Slope-Stabilization Demonstration Project

Estero Llano Grande State Park, Weslaco

Texas Parks and Wildlife Department
Alan Plummer Associates, Inc.

Presented by Chris Hathcock, TPWD
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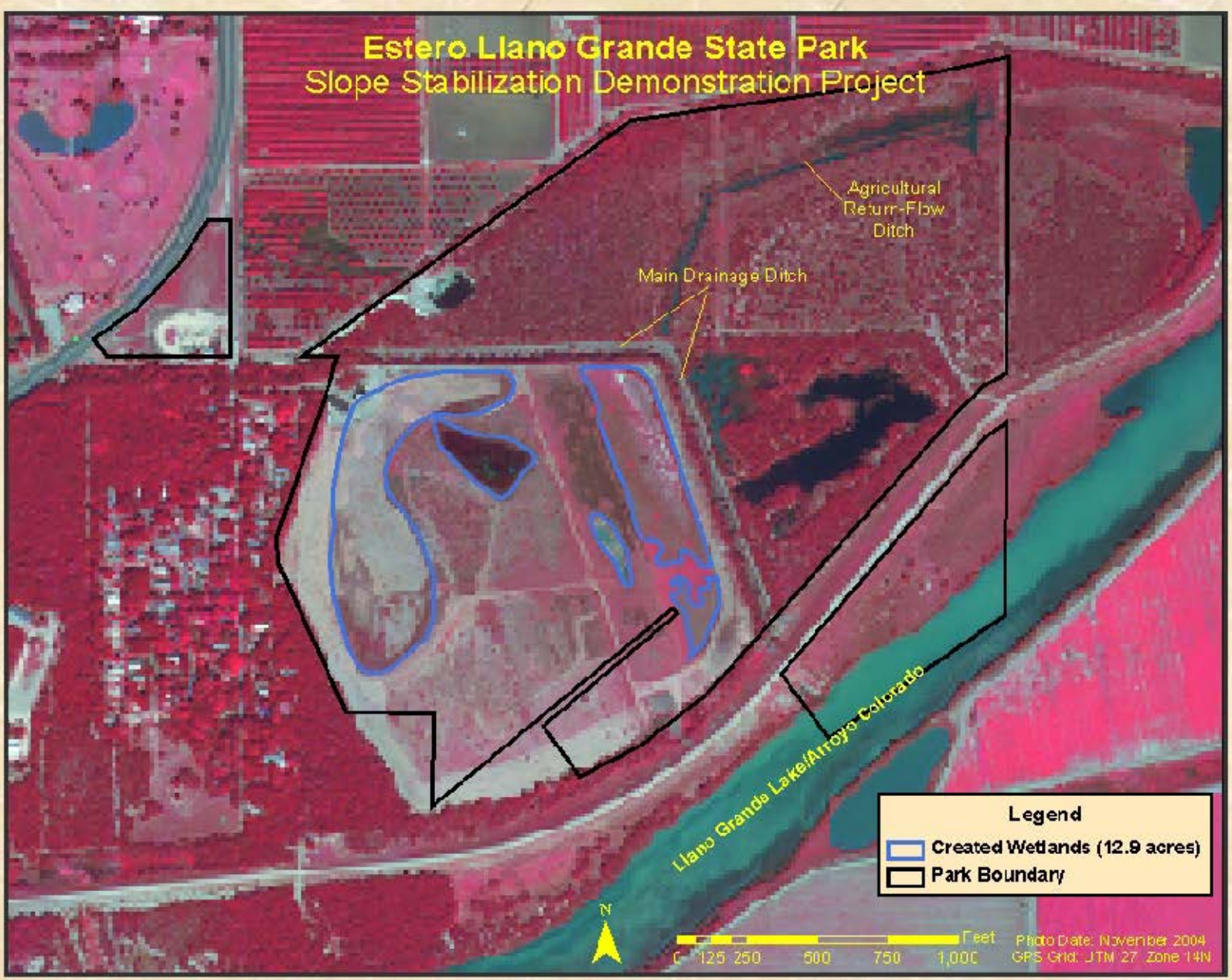
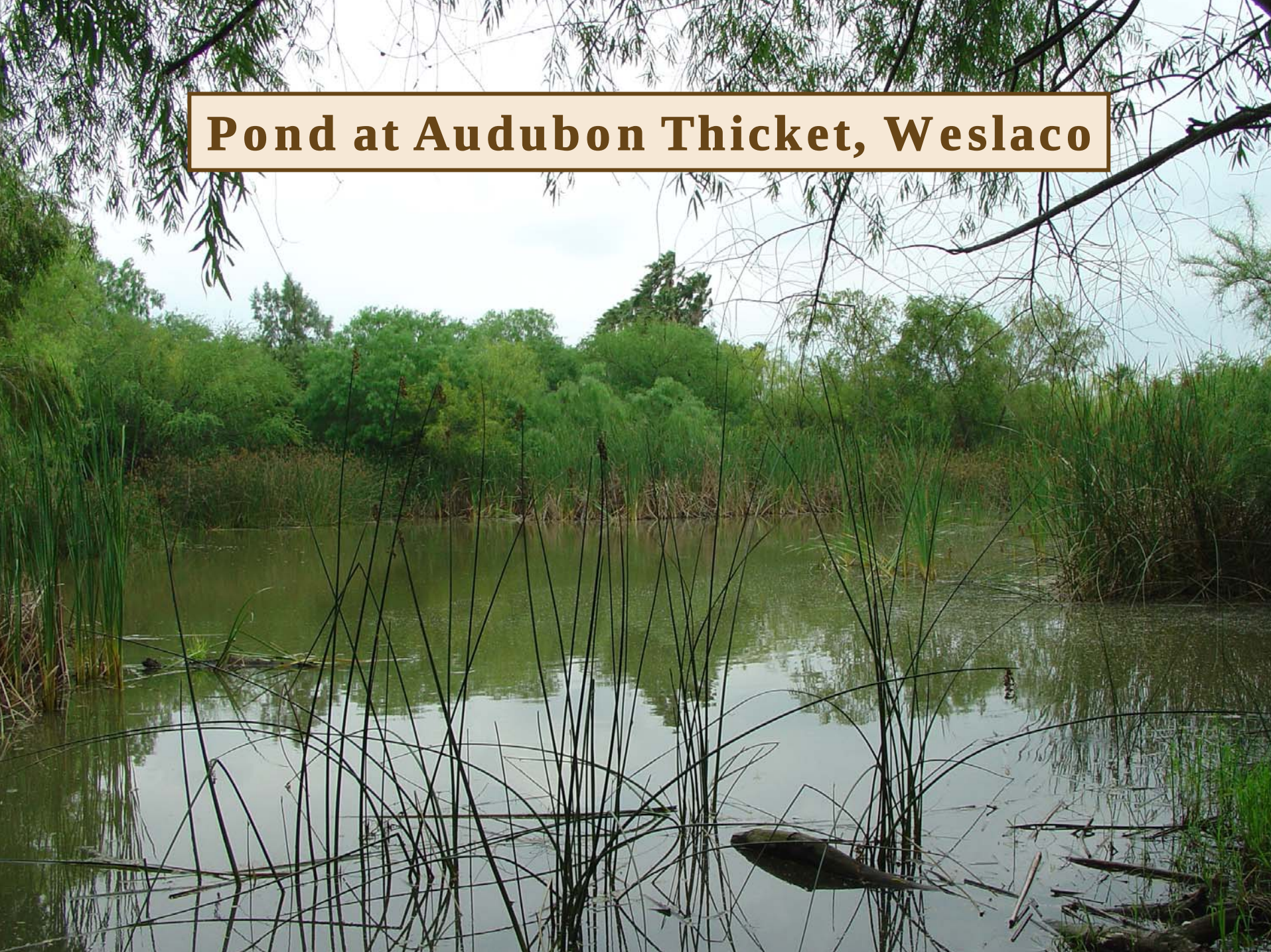

