

***FINAL***  
**WATERSHED PLAN**  
**and**  
**ENVIRONMENTAL IMPACT STATEMENT**

**LOS OLMOS CREEK**  
**WATERSHED**

**JIM HOGG AND STARR COUNTIES, TEXAS**



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

June 1981

### Abstract

The recommended alternative concerns a plan to reduce average annual flood damages to urban property in Rio Grande City and El Sauc, Texas, reduce average annual flood damage to agricultural properties, eliminate the threat to risk of loss of life and social-well being to the residents of the area as a result of project installation. The recommended works of improvement are one floodwater retarding structure and two dikes to be constructed during a four-year installation period. Installation of the structural measures will require 3,123 acres which is comprised of 3,032 acres rangeland and 91 acres cropland.

Federal assistance will be provided under authority of Public Law 83-366, 83d Congress, 68 Stat. 666, as amended. Further inquiries may be directed to Mr. George C. Marks, State Conservationist, Soil Conservation Service, W.A. Poage Federal Building, 101 South Main, P.O. Box 448, Temple, Texas 76503, telephone: 817/774-1114.

# EXECUTIVE SUMMARY

LOS OLMOS CREEK WATERSHED  
Jim Hogg and Starr Counties, Texas

FINAL

WATERSHED PLAN AND  
ENVIRONMENTAL IMPACT STATEMENT

June 1981

Prepared By: Starr County Commissioners Court  
Starr County Soil and Water Conservation District  
Monte Mucho Soil and Water Conservation District  
U.S. Department of Agriculture, Soil Conservation Service

Planned under the Authority of the Watershed Protection and Flood Prevention Act, Public Law 83-566, as amended (16 USC 1001-1008) and in accordance with Section 102(2)(C) of the National Environmental Policy Act of 1969, Public Law 91-190, as amended (42 USC 4321 et seq).

The recommended alternative concerns a plan to reduce average annual flood damages to urban property in Rio Grande City and El Sauz, Texas, reduce average annual flood damage to agricultural properties, eliminate the threat to risk of loss of life in every building in the flood hazard area, and improve the quality of life and social-well being to the residents of the area as a result of project installation.

Average Annual Benefits:

Item	Projected Damage		Existing Damage	
	(dollars)	(percent)	(dollars)	(percent)
Floodwater				
Crop and Pasture	9,870	1.9	9,870	2.4
Other Agricultural	14,010	2.7	14,010	3.4
Nonagricultural				
Road and Bridge	1,310	0.3	1,310	0.3
Urban				
Residential Property	419,240	81.9	316,890	77.4
Commercial Property	49,570	9.7	49,570	12.1
Public Property	18,000	3.5	18,000	4.4
Subtotal	512,000	100.0	409,650	100.0
Employment	11,840		11,840	
Total	523,840		421,490	

Detach Here

Project Costs:

<u>Item</u>	<u>: PL-566 Funds</u>	<u>: Other Funds</u>	<u>: Total</u>
	<u>(dollars)(percent)</u>	<u>(dollars)(percent)</u>	<u>(dollars)</u>
One Floodwater Retarding Structure and Two Dikes	3,424,250 82.9	707,450 17.1	4,131,700

Average Annual Cost of Structural Measures: \$335,080

Estimated Annual Cost of Operation and Maintenance: \$19,510

Total Annual Cost: \$354,590

Benefit Cost Ratio: Projected conditions 1.5:1.0  
Existing conditions 1.2:1.0

Beneficiaries:

<u>Item</u>	<u>Number</u>	<u>Percent</u>	Average cost to benefited farming unit: \$4,490/unit
Farming Units	43	6.6	Average cost to benefited urban property: \$6,410/property
Urban Properties	613	93.4	Average cost to agricultural acres benefited: \$25/acre
<u>Total</u>	<u>656</u>	<u>100.0</u>	Average cost to nonagricultural acres benefited: \$2,710/acre

Land Use:

	<u>Watershed</u>		<u>Flood Plain</u>	
	<u>(acres)</u>	<u>(percent)</u>	<u>(acres)</u>	<u>(percent)</u>
Cropland	5,500	2.7	775	8.4
Rangeland	195,500	95.6	6,924	75.7
Urban and Built-up	2,170	1.1	652	7.1
Other	1,300	0.6	800	8.8
<u>Total</u>	<u>204,470</u>	<u>100.0</u>	<u>9,151</u>	<u>100.0</u>

Land Ownership in Watershed: Private-99 percent; State/Local-1 percent;  
Federal-0 percent

Farm and Ranch Units in Watershed: 150 Average Size: 1,350 acres

Prime Farmland: 680 acres in flood plain

Wetlands: None

Endangered Species: No listed species present

Cultural Resources: None present of National significance

Responsible for Operation and Maintenance of Project Measures:  
Starr County Commissioners Court

FINAL

WATERSHED PLAN AND  
ENVIRONMENTAL IMPACT STATEMENT

LOS OLMOS CREEK WATERSHED  
Jim Hogg and Starr Counties, Texas

Prepared under the Authority of the Watershed  
Protection and Flood Prevention Act, Public  
Law 83-566, as amended (16 USC 1001-1008)  
and in accordance with Section 102(2)(C) of  
the National Environmental Policy Act of 1969,  
Public Law 91-190, as amended (42 USC 4321 et seq).

Prepared by: Starr County Commissioners Court  
Starr County Soil and Water Conservation District  
Monte Mucho Soil and Water Conservation District  
U.S. Department of Agriculture, Soil Conservation  
Service

## ADDENDUM

### Los Olmos Creek Watershed, Texas

This addendum displays project costs, benefits, and benefit-cost ratio based on a 7-5/8 percent interest rate, current normalized prices, and the 1980 price base. Average annual project costs, benefits, and benefit-cost ratio are as follows:

1. Project benefits are \$580,310
2. Project costs are \$397,390
3. The project benefit-cost ratio for projected conditions is 1.5 to 1.0
4. The project benefit-cost ratio for existing conditions is 1.2 to 1.0

October 1981

PREFACE

Enclosed are two documents--the Watershed Plan and Environmental Impact Statement for Los Olmos Creek Watershed, Jim Hogg and Starr Counties, Texas.

The Watershed Plan has been developed by the local sponsors with the assistance of the U.S. Department of Agriculture and is the basis for the authorization of federal assistance to implement the recommended alternative in accordance with the Watershed Protection and Flood Prevention Act, Public Law 83-566, as amended (16 USC 1001-1008).

The Environmental Impact Statement has been prepared by the U.S. Department of Agriculture in compliance with Section 102(2)(C) of the National Environmental Policy Act of 1969, Public Law 91-190, as amended (42 USC 4321 et seq).

The Environmental Impact Statement contains detailed information on project purposes and goals, recommended alternative, affected environment, watershed problems, environmental consequences, alternatives, irreversible and irretrievable commitment of resources, and the consultation and review with appropriate agencies.

TABLE OF CONTENTS

WATERSHED PLAN

	<u>Page No.</u>
Summary and Description. . . . .	P-1
Recommended Alternative. . . . .	P-2
Installation Costs-Monetary. . . . .	P-3
Economic Benefits. . . . .	P-4
Installation and Financing . . . . .	P-5
Operation, Maintenance, and Replacement. . . . .	P-7
Agreement. . . . .	P-9
Tables:	
Table 1 - Estimated Installation Cost. . . . .	P-15
Table 2 - Estimated Structural Cost Distribution . . . . .	P-16
Table 3 - Structural Data-Structures With Planned Storage Capacity . . . . .	P-17
Table 3A - Structural Data-Dikes . . . . .	P-18
Table 4 - Annual Cost. . . . .	P-19
Table 5 - Estimated Average Annual Flood Damage Reduction Benefits . . . . .	P-20
Table 6 - Comparison of Benefits and Costs . . . . .	P-21

TABLE OF CONTENTS  
ENVIRONMENTAL IMPACT STATEMENT

	<u>Page No.</u>
Cover Sheet	
Summary . . . . .	E-1
Affected Environment. . . . .	E-4
Watershed Problems. . . . .	E-9
Project Purposes and Goals. . . . .	E-14
Project Formulation . . . . .	E-14
Alternatives. . . . .	E-15
Recommended Alternative Selection and Summary Comparison. .	E-17
Recommended Alternative . . . . .	E-24
Environmental Consequences. . . . .	E-27
Short-Term Uses vs. Long-Term Productivity. . . . .	E-40
Irreversible and Irretrievable Commitments of Resources . .	E-40
Consultation and Review with Appropriate Agencies . . . . .	E-40
List of Preparers . . . . .	E-77
Index . . . . .	E-81
<b>Appendices:</b>	
Appendix A - Display Accounts for Recommended Alternative	
Appendix B - Letters of Comment Received on Draft Environmental Impact Statement	
Appendix C - Literature Cited or Sources Consulted	
Appendix D - Description of Habitats Affected by Structural Measures	
Appendix E - Habitat Evaluation Charts of Proposed Structural Measures	
Appendix F - Detailed Project Effects on Listed and Notice of Review Status Endangered Species	
Appendix G - Watershed Figures	

LIST OF PLATES

	<u>Page No.</u>
Plate 1 - Formulation Map-Alternative No. 1 . . . . .	E-18
Plate 2 - Formulation Map-Alternative No. 2 . . . . .	E-19
Plate 3 - Formulation Map-Alternative No. 3 . . . . .	E-20
Plate 4 - Formulation Map-Alternative No. 4 . . . . .	E-21
Plate 5 - Areas Planned for Mitigation of Wildlife Losses . . . . .	E-28

WATERSHED PLAN

LOS OLMOS CREEK WATERSHED

Jim Hogg and Starr Counties, Texas

June 1981

## LOS OLMOS CREEK WATERSHED PLAN

Jim Hogg and Starr Counties, Texas

June 1981

### SUMMARY AND DESCRIPTION 1/

This Watershed Plan (Plan) for watershed protection and flood prevention for Los Olmos Creek Watershed has been prepared by the Sponsoring Local Organization (Sponsors) which is comprised of the Starr County Commissioners Court, Starr County Soil and Water Conservation District, and Monte Mucho Soil and Water Conservation District (County, Starr County SWCD, and Monte Mucho SWCD, respectively). Technical assistance has been provided by the Soil Conservation Service (SCS), United States Department of Agriculture (USDA). The Fish and Wildlife Service, United States Department of the Interior (USDI), in cooperation with the Texas Parks and Wildlife Department, made a reconnaissance study of fish and wildlife resources of the watershed. The Plan has been coordinated with the Texas Historical Commission and the Heritage Conservation and Recreation Service, USDI. Archeological surveys of the floodwater retarding structure, dikes, and borrow areas were conducted by the Center for Archeological Research, The University of Texas at San Antonio.

Partial financial assistance in developing the Plan was provided by the Texas State Soil and Water Conservation Board.

The Los Olmos Creek Watershed comprises a total area of 319.5 square miles (204,470 acres) in portions of Jim Hogg and Starr Counties. It is estimated that 2.7 percent of the watershed is cropland; 95.6 percent is rangeland; 1.1 percent is urban and built-up land; and 0.6 percent is in miscellaneous uses such as farmsteads, etc.

The principal water and land resource problem within the watershed is flooding from Los Olmos Creek and the contributing drainage area of Sandia Creek Watershed which results in damages to residences, businesses, public buildings, agricultural properties, city streets and public roads, etc. Total floodwater damages are estimated to average \$566,020 annually.

The recommended alternative will eliminate the threat to risk of loss of life from the 100-year frequency flood in every building in the flood hazard area, reduce average annual damages to urban property, reduce average annual flood damages to agricultural properties, and increase the quality of life for the area as a result of project installation.

The structural measures in this Plan are one floodwater retarding structure and two dikes, one at El Sauz and one at Rio Grande City, to

1/ All information and data in this Watershed Plan, except as otherwise noted by reference to source, were calculated during watershed planning investigations by the Soil Conservation Service, U.S. Department of Agriculture.

be installed within a four-year installation period. The total estimated cost of those measures is \$4,131,700, of which the local share is \$707,450 and Public Law 566 share is \$3,424,250.

The recommended alternative will reduce average annual flooding from 3,588 to 2,669 acres and will directly benefit 499 residential properties, owners or occupants of 78 business establishments, 36 public buildings, and 43 owners and operators of agricultural land in the flood plain.

The floodwater retarding structure and dikes will require 3,123 acres of land. The floodwater retarding structure will have 142 acres of easement for the dam and emergency spillways, 35 acres of flowage easement below the emergency spillway and 1,961 acres in the retarding pool at easement line elevation. The Rio Grande City dike will require 271 acres for construction easement and an additional 597 acres for flowage easement. The dike at El Sauz will require a total of 38 acres for construction. Easement for wildlife mitigation will be required on an additional 79 acres and is included as a part of the total land rights.

As planned, 276 acres of woody vegetation and 92 acres of non-woody vegetation will be either cleared or inundated following construction of the floodwater retarding structure and dikes. Wildlife habitat remaining in the sediment pool will be altered by accumulation of sediment and occasional inundation. No significant impacts will result from the infrequent inundation of the retarding (detention) pool. Habitat affected by construction of the floodwater retarding structure and dikes will be converted to vegetation suitable for erosion control and wildlife food and cover.

Average annual projected flood damage will be reduced from \$566,020 to \$54,020. The average annual projected damage reduction benefits will be \$512,000 and \$11,840 to employment for a total of \$523,840. Under existing conditions flood damages would be reduced from \$461,760 to \$52,110 for benefits of \$409,650; employment benefits would be \$11,840 for a total of \$421,490. The average annual cost of the recommended alternative is \$354,590. Average annual cost includes interest charges during the installation period plus operation, maintenance, and replacement. The benefit cost ratio for projected conditions is 1.5:1.0 and 1.2:1.0 for existing conditions.

The County will be responsible for operation and maintenance of the floodwater retarding structure and dikes which is estimated to be \$19,510 annually.

#### RECOMMENDED ALTERNATIVE

The recommended structural measures will consist of one floodwater retarding structure and two dikes (Tables 3 and 3A). The floodwater retarding structure will be an earth dam with a principal spillway and plunge basin, two emergency spillways, a floodwater retarding pool, and a sediment pool. This structure will temporarily detain runoff from 45.7 percent of Los Olmos Creek Watershed. Water in the sediment pool at the lowest ungated outlet will occupy 50 acres. The floodwater detention pool will cover 1,690 acres at the elevation of the emergency spillway.

The dikes at Rio Grande City and El Sauz will be earthen embankments with side inlet structures at various locations to enable runoff to drain into Los Olmos Creek. The inlet structures will be designed to prevent reverse flow from the creek.

Wildlife habitat losses attributable to the project construction will be mitigated by fencing 686 acres at the planned structures' locations. These areas will be managed for wildlife.

The recommended alternative will provide protection from a 100-year frequency flood (one percent chance of being equaled or exceeded during any year) to all existing urban properties. The floodwater retarding structure will reduce peak runoff at the dike locations; however, this combination of structural measures is necessary to provide urban protection.

The County will continue to enforce an existing flood plain zoning ordinance (by order). The area subject to flooding is defined in the Environmental Impact Statement. This action will complement the recommended structural works of improvement.

The Environmental Impact Statement should be reviewed for pertinent information regarding the project purposes and goals, recommended alternative, affected environment, watershed problems, environmental consequences, alternatives, irreversible and irretrievable commitment of resources, and the consultation and review with appropriate agencies.

#### INSTALLATION COSTS-MONETARY

Total project cost of the structural measures is estimated to be \$4,131,700, of which \$3,424,250 will be borne by Public Law 566 funds and \$707,450 will be borne by other funds (Table 1). Cost-sharing arrangements relative to installation are presented in the AGREEMENT.

Total cost for installing the floodwater retarding structure is estimated to be \$1,710,060, of which \$1,376,610 will be borne from Public Law 566 funds, and \$333,450 by the County. Public Law 566 costs include \$1,137,500 for construction, \$72,800 for engineering services and \$166,310 for project administration. Local costs for installation of the floodwater retarding structure total \$333,450 (Table 2), which includes \$331,450 for land rights (\$300,450 for land values; \$28,500 for stock ponds, windmills and wells, troughs and storage facilities, and fences and corrals; and \$2,500 for legal fees) and \$2,000 for project administration. A portion of the land value, for mitigation to minimize project impacts on wildlife resources, is estimated to be \$57,150.

Total cost for constructing the dikes is estimated to be \$2,421,640, of which \$2,047,640 will be borne from Public Law 566 funds and \$374,000 by the County. Public Law 566 cost includes \$1,686,830 for construction, \$113,730 for engineering services and \$247,080 for project administration (Table 2). Local cost for installing the dikes totals \$374,000, which includes \$369,000 for land rights (\$172,480 for land values; \$192,520 for power and telephone lines, pipelines, highway modification, stock ponds, fences, and a shed; and \$4,000 for legal fees) and \$5,000 for project administration.

The construction cost estimate was based on the unit cost of structural measures in similar areas modified by special conditions inherent to the site locations. Ten percent of the estimate was added as a contingency to provide funds for unpredictable construction costs. Engineering services cost consists of, but are not limited to, detailed surveys, geologic investigations, laboratory analysis, reports, designs, and cartographic services. The SCS and the County will each pay the administrative cost which they incur. Those costs shown in the Plan represent preliminary estimates. Public Law 566 project administration costs consist of construction inspection, contract administration, and maintenance of the SCS State Office records and accounts. Other costs for project administration include the County's cost related to contract administration overhead and organization administrative costs and construction inspection they may desire to make at their own expense. In finally determining the costs to be borne by each party, the actual costs incurred to the installation of the measure will be used.

The values of land rights used in the plan were determined by representatives of the Sponsors.

#### ECONOMIC BENEFITS

The total average annual benefits from projected flood damage reduction and employment are \$523,840 (Table 6). The average annual flood damage reduction benefits accruing from structural measures are expected to be \$512,000 (Table 5). Average annual employment benefits will be \$11,840 (Table 6). The total average annual cost of the structural measures (amortized total installation and project administration costs including compound interest during the installation period; plus operation, maintenance, and replacement) is \$354,590 (Table 4). This results in a benefit cost ratio of 1.5:1.0 with projected conditions (Table 6).

The average annual benefits with existing conditions is \$421,490 of which \$409,650 would be from flood damage reduction and \$11,840 from employment. The benefit cost ratio would be 1.2:1.0 for existing conditions.

INSTALLATION AND FINANCING

The following is the estimated schedule of obligations for a four-year installation period:

Schedule of Obligations				
Fiscal :		: Public Law :	: Other :	
Year :	Measures	: 566 Funds :	: Funds :	: Total
		(dollars)	(dollars)	(dollars)
First	Acquisition of Land Rights	-	350,220	350,220
	Engineering Services (Surveys)	61,550	-	61,550
	Project Administration (Other)	4,730	1,250	5,980
	Subtotal	66,280	351,470	417,750
Second	Acquisition of Land Rights	-	350,230	350,230
	Engineering Services (Designs)	124,980	-	124,980
	Project Administration (Other)	9,590	1,250	10,840
	Subtotal	134,570	351,480	486,050
Third	Construction of Floodwater Retarding Structure and Dikes at El Sauz and Rio Grande City	2,793,880	-	2,793,880
	Project Administration (Construction Inspection)	160,460	4,000	164,460
	(Other)	226,590	-	226,590
	Subtotal	3,180,930	4,000	3,184,930
Fourth	Establishment of Vegetation on Structural Measures	30,450	-	30,450
	Project Administration (Construction Inspection)	9,000	500	9,500
	(Other)	3,020	-	3,020
	Subtotal	42,470	500	42,970
<b>Total</b>		<b>3,424,250</b>	<b>707,450</b>	<b>4,131,700</b>

This schedule may be changed from year to year to conform with appropriations, accomplishments, and any mutually desirable changes between the Sponsors and SCS.

Acquisition of land rights and certification of land treatment requirements will be completed during the first and second years of a four-year installation period. The floodwater retarding structure and dikes at El Sauz and Rio Grande City will be constructed during the third year of the installation period. Vegetation on disturbed areas will be established during the fourth year.

Technical assistance will be provided by the SCS in preparation of plans and specifications, construction inspection, preparation of contract payment estimates, final inspection, execution of certificate of completion, and related tasks necessary to install the structural measures.

The County will represent the Sponsors in coordination with the SCS on matters concerning construction of the floodwater retarding structure and dikes and have the following responsibilities:

1. Obtain the necessary land rights.
2. Provide for any needed changes in location or modification of highway, power or telephone lines, pipeline, fences and corrals, windmills and well, troughs and storage facilities, shed, and private roads.
3. Determine and certify legal adequacy of easements and State permits for construction of the floodwater retarding structure and dikes.

Land rights for all structural measures are to be secured before any construction begins. The minimum land rights required will be those necessary to mitigate, construct, operate, maintain, and inspect the structural measures. The schedule of obligations will begin when the Plan is approved for operations.

The Sponsors have requested the SCS to administer contracts.

Under present conditions there will be no apparent displacements or relocations of persons, businesses, or farm operations as a result of installation of the structural measures. If relocations or displacements become necessary, they will be carried out under the provisions of Public Law 91-646, Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

The County has rights of eminent domain under applicable state law and has the financial resources to fulfill their responsibilities.

The floodwater retarding structure and dikes will be constructed pursuant to the following conditions:

1. Certification that land treatment requirements in drainage areas of the floodwater retarding structure have been satisfied.
2. All needed land rights and State permits have been obtained for the floodwater retarding structure and dikes.
3. Project agreements have been executed.
4. Operation and maintenance agreements have been executed.
5. Flood plain management regulations will continue in effect.

No Federal permits will be required for implementation of the recommended alternative.

The structural measures will affect a total of 24 archeological sites, none of which are considered eligible for nomination to the National Register of Historic Places. The State Historic Preservation Officer has concurred with the findings of archeological surveys.

If previously unidentified evidence of significant cultural values are discovered prior to or during construction, the procedures in Public Law 93-291 will be followed. There will be no change in the existing responsibilities of the SCS under Executive Order 11593. Mitigation will be accomplished as set forth in Title 7, Code of Federal Regulations, Part 656, "Procedures for the Protection of Archeological and Historical Properties Encountered in SCS-assisted Programs."

Federal assistance for carrying out works of improvement described in this Plan will be provided under authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83d Congress, 68 Stat. 666), as amended. Funds allocated under Public Law 566 for financial and technical assistance are contingent upon the fulfillment of applicable laws and regulations and availability of appropriations for this purpose.

Funds for the local share of the installation of the floodwater retarding structure and dikes will be provided by the County through existing tax revenue. Operation and maintenance funds for the same structural measures will be provided from the general fund of the County.

The Sponsors have the financial ability to carry out their responsibilities of project installation and in operation, maintenance, and replacement. Other assistance for land rights, project administration, etc. may be available through the use of Community Development Funds administered by the Department of Housing and Urban Development (HUD).

#### OPERATION, MAINTENANCE, AND REPLACEMENT

##### Structural Measures

The County will assume responsibility for operation, maintenance, and replacement upon completion of each structural measure. Cost of operation, maintenance, and replacement for the structural measures is estimated to be \$19,510 annually, of which \$7,340 are for the floodwater retarding structure and \$12,170 are for the dikes. Monies for operation and maintenance will be supplied from the general fund of the County. This fund is supported by tax revenue. Each year the County will budget sufficient funds for their responsibilities.

Sponsors will secure easements that will provide for unrestricted access by their representatives and SCS to inspect all structural measures and their appurtenances at any time and to perform operation, maintenance, and replacement. The County will maintain a record of all maintenance inspections, maintenance applied, and the cost of such maintenance and have it available for inspection by SCS personnel. The necessary work

will be accomplished by contracts, force accounts, or equipment owned by the Sponsors.

The structural measures will be inspected at initial filling, after major storms, and annually for the first three years after construction by the designated District Conservationist, an SCS engineer, and representatives of the Sponsors. Thereafter, all structural measures will be inspected by representatives of the Sponsors every year. A safety inspection will be made periodically by a qualified engineer in conformance with legal requirements. The SCS will participate only to the extent of furnishing technical assistance necessary for the operation and maintenance program. The County or their representative will perform promptly all maintenance of the structures as needed including that required to prevent soil erosion and water pollution.

A vegetative cover will be established for wildlife habitat and to protect the structural measures from erosion. Fertilization and noxious weed control will be carried out to maintain a desirable cover. Fences and areas dedicated to benefit wildlife will be maintained. As a mitigation measure, grazing by domestic livestock will be restricted unless it is determined by SCS biologists that limited grazing is desirable for wildlife and species composition.

The debris guard on the principal spillway will require occasional maintenance to keep it in proper working condition. Bent and damaged grill work will be straightened or replaced. Routine maintenance will consist of fence repair (including debris removal), mowing, fertilization, and noxious weed control. Functioning of the dikes and/or emergency spillways may require repair and revegetation to eroded areas on the structures. Sponsors will also control the handling, use, and application of any pesticides that may be needed for maintenance of structural measures. Only approved and authorized reagents and compounds will be used. Application, storage, and disposal will be compatible with current laws and prudent judgment regulating their use.

A specific operation and maintenance agreement will be prepared for each structural measure and will be executed prior to signing a project agreement. The operation and maintenance agreement will include specific provisions for retention and disposal of property acquired or improved with Public Law 566 financial assistance. The agreement will set forth specific details on procedures in line with recognized assignments of responsibility and will be in accordance with the Texas Watersheds Operation and Maintenance Handbook.

#### Land Treatment

Conservation land treatment applied under the going program will be essentially the responsibility of land users. Assistance to land users will be provided by the Starr County SWCD and the Monte Mucho SWCD with technical assistance from the SCS. Each respective SWCD will make periodic field inspections of the watershed and maintain personal communications with land users to determine the status of land treatment.

## AGREEMENT

between the following local organizations:

Starr County Commissioners Court  
Starr County Soil and Water Conservation District  
Monte Mucho Soil and Water Conservation District  
(Referred to herein as Sponsors)  
State of Texas

and the

Soil Conservation Service  
United States Department of Agriculture  
(Referred to herein as SCS)

Whereas, application has heretofore been made to the Secretary of Agriculture by local organization(s) for assistance in preparing a plan for works of improvement for the Los Olmos Creek Watershed, State of Texas, under the authority of the Watershed Protection and Flood Prevention Act (16 U.S.C. 1001-1008); and whereas, the responsibility for administration of the Watershed Protection and Flood Prevention Act, as amended, has been assigned by the Secretary of Agriculture to the Soil Conservation Service (SCS); and

Whereas, there has been developed through the cooperative efforts of local organizations and SCS this plan for works of improvement for the Los Olmos Creek Watershed, State of Texas:

Now, therefore, in view of the foregoing considerations, the Secretary of Agriculture, through the SCS, and the Sponsors hereby agree on this plan and that the works of improvement for this project will be installed, operated, and maintained in accordance with the terms, conditions, and stipulations provided for in this watershed plan and including the following:

1. The Sponsors will acquire, with other than PL 566 funds, such land rights as will be needed in connection with the works of improvement. (Estimated Cost \$700,450).
2. The Sponsors assure that comparable replacement dwellings will be available for individuals and persons displaced from dwellings, and will provide relocation assistance advisory services and relocation assistance, make the relocation payments to displaced persons, and otherwise comply with the real property acquisition policies contained in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646, 84 Stat. 1894) effective as of January 2, 1971, and the Regulations issued by the Secretary of Agriculture pursuant thereto. The costs of relocation payments will be shared by the Sponsors and SCS as follows:

	<u>Sponsors</u> (percent)	<u>SCS</u> (percent)	<u>Estimated Relocation Payment Costs</u> (dollars)
Relocation Payments	17.1	82.9	0 <sup>1/</sup>

- The Sponsors will acquire or provide assurance that landowners or water users have acquired such water rights pursuant to state law as may be needed in the installation and operation of the works of improvement.
- The percentages of construction costs to be paid by the Sponsors and by SCS are as follows:

<u>Works of Improvement</u>	<u>Sponsors</u> (percent)	<u>SCS</u> (percent)	<u>Estimated Construction Costs</u> (dollars)
One (1) Floodwater Retarding Structure	0	100	1,137,500
Two (2) Dikes	0	100	1,686,830

- The percentages of the engineering costs to be borne by the Sponsors and the SCS are as follows:

<u>Works of Improvement</u>	<u>Sponsors</u> (percent)	<u>SCS</u> (percent)	<u>Estimated Engineering Costs</u> (dollars)
One (1) Floodwater Retarding Structure	0	100	72,800
Two (2) Dikes	0	100	113,730

- The Sponsors and SCS will each bear the costs of Project Administration which it incurs, estimated to be \$7,000 and \$413,390 respectively.
- The Sponsors will obtain agreements from owners of not less than 50 percent of the land above the floodwater retarding structure that they will carry out conservation farm or ranch plans on their land. Further, that 50 percent of the land upstream from the structure is to be adequately protected as a condition for construction of the structure.

<sup>1/</sup> Investigation has disclosed that under present conditions the project measures will not result in the displacement of any person, business, or farm operation. However, if relocations become necessary, relocation payments will be cost-shared in accordance with the percentages shown.

8. The Sponsors will encourage landowners and operators to operate and maintain the land treatment measures for the protection and improvement of the watershed.
9. The Sponsors will be responsible for the operation, maintenance, and replacement of the works of improvement by actually performing the work or arranging for such work in accordance with agreements to be entered into prior to issuing invitations to bid for construction work.
10. The costs shown in this Plan represent preliminary estimates. In finally determining the costs to be borne by the parties hereto, the actual costs incurred in the installation of works of improvement will be used.
11. This Agreement is not a fund obligating document. Financial and other assistance to be furnished by SCS in carrying out the Plan are contingent upon the fulfillment of applicable laws and regulations and the availability of appropriations for this purpose.
12. A separate agreement will be entered into between SCS and Sponsors before either party initiates work involving funds of the other party. Such agreements will set forth in detail the financial and working arrangements and other conditions that are applicable to the specific works of improvement.
13. This Plan may be amended, revised, or terminated only by mutual agreement of the parties hereto, except that SCS may terminate financial and other assistance in whole, or in part, at any time it determines that the Sponsors have failed to comply with the conditions of this Agreement. In this case, SCS shall promptly notify the Sponsors in writing of the determination and the reasons for the termination, together with the effective date. Payments made to the Sponsors or recoveries by SCS under projects terminated shall be in accord with the legal rights and liabilities of the parties. An amendment to incorporate changes affecting a specific measure may be made by mutual agreement between SCS and the Sponsors having specific responsibilities for the measure involved.
14. No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this Plan, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this Agreement if made with a corporation for its general benefit.
15. The program conducted will be in compliance with all requirements respecting nondiscrimination as contained in the Civil Rights Act of 1964, as amended, and the regulations of the Secretary of Agriculture (7 CFR 15.1-15.12), which provide that no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any activity receiving federal financial assistance.

Starr County Commissioners Court  
Local Organization

By Blas Chapa

Title Blas Chapa  
County Judge

Date County Judge  
1-13-82

Rio Grande City, Texas 78582  
Address Zip Code

The signing of this agreement was authorized by a resolution of the governing body of the Starr County Commissioners Court  
Local Organization

adopted at a meeting held on December 14, 1981

Jose S. Hinojosa  
Secretary, Local Organization  
Jose S. Hinojosa

Rio Grande City, Texas 78582  
Address Zip Code

Date 1-13-82

Starr County Soil and Water Conservation District  
Local Organization

By R. A. Peterson

Title R. A. Peterson  
Chairman

Date Chairman  
14 June 82

P.O. Box 431  
Rio Grande City, Texas 78582  
Address Zip Code

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

adopted at a meeting held on Jan. 14, 1982

Uvaldo Salinas  
Secretary, Local Organization  
Uvaldo Salinas

P.O. Box 431 Rio Grande City, Texas 78582  
Address Zip Code

Date 1-14-82

Monte Mucho Soil and Water  
Conservation District  
Local Organization

P. O. Box 772  
Hebbronville, Texas 78361  
Address Zip Code

By William C. Holbein  
Title Chairman  
Date 1-8-82

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

adopted at a meeting held on January 8, 1982

Romeo F. Montalvo  
Secretary, Local Organization  
Romeo F. Montalvo

Box 245  
Hebbronville, TX 78361  
Address Zip Code

Date Jan. 8, 1982

Appropriate and careful consideration has been given to the Environmental  
Impact Statement prepared for this project and to the environmental  
aspects thereof.

Soil Conservation Service  
United States Department of Agriculture

Approved by:

ACTING

George C. Marks  
State Conservationist

Date JAN 21 1982

TABLE 1 - ESTIMATED INSTALLATION COST

Los Olmos Creek Watershed, Texas

Installation Cost Item	Unit	Land	Estimated Cost (Dollars) <sup>1/</sup>			Total
			Public Law Number Non-Federal	566 Funds Non-Federal	Other Non-Federal	
<u>STRUCTURAL MEASURES</u>						
Floodwater Retarding Structure	No.	1	1,376,610	333,450		1,710,060
Dikes	No.	2	2,047,640	374,000		2,421,640
<b>TOTAL PROJECT</b>			<b>3,424,250</b>	<b>707,450</b>		<b>4,131,700</b>

<sup>1/</sup> Price Base: 1979

June 1981

TABLE 2 - ESTIMATE COST DISTRIBUTION  
STRUCTURAL MEASURES

Los Olmos Creek Watershed, Texas

(Dollars) 1/

Item	Installation Costs P.L. 566 Funds		Installation Costs				Total Installation Cost	
	Construction	Engineering	Project	Administration	P.L. 566	Land Rights		
No. 1	1,137,500	72,800	166,310	1,376,610	331,450 2/	2,000	333,450	1,710,060
Bikes								
El Sauz	262,360	22,560	38,800	323,720	13,100	1,500	14,600	338,320
Rio Grande City	1,424,470	91,170	208,280	1,723,920	355,900	3,500	359,400	2,083,320
GRAND TOTAL	2,824,330	186,530	413,390	3,424,250	700,450 3/	7,000	707,450	4,131,700

1/ Price Base: 1979

2/ Includes \$57,150 for wildlife mitigation.

3/ Includes \$472,930 for land values, \$3,200 for modification or relocation of power or telephone lines, \$4,000 for pipelines modification, \$170,520 for highway modification, \$13,000 for stock ponds, \$1,500 for waterwell or windmill, \$2,500 for water storage facility, \$20,300 for fence relocation or modification, \$4,000 for corrals, \$2,000 for sheds, and \$6,500 for legal fees.

June 1981

TABLE 3 - STRUCTURAL DATA -  
DAMS WITH PLANNED STORAGE CAPACITY

Los Olmos Creek Watershed, Texas

Item	Unit	Structure	Total
		Number	
		1	
Class of Structure		A	xxx
Seismic Zone		0	xxx
Total Drainage Area	Sq.Mi.	146.12	146.12
Runoff Curve No. (1-day)(AMC I)		60	xxx
Time of Concentration ( $T_c$ )	Hrs.	12.19	xxx
Elevation Top of Dam	Ft.	290.0	xxx
Elevation Crest Emergency Spillway	Ft.	283.0	xxx
Elevation Crest High Stage Inlet	Ft.	270.9	xxx
Elevation of Lowest Ungated Outlet	Ft.	262.0	xxx
Emergency Spillway Type		Veg.	xxx
Emergency Spillway Bottom Width	Ft.	1,000	xxx
Emergency Spillway Exit Slope	Ft./Ft.	0.028	xxx
Maximum Height of Dam	Ft.	37	xxx
Volume of Fill	Cu.Yd.	445,370	445,370
Total Capacity <u>1/</u>	Ac.Ft.	13,715	13,715
Lowest Ungated Outlet <u>2/</u>	Ac.Ft.	200	200
Sediment Submerged	Ac.Ft.	2,026	2,026
Sediment Aerated	Ac.Ft.	390	390
Floodwater Retarding	Ac.Ft.	11,299	11,299
Surface Area			
Lowest Ungated Outlet	Acres	50	50
Sediment Pool	Acres	424	424
Floodwater Retarding Pool <u>1/</u>	Acres	1,690	1,690
Principal Spillway Design			
Rainfall Volume (1-day)	In.	9.79	xxx
Rainfall Volume (10-day)	In.	16.35	xxx
Runoff Volume (10-day) <u>3/</u>	In.	2.22	xxx
Capacity of High Stage (Max.)	cfs	894	xxx
Dimensions of Conduit		6'x6'	xxx
Frequency Operation-Emergency Spillway	% chance	3.0	xxx
Emergency Spillway Hydrograph			
Rainfall Volume	In.	5.93	xxx
Runoff Volume	In.	1.88	xxx
Storm Duration	Hrs.	12.19	xxx
Velocity of Flow ( $V_e$ )	Ft./Sec.	1.89	xxx
Max. Reservoir Water Surface Elevation <u>4/</u>	Ft.	283.7	xxx
Freeboard Hydrograph			
Rainfall Volume	In.	9.02	xxx
Runoff Volume	In.	4.12	xxx
Storm Duration	Hrs.	12.19	xxx
Max. Reservoir Water Surface Elevation <u>4/</u>	Ft.	287.9	xxx
Discharge Per Foot of Width ( $Q_e/b$ )	Ac.Ft.	15.91	xxx
Bulk Length	Ft.	890	xxx
Capacity Equivalents			
Sediment Volume	In.	0.31	xxx
Floodwater Retarding Volume	In.	1.45	xxx

1/ Crest of Emergency Spillway

2/ Capacity included in sediment submerged

3/ Runoff volume based on Volume-Duration-Probability Data

4/ Based on Storm Duration Study, the maximum reservoir stages will occur at 24 hour duration and will be 285.3 for the Emergency Spillway Hydrograph and 288.6 for the Freeboard Hydrograph.

TABLE 3A - STRUCTURAL DATA - DIKES

Los Olmos Creek Watershed, Texas

Location	Station Ft.	Uncon- trolled Drainage Area Sq.Mi.	Designed Capacity (cfs)	Design Water Surface Elev. Ft.	Dike Dimensions Base Width Ft.	Height l/ Ft.	Slope Side Slopes	Velocity in Flood Plain Adjacent to Dike FPS	Fill Volume cu.yds.
El Sauz	0+00		47,270	256.7			Begin Dike	5.15	-
	10+62		47,440	261.0	48	4.5	4:1	3.46	2,755
	23+45		47,630	263.8	90	9.7	4:1	2.34	18,757
	24+66		47,630	269.5	112	12.5	4:1	1.14	970
	28+75	13.04	47,850	270.2	81	8.6	4:1 2/	1.45	13,042
	34+70		47,850	270.2	92	10.0	4:1	-	11,414
	39+10		47,850	270.2			End of Dike	-	5,084
								52,022	
Ric Grande City	0+00		40,060	162.6			Begin Dike	1.03	-
	13+50		40,101	164.8	76	8.0	4:1	2.33	30,362
	63+51		40,283	166.6	104	11.5	4:1	3.45	96,234
	83+27		40,355	169.3	95	10.4	4:1	3.43	59,070
	115+10		40,457	172.4	133	15.1	4:1	2.18	89,893
	130+03		40,508	175.2	129	14.6	4:1	1.24	53,988
	157+77		40,624	175.6	52	5.0	4:1	1.82	101,743
166+67						End of Dike	-	2,436	
TOTAL									485,748

1/ Includes 2.0 feet freeboard  
 2/ Transition to 2.5:1 slopes in areas where rock riprap slope protection required adjacent to the stream channel on El Sauz Dike.

TABLE 4 - ANNUAL COST

Los Olmos Creek Watershed, Texas  
(Dollars) 1/

Evaluation Unit	: Cost <u>2/</u> <u>3/</u>	: Installation : : of : : Amortization : : Operation, : : Maintenance, : : and : : Replacement : : Cost :	: Total
Floodwater Retarding Structure No. 1 and Dikes at El Sauz and Rio Grande City	335,080	19,510	354,590

1/ Price Base: 1979

2/ 100-years at 7.375 percent interest

3/ Includes compound interest at the current discount rate (7.375 percent) during installation period.

June 1981

TABLE 5 - ESTIMATED AVERAGE ANNUAL  
FLOOD DAMAGE REDUCTION BENEFITS

Los Olmos Creek Watershed, Texas

(Dollars) 1/ 2/

Item	: Estimated Average Annual Damage :		: Damage : Reduction : Benefits
	: Without : Project	: With : Project	
Floodwater			
Crop and Pasture	21,560	11,690	9,870
Other Agricultural	46,120	32,110	14,010
Nonagricultural			
Road and Bridge	2,830	1,520	1,310
Urban			
Residential Property <sup>3/</sup>	427,060	7,820 <sup>4/</sup>	419,240
Commercial Property	50,320	750 <sup>4/</sup>	49,570
Public Property	18,130	130 <sup>4/</sup>	18,000
<b>TOTAL</b>	<b>566,020</b>	<b>54,020</b>	<b>512,000</b>

1/ Price Base: Crop and pasture damages September 1979 current normalized prices, all other 1979.

2/ Evaluation of damages resulting from floods up to and including a 100-year frequency flood for agricultural and road and bridge, and 500-year frequency flood on urban areas.

3/ Includes projections

4/ Remaining damages with project are those resulting from inundation of properties beginning with the 250-year frequency flood up to and including the 500-year frequency flood.

June 1981

TABLE 6 - COMPARISON OF BENEFITS AND COSTS

Los Olmos Creek Watershed, Texas

(Dollars)

Evaluation Unit:	: AVERAGE ANNUAL BENEFITS <u>1/</u> :			: Average :	
	: Damage :	:	:	: Annual :	: Benefit :
	: Reduction :	:	:	: Cost :	: Cost :
	<u>2/ 3/</u> :	: Employment :	Total :	<u>4/</u> :	Ratio
Floodwater Retarding Structure No. 1 and Dikes at El Sauz and Rio Grande City	512,000	11,840	523,840	354,590	1.5:1.0

1/ Price Base: Crop and pasture September 1979 current normalized prices, all other 1979.

2/ From Table 5

3/ Damage reduction benefits for existing conditions are \$409,650. Benefit cost ratio for existing conditions is 1.2:1.0.

4/ From Table 4

June 1981

**ENVIRONMENTAL IMPACT STATEMENT**

**LOS OLMOS CREEK WATERSHED**

**Jim Hogg and Starr Counties, Texas**

**June 1981**

FINAL

ENVIRONMENTAL IMPACT STATEMENT

LOS OLMOS CREEK WATERSHED  
Jim Hogg and Starr Counties, Texas

June 1981

PREPARED BY

SOIL CONSERVATION SERVICE  
United States Department of Agriculture

The recommended alternative concerns a plan to reduce average annual flood damages to urban property in Rio Grande City and El Sauz, Texas, reduce average annual flood damage to agricultural properties, eliminate the threat to risk of loss of life in every building in the flood hazard area, and improve the quality of life and social-well being to the residents of the area as a result of project installation. The recommended works of improvement are one floodwater retarding structure and two dikes to be constructed during a four-year installation period. Installation of the structural measures will require 3,123 acres which is comprised of 3,032 acres rangeland and 91 acres cropland.

