

Ojai Basin Modeling Update and Drought Analysis

Ventura River Watershed Council
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Ojai Basin

Groundwater Management Agency

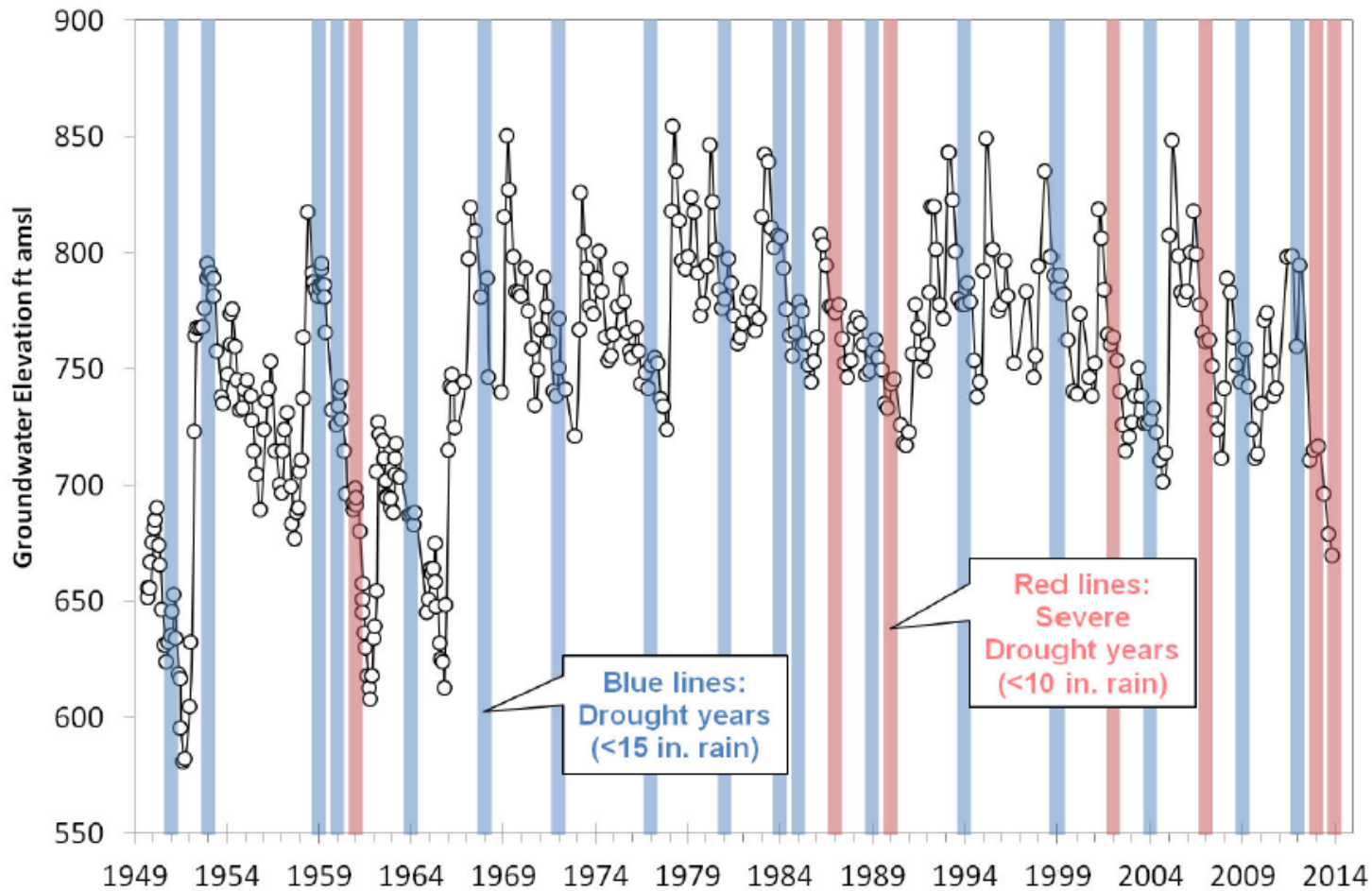
Mission

It is the mission of the Ojai Basin Groundwater Management Agency to preserve the quantity and quality of groundwater in the Ojai Basin in order to protect and maintain the long-term water supply for the common benefit of the water users in the Basin.

Activities

- Groundwater Management Planning
- Documents groundwater extraction from reported pumping
- Collects extraction charges from well owners
- Coordinates with the County and private entities to monitor Basin conditions
- Supports the San Antonio Spreading Grounds Rehabilitation Project (SACSGRP)
- Maintains a groundwater model of the Basin
- Monitors water levels in the Basin
- Performs outreach and education activities
- Participates in watershed, County, and State-wide meetings
- Assists individual stakeholders and landowners

