

**Section 1135 Las Cruces Dam
Environmental Restoration Project
U S Army Corps of Engineer's Presentation**



US Army Corps of Engineers



Las Cruces Dam Restoration Study, Section 1135

City Council Work Session,
September 13, 2010



What is the federal authority?

Section 1135 of Water Resources Development Act 1986 (as amended)

Modifications of Corps Structures or operation of the structure to improved the quality of environment to benefit of Fish and Wildlife.

Aquatic or Riparian Restoration



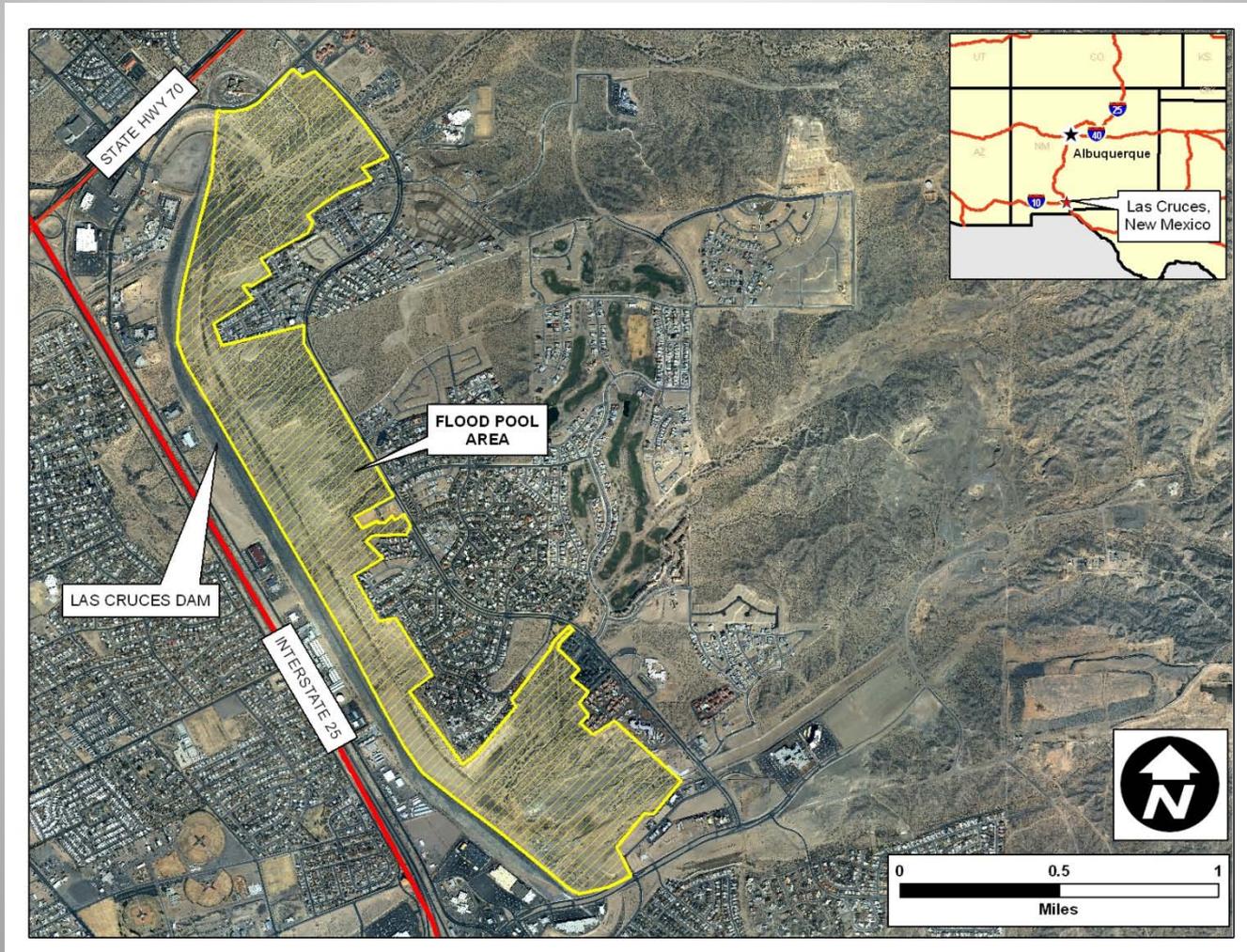
Study Scope

Identify multiple alternatives that meet study objectives for ecosystem restoration & ancillary recreation