Federal assistance will be provided under authority of Public Law 83-566, 83d Congress, 68 Stat. 666, as amended. Further inquiries may be directed to Mr. George C. Marks, State Conservationist, Soil Conservation Service, W.R. Poage Federal Building, 101 South Main, P.O. Box 648, Temple, Texas 76503, telephone: 817/774-1214.

# LOS OLMOS CREEK WATERSHED

## Environmental Impact Statement

Jim Hogg and Starr Counties, Texas

June 1981

### SUMMARY 1/

This Environmental Impact Statement (EIS) has been prepared by the Soil Conservation Service (SCS), United States Department of Agriculture (USDA), for compliance with Section 102(2)(c) of the National Environmental Policy Act of 1969 (NEPA) and appropriate Council on Environmental Quality (CEQ) rules and regulations. The Sponsoring Local Organization (Sponsors) is comprised of the Starr County Commissioners Court, Starr County Soil and Water Conservation District, and Monte Mucho Soil and Water Conservation District (County, Starr County SWCD, and Monte Mucho SWCD, respectively).

In order to satisfy the intent of NEPA, this EIS addresses the following five major elements: (1) environmental consequences of the recommended alternative; (2) any adverse environmental consequences which cannot be avoided should the recommended alternative be implemented; (3) alternatives to the recommended alternative; (4) relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; (5) irreversible and irretrievable commitments of resources which would be involved if the proposed action be implemented.

Final rules and regulations published by CEQ on November 28, 1978, ("Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act") have been adhered to. Appropriate SCS procedures and policy for compliance with those rules and regulations have been followed. Similarly, final rules and regulations published by the Water Resources Council (WRC) on December 14, 1979, ["Procedures for Evaluation of National Economic Development (NED) Benefits and Costs in Water Resources Planning (Level C)"] were complied with.

The Plan was developed in full consultation and cooperation with all interested agencies and individuals. Prior to initiation of planning activities, informational meetings were held with local organizations in Rio Grande City. It was recognized that favorable public opinion toward a watershed project was needed before submitting an application for planning assistance to the Texas State Soil and Water Conservation Board. It was also emphasized at this meeting that under the auspices of Public Law 566, a watershed project would be a local endeavor with federal assistance. The Texas State Soil and Water Conservation Board approved the application with a high priority for planning assistance.

Los Olmos Creek Watershed application for assistance under Public Law 566, as amended, was authorized for planning by the Administrator of the SCS on June 29, 1973. The State Conservationist of the SCS, in his written notification of initiation of plan development, solicited information and comments from numerous federal, state, and local agencies that might have an interest in the project. Contacts were made with several agencies and individuals during planning to obtain information and assistance during the planning process.

1/ All information and data in this Environmental Impact Statement, except as otherwise noted by reference to source, were calculated during watershed planning investigations by the Soil Conservation Service, U.S. Department of Agriculture.

The Fish and Wildlife Service (FWS) and the Texas Parks and Wildlife Department (TP&WD) participated in wildlife surveys of the watershed and furnished reports of findings and anticipated project effects. In addition, a list of endangered species which may inhabit the area was obtained from FWS Office of Endangered Species (OES). The recommended alternative has been reviewed by the SCS to determine the impacts to endangered species in accordance with Section 7 of the Endangered Species Act of 1973 (Public Law 93-205, as amended). The FWS OES has been informed that no impacts will be occasioned to any Federally listed species. The State Historic Preservation Officer has concurred with the findings of archeological surveys. The Sponsors provided the South Texas Development Council with notification of intent to apply for assistance involving Federal funds.

The Environmental Protection Agency (EPA) was consulted and the recommended alternative has been reviewed in the field to determine substantive impacts. The EPA concluded the recommended alternative does not appear to be of major concern as it relates to their legislative mandates.

Meetings were held by the Sponsors on numerous dates to gain opinions from individuals and inform the general public. Newspapers serving the watershed area published articles announcing public meetings and reported information and conclusions resulting from meetings. 1/

On September 8, 1978, a public meeting was held in Rio Grande City to discuss the Preliminary Investigation Report with Sponsors and interested publics. Thirty-one persons registered their attendance. The purpose of the meeting was to summarize planning studies to date and present possible solutions to watershed problems. The Sponsors and publics were apprised of structural options and most likely alternatives developed from expressed goals. These conceptual alternatives consisted of the following: Dikes with upstream floodwater retarding structure(s), permanent evacuation of existing urban properties, dike(s) only, floodwater retarding structure(s) only, and no project. Each alternative available to the Sponsors was discussed in detail and those in attendance were given an opportunity to comment. The Sponsors were requested to analyze each alternative and make a decision for selection of a conceptual plan.

On September 29, 1978, the Sponsors wrote Mr. George C. Marks, State Conservationist, and indicated they would support a plan consisting of structural measures that would eliminate the threat to risk of loss of life in the urban area and reduce flood damage to urban and agricultural land.

Based on this decision by the Sponsors, detailed planning progressed and plan formulation and plan development moved into final stages. On June 26, 1979, a public meeting was held in Rio Grande City to present the most logical and economically feasible approach to solving the watershed problems. Eighteen persons registered their attendance.

The Sponsors and interested publics were presented a structural option consisting of one floodwater retarding structure and two dikes. Environmental considerations and mitigation to compensate for habitat losses were discussed in detail. Representatives of the FWS questioned the amount of mitigation planned and stated additional recommendations would be made during review. On July 26, 1979, the Sponsors wrote the State

1/ A list of meetings indicating the topics discussed and those in attendance is available for review at the State Office, Soil Conservation Service, W.R. Poage Federal Building, Temple, Texas 76503.

Conservationist supporting their selection of structural measures (one floodwater retarding structure and dikes at El Sauz and Rio Grande City) and urging completion of planning activities. Further, the Sponsors selected a wildlife mitigation plan. This plan consisted of fencing and managing 686 acres for wildlife in proximity of the floodwater retarding structure and specified vegetative plantings having wildlife value on disturbed areas.

On February 15, 1980, the SCS notified concerned agencies and individuals of its intent to prepare an EIS. The Notice of Intent to Prepare an Environmental Impact Statement (NOI) was published in the Federal Register on March 18, 1980. The scoping process begun early in planning was continued up to and after the NOI was published. Scoping consisted of informational contacts with those agencies or individuals who had knowledge and data useful in the assessment of impacts. Scoping was used to address significant issues related to the recommended alternative.

On April 4, 1980, the Sponsors again wrote the State Conservationist, reaffirming their earlier selection of mitigation measures they deemed adequate to compensate for wildlife losses.

The SCS, having considered the decisions reached by the Sponsors, prepared a Watershed Plan and Environmental Impact Statement. These preliminary documents were reviewed for technical adequacy; project effectiveness; and conformance with existing policies, rules, and legislation by specialists from the State Staff, South Technical Service Center, and National Office. Following this in-Service review, revised documents were prepared for preliminary public review and additional input from Sponsors, affected agencies, and concerned individuals.

A public meeting was held on December 10, 1980, just prior to formal interagency review, to present the recommended alternative plan and other alternatives considered during planning. The meeting was held by the SCS and Sponsors in Rio Grande City, Texas, two weeks following the first of several notices in the following local newspapers: Rio Grande Herald (Rio Grande City), South Texas Reporter (Roma), The Mointor (McAllen), and Corpus Christi Caller (Corpus Christi). Other public announcements were made on KGBT TV, Harlingen; KRGV TV, Weslaco; and KURV radio, Edinburg. Notification of the meeting was sent to more than forty (40) agencies, groups, and individuals. Twenty-seven (27) persons registered their attendance. The only agency or special interest group with a representative present was the Texas Department of Highways and Public Transportation. Several local individuals asked questions for further clarification on structural locations, costs, land rights, mitigation, recreation, public access to structural measures, size of structural measures, and installation schedule. Several agencies sent letters of comment which offered suggestions to be incorporated into the Draft Plan and EIS. After evaluating the comments and suggestions, a Draft Plan and EIS was prepared.

On February 17, 1981, a Draft Plan and EIS was published and transmitted to appropriate Federal, State, and local agencies and certain interested groups for their review and comment. The EPA published The Notice of Availability on February 27, 1981, in the Federal Register. Nineteen recipients of the draft statement responded with comments. The SCS reviewed, evaluated, and considered all the views and comments provided during the course of this review process. The response to each of these comments is contained in the CONSULTATION AND REVIEW WITH APPROPRIATE AGENCIES section of the Final EIS.

Three unresolved issues have remained following interagency review. The U.S. Department of Interior (Fish and Wildlife Service) disagree with the habitat values, the Habitat Evaluation Procedure (HEP), and the amount of mitigation necessary to compensate for project losses. The adequacy of the mitigation plan selected by the Sponsors was evaluated using the HEP. Objective data has not been furnished by the USDI which would justify requiring the Sponsors to select a different mitigation plan over that which was previously chosen.

#### AFFECTED ENVIRONMENT

##### Physical and Social

Los Olmos Creek Watershed is located in far South Texas in portions of Jim Hogg and Starr Counties. It comprises an area of about 204,470 acres (about 319.5 square miles). Los Olmos Creek heads in southern Jim Hogg County as Remadura De Charco Largo Creek (becoming Los Olmos Creek in northern Starr County) and flows in a south-southeasterly direction for about 49 miles to join the Rio Grande about one mile downstream from Rio Grande City. The Rio Grande forms the international boundary between the United States and Mexico. Rio Grande City is about 90 miles west-northwest of Brownsville and about 200 miles south of San Antonio. Los Olmos Creek lies within the Rio Grande Basin.

The drainage area consists of numerous creeks and arroyos all of which have ephemeral flow. A major tributary to Los Olmos Creek is Sandia Creek and the drainage area of Sandia Creek Watershed was used in all evaluations. Sandia Creek begins in Jim Hogg County and flows in a southerly direction to its confluence with Los Olmos Creek about one mile downstream of the El Sauz community in central Starr County.

The topography of the watershed ranges from gently rolling in the upper portions to nearly level at the lower portion in the vicinity of Rio Grande City. Stream valleys are gently sloping and rather broad. The most prominent landscape feature is the line of low hills that form a boundary between the flood plains of Los Olmos Creek and the Rio Grande and the lands to the north. Ridges are gravelly and highly dissected and form an escarpment 50 to 100 feet above the flood plain. Elevations in the watershed range from 750 feet above mean sea level in southern Jim Hogg County to 150 feet at the confluence of Los Olmos Creek and the Rio Grande.

The dominant geologic units in areal extent are the sedimentary Jackson Group; Catahoula and Frio formations, undivided; and the Goliad Formation which are in the Eocene, Miocene, and Pliocene series, respectively. Strata in the Jackson Group are comprised mostly of fine to coarse grained, friable to quartzitic, gray to brown sandstone. Some beds of gray to red clay and white volcanic ash are also present. The Catahoula and Frio formations are siltstone, claystone, fine-grained sandstone, and tuff deposits. The Goliad Formation in the watershed is principally sandy claystone and siltstone with beds of poorly to well indurated caliche. All these strata strike generally north-south and dip gently to the east. Alluvial sediments are upper Pliocene-lower Pleistocene Uvalde Gravel in the southern portion of the watershed, Pleistocene fluvial terrace deposits from the Rio Grande and Recent sediment laid down in the flood plains and drainageways of Los Olmos Creek and its tributaries. Recent aeolian fine-grained sand and silt are in the northern extremities of the watershed.

Los Olmos Creek is located within portions of the Central Rio Grande Plain and Lower Rio Grande Valley Land Resource Area. Dominant upland soils in the

watershed are represented by Copita, McAllen, and Brennan fine sandy loams, and Catarina and Montell saline clays. The Ramadero and Zapata series, loam and gravelly loam respectively, also occur throughout the watershed except in the extreme northern and extreme southern portions. Soils in the northern most part of the watershed are characterized by Nueces and Sarita fine sands, Hebronville loamy fine sand, and Cuevitas and Randado fine sandy loams. Very gravelly loams, Jimenez and Quemado series, are in the extreme southern portion of the watershed on ridges in proximity to the flood plains and terraces of Los Olmos Creek and the Rio Grande. Dominant flood plain and terrace soils of Los Olmos Creek and the Rio Grande are Grulla clay, Camargo and Reynosa silty clay loams, and Lagloria and Rio Grande silt loams. Excepting the Grulla clay, these flood plain and terrace soils are in the extreme southern portion of the watershed.

Average rainfall at Rio Grande City is 19 inches. Average monthly rainfall is lowest during December and January and highest in May and June. After a mid-summer decline in precipitation, another peak is reached in September with the passage of tropical depressions which have been associated with tropical storms and hurricanes. The daily maximum temperature in July and August commonly exceeds 100 degrees Fahrenheit. Winter temperatures are mild, with low temperatures at night usually in the upper 40's. Freezing temperatures do not occur every year. The area averages 314 frost-free days annually.

Census data limited to the watershed is not available. Rio Grande City, although it is not incorporated, is the largest community in Starr County and serves as the county seat. It had a 1975 estimated population of 5,720. The 1975 estimated population for Starr County was 20,885. El Sauz, a small community northwest of Rio Grande City, had a 1975 population estimated to be 85 people (Texas Almanac and State Industrial Guide 1978-1979). Available population projections indicate measurable growth in Starr County by the Year 2000. Rio Grande City's population is expected to increase from an estimated 7,100 persons in 1980 to 10,400 persons in 2000, an increase of over 46 percent (Texas Water Development Board 1972). Starr County's population is estimated to increase from 24,200 in 1980 to 35,000 in 2000, a 45 percent increase. Projections for El Sauz are not available (Texas Department of Water Resources 1978). Approximately 98 percent of Starr County's population are Hispanic, 1.5 percent Anglo, and 0.5 percent Negro (U.S. Census 1970). Statewide, the distribution is 69 percent Anglo, 18 percent Hispanic, and 13 percent Negro.

The economy within the area relies primarily upon agriculture, with Rio Grande City serving as a market center. Most of the cultivated acreage lies to the east and southeast of Rio Grande City where truck crops, hay, and other field crops predominate. Rangeland is the prevailing land use in remainder of the watershed.

Land uses within the watershed are summarized in the following tabulation:

<u>Land Use</u>	<u>Acrea</u>	<u>Percent</u>
Cropland	5,500	2.7
Rangeland	195,500	95.6
Urban and Built-up*	2,170	1.1
Other	1,300	0.6
Total	204,470	100.0

\*Includes roads, railroads, unincorporated subdivisions, cemeteries, and educational institutions.

Present flood plain land uses are: cropland, 8.4 percent (includes 7.4 percent irrigated and 1.0 percent non-irrigated); rangeland, 75.7 percent; urban and built-up, 7.1 percent; and miscellaneous uses 8.8 percent.

Soils suitable for and used as irrigated cropland in Starr County are classed as prime farmland. There are 680 acres of prime farmland in the flood plain.

There are approximately 150 farm and ranch units, averaging about 1,350 acres in size, either wholly or partially within the watershed. The size of individual operating units range from less than 100 to more than 2,000 acres. About 98 percent of the agricultural land is owner-operated. Forty-three farm and ranch units have land within the flood plain.

Approximately 50 miles of hard-surfaced Federal, state, and county roads serve the watershed residents. The Missouri Pacific Railroad has loading and unloading facilities at Rio Grande City. The community has benefited from its highway access to the transportation, commerce, and recreation facilities in the Lower Rio Grande Valley.

The "Labor Force Estimates for Texas Counties, February 1980" documents a labor force of 9,963 for Starr County. Approximately 48.7 percent, or 4,851 workers, are unemployed. This is well above the state and national rates of unemployment. The 1979 annual unemployment rate for Starr County was 31.3 percent, an increase of 1.3 percent over the 1978 annual rate. A partial explanation for the unemployment rate is that a large majority of the available labor force is comprised of migrant farm workers. If the current rate of unemployment continues (January 1980-47.4 percent, February 1980-48.7 percent) the 1980 unemployment rate will far exceed the 1979 rate.

Starr County not only suffers from mass unemployment, but also is within a geographic area that has the lowest per capita income in the nation. According to the Texas Agricultural Extension Service (1980), the per capita income for Starr County was \$2,960 in 1978. This is well below the 1978 per capita income of \$7,840 for the United States.

The watershed is within the boundaries of the Rio Bravo Resource Conservation and Development Area which is authorized for operations. Starr County is within the geographic area served by the South Texas Development Council.

As defined by Gould (1962), Los Olmos Creek Watershed is located in the South Texas Plains vegetational area. Generally, the native vegetation of the watershed consists of a mixed brush complex. The brush is usually less than nine feet tall. Vegetation along the smaller arroyos and drainageways is similar in species and composition to that of the surrounding area. Woody vegetation along larger arroyos tends to be thicker and taller than adjacent vegetation. This is attributed to the greater amount of available moisture.

The present vegetation reflects past management rather than vegetation potential, even though there is distinct difference in climax plant communities and successional patterns on the various range sites. There are eight major range sites in the watershed. These are: clayey bottomland, clay loam, gravelly ridge, gray sandy loam, loamy bottomland, ramadero, saline clay, and shallow ridge. A detailed description of the range sites can be found in respective SCS Field Office Technical Guide.

Los Olmos Watershed is located in the approximate center of the Tamaulipan Biotic Province as described by Blair (1950). There are sixty-one species of mammals that have been identified in this province in recent times. In addition, 36 species of snakes, 19 lizards, two land turtles, and 21 amphibians have been documented. Several of these species appear to be endemic. Certain Mexican species range into the United States only in this province.

Los Olmos Creek has no major water-based recreational use. However, Falcon Reservoir, located about 35 miles upriver from Rio Grande City, is a major facility for water-based recreational activities. Water-based recreation is also available along the Rio Grande. Also, some fishing is permitted on farm ponds. Recognized wetlands do not exist in the watershed. Quail, dove, and whitetail deer are usually abundant and provide considerable income for the landowner through hunting leases.

The route along U.S. Highway 83 between McAllen and Laredo has been designated as a part of the Texas Tropical Trail, a recreational program of the Texas Department of Highways and Public Transportation. Approximately 3.5 miles of that road traverses the watershed in the extreme lower end.

Currently there are no historic sites as recognized by the U.S. Department of the Interior, Heritage Conservation and Recreation Service. The Texas Historical Commission (1975) lists fourteen historical markers for Rio Grande City. Of that number, four are in the watershed and are located on the grounds of former Fort Ringgold (Rio Grande City Independent School District). The SCS contracted an archeological survey on portions of the watershed that would be affected by planned structural measures. As a result of the survey, it was determined that 24 archeological sites, none of which are considered eligible to the National Register of Historic Places, would be affected by the planned project.

There are no existing or proposed water resource development projects of other agencies within the watershed. The works of improvement included in this plan will have no known detrimental effects on any existing or proposed downstream works of improvement, and will constitute a harmonious element in the full development of the Rio Grande Basin.

#### Significant Concerns

During the assessment process, analyses of impacts on a broad range of environmental, economic, and social factors were made; and the significance of these impacts to decision making was evaluated. From these analyses, it was found that the proposed project would have either minimal or no impacts on erosion and sedimentation, streams, wetlands, ground water, fish, water quality, visual resources, endangered or threatened plants and animals, protected nongame species, transportation, air quality, mineral resources, or cultural resources. Therefore, these factors are either omitted or not discussed in detail in the EIS. Basic data concerning these factors have been collected and are a part of support data to determine the magnitude of project impacts. Significant environmental, social, and economic factors were used to compare alternatives and to present impacts of the recommended alternative. An analysis of impacts resulting from the recommended alternative is presented in the following tabulation:

Analysis of Impacts

<u>Economic, Environmental, and Social Factors</u>	<u>Degree of Impact</u> <sup>1/</sup>	<u>Significant to Decision Making</u> <sup>2/</sup>	<u>Remarks</u>
-floodwater	major	Yes	Project will reduce average annual flood damages in urban and agricultural areas
-risk to loss of life	major	Yes	Project will eliminate threat
-erosion & sedimentation	minor	No	
-prime farmland	major	Yes	Project will reduce floodwater with commitment of minimal acreage
-streams	minor	No	
-wetlands	none	No	
-ground water	none	No	
-wildlife	moderate	Yes	Mitigation for most adverse effects
-fish	none	No	
-water quality	minor	No	
-visual resources	moderate	No	
-endangered animals	none	No	Project will not affect
-notice of review plants	minor	No	
-protected nongame species	minor	No	
-transportation	minor	No	
-employment	minor	No	
-air quality	minor	No	
-mineral resources	none	No	
-cultural resources of national significance	none	No	None present of national significance

<sup>1/</sup> Analysis used to establish scope and intensity of assessment of impacts and the detail which the EIS addressed the impacts.

<sup>2/</sup> Factors determined to be significant to decision making are described on the Summary Comparison of Alternatives.

## WATERSHED PROBLEMS

### Floodwater Damage

The major water and related land resource problem is flooding from Los Olmos Creek in urban properties within the developed areas of Rio Grande City and El Sauz (Figures 1, 1a, and 1b). Flooding on urban and built-up lands damages residences, public buildings, and commercial properties; impairs streets and roads; damages railroad facilities; and interrupts normal traffic patterns. Floodwaters create potential health hazards, provide vector habitat, and cause many inconveniences tending to lower the quality of life.

Flooding on agricultural lands damages crops, pastures, and farm improvements. Floodwaters inundate highly productive areas planted to vegetables and cause complete crop loss. Flooding damages fences, corrals, and other improvements. Livestock losses due to floodwaters have been reported. Flood prone area erosion is mostly on streambanks. Average annual flood plain scour is diminutive. When the waters recede, channels are laden with debris consisting of uprooted brush and small trees, fence wire, and other trash.

Urban flooding in Rio Grande City from Los Olmos Creek occurs when storm runoff exceeds channel capacity above Farm Road 755. Floodwaters spill into low areas north of town and continue through the northeastern portions of the city. Through a major "breakout" immediately east of the intersection of U.S. Highway 83 and Avasola Street, some of the floodwaters pass into an outlet channel to the Rio Grande. The majority of flow remains in Los Olmos Creek and its adjacent flood plain. Floodwaters that cross U.S. Highway 83 continue in a southeasterly direction flooding urban properties and irrigated cropland. These waters flow into the channel below U.S. Highway 83 bridge over Los Olmos Creek. Floodwaters north of U.S. Highway 83 also flow southeasterly coinciding with the channel of Los Olmos Creek. South of U.S. Highway 83, the combined discharge exceeds channel capacity and excess water spills southeastward into irrigated cropland. The flood flow follows the resacas into the Rio Grande.

Two major floods have occurred during the past 20 years. The most recent flood occurred September 20-21, 1967, in association with Hurricane Beulah. The other flood occurred October 23-24, 1960, which resulted from very heavy rains in the upper portion of the watershed during the night and early morning hours. Floodwaters reached Rio Grande City unexpectedly about noon the next day. Rio Grande City has no flood warning system to notify officials and the public of impending danger. Had this flood occurred at night, damages would have been much greater and the potential for loss of life would have been greatly increased. The 1960 and 1967 storms produced floods of approximately the same depths in the urban area of Rio Grande City. Floodwaters in Rio Grande City covered more than 50 blocks of residential and business areas and many homes had five feet of water in them. Both floods from Los Olmos Creek at Rio Grande City were estimated to have a recurrence interval of 20 years (five percent chance). As a result of the 1967 flood, 7,543

acres were inundated. Of this acreage, 542 acres within the urban areas of Rio Grande City and El Sauz were inundated. Damages to homes and personal property were so severe that some families were dislocated for days.

With present conditions, 370 residences, 51 commercial properties, and 8 public properties would be inundated by a flood equivalent to the 1967 event. Total monetary damage from such a flood is estimated to be \$2,572,760, of which \$2,270,270 is in the urban areas.

A 100-year frequency flood (one percent chance) would cause floodwater damages estimated at \$5,758,300. Of that amount, flood damages in the urban areas are estimated at \$5,322,810, based upon present conditions. Floodwaters would damage 499 residential properties, 78 commercial properties, and 36 public properties.

#### Plant and Animal Problems

There is a need to provide better range management practices throughout the watershed. Much of the rangeland is overgrazed and properly planned range management practices will greatly enhance the habitat for most wildlife species.

Indiscriminate clearing of mixed brush chaparral without wildlife considerations has removed unique wildlife habitat. Large tracts of brushy rangeland are being converted to cropland. This is a significant problem throughout the Rio Grande Plains region.

The habitat of greatest concern is the Rio Grande bottomland. Most of this bottomland has been converted to irrigated cropland. Small tracts remaining are the preferred habitat for unique species including the ocelot and jaguarundi; also, this is the prime nesting habitat for the whitewing dove.

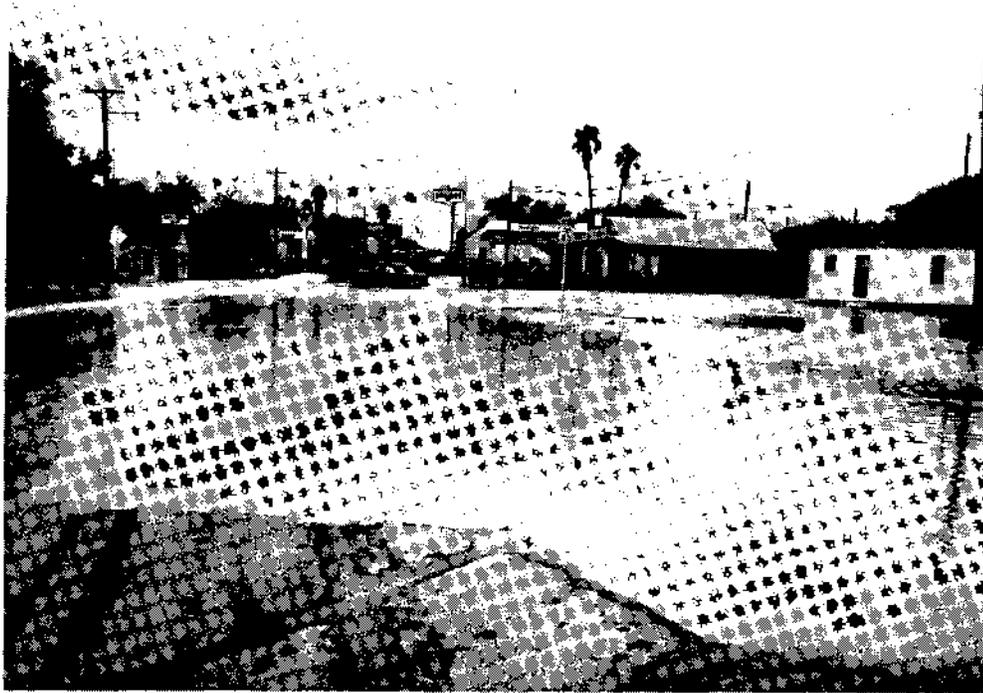
#### Economic and Social Problems

Residents of Rio Grande City and El Sauz who suffer from flood damages are burdened with flood losses that lower the standard of living. Monetary losses, threats to loss of life, and displacement from homes or businesses are three major problems.

A potential shortage of potable water exists in Rio Grande City during periods of flooding because the water treatment plant and pumping facility is located in the flood plain. When this facility is flooded, all of the electric motors that are used to pump and treat water are damaged and must be repaired or replaced. In the interim, while the motors are being repaired, residents in or near Rio Grande City must either haul their own water or do without. Being without treated water poses not only an inconvenience, but also increases the threat of disease from consuming or using contaminated water. Other problems are the control of vectors and the cleanup of debris which is spread throughout the flood plain by floodwaters.



On October 24, 1960, floodwaters from Los Olmos Creek inundated more than 50 city blocks in the northeast section of Rio Grande City. Many buildings had more than five feet of water in them.



As a result of the October 1960 flood, traffic on U.S. Highway 83 had to be rerouted and numerous businesses were temporarily closed.



In Rio Grande City, the floodwaters from Los Olmos Creek were more than three feet deep in the above home.



The story of the flood is the story of the city. It is the story of the people who lived through it. It is the story of the people who are still living with its aftermath.

# VALLEY EVENING MONITOR

McAllen, Texas, Tuesday, October 25, 1949. 5¢ DAILY—15¢ SUNDAY. 14 PAGES.

**WEATHER**  
 Partly cloudy. A low will pass over the area today. High 75, low 55. Windy.

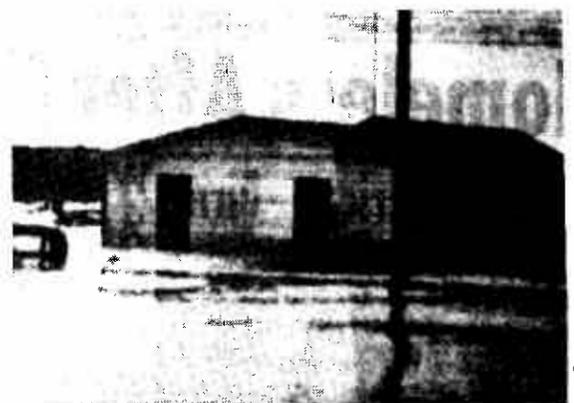
## 2,000 Homeless After Flood

### Water Receding At Rio Grande



**FLOOD WATERS DRAB THROUGH RIO GRANDE CITY**—This aerial photo looking north across the northeast corner of Rio Grande City shows how water stretching almost as far as the eye can see overflowed Grijalva Creek and drained through this section of the city following a flash flood yesterday. Center foreground shows railroad tracks and cars in front of flooded packing shed and lumber yards. August 11 just beyond and a little to the right. Water, which reached a depth of six to eight feet in places, was receding slowly today and residents began the tremendous task of cleaning up homes. (Monitor Photo)

**RIO GRANDE CITY**—Two thousand people are homeless in Rio Grande City, Tex., as the water recedes from the northeast corner of the city. The Rio Grande State County Judge reported that he has been visiting the flooded homes of about 2,000 people in the northeast corner of the city. He said he has been visiting the flooded homes of about 2,000 people in the northeast corner of the city. He said he has been visiting the flooded homes of about 2,000 people in the northeast corner of the city.



**DESERTED HOME**—A large packing shed and lumber yard in Rio Grande City, Tex., is deserted as floodwaters recede. Many residents were still in the city, but the water was slowly receding today. (See photo on Page 1 and 11.) (Monitor Photo)

## Rio Grande Flood Ebbs, Cleanup Being Rushed

**RIO GRANDE CITY**—Water has ebbed from the northeast corner of Rio Grande City, Tex., and cleanup is being rushed. The water, which reached a depth of six to eight feet in places, was receding slowly today and residents began the tremendous task of cleaning up homes. The cleanup is being rushed as the water recedes. The cleanup is being rushed as the water recedes. The cleanup is being rushed as the water recedes.

**Water Receding At Rio Grande**  
 August 11 just beyond and a little to the right. Water, which reached a depth of six to eight feet in places, was receding slowly today and residents began the tremendous task of cleaning up homes. (Monitor Photo)

**Water Receding At Rio Grande**  
 August 11 just beyond and a little to the right. Water, which reached a depth of six to eight feet in places, was receding slowly today and residents began the tremendous task of cleaning up homes. (Monitor Photo)

### Scenes of Rio Grande City Flood



**MORE THAN 50 BLOCKS FLOODED**—This is an aerial view of the northeast corner of Rio Grande City, Tex., showing the extent of the flooding. More than 50 blocks were flooded. The water was receding slowly today and residents began the tremendous task of cleaning up homes. (See photo on Page 1 and 11.) (Monitor Photo)



**BOATS COME IN MANDY**—Boats were the first to arrive in Rio Grande City, Tex., as floodwaters receded. Many residents were still in the city, but the water was slowly receding today. (See photo on Page 1 and 11.) (Monitor Photo)



**HOME EVACUATED**—This was the scene in many Rio Grande City homes yesterday as residents fled homes ahead of floodwaters. Many residents were still in the city, but the water was slowly receding today. (See photo on Page 1 and 11.) (Monitor Photo)

Reproduced with permission from The Monitor (McAllen, Texas)

Additional employment opportunities are needed for the 4,851 unemployed workers in the county.

### PROJECT PURPOSES AND GOALS

The overall objective of the project is the conservation, development, and productive use of the watershed's soil, water, and related resources. Specific project goals were identified in terms of two co-equal planning objectives: National Economic Development (NED) - increased production of goods and services; and Environmental Quality (EQ) - enhancement of physical, ecological, and aesthetic characteristics.

An initial study was made by representatives of the SCS and the Sponsors to determine watershed resource problems and potentials, identify project goals, and examine possible solutions. Preliminary goals were established through public involvement with technical input from state and other Federal agencies, and resource inventories and evaluation. The following is a listing of the goals:

<u>OBJECTIVE</u>	<u>GOAL</u>
NED	<ol style="list-style-type: none"><li>1. Reduce average annual flood damages to urban property in the flood plain.</li><li>2. Reduce average annual flood damages to agricultural flood plain lands.</li><li>3. Increase public funds available for community services by reduction of urban flood damages.</li><li>4. Provide opportunities for public water-based recreation for Rio Grande City and vicinity.</li></ol>
EQ	<ol style="list-style-type: none"><li>1. Improve community environment and social well-being to flood plain residents by reducing overbank flooding in the urban area.</li><li>2. Reduce the potential for health problems by controlling diseases, vectors and contaminated water supplies caused by flooding in the urban area.</li><li>3. Establish and maintain whitewing dove habitat along the Rio Grande as a fish and wildlife purpose.</li><li>4. Minimize irreversible or irretrievable commitment of natural resources.</li></ol>

### PROJECT FORMULATION

As planning progressed, it became apparent that not all of the project goals could be addressed. Reducing average annual flood damages to urban property and agricultural flood plain lands continued to be the primary NED goals expressed by the Sponsors. By reducing flood damages,

the EQ goals of improving community environment and reducing the potential for health problems complemented the major goals expressed for NED. Investigations during planning activities revealed that recreation as a project goal was not feasible because of a suitable site location. Therefore, the Sponsors requested it be deleted as a purpose. In addition, suitable sponsorship was not available for establishing whitewing habitat as a fish and wildlife purpose. This goal was suggested by the Texas Parks and Wildlife Department; however, they were unable to successfully obtain their portion of the necessary financing.

The Water Resources Council has mandated that agencies formulate and identify alternatives that maximize contributions to the NED and EQ objectives. Additionally, one of the alternatives must be a primarily nonstructural solution. Therefore, alternatives considered during detailed plan formulation were those which would satisfy remaining goals identified by the Sponsors and public for NED and EQ. The use of different structural and nonstructural measures in combination to satisfy remaining goals serves as the basis for formulating alternatives or options. The available measures consisted either singularly or combinations of the following: floodwater retarding structures(s), dikes, channel, permanent evacuation, floodproofing, and/or a flood warning system.

Formulation of all alternatives was approached by determining net economic benefits. Formulation of an alternative which would maximize contributions to the EQ objective was achieved first by reducing flood damages and second by minimizing the adverse impacts to wildlife habitat. It was recognized that structural measures necessary to reduce floodwater damages to urban and agricultural flood plains would result in some commitment of wildlife habitat. However, most adverse impacts were offset by mitigation, as applicable. The habitats of greatest concern were areas of woody vegetation. Therefore, minimizing disturbance to those areas constituted the formulation of an alternative that emphasized EQ. Nonstructural measures for flood protection are those means of alleviating flood losses by modifying the susceptibility of land, people, and property to flood damage. Each individual urban property in the flood plain was examined to determine its feasibility for non-structural treatment (either permanent evacuation or floodproofing).

#### ALTERNATIVES

The five alternatives consistent with remaining goals and developed from available measures are described below. Each alternative included flood plain regulation as a plan element and residents in the watershed have the opportunity to participate in the National Flood Insurance Program. An incremental analysis was accomplished to identify the alternative that produced the greatest net benefits. Wildlife habitat losses would be compensated by mitigation. Economic, environmental, and social impacts recognized to be of greatest significance to decision making are presented in the tabulation, Summary Comparison of Alternatives (RECOMMENDED ALTERNATIVE SELECTION AND SUMMARY COMPARISON).

Alternative 1 (NED Plan) - This alternative consists of a floodwater retarding structure and dikes at Rio Grande City and El Sauz

(Plate 1). The component structural measures as formulated are interdependent and considered to be one structure. Installation of this alternative would provide protection from the apparent risk to loss of life in every building in the urban flood hazard area, and reduce average annual flood damages to urban properties and agricultural lands. This alternative would clear or inundate woody vegetation on 276 acres.

Alternative 2 (EQ Plan) - This alternative consists of dikes at Rio Grande City and El Sauz (Plate 2). The dikes formulated for this alternative are by design larger and longer because of higher peak discharges generated by deleting the floodwater retarding structure as mentioned in Alternative 1. The alternative will require substantial land rights costs for flowage easements on irrigated cropland and railroad trestle modification. The dikes would intercept floodwater and protect the respective urban area. Installation of this alternative will induce additional flood damages to agricultural land downstream, but will provide protection from the apparent risk to loss of life in every building in the urban flood hazard area. This alternative would clear woody vegetation on 127 acres.

Alternative 3 - This alternative consists of two floodwater retarding structures and dikes at Rio Grande City and El Sauz (Plate 3). The inclusion of the additional floodwater retarding structure would further reduce average annual damages in the agricultural flood plain. However, the additional floodwater retarding structure as a last increment failed to produce economic benefits in excess of costs. This alternative would clear or inundate woody vegetation on 372 acres.

Alternative 4 - This alternative consists of permanent evacuation of 118 residential and 1 commercial properties (Plate 4). Persons affected by this alternative would be compensated for property. Although the evacuation plan is economically feasible for 119 properties, damages from flooding would continue to be a problem in the remaining 494 properties. In addition, damages would still occur to the transportation and utility systems and agricultural land. The risk to loss of life would still remain in many of those flooded properties. Therefore, a flood warning system would be installed to notify officials and the public in time to temporarily evacuate the area. The flood warning system would give service to social-well being effects. Implementation of this alternative would avoid most of the adverse environmental effects of the structural measures, but would not maximize contributions to the EQ objective.

Alternative 5 - This alternative consists of foregoing the implementation of a project. Flooding would continue on urban and built-up lands, agricultural lands, and the transportation systems. The need to commit land for construction and operation and maintenance activities with resultant adverse impacts would be eliminated.

Four other structural options and one nonstructural option were examined to determine the full range of possible solutions.

The first structural option would have provided protection and flood damage reduction through a system of floodwater retarding structures (which includes control on Sandia Creek). This option would have provided the necessary protection to the urban area, but a cursory analysis indicated the average annual costs from this option would far exceed the average annual benefits.

The second structural option was dikes and a combination of two or more floodwater retarding structures. The combination of floodwater retarding structures presented in Alternative 3 were formulated from the most feasible combination. Other locations and combinations were available; however, the net benefits were less than that which was provided by Alternative 3. There were no overriding environmental or social considerations for choosing another combination.

The third structural option was channel work on Los Olmos Creek. This option was eliminated when it became evident that treatment necessary to overcome the channel stability problems would produce average annual costs in excess of average annual benefits.

The fourth structural option was a single floodwater retarding structure on Los Olmos Creek immediately above Rio Grande City. No investigations were made because the drainage area and storage requirement for this structure would exceed the planning authority granted by Public Law 566.

The nonstructural option consisted of floodproofing (either raising floor elevations or constructing flood walls) existing urban properties subject to flooding from the 100-year flood. Physical limitations and/or cost to each property prohibited consideration of these measures. Therefore, this option was eliminated.

#### RECOMMENDED ALTERNATIVE SELECTION AND SUMMARY COMPARISON

Recommended alternative selection was made from the five alternatives previously discussed. The Sponsors considered the merits and adverse effects of each and chose Alternative 1 (NED Plan) as the Recommended Alternative (Appendix A). Of the five alternatives, only Alternative 1 was acceptable to both the Sponsors and SCS.

The Summary Comparison of Alternatives presents impacts of each alternative to major planning objectives and environmental concerns. An analysis of the tabulation indicates the following rationale:

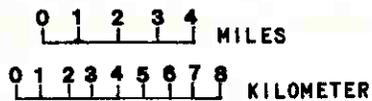
Alternative 1 provided the most net benefits, offered the residents of the two communities a higher quality environment, and did not induce average annual flood damages in agricultural lands. It had greater impact to woody vegetation than Alternative 2 (EQ Plan).

