

Appendix H

VALUE ENGINEERING REPORT

Value Engineering Study Report



***Small Diversion at Convent/Blind River
Amite River Diversion Canal Modification
Medium Diversion at White Ditch***

CEMVN-VE-09-05



June 2009

Prepared by

Value Management Strategies, Inc.





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Date: June 25, 2009

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Subject: Value Engineering Study Report – Final
Small Diversion at Convent/Blind River
Amite River Diversion Canal Modification
Medium Diversion at White Ditch

Mr. Vicidomina:

Value Management Strategies, Inc. is pleased to transmit an electronic copy of the Final Value Engineering Study Report.

This report summarizes the results and events of the study conducted May 18 through 22, 2009, in New Orleans, Louisiana.

We enjoyed working with you and are looking forward to continuing our efforts to assist the New Orleans District U.S. Army Corps of Engineers in its value engineering efforts.

Sincerely,

VALUE MANAGEMENT STRATEGIES, INC.

A handwritten signature in black ink that reads "Mark Watson". The signature is written in a cursive style with a long horizontal stroke at the end.

Mark Watson, PE, CVS
VE Study Team Leader

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- A. Information on Relative Sea Level Rise as prepared by Kevin Knuuti, P.E., Chief, Engineering Division, U.S. Army Corps of Engineers, Sacramento, CA

EXECUTIVE SUMMARY

INTRODUCTION

This Value Engineering (VE) Study Report summarizes the events of the VE workshop conducted May 18 – 22, 2009 for the U.S. Army Corps of Engineers (USACE), New Orleans District, by Value Management Strategies, Inc. The subject of the study was a group of three Louisiana Coastal Area (LCA) ecological restoration projects: Small Diversion at Convent/Blind River, Amite River Diversion Canal Modification, and Medium Diversion at White Ditch.

This study was conducted at the Feasibility Scoping Report/Preliminary Draft EIS, an early stage of project development, and as such is the beginning of plan formulation.

VE STUDY RESULTS

The VE team developed 32 alternative concepts which are intended to assist the USACE in better formulating plans to carry forward into the next phase of project development.

These recommendations are categorized per subject project, as well as those that pertain to general plan formulation.

Major findings of the workshop are summarized as follows:

Small Diversion at Convent/Blind River

U.S. Highway 61 (US 61) bisects the Convent/Blind River project site from northwest to southeast. Roughly paralleling the highway is an active railroad to the south. Both of these transportation routes act as a “dam” to the transfer, from south to north, of fresh water taken from the Mississippi River, except where the Blind River flows under the railroad and highway on its way to Lake Maurepas. In addition, Blind River acts as a “sink”, collecting the diverted/distributed water from the swamp and conveying it out of the study area. Finally, one of the key project constraints is to not adversely impact flood control projects in the area.

Key VE alternatives identified to address these issues are as follows:

- ◆ Hydrologic impoundment from US 61 and railroad grade
 - Provide method for transferring water under railroad and US 61 to the north restoration area. Proposed methods include jacking and boring of pipe culverts under both the railroad and the highway, installing shallow concrete box culverts under US 61, and installing small pumps at low spots on the south side of the highway and railroad.
- ◆ Distribution and control of freshwater into project area while not adversely impacting flood control
 - Use Blind River to distribute freshwater to project area
 - Consider reversible pumping of proposed river siphons and provide local drainage improvement to facilitate low river stage diversion flow

Amite River Diversion Canal Modification

The project site has been divided into eight subunits based on topographic high points or natural and artificial channels that serve to impede or intercept hydrologic flows. One of the goals of this project is to improve hydrologic connectivity between the subunits. A relic railroad grade traversing the study area from north to south in the eastern study area is one of the key hydrologic impairments. The study area is focused around the impaired bald cypress-tupelo swamp stands adjacent to the Amite River Diversion Canal.

Key VE alternatives identified to address these issues are as follows:

- ◆ Increase size and number of gaps in railroad ridge and use spoils to enhance habitat of remaining ridges

Medium Diversion at White Ditch

Presently, loss of area in the marsh allows water to rapidly pass through the system and salt water is able to quickly intrude. The absence of an outfall management plan related to the White Ditch diversion siphon results in the surrounding marsh receiving limited benefits from the diverted river water. Also, the lack of marsh-forming sediments from the Mississippi River has accelerated the degradation of all marsh types. Sediment needs in the project area are extensive and plan strategies that increase diversion flows to provide required sediment transport may not be sufficient to provide the necessary sediment.

