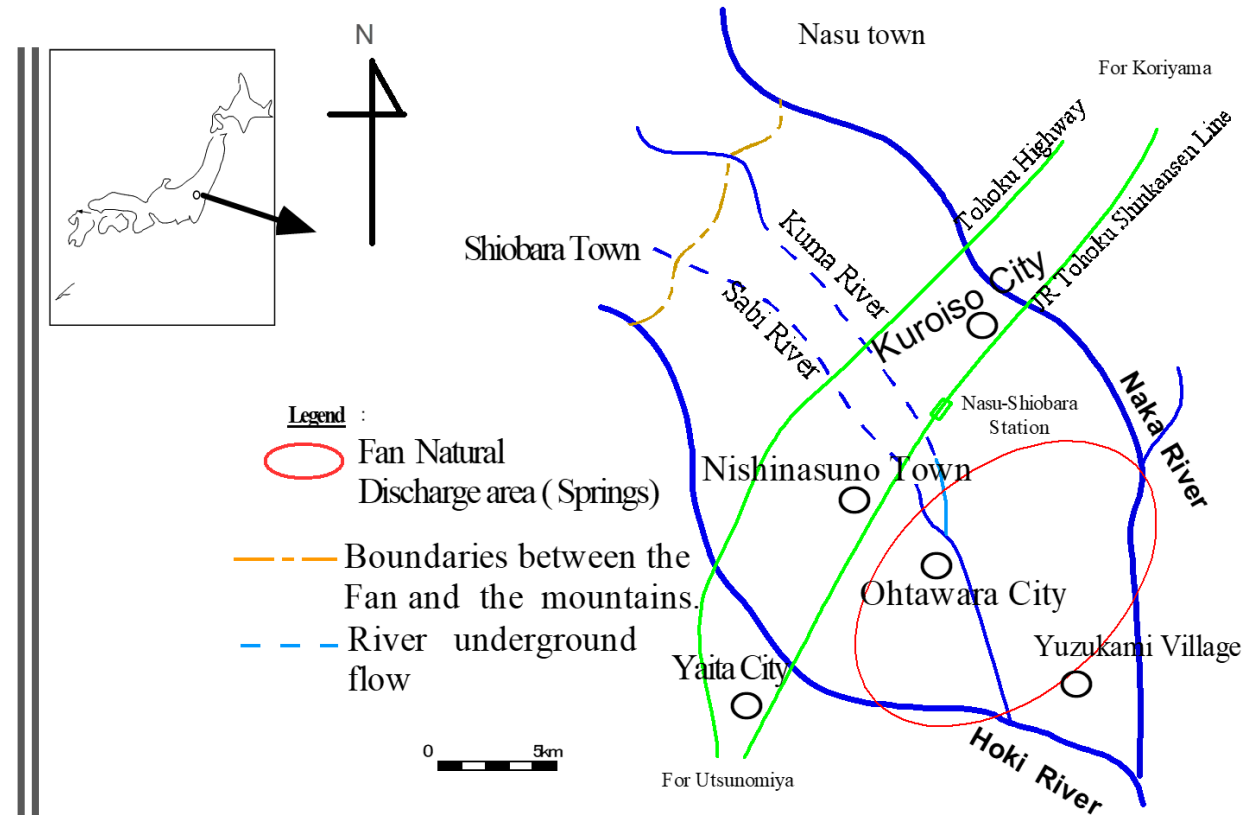
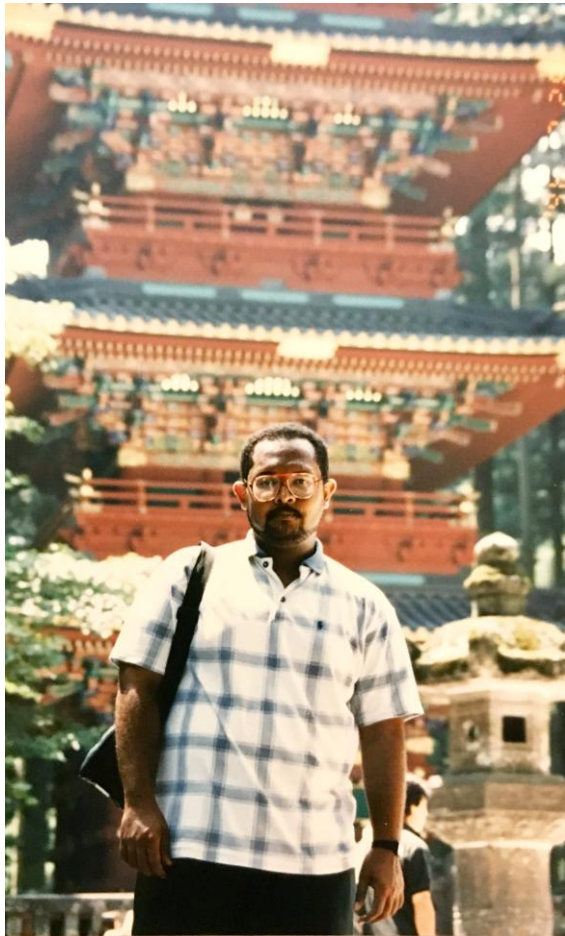




