CALIFORNIA DEPARTMENT OF WATER RESOURCES

Monitoring Special Study

MSS Program Updates, March 20, 2023

Bill McLaughlin, P.E., Supervising Engineer

Agenda

1. Welcome & Logistics
2. General MSS Updates and Poll
3. Poll – Refresh Preferences on MSS Meeting Participation
4. Technical Presentations
   - High-Speed Salinity Transect Mapping
   - Salinity Point-Source and Ion Sampling
   - Modeling: SCHISM 3D and Water Quality Data Integration (Data Assimilation)
5. Closing & Next Steps

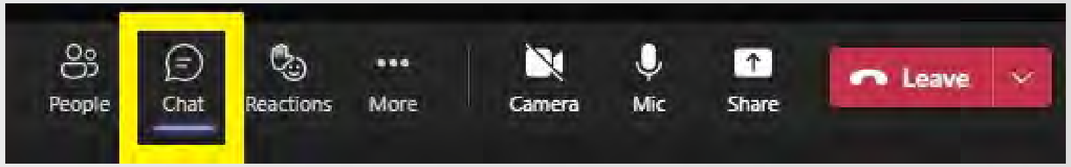
Ground Rules & Logistics

This meeting is focused on providing updates on the Draft MSS.

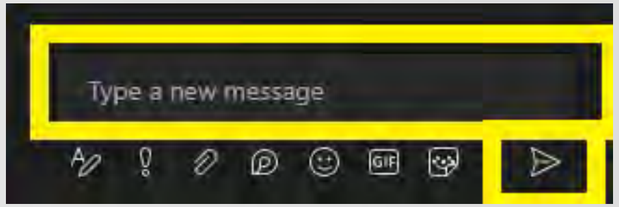
If you have a question or comment:

- Type it in the **Chat** box:

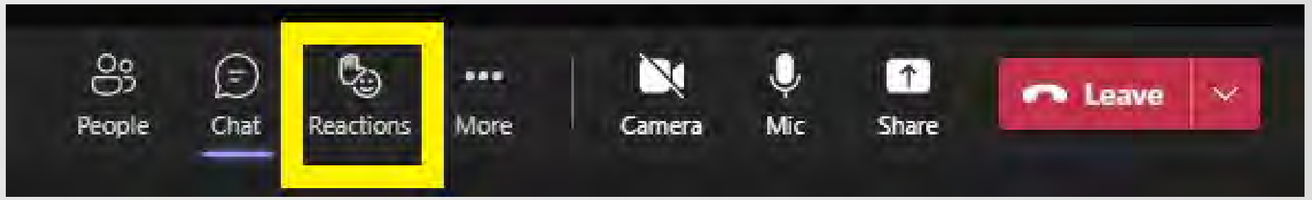
  1st, click "Chat" in the upper right of your screen



  2nd type in the chat box that opens on the right & hit "Send"



- OR, ‘Raise your hand’ to speak. Commenters will be called on in the order in which they ‘raise their hands’



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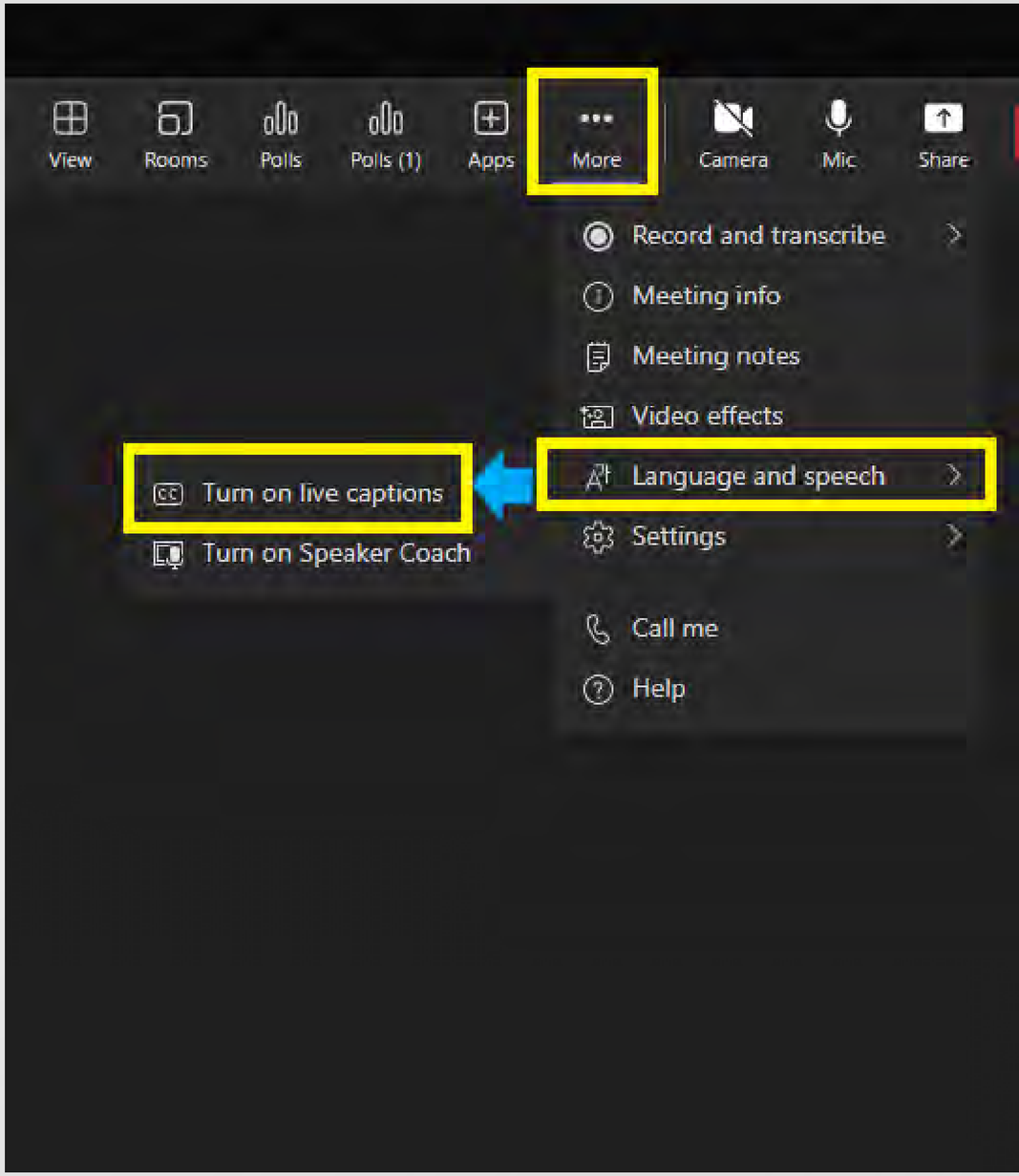
Accessibility

This meeting is being transcribed in real time with closed captions

To turn on closed captioning:

- Click on “More”
- Then click on “Turn on live captions”



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General MSS Updates

- New MSS Project Manager
- MSS Plan
  - Developed the MSS Plan in May 2022
  - Solicited feedback from SDWA, CCWD, and SWRCB in June 2022
  - Submitted the MSS Plan to SWRCB in September 2022
  - Waiting for SWRCB's approval on the MSS Plan
- Technical Workshops
  - SCHISM and Data Assimilation (December 2022)
  - High Speed Salinity Transect Mapping (September 2022)
- Modeling Assumptions Draft
  - Requesting external review of the Modeling Assumptions draft

QUESTIONS OR COMMENTS?

