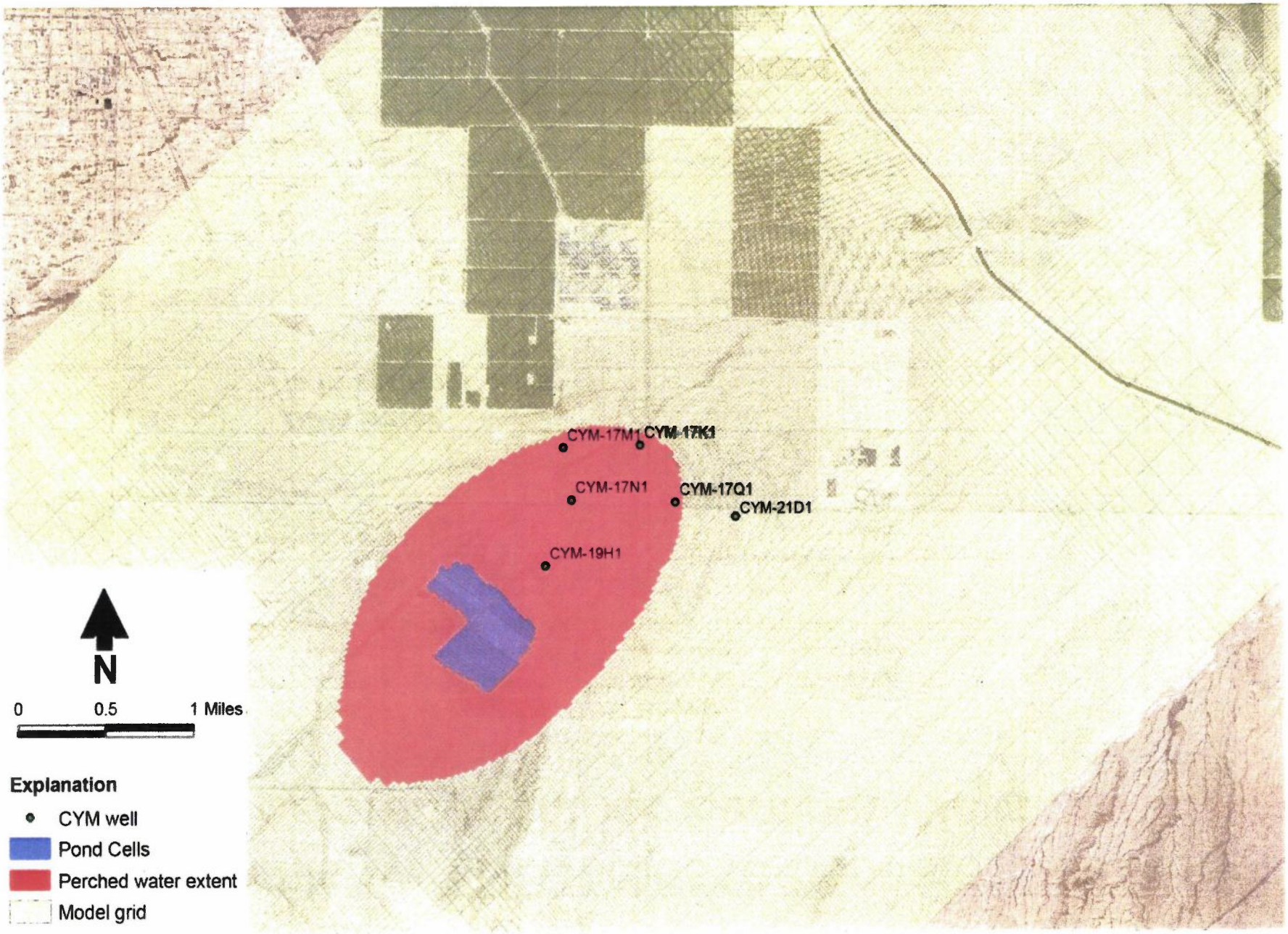
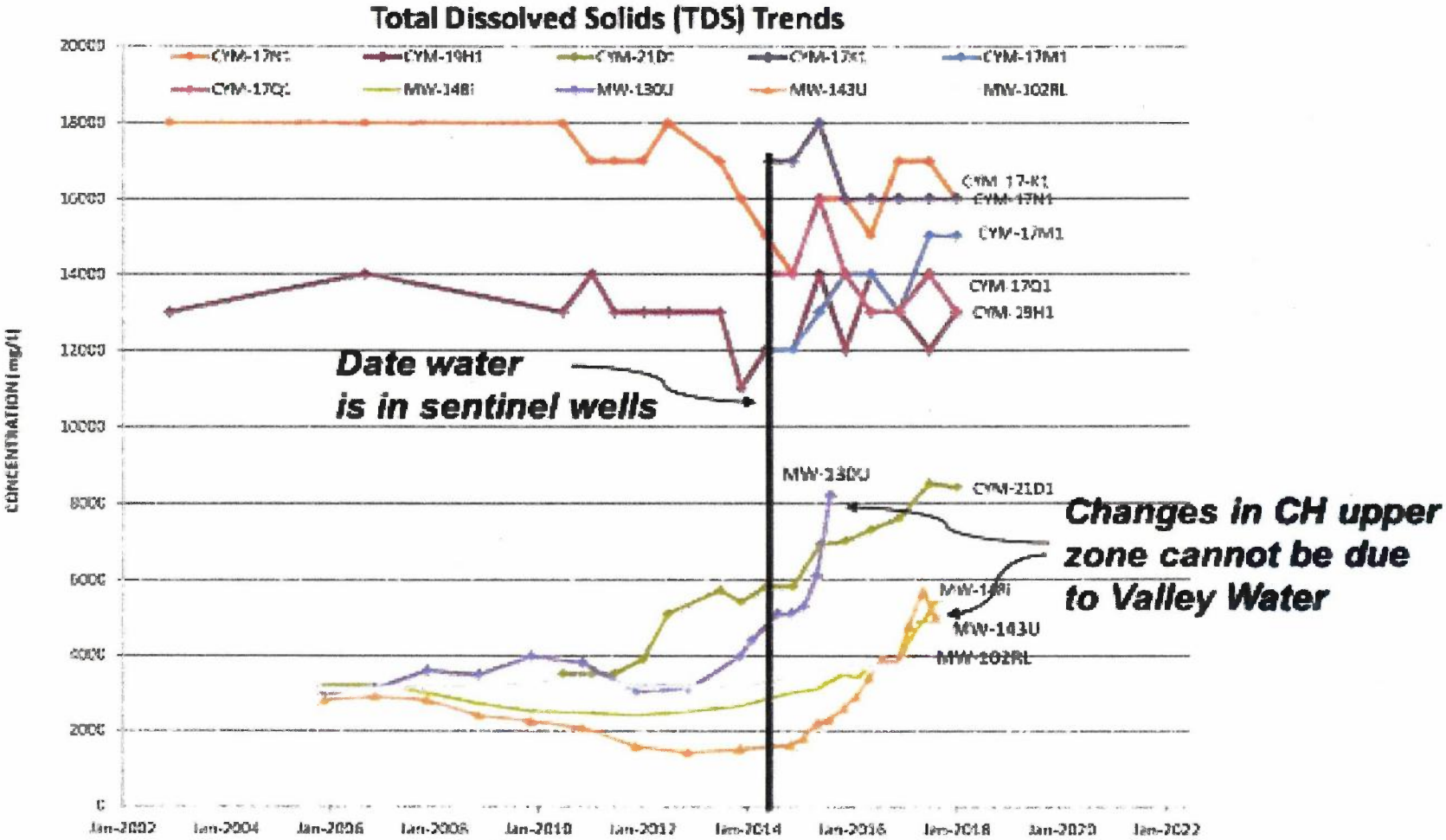
***

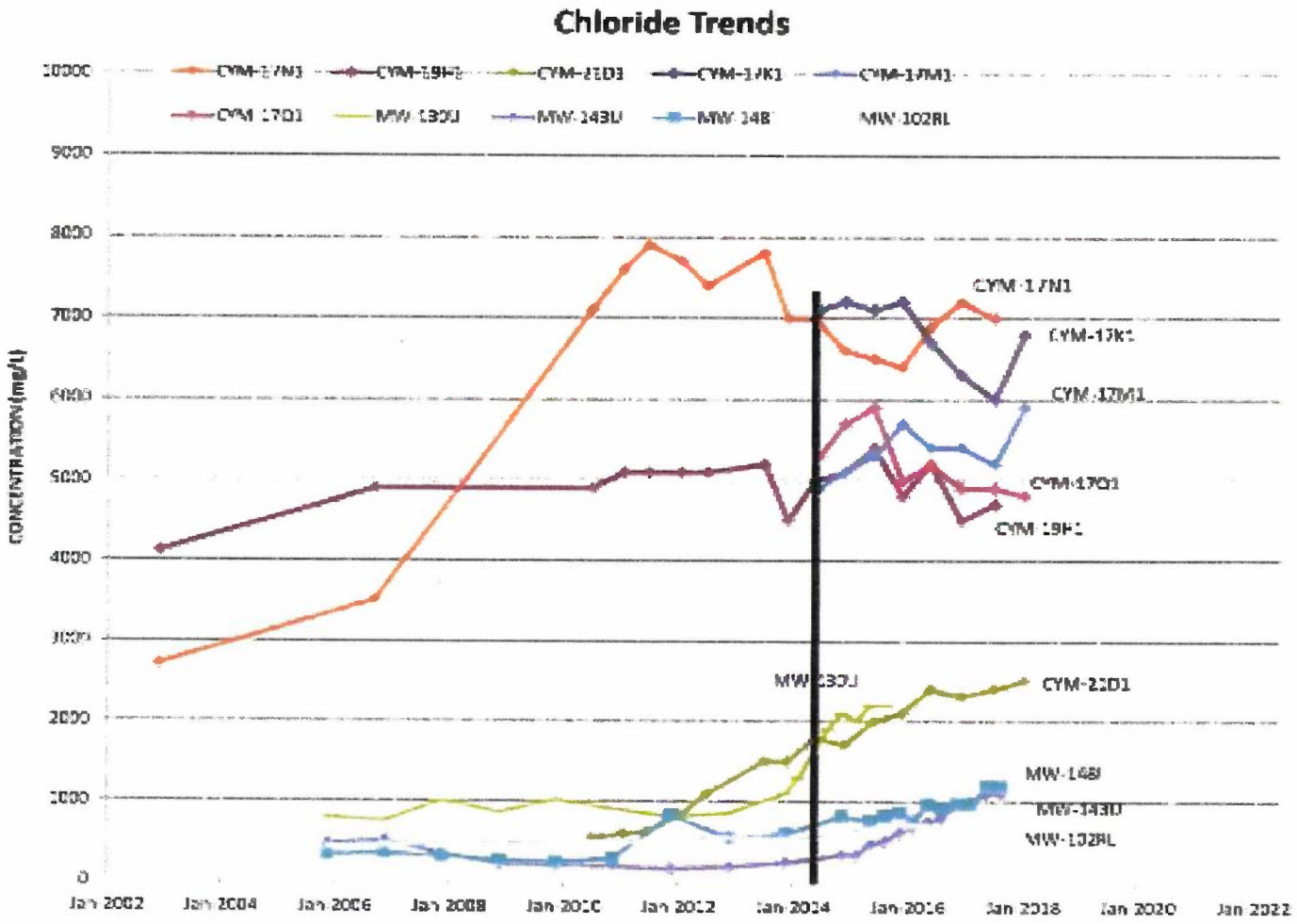
EXHIBIT 15


CYM-17M1
CYM-17K1
CYM-17N1
CYM-17Q1
CYM-21D1
CYM-19H1
N
0
0.5
1 Miles
Explanation
CYM well
Pond Cells
Perched water extent
Model grid

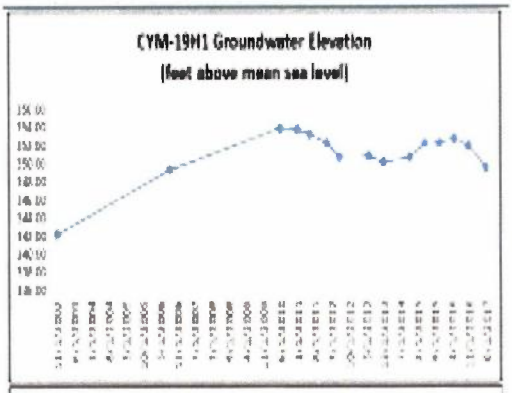
Geochemistry: TDS increase beneath Clean Harbors before McKittrick Sentinel Wells have water

