



Best Management Practices Plan

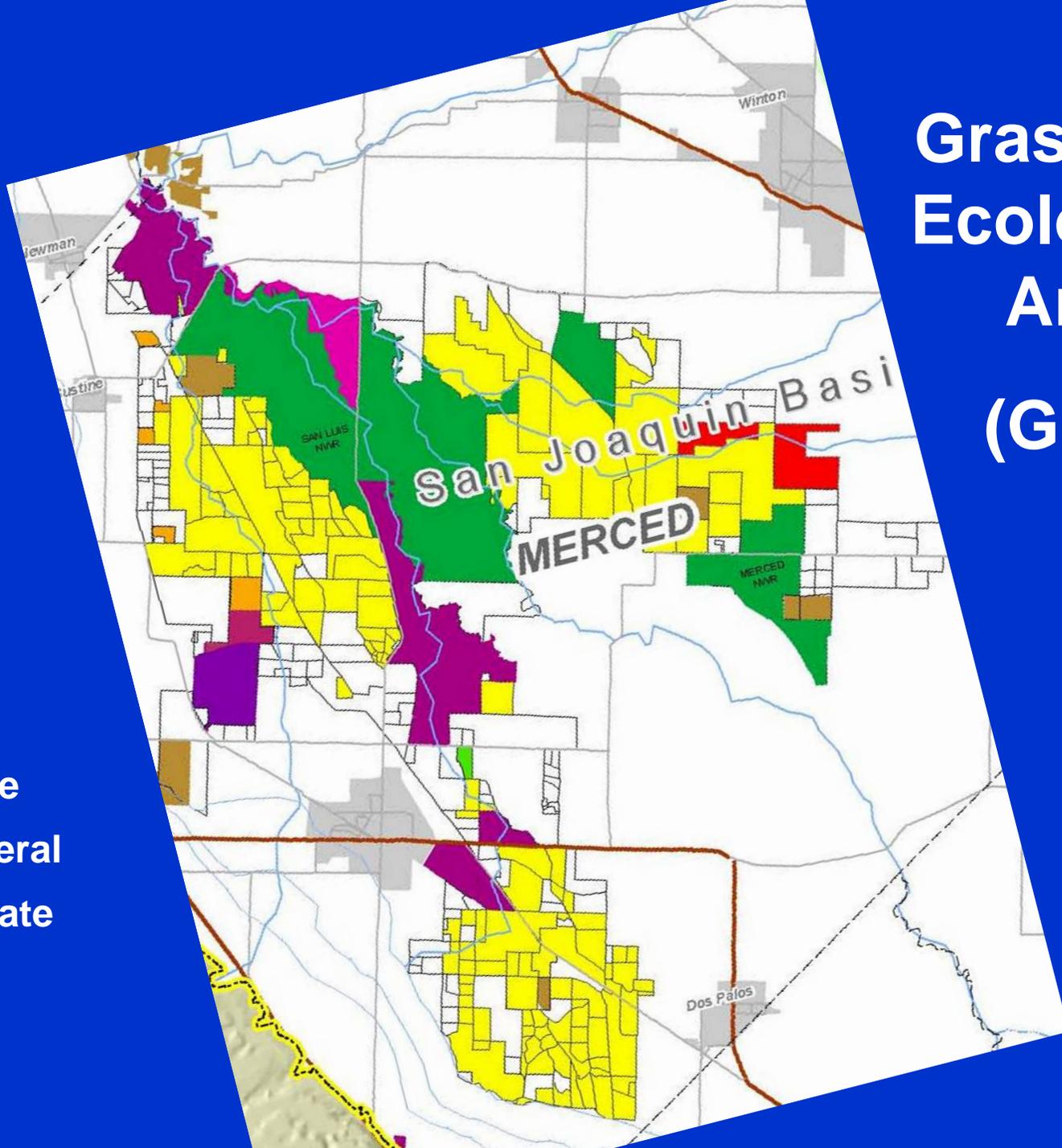
To Reduce the Impact of the Discharges from
Managed Wetlands into the San Joaquin River

