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ASWM Compensatory Mitigation Webinar #6:

Wetland Design Concept to Final Plans- Where Dreams and Reality Collide

Presented by Matt Gause, CERP

May 15, 2019

Overview

- Brief Overview of Case Study
- Concept Design Development
- Concept Design Iteration
  - New/Refined Data
  - External Forces
  - When to Communicate
- Final Design Stages

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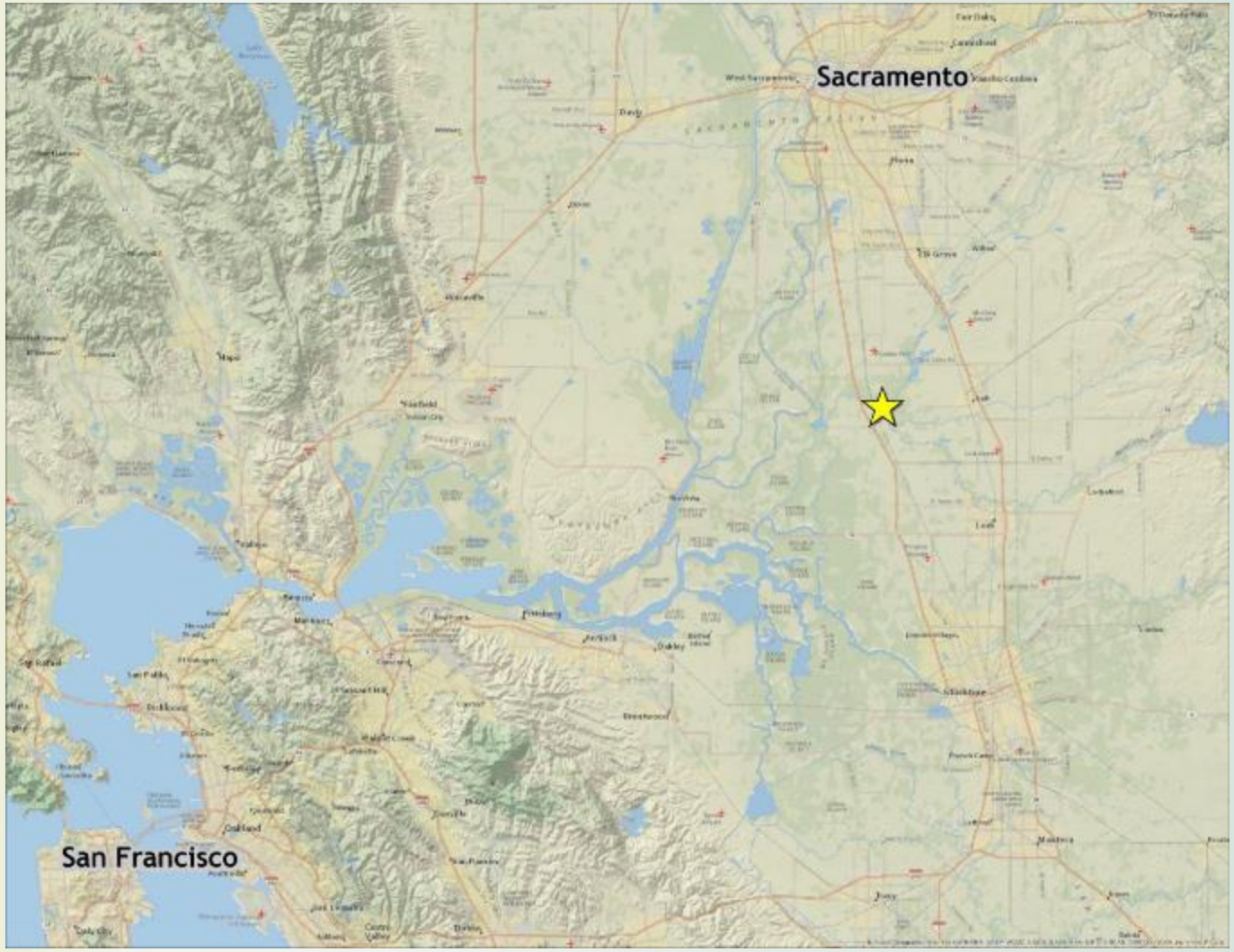
Introduction of Case Study -Cosumnes Floodplain Mitigation Bank



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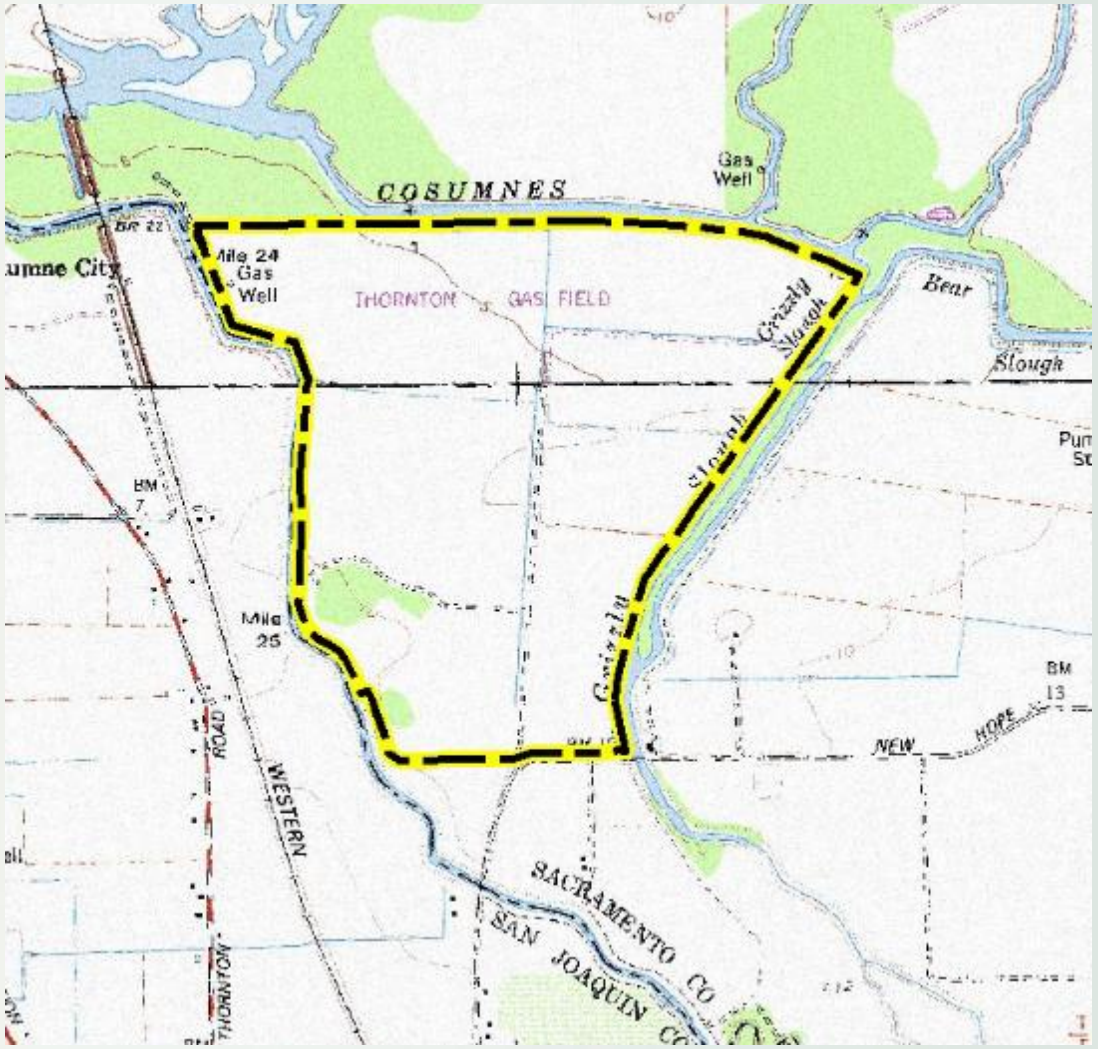
Introduction of Case Study -Cosumnes Floodplain Mitigation Bank