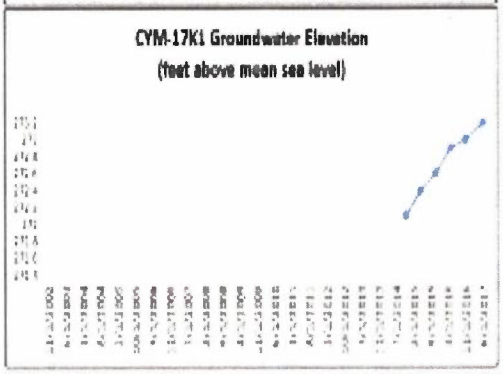


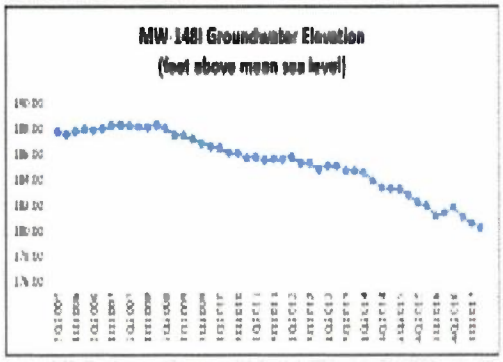
Similar for Chloride



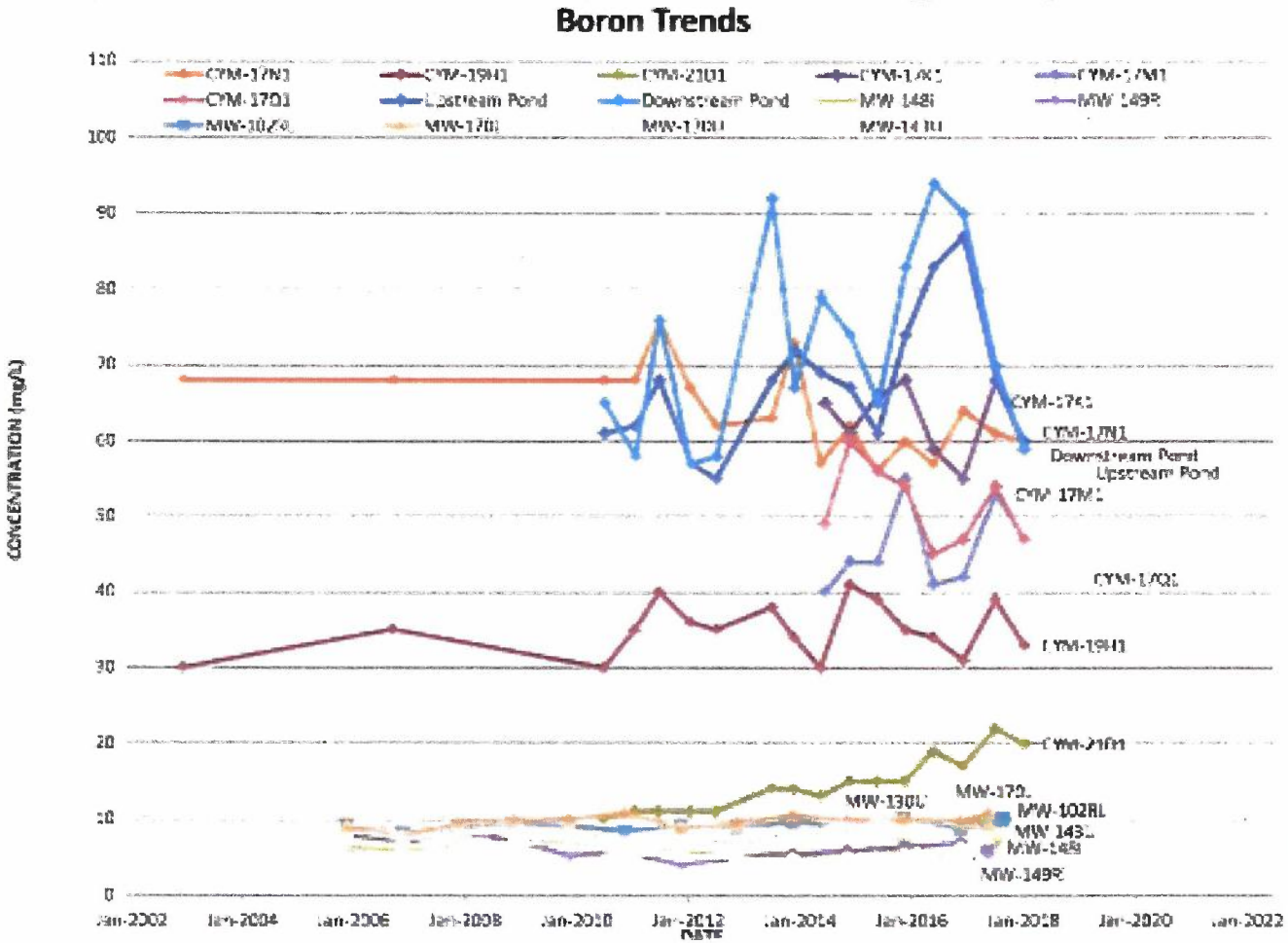
Groundwater at Clean Harbors before McKittrick Sentinel Wells

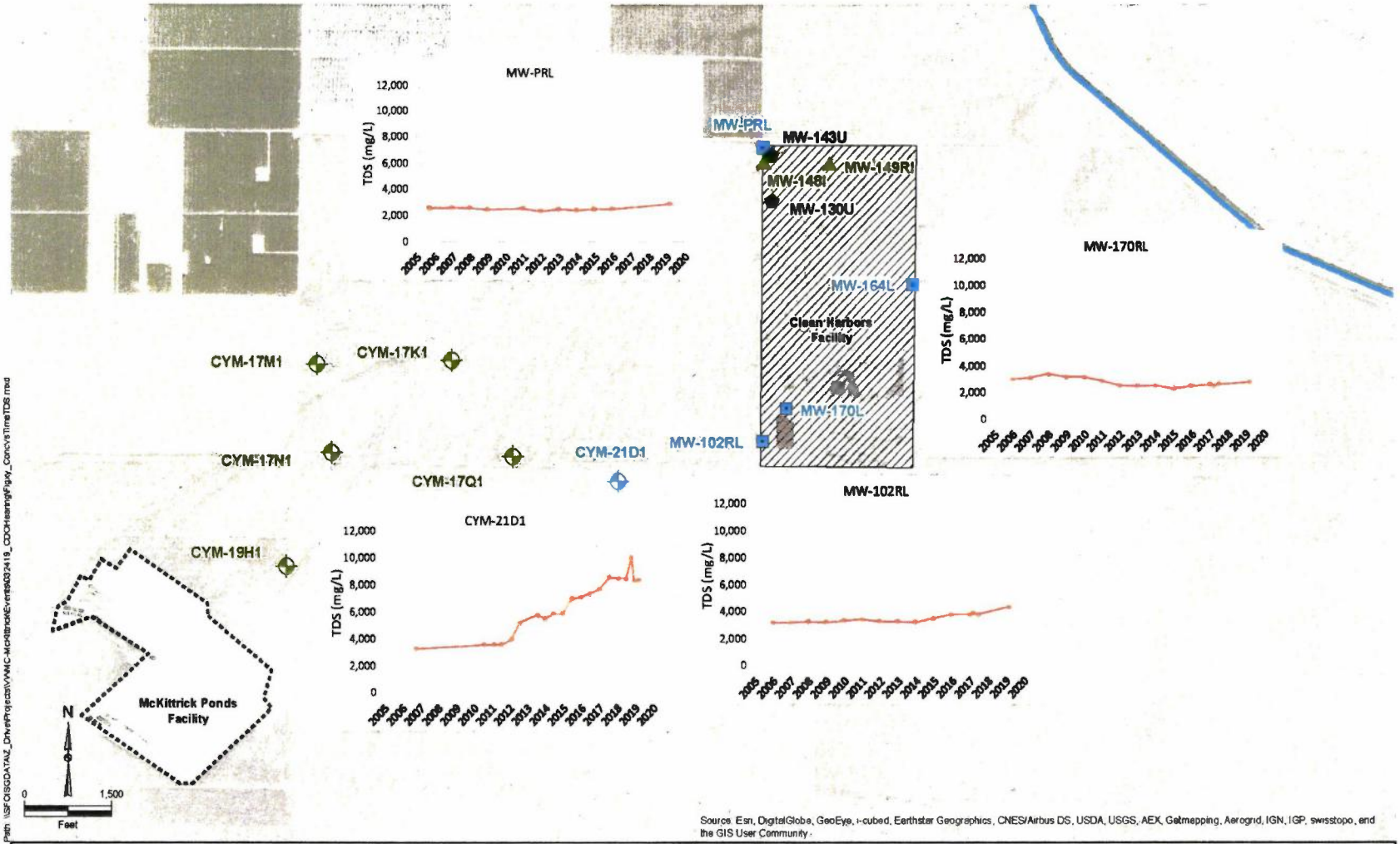






Clean Harbors not picking up produced water fingerprint



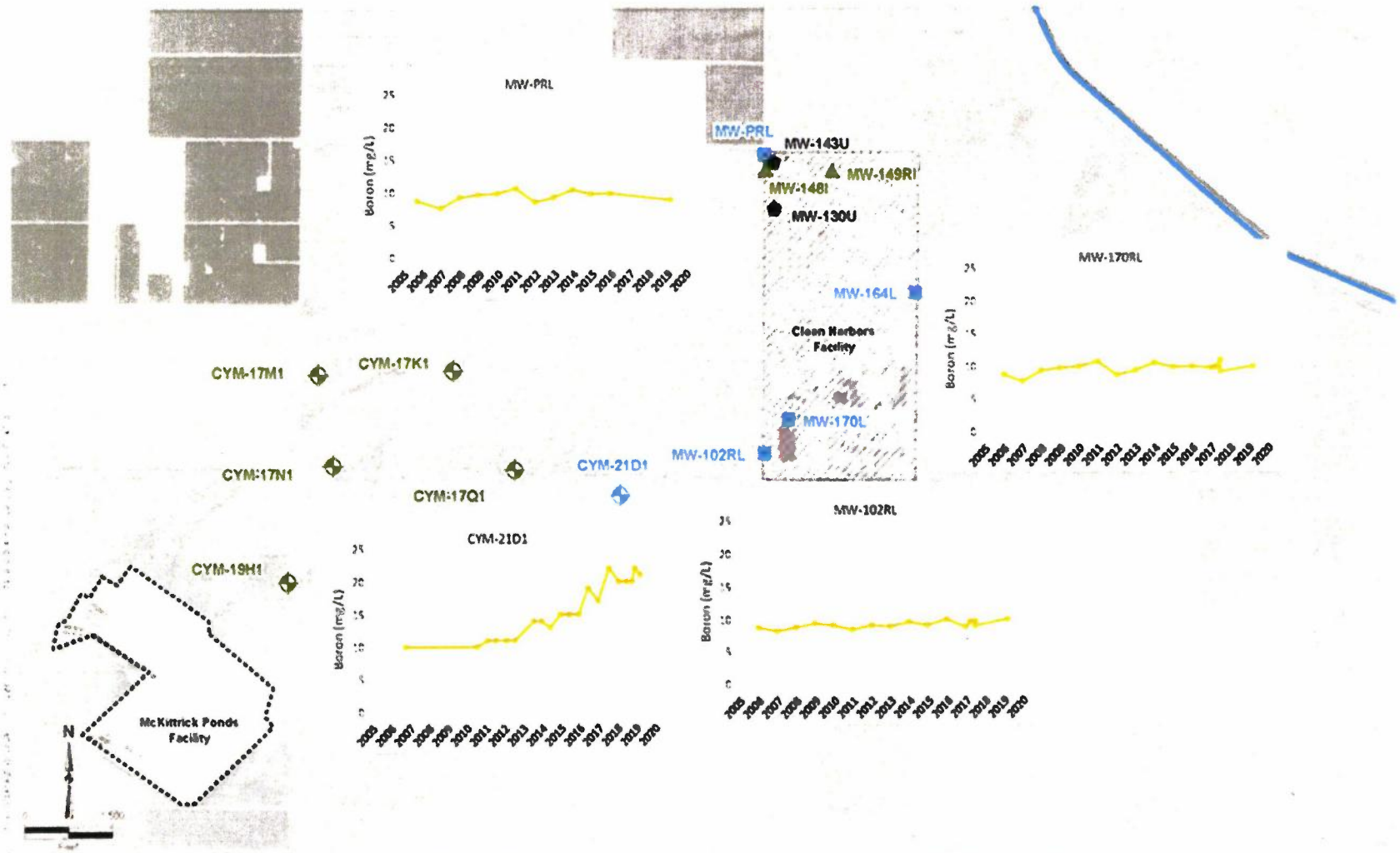


Path: \\SFOISGDATA\Z_Drive\Projects\VWMC-McKittrickEvents\3037419_CDOHearingFigs_ConcvsTimeTDS.mxd

Valley Water Management Company - McKittrick Facility
Total Dissolved Solids Concentrations vs. Time

Legend:

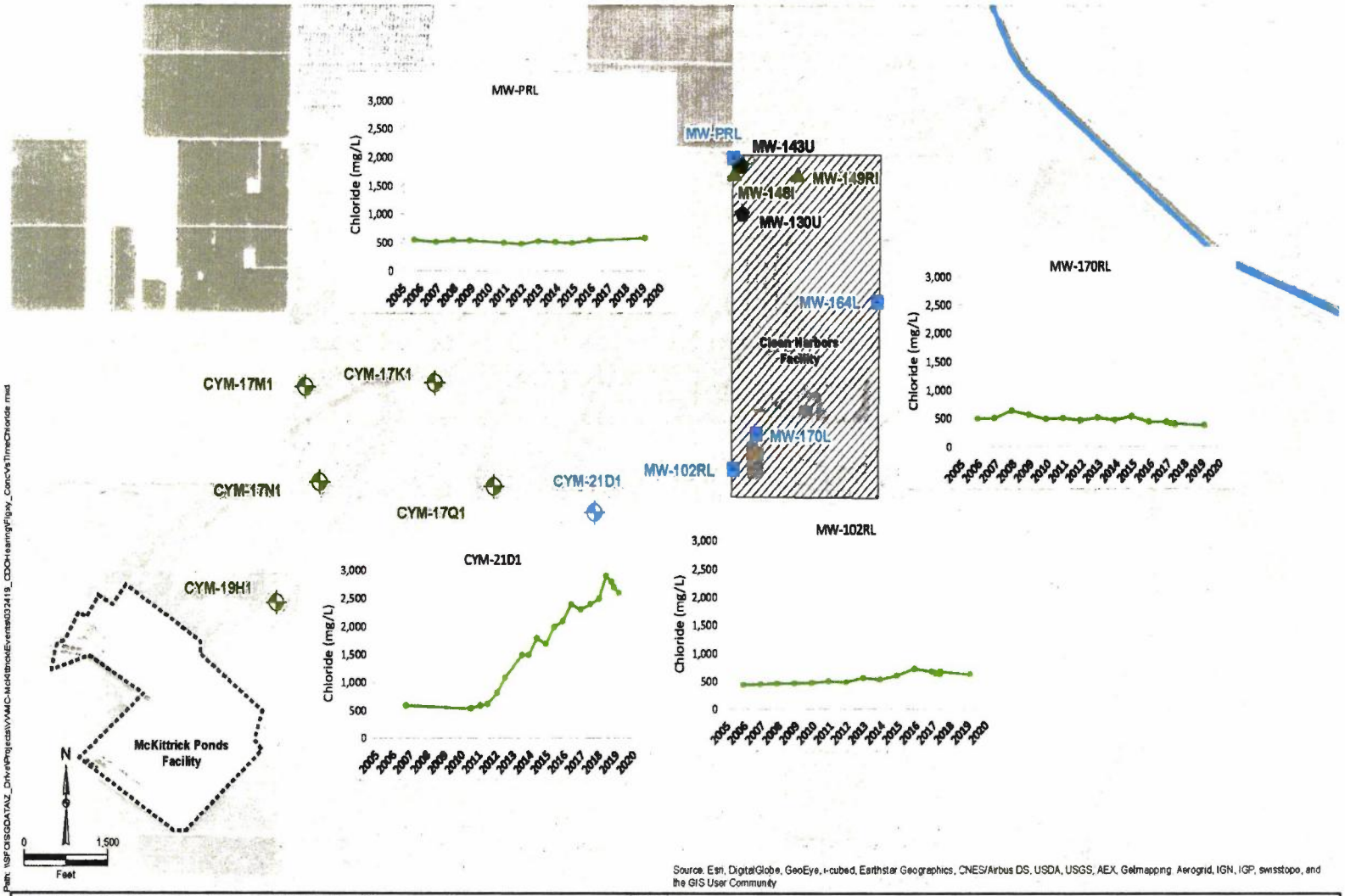
- Starth Farms Well
- Other Nearby Well
- Valley Water Management Company Well (Upper Tulare Clay)
- Valley Water Management Company Well (Lower Tulare Sands)
- Clean Harbors Well (Alluvial Fan Upper Perched Zone)
- Clean Harbors Well (Upper Tulare Intermediate Perched Zone)
- Clean Harbors Well (Lower Tulare Water Table Zone)