Corps and City of Las Cruces work together as partners



Project Location





Project Phases & Timeline

Preliminary Restoration Plan, 2005

Feasibility Study Phase, 2006- 2011

Design & Implementation Phase, 2011-2013

****Schedule subject to funding & feasibility report approvals

****Project Partnership Agreement Required to initiate D&I phase



The Feasibility phase- at a glance

- **Problems & Opportunities-** Identification & documentation(scoping meetings with Sponsor & others)
- **Existing Conditions & Future w/out Project Conditions Information**—Sedimentation & H&H analysis*, Geotechnical/soils analysis, Environmental engineering, Cultural resources, Biological resources*, real estate
- **Planning Objectives-** what is our desired future condition?
- **Planning Constraints-** dam maintenance, water budget, cultural/historic sites, etc.
- **Management Measures** -building blocks to develop alternative plans
- **ID Recommended plan for Implementation**
- **Corps Division Approval**



PROJECT COSTS

75% Federal Government

25% City of Las Cruces

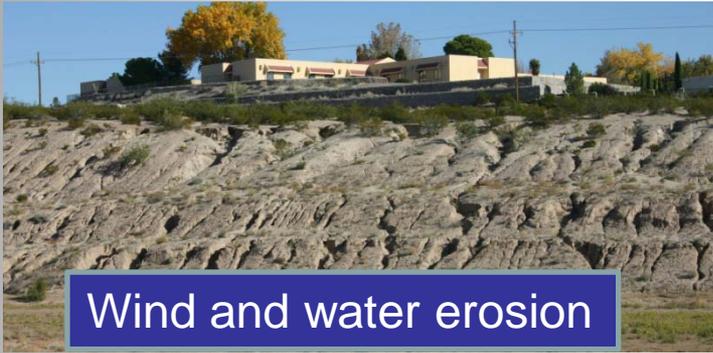
Total Feasibility Study Costs: ~1.2 million

Total Design & Implementation: Est. 2-3
million

Work-In-Kind allowable with executed Project Partnership
Agreement



What have we learned? Project Opportunities



Wind and water erosion



Chihuahuan Desert riparian habitat & hydraulic connectivity



Native species establishment & migration corridors



Water quality improvements



Development Encroachment, Recreation



How do we use this information? Formulate Objectives

- Increase the quality and quantity of Chihuahuan riparian and wetland habitat.
- Increase the amount and diversity of native vegetation .
- Decrease wind and water erosion from disturbed sites.
- Increase or restore habitat connectivity (arroyos)
- Increase recreation opportunities (inc. environmental /cultural/historical education)



Identify Preliminary Measures

- Create Wetlands.
- Restore Arroyo Riparian Habitat .
- Create or enhance Rio Grande Bosque habitats.
- Create sediment traps.
- Non-native plant control (Salt Cedar, Johnson Grass).

-----SCREENING-----

- Create Wetlands (Not sustainable in lower basin due to sediment)
- Restore Riparian Habitat (Water budget/hydrology limits bosque)
- Create sediment traps (high maintenance - not sustainable - REMOVED)
- Non-native plant control (High uncertainty – loss of function - REMOVED)



Restoration Measures Refined

1. Restore Arroyo Riparian habitat - more appropriate for majority of study area.
2. Create Rio Grande bosque cottonwood and wet meadow habitats where hydrology is appropriate.
3. Improve existing seasonal wetlands (Playas)
4. Use reclaimed water in upper basin for created wetland
5. Alter arroyo flow path to conserve playa habitat while improving arroyo habitat



Proposed Measures

- Restore Chihuahuan Desert Arroyo Riparian Areas

Proposed Restoration Area = 72 acres in 10 patches

Typical Species: Restoration areas would be planted with arroyos species, including desert willow, four-wing saltbush, apache plume, honey mesquite, burrobrush, little-leaf sumac and cutleaf brickellbush. Other appropriate species would be added to increase diversity.