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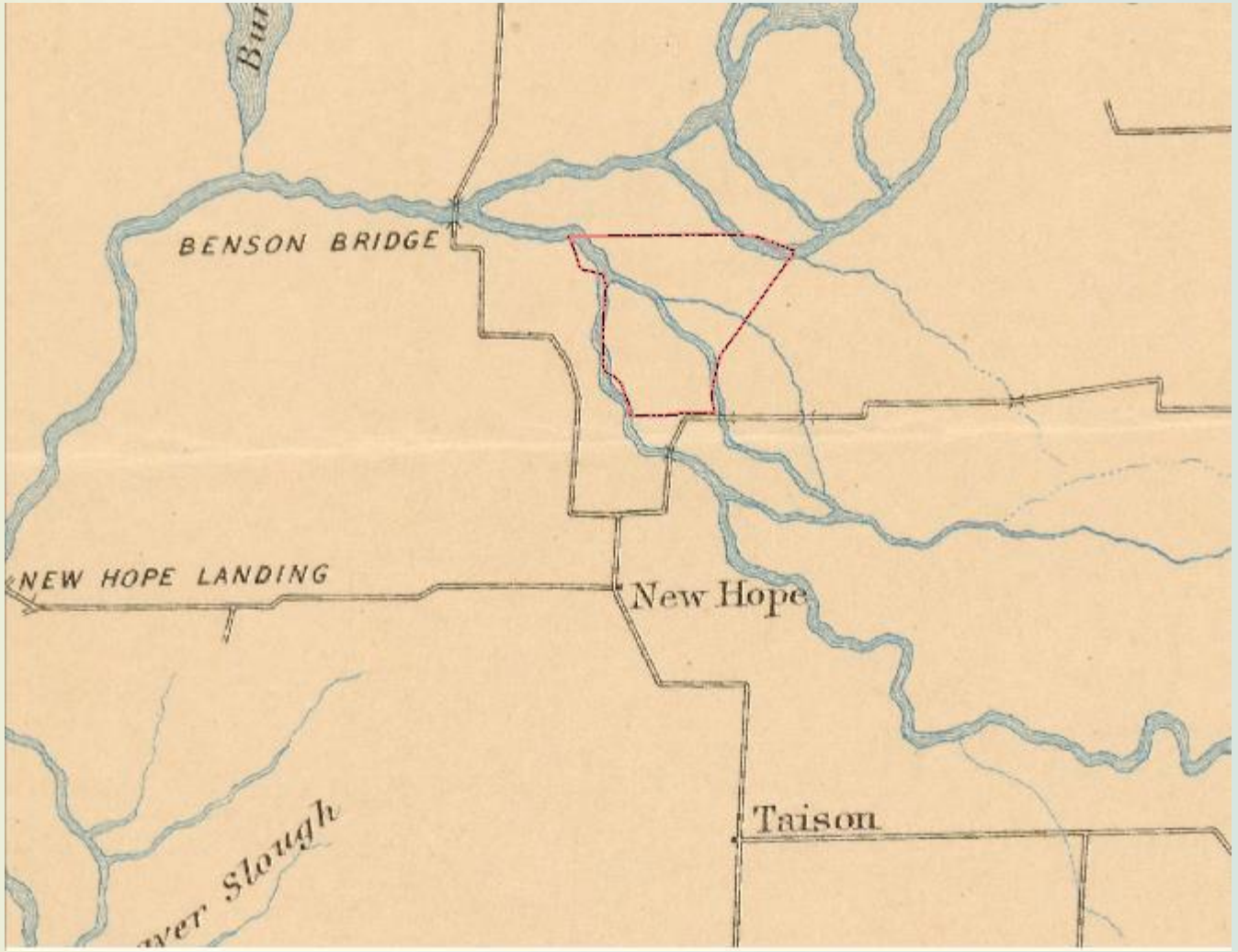
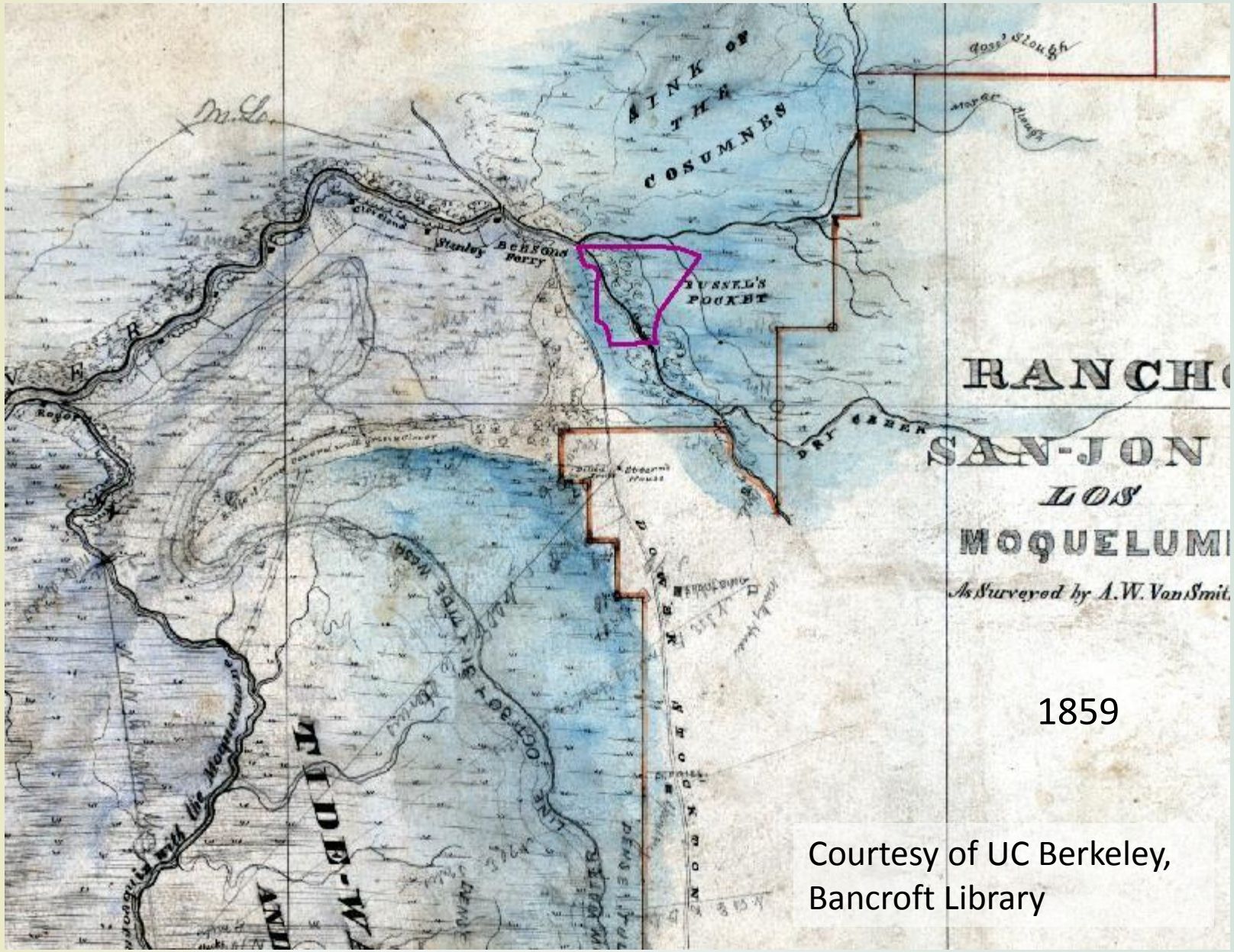
Introduction of Case Study -Cosumnes Floodplain Mitigation Bank - 1849