Regional Groundwater Management: Different Drivers Different Solutions

Ali Elhassan
MGWA 2018

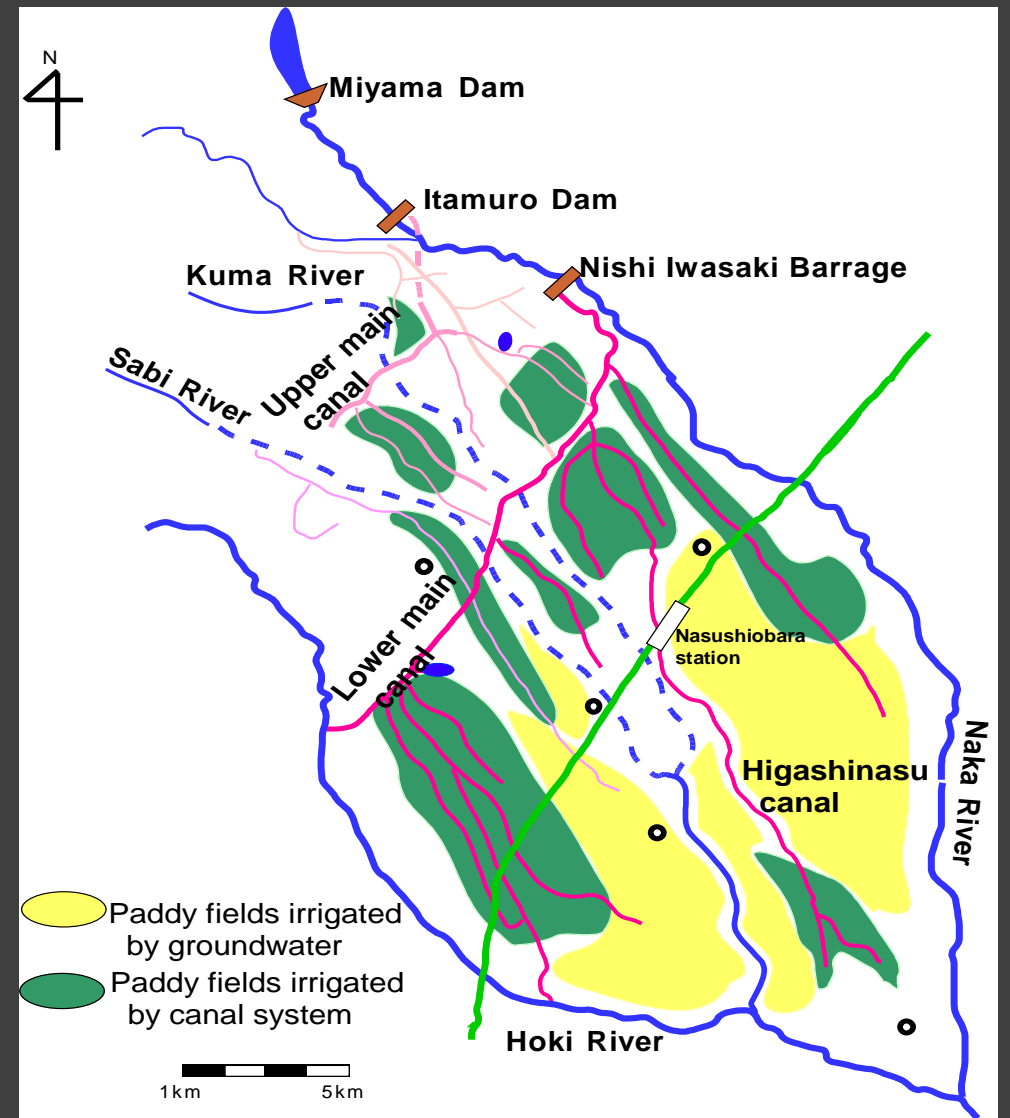
Outline of Nasuhoganata Alluvial fan