Current Drought Conditions Unprecedented



OJAI BASIN GROUNDWATER MODEL

Groundwater Elevations at

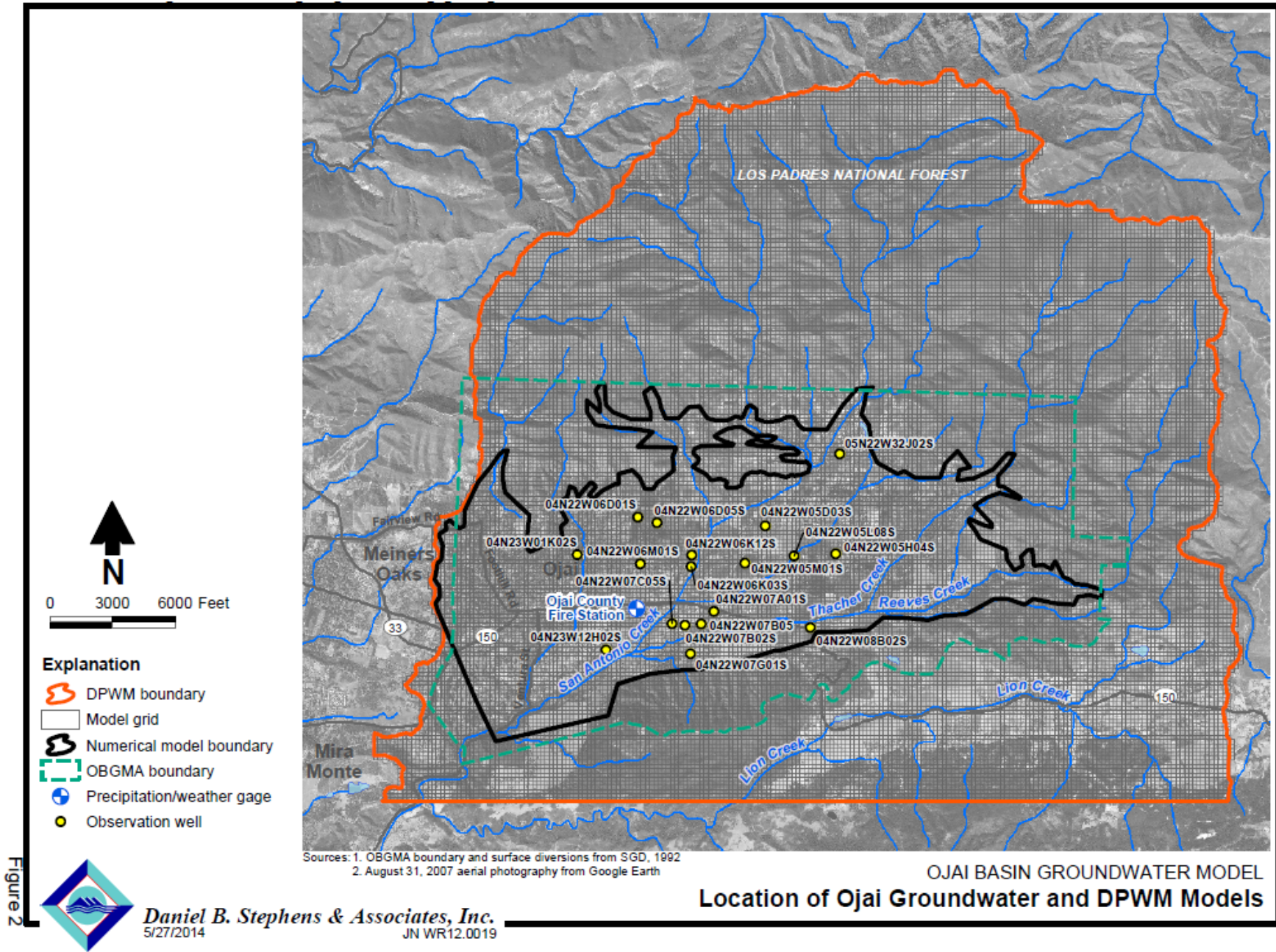
Ojai Key Well 04N22W05L08S and Drought Years