Introduction of Case Study -Cosumnes Floodplain



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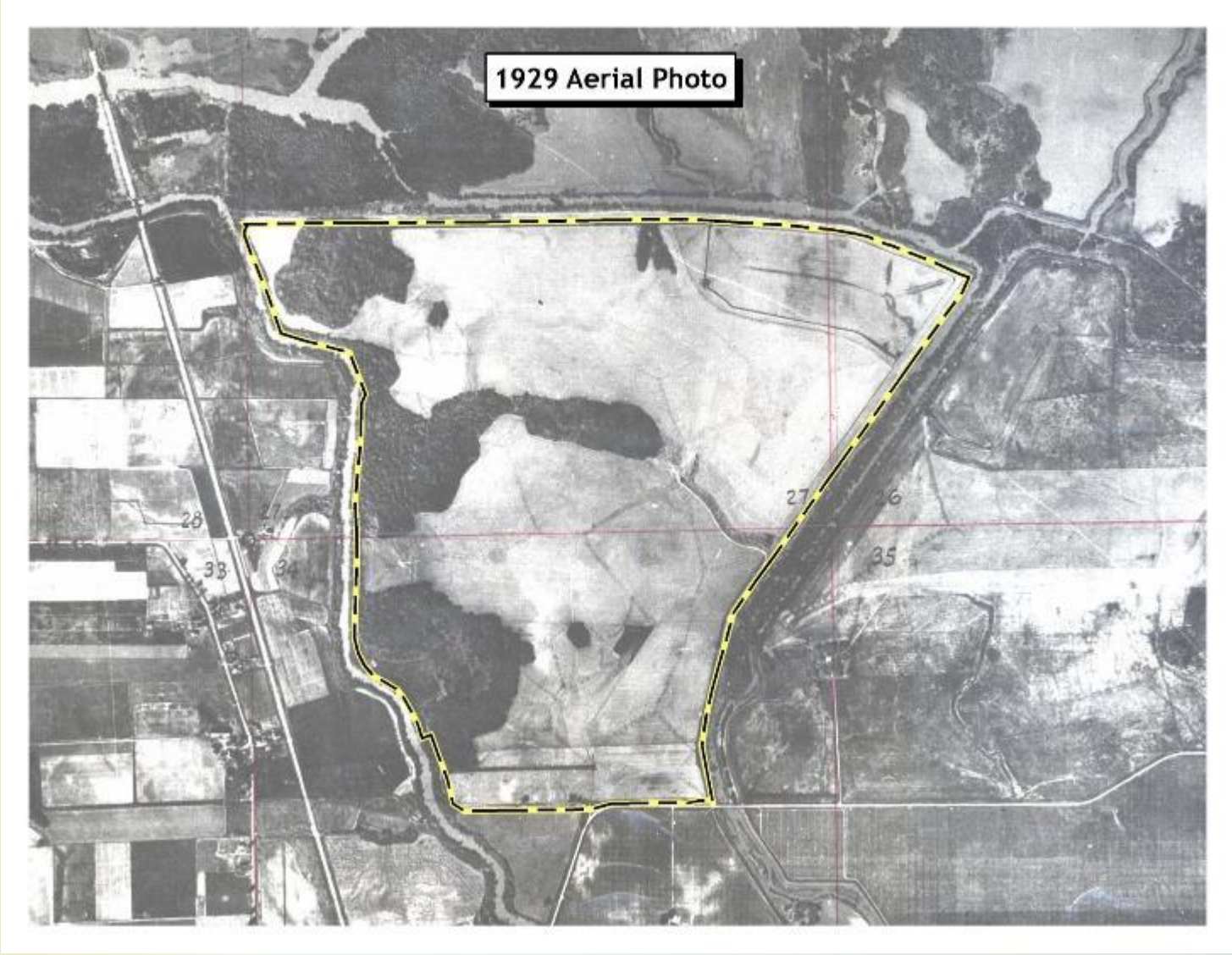
Introduction of Case Study -Cosumnes Floodplain Mitigation Bank-1929



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Introduction of Case Study -Cosumnes Floodplain Mitigation Bank-2008

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Concept Design Development – Basis of Design

"Set of conditions, needs, and requirements taken into account in designing a facility or product."

<u>Example Basis Elements</u>

- Biotic and abiotic baseline data
- Wetland functional goals and references
- Anticipated outcomes
- External influences
- Sustainability/durability
- Cost Benefit analysis

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Concept Design Development – Biotic and Abiotic Data

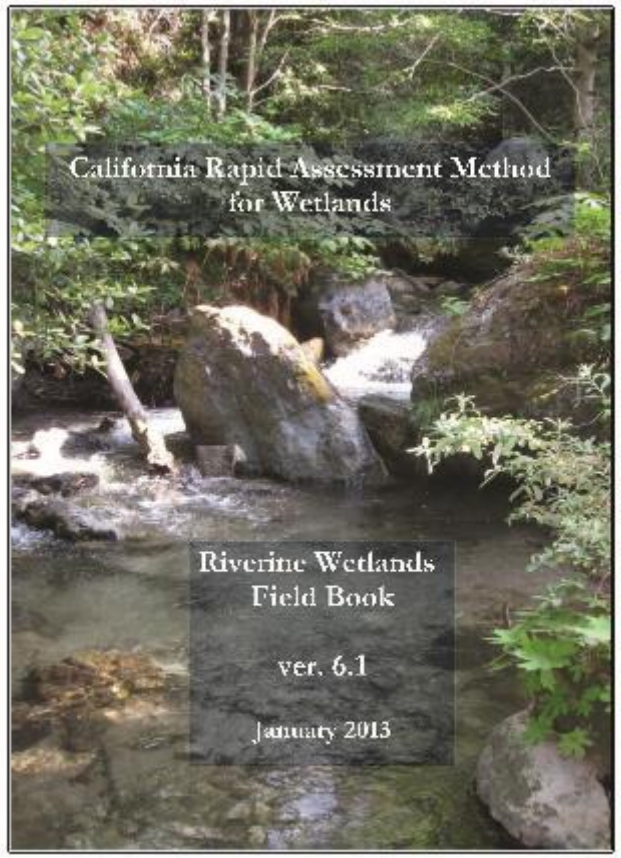
1) Should be driving the Conceptual design
2) Should be consistent with, and support, Mitigation Goals and Objectives

Common Sources of Uncertainty:

- Hydrologic and Hydraulic data
- Topographic data
- Soils and geologic data

Concept Design Development – Assessment Methods and Quantification Tools

Wetland/Stream Assessment and Quantification Tools



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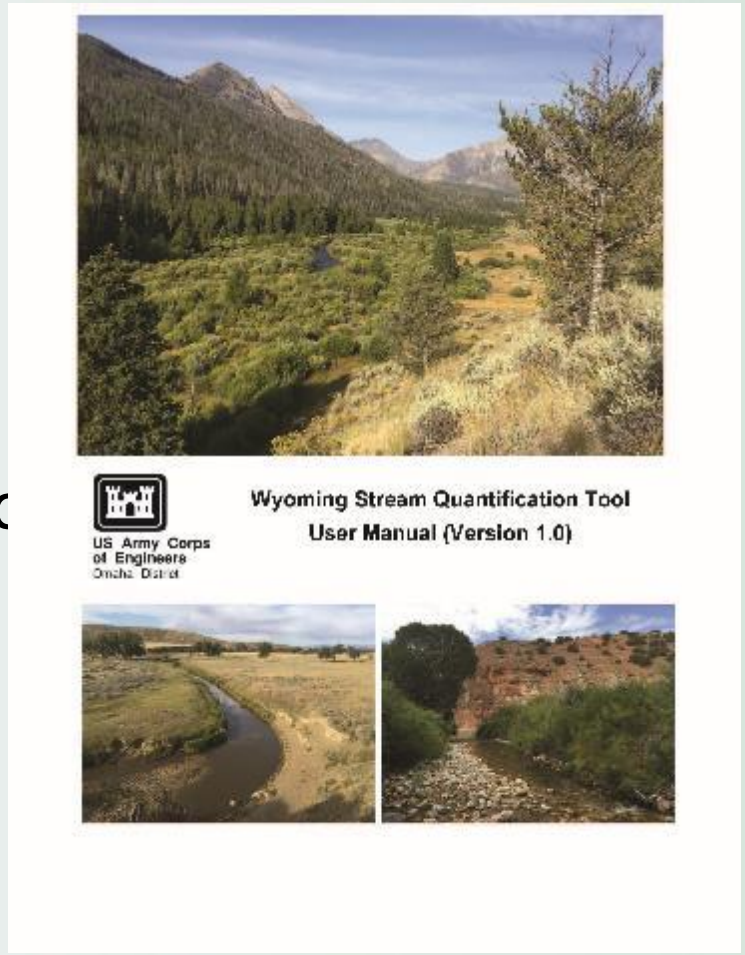