Valley Water Management Company - McKittrick Facility
Boron Concentrations vs. Time

Legend:

- Starn Farms Well
- Other Nearby Well
- Valley Water Management Company Well (Upper Tulare Clay)
- Valley Water Management Company Well (Lower Tulare Sands)
- Clean Harbors Well (Alluvial Fan Upper Perched Zone)
- Clean Harbors Well (Upper Tulare Intermediate Perched Zone)
- Clean Harbors Well (Lower Tulare Water Table Zone)



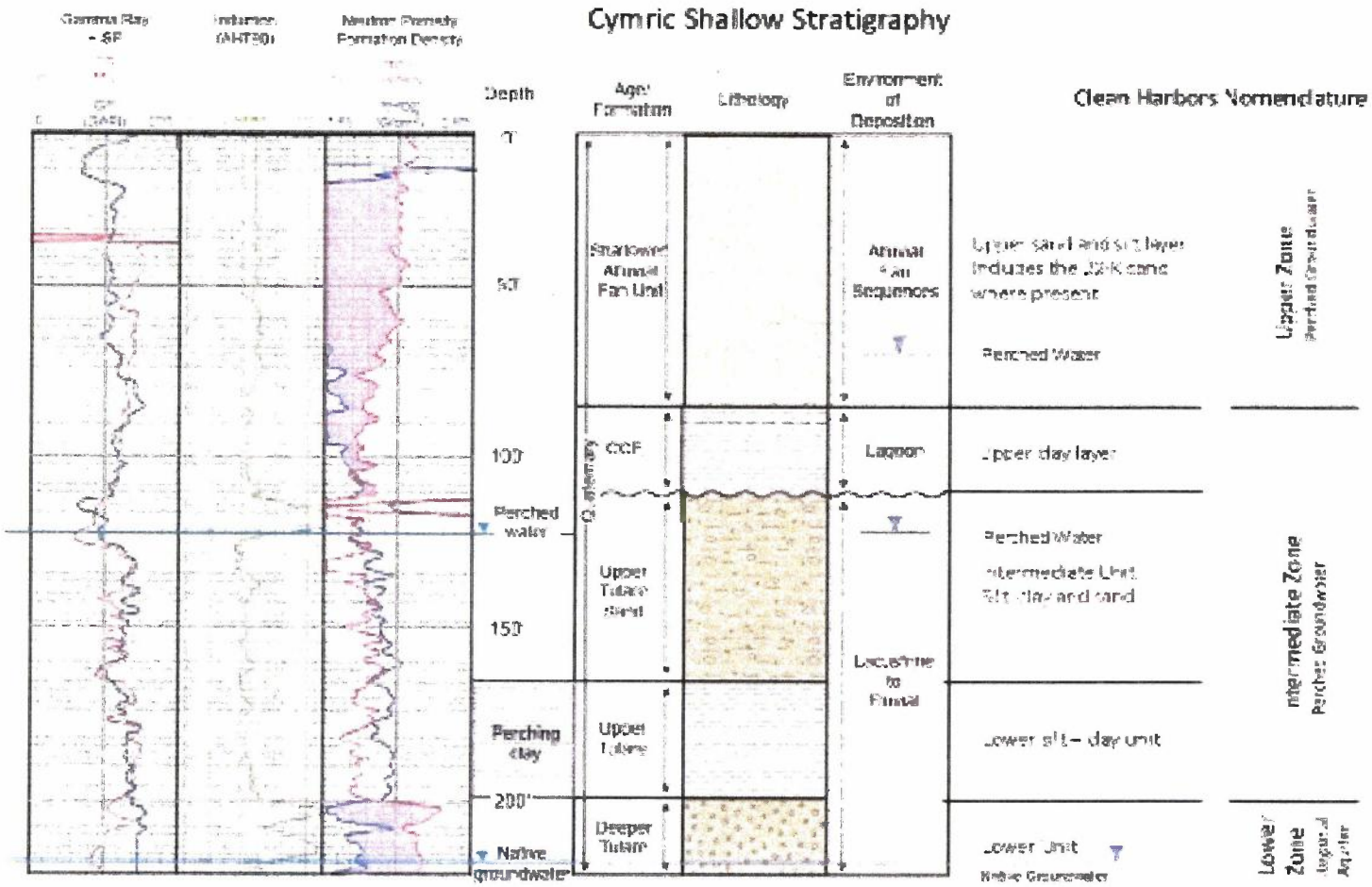
Path: \\SFCISGDATA\Z_Drive\Projects\VWMC-McKittrickEvents\032419_CDOHearingFigs_ConcVsTimeChloride.mxd

Valley Water Management Company - McKittrick Facility
Chloride Concentrations vs. Time

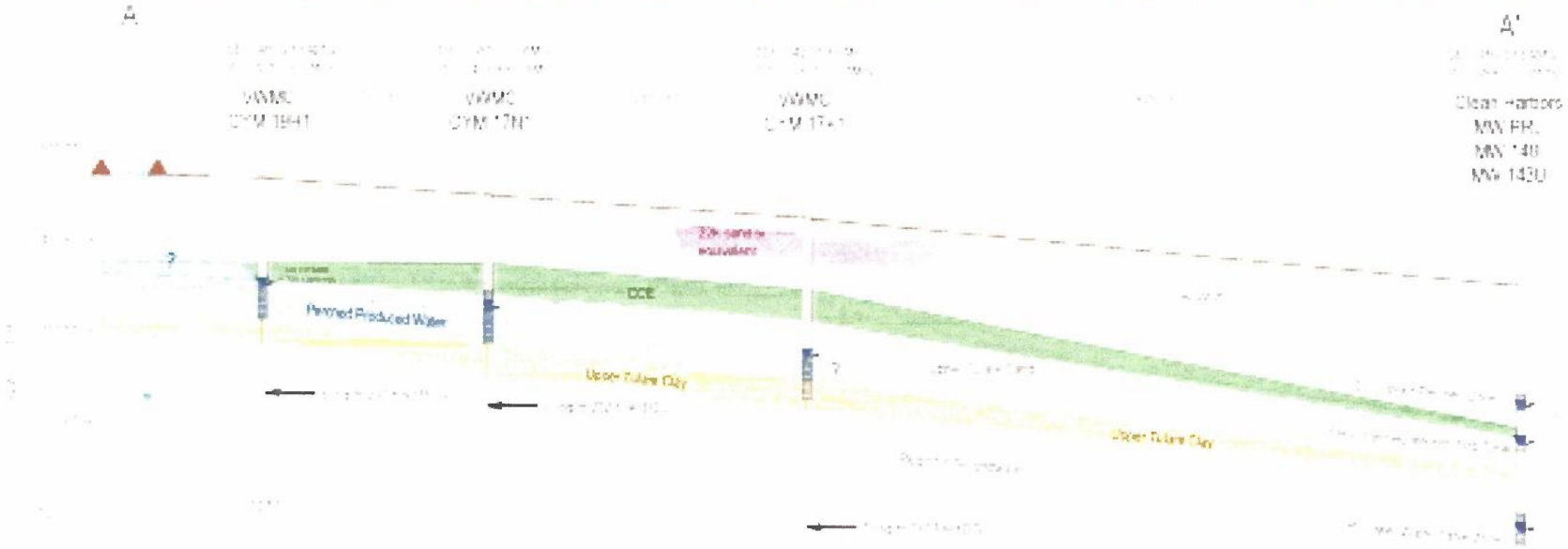
Legend:

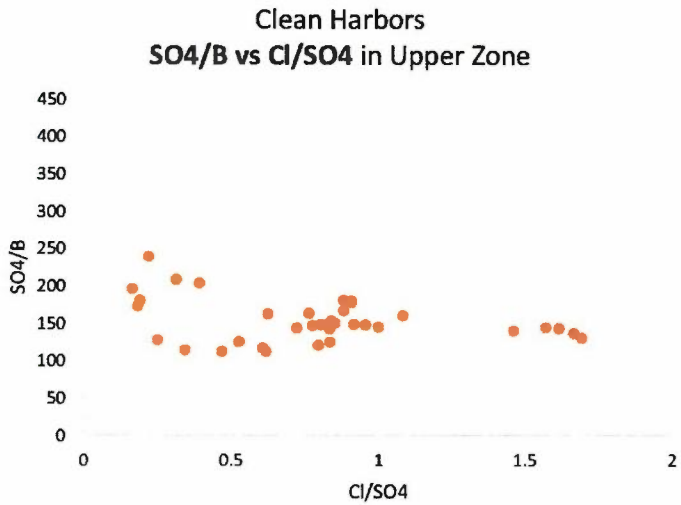
- Starrh Farms Well
- Other Nearby Well
- Valley Water Management Company Well (Upper Tulare Clay)
- Valley Water Management Company Well (Lower Tulare Sands)
- Clean Harbors Well (Alluvial Fan Upper Perched Zone)
- Clean Harbors Well (Upper Tulare Intermediate Perched Zone)
- Clean Harbors Well (Lower Tulare Water Table Zone)

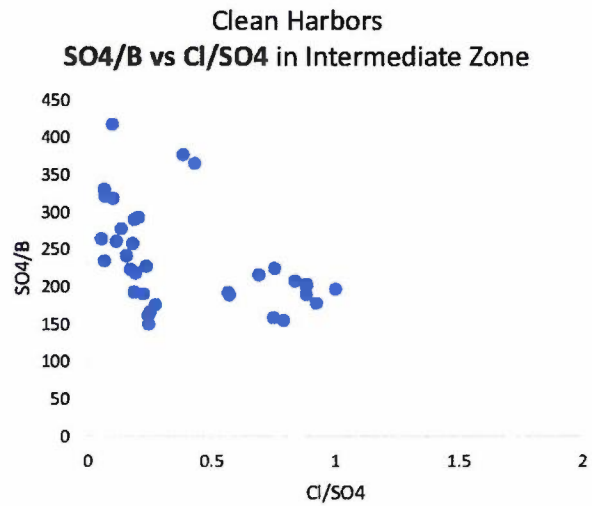
Stratigraphy: Shallow perched water at Clean Harbors, *not* McKittrick

