

Groundwater Management Planning for the Eastern San Joaquin Basin

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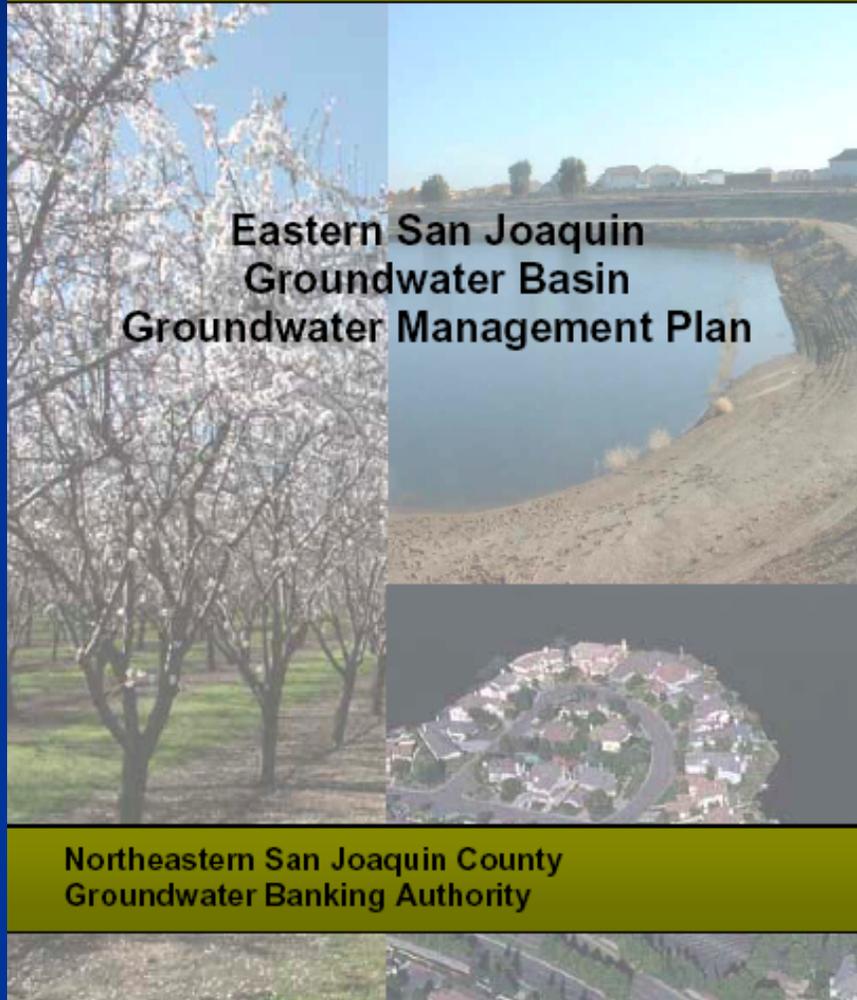


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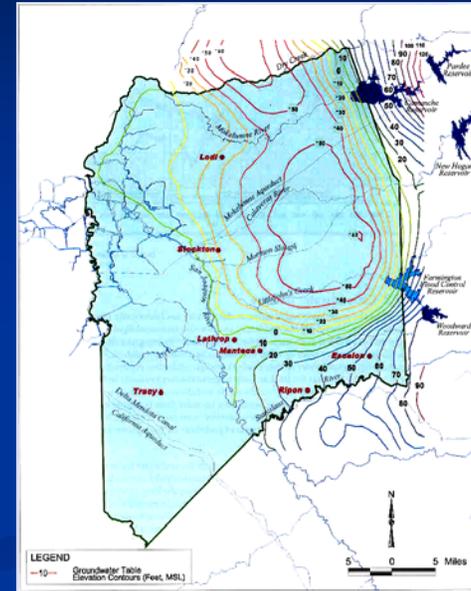
Groundwater Management Plan

September 2004

Eastern San Joaquin Groundwater Basin Groundwater Management Plan



Northeastern San Joaquin County
Groundwater Banking Authority



“...This Groundwater Management Plan is the result of this inexorable collaborative effort, which was single-minded in its effort to reinforce local control and provide direction for the sustainable development of this vital resource for the future social, economic and environmental viability of San Joaquin County.”

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Executive Summary

- Background
- Purpose and Objectives
- Groundwater Management Area
- Agency Participation
- Plan Consistency
- Eastern San Joaquin County Hydrogeology
- Basin Management Objectives
- Groundwater Management Options
- Groundwater Contamination
- Groundwater Monitoring and Science Programs
- Financing Options
- Plan Governance
- Integrated Conjunctive Use Program
- Plan Implementation
- Future Activities

Background

- Groundwater Export Ordinance – June 2000
- Countywide Water Management Plan – Adopted 2002
- Eastern San Joaquin Basin Groundwater Management Plan include requirements of AB 3030 & SB 1938
 - Basin Management Objectives
 - Expanded monitoring program
 - Update of Conjunctive Use Project Alternatives

Plan Review and Comments

- Plan Development Kickoff – April 2003
 - Regular monthly meetings – GBA CC & Planning Group
 - Ongoing review
- Draft Admin. Plan Release – April 2004
- Draft Plan Release & Board Acceptance – June 2004
 - 50 Plan copies (hard/CD) mailed plus website
- Comment Period – July through Sept. 2004
 - SEWD
 - Central Delta Water Agency
 - North San Joaquin Water Conservation District
 - City of Stockton
 - City of Manteca
 - San Joaquin Farm Bureau
 - EBMUD
- Final Plan Public Hearing – September 2004