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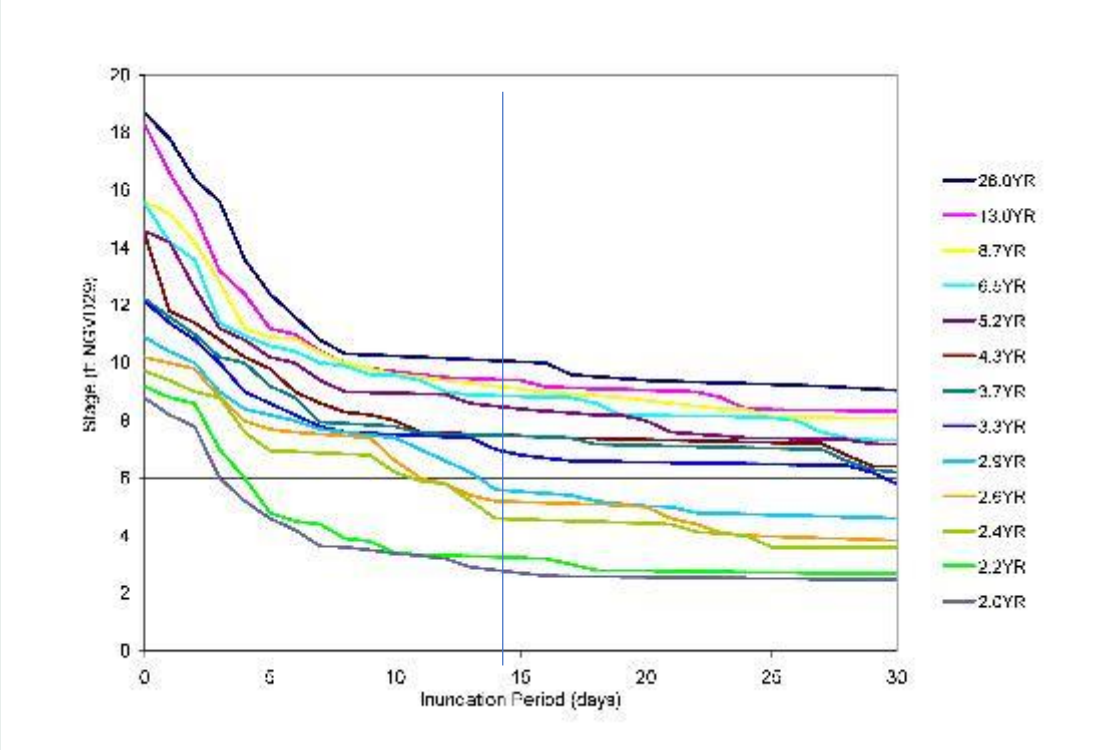
Design Iteration – The Influence of Refined Biotic and Abiotic Data

Common sources of new or refined data:

- On ground topographic data (vs. Lidar etc.)
- Site specific soil data
- More complete understanding of adjacent land uses/effects
- Site-specific hydraulic or hydrologic observations or models

New or refined data can influence:

- Spatial location and/or anticipated function of wetlands
- Wetland Goals and Objectives
- Cost vs. benefit and overall site suitability



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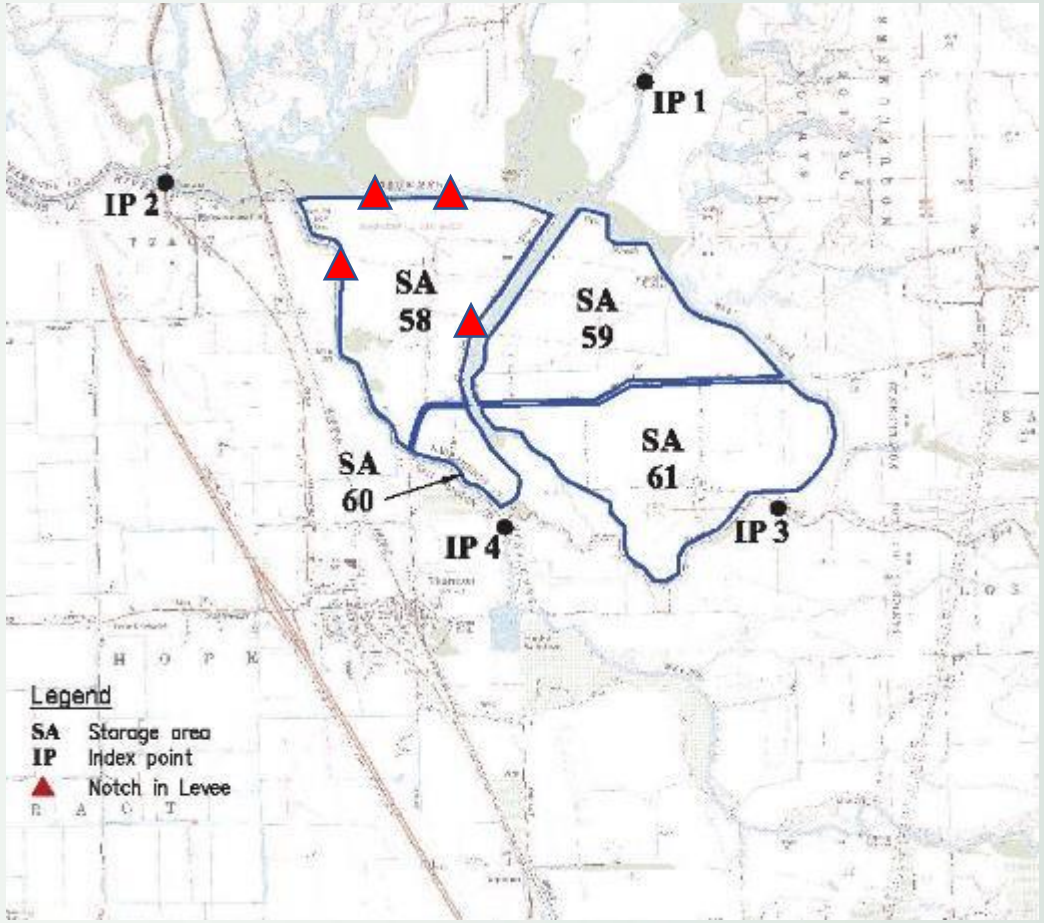
Design Iteration – Case Study

New Data: Improved regional flood modeling



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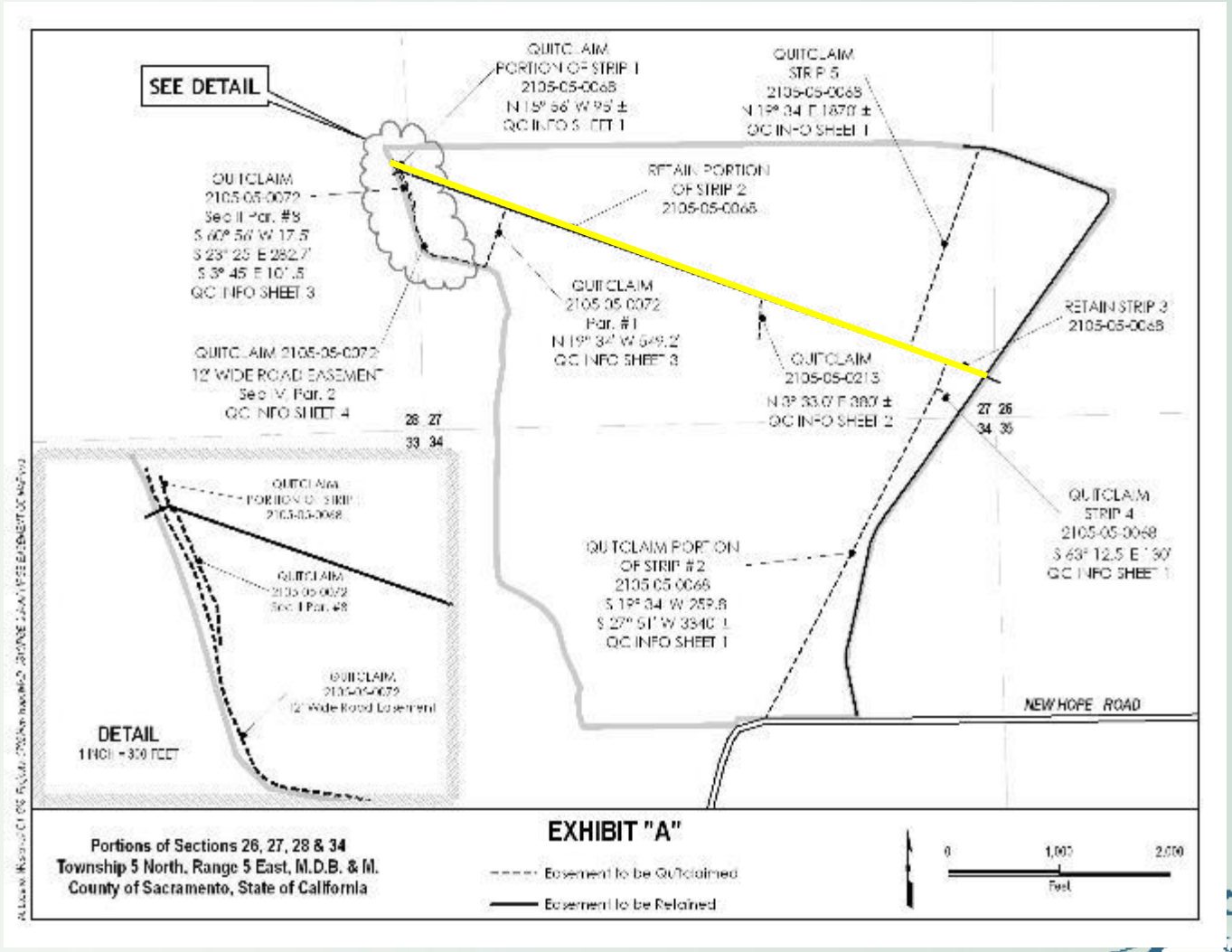
Design Iteration – The Influence of External Elements