Figure 1

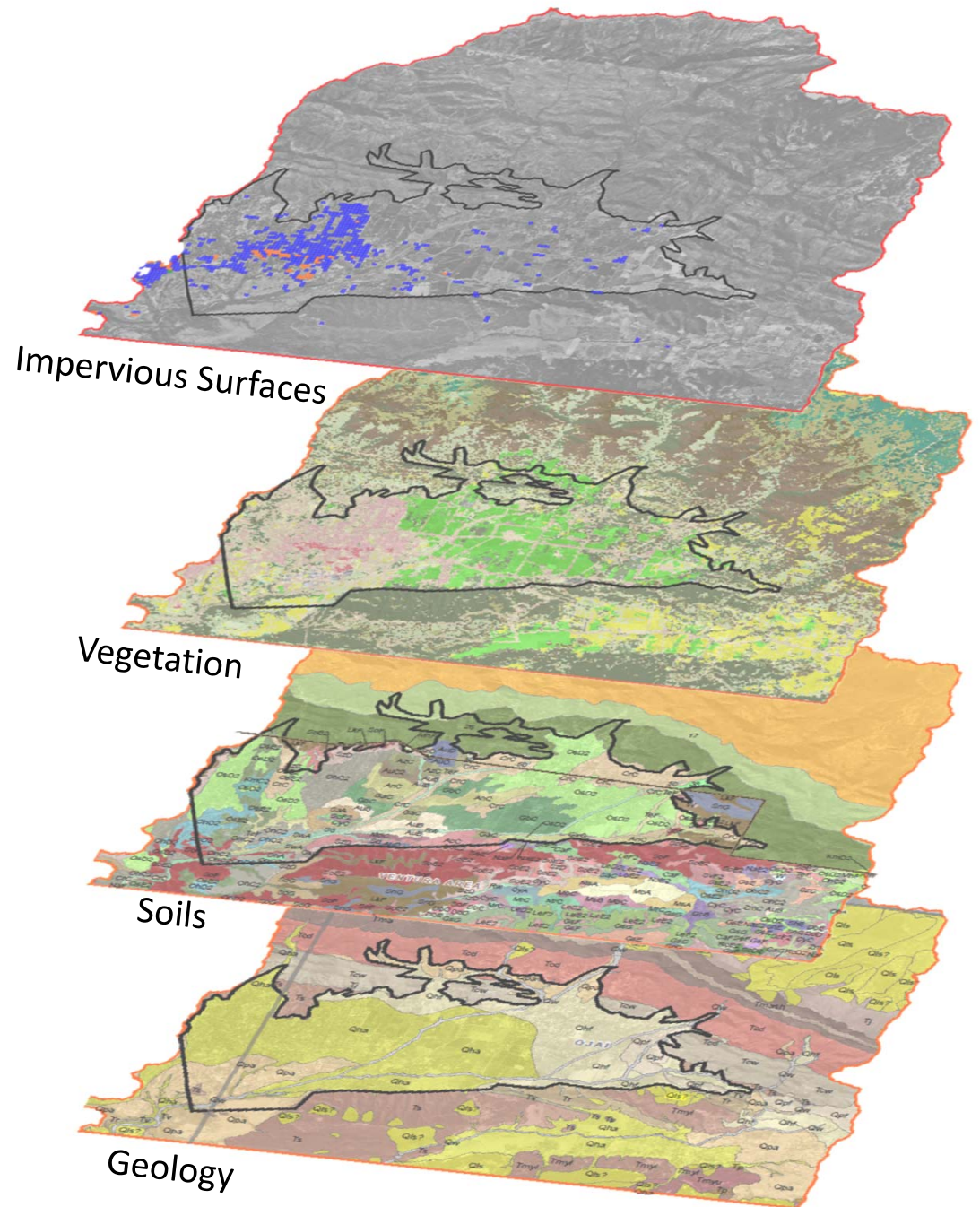


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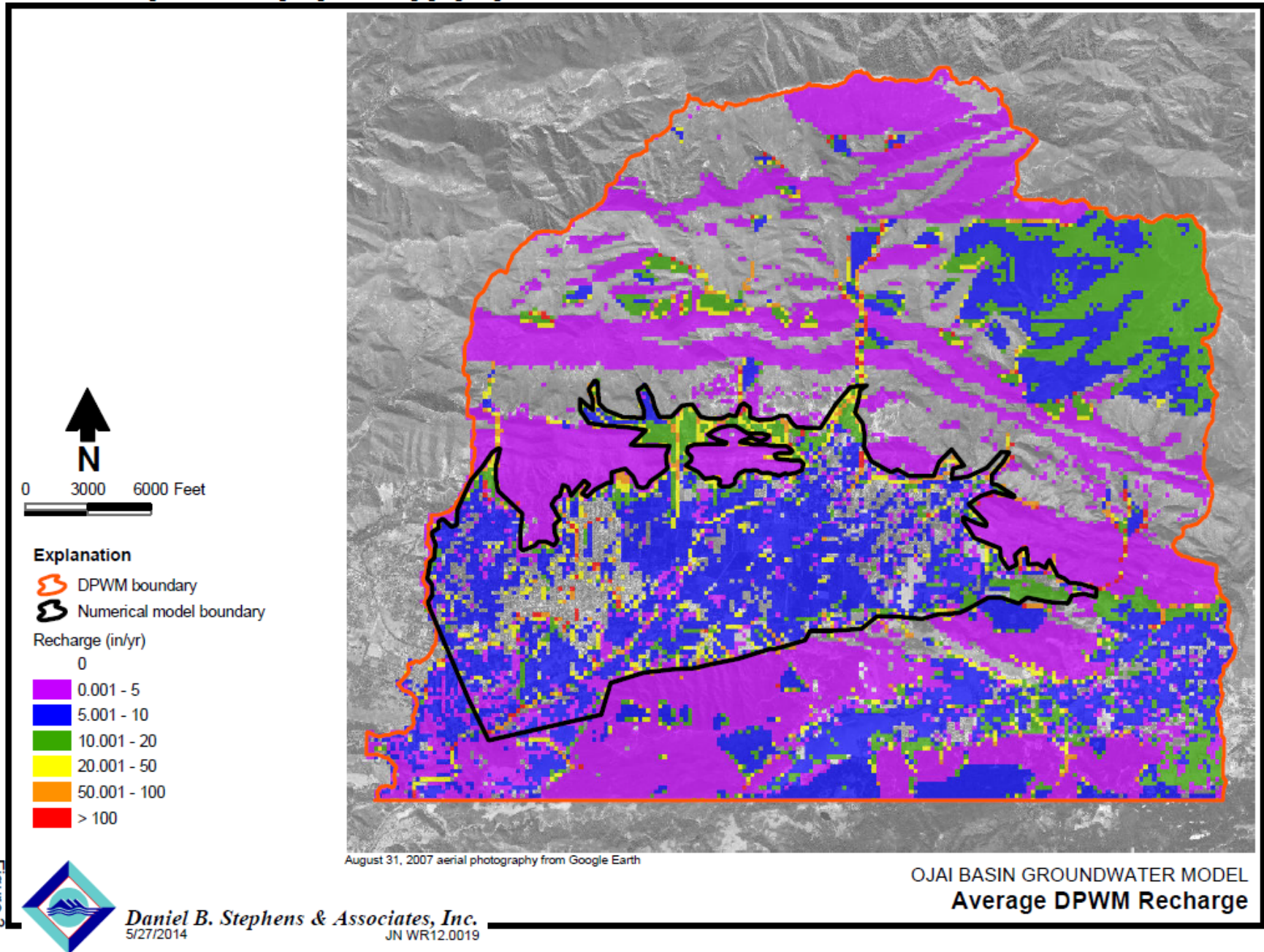
Ojai Groundwater Model Updated through December 2013