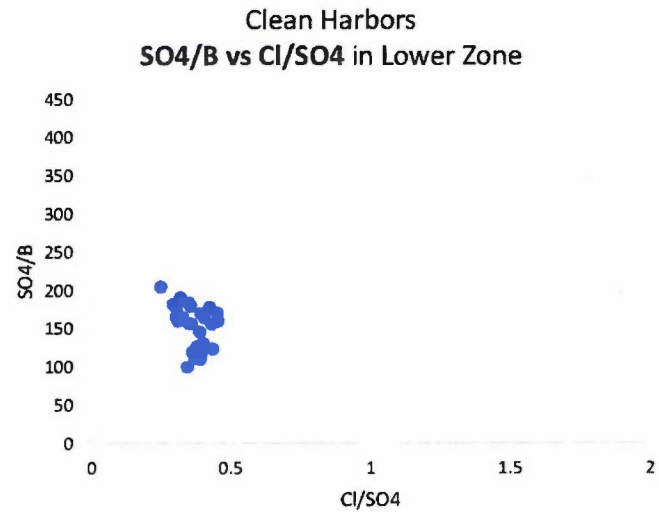


Cross Section

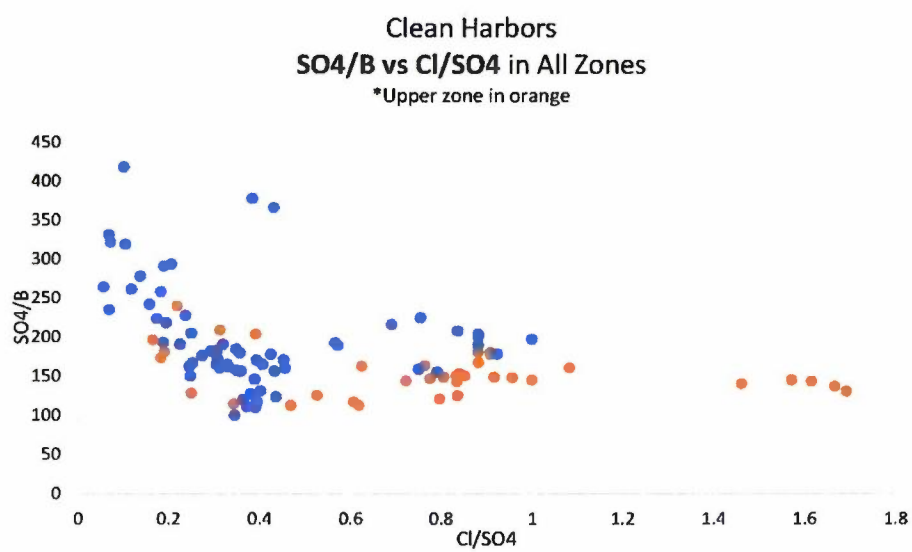




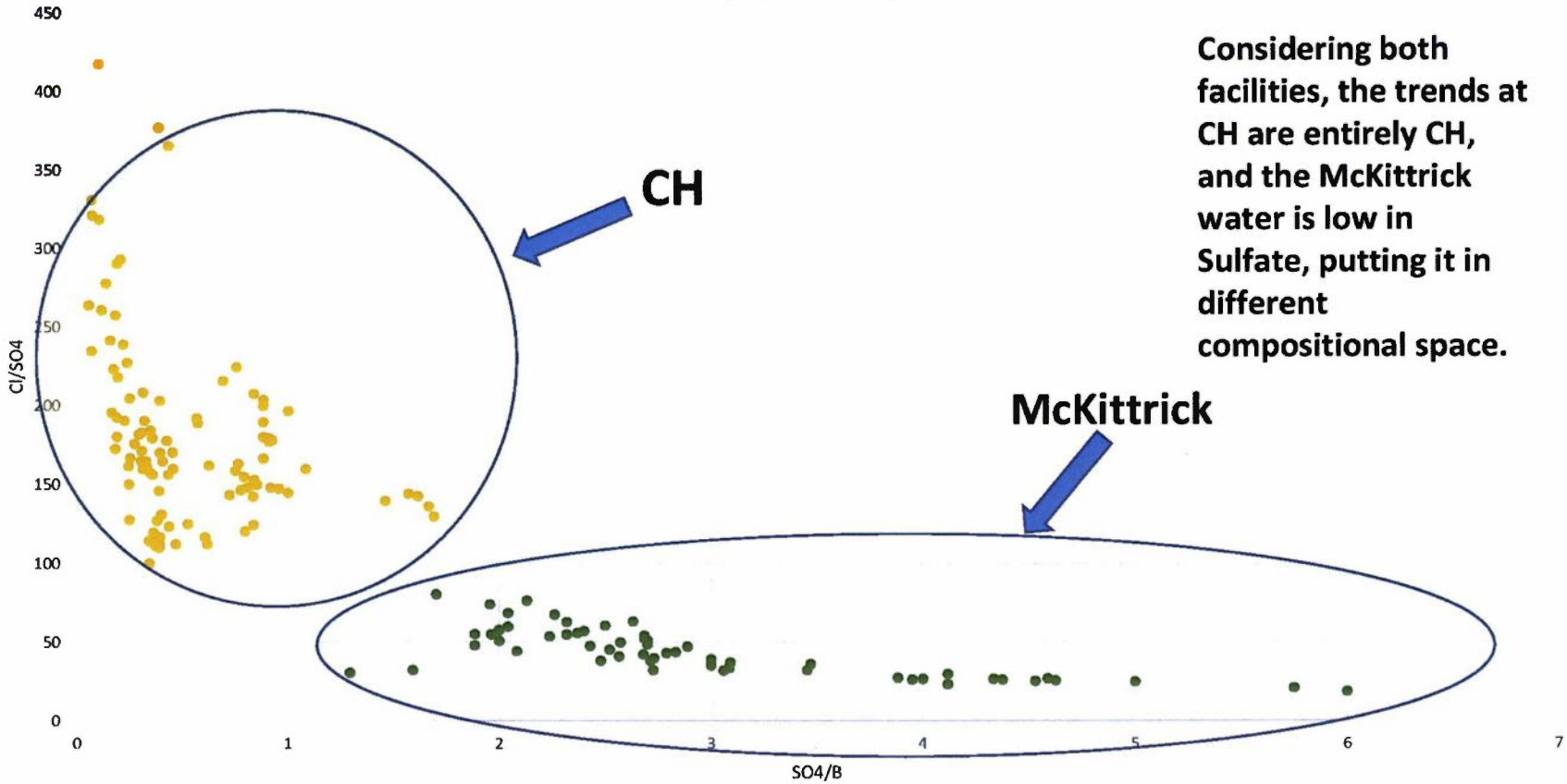




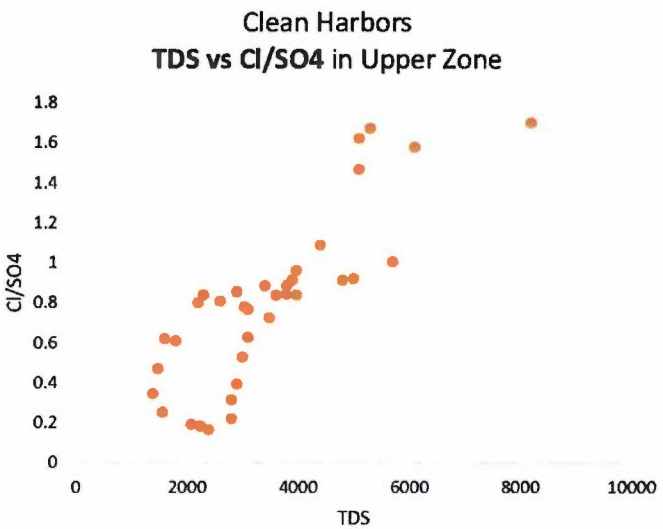
- **The Upper Zone, which cannot be from McKittrick, covers the range in Cl/SO4 seen at Clean Harbors, and the SO4/B in the intermediate zone goes to lower B (less of the "produced water signature")**
- **Therefore these key parameters all reflect UZ constituents migrating downwards**

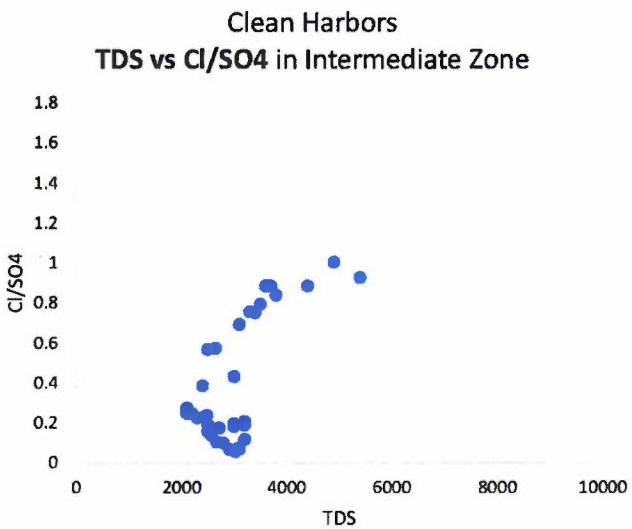


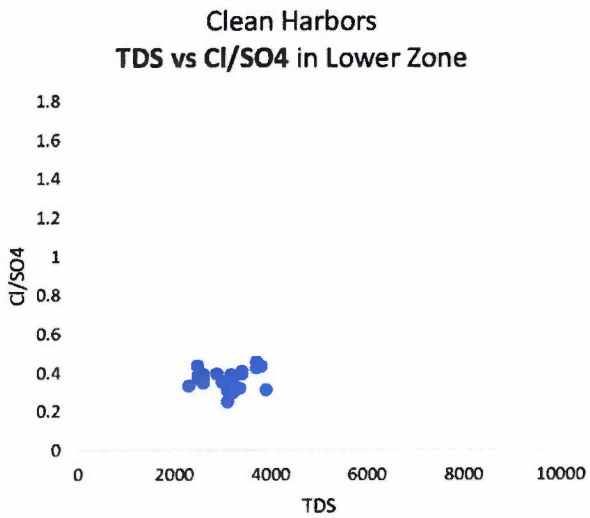
McKittrick and Clean Harbors
SO4/B vs Cl/SO4



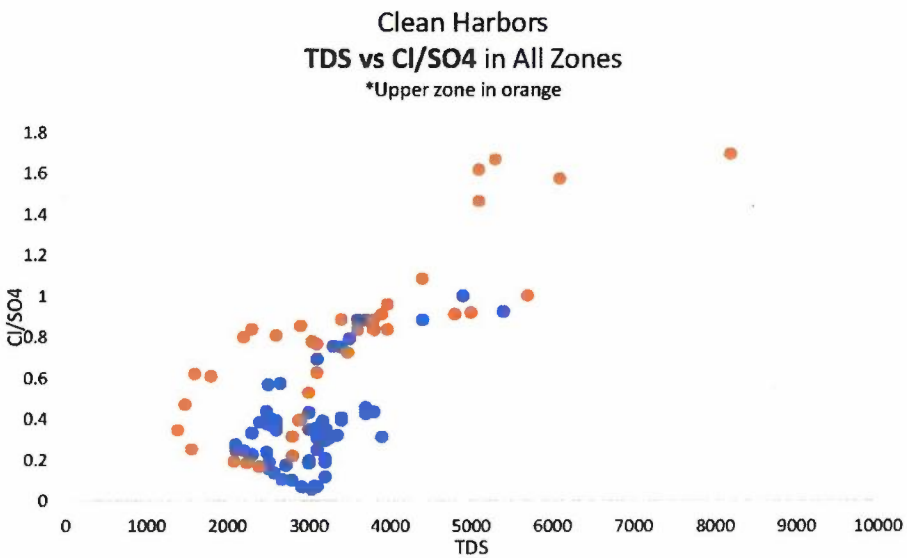
Considering both facilities, the trends at CH are entirely CH, and the McKittrick water is low in Sulfate, putting it in different compositional space.





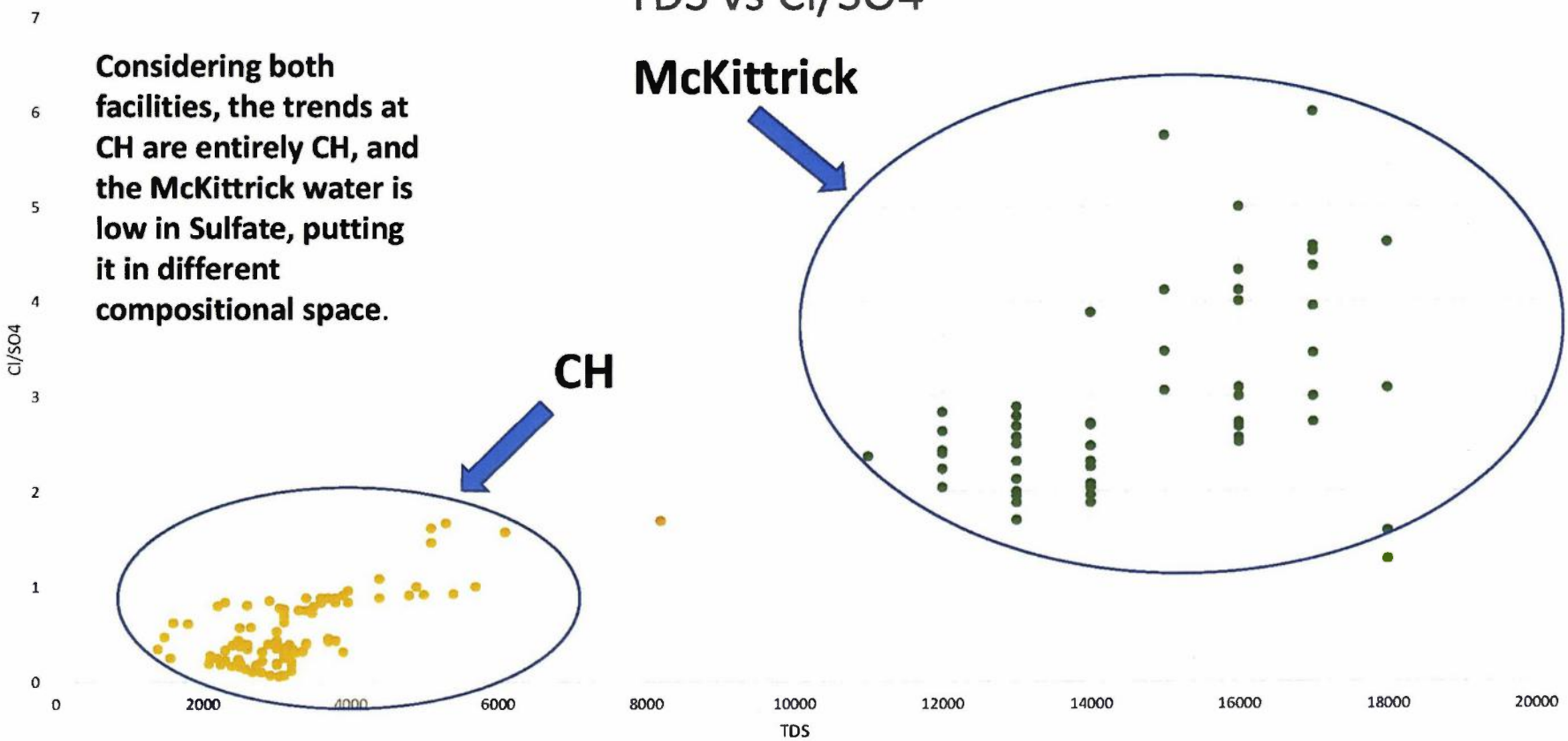


- **The Upper Zone, which cannot be from McKittrick, covers the range in Cl/SO4 seen at Clean Harbors, and the SO4/B in the intermediate zone goes to lower B (less of the "produced water signature")**
- **Therefore these key parameters all reflect UZ constituents migrating downwards**

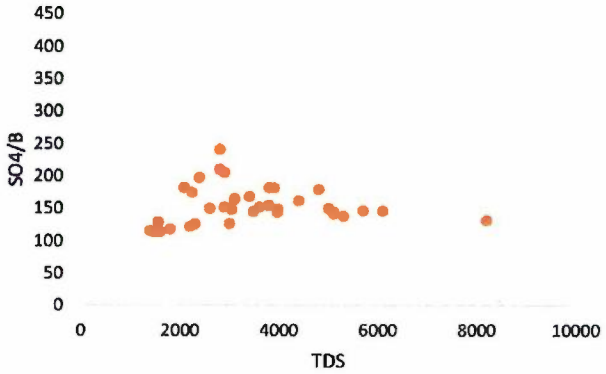


McKittrick and Clean Harbors
TDS vs Cl/SO4

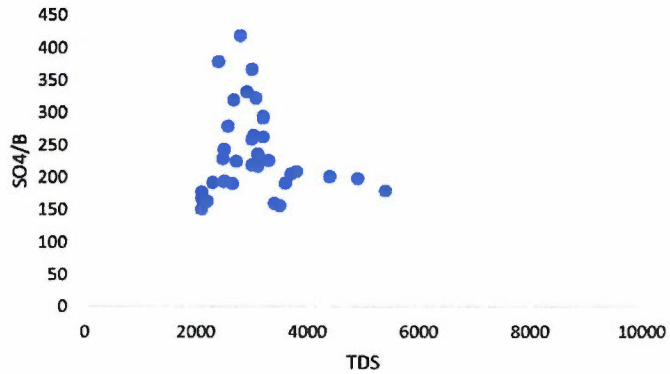
Considering both facilities, the trends at CH are entirely CH, and the McKittrick water is low in Sulfate, putting it in different compositional space.



