

# Inter-Basin Meeting: East Contra Costa Subbasin & Neighboring Tracy Subbasin

Wednesday February 12, 2020 3pm

# Agenda

- Introductions
- East Contra Costa GSP Integrated Hydrologic Model
- Opportunities for Collaboration
- Next Steps

# Introductions

- East Contra Costa Subbasin
  - From LSCE: Vicki Kretsinger Grabert, Debbie Cannon, Barb Dalgish, Faithe Lovelace
- Tracy Subbasin
  - From SJC: Michael Callahan
  - From GEI: Richard Shatz, Ashlee Casey, Michael Cornelius

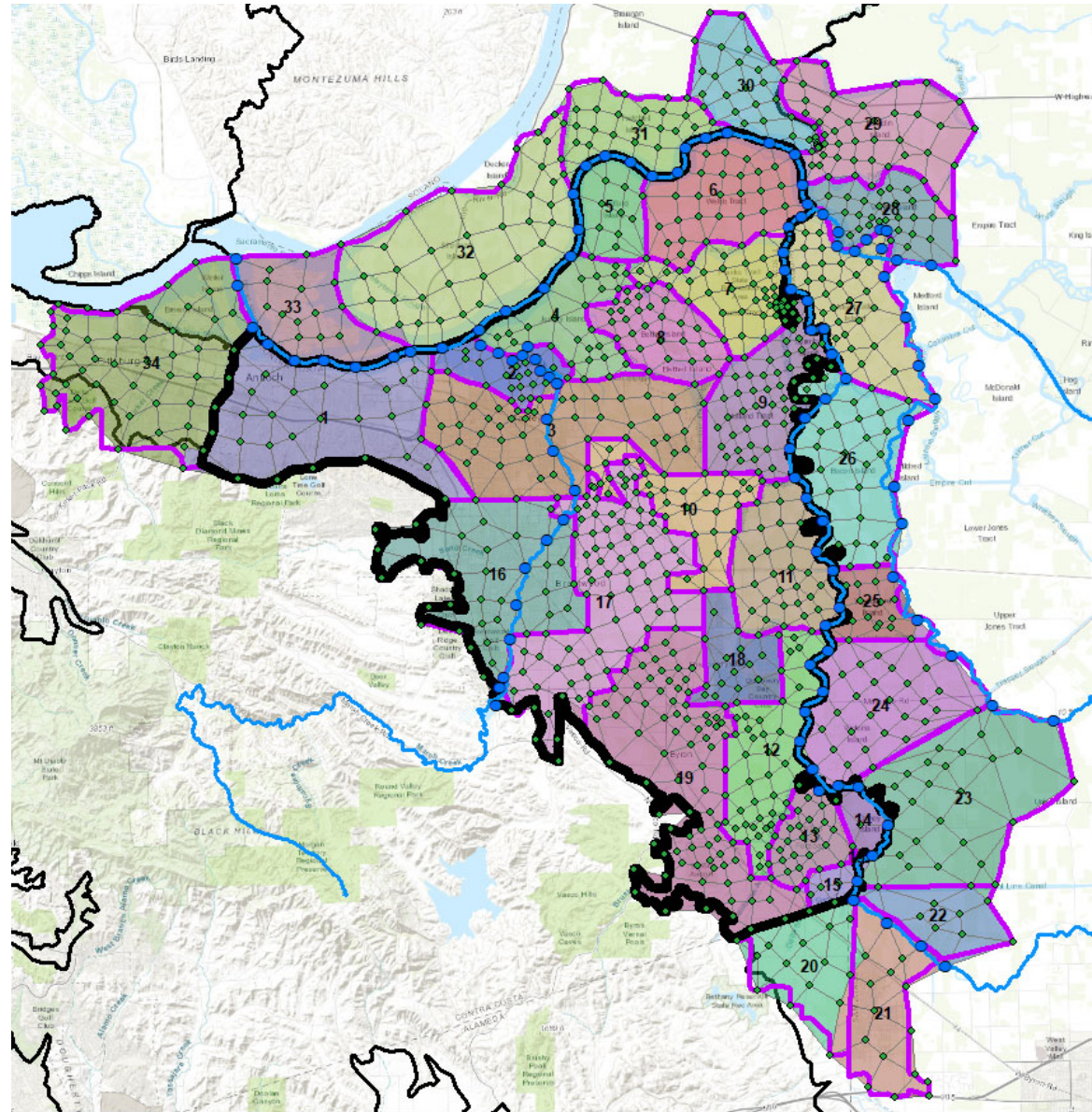
# East Contra Costa GSP

## Integrated Hydrologic Flow Model

- Conceptual Model
  - Model Base Period = WY 1997 – WY 2018
  - Model Area = Entire ECC Subbasin plus buffer to the north and east
  - Delta region (islands and waterways) hydraulically controlled by drains, essentially fixing the water table
  - GSA's in the area help form water balance subregions:
    - Byron Bethany Irrigation District
    - City of Antioch
    - City of Brentwood
    - Contra Costa County
    - Diablo Water District
    - Discovery Bay CSD
    - East Contra Costa Irrigation District
  - Heavy reliance on surface water to meet supply demands with some wells used more in drought years

# Model Boundary and Subregions

- 19 water balance subregions in the ECC Subbasin
- 15 water balance subregions outside ECC Subbasin
  - 10 water balance subregions in San Joaquin County
    - 8 subregions in the Tracy Subbasin
    - 2 subregions in the Eastern San Joaquin Subbasin

