

Calleguas Creek Watershed Wetland Restoration Plan

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Calleguas Creek Watershed

- **About the Watershed**

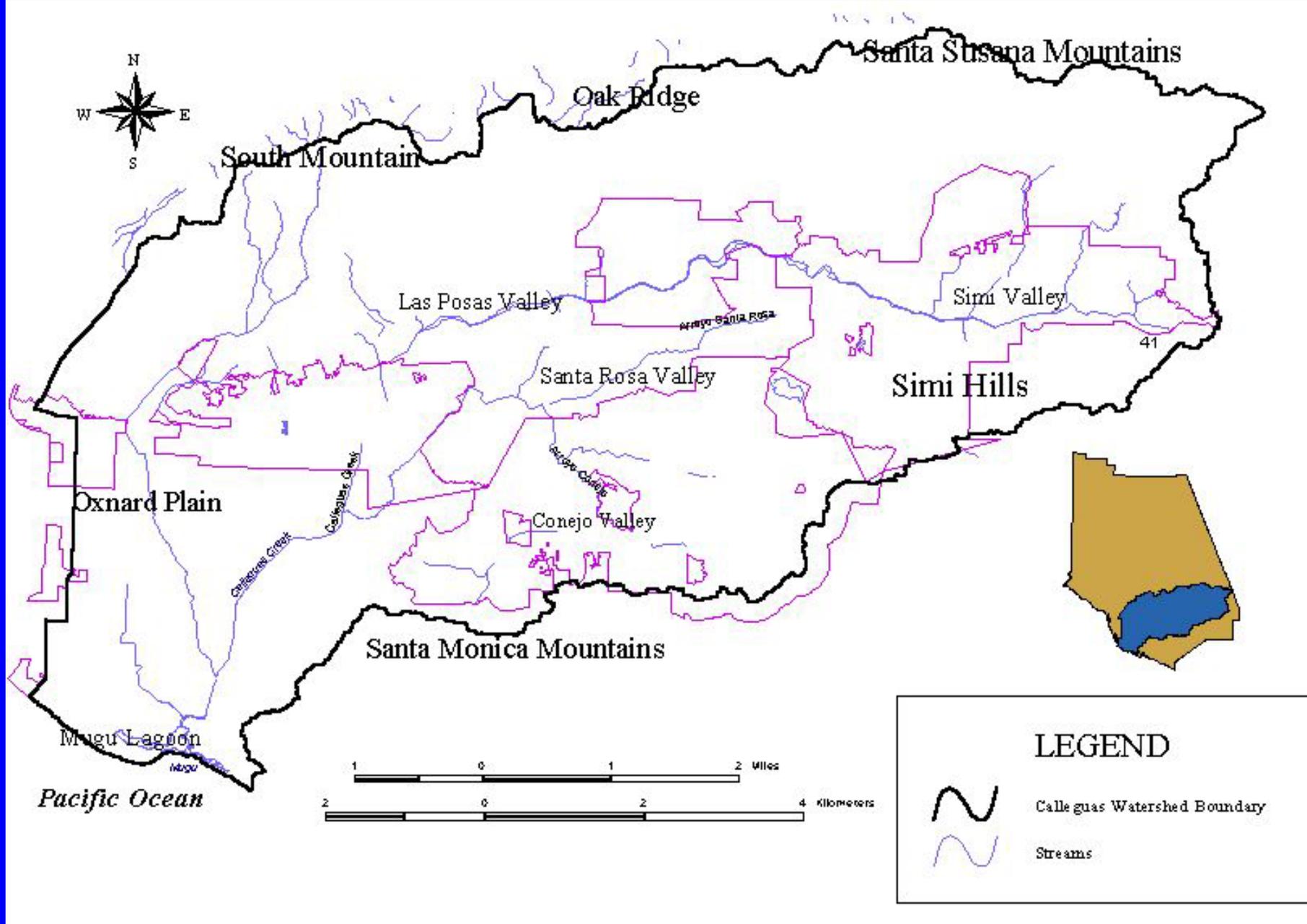
- **Located in southeastern Ventura County**
- **Drains 343 square miles**
- **Sea level to 3,670 feet elevation**
- **Outlet at Mugu Lagoon**
- **Four rapidly growing cities (Camarillo, Moorpark, Thousand Oaks, Simi Valley)**

- **Who am I?**

- **Represent the California Native Plant Society**
- **Consultant to Coastal Conservancy & EPA**

Topics of Discussion

- **Watershed planning issues**
 - **Habitat preservation and restoration**
 - **Flood control and sedimentation**
 - **Recreation**
 - **Water quality and supply**
- **State of wetlands and other habitats in the watershed**
- **Wetland restoration planning effort in watershed**