Raise your hand or type in the chat

State your name and affiliation

Poll

- Indicate your preference on what type of meeting you want to attend
- Your name will be recorded with your response
- A follow-up poll will be distributed to parties not in attendance today

High-Speed Salinity Transect Mapping

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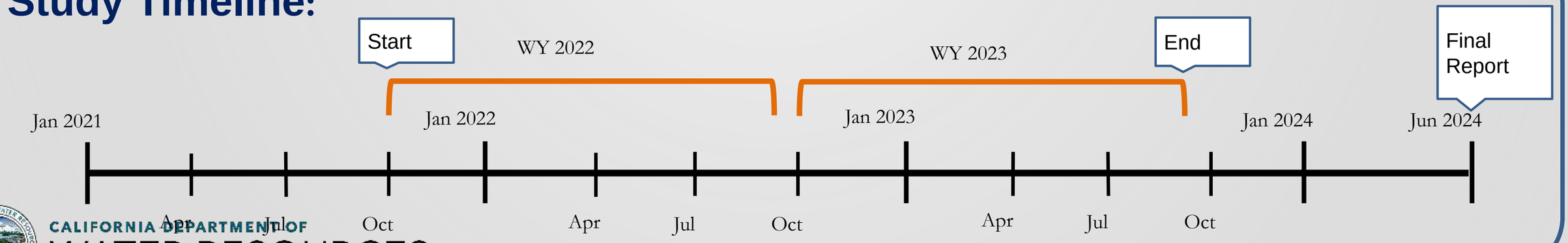
Collection Update

- 16 Transects Completed
- All Transects from WY 2022 are post-processed, QC'd, and available upon request
- 8 Additional Transects planned through WY 2023
- 8 Station Validations (Horizontal Profiles) Performed
- Additional Monitoring of Middle River

Date	Run
9/2/2021	San Joaquin & Upper Old River
9/29/2021	Confluence
10/26/2021	Confluence
11/16/2021	Confluence
1/27/2022	San Joaquin
3/2/2022	Fabian Tract
3/31/2022	Confluence (Upper Paradise) & Lower Old River
6/1/2022	Lower Old River
7/27/2022	Sugar Cut & Lower Old River
8/24/2022	Confluence & Grant Line Canal
10/26/2022	Lower Old River
10/27/2022	Grant Line Canal
11/03/2022	Confluence
12/15/2022	Lower Old River & Confluence
02/01/2023	Confluence
03/7/2023	Middle River

Study Timeline:



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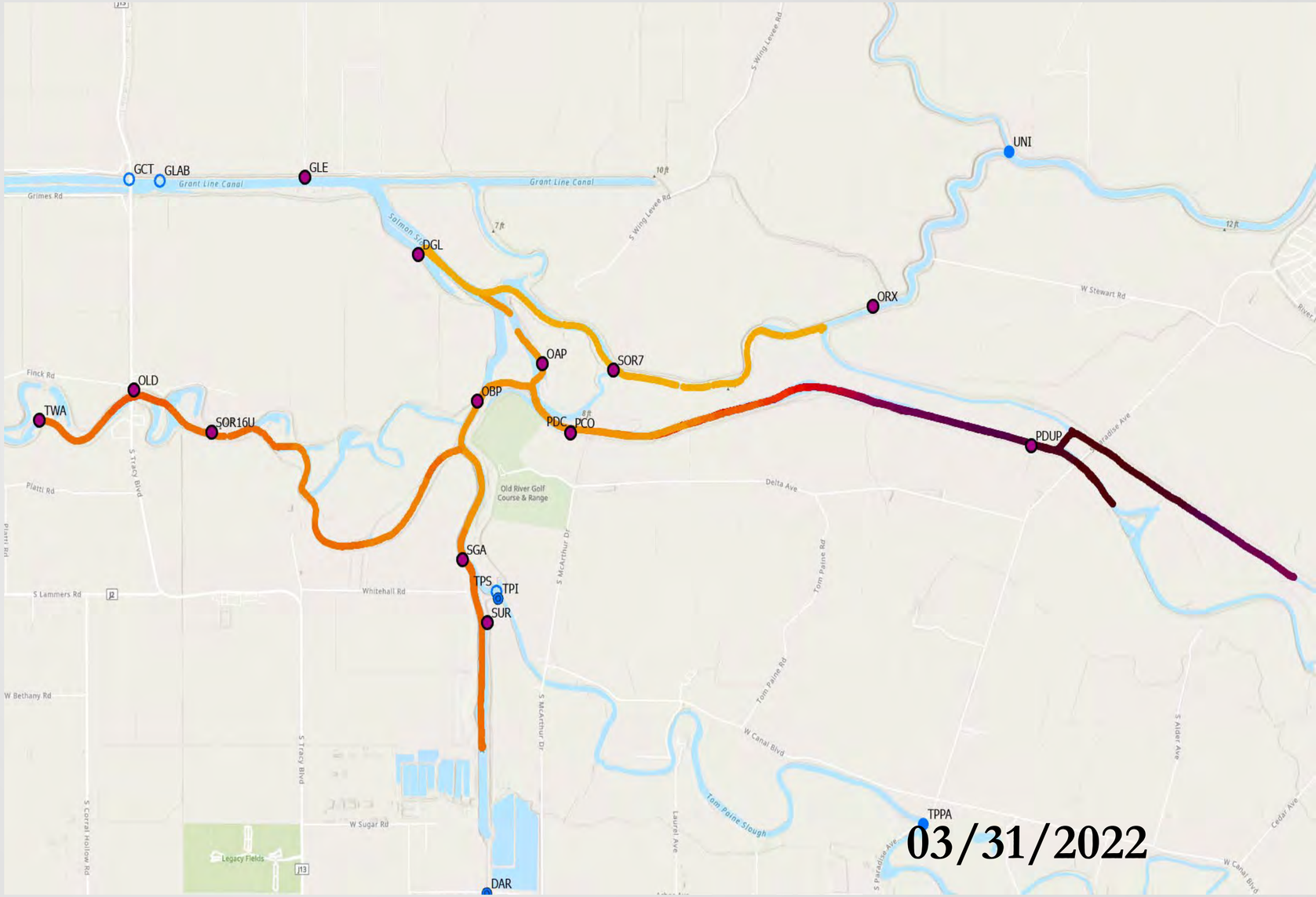
High-Speed Salinity Transect Mapping

Data Availability

- Transect data will be publicly available, in perpetuity, through the DWR GIS Atlas.
- WY 2022 is available upon request as a compressed file geodatabase, individual layer packages, or as tabular data in a CSV.
- Exploring the possibility of using the Environmental Data Initiative portal to disseminate all MSS data as one package.



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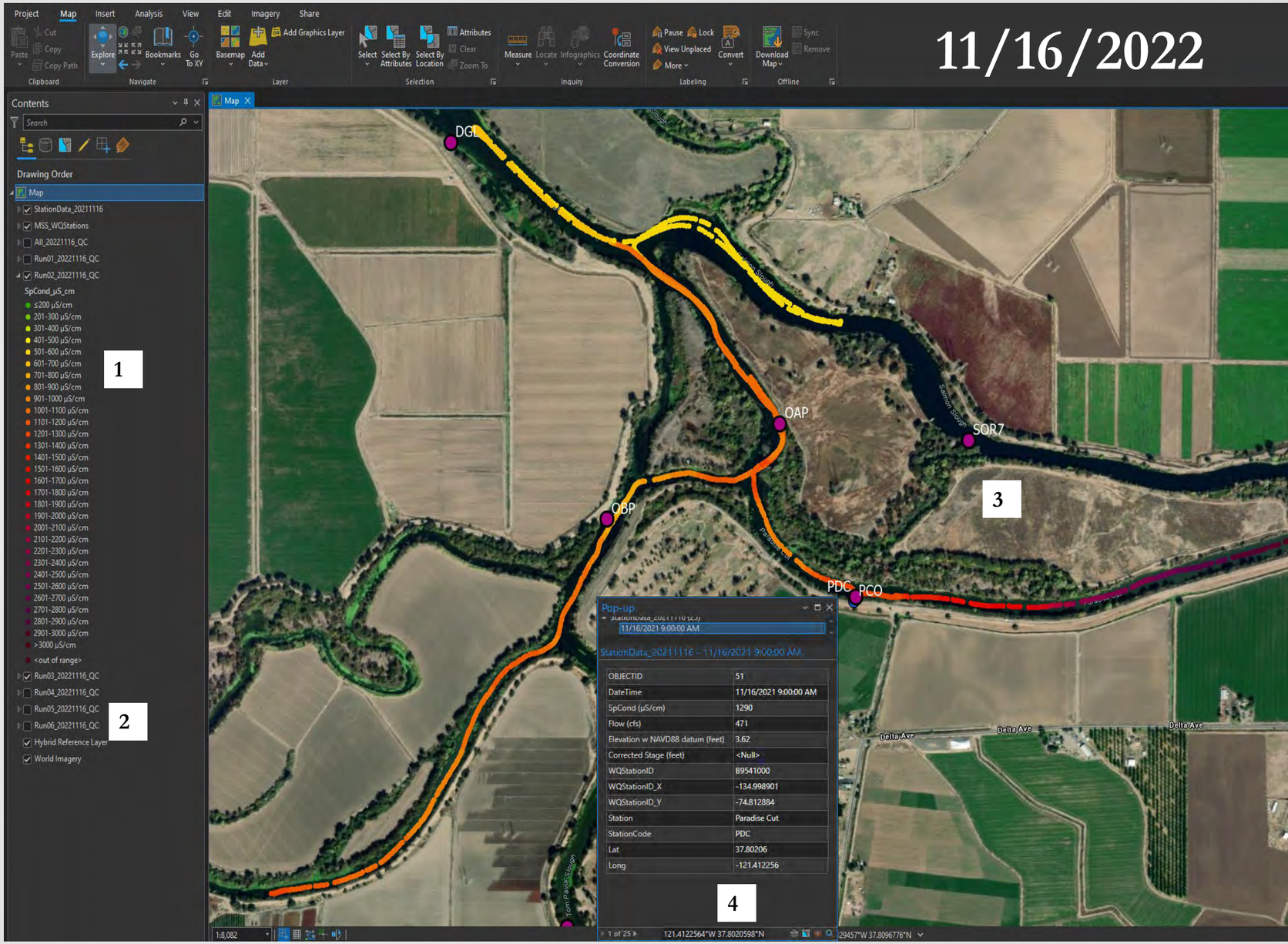
Contact: Patrick Scott – Patrick.Scott@water.ca.gov