Sabi River Downstream

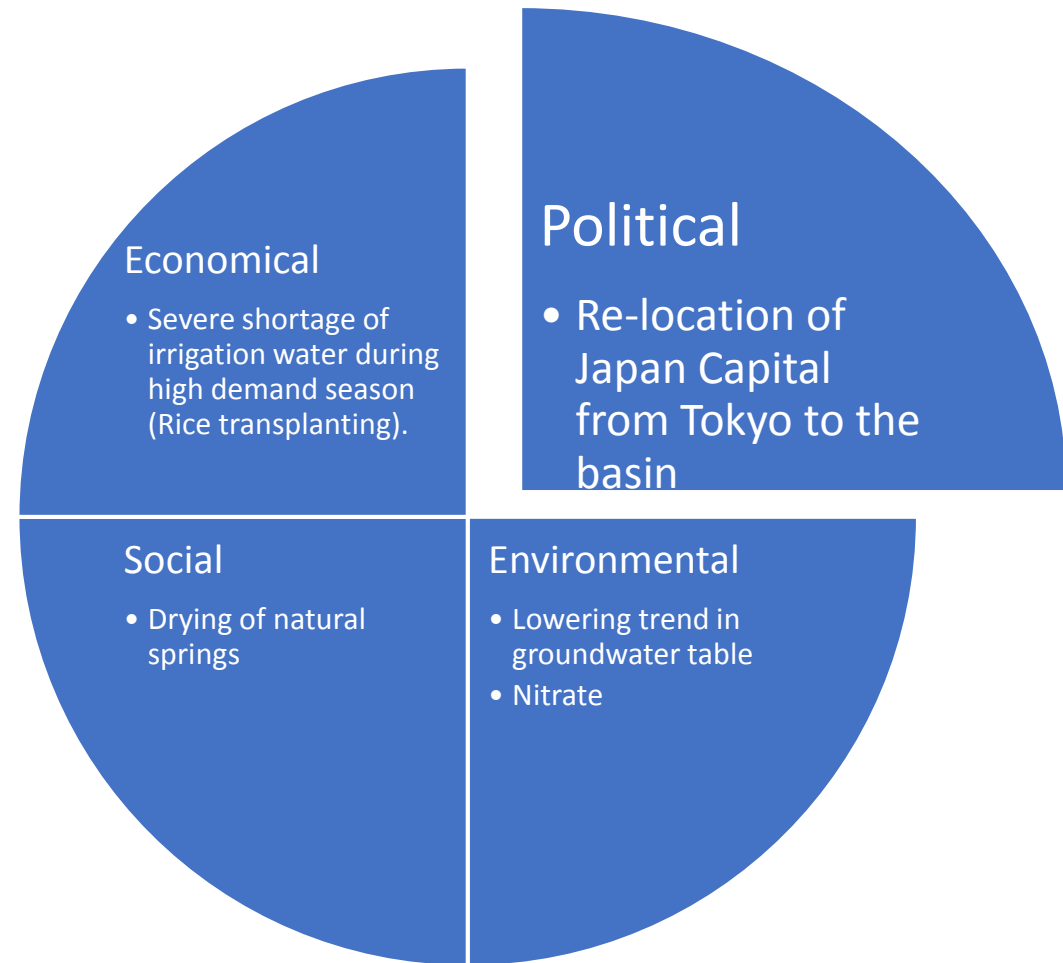


Sabi River Upstream

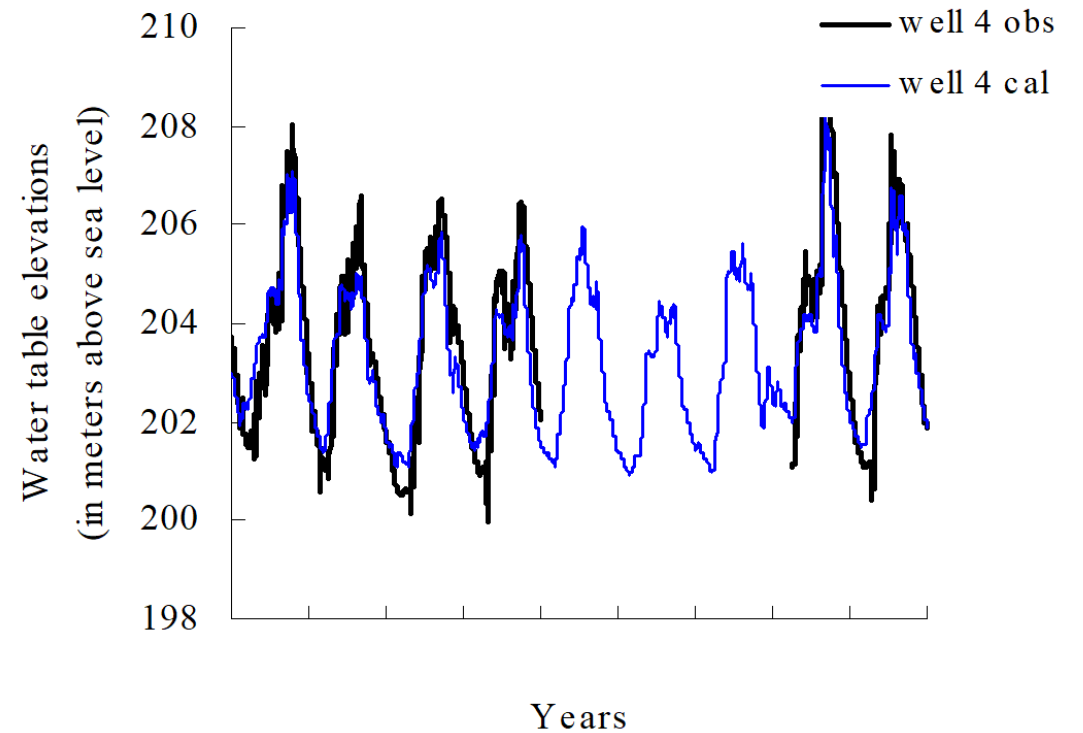
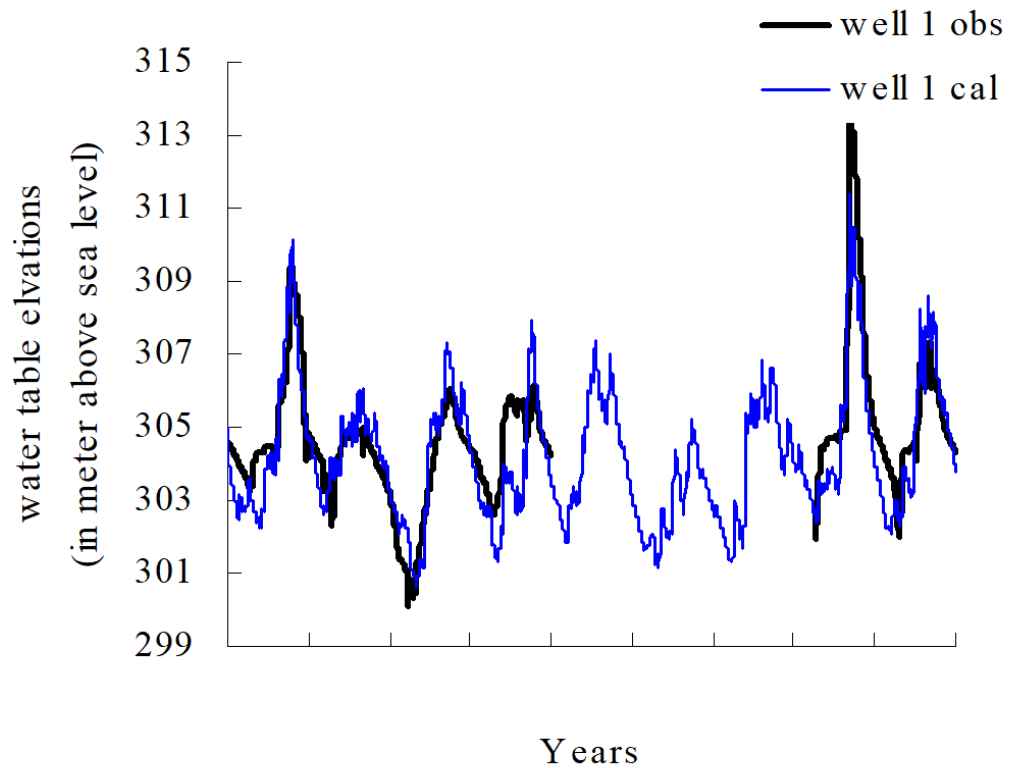