LEGEND

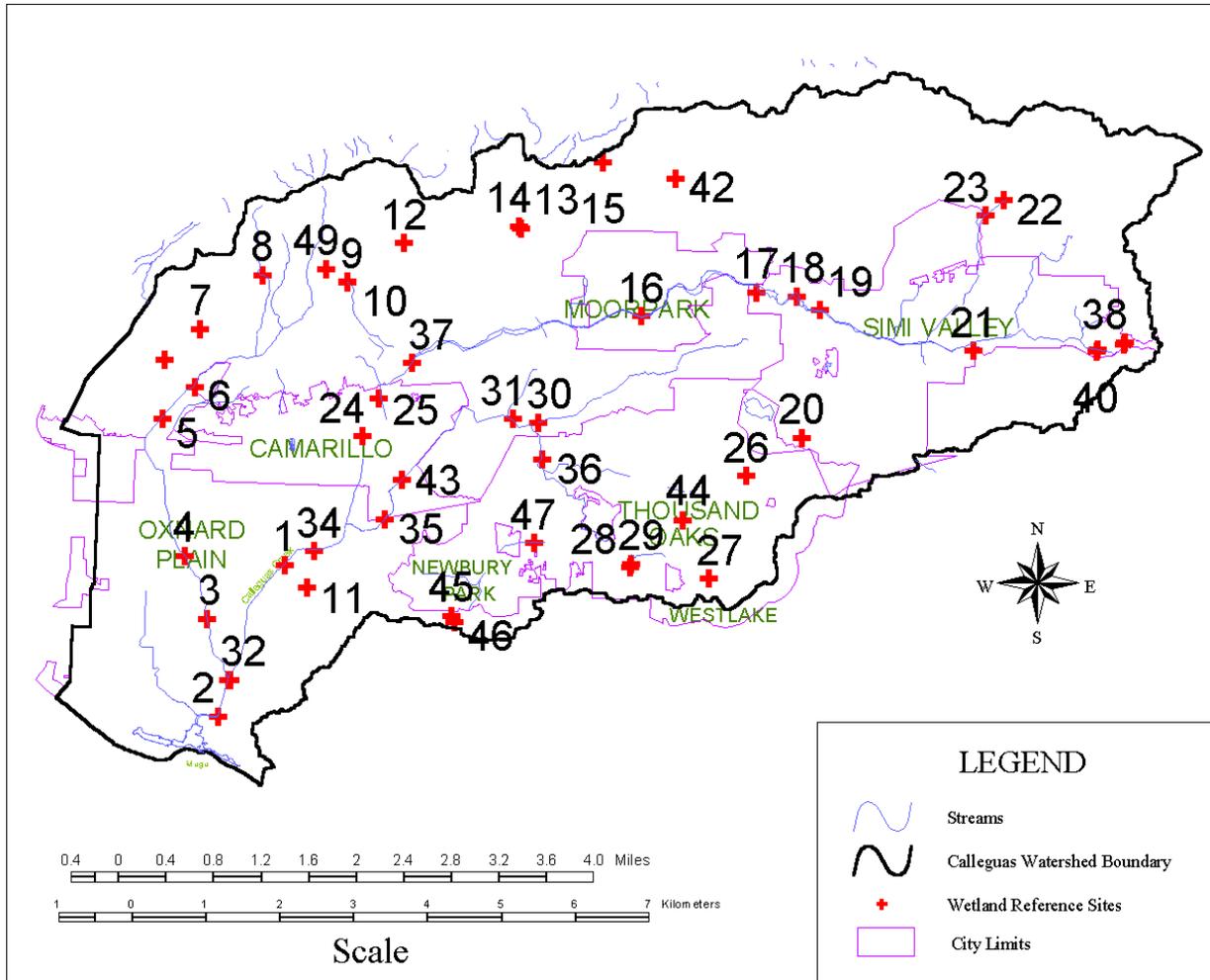
-  Calleguas Watershed Boundary
-  Streams

Calleguas Watershed Wetlands

- _____ (more) acres of wetlands originally
- _____ (less) acres of wetlands today
- **The future of watershed wetlands**
 - **SOAR Initiatives restricting growth to within cities (25% of watershed)**
 - **Agricultural activities (25% of watershed)**
 - **Flood control activities**
 - **Recreational facilities development**

Calleguas Watershed Wetlands Restoration Plan

- **Inventory watershed wetlands**
 - Map and classify wetlands at selected sites
 - Support regional goals (HGM model)
- **Identify candidate restoration sites**
- **Evaluate candidate sites**
- **Develop restoration plans for several candidate sites for implementation**



Watershed Level Wetland Restoration Planning Constraints

- **Scale/size of watershed (really big area)**
- **Availability of physical and biological data (lack of data)**
- **Availability of funding (never enough funding)**
- **Condition of watershed wetlands (really bad and far between)**

The Data Management Problem

- **How are we managing our data?**
 - GIS (ArcView)
 - Database (Access)
 - Spreadsheets (Excel)
- **How will we use these data?**
 - Query GIS database
 - Identify restoration opportunities and constraints
 - Support larger watershed planning effort

What Wetlands Data to Collect?

- **Landscape context**
- **Site characteristics**
 - **Landscape characteristics**
 - **Channel characteristics**
 - **Bank characteristics**
 - **Flow characteristics**
 - **Sediment characteristics**
 - **Management**
- **Vegetation characteristics**

Landscape Context

- **Drainage name**
- **Drainage area**
- **Strahler stream order (1, 2, 3, 4, 5 at 1:24,000)**
- **River miles to Mugu Lagoon**
- **Up/down gradient dams (yes/no for both)**
- **Primary adjacent land uses (natural/range, mining, row crop, orchard, low/high-density urban)**
- **Primary drainage area land uses (ditto)**

Site Characteristics

- **Landscape Characteristics**

- Landform
- Position
- Feature
- Confinement
- Topography

- **Channel Characteristics**

- Baseflow width (ft.)
- Baseflow depth (ft.)
- Floodprone area width (ft.)
- Entrenchment ratio
- Energy slope (%)
- Sinuosity
- Bed materials
- Median bed material size class

Site Characteristics (cont...)

- **Bank characteristics**

- **Bank height (ft.)**
- **Bank angle (deg.)**
- **Bank materials (natural, riprap, concrete)**
- **No. of bank strata**
- **No. of coarse, non-cohesive bank strata**

- **Bank vegetation**

- **Tree (none, trace, abundant)**
- **Shrub (ditto)**
- **Herb (ditto)**

Site Characteristics (cont...)