High-Speed Salinity Transect Mapping

GIS Layer Packages For Visualization

1. Consistent Symbology across all runs
2. Divided into individual runs to avoid overlapping data points
3. Continuous Stations and their metadata included on individual layer
4. Corresponding Flow, Stage, and Conductivity data from continuous stations included



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QUESTIONS OR COMMENTS?

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State your name and affiliation

Salinity Point-Source and Ion Sampling

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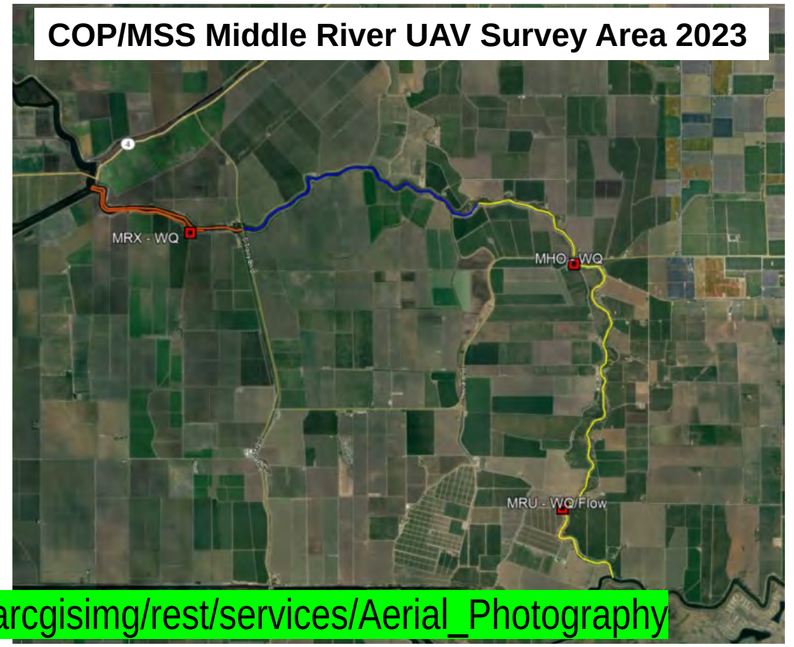
Salinity Point Source and Ion Sampling

Study Plan Updates:

1. ***Drone Imagery***
2. *Continuous EC Monitoring*
3. *Ion Sampling*
4. *Rhodamine Dye Tracer Monitoring*
5. *Pescadero Tract Circulation*



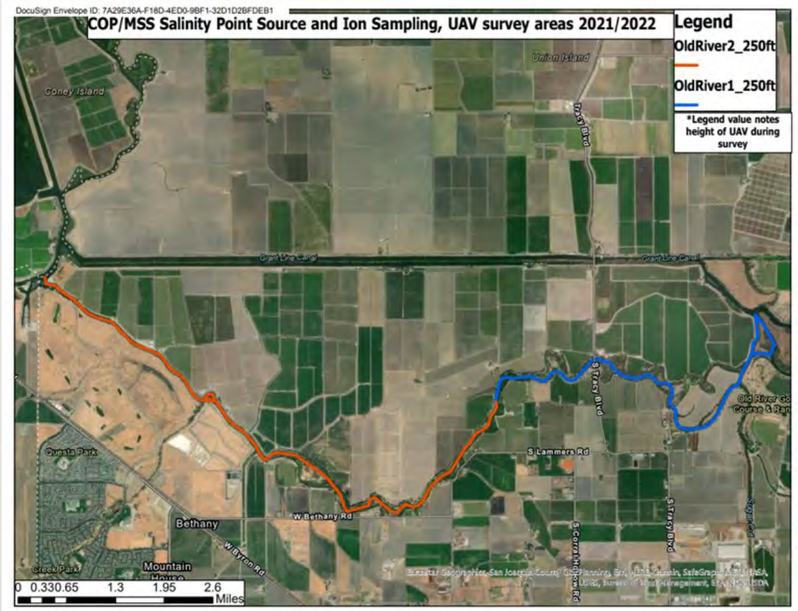
	Drone Flights	Location	Conditions
1	11/17/2021	Paradise Cut	Temporary Barrier, High Vegetation
2	11/22/2021	Upper Old River	
		Sugar Cut	
		Tom Paine Slough	
3	4/19/2022	Paradise Cut	Pre-Temporary Barrier, Low Vegetation
4	4/20/2022	Sugar Cut	
		Upper Old River	
5	5/5/2022	Lower Old River	

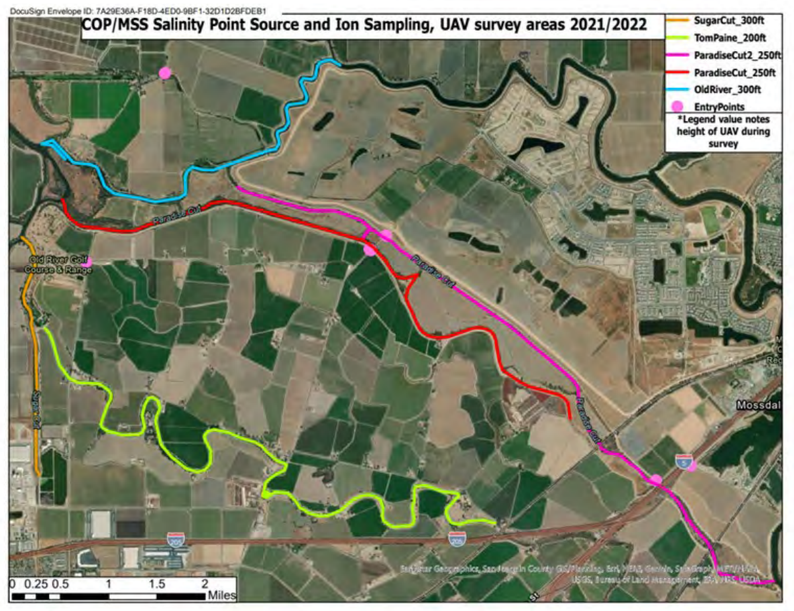
6	4/6/2022	Upper Paradise Cut Dye Study	Pre-Barrier
7	7/19/2022	Upper Paradise Cut Dye Study	Post-Barrier, Ag Season
8	8/30/2022	Lower Paradise Cut Dye Study	

