

# Hydrologic Evaluation of the Settlement of CID Water Rights Adjudication Law Suit

Prepared by  
Hydrosphere Resource Consultants, Inc.

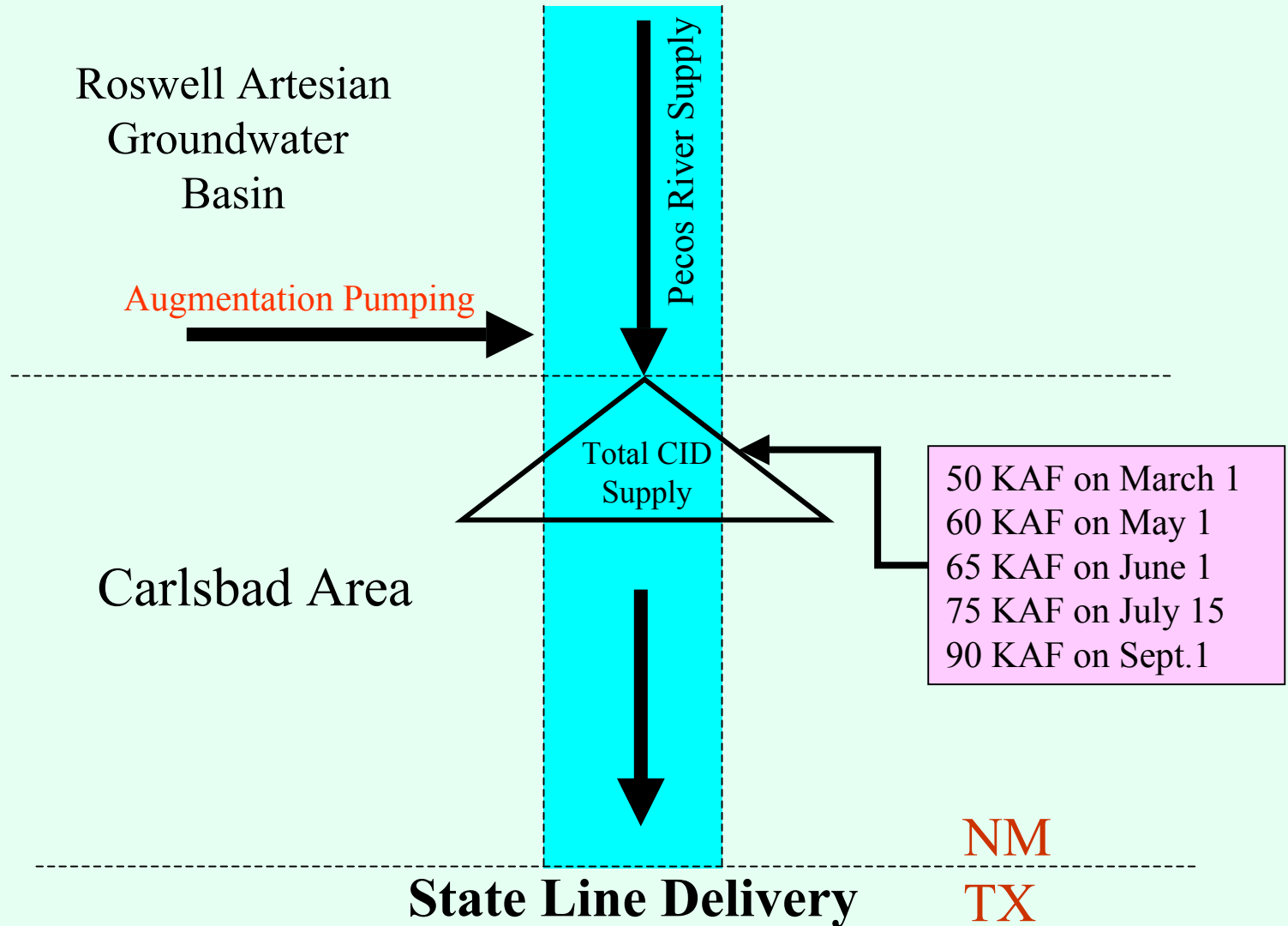
Under the Direction of  
New Mexico ISC/OSE Staff

Reviewed by  
CID/USBOR and PVACD

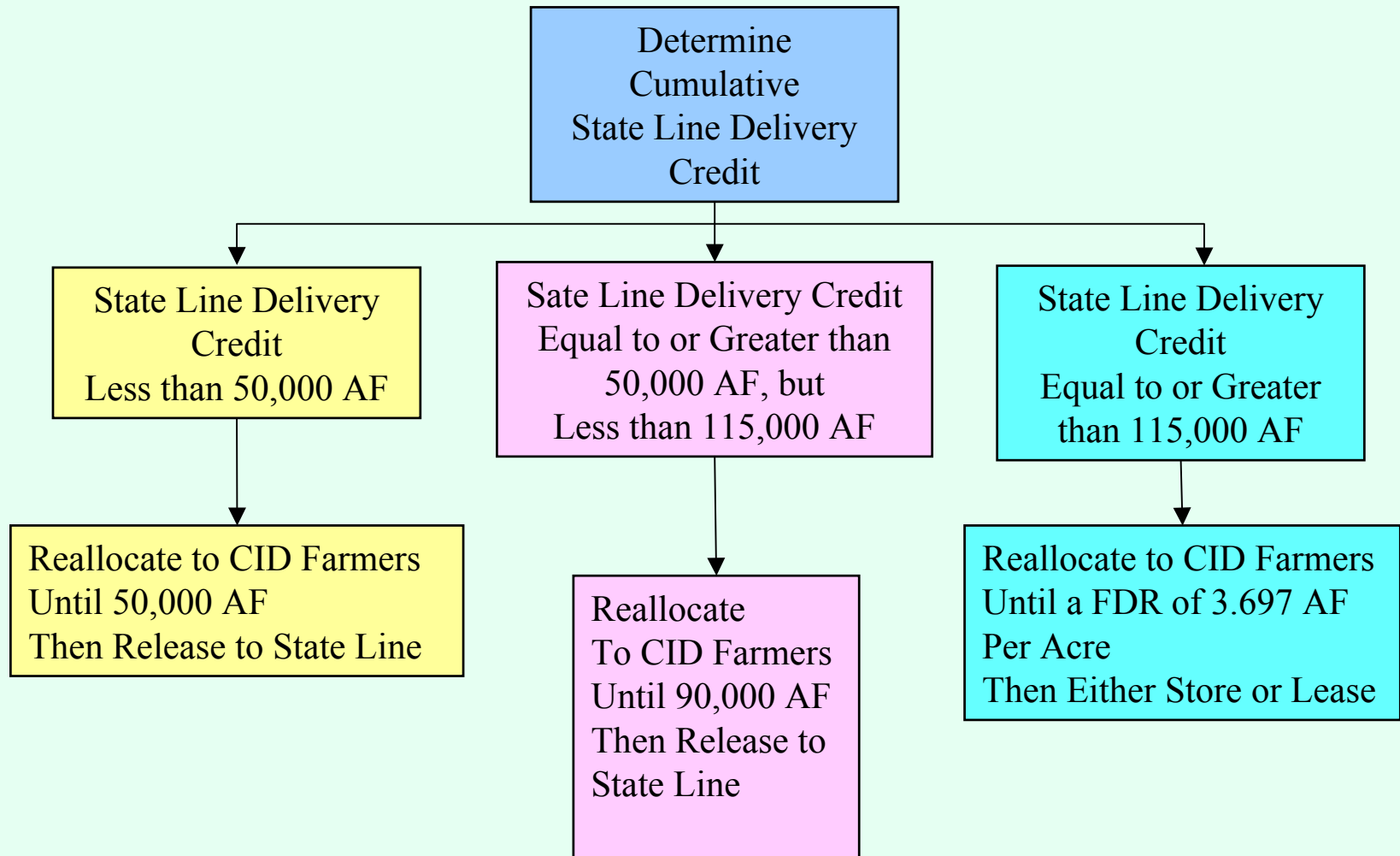
# Key Hydrologic Elements

- Retire 6,000 acres of irrigation rights within the CID and 11,000 acres within the PVACD
- Pump only as needed, up to 35,000 AFY, but not more than 100,000 AF during each 5-year accounting period to augment Pecos River flow
- Use CID water allocated to ISC lands for reallocation to CID farmers and for state line delivery

