

Sites Project Water Quality Group Discussion

April 7, 2021



Agenda

1. Introductions
2. Group Norms
3. Preferred Project
4. Approach to Analysis
 - a. Qualitative
 - b. Quantitative
5. Source Water
 - a. Operations
 - b. Data Sources
 - c. Example Data
6. Schedule and Future Meeting Topics
7. Action Items and Next Steps

Group Norms

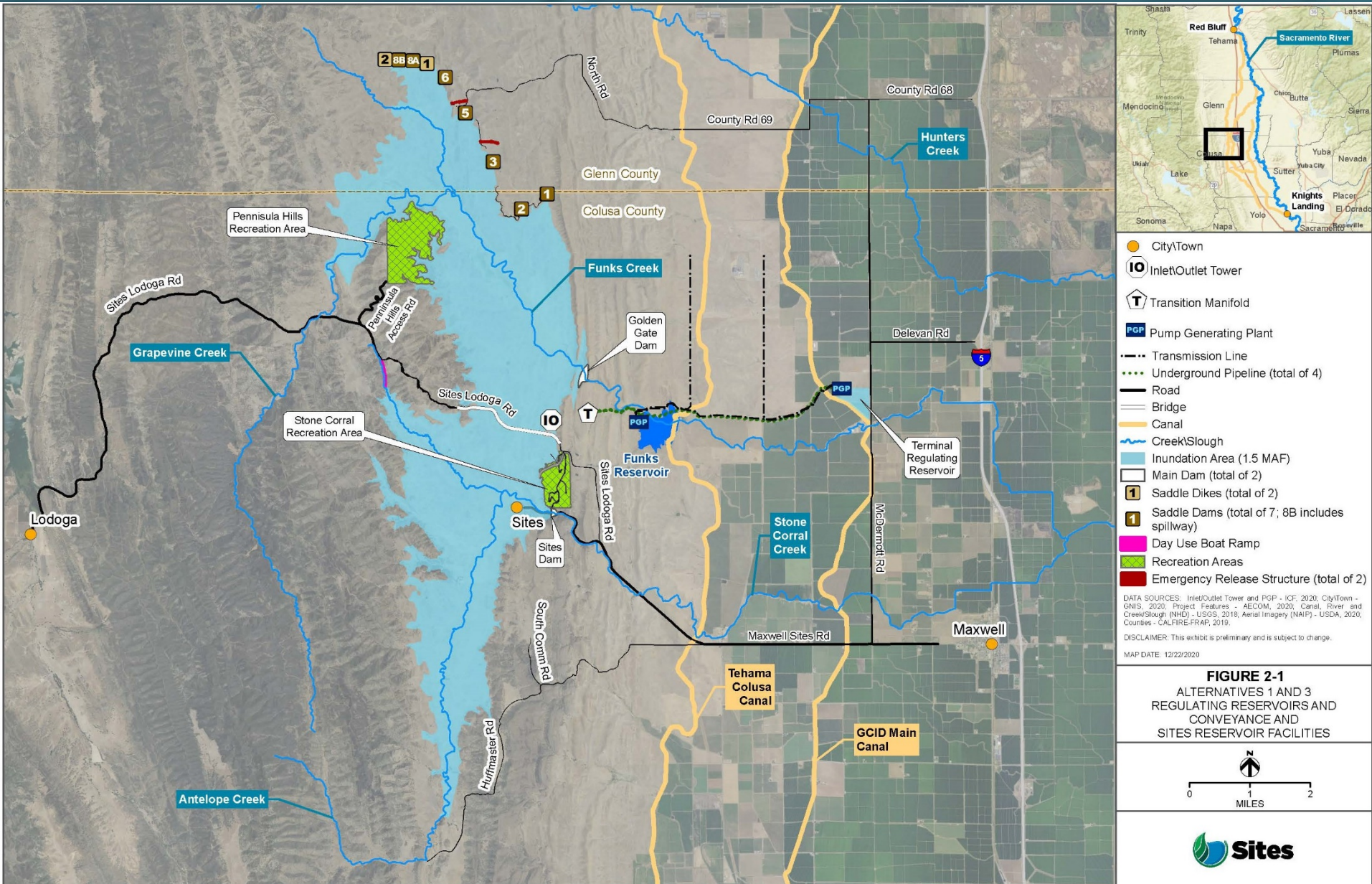
- Encourage everyone to be on video
- Mute yourself when others are speaking
- Respectful, professional dialogue
- Ask questions throughout, lets have a dialogue
 - Let the speaker finish their point
 - Use the raise your hand function in Teams if needed
- Topics for next meeting will be discussed and recorded