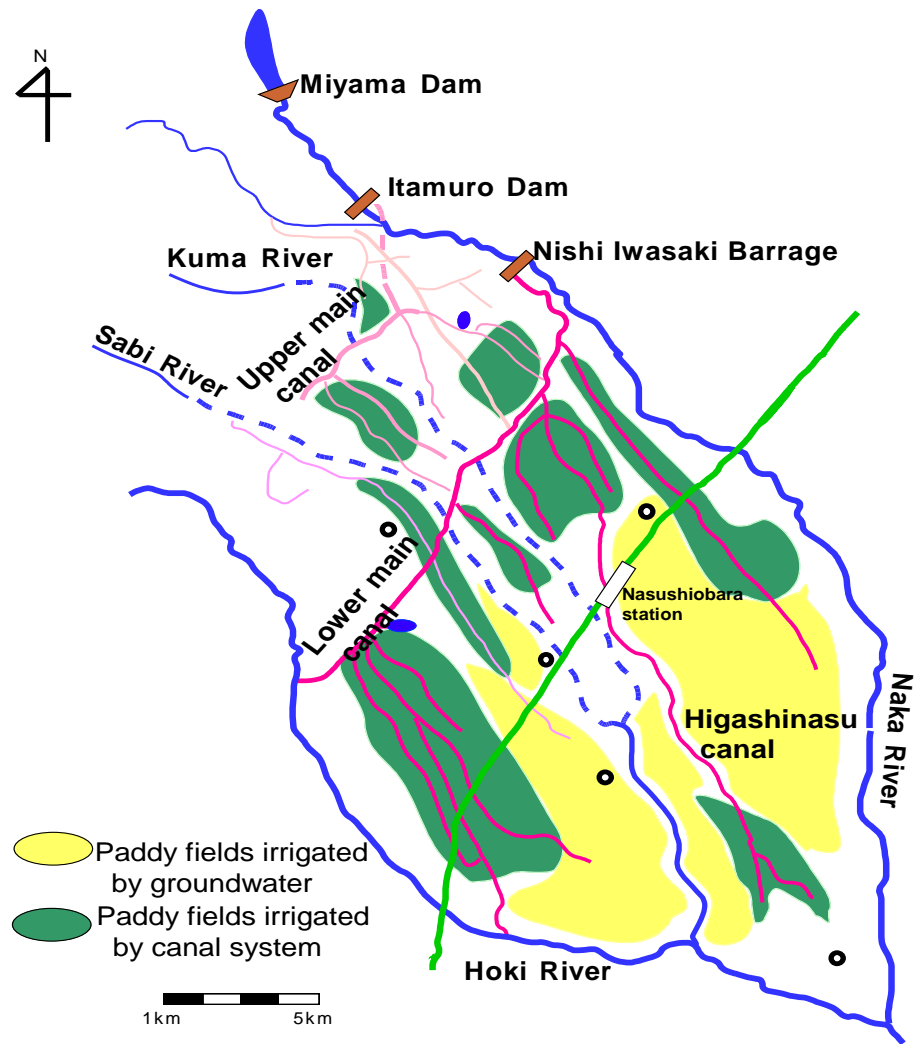
Nasunogahara irrigation scheme and paddy fields distribution

