Stormwater Recharge to Benefit the San Pedro River near Sierra Vista, AZ

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CCRN Project Locations
A Brief History of Cochise County Recharge Projects

- 2011 County awarded $1.693 Million Walton Family Foundation grant for Palominas Recharge Pilot Project
- 2014 Palominas construction complete & monitoring started
- 2015, 2016, 2017 Preliminary design on Riverstone, Bella Vista and 3 Canyons recharge properties
- 2016 Ephemeral Streamflow & Groundwater monitoring started on other recharge properties
- 2017 County awarded $550,000 Natural Resources Conservation Service grant for Bella Vista/Coyote Wash recharge project design
Five-Phase Approach to Project Development

• Phase 1: Initial Investigations and Feasibility Study
  Surface Water Analyses
  Near-surface studies to identify optimum recharge site locations

• Phase 2: Detailed Investigations and Concept Development
  Deeper Subsurface Investigations (Boreholes, Electrical Resistivity)
  Concept Site Design

• Phase 3: Facility Design and Permitting
  Construction Plan Preparation
  Permitting

• Phase 4: Facility Construction

• Phase 5: Operations, Maintenance, Monitoring

NOTE: Aquifer recharge is being prioritized for supporting river baseflows, so iterations with the groundwater model are essential
Bella Vista Recharge: Conceptual Design for Urban Enhanced Runoff (UER)

Sierra Vista, AZ
Cochise County owned property
TNC conservation easement
Bella Vista Coyote Wash Recharge Project

- Drains large portion of urbanized Sierra Vista
- Buffer between City and SPRNCA
- EOP groundwater mound lies beneath much of 2900 acre property
- Coyote Wash conveys the most runoff annually from urbanized areas of any drainage in the Sierra Vista Subwatershed
- Recharged UER of 150 acre feet per year is estimated to have a positive effect on the San Pedro River downstream
Key Questions:
Bella Vista Coyote Wash UER Recharge

- What is UER?
- How much UER is generated in each watershed?
- Where and how can UER be captured?
- Where are sites amenable to groundwater recharge?
- How much UER capture will be/is recharged under a specific design?
- What is the effect on the groundwater aquifer supporting the San Pedro?
- How to leave pre-development flows?

Example of runoff hydrograph under pre-and post-development conditions in Bangalore, India (Adapted from Fig. 12-2 in Ramachandra and Mujumdar, 2009)
Bella Vista Recharge Project Status

- Preparing Watershed Plan and Environmental Assessment at optimal recharge location
- Evaluating preliminary design alternatives.
- Expect to choose a selected alternative this spring
- Then enter full design phase
- Design complete (with bid-ready construction plans) by March 1, 2020
Questions?

Laura Fawcett, 2015

Laura Fawcett, 2015

Dennis Donovan, 2014

Laura Fawcett, 2015