

# Flows and Salinity in the South Delta

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# Key Points

- Flow

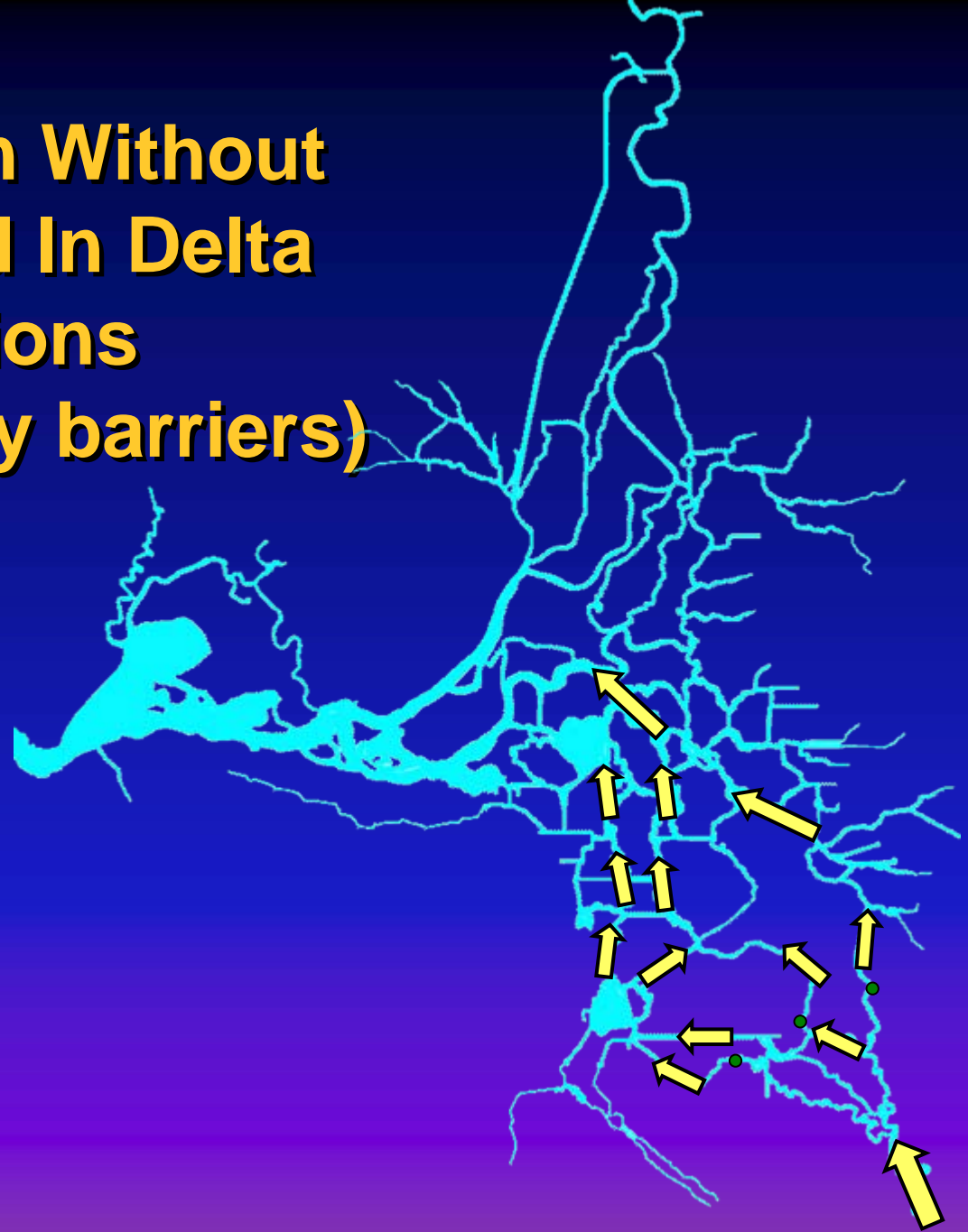
- San Joaquin River at Vernalis flow - flows downstream into the South Delta
- Exports are downstream of the objective locations
- Barriers utilize tidal energy to move water upstream into the South Delta
- Increases in San Joaquin flow do not result in a proportional increase in flow at Old River at Tracy

# Key Points

- Water Quality

- Salinity in the South Delta is primarily dominated by the San Joaquin River and in Delta Sources
- Reduction in exports and/or additional Sacramento flows alone cannot cause significant changes in water quality at the south Delta objective locations.
- Circulation of “Sacramento side” water can be moved upstream to affect the water quality at two of the three objective locations by the use of temporary barriers.
- Water Quality at Brandt Bridge cannot be significantly affected by changes in Sacramento flow, export reduction, or gates

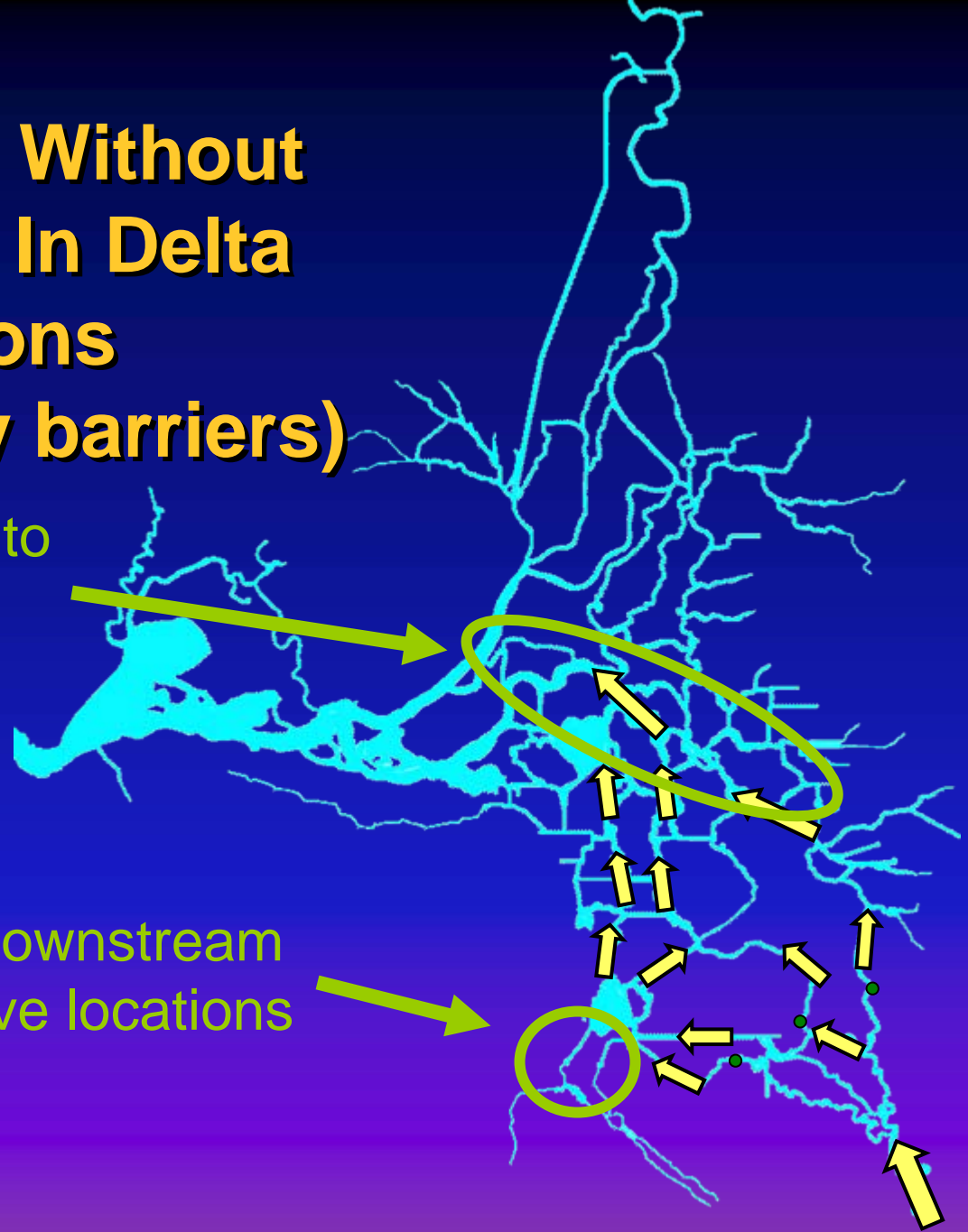
**Flow Pattern Without  
Exports and In Delta  
Diversions  
(no temporary barriers)**