Plan Purpose and Objectives

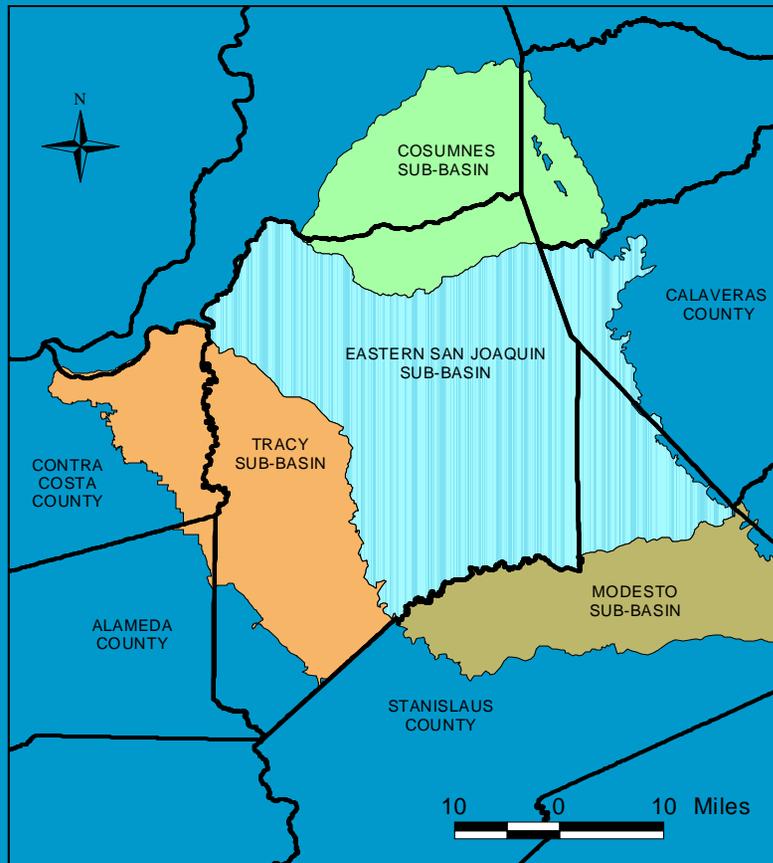
- Maintain Long-Term Sustainability of the Basin - Development of Management Objectives, Practices & Conjunctive Use Projects
- Prevent Further Saline Intrusion and Degradation of Groundwater Basin
- Development of Program to Monitor, Evaluate and Predict Basin Conditions
- Maintain Local Control of the Groundwater Basin
- Attainable Management Objectives to Retain State Funding Eligibility
- Voluntary Policies, Practices and Incentive Programs to Meet Management Objectives
- Financing Strategies for Plan Implementation

Mission Values for Success

Groundwater Management Plan Mission Values for Success

Be implemented in an equitable manner	Maintain or enhance the local economy	Protect groundwater and surface water quality
Be affordable	Minimize adverse impacts to entities within the County	Provide more reliable water supplies
Exhibit multiple benefits to local land owners and other participating agencies	Maintain overlying landowner and Local Agency control of the Groundwater Basin	Restore and maintain groundwater resources
Minimize adverse impacts to the environment	Protect the rights of overlying land owners	Increase amount of water put to beneficial use within San Joaquin County

Groundwater Management Area

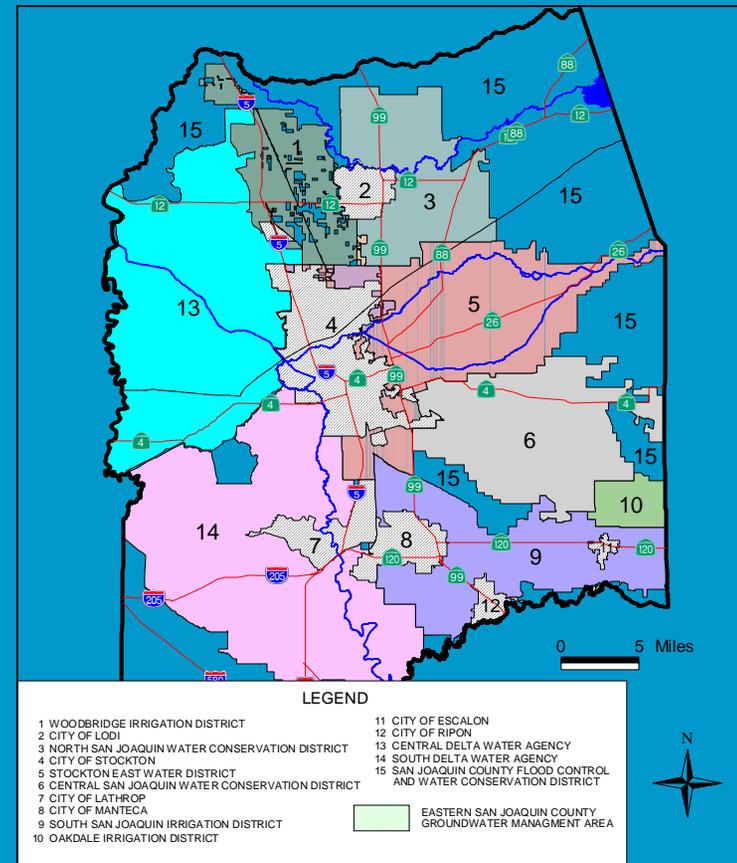


Source: California Spatial Information Library at <http://www.gis.ca.gov/>

Figure 1-X

NORTHEASTERN SAN JOAQUIN COUNTY
GROUNDWATER BANKING AUTHORITY

GROUNDWATER BASINS
OF SAN JOAQUIN COUNTY



LEGEND

- | | |
|---|---|
| 1 WOODBRIDGE IRRIGATION DISTRICT | 11 CITY OF ESCALON |
| 2 CITY OF LODI | 12 CITY OF RIPON |
| 3 NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT | 13 CENTRAL DELTA WATER AGENCY |
| 4 CITY OF STOCKTON | 14 SOUTH DELTA WATER AGENCY |
| 5 STOCKTON EAST WATER DISTRICT | 15 SAN JOAQUIN COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT |
| 6 CENTRAL SAN JOAQUIN WATER CONSERVATION DISTRICT | |
| 7 CITY OF LATHROP | |
| 8 CITY OF MANTECA | |
| 9 SOUTH SAN JOAQUIN IRRIGATION DISTRICT | |
| 10 OAKDALE IRRIGATION DISTRICT | |
| | EASTERN SAN JOAQUIN COUNTY GROUNDWATER MANAGEMENT AREA |



Figure 1-X

NORTHEASTERN SAN JOAQUIN COUNTY
GROUNDWATER BANKING AUTHORITY

AGENCIES OVERLYING
THE GROUNDWATER MANAGEMENT AREA

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Agency Participation

■ Local/Regional Participants & Agencies

- Calaveras County Water District
- California Water Service Company
- Central Delta Water Agency
- Central San Joaquin Water Conservation District
- City of Lathrop
- City of Lodi
- City of Manteca
- City of Stockton
- East Bay Municipal Utility District
- Linden County Water District
- North San Joaquin Water Conservation District
- San Joaquin County Environmental Health
- San Joaquin County Public Works
- San Joaquin Farm Bureau Federation
- South Delta Water Agency
- South San Joaquin Irrigation District
- Stanislaus County
- Stockton Area Business Council, Inc.
- Stockton East Water District
- Woodbridge Irrigation District

■ State Participants & Agencies

- Department of Water Resources
- Office of State Senator Charles Poochigan
- Office of Assemblywoman Barbara Matthews

■ Federal Participants & Agencies

- Natural Resource Conservation Service
- U.S. Geological Survey
- U.S. Army Corps of Engineers