# Augmentation Pumping Schedule

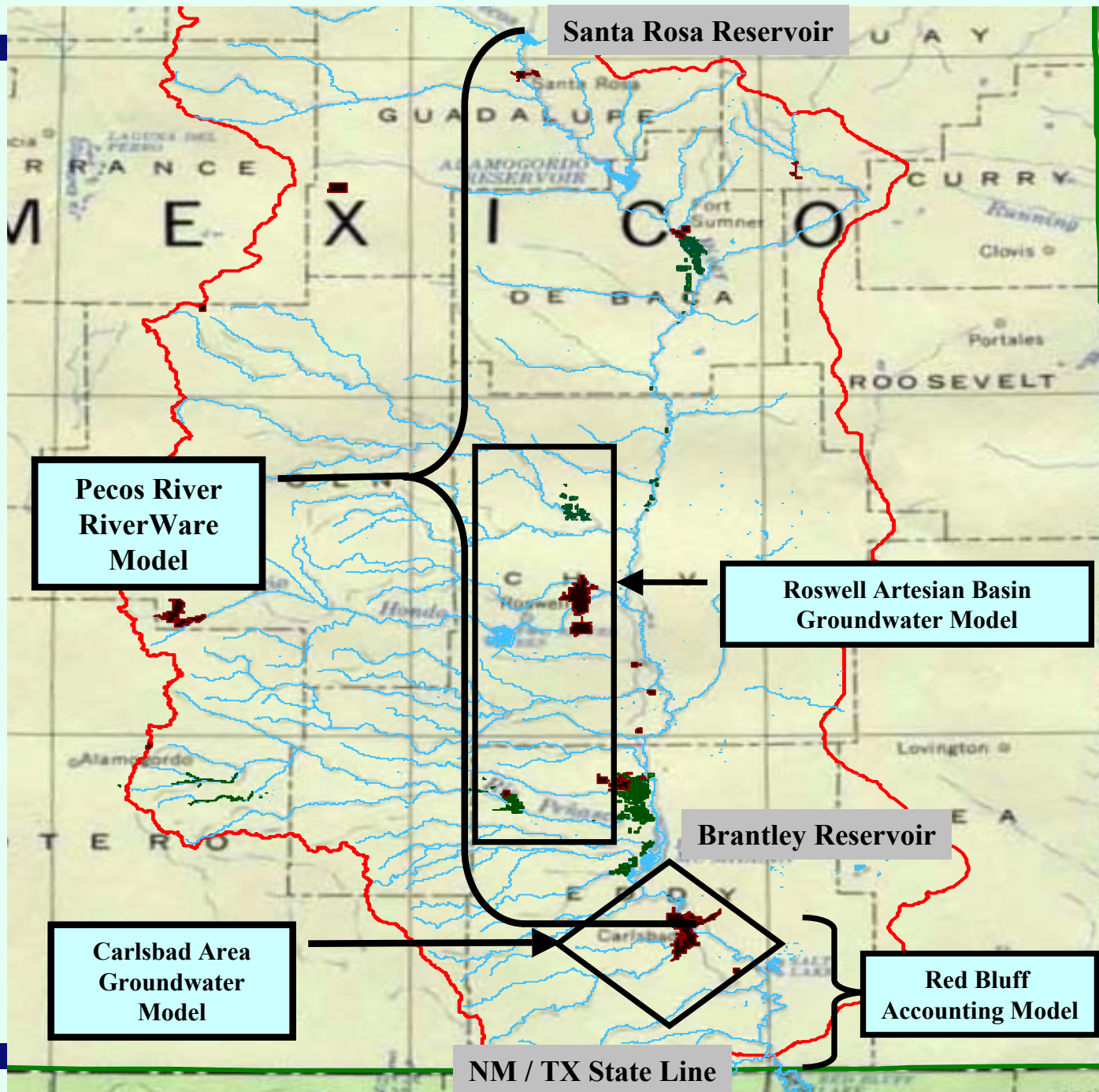


# Use of CID Water Allocated to ISC Lands



# Impact Analysis

## 1. Model Development



Santa Rosa Reservoir

Pecos River  
RiverWare  
Model

Roswell Artesian Basin  
Groundwater Model

Brantley Reservoir