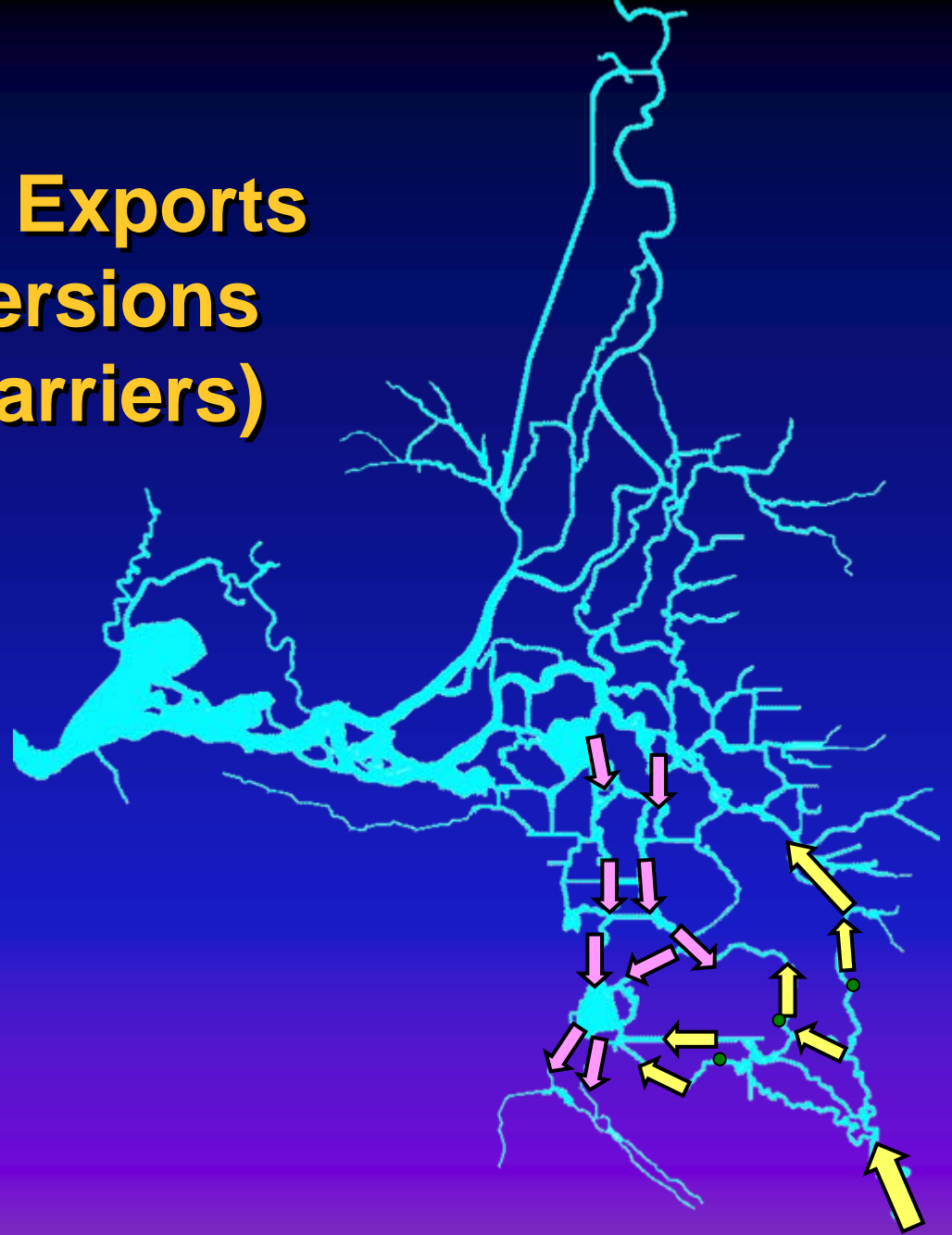
# Flow Pattern Without Exports and In Delta Diversions (no temporary barriers)