■ Other Participants & Agencies

- California Center for Collaborative Policy
- Camp, Dresser, & McKee
- Galt Economic Development Task Force
- Schlumberger Water Services
- The Great Valley Center
- The Sierra Club

Plan Consistency & Requirements

Table ES-4 Components of a Groundwater Management Plan

Plan Component	Recommended by AB 3030	Required by SB 1938	Plan Sections
Control of saline water intrusion	X		2, 3, 4, 5, 8
Management of wellhead protection and recharge areas	X		4
Regulation of contaminated groundwater	X		4
The administration of a well abandonment	X		4
Elimination of groundwater overdraft	X		2, 3, 4, 5, 8
Replenishment of groundwater	X		2, 3, 4, 8
Groundwater monitoring	X	X	5
Operation of a conjunctive water management system	X		3, 8
Well construction standards	X		4
Financing groundwater management projects	X		6, 7
The development of groundwater management partnerships	X		1, 4, 7, 8
Coordination of land use planning and groundwater management	X		4
Description of participation by interested parties		X	1, 7
Plan to involve agencies overlying the basin		X	1, 7
Basin Management Objectives		X	3
Basin management entity and area map		X	1

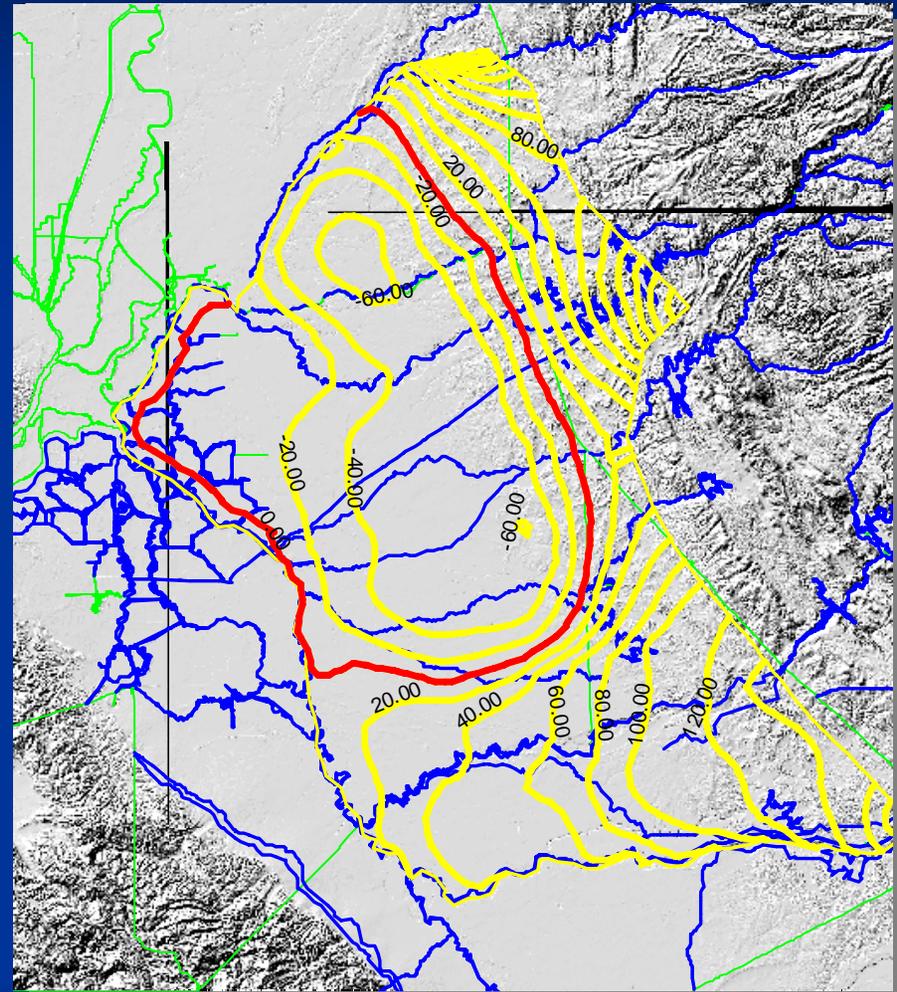
Sources: California Department of Water Resources Division of Planning and Local Assistance

<http://www.dpla.water.ca.gov/cgi-bin/supply/gw/management/hq/ab3030/main.pl>

California Department of Water Resources Draft 2003 Update Bulletin 118

Groundwater Hydrogeology

- Extensive area of County with heads below MSL
- Groundwater heads as low as 60 feet below MSL
- Strong west to east gradient in Stockton area – reversing historical flow directions



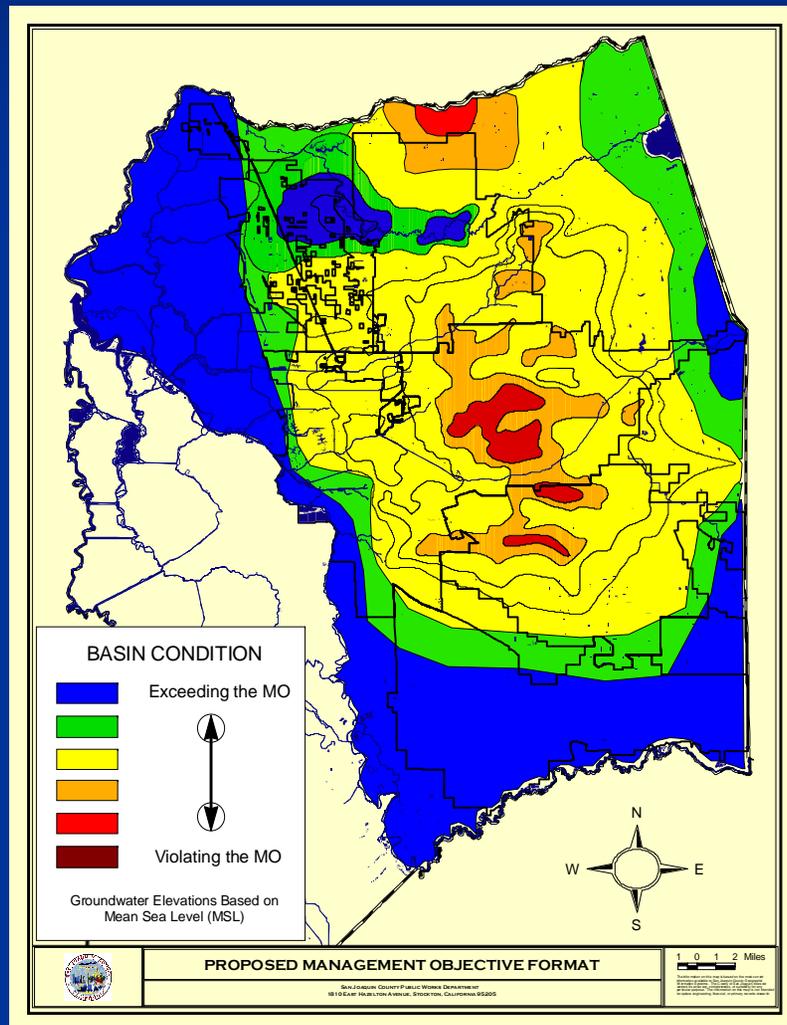
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Basin Management Objectives