Carlsbad Area  
Groundwater  
Model

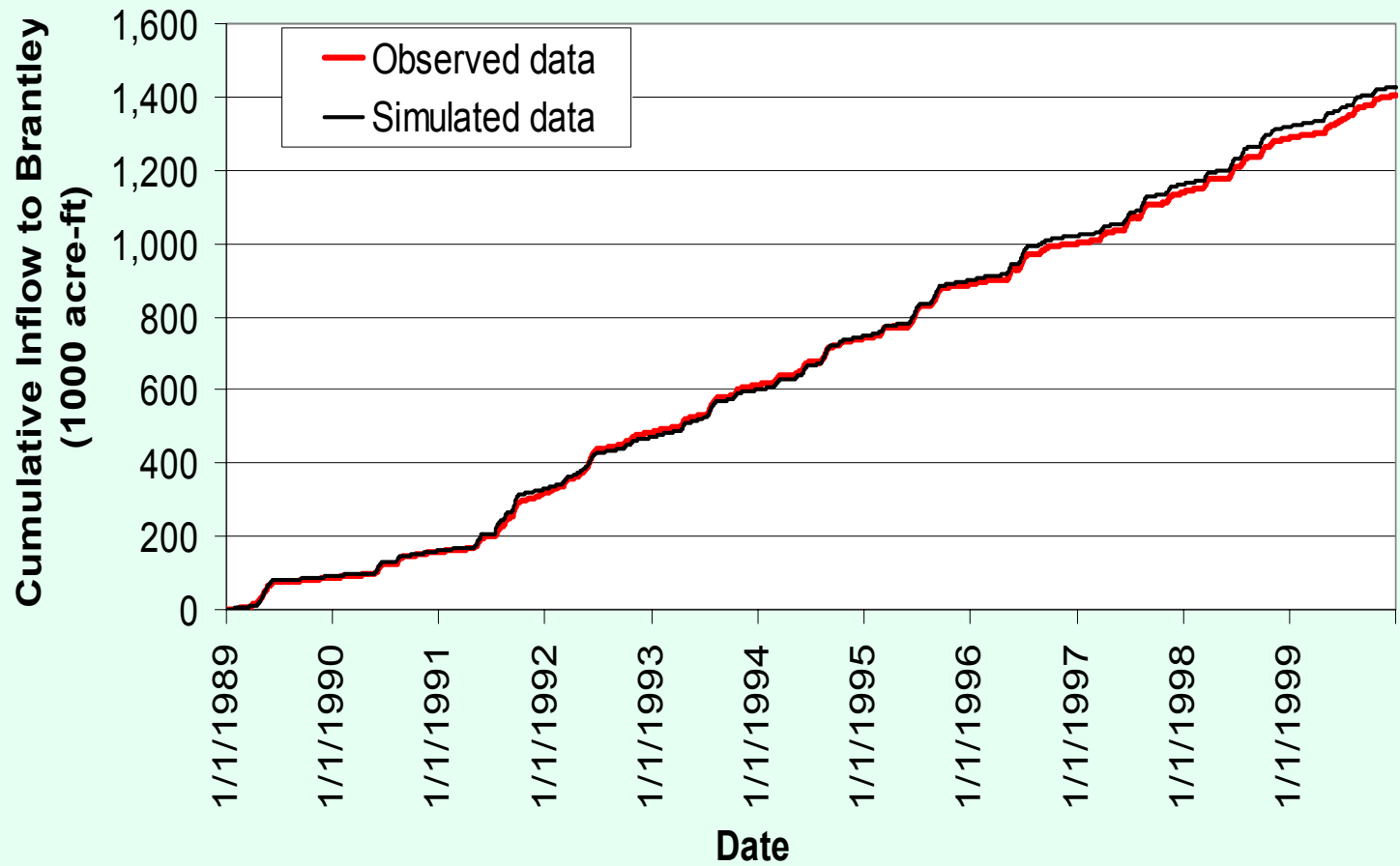
Red Bluff  
Accounting Model

NM / TX State Line

# Impact Analysis

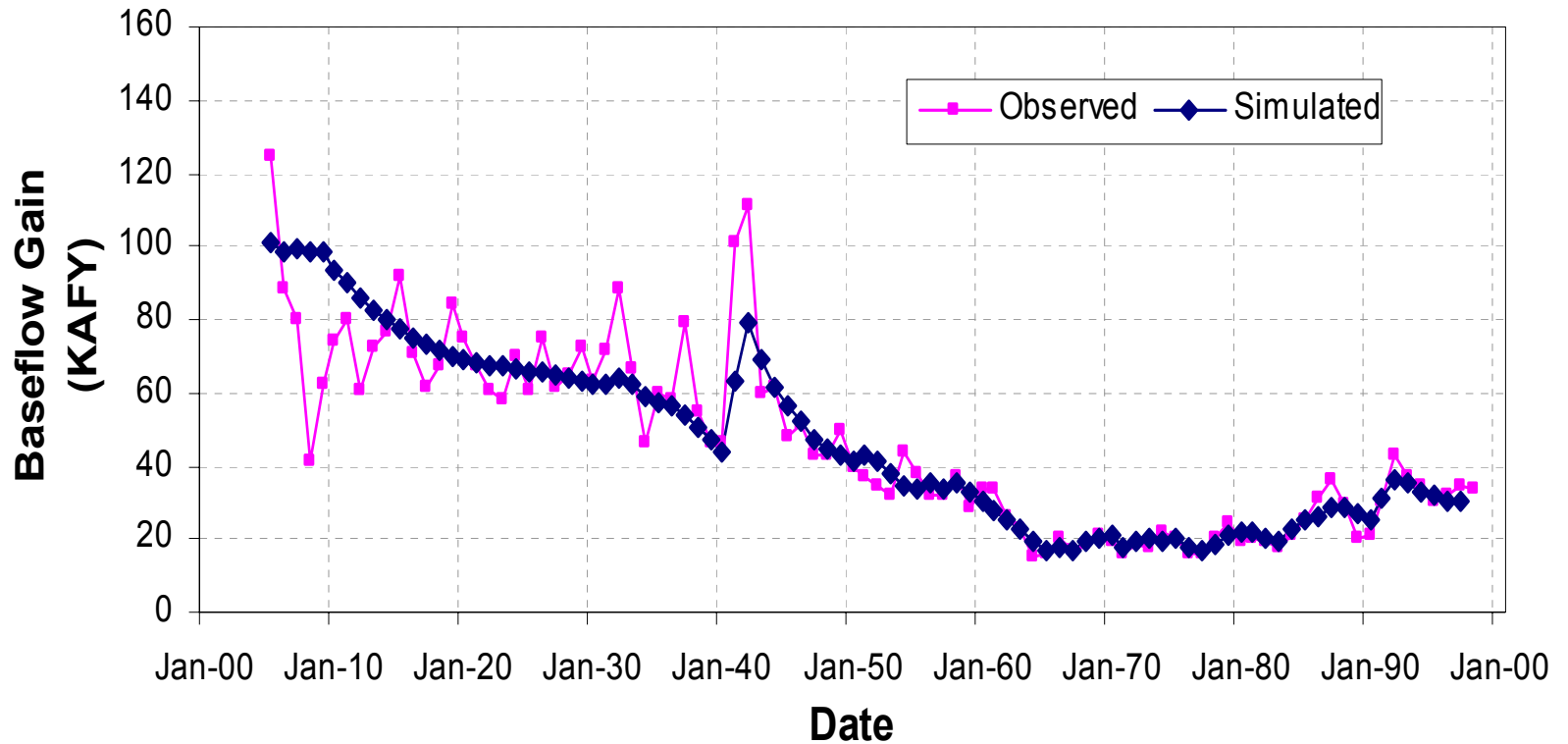
## 2. Model Testing

# Cumulative Inflow to Brantley Reservoir

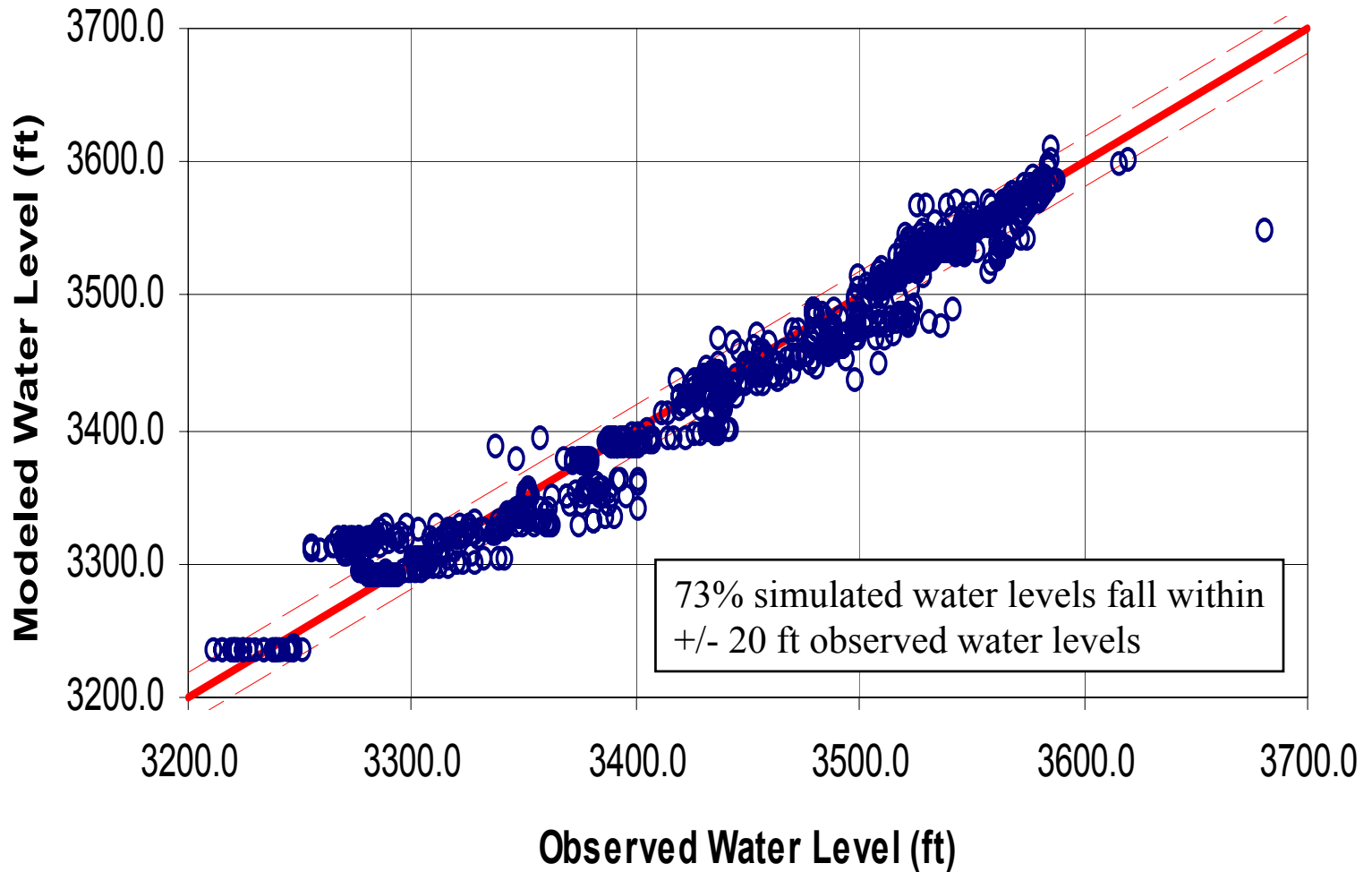