Influence of Sacramento River downstream of objective locations

Exports downstream of objective locations



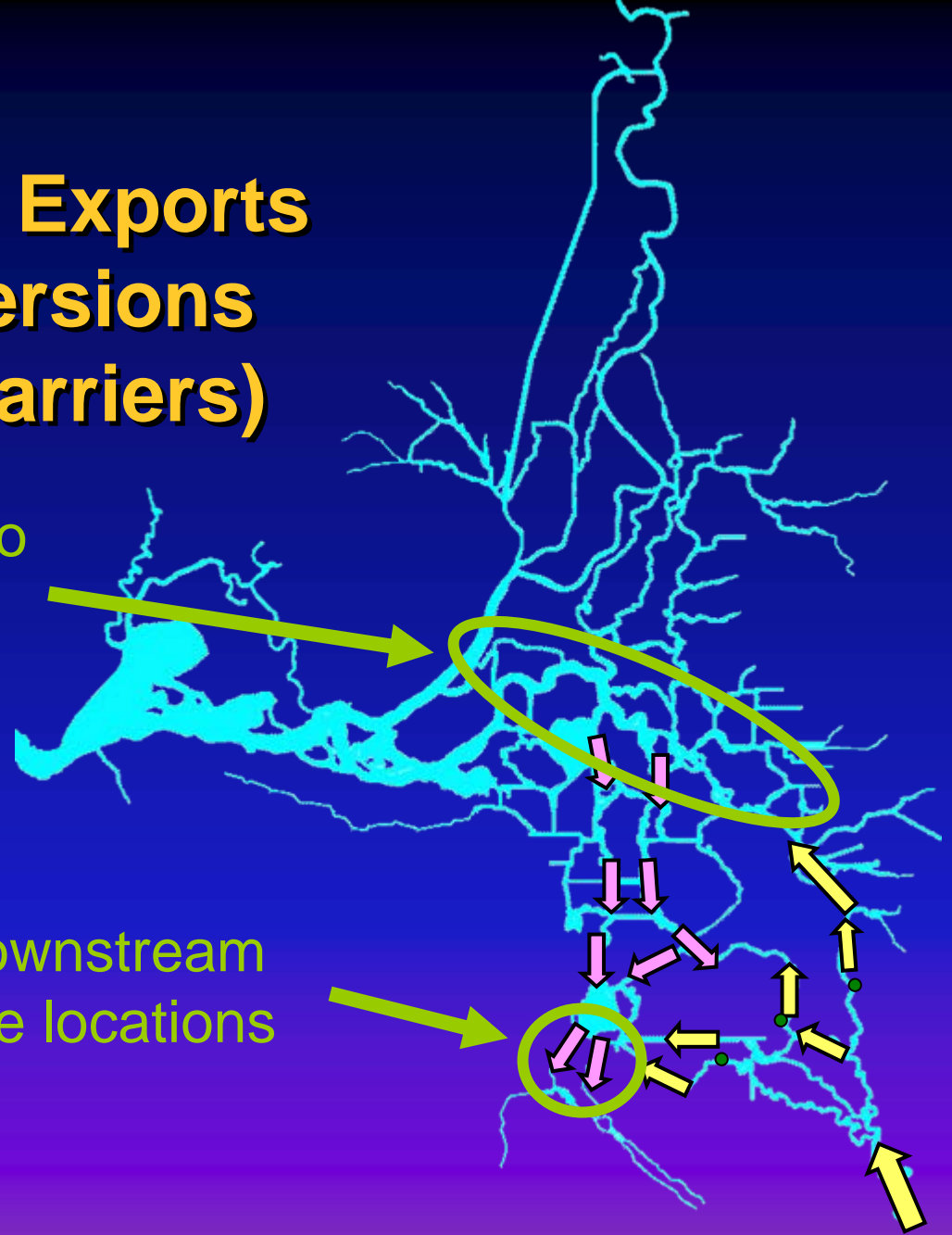
# Flow Pattern With Exports And In Delta Diversions (no temporary barriers)



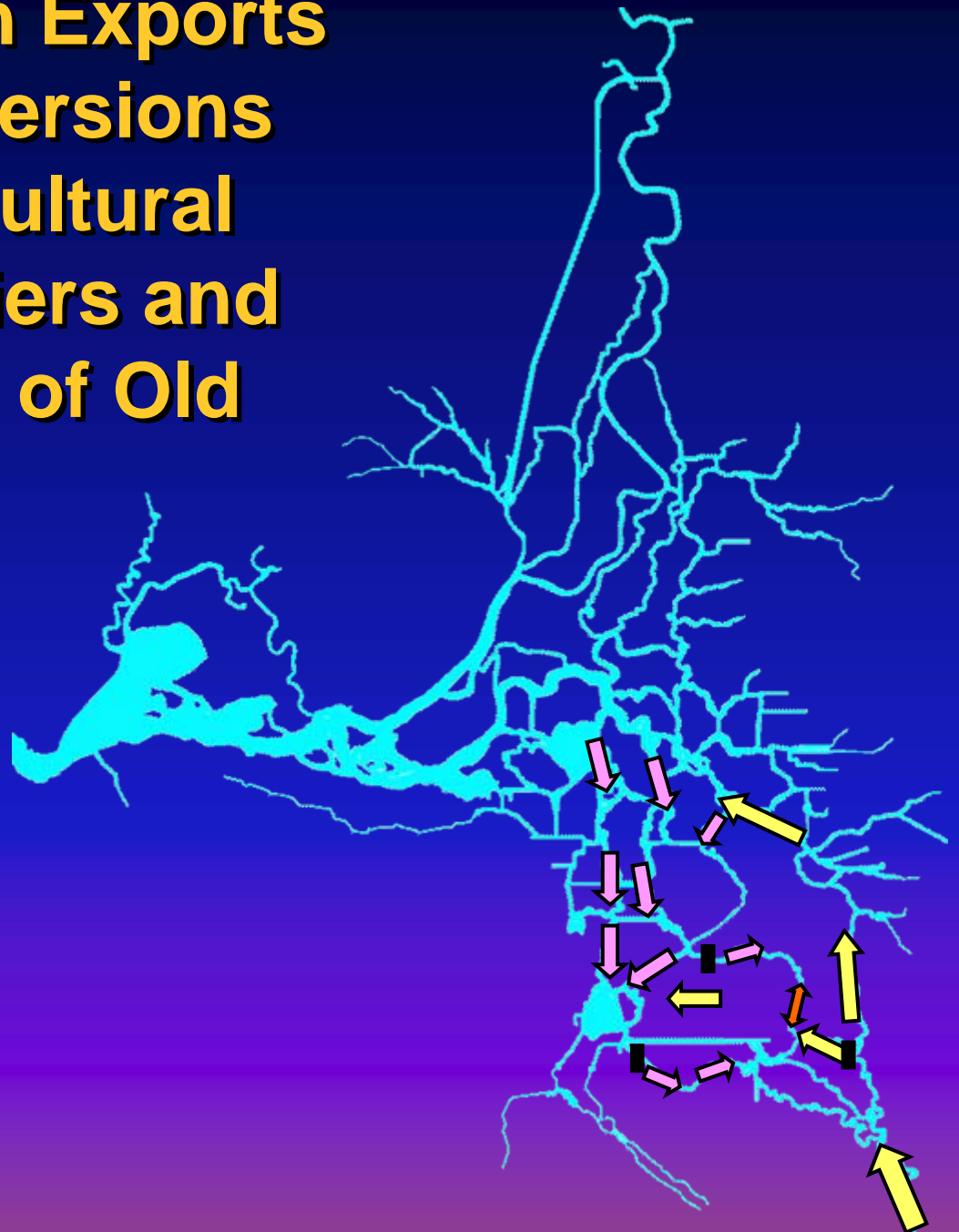
# Flow Pattern With Exports and In Delta Diversions (no temporary barriers)