9	3/8/2023	Middle River	Pre-Barrier

Data Availability:
DWR Atlas Website

https://gis.water.ca.gov/arcgisimg/rest/services/Aerial_Photography





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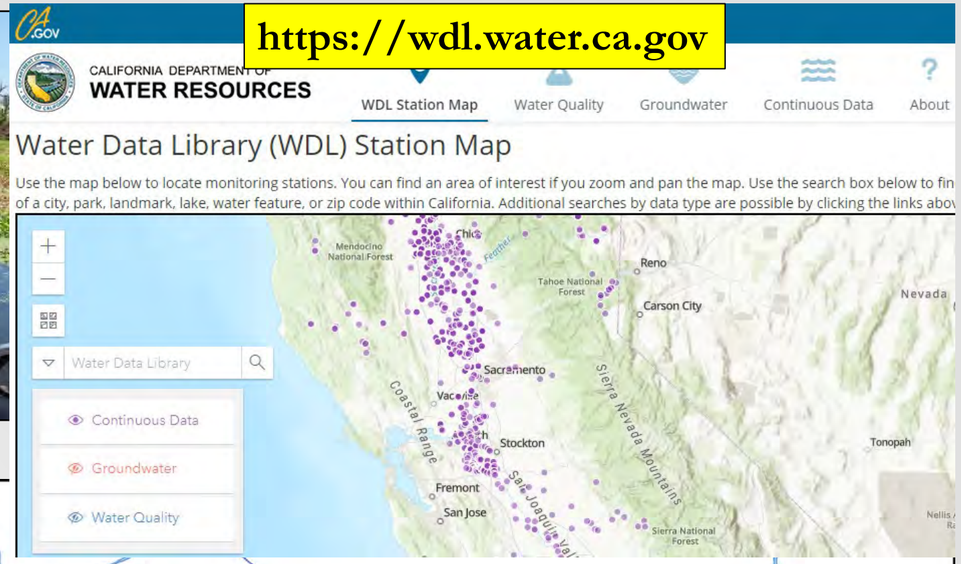
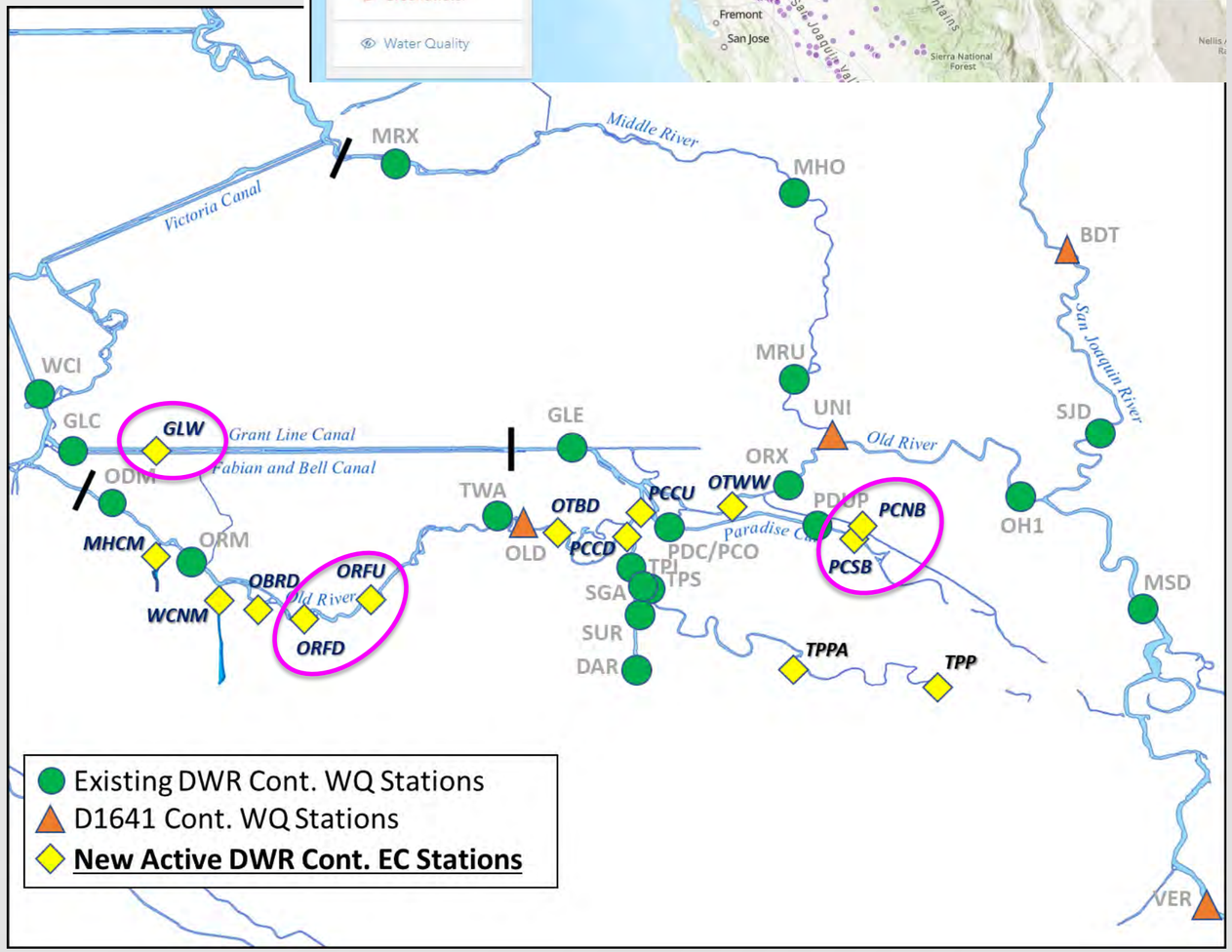
Study Plan Updates:

1. Drone Imagery
2. **Continuous EC Monitoring**
3. Ion Sampling
4. Rhodamine Dye Tracer Monitoring
5. Pescadero Tract Circulation

https://wdl.water.ca.gov



	Station Name	Station Code	Region	WDL Station Code	Data Record
1	Old River at Bethany Rd Drain (SOR24)	OBRD	Lower Old River	B9537400	9/17/2021 - Current
2	Old River upstream of Tracy Blvd Drain (SOR16U)	OTBD		B9538100	12/16/2021 - Current
3	Wicklund Cut near Mouth (SOR28)	WCNM		B9537100	12/16/2021 - Current
4	Mountain House Creek (SOR31)	MHCM		B9536900	2/23/2022 - Current
5	Old River Anchored at ADCP Downstream	OAAD		B9537500	6/15/2022 - Current
6	Old River Flux Station Upstream	ORFU		B9537600	6/15/2022 - Current
7	Old River downstream of Tracy WW outfall (SOR7)	OTWW	Upper Old River	B9538900	11/4/2021 - Current
8	Old River at Paradise Cut Confluence Downstream	PCCD	5-Point Confluence	B9538500	11/4/2021 - Current
9	Old River at Paradise Cut Confluence Upstream	PCCU		B9538600	11/4/2021 - Current
10	Paradise Cut Upstream at South Bridge	PCSB		**	2/15/2023 - Current
11	Paradise Cut Upstream at North Bridge	PCNB		**	2/15/2023 - Current
12	Tom Paine Slough near Pescadero	TPP	Tom Paine Slough	B95425	1/13/2022 - Current
13	Tom Paine Slough at Paradise Ave	TPPA		B9542400	1/19/2022 - Current
14	Grant Line Canal West	GLW	Grant Line Canal	**	2/7/2023 - Current



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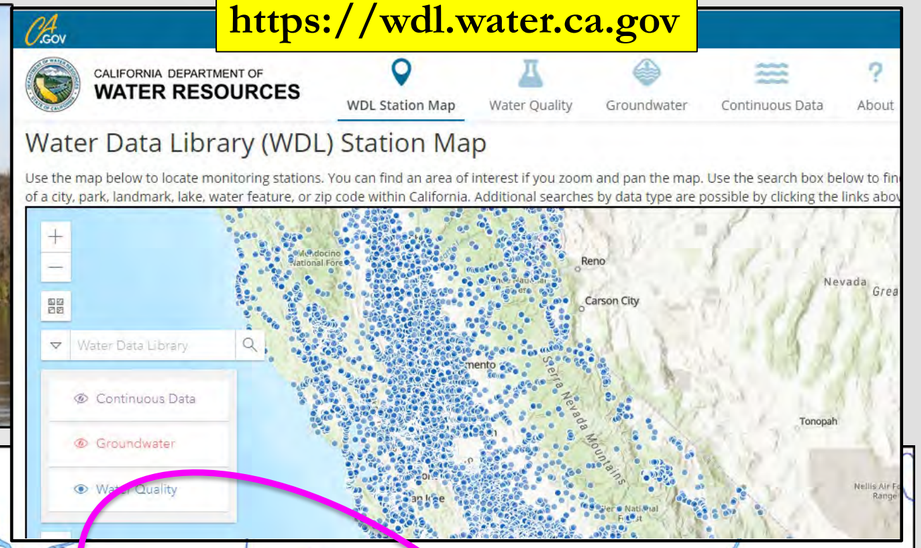
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