# Annual Baseflow Gain between Acme and Artesia

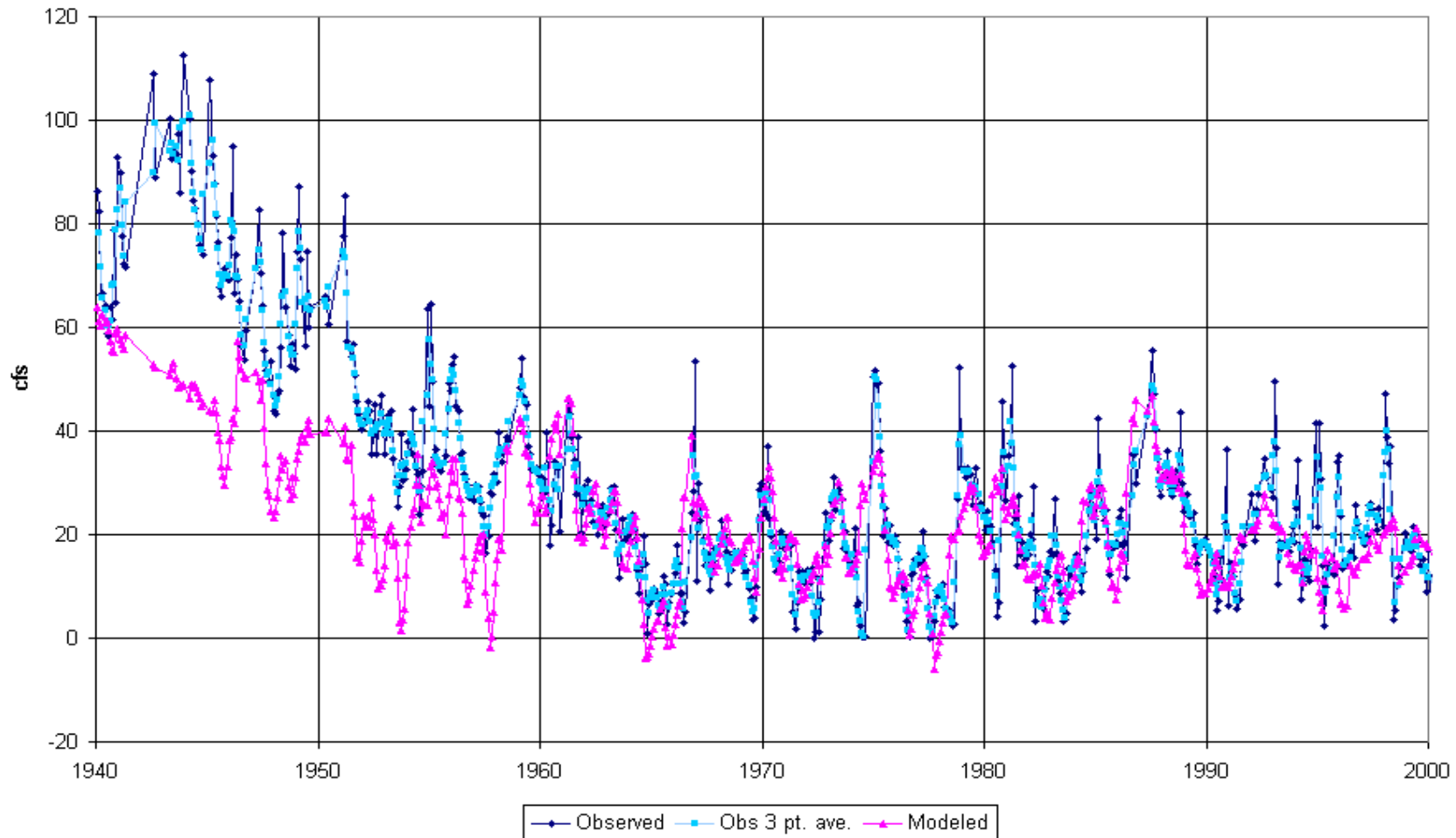


## Simulated Versus Observed Water Levels – Roswell Basin (1906-1998 data from 41 wells)



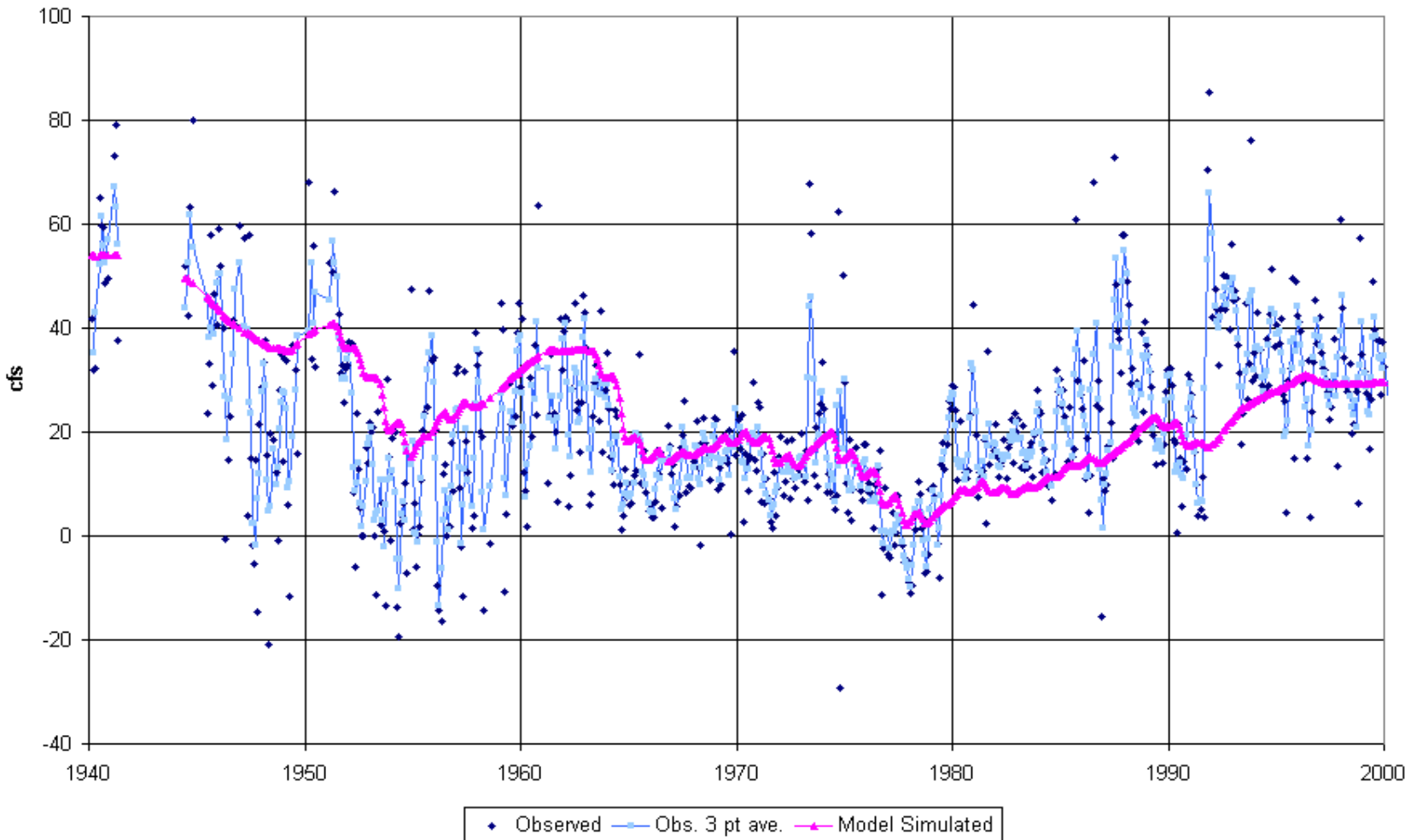
# Baseflow Gain to the Upper (Carlsbad Springs) Reach

