SAN JOAQUIN RIVER RESTORATION PROGRAM

DWR Geotechnical Studies in Support of SJRRP

Overview and Status of the
San Joaquin Levee Evaluation (SJLE) Project
and the
Non Urban Levee Evaluation (NULE)Project
August 20, 2014

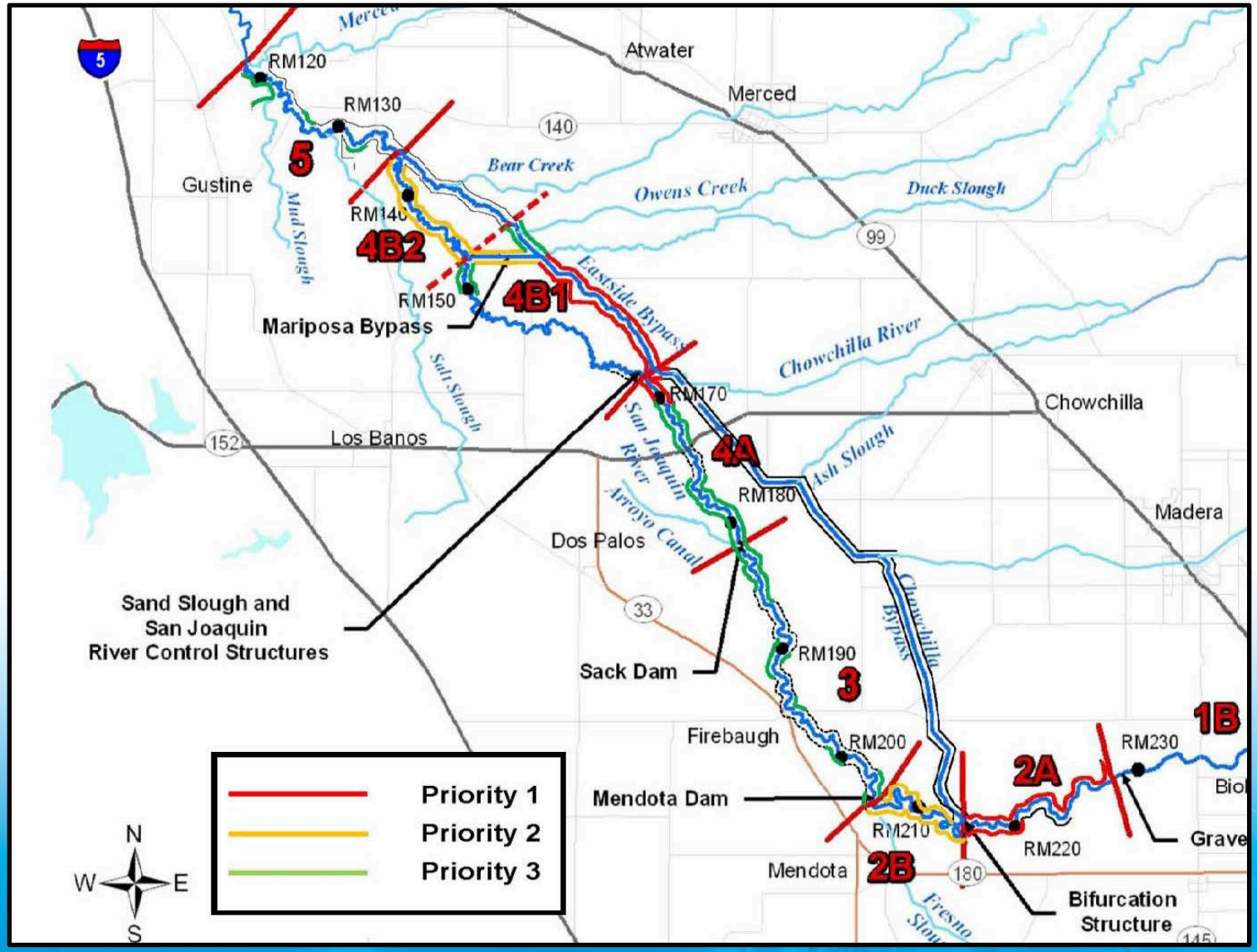
San Joaquin Levee Evaluation (SJLE) Project