- **Utilities (pipelines**, electricity transmission, etc.)
- Mineral Rights
- Water Rights
- Local Agencies
- Neighbors & Concerned Citizens
- Local “experts”
- Permitting



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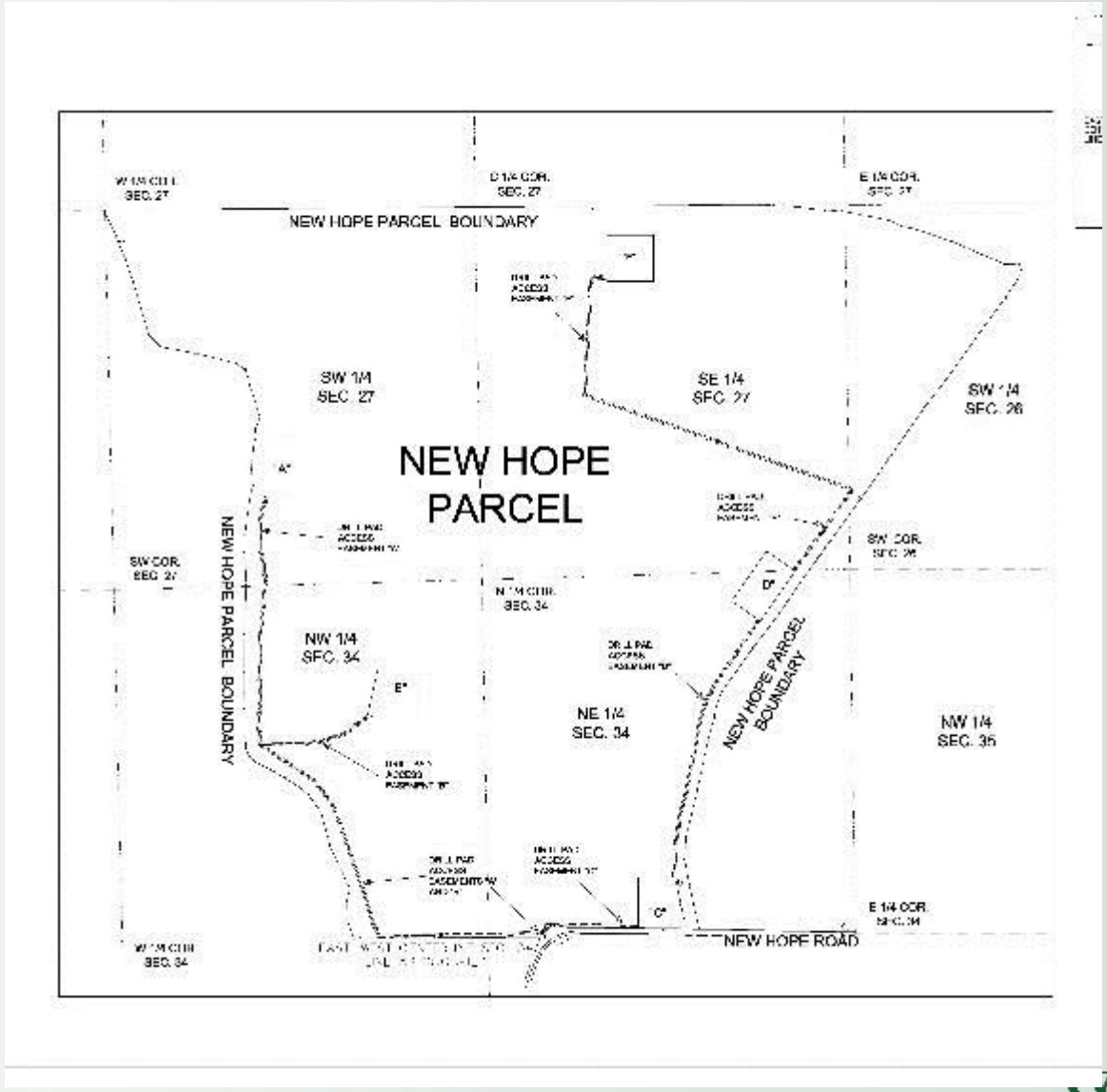

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Design Iteration – The Influence of External Elements

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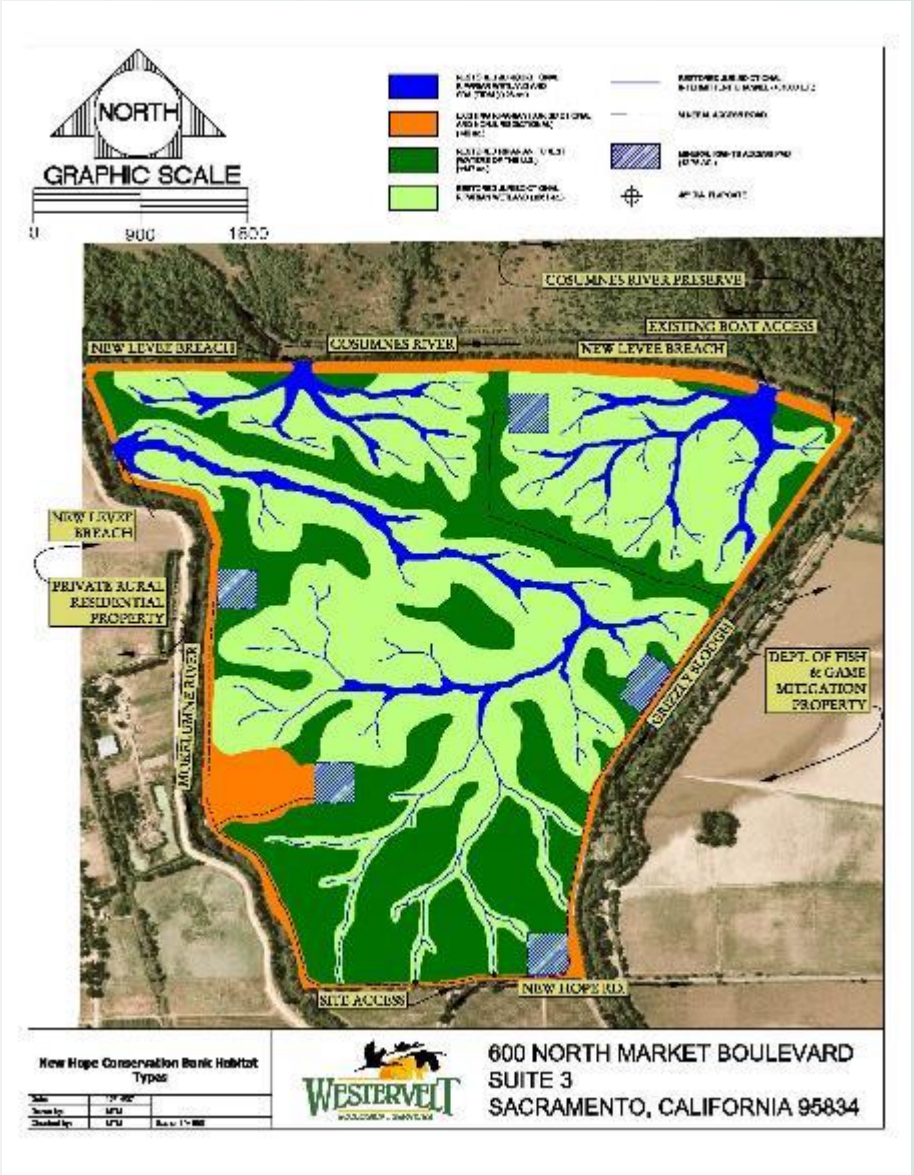
- Mineral Rights
- **Other Agencies**
- **Engineering**
- Local “experts”
- Permitting