Upper Reach (Carlsbad Springs) Baseflow Gains

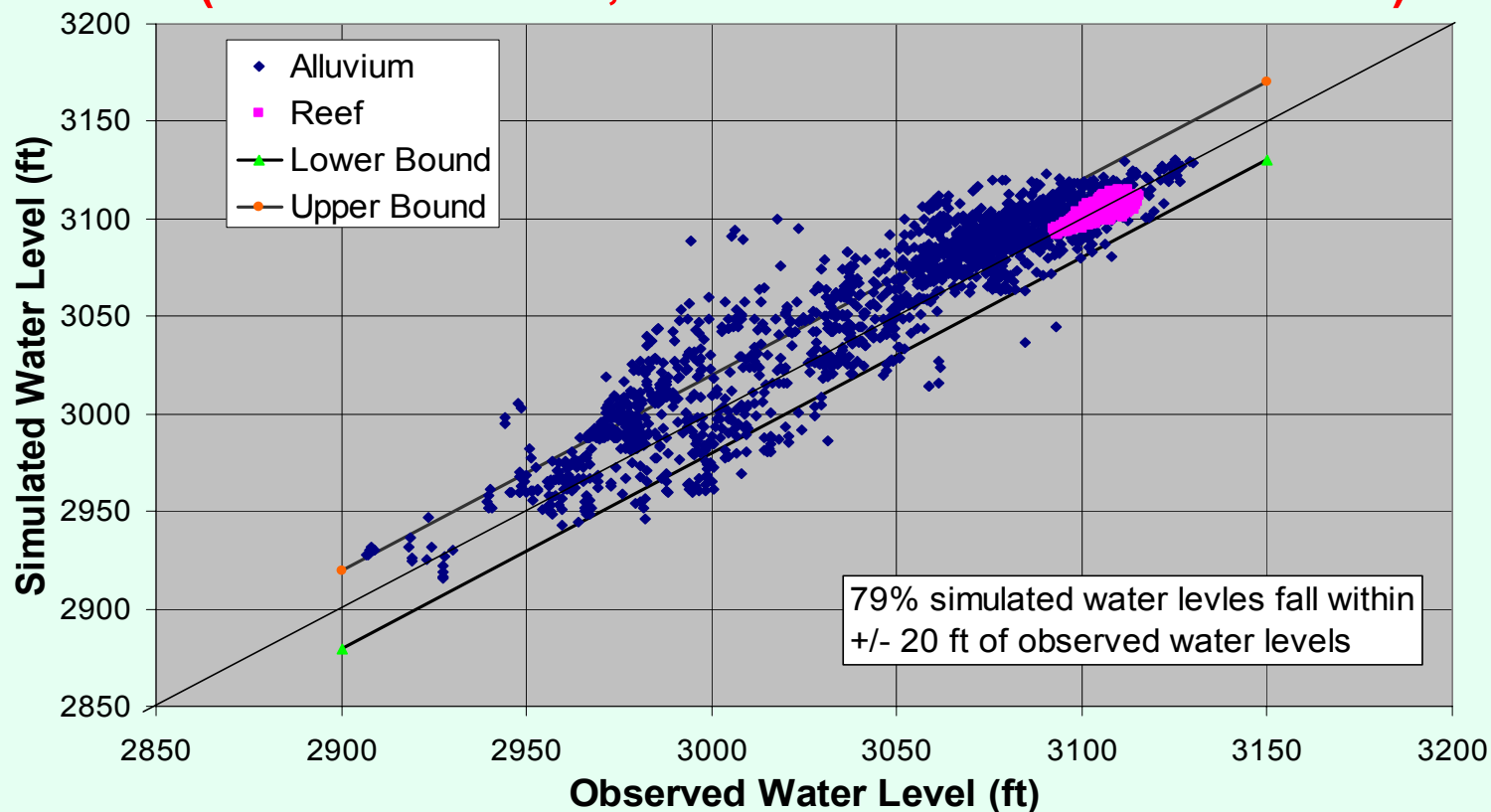


# Baseflow Gain to the Lower Reach (Carlsbad to Malaga)

Lower Reach (Carlsbad to Malaga) Baseflow gains



## Simulated Versus Observed Water Levels (Carlsbad Model, 1940-2000 data from 149 wells)



# Impact Analysis

## 3. Operational Assumptions

# Operational Assumptions

- Future hydrologic conditions are assumed to be represented by the hydrologic conditions during the period 1967-1996
- Impact is measured as the difference between a “baseline” scenario and the “settlement” scenario