Influence of Sacramento  
River downstream of  
objective locations

Exports downstream  
of objective locations



**Flow Pattern With Exports  
and In Delta Diversions  
(with two agricultural  
temporary barriers and  
barrier at Head of Old  
River)**



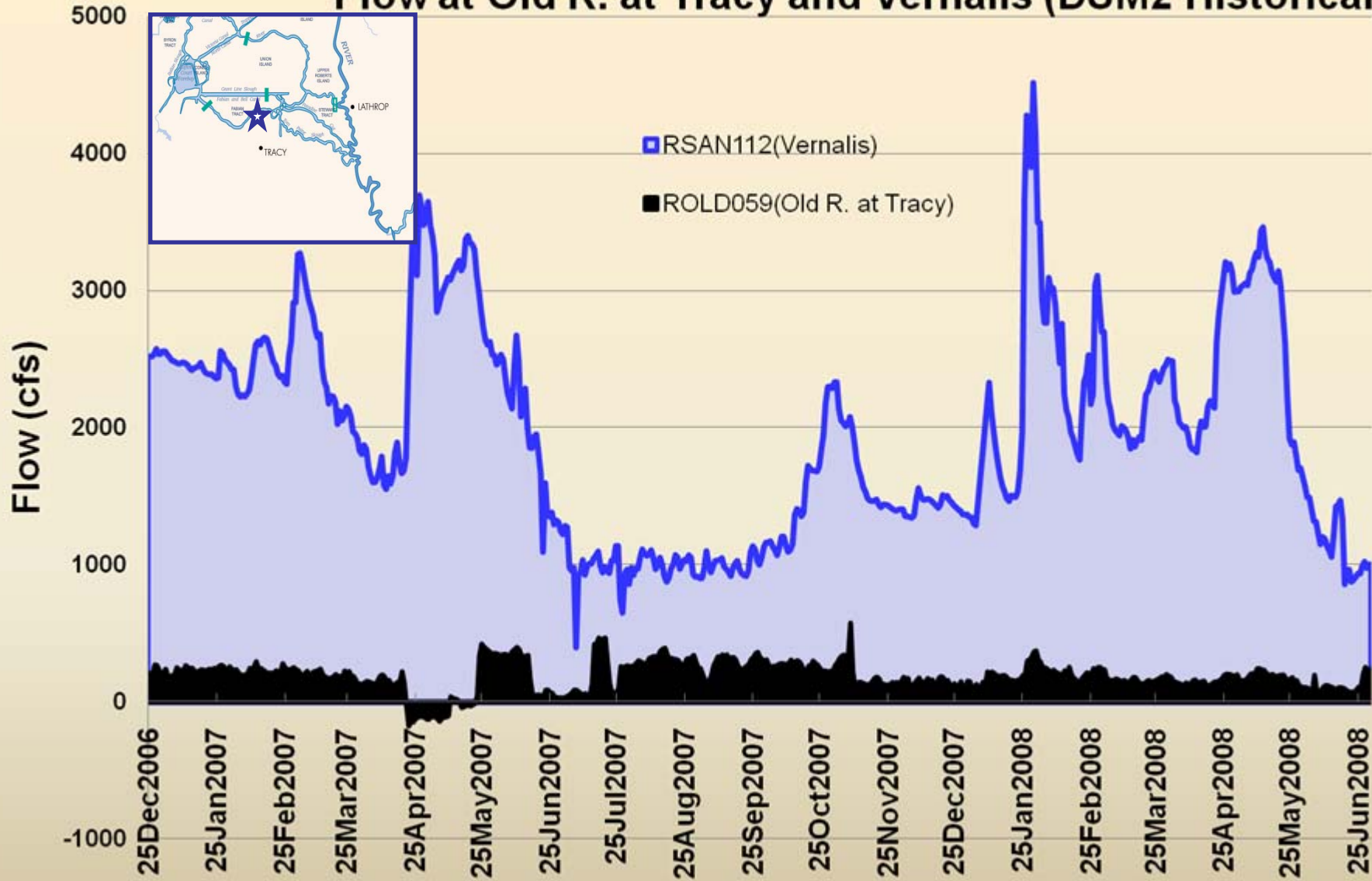