- **Flow duration**
(ephemeral, seasonal, perennial)
- **Tidal influence**
(none, freshwater tidal, brackish-saline tidal)
- **Base flow alterations**
 - Magnitude (-, 0, +)
 - Duration (-, 0, +)
- **Peak flow alterations**
 - Magnitude (-, 0, +)
 - Timing (earlier, unchanged, later)
 - Duration (-, 0, +)

Site Characteristics (cont...)

- **Sediment characteristics**
 - **Accommodation space trend**
 - Incising
 - Stable
 - Filling

Site Characteristics (concl.)

● Management

– Levees

- None
- Setback
- Not setback

– Hardscaping

- None
- Rock riprap banks
- Riprap banks & bed
- concrete banks
- concrete bed & banks

– Straightened (yes/no)

– Vegetation clearing (yes/no)

– Dredging and/or aggregate extraction (yes/no)

– Placement of fill and/or other debris (yes/no)

Vegetation Characteristics

- **Dominant vegetation**
 - Series description according to CNPS classification (Sawyer and Keeler-Wolf 1995)
 - Classification according to USFWS system (Cowardin et al. 1979)
- **Associate species**
 - Floristic list of plants present
- **Site map**

Next Steps

- **Select candidate restoration sites**
- **Gather additional data on candidate sites**
- **Select/rank short-list of candidate restoration sites**
- **Gather intensive physical data on sites**
- **Develop specific restoration plans for several of the top-ranking sites**

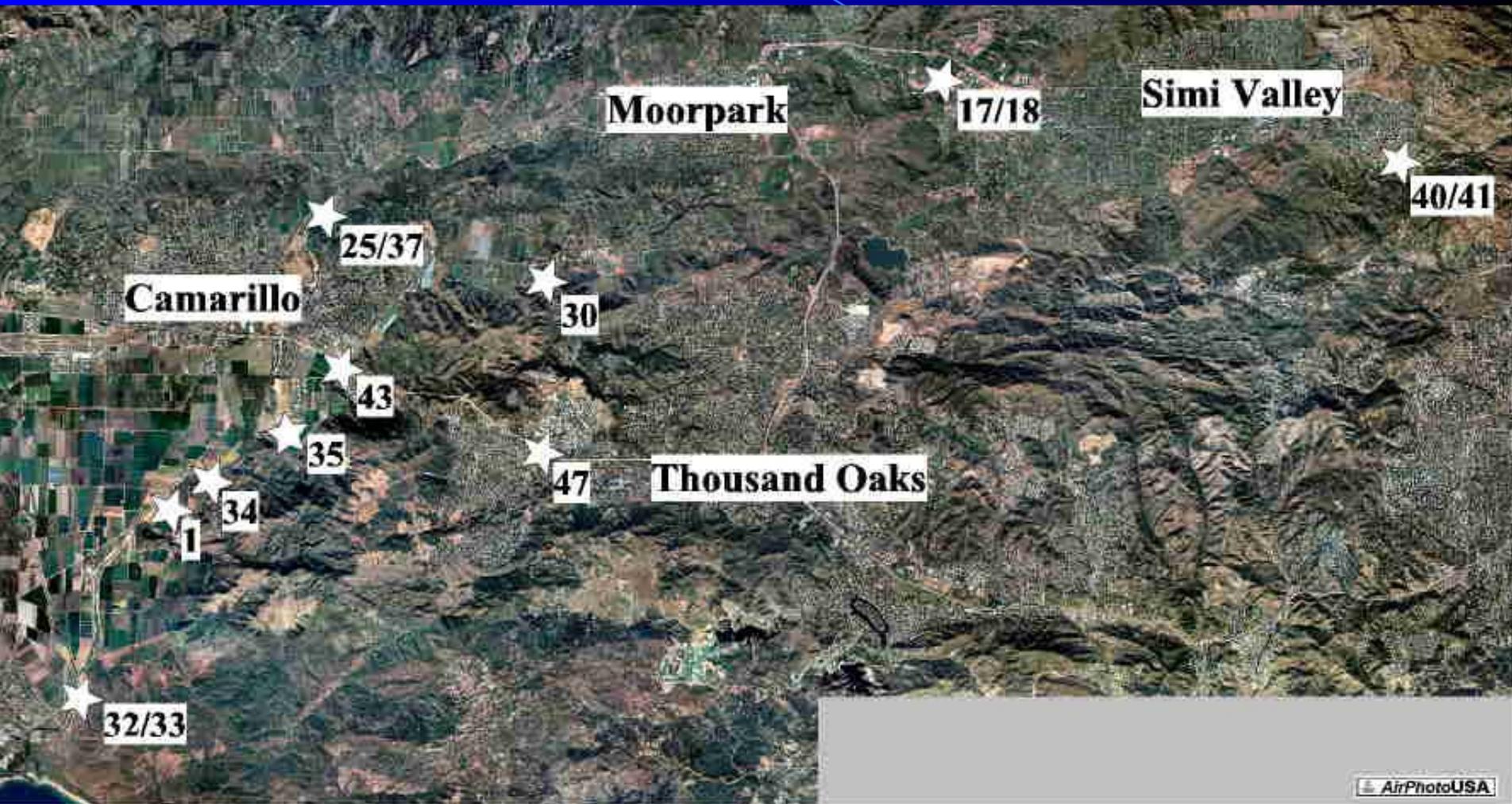
Rationale for Restoration and Preservation of Specific Riverine Systems

- Ecosystem- and Watershed-Scale Function Approach
- Focus on Watershed-Scale Cumulative Effects
- Focus on Restoration of Degraded Areas AND Preservation of Relatively Pristine Areas