BACKGROUND

- Part of larger “Program To Meet Standards” as a result of H.R. 2828 legislation.
- Primary focus is on the 80,000 acres within the Grassland Ecological Area, in central Merced County.
- Includes federal, state and private wetland complexes
- Plan document released in fall of 2007

Grassland Ecological Area (GEA)

- State
- Federal
- Private



The Grassland Ecological Area



Contents and Strategy of BMP Plan

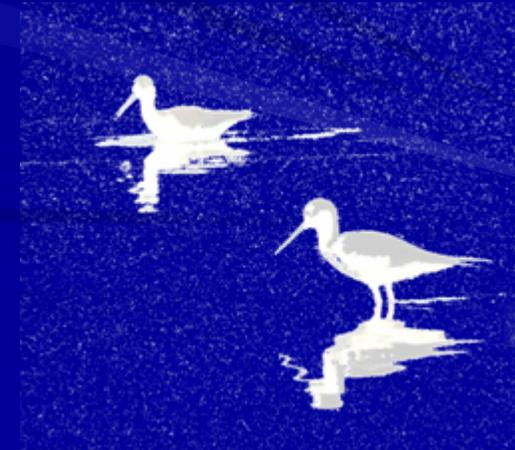
- Refuge Background Information
- Review Past Studies
- Review Current Studies
- Best Management Practices
 - Those currently being implemented
 - Those that may eventually be implemented
 - Those that need further evaluation



CURRENT MANAGED WETLANDS WATER QUALITY PROJECTS

Grassland Bypass Project (1996 – present)

Westside Drainage Coalition (2003-Present)



Grassland Bypass Project

- 1996 to the present
- Focuses on improving water quality in water delivery channels.
- Utilizes San Luis Drain
- Reroutes subsurface agricultural drainage around wetland habitat areas.



Westside Drainage Coalition

- Under the Conditional Waiver of Waste Discharge Requirements
- GEA wildlife group joined with agricultural groups in the area to form the Coalition
- Monitors drainwater discharges
- Will assist the development of standards for salt, boron, DO and pesticides for the SJR



BEST MANAGEMENT PRACTICES

- 1) Habitat Assessment Methodology
- 2) Modified Hydrology Study
- 3) Water Quality Monitoring
- 4) Modeling Tools



1) Habitat Assessment

Current lack of data

Way to document baseline conditions as well as wildlife use and habitat trends

Use this to determine if modifications are necessary



2) Modified Hydrology Study of Managed Wetlands

- **Three Year Effort Utilizing Prop 50 Funds**
- **Includes twelve representative sites in both northern and southern ends of the GEA**
- **Evaluation of Habitat and Wildlife Response**



