

WESTSIDE CREEKS ECOSYSTEM RESTORATION

Appendix M: Cost Analysis and Detailed Cost Estimate

COST ANALYSIS AND DETAILED COST ESTIMATE APPENDIX

PROJECT GOALS AND OBJECTIVES

The goal is to provide an economical ecosystem restoration project located in San Antonio within the West Side Creeks area. The objectives include (1) Restore to the extent practicable, a sustainable, dynamic, riverine ecosystem providing habitat for aquatic and riparian dependent migratory and native resident bird species in the Westside Creeks study area, (2) Maximize, to the extent practicable, recreation benefits along the Westside Creeks compatible in scope and scale of the project's ecosystem restoration objective and consistent with national, regional, and local recreation goals.

METHODOLOGY

Costs during plan formulation were developed using MII V 4.1 software and the 2010 Cost Book. The effective date of costs was set at October 2012. After the Tentatively Selected Plan (TSP) was chosen and concurred with by USACEHQ, the Fort Worth District upgraded to MII V4.2 and the 2012 Cost Book. Costs for the TSP were estimated again with the newer information, with the effective date remaining at October 2012. This project was determined to be an ecosystem restoration project with National significance. Once the way forward was determined the cost was created using information from the non-federal sponsor, San Antonio River Authority (SARA), H&H and Civil. The project was broken out by the four creeks that make up the project area. It was determined what type of restoration was viable for each reach. The four reaches in the estimate are broken out based on the Civil Works Work Breakdown Structure (CWWBS). Within each reach there are different components estimated that were then placed in the Cost Estimating-Incremental Cost Analysis (CE-ICA) spreadsheet. Based on the CE-ICA a Tentatively Selected Plan (TSP) will be chosen. The CE-ICA is being utilized to show the various opportunities and components available to the project and maximize the benefits. Once the recommended plan is chosen it will be revised to be more specific. The estimate currently includes construction, relocations, plantings, PED and Construction Management costs, and contingency (based on the Abbreviated Risk Analysis).

ASSUMPTIONS AND CONSTRAINTS

The assumption for this project is that all work will be done within the existing right of way and no other Real Estate will have to be acquired at this level. There are some bridges within the construction limits but it is assumed that they will not be impacted by any of the planned restoration. Recreation formulation was dependent on a final TSP, therefore recreation costs reflect costs from the updated MCASES software and cost book. Some feature costs, such as shade structures, were developed from known costs of similar features in the Mission Reach Ecosystem Restoration Project.

RISKS

After having the Project Development Team complete the abbreviated risk analysis for this project it was determined that contingencies for this project range from 5% for slackwater to 29.73% for relocations. The higher risks come from the Project Growth, Construction Elements, Quantities and External Project Risks.

Based on information received from Civil Design there is the possibility that a couple of lift stations may be needed because of the new depth of the utility relocations, in Martinez Creek, but have not been included in the estimate at this time. This was accounted for in the abbreviated cost risk analysis (ARA) and reflected in the contingency.

ALTERNATIVES

From the information developed using the Cost Estimating-Incremental Cost Analysis (CE-ICA) there were six action plans that were determine to be best buys plans. There were 7 plans in total with the first being the no action plan. The other alternatives were a combination of Riparian Meadow, Pilot Channel (with pool riffles and utility relocations), Woody vegetation, Slackwater, and in Martinez a wetland.

RECOMMENDED PLAN

After analyzing the costs and the risks associated with the various alternative, the recommended plan in alternative 6, this includes Riparian Meadow in all 4 creeks, Pilot channel, Woody vegetation and Slackwater in San Pedro, Alazan, and Apache Creeks, to the extent practicable within the study limits, and recreation features (including trails, shade structures, benches, drinking fountains, trashcans and directional signage).

WestSideCreeks-15 July 2013

Revised as of 15 July 2013

This includes the revised contingencies based on the ARA dated March 2013

Estimated by
Designed by
Prepared by Ninfa Taggart

Preparation Date 5/10/2013
Effective Date of Pricing 10/1/2012
Estimated Construction Time 2,555 Days

<u>Description</u>	<u>Quantity</u>	<u>UOM</u>	<u>ProjectCost</u>
PROJECT SUMMARY - Scope			50,648,551
1 TSP - Alternative 6	1.00	LS	50,648,551
1.1 ER Component	1.00	LS	45,344,023
1.1.1 San Pedro Creek	1.00	LS	12,817,367
1.1.2 Apache Creek	1.00	LS	5,161,735
1.1.3 Alazan Creek	1.00	LS	13,444,971
1.1.4 Martinez Creek	1.00	LS	4,824,062
1.1.5 30 Planning, Engineering and Design	1.00	LS	4,584,548
1.1.6 31 Construction Management	1.00	LS	4,511,340
1.2 Recreation Components	1.00	LS	5,304,528
1.2.1 14 Recreation	1.00	LS	3,862,588
1.2.2 30 Planning, Engineering and Design	1.00	LS	726,773
1.2.3 31 Construction Management	1.00	LS	715,167

Description	Quantity	UOM	ProjectCost
PROJECT INDIRECT SUMMARY - System			50,648,551
1 TSP - Alternative 6	1.00	LS	50,648,551
1.1 ER Component	1.00	LS	45,344,023
1.1.1 San Pedro Creek	1.00	LS	12,817,367
1.1.1.1 Riparian Meadow	1.00	LS	5,641,473
1.1.1.2 Channel Modification	1.00	LS	6,622,544
1.1.1.3 Woody Veg 70/30 trees	1.00	LS	250,244
1.1.1.4 Slackwater	1.00	LS	303,106
1.1.2 Apache Creek	1.00	LS	5,161,735
1.1.2.1 Riparian Meadow	1.00	LS	2,628,329
1.1.2.2 Channel Modification	1.00	LS	2,254,234
1.1.2.3 Woody Veg 70/30 trees	1.00	LS	154,073
1.1.2.4 Slackwater	1.00	LS	125,099
1.1.3 Alazan Creek	1.00	LS	13,444,971
1.1.3.1 Riparian Meadow	1.00	LS	5,826,580
1.1.3.2 Channel Modification	1.00	LS	7,145,180
1.1.3.3 Woody Veg 70/30 trees	1.00	LS	156,315
1.1.3.4 Slackwater	1.00	LS	316,896
1.1.4 Martinez Creek	1.00	LS	4,824,062
1.1.4.1 Riparian Meadow	1.00	LS	4,824,062
1.1.5 30 Planning, Engineering and Design	1.00	LS	4,584,548
1.1.6 31 Construction Management	1.00	LS	4,511,340
1.2 Recreation Components	1.00	LS	5,304,528
1.2.1 14 Recreation	1.00	LS	3,862,588
1.2.1.1 10' Wide Trails Pedestrian Only	44,600.00	LF	2,772,529
1.2.1.2 Shade Structure	6.00	EA	833,470
1.2.1.3 Interpretive/Directional Signage	50.00	EA	3,832
1.2.1.4 Benches	15.00	EA	127,636

<u>Description</u>	<u>Quantity</u>	<u>UOM</u>	<u>ProjectCost</u>
1.2.1.5 Water Fountain	15.00	EA	4,140.35 62,105
1.2.1.6 Picnic Tables	23.00	EA	2,104.02 48,393
1.2.1.7 Trash Receptacles	23.00	EA	635.79 14,623
1.2.2 30 Planning, Engineering and Design	1.00	LS	726,773
1.2.3 31 Construction Management	1.00	LS	715,167