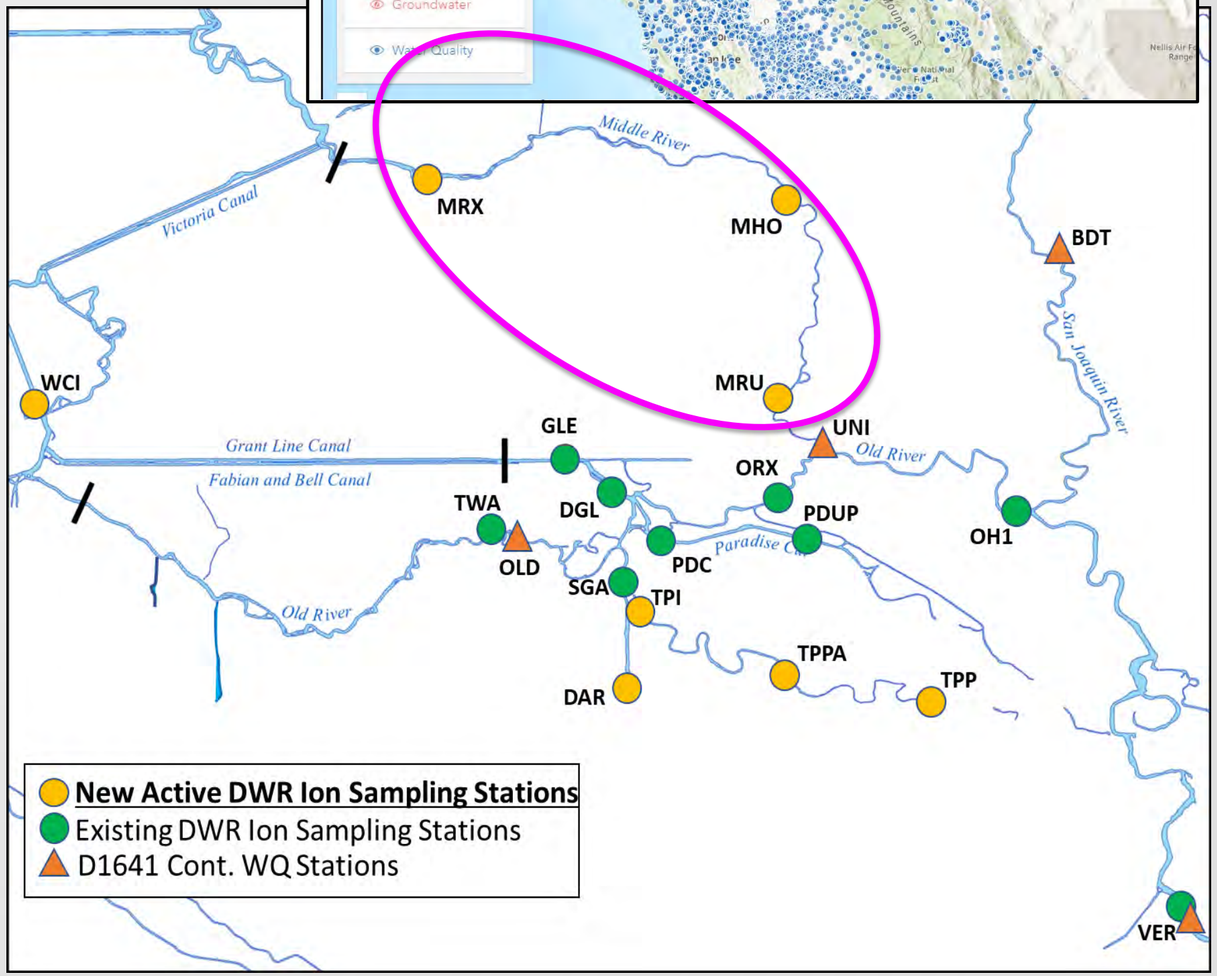
Study Plan Updates:

1. Drone Imagery
2. Continuous EC Monitoring
3. **Ion Sampling**
4. Rhodamine Dye Tracer Monitoring
5. Pescadero Tract Circulation

https://wdl.water.ca.gov



	Station Name	Station Code	WDL Station Code	Data Record	N
1	Paradise Cut Upstream	PDUP	B9D74811224	7/11/2018 - Current	49
2	Paradise Cut	PDC	B9D74811247	6/20/2018 - Current	53
3	Sugar Cut Downstream of Tom Paine Slough	SGA	B9D74761253	6/20/2018 - Current	56
4	Old River at Head	OH1	B9540000	6/27/2018 - Current	53
5	Old River above Doughty Cut	ORX	B9D74871232	6/27/2018 - Current	57
6	Grant Line Canal East	GLE	B9D74921261	6/27/2018 - Current	51
7	Old River at Tracy Wildlife Association	TWA	B9D74821274	7/2/2018 - Current	59
8	C10A - San Joaquin River near Vernalis	VER	B9D74081159	4/1/2005 - Current	**
9	West Canal Above Clifton Court Intake	WCI	B9D74991332	7/12/2022 - Current	6
10	Tom Paine Slough near Pescadero	TPP	B9542500	1/19/2022 - Current	12
11	Tom Paine Slough at Paradise Ave	TPPA	B9542400	1/19/2022 - Current	12
12	Drainage at Arbor Road	DAR	B9542300	1/19/2022 - Current	12
13	Tom Paine Slough above Intake	TPI	B9542100	1/19/2022 - Current	11
14	Middle River near Tracy Road	MRX	B9D75291280	3/8/2023 - Current	2
15	Middle River at Howard Road	MHO	B9D75261229	3/8/2023 - Current	2
16	Middle River at Undine Road	MRU	B9D75011230	3/8/2023 - Current	2



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Study Plan Updates:

1. Drone Imagery
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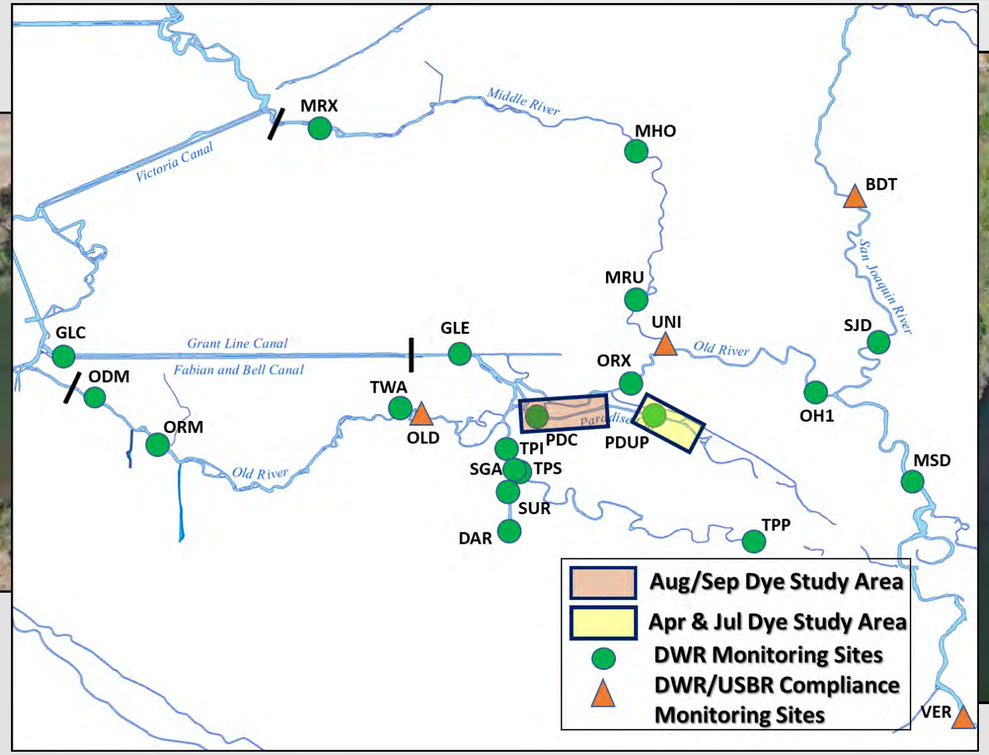
4. **Rhodamine Dye Tracer Monitoring**
5. **Pescadero Tract Circulation**

3 Completed Dye Tracer Studies in Paradise Cut

	Rhodamine Dye Tracer Studies	Location	Conditions
1	April 5th - 8th 2022	Upper Paradise Cut Near Bifurcation	Pre-Temporary Barrier Install and Non-Ag Season
2	July 18th - 22nd 2022		Post- Temporary Barriers and Peak Ag Season
3	August 29th - Sept. 2nd 2022	Lower Paradise Cut	



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Contact: Jared.Frantzich@water.ca.gov

QUESTIONS OR COMMENTS?