Arroyo Riparian





Proposed Measures

- Create Cottonwood-Willow Riparian Habitat

Proposed Restoration Area = 6.35 acres in 3 areas
(around playas and wetlands)

Typical Species: Cottonwood, Gooding's willow, and Coyote willow. Other riparian shrubs may be added for diversity, such as seepwillow, Torrey's wolfberry, or arrow-weed. Vegetation would provide wildlife cover and protection and stability to the wetland.



Proposed Measures

- Improve Playa Habitat

Proposed Restoration Area = 3.6 acres (in and around 4 existing playa basins)

Typical Species: Sedges or rushes in the deeper areas and grasses that tolerate periodic inundation in shallower areas and margins. Spikerushes and Baltic rush would grow in shallow water at the edges of playas. Nutsedge would grow in the moist-soil margins. Grasses would include vine-mesquite, tobosa, alkali sacaton, saltgrass, and scratchgrass.

Playa





Proposed Measures

- Create Permanent Wetland

Proposed Restoration Area = Two 1-acre cells

Upper cell open water with vegetated fringe.

Lower cell moist soil, grass meadow.

Typical Species: A variety of sedges, rushes and grasses, similar to the playas but including taller bulrushes that need permanent water.

Wetlands





We've Identified the measures, what's next?

Quantify Measures & Develop Alternative Plans

- Use Habitat Suitability Models to quantify with/without project future conditions.
- Determine \$cost\$ of each measure.
- Identify dependencies and combinability of measures.
- Perform Cost Effectiveness/Incremental Cost Analysis.

TECHNICAL REPORT BY CCR
MAY 1995

HABITAT SUITABILITY INDEX MODELS:
CACTUS WREN



Fish and Wildlife Service
U.S. Department of the Interior



Cost Effectiveness Incremental Cost Analysis

Plan	Name	Cost	Output (AAHU)	Plan Type
0	No Action Plan	0.000	0	Best Buy
1	Cottonwood around playas	\$104,944	4.88	Best Buy
2	Arroyo Planting AND Cottonwood around playas	\$494,119	21.4	Best Buy
3	Arroyo Planting AND Cottonwood around playas AND Playa Plantings	\$723,417	22.49	Best Buy
4	Arroyo Planting AND Cottonwood around playas and wetland AND Playa Plantings AND wetland	\$1,653,828	25.07	Best Buy
5	Arroyo Planting AND Cottonwood around playas AND Playa Plantings AND wetland AND Channel Diversion	\$2,013,892	25.11	Best Buy
6	Cottonwood around playas AND Playa Plantings	\$334,242	5.97	Cost Effective
7	Arroyo Planting	\$389,175	16.52	Cost Effective
8	Arroyo Planting AND Cottonwood around playas AND Playa Plantings AND Channel Diversion	\$1,107,093	23.54	Cost Effective
9	Arroyo Planting AND Cottonwood around playas and wetland AND wetland	\$1,424,530	23.72	Cost Effective
10	Arroyo Planting AND Cottonwood around playas AND Playa Plantings AND wetland AND Channel Diversion	\$1,630,216	24.02	Cost Effective

