DOWNEY BRAND LLP
MELISSA A. THORME (Bar No. 151278)
621 Capitol Mall, 18th Floor
Sacramento, CA 95814-4731
Telephone: (916) 444-1000
mthorme@downeybrand.com

Attorneys for
VALLEY WATER MANAGEMENT COMPANY

BEFORE THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

FOR THE CENTRAL VALLEY REGION

In the Matter of: TENTATIVE CEASE AND DESIST ORDER R5-2019-0XXX FOR VALLEY WATER MANAGEMENT COMPANY'S McKITTRICK 1 & 1-3 FACILITY, KERN COUNTY	**VALLEY WATER MANAGEMENT COMPANY'S SUBMISSION OF EVIDENCE, POLICY STATEMENTS, AND DESIGNATION OF WITNESSES AND SUMMARY OF TESTIMONY**

Valley Water Management Company ("Valley Water") requests that the Central Valley Water Board adopt a new Waste Discharge Requirements ("WDRs") as ordered by Resolution R5-2018-0015 on April 5, 2018, instead of the proposed Cease and Desist Order ("CDO"). The Revised Supplemental Notice of Public Hearing provided on March 22, 2019 required response to the proposed CDO by April 8, 2019. Valley Water timely submits the attached testimony, evidence, and policy statements along with witness designations and subject(s) of including the following information:

1. Overview and Summary
2. Factual, technical, legal, and economic arguments or analysis.
3. Evidence [other than witness testimony to be presented orally at the hearing] that Valley Water would like the Central Valley Regional Water Quality Control Board ("Central Valley Water Board") to consider. Evidence and exhibits in the public files of the Central Valley Board or online are submitted by reference where identified.
4. The name of each witness that Valley Water intends to call at the hearing, the subject(s) of each witness' proposed testimony, and the estimated time required by each witness to present direct testimony.
5. The identification and qualifications of each expert witness, if any.

I. OVERVIEW AND SUMMARY

Valley Water believes the draft CDO for its McKittrick facility is unnecessary owing to the work currently being done with Central Valley Water Board staff that should lead to agreement on the factual basis of this matter and, therefore, support fact-based decision making. In 2018, Valley Water worked collaboratively with Central Valley Water Board staff in the development of a hydraulic model of groundwater flow beneath the McKittrick 1 & 1-3 Facility ("Facility"). It was jointly concluded that additional groundwater monitoring wells were needed to fill data gaps that kept Valley Water and Central Valley Water Board staff from reaching full consensus on the model input and calibration parameters, as well as the model-predicted extent of produced water migration. With the promise of this additional information, the Central Valley Water Board directed its staff to adopt a new permit for this Facility, not a CDO. (Res. No. R5-2018-0015 (April 5, 2018).)[1]

In the last year, a new Monitoring and Reporting Program ("MRP") was issued for the Facility, and Valley Water and Central Valley Water Board staff have worked together to come to an agreement on the stratigraphic relationships between the Cymric shallow stratigraphy underlying the McKittrick Facility and the Cymric shallow stratigraphy underlying a neighboring Class 1 waste disposal facility owned by Clean Harbors. Valley Water used this information to develop a groundwater hydraulic model to further facilitate discussions related to the trends and significance of the geochemical results beneath the two facilities. While there was substantial agreement on the geochemistry and water quality, questions remained to which agreement could not be reached due to a lack of monitoring wells between the Valley Water McKittrick Facility and the downgradient Clean Harbors facility. (*See accord* Exhibit 22 at pp. 13, 20.)

---

[1] The Central Valley Water Board's objectives can be better served through the issuance of WDRs (draft provided as Exhibit 3), which includes regulatory options and a time schedule similar to that provided in the draft CDO. This permitting approach is consistent with a CDO in providing a schedule of milestones that must be met, but better reflects the oil field General Orders and the Salinity Management Policy adopted by the Central Valley Board in May of 2018 that would allow continued operation of the Facility while Valley Water achieves the required milestones.

In the last year, Valley Water has been diligently pursuing installation of additional monitoring wells downgradient of the Facility, but California Endangered Species Act ("ESA") issues led to a necessarily long implementation timeframe. (Exhibit 1, ¶10; Exhibit 24; Exhibit 22 at p. 3, 21, and 23 (highlighted).) Specifically, the situation was complicated by the habitat and presumed presence of the Blunt-Nosed Leopard Lizard (*Gambelia sila*), a fully-protected endangered species in California. Unlike other endangered species, ***fully protected species*** may not be taken or possessed at any time and no licenses or permits may be issued for their take (*See accord* http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/fully_pro.html (*last accessed* April 4, 2019) (lists Blunt Nosed Leopard Lizard). The potential sites are also home to eleven (11) other state or federal protected mammals, birds, and animals (Exhibit 24, Oct. 1, 2018 letter, p. 1).

However, as a result of Valley Water's diligent work undertaking a biological survey (Exhibit 24), selecting previously disturbed sites, avoiding construction during sensitive times, planning to have a biologist onsite during construction, and negotiating neighboring landowner approvals to conduct surveys and install the needed monitoring wells, Valley Water should be able to install all additional monitoring wells by October of 2019, with water quality results available soon after that. (Exhibit 1, ¶11.) Valley Water believes that consideration of the CDO should be a fact-based decision, and would be better informed after the review of the new monitoring data that should answer the questions those data are expected to resolve. (Exhibit 1, ¶¶11, 13.)

Once the new well data are available, Valley Water believes the same productive and collaborative process will lead to resolution of the geochemical questions and allow completion of a jointly-supported groundwater hydraulic model that simulates future produced water migration, and provides a sound foundation for decisions regarding the site.

Valley Water has also reviewed more recent water quality data collected this year at Clean Harbors and still finds an absence of evidence of McKittrick produced water influence at Clean Harbors on the perched groundwater in the upper and intermediate zones and no indication of any influence in the lower Tulare zone. Furthermore, all of the geochemical trends at Clean Harbors are fully explainable by conditions there. Not only is there no data indicating McKittrick produced water lies beneath Clean Harbors, but there are no unexplained effects at Clean Harbor that might

make one even suspect such an effect. In any case, the data from the planned new wells should fully resolve this current area of disagreement between Valley Water and Central Valley Water Board staff.

Finally, as discussed more fully below, Valley Water's data and Clean Harbors' data indicate that the Lower Tulare formation in this area was never "high quality" water, and was never able to reasonably support an unrestricted municipal ("MUN") or agricultural ("AGR") supply designation. Therefore, any salinity and other potential contaminants that may have reached that zone from either McKittrick, Clean Harbors, or other discharges would not have impaired existing beneficial uses. Because this alleged impairment is the stated reason for the CDO, Valley Water believes that consideration of the CDO is premature until the supplemental water quality data, which includes a new well in the Lower Tulare Formation, is available to support fact-based decision-making.

Instead of issuing a CDO, Valley Water urges the Central Valley Water Board to issue an updated permit for the Facility since the current permit is over 50 years old. (Attachment D.) To facilitate this process, this submittal includes both a Report of Waste Discharge/Form 200 (Exhibit 2), and a draft Waste Discharge Requirements ("WDRs") (Exhibit 3). Since the stated purpose of the CDO is to eventually adopt a permit and require compliance, and since Resolution R5-2018-0015 (Attachment K) instructed staff to determine the appropriate permit for the Facility, adoption of a new WDR is the best option.

II. FACTUAL BACKGROUND

A. HISTORY OF VALLEY WATER MANAGEMENT COMPANY

Valley Water currently owns and operates the McKittrick Facility. (Exhibit 1, ¶5.) Valley Water is a not-for-profit oilfield produced water storage and management company, which has served many small and large oil companies in Kern County for almost 87 years. (*Id.*, ¶4.) Various oil companies have used this Facility over the years. Valley Water is the only local company available for this service. (*Id.*)

Valley Water has several facilities located in and around Kern County's oilfields, many that have been permitted for decades; some like this Facility since the 1950s. (Exhibit 1, ¶5.) This

Facility is regulated and regularly inspected by the Central Valley Water Board. (*Id.*) Between 1992 and 2014, the inspections undertaken over these three decades found **no violations** of the applicable permit. (*Id.; see* Section II.C. and Exhibit 8.) However, without Valley Water managing its facilities any differently or dropping out of compliance, the Central Valley Water Board changed its inspection and enforcement practices in the mid-2010s and began issuing numerous orders related to this Facility (Exhibit 17) due to its policy decision to more closely scrutinize oil field operations.

B. REGULATORY HISTORY OF THE MCKITTRICK FACILITY

The McKittrick Facility is currently regulated by a Waste Discharge Requirements (WDR), Resolution No. 69-199, a permit which has not been updated for more than 50 years, since February of 1969. (Attachment D.) Portions of this Facility have been in place since the 1950s. (Exhibit 1, ¶6.) The 1969 WDRs replaced earlier resolutions Nos. 58-289, 58-292 and 61-122. (Attachment D.)

The 1969 McKittrick WDR found "underground movement of percolating waste waters from the disposal sumps towards the trough of the San Joaquin Valley is restricted by a structurally high ridge formed by the south plunging nose of the South Belridge Oil Field and the north plunging nose of Elk Hills Oil Field." (Attachment D at p. 1.) The WDR also states that "usable ground waters in this area are confined to Little Santa Maria Valley and other small alluviated valleys in the Belgian Anticline Oil Field south of McKittrick and to the area generally east of Buena Vista Slough some seven miles northeast…." (*Id.* at p. 1.)

The WDR also requires that the discharge not cause a pollution of ground or surface waters, and not cause a nuisance by reason of odors or unsightliness. (*Ibid.*) The permit thereby limits nuisance to odors and visual issues, not the full definition of "nuisance" under Water Code section 13050(m). "Pollution" is defined as "an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either of the following: (A) The waters for beneficial uses; (B) Facilities which serve these beneficial uses." Water Code §13050(*l*)(1). Pollution can also include "contamination," which is defined as "an impairment of the quality of

the waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease," and "includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected." Since no hazardous chemicals or infectious agents have been seen in local ground waters at problematic levels due to produced water, the requirements for "contamination" have not been met. Pollution must be determined based on the actual beneficial uses and whether or not they have been unreasonably affected. This may be difficult to prove since the Basin Plan itself states that "[n]o proven means exist at present that will allow ongoing human activity in the Basin and maintain groundwater salinity at current levels throughout the Basin." (*See* Attachment A, Tulare Lake Basin Plan at p. 3-8.) Further, as demonstrated in the Technical Arguments section, there were no existing MUN or AGR uses in or around the Facility historically. (*See* Exhibit 22 at p. 7 (Rodgers: "Based on water quality collected to date, the groundwater directly beneath the McKittrick facility probably meets this case [for de-designation]." (highlighted).)

C. FACILITY INSPECTION AND ENFORCEMENT HISTORY

The following chronology provides the general inspection and enforcement history for the Facility:

1958 - The first WDRs were issued to Valley Water's McKittrick Facility by the Regional Water Board through Res. Nos. 58-289 and 58-292 on April 24, 1958. These resolutions restricted the waste water percolation and evaporation facilities to an area west of Highway 33. (*See* Attachment D.)

Between 1958 and 1961 – Subsequent investigation disclosed evidence of structural barriers to prevent the underground movement of water. (*See* Attachment D.)

1961 – On September 28th, the WDRs for the Cymric Oil Field were modified in view of the aforementioned geologic barriers. As conditions were essentially the same for all three fields (with the exception of a fresh water bearing formation in the Little Santa Maria Valley), the WDRs for all three fields were combined into one WDR for administrative ease. (*See* Attachment D.)

1990-2014 – ***No violations*** were indicated in any inspection report for this Facility during

this timeframe. (*See* Exhibit 8 – inspection report timeline and copies of inspection reports in Valley Water's files.) Apparently no inspections were conducted by the Central Valley Water Board between the 2014 inspection and an inspection in 2017 (*see accord* Facility Report, https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=drilldown&reportName=facilityAtAGlance&placeID=209130&reportID=1041750, *last accessed* April 4, 2019.)

2012 – On February 2nd, the Central Valley Water Board adopted Order No. R5-2012-0014, which amended the Facility's WDRs to update the ownership name and address. (Att. D.)

2014 – On April 18th, Valley Water provided comments on the Variance and Exception Policies being proposed. In that letter, Valley Water cited to the State Water Board's Vacaville Order, Order No. 2002-0015, which stated: "Where a Central Valley Water Board has evidence that a use does not exist and likely is not feasibly attainable, the Central Valley Water Board should avoid enforcing permit limits to protect the use at least until the Central Valley Water Board either amends the basin plan to dedesignate the use, or determines the use cannot legally be dedesignated." (Emphasis in letter, not in Vacaville order). The letter also suggested that "Providing a compliance schedule would be one method to 'avoid enforcing permit limits' and is certainly allowed under state law," citing Water Code §§13050(j); 13242(b); and 13263(c).

2015 – On April 1st, the Central Valley Water Board issued a 13267 order requiring the collection and analysis of produced water in the listed ponds for specified constituents.

2016 – On October 18th, a draft Monitoring and Reporting Program (MRP) was sent to Valley Water for the Facility, and Valley Water provided detailed comments on the draft MRP.

On June 21st, Valley Water sent a letter to the Central Valley Water Board asking for clarification of the MUN designations, adding Boron to list of Exceptions, clarifying that water quality objectives and Basin Plan effluent limits for groundwater are running annual averages, coordinating groundwater regulation with the Sustainable Groundwater Management Act (SGMA), and deferring oil field General Orders and permits to not get ahead of the CV-SALTS process.

2017 – On June 26th, the Central Valley Water Board sent a new MRP to Valley Water for

the McKittrick Facility, Order No. R5-2017-0806. On July 5th, Valley Water requested rescission of this MRP for failure to comply with legal requirements. Valley Water appealed that MRP to the State Water Resources Control Board ("State Water Board") and requested a stay, but on August 18th, Valley Water requested that its petition be placed in abeyance in order for Valley and the Central Valley Water Board to discuss the provisions of that MRP, to determine the applicability of General Order No. 3 to the McKittrick facility, and/or have a hearing before the Central Valley Water Board itself. On September 1st, the Central Valley Water Board rescinded Order No. R5-2017-0806 and began to work on another MRP.

In addition to the items delineated in this timeline, other orders, activities, and coordination occurred between Valley Water and Central Valley Regional Board staff. These are detailed and included in Exhibit 17.

2018 – On April 4th, the Executive Officer issued a final MRP for the Facility, Order No. R5-2018-0808 (Attachment J.) On April 25th, Valley Water filed a protective appeal of this MRP, arguing that requiring expensive monitoring to protect a non-existent MUN use was not required or reasonable, but placed this petition in abeyance for two years. (Exhibit 16.)

On April 5th, the Central Valley Water Board adopted Resolution No. R5-2018-0015 (Attachment K), instructing staff to determine the appropriate permit for the Facility, whether that be General Order coverage or an individual permit.

Also in April, Valley Water also met with the Central Valley Water Board staff, Chevron, and Clean Harbors to discuss the current land issues related to monitoring well placement in the sensitive habitat surrounding the McKittrick Facility. (Exhibit 22, p. 21 (highlighted).) Clean Harbors had been reluctant to communicate with Valley Water or to provide any solutions/alternatives over the past two years, but, with urging from Central Valley Water Board staff, Clean Harbors agreed to provide access to their land for drilling monitoring wells, contingent on their approval and the Central Valley Water Board's approval, and also agreed to allow access to their monitoring network provided Valley Water used their consultants for sampling. (Exhibit 1, ¶ 10.)

On May 7th, the Center for Biological Diversity (CBD) appealed Resolution No. R5-2018-

0015 to the State Water Board. After the State Water Board failed to take up the appeal, CBD filed a petition for writ of mandate challenging that Resolution on September 5th.

Just over a week later, on September 13th, the Central Valley Water Board sent a 13267 Order for the Facility, ordering a time schedule for various technical reports.

On October 3rd, Valley Water responded to the 13267 Order, submitting a biological assessment as ordered, which identified endangered species habitat at all proposed monitoring well locations. Valley Water notified the Central Valley Water Board that several of the items ordered could not be complied with due to these concerns, but that Valley Water was committed to completing the tasks as soon as legally and physically possible and providing regular updates to the Central Valley Water Board of progress made.

2019 – On February 25th, the Central Valley Water Board released a Notice of Public Hearing announcing consideration of adoption of a Tentative CDO applicable to the Facility at a hearing on June 6 or 7, 2019. (Exhibit 9.)

On March 1st, Valley Water filed objections to the hearing notice, requesting a formal hearing and separation of prosecution and advisory teams. (Exhibit 10.)

On March 18th, a Supplemental Notice of Public Hearing was issued with the Central Valley Water Board's witness list. (Exhibit 11.)

On March 19th, Valley Water filed additional objections to the Supplemental Notice. (Exhibit 12.) On March 22nd, a Revised Supplemental Notice of Public Hearing was issued with revised submittal dates. (Exhibit 12.)

On March 26th, attorneys for the Coalition for Biological Diversity and the Central Valley Water Board filed a joint stipulation to stay the pending writ proceedings until June 10th and delay the preparation of the administrative record until after the hearing on the Tentative CDO. One whereas clause in this stipulation stated that the CDO, "if adopted as drafted, would require Valley Water to cease discharges at its Facility no later than July 1, 2020 unless the discharges are in compliance with new Waste Discharge Requirements for the Facility issued by the Central Valley Water Board." (Exhibit 13 at p. 2.)