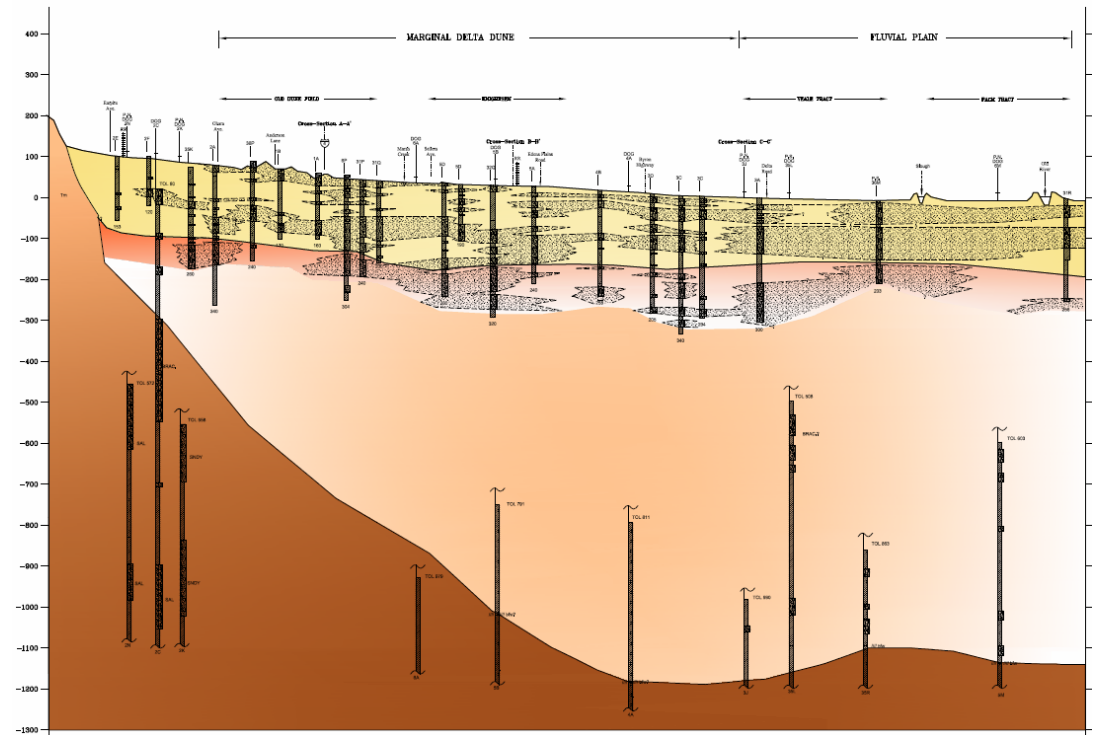


# General Water Supply and Demand in the ECC Subbasin

| GSA Name                              | Source of Water Supply  | Comments   |
|---------------------------------------|---|--|
| Byron Bethany Irrigation District     | All surface water except in 2015 when they needed to use groundwater  | During the drought, their surface water rights were reduced  |
| City of Antioch                       | All surface water   | Deminimus users in Antioch represent a small number (~30) domestic water users with private wells and septic systems |
| City of Brentwood                     | Surface water and groundwater pumping; recycled water used in irrigation; ag use estimated as amount of ECCID SW delivered to Brentwood GSA in ECCID boundary |  |