Site Selection Criteria

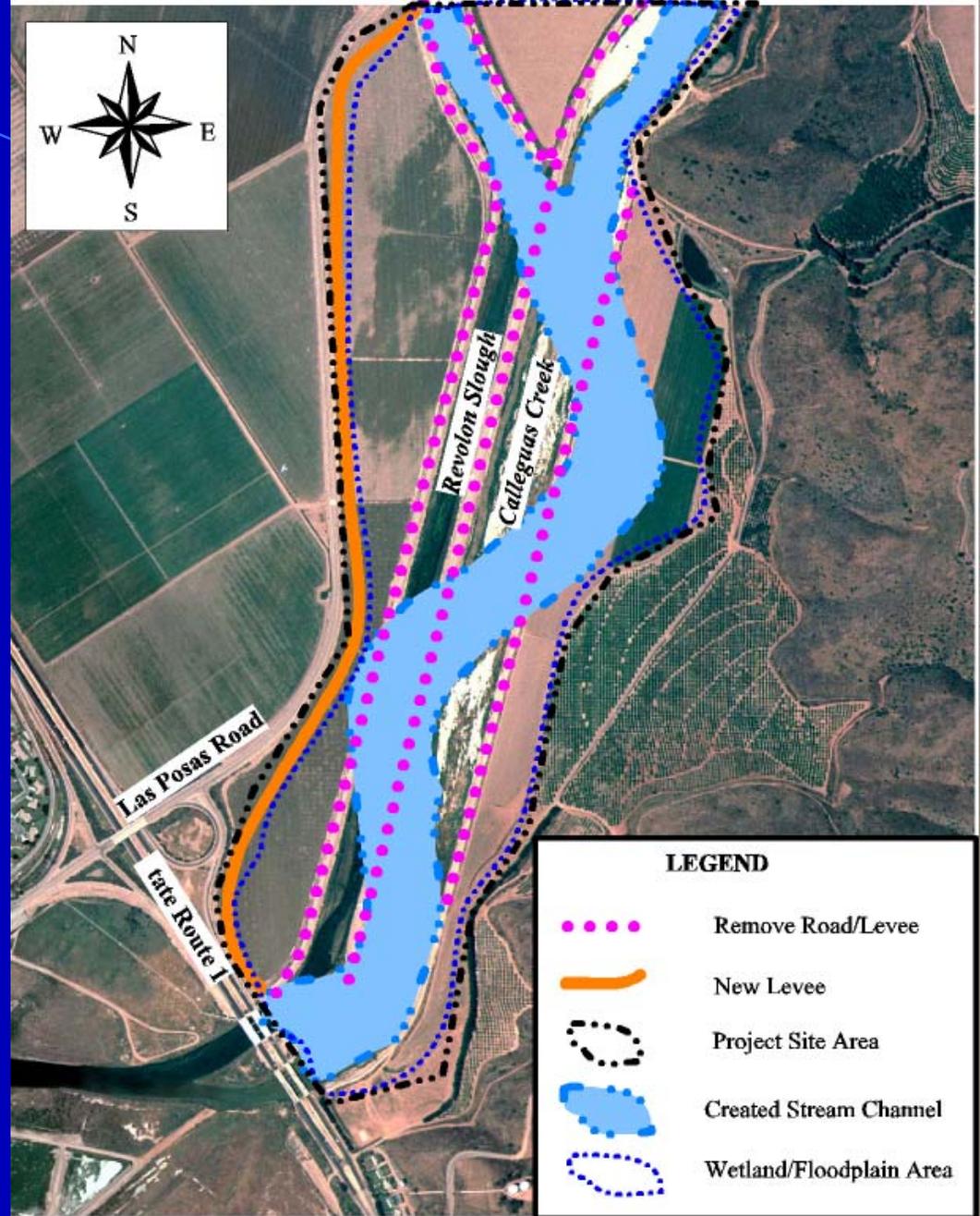
- Potential for Restoration of Physical and Biological Processes
- Source Control (water/flooding, sediments/erosion, etc.)
- Landscape-Scale Connectivity to Adjacent Habitats
- Sustainability
- Multiple Environmental Benefits
- Regional Biological Importance
- Technical and Financial Feasibility
- Amelioration of Upstream Impacts
- Cost Savings