Key VE alternatives identified to address these issues are as follows:

- ◆ Maximize sediment introduction
 - Design diversion structures to maximize sediment introduction
 - Install sediment introduction system into White Ditch diversion structure
- ◆ Diversion control structure size and location
 - Construct a combination spillway with capacity controls to medium diversion levels
 - Construct diversion structure approximately seven miles south of Phoenix
- ◆ Address fresh water source and transport
 - Optimize flow conveyance in White Ditch to feed areas immediately adjacent to the south of existing channel

General/Plan Formulation

- ◆ Develop Plan Strategies that account for much higher levels of global sea level (GSL) rise

One issue addressed by the VE team spans all three projects and has ramifications throughout the LCA program. Currently, work is underway by the USACE, National Oceanic and Atmospheric Administration (NOAA), and United States Geological Survey (USGS) to investigate the glacial melt contribution to future GSL rise. Project benefits depend upon habitats maintained above sea level. Consequently, benefits beyond the 50-year planning horizon will be lost if subsidence and GSL rise exceed the current

assumptions. The rate of GSL rise in the future is currently unknown, but could be much greater than the current assumptions. As such, the projects should develop specific Plan Strategies that consider the range of possible future GSL rates.

- ◆ Provide clarification and address the Water Resources Development Act of 2007 (WRDA 2007) regarding specified authorized funding limits and the extent of planning development of LCA projects

Each LCA project has a specific level of funding to accomplish the authorized project goals and objectives as described in the LCA Program. However, during the plan formulation phase of the studies, stipulations (cost and/or size, as well as time) should not serve as planning constraints. Consideration of all reasonable alternatives to achieve the goals and objectives of the project, regardless of the time, cost, and/or size, is required by USACE policy. The USACE policy guidance requires identification of a National Ecosystem Restoration (NER) plan that maximizes ecosystem restoration benefits compared to costs, in addition to the identification of a Tentatively Select Plan (TSP). In some cases, the NER plan may differ from the TSP by exceeding the authorization stipulations resulting in time, cost, and/or size serving as constraints for the plan selection phase of the study. This forces the TSP to be an alternative that would accomplish the ecosystem benefits within the WRDA authorization.

SUMMARY OF VE ALTERNATIVE CONCEPTS

The table below summarizes all of the alternative concepts developed by the VE team. The items in **red** text were identified by the VE team as items of particular note and key recommended strategies for the Project Development Team (PDT) to consider.

SUMMARY OF VE ALTERNATIVE CONCEPTS

*Small Diversion at Convent/Blind River
Amite River Diversion Canal Modification
Medium Diversion at White Ditch*

Number	Description
Small Diversion at Convent/Blind River	
CB-1	Provide method for transferring water under railroad and US 61 to the north restoration area
CB-2	Use Blind River to distribute fresh water to project area
CB-3	Consider reversible pumping of proposed river siphons or to facilitate low river stage diversion flow
CB-4	Construct “environmentally friendly” conveyance channels
CB-5	Define the hydrologic connectivity of project areas
CB-6	Obtain Total Maximum Daily Load (TMDL) waiver for diversion into Blind River
Amite River Diversion Canal Modification	
A-1	Increase size and number of gaps in railroad ridge
A-2	Use railroad ridge as an oak tree habitat
A-3	Develop alternative that maximizes long-term fresh water content of Lake Maurepas as potential buffer to a major salt water inflow event
Medium Diversion at White Ditch	
WD-1	Design diversion structures to maximize sediment introduction
WD-2	Optimize quantity of freshwater diverted at White Ditch in combination with other proposed diversion projects
WD-3	Construct diversion structure approximately seven miles south of Phoenix
WD-4	Construct a combination spillway with capacity controls to medium diversion levels
WD-5	Install sediment introduction system into White Ditch diversion structure
WD-6	Optimize flow conveyance in White Ditch
WD-7	Identify and incorporate impacts effects of subsidence due to fluid withdrawal into project analysis
General/Plan Formulation	
G-1	Develop Plan Strategies accounting for rise in sea level
G-2	Provide clarification and address the WRDA 2007 regarding specified authorized funding limits and the extent of planning development of LCA projects
G-3	Define plan alternatives that can be optimized within project authorization
G-4	Amend project authorizations to include additional federal funding for “first phase” adaptive management measures
G-5	Establish permanent trust fund for project maintainability
G-6	Identify impacts of multiple diversion structures on Mississippi River and fresh water and sediment requirements of project areas
G-7	Incorporate comprehensive monitoring of project benefits before, during, and after completion of diversion measures
G-8	Identify and address potential real and perceived drainage impact of proposed diversion flows
G-9	Redefine project constraints versus project issues
G-10	Revisit weighted matrix method of ranking initial alternatives and plan elements

Number	Description
G-11	Redefine structural versus non-structural items
G-12	Develop salt tolerant bald cypress variety for use in coastal swamp restoration efforts
G-13	Use Ascension Parish wastewater effluent to replenish cypress forests
G-14	Use self-regulating tide gates for flap gates
G-15	Consider using vinyl sheet pile in guide levees for proposed diversion outlet channels
G-16	Consider effects of nutria in project analysis

Full Report Available Upon Request