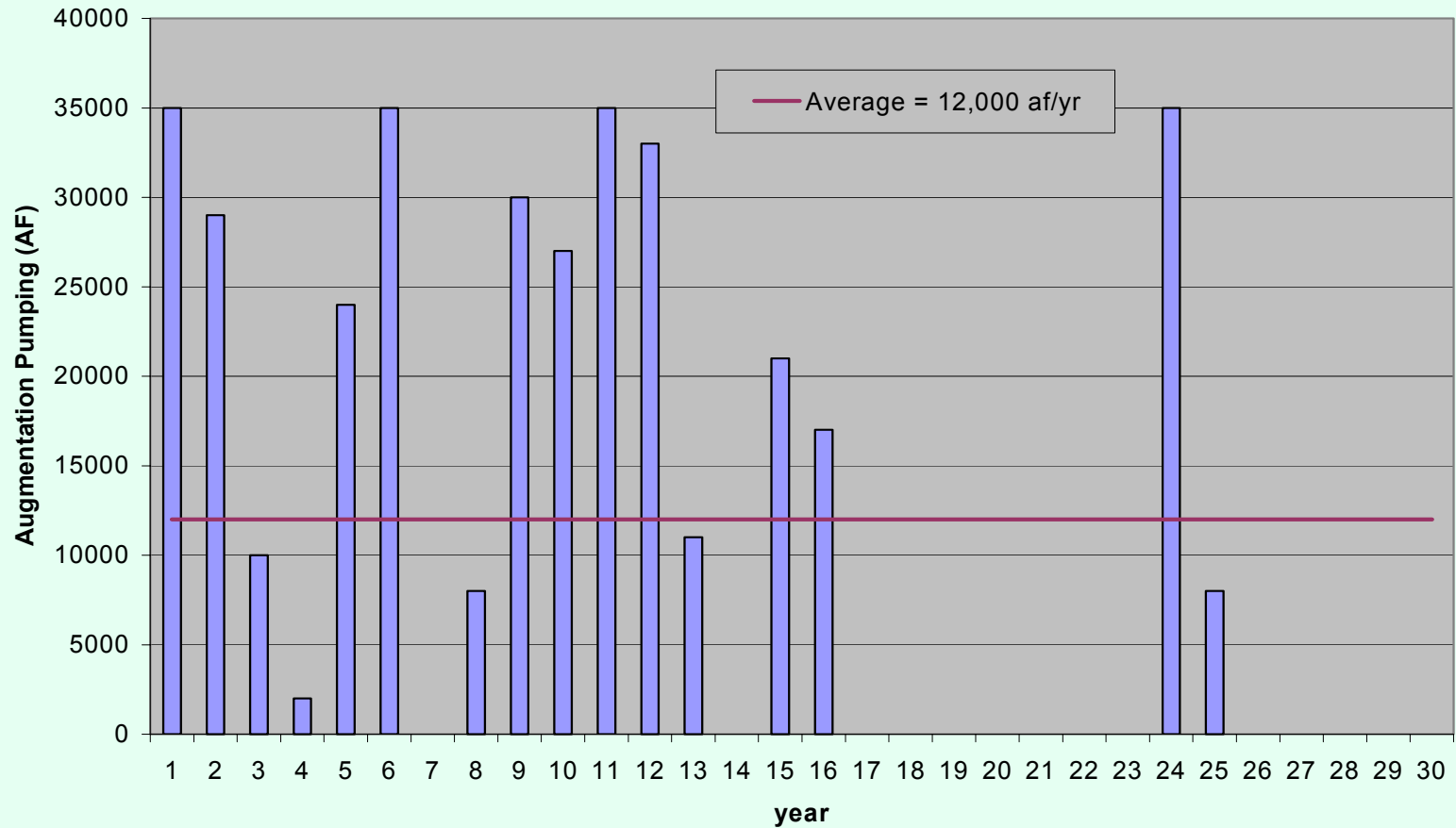
# Impact Analysis

## 4. Results



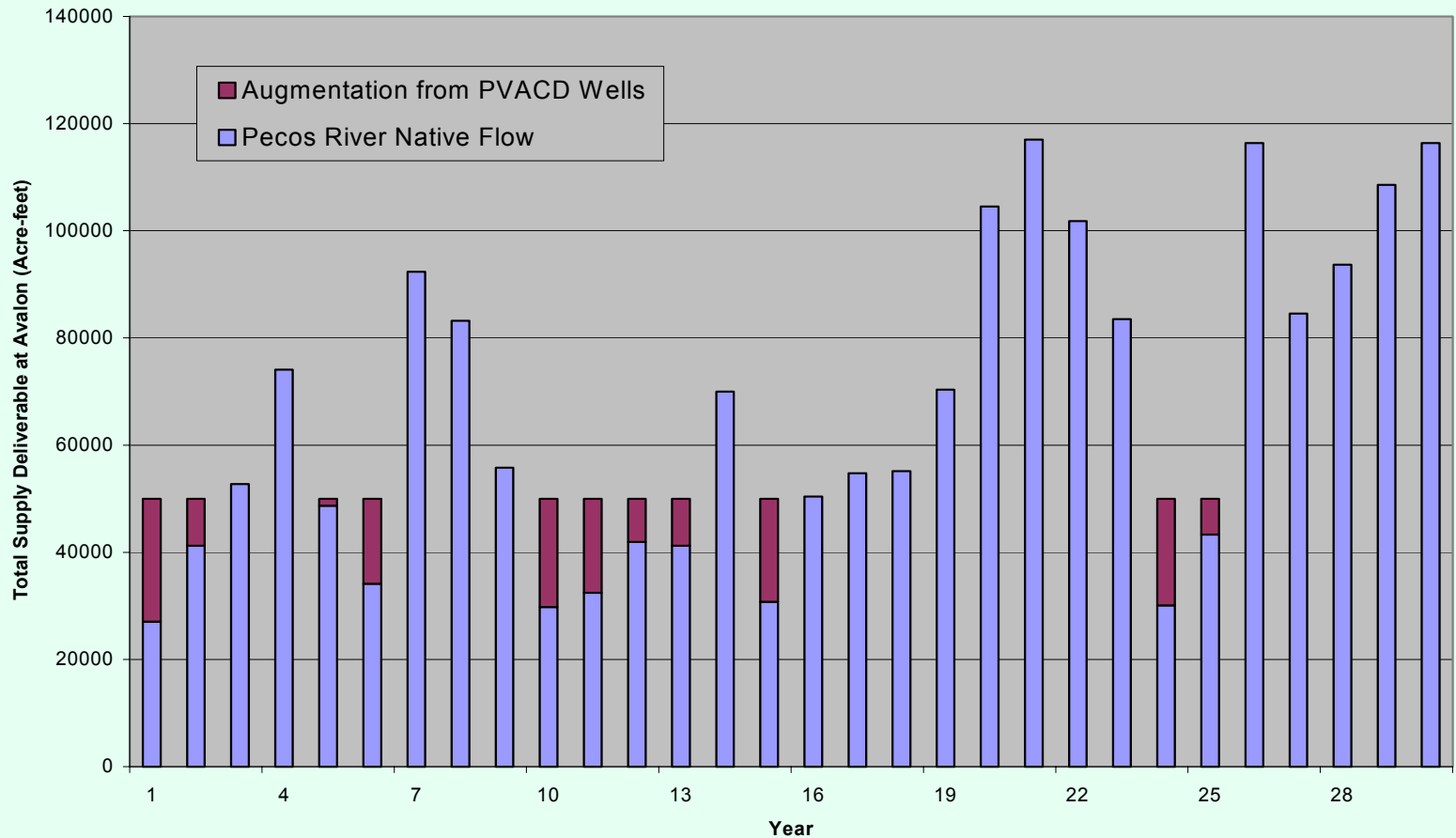
# Augmentation Pumping from the RAB

Augmentation Pumping from PVACD (Annual Volume at Well Head, AF)