Wetland Restoration Sites

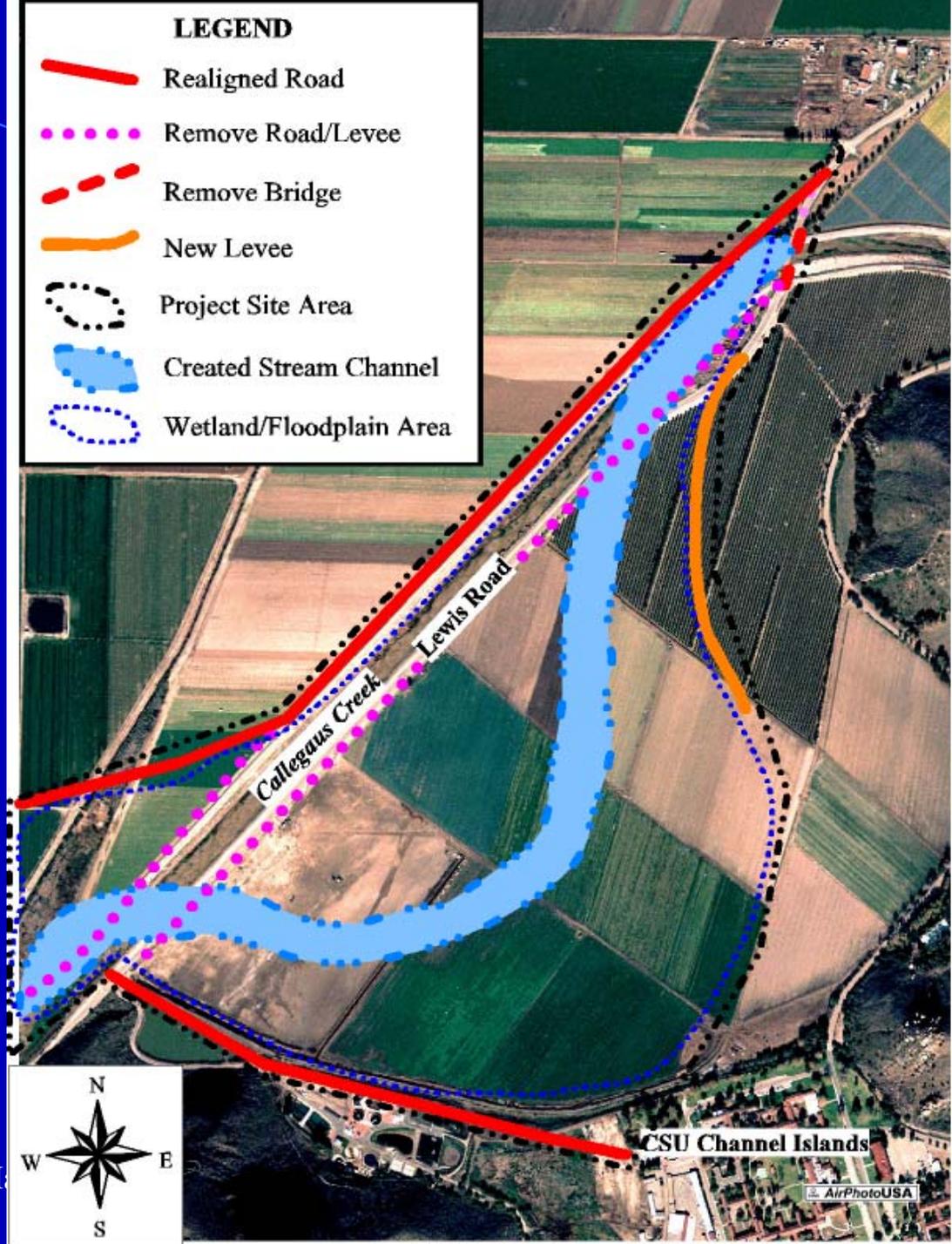


AirPhotoUSA

Site 32/33 Restoration Concept

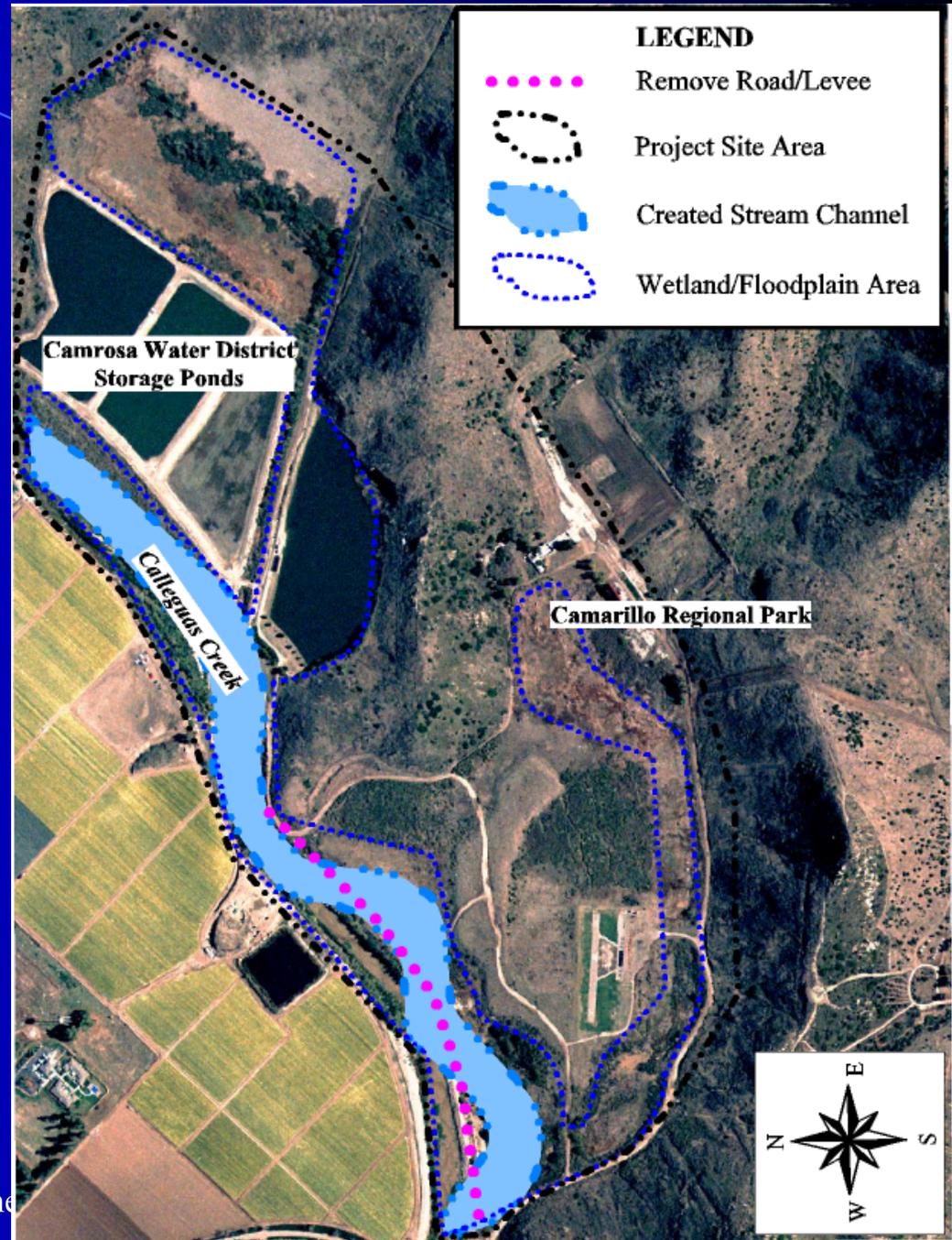