Raise your hand or type in the chat

State your name and affiliation

SCHISM 3D and Water Quality Data Integration

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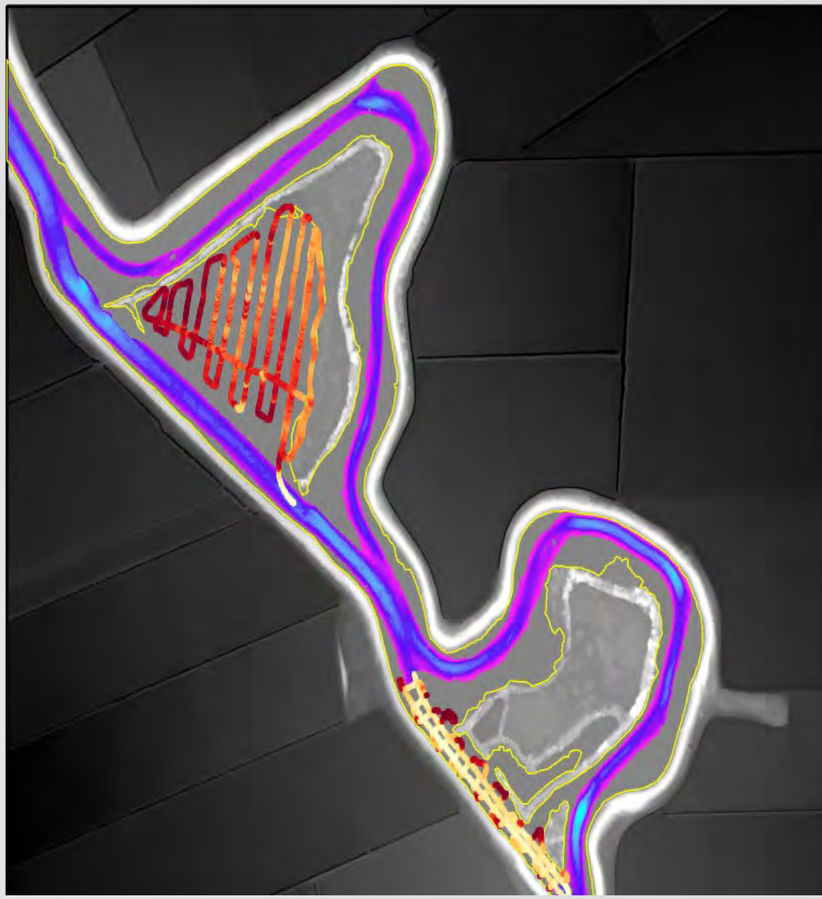
MSS Modeling Update

March 20, 2023

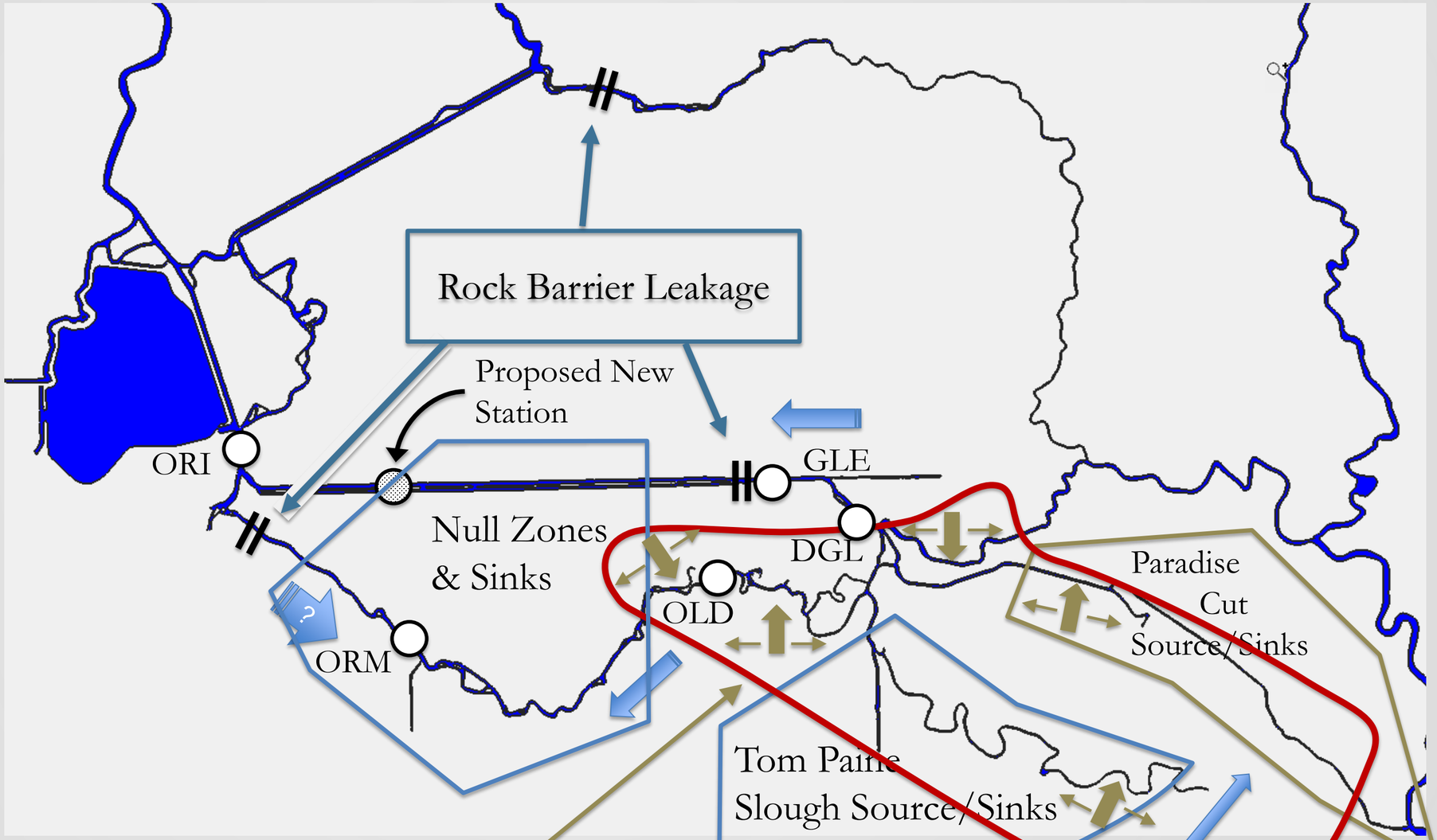
Zhenlin Zhang and Eli Ateljevich

Major Activities



- Modeling assumptions document (done)
- Associated data products (~done)
- Bathymetry collection and processing
  - South Delta due June
  - DSM2: Tom Burke and DMS?
- Data assimilation descriptive presentation (June)
- SCHISM runs (ongoing, requires DA results)

Modeling Assumptions Document



Agricultural Barrier

More complete

Less complete

Candidate Source (conceptual only)