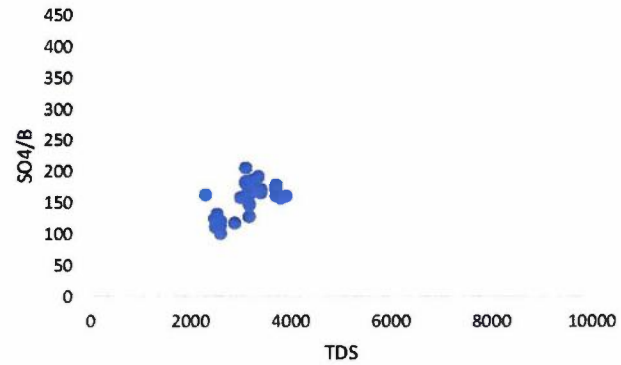
Clean Harbors
TDS vs SO4/B in Upper Zone



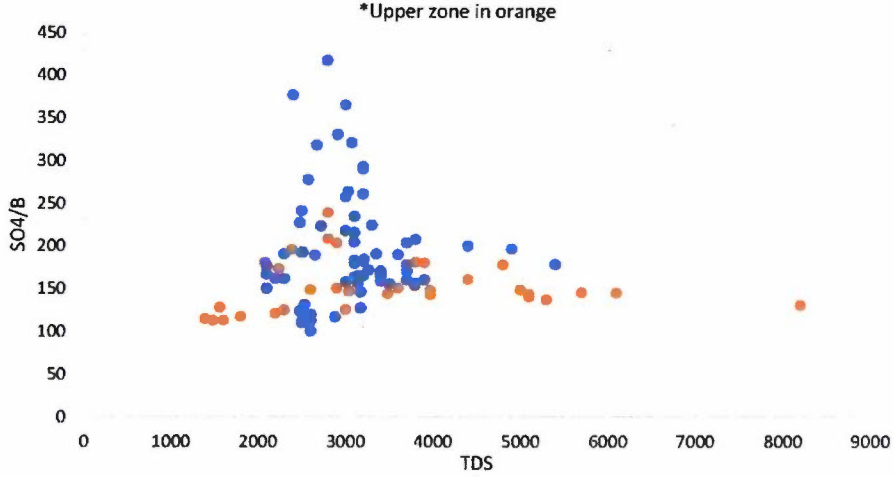
Clean Harbors
TDS vs SO4/B in Intermediate Zone



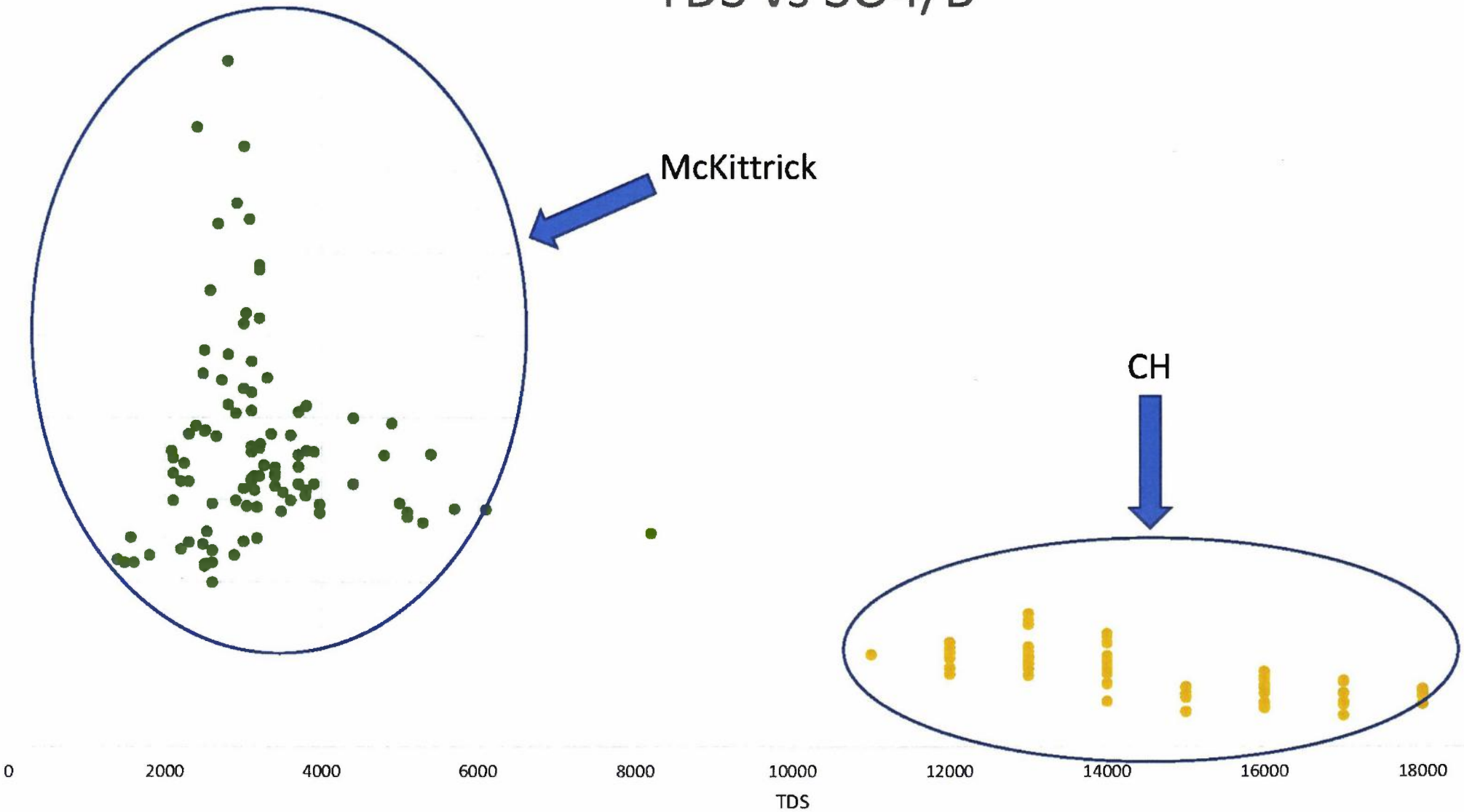
Clean Harbors
TDS vs SO4/B in Lower Zone



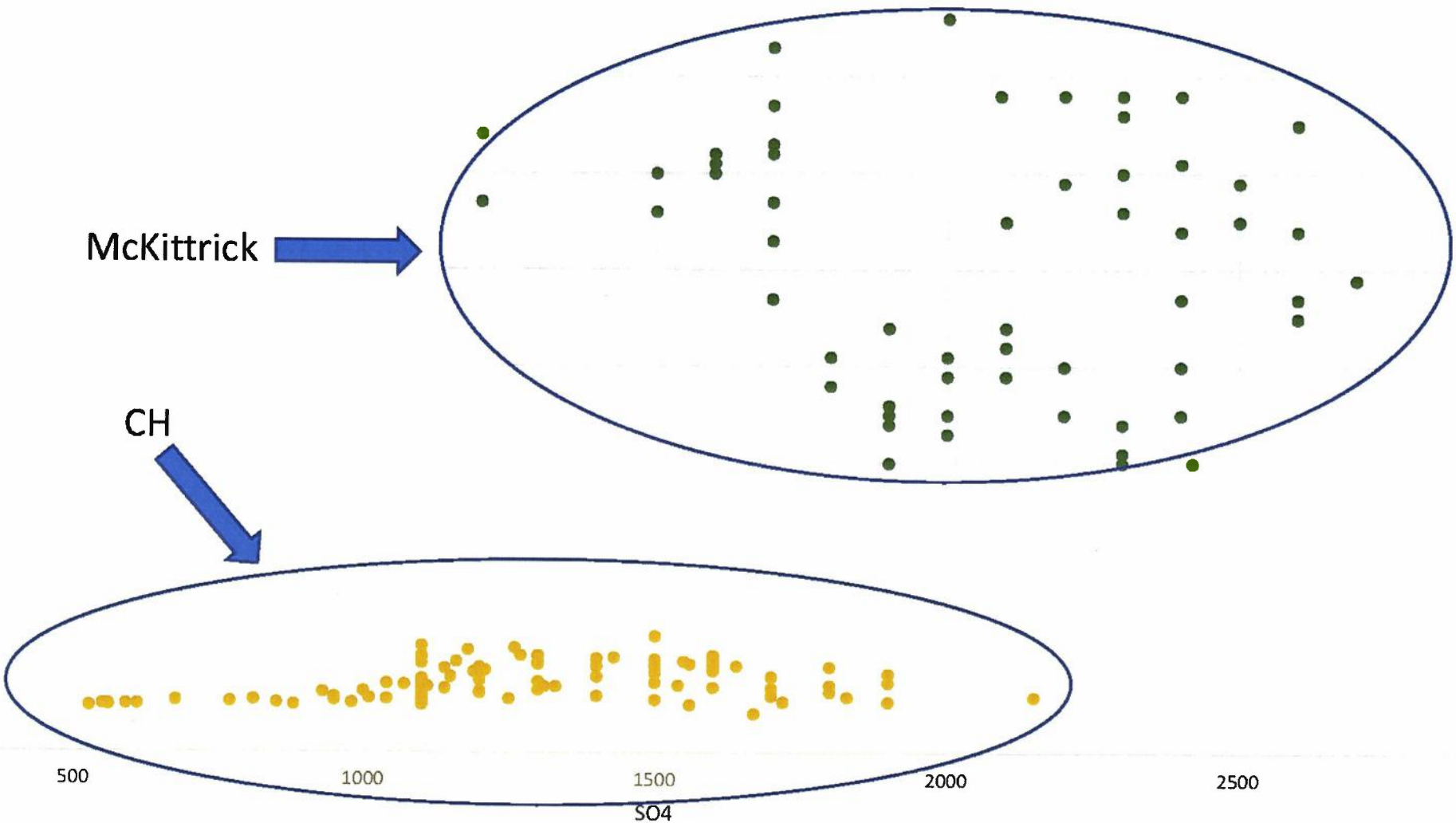
Clean Harbors
TDS vs SO4/B in All Zones
*Upper zone in orange

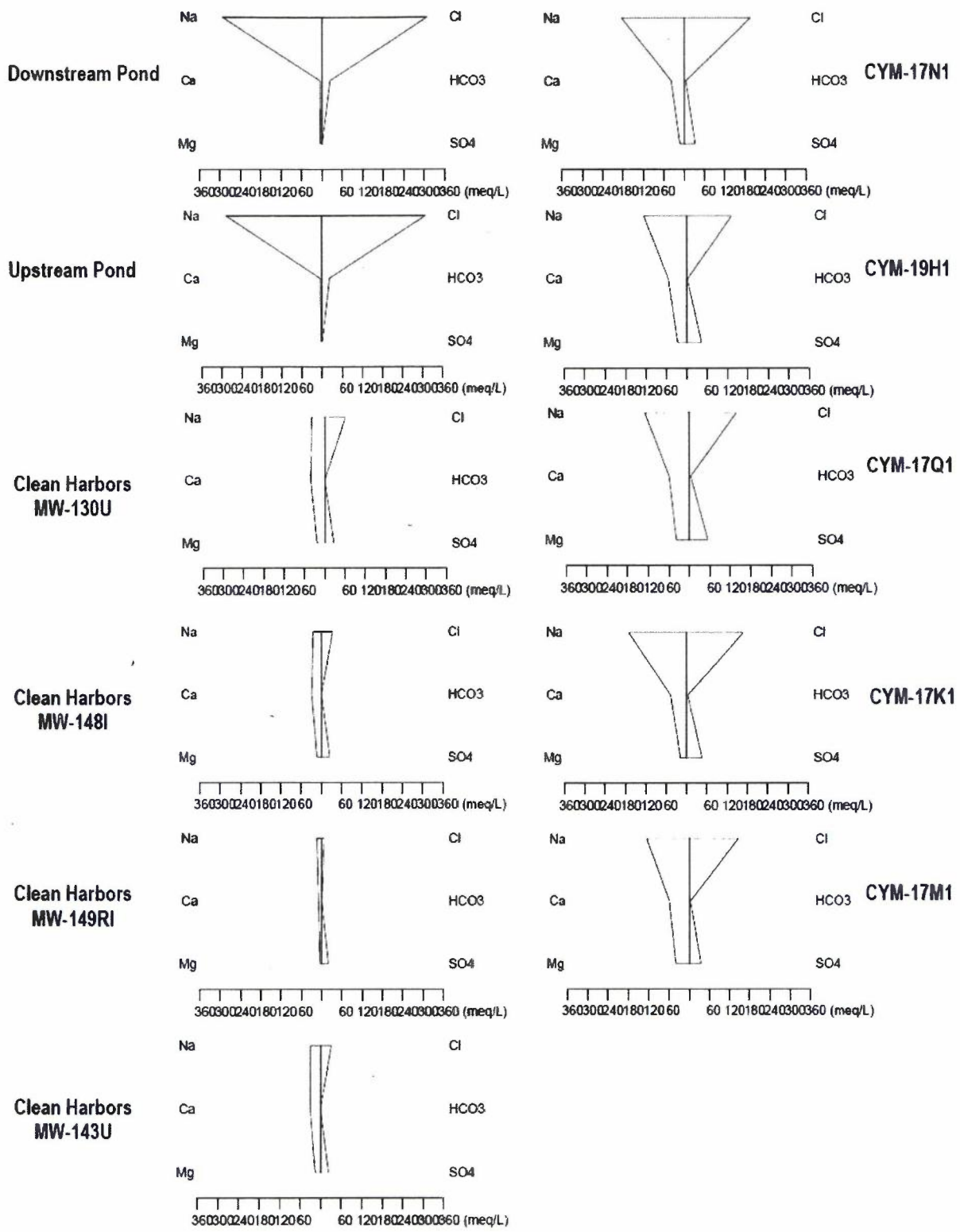


McKittrick and Clean Harbors
TDS vs SO4/B



McKittrick and Clean Harbors
SO4 vs B

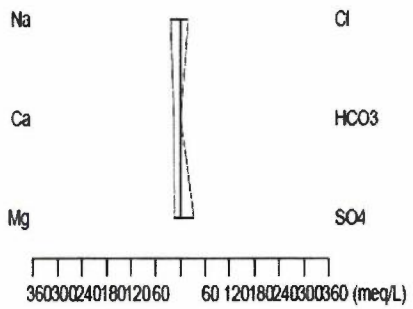


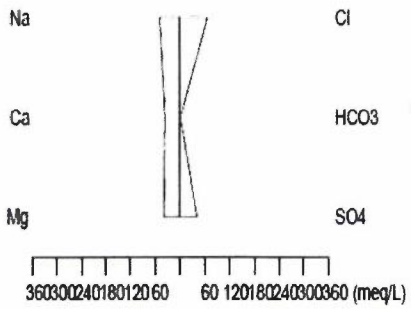


Stiff diagrams May and June 2017, upper Tulare Sand/ upper perched zone and intermediate perched zone