Plate 1

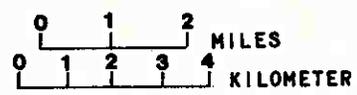
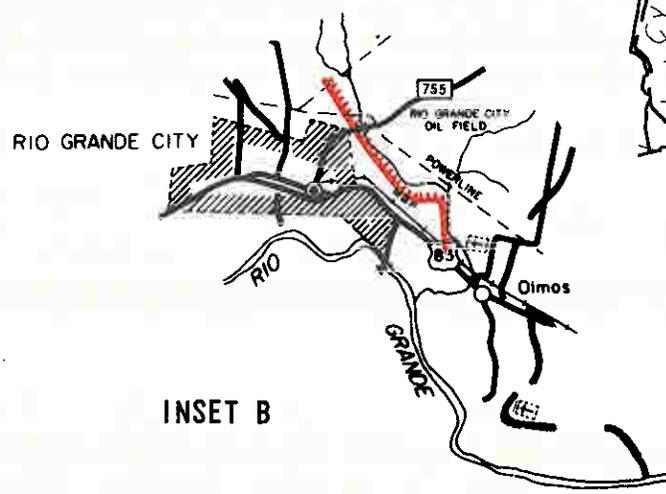
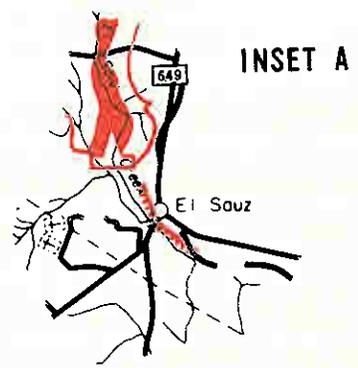
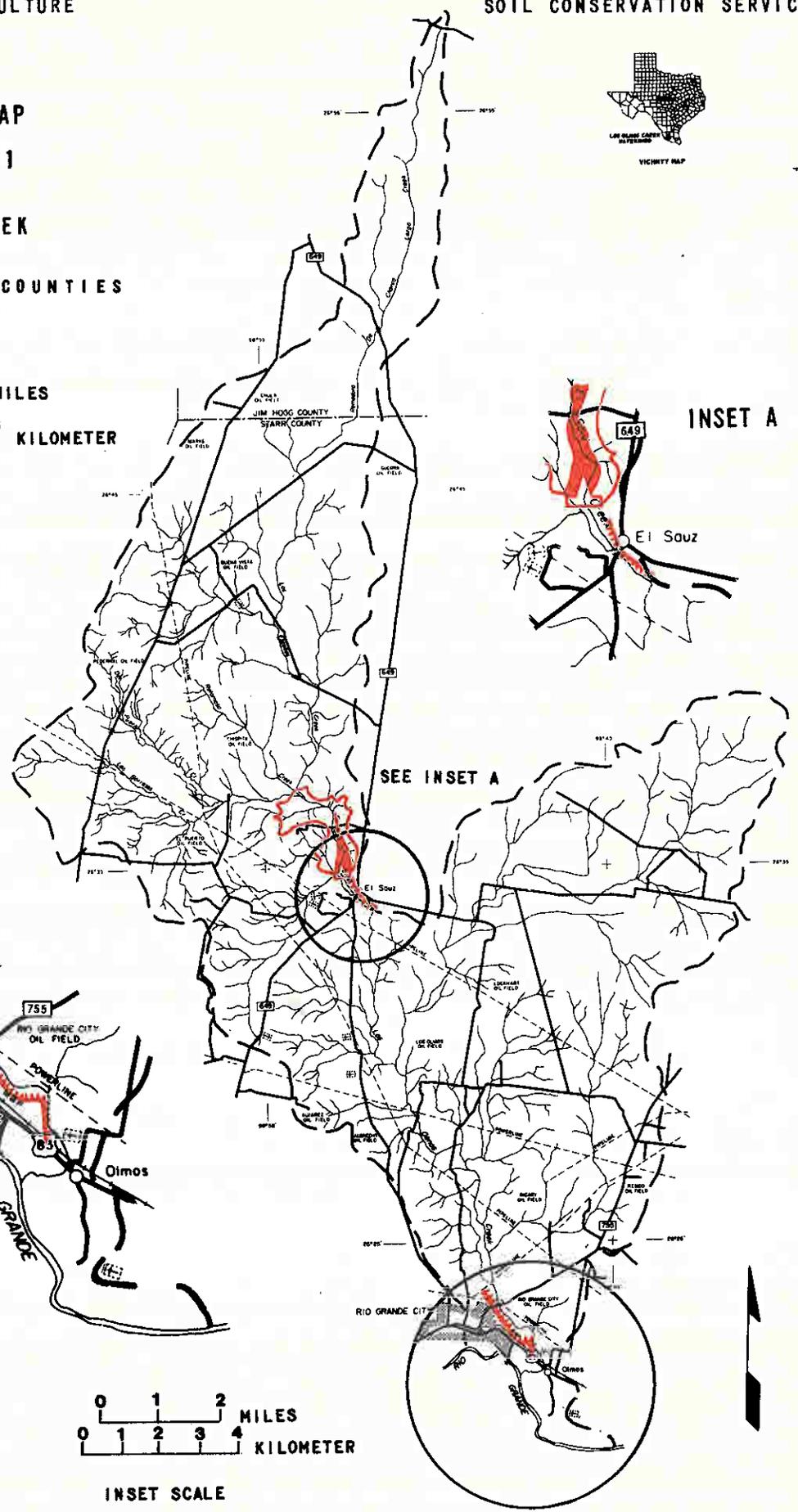
FORMULATION MAP

ALTERNATIVE NO. 1

LOS OLMO'S CREEK  
WATERSHED  
JIM HOGG AND STARR COUNTIES  
TEXAS



- PRIMARY ROAD
- SECONDARY ROAD
- U. S. HIGHWAY
- FARM TO MARKET ROAD
- RAILROAD
- TOWN
- COUNTY SEAT
- CITY LIMITS
- COUNTY BOUNDARY
- DRAINAGE
- WATERSHED BOUNDARY
- DIKE
- FLOODWATER RETARDING STRUCTURE



INSET SCALE

SEE INSET B



F18

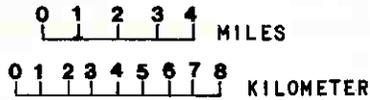
Plate 2

FORMULATION MAP

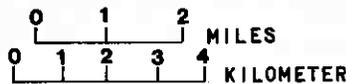
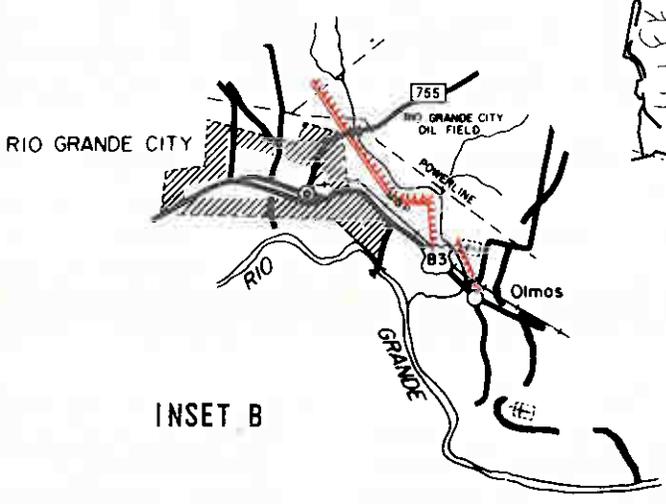
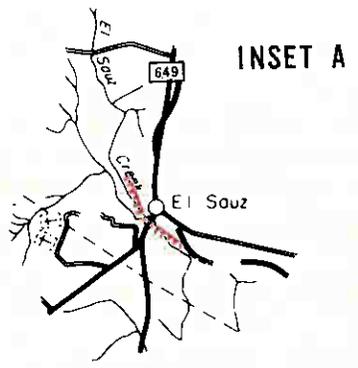
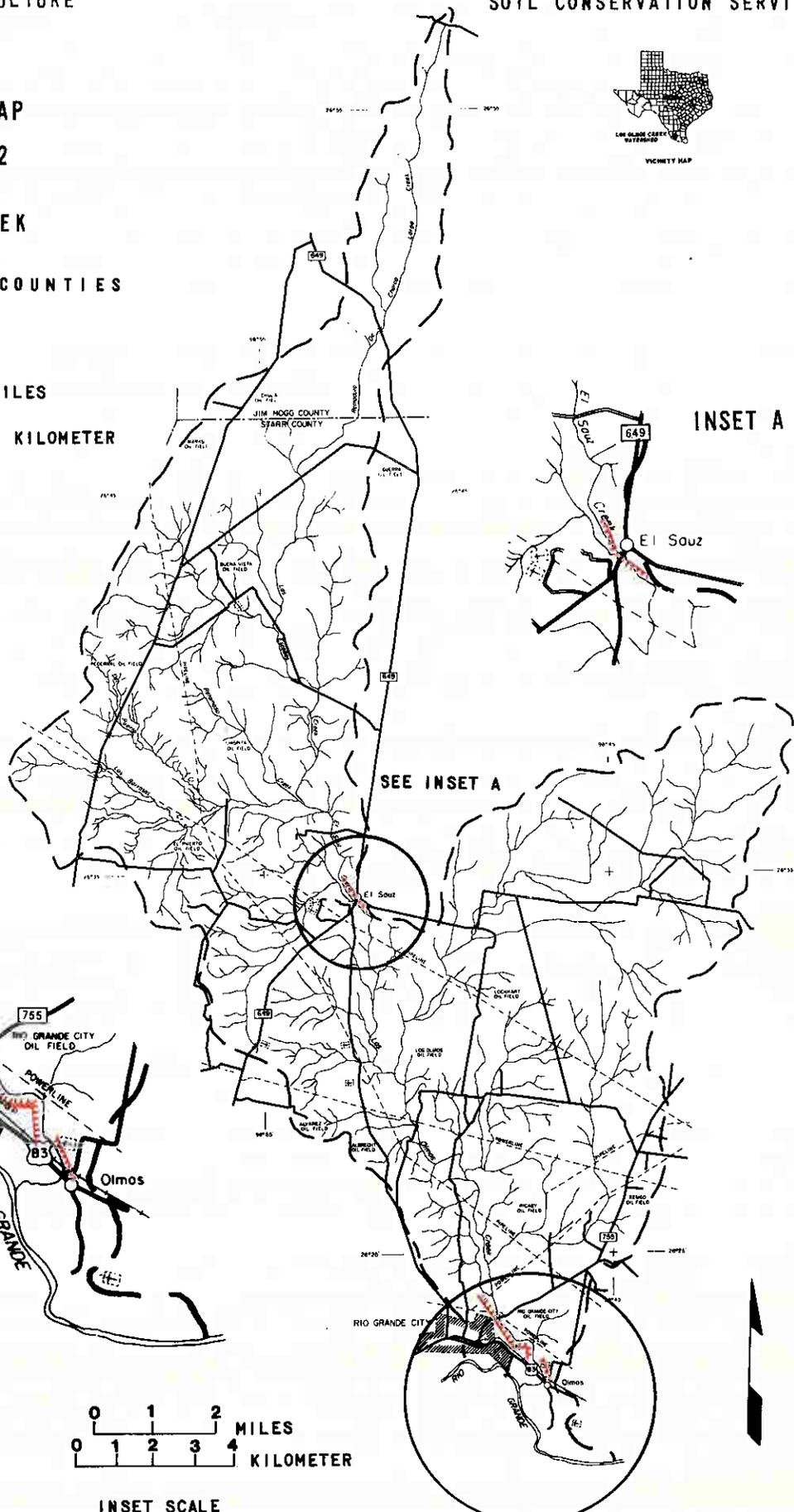
ALTERNATIVE NO. 2

LOS OLMOS CREEK  
WATERSHED

JIM HOGG AND STARR COUNTIES  
TEXAS



- PRIMARY ROAD
- SECONDARY ROAD
- U. S. HIGHWAY
- FARM TO MARKET ROAD
- RAILROAD
- TOWN
- COUNTY SEAT
- CITY LIMITS
- COUNTY BOUNDARY
- DRAINAGE
- WATERSHED BOUNDARY
- DIKE



INSET SCALE

SEE INSET B

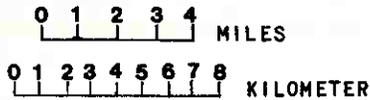
F 19

Plate 3

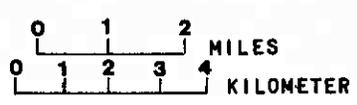
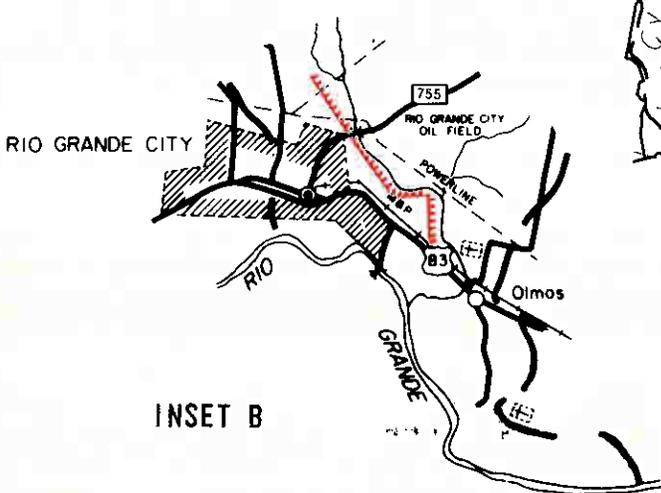
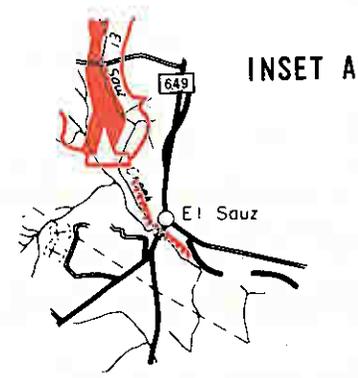
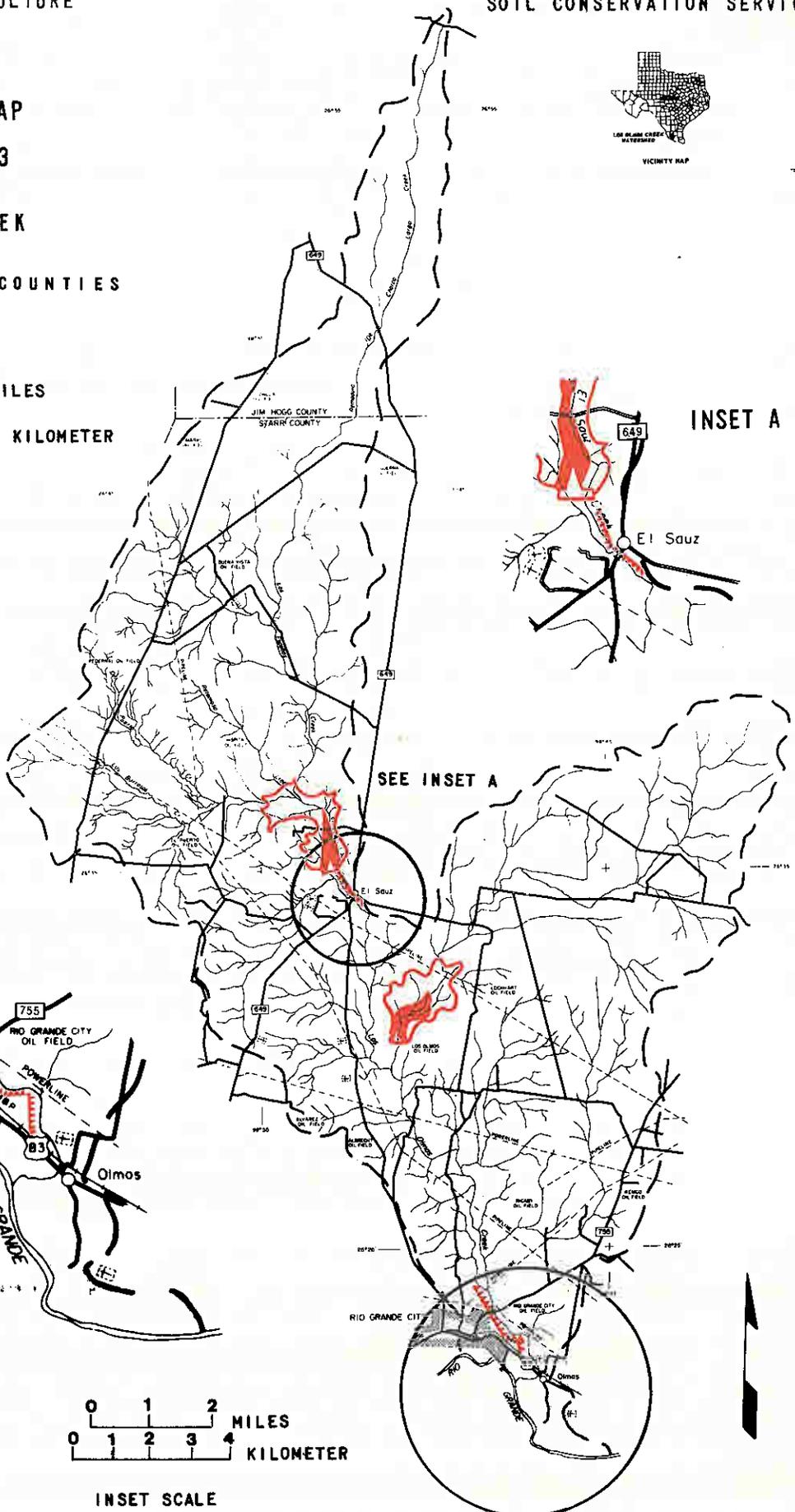
FORMULATION MAP

ALTERNATIVE NO. 3

LOS OLMOES CREEK WATERSHED  
JIM HOGG AND STARR COUNTIES  
TEXAS



- PRIMARY ROAD
- SECONDARY ROAD
- U. S. HIGHWAY
- FARM TO MARKET ROAD
- RAILROAD
- TOWN
- COUNTY SEAT
- CITY LIMITS
- COUNTY BOUNDARY
- DRAINAGE
- WATERSHED BOUNDARY
- DIKE
- FLOODWATER RETARDING STRUCTURE



SEE INSET B

E30

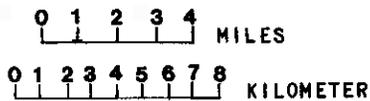
Plate 4

FORMULATION MAP

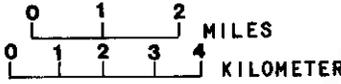
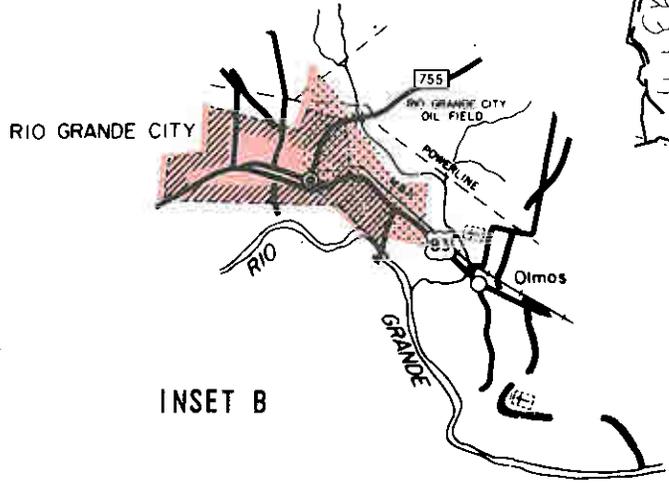
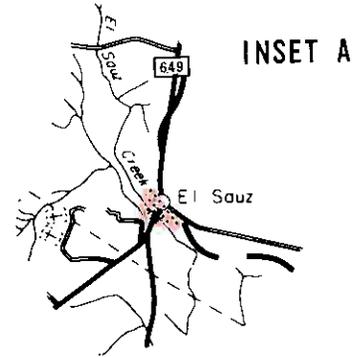
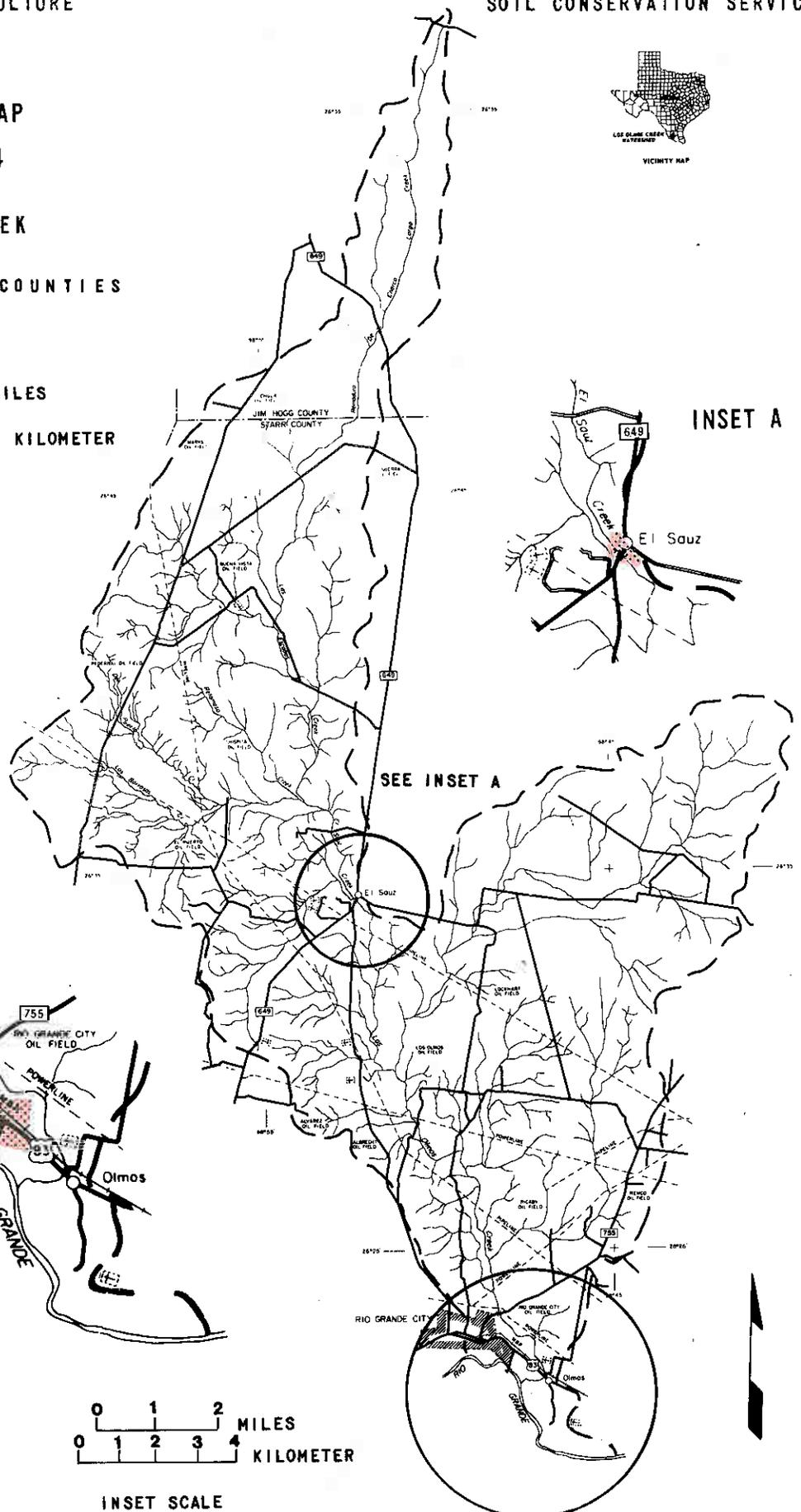
ALTERNATIVE NO. 4

LOS OLMOES CREEK WATERSHED

JIM HOGG AND STARR COUNTIES TEXAS



- PRIMARY ROAD
- SECONDARY ROAD
- U. S. HIGHWAY
- FARM TO MARKET ROAD
- RAILROAD
- TOWN
- COUNTY SEAT
- CITY LIMITS
- COUNTY BOUNDARY
- DRAINAGE
- WATERSHED BOUNDARY
- URBAN AREA ANALYZED FOR PERMANENT EVACUATION
- URBAN AREA AFFECTED BY PERMANENT EVACUATION



INSET SCALE

SEE INSET B

Alternative 2 was not chosen by the Sponsors because it would induce average annual flood damages in agricultural land. It would require the Sponsors to obtain additional flowage easements and modify a railroad trestle, all at a substantial local cost. It had the least impact to selected woody habitats as compared to Alternatives 1 and 3.

Alternative 3 was acceptable to the Sponsors, but was not acceptable to SCS because average annual costs of an additional floodwater retarding structure exceeded average annual benefits. This alternative had the greatest impact to woody vegetation.

Alternative 4 was not chosen by the Sponsors because it would not provide adequate protection to the majority of urban properties in the flood plain. Evacuation would produce a "patchwork" effect since the affected properties are dispersed throughout the flood plain. Community cohesion is strong and the concept of breaking up neighbors or relatives in a given block is not well accepted by local residents. Under current statutes, the Sponsors lack the authority to implement this alternative except on a voluntary basis.

Alternative 5 would not achieve any of the expressed goals and was not acceptable to the Sponsors.

Summary Comparison of Alternatives

Economic and Environmental Factors	Goal : (Desired Effects)	Anticipated Effects					Alt. 5 1/
		Alt. 1 : (Recommended Alternative)	Alt. 2	Alt. 3	Alt. 4		
Average Annual Flood Damage Reduction (percent) Urban (includes road and bridge)	Maximize	98	95	100	49	-	
Agriculture	Maximize	35	2 2/	47	0	-	
Total Cost (\$) 3/		4,131,700	3,984,480	5,371,030	2,174,610 4/	-	
Public Law 566		3,424,250	2,600,890	4,572,350	1,739,690	-	
Other (local)		707,450	1,383,590	798,680	459,920	-	
Average Annual Cost (\$) 5/		354,590 6/	341,440 6/	458,650 6/	161,770	-	
Projected Average Annual Damage Reduction Benefits (\$) 7/		512,000	474,400	528,850	245,360	-	
Average Annual Employment Benefits (\$)		11,840	8,990	15,820	9,120	-	
Projected Total Average Annual Benefits (\$)		523,840	483,390	544,670	254,480	-	
Projected Average Annual Net Benefits (\$)		169,250	141,950	86,020	92,710	-	
Risk to Loss of Life 8/	Eliminate	Eliminate	Eliminate	Eliminate	Reduce	No Effect	
Flood Water Damage in Prime Farmland	Reduce	Reduce	Increase	Reduce	No Effect	No Effect	
Community Environment and Social Well-Being	Improve	Improve	Improve	Improve	Limited Effect	No Effect	
Potential for Health Problems	Reduce	Reduce	Reduce	Reduce	Limited Effect	No Effect	
Wildlife Habitat (Area of woody vegetation inundated or cleared-acres)	Minimize Disturbance	276	127	372	No Effect	No Effect	

- 1/ No action - future without project
- 2/ Induced average annual damages are compensated by flowage easements. Average annual flood damage reduction reflects net beneficial effects.
- 3/ Price Base: 1979 prices
- 4/ Includes \$10,000 for flood warning system
- 5/ 100-years at 7.375 percent interest plus operation, maintenance, and replacement
- 6/ Includes compound interest at the current discount rate (7.375 percent) during installation period.
- 7/ Benefits evaluated from damages resulting from floods up to and including a 100-year frequency flood for agriculture and 500-year frequency flood on urban areas.
- 8/ 100-year frequency flood

## RECOMMENDED ALTERNATIVE

### Flood Plain Regulation

The County has enacted and is enforcing a zoning ordinance (by order) to regulate urban expansion in this area of jurisdiction below the 100-year flood elevation. The County will continue to enforce this ordinance, which will complement the recommended structural works of improvement.

### Structural Measures

The recommended works of improvement are two dikes, one at El Sauz and one at Rio Grande City, and one single-purpose floodwater retarding structure to be installed during a four-year installation period. Locations of the structural measures are presented on the Project Map (Appendix G). Details on quantities, cost, and design are presented on Tables 1, 2, 3, and 3A.

### Floodwater Retarding Structure

The floodwater retarding structure will be an earth dam with a principal spillway and plunge basin, two emergency spillways, a sediment pool, and a floodwater retarding pool (Figure 2). This structure will retard 1.45 inches of runoff from 146.12 square miles of drainage area. Total capacity will be 13,715 acre-feet of which 11,299 acre-feet will be for floodwater retardation and 2,416 acre-feet will be for sediment storage. The structure is designed to store both aerated and submerged sediment. The structure will detain the runoff from a storm having a predicted recurrence interval of once in every 33 years (three percent chance). Crest of the principal spillway will be installed at the elevation of the 100-year sediment pool.

### Dikes

Two dikes (Figure 2a) will provide protection to the urban areas of El Sauz and Rio Grande City. The El Sauz dike will have the expressed purpose of protecting downstream development at El Sauz from a breach of the floodwater retarding structure. The Rio Grande City dike would also pass the breach flow from the floodwater retarding structure without damages to development at Rio Grande City. In addition, the Rio Grande City dike will protect the urban area from the one percent chance storm runoff from the 376 square miles of area not controlled by the floodwater retarding structure. Design height of the dikes was set at the elevation required to pass the designed flow plus two feet of freeboard. Both dikes will consist of compacted earth fill.

Inflow from the areas protected will be conveyed through the dike by conduits with outlet flap gates to prevent reverse flow. Farm Road 755 at Rio Grande City will require modification by raising the elevation of the roadway to the elevation of the top of dike at that point. Farm Road 649 at El Sauz will require modifications to the highway rights of way.

### Embankment Classification

Classes of Dams. Dams (floodwater retarding structures) are classified according to the potential hazard to life and property should the dam suddenly breach or fail. Existing and future flood plain development including controls for future development must be considered when classifying the dam. The classification of a dam is determined only by the potential hazard from failure, not by the criteria used in design of the dam.

Class (a) - Dams located in rural or agricultural areas where failure may damage farm buildings, agricultural land or township, and country roads.

Class (b) - Dams located in predominantly rural or agricultural areas where failure may damage isolated homes, main highways, or minor railroads or cause interruption in service of relatively important public utilities.

Class (c) - Dams located where failure may cause loss of life or serious damage to homes, industrial and commercial buildings, important public utilities, main highways, or railroads.

Classes of Dikes. Class I dikes are used to protect improved areas where inundation, erosion and scour, or sediment and debris may cause high property damage or loss of life.

Class II dikes are used to protect agricultural lands of medium to high capability; improvements are generally limited to farmsteads and allied farm facilities.

Class III dikes are used to protect agricultural lands of relatively low capability or improvements of relatively low value. These dikes are limited to low heads of water.

Hazard Classification of Structural Measures. The recommended structural alternative for Los Olmos Creek Watershed consists of a Class (a) floodwater retarding structure upstream of two Class I dikes. The dikes will provide urban protection with the structure reducing peak runoff at the location of the dikes.

Floodwater retarding structure or dikes installed singularly would be classified Class (c) or Class I due to downstream improvements. By virtue of being upstream from both dikes, the floodwater retarding structure in combination has no significant effect downstream other than on the dikes themselves. The dikes are Class I due to their proximity to both urban areas and the damage they would inflict if breached. The dam is Class (a) since failure would damage only Farm Road 649, county roads, and agricultural land downstream to the dikes. Farm Road 649 would be overtopped in the event of a breach; but in considering classification, there would be minimal damage to the bridge and roadway. Past flood events have shown that damages were limited to debris accumulation, spot buckling of pavement, and minor erosion of abutment slopes.

Alternate routes are available to Rio Grande City and/or Roma from areas north of El Sauz should Farm Road 649 be impassable.

The dikes are proportioned considering an upstream breach of the dam as a design consideration.

A failure of one of the Class I dikes would damage homes, businesses, highways, and public utilities in the urban areas. Extent of the damage would be closely tied to the point of the breach along the dike. A breach in the lower section might not affect any homes or businesses--only highways, public utilities, and agricultural land.

A map delineating the area inundated by a breach of either the dam or a dike is available from SCS.

#### Design and Construction Prerequisites

There are no active faults known in the watershed vicinity. The Algermissen Seismic Risk Map (based on the distribution of recorded damaging earthquakes) shows this area of Texas to be located within Zone 0 which is defined as having no reasonable expectancy of earthquake damage. Therefore, seismic activity was not a consideration in floodwater retarding structure or dike design.

The minimum land rights required will be those necessary to mitigate, construct, operate, maintain, and inspect all structural measures. Installation may require changes in location or modification of known existing facilities as follows:

Floodwater Retarding Structure No. 1 - Stock ponds, corrals, waterwell, water storage facility, and fences.

El Sauz Dike - Powerline, telephone cable and line, waterline, Farm Road 649, fences, shed and outdoor toilet, stock ponds, and private road.

Rio Grande City Dike - Waterline, sewerline, telephone line, gasline, powerlines, fences, and Farm Road 755.

Sanitary facilities intended for use by construction workers will be provided in conformance with Federal, state, and local water pollution control regulations, to reduce pollution hazards. Special provisions in the construction contract will be incorporated by reference to Occupation Safety and Health Administration (OSHA) Part 1926, Construction Standards and Interpretations, and with SCS Supplement to Part 1926. Further, the contractor will be required to comply with Section 114 of the Air Act, as amended (42 U.S.C. 1857 et seq.) and Section 308 of the Water Act, as amended (33 U.S.C. 1251 et seq.).

All applicable state laws will be complied with in the design and construction of the structural measures. However, no Federal permits will be required for implementation. Construction contracts will require contractors to adhere to strict standards controlling soil erosion and water and air pollution during construction. Measures to control erosion will be specified at the work site and will include, as applicable, use of temporary vegetation, mulches, diversions, mechanical

retardation of runoff, and sediment traps. Harmful dust and other pollutants inherent to the construction process will be held to minimum practical limits. Provisions will be made to protect against pollutants such as fuel, lubricants, and chemicals. Clearing and disposal of brush and vegetation will be carried out in accordance with applicable laws, ordinances, and regulations.

The emergency spillways will be cut below finished grade, backfilled with topsoil, and vegetated for protection from erosion. Similarly, the embankment and areas where vegetation is destroyed during construction and not subsequently inundated by impoundment in the sediment pool will be vegetated immediately after construction. Embankment slopes of the dike will also be vegetated. Provisions are included to provide rock riprap slope protection if determined to be needed during final design of the El Sauz dike. A combination of multiple-use plants, adapted to prevailing conditions and effective for erosion control and wildlife food and cover, will be established. These plantings will be sited and planned in detail during the final design stage in consideration of specific site conditions. The selection of exact species to be used will be from seed and plant stock available at the time of construction.

#### Wildlife Mitigation

Habitat losses attributable to installation of the structural measures will be compensated for by fencing and managing 686 acres for wildlife. Additional mitigation will include vegetative plantings on disturbed areas. The management will consist of restricting livestock grazing unless it is determined by SCS biologists that limited grazing is desirable for wildlife. Plantings will consist of species having value for erosion control and wildlife food and cover. The locations of areas used to compensate for habitat losses are presented on Plate 5.

### ENVIRONMENTAL CONSEQUENCES

A broad range of environmental, economic, and social factors were considered during the environmental assessment process. Areas of potential impact were evaluated and an analysis made of the significance of the impact to decisionmaking (Significant Concerns Section).

A description of the recommended alternative effects is presented in the following discussions. Appropriate baseline data has been included to establish needed perspective. Areas of impact believed to be of key importance to decisionmaking are listed for the various alternatives in the Summary Comparison of Alternatives.

#### Flood Prevention

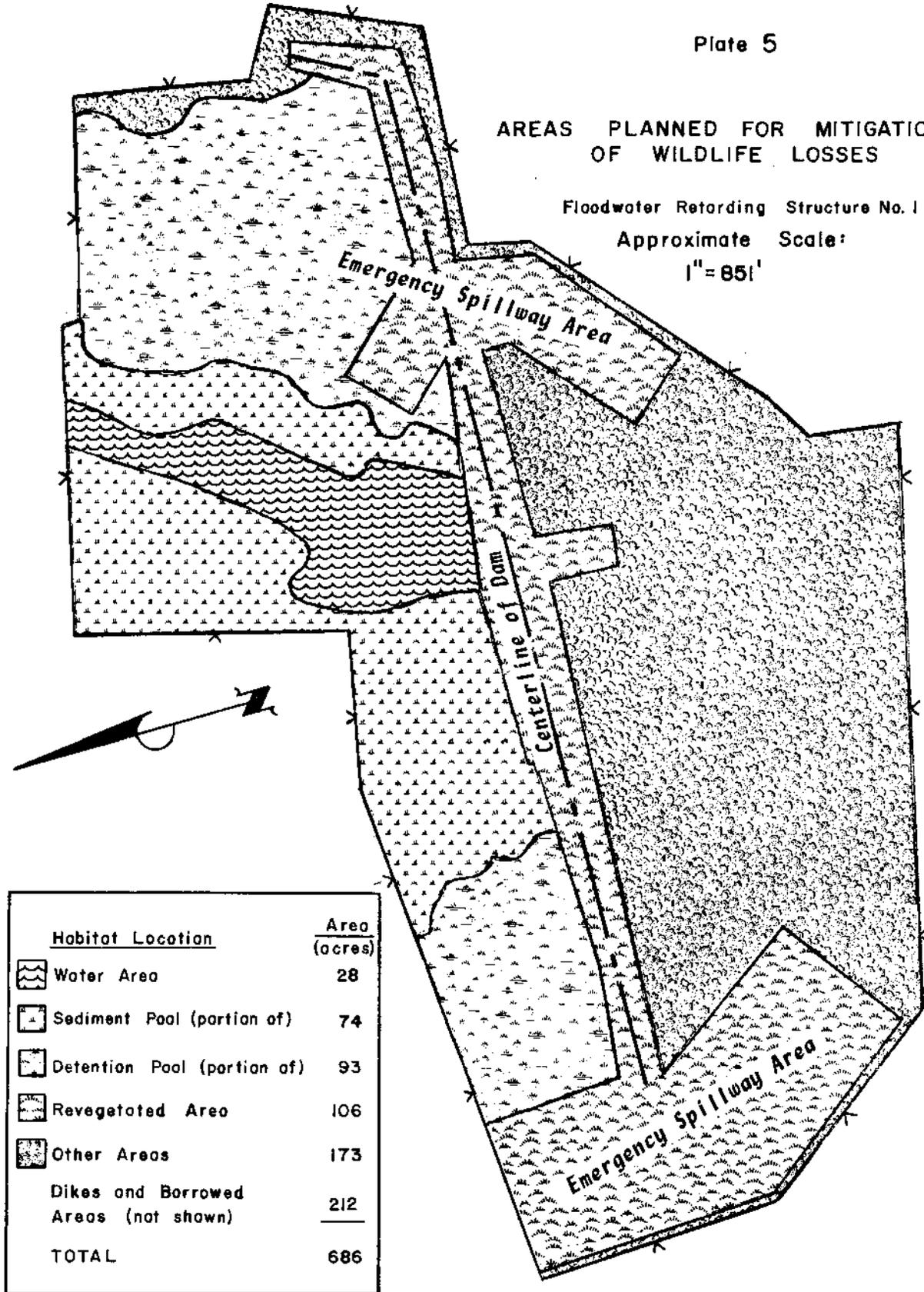
Installation of the recommended structural measures will achieve the project objectives of flood damage reduction. The recommended alternative will prevent flooding from the 100-year frequency flood originating from Los Olmos Creek to all existing urban properties in Rio Grande City and El Sauz. The risk to loss of life within the urban areas will be eliminated (Figures 1a and 1b). Average annual flooding will be reduced from 3,588 acres to 2,669 acres and directly benefit 43 owners and operators of agricultural land in the flood plain.

AREAS PLANNED FOR MITIGATION  
OF WILDLIFE LOSSES

Floodwater Retarding Structure No. 1

Approximate Scale:

1" = 85'



Habitat Location	Area (acres)
Water Area	28
Sediment Pool (portion of)	74
Detention Pool (portion of)	93
Revegetated Area	106
Other Areas	173
Dikes and Borrowed Areas (not shown)	212
<b>TOTAL</b>	<b>686</b>

Reach 2 and portions of Reach 4 will have additional acreage flooded as a result of installation of the recommended alternative. This additional flooding is the result of increased stages caused by flow area confinement by the Rio Grande City dike. Increased stages will result from passage of the one percent, two percent, and four percent frequency floods. Additional area inundated as the result of the previously listed floods are 17, 13, and 2 acres, respectively. Average annual acres flooded in that area will be reduced from 69 acres to 51 acres.

The 100-year without project conditions for Reach 4 consists of 632 acres urban and built-up land and 199 acres of miscellaneous land for a total of 831 acres. With project, the urban and built-up area of 632 acres will receive complete protection, but flooding will increase by an additional eight acres for a total of 207 acres of miscellaneous land. Flooding will increase an additional nine acres in Reach 2 for a total of 232 acres.

The structural measures will reduce flooding on 528 acres of prime farmland in Reach 1 and eliminate flooding in Reach 3 on 116 acres of prime farmland. Flooding on 23 acres of prime farmland in Reach 2 will be reduced for floods smaller than a four percent chance event.

As required by 18 CFR Part 713, 8713.533, the evaluated 500-year flood plain without project conditions consists of approximately 898 acres which includes all of Reach 4 (Rio Grande City) and the urban and built-up area of Reach 5 (El Sauz). The land use consists of 659 acres urban and built-up and 216 acres of miscellaneous land in Reach 4 and 23 acres of urban and built-up land in Reach 5. With project, the 500-year flood plain will consist of approximately 747 acres of which 739 acres are in Reach 4 and 8 acres are in Reach 5. The land use consist of 527 acres urban and built-up land and 212 acres of miscellaneous land in Reach 4 and 8 acres of urban land in Reach 5.

Population data limited to the 500-year flood plain is not available. Essential services in the affected area of Rio Grande City are the municipal water treatment plant and the fire station. Both of these amenities will flood from the 500-year frequency event, with and without project conditions. Hospital facilities and police services in Rio Grande City are located a short distance west of the flood plain. There are no essential services affected in El Sauz.

Since neither Rio Grande City nor El Sauz currently has a flood warning system, an accurate estimate of anticipated warning time cannot be determined should a catastrophic flood event occur. Without the project, the 500-year frequency flood would produce maximum water depths of approximately 9.7 feet and average flood plain velocities of 3.2 feet per second. With the project, the same flood would produce maximum water depths of 5.3 feet and average flood plain velocities of 2.4 feet per second in the urban area.

Debris content from the 500-year flood without the project consist of buildings (and parts of), building contents, automobiles, pavement, trees and brush, fence wire, drowned livestock, machinery (both farming and industrial), silt and sediment, utility lines, etc. It is reasonable to assume debris content with the project will consist of similar items; however, the total amount should be less since the anticipated depths and velocities would not be as great.

If the recommended alternative had been installed at the time of the 1967 flood, acres flooded would have been reduced from 7,543 acres to 6,205 acres, a reduction of 17.7 percent. Area inundated in each evaluation reach without and with the project by various frequency floods are presented in the following tabulation:

Area Inundated by Selected Recurrence Intervals (Acres)										
Evaluation:	Recurrence Interval									
	5-Year		20-Year		50-Year		100-Year		500-Year	
Reach	1/	2/	1/	2/	1/	2/	1/	2/	1/	2/
	W.O.P.	W.P.	W.O.P.	W.P.	W.O.P.	W.P.	W.O.P.	W.P.	W.O.P.	W.P.
1	0	0	822	619	1,025	937	1,056	1,029	3/	3/
2	81	44	135	114	210	217	222	231	3/	3/
3	0	0	25	0	90	0	155	0	3/	3/
4	309	40	648	102	805	194	831	207	875	739
5	4,799	4,213	5,913	5,370	6,503	5,865	6,887	6,212	23	8
Total	5,189	4,297	7,543	6,205	8,633	7,213	9,151	7,679	898	747

1/ Evaluation Reach Map (Appendix G)

2/ Without project (W.O.P.), with project (W.P.)