Driver



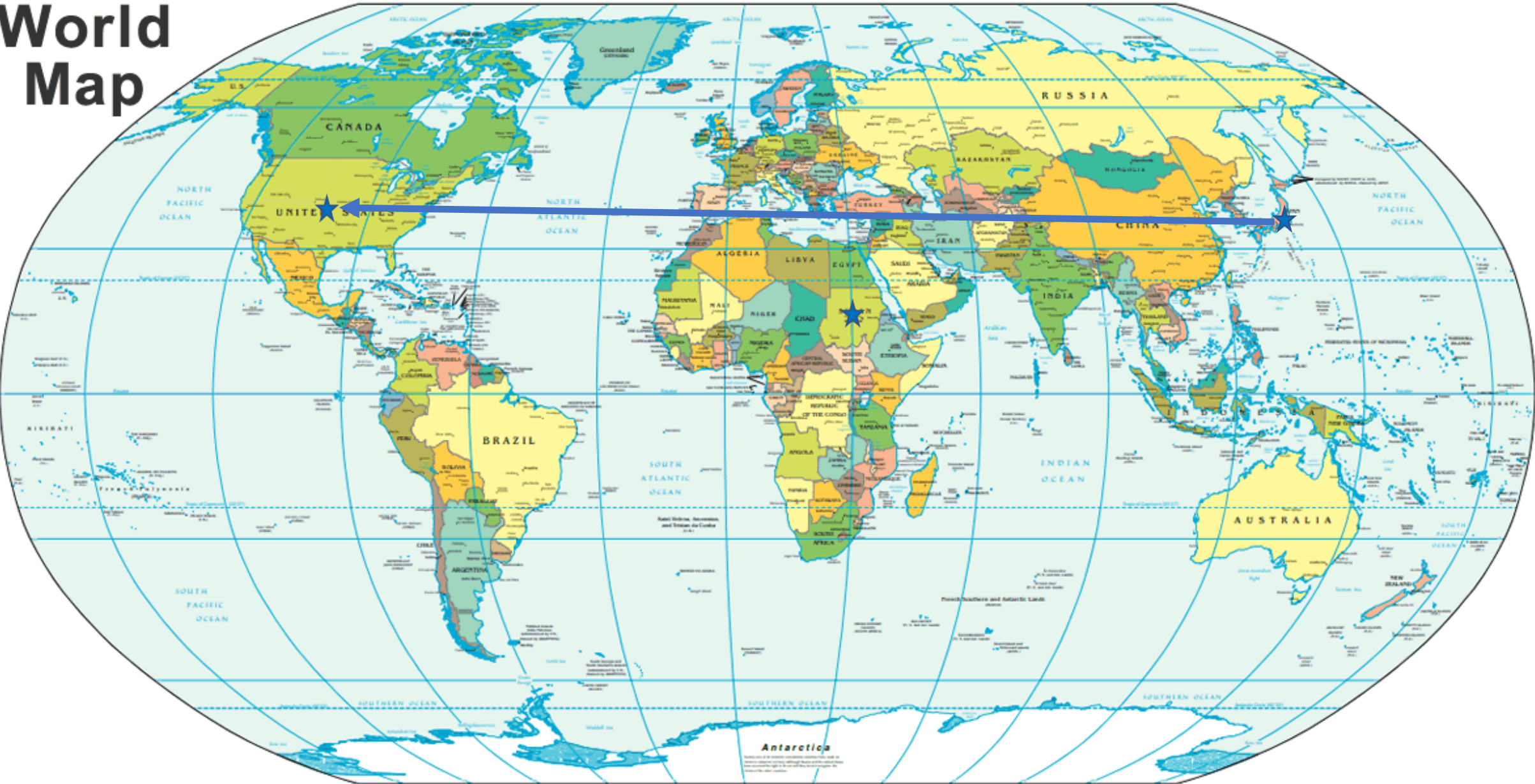
Model Results





Scenario	Conditions	Result
Green	Less Canal Water Paddy fields	Lower Water Table
Yellow	Less Groundwater Paddy Fields	Higher water Table
Green + Yellow	Less Paddy fields	Higher South, Lower North

World Map



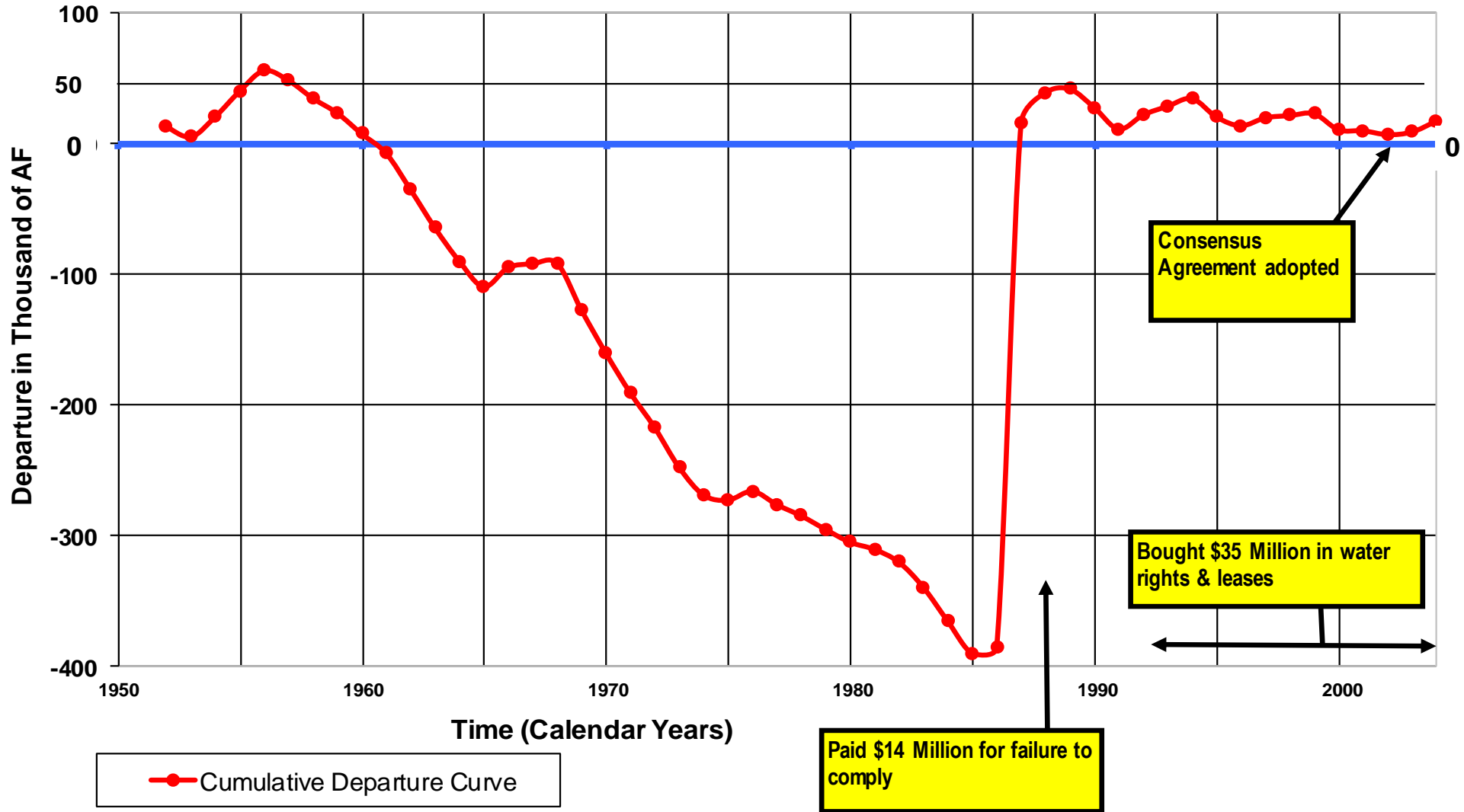
Trivia: In which state was the First USGS stream Gage built in USA