- Goal: Assist SJRRP in assessing flood control system integrity associated with levee seepage and stability
- Scope
  - Task 1 - Levee prioritization based on channel capacity
  - Task 2 - Geotechnical explorations
  - Task 3 - Geotechnical analyses using Corps criteria
- Limitations
  - Analyses limited to levee seepage and stability

SJLE Task 1 – Levee Prioritization

- DWR Geotechnical Analysis findings:
  - High flood hazards for most SJRRP levees
  - Significant levee segments with limited geotechnical data
- Levees prioritized for geotechnical exploration based on:
  - Current channel capacity limitations
  - Relationship to Prior DWR explorations
  - Anticipated Restoration Flow routing

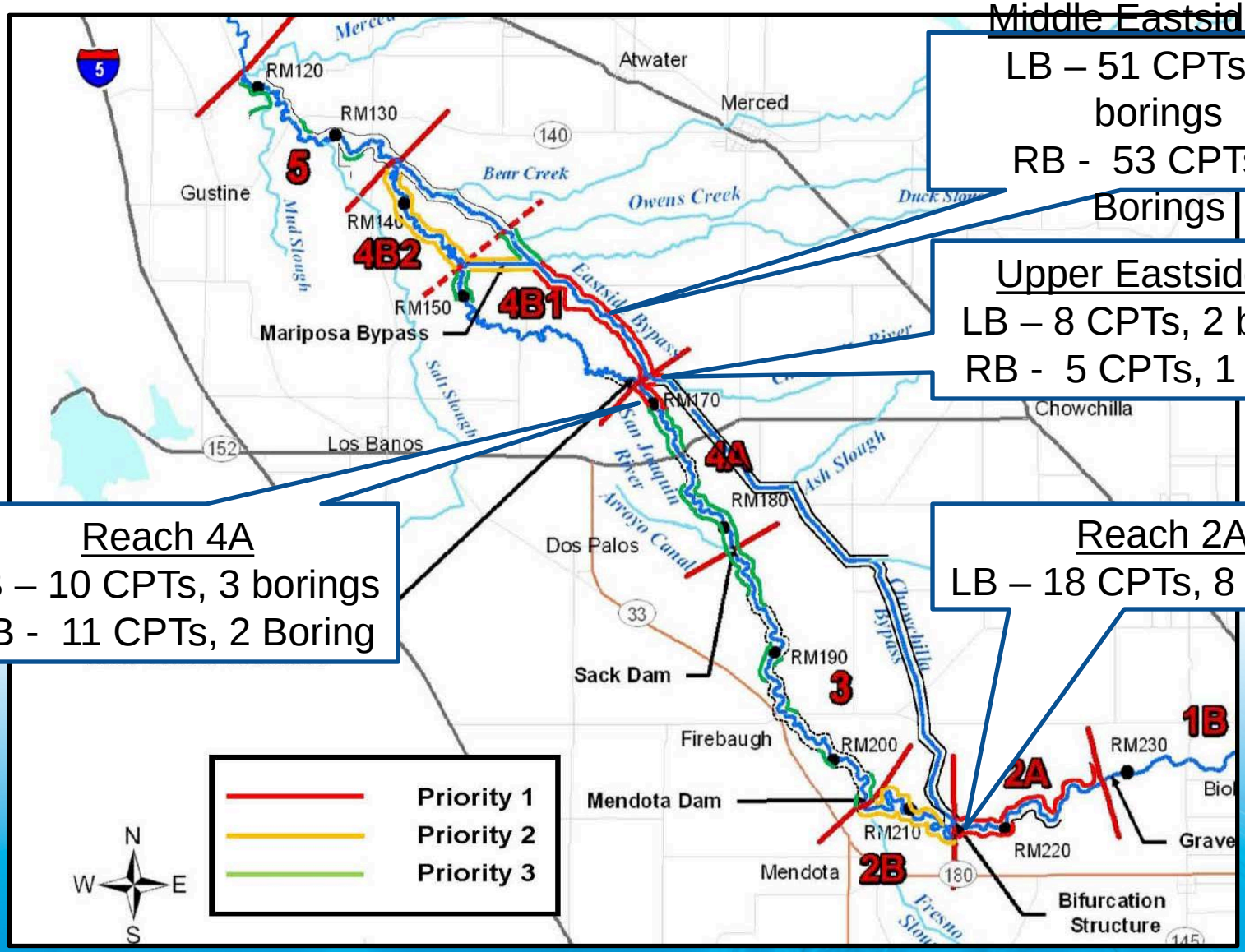
SJLE Task 1 - Levee Evaluation Priorities