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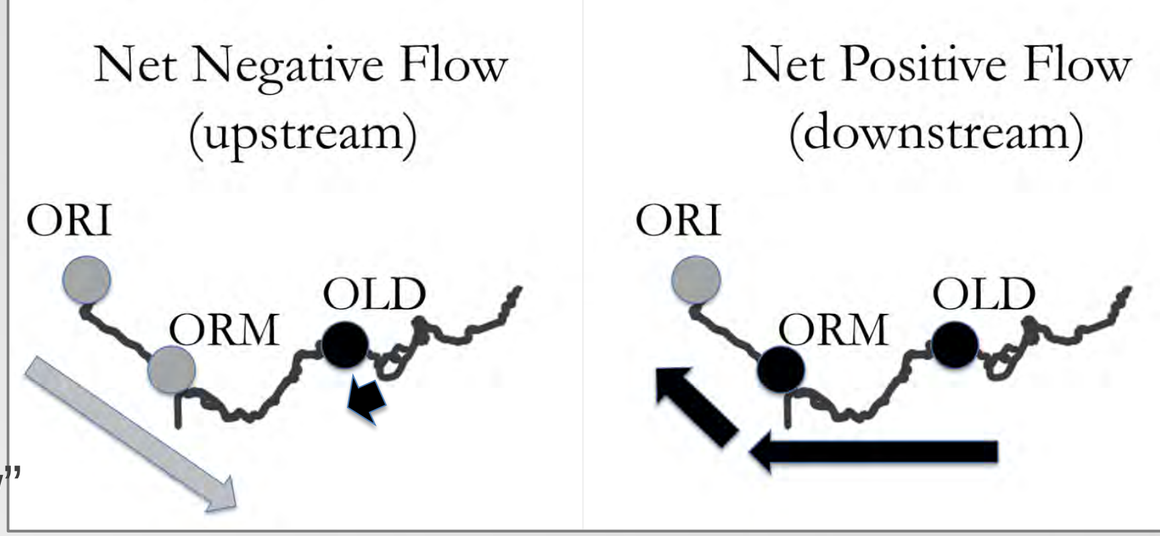
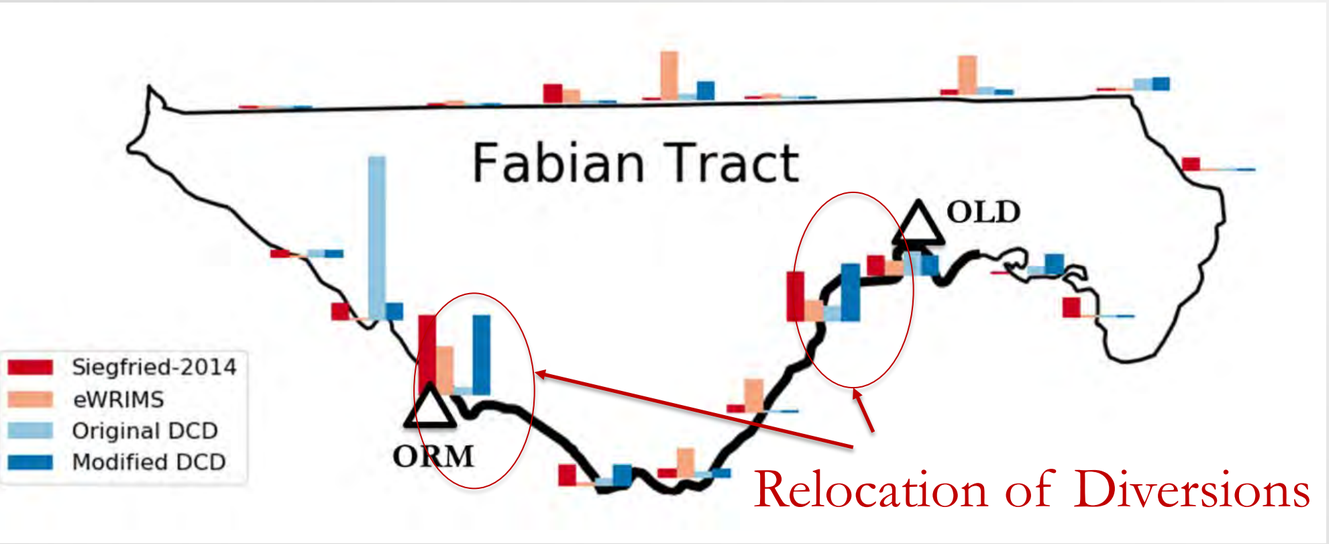
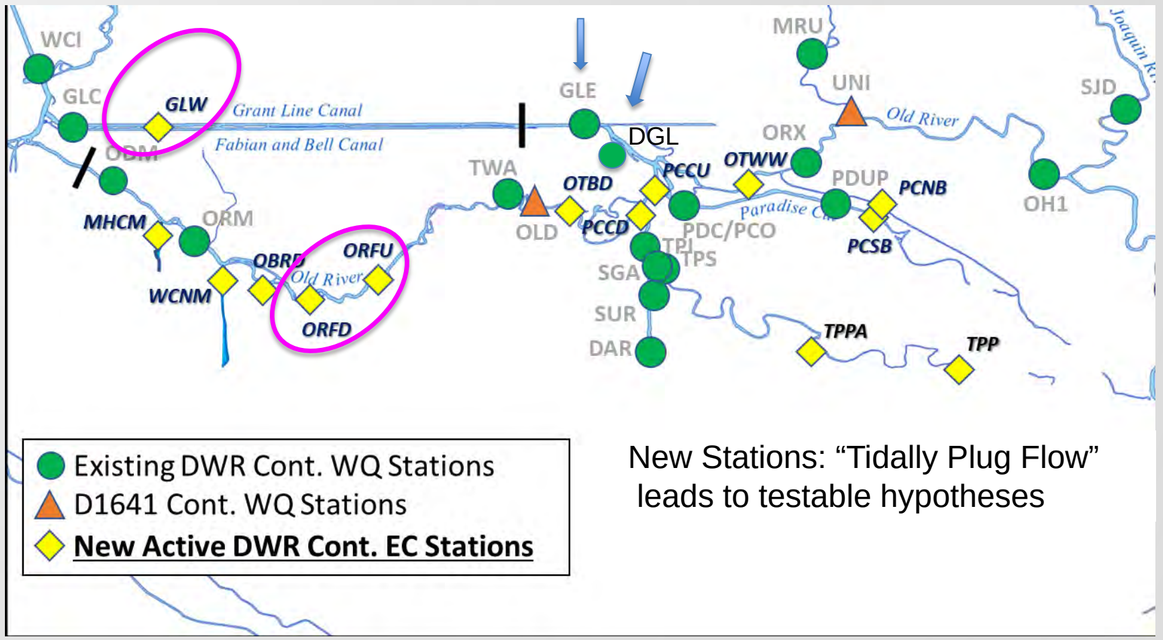
Null Zone

- Estimates, bridged to modeling inputs
- Consistent with flow, EC, reporting, consumptive use. Differences resolved.
- Confirmation of flow direction from “tidally plug flow”
- Tie-ins to other MSS activities
- Implemented as relocation of diversions







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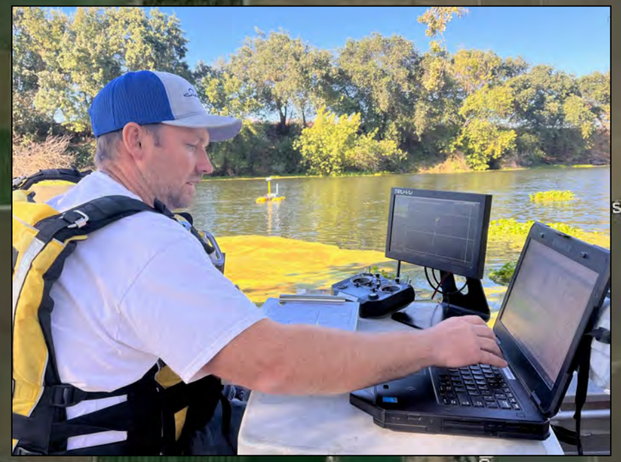
Old River Special Flow Study



