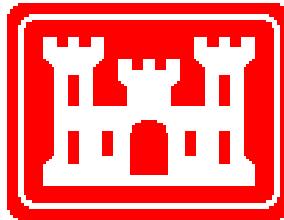


***Nueces River Basin Section 905(b)  
Analysis Reconnaissance Report***

*Prepared for:*



***U.S. Army Corps of Engineers  
Ft. Worth and Galveston Districts***

*Prepared by:*



**August 2002**

## ***Table of Contents***

<b><u>Section</u></b>		<b><u>Page</u></b>
Executive Summary .....		ES-1
1 Study Authority .....	1	1
2 Study Purpose .....		1
3 Location of Study Area / Congressional District.....		1
3.1 Location.....		1
3.2 Congressional Districts .....		2
4 Prior Reports and Existing Projects.....		3
5 Plan Formulation .....		4
5.1 Federal Objectives.....		4
5.2 Public / Local Sponsor Concerns .....		5
5.3 Planning Objectives including Problems and Opportunities.....		5
5.4 Planning Constraints .....		7
5.5 Nueces River Basin Overview .....		7
5.5.1 Land Area.....		11
5.5.1.1 Edwards Plateau (Hill Country) .....		11
5.5.1.2 South Texas Plains (Brush Country).....		12
5.5.1.3 Gulf Coast Prairies and Marshes (Coastal Plains) .....		12
5.5.2 Precipitation and Climate .....		13
5.5.3 Physiography and Geology .....		14
5.5.1 Edwards Aquifer/Guadalupe – San Antonio Basin Springflows .....		14
5.5.5 Reservoirs.....		17
5.5.6 Stream Segments .....		21
5.5.6.1 Hill Country Streams.....		22
5.5.7 Nueces River Delta and Estuary.....		23
5.6 Potential Federal Interest Projects.....		26
5.6.1 Flood Damage Reduction .....		27
5.6.1.1 July 2002 Flooding in Nueces River Basin.....		27
5.6.1.2 Flooding Downstream of Lake Corpus Christi .....		29
5.6.2 Ecosystem Restoration.....		30
5.6.2.1 Treated Effluent Placement in Nueces Delta .....		31
5.6.2.2 Stream Restoration in the Upper Nueces Basin .....		32
5.6.2.3 Water Quality in Choke Canyon Reservoir.....		34
5.6.2.4 Brush Management .....		35
5.6.2.5 Exotic Plant Control in the Nueces River Basin .....		36
5.6.3 Multipurpose Projects .....		36
5.6.3.1 Two-Way Pipe Project to Increase CCR/LCC System Storage.....		37
5.6.3.2 Desalination.....		38

## ***Table of Contents (continued)***

<b><u>Section</u></b>		<b><u>Page</u></b>
5.6.3.3	Recharge Enhancement Projects .....	40
5.6.3.4	Cotulla Diversion Project to Support CCR/LCC System Storage ....	47
5.7	Summary from the Preliminary Screening.....	49
5.8	Establishment of a Plan Formulation Rationale.....	50
6	Federal Interest .....	51
7	Preliminary Financial Analysis.....	51
8	Summary of Feasibility Assumptions.....	51
9	Feasibility Milestones.....	52
10	Feasibility Costs.....	52
11	Views of Other Agencies.....	53
12	Potential Issues Affecting Feasibility Phase.....	53
13	Project Map.....	54
14	Recommendations.....	54

## **Appendices**

- A      Detailed Map of Study Area – Nueces River Basin
- B      Letter of Support from Local Sponsor
- C      Feasibility Phase Study Estimates
- D      2001 Agreed Order between TNRCC and the City of Corpus Christi
- E      Technical Review Documents by USACE

## ***List of Figures***

<b><u>Figure</u></b>		<b><u>Page</u></b>
3-1	Location Map of the Nueces River Basin .....	2
5-1	Physical and Hydrologic Data for the Nueces River Basin .....	9
5-2	Location of Springs Outside Nueces River Basin .....	16
5-3	Explanation of Nueces Bay Inflow Methodology .....	20
5-4	Nueces Delta and Estuary.....	24
5-5	Common Species Associated with Nueces Estuary.....	24
5-6	Reservoir System Inflows from Last Four Major Droughts.....	25
5-7	Flooding in Nueces River Basin .....	29
5-8	Flooding in Nueces River Basin .....	29
5-9	Flooding in Nueces River Basin .....	29
5-10	Flooding in Nueces River Basin Downstream of LCC .....	30
5-11	Nueces River Undisturbed; Submerged Truck; 9 Vehicles .....	33
5-12	Endangered Species: Fountain Darter, Gambusia, Wild Rice, and Blind Salamander.....	40
5-13	Map of Proposed Recharge Enhancement Projects .....	41
5-14	Schematic of a Typical Recharge Enhancement Structure .....	43
5-15	Typical Stream Above Recharge Zone, Same Stream Over Recharge Zone .	43
5-16	Existing Recharge Site Upstream of Dam .....	43
5-17	Sample Hydrograph Showing Flow Differences .....	45
5-18	Central Frio County Hydrograph for Carrizo-Wilcox Aquifer.....	46
5-19	Estimated Commercial Fishing Harvest with and without Recharge Enhancement Structures .....	47
5-20	Cotulla Reservoir Proposed Site.....	49

## ***List of Tables***

<b><u>Table</u></b>		<b><u>Page</u></b>
5-1	Endangered and Threatened Species of the Nueces River Basin .....	10
5-2	Median Streamflow Table .....	23
5-3	Summary of Problems and Opportunities.....	27
5-4	Data on Recharge Enhancement Structures.....	41
5-5	Proposed Projects with Greatest Potential for Implementation.....	50
9-1	Feasibility Schedule / Milestones .....	52
10-1	Feasibility Cost Estimate .....	53