

**Rio Grande, Sandia Pueblo to Isleta Pueblo, CO, NM, TX
Ecosystem Restoration Feasibility Study and
Environmental Assessment**

Appendix A

Civil Engineering

U. S. Army Corps of Engineers
Albuquerque District



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of Engineers** ®
Albuquerque District

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Table of Contents

1 - SITE ANALYSIS	1
1.1 Introduction.....	1
1.2 Existing Conditions.....	1
1.3 Demolition	1
1.4 Site Development.....	1
1.4.1 Wetland Restoration/Construction	1
1.4.2 Bank Destabilization.....	2
1.4.3 High Flow Channels	2
1.4.4 Swales.....	2
1.5 Access and Staging Areas.....	3
1.6 Grading	3
1.7 Utilities.....	4
1.8 Fencing.....	4
1.9 Planting and Seeding.....	4
1.10 Quantities	4
1.11 CADD.....	5

EXHIBIT A - RECOMMENDED PLAN DRAWINGS

1 - SITE ANALYSIS

1.1 Introduction

The study area lies within an approximately 39 mile stretch of the Middle Rio Grande River in the vicinity of the City of Albuquerque, New Mexico between the northern boundary of the Sandia Pueblo and the southern boundary of the Pueblo of Isleta. The following ecosystem restoration measures were considered in the four study reaches: jetty jack removal, exotic species removal and fuel load reduction, wetland restoration/construction, bank destabilization, high-flow channels, riparian gallery forest mosaic restoration and gradient restoration facility. These measures were developed by the project team, considering a series of best buy alternatives throughout the entire study area. The final set of alternatives was selected by the project team and the Middle Rio Grande Conservancy District (MRGCD), local sponsor. The National Ecosystem Restoration (NER) Plan Tentatively Selected Plan (TSP) Feasibility Drawings reflect the final set of alternatives. Drawings illustrating these features are included in the Civil Engineering Appendix as Exhibit A.

1.2 Existing Conditions

The existing condition of the study area is a riparian forest (bosque) with a confined river system as a result of previously constructed flood control features and levee projects. The riparian forest is populated with both native and non-native invasive plants. Multiple restoration measures similar to those proposed in this feasibility study have been constructed within the study area under a previous USACE project titled “Middle Rio Grande Restoration Project”.

1.3 Demolition

Removal of non-native plants and reduction of fuel loads will be executed in Reach 3, Reach 4 and Reach 5 prior to implementing proposed restoration measures. The existing dirt mounds identified in Reach 3 will be removed to existing grade to assist with flow inundation within the bosque.

1.4 Site Development

1.4.1 Wetland Restoration/Construction

Wetland measures include both outfall wetlands and wet meadows. Outfall wetlands are proposed in Reach 3 and Reach 4 and are proposed to be constructed at existing storm water outfall to utilize the flows from the outfall and create a wetland habitat along the reconstructed channel connecting to the river. Wet meadow areas are proposed in Reach 2 and Reach 4 and will be created by excavating depressions to allow surface water from other water features to flow into area and create a wetland habitat.

1.4.2 Bank Destabilization

Bank destabilization measure is proposed in Reach 3 will clear and grub vegetation along the bank at the main channel followed by terracing the bank to multiple levels allowing overbank flooding.

1.4.3 High Flow Channels

High flow channel measures are proposed in Reach 2, Reach 3 and Reach 4 and will utilize remnant high-flow channels that were established during historic flow regimes. The existing high-flow channels will be dredged of sediment, cleared of debris and non-native plants and planted with native plants. The objective is to reestablish the connection between the riparian bosque and the river during high flows.

1.4.4 Swales

Swale measures are proposed in Reach 2, Reach 3 and Reach 4 and will utilize existing depressions created by removal of non-native vegetation and debris and further excavating to decrease the distance to the water table. The swale will be planted with native vegetation.

1.5 Site Access and Staging Areas

The contractor staging areas will be located within the riparian bosque and site access for this project will be along public roads, levee roads and temporary roads within the bosque.

1.6 Grading

Grading in the bosque will be required for wetlands, bank destabilization, high flow channels, swales and temporary site access roads. The majority of the grading will be excavation of restoration measures to design elevations requirements.

1.7 Utilities

Since all of the proposed restoration measures are all within the riparian bosque, it is not anticipated that there will be utility conflicts. As this project progresses to design a utility survey will be executed to verify that no utility conflicts with the restoration measures exist.

1.8 Fencing

Temporary fencing will be provided around the contractor's staging area during construction.

1.9 Planting and Seeding

All proposed cleared ecosystem restoration sites will include seeding with native grasses and forbs, bare root container or plug planting with native shrubs and pole planting of native shrubs and trees.

1.10 Quantities

Quantities were based data compiled a previously constructed USACE project titled "Middle Rio Grande Restoration Project" which contained similar restoration measures.

1.11 CADD

Bentley Microstation V8 was the computer-aided design and drafting (CADD) software was used in development of the feasibility drawings.