Site 1 Restoration Concept

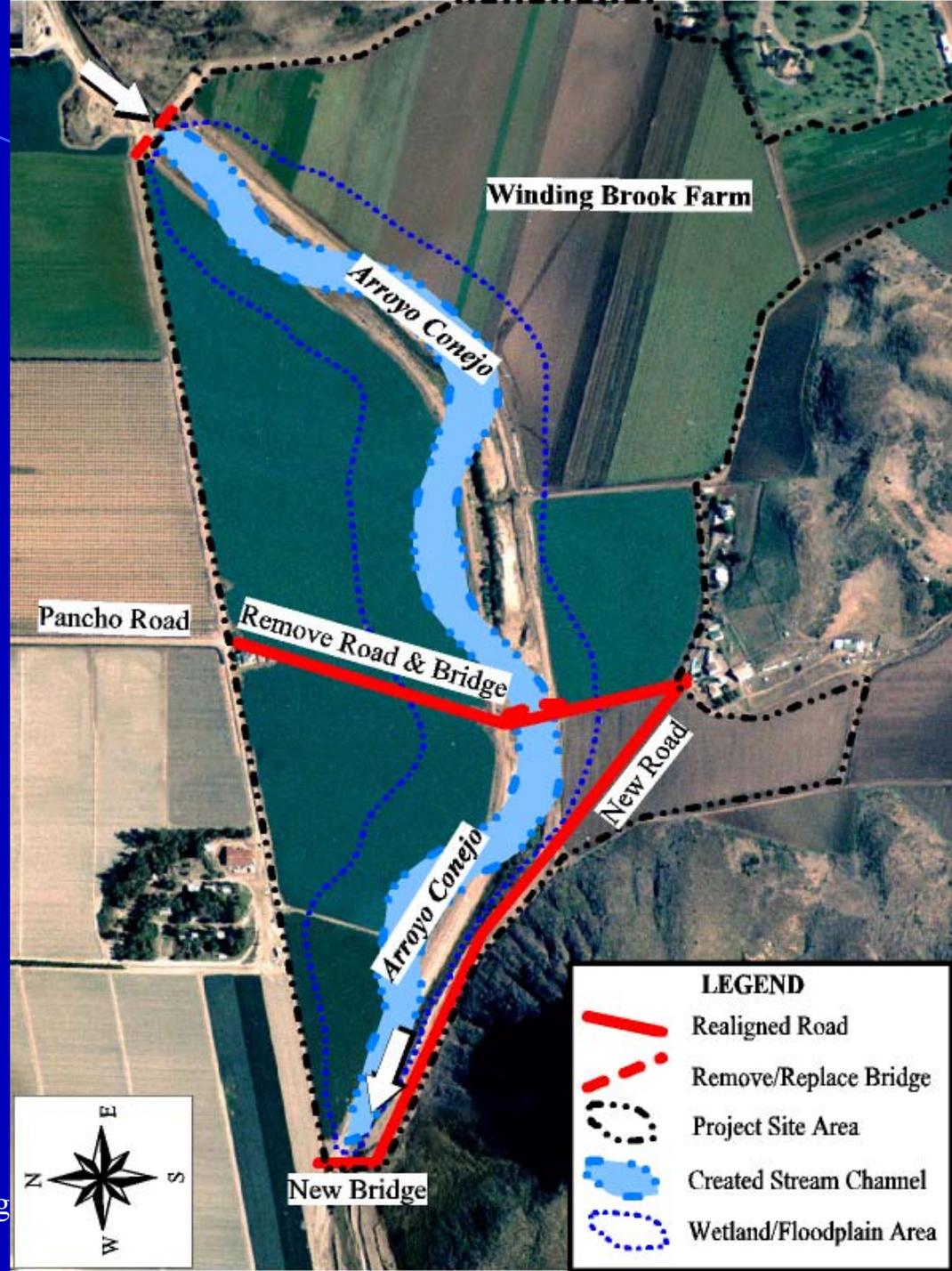


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Site 34 Restoration Concept