SJLE Task 2 – Geotechnical Explorations

- Phased exploration of Priority 1 levee segments consistent with DWR levee evaluations protocol
- Initial Phase completed May 2013
  - Cone Penetrometer Tests (156)
  - Exploratory Borings (35)
- Supplemental Explorations Underway
  - Geophysical surveys
  - Hand auger borings
  - Exploratory borings

SJLE Task 2 – Geotechnical Explorations completed



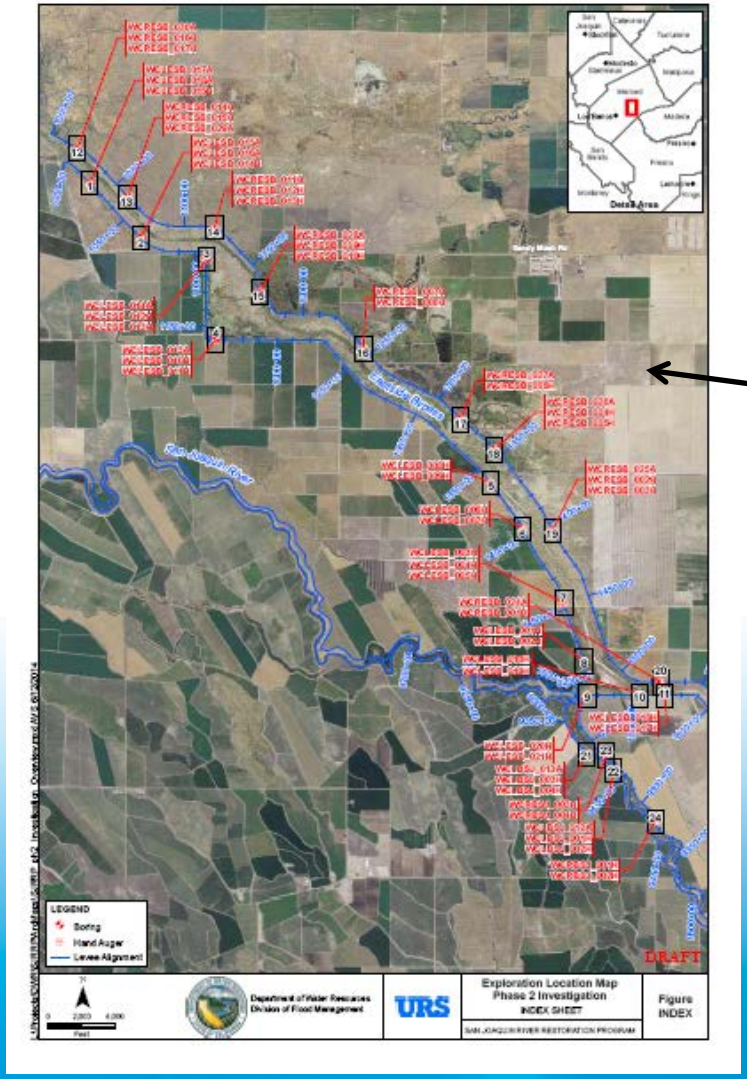
Middle Eastside BP
LB – 51 CPTs, 10 borings
RB - 53 CPTs, 9 Borings