Sites' Preferred Project

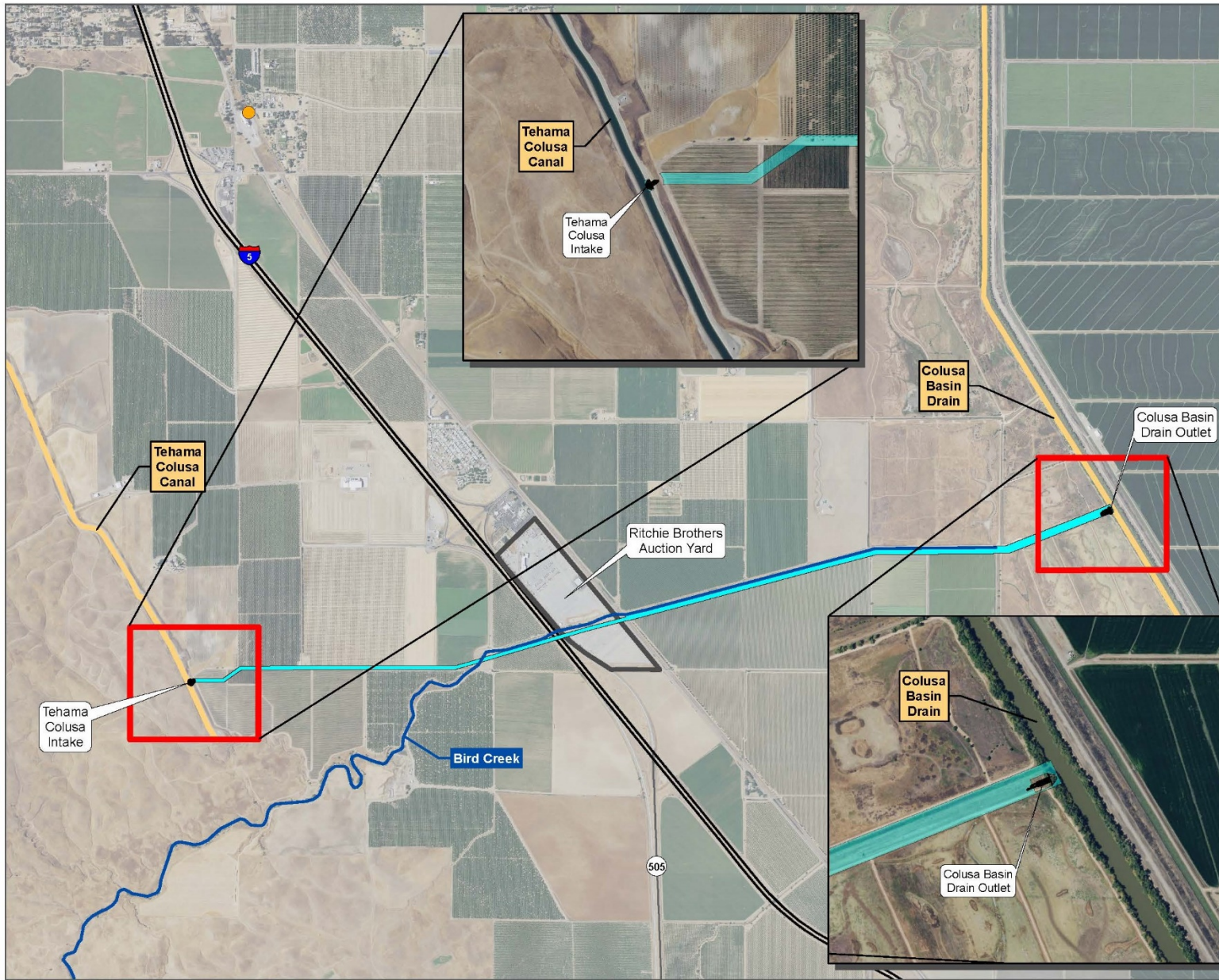
Major Revisions to Project

- Reservoir size reduced from 1.8 MAF to 1.5 MAF
- No Delevan diversion, pipeline or outfall
 - Utilize existing at Red Bluff and Hamilton City pumping plants
 - Releases to Tehama-Colusa Canal to the Colusa Basin Drain
 - New 1,000 cfs pipeline and release near Dunnigan
 - Alternative 2: a new 1,000 cfs outfall near Tyndall Landing
- Max diversion rate reduced from 5,900 cfs to 3,900 cfs
- Releases reduced from 1,500 cfs to 1,000 cfs

Alt 1 – Preferred Project



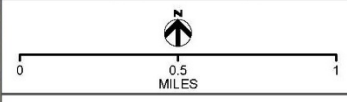
Alt 1 – Preferred Project



- LEGEND**
- City/Town
 - Bird Creek
 - Dunnigan Underground Pipeline

DATA SOURCES: City/Town - GNS, 2020; Project Features - AECOM, 2020; Canals (NHD) - USGS, 2018; Aerial Imagery (NAIP) - USDA, 2020.
 DISCLAIMER: This exhibit is preliminary and is subject to change.
 MAP DATE: 12/22/2020