3/ Not Applicable

Reduction in area inundated varies with respect to location within the watershed. The average annual area inundated in each evaluation reach without and with the project is presented in the following tabulation:

Average Annual Area Inundated			
Evaluation:	Without	With	
Reach 1/:	Project	Project	Reduction
	(acres)	(acres)	(percent)
1	96	53	44.8
2	36	25	30.6
3	5	0	100.0
4	168	26	84.5
5	3,283	2,565	21.9
Total	3,588	2,669	25.6

1/ Evaluation Reach Map (Appendix G)

The number of urban properties inundated without and with the project by various frequency floods is presented in the following tabulation:

Urban Properties Flooded by Selected Recurrence Interval										
Property	Recurrence Interval									
	5-Year		20-Year		50-Year		100-Year		500-Year	
Classifi-	W.O.P.	W.P.	W.O.P.	W.P.	W.O.P.	W.P.	W.O.P.	W.P.	W.O.P.	W.P.
cation	1/	1/	1/	1/	1/	1/	1/	1/	1/	1/
Residential	71	0	370	0	453	0	499	0	542	367
Commercial	10	0	51	0	74	0	78	0	96	51
Public	0	0	8	0	27	0	36	0	39	8
Total	81	0	429	0	554	0	613	0	677	426

1/ Without project (W.O.P.), with project (W.P.)

The recommended alternative is in accordance with the particular criteria as set forth in Executive Order 11988, Floodplain Management and Executive Order 11990, Protection of Wetlands. The area intended for confinement of floodwater for the two dikes will remain hazardous for urban development. Existing ordinances will continue to prohibit development that is not compatible with prudent flood plain management and land use.

#### Visual Resources

The recommended alternative will be constructed in both rural and urban environments. The degree of visual impact will depend on the visual resource quality of the landscape elements, landscape use of the affected area, and visibility by the viewer.

The construction site for the floodwater retarding structure is a rural area characterized by broad plains and gently rolling hills. It is anticipated the structure will not be visible from public road(s) or easily accessible vantage point(s). The dike at El Sauz will be constructed in a combination of rural-urban landscapes. Further, the dike will be located near rural homes and visible from Farm Road 649. The dike at Rio Grande City will be constructed in a predominantly urban landscape along Los Olmos Creek. Part of the dike will cross an area of irrigated cropland. The dike will be visible from numerous residences and businesses. It will be seen from both Farm Road 755 and several city streets.

Visual impact of structural measures will be lessened by blending cut slopes with existing topography. Where feasible, existing natural vegetation will be used for screening highly visible areas. The most visible portions of the dikes at El Sauz and Rio Grande City may require additional landscape architecture considerations during detailed design and final layout.

#### Water and Air Resources

A maximum initial reduction in average annual runoff of 110 acre-feet is expected because of evaporation from the sediment pool of the floodwater retarding structure. Average annual volume of watershed runoff will be reduced from 7,940 acre-feet to 7,830 acre-feet, or about one percent. This initial water loss will be reduced as sediment accumulates in the sediment pool over the life of the project.

Installation of the floodwater retarding structure will cause a change in the flow regime. During periods of runoff, the depth, velocity, and duration of out-of-channel flows will be reduced downstream from this structure. The duration of the low flows will be increased. This change in flow regime will reduce downstream flooding and associated flood damages.

The structure is designed to store a total of 2,416 acre-feet of sediment during a 100-year period. Presently, there are no pollution problem sources which drain directly into the structure. Functioning of the structure should have a slight effect on downstream water quality by

reducing sediment concentration in flood waters. The quantity and timing of water passing the structure will be changed slightly.

Installation and functioning of the floodwater retarding structure is not expected to have an appreciable impact on ground water.

The construction sites are in both rural and urban areas. During construction of the structural works of improvement, air and water pollution will increase slightly from dust and sediment inherent to the construction process. There will be an increase in pollutants such as dust and chemicals from equipment exhausts during these phases. During the project installation period it may be possible to record some increases in suspended particulates and/or gaseous pollutants caused by construction activities. These increases are local and temporary and will not result in long term impacts to the surrounding area. Also, there will be an increase in noise levels as a result of these activities. This increase will be kept within tolerable limits. Noise during construction activities will be a temporary nuisance.

#### Terrestrial and Aquatic Habitat

The biology work group composed of biologists from Texas Parks and Wildlife Department, Fish and Wildlife Service, and Soil Conservation Service determined that seven habitat types occur in the watershed. These are ramadero, saline, mixed brush, cropland (irrigated, dryland, and abandoned), buffelgrass, Rio Grande bottomland, and mono-typic brush. Each of those habitats with the exception of Rio Grande bottomland will be impacted by the recommended alternative. Variation and ecotones of these habitats occur but more detailed habitat descriptions probably would not result in a greater understanding of project impacts, since most wildlife species move freely about all types. A detailed description of the habitats to be affected is presented in Appendix D.

Installation of the recommended alternative will modify the habitat for certain terrestrial species of wildlife. Existing habitat types affected by each proposed construction activity is presented in the following tabulation:

Acres of Habitat Types Affected by Recommended Alternative

Habitat Types	:Revegetated Area	:Water Area	<u>1/</u> : Sediment Pool	: Detention Pool	: Dikes and Borrow Areas	: Total
Ramadero	20	50	218	385	99	772
Mixed Brush	60	-	17	581	7	665
Mono-typic Brush	20	-	42	67	20	149
Cropland, irrigated	-	-	-	-	26	26
dryland	-	-	-	36	-	36
abandoned	-	-	-	-	40	40
Saline Site	6	-	85	103	16	210
Buffelgrass	-	-	12	64	4	80
<b>TOTAL ACRES</b>	<b>106</b>	<b>50</b>	<b>374</b>	<b>1,236</b>	<b>212</b>	<b>1,978 <u>2/</u></b>

1/ Lowest ungated outlet.

2/ Does not include 173 acres of "other areas" planned for wildlife mitigation.

To accurately determine the effects of installation of the recommended alternative, it was necessary to make a comparison of future without project habitats and compare changes that take place with the project. To that end, a system of quantitative and qualitative measurements was employed to determine approximate gain or loss for selected wildlife species.

The future without project habitat was evaluated using definitive terms for habitat quality (Appendix E-Charts 1 through 4). Future without project conditions were established by reducing the areal extent of existing ramadero and mixed brush habitats by 25 percent and converting that amount to a grass mixture. This projection was based on present trends and soil suitabilities for such action. Each acre was evaluated on the basis of its habitat value in respect to various wildlife species present.

Projected wildlife habitats were evaluated by changing the future without project habitats to those which would exist under future with project conditions. Future with project habitat is presented on Charts 1A through 4A (Appendix E). A comparison was made to compare the change in wildlife habitats for future with and future without project.

The following tabulation gives the relative change in habitat value by species:

Total Wildlife Habitat Value Affected by Installation of the Recommended Alternative			
Species	Habitat Value : Future Without Project	Habitat Value : Future With Project	Percent : (Change)
	(Total Value Rating)		
Deer	4,344	3,969	- 9
Quail	3,581	3,760	+ 5
Mourning Dove	3,517	3,625	+ 3
Coyotes	4,842	4,622	- 4
Passerines	2,708	2,865	+ 6
Fish	0	70	not calculated
Waterfowl	0	144	not calculated
<b>TOTAL</b>	<b>18,974</b>	<b>19,055</b>	<b>+ 0.4</b>

Installation of the recommended alternative with the planned mitigation will increase the value of the affected habitats by less than one percent. Increases in habitat values are expected for quail, mourning dove, and passerines. The greatest loss will be experienced by both deer and coyotes. It is anticipated the acres of habitat to be directly affected by the project amount to slightly less than one percent of the total land in the watershed.

Overall, the floodwater retarding structure will benefit the wildlife community. The water area would provide resting habitat for migratory waterfowl and marsh birds as well as a water supply for all wildlife species. The floodwater retarding structure will destroy 150 acres of brush-type habitats.

The floodwater retarding structure will initially impound up to 50 surface acres of water; however, this will gradually change as the site ages and fills with sediment. The structure is designed for a 100-year sediment pool which will eventually cover 424 acres. At the end of 100 years the sediment pool will contain no permanent water. That area is expected to be a marsh-like habitat and contain plants that have varying degrees of ability to survive in semi-aquatic conditions. There will be concentric rings of ecotones from the lower elevations to higher elevations; i.e., from aquatic habitat to strictly terrestrial habitat. The elevations where ecotones will occur cannot be predicted with available information; however, the changes will be gradual, and may take longer than 100 years or may occur faster. After 100 years, the area may even approach riparian rather than aquatic habitat. This will be dependent upon rate of sediment accumulation and occurrence of storm events. Even though there will be an aquatic, semi-aquatic, or riparian habitat within the 424 acre sediment pool, the total acreage cannot be considered lost as terrestrial habitat.

The permanent and semi-permanent water in the sediment pool will be dependent upon annual precipitation. Greater soil moisture expected in the periphery of the sediment pool will be conducive to the production of robust vegetation. This will be very favorable to many species of animals, especially the avian fauna.

No significant amount of change in terrestrial habitat in the detention pool is expected. There will be a greater diversity in the biotic community adjacent to the floodwater retarding structure created by the ecotone where terrestrial meets aquatic habitat. Range management (involving proper grazing use and deferred grazing) will create a more valuable habitat because of greater plant diversity. No adverse effects are predicted in the detention pool because the frequency and depth of inundation are such that no expected change will occur in the habitats.

It is predicted the 50 surface acres of water created by the lowest ungated outlet will be turbid because of the dispersed soils in the area. Further, the pool will contain a large percentage of shallow water. It will be low to moderate fish habitat because of water turbidity and shallowness. It will also be low value waterfowl habitat because lack of water clarity will restrict the growth of rooted aquatic vegetation.

The amount of acreage inundated and the length of time it will take the water to recede to the normal water level for various frequency storms is presented in the following tabulation:

Approximate Acres Inundated and Drawdown Time from Selected  
Frequency Storms for Floodwater Retarding Structure

<u>Component</u>	<u>Selected Recurrence Interval</u>			
	<u>2-Year</u>	<u>5-Year</u>	<u>25-Year</u>	<u>100-Year</u>
<u>AT YEAR ONE</u>				
Acres Inundated	145	500	900	1,400
Drawdown Time to Top of Riser (Sediment Pool) <sup>1/</sup> (Days)	0	1	3	6
Days Drawdown to Lowest Ungated Outlet (200 ac.ft. Storage)	8	9	12	14
<u>AT YEAR 100</u>				
Acres Inundated	525	690	1,100	1,550
Drawdown Time <sup>1/</sup> (Days)	2	3	6	8

<sup>1/</sup> Assuming the site is full to lowest ungated outlet and drawdown time is calculated after inflow ceases.

To mitigate for habitat losses attributed to the floodwater retarding structure, 474 acres in the proximity of the dam, emergency spillways, and portions of pool areas will be managed for wildlife by restricting

livestock grazing. This action will allow an increase in herbaceous vegetation in undisturbed areas which will benefit the majority of wildlife species and increase the overall habitat value. Fencing on portions of the shoreline vegetation pool areas will protect from overgrazing; thereby reducing shore erosion and water turbidity. A decrease in water turbidity will increase the value of the aquatic habitat.

Installation of the dikes is not expected to have an adverse impact upon the total wildlife habitat. Although the dikes and borrow areas will change several habitat types to a grassland community, the overall habitat value will be increased. Generally, the habitats altered by the dikes and borrow areas are low value because of their proximity to urban areas and deteriorated or overgrazed condition. The greatest impact is the conversion of 126 acres of brush-type habitats to a grassland community. Fencing and restricted grazing on the dikes will create greater "edge" by providing a strip of quality herbaceous vegetation through an area presently void of herbaceous ground cover.

The borrow areas needed for the Rio Grande City dike will cause a reduction in the total habitat value. That reduction will mainly affect mourning dove and coyotes. Borrow Area No. 1 is abandoned or idle cropland and is in an early stage of plant succession. There are a large amount of quality seed producing annuals. If the succession of the plant communities continue, it will not be a preferred bird feeding area because the annual vegetation will be replaced by perennials. The perennial vegetation that is expected will not provide the same quality of food (seeds) that the present composition of annuals produce. Borrow Areas Nos. 2 and 3 are in brush-type habitats. Following the installation of the recommended alternative, the borrow areas will be planted to species having wildlife value and will be protected from grazing. That action will improve habitat for deer, quail, and passerines.

#### Endangered Species

The list of endangered species that could possibly have distribution within the Los Olmos Watershed boundaries were obtained from Fish and Wildlife Service, Office of Endangered Species.

Three listed endangered animal species that may occur in the watershed are jaguar, jaguarundi, and ocelot. Critical habitat has not been listed within the project area. Notice of review species (all plants) are Paronychia congesta, Dyssodia tephroleuca, Urtica chamaedryoides var. runyonii, and Frankenia johnstonii.

The assessment which consisted of field studies, literature reviews, and consultations with other agencies and individuals concluded that there are no project impacts expected upon any listed endangered species. However, the recommended alternative will negatively affect two notice of review plant species Urtica chamaedryoides var. runyonii, and Frankenia johnstonii. A detailed analysis of recommended alternative effects on listed and notice of review species is presented in Appendix F.

The Fish and Wildlife Service, Office of Endangered Species, has been informed that no impacts will be occasioned to any Federally listed species. A summary of impacts on endangered species by installation of the recommended alternative is presented in the following tabulation:

<u>Endangered Species Listed or Proposed by Fish and Wildlife Service</u>	
<u>Species</u>	<u>Anticipated Effects of Recommended Alternative <u>1/</u></u>
<u>Animals 2/</u>	
Jaguar	0
Jaguarundi	0
Ocelot	0
<u>Plants 3/</u>	
Whitlow-wort ( <u>Paronychia congesta</u> )	0
Ashy dogwood ( <u>Dyssodia tephroleuca</u> )	0
Ortigailllo ( <u>Urtica chamaedryoides</u> var. <u>runyonii</u> )	-
<u>Frankenia johnstonii</u>	-

- 1/ ++ Very positive effect  
 + Positive effect  
 0 No effect  
 - Negative effect  
 -- Very negative effect  
2/ Listed as Endangered  
3/ Notice of Review Status

#### Cultural Resources

Presently, there are no known locations of historic significance in the watershed that would be affected by installation of the project.

A field survey and evaluation of cultural resources to be affected by the floodwater retarding structure and dikes was carried out by the Center for the Archeological Research, the University of Texas at San Antonio. The SCS archeologist completed a survey of the borrow areas that might be affected by the dike at Rio Grande City. As a result of the surveys, it was determined that 24 archeological sites may be either inundated or disturbed by installation of the structural measures. These investigations and subsequent testing indicated that those sites were not eligible for nomination to the National Register of Historic Places and no further work was recommended. The State Historic Preservation Officer has concurred with the findings of the archeological surveys.

#### Economic and Social

The estimated monetary floodwater damages, with present level of development, that would result from a 100-year frequency flood will be reduced

from \$5,758,300 to \$357,980, a reduction of 93.8 percent. If the September 1967 flood were to occur with present conditions, estimated monetary damages would be reduced from \$2,572,760 to \$234,220, a reduction of 90.9 percent. Reduction in monetary flood damages would vary with respect to locations within the watershed. Monetary floodwater damages, for each evaluation reach by recurrence intervals, are presented in the following tabulation:

Monetary Floodwater Damages								
Recurrence Interval								
Evaluation Reach <u>1/</u>	5-Year		20-Year		50-Year		100-Year	
	: Without : Project	: With : Project	: Without : Project	: With : Project	: Without : Project	: With : Project	: Without : Project	: With : Project
	(dollars)	(dollars)	(dollars)	(dollars)	(dollars)	(dollars)	(dollars)	(dollars)
1	0	0	140,560	104,920	177,430	161,090	184,490	178,400
2	7,350	2,860	20,720	18,940	33,610	33,740	37,460	38,100
3	0	0	8,590	0	30,530	0	52,590	0
4 <u>2/</u>	273,380	0	2,251,990	0	3,870,140	0	5,193,280	0
5 <u>2/</u>	84,960	59,030	150,900	110,360	212,730	129,520	290,480	141,480
<b>Total</b>	<b>365,690</b>	<b>61,890</b>	<b>2,572,760</b>	<b>234,220</b>	<b>4,324,440</b>	<b>324,350</b>	<b>5,758,300</b>	<b>357,980</b>

1/ Evaluation Reach Map (Appendix G)

2/ Monetary damages in the urban areas as a result of the 500-year frequency storm would be \$8,801,170 without the project and \$2,251,990 with the project.

The estimated average annual floodwater damages for current conditions will be reduced from \$461,760 to \$52,110, a reduction of 88.7 percent. Total flood damage reduction benefits will be \$409,650. The project is feasible under existing conditions. The risk and uncertainty of projections does not affect project feasibility. The estimated average annual floodwater damages for projected conditions will be reduced from \$566,020 to \$54,020, a reduction of 90.5 percent. Total flood damage reduction benefits will be \$512,000. Average annual damages and benefits attributed to structural measures for current and projected conditions are presented in the following tabulation:

Average Annual Damages and Benefits						
Current Conditions				Projected Conditions <u>2/</u>		
Evaluation Reach <u>1/</u>	: Without : Project	: With : Project	: Benefits	: Without : Project	: With : Project	: Benefits
	(dollars)	(dollars)	(dollars)	(dollars)	(dollars)	(dollars)
1	16,490	9,060	7,430	16,490	9,060	7,430
2	4,550	3,020	1,530	4,550	3,020	1,530
3	1,630	0	1,630	1,630	0	1,630
4	386,250	6,790	379,460	489,000	8,700	480,300
5	52,840	33,240	19,600	54,350	33,240	21,110
<b>Total</b>	<b>461,760</b>	<b>52,110</b>	<b>409,650</b>	<b>566,020</b>	<b>54,020</b>	<b>512,000</b>

1/ Evaluation Reach Map (Appendix G)

2/ Includes projections of an increase in residential content values only. These projections were computed through year 2020.

Each evaluation reach will be affected differently concerning flood damage reduction as the result of the project. Average annual flood damage reduction with installation of the recommended alternative is presented in the following tabulation:

Average Annual Damage Reduction in Percent				
Evaluation Reach <sup>1/</sup>	Crop and Pasture	Other Agricultural	Non-Agricultural	Total
1	45.0	45.8	0	45.1
2	29.7	0	37.9	33.6
3	100.0	0	0	100.0
4	0	0	98.2	98.2
5	24.4	30.1	97.8	38.9
Total	45.8	30.4	98.0	90.5

1/ Evaluation Reach Map (Appendix G)

Installation of the recommended alternative will eliminate the apparent risk of injury and loss of life and reduce health hazards associated with floods. Owners of urban properties will have the incentive to improve and repair without the risk of damage from overbank flooding. Increased agricultural efficiency will be realized after damaging floods have been reduced.

The equivalent of two permanent jobs will be created as the result of increased economic activity. Construction of the recommended alternative will create about 137 man-years of employment over the installation period. The use of otherwise unemployed or underemployed labor resources for the installation of the recommended alternative will result in employment benefits that will average \$11,840 annually. Only the labor resources utilized for construction or installation of the structural measures were evaluated as benefits to the structural measures.

Intangible benefits that improve the quality of living will accrue to the recommended alternative through the opportunity to shift public funds from the repair of flood damages to the investment in schools and other public facilities. In a similar manner, private funds now being used to repair flood damage can be shifted to raising the standard of living of the residents in the affected area. Further, the recommended alternative will provide flood plain residents a reduction of recurrent flood damage and serve as the basis for improving the quality of life. Potential health hazards from drinking water contaminated by flood water will be eliminated. The hazard at low water crossings will be reduced substantially.

The recommended alternative is not anticipated to have any adverse equal opportunity impacts on any minority group in the watershed. Since the vast majority of watershed residents are of Hispanic origin (E-5), the recommended alternative will generally benefit those persons and serve as a vehicle for community improvement. The recommended alternative is intended to provide an equitable distribution of benefits to all persons concerned.

### SHORT-TERM USES VS. LONG-TERM PRODUCTIVITY

The Los Olmos Creek Watershed is a contributing part of the Rio Grande Basin. This watershed has a total drainage area of about 319.5 square miles, or about 0.18 percent of the basin. Therefore, the total effect of this measure on the Rio Grande Basin will be insignificant.

The long-term habitability and contribution to the economic well-being of the area will be improved with only minimal detriment to a few features of the existing environment. In total, the natural environment of the area will be benefited over that which would exist in the long-term without project action.

### IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Installation of the structural measures will require 3,123 acres of agricultural land which is comprised of 3,032 acres of rangeland and 91 acres of cropland. <sup>1/</sup> The 686 acres necessary for mitigation will be fenced and managed to benefit wildlife. Flowage easements will be obtained on 632 acres.

The dike at Rio Grande City will permanently commit 13 acres of prime farmland which is currently used as irrigated cropland.

The commitment of labor and material resources for construction of all structural measures will be irretrievable. No other permanent commitment of resources is known to be required for the recommended alternative.

### CONSULTATION AND REVIEW WITH APPROPRIATE AGENCIES

The following Federal agencies were requested to review and submit comments and recommendations:

- U.S. Department of the Army
- U.S. Department of Commerce
- Federal Energy Regulatory Commission
- U.S. Department of Health and Human Services
- U.S. Environmental Protection Agency
- U.S. Department of the Interior
- U.S. Department of State
- U.S. Department of Transportation
- Advisory Council on Historic Preservation
- Office of Equal Opportunity, USDA
- Forest Service, USDA

The following state and local agencies were requested to review and submit comments and recommendations:

- Budget and Planning Office (State Agency designated by Governor and State Clearinghouse)
- South Texas Development Council (Regional Clearinghouse)

<sup>1/</sup> The commitment of acres needed for the project is the land required for construction and proper functioning. It should not be confused or compared with wildlife habitat acres altered.

Discussion and Disposition of Each Comment on Draft  
Environmental Impact Statement (EIS)

Not all of the above agencies requested to comment on the Draft EIS submitted comments. Formal comments were not received from the U.S. Department of State, U.S. Department of Transportation, Advisory Council on Historic Preservation, and the South Texas Development Council (Regional Clearinghouse). The responding agencies' comments and the disposition of each are as follows:

Federal Agencies

U.S. Department of the Army

Comment: "We have reviewed the plan and statement and concur with your findings. Since the proposed work appears to involve placement of fill material in wetlands and will require a Department of the Army permit, it is recommended you contact Mr. Marcos De La Rosa, Chief, Permit Branch, at FTS 527-6378."

Response: The Draft EIS, on page E-8, stated that wetlands would not be impacted by the recommended alternative. In discussing this comment with the Corps of Engineers personnel, the concern expressed was for the plant species found in the Rio Grande bottomland habitat type. Page E-31, next to the last paragraph, stated that there would be no impact on that habitat type. We, therefore, conclude that no Corps of Engineers permit will be needed.

U.S. Department of Commerce

Comment: "The subject statement has been reviewed within the areas of the National Ocean Survey's (NOS) responsibility and expertise, and in terms of the impact of the proposed action on NOS activities and projects.

"Geodetic control survey monuments may be located in the proposed project area. If there is any planned activity which will disturb or destroy these monuments, NOS requires not less than 90 days' notification in advance of such activity in order to plan for their relocation. NOS recommends that funding for this project includes the cost of any relocation required for NOS monuments. For further information about these monuments, please contact Mr. John Spencer, Director, National Geodetic Information Center (OA/C18), or Mr. Charles Novak, Chief, Network Maintenance Branch (OA/C172), at 6001 Executive Boulevard, Rockville, Maryland 20852."

Response: No monuments are known to exist in the areas of construction by the recommended alternative.

Federal Energy Regulatory Commission

Comment: "Our review of the report indicates that none of the proposed structures would afford an economical opportunity for hydropower development, nor would the project affect responsibilities of the Commission."

Response: Noted.

U.S. Department of Health and Human Services

Comment: "No mention is made of either beneficial or adverse impacts of this project on vector or other populations. The Final EIS should describe the extent of any existing or anticipated vector problems. There should be a description of which agency or authority will provide mosquito control activities, the proposed control measures, the kinds and amounts of insecticides, and the application rates and methods of application."

Response: The Draft EIS on page E-10 addressed the problem of vectors associated with flooding. On page E-38, it was stated the recommended alternative will reduce health hazards (which includes vectors) caused or associated with floods. Since the proposed floodwater retarding structure is to be built in a remote, rural area significant vector problems are not expected to exist. The watershed is primarily rangeland and there are numerous stock watering devices (farm ponds, troughs, etc.). No documentation exists to suggest that impounded water in this area constitutes a serious vector problem.

Comment: "On page 8, the Draft EIS mentions noxious weed control. However, there is no discussion of the control measures to be followed, the methods of chemical application, the types of herbicides to be used, their toxicity, and which agency or authority will provide these control measures."

Response: The Plan and Draft EIS provides for the application of pesticides in conformance with current laws (both State and Federal) regulating their use.

Comment: "The Final EIS should state whether completion of this project will require the relocation of any families. If relocation is required, a discussion of family relocation needs and how these needs will be met should be provided."

Response: Relocation was discussed in detail on pages P-9 and 10 of the Draft Plan and EIS. As mentioned on those pages, no relocations are required as a result of project action.

Comment: "Since some of the land affected is prime farmland, the EIS should state whether the project conforms to the Council on Environmental Quality's and the Department of Agriculture's joint memorandum of August 30, 1976, concerning analysis of prime and unique farmland."

Response: The SCS has determined the extent of impacts to prime farmland in conformance with the above mentioned memorandum.

Comment: "The Final EIS should contain a statement about the applicability of Executive Order 11990, Protection of Wetlands, and also Executive Order 11988, Floodplain Management."

Response: The recommended alternative conforms to both Executive Orders. A statement for compliance has been added to the Final Plan and EIS.

Comment: "A statement should be made about anticipated air pollution levels that may be created by construction activities. This should include pollution levels from equipment as well as construction dusts. Potential noise pollution from construction equipment should also be addressed including noise levels and their duration."

Response: An adequate statement addressing this subject was contained on pages E-26 and E-31 of the Draft EIS.

#### U.S. Environmental Protection Agency

Comment: "We classify your Draft EIS as LO-1. Specifically, we have no objections to the project as it relates to Environmental Protection Agency's (EPA) legislative mandates. The EIS contained sufficient information to evaluate adequately the possible environmental impacts which could result from project implementation. Our classification will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions under Section 309 of the Clean Air Act."

Response: Noted.

#### U.S. Department of the Interior

Comment: "The work plan and the draft statement do not address the requirements of Executive Orders on Floodplain Management and Protection of Wetlands, EO 11988 and EO 11990, respectively. Section 3(b) of EO 11988 and Section 3 of EO 11990 require agency requests for new authorizations or appropriations transmitted to the Office of Management and Budget to indicate whether the proposals are in accordance with the criteria set forth in the EO's. The final document should contain this information."

Response: A statement for compliance with Executive Orders 11988 and 11990 has been added to the Final EIS. The recommended alternative is in accordance with the particular criteria as set forth in both EO's.

Comment: "The work plan does not contain an adequate fish and wildlife mitigation plan for the proposed work plan and the impact statement does not contain a valid assessment of the project-induced fish and wildlife impacts. Support for this conclusion is set forth as follows:

"1. The basic problem with the mitigation plan is the failure to compensate for the project-induced losses to the fish and wildlife base. We believe the deficiency in mitigation

planning stems from the inappropriate application of the habitat evaluation procedure which tends to minimize the fish and wildlife resources losses. For example, the mitigation plan fails to compensate for the project-caused losses to the brushland habitat in the study area. Adequate compensation is vital to the survival of the mourning and white-winged doves, the white-tailed deer, the javelina, and numerous species of non-game wildlife.

"2. The habitat values presented and the resultant calculation of net gains or losses of wildlife habitat provided an inadequate assessment of project-related impacts. High values have been arbitrarily assigned to habitat types with little or no value to wildlife and show positive gains to wildlife which realistically would not occur as a result of the project. This leads to an understatement of the measures needed to mitigate project-induced losses.

"3. Species selections for habitat evaluation appear to be arbitrary as criteria for the selection process is not documented in the DEIS. Important game species such as javelina are excluded from evaluation. Passerines are judged as one species when, in fact, this group of birds includes 182 species in Starr County. Passerines should not be evaluated as a group, as several species are confined to particular types of habitat such as grasslands, brushlands, and wetlands. Specific examples include the green jay which is confined to brushlands and the meadowlark which is confined to open grasslands. In assessing the value of a certain habitat type for passerines as a whole, the values assigned would be selecting against bird species which require specific habitat types for survival. Representative small mammal and reptile species are not included in the habitat assessment.

"4. The habitat evaluation methods used to assess impacts rely on the premise that each habitat type, regardless of size, is independently capable of supporting a species. This concept does not hold true for wide-ranging species such as deer and coyotes or for species such as mourning doves which use different habitat types for each survival function (brushlands for resting, roosting and nesting; open fields for feeding; ponds for watering).

"5. Another major deficiency in the SCS habitat evaluation methodology is that it fails to account for losses over the life of the project. Thus, this system yields an inaccurate assessment of impacts to fish and wildlife resources as was previously indicated by our Fish and Wildlife Service (FWS) letters to the SCS.

"6. The document does not effectively present and analyze the impacts of all five alternatives with regard to NED and EQ so that an objective evaluation of all alternatives can be made

not only by the SCS but by other agencies and individuals reviewing the document.

"In summary, we do not believe the watershed work plan contains an adequate fish and wildlife mitigation plan even though the Corpus Christi office of the U.S. Fish and Wildlife Service has provided your office with mitigation proposals over the past two years.

"The problem stems from the questionable approach being used in applying habitat evaluation procedures, and this leads to a significant understatement of the project-induced fish and wildlife resource losses. We strongly recommend further coordination between our respective agencies to develop a mitigation plan which will have our mutual support. As now formulated, we are concerned that the selected alternative would, in the flood structure alone, needlessly destroy over 500 acres of the area's better brush habitat without an acceptable mitigation plan. We also believe that, in order to properly mitigate habitat losses incurred as a result of Alternative 1, the mitigation plan must provide more than just fencing of a small percentage of the sediment pool and grassy areas on or around the flood control structure. The mitigation plan should provide habitats for the displaced wildlife populations that would remain throughout the life of the project. These can be provided by acquiring conservation easements to fence 500 acres at the 5-year flood detention level."

Response: The Soil Conservation Service has reviewed in depth the comments raised by U.S. Department of the Interior (USDI) on the adequacy of the EIS and your opinion that the recommended mitigation plan does not adequately compensate for the projected losses to the area's wildlife resources. The assessment of the environmental impacts on the area's wildlife resources was made using an interagency team of biologists from the Fish and Wildlife Service (FWS), an agency of the USDI; Texas Parks and Wildlife Department (TP&WD); and the SCS. Alternative mitigation proposals were also developed and evaluated by the interagency team. The TP&WD reviewed the Draft EIS and concurred in the assessment of impacts and the recommended mitigation plan (refer to comments from State Agencies--this document).

Joint field investigations between FWS, TP&WD, and SCS began as early as May 1973. A Preliminary Investigation Report dated June 24, 1974, prepared by FWS indicated that the project would benefit the wildlife community. The following is quoted from the report:

"The construction of five floodwater retarding structures in Los Olmos Creek Watershed would require the removal of several hundred acres of brush. The loss of brush would represent a loss of wildlife habitat, however, the wildlife community would benefit from the floodwater retarding reservoirs. Flood protection below the reservoirs

would benefit ground nesting birds and burrowing animals. The reservoirs would provide resting habitat for migratory waterfowl and feeding areas for marsh birds as well as a permanent water supply for all wildlife species."

This report was signed by the Regional Director, FWS, and was concurred with by TP&WD in letter dated April 23, 1974, and signed by the Executive Director.

At that time, five floodwater retarding structures were planned. Presently, the recommended alternative consists of a single floodwater retarding structure and two dikes. The installation of those structural measures will impact far less habitat than the five floodwater retarding structures which were determined to be beneficial to wildlife.

Prior to responding directly to the issues raised by the USDI, the following chronological summary is provided as background data and to explain the interagency approach used to assess the environmental impacts and arrive at an adequate mitigation plan that would compensate for the losses and be acceptable to the Sponsors.

On September 8, 1978, several project-action alternatives were presented to the Sponsors at a public meeting. The purpose of this meeting was to summarize planning studies to date and present SCS's Preliminary Investigation Report. Alternative solutions considered to achieve project goals were presented for discussion. The FWS was invited, but did not attend the meeting.

Between November 1978 and June 1979, two biological field investigations and two office meetings were conducted by the SCS with FWS and TP&WD. The first meeting was a field investigation during the week of November 13-17, 1978. The purpose of this meeting was to review the wildlife habitats of the watershed, select species for evaluation and to determine the relative values for these habitats for selected species. FWS and SCS participated in this investigation. The participants had an equal opportunity to provide inputs into the habitat values and species evaluated. The values were selected, discussed and changed by group opinion. There was no objection expressed to using the SCS habitat evaluation procedure at this time.

During the week of February 20-23, 1979, the second field investigation was conducted. The purpose of this investigation was to familiarize reassigned personnel from the Corpus Christi office of the FWS with the project. TP&WD also attended this investigation. At this time, the FWS expressed some objection to using the SCS habitat evaluation procedures, but TP&WD had no objections. After some discussion, it was mutually decided the SCS habitat evaluation procedure would be used. Some of the

habitat values previously used and species selected for evaluation were changed as a result of inputs by TP&WD and FWS. During this investigation, habitat values were determined for the habitats and species with and without project. All values were verbally concurred with by TP&WD and FWS and no other changes in values were suggested.

On May 1, 1979, the Biological Technical Summary (BTS) which proposed five mitigation alternatives and the revised habitat evaluation was sent to the FWS and TP&WD for review and comments. The alternatives were as follows:

1. Obtain and fence 100 acres of Rio Grande bottomland habitat. This acreage may be obtained by fee title or easement. The exact acres will be determined by the availability of tracts. These tracts should be obtained from a willing landowner. Condemnation rights should not be exercised to obtain this land.

This is not a habitat type the project impacted upon but because of the value and scarcity of this habitat for whitewing dove nesting and other associated wildlife, acquiring this habitat will compensate for terrestrial losses incurred with the construction of the flood-water retarding structure.

Texas Parks and Wildlife Department will be involved in the selection of the tracts. Also, TP&WD should assume the management of the area, but if they are unable too, then it becomes the Sponsor's responsibility with technical assistance from SCS and TP&WD.

2. Fence the sediment pool at approximately the 5-year level and restrict livestock grazing. The dam, spillway, sediment pool, and odd areas will be managed for wildlife and the primary land use. Permit livestock grazing only when it benefits the habitat. Livestock watering access should be provided.
3. Fence approximately 150 acres of Ramadero and/or Mixed Brush habitat in the proximity of the floodwater retarding structure and manage for wildlife. Permit grazing as for No. 2 (above).
4. Combination of fencing 39 acres below dam and 257 acres of sediment pool and detention pool.
5. Combination of fencing 92 acres below dam and 215 acres of sediment pool and detention pool.

On June 4-8, 1979, a representative of SCS traveled to both Corpus Christi and McAllen. The purpose of the trip was to meet with FWS and TP&WD in order to obtain comments and make modifications in the BTS. The FWS recommended several modifications in the review copy. These modifications were made. There were no recommended modifications in the habitat values, species selected or evaluated. The FWS did not agree, however, with any of the five mitigation alternatives presented in the BTS. It was the understanding of SCS that FWS wanted both the 5-year detention pool fenced plus 100 acres of Rio Grande bottomland as adequate mitigation. That proposal was evaluated and it was determined that the mitigation measure would be excessive and represent enhancement rather compensation. TP&WD had no major comments on the BTS.

At a public meeting on June 26, 1979, the Sponsors and interested publics were presented the details of the structural option which consisted of one floodwater retarding structure and two dikes. These measures were previously chosen by the Sponsors at a public meeting held on September 8, 1978. The Sponsors were requested to consider the five (5) mitigation alternatives formulated to compensate for habitat losses. They (Sponsors) were requested to choose from any of the five alternatives or parts from several of them. Representatives of the FWS questioned the amount of mitigation planned and stated additional recommendations would be made during review.

On July 17, 1979, SCS wrote the Corpus Christi office of the FWS requesting the reasons for disagreement with the mitigation features proposed to the Sponsors. The rationale for any additional features was also requested.

On July 26, 1979, the Sponsors wrote SCS selecting a mitigation plan for the project. The plan selected was a combination of two of the five proposals in the BTS (Alternatives Nos. 4 and 5).

An answer to the July 17 letter was received on October 18, 1979, three months later. In this letter, FWS stated that fencing of the 5-year detention pool would be adequate for mitigating the losses incurred by the construction of the floodwater retarding structure; and acquire 100 acres of Rio Grande bottomland habitat to mitigate for the adverse impacts of the dikes. Based on the previous field evaluation, the dikes and associated borrow areas will not have significant or long-term adverse impacts. FWS requested a meeting to resolve the mitigation plan.

On December 6, 1979, TP&WD, FWS, and SCS attended a meeting at Austin to resolve the mitigation plan. During

the meeting, the FWS stated their disagreement with the values of the HEP. At the conclusion of this meeting, SCS thought that all agencies had an understanding what would be acceptable to the FWS for adequate mitigation for the project. It was agreed that the Sponsors would be given an opportunity to evaluate the FWS's proposal for mitigation in lieu of that which they had already selected.

Following the meeting, the SCS wrote the FWS letters on December 17, 1979, and January 2, 1980. In these letters, the SCS requested agreement on the mitigation plan the FWS wanted presented to the Sponsors. It was SCS understanding that either of the following mitigation proposals for the floodwater retarding structure would be acceptable to the FWS:

1. Fence the detention pool at the five-year storm frequency elevation and allow grazing only when it benefits the wildlife habitat.

OR:

2. Obtain an easement that would not permit any clearing in the 100-year storm frequency detention pool. In addition to the easement, the 200 acre feet elevation will be fenced which will approximate 50 surface acres.

In these letters, SCS requested the value changes and the rationale for the changes to the HEP. Further, based on field investigations, it was determined that no white-winged dove habitat would be impacted by the construction activities. The SCS requested that white-winged dove be deleted from the HEP.

In their letter of February 5, 1980, the FWS specified that both the no-clearing easement plus fencing the 5-year detention pool was to be included in the alternative. This was not consistent with the verbal agreements reached at the December meeting. Further, in a letter of March 21, 1980, the TP&WD confirmed that an acceptable mitigation plan would in part obtain an easement to prevent clearing woody vegetation by landowners within the 100-year detention pool. In addition, the permanent water (approximately 50 to 75 acres) would be fenced. The TP&WD did not mention fencing the 5-year detention pool as a component of the proposal to be presented to the Sponsors. It was reasoned by SCS that fencing the 5-year pool, presented in June 1979 as a mitigation alternative, was still viable for selection since the FWS had emphasized this proposal in past meetings and correspondence. FWS and TP&WD concurred with the deletion of white-winged dove from the HEP in

their letters of February 5 and March 21, respectively. The February 5 letter from FWS provided their changes in the HEP values, but no biological rationale was provided. The SCS could not accept the values changed by the FWS without accompanying rationale.

Recognizing that disagreement existed, it was agreed to meet in the field for one last effort to resolve differences in habitat values, species to be evaluated, etc. The field investigation in the watershed occurred on March 17-19, 1980. Field biologists from all three agencies were present. Habitat values were obtained by averaging three separate values from each of the agency representatives. The FWS representatives would not concur with these averaged values, since they lacked the authority to make on-site decisions. The SCS went to Corpus Christi for a conference with the Field Supervisor since concurrence could not be obtained in field. The Field Supervisor refused to concur with the new averaged values. He indicated the FWS reserved the right to amend values at some future time.

As requested by FWS, the Sponsors were given an opportunity to evaluate the additional proposals for mitigation concurrent with the desires of the FWS. Additional measures proposed by the FWS were deemed unacceptable by the Sponsors. On April 4, 1980, the Sponsors wrote SCS, reaffirming their earlier decision of a mitigation plan. This plan consisted of fencing a maximized area of 686 acres at the structural measures and managing wildlife for public values. The net results of the average values of the HEP reflects that the mitigation alternative selected was adequate to compensate for project losses.

On April 9, 1980, a meeting with FWS and TP&WD was held in Austin. This was requested by the SCS Assistant State Conservationist for Water Resources in an attempt to resolve the difference of opinion concerning mitigation with the FWS Area Manager. SCS biologists reviewed in detail the rationale used in developing the habitat ratings and mitigation plans.

On June 4, 1980, the SCS State Conservationist wrote the FWS Area Manager outlining SCS's understanding that agreement on the plan, as presented, had been reached.

On June 16, 1980, the Area Manager wrote SCS advising of his desire for meeting again with SCS prior to inter-agency review being started. This letter provided draft set of suggested procedures for future studies. The meeting was held at Austin, Texas, on July 8, 1980. SCS left the meeting with the verbal understanding that the proposed mitigation plan was acceptable to the FWS. Both

the Area Manager and his assistant indicated that agreement had been reached and no further problem was expected.

On July 11, 1980, the SCS wrote to the Area Manager confirming the discussions of the last meeting. As stated in the letter, joint understanding was reached in regard to the planned mitigation and the display of environmental effects. SCS informed the FWS it was proceeding with preparation of a Draft Plan and EIS. Having received no response, the SCS again wrote the FWS on August 11, 1980, requesting acknowledgement that a mutual understanding was reached in the previous meetings.

On August 27, 1980, the Acting Area Manager wrote SCS. The text of the letter stated that, "...sufficient agreement exists to release the draft plan and environmental impact statement for interagency review. Specifically, we expect those documents to describe a maximized contiguous area of mitigation for public values around the dam site."

On November 6, 1980, the Preliminary Plan and EIS was circulated for informal field level review to interested agencies and individuals.

On December 10, 1980, a public meeting was held in Rio Grande City to present the recommended alternative plan and other alternatives considered during planning. Twenty-seven (27) persons registered their attendance. The only agency or special interest group with a representative present was the Texas Department of Highways and Public Transportation. Several local individuals asked questions for further clarification on structural locations, costs, land rights, mitigation, recreation, public access to structural measures, size of structural measures, and installation schedule. Several agencies sent letters of comment which offered suggestions to be incorporated into the Draft Plan and EIS.

On December 15, 1980, a letter was sent from Field Supervisor, FWS, Corpus Christi, to the SCS State Conservationist containing 14 pages of comments on the Preliminary Plan and EIS. This letter stated FWS's recommendations for additional mitigation measures and suggested further FWS assistance in designing studies, interpreting data, and developing plans. Upon receipt of this letter, two attempts were made to contact the Area Manager, FWS, by phone to inquire whether the letter represented that agency's position. The new Area Manager was out of the office and unavailable for consultation. Based on the letter of comments, the preliminary document was amended or supplemented to incorporate several suggestions expressed by the FWS.