Estero Llano Grande State Park
Slope Stabilization Demonstration Project
Agricultural Return-Flow Ditch
Main Drainage Ditch
Llano Grande Lake/Arroyo Colorado
Legend
Created Wetlands (12.9 acres)
Park Boundary
N
Feet
0 125 250 500 750 1,000
Photo Date: November 2004
GPS Grid: UTM 27 Zone 14N

Wetland next to Resaca del Rancho Viejo in San Benito


Pond at Audubon Thicket, Weslaco

El Morillo Resaca (Bentsen State Park) Choked with Common Reed (*Phragmites australis*)

“Sugar Cane” Resaca

Mexican Ash & Sugar Hackberry on Resaca Bank

Mexican buttonbush (*Cephalanthus salicifolius*)

Bioengineering

Definition:

erosion-control techniques using both living and inert materials

live = plants (aquatic, wetland-margin, and bank)

inert = erosion cloths, logs, rip-rap, walls, etc.

Benefits:

- Control bank erosion
- Reduce sediment loads into Arroyo Colorado
- Improve water quality
- Improve wildlife habitat

Demonstration Project

- **Evaluation of six different techniques**
  - two replicates for each
  - two controls
- **Measures**
  - “roughness” of vegetation as it relates to flow
  - effectiveness in minimizing slope erosion
  - effectiveness in reducing sediment loads
  - water quality improvement

Mid-Depth Emergent

Soft-Stem Bulrush (*Schoenoplectus tabernaemontani*)

Mid-Depth Emergent
Arrowhead (*Sagittaria* sp.)

Shallow Emergent

Alkali Bulrush (*Bulboschoenus maritimus*)

Lower Slope/Water Margin

Sedges (Cyperaceae) and water hyssop (*Bacopa monnieri*)

Lower Slope/Water Margin

pennywort (*Hydrocotyle bonariensis*)

Pennywort along Pond Margin (City Park in Brownsville)

Entire Slope & Water Margin

Creeping Lovegrass (*Eragrostis reptans*)

Middle and Upper Slope

Carolina Wolfberry (*Lycium carolinianum*)

Project Contributors:

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