FIGURE 2-2
 ALTERNATIVE 1 AND 3
 CONVEYANCE TO SACRAMENTO
 RIVER COMPONENTS



Approach to Analysis

Method Analysis Overview

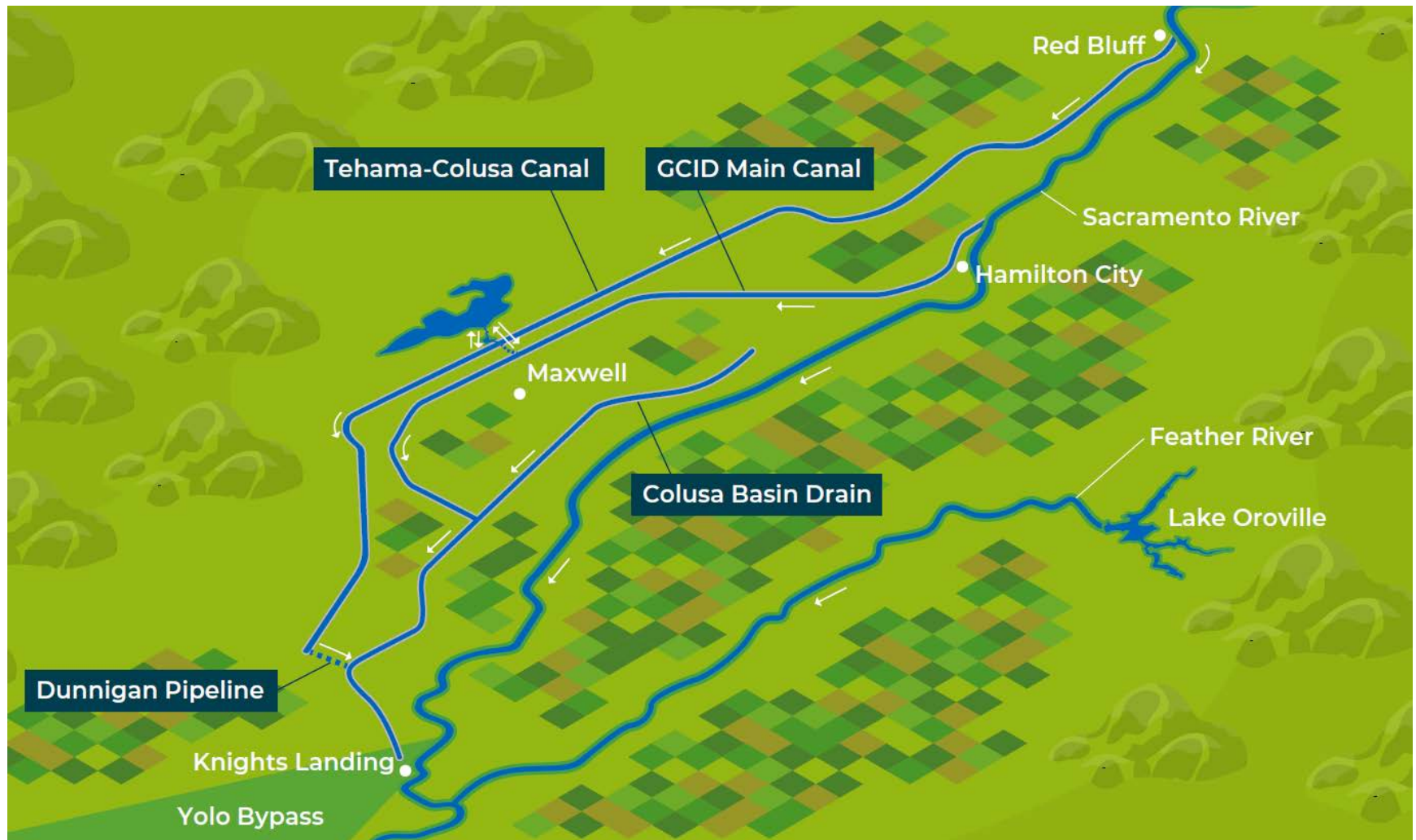
Mechanisms by which Sites Reservoir Operations Could Affect Water Quality	Main Constituents Considered	Qualitative	Quantitative	Model Results Considered
Temporal Shift	Metals Pesticides Salinity	X	X	CalSim
Evapoconcentration	Metals Salinity		X	CalSim
In-Reservoir Processes	Mercury HABs Nutrients/OC/DO Temperature	X	X	Reservoir temperature modeling (CE QUAL W2)
Change in System Reservoir Operations	Temperature HABs Mercury	X	X	CalSim, HEC5Q and Reclamation temperature model
Change in Delta Operations	Salinity Chloride	X	X	CalSim and DSM2 QUAL
Redirection of CBD Flow to Yolo Bypass	Pesticides Nutrients/OC/DO HABs Mercury Temperature	X	X	CalSim

Quantitative Models

- CalSim II used for overall operations
 - Hydrological planning tool used to represent state-wide changes that would result from Sites
 - Monthly timestep
 - Results inform water quality models
 - Comparative analysis of results
- Water quality models
 - Reservoir Temperature: CE QUAL W2
 - River Temperature: HEC5Q, Reclamation Temperature Model
 - Delta salinity: DSM2 QUAL