On January 22, 1981, SCS wrote the Area Manager, FWS, reiterating SCS's impression of prior verbal agreements. The letter suggested SCS's willingness to meet and discuss, if desired by Area Manager.

On February 3, 1981, the FWS answered the previous letter from SCS stating Field Supervisor's responsibilities in planning and indicating lack of substantiation for agreement.

Prior to formal interagency review of the Draft Plan and EIS, a meeting was held in Austin on February 10, 1981, between the Assistant State Conservationist for Water Resources and the newly assigned Area Manager. The purpose of that meeting was to brief the Area Manager on the history of the project and past coordination efforts. The Area Manager was advised that the Draft EIS would soon be circulated and that it would be desirable to resolve any remaining differences prior to that review.

On February 17, 1981, a Draft Plan and EIS was published and transmitted to appropriate Federal, State, and local agencies and certain interested groups for their review and comment. The EPA published The Notice of Availability on February 27, 1981, in the Federal Register.

Reference to the proceeding summary will serve to partially answer the specific areas of concern mentioned by the comments. The following discussions provide the SCS an opportunity to respond accordingly to the comments supplemented by the summary.

USDI has questioned the recommended mitigation plan selected by the Sponsors and the assessment of the impacts on wildlife. They supported their position on the basis of six items. The SCS does not agree with the conclusion reached by USDI for the following reasons: (1) The evaluation procedure used is an accepted procedure. (2) Personnel from three agencies with expertise in the field participated in the evaluation. (3) Although there was not always agreement between all personnel involved, SCS believes that the results are technically sound and serve as an adequate basis for decisionmaking.

The recommended mitigation plan was developed using a quantitative and qualitative evaluation of gains and losses on affected wildlife habitats. The HEP demonstrates that the selected plan, with accompanying mitigation, provides for a slight net gain in habitat values. Reference is made to the tabulation on page E-33.

It is incorrect to state that lack of adequate compensation for wildlife losses is vital to the survival of mourning and white-winged doves, white-tailed deer, javelina, and numerous species of non-game wildlife. Significant nesting habitat for white-winged dove does not exist in the impact areas. The most recent data from TP&WD indicates that citrus groves and urban areas account for 86 percent of the 1980 nesting habitat in the Rio Grande Valley (Waggener, 1981). The remaining areas

of significant nesting habitat are adjacent to the Rio Grande. Brown et al. (1977) characterizes the natural, preferred nesting habitat of this species as, "...dense, thicketlike forests of native subtropical trees 15 to 25 feet (4.6 to 7.6 m) in height with and understory of thorny shrubs." It was planned to use white-wing dove as one of the indicator species, but after joint field investigations which included the FWS, the species was deleted from the HEP. The FWS agreed to delete white-winged dove from the evaluation in their letter of February 5, 1980.

Javelina as a species were not evaluated because its habitat needs closely approximate that of deer and coyotes. Javelinas can be expected to use the Ramadeo habitat for travel lanes from one area to another. It also provides resting and loafing areas for the species. Habitat used for foraging; however, is concentrated in upland brush types (telephone conversation with Mr. James H. Everitt, USDA, Agricultural Research Service, Weslaco, Texas). In a recent study by Everitt et al. (1981) the preferred food consisted mainly of pricklypear (81.4 percent). The data used were collected on a ranch about two miles south of the dam site of the proposed floodwater retarding structure. Severe destruction of javelina habitat could occur if large expanses of rangeland containing pricklypear were cleared. That type of action would limit not only their preferred food, but also restrict movement by reducing the value of connecting travel ways. Relatively small areas of disturbance; however, do not seem to affect movement and/or home range. Therefore, the physical impacts of the project to javelina habitat are not considered to be significant enough to evaluate separately from deer and coyotes.

Values of the evaluation procedure are greatly dependent on knowledge of the species being evaluated. Variables such as size of habitat units, interspersions of habitat types, condition of habitat types, and the needs of the species are averaged by the biologist before a value was decided. The habitat values were determined before and after project to obtain a difference in habitat values. The values for selected species on selected habitat types were mutually decided during field investigations with FWS, TP&WD, and SCS. When agreement on values could not be arbitrated, the three individual values were averaged.

The species used as indicators were selected during the joint field investigations with FWS, TP&WD, and SCS. It was never the intent to evaluate every species that may or may not occur in the watershed. Rather, indicator species were used to develop an index of total habitat value for wildlife. Species were selected to appraise a wide range of habitat values. The professional approach is to evaluate species whose ecology and habitat requirements are known or where information is available. Therefore, species whose ecological requirements are known were selected for impact analysis (Flood et al., 1977). Also, since the evaluated species are symbiotic in respect to habitat with many other species, the analysis is accurate to the degree needed. The comment referring to the passerine group is correct and would be valid except during field investigations, numerous indicator passerine species that required several habitat types were evaluated. Similar logic is applicable to small mammals and herptiles.

It is incorrect to assume that habitat impacts are based solely on the individual acres impacted by the project. While use of the evaluation procedure depends heavily on the affected acres; judgment on the surrounding habitat is necessary in order to obtain a realistic, unbiased value for the habitat. The biologist must consider whether the habitat being evaluated is similar to the surrounding area, are there limiting features such as a lack of food or water? is the habitat representative of optimum conditions (or less)? and do the acres impacted represent a significant loss in carrying capacity for the species? The measurements of impacts for wide-ranging species is accurate when one considers that acres involved exceed the minimal needs for sustaining a population of the species. Obviously if cover or food sources in brushy areas are more important to a species than open areas of grassland, the grassland should be ranked lower even though it may provide an optimum amount of vegetation. Its benefit would be to provide an edge, an important concept for many species. The relative worth of any habitat must be judged as to its effects with the whole and the interrelationships with each. For example, one acre of grassland has little significance in a given square mile of like habitat. However, its value is increased many times if that same acre appears within a square mile of dense brush.

The assessment of impacts accounts for project losses immediately after installation of the project. Installation includes the period of re-vegetation and a return to normalcy for the affected habitats. It must be reasoned that the project impacts caused by inundation will occur when the structure functions as designed. Therefore, these are taken into consideration as happening simultaneously with installation. The long-term effect must be measured with prudent judgment as to the various successional stages expected over the next 100 years.

Lastly, the analyses of alternatives relative to NED and EQ is adequate as presented.

The summary comment concerning the deficiency of the mitigation plan demonstrates opinion rather than fact. The mitigation plan selected by the Sponsors is more than, "...fencing a small percentage of the sediment pool and grassy areas on or around the flood control structure," as stated by the comment. In fact the mitigation plan manages and preserves 173 acres of Ramadero and Mixed Brush habitats which are considered the most valuable types. In addition, 167 acres of various habitat types above the dam, 28 acres of water, 106 acres of vegetated dam and spillways, and 212 acres of vegetated dikes and borrow areas will be fenced and managed for wildlife.

Data provided by the FWS does not demonstrate that fencing 500 acres of the detention pool would significantly benefit displaced wildlife over that which is provided for with the recommended alternative. It should be evident that installation of the selected mitigation protects 173 acres of undisturbed brush habitats at the dam site. This is not a component to the mitigation plan proposed by the FWS. An area such as this will provide cover for wildlife temporarily displaced by any periodic inundation of the detention pool. Conversely, the FWS proposal does not protect habitats beyond the 5-year detention pool elevation. Thus, impacts on temporarily displaced animals could be greater.

### "Specific Comments"

Comment: "P-8 third paragraph, second sentence. What vegetative species composition and percentage cover constitutes a desirable cover? Weed control would eliminate desirable forbs that could be beneficial to wildlife and is therefore not recommended."

Response: The vegetative plan was discussed on page E-27. Species may consist of a mixture of the following: kleingrass-selection 75, Alamo switchgrass, King Ranch or caucasian bluestem, green sprangletop, englemandaisy, and maximillian sunflower. A minimum of seventy percent (70%) cover of the desirable species constitutes adequate vegetative cover. Since the major purpose of vegetation on structural works is to control erosion, herbicides may be used to lessen unwanted vegetative competition during and after establishment. Further, spot treatment with herbicides may be necessary to control woody vegetation on the spillways and embankment slopes.

Comment: "P-8, fourth paragraph, fifth sentence. The need for pesticides for the 'maintenance of structural measures' is not clear. Further explanation of the fauna [sic] to be controlled and justification is necessary."

Response: P-8. Pesticides in this statement refer to herbicides, which are used to control undersirable vegetation. The use of pesticides to control fauna (?) is not a normal procedure for operation and maintenance activities.

Comment: "E-7, first paragraph. The number of bird species found in the project area needs to be included in this paragraph in order that project impacts can be fully identified. Tables showing mammal, bird, reptile, amphibian and fish species lists would be desirable in the document. Habitat preferences of the various species inhabiting the project area should also be included. A more elaborate discussion is needed on endemic species and Mexican species which range into the U.S. only in the Tamaulipan Biotic Province. This paragraph does not specifically mention how many and which species are endemic to this area."

Response: The data requested were a part of the BTS which was reviewed by the FWS and TP&WD. Reference is made to 40 CFR Part 1502 §1502.2(a), (b), and (c) and §1502.15. Inclusion of such data in the EIS is extraneous and tends to make the document encyclopedic.

Comment: "E-7, second paragraph. More elaboration is needed on the amount and type of water-based recreation found on the Rio Grande. The number and location of farm ponds available for public fishing should be indicated. Whether or not these existing farm ponds meet the recreational demand for the area should be documented."

**Response:** The inclusion of this data serves no purpose for the decision-making process.

**Comment:** "E-15, first paragraph, second sentence. What forms of recreation were considered during the planning process that deemed this goal (NED Goal 4) unfeasible due to 'a suitable site location'? Recreational opportunities could be provided by making the site accessible to the general public and constructing trails around the site to allow for hiking and nature study."

**Response:** As stated by the goal, "...public water-based recreation...", generally refers to measures formulated to provide a water area for the enjoyment of any or all forms of recreation that are based on use of or proximity to the water. The recreation potential for water-based activities in this watershed is limited to impounded water. Therefore, a suitable site location (drainage, water yield, etc.) are precursors to achieving this goal as a project purpose.

In 1974, a cursory investigation of the watershed by SCS planners was conducted. Types of recreational experiences and an estimate of visitor-use days were investigated. The division of costs and the amount of involvement were explained to the Sponsors. Early investigations indicated a proposed floodwater retarding structure with close proximity to Rio Grande City as the site most suitable for recreation. This site was eliminated from consideration as an alternative because it did not produce economically justifiable flood prevention benefits. The floodwater retarding structure in the recommended alternative was not conducive to recreation because of topography and its distance from Rio Grande City (22 miles). The distance of 22 miles and the proximity of Rio Grande City to Falcon Reservoir, 35 miles upriver, resulted in questionable recreation benefits and Sponsor enthusiasm. Thus, on July 26, 1979, the Sponsors requested the SCS terminate investigations into water-based recreation.

The land where the proposed structure is to be constructed is privately owned. Since the purposes of the planned floodwater retarding structure are for sediment control and floodwater retardation, the Sponsors will not be required to obtain rights that will permit use of the floodwater retarding structure for either passive or active public recreation.

**Comment:** "E-15, first paragraph, fourth sentence. EQ goal #3 to establish and maintain white-winged dove habitat along the Rio Grande could be fulfilled by preserving bottomland habitat along the Rio Grande through easements whereby the landowner(s) would retain title and existing land use rights and would only be required to retain the habitat in its native state. This option should be fully considered as part of the mitigation plan."

**Response:** The habitat evaluation procedure did not identify white-winged dove habitat in the affected area. Therefore, there was no reason to mitigate. We are unaware of any sponsorship for including fish and wildlife habitat improvement (not included as mitigation) as a project purpose.

**Comment:** "E-27, third paragraph. Mitigation proposed in this paragraph appears inadequate to effectively compensate for habitat losses due to the project. Mitigation acceptable to the FWS has been previously recommended to the SCS (USDI, 1979).

"A more appropriate plan for mitigation would include the following measures:

"1. Fencing at the 5-year detention pool elevation and restricting grazing. This would protect important wetland and adjacent brush vegetation and mitigate habitat losses incurred from the floodwater retarding structure and its impounded waters. If this area were not fenced and livestock use restricted, the bordering wetland and brush vegetation would normally not be of a satisfactory quality and quantity to provide food sources and cover necessary to maintain optimum populations of waterfowl, egrets, herons, quail, deer, raccoons and other wildlife which concentrate their activities in such habitats. Because of a tendency of livestock to concentrate near the water, areas often become completely barren of vegetation which results in excessive erosion thereby increasing turbidity in the aquatic environments and reducing biotic production of food chain components necessary for fish production and waterfowl utilization.

"2. Acquiring about 100 acres of high quality brushland near the Rio Grande. This will protect important nesting habitat for white-winged doves and numerous non-game birds and mitigate the detrimental impacts resulting from dike construction. The range of many of these species in the United States is limited to these brush tracts along the Rio Grande."

**Response:** We recognize a difference of opinion exists for what each agency considers to be adequate mitigation for this project. The FWS has failed to objectively substantiate the need for additional mitigation over that which has been determined to compensate for wildlife habitat disturbed by the project. The proposal in question was evaluated with other mitigation alternatives and presented to the Sponsors. The results of the evaluation indicated that it would overly compensate for losses and the Sponsors did not select the proposal.

**Comment:** "E-33, table at top of page. Briefly describe criteria used in selecting species for habitat evaluation. Why were species

such as javelina and bobcat excluded from the evaluation? Passerines were evaluated as a single species when in fact this group represents an order of 182 avian species in Starr County, each with its own habitat requirements and preferences. Species should be selected from this group for habitat evaluation."

**Response:** The subject of this comment has been discussed in other responses. The species that were selected for evaluation should be representative of the habitat that occurs in the affected area. Additional species used as indicators would not have provided any greater understanding of project impacts and environmental setting. Reference to the passerine group in the comment is correct and would be valid except that during field investigations, passerines which are cosmopolitan to the specific habitat types were evaluated. Representative species could include mockingbird, white-crowned sparrow, scissor-tailed flycatcher, cactus wren, white-eyed vireo, loggerhead shrike, cardinal, and others.

**Comment:** "E-33, first paragraph. The qualitative measurements do not approximate the gain or loss for the selected wildlife species as the values assigned to the various habitat types were subjective."

**Response:** The present biological technology limits all habitat evaluation procedures. Other available methods were considered and the agreed-to procedure displayed in the Draft Plan and EIS was used to evaluate the habitats.

**Comment:** "E-33, second paragraph. This paragraph needs to be restated. The floodwater retarding structure will not benefit the wildlife community as a whole. The structure will create a net loss rather than a net gain as is stated in the DEIS. Creating a resting area for waterfowl and marsh birds will only attract birds from existing populations and no net gains in waterfowl and marsh birds will be made. The dam and its impoundment will result in the probable destruction of 424 acres of valuable nesting and breeding habitat for deer, white-winged and mourning doves, quail and other species of wildlife. When faced with habitat loss, displaced wildlife either seeks suitable unoccupied habitat or it dies. The latter occurs slowly over a period of time as the displaced wildlife competes with the existing animals for limited food and breeding sites in habitat that was at or over the carrying capacity prior to the displacement. The resultant increase in competition will create additional stress to wildlife and thereby reduce the reproductive rate and increase mortality. The decrease in productivity will inflict a net loss to wildlife populations."

**Response:** The text of the Draft EIS was concise and adequate discussions were presented to document and display the project impacts.

Comment: "E-33, last sentence in page. A portion of the 424-acre sediment pool should be considered as lost terrestrial habitat as there would still be a loss of 50 acres of habitat in the water area which is incorporated into the 424-acre sediment pool (see table on E-32)."

Response: The sentence must be considered in context with the entire paragraph. The statement was accurate as written.

Comment: "E-34, first and third paragraphs. These two paragraphs are contradictory. The first paragraph states that there will be a lush growth in hydrophytic vegetation which will be 'very favorable' to wildlife. The third paragraph, on the other hand, states, 'It will also be low waterfowl habitat because lack of water clarity will restrict the growth of rooted aquatic vegetation.' In leaving a major portion of the proposed reservoir unfenced, the area would turn out to be of low quality for waterfowl. Livestock would wade along the shoreline thus stirring up mud and trampling any aquatic vegetation and preventing its growth and establishment. This has been indicated to the SCS by FWS in a previous letter (USDI, 1979)."

Response: These two paragraphs are referenced to the semi-permanent water and the peripheral area subject to inundation.

The first paragraph referenced has been amended to clarify any contradiction with the second. The adverse impacts to aquatic plant production and value to waterfowl were considered as the rationale for limiting grazing by livestock. The planned mitigation provides for about 5,500 feet of protected shoreline (80 percent of the permanent and semi-permanent water). Since the majority of the permanent and semi-permanent water will be fenced to exclude most livestock grazing, the adverse impacts have been minimized.

Comment: "E-34, second paragraph, second sentence. Achieving greater diversity adjacent to the floodwater retarding structure depends on the type of management implemented. If grazing is allowed on the structure, severe erosion along the shoreline may develop causing additional sedimentation and turbidity, and would create additional operation and maintenance problems. Shoreline erosion and concentrated livestock movements along the shoreline would prohibit the establishment of emergent vegetation and thus would lessen the diversity of the biotic community. The type of vegetation that is planted on the floodwater retarding structure will also influence diversity in the biotic community. If the dam is planted solely with buffelgrass [sic], diversity would be low. The FWS recommends that a variety of vegetative species which provide food, cover and nesting sites to wildlife (as well as controlling erosion) be planted on the structure and that grazing on the structure be restricted to prevent shoreline and structural erosion."

Response: The SCS is unaware of data or studies that indicate normal grazing patterns increase erosion with the potential for limiting the structure's operational life. Adequate safeguards exist with current policies to protect the vegetated portions of the structural measures. As stated on page E-27, grazing will be restricted unless it is determined by SCS biologist that limited grazing is beneficial to wildlife.

Based on a suggestion jointly concurred in by TP&WD and the FWS, buffelgrass was deleted from the vegetative mixture. References to buffelgrass as component of the seeding mixture was not mentioned in the Draft EIS and we question the constant reference to the species.

Comment: "E-34, third paragraph, first sentence. Increased turbidity in the 50-acre water area could be minimized by fencing at the 5-year detention pool and implementing proper range management techniques in lands adjacent to and upstream from the floodwater retarding structure. Fencing at the 5-year detention pool would prevent shoreline erosion and a resultant increase in turbidity caused by livestock concentrating in and around the shoreline."

Response: The Sponsors and SCS advocate the proper use and management of all lands in the watershed area. However, as long as these agricultural areas remain in private ownership, it is the prerogative of owners and operators to determine their use and management.

In regard to fencing the 5-year detention pool, a small amount of erosion and sediment or turbidity could be suppressed by preventing livestock from utilizing the sediment pool impoundment as a drinking water source. However, it has not been demonstrated or substantiated the prevented erosion and small amount of reduced turbidity would be significant in light of the substantial acreage of dispersive soils in the drainage area of the floodwater retarding structure. There are about 700 acres of dispersive soils in the 1,266 acres flood detention pool above the sediment pool elevation alone. It is anticipated that if a significant control on turbidity in the sediment pool impoundment is effected, it will be through proper use and management of all the areas where dispersive soils are located in the structure's 93,514 acre drainage area. The planned mitigation provides for fencing about 20 percent of the 5-year detention pool.

Comment: "E-34, third paragraph, second sentence. More detailed data is needed on the physical characteristics of the sediment pool. What will the maximum depth of the pool be? What percentage of the pool will consist of shallow water?"

Response: The 50-acre surface acres of water created by the lowest ungated outlet will have a maximum depth of nine feet at the dam and will average four feet deep in the pool.

Comment: "E-34, third paragraph, third sentence. This sentence states that the 50-year water area will be marginal fish habitat, thereby contradicting the assigned habitat value in chart 1A for the water area which rated a 1.4 (low to moderate) value for fish. Water turbidity could be decreased by using proper range management techniques in adjacent lands and by limiting livestock use around the shorelines with the fencing of the sediment pool. With proper management the 50-acre water area could provide a warm-water fishery equivalent to that of a large farm pond; however, insufficient data is contained in the DEIS to effectively evaluate the potential of the water area as fish habitat."

Response: "Low to moderate" has been added to the sentence and this reflects the 1.4 value. See response statement on turbidity--E-34, third paragraph, first sentence.

Comment: "E-34, last sentence in page. A restriction in livestock grazing in and by itself cannot be accepted as mitigation for habitat loss. To offset the losses, the following measures should be considered:

- "a. Develop brush habitat where none existed before (such as in abandoned cropland) and manage primarily for wildlife.
- "b. Open areas in detention and sediment pools, and borrow areas should be planted with species beneficial to wildlife such as common ragweed (Ambrosia artemisiifolia), croton (Croton sp.), Russian olive (Elaeagnus angustifolia), autumn olive (Elaeagnus umbellata), mesquite (Prosopis juliflora), anaqua (Ehretia anacua), Texas ebony (Pithecellobium flexicaule) and granjeno (Celtis pallida).
- "c. Acquire about 100 acres of high quality brushland near the Rio Grande and manage for wildlife.
- "d. Fencing at the 5-year detention pool elevation and restricting grazing."

Response: The habitat evaluation indicates the mitigation as presented in the recommended alternative is adequate to compensate for losses.

Comment: "E-35, first paragraph. Fencing the sediment pool will, as you have indicated, reduce overgrazing and improve the habitat that would establish within the area as well as reduce water turbidity. However, please indicate why only a small percentage of the sediment pool would be fenced contrary to the recommendations of the FWS and other wildlife experts. In leaving the major portion of the sediment pool unfenced, sedimentation and turbidity would not be restricted to the unfenced area but would adversely affect the fenced area which would lie downstream from the unfenced area."

**Response:** The SCS has maintained that preserving and improving the native brush habitats was more important than preserving a modified brush habitat in the sediment pool. Further, it should be recognized that the majority of the water area is fenced.

**Comment:** "E-34, second paragraph, second sentence. The overall habitat value will not increase in the dike and borrow areas as a result of transforming existing habitats to a grassland. Charts 2, 3, and 4 infer that these areas will be planted with buffelgrass. According to the habitat description on Appendix D of the DEIS 'buffelgrass occurs in an almost pure stand' during the first few years after seeding. If buffelgrass is allowed to occur as a dominant species in the dike and borrow areas, the overall habitat value will decrease. Buffelgrass is of little or no value to wildlife."

**Response:** As this comment suggests, the recommended alternative does not simply convert existing habitat to grassland. Rather, the vegetation to be used will create areas of diversity in the present habitats. It is well documented and an established fact that brush management in strips and field borders adjacent to cropland improve the diversity of wildlife. As previously stated, buffelgrass is not a part of the seeding mixture.

**Comment:** "E-35, second paragraph, third sentence. The mere proximity of brush habitats to urban areas should not appreciably lessen their value to wildlife. Doves, quail, various passerines, small mammals and various reptiles probably utilize these areas despite their proximity to urban areas. Deer and coyotes also have been known to inhabit suitable habitat near urban areas where harassment is minimal."

**Response:** The subject of the comment would be correct if other facts were not evident. Field examination of the area revealed that wildlife, in general, is harassed by the human population. Further, severe overgrazing has eliminated all but the most hardy thorn-scrub which in turn has reduced the value of all habitats present.

**Comment:** "Appendix E, Chart 1A. Habitat values were assigned to the sediment and detention pools even though two factors are unknown: (1) the type of vegetation that the sediment pool will support, and (2) whether or not deer and quail will actually use the area. The sediment and detention pools will be periodically inundated which will have adverse impacts on quail. This fact would negate the 3 (excellent) value given to the detention pool."

**Response:** Habitat values were assigned in the field with the concurrence and agreement of technical personnel from each of the three (3) agencies at the time of evaluation. Each agency had the opportunity to predict the extent of use and value of a habitat for each species evaluated. The habitat values are

the best estimates based on current technology, available knowledge, and the prudent use of time.

**Comment:** (Appendix E, Chart 1A, continued) "Buffelgrass should be assigned a habitat value of zero (0) for all wildlife species. This type produces no food or nesting habitat for dove and quail. Buffelgrass seeds are unpalatable to dove and quail due to the dense covering of fine bristles on the seeds. Its use as cover is very low as its density restricts the movements of dove, quail and other wildlife and thus precludes their use of buffelgrass.

"Buffelgrass habitat types are also of no value to deer as dense stands of the grass make forbs, if any at all are present, unavailable to deer. Buffelgrass tends to out compete native forbs which provide food for deer and results in a monocultural type with little or no vegetative diversity (please refer to the description of the type on Appendix D, seventh paragraph, last sentence).

"Buffelgrass has little or no value to coyotes. Their chief prey base in this type, small mammals, would be unavailable as the density of buffelgrass would decrease their vulnerability and hamper the predatory efficiency of the coyote. Pure buffelgrass habitat types would also tend to support a lower diversity of small mammals."

**Response:** The opinions expressed for buffelgrass have been noted. On the contrary; however, representatives of the TP&WD have indicated that quail use buffelgrass for nesting when adjacent to homogeneous stands of brush habitats having little or no herbaceous ground cover. This concept typifies many of the areas in the watershed. Further, Kiel (1976) cites that bobwhites may use the edges of dense stands of buffelgrass for cover if food is available nearby. It is erroneous to suggest that buffelgrass has absolutely no value for all wildlife species. The subject of the comment; however, is mute since buffelgrass will not be a part of the seeding mixture.

**Comment:** "Appendix E, Charts 2, 2A, 3, 3A, 4, 4A. According to the values assigned, the conversion of brushlands to buffelgrass would result in a net gain in wildlife habitat value. As previously stated, deer, quail, mourning doves and coyotes would not benefit from the destruction of brushlands and their subsequent conversion to buffelgrass types. On the contrary, adverse impacts would be incurred by these and other wildlife species as a result of transforming valuable brushlands into buffelgrass types."

**Response:** Reference is made to the previous comment-response. SCS has maintained that dikes and associated borrow areas, each of which will be revegetated will not have a significant adverse impact. Realistically they will create an edge effect which will be beneficial to most forms of wildlife indigenous to the

affected area. The edge effect in wildlife management refers to the area of interface between two distinct habitat types. The edge between the two types will be more favorable as wildlife habitat than either considered alone. Both the number of species of animals and the total biomass will be larger in the edge area than in any comparable area contained wholly within one or the other type. Leopold (1933) recognized this phenomenon as the "Law of Interspersion." According to this concept, the density of game is directly proportional to the amount of edge for all species of low mobility that require more than one vegetative type.

Comment: "Appendix F, second paragraph, third sentence. This sentence infers that preferred jaguarundi habitat is limited to the Rio Grande bottomland which is not the case. Brush thickets along Los Olmos Creek could also qualify as preferred habitat. Reference to Feine Status Survey by J.C. Smith, Texas Parks and Wildlife Department, for distribution and occurrence of jaguarundi in South Texas, indicates that jaguarundi have been sighted in brushy areas other than the Rio Grande bottomland and the Laguna and Santa Ana National Wildlife Refuges (TPWD, 1979). The existence of this endangered cat in brush types with apparent brush species composition and density differences from that found in the Rio Grande bottomland and the two refuges has been documented. The report also mentions a jaguarundi sighting in Jim Hogg County, 21 miles south of Hebbronville in October 1979 (1978?)."

Response: Santa Ana National Wildlife Refuge is an excellent example of Rio Grande bottomland habitat. Laguna National Wildlife Refuge is a different biome being heavily influenced by the coastal environment. The occurrence of jaguarundi at these locations would infer they are not limited to a specific type of brush. It does appear; however, that the animals prefer and inhabit areas of rich vegetation and thick undergrowth (Goodwyn, 1970).

Further, Goodwyn indicates the animals do not require continuous brush, "...but one of interspersed thickets and cleared areas." Also, the jaguarundi do not need a continuous stand of brush as long as they have suitable escape cover (telephone conversation with Mr. John Smith, Texas Parks and Wildlife Department, Rockport, Texas).

Habitat preference as deduced from the literature and personal contacts with experts in the field indicate that jaguarundi are most likely to be associated with areas typical of the Rio Grande bottomland. This should not be construed to mean these are the only suitable areas, rather they and similar areas provide the optimum conditions.

Comment: "Appendix F, sixth (fifth?) paragraph, last sentence. An increase in diversity does not necessarily mean there will also be a corresponding increase in numbers of individuals.

The relationship of species diversity and species abundance is described by R.L. Smith in Ecology and Field Biology (Smith, 1966)."

Response: The concept of diversity referred to by the comment is correct. Diversity by itself does not increase the total number of individuals or all species. The theory of diversity as described by Smith (1966) does allow for an increase of individuals when productivity increases. Increases in prey species are expected because of net increases in primary productivity due to greater available moisture and the establishment of more energy efficient plants.

#### U.S. Department of Housing and Urban Development

Comment: "The Draft Environmental Impact Statement for the Los Olmos Creek Watershed, Texas, has been reviewed in the Department of Housing and Urban Development's San Antonio Area Office and Fort Worth Regional Office, and it has been determined that the department will not have comments on the statement."

Response: Noted.

#### U.S. Department of Agriculture--Office of Equal Opportunity

Comment: "We have reviewed the Draft Statement. It appears that there are no civil rights issues associated with the planned actions."

Response: Noted.

#### U.S. Department of Agriculture--Forest Service

Comment: "We have reviewed the subject document received under your cover letter dated February 17, 1981. The following is our only comment:

"Page F-2, par. 5, lines 6-9 and par. 6. As now written, this section infers that the \$19,510 O&M cost is in addition to the average annual cost of \$354,590 for the structural measures. However, page 2 of the Executive Summary in the front of the document shows that the O&M cost is included in the \$354,590 figure. We suggest rewording this section to clarify this point and thereby reduce the likelihood of misinterpretation."

Response: The narrative has been amended to clarify the statement covering average annual costs. Average annual costs total \$354,590 and include the estimated annual cost of operation, maintenance, and replacement.

#### State Agencies

#### Budget and Planning Office

Comment: "The Draft Watershed Plan and Environmental Impact Statement pertaining to Los Olmos Creek, prepared by the Service, has

been reviewed by the Budget and Planning Office and interested state agencies. Copies of the review comments are enclosed for your information and use. The State Environmental Impact Statement Identifier Number assigned to the project is 1-02-50-037.

\* \* \* \* \*

"Enclosures: Comments by Texas Parks and Wildlife Department  
State Department of Highways and  
Public Transportation  
Texas Air Control Board  
Railroad Commission of Texas  
Bureau of Economic Geology  
Texas Department of Water Resources  
Texas State Soil and Water Conservation  
Board"

Response: Noted.

Texas Parks and Wildlife Department

Comment: "Since this Department has assisted the Soil Conservation Service during field investigations and in project planning meetings, no specific comments are offered concerning the scope of this project.

"Concerning revegetation efforts on the dikes and proposed mitigation area, the use of a mixture of multiple-use plants would be beneficial to wildlife."

Response: Noted. The deletion of buffelgrass in the seeding mixture has been made per your recommendation.

State Department Highways and Public Transportation

Comment: "As we indicated in our letter of December 15, 1980, the Los Olmos Creek watershed project will have some minor effect on the State highway system. Since project inception, the Department and Soil Conservation Service have closely coordinated their proposed plans. We expect to continue working together to locate facilities for mutual benefit."

Response: Noted.

Texas Air Control Board

Comment: "We have reviewed the above cited document and found it to be consistent with the State Implementation Plan."

Response: Noted.

Railroad Commission of Texas

Comment: "No Comment"

Response: Noted.

Bureau of Economic Geology

Comment: "No Comment"

Response: Noted.

Texas Department of Water Resources

- Comment: "1. We find that the proposed flood control project does not conflict with or duplicate any of our current or planned programs, projects, or activities within the purview of our statutory statewide responsibilities relative to water resources planning, development, and management pursuant to the Texas Water Code. The proposed project appears to be in consonance with our own objectives and goals to support and foster balanced economic growth and community development throughout all regions of Texas. Therefore, we concur in USDA-SCS's explicit findings presented on page E-7, fifth paragraph, that: 'There are no existing or proposed water resource development projects of other agencies within the watershed. The works of improvement included in this plan will have no known detrimental effects on any existing or proposed downstream works of improvement, and will constitute a harmonious element in the full development of the Rio Grande Basin.'
- "2. We believe that reasonable assurances are furnished (reference: pages E-26, and E-27) that 'all applicable state laws will be complied with in the design and construction of all structural measures,' and that appropriate measures will be adopted during the construction phase to control soil erosion and the discharge of other pollutants inherent to the construction process will be held to minimum practical limits.
- "3. From the standpoint of our responsibilities and activities pursuant to the Texas Water Code, we concur in principle with the proposed project. We particularly support the assurances given on pages E-24, first paragraph, which are presented as a basic element of the recommended project, indicating that: 'The County (of Starr) has enacted and is enforcing a zoning ordinance (by order) to regulate urban expansion in this area of jurisdiction below the 100-year flood elevation. This county will continue to enforce this ordinance, which will complement the recommended structural works of improvement.'

(Underlining added for emphasis.) We feel that these assurances are complementary elements of the proposed structural installation project."

Response: Noted.

Texas State Soil and Water Conservation Board

Comment: "Our involvement with the sponsors and the Soil Conservation Service staff working on the project leads us to believe that the objectives of the sponsors will be satisfied by this work plan and that the project measures called for in the work plan are the best practical solution to the watershed problems. We urge that all associated with the project from this point forward seek expedient implementation of the plan."

Response: Noted.

Texas Agricultural Extension Service

Comment: "This letter is in response to the recently received draft Environmental Impact Statement and Watershed Plan for Los Olmos Creek Watershed in Jim Hogg and Starr counties. Dr. H.O. Kunkel also has requested that I provide comments for Texas A&M University in regard to these draft documents. Following review of these materials, we have no substantive changes to suggest. We recognize that the proposed structures have long been needed for amelioration of existing flood hazards."

Response: Noted.

Interested Organization

Frontera Audubon Society

Comment: "1) The report is confusing as to the number of acres actually involved in, and affected by, this project. The entire watershed (204,470 acres)? The 93,514 acre drainage area suggested by Figure 3, Project Map? The 3,123 acres required for the recommended alternative structures?"

Response: The 204,470 acres are the entire watershed area for Los Olmos Creek Watershed (page E-4). The 93,514 acres are the drainage area controlled by the proposed floodwater retarding structure (page E-24). The 3,123 acres are the areal extent of land rights required for construction and proper functioning (page E-39). Of this amount only 1,978 acres of various habitat types will actually be impacted by the recommended alternative (page E-32).

Comment: "2) There is lack of detail as to how the 3,123 acres (required for the floodwater retarding structure and dikes) are presently divided into habitat types. Page E-31 states

'...seven habitat types occur in the watershed...Each...with the exception of Rio Grande bottomland will be impacted...'. Since different habitat types are both directly and indirectly affected by this project, the environmental impact on each type must be stated and the mitigation plan must address and encompass each of these types in detail."

Response: Only 1,978 acres of the 3,123 acres will be impacted by construction activity. The remaining acres are easements and will not be adversely impacted in the biological sense. Reference is made to the appropriate discussion and footnote on page E-39 of the Draft EIS.

The tabulations presented on pages E-32 and E-33 and the habitat evaluation charts contained in Appendix E (Charts 1 through 4) portray the impacts on selected species by habitat types. The adequacy of the selected mitigation plan was evaluated by the same methods. The mitigation plan concentrates protection and management on those habitats considered the most valuable habitat types; i.e., the Ramadero and Mixed Brush. This endeavor for protection and management was accomplished by the selected mitigation plan. The Rio Grande Bottomland habitat will not be impacted by the recommended alternative. Therefore, further evaluations are not necessary and add nothing to the understanding of impacts.

Comment: "3) There is no factual basis for the statement that 'No significant impacts will result from the infrequent inundation of the retarding (detention) pool.' (p. P-2). This is especially so in light of the fact that this pool occupies 1,690 acres! Since the project claims benefits of protection to municipal and agricultural interests from a 100-year-flood as a major plus, then adverse impacts of the project with that same 100-year-flood must be addressed. They are not."

Response: An adequate discussion of impacts caused by inundation of the detention pool was contained on page E-34. The 1,690 acres mentioned for the detention pool contains 50 surface acres at lowest ungated outlet, 374 acres of sediment pool, and 30 acres of the revegetated area. These acres must be subtracted from the figure to determine actual impacts. This leaves 1,236 acres that will receive periodic inundation. The amount and frequency of inundation (refer to the tabulations on E-34 of the Draft EIS) will be so infrequent so as to have no significant impact. Any wildlife impact, that does occur should be favorable because of the irrigation effect and be conducive to more lush herbaceous vegetation. This effect will offset any adverse effect from the temporary displacement of ground dwelling species.

Comment: "4) The tabulation on p. E-33 relative to wildlife and habitat value is insufficient. No where are impacts on the other stated 59 species of mammals, 36 species of snakes, 19

lizards, 2 land turtles, and 21 amphibians calculated. The breakdown of avifauna into 'quail, mourning dove, passerines and waterfowl' is biased towards commercially exploited species, incomplete, and insufficiently broken down. Inadequate discussion of impacts to fish &/or other aquatic flora and fauna is presented. What happens to the naturally occurring arroyo community of plant and animal life when Los Olmos Creek is dammed?"

Response: The groups of animals mentioned are those known to occur in the Tamaulipan Biotic Province (page E-7) and may or may not occur in the watershed area. The majority of these species do not occur in the watershed. These animal groups were mentioned only as a discussion of the biotic natural history of the area. The rationale for selection of species that were evaluated was discussed with the comments from the USDI.

Because of ephemeral flow conditions, no aquatic flora or fauna in Los Olmos Creek will be impacted. Very little impact is expected other than the actual area of dam construction which is a small percentage of arroyo ecosystem. The arroyo ecosystem is synonymous with the Ramadero habitat type which is thoroughly discussed.

Comment: "5) Sufficient evidence to support the position that 'the floodwater retarding structure will benefit the wildlife community' (p. E-33) is lacking. The structural requirements of the floodwater retarding structure and its attendant sediment pool, and the subsequent fencing of both, leave doubts as to whether they can actually provide 'a water supply for all wildlife species.' The 150 acres of destroyed brush habitat is not mitigated. Changing the nature of a habitat, from terrestrial to aquatic, is a loss to terrestrial wildlife forms and cannot be construed otherwise."

Response: The floodwater retarding structure and associated water habitats will create diversity in the biotic community. Although this increase in diversity will not be favorable to all species, the general effect to the biological community should be favorable. The water area will be available to all wildlife species whose home range encounters the pool.

The mitigation plan manages and preserves 173 acres of Ramadero and Mixed Brush habitats which are considered the most valuable types. Also, 167 acres of various habitat types above the dam will be fenced and managed for wildlife.

Comment: "6) The statement 'Recognized wetlands do not exist in the watershed.' (p. E-7) is insufficient. What definition of wetlands is being used and how was the determination of their non-existence made?"

Response: Fish and Wildlife Service Circular 39 was used to define wetlands and the watershed was surveyed in the field to

determine the existence of any wetlands. No recognized wetlands were found or known to exist in the watershed. Circular 39 was cited in Appendix C of the Draft EIS.

Comment: "7) We do not find evidence to support the wide-ranging statements and analysis on pp. E-7 & 8 under Significant Concerns and find them disturbing. Examples:

"- The report allots a major degree of impact to the 'risk to loss of life', considers this risk significant to decision making and concludes the project will eliminate the threat. No where is this threat documented.

"- At the same time the report attributes a minor degree of impact of the project to streams and does not consider streams significant in decision making. Is not the structural objective of the project the damming of a stream? Why undertake such a project if the stream is insignificant? How can one dam a stream and not significantly affect it? Los Olmos is one of only a few intermittent [sic] streams existing in this area of the Valley and as such any impact to it must be viewed as having great significance. These intermittent streams add greatly to the diversity of the flora and fauna found in this region.

"- Additionally, protected non-game species are given minor degree of impact status and are not considered significant to decision making. Numerous documented peripheral, endemic and migratory non-game species exist in the watershed area and will be necessarily impacted by the project. This is not adequately addressed."

Response: It is suggested that pages E-9 and E-10 and the pictures presented on pages E-11, E-12, and E-13 be read and observed. Surely the commentor will agree that more than five feet of water in homes constitutes a threat to life. At these depths children, elderly, and handicapped persons are especially susceptible to injury and drowning.

The term "stream" on E-7 refers to streamflow conditions. Since the normal flow in Los Olmos Creek is ephemeral, the stated impacts for evaluation of alternatives were not significant to decisionmaking. By definition, ephemeral streams flow only during periods of surface runoff; they are otherwise dry. Intermittent streams have continuous flow through some seasons of the year, but little or no flow throughout other seasons. If the project significantly affected normal streamflows, it would have become important to the decisionmaking and would have been evaluated in greater detail in the discussion of impacts.

Impacts on all species of protected nongame were evaluated and as stated on E-7 are a part of the support data. If the

proposed alternatives would have significantly affected the population of a protected nongame species, it would have become significant to the decisionmaking process.

Comment: "8) Why could not all project goals be addressed? (p. E-14) The discussion presented is unsatisfactory."

Response: The EIS has been prepared in accordance with final rules and regulations published by CEQ on November 28, 1978, "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act." Appropriate SCS procedures and policy for compliance with those rules and regulations have been followed. The goals stated on E-14 are the result of multidisciplinary planning in order to assess the possibility for assistance by Public Law 566. Since the Small Watershed Program is a federally-assisted program to local units of government, sponsorship of each project purpose is a requirement for detailed planning and implementation. The stated goals were preliminary and based on early identification of watershed problems and possible solutions. As detailed planning progressed, there was a continual refinement and reiteration process. This process sifted many goals either due to lack of sponsorship or nonfeasibility. The remaining goals as stated on E-15 were the basis for formulation of alternatives.

Comment: "9) The mitigative plans for wildlife habitat loss in the recommended alternative plan call for the fencing of 686 acres at the three structures. These plans are totally unacceptable. Among other things, they:

- "a) do not address the necessity for mitigation to proceed hand in hand with construction of the project;
- "b) are not sufficiently detailed as to timetables and species included in the plans for vegetative re-planting;
- "c) are not specific in their actual management plans;
- "d) do not address the issue of the total number of acres directly or indirectly affected by the project;
- "e) do not address the different types of habitat affected in the total acreage;
- "f) do not properly take into account the impacts on endangered and review species during actual project construction;
- "g) do not properly take into account the impacts on endangered fauna after project completion;

- "h) effectively ignore the impacts of the project as completed on review flora in the area;
- "i) are incomplete as to the numbers and types of wildlife losses incurred;
- "j) do not properly take into account the effect of the sediment pool on flora and fauna;
- "k) do not properly take into account the effect of the detention pool on flora and fauna;
- "l) do not adequately take into account the effect of the project on the naturally occurring arroyo community of Los Olmos Creek."