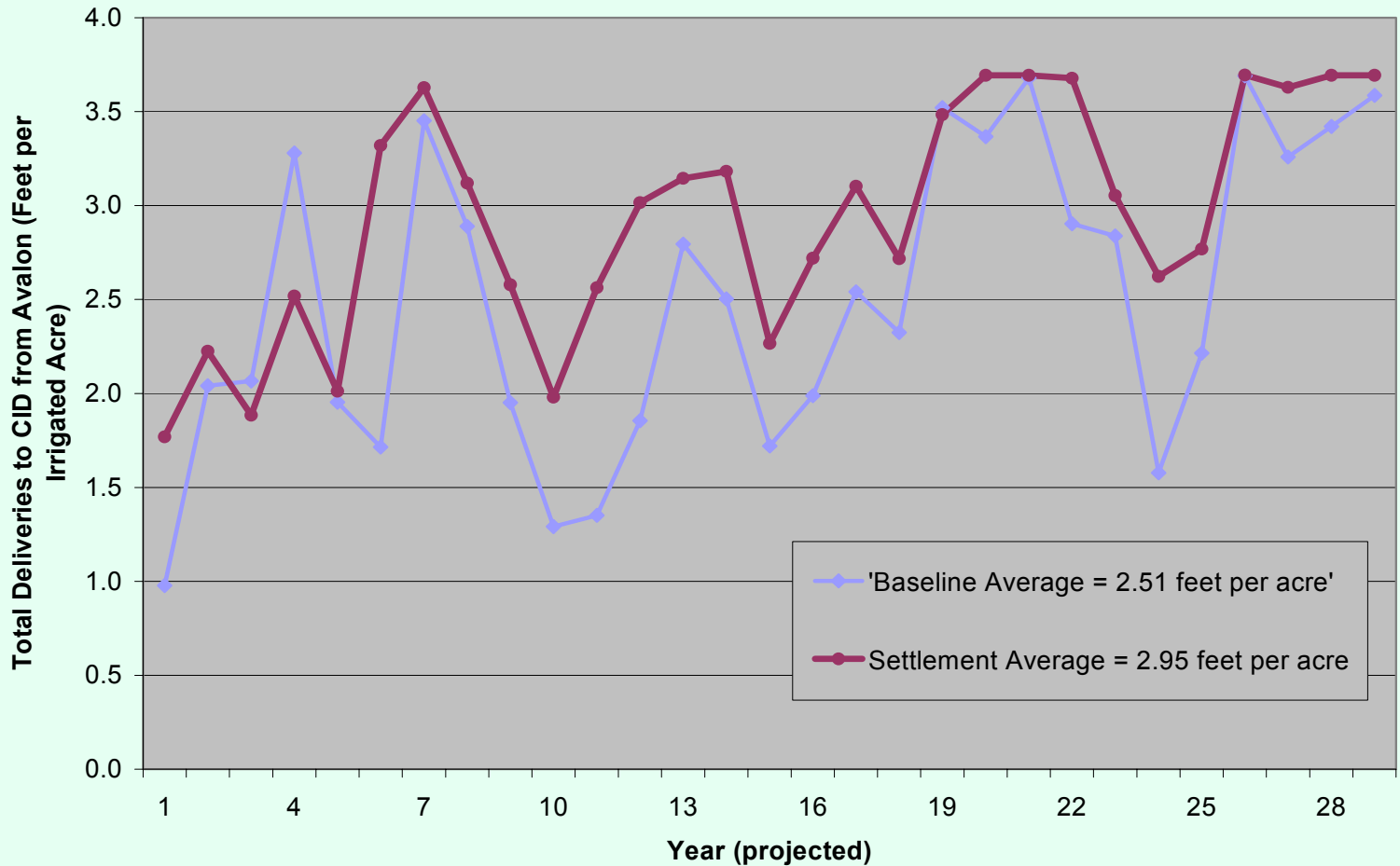
# CID Supply As Of March 1

CID Surface Water Supply - March 1



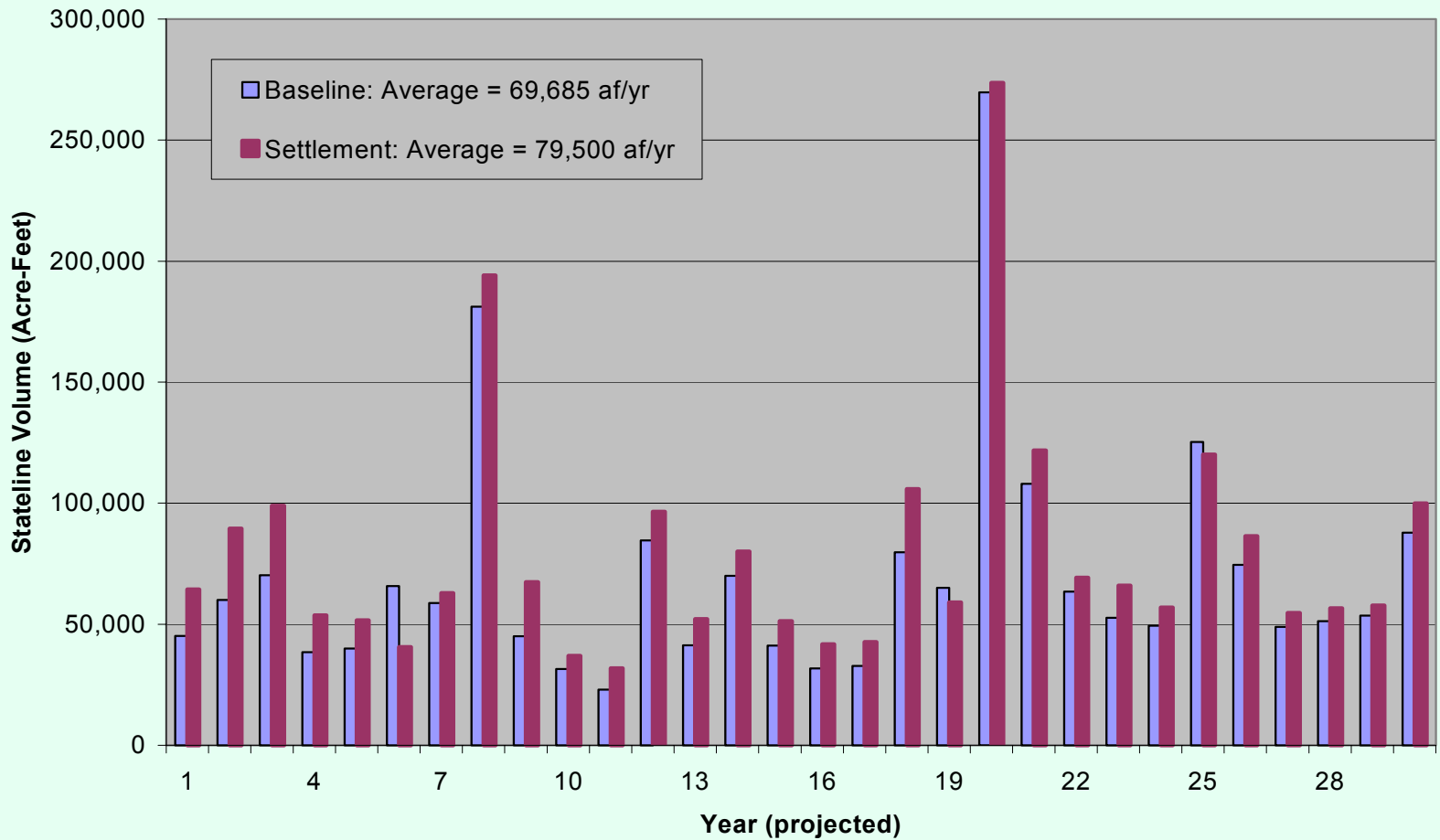
# CID Farm Deliveries

Comparison of Actual CID Deliveries (from Avalon)  
Initial Condition = January 1, 2000