Upper Eastside BP
LB – 8 CPTs, 2 borings
RB - 5 CPTs, 1 Boring

Reach 4A
LB – 10 CPTs, 3 borings
RB - 11 CPTs, 2 Boring

Reach 2A
LB – 18 CPTs, 8 borings

SJLE Task 2 – Geotechnical Explorations in 2014



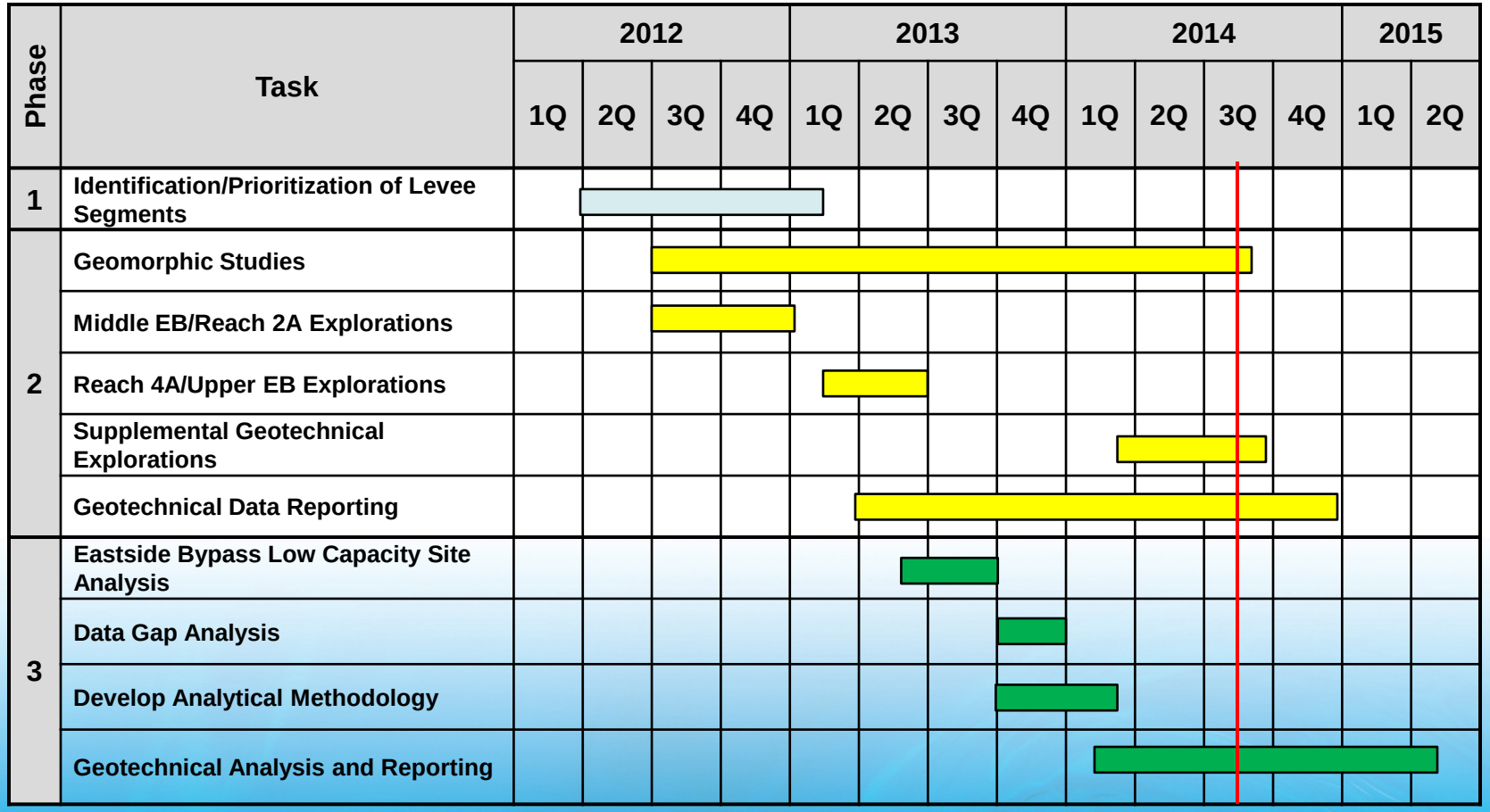
- Eastside Bypass
  - Geophysical surveys (completed June 2014)
  - Hand augers (completed July 2014)
  - Borings (underway)
- Reach 2A
  - Geophysical surveys (completed June 2014)
  - Hand augers (completed July 2014)
  - Borings (est. Fall 2014)

SJLE Task 3 – Geotechnical Analysis

- Geotechnical analyses of Priority 1 levees
  - Limited to seepage and stability
  - Applied USACE levee performance criteria
- Key subtasks
  - Development of geotechnical analysis methodology (complete)
  - Analyses of low channel capacity sites in Eastside Bypass (completed in 2013)
  - Geomorphology analyses (estimated completion September 2014)
  - Geotechnical analyses and reporting (estimated completion April 2015)

SAN JOAQUIN RIVER RESTORATION PROGRAM

SJLE – Schedule



SJLE – Next Steps

- Complete Priority 1 levee evaluation
- Support SJRRP in:
  - Assessing channel capacity revisions
  - Identifying levee remediation needs
  - Identify monitoring needs for flood management under Restoration flows
- Continue coordination with SJRRP and Reclamation on Priority 2 and 3 needs
- Identify future funding availability for additional evaluations