- Response:
- (a). Mitigation is a part of the recommended alternative and will be installed concurrent with construction and vegetation.
  - (b). The vegetation plan will be initiated as soon as feasible and plant species used to revegetate will depend upon species commercially available. A detailed vegetative plan will be developed during project installation.
  - (c). The document presented the amount of management the mitigation area will receive on page E-27.
  - (d and e). The affected acres and habitat types were presented in the document on pages E-27, 28, 29, 31, 32, 33, 34, and Appendices E and F.
  - (f, g, and h). The impacts on endangered species were discussed on pages E-35, E-36, and Appendix F.
  - (i). The exact numbers of wildlife individuals vary from year to year. Therefore, it is unrealistic to assess impacts to individual animals. The accepted mode of analysis is to assess impacts (effects) on habitats and project changes in those habitats as it may affect a particular species. This item was discussed in Comment Number 4.
  - (j and k). Discussed on pages E-33 through E-35.
  - (l). The arroyo community is synonymous with the Ramadero habitat and discussed in the impacts statement as such.

Comment: "10) The section on Plant and Animal Problems (p. E-10) should be enlarged, with specific consideration given to how this project will affect these problems. If only small tracts of preferred habitat for unique, threatened and endangered species remain in the Rio Grande region, it logically follows that not only should those small tracts be preserved intact but that additional care should be taken to enlarge them and

to preserve 'marginal' and 'approaching preferred' habitat for the species. This is clearly not done with this project."

Response: The Plant and Animal Problem Section is provided for the knowledge of the decisionmakers so that they will have both a greater understanding of the biological resources of the area and be informed as to the problems of the biotic community with or without the project. This section does not necessarily provide goals or purposes of the project. The expressed purpose of the watershed plan was flood damage reduction. Although a goal was expressed to preserve and enhance Rio Grande Bottomland habitat in the watershed, we are not aware of any sponsorship for this purpose.

The mitigation plan which was designed to offset impacts of the project, preserves and enhances 173 acres of brush habitats below the floodwater retarding structure and 167 acres of habitat above the structure.

The small tracts of preferred habitat referred to in the problem section on E-10 pertains to Rio Grande Bottomland habitats. The Los Olmos Creek Watershed Plan will not impact this habitat type.

Comment: "11) We do not concur the anticipated effects on endangered species as stated in the tabulation on p. E-36. Construction itself must be viewed as having a negative effect on jaguars, jaguarundis and ocelots, as should periodic flooding of the detention pool. Increased human development and activity in these areas should also be counted as a negative effect for both plants and animals listed. How is the stated negative effect to Urtica chamaedryoides var. runyonii and Frankenia johnstonii being offset?"

Response: The existence of the mentioned feline species have not been documented in the watershed. In addition, it is doubtful that the project will have any effect (Appendix F and tabulation on E-36 of the Draft EIS). Feline species tend to have large home ranges and are quite mobile therefore, construction activity will have only a temporary effect, if any.

The impacts to Urtica chamaedryoides and Frankenia johnstonii are being offset by preserving areas of their habitat in the mitigation areas from future brush control and livestock overuse.

Comment: "12) The section on Flood Plain Regulation (p. E-24) should be clarified and expanded. The expenditure of \$3,424,250 of federal monies to obtain a cost benefit ratio of 1.5:1.0 over the existing 1.2:1.0 must be questioned. The project as recommended reduces the 'average annual area inundated' by 25.6% (p. E-29). The majority of the area will still flood. If the population of this area increases, a not unlikely

possibility, it is also not unlikely that the future will find more and more human development in an already unsuitable, stressed ecosystem."

**Response:** The section dealing with Flood Plain Regulation is adequate and has been endorsed by the Texas Department of Water Resources. It is erroneous to suggest that an expenditure of \$3,424,250 will bring about a net change of only 0.3:1.0 in the benefit cost ratio. Rather the ratio presented for present conditions (with project) is average annual project benefits compared to average annual project costs. The increase of benefits for projected conditions is average annual project benefits (with projections) compared to average annual project costs. In the latter analyses, projections were made for residential content values.

The primary goal of the project was to reduce average annual flood damages. While the weighted average annual area inundated is reduced by 25.6 percent, it should be noted that the weighted average annual damage reduction is 90.5 percent (page E-38 of the Draft EIS).

Population in Starr County is projected to increase (E-5). Development in the flood plain, however, will be limited to that which exists now and that which would be allowed with enforcement of existing flood plain regulations.

**Comment:** "13) We question the sagacity of spending \$823,360 more in federal money (recommended alternative #1 over #2) for a project which not only adversely impacts an additional 149 acres of wildlife habitat but which also benefits only 43 individual land owners. We also question the actual purposes of a project in which the local sponsors support a considered alternative (#3) which requires a greater amount of federal money, destroys a greater portion of wildlife habitat, and is not cost effective."

**Response:** The rationale for alternative selection is presented in the Plan and EIS. Selection of Alternative 2 would forego benefits to the majority of ranchers and farmers in the flood plain and would require an estimated \$676,140 of additional land rights costs. The additional costs are borne solely by the Sponsors.

**Comment:** "14) Allusions in this report to the project's ability to enhance the standard of living in the area are questionable. That the project will generate employment for local residents during construction is undocumented. It can be argued that the project will encourage further settlement in an area already beset by a low standard of living and high unemployment rates, amplifying these problems. It is also spurious to suggest that monies spent on flood disaster repair would necessarily be available to local residents for 'raising the standard of living' (p. E-38)."

**Response:** Conceptually, any employment, anywhere in the Nation, of otherwise unemployed or underemployed resources that results from a project represents a valid NED benefit. However, primarily because of identification and measurement problems, and because unemployment is regarded as a temporary phenomenon, the Principles and Standards specifically permit only those labor resources employed onsite in the construction or installation of a structural or a nonstructural measure. The Principles and Standards state that the WRC will designate planning regions that have unemployed or underemployed labor resources. Areas to be used in the analysis are those areas with "substantial and persistent unemployment," as designated by the Economic Development Administration (EDA), U.S. Department of Commerce, as eligible under Subsection 1 of Title IV of the Public Works and Economic Development Act of 1965 (Pub. L. 89-136, as amended). Only the portion of project construction activity located in a designated area is eligible for employment benefits. All benefits claimed are clearly justifiable both in terms of availability of amounts of unemployed and/or underemployed labor and their skills and occupations.

As stated on page E-6, the 1979 annual unemployment rate for Starr County was 31.3 percent. This high rate qualifies this project for employment benefits.

We believe it is reasonable to assume local tax monies could be shifted from repair of flood damages to investments or improvement in other public facilities.

**Comment:** "15) The relationship between local short term uses of the environment and the maintenance and enhancement of long-term productivity is not sufficiently developed. Its absence is profound."

**Response:** We believe the discussion is adequate as presented.

LIST OF PREPARERS <sup>1/</sup>

SCS Watershed Planning Staff

Colwick, Allan B. Staff Leader. B.S. Agricultural Engineering-Texas Tech University. Environmental Development-Colorado State University.

Mr. Colwick served as civil and hydraulic engineer-Watershed planning staff for fourteen years. He has served as watershed planning staff leader from 1974 to present.

Mr. Colwick is a member of the Soil Conservation Society of America, American Society of Agricultural Engineers, and National Association of Conservation Districts. He is a registered Professional Engineer in Texas.

Baird, F. Charles. Civil Engineer. B.S. in Agricultural Engineering, Texas Tech University.

For eleven years Mr. Baird worked in various locations in Texas as agricultural engineer and area engineer. He has experience in irrigation, grade stabilization, drainage, livestock waste management, terracing, and livestock water development. From 1976 to present, he has served as planning engineer on the watershed planning staff.

Mr. Baird is a member of the Soil Conservation Society of America and American Society of Agricultural Engineers. He is a registered Professional Engineer in Texas.

Berry, Buford G. Agricultural Economist. B.S. Agronomy-Louisiana State University.

Mr. Berry has served over twenty-eight years with the Soil Conservation Service at various locations in Louisiana and Texas. He has held positions as an area soil scientist and soil conservationist on the river basin staff. For the past fifteen years, he has served as an agricultural economist on the watershed planning staff.

Bircket, Max D. Geologist. B.S. in Geology-Oklahoma State University. Environmental Development-University of Georgia.

Mr. Bircket has seven years experience as a microbiology laboratory technician. For the past 12 years he has served as watershed planning staff geologist working on projects throughout Texas with principal responsibilities concerning erosion, sedimentation, ground-water, and engineering geology.

He is a member of the Association of Engineering Geologists.

Bryant, H. Harold. Soil Conservationist. B.F. Forestry/Range Management-Stephen F. Austin State University. M.S. Range Management/Biology-Sul Ross State University. Environmental Development-University of Georgia.

1/ The preliminary watershed plan and environmental impact statement was reviewed and concurred in by State Staff specialists having responsibility for engineering, economics, soils, geology, hydrology, biology, archeology, and landscape architecture. This review was followed by review of the document and supporting data by the South Technical Service Center. The TSC concurred in the technical aspects of the plan and EIS. The SCS National Office and TSC concurred with the engineering layout of the structural measures.

Mr. Bryant served both government and private industry with a broad range of experience in environmental sciences prior to joining the Soil Conservation Service. For the last six years, he has served as resource conservationist analyzing resource data and writing environmental impact statements.

He is a member of the Society for Range Management, Soil Conservation Society of America, and Texas Organization for Endangered Species.

Featherston, James W. Agricultural Economist. B.S. Agricultural Economics-Texas A&M University.

Mr. Featherston has served over three years with the Soil Conservation Service in Texas. Since 1978, he has served as an agricultural economist on the watershed planning staff.

Hailey, James L. Hydraulic Engineer. B.S. and M.S. Agricultural Engineering-Texas A&M University. Soil Mechanics and Foundation Engineering-Utah State University. Statistical Methods in Hydrology-University of Maryland. Flood Plain Hydrology and Hydraulics-University of Texas.

For six years Mr. Hailey has served as agricultural engineer and civil engineer at various locations in Texas. He has served as hydraulic engineer on the watershed planning staff from 1977 to present.

Mr. Hailey is a member of the American Society of Agricultural Engineers and Soil Conservation Society of America. He is a registered Professional Engineer in Texas.

Haynes, Arthur B. Civil Engineering Technician. Texas Tech University. Advance study courses, "Hydraulics" and "Computations and Quantities."

For the past 22 years, Mr. Haynes has served as engineering aid, surveying aid, supervisory surveying aid, engineering aid general, and civil engineering technician.

He is a member of the Soil Conservation Society of America and is a Certified Civil Engineering Technician with the Institute for the Certification of Engineering Technicians.

McPherson, Jr., William T. Biologist. B.S. Wildlife Management/Range Management-University of Arizona.

For four years, Mr. McPherson worked for the Soil Conservation Service in various locations in Texas serving as a soil conservationist and range conservationist. From 1975 to present he has served as a biologist on the watershed planning staff.

Mr. McPherson is a member of Wildlife Society, Texas Chapter of American Fisheries Society, and Texas Organization for Endangered Species. Certification as a Professional Wildlife Biologist is pending.

Peevy, Buel L. Civil Engineering Technician.

Mr. Peevy has three years experience as a surveyor for oil exploration. For the past 20 years he has served as an engineering aid, surveying technician, and civil engineering technician on a watershed planning staff. Mr. Peevy periodically serves as an instructor for the Basic Surveying Course at the South Technical Service Center in Fort Worth.

He is a Certified Senior Civil Engineering Technician with the Institute for the Certification of Engineering Technicians and is a member of the American Society of Certified Engineering Technicians.

SCS Field Office

Gonzalez, Silvestre. District Conservationist. B.S. Agronomy-Texas A&M University.

Mr. Gonzalez has served over twenty-two years with the Soil Conservation Service at various locations in Texas. He has held positions as a soil conservationist, soil scientist, and district conservationist. For the past seven years he has served as district conservationist in Rio Grande City.

He is a member of the Soil Conservation Society of America. Certification as a Professional Agronomist is pending.

SCS Technical Support Staff

Cole, Nancy J. Archeologist. B.A. and M.A. Anthropology-University of Texas at Austin.

Ms. Cole has participated in numerous archeological field schools and contract archeological survey work. Since 1976 she has served as staff archeologist for the Soil Conservation Service and periodically serves as an instructor for archeological courses at Temple Junior College.

She is a member of the Society of Professional Archeologists, Society for American Archeology, American Anthropological Association, Council of Texas Archeologists, Texas Archeological Society, and Texas State Historical Society.

Consultant

Hester, Thomas R. Professor of Anthropology. Ph.D-University of California at Berkeley.

Dr. Hester is Director of the Center for Archeological Research at the University of Texas at San Antonio. He is credited with administration of more than 170 projects and has produced 225 publications.

He is a member of the Society for American Archeology; Council of Texas Archeologists; Fellow, Texas Archeology Society; and Executive Committee, Association of Field Archeology.

Other

Perez, Roy, Sam Spiller, and Paul Lazerine of the Fish and Wildlife Service (Office of Ecological Services-Corpus Christi, Texas) provided technical inputs into species impacted, habitat types, habitat values, and mitigation alternatives.

Waggerman, Gary, of Texas Parks and Wildlife Department (Edinburg, Texas) provided technical inputs into species impacted, habitat types, habitat values, and mitigation alternatives.

## INDEX

Affected Environment, E-4-8, Appendix D  
Alternatives, E-1, E-2, E-15-16, E-17, E-18-21(Plates 1-4), E-22-23  
Consultation and Review with Appropriate Agencies, E-40-76  
Cultural Resources, E-2, E-7-8, E-23, E-37, Appendix A  
Economic and Social, E-5-6, E-10, E-14, E-37-39, Appendix A  
Employment, E-39, Appendix A  
Employment Benefits, E-23, E-39, Appendix A  
Endangered Species, E-2, E-7-8, E-36-37, Appendix F  
Environmental Consequences, E-1, E-24-39  
Environmental Quality (EQ), E-14-16, E-17, Appendix A  
Equal Opportunity, E-39  
Flood Plain Regulation, E-15, E-24  
Flood Prevention, E-27, E-39, Appendix A  
Floodwater Damage, E-8, E-9-10, E-11-13, E-14-15, E-23, E-37-39  
Goals, E-2, E-14-15, E-23  
Incremental Analysis, E-15  
Irreversible and Irretrievable Commitments of Resources, E-1, E-40  
List of Preparers, E-77-80  
Mitigation, E-3, E-4, E-8, E-15, E-27, E-28(Plate 5), E-33, E-34, E-35-36  
National Economic Development (NED), E-1, E-14-17, Appendix A  
Nonstructural Alternative, E-15-16, E-17, E-21(Plate 4), E-22, E-23  
Nonstructural Option, E-17  
Plant and Animal Problems, E-10  
Prime Farmland, E-6, E-8, E-23, E-29, E-40  
Project Formulation, E-2, E-14-15  
Project Purposes and Goals, E-2, E-14, E-15, E-23  
Projects of Other Agencies, E-7  
Recommended Alternative, E-1-3, E-7, E-15, E-17, E-18(Plate 1),  
E-23, E-24-39, E-40, Project Map(Appendix G)  
Recommended Alternative Selection and Summary Comparison, E-17, E-22-23  
Scoping, E-3  
Short-Term Uses vs. Long-Term Productivity, E-1, E-40  
Significant Concerns, E-3, E-7-8, E-27  
Structural Alternatives, E-15-16, E-17, E-18-20(Plates 1-3), E-22-23  
Structural Measures, E-24-28, Project Map(Appendix G)  
Structural Options, E-2-3, E-16-17  
Summary, E-1-4  
Terrestrial and Aquatic Habitat, E-10, E-14-17, E-22, E-23, E-27, E-32-36,  
Appendix A, Appendix D, Appendix E  
Unemployment, E-6, E-14, E-39  
Unresolved Issues, E-4  
Visual Resources, E-7-8, E-31  
Watershed Problems, E-9-14  
Water and Air Resources, E-7-8, E-31-32  
Wetlands, E-7-8

APPENDIX A

Display Accounts for Recommended Alternative

Recommended Alternative

NATIONAL ECONOMIC DEVELOPMENT ACCOUNT

Los Olmos Creek Watershed, Texas

<u>Components</u>	<u>Measures of effects</u> (Average Annual) <u>1/ 2/</u>	<u>Components</u>	<u>Measures of effects</u> (Average Annual) <u>1/ 2/</u>
-------------------	---	-------------------	---

Beneficial effects:

A. The value to users of increased outputs of goods and services

1. Flood prevention (projected)

\$512,000

2. Employment benefits

\$11,840

Adverse effects:

A. The value of resources required for a plan

1. One floodwater retarding structure and associated dikes at Rio Grande City and El Sauz.

\$335,080

a. Project installation  
b. Operation, maintenance, and replacement

\$19,510

Total beneficial effects \$523,840

Total adverse effects

\$354,590

Net beneficial effects \$169,250

1/ 100-years at 7.375 percent interest

2/ Price base: September 1979 current normalized prices for agricultural, 1979 prices for all other.

Recommended Alternative

ENVIRONMENTAL QUALITY ACCOUNT

Los Olmos Creek Watershed, Texas

Components

Measures of Effects

Beneficial and adverse effects:

- |  |   |
|--|---|
| A. Areas of natural beauty.                                  | 1. Destroy rangeland vegetation on 368 acres.   |
|  | 2. Visual quality will be modified by floodwater retarding structure, dikes, and use thereof.                                     |
|  | 3. Create 50 acres of water surface in the sediment pool up to the lowest ungated outlet.   |
| B. Quality considerations of water, land, and air resources. | 1. Modify the use of land on 686 acres necessary for wildlife mitigation.   |
| C. Biological resources and selected ecosystems.             | 1. Destroy terrestrial wildlife habitat and food supply on the equivalent of 50 acres.  |
|  | 2. Create 50 acres of fish habitat in the sediment pool.  |
|  | 3. Provide 50 surface acres in the sediment pool for migratory waterfowl.   |
|  | 4. Minimize adverse effects of construction on upland habitat by planting selected areas to vegetation beneficial to wildlife.    |
|  | 5. Fence 686 acres adjacent to dikes and floodwater retarding structure to compensate for adverse impacts to terrestrial habitat. |
| D. Cultural resources.                                       | 1. Occasionally inundate six archeological sites located in the detention pools.  |
|  | 2. Inundate 10 archeological sites located in the sediment pool.  |
|  | 3. Disturb eight archeological sites located in the dam and dikes.  |

Recommended Alternative

ENVIRONMENTAL QUALITY ACCOUNT - continued-2

Los Olmos Creek Watershed, Texas

<u>Components</u>	<u>Measures of Effects</u>
E. Irreversible or irretrievable commitments.	<ol style="list-style-type: none"><li>1. Commit 3,123 acres of rangeland and cropland to construction and functioning of floodwater retarding structure and dikes.</li><li>2. Commit labor, materials, and energy for construction of measures.</li><li>3. Commit 13 acres of prime farmland to dikes.</li></ol>



Recommended Alternative

REGIONAL DEVELOPMENT ACCOUNT (continued-2)

Los Olmos Creek Watershed, Texas

<u>Components</u>	<u>Measures of effects</u> Region 1/ Rest of Nation	<u>Components</u>	<u>Measures of effects</u> Region 1/ Rest of Nation
B. Employment:		B. Employment:	
Beneficial effects:		Adverse effects:	
1. Increase in number and types of jobs.		1. Decrease in number and types of jobs	
a. Permanent employment	2 permanent jobs		
b. Employment for project construction	137 man-years of employment during the installation period (4 years)		
Total beneficial effects	2 permanent jobs 137 man-years of employment over the installation period (4 years)	Total adverse effects	0 0
		Net beneficial effects	2 permanent jobs 137 man-years of employment over the installation period (4 years)

1/ Lower Rio Grande Region of Texas, as designated in the Texas Interindustry Project, Office of the Governor, Division of Planning Coordination.

Recommended Alternative

REGIONAL DEVELOPMENT ACCOUNT (continued-3)

Los Olmos Creek Watershed, Texas

<u>Components</u>	<u>Measures of effects</u>	
	Region <u>1/</u>	Rest of Nation
<b>Population Distribution</b>		
Beneficial effects	Create 137 man-years of employment over the installation period (4 years) and 2 permanent jobs.	---
Adverse effects	---	---
<b>Regional Economic Base and Stability</b>		
Beneficial effects	Create 137 man-years of employment over the installation period (4 years) and 2 permanent jobs. Reduce average annual flooding from 3,588 acres to 2,669 acres. Eliminate flood damages to owners and occupants of about 499 residential properties, 78 commercial establishments, and 36 public buildings.	---
Adverse effects	---	---

1/ Lower Rio Grande Region of Texas, as designated in the Texas Interindustry Project, Office of the Governor, Division of Planning Coordination.

Recommended Alternative

SOCIAL WELL-BEING ACCOUNT

Los Olmos Creek Watershed, Texas

Components

Measures of effects

Beneficial and adverse effects:

- |                             |   |
|-----------------------------|---|
| A. Real Income              | 1. Create 137 man-years of employment over the installation period (4 years) and 2 permanent jobs.  |
|                             | 2. Create projected regional income benefit of \$523,840.   |
|                             | 3. Local costs of \$81,880 annually will be borne by the County. The percentage of contributions to local costs by income classes is not readily available.   |
| B. Life, health, and safety | 1. Provide protection from the 100-year flood event to 499 residential properties, 78 commercial establishments, and 36 public buildings. Future threats of loss of life and displacements in the urban areas during floods will be eliminated. |

APPENDIX B

Letters of Comment Received on Draft Environmental Impact Statement



REPLY TO  
ATTENTION OF:

SWGED-E

DEPARTMENT OF THE ARMY  
GALVESTON DISTRICT, CORPS OF ENGINEERS  
P.O. BOX 1229  
GALVESTON, TEXAS 77553

14 MAY 1981

Mr. George C. Marks  
State Conservationist  
Soil Conservation Service  
U.S. Department of Agriculture  
P.D. Box 648  
Temple, TX 76501

Dear Mr. Marks:

This is in regard to your draft Watershed Plan and Environmental Impact Statement for Los Dmos Creek Watershed, Jim Hogg and Starr Counties, Texas which was referred to us from the Office of Chief of Engineers.

We have reviewed the plan and statement and concur with your findings. Since the proposed work appears to involve placement of fill material in wetlands and will require a Department of the Army permit, it is recommended you contact Mr. Marcos De La Rosa, Chief, Permit Branch, at FTS 527-6378.

Sincerely,

A handwritten signature in black ink, appearing to read "James M. Sigler".

JAMES M. SIGLER  
Colonel, Corps of Engineers  
District Engineer



**UNITED STATES DEPARTMENT OF COMMERCE**  
**The Assistant Secretary for Policy**  
Washington, D.C. 20230

APR 20 1981

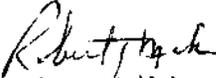
Mr. George C. Marks  
State Conservationist  
U.S. Department of Agriculture  
Soil Conservation Service  
P.O. Box 648  
Temple, Texas 76501

Dear Mr. Marks:

This is in reference to your draft watershed plan and environmental impact statement entitled "Los Olmos Creek Watershed, Jim Hogg and Starr Counties, Texas." The enclosed comment from the National Oceanic and Atmospheric Administration's National Ocean Survey (NOAA/NOS) is forwarded for your consideration.

Thank you for giving us an opportunity to provide this comment, which we hope will be of assistance to you. We would appreciate receiving four (4) copies of the final statement.

Sincerely,

  
Robert T. Miki  
Deputy Assistant Secretary for  
Regulatory Policy (Acting)

Enclosure Memo from Robert B. Rollins  
NOAA/NOS



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL OCEAN SURVEY  
Hockville, Md. 20852

MAR

OA/C52x6:JVZ

TO: PP/EC - Thomas K. Bick  
FROM: OA/C5 - Robert B. Rollins *[Signature]*  
SUBJECT: DEIS #8102.20 - Los Olmos Creek Watershed--Jim Hogg and Starr Counties,  
Texas

The subject statement has been reviewed within the areas of the National Ocean Survey's (NOS) responsibility and expertise, and in terms of the impact of the proposed action on NOS activities and projects.

Geodetic control survey monuments may be located in the proposed project area. If there is any planned activity which will disturb or destroy these monuments, NOS requires not less than 90 days' notification in advance of such activity in order to plan for their relocation. NOS recommends that funding for this project includes the cost of any relocation required for NOS monuments. For further information about these monuments, please contact Mr. John Spencer, Director, National Geodetic Information Center (OA/C18), or Mr. Charles Novak, Chief, Network Maintenance Branch (OA/C172), at 6001 Executive Boulevard, Rockville, Maryland 20852.



**10TH ANNIVERSARY 1970-1980**  
**National Oceanic and Atmospheric Administration**

A young agency with a historic  
tradition of service to the Nation

FEDERAL ENERGY REGULATORY COMMISSION  
WASHINGTON 20426

IN REPLY REFER TO:

April 14, 1981

Mr. George C. Marks  
State Conservationist  
U. S. Department of Agriculture  
P.O. Box 648  
Temple, Texas 76501

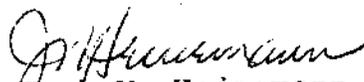
Dear Mr. Marks:

I am replying to your request of February 17, 1981 to the Federal Energy Regulatory Commission for comments on the Draft Environmental Impact Statement for the Los Olmos Creek Watershed, Texas. This Draft EIS has been reviewed by appropriate FERC staff components upon whose evaluation this response is based.

Our review of the report indicates that none of the proposed structures would afford an economical opportunity for hydropower development, nor would the project affect responsibilities of the Commission.

Thank you for the opportunity to review this statement.

Sincerely,



Jack M. Heinemann

Advisor on Environmental Quality



Centers for Disease Control  
Atlanta, Georgia 30333

(404) 262-6649

April 10, 1981

Mr. George C. Marks  
State Conservationist  
U.S. Department of Agriculture  
Soil Conservation Service  
P.O. Box 648  
Temple, Texas 76501

Dear Mr. Marks:

We have reviewed the Draft Watershed Plan and Environmental Impact Statement (EIS) for Los Olmos Creek Watershed, Jim Hogg and Starr Counties, Texas. We are responding on behalf of the Public Health Service.

No mention is made of either beneficial or adverse impacts of this project on vector or other populations. The Final EIS should describe the extent of any existing or anticipated vector problems. There should be a description of which agency or authority will provide mosquito control activities, the proposed control measures, the kinds and amounts of insecticides, and the application rates and methods of application.

On page 8, the Draft EIS mentions noxious weed control. However, there is no discussion of the control measures to be followed, the methods of chemical application, the types of herbicides to be used, their toxicity, and which agency or authority will provide these control measures.

The Final EIS should state whether completion of this project will require the relocation of any families. If relocation is required, a discussion of family relocation needs and how these needs will be met should be provided.

Since some of the land affected is prime farmland, the EIS should state whether the project conforms to the Council on Environmental Quality's and the Department of Agriculture's joint memorandum of August 30, 1976, concerning analysis of prime and unique farmland.

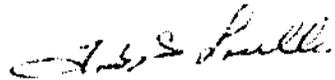
The Final EIS should contain a statement about the applicability of Executive Order 11990, Protection of Wetlands, and also Executive Order 11988, Floodplain Management.

A statement should be made about anticipated air pollution levels that may be created by construction activities. This should include pollution levels from equipment as well as construction dusts. Potential noise pollution from construction equipment should also be addressed including noise levels and their duration.

Page 2 - Mr. George C. Marks

Thank you for the opportunity of reviewing the Draft EIS. We would appreciate receiving a copy of the Final EIS when it is issued.

Sincerely yours,



Frank S. Lisella, Ph.D.  
Chief, Environmental Affairs Group  
Environmental Health Services Division  
Center for Environmental Health



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VI

1201 ELM STREET

DALLAS, TEXAS 75270

March 13, 1981

Mr. George C. Marks  
State Conservationist  
USDA, Soil Conservation Service  
P. O. Box 648  
Temple, Texas 76501

Dear Mr. Marks:

We have completed our review of the Draft Environmental Impact Statement (EIS) on the proposed Los Dimos Creek Watershed Project to be located in Jim Hogg and Starr Counties, Texas. The purpose of this project is to reduce average annual flood damages to urban property in Rio Grande City and El Sauz, reduce average annual flood damage to prime agricultural land, eliminate the threat of loss of human life and improve the quality of life and social well-being to the residents of the area. The recommended works of improvement include one floodwater retarding structure and two dikes to be constructed during a four-year installation period. The proposed action will directly benefit 499 residences, 78 business establishments, 36 public buildings, and 43 owners and operators of agricultural land.

We classify your Draft EIS as LO-1. Specifically, we have no objections to the project as it relates to Environmental Protection Agency's (EPA) legislative mandates. The EIS contained sufficient information to evaluate adequately the possible environmental impacts which could result from project implementation. Our classification will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions under Section 309 of the Clean Air Act.

Definitions of the categories are provided on the enclosure. Our procedure is to categorize the EIS on both the environmental consequences of the proposed action and on the adequacy of the EIS at the draft stage, whenever possible.

We appreciated the opportunity to review the Draft EIS. Please send our office five (5) copies of the Final EIS at the same time it is sent to the Office of Federal Activities, U.S. Environmental Protection Agency, Washington, D.C.

Sincerely,

A handwritten signature in cursive script that reads "Frances E. Phillips".

Frances E. Phillips  
Acting Regional Administrator

Enclosure

## ENVIRONMENTAL IMPACT OF THE ACTION

### LO - Lack of Objections

EPA has no objections to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

### ER - Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to re-assess these aspects.

### EU - Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

## ADEQUACY OF THE IMPACT STATEMENT

### Category 1 - Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

### Category 2 - Insufficient Information

EPA believes the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

### Category 3 - Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement. If a draft statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make a determination.



# United States Department of the Interior

OFFICE OF THE SECRETARY  
WASHINGTON, D.C. 20240

ER-81/292

MAY 8 1981

Mr. George C. Marks  
State Conservationist  
Soil Conservation Service  
Department of Agriculture  
Post Office Box 648  
Temple, Texas 76501

Dear Mr. Marks:

Thank you for the letter of February 17, 1981, requesting our views and comments on the document containing the draft watershed work plan and draft environmental impact statement for the Los Olmos Creek Watershed, Jim Hogg and Starr Counties, Texas. We wish to provide the following comments for your consideration and use in finalizing the document.

The work plan and the draft statement do not address the requirements of Executive Orders on Floodplain Management and Protection of Wetlands, EO 11988 and EO 11990, respectively. Section 3(b) of EO 11988 and Section 3 of EO 11990 require agency requests for new authorizations or appropriations transmitted to the Office of Management and Budget to indicate whether the proposals are in accordance with the criteria set forth in the EO's. The final document should contain this information.

The work plan does not contain an adequate fish and wildlife mitigation plan for the proposed work plan and the impact statement does not contain a valid assessment of the project-induced fish and wildlife impacts. Support for this conclusion is set forth as follows:

1. The basic problem with the mitigation plan is the failure to compensate for the project-induced losses to the fish and wildlife base. We believe the deficiency in mitigation planning stems from the inappropriate application of the habitat evaluation procedure which tends to minimize the fish and wildlife resources losses. For example, the mitigation plan fails to compensate for the project-caused losses to the brushland habitat in the study area. Adequate compensation is vital to the survival of the mourning and white-winged doves, the white-tailed deer, the javelina, and numerous species of non-game wildlife.

2. The habitat values presented and the resultant calculation of net gains or losses of wildlife habitat provided an inadequate assessment of project-related impacts. High values have been arbitrarily assigned to habitat types with little or no value to wildlife and show positive gains to wildlife which realistically would not occur as a result of the project. This leads to an understatement of the measures needed to mitigate project-induced losses.

3. Species selections for habitat evaluation appear to be arbitrary as criteria for the selection process is not documented in the DEIS. Important game species such as javelina are excluded from evaluation. Passerines are judged as one species when, in fact, this group of birds includes 182 species in Starr County. Passerines should not be evaluated as a group, as several species are confined to particular types of habitat such as grasslands, brushlands, and wetlands. Specific examples include the green jay which is confined to brushlands and the meadowlark which is confined to open grasslands. In assessing the value of a certain habitat type for passerines as a whole, the values assigned would be selecting against bird species which require specific habitat types for survival. Representative small mammal and reptile species are not included in the habitat assessment.

4. The habitat evaluation methods used to assess impacts rely on the premise that each habitat type, regardless of size, is independently capable of supporting a species. This concept does not hold true for wide-ranging species such as deer and coyotes or for species such as mourning doves which use different habitat types for each survival function (brushlands for resting, roosting and nesting; open fields for feeding; ponds for watering).

5. Another major deficiency in the SCS habitat evaluation methodology is that it fails to account for losses over the life of the project. Thus, this system yields an inaccurate assessment of impacts to fish and wildlife resources as was previously indicated by our Fish and Wildlife Service (FWS) letters to the SCS.

6. The document does not effectively present and analyze the impacts of all five alternatives with regard to NED and EQ so that an objective evaluation of all alternatives can be made not only by the SCS but by other agencies and individuals reviewing the document.

In summary, we do not believe the watershed work plan contains an adequate fish and wildlife mitigation plan even though the Corpus Christi office of the U.S. Fish and Wildlife Service has provided your office with mitigation proposals over the past two years.

Mr. George C. Marks

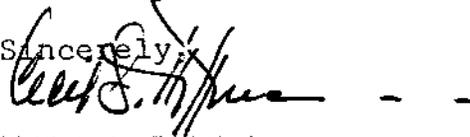
3

The problem stems from the questionable approach being used in applying habitat evaluation procedures, and this leads to a significant understatement of the project-induced fish and wildlife resource losses. We strongly recommend further coordination between our respective agencies to develop a mitigation plan which will have our mutual support. As now formulated, we are concerned that the selected alternative would, in the flood structure alone, needlessly destroy over 500 acres of the area's better brush habitat without an acceptable mitigation plan. We also believe that, in order to properly mitigate habitat losses incurred as a result of Alternative 1, the mitigation plan must provide more than just fencing of a small percentage of the sediment pool and grassy areas on or around the flood control structure. The mitigation plan should provide habitats for the displaced wildlife populations that would remain throughout the life of the project. These can be provided by acquiring conservation easements to fence 500 acres at the 5-year flood detention level.

Attached as an enclosure to this letter is a series of specific comments dealing with the work plan and the draft environmental statement. These comments elaborate on the issues discussed in this letter.

Thank you for the opportunity to review the draft watershed plan and the draft environmental impact statement.

Sincerely,



GEORGE C. MARKS

Special Assistant to

Assistant SECRETARY

Enclosure

## LOS OLMOS WATERSHED WORK PLAN AND DRAFT ENVIRONMENTAL STATEMENT

### Specific Comments

P-8, third paragraph, second sentence. What vegetative species composition and percentage cover constitutes a desirable cover? Weed control would eliminate desirable forbs that could be beneficial to wildlife and is therefore not recommended.

P-8, fourth paragraph, fifth sentence. The need for pesticides for the "maintenance of structural measures" is not clear. Further explanation of the fauna to be controlled and justification is necessary.

E-7, first paragraph. The number of bird species found in the project area needs to be included in this paragraph in order that project impacts can be fully identified. Tables showing mammal, bird, reptile, amphibian, and fish species lists would be desirable in the document. Habitat preferences of the various species inhabiting the project area should also be included. A more elaborate discussion is needed on endemic species and Mexican species which range into the United States only in the Tamaulipan Biotic Province. This paragraph does not specifically mention how many and which species are endemic to this area.

E-7, second paragraph. More elaboration is needed on the amount and type of water-based recreation found on the Rio Grande. The number and location of farm ponds available for public fishing should be indicated. Whether or not these existing farm ponds meet the recreation demand for the area should be documented.

E-15, first paragraph, second sentence. What forms of recreation were considered during the planning process that deemed this goal (NED Goal 4) unfeasible due to "a suitable site location"? Recreational opportunities could be provided by making the site accessible to the general public and constructing trails around the site to allow for hiking and nature study.

E-15, first paragraph, fourth sentence. EQ Goal 3, to establish and maintain white-winged dove habitat along the Rio Grande, could be fulfilled by preserving bottomland habitat along the Rio Grande through easements whereby the landowner(s) would retain title and existing land use rights and would only be required to retain the habitat in its native state. This option should be fully considered as part of the mitigation plan.

E-27, third paragraph. Mitigation proposed in this paragraph appears inadequate to effectively compensate for habitat losses due to the project. Mitigation acceptable to the FWS has been previously recommended to the SCS.

A more appropriate plan for mitigation would include the following measures:

1. Fencing at the 5-year detention pool elevation and restricting grazing. This would protect important wetland and adjacent brush vegetation and mitigate habitat losses incurred from the floodwater retarding structure and its impounded water. If this area were not fenced and livestock use restricted, the bordering wetland and brush vegetation would normally not be of a satisfactory quality and quantity to provide food sources and cover necessary to maintain optimum populations of waterfowl, egrets, herons, quail, deer, raccoons, and other wildlife which concentrate their activities in such habitats. Because of a tendency of livestock to concentrate near the water, areas often become completely barren of vegetation which results in excessive erosion thereby increasing turbidity in aquatic environments and reducing biotic production of food chain components necessary for fish production and waterfowl utilization.
2. Acquiring about 100 acres of high quality brushland near the Rio Grande. This will protect important nesting habitat for white-winged doves and numerous non-game birds and mitigate the detrimental impacts resulting from dike construction. The range of many of these species in the United States is limited to these brush tracts along the Rio Grande.

E-33, table at top of page. Briefly describe the criteria used in selecting species for habitat evaluation. Why were species such as javelina and bobcat excluded from the evaluation? Passerines were evaluated as a single species when, in fact, this group represents an order of 182 avian species in Starr County, each with its own habitat requirements and preferences. Species should be selected from this group for habitat evaluation.

E-33, first paragraph. The qualitative measurements do not approximate the gain or loss for the selected wildlife species as the values assigned to the various habitat types were subjective.

E-33, second paragraph. This paragraph needs to be restated. The floodwater retarding structure will not benefit the wildlife community as a whole. The structure will create a net loss rather than a net gain as is stated in the DEIS. Creating a resting area for waterfowl and marsh birds will only attract birds from existing populations and no net gains in waterfowl and marsh birds will be made. The dam and its impoundment will result in the probable destruction of 424 acres of valuable nesting and breeding habitat for deer, white-winged doves, mourning doves, quail, and other species of wildlife. When faced with habitat loss, displaced wildlife either seeks suitable unoccupied habitat or it dies. The

latter occurs slowly over a period of time as the displaced wildlife competes with the existing animals for limited food and breeding sites in habitat that was at or over the carrying capacity prior to the displacement. The resultant increase in competition will create additional stress to wildlife and thereby reduce the reproductive rate and increase mortality. The decrease in productivity will inflict a net loss to wildlife populations.

E-33, last sentence on page. A portion of the 424-acre sediment pool should be considered as lost terrestrial habitat as there would still be a loss of 50 acres of habitat in the water area which is incorporated into the 424-acre sediment pool (see table on E-32).

E-34, first and third paragraphs. These two paragraphs are contradictory. The first paragraph states that there will be a lush growth in hydrophytic vegetation which will be "very favorable" to wildlife. The third paragraph, on the other hand, states, "It will also be low waterfowl habitat because lack of water clarity will restrict the growth of rooted aquatic vegetation." In leaving a major portion of the proposed reservoir unfenced, the area would turn out to be of low quality for waterfowl. Livestock would wade along the shoreline, thus stirring up mud and trampling any aquatic vegetation and preventing its growth and establishment. This has been indicated to the SCS by the FWS in a previous letter.

E-34, second paragraph, second sentence. Achieving greater diversity adjacent to the floodwater retarding structure depends on the type of management implemented. If grazing is allowed on the structure, severe erosion along the shoreline may develop causing additional sedimentation and turbidity, and would create additional operation and maintenance problems. Shoreline erosion and concentrated livestock movements along the shoreline would prohibit the establishment of emergent vegetation and thus would lessen the diversity of the biotic community. The type of vegetation that is planted on the floodwater retarding structure will also influence diversity in the biotic community. If the dam is planted solely with buffelgrass, diversity would be low. The FWS recommends that a variety of vegetative species which would provide food, cover, and nesting sites to wildlife (as well as controlling erosion) be planted on the structure and that grazing on the structure be restricted to prevent shoreline and structural erosion.

E-34, third paragraph, first sentence. Increased turbidity in the 50-acre water area could be minimized by fencing at the 5-year detention pool and implementing proper range management techniques in lands adjacent to and upstream from the floodwater retarding structure. Fencing at the 5-year detention pool would prevent shoreline erosion and a resultant increase in turbidity caused by livestock concentrating in and around the shoreline.

E-34, third paragraph, second sentence. More detailed data is needed on the physical characteristics of the sediment pool. What will be the maximum depth of the pool? What percentage of the pool will consist of shallow water?

E-34, third paragraph, third sentence. This sentence states that the 50-acre water area will be marginal fish habitat, thereby contradicting the assigned habitat value in chart 1A for the water area which rated a 1.4 (low to moderate) value for fish. Water turbidity could be decreased by using proper range management techniques in adjacent lands and by limiting livestock use around the shoreline with the fencing of the sediment pool. With proper management, the 50-acre water area could provide a warm-water fishery equivalent to that of a large farm pond; however, insufficient data is contained in the DEIS to effectively evaluate the potential of the water area as fish habitat.

E-34, last sentence on page. A restriction in livestock grazing in and by itself cannot be accepted as mitigation for habitat loss. To offset the losses, the following measures should be considered:

- a. Develop brush habitat where none existed before (such as in abandoned cropland) and manage primarily for wildlife.
- b. Open areas in detention and sediment pools, and borrow areas should be planted with species beneficial to wildlife such as common ragweed (Ambrosia artemisifolia), croton (Croton sp.), Russian olive (Elaeagnus angustifolia), autumn olive (Elaeagnus umbellata), mesquite (Prosopis juliflora), anaqua (Ehretia anacua), Texas ebony (Pithecellobium flexicaule), and granjeno (Celtis pallida).
- c. Acquire about 100 acres of high quality brushland near the Rio Grande and manage for wildlife.
- d. Fencing at the 5-year detention pool elevation and restricting grazing.