Distributed Parameter
Watershed Model
(DPWM) **estimates
groundwater recharge
from precipitation and
irrigation**



Recharge Primarily from Precipitation, Focused in Stream Channels



Recharge $\leq 1,000$ ac-ft/yr when rain is less than 10 inches

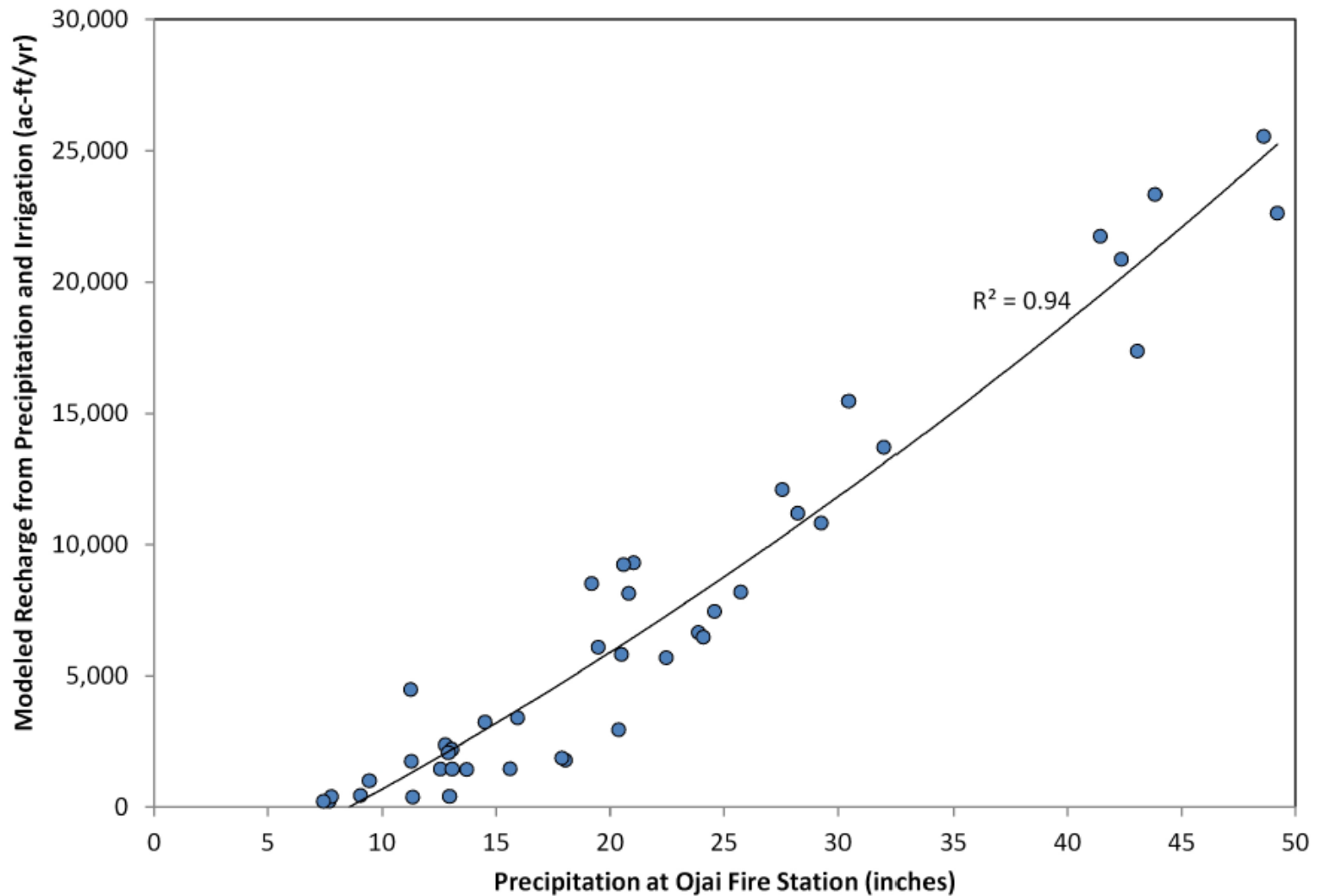


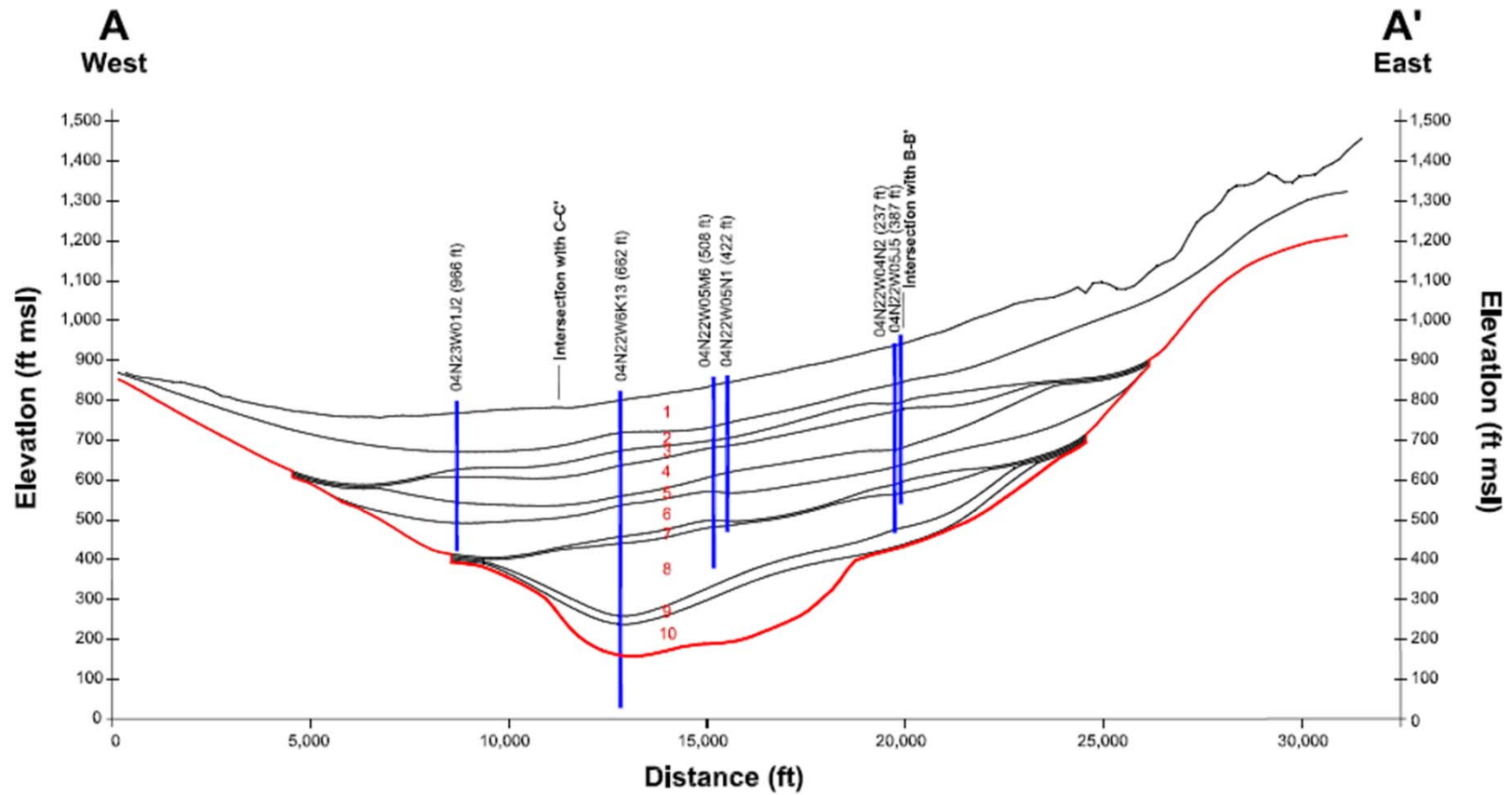
Figure 4



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OJAI BASIN GROUNDWATER MODEL
Recharge-Precipitation Regression Analysis