III. TECHNICAL ANALYSIS

A. OVERVIEW

The following technical analysis covers the following major topics:

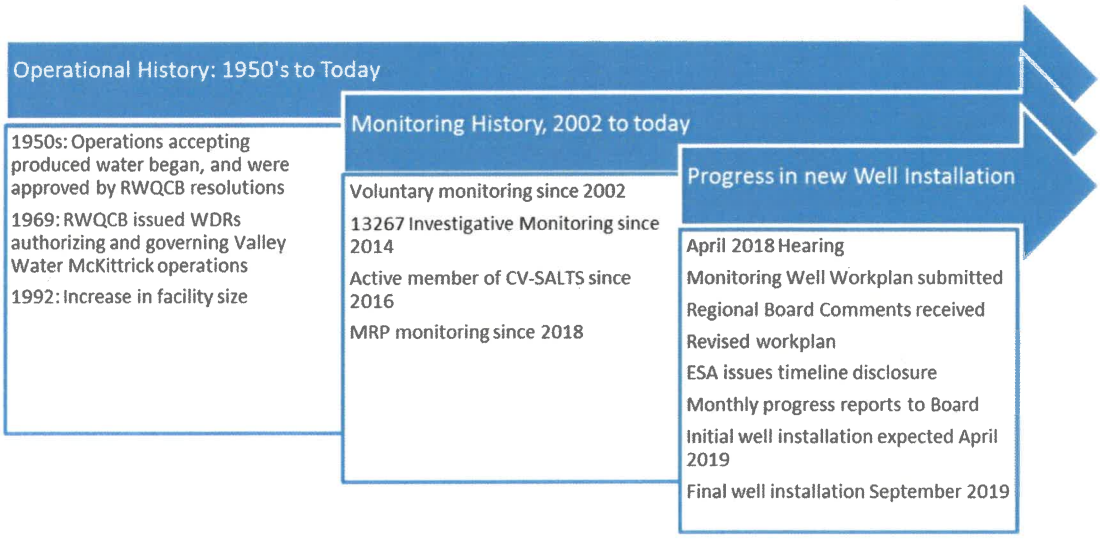
1. Chronology of Activity at Valley Water McKittrick Facility, with an emphasis on work completed since the April 2018 Board Hearing. Valley Water has been working diligently to address significant endangered species constraints and expects most of the ten (10) wells to be installed in May of 2019 with any remaining drilling soon after September of 2019 (once biological report finalized). (Exhibit 1, ¶11; Exhibit 17.)
2. The groundwater quality and hydrogeologic data collected at the Facility, and during joint monitoring at Valley Water McKittrick and Clean Harbors in 2017 and 2019, consistently demonstrate that produced water from the McKittrick facility has not migrated to the Clean Harbors Facility. (*See* Exhibit 15, which includes copies of all Figures used in this document in full size version.)
3. The groundwater quality conditions beneath Clean Harbors are entirely explainable by influences at and in the vicinity of Clean Harbors. There is no reason to suspect that Valley Water McKittrick has have migrated downgradient to Clean Harbors.
4. Groundwater quality conditions in the Lower Tulare Formation in the vicinity of Valley's McKittrick facility have never been sufficient to reasonably support MUN or AGR beneficial use designations.

This section presents the bases for the technical conclusions gleaned from the information provided both by the Central Valley Water Board along with the draft CDO, as well as other information located and utilized by Valley Water's experts.

B. CHRONOLOGY OF THE LAST YEAR'S ACTIVITY AT THE MCKITTRICK FACILITY

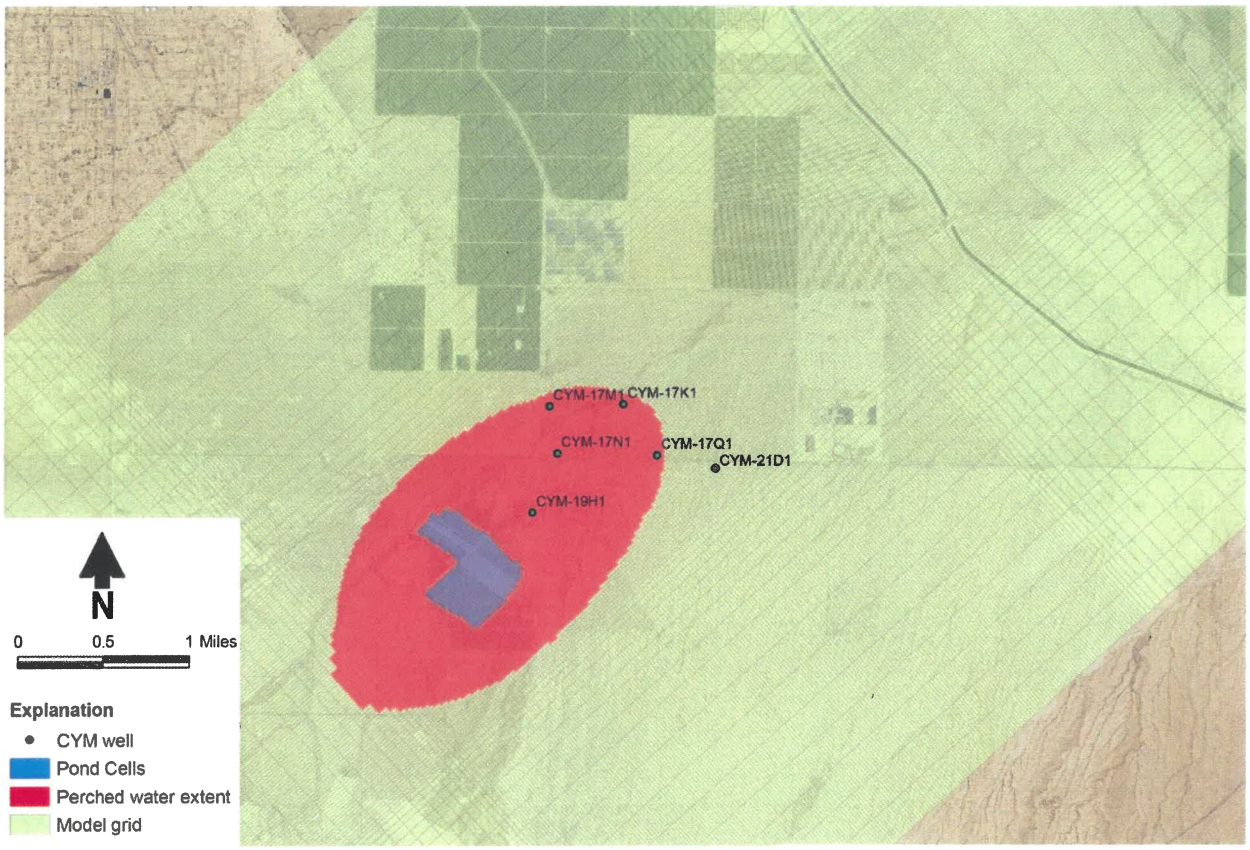
The timeline chart below summarizes key milestones in the McKittrick Facility's operational, monitoring, and new monitor well installation history. Most notably, Valley Water has been working diligently to obtain neighboring landowner approvals to conduct surveys and install wells on their land, which sits within the habitat of the California Endangered Species Act fully-

protected BNLL, as well as several endangered small mammals. Valley Water has been successful in finding locations that should be suitable for installing the required monitoring wells. Accordingly, the final monitoring wells, which both Valley and the Board Staff agree should allow consensus on the physical and chemical conditions in the vicinity and completion of the predictive model, will be drilled when all endangered species requirements are completed and approved. (Exhibit 1, Exhibit 17.)



C. THE WATER QUALITY AND HYDROGEOLOGIC DATA COLLECTED DEMONSTRATE THAT PRODUCED WATER FROM THE MCKITTRICK FACILITY HAS NOT MIGRATED TO THE CLEAN HARBORS FACILITY.

The extent of the shallow produced water mound flowing northeast from the McKittrick Facility is approximately one mile long within the Upper Tulare Sand and extends just past Valley Water wells CYM-17K1, CYM-17M1, and CYM-17Q1. Valley Water well CYM-21D1 (shown below) is not completed in the Upper Tulare Sands, and is not used to depict the extent of perched water. The following figure shows the extent of the produced water perched above the Upper Tulare Clay as derived from the calibration runs of the model:



Groundwater in Clean Harbors ("CH") Upper Perched Zone wells MW-130U and MW-143U, located in the northwest corner of the CH facility, are not affected by McKittrick produced water because the McKittrick produced water plume migrates downward through the Corcoran Clay Equivalent ("CCE") beneath the Valley Facility and, therefore, is never perched in the equivalent of the CH upper zone. In our collaborative work with Central Valley Water Board Staff, we have agreed that the Clean Harbors "Upper Zone", which is perched above the CCE unit, has no equivalent perched zone beneath McKittrick. That is, the CCE causes groundwater to perch beneath Clean Harbors, but not beneath McKittrick. Therefore, the characteristics and trends of the Clean Harbors upper zone have no relationship with the groundwater beneath the McKittrick Facility. A different source of perched water, most likely related to the adjacent irrigated agricultural fields, appears to be affecting these wells, as well as the CH Intermediate Perched Zone well MW-148I (conditions beneath the Clean Harbors facility are discussed in greater detail below in Section III.D).

CH wells MW-130U and MW-143U contained perched groundwater continuously from 2005 to 2015, and from 2005 to 2017, respectively. Valley Water wells CYM-17K1, CYM-17M1, and CYM-17Q1 did not contain groundwater from 2006 to 2014. Therefore, in addition to the stratigraphic impossibility of McKittrick produced water reaching the CH Upper Zone, the timing further prohibits that conclusion. These factors demonstrate a totally different source of perched groundwater in the CH Upper Zone.

Groundwater levels declined 12 to 15 feet in CH Upper Perched Zone wells MW-130U and MW-143U between 2005 and 2017 with well MW-130U now dry and well MW-143U containing only two feet of water in 2017. In contrast, water levels in Valley's Upper Tulare Sand wells have remained constant during this time, providing further evidence of a different source of perched water at these wells. In addition, Total Dissolved Solids ("TDS") and chloride concentrations have been increasing in CH Upper Perched Zone wells MW-130U and MW-143U beginning in 2012 and 2013, prior to groundwater being encountered in Valley sentinel wells CYM-17K1, CYM-17M1, and CYM-17Q1. This timing, along with the falling water levels in MW-130U and MW-143U, indicates a completely different source of perched water for CH Upper Zone wells. These facts are depicted in the figures shown below.

Section III.D below expands on these conclusions to demonstrate that the CH Upper Zone groundwater cannot be from the McKittrick Facility, and explains the groundwater conditions occurring in the deeper water-bearing zones beneath CH.

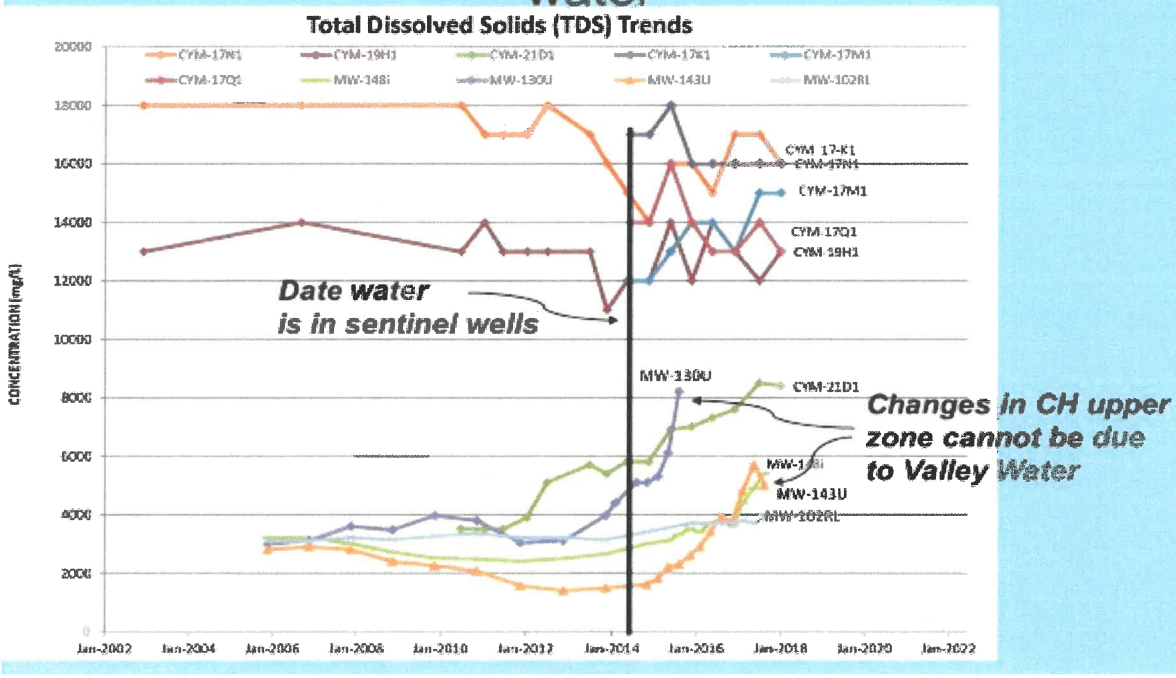
//

//

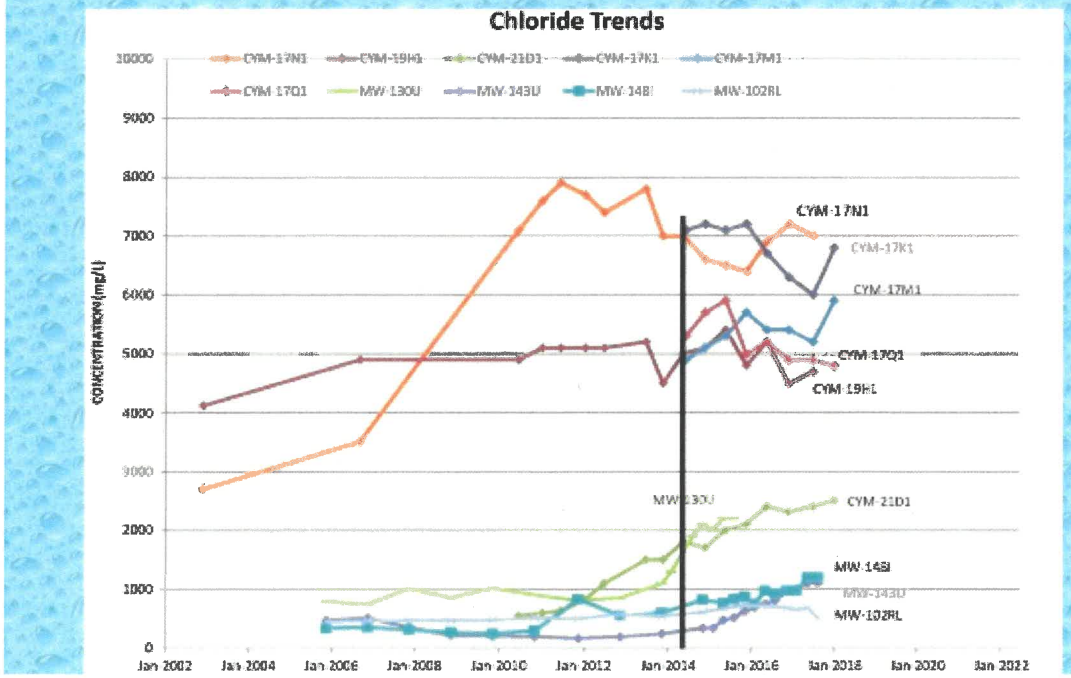
//

//

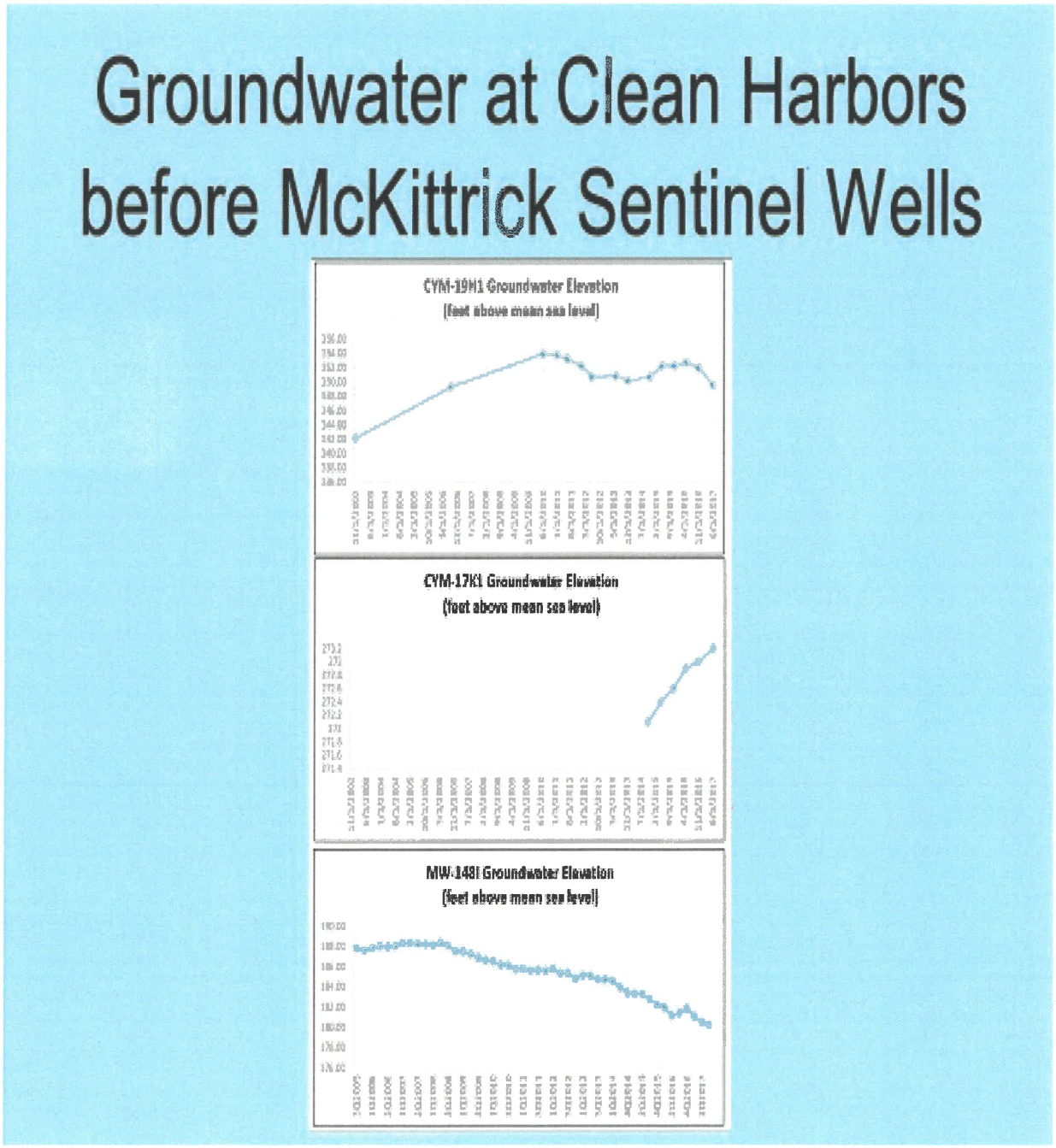
Geochemistry: TDS increase beneath Clean Harbors before McKittrick Sentinel Wells have water