- **Groundwater Level:** Maintain or enhance groundwater elevations to meet the long-term needs of groundwater users within the Basin Management Area.
- **Water Quality:** Maintain or enhance groundwater quality underlying the Basin to meet the long-term needs of groundwater users within the Basin Management Area.
- **Surface Water Quality:** Minimize impacts to surface water quality and flow due to continued Basin overdraft and planned conjunctive use.
- **Inelastic Land Subsidence:** Prevent inelastic land subsidence in Eastern San Joaquin County due to continued groundwater overdraft.

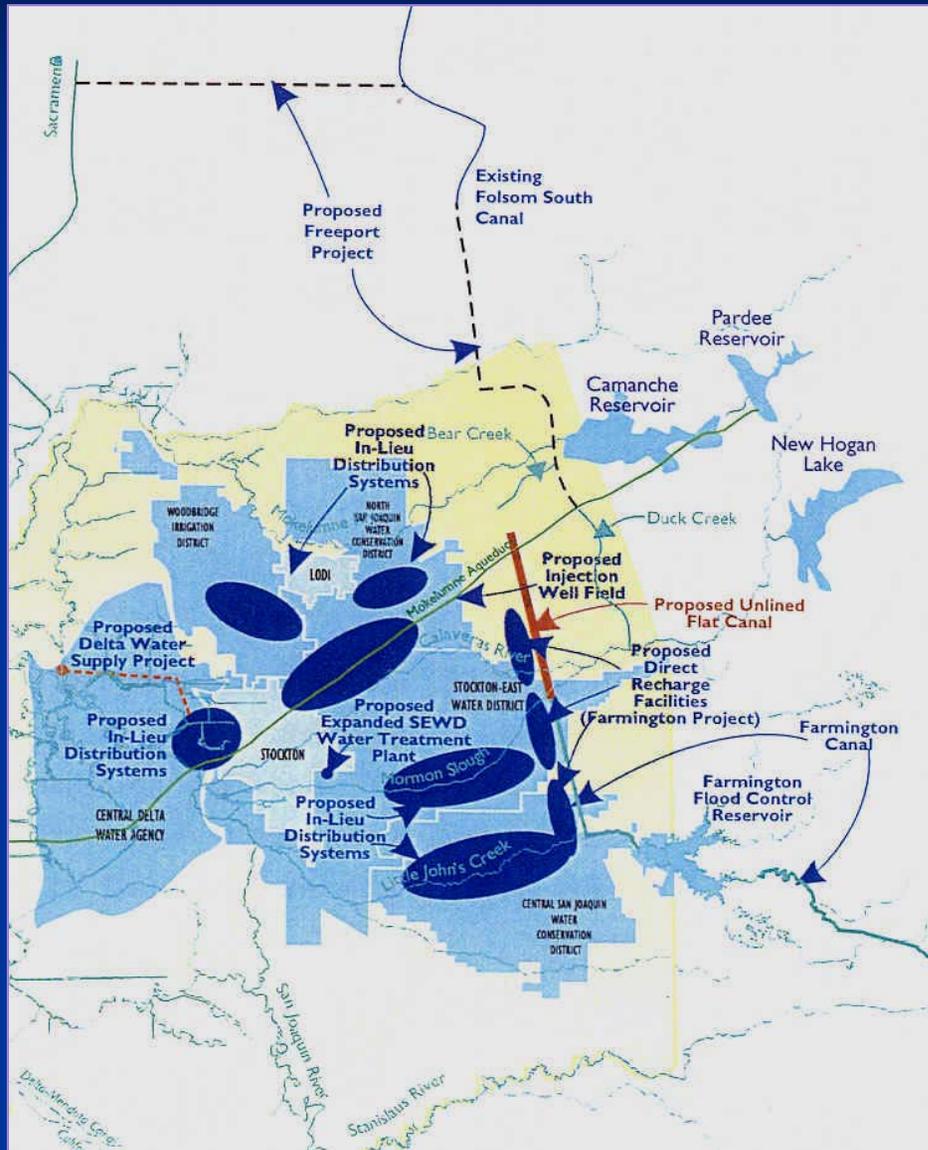
Basin Management

Management Objective #1: Groundwater Level Plan Elements



1. Increase use of available and new surface water supplies;
2. Implementation of local and regional conjunctive use programs;
3. Development of Basin Operations Criteria;
4. Development of urban and agricultural incentive-based conservation and demand management programs;
5. Development of local and outside revenue sources.