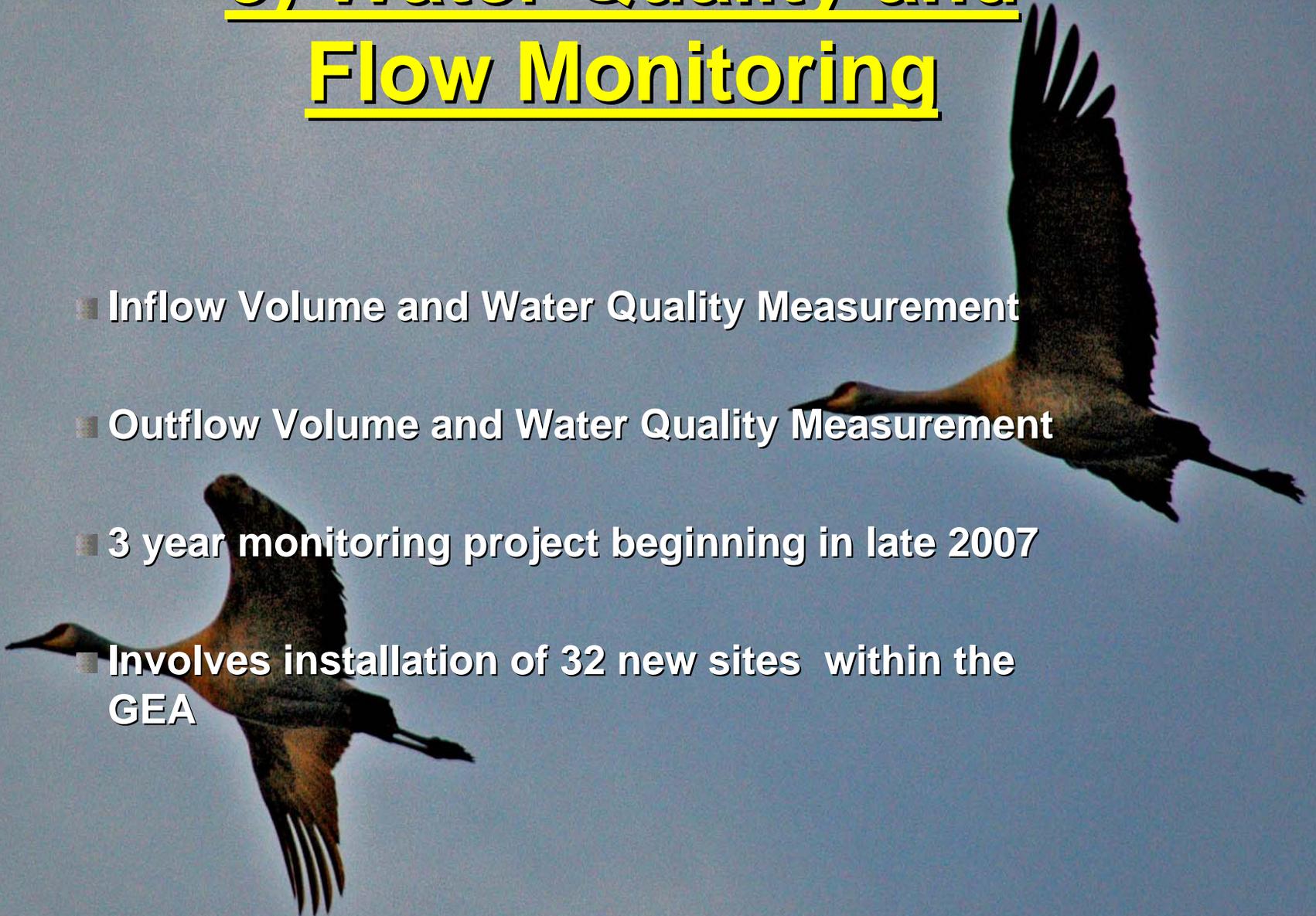
2) Modified Hydrology Study of Managed Wetlands

- ❑ First Year complete – served to document baseline conditions and habitat trends.
- ❑ After third year- data evaluated to determine if modifications are necessary.



3) Water Quality and Flow Monitoring

- Inflow Volume and Water Quality Measurement
- Outflow Volume and Water Quality Measurement
- 3 year monitoring project beginning in late 2007
- Involves installation of 32 new sites within the GEA



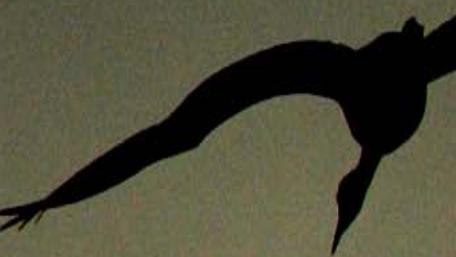
3) Water Quality and Flow Monitoring

- Incorporates majority of inflow and outflow volume of managed wetlands in the west side of the GEA.
- Divided the focus into logical drainage units



4) Modeling Tools

- Need for new models and refinement of existing ones
- Can predict impacts and guide habitat management



Water Management (Potential BMP's)