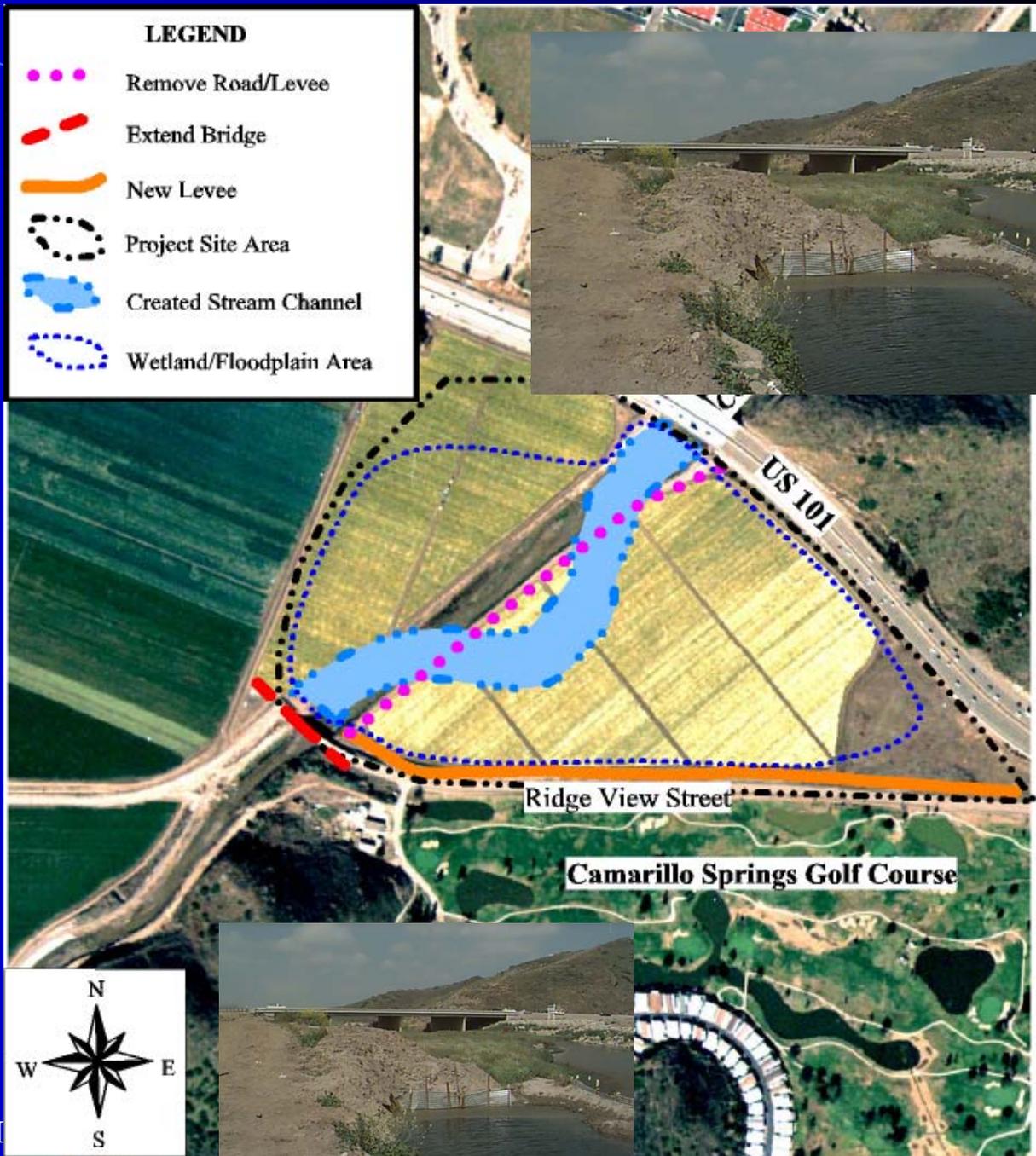
Site 35 Restoration Concept



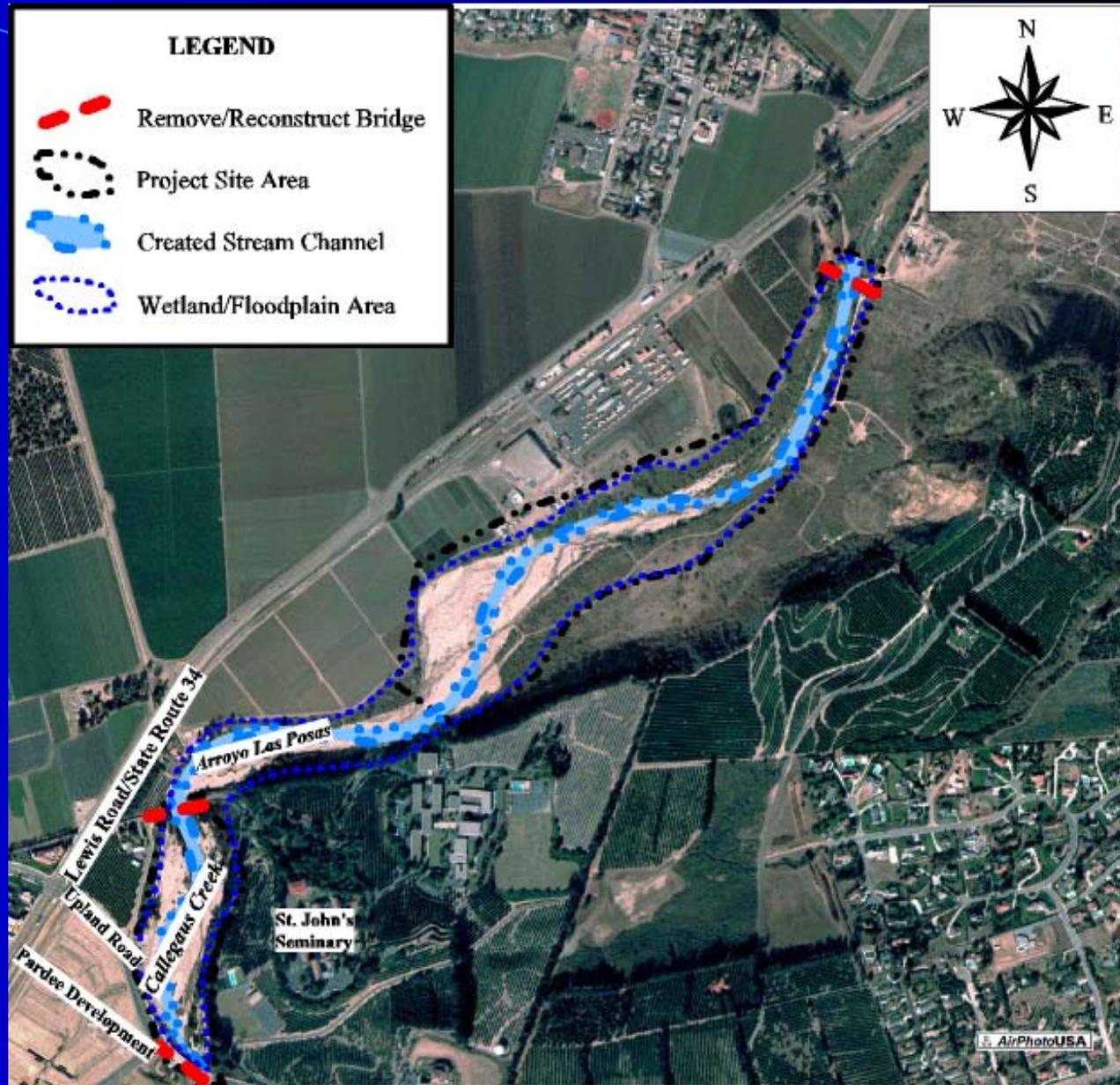
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Site 43