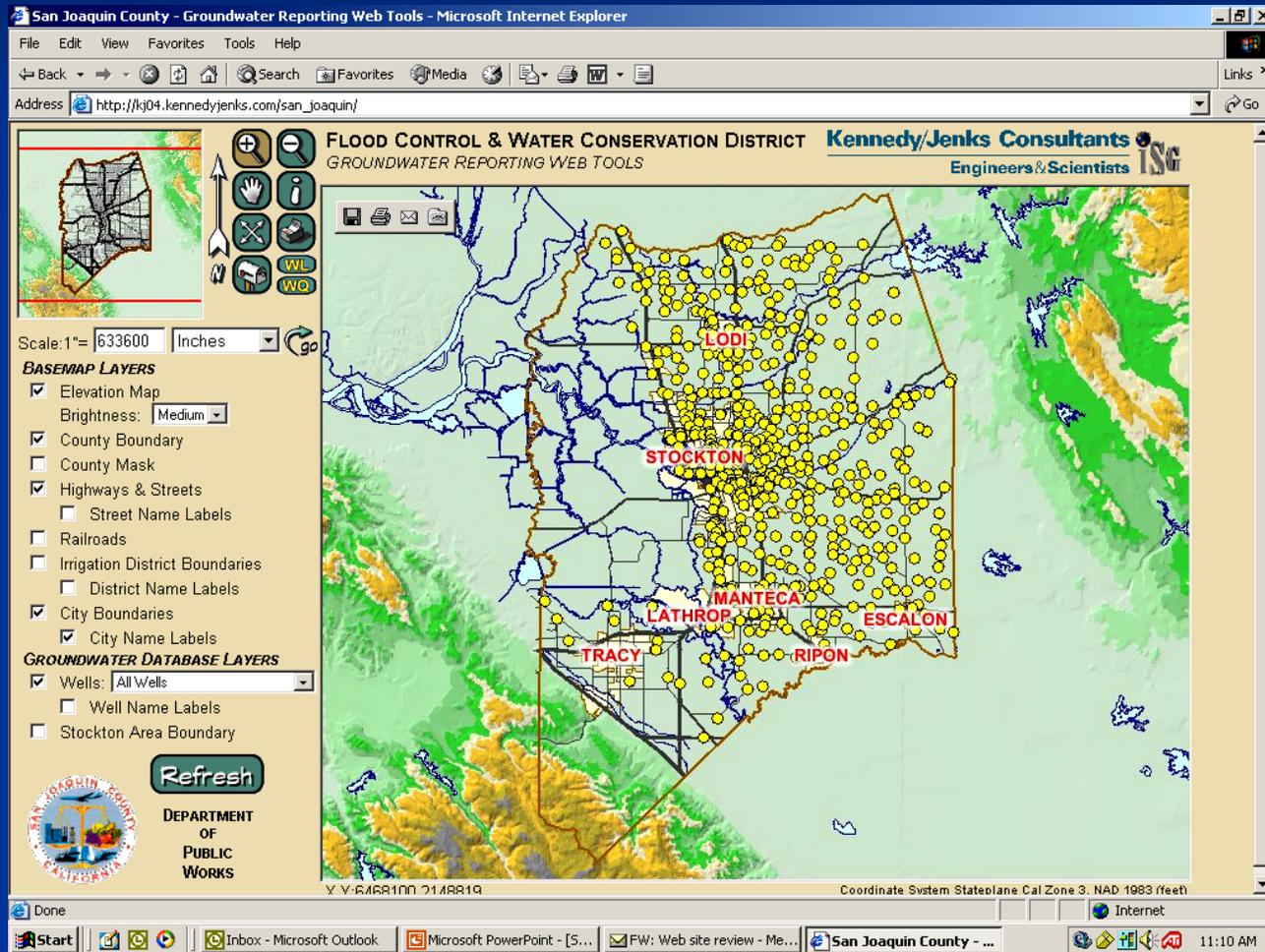
Groundwater Management Options



- Existing or new surface water supply elements
- New & improved Storage/conveyance elements
- Conjunctive use elements
 - In-lieu groundwater recharge
 - Direct recharge
 - ASR facilities
 - Direct use
 - Other options

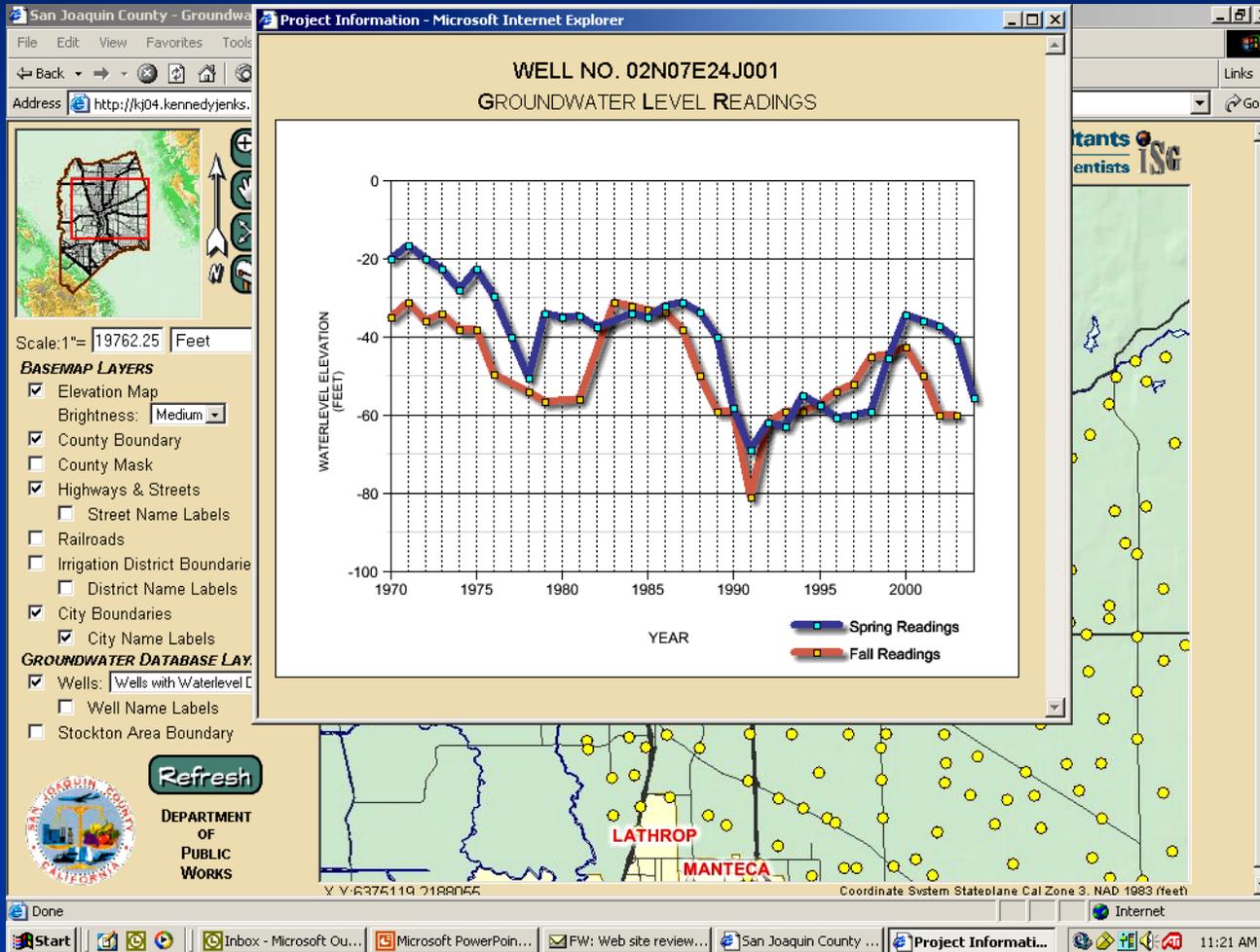
Monitoring & Science Programs

Groundwater Data Center



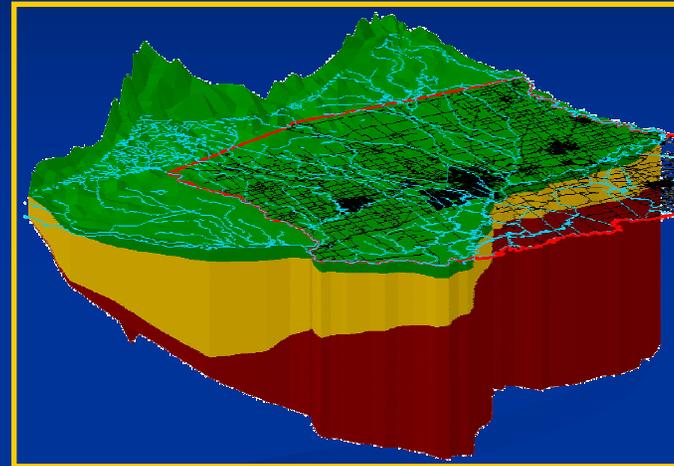
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Groundwater Reporting