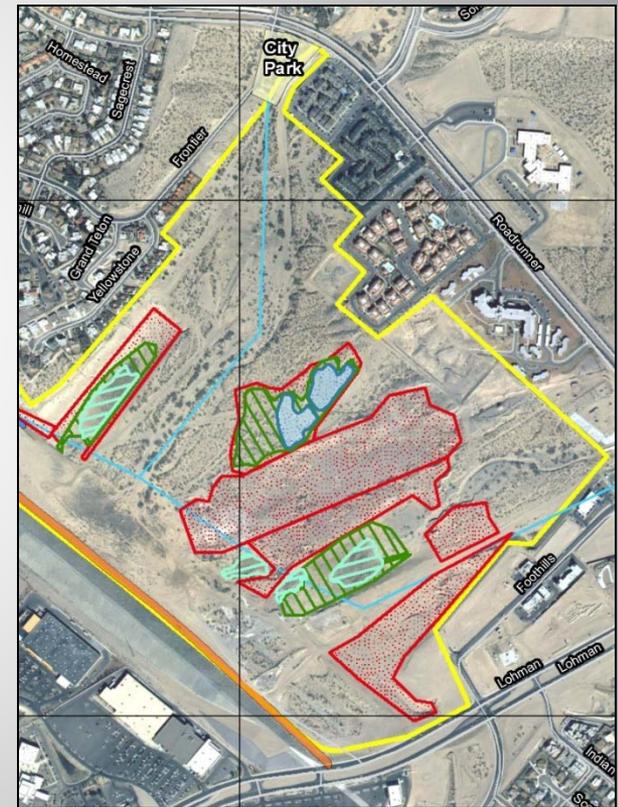
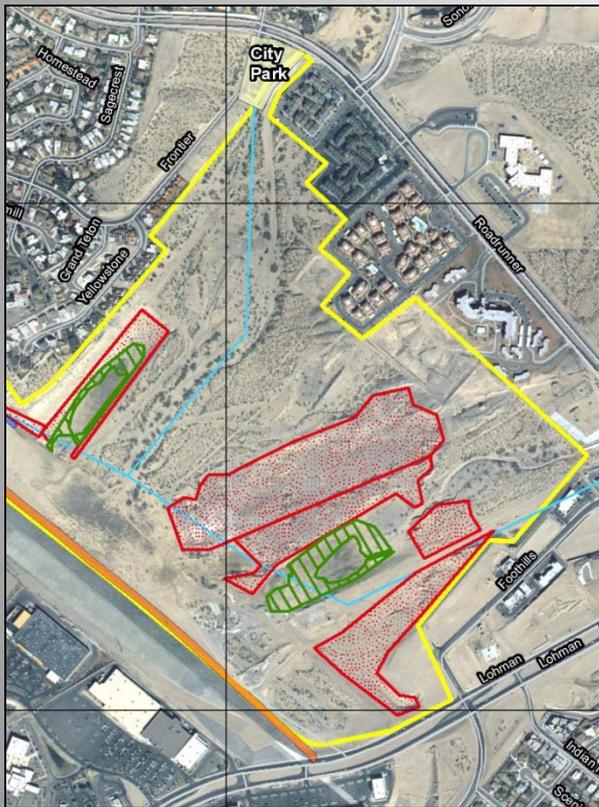


Preferred Plans

Plan 2

Plan 9

Plan 4* Hab team Rec.