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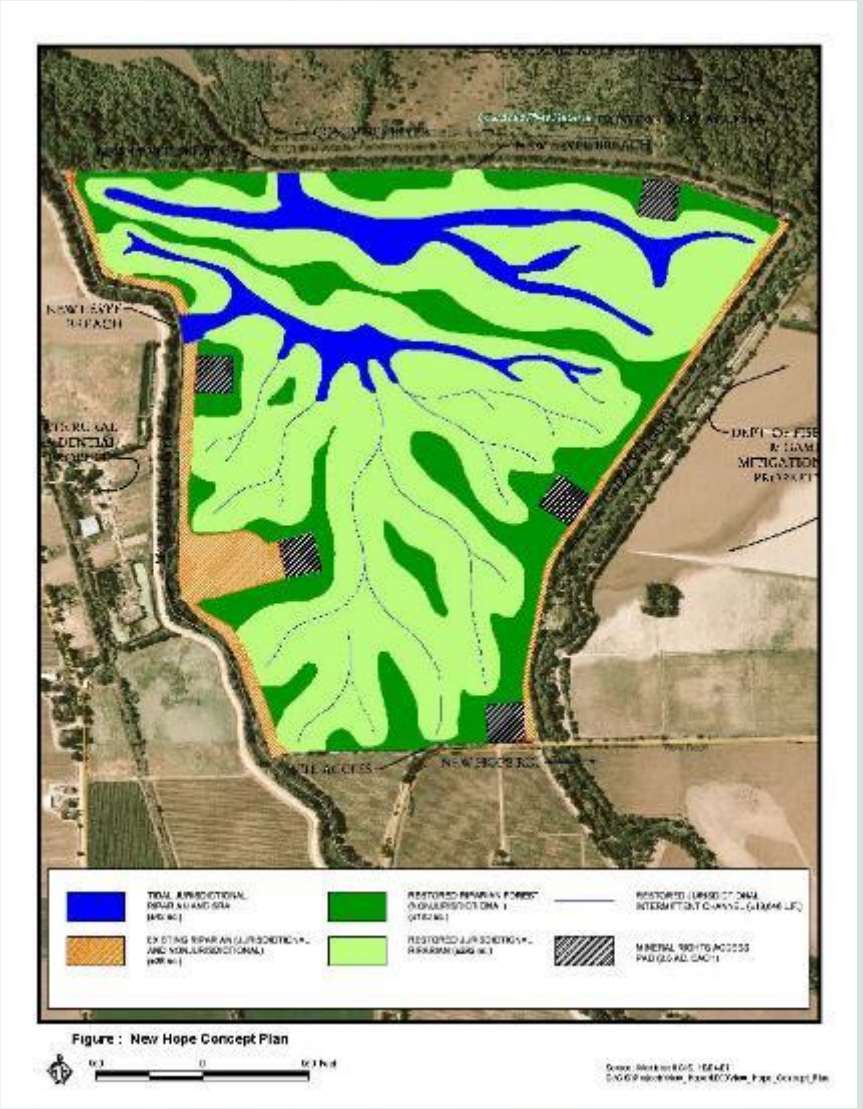

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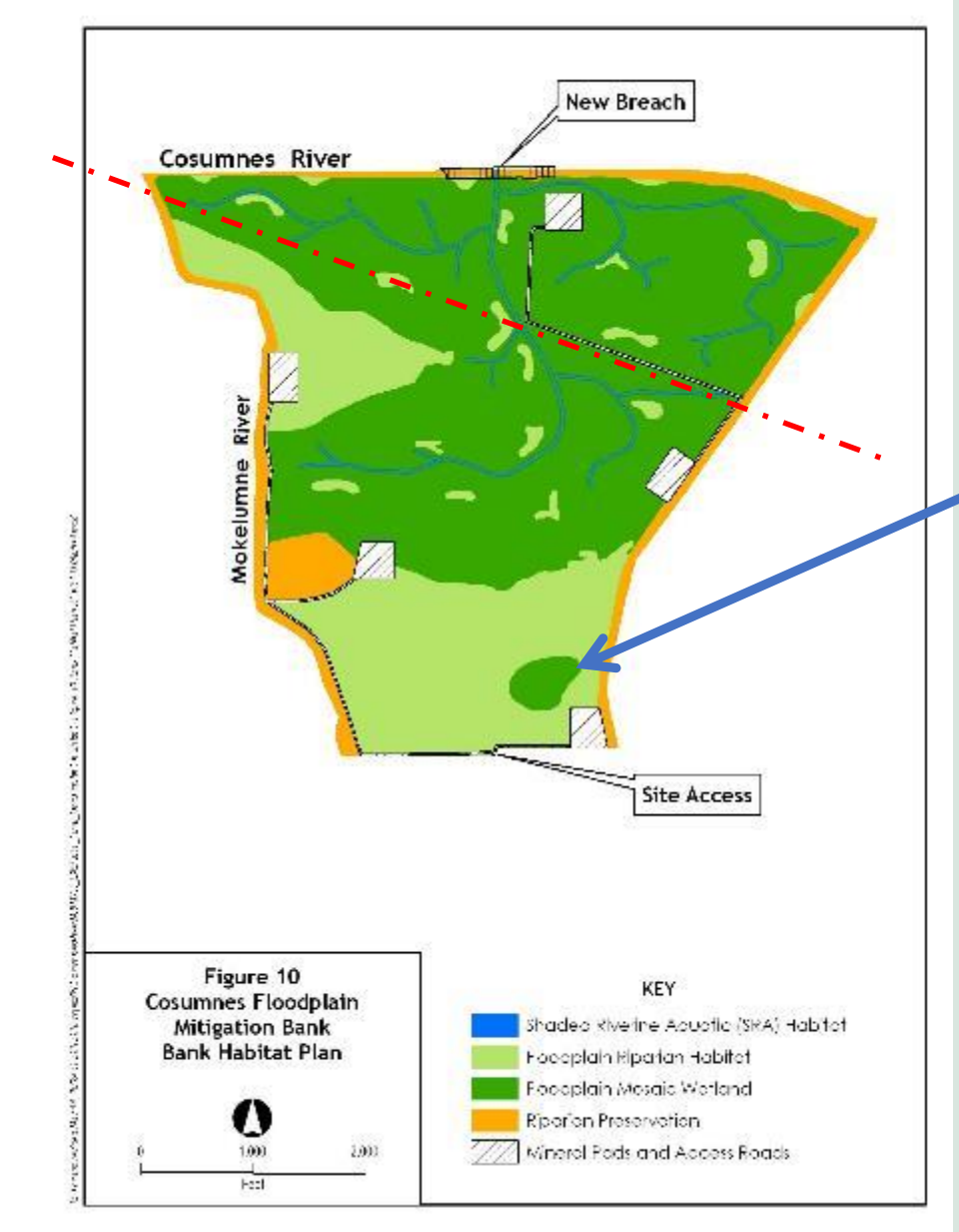
Design Iteration – The "Final" Design

- **Utilities (pipelines**, electricity transmission, etc.)
- Mineral Rights
- Other Agencies
- **Engineering**
- Local "experts"
- **Permitting: T&E spp**



Setback levee borrow area

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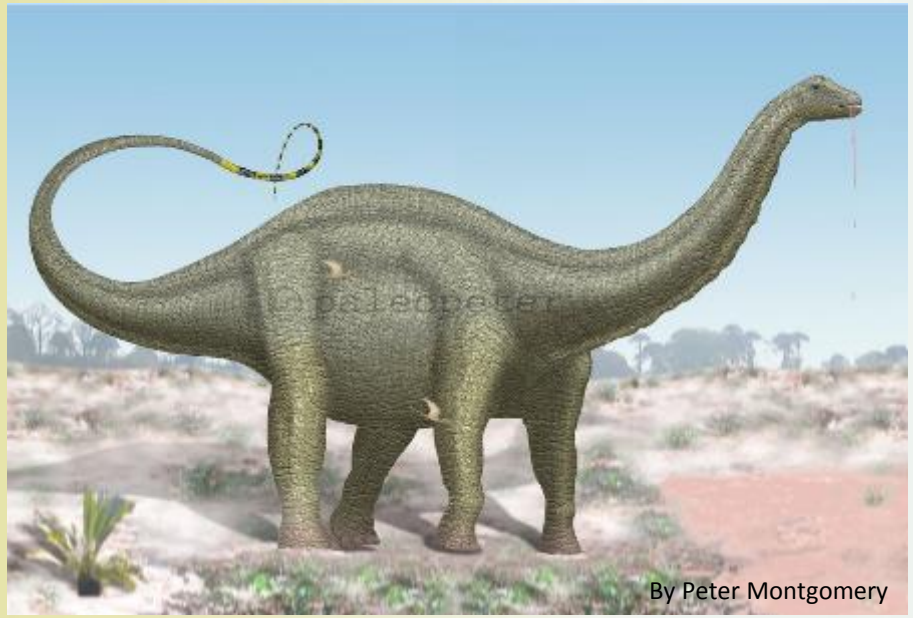
Design Iteration – When to Communicate Change?



