

Engineering With Nature Project Fact Sheet



Title

Realizing a Triple Win in the Desert: Systems-level Engineering With Nature on the Rio Grande

Background

Three recently completed system-level studies on the Middle Rio Grande (MRG) used Engineering With Nature (EWN) to achieve sustainable development of water resources in the desert. These studies balanced social, environmental, and economic considerations using traditional benefit metrics (i.e., habitat units) to support transparent decision-making. The MRG projects have resulted in a unique opportunity to measure the benefits of ecosystem goods and services (EGS).

Objectives

- 1) Develop a series of ecosystem production functions and a monetization strategy to characterize the EGS produced by the MRG studies
- 2) Devise a methodology to integrate these new metrics into the current operation and management paradigm
- 3) Explore adaptive management strategies to maximize return on investment (ROI) based on system goals and objectives

Approach

The old adage, “What gets measured, gets managed,” serves as the underlying driver for these projects. In their current state, the Middle Rio Grande projects will continue to be monitored and managed by the USACE Albuquerque District using traditional metrics (i.e., habitat units). Under this effort, researchers will:

- 1) develop EGS metrics and a strategy to monetize outputs,
- 2) perform multi-criteria decision analysis to collapse metrics into a single EGS production score, and
- 3) evaluate the system using the EGS approach and assess potential returns on investment with adaptive management.

Outcomes

EGS's generated via the effective and efficient operation and management of the system (i.e., recreation, aquifer recharge, aesthetics, constant stream flow, clean-water provisioning, recreation, carbon sequestration, biodiversity, etc.) are unique. If these EGS's are not characterized in a meaningful way, the MRG adaptive management strategy will focus on the habitat rather than the true ROI – the provisioning of human services to the local community. This project offers the development of a new capability: the effective and efficient characterization of EWN with an eye towards maximizing ROI through holistic adaptive management.

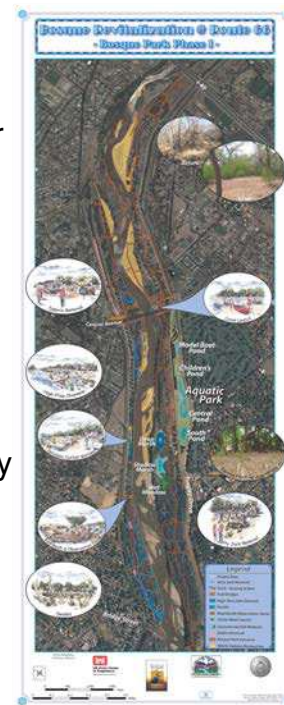


Figure 1. Study Area

Point of Contact: Kelly A. Burks-Copes
Kelly.A.Burks-Copes@usace.army.mil; 601-634-2290