Pecos River Basin, NM

Figure 1. Pecos River Cumulative Delivery Departures from Obligation 1952 - 2004



Driver

Regulatory

Evaluating the impacts of proposed changes in pumping patterns within the Roswell Underground Water Basin (RUWB), New Mexico

The Roswell Artesian Basin Groundwater Model.



The Office of the State Engineer adopted the model for water rights administration in the RUWB in December 2004.

```

*****
SECTION-B
*****
NET IMPACTS ("FROM-TO") (AFY)
-----

```

YEARS	PBCOS	IMPACT	ALLUV STORAGE	INTAKE STORAGE
1		19.2	44.3	35.3
2		26.5	51.0	21.2
3		28.2	51.2	19.2
4		28.2	52.3	18.2
5		27.8	53.4	17.5
6		27.6	54.2	16.8
7		27.7	54.7	16.3
8		28.1	54.8	15.8
9		28.0	54.7	15.3
10		29.7	54.3	14.8
11		30.7	53.7	14.3
12		31.9	53.0	13.8
13		33.2	52.2	13.3
14		34.5	51.3	12.9
15		35.9	50.3	12.5
16		37.3	49.3	12.0
17		38.8	48.3	11.6
18		40.3	47.2	11.2
19		41.7	46.1	10.8
20		43.2	45.0	10.5
21		25.6	-0.5	-25.1
22		19.9	-8.6	-11.4
23		19.8	-10.1	-9.7
24		21.3	-12.3	-9.0
25		23.0	-14.5	-8.5
.
.
.
.
.
.
99		4.5	-3.7	-0.8
100		4.4	-3.6	-0.7

Roswell Basin Groundwater Superposition Model

Is this Temporary Transfer?
 Yes No How many years? 100

Pumping Wells
 Choose: UTM_83 (meter) State Plane_27 (ft)

Move From | Move To

Add Remove Name: []
 X: []
 Y: []
 Layer: []
 Q (AFY): []
 Return Flow (%): []

Run PRE-PROCESSOR

Run MODFLOW2000

Observation Wells
 Add Remove Check to use X and Y
 Name: []
 X(SP): []
 Y(SP): []
 Layer: []