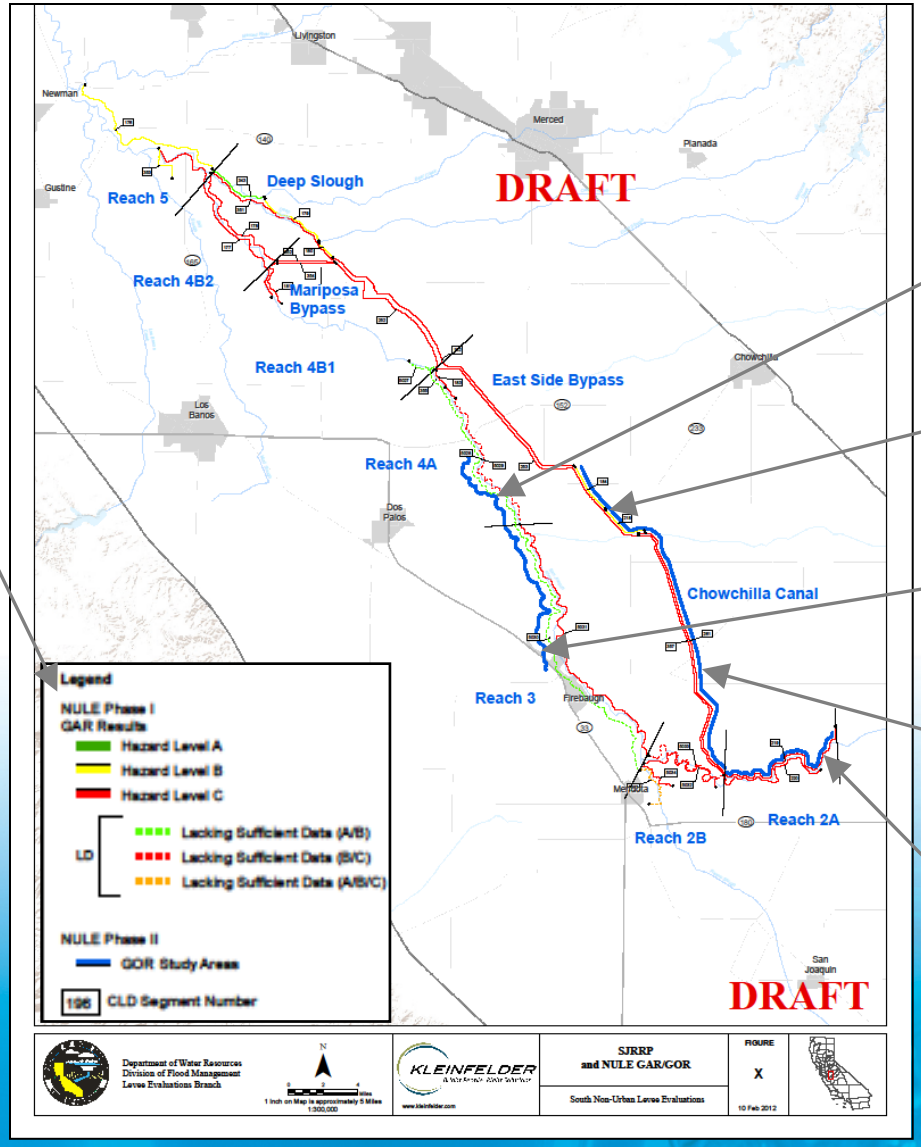
DWR NULE Project

- Goals
  - Support CVFPP in evaluating levee integrity and remedial needs
  - Study Area expanded to include all SJRRP reaches to support SJRRP
- Phased Approach
  - Phase 1 - Preliminary Evaluations Using Existing Data
    - Completed June 2011
  - Phase 2 - Targeted Geotechnical Exploration/Analyses
    - Scope limited to levees protecting > 1,000 people
    - Data collection completed 2013
    - Analyses scheduled for completion by December 2014

NULE Activities to Date

Phase 1 GAR Results

Levee Hazard Assessments of all SJRRP levees



Phase 2 Explorations

Reach 4A	45 CPTs 10 Borings
Eastside Bypass	35 CPTs 11 Borings
Reach 3A	69 CPTs 12 Borings
Chowchilla Canal	90 CPTs 35 Borings
Reach 2A	40 CPTs 18 Borings

Summary

Questions and Summary