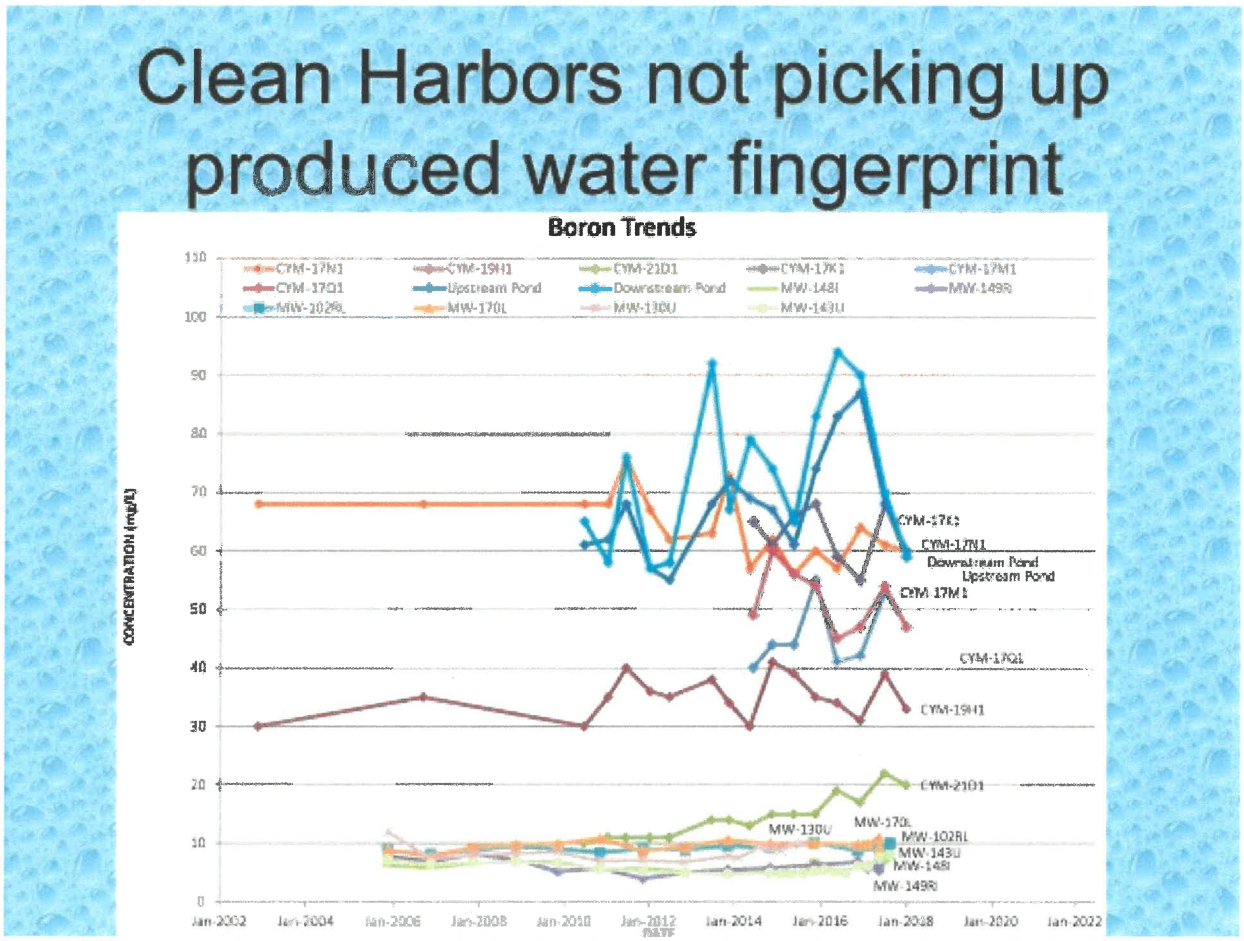
Similar for Chloride



Considering the groundwater in the CH Intermediate Zone, water levels in CH Intermediate Zone wells MW-148I and 149RI have fallen from 7 to 17 feet from 2005 to 2017. This declining trend is consistent with the declining trend in the Upper Perched Zone, indicating a similar source of perched water. Because the source of perched water at the Clean Harbors Upper Zone cannot be from the McKittrick Facility, the related trends in groundwater level cannot be due to the McKittrick Facility, as shown in the following figure:



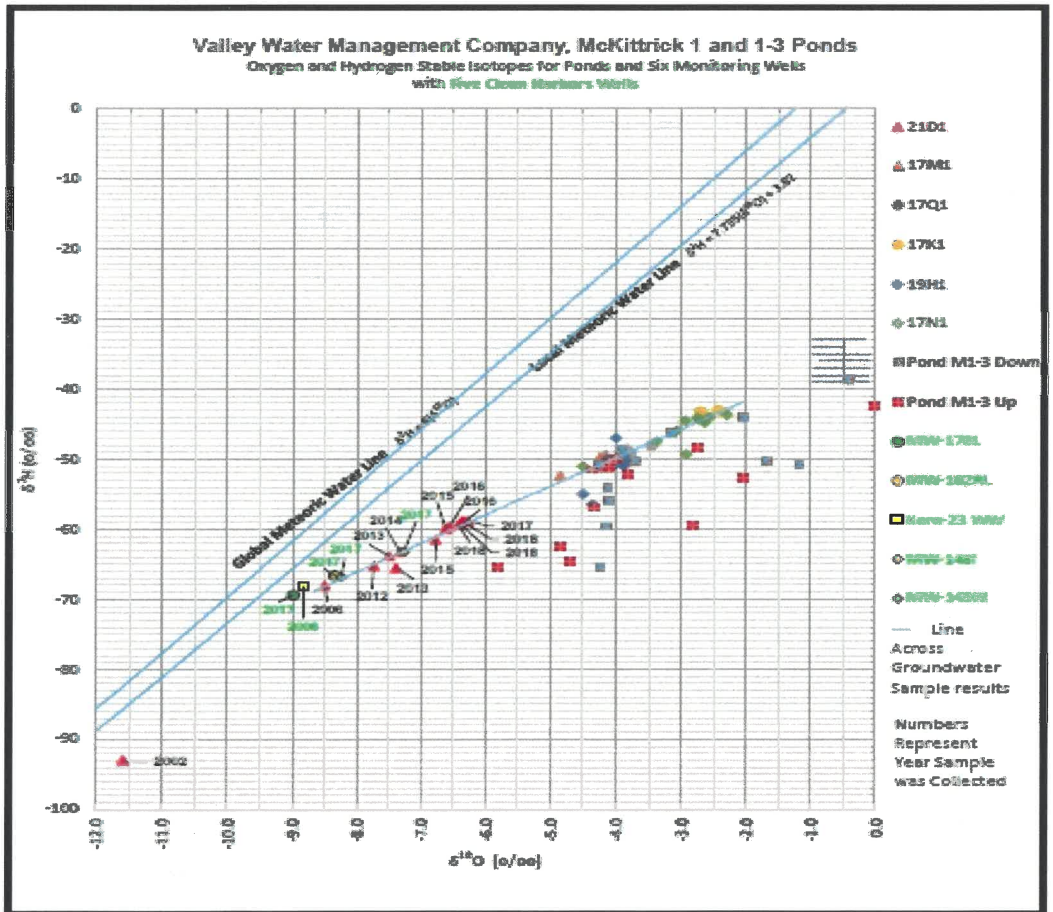
Although boron is not always a perfect tracer, this element still has utility to estimate the influence of produced water on native groundwater. Boron concentrations in McKittrick pond water historically range between 55 and 95 mg/L and between 30 and 70 mg/L in Valley's Upper Tulare Zone wells, consistent with percolated produced water. Boron concentrations in CH wells MW-130U and MW-143U range from 4.7 to 12 mg/L and have not increased along with the chloride and TDS values, indicating a different source of perched water at Clean Harbors. These data also indicate that the water beneath CH contains boron due to a combination of natural and anthropogenic influences. The water beneath Clean Harbors is simply not picking up this fingerprint of produced water, as shown in the figure below.



Chloride and TDS concentrations have been increasing in CH Intermediate Perched Zone well MW-148I beginning in 2017. However, boron concentrations have not increased. This indicates vertical downward migration from the overlying Upper Perched Zone at Clean Harbors, and not from McKittrick produced water (see Section III.D. below for further detail).

Additionally, nitrate concentrations in MW-148I were 58 mg/L in 2017 versus 13 to 15 mg/L in Valley's Upper Tulare Sand wells, which are upgradient.

Stable isotopes of water have been analyzed, specifically deuterium and oxygen-18. The stable isotopes are a strong interpretative tool, because they represent part of the water molecule and are not influenced by chemical processes as water moves underground. One of the most important factors influencing the stable isotope concentration is evaporation or evapotranspiration. Attachment K of the Central Valley Water Board's staff report (reproduced below and included full size in Exhibit 15) shows the stable isotope composition of pond produced water and water from monitoring wells. One can see that the oxygen 180 concentration of pond produced water ranges from about 5.8 to 0.0 0/00. The less negative that the isotope concentration is, the heavier it is.



Local Meteoric Water Line determined from stable isotope data from 47 wells in *Ground-Water Quality Data in the Kern County Sub-Basin Study Unit, 2006-Results from the California GAMA Program:* US Geological Survey Data Series 337

STABLE ISOTOPE FIGURE OF PRODUCED WASTEWATER AND GROUNDWATER WELLS
STAFF REPORT
FOR
VALLEY WATER MANAGEMENT COMPANY
MCKITTRICK 1 & 1-3 FACILITY
KERN COUNTY **ATTACHMENT K**

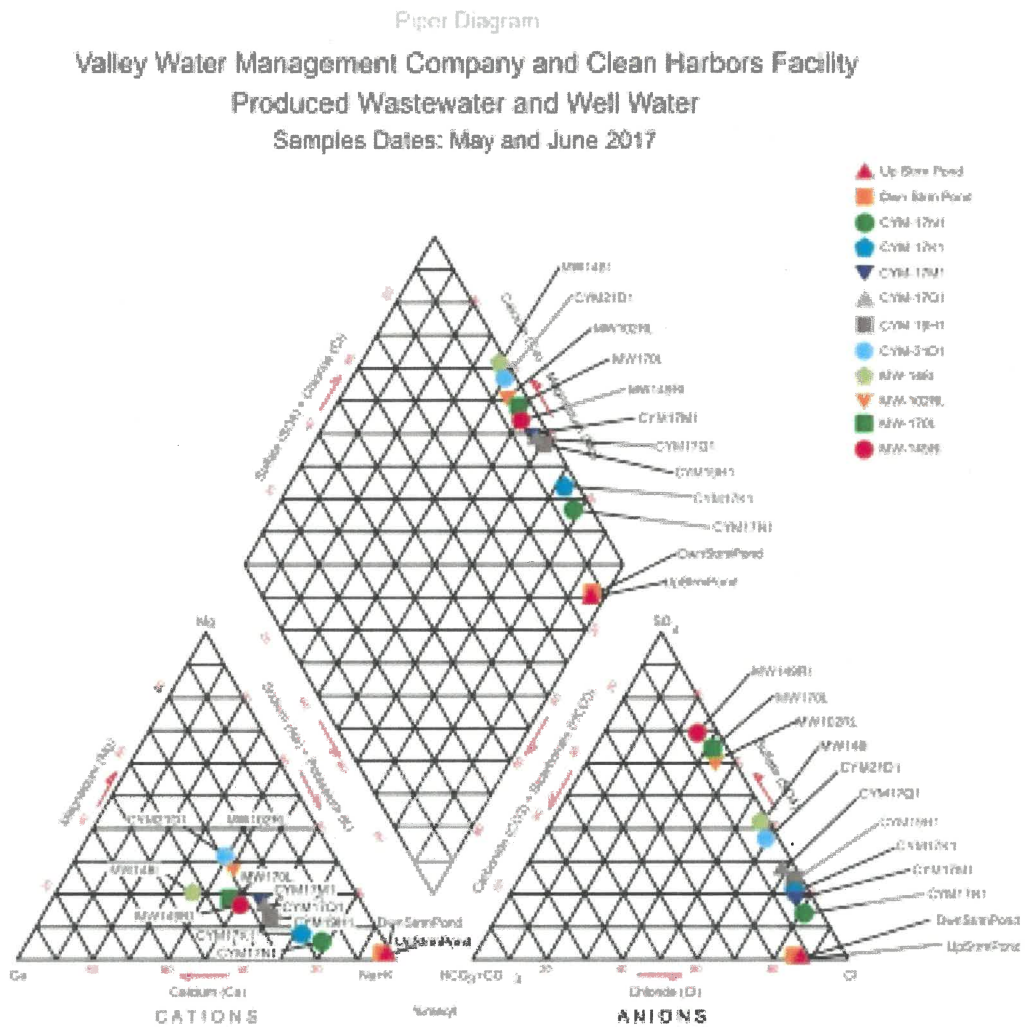
The sample from MW-21Dl in 2002 was anomalously light as shown on the diagram and is not considered representative (see III.E. below for more detail). One of the most important features in Attachment K is that water from MW-102RL and MW-148i does not plot in the field of the oilfield produced water ponds, rather these samples were significantly lighter (oxygen 180 concentrations of about -7.0 to -9.0 0/00).

The anion part of the trilinear diagram is most useful in discussing mixtures and sources of groundwater. This is because cation exchange during movement through subsurface material influences the relative amounts of the cations and renders the cation portion of the diagram not as useful for evaluating two-component mixing. Attachment M.3 to the Central Valley Water Board staff report (reproduced below) shows a tri- linear diagram for samples from produced water ponds and monitoring wells. Experience in the area indicates that groundwater that is primarily of the sulfate type (greater than 60 percent reacting value) is representative of background (non-oilfield produced water influenced) conditions. Three CH wells (MW-102RL, MW-170L, and MW-149Rl) have this anion composition on the trilinear diagram. This could be characterized as the "sulfate end member" in terms of evaluating mixing of two water types.

In contrast, groundwater primarily of the chloride type (greater than about 70 percent reacting value) can be characterized as oilfield produced water influenced. However, in some parts of the west side of the San Joaquin Valley, chloride type groundwater represents background (natural), as opposed to affected by oilfield produced water. Water from three wells had high chloride reacting values (CYM-17Kl, -17Ml, and -17Nl). The pond produced water on this diagram plotted at less than 90 percent chloride reacting value, whereas other trilinear diagrams show the pond produced water at more than 95 percent chloride (which is considered more representative). Water from the ponds can be classified as the "chloride end member."

When the two types of water are mixed, the mixture should plot on a straight line between the two end members on the anion diagram. If one assumes a pond produced water has a 95 percent chloride reacting value, then all of the monitoring well water samples plot on

a straight line between the two end members. The most important conclusion is that water from MW-102RL plots as a background high sulfate type water, and not as an oilfield produced water influenced sample.