Post Processing
 Total number of time steps: 100

Run POST-PROCESSOR

Close

Superposition Model



Pecos Settlement Implementation

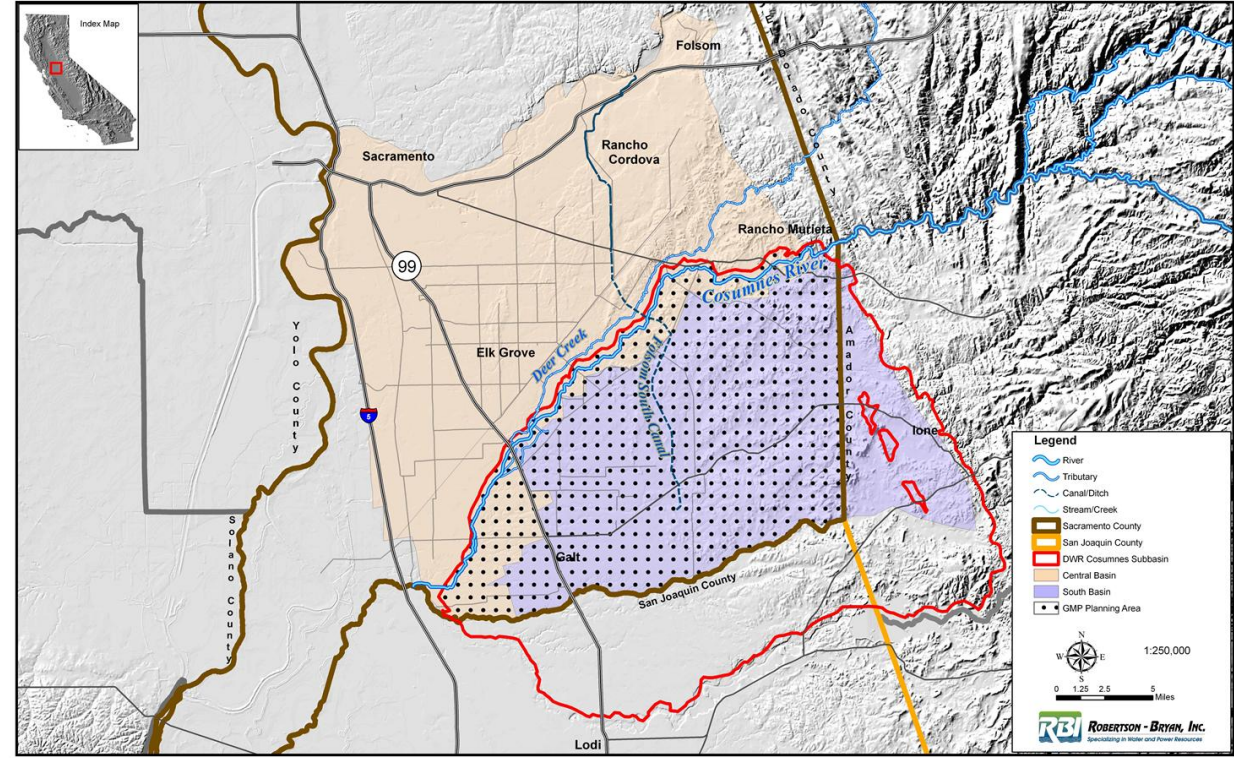
United States of America





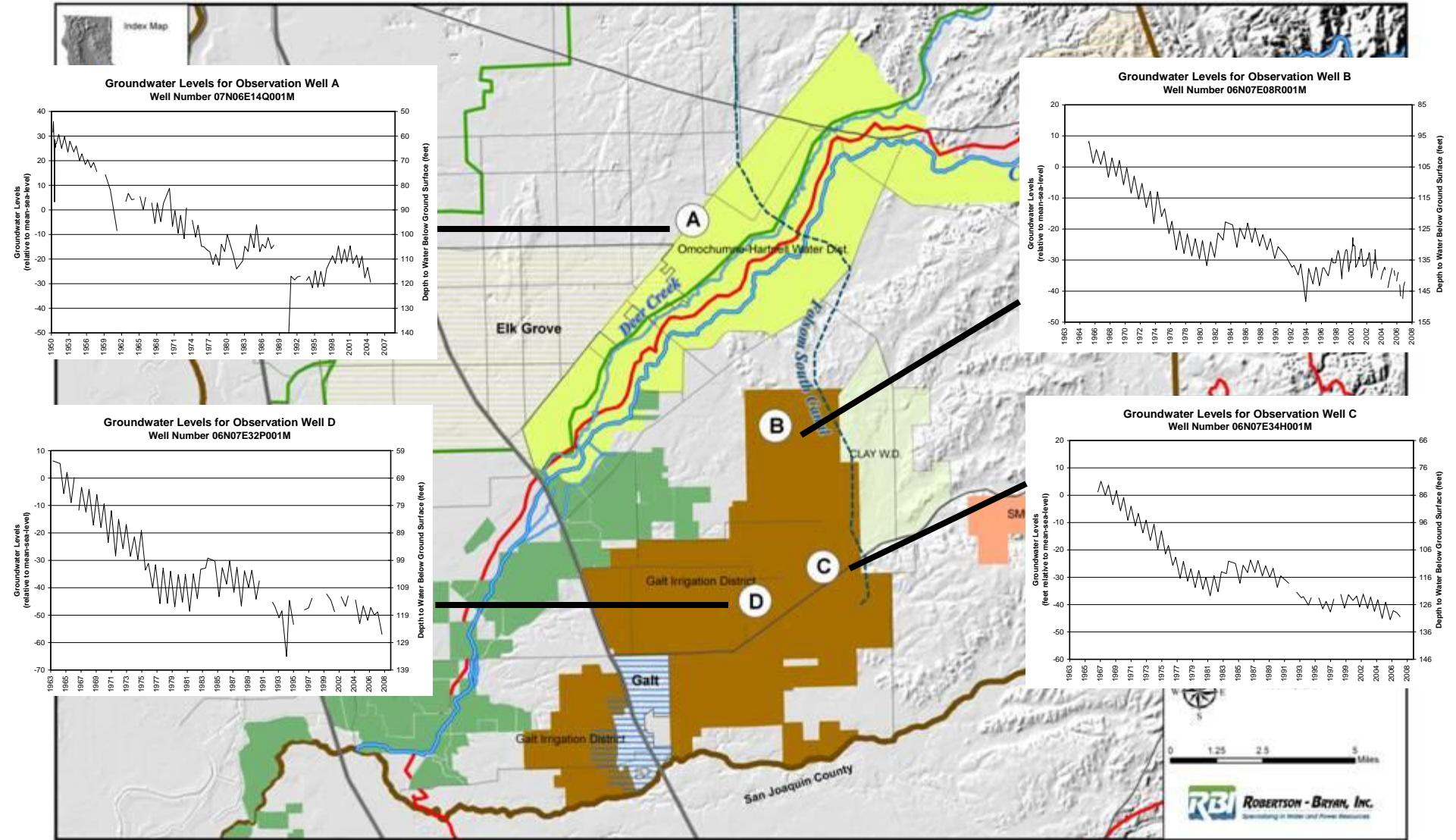
Discussing Water Rights, A Western Pastime