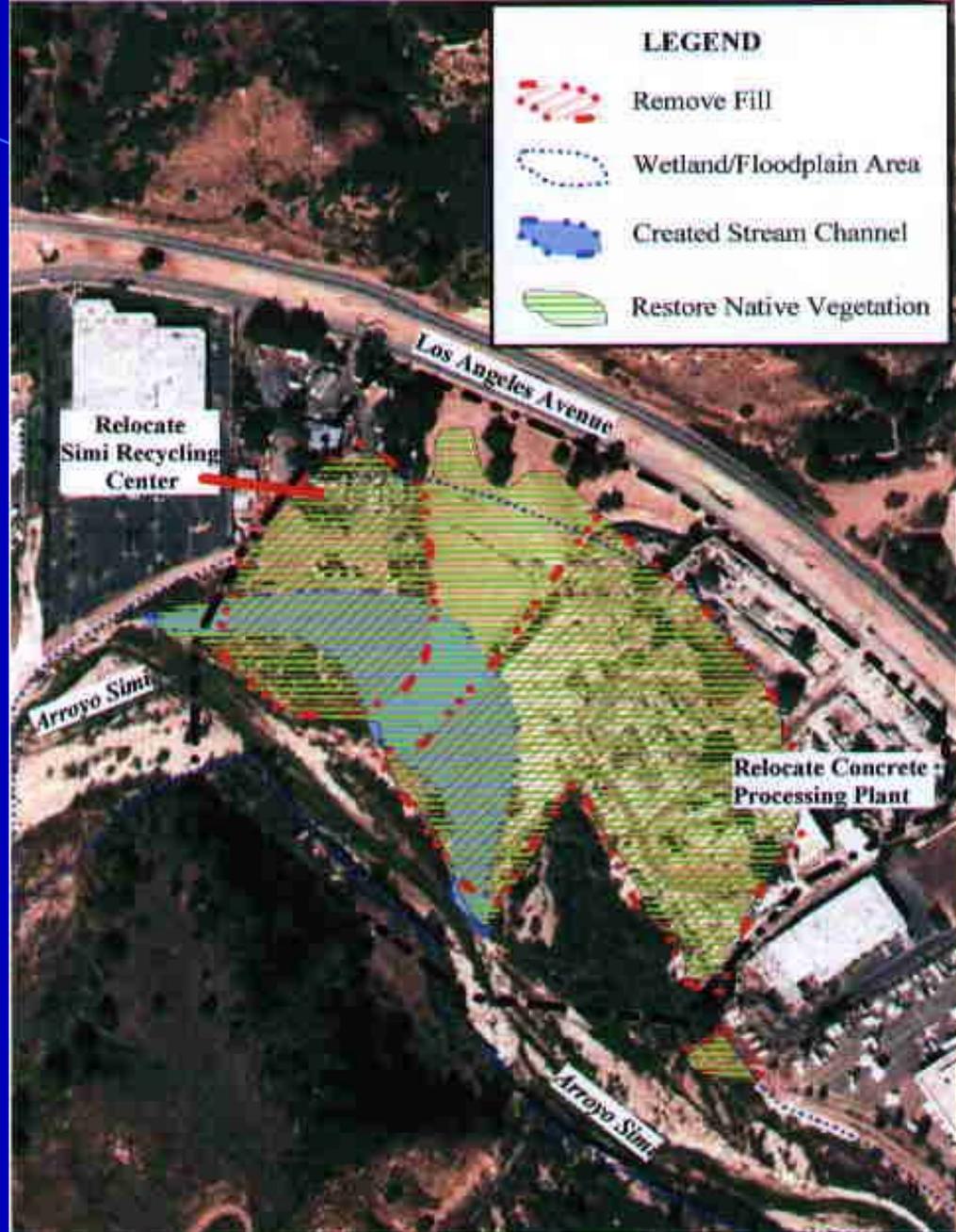
Restoration Concept



Site 25/37 Restor- ation Concept



Site 18 Restoration Concept



Site 30 Restoration Concept



Site 40/41 Restoration Concept



Site 47 Restoration Concept



A Typical Orchard Site

Site 49



Typical Undersized Bridges and Culverts



Calleguas Creek Watershed Wetlands Project Funding

- **California State Coastal Conservancy**
 - From a grant from the US EPA
 - Coastal Conservancy funds
- **US Army Corps of Engineers**
 - **Mitigation bank fund for watershed**
 - Administered by Coastal Conservancy

Questions?

Your question will undoubtedly raise more questions than answers