USGS – Joint Salinity Study

- GBA, USGS and DWR joint project
- \$2.5 million over next 5 years
- Source, areal extent and vertical distribution of high-chloride groundwater
- Sources, distribution and rates of groundwater recharge



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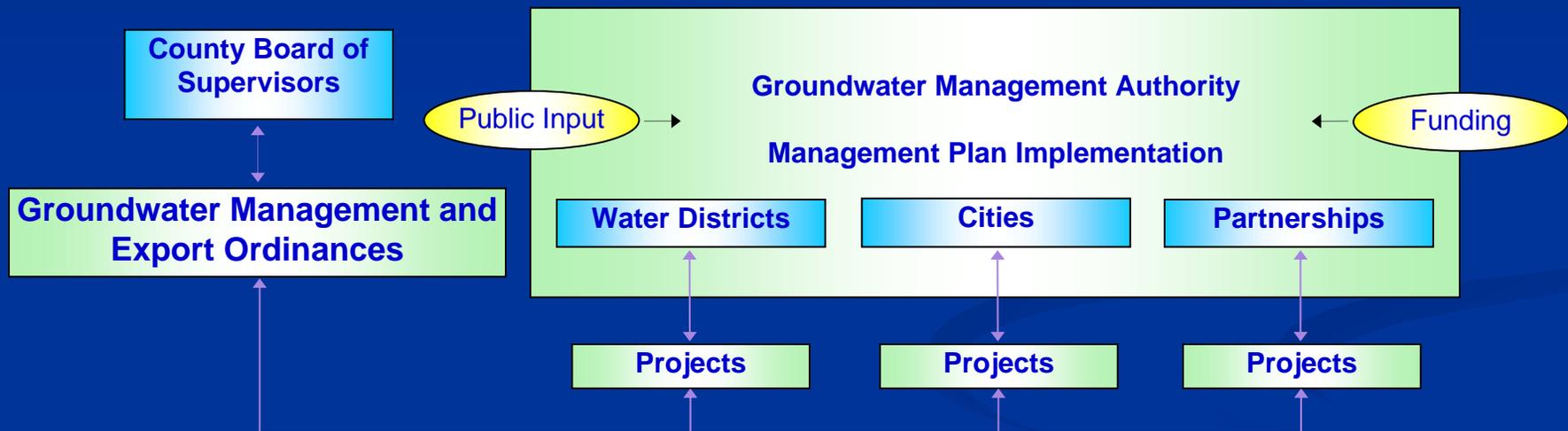
Financing Options

- State Eligibility for GBA member agencies
- Sources:
 - Federal
 - State – AB 303, Prop # 50
 - Local
 - Regional Partnerships



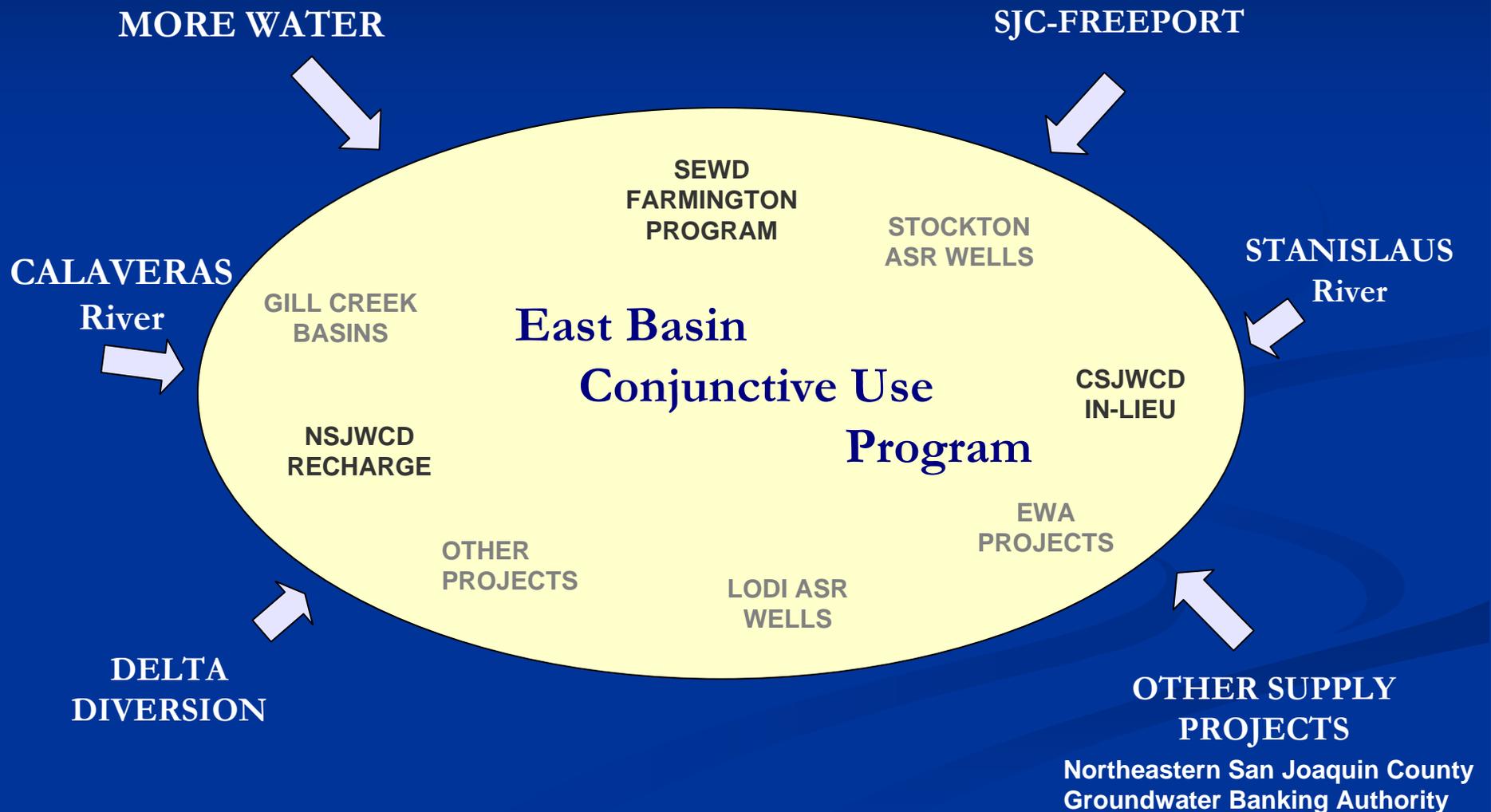
Basin Plan Governance

Mutual Interest-based Model



- Management Structure
 - Individual Interest-based
 - Mutual Interest-based
- Dispute Resolution