California



South Sacramento County Groundwater Management

Groundwater Levels in South Basin

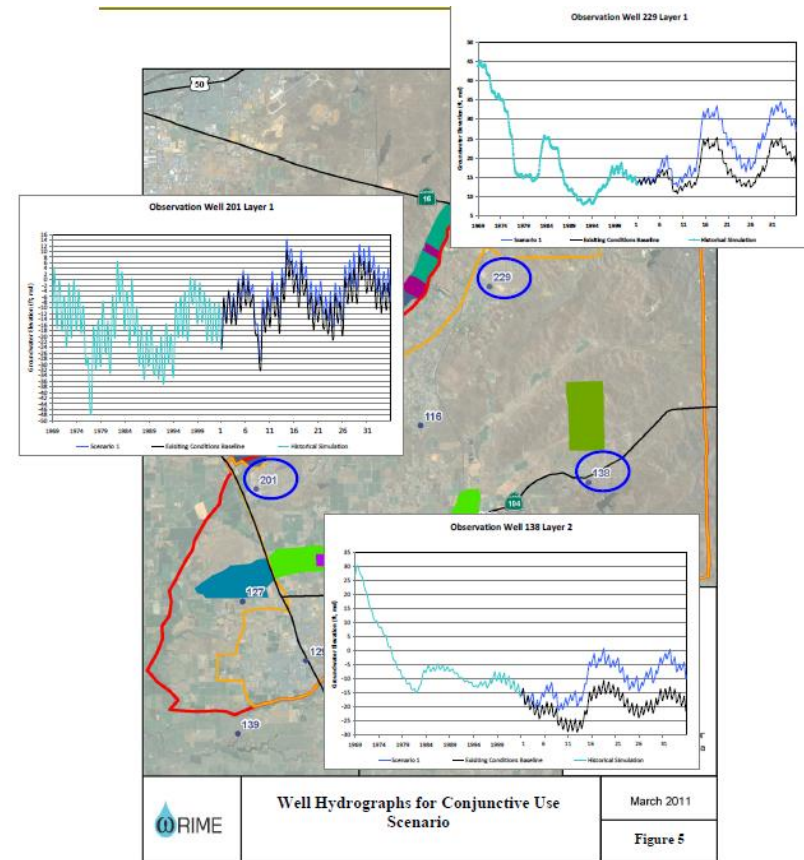
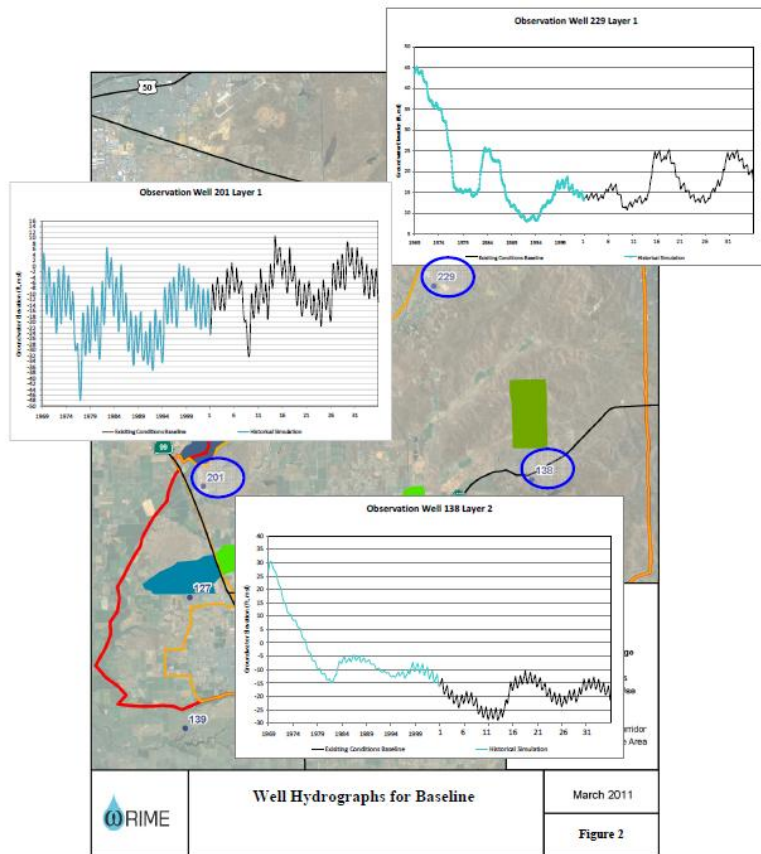


Driver

Economic Development

simulate a 'No Action' condition and three alternative groundwater management strategies on water availability and suitability to support South Sacramento County, California.

SaciGSM Model



Regional Groundwater Management

- [Tóth \(1963\)](#) given that the subsurface is hidden from view and analysis is hampered by lack of field observations, a model is the most defensible description of a groundwater system for informed and quantitative analyses as well as forecasts about the consequences of proposed actions.

Questions

ali.elhassan@metc.state.mn.
us