CLIENT: Valley Water Management Co.		PROJECT: Cymric study area	
JOB #: 31400789		DRAWN: AG	CHECKED: DH
DATE: October 2017		FIGURE: 3-1	

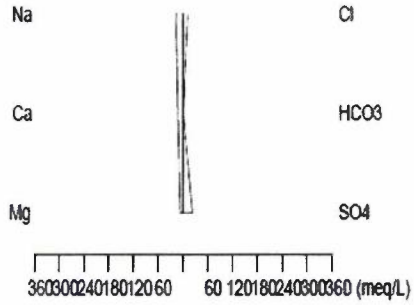
Clean Harbors
MW-102RL





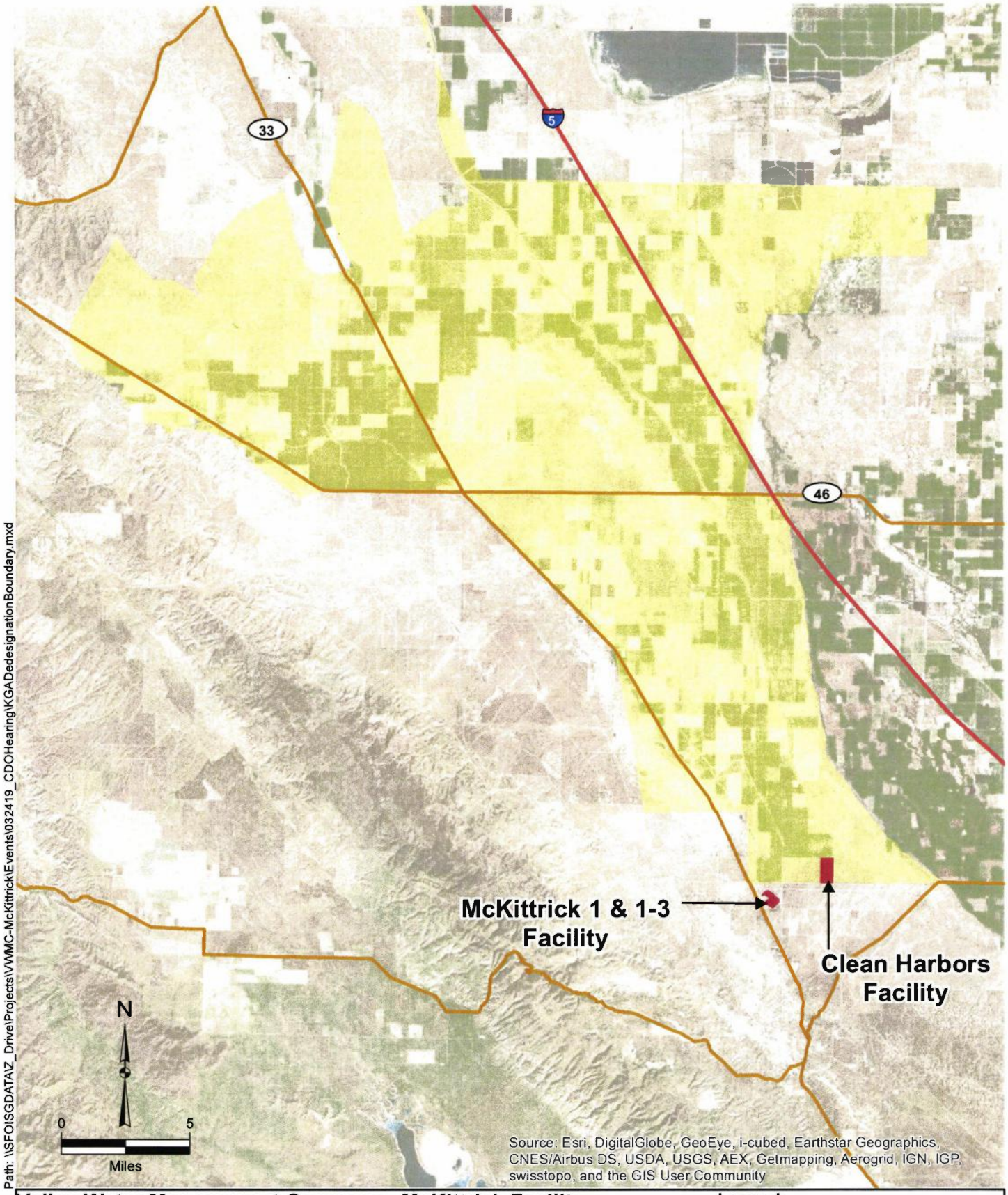
CYM-21D1

Clean Harbors
MW-170L



Stiff diagrams May and June 2017, lower Tulare sand/ lower water table zone

CLIENT:	Valley Water Management Co.	PROJECT:	Cymric study area
JOB #:	31400789.000	DRAWN: AG	CHECKED: DH
DATE:	October 2017	FIGURE:	3-2



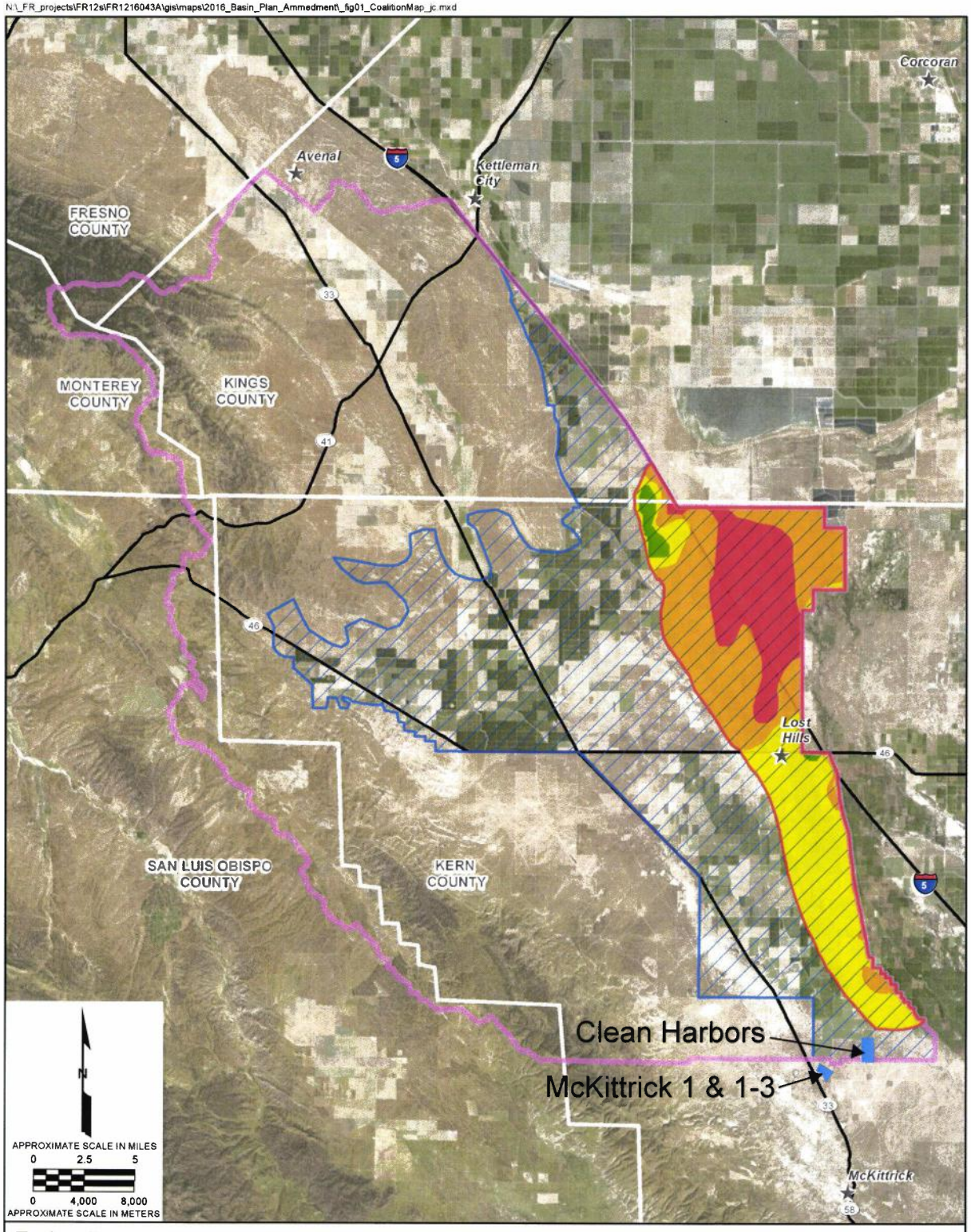
Valley Water Management Company - McKittrick Facility
Westside Water Quality Coalition Dedesignation Boundary

Legend:

WWQC Dedesignation Boundary

Source: Amec Foster Wheeler. Basin Plan Amendment. Westside Water Quality Coalition. 19 September 2016.

N:_FR_projects\FR12s\FR1216043A\gis\maps\2016_Basin_Plan_Ammedment_fig01_CoalitionMap_jc.mxd



Explanation

★ US Census Populated Places

Counties

Electrical conductivity in perched groundwater 2012 (µmhos/cm)

- 0 - 2,000
- 2,000 - 4,000
- 4,000 - 10,000
- 10,000 - 20,000
- > 20,000

Coalition areas

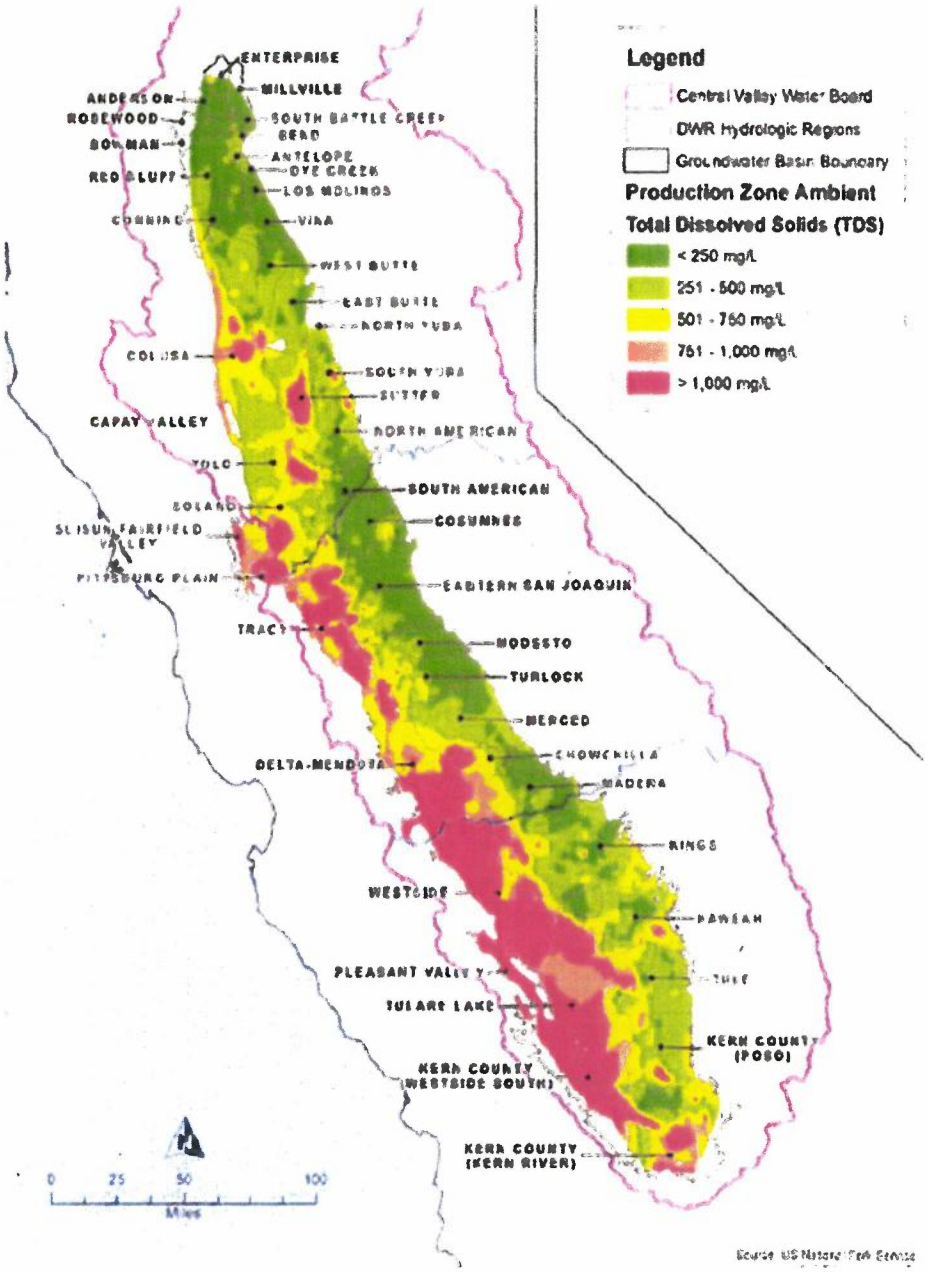
- Westside Water Quality Coalition
- Basin Plan Amendment Area Unconfined/Semi-Confined
- Basin Plan Amendment Area Perched Groundwater