Integrated Conjunctive Use Program

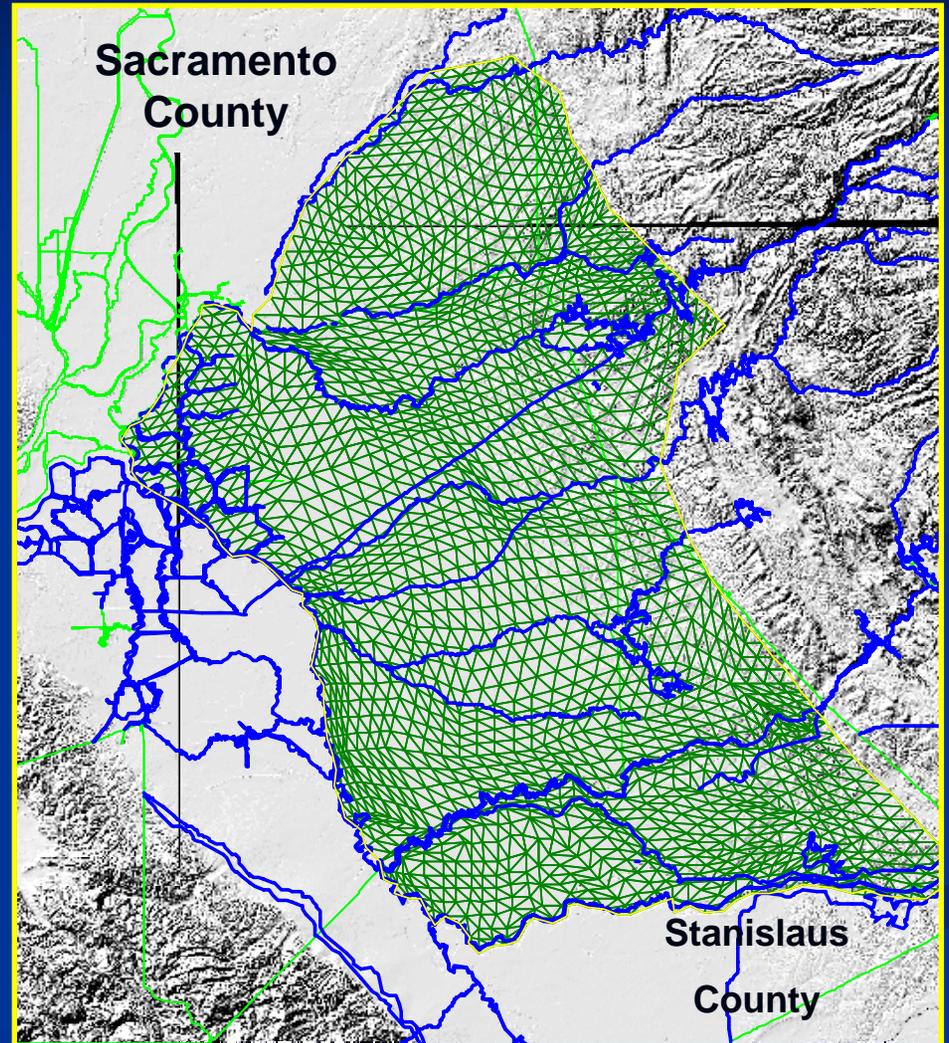


Basin Modeling

DYNFLOW Finite Element Flow Model

- 3,520 Elements
- 1860 Plan View Nodes
- 4 Layers, 5 Levels

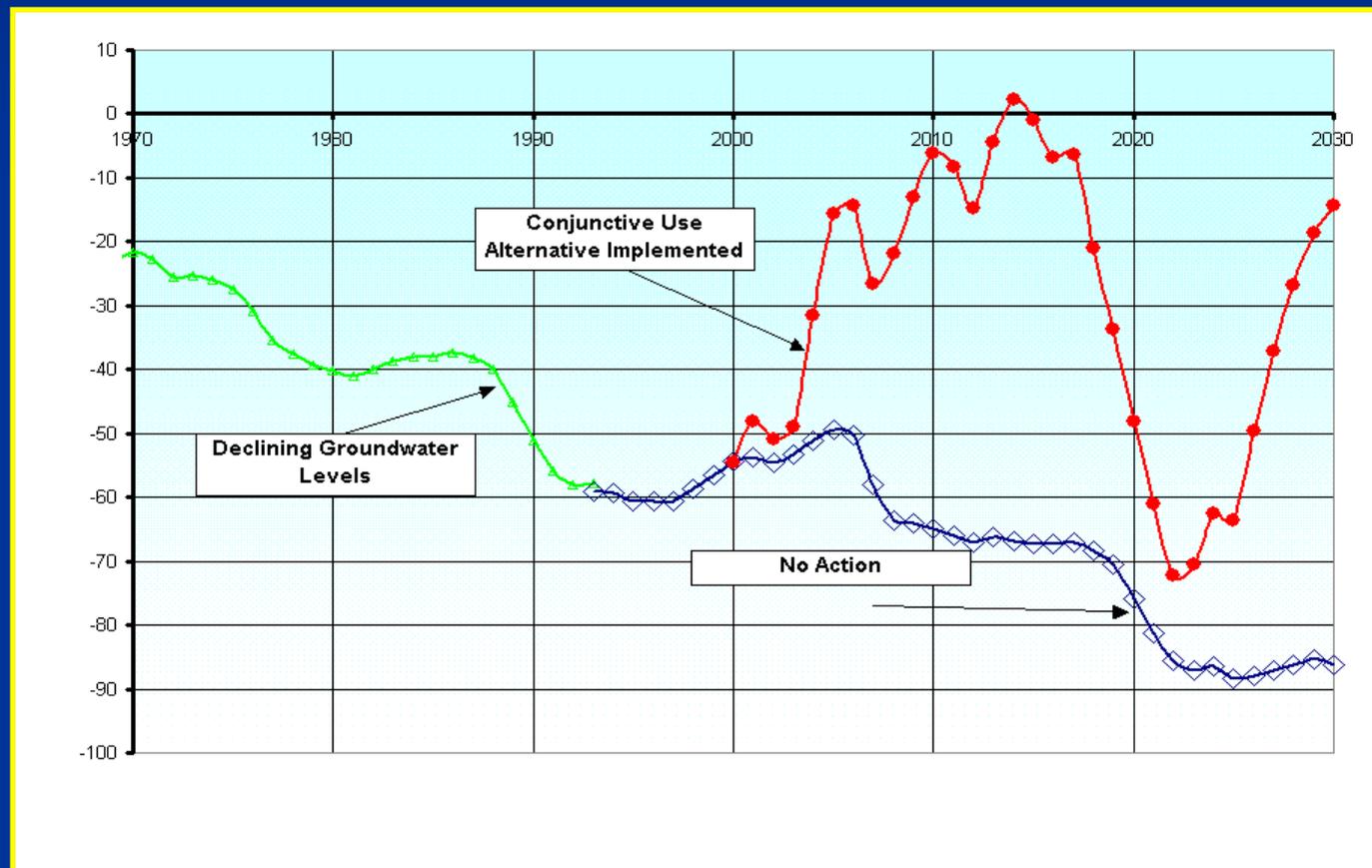
- Typical 3-D groundwater model parameters
- Land use parameters
- River/stream parameters
- Irrigation parameters