# Flow Pattern With Exports and In Delta Diversions (with three agricultural temporary barriers)

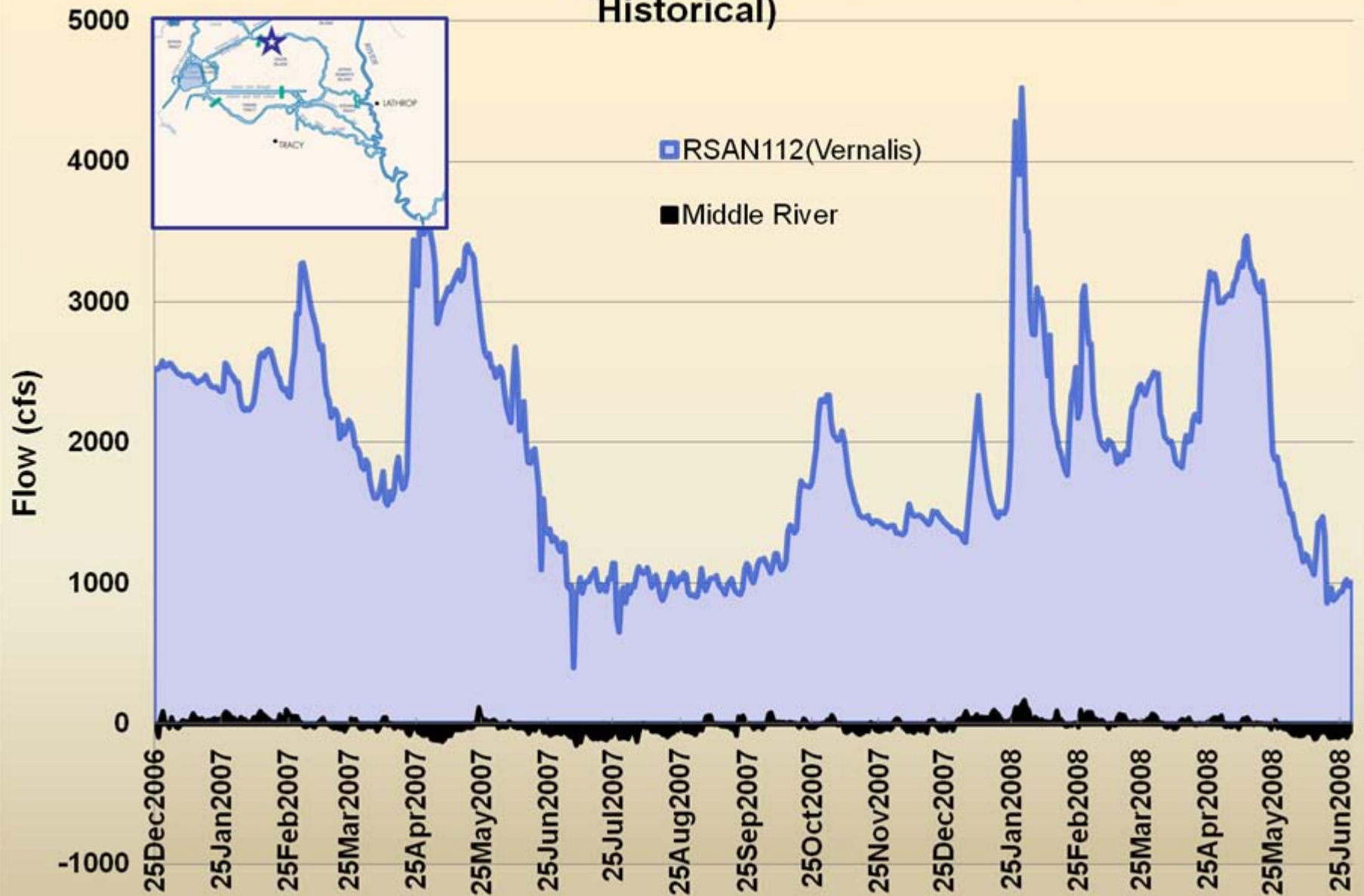


# PTM Animation Generated Hydrology

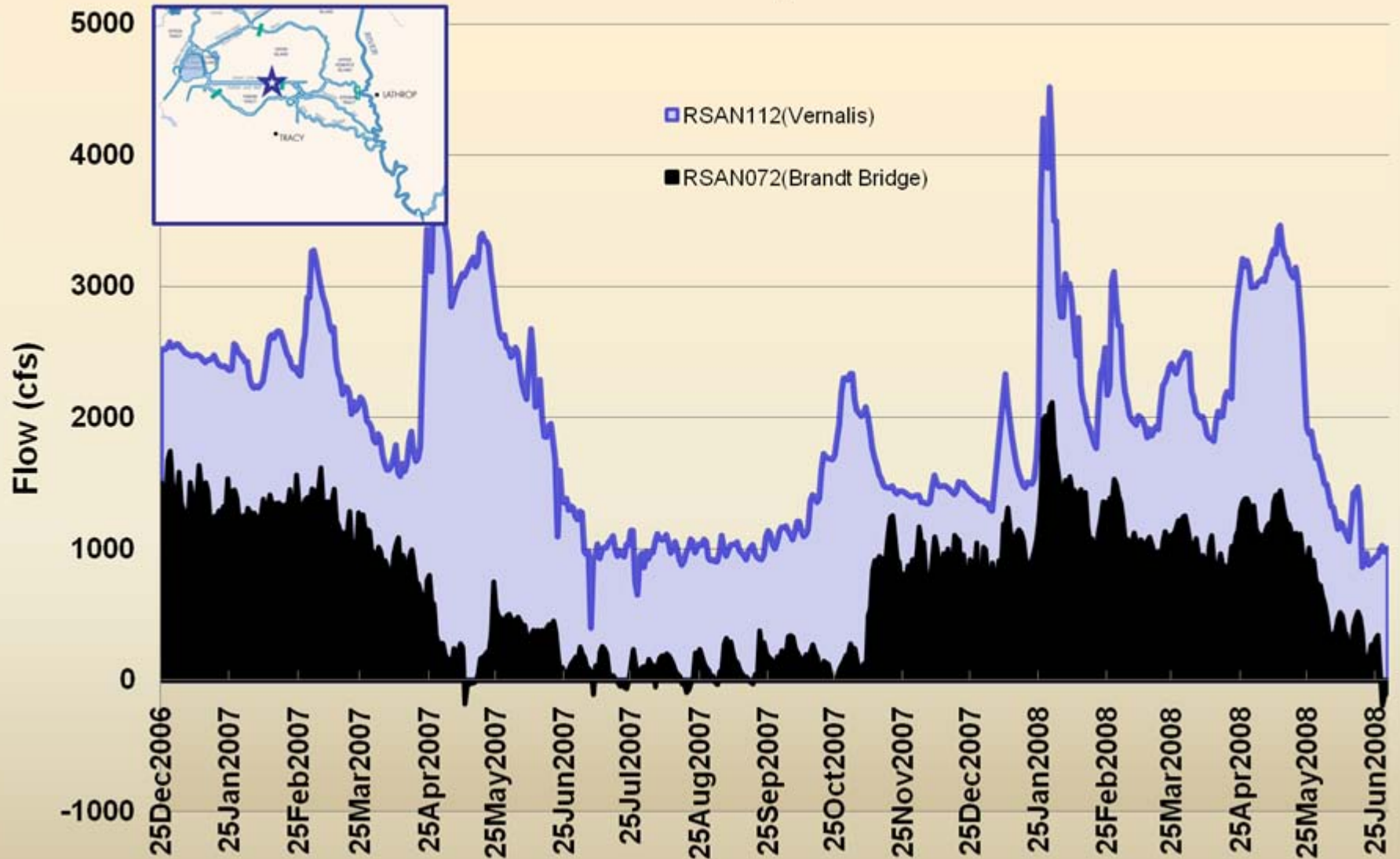
# Flow at Old R. at Tracy and Vernalis (DSM2 Historical)