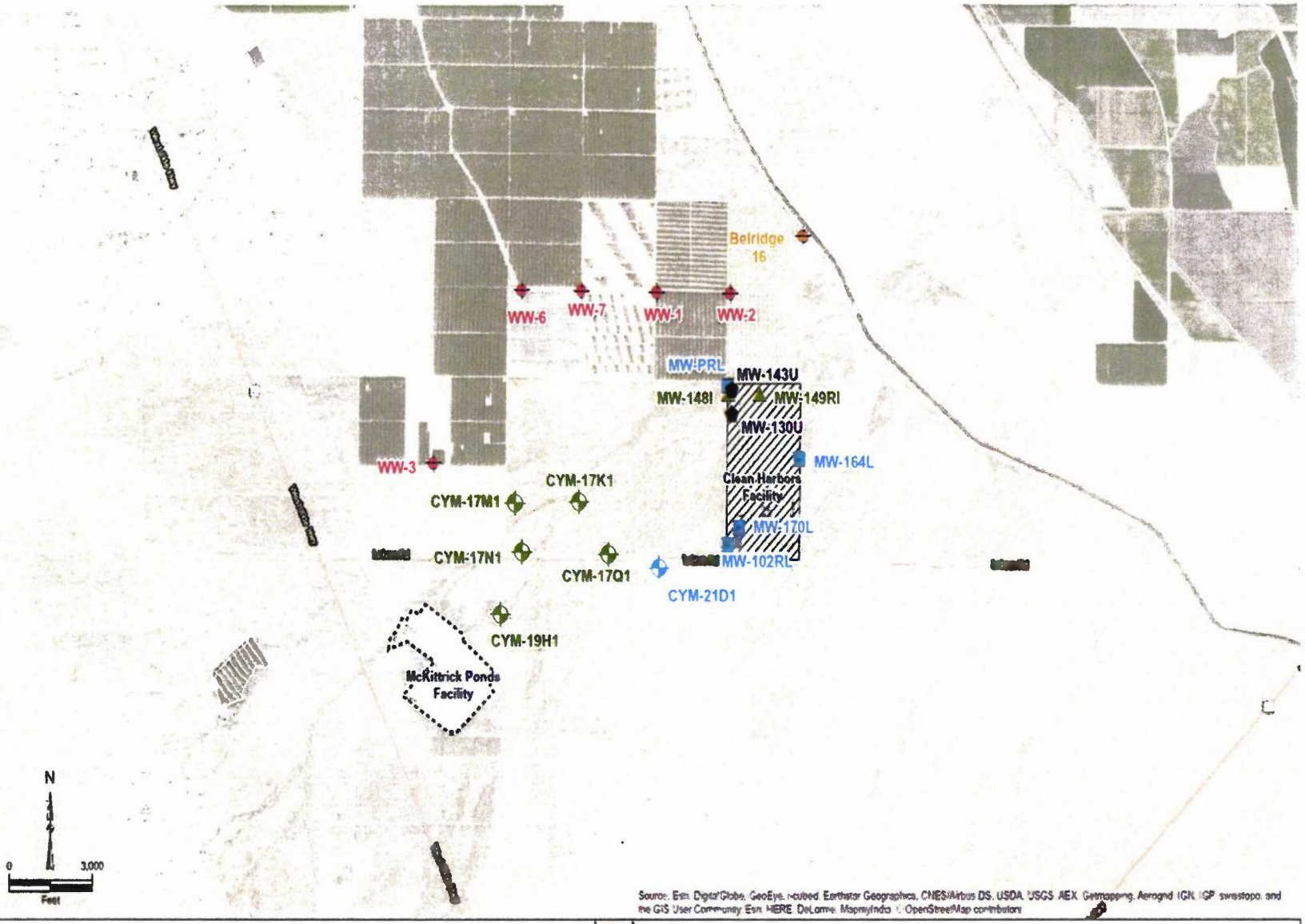
Basemap modified from ESRI online shared content, aerial imagery web mapping services.

WESTSIDE WATER QUALITY COALITION MAP AND BASIN PLAN AMENDMENT AREAS
Westside Water Quality Coalition
Kern and Kings Counties, California

Date: 08/17/2016	Project No.: FR1216043A	Figure 1
Submitted By: GLK	Drawn By: JAC	

Figure 2 - 7. Ambient Groundwater Quality for Production Zone (TDS) mg/L



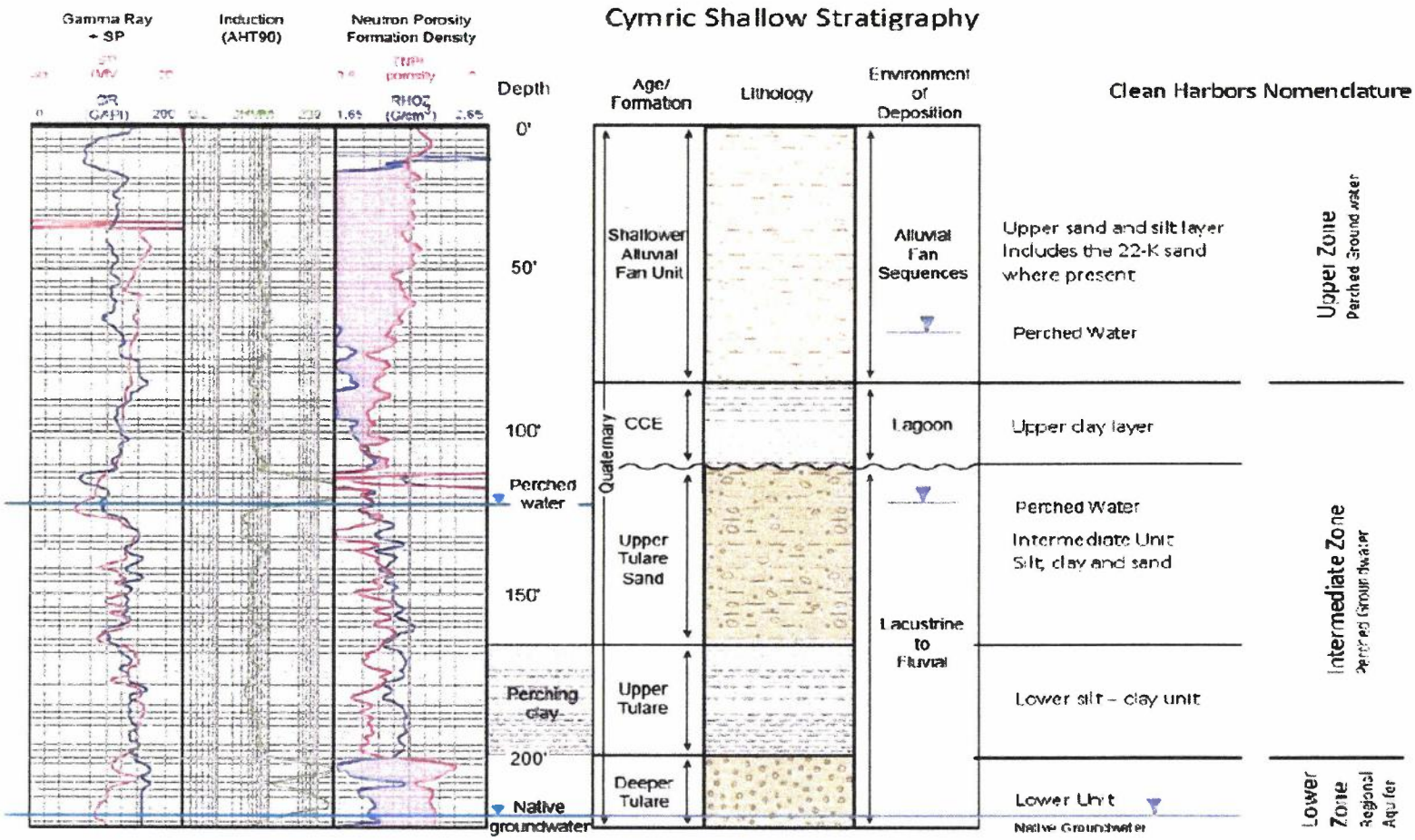


Valley Water Management Company - McKittrick Facility
Project Area Map

Figure 1

Legend:

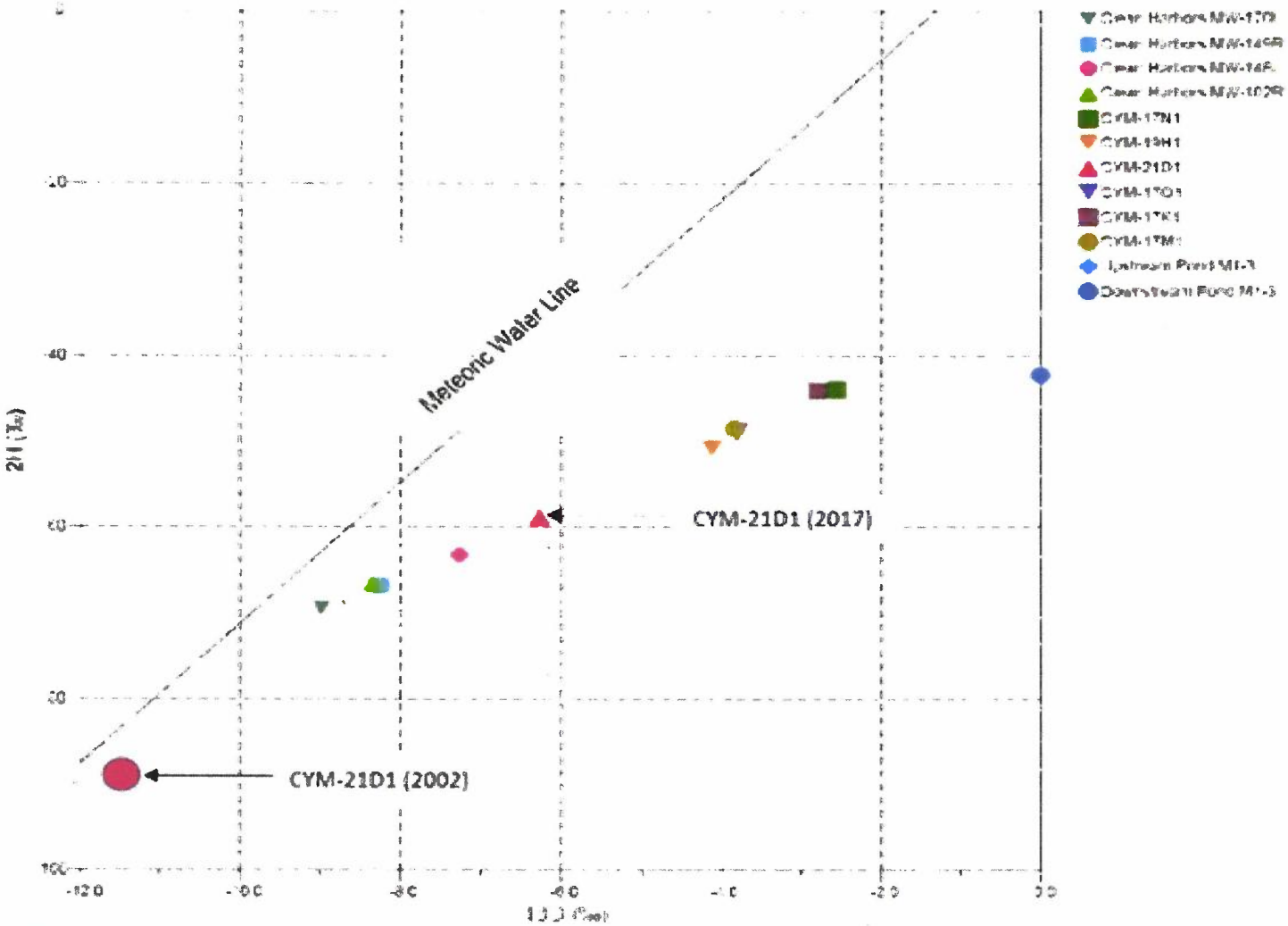
- Starrh Farms Well
- Other Nearby Well
- Valley Water Management Company Well (Upper Tulare Clay)
- Valley Water Management Company Well (Lower Tulare Sands)
- Clean Harbors Well (Alluvial Fan Upper Perched Zone)
- Clean Harbors Well (Upper Tulare Intermediate Perched Zone)
- Clean Harbors Well (Lower Tulare Water Table Zone)



