

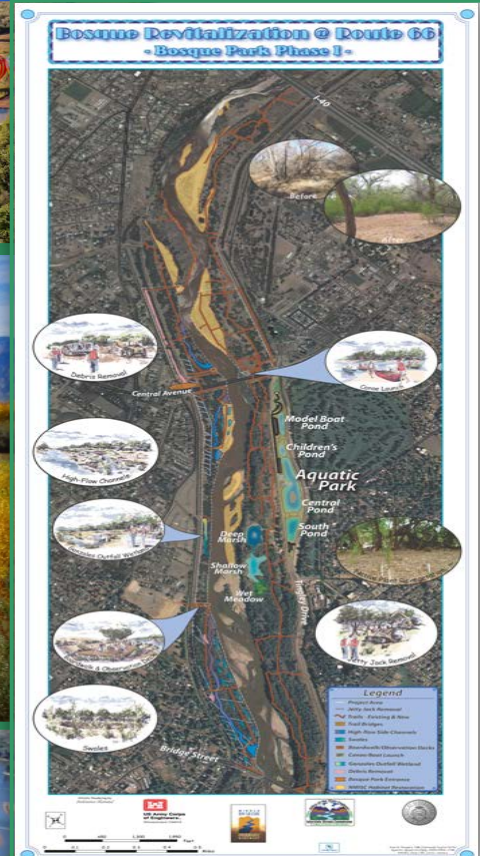
Realizing a Triple Win in the Desert: Systems-level Engineering With Nature on the Rio Grande

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US Army Corps of Engineers
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■ Problem

- ▶ Three constructed projects on the Middle Rio Grande:
 - Ecosystem Revitalization @ Route 66 Project
 - Middle Rio Grande Bosque Ecosystem Restoration Project
 - Albuquerque Biological Park Wetland Restoration Project
- ▶ All 3 deployed EWN strategies
- ▶ Ops needs an approach that promotes **transparency** and **collaboration** to adaptively monitor, evaluate and enhance the returns on these investments as well as a means to tactically and strategically capture the broad range of **ecological, social and economic benefits** arising from these features



Objectives

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



Approach

- Kickoff Workshop**/Webinar (FY13-14)
- Develop** EGS Metrics and Calibrate (FY14-15)
- Perform** MCDA on EGS (FY15-16)
- Evaluate** System and Determine ROI (FY16)
- Formulate** Adaptive Management Measures (FY16)
- Produce** 2 TNs in FY14



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■ Project Funding by Year

- ▶ FY13: \$50K
- ▶ FY14: \$102K*
- ▶ FY15: \$118K?
- ▶ FY16-17: \$150K?

Major Project Deliverables

- **Series of TNs** detailing the process and outcomes
- **Series of EGS** associated with commonly utilized EWN Features in the arid landscape
- **Series of metrics** that can be ported to other studies – Las Cruces, NM & Bottomless Lakes (Pecos River)
- **A structured approach and framework** that can be ported elsewhere



Benefits to Navigation Program

The alignment of traditional USACE operational objectives with **broader societal benefits** could generate a range of advantageous outcomes including:

- ❖ **increased** potential for innovative funding,
- ❖ **greater** public appreciation of the multifunctional role of USACE projects
- ❖ **enhanced** awareness of aquatic ecosystem protection benefits for both people and wildlife



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■ FY14 Products

■ Stakeholder Workshop (FY 14)

■ Documents

- **White Paper #1** describing the challenges for the community of practice (FY 15)
- **TN #1:** Intro studies & EWN features (FY14)
- **TN #2:** Workshop Results (FY15)
- **TN #3:** Service Matrix and Decomposition (FY15)
- **TN #4:** Causal Mapping (FY15)
- **TN #5:** Metrics Development (FY16)
- **Factsheet & Web Materials**

■ Conferences & Meetings

- **Oral presentation** given by Dr. David Koran (USACE-HQ) at the Desert Fishes Council, Flagstaff, AZ (November 2013)
- **Poster** presented at the *Flood Risk Management (FRM) and EWN Collaborative Meeting* held in Vicksburg, MS (10-11 June 2014)