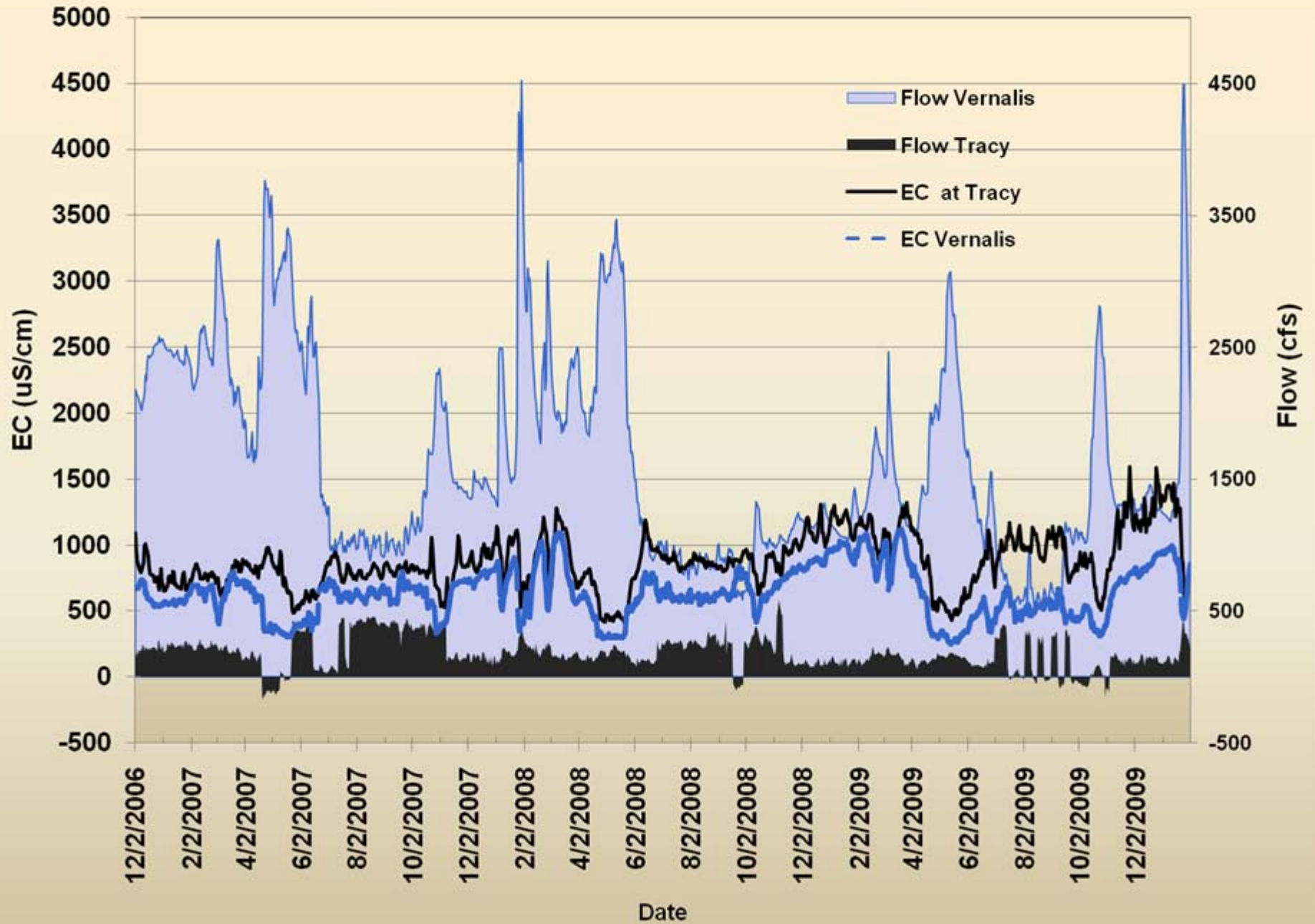
# Flow in Middle River (East of Barrier) and Vernalis (DSM2 Historical)



# Flow in Grant Line Canal (West of Barrier) and Vernalis (DSM2 Historical)



Thirty Day Running Average Flow and EC -  
San Joaquin River at Vernalis and Old River at Tracy



# Sources of Salinity in South Delta

(DWR Report, B. Montoya – May 2007)

- Approximately 74 discharge sites along waterways from Vernalis to export sites via Old River and Grant Line Canal
- Agricultural return Salinity ranges from 350 to 4,500  $\mu\text{S}/\text{cm}$  with 1496  $\mu\text{S}/\text{cm}$  average
- Point Sources of Salinity (municipal) – between 1,099 and 1753  $\mu\text{S}/\text{cm}$ .
- Groundwater – between 2,100 and 2,600  $\mu\text{S}/\text{cm}$