\$494, 000- Best Buy

\$1,425,000- Cost Effective

\$1,654,000- Best Buy



One other Component to Consider: **Recreation**



Recreation Master Plan



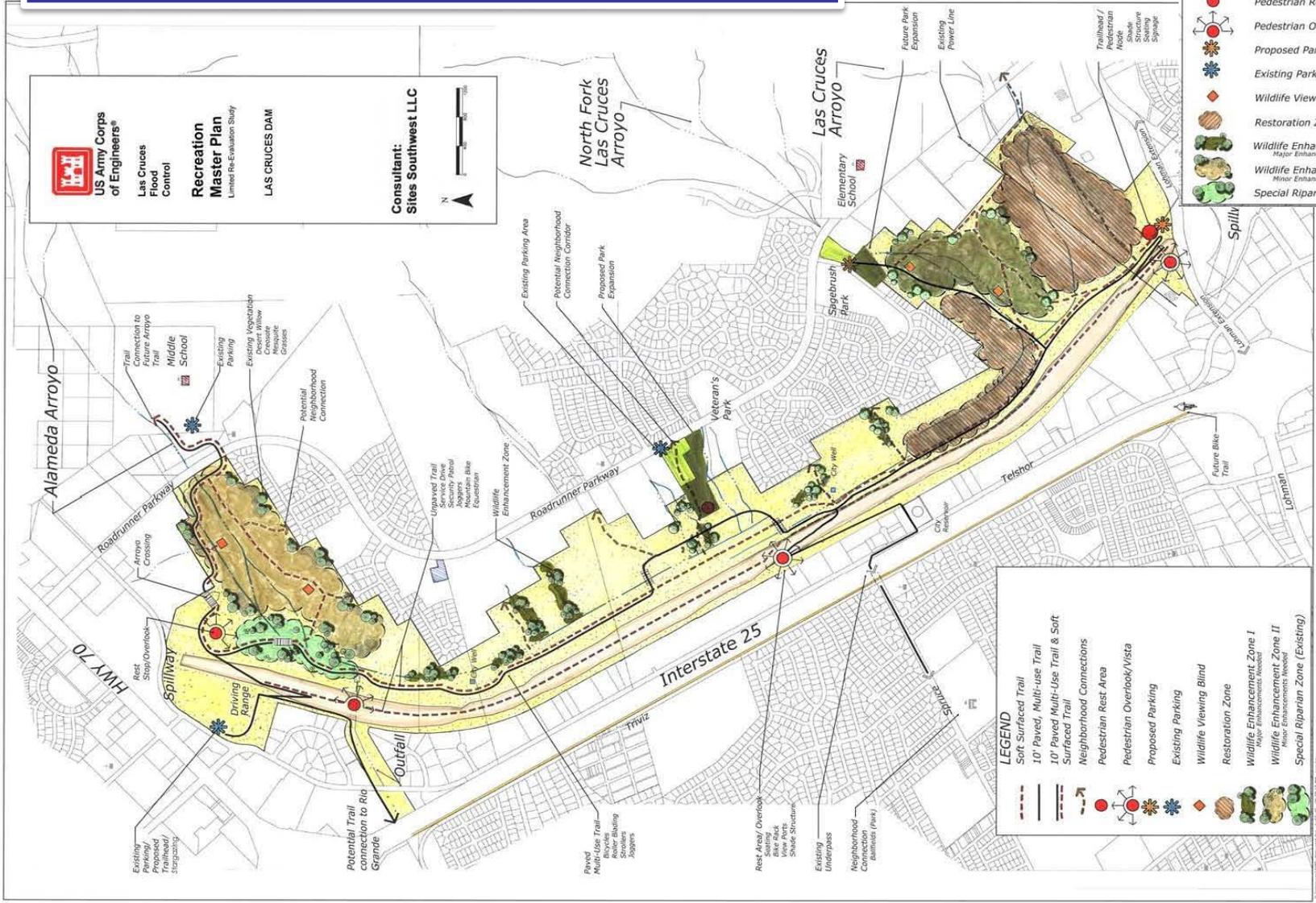
US Army Corps of Engineers

Las Cruces Flood Control

Recreation Master Plan
Limited Re-Evaluation Study

LAS CRUCES DAM

Consultant:
SITES Southwest LLC



LEGEND

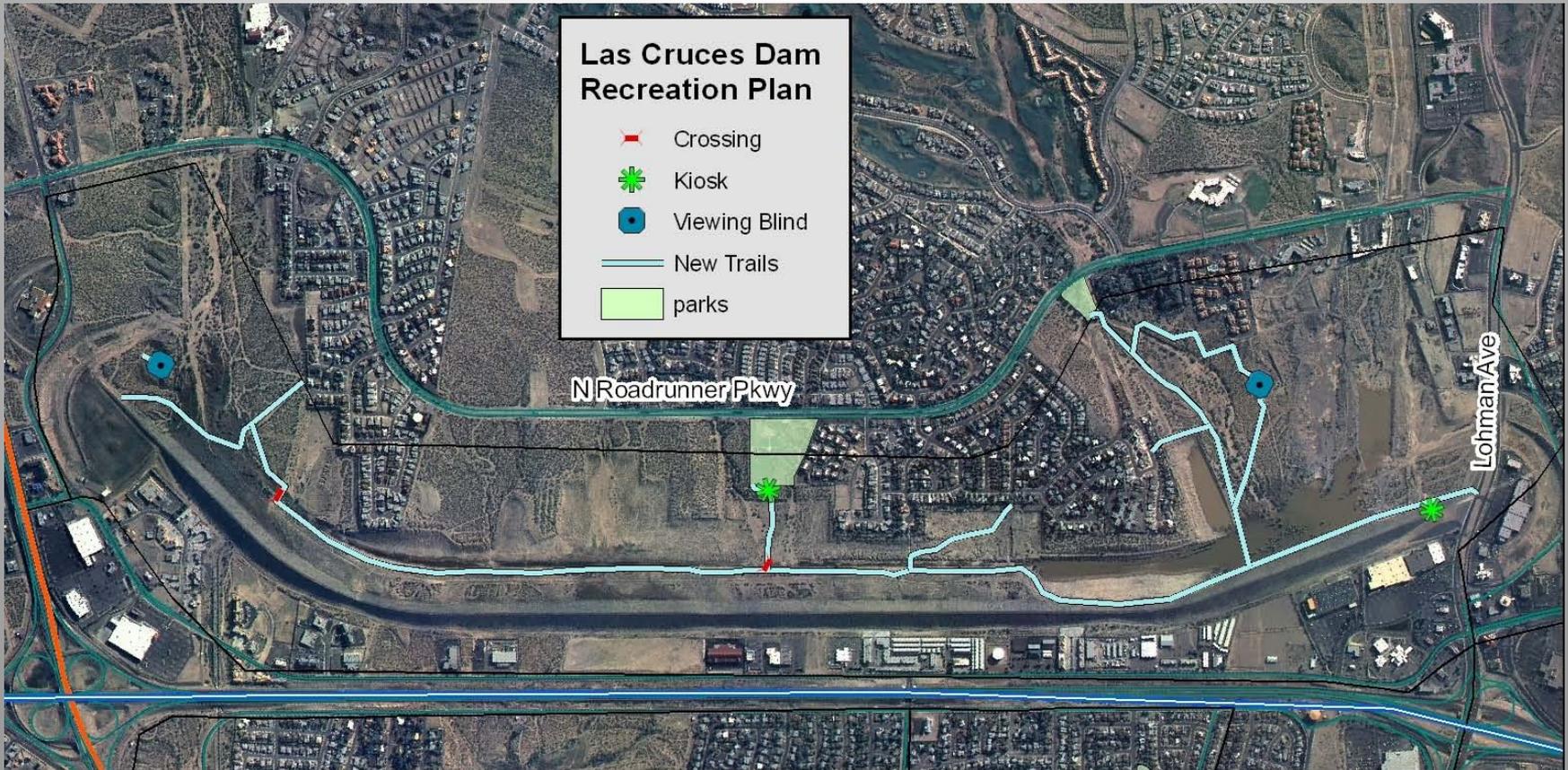
- Soft Surfaced Trail
- 10' Paved, Multi-use Trail
- 10' Paved Multi-Use Trail & Soft Surfaced Trail
- Neighborhood Connections
- Pedestrian Rest Area
- Pedestrian Overlook/Vista
- Proposed Parking
- Existing Parking
- Wildlife Viewing Blind
- Restoration Zone
- Wildlife Enhancement Zone I
Major Enhancements Needed
- Wildlife Enhancement Zone II
Minor Enhancements Needed
- Special Riparian Zone (Existing)

LEGEND

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Proposed Recreation Plan



What do you think?

- Recommended Plan? Habitat team recommends Plan #4
- Restoration Plan? Limited to 10% for restoration costs



Plan 2



Plan 9



Plan 4

Artist Rendition of Recommended Plan #4





The Look Ahead- moving forward with the recommended plan

- Complete Design Documentation Report/EA- Fall 2010*
- Complete Quality Control Reviews, Feb 2011
- Alternative Review Conference, March 2011
- Public Review of NEPA, April-May, 2011
- Submit draft report for review and approval, July 2011

*Schedule subject to funding

Thank you!



Image s courtesy of Patrick Alexander



Image Courtesy of:
www.mcspb.com/photos/birds.htm



Image Courtesy of: hollycatherine.wordpress.com/



Western New Mexico University
Department of Natural Sciences and the
Dale A. Zimmerman Herbarium
<http://gilafloora.com>