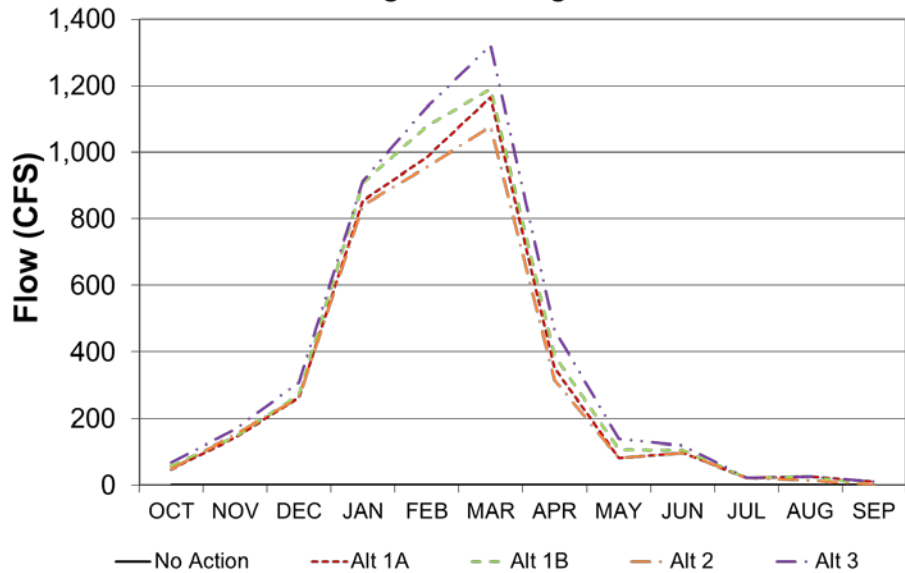
Source Water

Project Water Operations

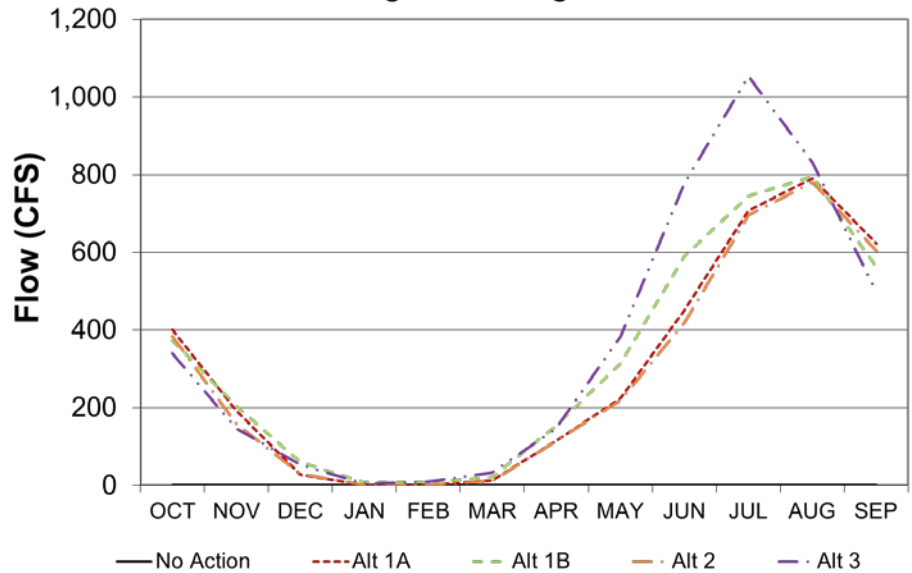


Diversions and Releases

Total Sites Diversion to Fill
Long-term Averages



Total Sites Release
Long-term Averages



Main Data Sources

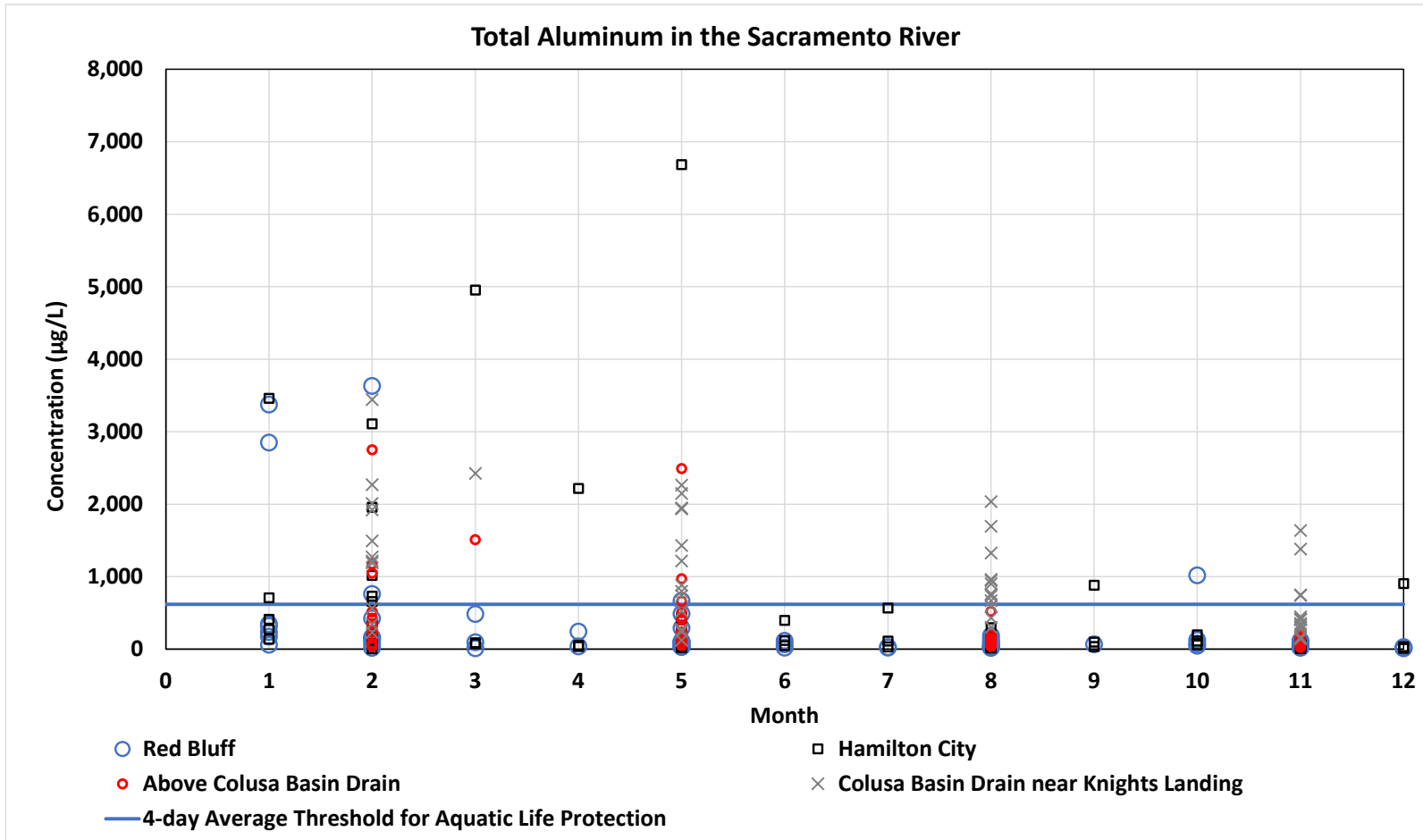
Constituent Group	Data Source	Location
Metals Electrical Conductivity Nutrients	DWR Water Data Library (WDL)	Sacramento River below Red Bluff Sacramento River at Hamilton City Sacramento River above CBD CBD near Knights Landing Stone Corral Creek near Sites
Flow	USGS WDL CA Data Exchange Center	Sacramento River at Keswick Sacramento River above Bend Bridge
Pesticides	CA Dept of Pesticide Regulation Surface Water Database (CDPR SURF)	Sacramento River near Hamilton City Sacramento River at Colusa CBD above Knights Landing Yolo Bypass Toe Drain near Babel Slough