| Contra Costa County                   | Ag water use from individual landowner water rights; Ironhouse Sanitary District provides recycled water to irrigate crops on Jersey Island                   |  |
| Diablo Water District                 | Surface water and groundwater pumping   |  |
| Discovery Bay CSD                     | All groundwater   |  |
| East Contra Costa Irrigation District | Majority surface water deliveries; ag wells minimal pumping on normal/wet years; ag wells used more in drought years  |  |

# Model Structure

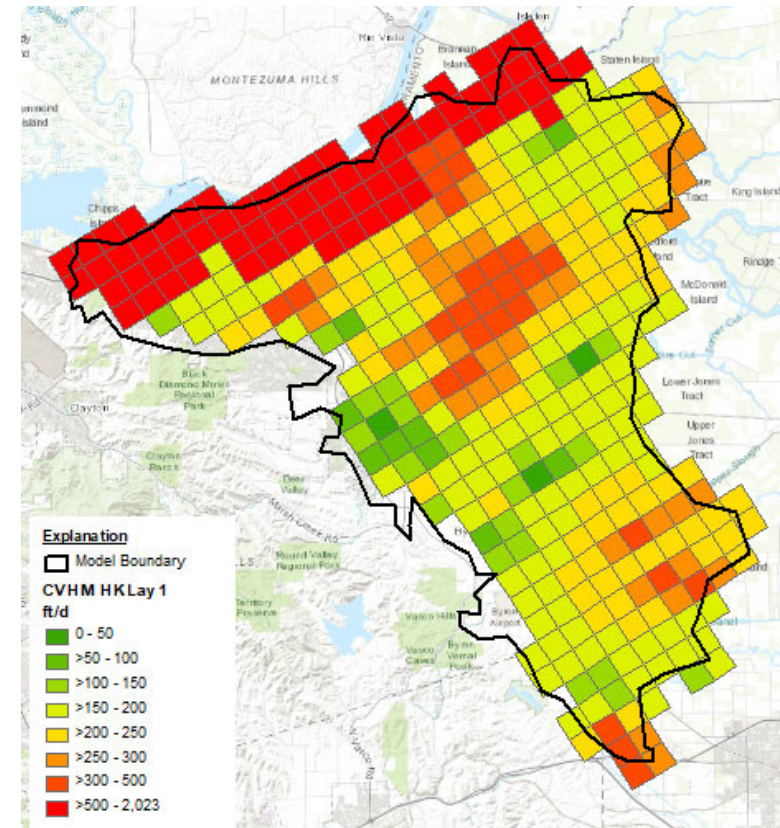
- Model Platform: IWFM
- Evaluate C2VSimFG and CVHM for model inputs
  - Insufficient simulation of surface water bodies – only represent San Joaquin River
- Model layering based on LSCE's HCM division of the Shallow and Deep Zones
- Four-layer model (upper two layers = Shallow Zone; lower two layers = Deep Zone)