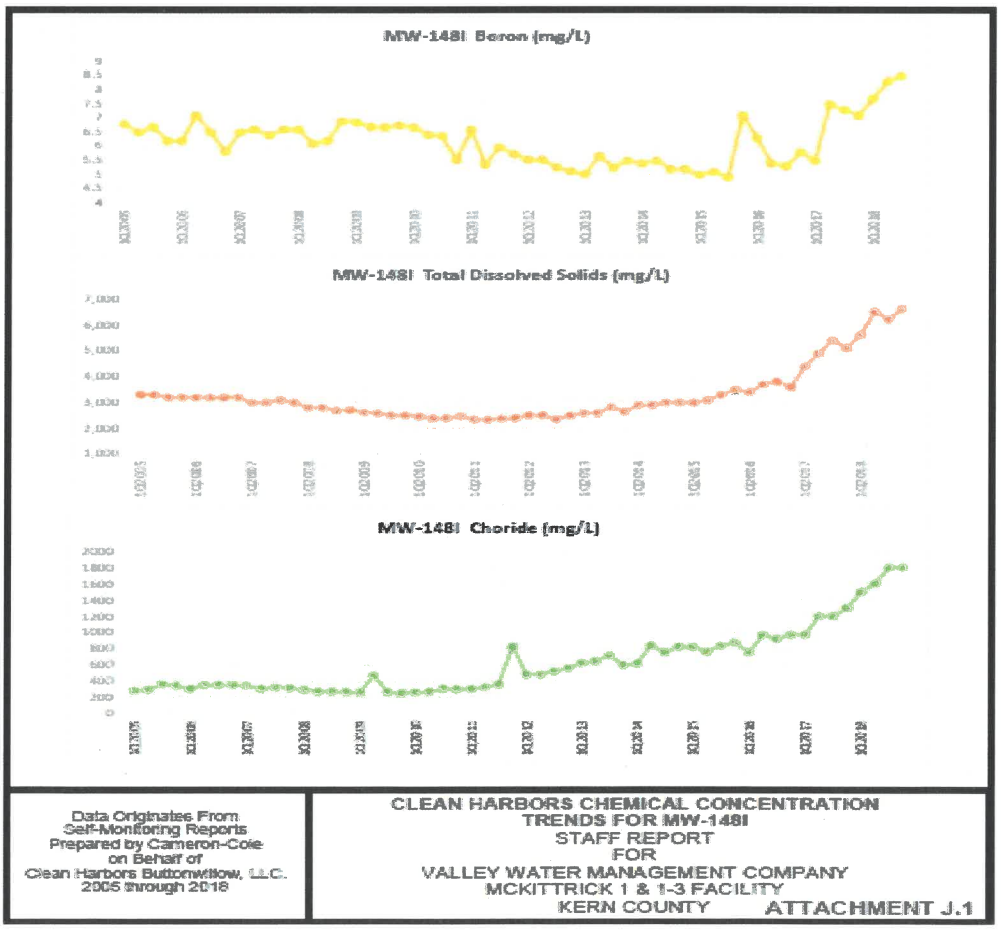


PIPER DIAGRAM OF PRODUCED WASTEWATER AND GROUNDWATER FROM VALLEY WATER MANAGEMENT COMPANY AND CLEAN HARBORS FACILITY
STAFF REPORT
FOR
VALLEY WATER MANAGEMENT COMPANY
MCKITTRICK 1 & 1-3 FACILITY
KERN COUNTY

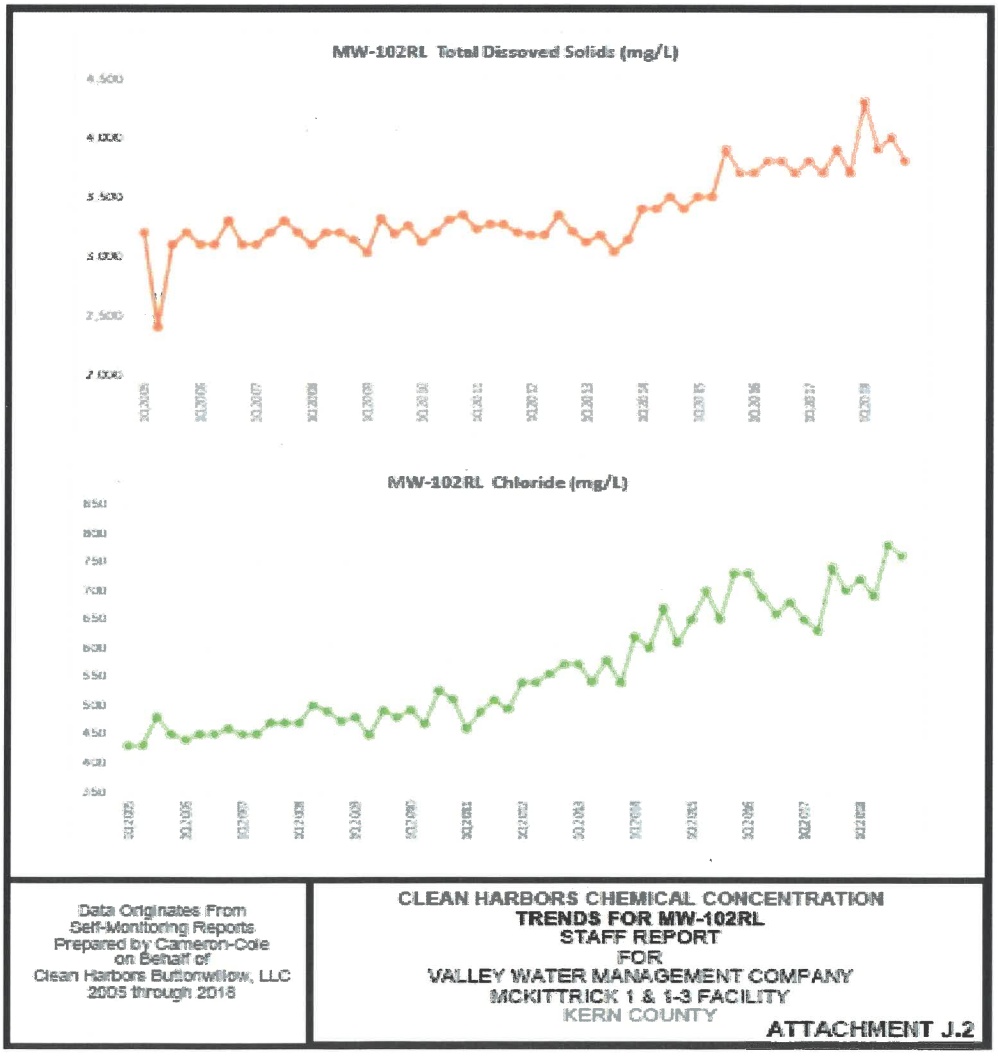
ATTACHMENT M.3

The MW-148i sample plots about halfway between the two end members. However, one should also consider other evidence, such as stable isotopes, before drawing conclusions about MW-148i.

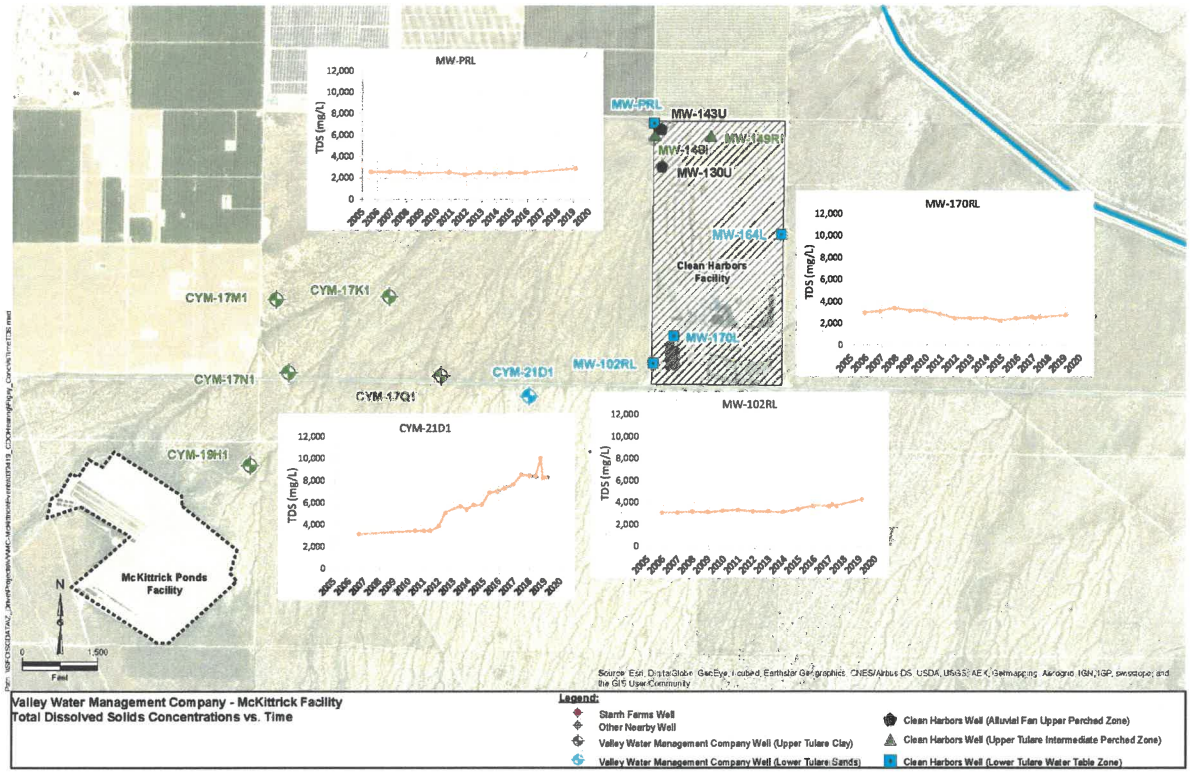
Attachment J.l of the Central Valley Water Board staff report (reproduced below) shows time trends for TDS, chloride, and boron in water from MW-148i. Both TDS and boron concentrations decreased between 2005 and 2011, and the boron concentrations continued to decrease through 2015. The chloride concentrations were relatively stable through 2011, then increased through 2018. The TDS concentration also increased between 2011 and 2018. Boron concentrations increased after 2015. The increase in boron concentration was later in time than the increases for TDS and chloride concentrations, probably because boron is not as mobile as chloride in water movement through the vadose zone and aquifer.



Attachment J.2 of the Central Valley Water Board staff report (reproduced below) shows time trends for TDS and chloride in water from MW-102RL. Note that there appears to be an error in Central Valley Water Board staff's Attachment J.2: Valley Water's data compilation shows that TDS in MW-102RL has never been below 3,000 mg/L, with data extending back to 1999. However, Attachment J.2 shows one value from the second quarter of 2005 at 2,500 mg/L TDS. This attachment also shows chloride concentrations with an almost linear slight increase between 2005 and 2012, then further increases. TDS concentrations were relatively stable from 2005-2013, then increased. The Central Valley Water Board did not plot boron concentrations for MW-102RL, but these were similar to TDS trends. If chloride is considered the best tracer of produced water, then these trends are not consistent with a produced water influence in MW-102RL.



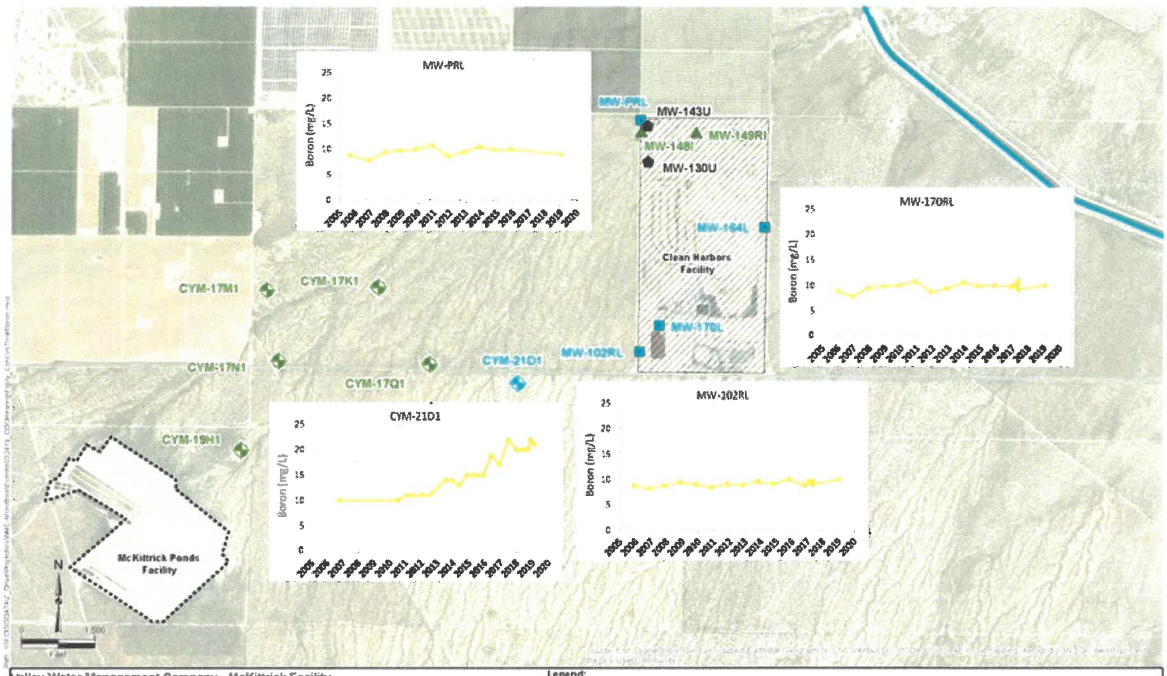
Considering the Lower Tulare Sands regional aquifer, the data also demonstrates that produced water from the McKittrick Facility did not migrate to Clean Harbors. As shown in the following graphs, TDS, boron, chloride, and sulfate show increases at CYM 21D1 (which are discussed in Section III.E. below), but there are no corresponding increases at any of the Clean Harbors wells in the Lower Tulare Sands. Therefore, produced water from the McKittrick Facilty has not reached the Lower Tulare Sands downsgradient from the Valley Water well array.



//

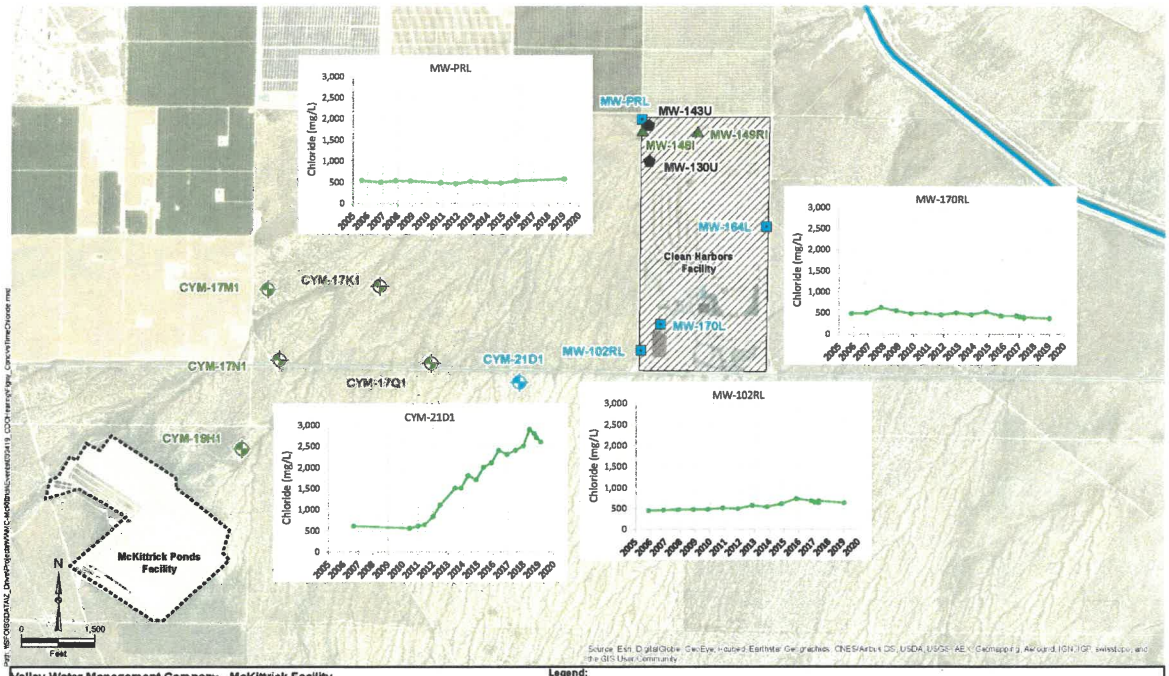
//

//



Valley Water Management Company - McKittrick Facility
Boron 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)



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)

D. THE GROUNDWATER QUALITY CONDITIONS BENEATH CLEAN HARBORS ARE ENTIRELY EXPLAINABLE BY INFLUENCES IN THE VICINITY OF CLEAN HARBORS.

In this section, Clean Harbors data are evaluated in isolation from the data from Valley Water's McKittrick Facility, evaluating the hypothesis that the water quality at CH can be explained entirely without any chemical signature from the McKittrick Facility.

The following three (3) issues provide clarity on this technical issue and the related questions should have been resolved between Valley Water and Central Valley Water Board staff before bringing the proposed CDO before the Central Valley Water Board Members:

1) **Stratigraphy:** The Upper Alluvium unit beneath the McKittrick Facility does not have perched water above the CCE, while the stratigraphically-equivalent Upper Zone beneath Clean Harbors does have perched water above the CCE. As agreed with Central Valley Water Board staff in 2018, this condition means that Upper Zone water beneath Clean Harbors cannot be from the Valley Water facility. That is, produced water cannot migrate downgradient from the Facility towards Clean Harbors, and then flow vertically ***upwards*** from below the CCE and up through the CCE to be found in the "Upper Perched Zone" at Clean Harbors. This provides a significant constraint in evaluating water quality beneath Clean Harbors in isolation, because any water quality conditions in the Upper Zone must be solely due to conditions in the vicinity of Clean Harbors.