Average Metal/Metalloid Concentrations

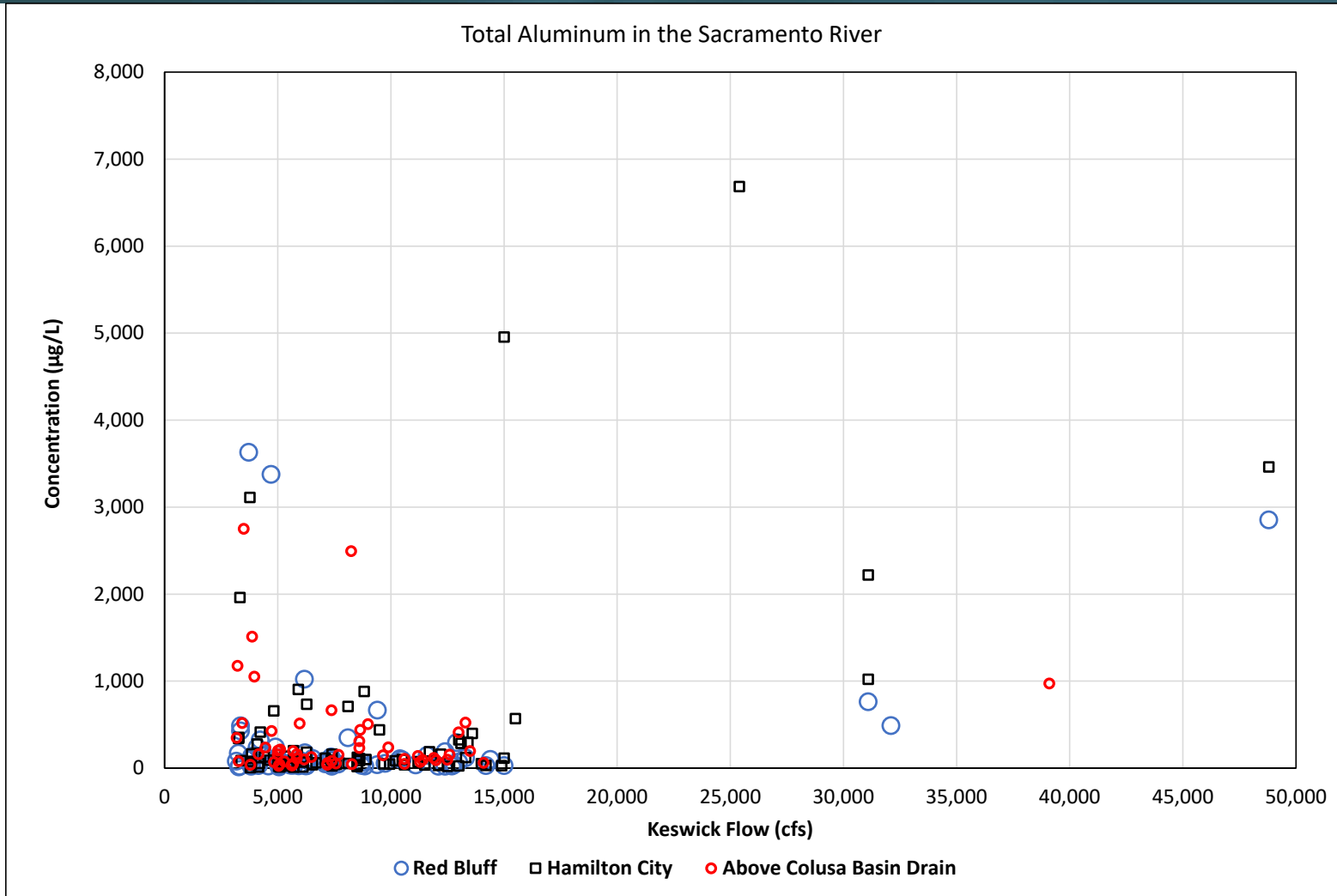
- Units are in micrograms per liter
- No available data for Funks Creek
- Source for Stone Corral Creek and Sacramento River = DWR Water Data Library. See Slide 14
- Source for groundwater is DWR NODOS study (2007)

Metal/Metalloid	Stone Corral Creek	Groundwater in Sites Reservoir Footprint	Sacramento River at Intake Locations
Dissolved Aluminum	149	3	94
Total Aluminum	562	12	359
Dissolved Arsenic	2.8	0.7	1.5
Total Arsenic	3.1	0.8	1.6
Dissolved Cadmium	0.05	0.02	0.04
Total Cadmium	0.06	0.05	0.04
Dissolved Chromium	2.9	2.6	0.7
Total Chromium	4.0	3.3	1.4
Dissolved Copper	2.8	2.7	1.3
Total Copper	3.9	3.4	2.3
Dissolved Iron	123	7	67
Total Iron	512	81	424
Dissolved Lead	0.08	0.12	0.03
Total Lead	0.31	0.27	0.20
Dissolved Manganese	12	18	2
Total Manganese	37	21	15
Dissolved Nickel	2.8	1.0	1.2
Total Nickel	4.0	1.3	2.2
Dissolved Selenium	6.1	4.6	1.2
Total Selenium	6.7	5.0	0.2
Dissolved Silver	0.03	0.00	0.01
Total Silver	0.05	0.01	0.03
Dissolved Zinc	1.4	112.5	0.9
Total Zinc	3.7	115.2	3.8