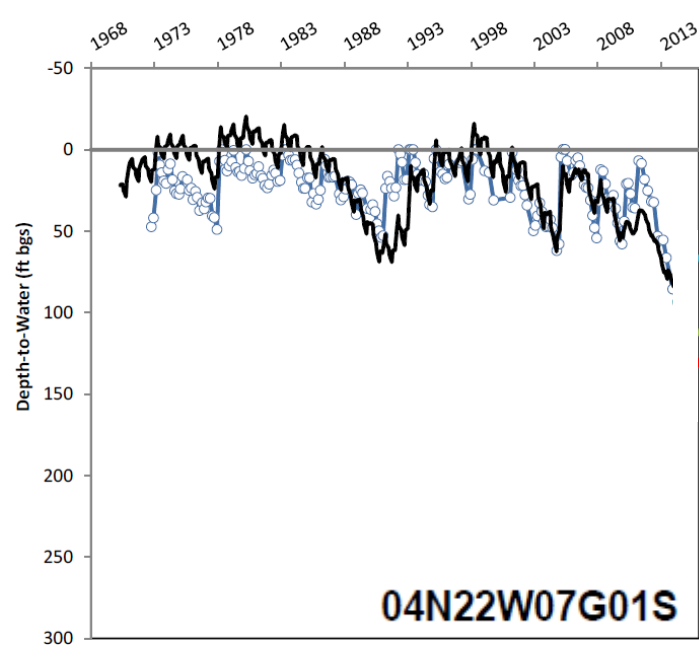
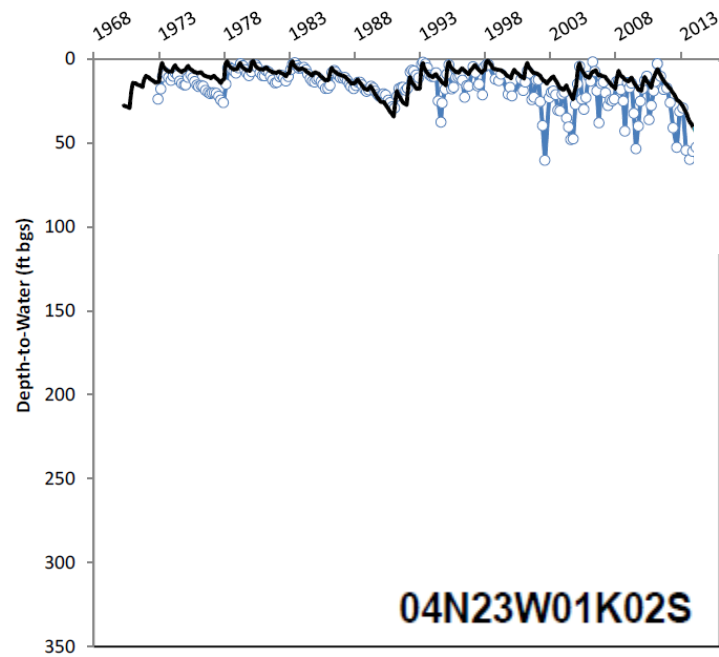
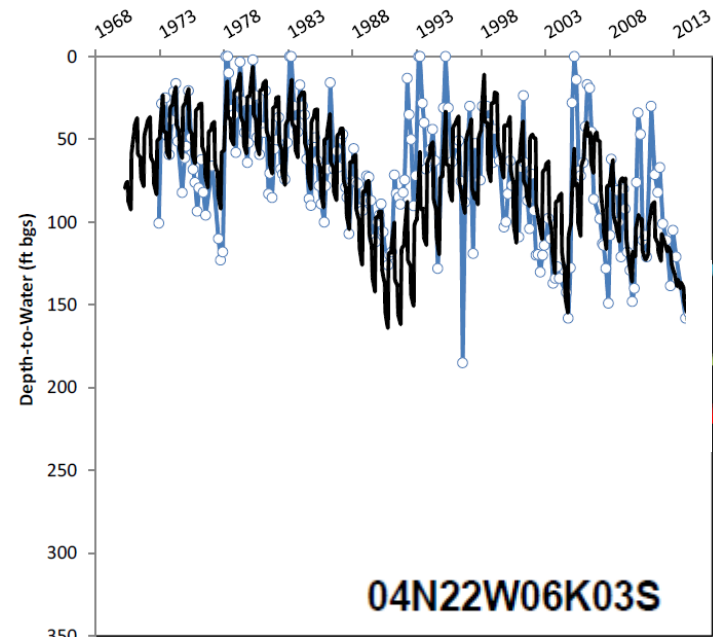
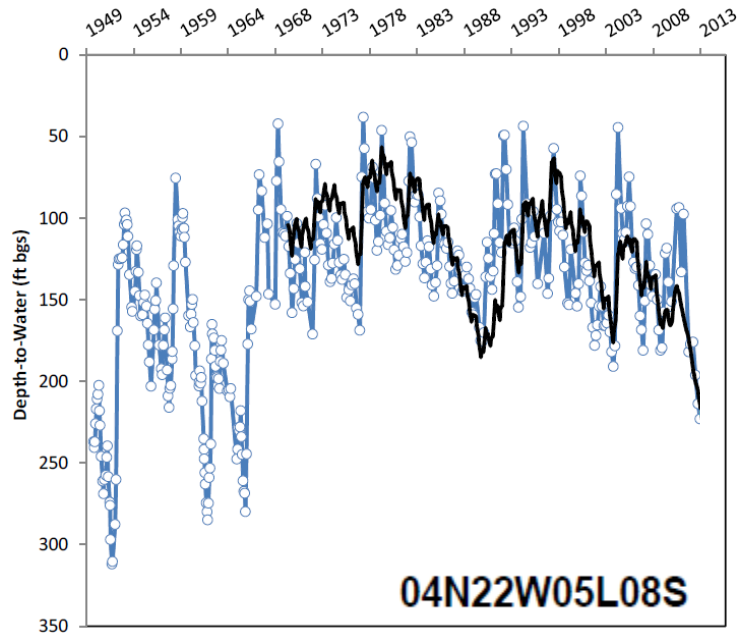
Groundwater model estimates groundwater levels and groundwater balance



Explanation

- | | |
|--|---|
|  Well |  Model layer boundary |
|  Model layer number |  Model bottom boundary |