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Project Impacts & Coordination

- Evaluate increase in groundwater levels



Implementation & Next Steps

- Local and regional cooperation
- Increased data collection and analysis
 - Better characterize salinity problem
 - Groundwater monitoring – State of the Basin Report
- State and Federal funding
 - Major conjunctive use opportunities
- Implement management objectives
 - Operations Criteria discussions
 - Modeling effort
 - IRWMP effort
 - Integrated Conjunctive Use Programmatic EIR development
 - Local Control & Governance review

Future Activities

Governance Options

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Groundwater Management Plan



Basin Management Objectives



Basin Operations Criteria



Groundwater Management Authority

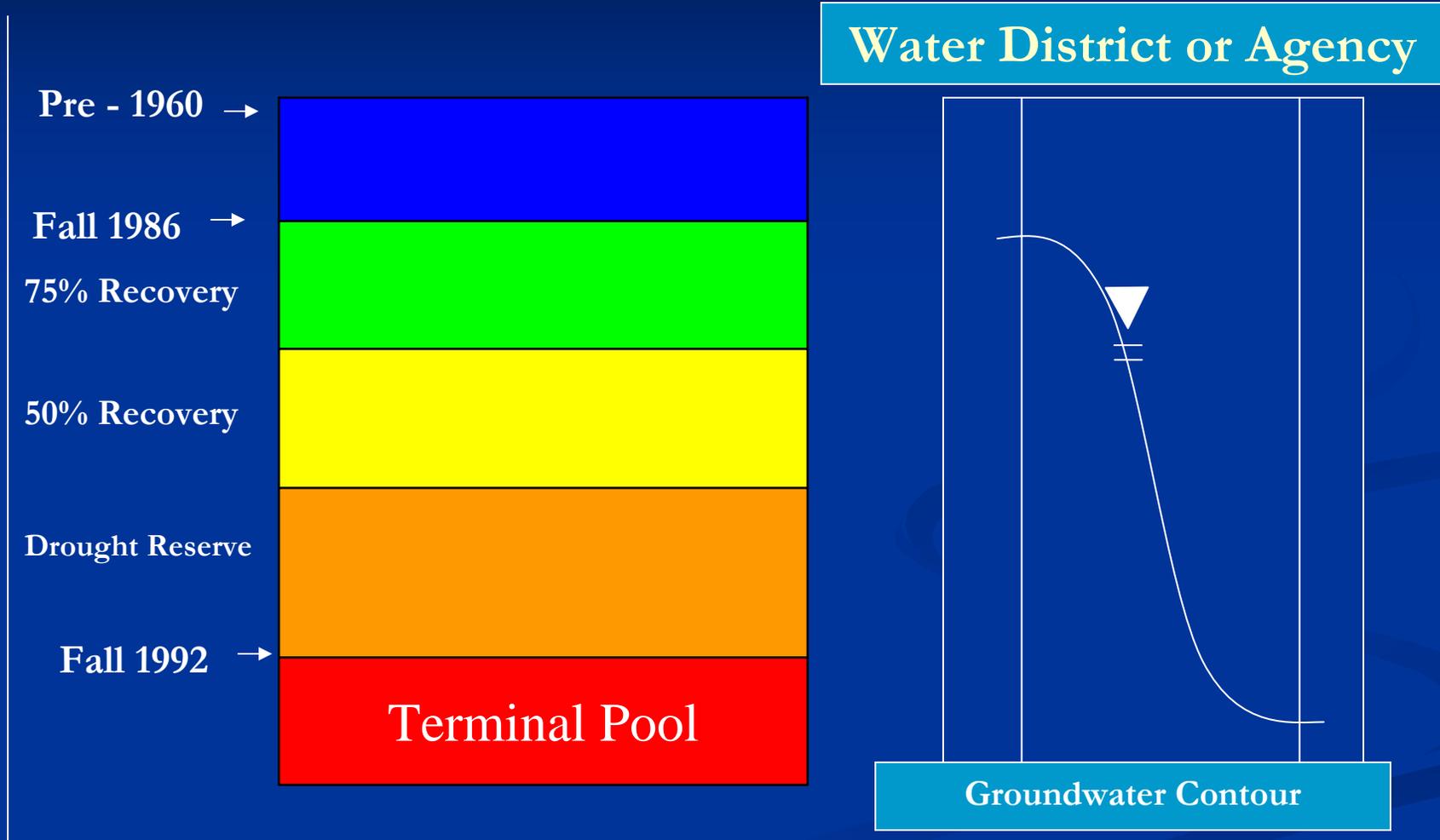
Groundwater Management Ordinances



*Groundwater Export Permitting
Review*

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Draft Basin Operations Criteria



Questions?



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Acknowledgements

This Groundwater Management Plan (GMP) is a product of the commitment that the Groundwater Banking Authority (GBA) members together with many other interested agencies made to sustain and enhance the groundwater resources of the Eastern San Joaquin Basin. The GBA extends thanks to staff consultants from HDR Inc., Schlumberger Water Services and Camp Dresser & McKee Inc. in the preparation of materials, modeling information and technical review of the GMP. In addition, special thanks are given for grant funding, information and services provided by the California Department of Water Resources, the Center for Collaborative Policy and the U.S. Geological Survey.

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