Valley Water Management Company - McKittrick Facility
Stratigraphy Diagram

Figure 2

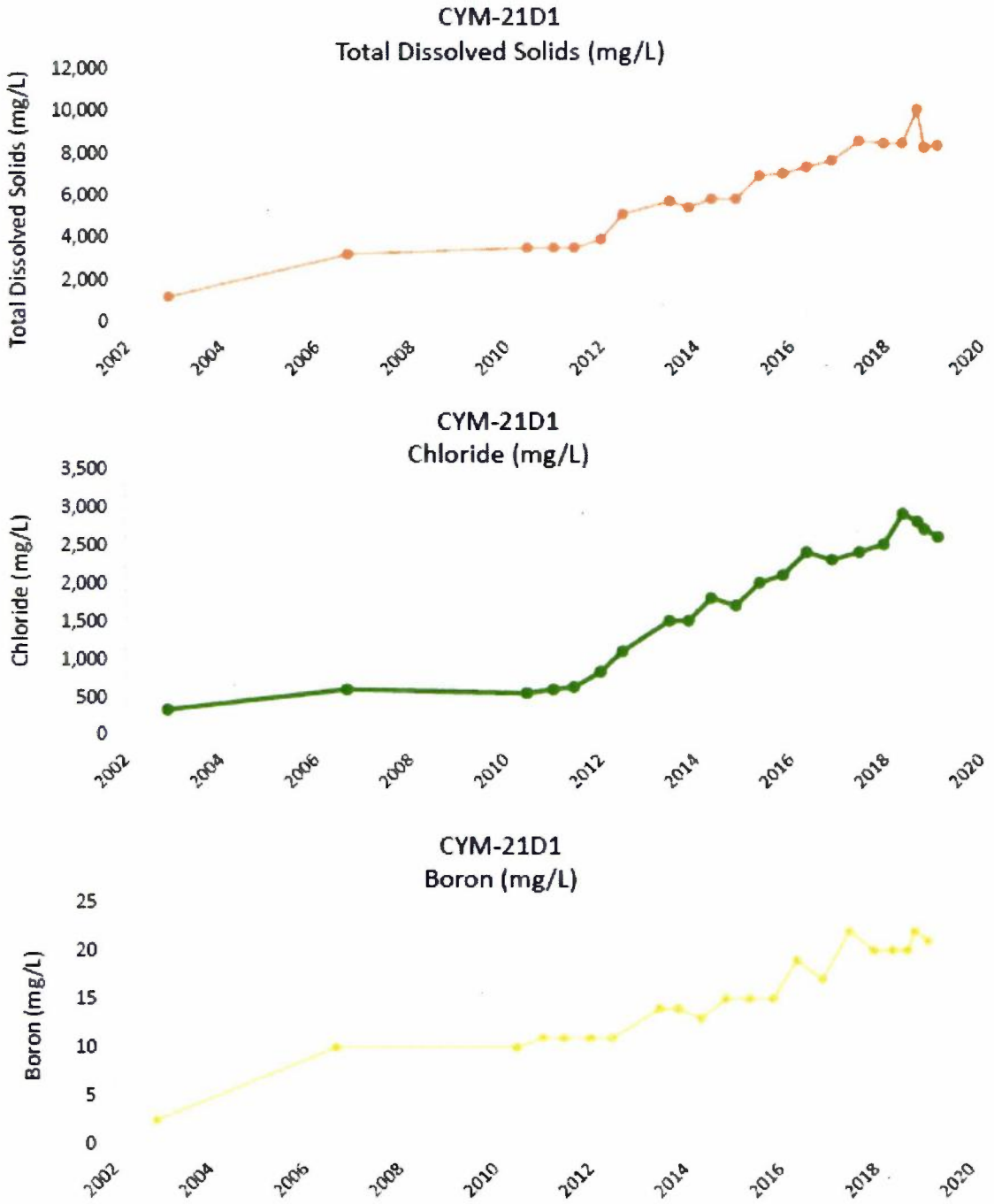
Source: WSP Parsons Brinkerhoff. 2018b. Valley Water McKittrick Ponds – March 14, 2018. Valley Water Management Company Powerpoint presentation to CRWQCB. Fresno, CA. 15 pages.



Valley Water Management Company - McKittrick Facility
Oxygen and Hydrogen Isotopic Compositions (May and June 2017)

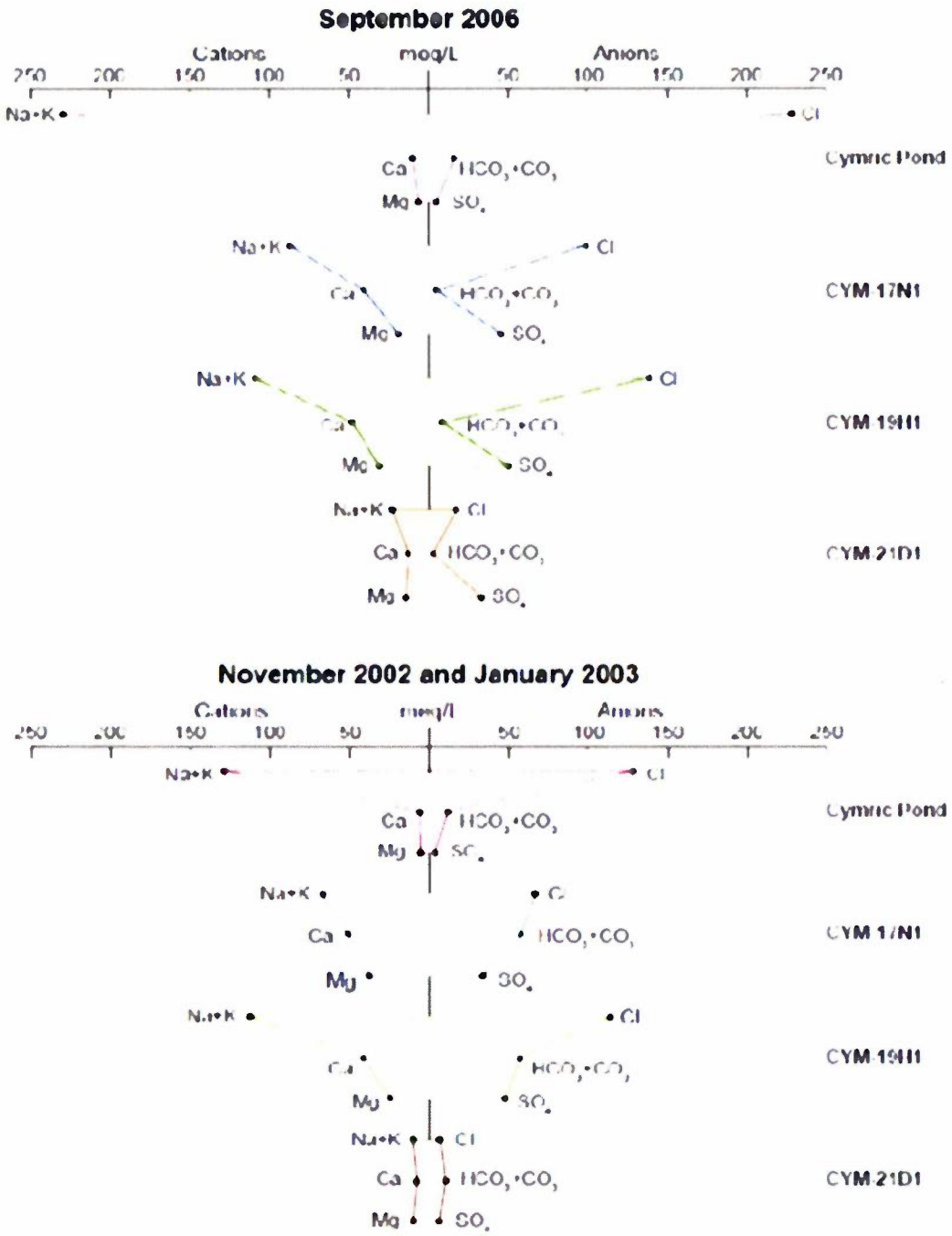
Figure 4

Source: WSP Parsons Brinckerhoff. 2017. *First Semi-Annual 2017 Cymric Area Sampling and Analysis Report*. 6 October 2017. Figure 3-7



Valley Water Management Company - McKittrick Facility
Water Quality at CYM-21D1

Figure 3

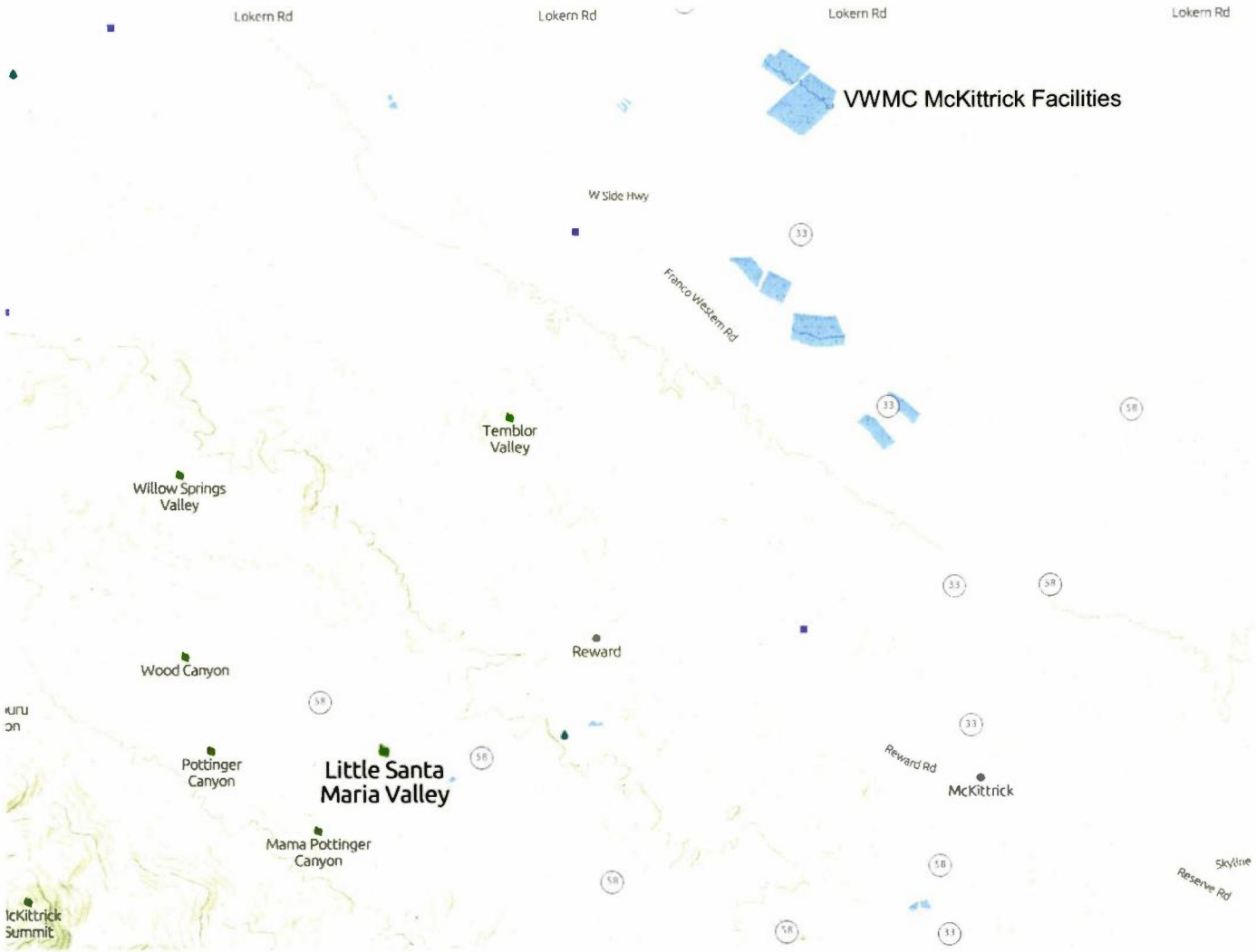


Valley Water Management Company - McKittrick Facility
Stiff Diagrams

Figure 5

Source: Geomega, 2007 *Phase II Hydrogeologic Characterization Report* Figure 5

CV-SALTS Committee Rosters

Executive Committee Membership			CV-SALTS Executive Committee Meetings - 2018-2019											
Voters	Category/Stakeholder Group	Name	15-Feb	8-Mar	13-Apr	3-May	24-May	16-Aug	20-Sep	18-Oct	15-Nov	10-Jan	21-Feb	28-Mar
1	Central Valley Water Board	Patrick Pulupa	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
Alt	Central Valley Water Board	Anne Littlejohn		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2	State Water Resources Control Bd.	Darrin Polhemus	✓	✓		✓	✓		✓					
3	Department of Water Resources	Jose Faria												
Alt	Department of Water Resources													
4	US Bureau of Reclamation		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
5	Environmental Justice													
6	Environmental Water Quality	TBD												
CV Salinity Coalition														
1	So. San Joaquin WQC	Nicole Bell	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	
2	City of Stockton	Deedee Antypas						✓	✓	✓	✓	✓	✓	
3	California Cotton Growers	Chris McGlothlin										✓		
4	City of Fresno	Rosa Lau-Staggs		✓	✓	✓		✓						
5	CA Leaque of Food Processors	Trudi Hughes												
Alt	CA Leaque of Food Processors	Rob Neenan	✓			✓	✓	✓		✓				
6	NCWA/SVWQC	Bruce Houdesheldt	✓	✓	✓	✓	✓	✓		✓	✓	✓		
7	City of Tracy	Stephanie Hiestand	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
Alt	City of Tracy	Dale Klever					✓		✓				✓	
8	Sacramento Regional CSD	Rebecca Franklin	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
Alt	Sacramento Regional CSD	Sam Safi						✓	✓	✓	✓		✓	
9	San Joaquin Tributaries Authority	Dennis Westcot												
10	Valley Water Management	Melissa Thorme	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
Alt	Valley Water Management	Jason Meadors								✓		✓	✓	
11	California Rice Commission	Tim Johnson		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
12	City of Davis	Josie Tellers	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
13	Tulare Lake Drainage District	Mike Nordstrom	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
14	Western Plant Health Assoc.	Renee Pinel												
15	City of Vacaville	Mindy Boele				✓	✓	✓	✓	✓		✓		
Alt	City of Vacaville	Justen Cole	✓	✓	✓		✓							
16	Dairy Cares	J.P. Cativiela	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
Alt	Dairy Cares								✓					
17	Westlands Water District	Debra Dunn						✓			✓	✓	✓	
Alt	Westlands Water District	Kit Campbell		✓										
Comm. Chairs/Co-chairs														
1	Chair Executive Committee	Parry Klassen, ESJWQC	✓	✓		✓	✓	✓		✓	✓	✓	✓	
2	Vice Chair Executive Committee	Debbie Webster CVCWA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
3	Technical Advisory Committee	Roger Reynolds, S Engr.												
	Technical Advisory Committee	Nigel Quinn, LBL												
4	Public Education and Outreach	Nicole Bell												
5	Economic and Social Cost Committee	David Cory, SJVDA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
6	Lower San Joaquin River Committee	Karna Harrigfeld, SEWD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Little Santa Maria Valley Proximity