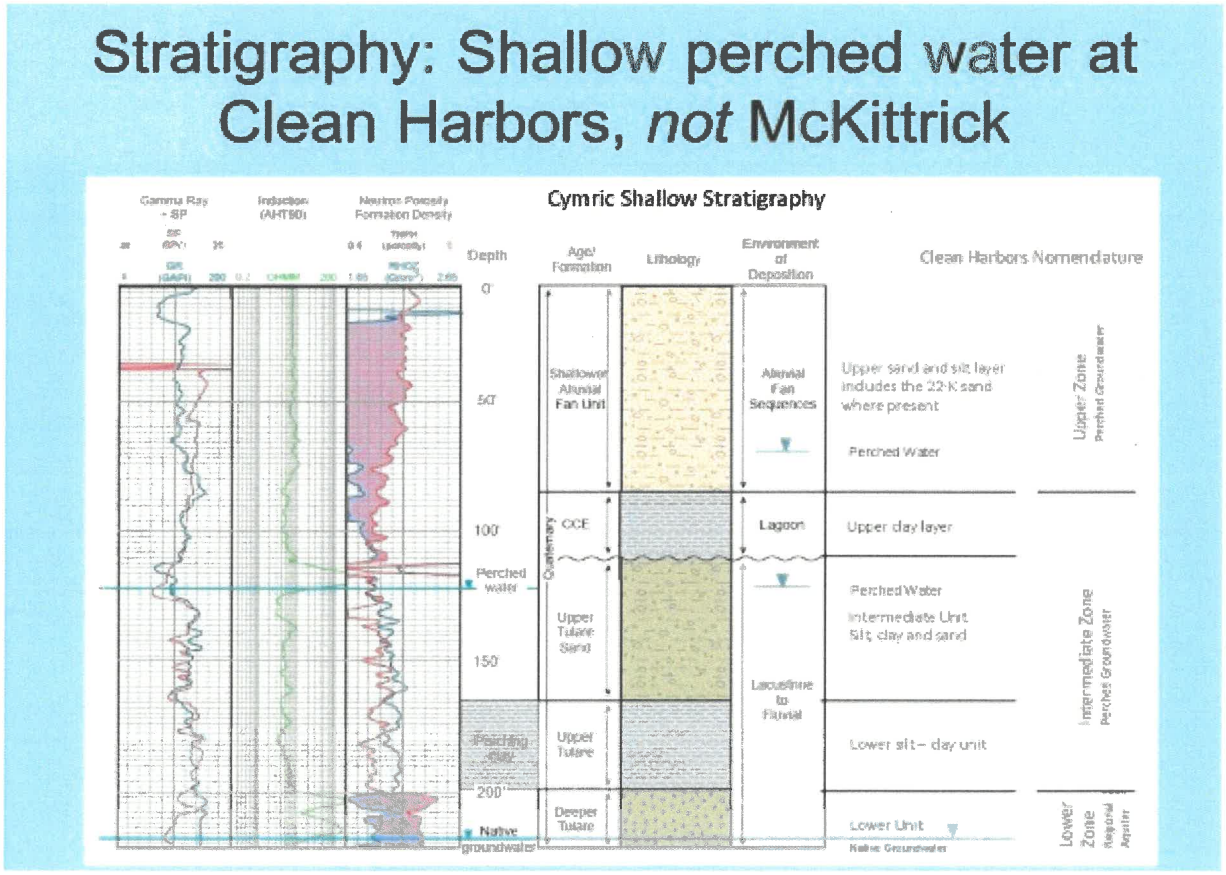
2) **Local Groundwater Quality**: The groundwater quality beneath Clean Harbors is dominated by sulfate, and shows high levels of other constituents, such as nitrate, not associated with the produced water beneath the McKittrick Facility. The relatively low nitrate concentrations in the groundwater downgradient from the McKittrick Facility cannot explain the fairly high concentration in groundwater beneath Clean Harbors.

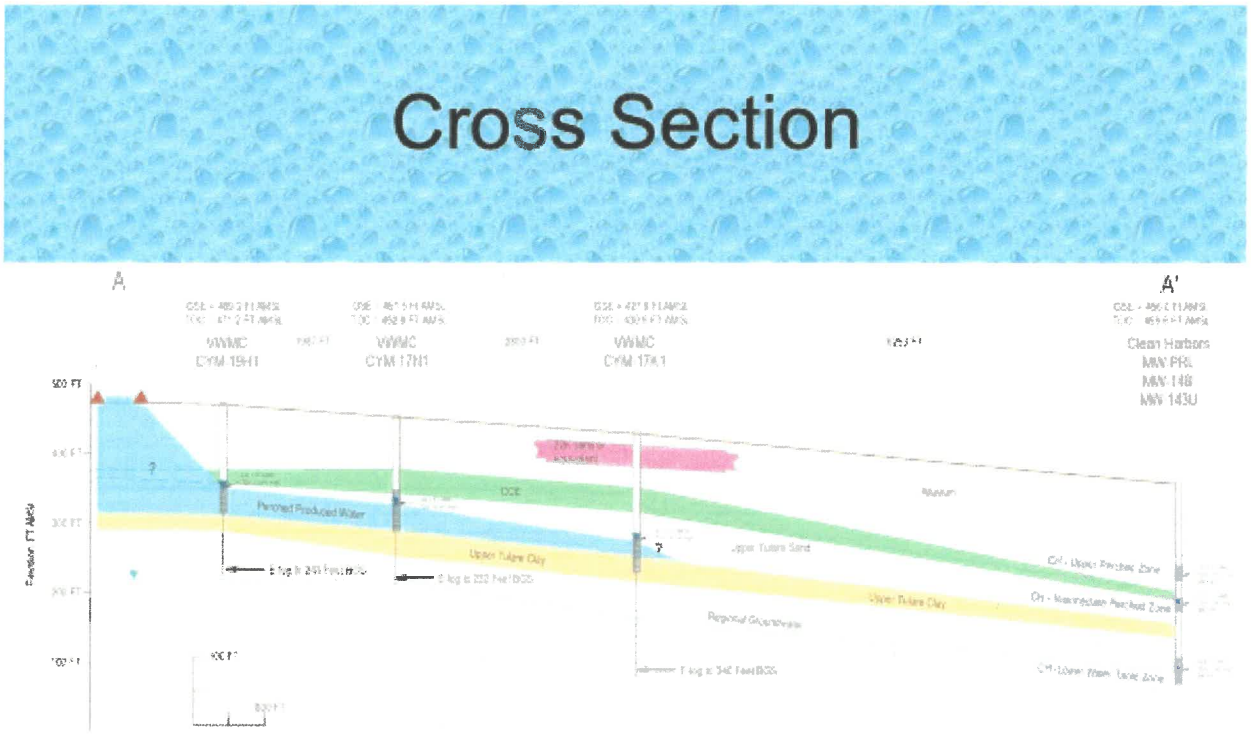
3) **Other sources.** Extensively irrigated land sits adjacent to the one location on Clean Harbors' property that has perched groundwater in both the Upper Perched Zone and the Intermediate Perched Zone. This irrigated agriculture must be explored as the cause and effect of the groundwater quality conditions under Clean Harbors. (*See* Exhibit 22, p. 22 (Longley: "There may be other sources, and we don't know that." (highlighted).)

Each of these key items is explored further in the following sections.

1. STRATIGRAPHY.

Attached below is a stratigraphic section, developed collaboratively between Valley Water and Central Valley Water Board staff, which shows how the stratigraphy beneath the McKittrick facility correlates to the stratigraphy beneath Clean Harbors. Beneath the McKittrick ponds, the Upper Alluvium does not have perched water as the CCE is predominantly silty and, therefore, does not significantly restrict the downward migration of produced water. In contrast, beneath the northwest portion of the Clean Harbors facility, the CCE is more clay-rich and acts as a relatively impermeable barrier allowing water to perch underneath the Clean Harbors facility. As shown in the following figures, the Upper Perched Zone under the northwest portion of the Clean Harbors facility is saturated while the Upper Alluvium beneath the McKittrick Facility is not saturated.



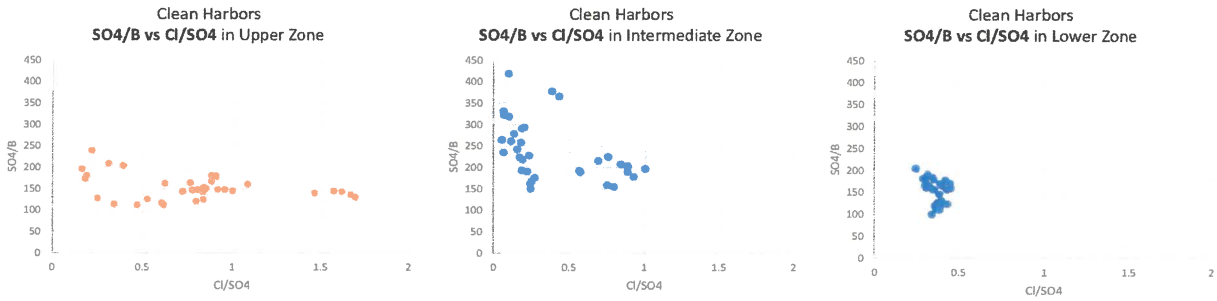


2. LOCAL GROUNDWATER QUALITY.

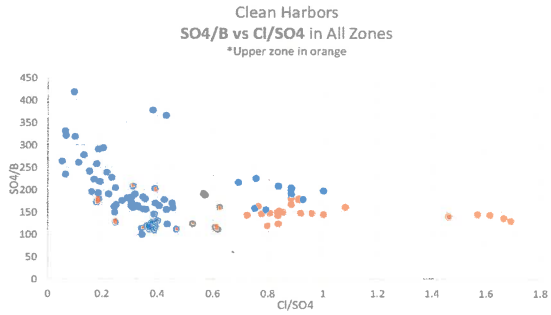
The series of graphs below plot sulfate, chloride, boron, and TDS in order to determine whether water quality in the Clean Harbors Upper Zone (which as explained previously cannot be from the McKittrick Facility owing to stratigraphic constraints) can explain the groundwater quality in the deeper formations. In almost all cases, the range in values of the parameters is fully encompassed by the Upper Zone water quality (which cannot be due to the Facility). The one case where the Intermediate Zone shows a wider range than the Upper Zone is in the SO4/B ratio. In this case, the higher ratios in the Intermediate Zone are due to lower boron in the denominator of the equation. Because high boron can be indicative of produced water, the trends to lower boron in the Intermediate Zone indicate even less evidence for a produced water signature. Therefore, percolation downwards from the Upper Zone to the Lower Zone explains the chemical trends observed in the Clean Harbors groundwater. The observed water quality trends do not require a component from or

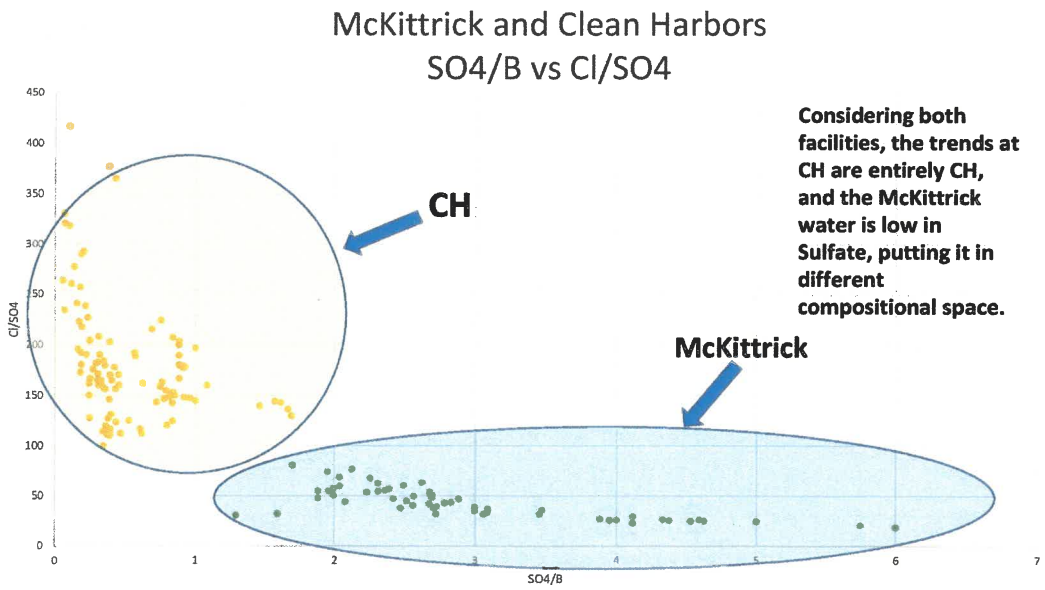
connection to the McKittrick Facility to be understood.

While the data indicate that water quality at Clean Harbors is ***not*** due to mixing with water from Valley Water, the section below after the graphs (Other Sources of Water Quality Impairment near Clean Harbors) indicates it ***is*** most likely due to irrigation at the agricultural field adjacent to Clean Harbors.

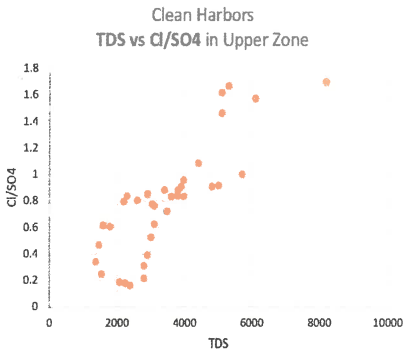


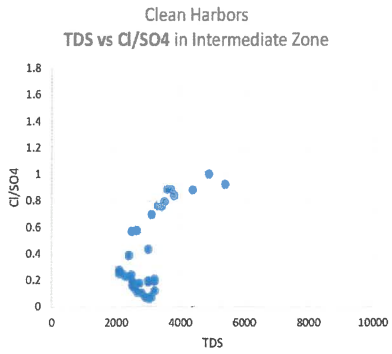
- **The Upper Zone, which cannot be from McKittrick, covers the range in Cl/SO4 seen at Clean Harbors, and the SO4/B in the intermediate zone goes to lower B (less of the "produced water signature")**
- **Therefore these key parameters all reflect UZ constituents migrating downwards**

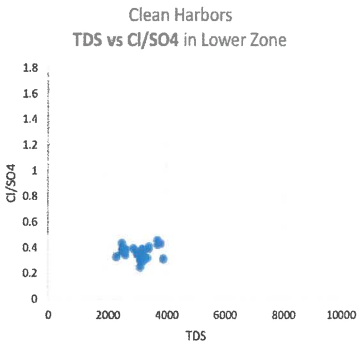




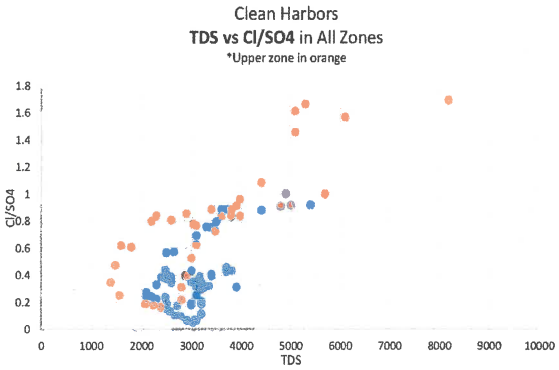
Considering both facilities, the trends at CH are entirely CH, and the McKittrick water is low in Sulfate, putting it in different compositional space.