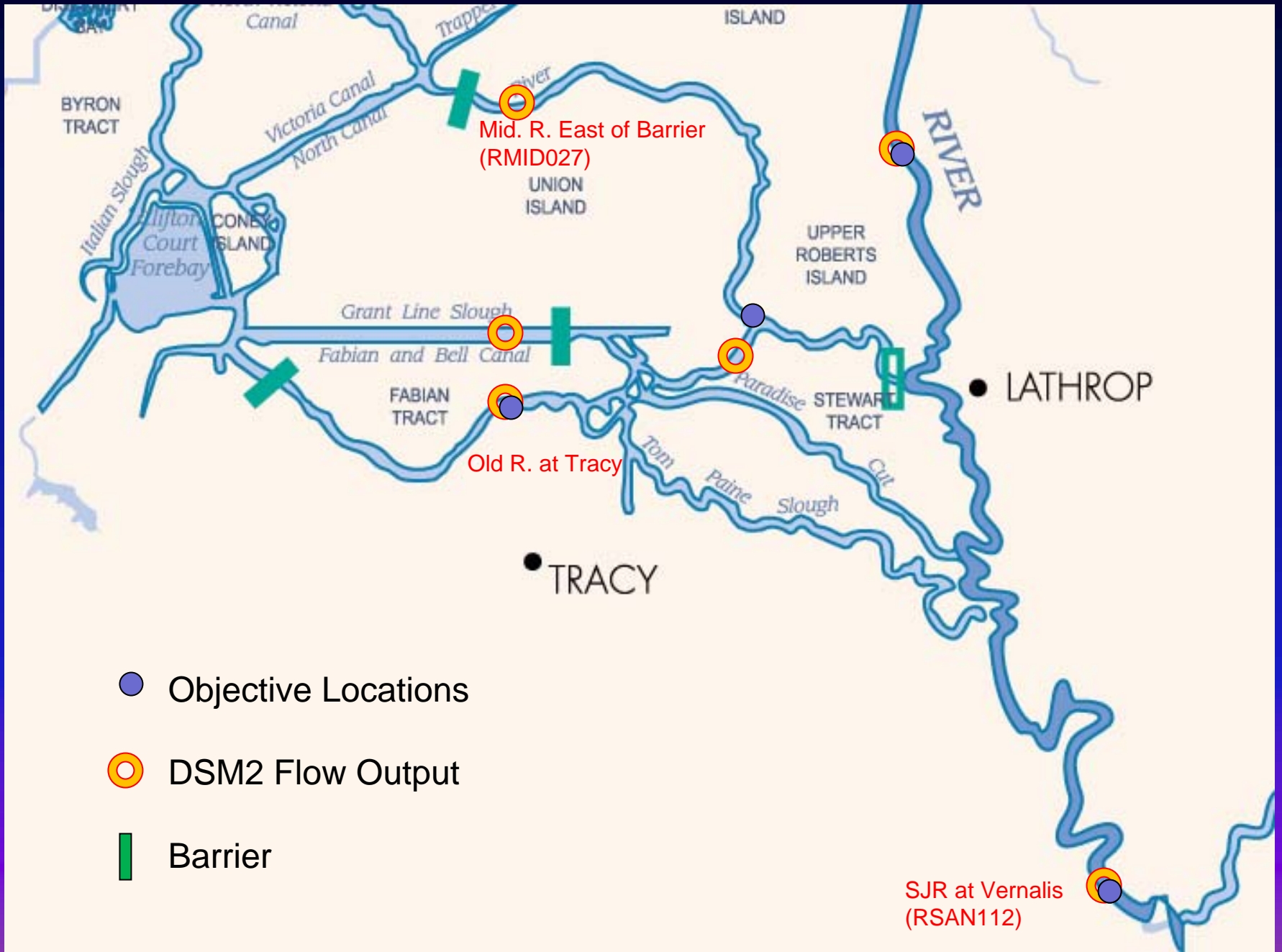
# Acknowledgements

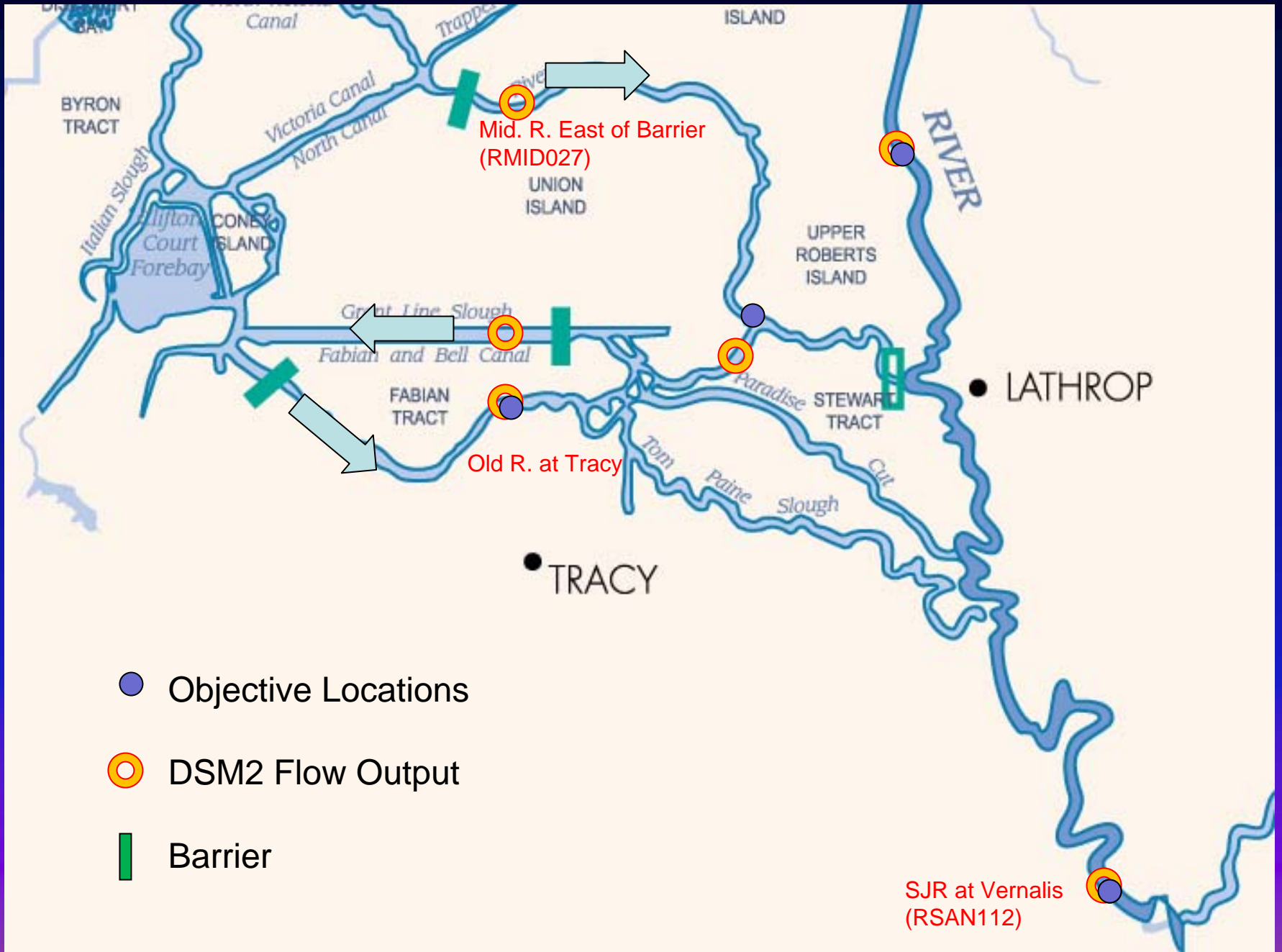
- Barry Montoya
- Myint Thein
- Lan Liang
- Min Yu
- Bob Suits
- Parviz Nader-Tehrani
- Bijaya Shrestha