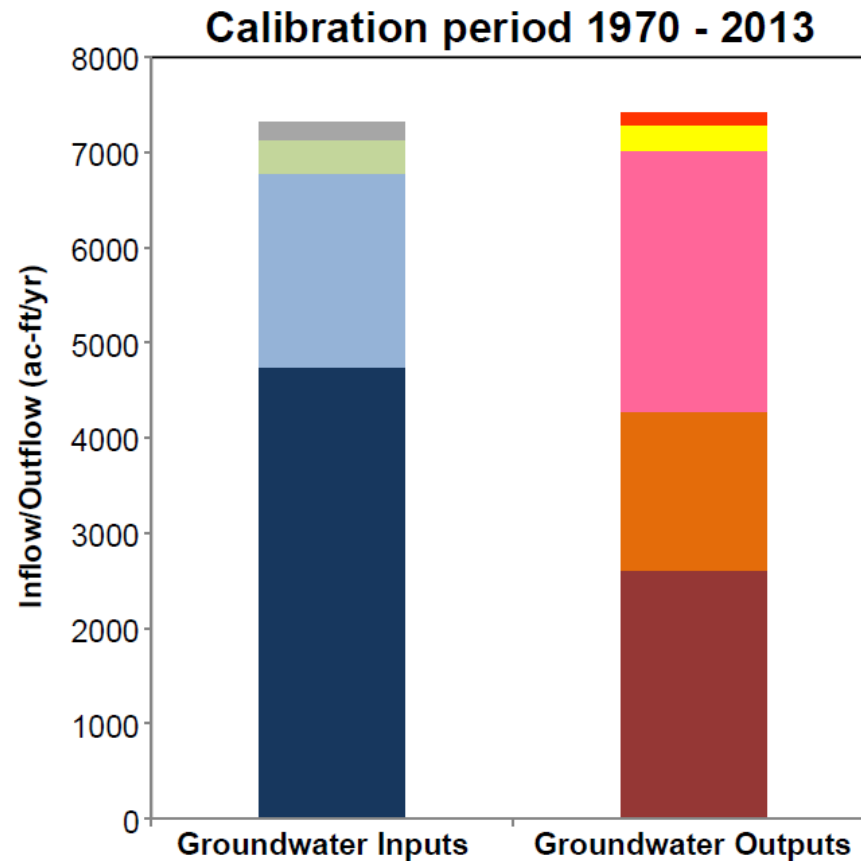
Updated Groundwater Model Calibration - Mean Error 21 ft



Groundwater Balance:

$$\text{Change in Groundwater Storage} = \text{Groundwater Inputs} - \text{Groundwater Outputs}$$

1970 - 2013: Net loss of 111 ac-ft/yr groundwater in storage

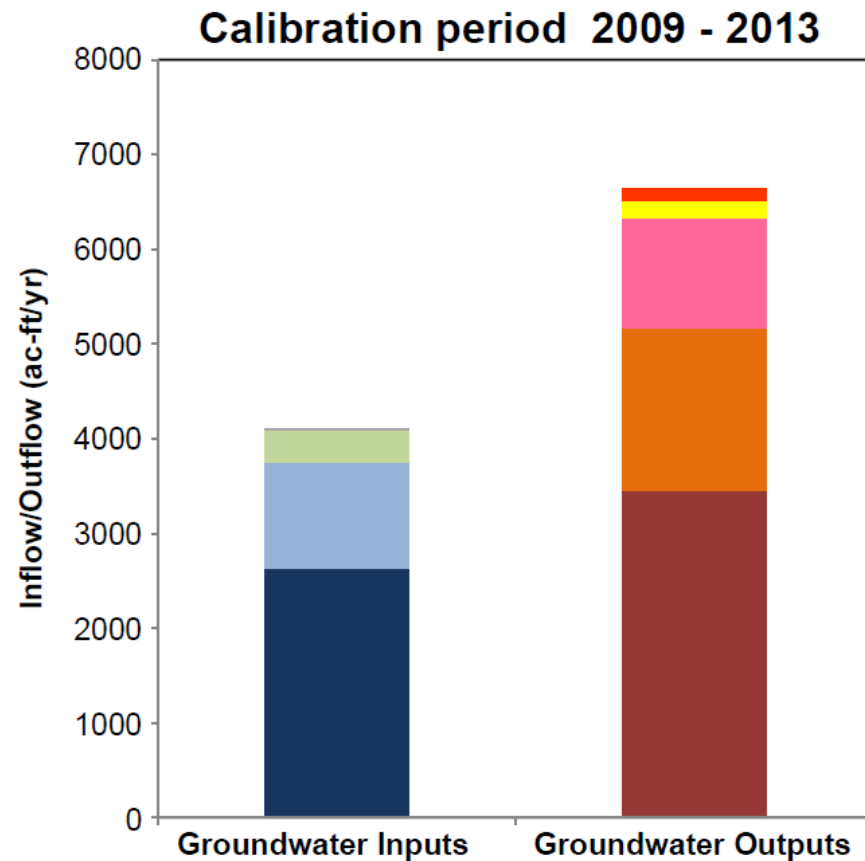


Explanation

- Recharge from septic systems, wastewater, former SACSG
- Irrigation recharge
- Precipitation recharge (upgradient)
- Precipitation recharge (basin floor)