E-35, first paragraph. Fencing the sediment pool will, as you have indicated, reduce overgrazing and improve the habitat that would establish within the area as well as reduce water turbidity. However, please indicate why only a small percentage of the sediment pool would be fenced contrary to the recommendations of the FWS and other wildlife experts. In leaving the major portion of the sediment pool unfenced, sedimentation and turbidity would not be restricted to the unfenced area but would adversely affect the fenced area which would lie downstream from the unfenced area.

E-35, second paragraph, second sentence. The overall habitat value will not increase in the dike and borrow areas as a result of transforming existing habitats to a grassland. Charts 2, 3, and 4 infer that these areas will be planted with buffelgrass. According to the habitat description in Appendix D of the DEIS "buffelgrass occurs in an almost pure stand" during the first few years after seeding. If buffelgrass is allowed to occur as a dominant species in the dike and borrow areas, the overall habitat value will decrease. Buffelgrass is of little or no value to wildlife.

E-35, second paragraph, third sentence. The mere proximity of brush habitats to urban areas should not appreciably lessen their value to wildlife. Doves, quail, various passerines, small mammals, and various reptiles probably utilize these areas despite their proximity to urban areas. Deer and coyotes also have been known to inhabit suitable habitat near urban areas where harassment is minimal.

Appendix E, Chart 1A. Habitat values were assigned to the sediment and detention pools even though two factors are unknown: (1) the type of vegetation that the sediment pool will support, and (2) whether or not deer and quail will actually use the area. The sediment and detention pools will be periodically inundated which will have adverse impacts on quail. This fact would negate the 3 (excellent) value given to the detention pool.

Buffelgrass should be assigned a habitat value of zero (0) for all wildlife species. This type produces no food or nesting habitat for dove and quail. Buffelgrass seeds are unpalatable to dove and quail due to the dense covering of fine bristles on the seeds. Its use as cover is very low as its density restricts the movement of dove, quail, and other wildlife and thus precludes their use of buffelgrass.

Buffelgrass habitat types are also of no value to deer as dense stands of the grass make forbs, if any at all are present, unavailable to deer. Buffelgrass tends to out compete native forbs which provide food for deer and results in a monocultural type with little or no vegetative diversity (please refer to the description of the type in Appendix D, seventh paragraph, last sentence).

Buffelgrass has little or no value to coyotes. Their chief prey base in this type, small mammals, would be unavailable as the density of buffelgrass would decrease their vulnerability and hamper the predatory efficiency of the coyote. Pure buffelgrass habitat types would also tend to support a lower diversity of small mammals.

Appendix E, Charts 2, 2A, 3, 3A, 4, 4A. According to the values assigned, the conversion of brushlands to buffelgrass would result in a net gain in wildlife habitat value. As previously stated, deer, quail, mourning doves, and coyotes would not benefit from the destruction of brushlands and their subsequent conversion to buffelgrass types. On the contrary, adverse impacts would be incurred by these and other wildlife species as a result of transforming valuable brushlands into buffelgrass types.

Appendix F, second paragraph, third sentence. This sentence infers that preferred jaguarundi habitat is limited to the Rio Grande bottomland which is not the case. Brush thickets along Los Olmos Creek could also qualify as preferred habitat. Reference to Feline Status Survey by J.C. Smith of Texas Parks and Wildlife Department, for distribution and occurrence of jaguarundi in South Texas, indicates that jaguarundi have been sighted in brushy areas other than the Rio Grande bottomland and the Laguna and Santa Ana National Wildlife Refuges. The existence of this endangered cat in brush types with apparent brush species composition and density differences from that found in the Rio Grande bottomland and the two refuges has been documented. The report also mentions a jaguarundi sighting in Jim Hogg County 21 miles south of Hebbronville in October 1979.

Appendix F, sixth paragraph, last sentence. An increase in diversity does not necessarily mean there will also be a corresponding increase in numbers of individuals. The relationship of species diversity and species abundance is described by R.L. Smith in Ecology and Field Biology (Smith, 1966).



REGION VI

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT  
FORT WORTH REGIONAL OFFICE  
221 WEST LANCASTER AVENUE  
P.O. BOX 2905  
FORT WORTH, TEXAS 78113

IN REPLY REFER TO:

April 6, 1981

George C. Marks  
State Conservationist  
United States Department of Agriculture  
Soil Conservation Service  
P.O. Box 648  
Temple, Texas 76501

Dear Mr. Marks:

The Draft Environmental Impact Statement for the Los Olmos Creek Watershed, Texas, has been reviewed in the Department of Housing and Urban Development's San Antonio Area Office and Fort Worth Regional Office, and it has been determined that the department will not have comments on the statement.

Sincerely,

  
Victor J. Hancock  
Environmental Clearance Officer

UNITED STATES DEPARTMENT OF AGRICULTURE  
OFFICE OF THE SECRETARY  
WASHINGTON, D.C. 20250

OFFICE OF EQUAL OPPORTUNITY

IN REPLY

REFER TO:

8140

SUBJECT: Draft Environmental Statement, Los  
Olmos Creek Watershed, Texas

MAR 3 1981

TO:

George C. Marks  
State Conservationist

THRU:

David Montoya, Director  
Equal Opportunity and Civil Rights  
Soil Conservation Service

We have reviewed the Draft Statement. It appears that there are no civil rights issues associated with the planned actions.

Thank you for the opportunity to comment.

  
JAMES ERAZIER  
Director

UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE

1720 Peachtree Road, N. W.  
Atlanta, Georgia 30367

March 2, 1981

**REPLY TO:** 3510 Watershed Protection and  
Flood Prevention (PL 566)

**SUBJECT:** Los Olmes Creek Watershed, Texas  
January 1981 Draft Plan and Environmental  
Impact Statement

**TO:** George C. Marks  
State Conservationist  
Soil Conservation Service  
P. O. Box 648  
Temple, Texas 76501



We have reviewed the subject document received under your cover letter dated February 17, 1981. The following is our only comment:

Page F-2, par. 5, lines 6-9 and par. 6. As now written, this section infers that the \$19,510 O&M cost is in addition to the average annual cost of \$354,590 for the structural measures. However, page 2 of the Executive Summary in the front of the document shows that the O&M cost is included in the \$354,590 figure. We suggest rewording this section to clarify this point and thereby reduce the likelihood of misinterpretation.

We appreciate the opportunity to review and comment on the Plan and EIS, and look forward to receiving a copy of the final EIS when it is published.

*Robert D. Raisch*  
Fa ROBERT D. RAISCH  
Area Director



OFFICE OF THE GOVERNOR

WILLIAM P. CLEMENTS, JR.  
GOVERNOR

April 16, 1981

Mr. George C. Marks, State Conservationist  
Soil Conservation Service  
U. S. Department of Agriculture  
P. O. Box 648  
Temple, Texas 76501

Dear Mr. Marks:

The Draft Watershed Plan and Environmental Impact Statement pertaining to Los Olmos Creek, prepared by the Service, has been reviewed by the Budget and Planning Office and interested state agencies. Copies of the review comments are enclosed for your information and use. The State Environmental Impact Statement Identifier Number assigned to the project is 1-02-50-037.

The Budget and Planning Office appreciates the opportunity to review this project. If we can be of any further assistance during the environmental review process, please do not hesitate to call.

Sincerely,



F. R. Spies, Manager  
General Government Section  
Budget and Planning Office

epg

Enclosures: Comments by Texas Parks and Wildlife Department  
State Department of Highways and Public  
Transportation  
Texas Air Control Board  
Railroad Commission of Texas  
Bureau of Economic Geology  
Texas Department of Water Resources  
Texas State Soil and Water Conservation  
Board

cc Mr. Allen Colwick  
Watershed Planning Staff

TEXAS  
GAMES AND WILDLIFE DEPARTMENT



CHARLES D. TRAVIS  
EXECUTIVE DIRECTOR

4701 South School Road  
Austin, Texas 78744

COMMISSIONERS

JOE K. FULTON  
Lubbock

EDWIN L. COX, JR.  
Dallas

W. B. DSBORN, JR.  
Santa Elena

MEMBERS

J. H. BASS  
Houston, Fort Worth

R. PAXTON  
Houston, Palestine

JOE JOHNSON  
Austin

RECEIVED

MAR 20 1981

Budget/Planning

March 19, 1981

Mr. Paul T. Wrotenbery, Director  
Governor's Budget and Planning Office  
Attention: General Government Section  
Post Office Box 13561, Capitol Station  
Austin, Texas 78711

Re: Los Olmos Creek Watershed Plan and  
Draft Environmental Impact Statement  
(EIS No. 1-02-50-037)

Dear Mr. Wrotenbery:

Since this Department has assisted the Soil Conservation Service during field investigations and in project planning meetings, no specific comments are offered concerning the scope of this project.

Concerning revegetation efforts on the dikes and proposed mitigation area, the use of a mixture of multiple-use plants would be beneficial to wildlife.

I appreciate the opportunity to review this project.

Sincerely,

A handwritten signature in cursive script, appearing to read "Charles D. Travis".

Charles D. Travis  
Executive Director

CDT:RWS:gv



COMMISSION  
 STATE DEPARTMENT OF HIGHWAYS  
 AND PUBLIC TRANSPORTATION  
 DENNIS GREEN  
 BOARD CHAIRMAN

STATE DEPARTMENT OF HIGHWAYS  
 AND PUBLIC TRANSPORTATION  
 AUSTIN, TEXAS 78701

RECEIVED  
 MAR 17 1981  
 ENGINEER DIRECTOR  
 M. G. GOODE  
 Budget/Planning

March 13, 1981

IN REPLY REFER TO  
 FILE NO.

D8-E 854

Draft Environmental Statement  
 Starr and Jim Hogg Counties

Los Olmos Creek Watershed

Mr. Paul T. Wrotenbery, Director  
 Governor's Budget and Planning Office  
 Sam Houston Building, 7th Floor  
 14th and San Jacinto Streets  
 Austin, Texas

Dear Mr. Wrotenbery:

Thank you for your memorandum of March 4, 1981, transmitting the draft environmental statement covering the Los Olmos Creek Watershed. A preliminary copy of the draft statement had previously been furnished to us by your office in November, 1980.

As we indicated in our letter of December 15, 1980, the Los Olmos Creek watershed project will have some minor effect on the State highway system. Since project inception, the Department and Soil Conservation Service have closely coordinated their proposed plans. We expect to continue working together to locate facilities for mutual benefit.

Sincerely yours,

M. G. Goode  
 Engineer-Director

By: *Marcus L. Yancey Jr.*  
 Marcus L. Yancey, Jr.  
 Deputy Engineer-Director

# TEXAS AIR CONTROL BOARD

6330 HWY. 290 EAST  
AUSTIN, TEXAS 78723  
512/451-5711

JOHN L. BLAIR  
Chairman  
CHARLES R. JAYNES  
Vice Chairman

BILL STEWART, P. E.  
Executive Director



WILLIAM N. ALLAN  
VITTORIO K. ARGENTO, P. E.  
FRED HARTMAN  
D. JACK KILIAN, M. D.  
OTTO R. KUNZE, Ph. D., P. E.  
FRANK H. LEWIS  
WILLIAM D. PARISH

April 3, 1981

RECEIVED

APR 8 1981

Budget/Planning

Mr. Paul T. Wrotenbery, Director  
Governor's Budget and Planning Office  
Attn: General Government Section  
P.O. Box 12428  
Austin, Texas 78711

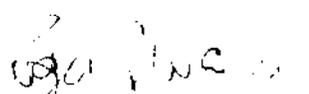
Subject: Los Olmos Creek Watershed, Jim Starr and Hogg  
Counties; EIS Number 1-02-50-037

Dear Mr. Wrotenbery:

We have reviewed the above cited document and found it  
to be consistent with the State Implementation Plan.

Thank you for providing us the opportunity to review the  
document. If we can assist further, please contact me.

Sincerely,

  
Roger R. Wallis, Deputy Director  
Standards and Regulations Program

cc: Mr. Robert Guzman, Regional Supervisor, Harlingen



OFFICE OF THE GOVERNOR

WILLIAM P. CLEMENTS, J. I.  
GOVERNOR

March 4, 1981  
TRANSMITTAL MEMORANDUM

RECEIVED

MAR 13 1981

Budget/Planning

TO: Review Participants

DATE COMMENTS DUE TO  
BUDGET AND PLANNING OFFICE: 4/6/81

- Aeronautics Commission
- Air Control Board
- Animal Health Commission
- Bureau of Economic Geology
- Coastal and Marine Council
- Department of Agriculture
- Department of Health
- Department of Highways and Public Transportation
- Department of Water Resources
- Texas Forest Service
- General Land Office
- Historical Commission

- Industrial Commission
- Parks and Wildlife Department
- Public Utilities Commission
- Railroad Commission
- Soil and Water Conservation Board
- Texas Energy and Natural Resources Advisory Council
- Governor's Office of Regional Development
- Texas Dept. of Community Affairs

Draft EIS     Other    EIS Number 1-02-50-037

Project Title Los Olmos Creek Watershed

Jim Starr and Hogg Counties

Originating Agency U.S. Dept. of Agriculture, Soil Conservation Service

Pursuant to the National Environmental Policy Act of 1969, Office of Management and Budget Circular A-95, and the Texas Policy for the Environment (1975), the Governor's Budget and Planning Office is responsible for securing the comments and views of local and State agencies during the environmental impact statement review process.

Enclosed for your review and comment is a copy of the above cited document. This Office solicits your comments and asks that they be returned on or before the above due date. For additional information, Allen Colwick or Harold Bryant are available at the Soil Conservation Service in San Marcos (512/392/7158).

For questions on this project, contact Ward Goessling at (512) 475- 6021.

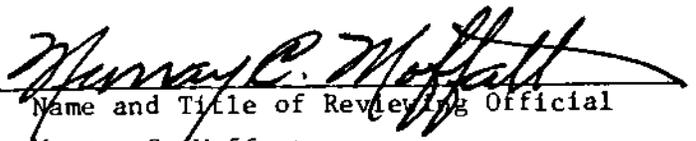
Please address your agency's formal comments to: Mr. Paul T. Wrotenbery, Director  
Governor's Budget and Planning Office  
Attention: General Government Section  
P.O. Box 12428  
Austin, Texas 78711

Suggested Questions to be Considered by Reviewing Agencies:

1. Does the proposed project impact upon and is it consistent with the plans, programs and statutory responsibilities of your agency?
2. What additional specific effects should be assessed?
3. What additional alternatives should be considered?
4. What better or more appropriate measures and standards should be used to evaluate environmental effects?
5. What additional control measures should be applied to reduce adverse environmental effects or to avoid or minimize the irreversible or irretrievable commitment of resources?
6. How serious would the environmental damage from this project be, using the best alternative and control measures?
7. What specific issues require further discussion or resolution?
8. Does your agency concur with the implementation of this project?

As a part of the environmental impact statement review process, the Budget and Planning Office forwards to the originating agency all substantive comments which are formally submitted. If, after analyzing this document, you conclude that substantive comments are unnecessary, you may wish to so indicate by checking the box below and forwarding the form to this office. This type of response will indicate receipt of this document by your agency and that no formal response will be prepared.

No Comment.

  
Name and Title of Reviewing Official  
Murray C. Moffatt  
Engineer

March 12, 1981

~~Railroad Commission of Texas (Oil and Gas Division)~~  
Agency



OFFICE OF THE GOVERNOR

WILLIAM P. CLEMENTS, J. I.  
GOVERNOR

March 4, 1981  
TRANSMITTAL MEMORANDUM

SSW  
RECEIVED

MAR 9 1981

Budget/Planning

TO: Review Participants

DATE COMMENTS DUE TO  
BUDGET AND PLANNING OFFICE: 4/6/81

- Aeronautics Commission
- Air Control Board
- Animal Health Commission
- Bureau of Economic Geology
- Coastal and Marine Council
- Department of Agriculture
- Department of Health
- Department of Highways and Public Transportation
- Department of Water Resources
- Texas Forest Service
- General Land Office
- Historical Commission

- Industrial Commission
- Parks and Wildlife Department
- Public Utilities Commission
- Railroad Commission
- Soil and Water Conservation Board
- Texas Energy and Natural Resources Advisory Council
- Governor's Office of Regional Development
- Texas Dept. of Community Affairs

Draft EIS     Other    EIS Number 1-02-50-037

Project Title Los Olmos Creek Watershed  
Jim Starr and Hogg Counties

Originating Agency U.S. Dept. of Agriculture, Soil Conservation Service

Pursuant to the National Environmental Policy Act of 1969, Office of Management and Budget Circular A-95, and the Texas Policy for the Environment (1975), the Governor's Budget and Planning Office is responsible for securing the comments and views of local and State agencies during the environmental impact statement review process.

Enclosed for your review and comment is a copy of the above cited document. This Office solicits your comments and asks that they be returned on or before the above due date. For additional information, Allen Colwick or Harold Bryant are available at the Soil Conservation Service in San Marcos (512/392/7158).

For questions on this project, contact Ward Goessling at (512) 475- 6021.

Please address your agency's formal comments to: Mr. Paul T. Wrotenbery, Director  
Governor's Budget and Planning Office  
Attention: General Government Section  
P.O. Box 12428  
Austin, Texas 78711

MAR 5 1981

Suggested Questions to be Considered by Reviewing Agencies:

1. Does the proposed project impact upon and is it consistent with the plans, programs, and statutory responsibilities of your agency?
2. What additional specific effects should be assessed?
3. What additional alternatives should be considered?
4. What better or more appropriate measures and standards should be used to evaluate environmental effects?
5. What additional control measures should be applied to reduce adverse environmental effects or to avoid or minimize the irreversible or irretrievable commitment of resources?
6. How serious would the environmental damage from this project be, using the best alternative and control measures?
7. What specific issues require further discussion or resolution?
8. Does your agency concur with the implementation of this project?

As a part of the environmental impact statement review process, the Budget and Planning Office forwards to the originating agency all substantive comments which are formally submitted. If, after analyzing this document, you conclude that substantive comments are unnecessary, you may wish to so indicate by checking the box below and forwarding the form to this office. This type of response will indicate receipt of this document by your agency and that no formal response will be prepared.

No Comment.

  
E. G. Wermund, Associate Director  
Name and Title of Reviewing Official

Bureau of Economic Geology  
Agency

TEXAS DEPARTMENT OF WATER RESOURCES

1700 N. Congress Avenue  
Austin, Texas



Harvey Davis  
Executive Director

March 27, 1981

RECEIVED

MAR 31 1981

Budget/Planning

TEXAS WATER COMMISSION

Felix McDonald, Chairman

Dorsey B. Hardeman

Joe R. Carroll

TEXAS WATER DEVELOPMENT BOARD

Louis A. Beeherl, Jr., Chairman

John H. Garrett, Vice Chairman

George W. McCleskey

Glen E. Roney

W. O. Bankston

Louie A. "Bo" Pilgrim

Mr. Paul T. Wrotenbery, Director  
Governor's Budget and Planning Office  
P.O. Box 13561, Capitol Station  
Austin, Texas 78711

Dear Mr. Wrotenbery:

Re: U. S. Department of Agriculture, Soil Conservation Service (USDA-SCS)--  
Draft Watershed Plan and Environmental Impact Statement (WP/EIS) for  
Los Olmos Creek Watershed, Jim Hogg and Starr Counties, Texas. (Authority:  
Watershed Protection and Flood Prevention Act, P.L. 83-566, as Amended.)  
January 1981. (State Reference: EIS-1-02-50-037.)

In response to your March 4 memorandum, the Texas Department of Water Resources (TDWR) has reviewed the referenced draft report relative to the proposed construction by the USDA-SCS of: (1) a 13,715-acre-foot-capacity floodwater retarding structure, at an estimated cost of \$1,710,000; and (2) 20,577 linear feet of urban flood protection earth dikes at the cities of El Sauz (pop. 35), and Rio Grande City (pop. 7,100) at an estimated cost of \$2,421,640. These facilities are intended to provide improved flood protection for an estimated 613 urban properties, and 43 farm units and agricultural lands in the two said cities, and in the intervening reaches of the Los Olmos Creek flood plain between these two cities. The report indicates that the floodwater retarding structure will be designed to detain upper Los Olmos Creek watershed runoff from a storm having a 33-year recurrence frequency (i.e., three percent chance); the El Sauz dike will be designed to protect El Sauz from flooding in the event the upstream floodwater retarding structure is breached; and the Rio Grande City dike will be designed to protect the existing developed urban area of the city from a storm having a 100-year recurrence frequency (i.e., one percent chance) in the 376-square mile area not controlled by the floodwater retarding structure, draining into Rio Grande City.

TDWR offers the following review comments:

1. We find that the proposed flood control project does not conflict with or duplicate any of our current or planned programs, projects, or activities within the purview of our statutory statewide responsibilities relative to water resources planning, development, and management pursuant to the Texas Water Code. The proposed

Mr. Paul T. Wrotenbery, Director  
Page 2  
March 27, 1981

project appears to be in consonance with our own objectives and goals to support and foster balanced economic growth and community development throughout all regions of Texas. Therefore, we concur in USDA-SCS's explicit findings presented on page E-7, fifth paragraph, that: "There are no existing or proposed water resource development projects of other agencies within the watershed. The works of improvement included in this plan will have no known detrimental effects on any existing or proposed downstream works of improvement, and will constitute a harmonious element in the full development of the Rio Grande Basin."

2. We believe that reasonable assurances are furnished (reference: pages E-26, and E-27) that "all applicable state laws will be complied with in the design and construction of all structural measures," and that appropriate measures will be adopted during the construction phase to control soil erosion and the discharge of other pollutants inherent to the construction process will be held to minimum practical limits.
3. From the standpoint of our responsibilities and activities pursuant to the Texas Water Code, we concur in principle with the proposed project. We particularly support the assurances given on pages E-24, first paragraph, which are presented as a basic element of the recommended project, indicating that: "The County (of Starr) has enacted and is enforcing a zoning ordinance (by order) to regulate urban expansion in this area of jurisdiction below the 100-year flood elevation. This county will continue to enforce this ordinance, which will complement the recommended structural works of improvement." (Underlining added for emphasis.) We feel that these assurances are complementary elements of the proposed structural installation project.

TDWR appreciated the opportunity of reviewing the referenced report. Please advise if we can be of further assistance.

Sincerely yours,



Harvey Davis *for*  
Executive Director



TEXAS STATE SOIL AND WATER CONSERVATION BOARD

1002 First National Building

P. O. Box 658

Temple, Texas 76501

Area Code 817, 773-2250

April 2, 1981

RECEIVED

APR 6 1981

Budget/Planning

Mr. Paul T. Wrotenbery, Director  
Governor's Budget and Planning Office  
Attention: General Government Section  
P.O. Box 12428  
Austin, TX 78711

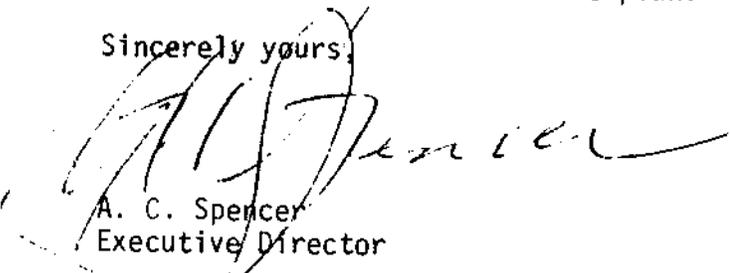
Dear Mr. Wrotenbery:

We have reviewed the draft Watershed Plan and Environmental Impact Statement for the Los Olmos Creek Watershed in Jim Hogg and Starr Counties, prepared by the USDA, Soil Conservation Service.

This agency received the application for assistance on this project on June 22, 1961. Since that time we have worked with the sponsors on numerous occasions attempting to ensure that their objectives would receive federal assistance. The State Soil and Water Conservation Board granted a planning priority on this project on March 22, 1973.

Our involvement with the sponsors and the Soil Conservation Service staff working on the project leads us to believe that the objectives of the sponsors will be satisfied by this work plan and that the project measures called for in the work plan are the best practicable solution to the watershed problems. We urge that all associated with the project from this point forward seek expedient implementation of the plan.

Sincerely yours,

  
A. C. Spencer  
Executive Director

ACS/JMM/vd

TEXAS AGRICULTURAL EXTENSION SERVICE    *The Texas A&M University System*    College Station, Texas 77843  
348 Soil and Crop Sciences  
February 25, 1981

Mr. George C. Marks  
State Conservationist  
USDA-Soil Conservation Service  
P.O. Box 648  
Temple, Texas 76501

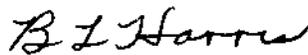
Dear George:

This letter is in response to the recently received draft Environmental Impact Statement and Watershed Plan for Los Olmos Creek Watershed in Jim Hogg and Starr counties. Dr. H. O. Kunkel also has requested that I provide comments for Texas A&M University in regard to these draft documents. Following review of these materials, we have no substantive changes to suggest. We recognize that the proposed structures have long been needed for amelioration of existing flood hazards.

As always we are glad to actively support PL 566 projects. We will assist as possible and as appropriate in furthering implementation of these watershed protection projects.

Please inform us where we may be of assistance.

Sincerely yours,



B. L. Harris  
Soil and Water Use Specialist

BLH/by

cc: Dr. H. O. Kunkel  
Dr. C. D. Welch  
Dr. E. C. A. Runge

# frontera

## audubon society

April 10, 1981

George C. Marks  
State Conservationist  
Soil Conservation Service  
W.R. Poage Federal Building  
101 S. Main  
P.O. Box 638  
Temple, Texas 76501

RE: Watershed Plan and Draft Environmental  
Impact Statement, Los Olmos Creek  
Watershed, Jim Hogg & Starr Counties,  
Texas, January 1981

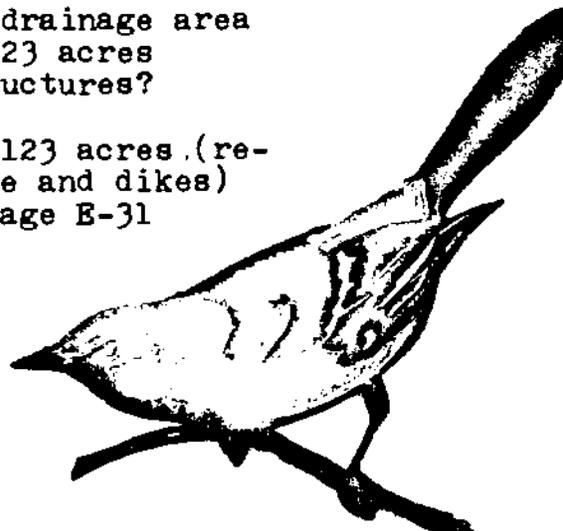
Dear Mr. Marks:

We have reviewed the above-referenced Watershed Plan and Draft Environmental Impact Statement (EIS) and feel strongly that the environmental consequences of the project to this particular portion of the Lower Rio Grande region have not been properly and adequately addressed throughout the report. The wildlife mitigation plans offered are inappropriate and inadequate. In addition, we have reservations about the recommended alternative plan, and feel that the cost benefit ratio for this project raises serious questions about the necessity of the entire project.

More specifically, we offer the following comments.

1) The report is confusing as to the number of acres actually involved in, and affected by, this project. The entire watershed (204,470 acres)? The 93,514 acre drainage area suggested by Figure 3, Project Map? The 3,123 acres required for the recommended alternative structures?

2) There is lack of detail as to how the 3,123 acres (required for the floodwater retarding structure and dikes) are presently divided into habitat types. Page E-31 states "...seven habitat types occur in the watershed...Each...with the exception of



**"To Increase Environmental Awareness"**

Rio Grande bottomland will be impacted...". Since different habitat types are both directly and indirectly affected by this project, the environmental impact on each type must be stated and the mitigation plan must address and encompass each of these types in detail.

3) There is no factual basis for the statement that "No significant impacts will result from the infrequent inundation of the retarding (detention) pool." (p. P-2). This is especially so in light of the fact that this pool occupies 1,690 acres! Since the project claims benefits of protection to municipal and agricultural interests from a 100-year-flood as a major plus, then adverse impacts of the project with that same 100-year-flood must be addressed. They are not.

4) The tabulation on p. E-33 relative to wildlife and habitat value is insufficient. No where are impacts on the other stated 59 species of mammals, 36 species of snakes, 19 lizards, 2 land turtles, and 21 amphibians calculated. The breakdown of avifauna into "quail, mourning dove, passerines and waterfowl" is biased towards commercially exploited species, incomplete, and insufficiently broken down. Inadequate discussion of impacts to fish &/or other aquatic flora and fauna is presented. What happens to the naturally occurring arroyo community of plant and animal life when Los Olmos Creek is dammed?

5) Sufficient evidence to support the position that "the flood-water retarding structure will benefit the wildlife community" (p. E-33) is lacking. The structural requirements of the flood-water retarding structure and its attendant sediment pool, and the subsequent fencing of both, leave doubts as to whether they can actually provide "a water supply for all wildlife species." The 150 acres of destroyed brush habitat is not mitigated. Changing the nature of a habitat, from terrestrial to aquatic, is a loss to terrestrial wildlife forms and cannot be construed otherwise.

6) The statement "Recognized wetlands do not exist in the watershed." (p. E-7) is insufficient. What definition of wetlands is being used and how was the determination of their non-existence made?

7) We do not find evidence to support the wide-ranging statements and analysis on pp. E-7 & 8 under Significant Concerns and find them disturbing. Examples:

- The report allots a major degree of impact to the "risk to loss of life", considers this risk significant to decision making and concludes the project will eliminate the threat. No where is this threat documented.
- At the same time the report attributes a minor degree of impact of the project to streams and does not consider streams significant in decision making. Is not the structural objective of the project the damming of a stream? Why undertake such a project if the stream is insignificant? How can one dam a stream and not significantly affect it? Los Olmos is

one of only a few intermittent streams existing in this area of the Valley and as such any impact to it must be viewed as having great significance. These intermittent streams add greatly to the diversity of the flora and fauna found in this region.

- Additionally, protected non-game species are given minor degree of impact status and are not considered significant to decision making. Numerous documented peripheral, endemic and migratory non-game species exist in the watershed area and will be necessarily impacted by the project. This is not adequately addressed.

8) Why could not all project goals be addressed? (p. E-14)  
The discussion presented is unsatisfactory.

9) The mitigative plans for wildlife habitat loss in the recommended alternative plan call for the fencing of 686 acres at the three structures. These plans are totally unacceptable. Among other things, they:

- a) do not address the necessity for mitigation to proceed hand in hand with construction of the project;
- b) are not sufficiently detailed as to timetables and species included in the plans for vegetative re-planting;
- c) are not specific in their actual management plans;
- d) do not address the issue of the total number of acres directly or indirectly affected by the project;
- e) do not address the different types of habitat affected in the total acreage;
- f) do not properly take into account the impacts on endangered and review species during actual project construction;
- g) do not properly take into account the impacts on endangered fauna after project completion;
- h) effectively ignore the impacts of the project as completed on review flora in the area;
- i) are incomplete as to the numbers and types of wildlife losses incurred;
- j) do not properly take into account the effect of the sediment pool on flora and fauna;
- k) do not properly take into account the effect of the detention pool on flora and fauna;
- l) do not adequately take into account the effect of the project on the naturally occurring arroyo community

## of Los Olmos Creek.

- 10) The section on Plant and Animal Problems (p. E-10) should be enlarged, with specific consideration given to how this project will affect these problems. If only small tracts of preferred habitat for unique, threatened and endangered species remain in the Rio Grande region, it logically follows that not only should those small tracts be preserved intact but that additional care should be taken to enlarge them and to preserve "marginal" and "approaching preferred" habitat for the species. This is clearly not done with this project.
- 11) We do not concur with the anticipated effects on endangered species as stated in the tabulation on p. E-36. Construction itself must be viewed as having a negative effect on jaguars, jaguarundis and ocelots, as should periodic flooding of the detention pool. Increased human development and activity in these areas should also be counted as a negative effect for both plants and animals listed. How is the stated negative effect to Urtica chamaedryoides var. runyonii and Frankenia johnstonii being offset?
- 12) The section on Flood Plain Regulation (p. E-24) should be clarified and expanded. The expenditure of \$3,424,250 of federal monies to obtain a cost benefit ratio of 1.5:1.0 over the existing 1.2:1.0 must be questioned. The project as recommended reduces the "average annual area inundated" by 25.6% (p. E-29). The majority of the area will still flood. If the population of this area increases, a not unlikely possibility, it is also not unlikely that the future will find more and more human development in an already unsuitable, stressed ecosystem.
- 13) We question the sagacity of spending \$823,360 more in federal money (recommended alternative #1 over #2) for a project which not only adversely impacts an additional 149 acres of wildlife habitat but which also benefits only 43 individual land owners. We also question the actual purposes of a project in which the local sponsors support a considered alternative (#3) which requires a greater amount of federal money, destroys a greater portion of wildlife habitat, and is not cost effective.
- 14) Allusions in this report to the project's ability to enhance the standard of living in the area are questionable. That the project will generate employment for local residents during construction is undocumented. It can be argued that the project will encourage further settlement in an area already beset by a low standard of living and high unemployment rates, amplifying these problems. It is also spurious to suggest that monies spent on flood disaster repair would necessarily be available to local residents for "raising the standard of living" (p. E-38).
- 15) The relationship between local short term uses of the environment and the maintenance and enhancement of long-term productivity is not sufficiently developed. Its absence is profound.

It would be difficult to refute this area's ecological uniqueness to the country and to the world. The meshing of different geologic and climatic types makes this an area truly distinctive for its diversity of plant and animal life. We share space with over 525 vertebrate species, including 32 placed in protected status by state &/or federal agencies. At least 349 species of birds have been found here and their presence is a major drawing card for scientific, educational and pleasure-seeking bird enthusiasts. Area native vegetation has long attracted the attention of botanists. Many of these plant and animal forms find the northern most limits of their distributions here in the Valley, adding yet again to the area's uniqueness.

Yet it has been only within the last 60 years that over 95% of this region's original native brush has been cleared for urban or agricultural uses. More than anything else it is this substantial loss of habitat that has contributed to the decline and even disappearance of native species of flora and fauna. What remains of the once extensive brush tracts throughout the Valley are a few scattered areas rich in their remaining diversity of plant and animal life. As remnants of the natural world and as sanctuaries for the other living things succumbing to man's increase, these must be preserved and expanded.

We believe that no further developmental projects should proceed in this region without a commitment to this belief. Would it not be wise environmental and economic planning to invest more than the planned 1.38% for "mitigation" on this project in an effort to truly lessen adverse environmental impacts and losses and at the same time encourage lasting economic benefits in terms of tourism, recreation and employment?

Sincerely,



Cynthia Chapman  
Executive Board  
Conservation Committee  
Frontera Audubon Society  
200 East 11th Street  
Weslaco, Texas 78596

/cc

APPENDIX C

Literature Cited or Sources Consulted

### Literature Cited or Sources Consulted

- Blair, W. Frank. 1950. The biotic provinces of Texas. *Texas J. Sci.* 2 (1): 93-117.
- Brown, D.E., D.R. Blankinship, P.K. Evans, W.H. Kiel, Jr., G.L. Waggener, and C.K. Winkler. 1977. White-winged dove (*Zenaida asiatica*). In "Management of migratory shore and upland game birds in North America" ed. Glen C. Sanderson. International Association of Fish and Wildlife Agencies, Washington, D.C. 358 p.
- Cole, Nancy Mottashed. 1979. Archeological and historical survey of the proposed dike at El Sauz and the realignment of the proposed dike at Rio Grande City, Los Olmos Creek Watershed, Starr County, Texas, and An archeological and historical survey of the borrow areas for the proposed dike at Rio Grande City and the small dike near Olmos, Starr County, Texas. Soil Conservation Service. Temple, Texas. 25 p.
- Cottam, C. and J.B. Trefethen (editors). 1968. *Whitewings*. D. Van Nostrand Company, Inc., Princeton, New Jersey. 348 p.
- Everitt, J.H., D.L. Gonzalez, M.A. Alaniz, and G.V. Latigo. 1981. Food habits of the collared peccary on south Texas rangelands. *J. Range Manage.* 34:141-144.
- Fish and Wildlife Service. 1978. Proposed acquisition of white-winged dove habitat Cameron, Hidalgo, and Starr Counties, Texas. Environmental Assessment. U.S. Department of the Interior. Albuquerque, New Mexico. 116 p.
- Flood, Bettina S., Mary E. Sangester, Rollin D. Sparrowe, and Thomas S. Baskett. 1977. A handbook for habitat evaluations procedures. U.S. Department of the Interior, Fish and Wildlife Service. Resource Publication 132. 77 p.
- Fox, Daniel E. 1978. An intensive survey of sixteen prehistoric archaeological sites in Starr County, Texas. 64 p.
- Goodwin, Frank, Jr. 1970. Behavior, life history, and present status of the jaguarundi, *Felis yagouaroundi* (Lacepede) in south Texas. Master's thesis, Texas A&I University, Kingsville, Texas. 63 p.
- Gonzalez, C.L., and J.D. Dodd. 1979. Production response of native and introduced grasses to mechanical brush manipulation, seeding, and fertilization. *J. Range Manage.* 32:305-309.
- Gould, F.W. 1962. Texas plants--a checklist and ecological summary. Texas Agr. Exp. Sta., Texas A&M University, College Station, Texas. 111 p.
- Hailey, Tommy L. 1979. Basics of brush management for white-tailed deer production. Texas Parks and Wildlife Dept., Austin, Texas. 8 p.

- Inglis, Jack M. 1964. A history of vegetation on the Rio Grande plain. Texas Parks and Wildlife Department, Austin, Texas. Bull. 45. 122 p.
- Kelly, Thomas C., and Carol Graves. 1980. The El Suaz project: archaeological testing of selected sites in the Arroyo Los Olmos Watershed, Starr County, Texas. Center for Archaeological Research. The University of Texas at San Antonio. Archaeological Survey Report No. 88. Purchase Order No. 53-7442-9-713 between SCS and UTSA. 23 p.
- Kiel, William H., Jr. 1976. Bobwhite quail population characteristics and management in South Texas. Preceedings from the Forty-First North American Wildlife Conference. pages 407-420.
- Leopold, Aldo. 1933. Game management. Charles Schribner's Sons. New York. 481 p.
- McBride, Roy. 1978. Ocelot survey. Unpublished report for U.S. Fish and Wildlife Service. Albuquerque, New Mexico. 9 p.
- Nunley, Parker, and Thomas R. Hester. 1975. An assessment of archaeological resources in portions of Starr County, Texas. Archaeological Survey Report No. 7, Center for Archaeological Research. The University of Texas at San Antonio. 110 p.
- Rameriz, Pedro, Jr. 1976. Little wildcat few people know. In Texas Parks and Wildlife Magazine. Austin, Texas. Vol. XXXIV, No. 2. p. 12-13.
- Sanders, Russell R., Charles M. Thompson, Dewayne Williams, and Jerry L. Jacobs. 1974. Soil survey of Jim Hogg County, Texas. United States Department of Agriculture, Soil Conservation Service, in cooperation with the Texas Agricultural Experiment Station. 42 p. plus maps.
- Scifres, C.J., and J.L. Mutz. 1975. Secondary succession following extended inundation of Texas coastal rangeland. J. Range Manage. 28:279-282.
- Shaw, Samuel P., and C. Gordon Fredine. 1971. Wetlands of the United States: their extent and their value to waterfowl and other wildlife. Circular 39. U.S. Dept. of the Interior, Fish and Wildlife Serv. 67 p. Plate in pocket.
- Smith, John C. 1979a. Nongame wildlife investigations. Job No. 12.: Feline status survey. Federal Aid Project No. W-102-R-8. Texas Parks and Wildlife Department, Austin, Texas. 2 p.
- Smith, John C. 1979b. Nongame Wildlife Investigations. Job No. 12: Feline status survey. Federal Aid Project No. W-103-R-9. Texas Parks and Wildlife Department. Austin, Texas. 3 p.
- Smith, Robert Leo. 1966. Ecology and field biology. Harper and Row. New York. 686 p.

- Texas Agricultural Extension Service. 1980. Community Development Newsletter (CRD Newsletter 169-80, May 20, 1980). Texas A&M University. 3 p.
- Texas Almanac and State Industrial Guide. 1978-1979. A.H. Belo Corp, owner of the Dallas Morning News, Dallas, Texas. 704 p.
- Texas Historical Commission. 1975. Guide to official Texas historical markers. Compiled and published by the Texas Historical Commission. Austin, Texas. 151 p.
- Texas Water Development Board. 1972. Texas Water Development Board, population projections, December 1972. Economics Water Requirements and Uses Div., Austin, Texas. n.p.
- Texas Water Quality Board. 1976. Texas water quality standards. Austin, Texas. 79 p.
- Thompson, Charles M., Russell R. Sanders, and Dewayne Williams. 1972. Soil survey of Starr County, Texas. United States Department of Agriculture, Soil Conservation Service, in cooperation with the Texas Agriculture Experiment Station. 62 p. plus maps.
- Waggerman, Gary. 1981. Survey, status of white-winged dove in Texas. Job No. 1: White-winged dove harvest regulations. Federal Aid Project No. W-30-R-34. Texas Parks and Wildlife Department. Austin, Texas. 17 p.

APPENDIX D

Descriptions of Habitats Affected by Structural Measures

## Descriptions of Habitats Affected by Structural Measures

Ramadero. This habitat consist of Ramadero loam, a nearly level soil that occurs mainly in long, narrow drainageways or on valley floors. The drainage channels are not well defined in most areas. This type ordinarily receives runoff water from surrounding areas.

This habitat is a preferred grazing area and grazing is the major land use for this habitat. The present vegetation is a direct result of the past grazing management of the area.

Generally the present vegetation consist of mesquite, huisache, hackberry, and various species of condalia. The understory and ground cover are usually completely lacking except for annuals which occur following periods of precipitation. Under proper management there will be an understory of grasses, consisting of buffelgrass, fourflower trichloris, Arizona cottontop, plains bristlegrass, alkali sacaton, curly mesquite, buffalograss, and windmillgrass.

When associated with other habitat types and properly managed, this is the most valuable habitat found in the watershed.

Mixed brush. This habitat consist of several range sites and there is variability in the production and height of the dominant brush species depending on the soil. This habitat type is used mainly for the grazing of domestic livestock. The understory and overstory vegetation is a direct result of the past management.

The present vegetation is a mixed brush chaparral consisting of black brush, spiney hackberry, condalia sp., mesquite, and lotebush. The understory can be completely lacking or may consist of a good stand of buffelgrass. Very few native grasses are present.