Initial Concept

The Final Concept

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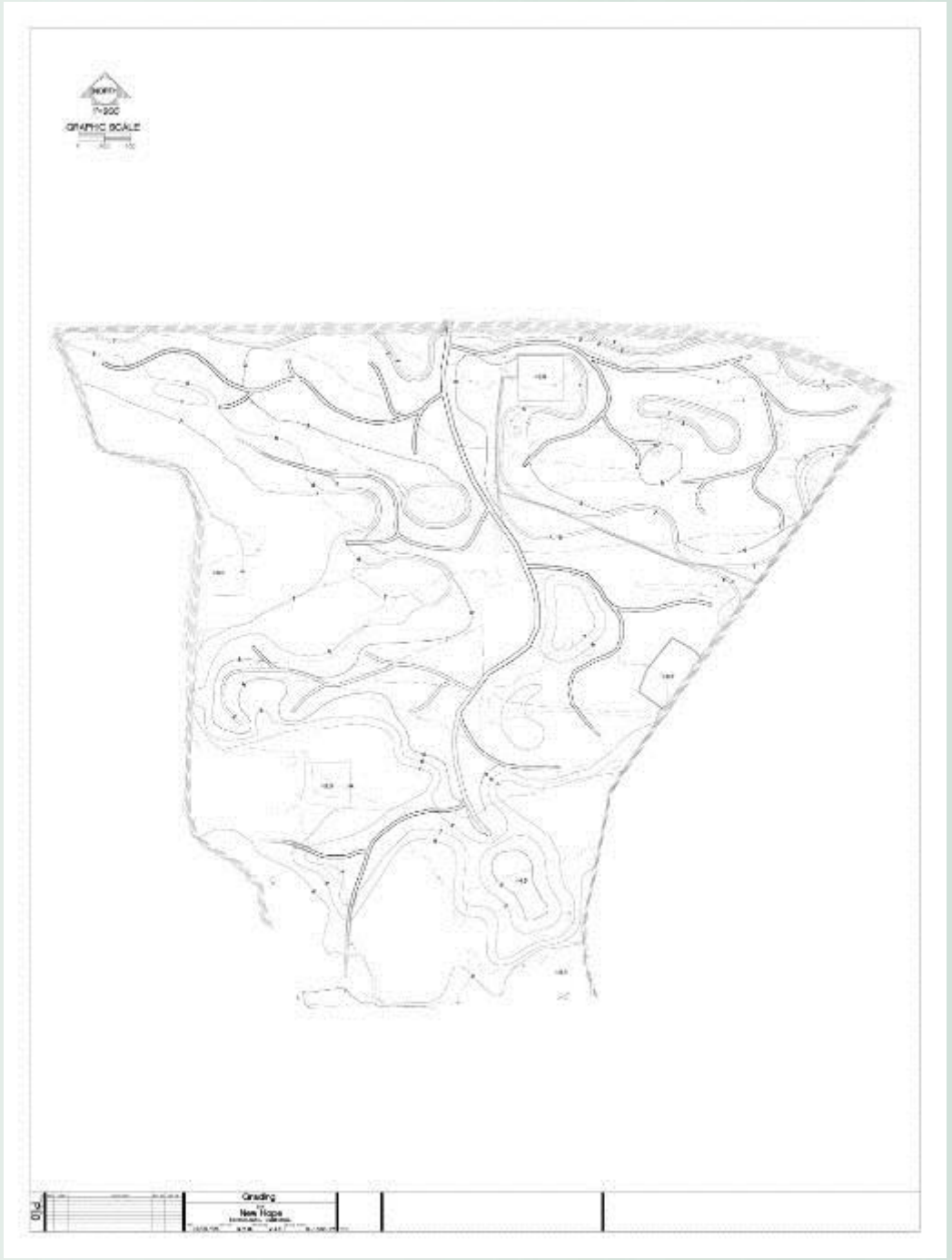
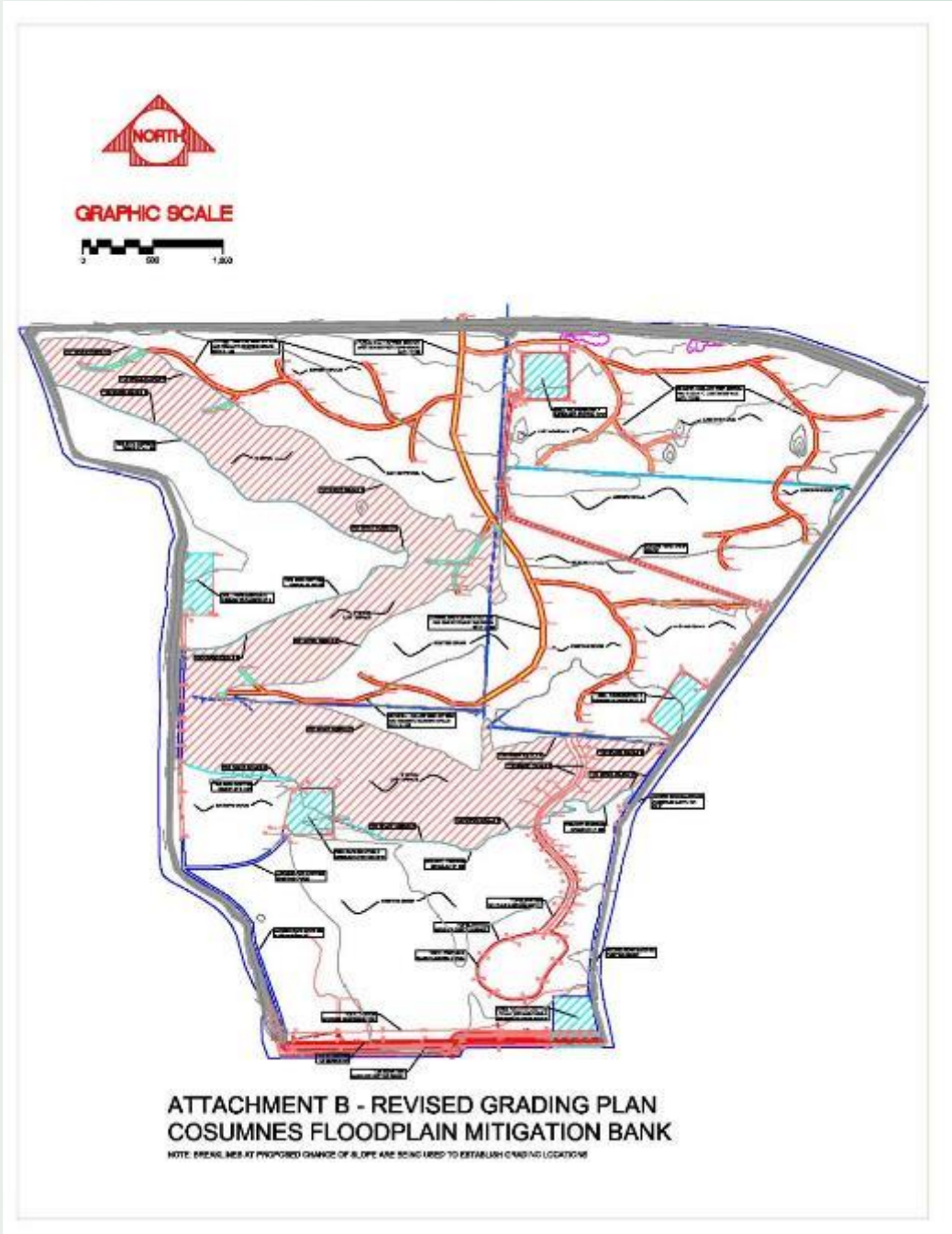
Overview of Final Design Stages – 30% Design