# Extra Slides







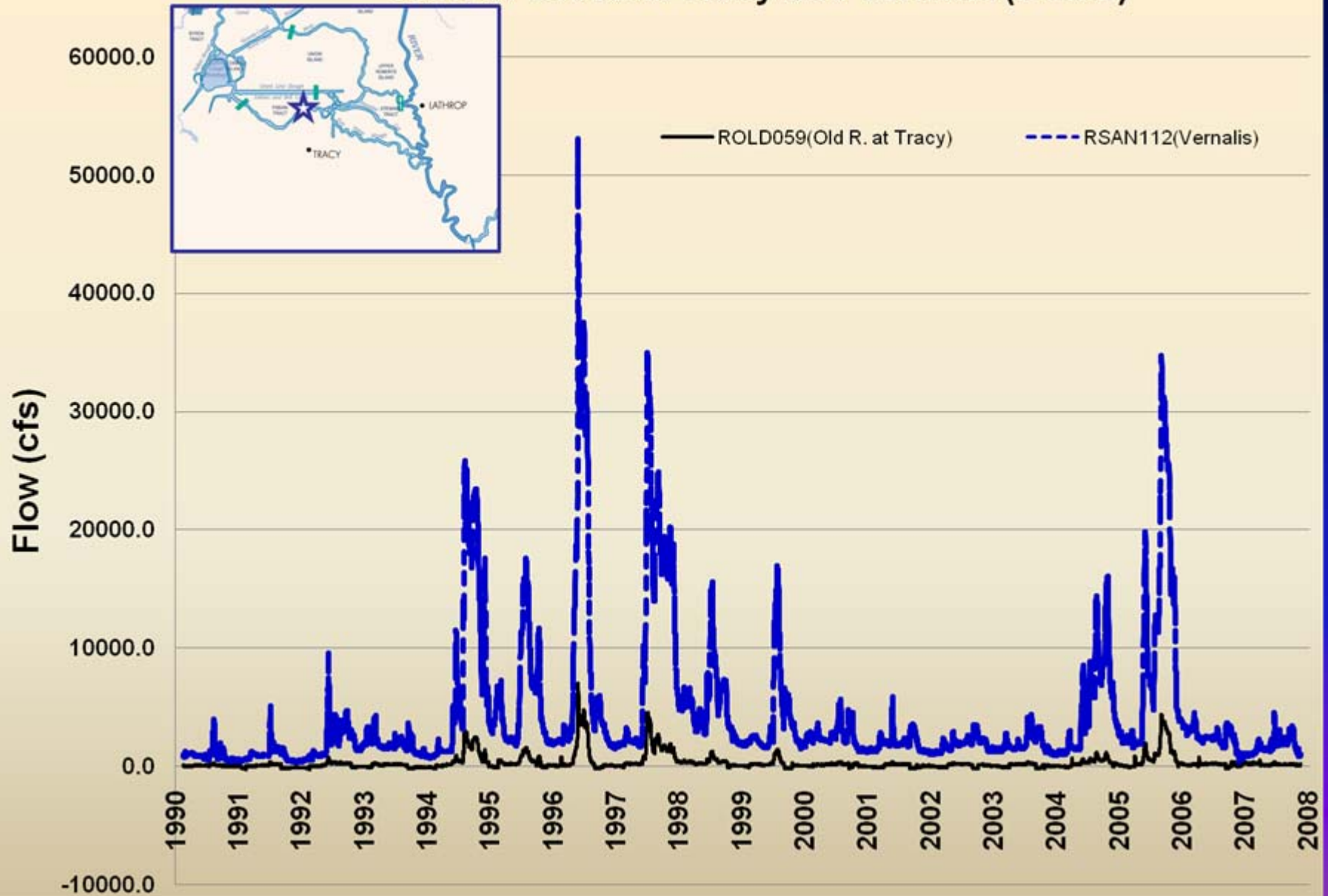
● Objective Locations

○ DSM2 Flow Output

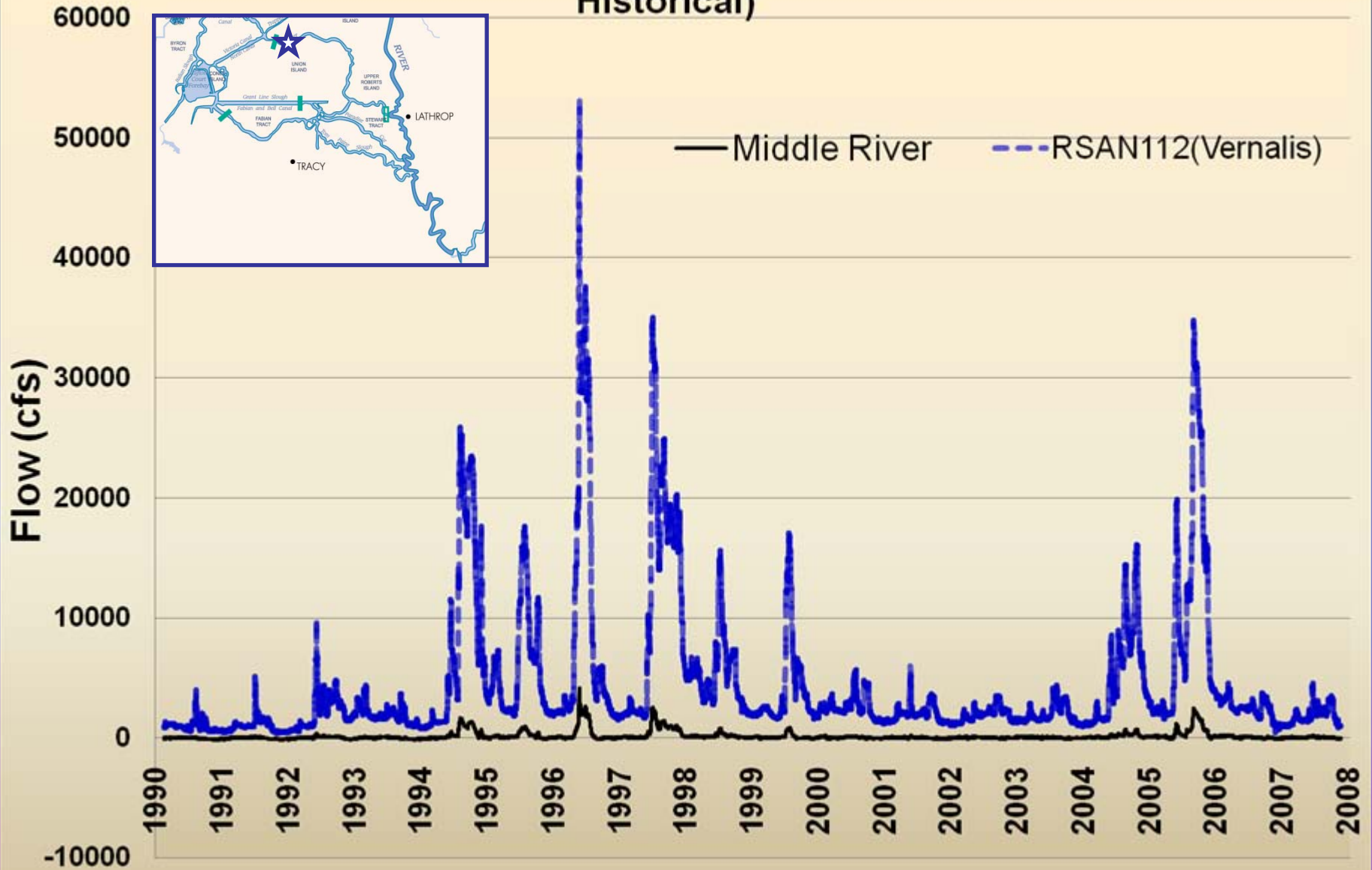
█ Barrier

SJR at Vernalis  
(RSAN112)

# Flow at Old R. at Tracy and Vernalis (DSM2)



# Flow in Middle River (East of Barrier) and Vernalis (DSM2 Historical)



# Flow in Grant Line Canal (West of Barrier) and Vernalis (DSM2 Historical)