# Aquifer Properties in the Model Area - CVHM

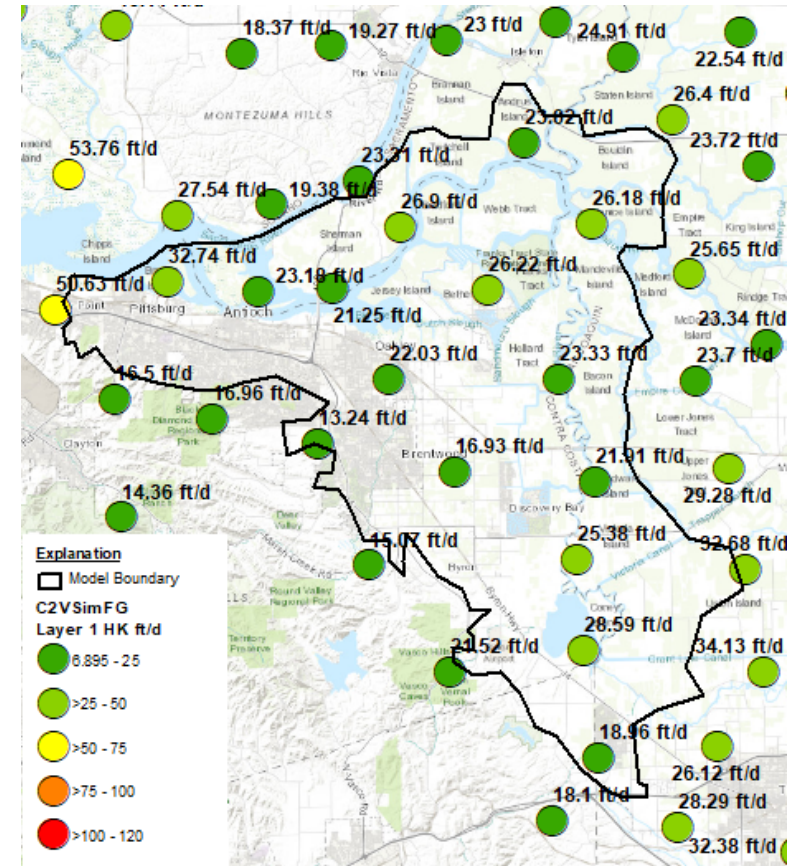
- CVHM shows more variability in aquifer material parameters in the upper three model layers, with the highest permeability occurring along the San Joaquin/Sacramento Rivers.
  - High K values along SJ/Sac Rivers >500 ft/d
  - Typical K values around 200 ft/d
- CVHM shows less variability in aquifer material parameters in deeper model layers with decreasing K values with depth
  - High K values still exist along SJ/Sac Rivers (between 650 and 150 ft/d)
  - Typical K values around 100 (ft/d) or lower with depth
- CVHM uses General Head Boundary conditions to simulate the Delta





# Aquifer Properties in the Model Area – C2VSimFG

- C2VSimFG uses less resolution for defining aquifer parameters (parametric grid nodes), typically >3 miles apart
- C2VSim HK values are much lower than CVHM, on the order of 20 to 30 ft/d in the ECC Subbasin for C2VSim Layer 1
- C2VSim HK values very similar with depth in ECC area:
  - Typically <15 ft/d in Layer 2
  - Typically <13 ft/d in Layer 3
  - Typically <14 ft/d in Layer 4



# Opportunities for Collaboration

- Water Supply sources and amounts in regions along western border of Tracy Subbasin
- Boundary conditions along Tracy Subbasin and East Contra Costa Subbasin
- Any monitoring data not publicly available that would be useful on the western border of Tracy Subbasin
- Approach for simulation of Middle River (riverbed properties, etc.)

# Next Steps

- Follow-up discussion timeline
  - monthly? quarterly? after specific milestones?
- Data sharing
  - Dropbox, FTP, email
- Provide LSCE water supply info for western border of Tracy Subbasin (source description and monthly amounts Oct 1996 – present)