- Groundwater outflow
- Riparian evapotranspiration
- Discharge to San Antonio Creek
- Pumping for Ojai city use (GSWC)
- Pumping from private wells

2009 - 2013: Net loss of 2,532 ac-ft/yr groundwater in storage



Explanation

- Recharge from septic systems, wastewater, former SACSG
- Irrigation recharge
- Precipitation recharge (upgradient)
- Precipitation recharge (basin floor)

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Groundwater Levels Projected to Remain Relatively Low Even if 2015 is a “Wet” Year (~40 inches precipitation)

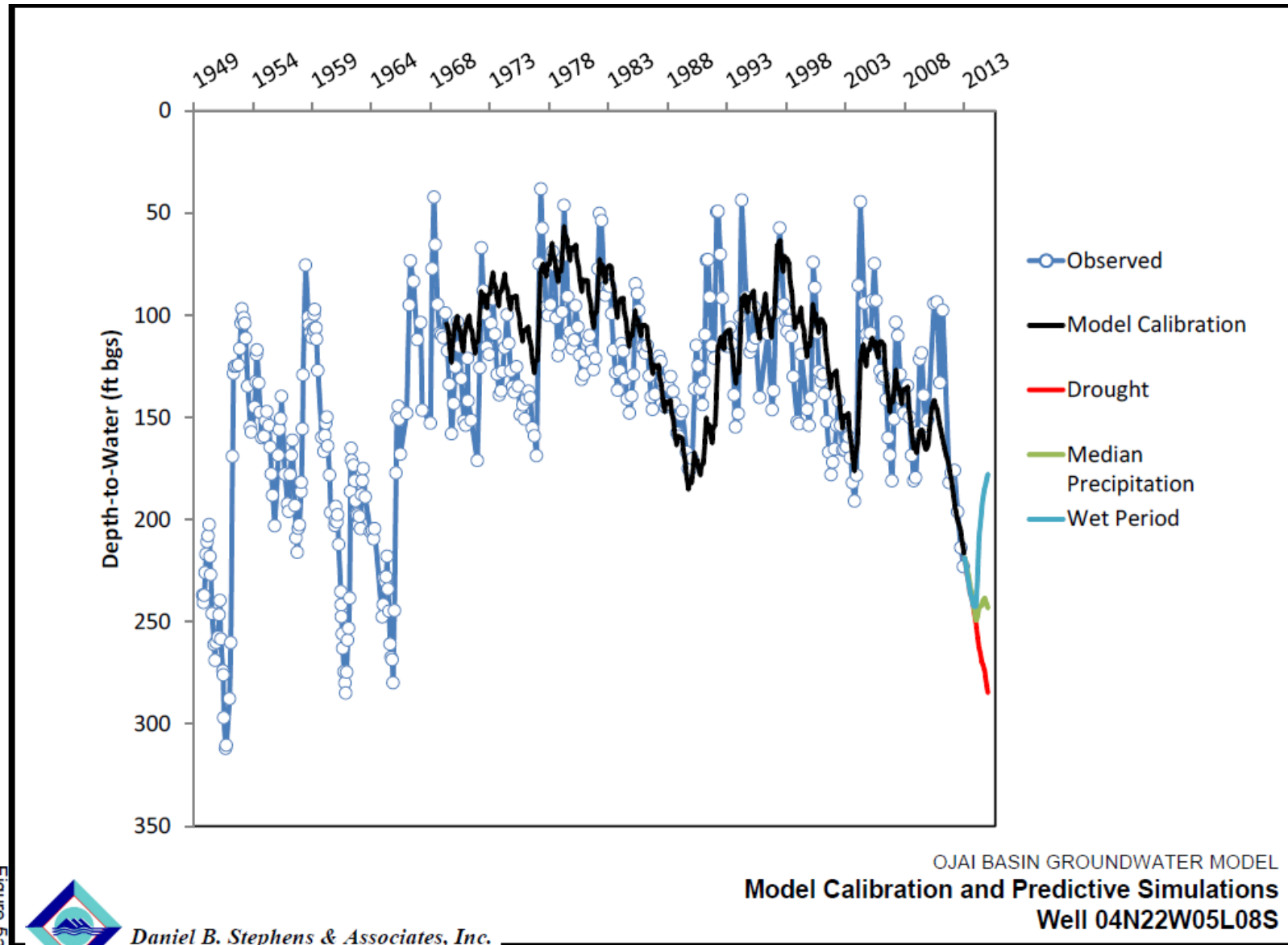


Figure 5a







August 31, 2007 aerial photography from Google Earth



0 1750 3500 Feet



Explanation

-  Numerical model boundary
-  Depth-to-water (ft)

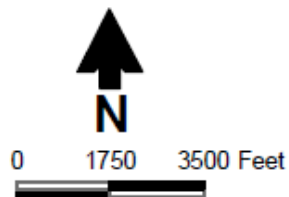




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OJAI BASIN GROUNDWATER MODEL
Simulated Depth-to-Water, December 2013



August 31, 2007 aerial photography from Google Earth



Explanation
 Numerical model boundary
 Depth-to-water (ft)

OJAI BASIN GROUNDWATER MODEL
Simulated Depth-to-Water, December 2015
Continued Drought Scenario

Figure 8



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Questions?