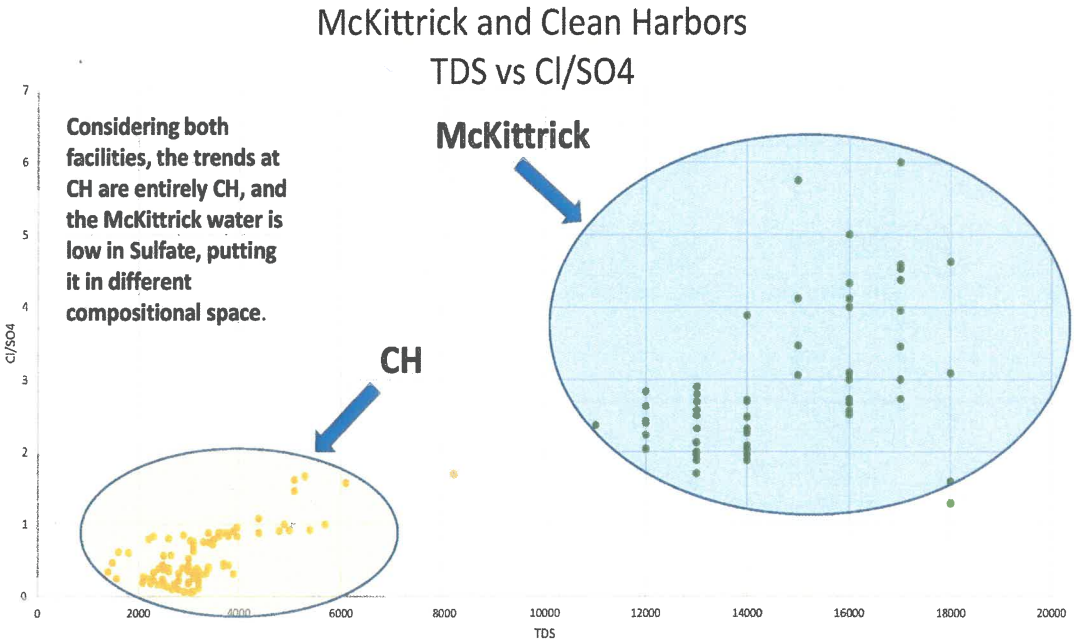


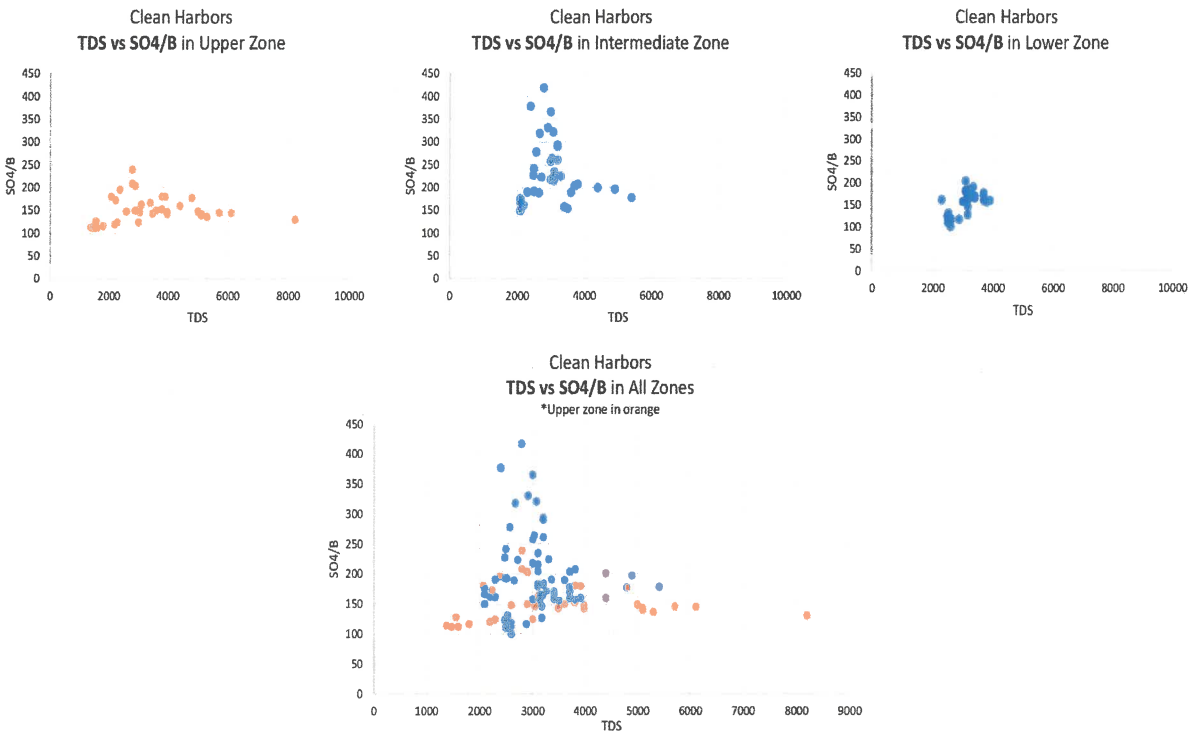


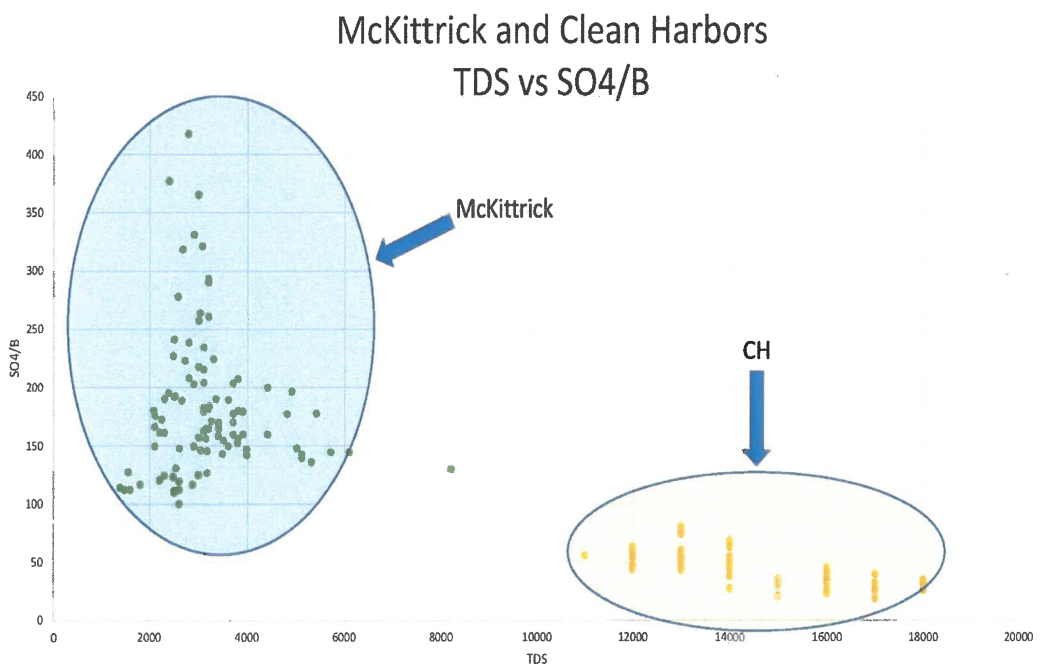


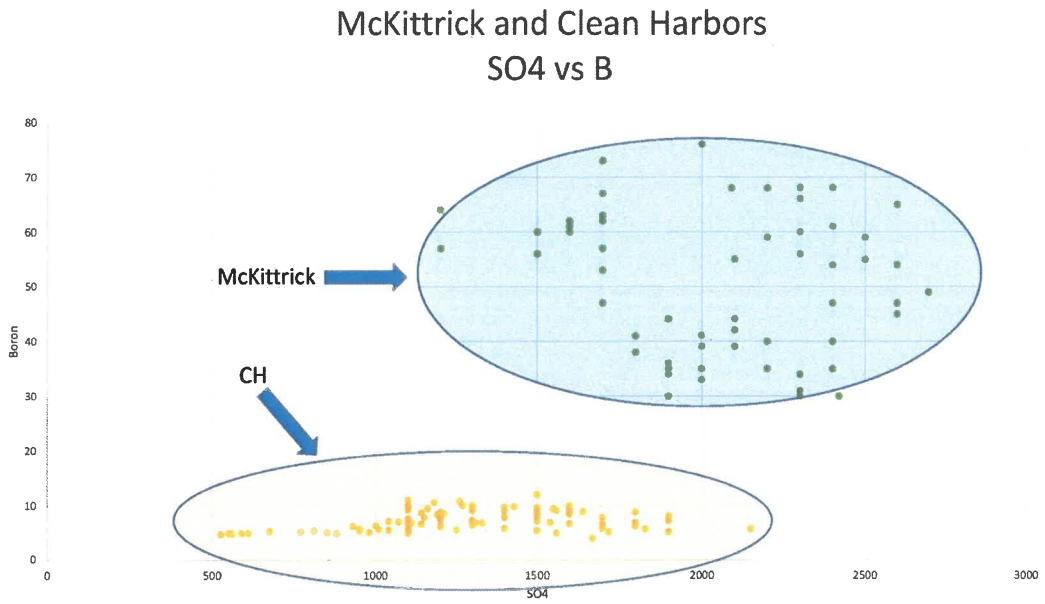
- **The Upper Zone, which cannot be from McKittrick, covers the range in Cl/SO4 seen at Clean Harbors, and the SO4/B in the intermediate zone goes to lower B (less of the "produced water signature")**
- **Therefore these key parameters all reflect UZ constituents migrating downwards**






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
SO4/B
TDS


McKittrick and Clean Harbors
TDS vs SO4/B
McKittrick
CH
SO4/B
TDS



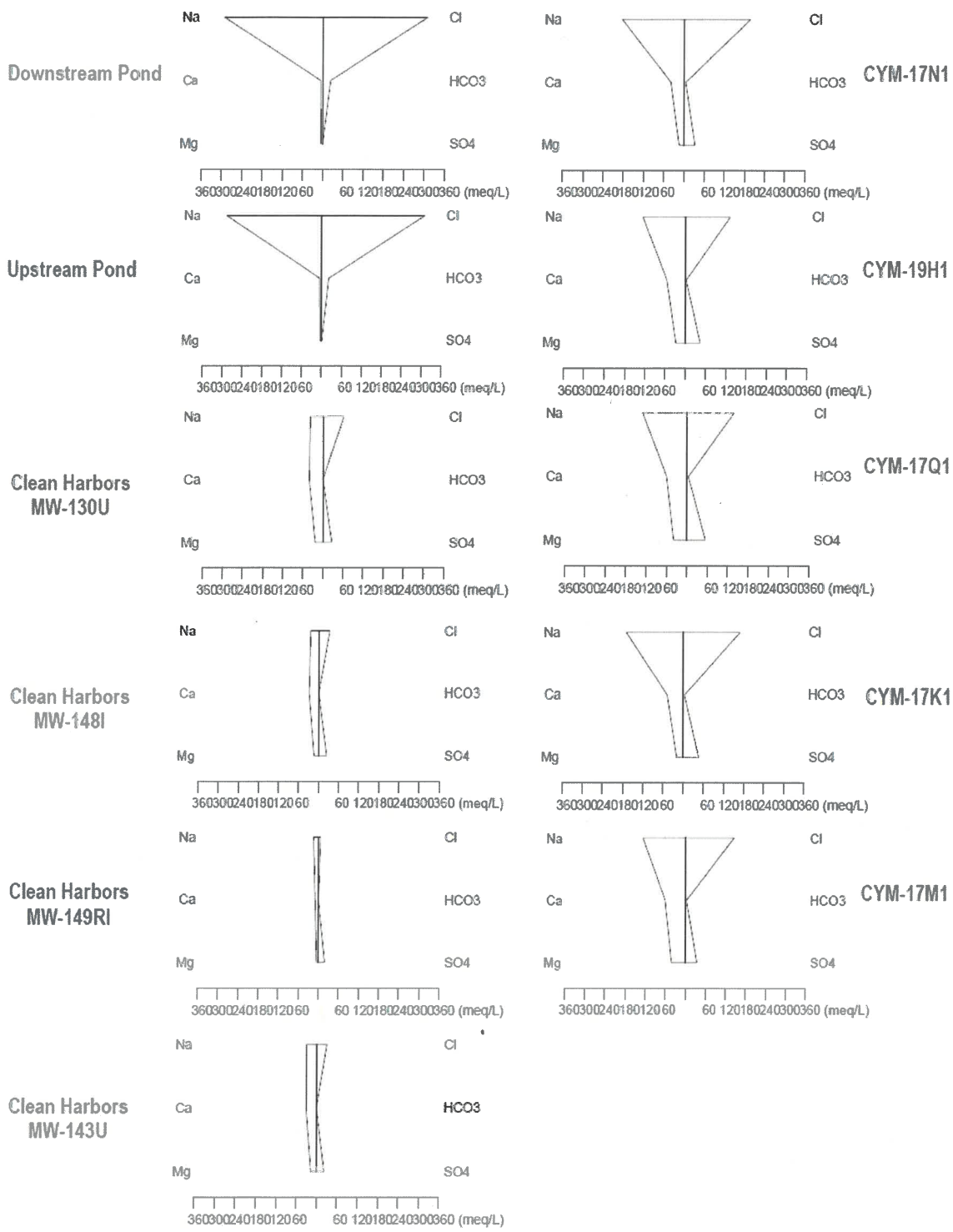
In the Stiff Diagrams on the pages below, the water quality at Clean Harbors is internally consistent from upper zone to lower zone, and needs no other component to explain vertical percolation downward from the Upper Zone to the Intermediate Zone. These diagrams are also useful to show that there is no indication of influence from McKittrick produced water.

//

//

//

//

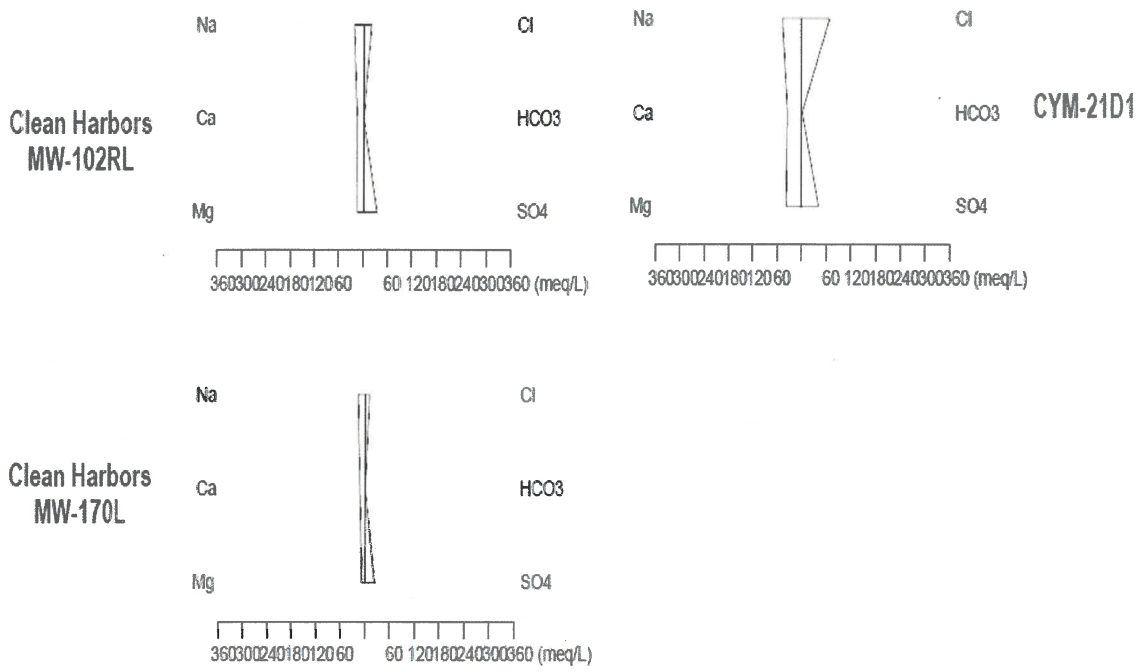


Stiff diagrams May and June 2017, upper Tulare Sand/ upper perched zone and intermediate perched zone

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

P:\Cymric\04110 1020420 and 1022320 Water Quality Sampling\400 Reports\2014 SA2\Raw Tables & Figures\Figure 3-1 Stiff Diagram.docx

Similarly, in the following Stiff Diagrams, the Lower Tulare Formation at the CH facility lacks a produced water signature.



wsp	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	

P:\Cymric\054118 (020420 and 002929) Water Quality Sampling\400 Reports\2014 SA2\Raw Tables & Figures\Figure 3-1 Stiff Diagram.doc>

3. OTHER SOURCES OF WATER QUALITY IMPAIRMENT NEAR CLEAN HARBORS.

a. Irrigated Agriculture is a Likely Source of Impairment.

A significant source of recharge to the Upper Perched Zone under the northwest portion of the Clean Harbors facility is from deep percolation of applied irrigation water adjacent to that facility. As discussed previously, no known physical mechanism exists whereby water from the McKittrick Facility, which first occurs beneath the CCE, could travel downgradient to Clean Harbors, and then migrate upwards through the CCE. The water found in the Upper Perched Zone beneath Clean Harbors cannot be from the McKittrick Facility (as described above), but does contain nitrate levels that implicate irrigated water as the potential source of the perched water beneath the Clean Harbors facility.

Perched water at Clean Harbors is most notably associated with relatively high concentrations of sulfate and nitrate, and relatively low concentrations of boron; none of which are typical of McKittrick produced water. However, these are characteristic of percolation from irrigated fields through a gypsum-bearing unsaturated zone down to groundwater. Taken together, the groundwater quality indicates that the limited area of perched water at Clean Harbors is not impacted by produced water from the McKittrick Facility. Rather, perched groundwater appears to be impacted by irrigation in adjacent agricultural fields to the north. Irrigation wells used to irrigate these fields may have been affected by produced water from other areas of Kern County (or oil), but not by the McKittrick Facility.

Specifically, CH intermediate zone well MW-148i is adjacent to an irrigated field where well water that was highly influenced by oilfield produced water (not from the McKittrick Facility) has been used for irrigation. Deep percolation from irrigation, which greatly concentrates salts due to evapotranspiration, particularly where drip irrigation is used, is the most likely factor that has caused TDS and chloride concentrations in water from MW-148i to increase.

Leaching of salts from the vadose zone in an area that was apparently not irrigated

before 2005 is a source of sulfate and TDS in percolating water beneath the irrigated fields, due to gypsum in the west side alluvial deposits.

Also, as noted in Section III.B. above, consistent differences exist in water level changes between the monitoring wells owned by Valley Water and the monitoring wells beneath Clean Harbors. Historically, the water levels in the Valley Water monitoring wells have been rising over time. During that same time, water levels in the Clean Harbors monitoring wells have been falling. This clearly indicates a disconnect between potentially migrating produced water from the McKittrick Facility and the Clean Harbor wells.

b. AGR and MUN Uses are Not Viable Directly to the Northeast.

In litigation over produced water impacts to the Starrh farms, located northeast of the McKittrick Facility, *related to other produced water discharges not owned or operated by Valley Water*, a court found "evidence that the native groundwater could not be used for drinking or irrigation of agricultural crops, with the exception of cotton and other high-salt-tolerant plants. There was also evidence that Starrh's plan to use a 50-50 blend of native groundwater and aqueduct water for irrigation was not cost effective." (*Starrh and Starrh Cotton Growers ("SSCG") v. Aera Energy LLC* (5th DCA 2007) 63 Cal.Rptr.3d 165, 178 (emphasis added).)

The following facts were outlined in that case to demonstrate that "the native groundwater in these aquifers is naturally salty and of questionable usability." (*Id.* at 169 (emphasis added).) "Starrh farms approximately 6,000 acres next to the Belridge Oil Field, located in western Kern County." (*Id.* at 168.) "Historically, irrigation in the area has been by use of water imported from the California Aqueduct Project or other sources." (*Id.* at 169.)

"Starrh had not used the underground aquifers as a source of irrigation water, but used aqueduct water or other purchased water. When Starrh's property was appraised in 1998, the appraiser reported that the groundwater under Starrh's property was unsuitable for irrigation because of a high level of salts and boron. The appraiser's conclusion was not surprising to Starrh because it was consistent with Starrh's understanding and experience; the water was

too salty for irrigation. Starrh's agricultural expert confirmed that the native groundwater has historically not been considered usable for irrigation." (*Ibid.* (emphasis added).)