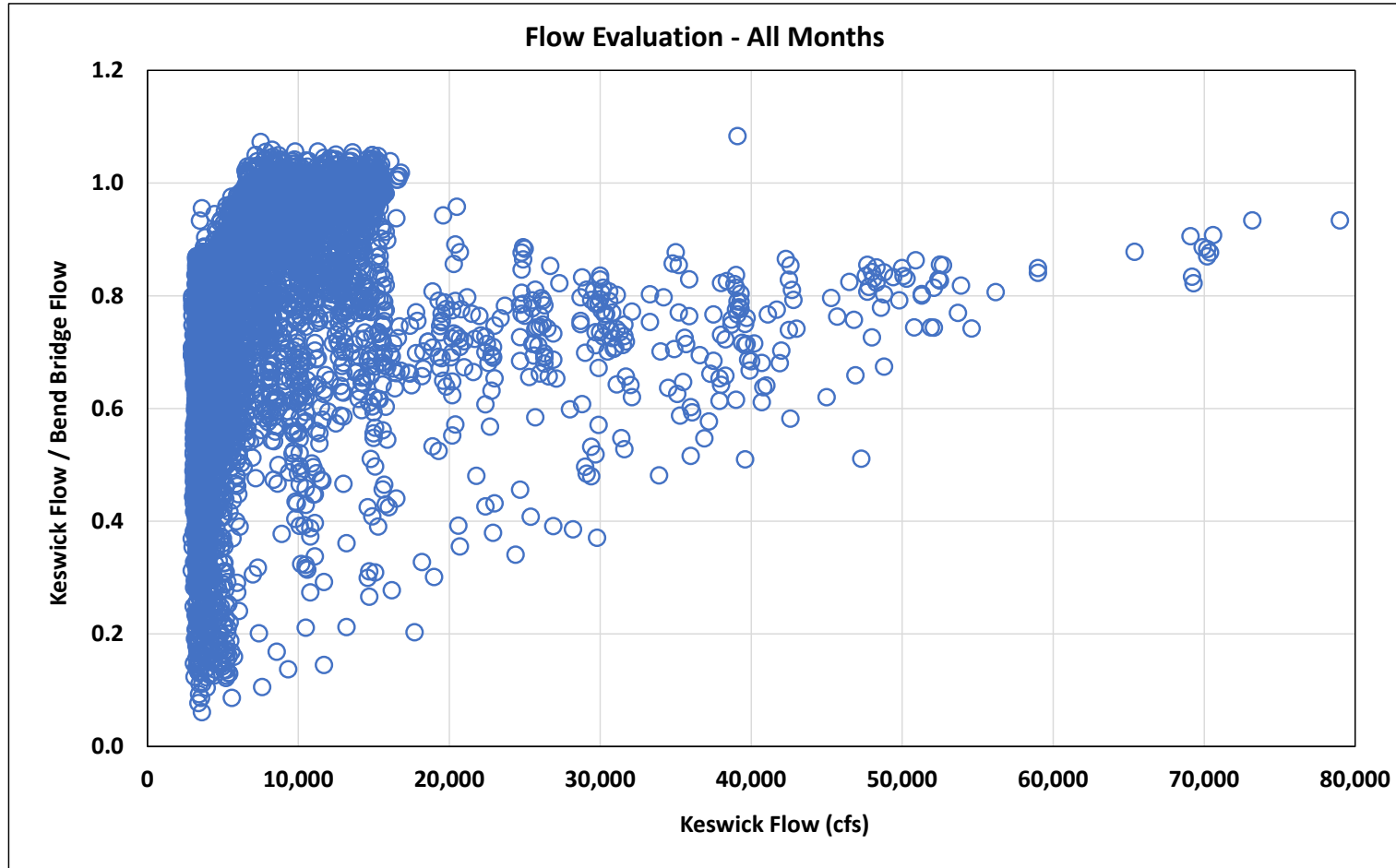
Metals – Aluminum Example



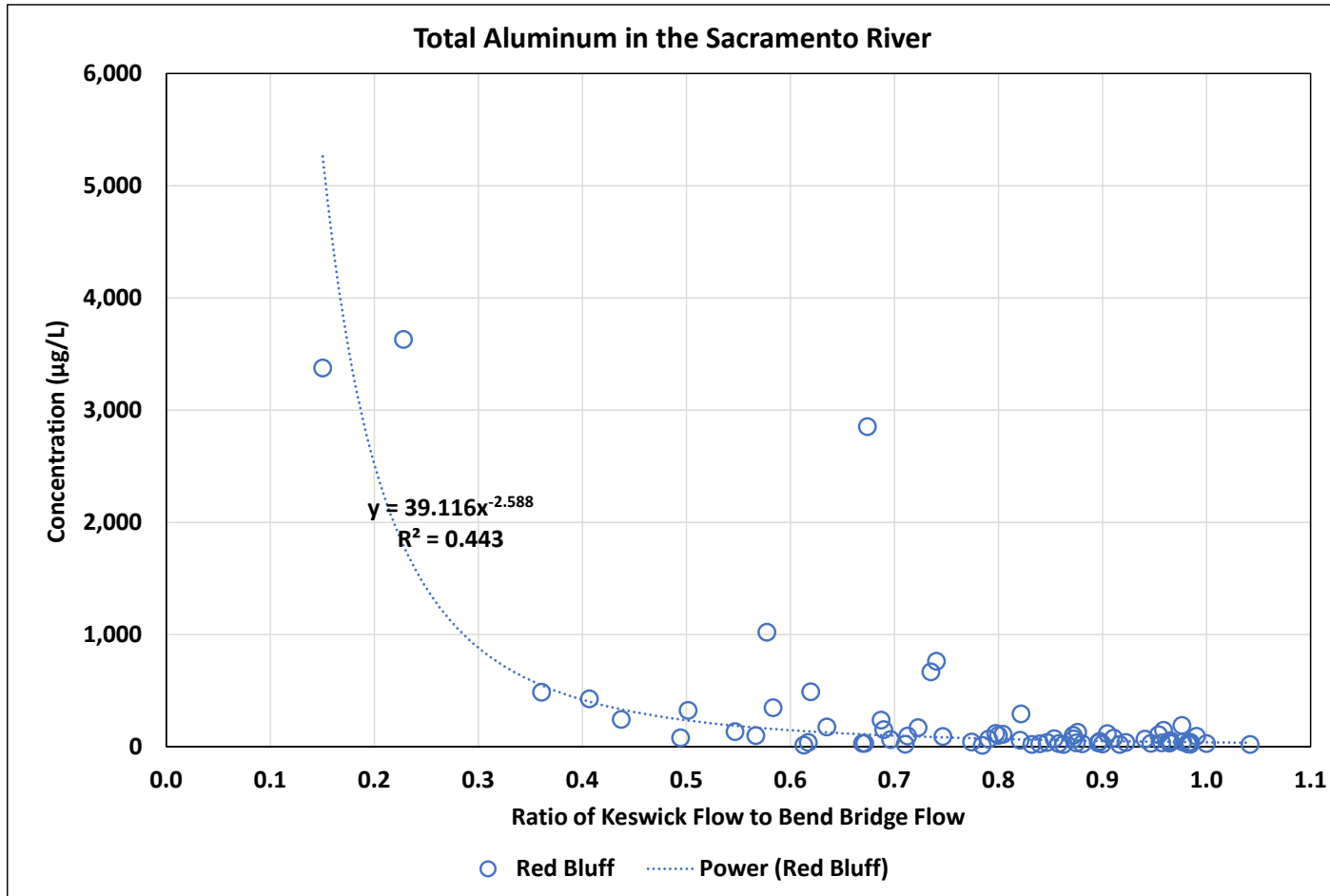