■ *Recirculation*

■ *Staged Draw-downs*



■ *Earlier Releases*

■ *Control of Individual Management Units*

■ *NPDES Permit*



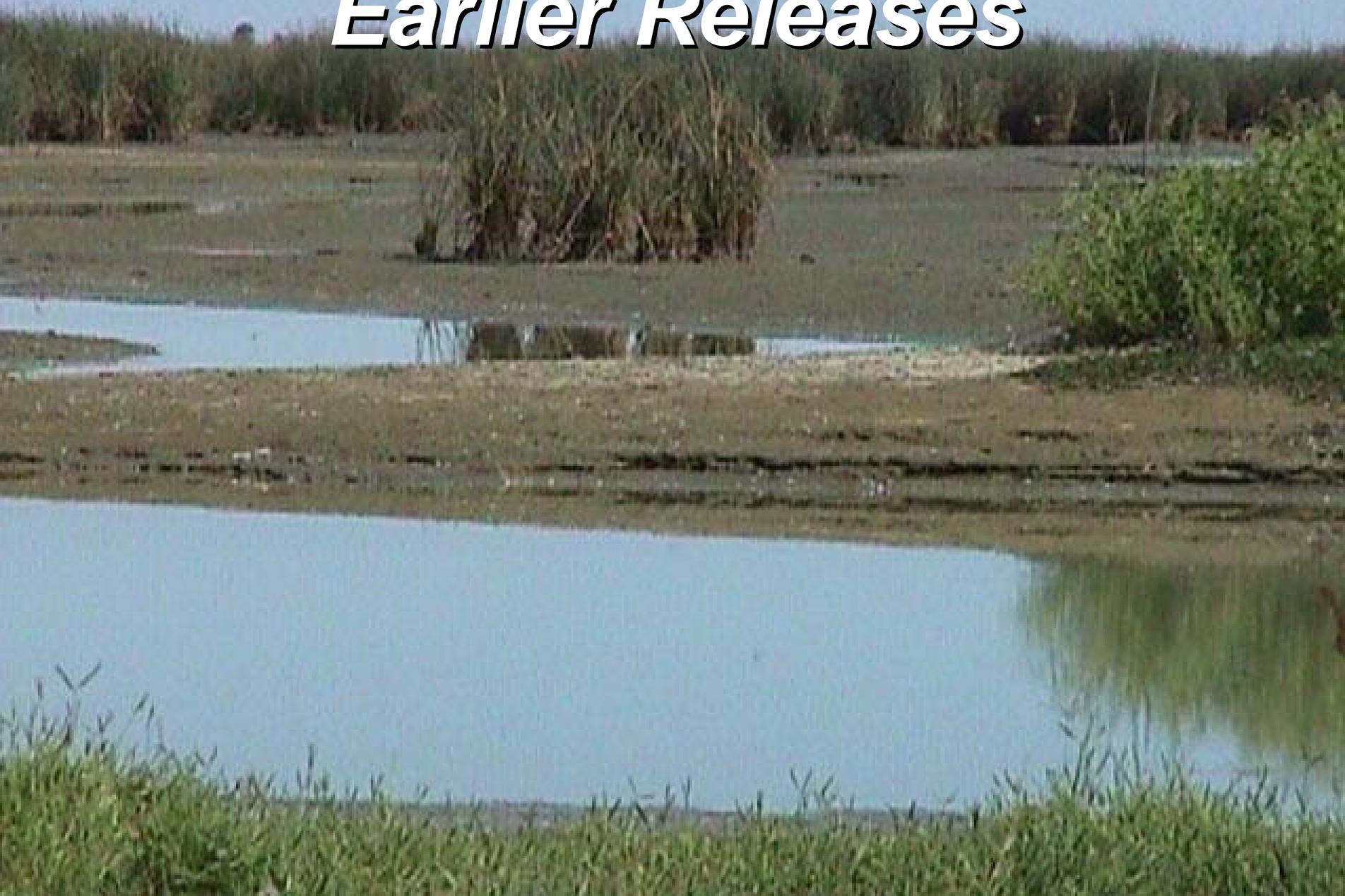
Recirculation



Staged Draw-downs



Earlier Releases



Independent Control of Individual Management Units



NPDES Permit

- For spraying aquatic invasives
- Increases water use efficiency
- Reduces operations costs



Full Level 4 Water Supply

- Provides Optimal Habitat Development per CVPIA
- Helps Meet Multiple Program Objectives
- Provides maximum flexibility for wetland managers
- Allows “flow-through water” to improve wetland water quality