"After the lawsuit was filed, Starrh began an experiment. It drilled several wells on the property and used a blend of aqueduct water and well water extracted from aquifer 22K to irrigate approximately 2,830 acres of cotton. Starrh is the only area farmer attempting to use groundwater for irrigation." *Id.* at 170 (emphasis added).[2]

In 2003 and 2004, water wells including WW-2, WW-1, WW-6, and WW-7 were installed and sampled on the SSCG irrigated areas (Exhibit 19). Aerial photographs for the area (from Google Earth, see Exhibit 19, Attachment 1) indicate that, since 1994, crops have been grown in the section just north of Clean Harbors (T29S R22E Section 9) as well as in the two sections to the west of Section 9. Surface water supplied from the California Aqueduct enters the SSCG system near water well WW-6 (see Exhibit 19, Figure 1), and was solely used for irrigation of SSCG lands before 2003. In 2003, wells WW-1, WW-2, and others were added to the water supply for irrigation; this is the first known use of groundwater in this area.

Exhibit 19, Figure 1 shows 2013 nitrate-N concentration data for the SSCG wells, Clean Harbors nitrate-nitrogen data from 2019, and nitrate-nitrogen data from the Valley Water wells (averages for 2014 – 2019 or 2018-2019). Similar datasets for (2013-2014) TDS,

---

[2] The *Starrh* case also discussed the infeasibility of restoration of the area's groundwater. "Starrh presented evidence of a restoration plan for returning the underlying groundwater to its native condition. According to Starrh's expert, the plan consists of pumping groundwater out of the subsurface aquifers by using a number of extraction wells (72 to 111). It would then be pumped into a series of lined evaporative ponds. The ponds would cover approximately 10 acres each and, together, 5,000 acres of Starrh's 6,000 acres of land. The restoration effort, while projected to last 30 years, could require up to 60 years to complete. All farming on the land would be suspended during this period of time. When done, there would be very little water left in aquifers I and 22K, although Fisher said this was a temporary condition and that with time water would reappear. There would still be dissolved solids in the water at native values, rendering the water unusable for all but the most salt-tolerant crops. The proposal was to pump most of it into lined ponding basins covering a total of 5,000 acres. The project would cost $2,269,160,693 and last for decades. According to the expert, the quality of the water would ultimately return to its native condition and no better." *Starrh I, supra* at 170 (emphasis added).

On remand, "Aera moved to exclude the testimony of two experts Starrh proffered to support a scenario in which all the contaminated water would be pumped out of the ground and treated, over a period of up to 50 years and at a cost of hundreds of millions of dollars. The court granted the motion to exclude the testimony of Dr. Joseph Culkin on the grounds that his proposed scheme would result in water that was in a better condition than the original condition, and that his proposals for disposing of the treated water were speculative. The court also granted in part a motion to exclude the testimony of Dr. Jeffrey Dagdigian. Because of these rulings, Starrh informed the trial court that it was unable to go forward on its claim for damages based on the cost of restoration." *Starrh II,* 2012 WL 210452, at *4. This case was ultimately settled.

boron, chloride, and sulfate data are shown in Exhibit 19, Figures 2, 3, 4, and 5, respectively.

Historical aerial photographs for the northwest corner of the Clean Harbors Facility show the crops grown just north of Clean Harbors (Exhibit 19, Attachment 2) as well as the condition of a pond adjacent to and just east of three Clean Harbors monitoring wells: MW-143U, MW-148I, and MW-PRL. The photographs indicate that the pond appears to be unlined and receives sufficient water to support some vegetative growth. The pond may also contribute seepage to the subsurface.

Valley Water obtained 2019 photographs of the water being pumped from agricultural wells on the Starrh facility, which seems to show that those wells are pumping oil mixed with water. (Exhibit 19.) Notwithstanding this fact, Starrh appears to be using this water, blended with aqueduct water, on its orchards as evidenced by photographs showing the oily staining of the soil. (*Id.*) The fact that local wells are producing oil and require substantial blending demonstrates that local groundwater is not supportive of or reasonably useable for either AGR or MUN uses in this area.

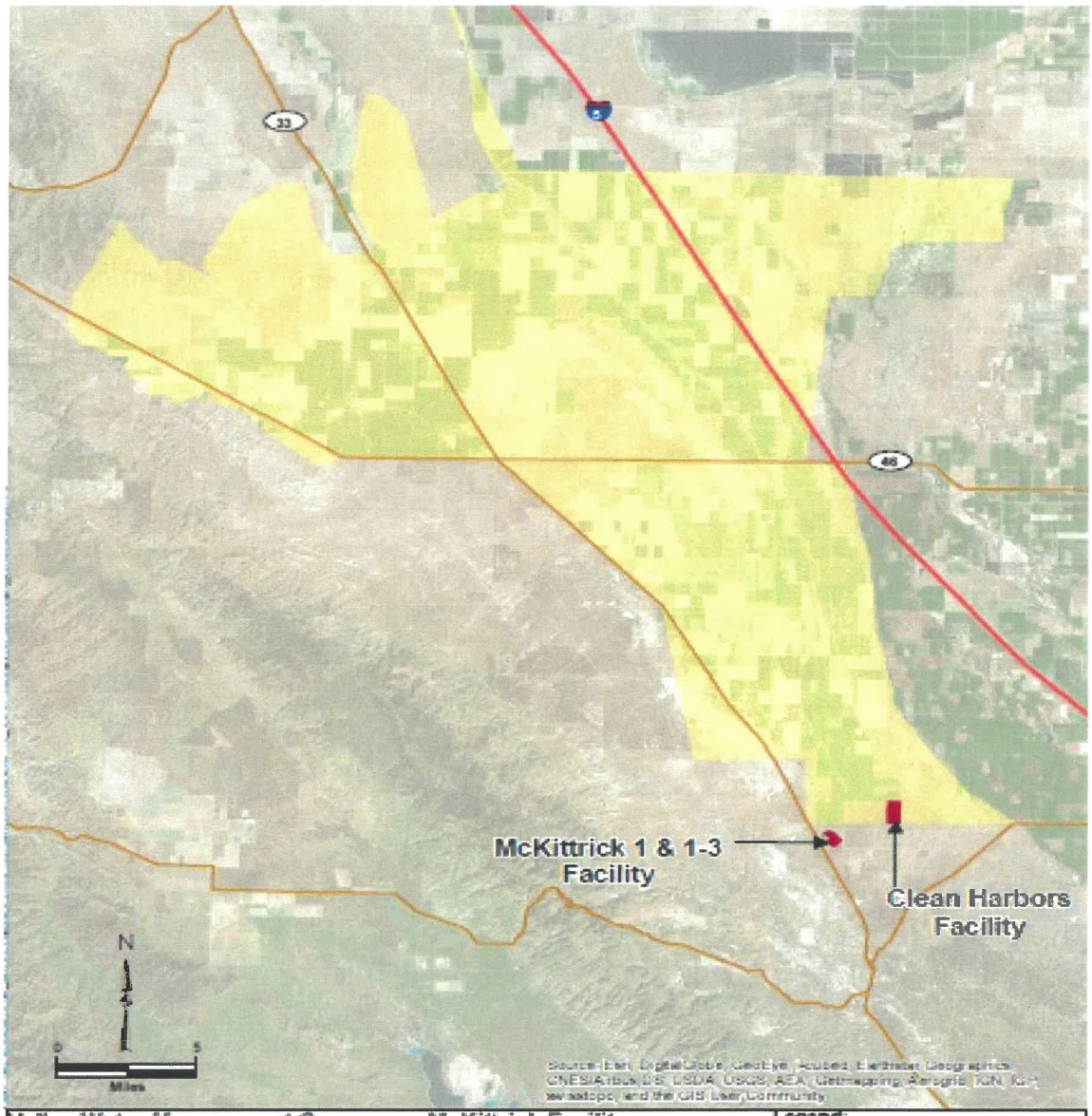
E. GROUNDWATER QUALITY IN THE LOWER TULARE FORMATION NEAR MCKITTRICK FACILITY WAS NEVER SUFFICIENT TO SUPPORT MUN OR AGR

The Staff Report for the CDO at page 19 states that:

> *"The groundwater directly under the Facility appears to be primarily produced water from the Facility ponds and possibly other Valley Water facilities. This groundwater may be suitable for dedesignation. However, this water is migrating to the northeast into areas where groundwater not suitable for dedesignation, because it is of higher quality and is being beneficially used."*

While Valley Water agrees that the groundwater beneath the McKittrick Facility above the Tulare Clay should never have been designated and, if designated, is suitable for de-designation (Exhibit 22, p.7); the areas to the northeast sought to be protected by the Central Valley Water Board staff in the CDO are also suitable for de-designation. In fact, the Westside Water Quality Coalition has created a work plan to de-designate the water northeast (downgradient) from the McKittrick Facility, which indicates that the natural water quality is poor (*see* Exhibit 14). As shown in the figures below, the McKittrick Facility is just southwest

of the area proposed for de- designation, and upgradient from areas of naturally poor-quality groundwater sought to be de-designated.

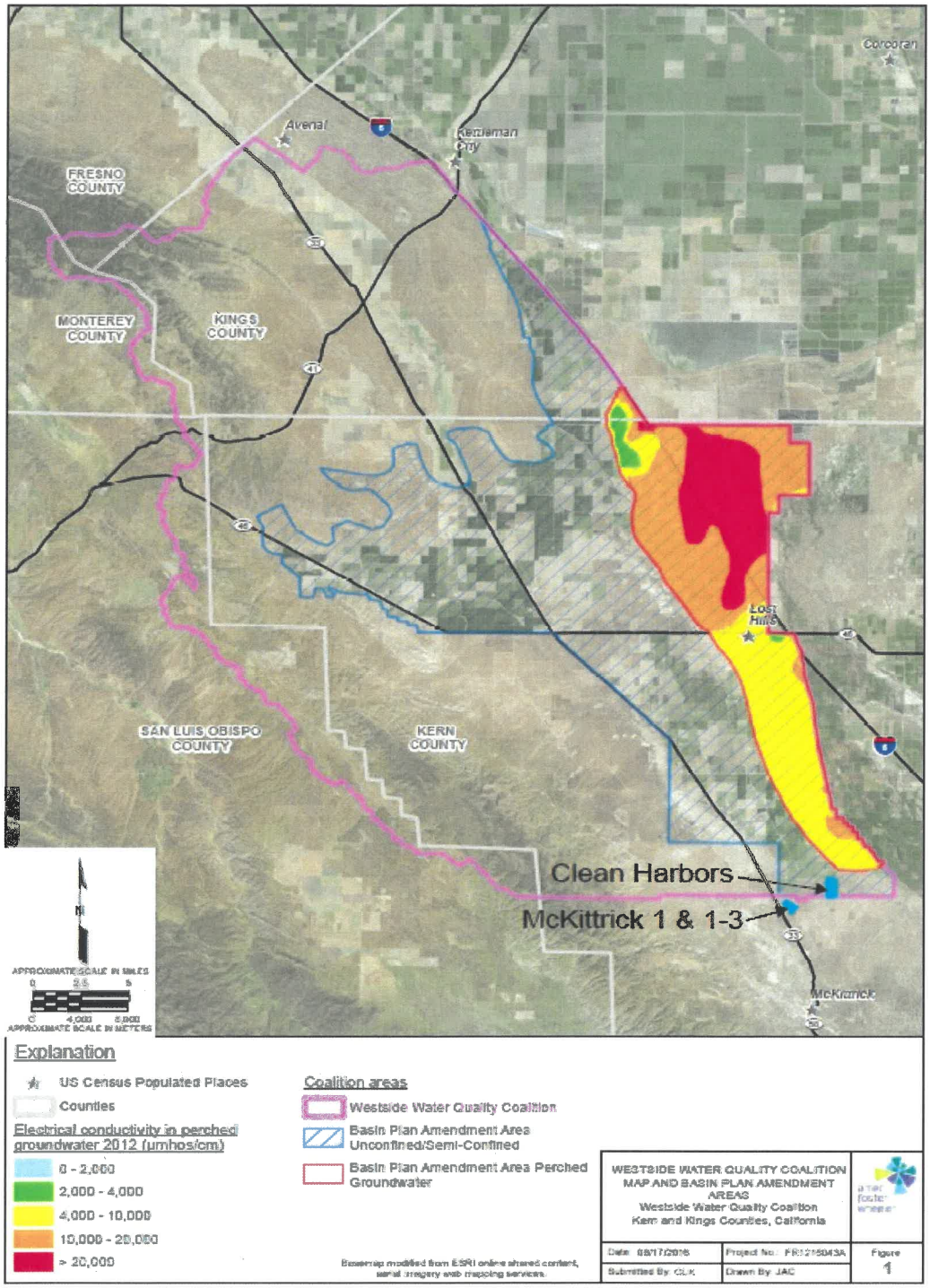


Valley Water Management Company - McKittrick Facility
Westside Water Quality Coalition Dedesignation Boundary

Legend:
WWQC Dedesignation Boundary

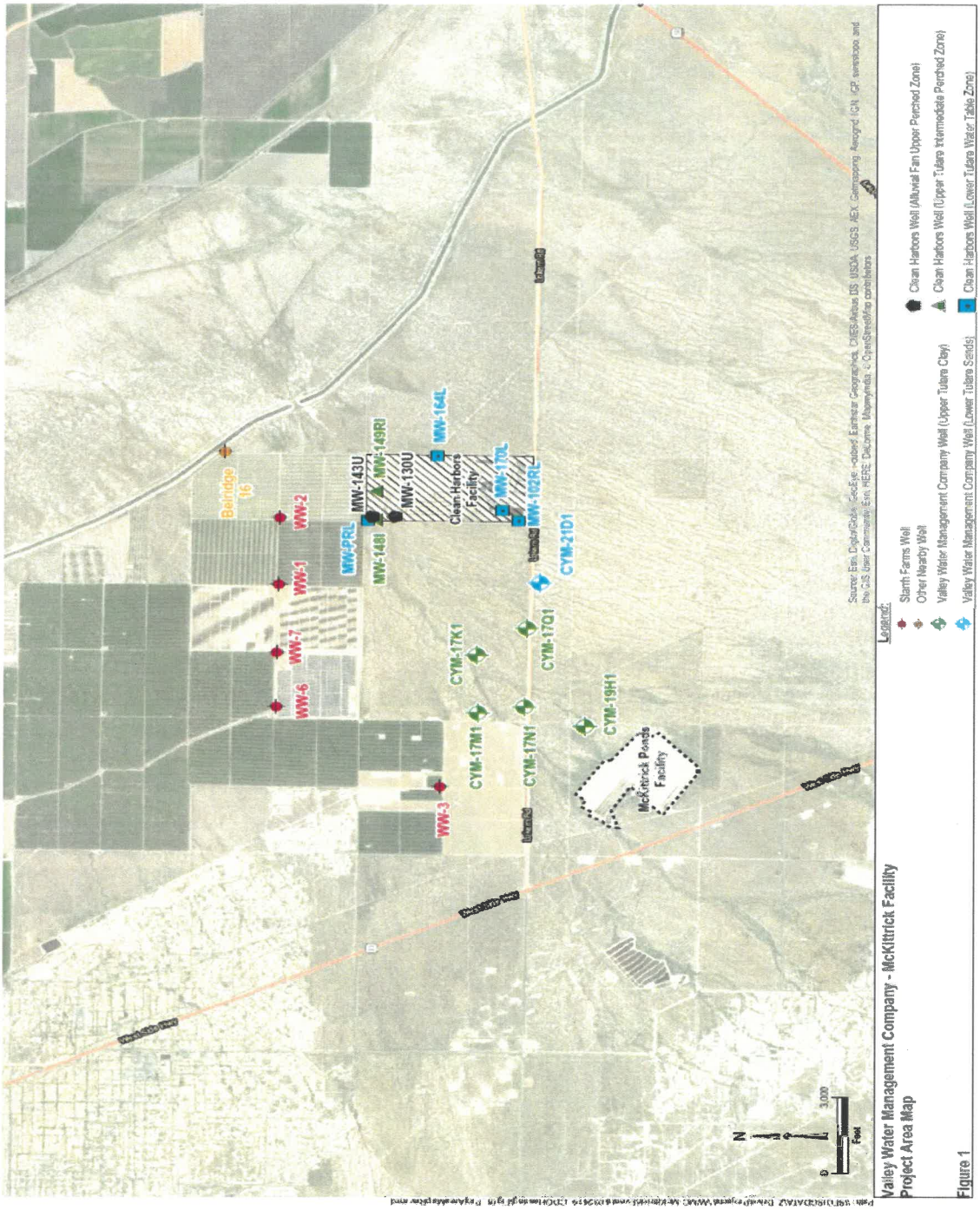
Source: Amec Foster Wheeler. Basin Plan Amendment. Westside Water Quality Coalition. 19 September 2016.

In addition, the following figure from the same work plan shows that the TDS concentrations of the groundwater in the area proposed for de-designation range from 4,000 mg/L to over 20,000 mg/L. These values are consistent with the poor-quality groundwater found in the regional aquifer beneath Valley Water and CH, as described more full in the following paragraphs.