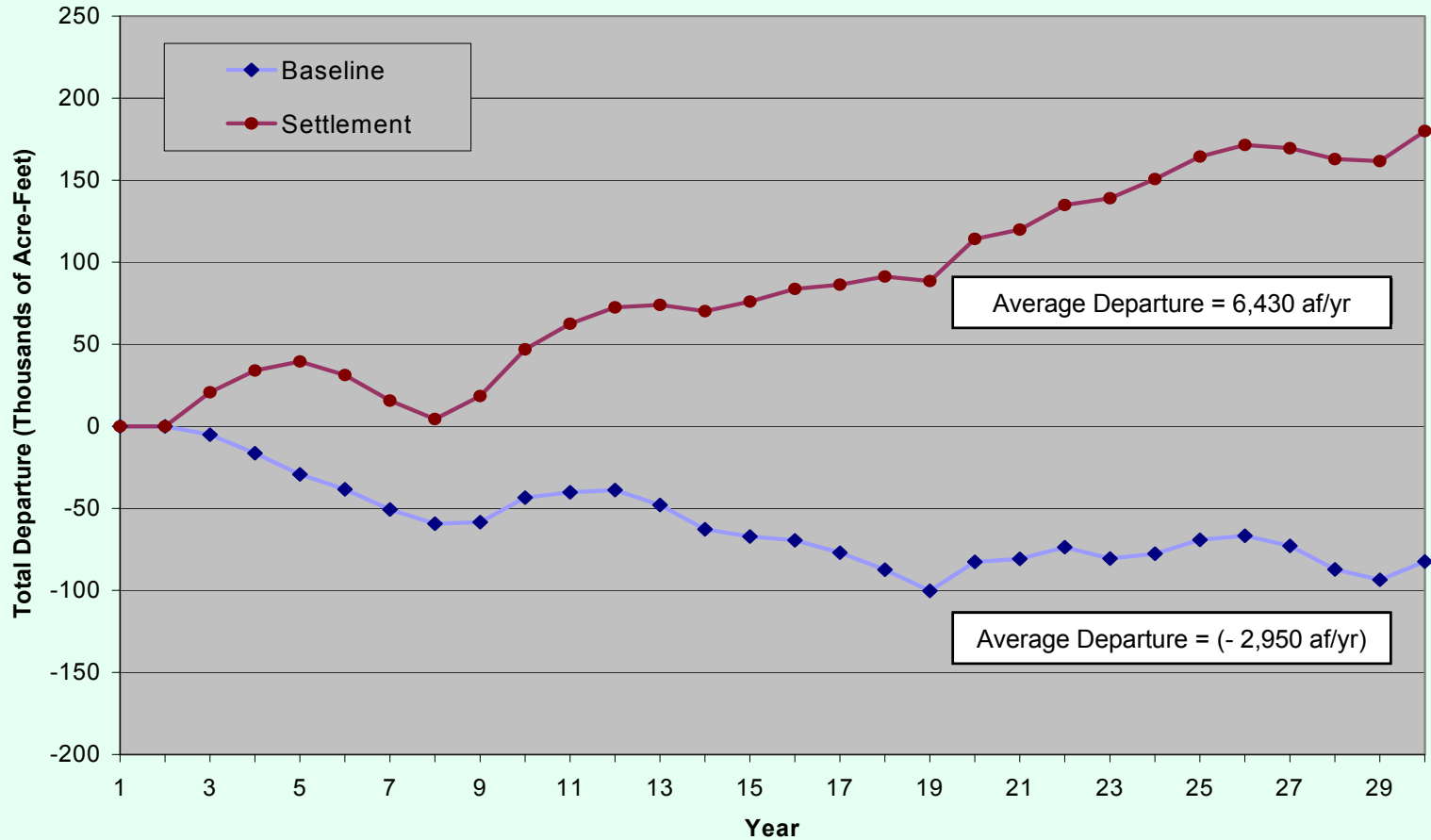
# Flows at Stateline

**Comparison of Stateline Deliveries**  
Initial Condition = January 1, 2000

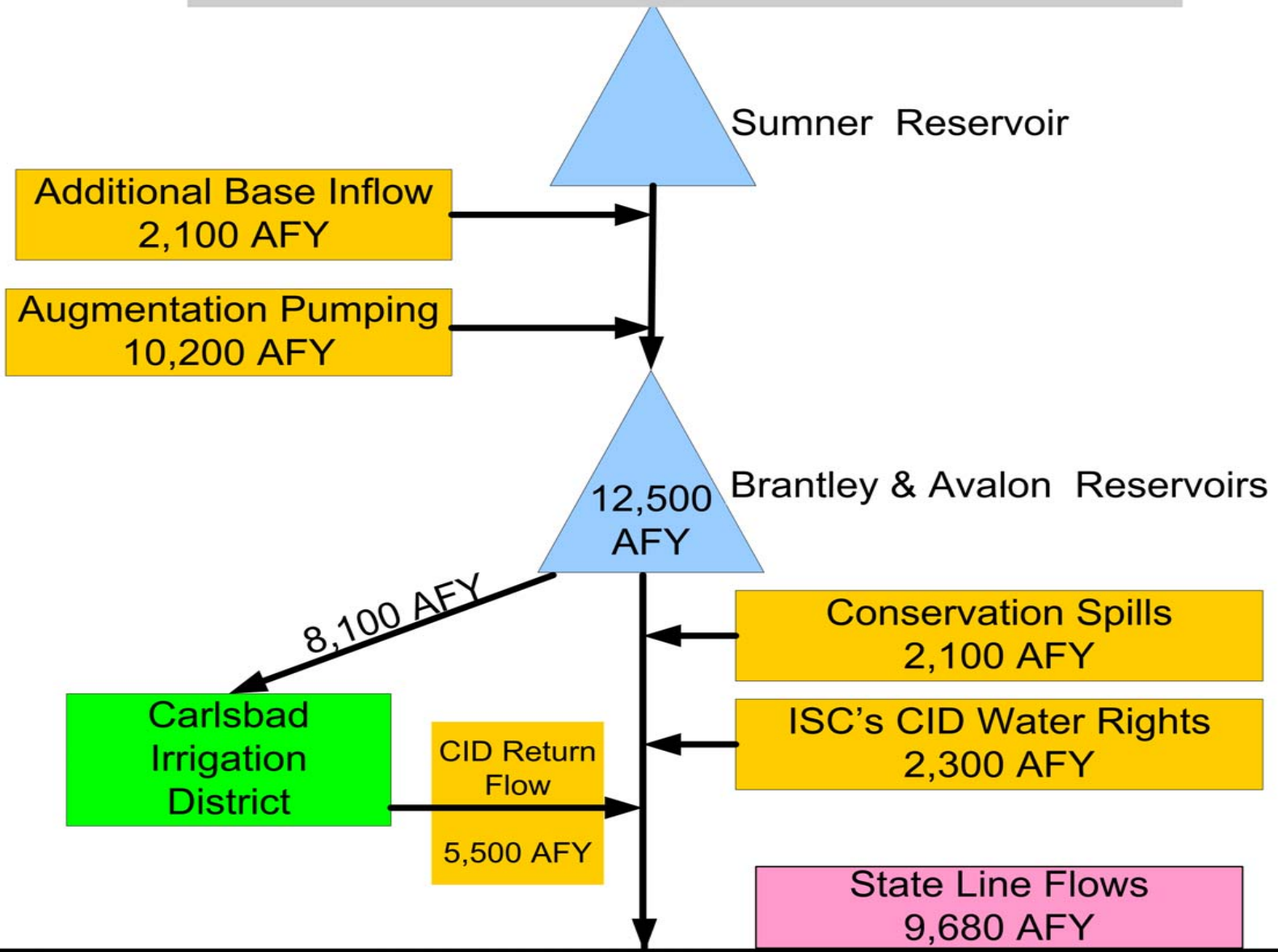


# Compact Delivery Departures: Cumulative

Cumulative Compact Departure from Obligation  
Initial Condition = January 1, 2000



# Average Annual Water Budget



# Conclusions

## Implementation of the Proposed Settlement Agreement Would:

1. Provide for a comfortable level of state line delivery credit and significantly reduce and probably avoid the occurrence of net shortfalls
2. Increase CID farm deliveries by about 0.5 AF/acre
3. Significantly reduce and probably avoid the need for a priority call on the Pecos River