Compared to Flow



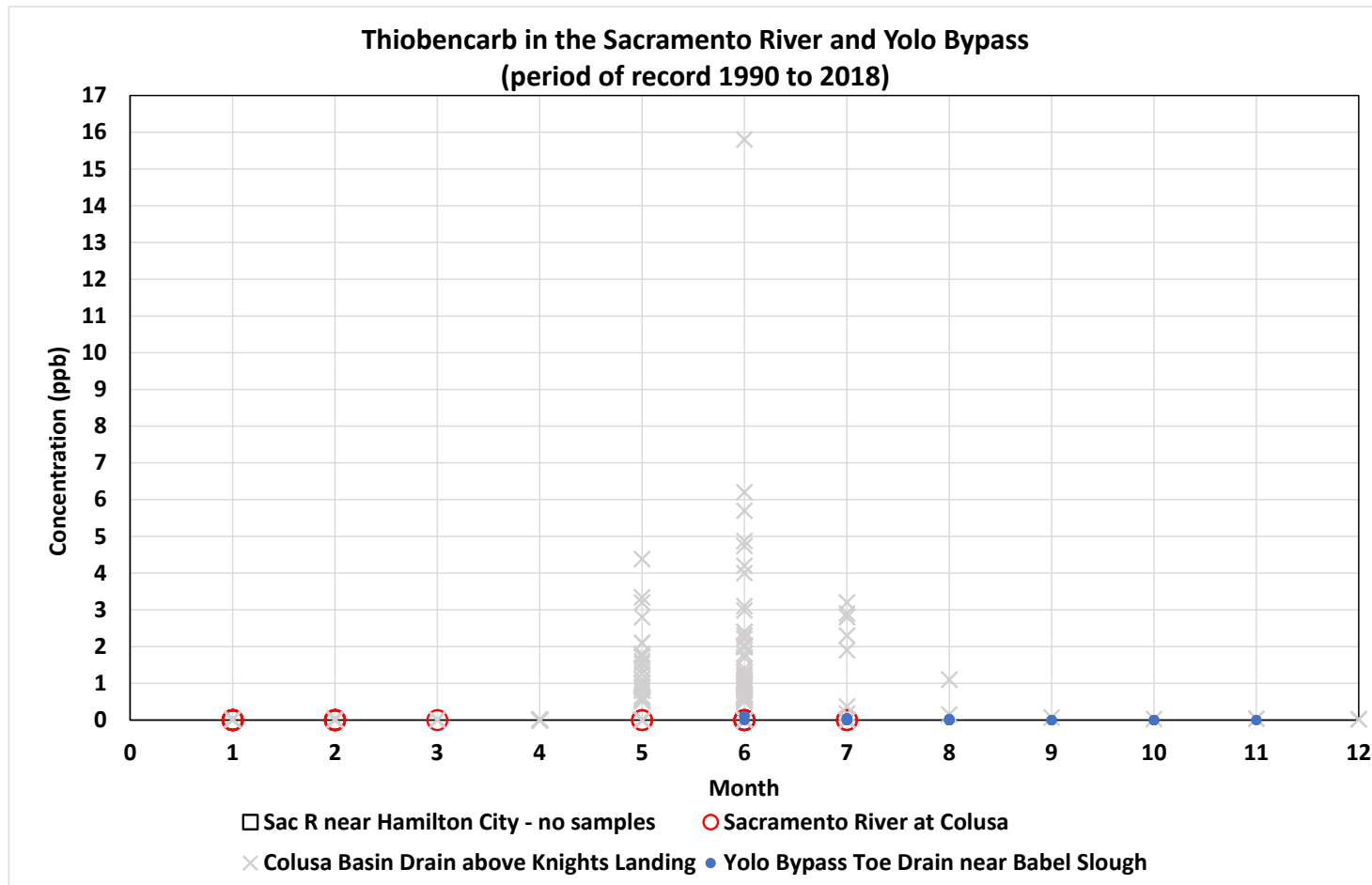
Sacramento River Indicator of Local Runoff vs Flow