ORM

OLD

Old River

Tracy Blvd

Old River

Old River

Old River

Upstream Sentinel

Downstream Sentinel

Old River

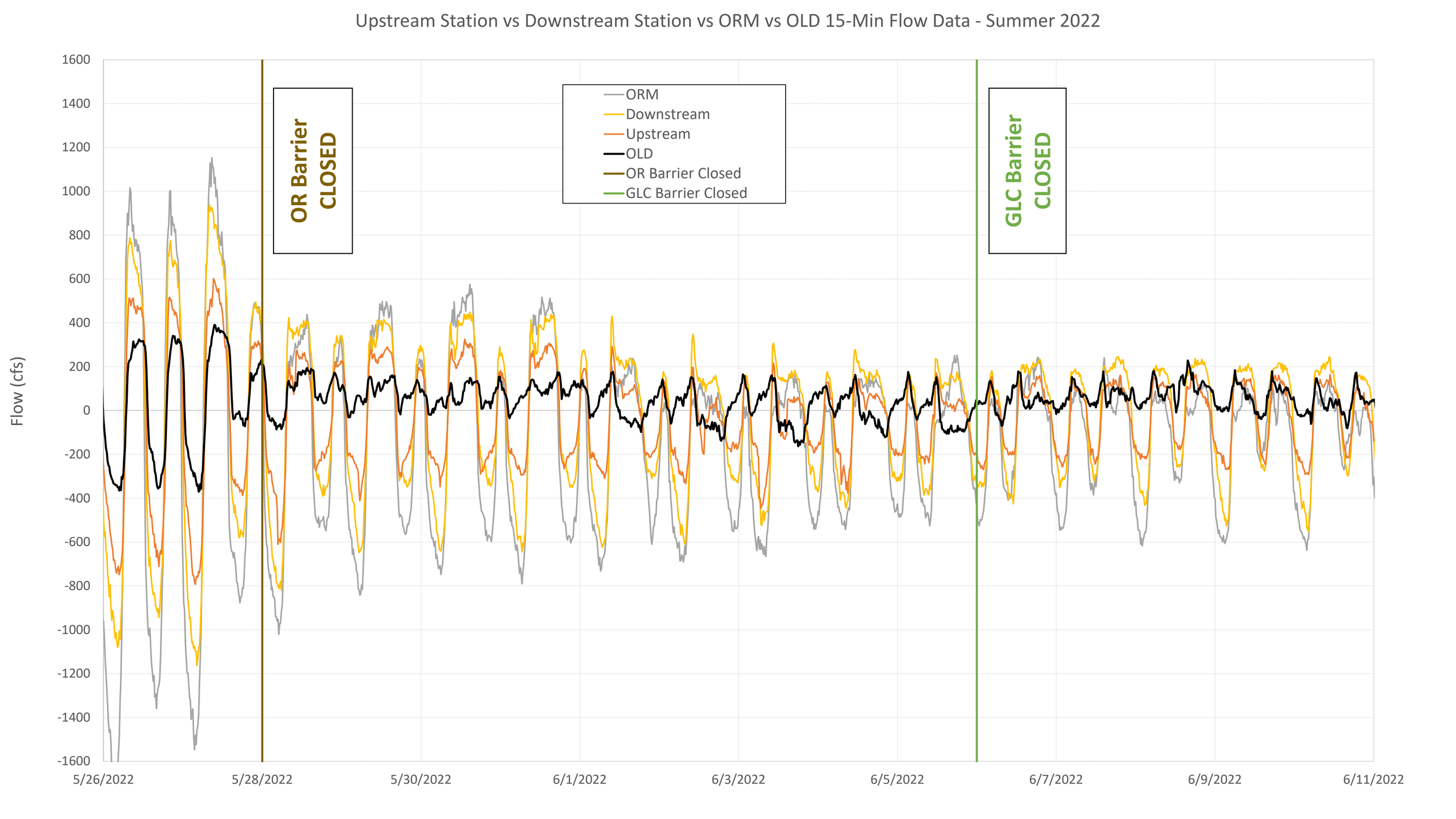
s Rd

ollow Rd

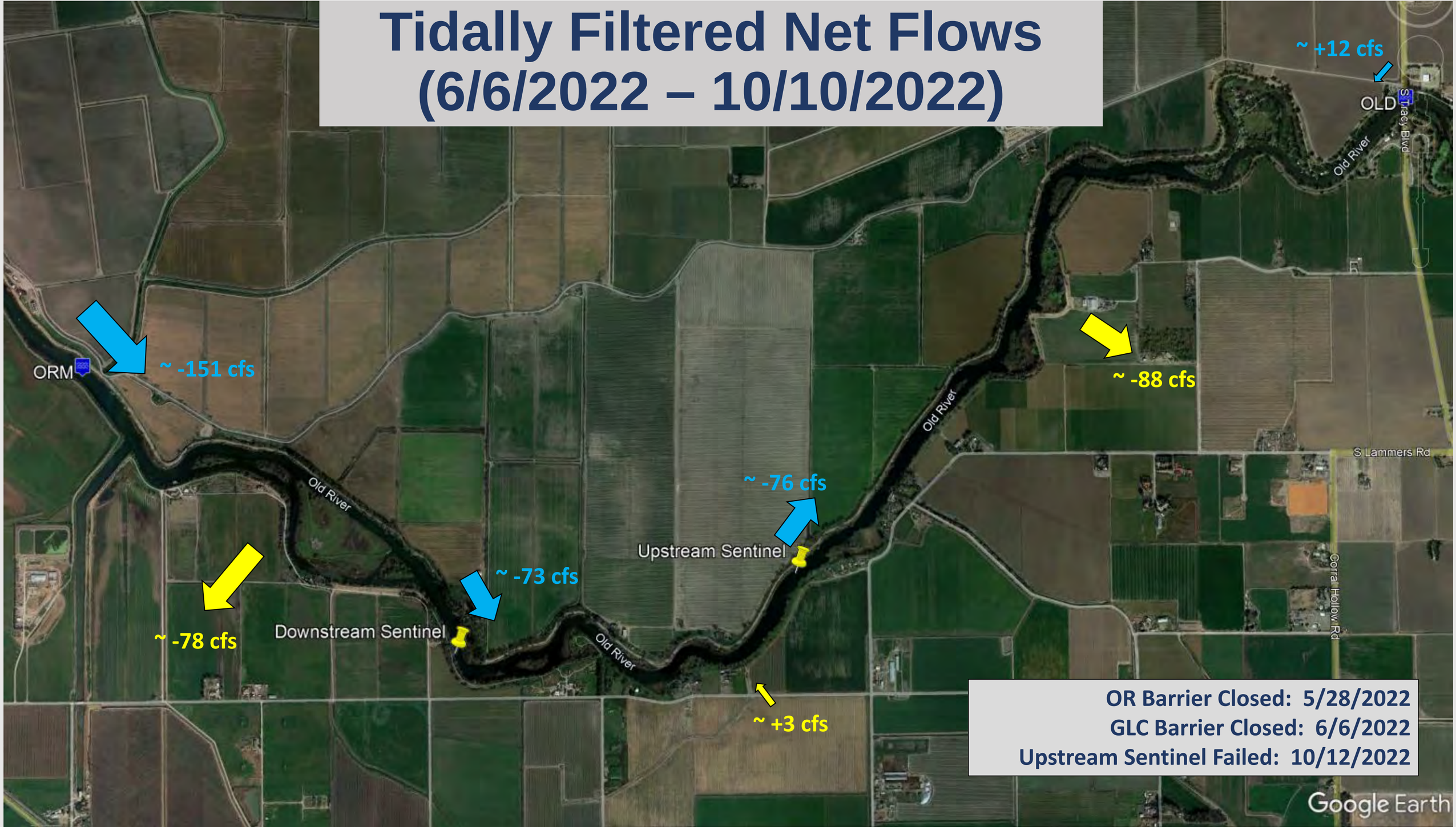
Google Earth

Deployed: 5/24/2022
OR Barrier Closed: 5/28/2022
OR Barrier Breached: 11/4/2022
ADCPs Retrieved: 11/8/2022

ORM to OLD ~ 5.3 river miles
ORM to Upstream ADCP ~ 2.7 river miles


Upstream Station vs Downstream Station vs ORM vs OLD 15-Min Flow Data - Summer 2022
Flow (cfs)
1600
1400
1200
1000
800
600
400
200
0
-200
-400
-600
-800
-1000
-1200
-1400
-1600
5/26/2022
5/28/2022
5/30/2022
6/1/2022
6/3/2022
6/5/2022
6/7/2022
6/9/2022
6/11/2022
ORM
Downstream
Upstream
OLD
OR Barrier Closed
GLC Barrier Closed
OR Barrier CLOSED
GLC Barrier CLOSED

Tidally Filtered Net Flows (6/6/2022 – 10/10/2022)



Implications

- Current state good: shift to data assimilation and SCHISM
- Thin margins of mean flow control water quality
  - Hope!
  - Tradeoffs
- Reduced region for inferred sources and data assimilation… testable and measurable!
- EC over the “reach” is genuinely observed.
- EC is useful for assessing flow direction
- Additional monitoring station on Grant Line

Feedback wanted!!

- Report/chapter in circulation
- Recorded presentation available: https://www.youtube.com/watch?v=vcZxIsCGNSw

QUESTIONS OR COMMENTS?

Raise your hand or type in the chat

State your name and affiliation

Closing & Next Steps

- Your feedback on Modeling Assumptions draft document is requested
- Topic for new Technical Work Group Meeting

THANK YOU!!

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QUESTIONS OR COMMENTS?

Raise your hand or type in the chat

State your name and affiliation

Contacts

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Website

The website is currently down for maintenance. Contact Bill McLaughlin if you need access to any documents.

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