Buffelgrass. This habitat is a result of mechanical treatment of other types to control the brush in order to increase the livestock production. Once the area has been root plowed, it is seeded to buffelgrass. During the first few years after root plowing and seeding, buffelgrass occurs in an almost pure stand.

Mono-typic brush. This habitat is a result of the long-term management on lands previously cleared of brush and seeded to buffelgrass and other improved grasses. Depending on the degree and intensity of range management practices, woody plants gradually reestablish, and by the tenth year, 5 to 10 percent of the vegetation is woody plants. This mixture, if managed properly, has been stable for as long as 25 years. If not managed properly, brush will again become dominant. As the brush encroaches, there is much less diversity of brush species in the plant community than there was before treatment. The species of brush that becomes dominant is dependent upon the soil present.

Saline. This habitat consist of soils that are saline to a depth of more than 10 inches, and consequently, the available water capacity and

effective rooting depth are reduced. There are varying degrees of salinity in the surface soils because of the local influence of position, runoff, erosion, and past grazing use. Small amounts of rain are not effective, because of the shallowness of water penetrations.

Under proper livestock management the site is dominated salt tolerant mid and short grasses. The major grass species are two flower trichloris, alkali sacaton, big sacaton, and curly mesquite. Under poor management all grass species may disappear and saladillo and dwarf screwbean become dominant. On some areas brush such as amargosa, mesquite, and cacti may dominate.

Rio Grande Bottomland. This type is found only in the extreme lower end of the watershed adjacent to the Rio Grande. This habitat is located in the flood plain of the Rio Grande. The plant community varies with frequency of flooding and depth of floodwaters. The major overstory plants are black willow, cottonwood, ebony, black walnut, elm, baccharis, acacia, hackberry, and mesquite. The understory contains common reed, big sacaton, white tridens, vine mesquite, greenbriar, and four flowered trichloris. Under heavy grazing or very dense canopy there may not be an understory.

The majority of this habitat has been placed in cultivation throughout the Rio Grande Valley. As a result, these areas have become one of the most restricted habitats in South Texas.

Cropland. The cropland habitat is divided into three sub types. These are irrigated cropland, dryland cropland, and idle or abandoned cropland.

The irrigated cropland is located on old flood plains of the Rio Grande. The main crops are truck crops. This sub type generally has very little value for wildlife.

The dryland cropland is located on uplands away from the Rio Grande. The major crop is grain sorghum. This type provides food seasonally for certain species of wildlife.

Abandoned cropland habitat is located in the lower portions of the watershed in the vicinity of the dike at Rio Grande City. This type provides ideal food for mourning dove and whitewings. This food source will be available for a limited time because plant succession will eventually replace the annuals with perennial grasses which have less preferred seed for the ground feeding birds.

APPENDIX E

Habitat Evaluation Charts of Proposed Structural Measures

CHART 1

Floodwater Retarding

Site No. Structure Site 1 - Future Without Project

WILDLIFE HABITAT VALUE

Watershed: Los Olmos Creek

Acres Involved 1939

Species	Mixed Brush (493 ac.)		Ramadero (504 ac.)		Dryland Cropland (36 ac.)		Monotypic Brush (129 ac.)		Saline Site (194 ac.)		Buffelgrass (453 ac.)		Other Area (130 ac.)		TOTAL VALUE	RATING
	Rating	Value	Rating	Value	Rating	Value	Rating	Value	Rating	Value	Rating	Value	Rating	Value		
Deer	3.0	1479.0	3.0	1512	1.2	43.2	1.7	164.9	1.0	194	0.7	317.1	3.0	390	4100.2	
Quail	2.5	1232.5	2.0	1008	1.2	43.2	1.5	145.5	1.5	291	0.7	317.1	2.0	260	3297.4	
Mourning Dove	2.0	986.0	2.5	1260	1.8	64.8	1.3	126.1	1.5	291	0.3	135.9	2.5	325	3188.8	
Coyotes	3.0	1479.0	3.0	1512	0.5	18.0	2.0	194.0	1.0	194	1.5	679.5	3.0	390	4466.5	
Passerines	1.5	739.5	2.0	1008	1.0	36.0	0.5	48.5	0.5	97	0.5	226.5	2.0	260	2415.5	
Fish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Waterfowl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTALS		5916.0		6300		205.2		679.0		1067		1676.1		1625	17468.3	

1/ Rating factors are defined as follows:

- 0 - Habitat is nonexistent or of no significant value for a particular species.
- 1 - Low value habitat is habitat which lacks adequate food, cover, or other essential elements to support a significant population of a particular species.
- 2 - Moderate value habitat is habitat which has the needed elements to support a particular species, but at population levels below the optimum.
- 3 - High value habitat is habitat which has all necessary habitat elements to support an optimum population of a particular species.

2/ Value ratings are derived by multiplying the habitat rating factor by the acreage of habitat type.

Notes: Future without project computed by reducing the amount of brush habitat by 25 percent. The reductions of brush habitat was added to the buffelgrass habitat.



CHART 2 WILDLIFE HABITAT VALUE Watershed: Los Olmos Creek

Site No. Rio Grande City Dike - Future Without Project CHART 2A  
 Site No. Rio Grande City Dike - Future With Project

Acres Involved: 82 Acres Involved: 82

Species	Irrigated Cropland (26 ac.)				Buffelgrass (16 ac.)				Mixed Brush (6 ac.)				Grass Mixture (82 ac.)			
	Rating	Value	Rating	Value	Rating	Value	Rating	Value	Rating	Value	Rating	Value	Rating	Value	TOTAL VALUE	TOTAL RATING
Deer	1.7	57.8	0.5	13.0	0.7	11.2	1.7	10.2	1.0	82	1.0	82	1.0	82	82	82
Quail	1.5	51.0	1.0	26.0	0.7	11.2	2.0	12.0	2.0	164	2.0	164	2.0	164	164	164
Mourning Dove	2.0	68.0	1.2	31.2	0.3	4.8	2.0	12.0	1.5	123	1.5	123	1.5	123	123	123
Coyotes	2.1	71.4	1.0	26.0	1.5	24.0	2.5	15.0	1.5	123	1.5	123	1.5	123	123	123
Passerines	2.0	68.0	0.5	13.0	0.5	8.0	2.5	15.0	1.5	123	1.5	123	1.5	123	123	123
TOTAL		316.2		109.2		59.2		64.2		615		615		615	615	615

1/ Rating factors are defined as follows:  
 0 - Habitat is nonexistent or of no significant value for a particular species.  
 1 - Low value is habitat which lacks adequate food, cover, or other essential elements to support a significant population of a particular species.  
 2 - Moderate value habitat is habitat which has the needed elements to support a particular species but at population levels below the optimum.  
 3 - High value habitat is habitat which has all necessary habitat elements to support an optimum population of a particular species.

2/ Value ratings are derived by multiplying the habitat rating factor by the acreage of habitat type.

Watershed: Los Olmos Creek  
 :CHART 3A  
 :Site No. El Sauz Dike - Future With Project  
 :Acres Involved: 38

WILDLIFE HABITAT VALUE

CHART 3  
 Site No. El Sauz Dike - Future Without Project  
 Acres Involved: 38

Species	Ramadero (7 ac.)			Saline Site (16 ac.)			Abandoned Copland (12 ac.)			Buffelgrass (3 ac.)			Grass Mixture (38 ac.)			TOTAL VALUE RATING
	Rating	1/	2/	Rating	1/	2/	Rating	1/	2/	Rating	1/	2/	Rating	1/	2/	
Deer	2.0	14.0	1.0	1.0	16	0.5	6	0.7	2.1	38.1	1.0	38	38	76	57	38
Quail	2.0	14.0	1.5	24	1.5	18	0.7	2.1	58.1	2.0	76	76	57	57	57	57
Mourning Dove	2.0	14.0	1.5	24	2.0	24	0.3	0.9	62.9	1.5	57	57	57	57	57	57
Coyotes	2.5	17.5	1.0	16	1.5	18	1.5	4.5	56.0	1.5	57	57	57	57	57	57
Passerines	2.0	14.0	0.5	8	1.5	18	0.5	1.5	41.5	1.0	38	38	38	38	38	38
TOTALS		73.5		88		84		11.1		256.6		266		266		266

- 1/ Rating factors are defined as follows:  
 0 - Habitat is nonexistent or of no significant value for a particular species.  
 1 - Low value habitat is habitat which lacks adequate food, cover, or other essential elements to support a significant population of a particular species.  
 2 - Moderate value habitat is habitat which has the needed elements to support a particular species, but at population levels below the optimum.  
 3 - High value habitat is habitat which has all necessary habitat elements to support an optimum population of a particular species.
- 2/ Value ratings are derived by multiplying the habitat rating factor by the acreage of habitat type.

CHART 4 Rio Grande City Dike Watershed: Loa Olmos Creek  
 Site No. Borrow Areas - Future Without Project : CHART 4A Rio Grande City Dike  
 Acres Involved 92 : Site No. Borrow Areas - Future With Project  
 : Acres Involved 92

WILDLIFE HABITAT VALUE

Species	Ramadero (33 ac.)		Abandoned Cropland (28 ac.)		Monotypic Brush (15 ac.)		Buffelgrass (16 ac.)		Grass Mixture (92 ac.)		TOTAL VALUE	TOTAL RATING
	Rating	Value	Rating	Value	Rating	Value	Rating	Value	Rating	Value		
Deer	2.0	66.0	0.5	14	1.5	22.5	0.7	11.2	1.0	92	113.7	92
Quail	1.5	49.5	1.5	42	1.5	22.5	0.7	11.2	2.0	184	125.2	184
Mourning Dove	2.0	66.0	2.0	56	1.5	22.5	0.3	4.8	1.5	138	149.3	138
Coyotes	2.1	69.3	1.5	42	2.0	30.0	1.5	24.0	1.5	138	165.3	138
Passerines	2.0	66.0	1.5	42	1.0	15.0	1.5	24.0	1.5	138	147.0	138
TOTALS		250.8		196		112.5		75.2		690	700.5	690

1/ Rating factors are defined as follows:

- 0 - Habitat is nonexistent or of no significant value for a particular species.
- 1 - Low value habitat is habitat which lacks adequate food, cover, or other essential elements to support a significant population of a particular species.
- 2 - Moderate value habitat is habitat which has the needed elements to support a particular species, but at population levels below the optimum.
- 3 - High value habitat is habitat which has all necessary habitat elements to support an optimum population of a particular species.

2/ Value ratings are derived by multiplying the habitat rating factor by the acreage of habitat type.

APPENDIX F

Detailed Project Effects on Listed and Notice of Review Status  
Endangered Species

## Animals

The presence of jaguarundi (Felis yagourundi) in the watershed has not been documented, but since the animal is very shy, their presence may have gone unnoticed. For this reason there is a possibility that there may be some present, especially in the lower portions of the watershed along the Rio Grande. Some of this area approaches preferred jaguarundi habitat.

If a population of jaguarundi exists, installation of the recommended alternative is not expected to have an impact on the species. Although the watershed is in the known range of the jaguarundi (Smith 1979b), the type of habitat impacted is considered marginal. Their preferred habitat seems to be the Rio Grande bottomland, especially those areas which retain the more pristine vegetation. Good examples of habitat are the Santa Ana and Laguna Atascosa National Wildlife Refuges where evidently jaguarundis do occur. Refer to the map by Goodwyn (1970) of known areas where jaguarundi populations are most likely to occur.

There is some evidence that jaguarundi also prefer riparian or water-associated habitats. Most of the literature characterize the jaguarundi as inhabitants of dense brush, but according to Goodwyn (1970) they are not limited to a specific type of brush because of the variety of vegetational regions they inhabit. Goodwyn also states jaguarundis most likely need brush to survive, but the brush does not need to be continuous.

Birds are the mainstay of the jaguarundi diet, although other small vertebrates are freely eaten (Rameriz, 1976).

The floodwater retarding structure will remove or inundate 150 acres of brush habitat. The 150 acres consist of 100 acres for dam and spillways and 50 surface acres of water at the lowest ungated outlet. The 'edge' habitat created by the native brush merging with the water area and the properly managed area of dam and spillway should create greater diversity in the biotic community in the vicinity of the structure. Although the destruction of brush habitat will adversely affect certain jaguarundi prey species there should be a net increase in available food because of the increased diversity.

Sufficient brush habitat is adjacent to the floodwater retarding structure. A greater available food supply is expected because of the anticipated higher productivity in the edge areas. Since jaguarundis do not require a continuous stand of brush for movement or feeding, no impacts to this species are expected.

Installation of the dike at El Sauz and Rio Grande City will change 126 acres of brush habitat into grassland habitat. Again, the brush habitat is considered marginal jaguarundi habitat. The dikes will not greatly change the composition of the habitats and is not expected to have an effect on jaguarundi.

Another minor effect will be the temporary displacement of the animals during periods of inundation of the detention pool and during construction activities at both the floodwater retarding structure and the dikes.

The ocelot (Felis paradalis) historically range within the watershed boundaries. As far as can be determined there are no recent reports of ocelot in the general area. As with the jaguarundi, the ocelot is very shy and their presence may have been unnoticed. The type of habitat impacted by the proposed alternatives is thought to be marginal habitat. There is an area, located where Los Olmos Creek has confluence with the Rio Grande, that might be considered preferred ocelot habitat. However, a report by Roy McBride (1978) under the supervision of Milton Caroline, of the Fish and Wildlife Service at San Antonio, Texas, states that there is not a significant ocelot population in the areas (see map of ocelot population) of proposed construction. The SCS feels this does not rule out the slight possibility of a small population occurring in the watershed. However, the SCS feels the proposed alternatives will not have an impact upon the ocelot for the same reason as the jaguarundi.

The presence of jaguar (Felis onca) has not been documented in the watershed but there is a remote possibility that the species may stray into the lower portions of the watershed from Mexico. Davis (1974) states that jaguar probably roam over very large areas and nowhere are they abundant. Because of the large areas they range the small amount of acres involved, the proposed activities will have not had any anticipated impacts on the species.

In addition to the above information, the EPA restricts the use of the M-44 predator control device in areas where threatened or endangered animals might be adversely affected. Both the EPA pesticide label and that provided by the Texas Department of Agriculture (TDA) restricts the use of the M-44 in areas inhabited by endangered felids. Each applicator is issued a map which clearly indicates such areas (See map of M-44 restrictions-ocelot population). At the present time the m-44 is not restricted for use in Starr and Jim Hogg Counties, but is restricted for use in Kenedy, Wilacy, Cameron, and Hildago Counties (telephone conversation with Mr. Donald Hawthron, FWS Animal Damage Control, San Antonio, Texas). No other counties in Texas are restricted concerning endangered felids. This current restriction substantiates the conclusion that the watershed contains at best marginal ocelot and jaguarundi habitat.

Based on the above information and investigations by the SCS, there is not any significant habitat of these endangered animals that will be impacted upon by project actions.

## Plants

The following list of plant species was obtained from the Fish and Wildlife Service, Office of Endangered Species. These species at the present time are listed as notice of review status. Data substantiating these plants were obtained solely on a 1977 literature and herbarium review conducted by the Rare Plant Study Center, University of Texas at Austin. No other plants that are proposed for listing were observed during field investigations by Soil Conservation Service personnel.

-Whitlow-wort (Paronychia congesta). Rio Grande Plains of Jim Hogg County. Reported 1 mile south of Thompsonville on rocky areas of breaks.

-Ashy dogweed (Dyssodia tephroleuca). Rio Grande Plains of Starr County, occupying sandy soils of grass and shrublands. Reported eight miles north of Rio Grande City.

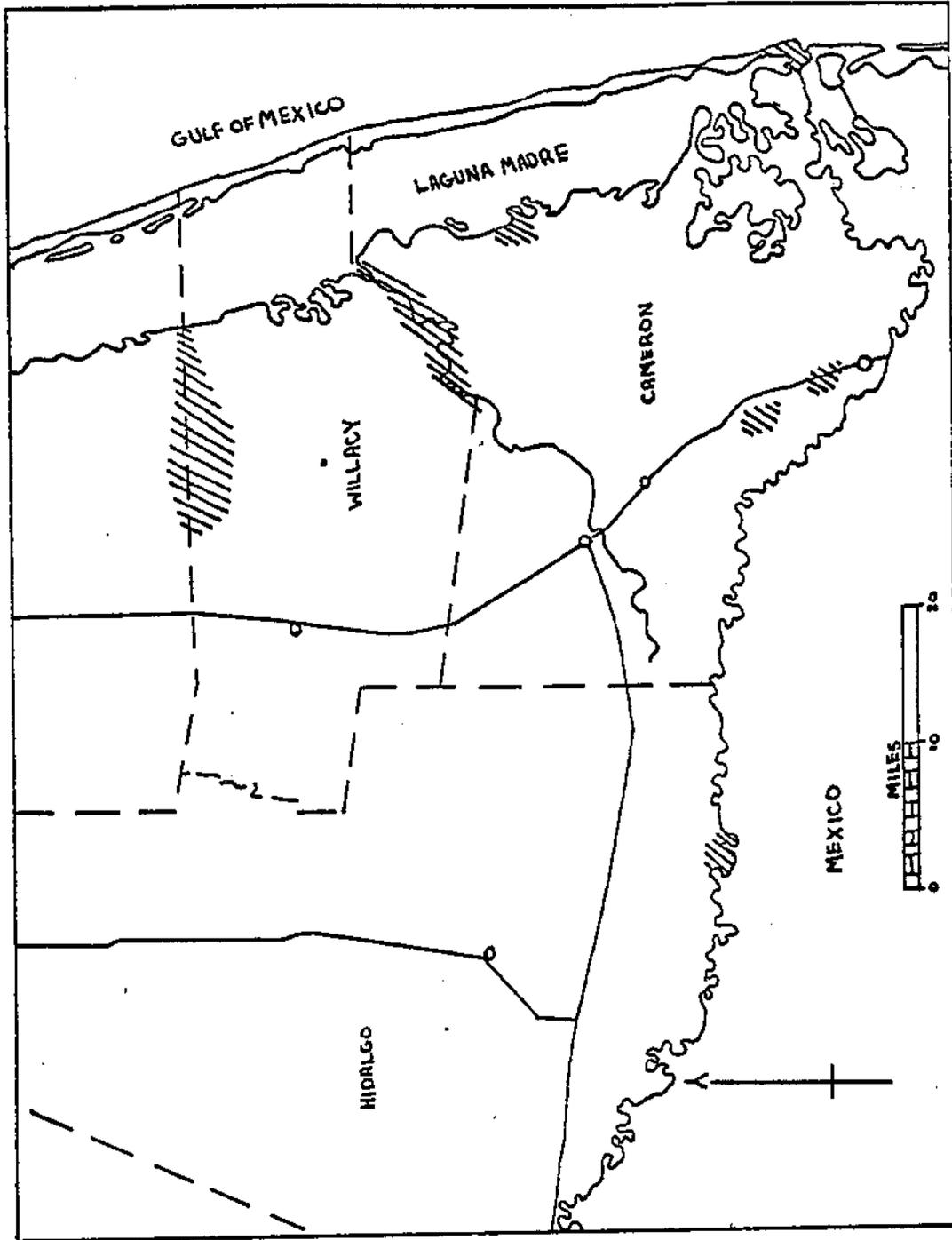
-Ortiguillo (Urtica chamaedryoides var. runyonii). An annual found among boulders in humus wooded slopes in bottomlands and shell mounds and rocky slopes. Reported along the Arroyo Los Olmos immediately east of Rio Grande City, Starr County. This plant is well known in the area. Found along streambanks in the shade on ramadero or Rio Grande bottomland sites. Although not confirmed in the area of construction, it would be expected to occur along Los Olmos Creek, in suitable habitat, in the vicinity of floodwater retarding structure 1B.

-Frankenia johnstonii. Rio Grande Plains of Starr County on saline flats and rocky gypseous hillsides. Confirmed on the salt flats along Arroyo Los Olmos east of El Sauz. Frankenia sp. was found along the centerline of the proposed dike at El Sauz. This species was also found on other saline sites in watershed. Although the plant was not abundant, it could be found on most saline sites in the watershed. All plants found had been grazed.

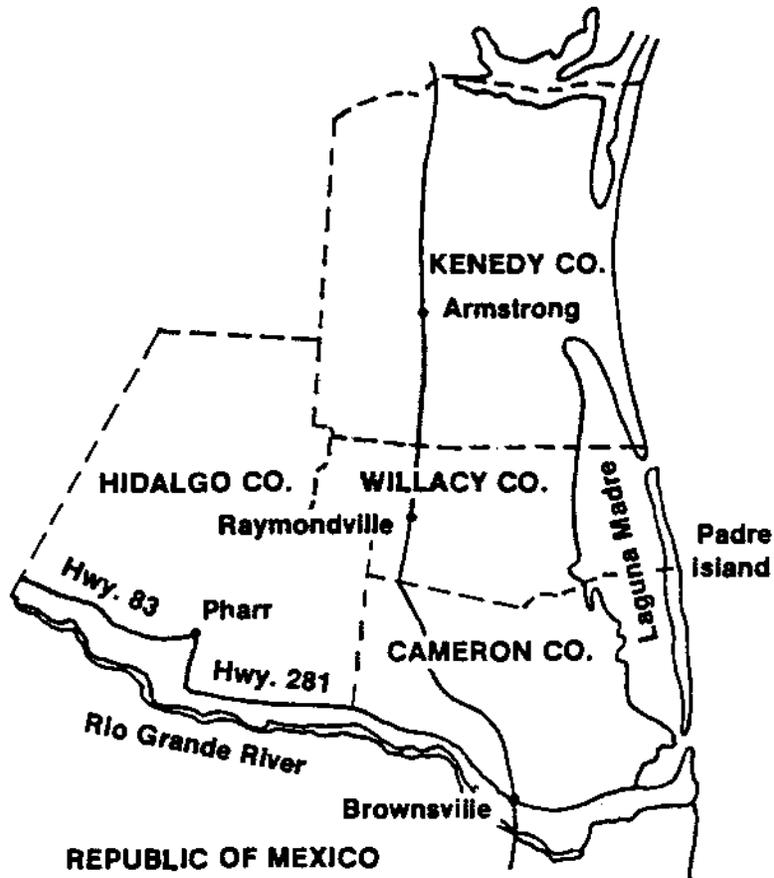
Of the four species, Urtica sp. and Frankenia sp. are the only species that were found to occur in the area of construction activity.

Although Dyssodia tephroleuca, occurs in the watershed the known populations are outside the areas of construction activities. This plant prefers sandy soil and there does not appear to be any suitable habitat in the area of construction.

Frankenia sp. was the only plant observed in the proposed areas for construction during field investigation by the SCS biologist. Urtica sp. was not found in the area of construction. It is expected to occur on Los Olmos Creek where there is suitable habitat.



Approximate locations of brush areas in the Rio Grande Valley of Texas said by persons interviewed to contain jaguarundis (from Goodwin, 1970).



The use of the M-44 device is prohibited in the shaded areas.

**Estimate of probable ocelot abundance by counties:**

Willacy Co.....	30-40
Kenedy Co. ....	unknown
Hidalgo Co. ....	0-2(?)
Cameron Co.....	12-20

Survey in last known areas of habitats where ocelots historically occurred (from McBride, 1978).

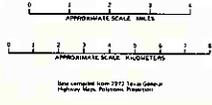
APPENDIX G

**Watershed Figures**

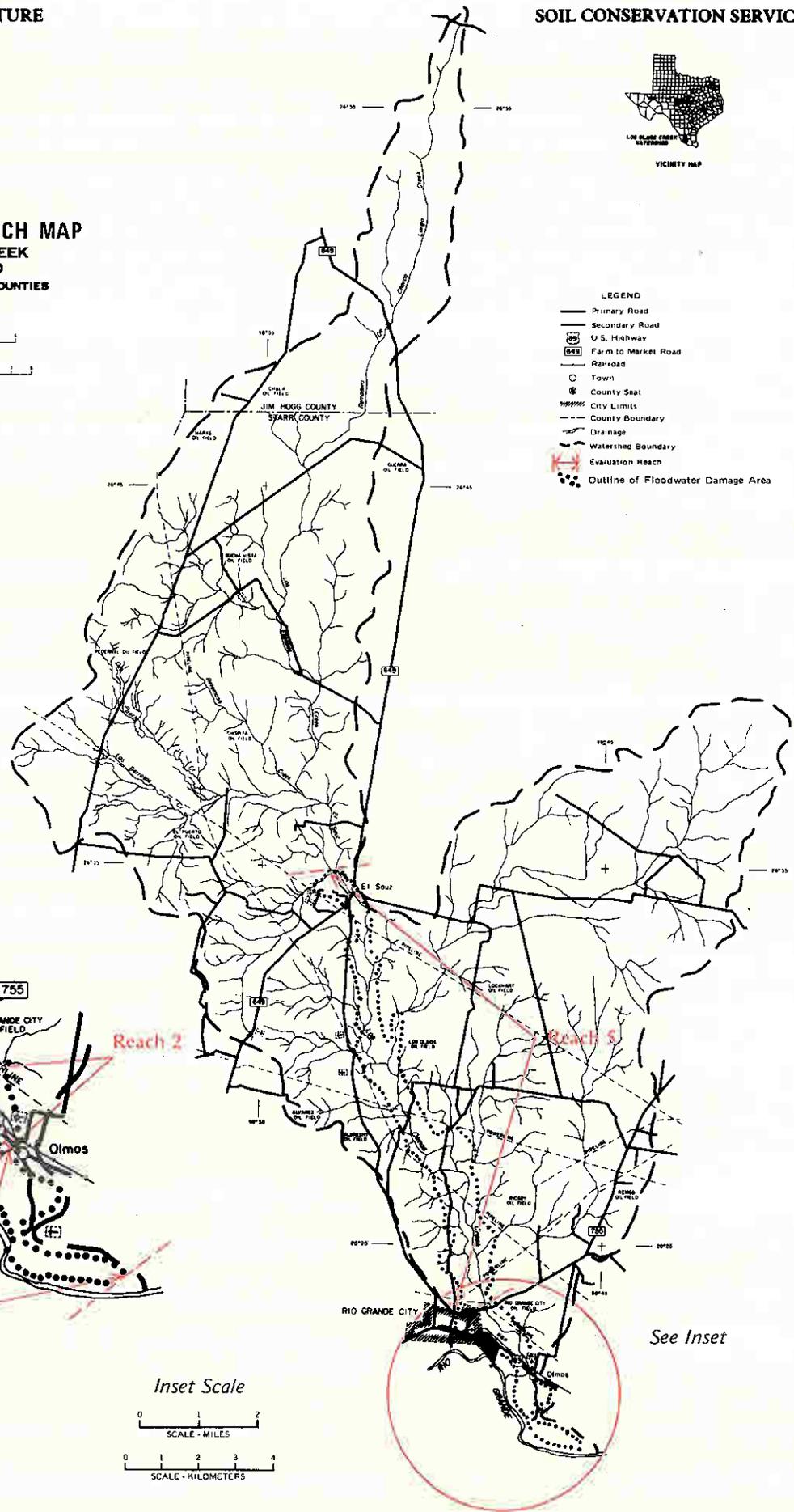
- Figure 1 - Evaluation Reach Map
- Figure 1a - Urban Flood Plain Map (Reach 4)
- Figure 1b - Urban Flood Plain Map (Portion of Reach 5)
- Figure 2 - Section of a Typical Floodwater Retarding Structure
- Figure 2a - Typical Section of the Proposed Dikes
- Figure 3 - Project Map



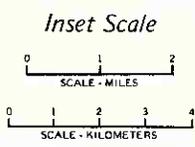
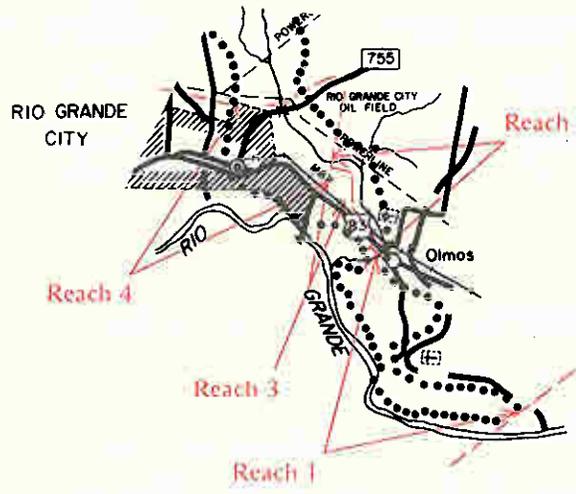
Figure 1  
EVALUATION REACH MAP  
LOS OLMOS CREEK  
WATERSHED  
JIM HOGG AND STARR COUNTIES  
TEXAS



- LEGEND
- Primary Road
  - Secondary Road
  - U.S. Highway
  - Farm to Market Road
  - Railroad
  - Town
  - County Seat
  - City Limits
  - County Boundary
  - Watershed Boundary
  - Drainage
  - Evaluation Reach
  - Outline of Floodwater Damage Area



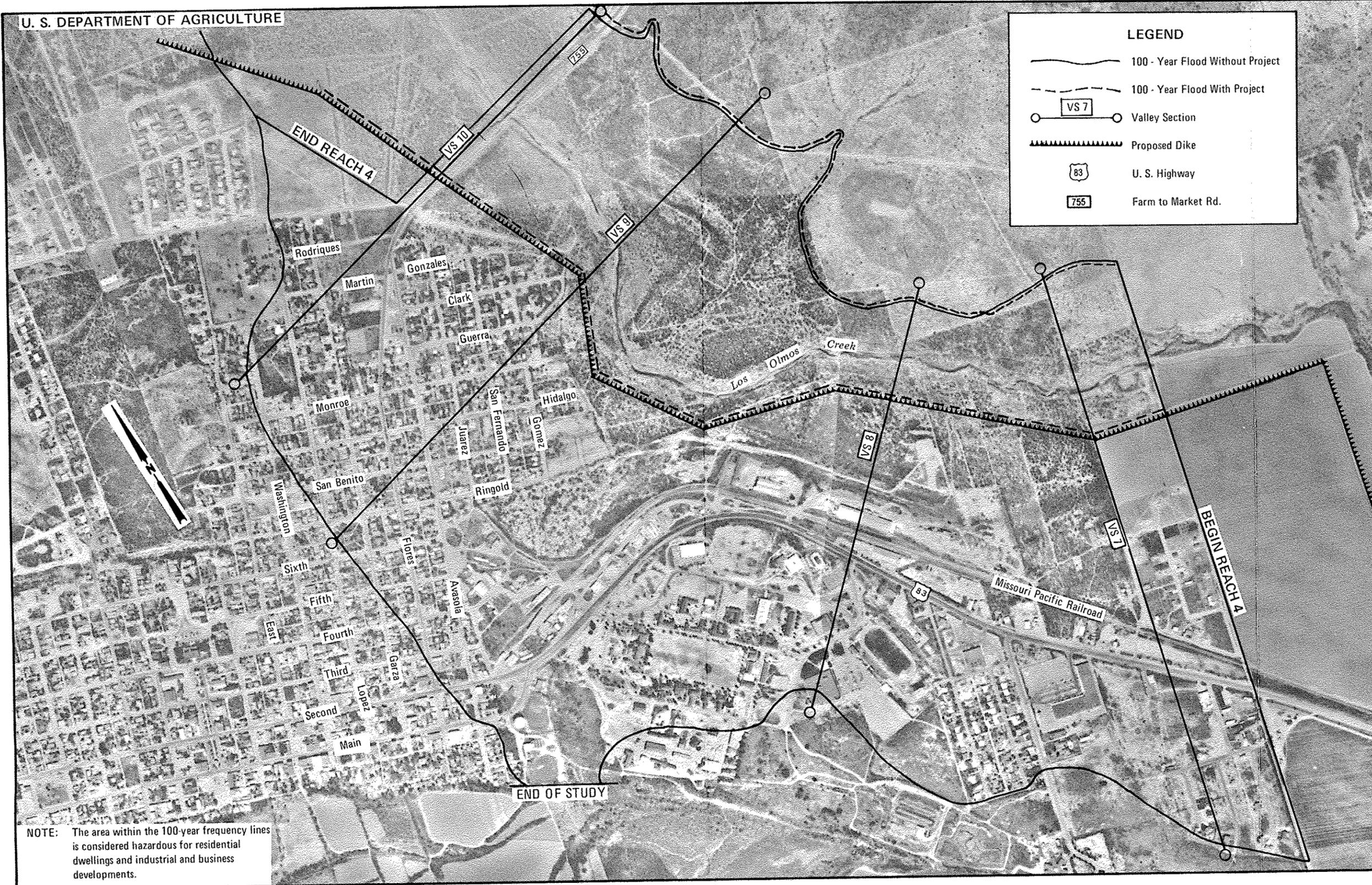
INSET



See Inset

SOURCE: Data compiled by Watershed Planning Staff.

61



**LEGEND**

- 100 - Year Flood Without Project
- 100 - Year Flood With Project
- Valley Section
- Proposed Dike
- U. S. Highway
- Farm to Market Rd.

**WATER SURFACE ELEVATIONS AT VALLEY SECTIONS <sup>1/</sup>**

Valley Section	100 - Year Frequency Flood	
	Without Project	With <sup>2/</sup> Project
7	166.2	166.1
8	168.8	169.0
9	171.1	172.0
10	172.7	174.5

<sup>1/</sup> Elevations presented in feet - MSL.  
<sup>2/</sup> 100 - Year frequency flood with project is completely confined by dike.

**FIGURE 1a**  
**URBAN FLOOD PLAIN MAP**  
**(REACH 4)**  
**LOS OLMOS CREEK WATERSHED**  
**RIO GRANDE CITY**  
**STARR COUNTY, TEXAS**

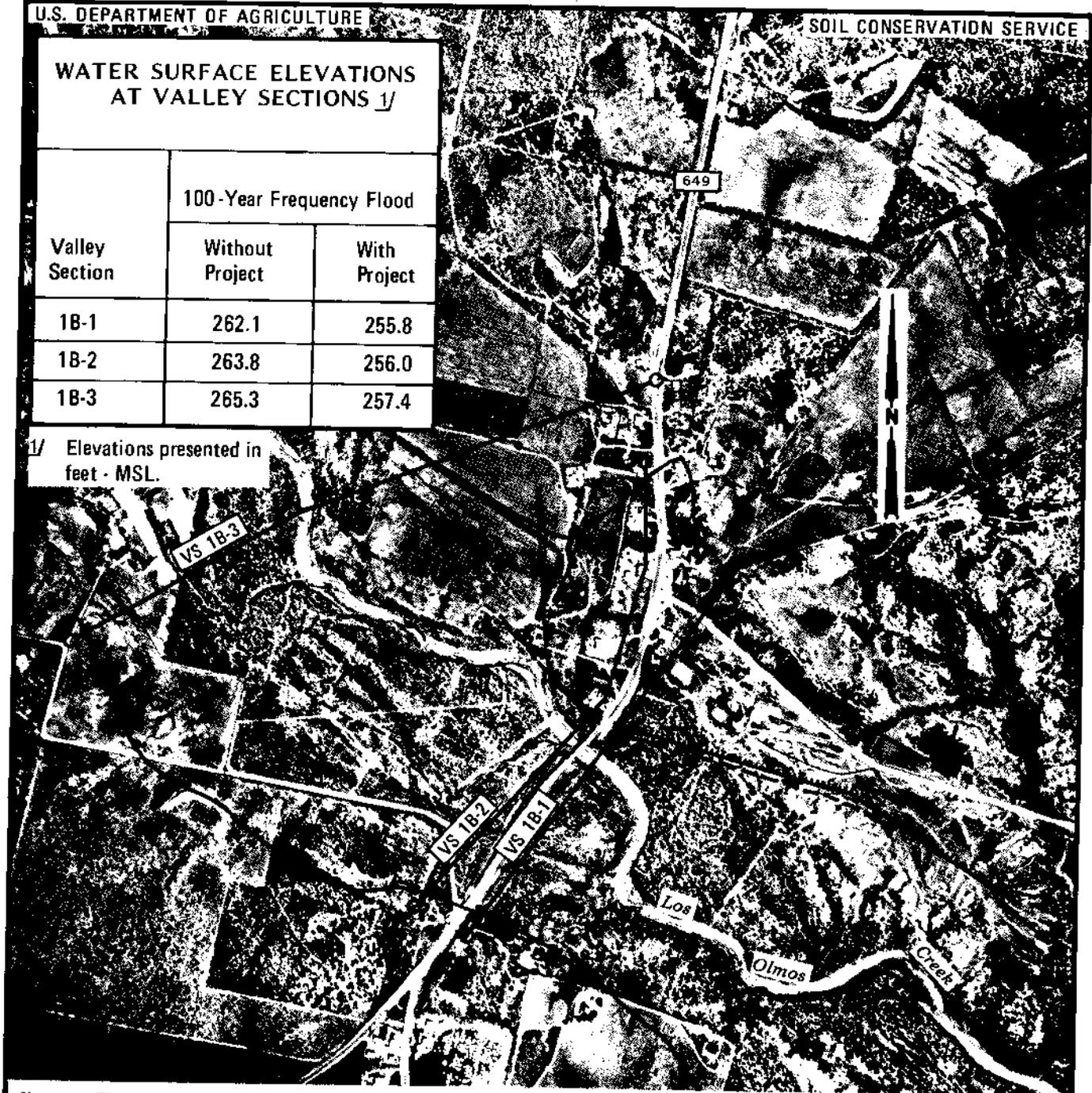
0 500 1000 2000 FEET  
 0 300 600 METERS  
 APPROXIMATE SCALE

**NOTE:** The area within the 100-year frequency lines is considered hazardous for residential dwellings and industrial and business developments.

**WATER SURFACE ELEVATIONS  
AT VALLEY SECTIONS 1/**

Valley Section	100-Year Frequency Flood	
	Without Project	With Project
1B-1	262.1	255.8
1B-2	263.8	256.0
1B-3	265.3	257.4

1/ Elevations presented in feet - MSL.

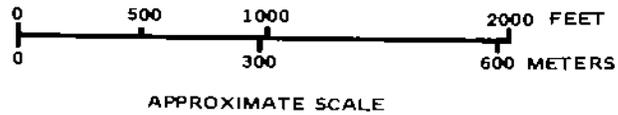


**Note:** The area within the 100-Year frequency lines is considered hazardous for residential dwellings and industrial and business developments.

**FIGURE 1b**  
**URBAN FLOOD PLAIN MAP**  
(Portion of Reach 5)  
**LOS OLMOS CREEK WATERSHED**  
EL SAUZ  
STARR COUNTY, TEXAS

**LEGEND**

-  100 - Year Flood Without Project
-  100 - Year Flood With Project
-  Valley Section
-  Proposed Dike
-  Farm to Market Road



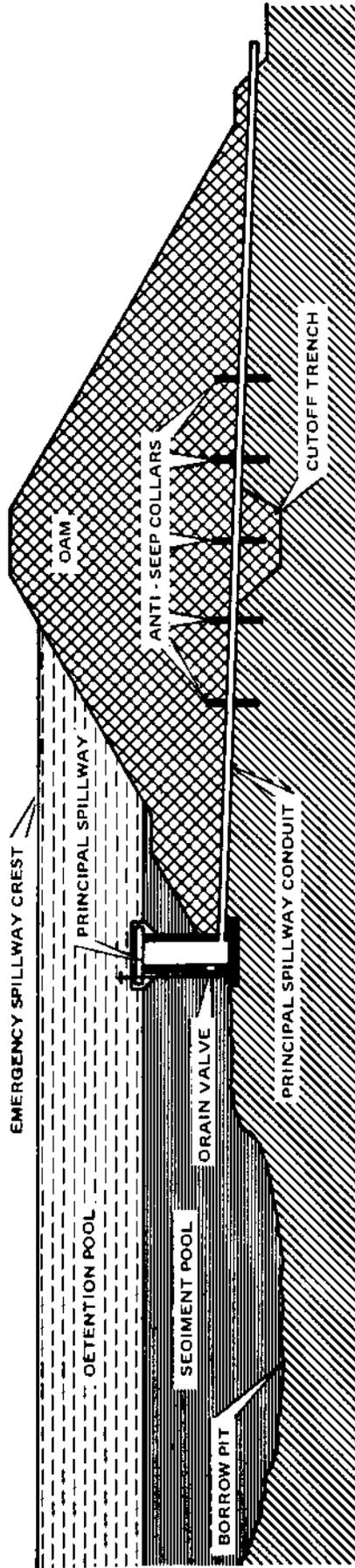


Figure 2  
SECTION OF A TYPICAL FLOODWATER RETARDING STRUCTURE

64



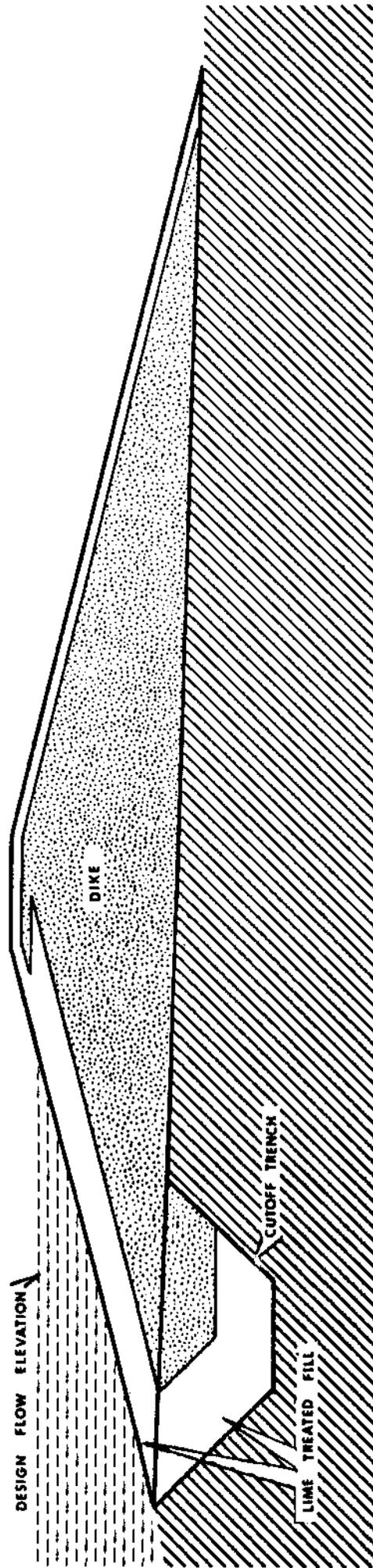


Figure 2 a  
TYPICAL SECTION OF THE PROPOSED DIKES