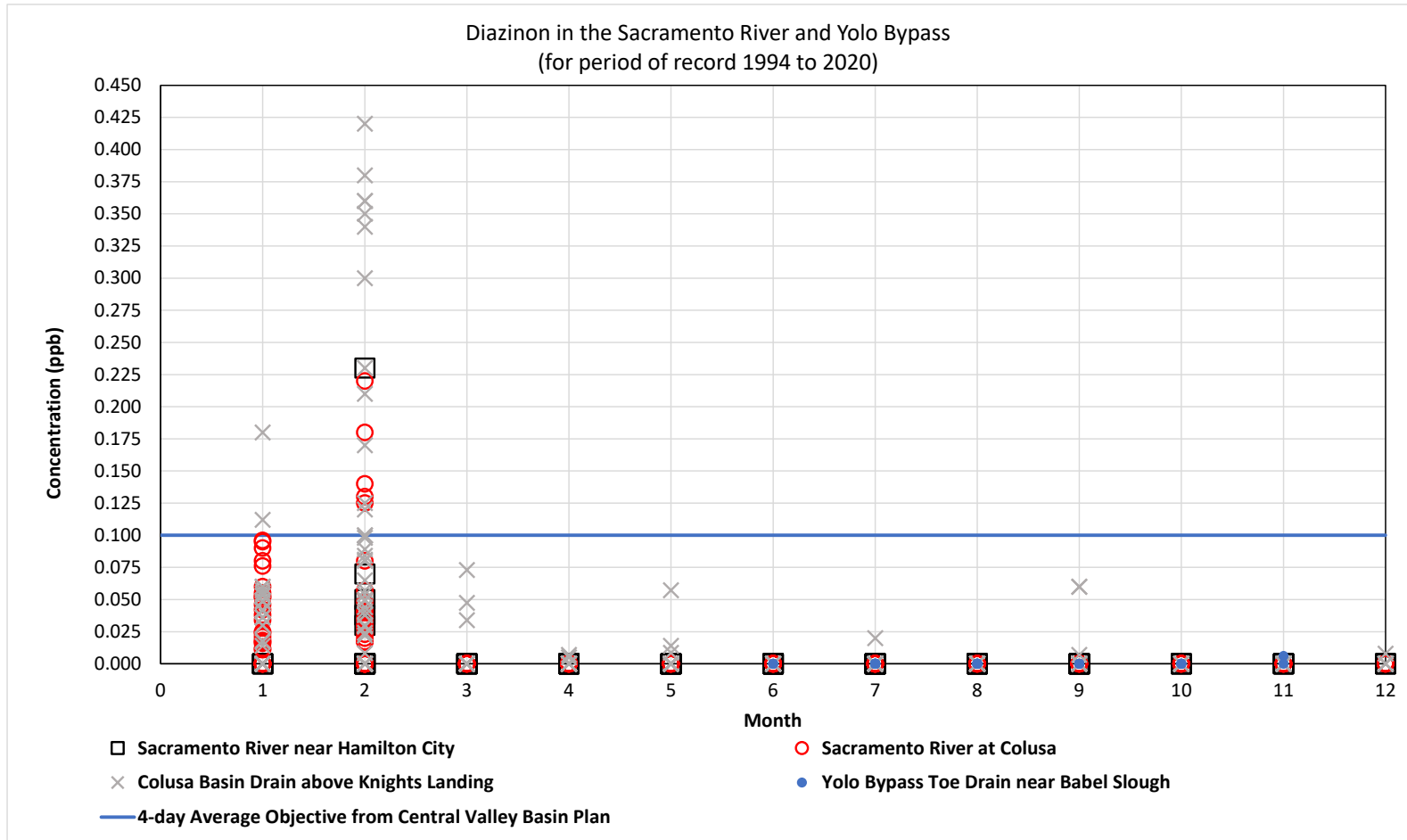
Example Quantitative Approach



Thiobencarb – typical pesticide pattern



Diazinon – atypical pesticide pattern



Schedule and Next Meeting

Schedule

- Summer 2021
 - Draft EIR and Supplemental EIS Released
- December 2021
 - Biological Assessment to Agencies
 - Submit State ITP Applications
- Spring 2022
 - Final EIR/Final EIS
- Spring 2023
 - All permits obtained
- Spring 2024 Construction Begins
- Topics for the next meeting?



Additional Topics from the Group

- Any additional questions or thoughts?
- Topics for the next meeting?



Action Items and Next Steps



Thank you!