- “Final” Conceptual design is shown and is tied to survey grid and available topographic data
- Design topography shown
- Cross sections developed
- Quantities determined
- “Value Engineering” stage

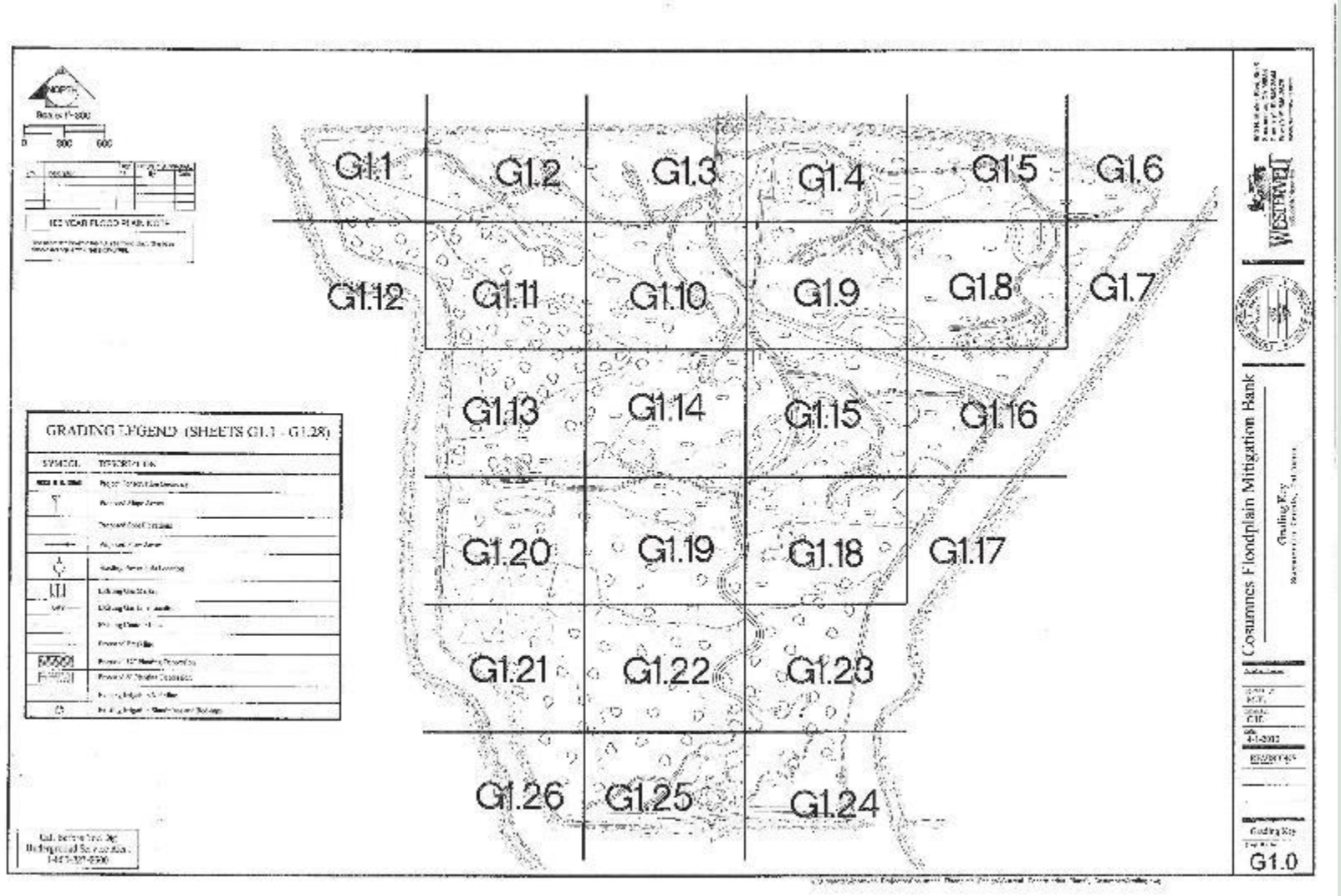


Overview of Final Design Stages – 60 to 90% Design

- Continual refinement of construction plan
- Specifications
- Access and ESA areas identified
- Design topography
- Cut and fill locations identified
- Cross sections finalized
- Quantities finalized
- Specifications and Technical Elements



Final Plan Set



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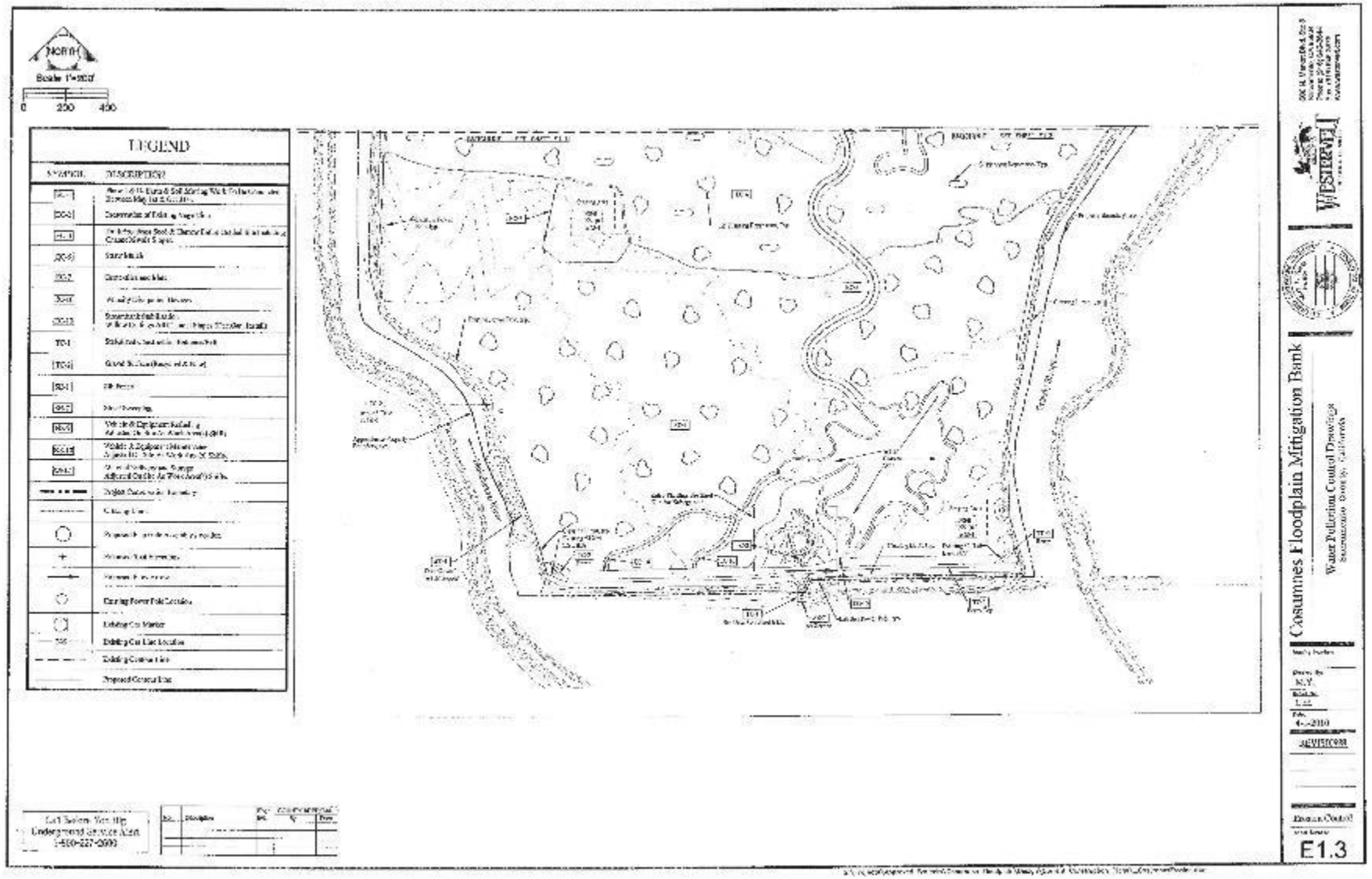

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Thank You

9 years after levee breach

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