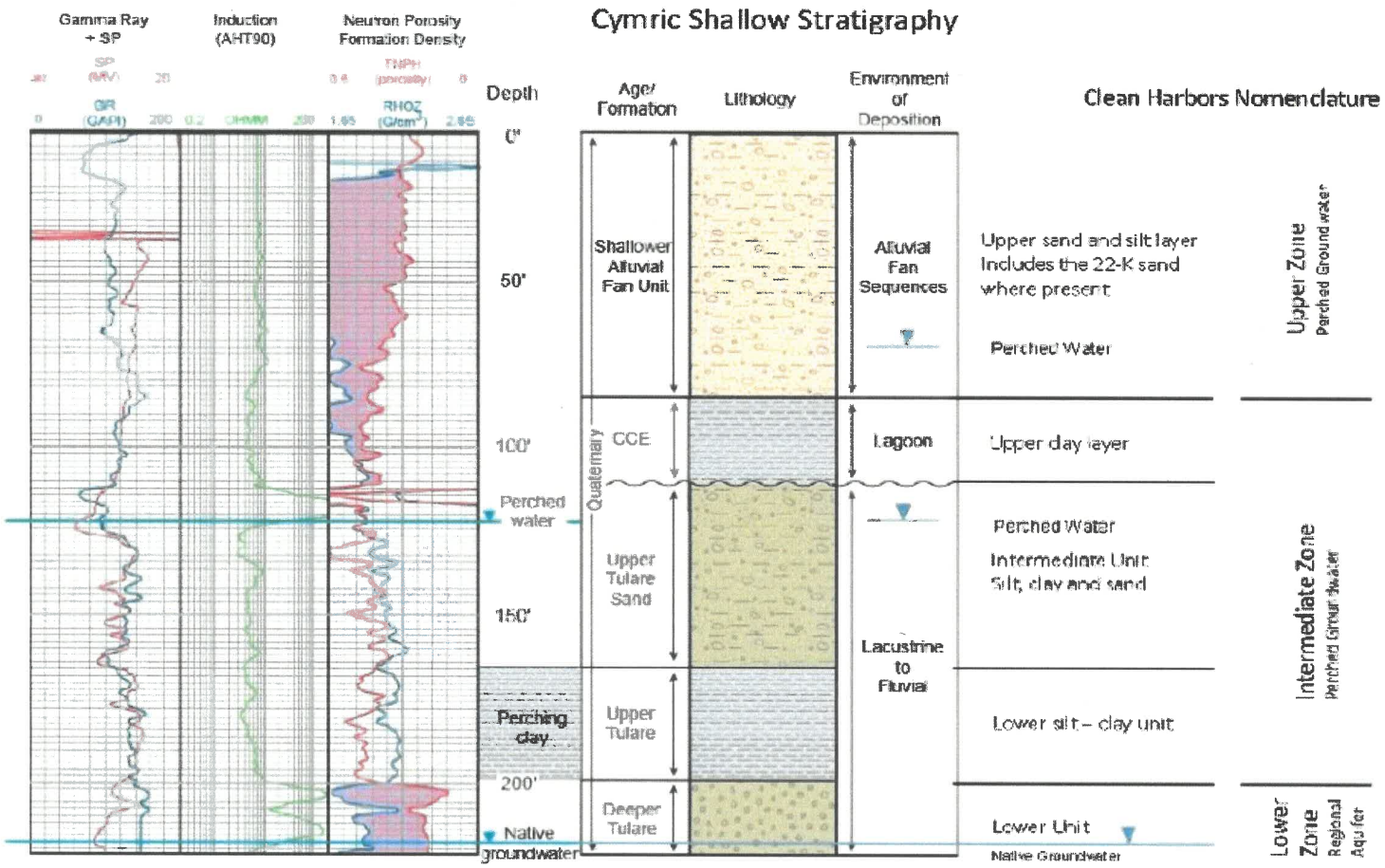


The Central Valley Water Board's own Final Staff Report for the Salt and Nitrate Control Program also shows ambient groundwater in the western area of Kern County is not particularly good quality for TDS (salinity). (*See* Exhibit 15, Figure 2-7 (Ambient Groundwater Quality for Production Zone (TDS).)

In order to adequately characterize groundwater migration from the McKittrick ponds, Valley Water voluntarily installed three groundwater monitoring wells (CYM-17N1, CYM-19H1,and CYN-21D1) in 2002 (Figure 1).



Of these, CYM-21D1 is the only Valley Water well screened in the deeper Tulare Formation (274 to 294 feet bgs), below the upper Tulare clay (*see* Figure 2 below).

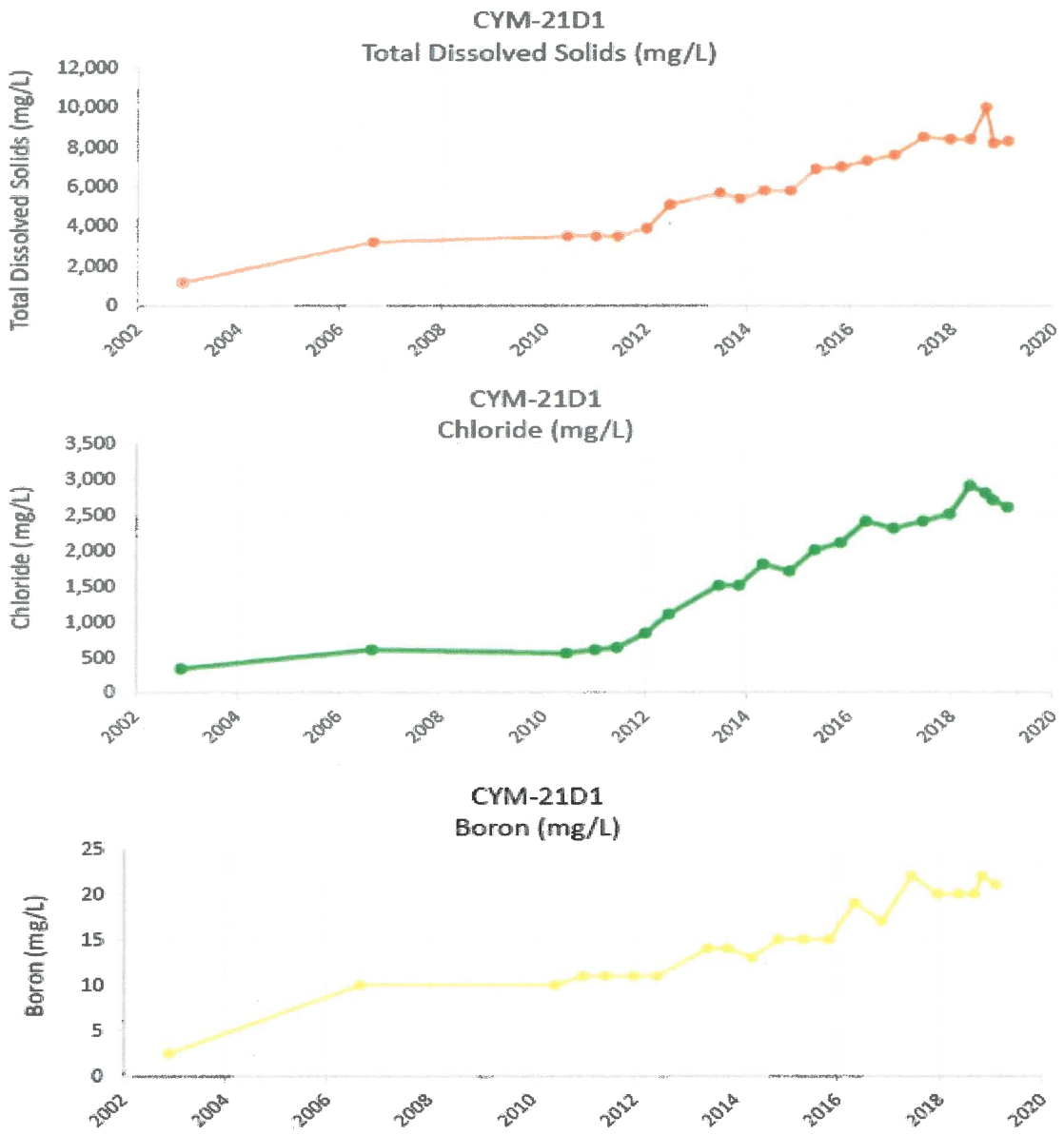


Valley Water Management Company - McKittrick Facility
Stratigraphy Diagram

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.

According to Central Valley Water Board staff, the data for well CYM-21D1 has shown increasing TDS, chloride, and boron concentrations since 2002 (*see* Figure 3 below).



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

Figure 3

Central Valley Water Board staff contends this change indicates that produced water discharged to the ponds is passing through the upper Tulare clay layer and impacting the regional aquifer. However, the more likely conclusion is an ongoing problem with that well's

construction. According to Valley Water records and Central Valley Water Board staff review, monitoring well CYM-21D1 had an increase in TDS from 1,200 mg/L to about 8,000 mg/L, in chloride from 334 mg/L to about 2,700 mg/L, and in boron from 2.5 mg/L to 22 mg/L, based on use of a 2002 data point. As described below, however, the 2002 data point was not representative of groundwater in the Lower Tulare formation.

Valley Water does not refute the fact that salt concentrations have increased in this well over time. However, Central Valley Water Board staff states that, based on the Electrical Conductivity ("EC"), TDS, chloride, and boron concentrations in monitoring CYM-21D1 found in the early 2000s, water in CYM-21D1 may have been potentially suitable for MUN and AGR uses, and that the recent increases in these constituents now render the groundwater in these wells unsuitable for irrigation of most crops. Valley Water disagrees with this premise and conclusion because the 2002 data point, collected immediately after well development, did not provide a representative sample of formation water. The chemical and isotopic data show this because the result is in part a measurement of the water introduced into the well to allow development. In addition, consideration of potential well construction difficulties further support the conclusion that the 2002 data point is not representative of Lower Tulare Formation groundwater.

The 19 August 2009 Central Valley Water Board review of the Phase II Hydrogeologic Characterization Report for the McKittrick Facility agrees with Valley Water's conclusion (Exhibit 23, first document at the bottom of Page 4), which notes:

> *"Analytical data from the September 2006 sampling event at well CYM-21 D1 shows that concentrations of TDS boron and chloride have increased since the November 2002 sampling event. However the 2006 groundwater analytical data is consistent with downgradient background groundwater monitoring well MW-102RL at the Clean Harbors Buttonwillow Facility. <u>It appears that well CYM-21 D1 may not have been sufficiently developed during the initial 2002 sampling event resulting in lower constituent concentrations due to dilution</u>. The 2006 sampling results appear to be more representative of background groundwater quality."* (Emphasis added.)

Central Valley Water Board staff's conclusion was based on the fact that there was only five (5) feet of water in the well and fresh water had to be added to develop and sample the well.

As a result, the samples initially collected were not representative of the groundwater.

The clearest indication of this is shown in the stable isotopes dataset, which shows that the 2002 monitoring results are much lower in δ^2H and $\delta^{18}O$ than any other sample of groundwater ever collected at this site (as expected given the use of fresh water during well development). Central Valley Water Board staff also noted that the available data in the Phase II Hydrogeologic Characterization Report showed that produced water had not moved far enough to reach well CYM-21D1 (*see* Exhibit 23, first document, p. 1, item 3)). Therefore, the apparent change in water quality between the 2002 and the 2006 sampling events was not due to an impact caused by thr Facility; instead, the water quality measured at CYM-21D1 in 2016 was more representative of the water quality levels for the groundwater in the Lower Tulare Sands.

In using the current data set, the 2002 data point cannot be accurately cited for such a significant conclusion that Valley Water has impaired water that had supported MUN and AGR. Valley Water's upcoming monitoring well installation includes a replacement well for CYM-21D1 that will avoid the issues apparent in the 2002 data. The remainder of this response provides further detail on the chemical data and well construction considerations that lead to rejection of the 2002 data for decision-making purposes.

1. WELL CONSTRUCTION ISSUES WITH CYM-21D1.

Valley Water has carefully reviewed the early data for CYM-21D1. It is highly likely that the initial analytical test of the water found in CYM-21D1 was not accurate. When the well was completed, and subsequently developed, there was only 5 feet of water in the bottom. Field notes and discussions found in the 2004 report (Exhibit 23 - Hydrogeologic Characterization Report, Valley Waste Disposal Company, Cymric Field Study Area, March, 16, 2004) indicate that swabbing of the well was difficult. To allow proper development of this well, fresh water was added to the well to allow purging. Also, the records do not reflect the use of casing centralizers, which could have caused the some of the PVC casing to lean against the formation wall, not allowing for good sealing of the casing. It is possible this caused a "short circuit" of the produced water from above the upper Tulare clay in the well.

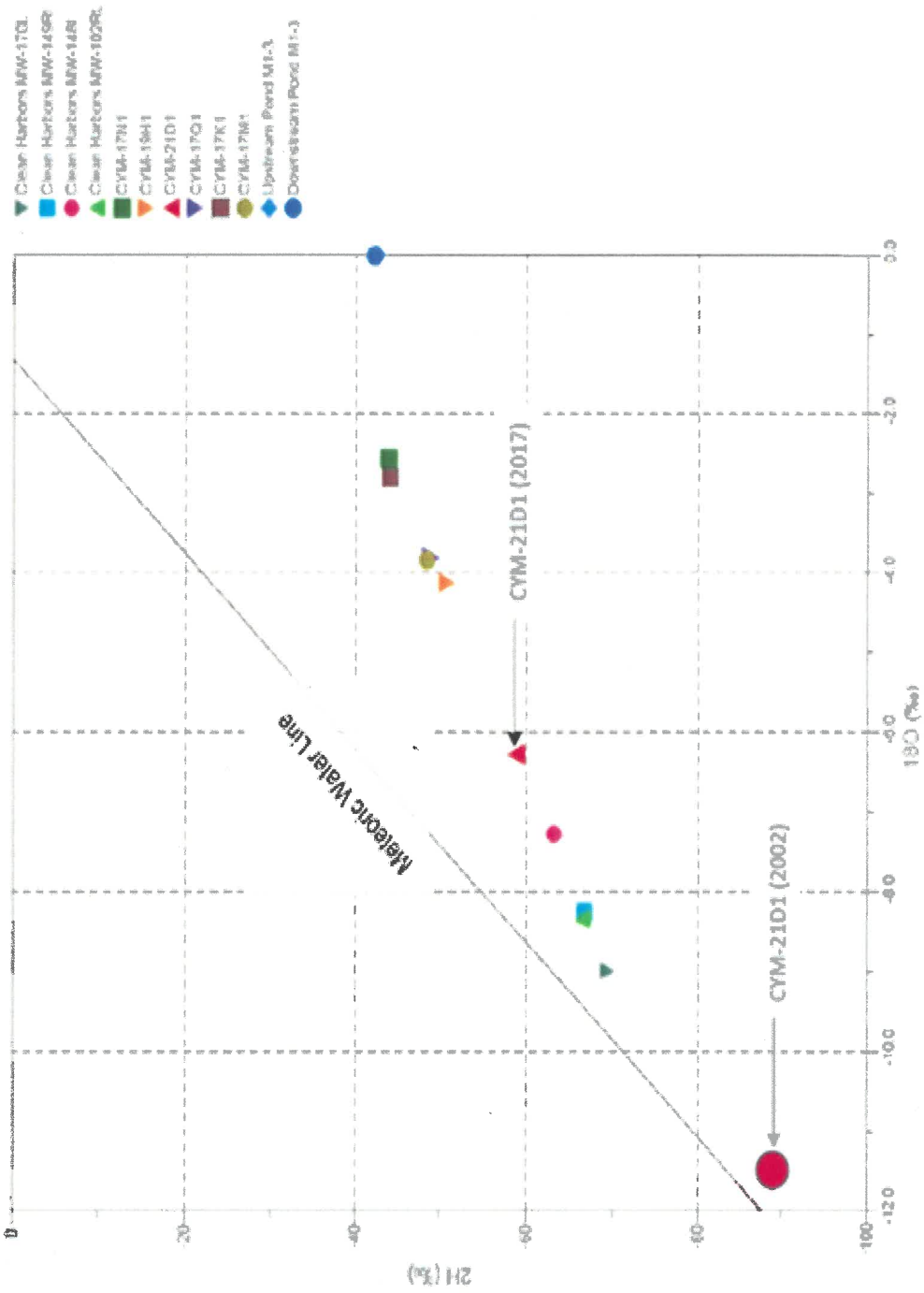
In addition to these indicators of well condition problems, historical water levels have

shown large fluctuations, which are not typical of other Lower Tulare zone monitoring wells in the area, and are more characteristic of well construction issues. Because so much of the Central Valley Water Board staff's evaluation of the extent of the oilfield produced water influence from the McKittrick Facility is based on this one well, it would be wise to further evaluate the integrity of the well. In any case, this well is scheduled for replacement by this fall, and the replacement will provide more reliable data to support further analysis.

2. DATA INDICATE 1,200 MG/L TDS IS NOT "FORMATION WATER".

Valley Water asserts that the initial low concentration level of TDS (1,200 mg/L) in 2002 in well CYM-21D1 was due to the inability to completely remove fresh-water drilling fluid from the well during the development activities. This is a typical problem when wells do not contain enough water to be properly developed. In our review of down-dip deeper Tulare wells, that low TDS concentration does not represent the norm for the area.

Furthermore, in reviewing the isotopic signatures of O and H, the CYM-21D1 (2002) groundwater plots sit exceedingly far to the left below the meteoric water line (*see* Figure 4 below). When compared to other native Lower Tulare waters, the water from this well in the initial test is unusually positioned on the graph and is not representative of the native groundwater. Subsequent testing of the groundwater from CYM-21D1 shows the initial concentration for TDS was far more likely to have concentrations similar to those found in the 2006 sampling. At that time, TDS was 3,500 mg/L, chloride was 600 mg/L, and boron was 10 mg/L. These numbers are reflective of the range normally found in the native groundwater in the deeper Tulare for this area. Therefore, initial water quality in CYM-21D1 was likely greater than 3,500 mg/L TDS, and not suitable for MUN or AGR beneficial uses without substantial mixing with fresher water. TDS observed in this well has increased, but this was never a "high quality" water suitable for AGR or MUN, or subject to the Antidegradation Policy. The isotopic analyses support this conclusion. As noted above, the Central Valley Water Board staff agreed with this conclusion as well.



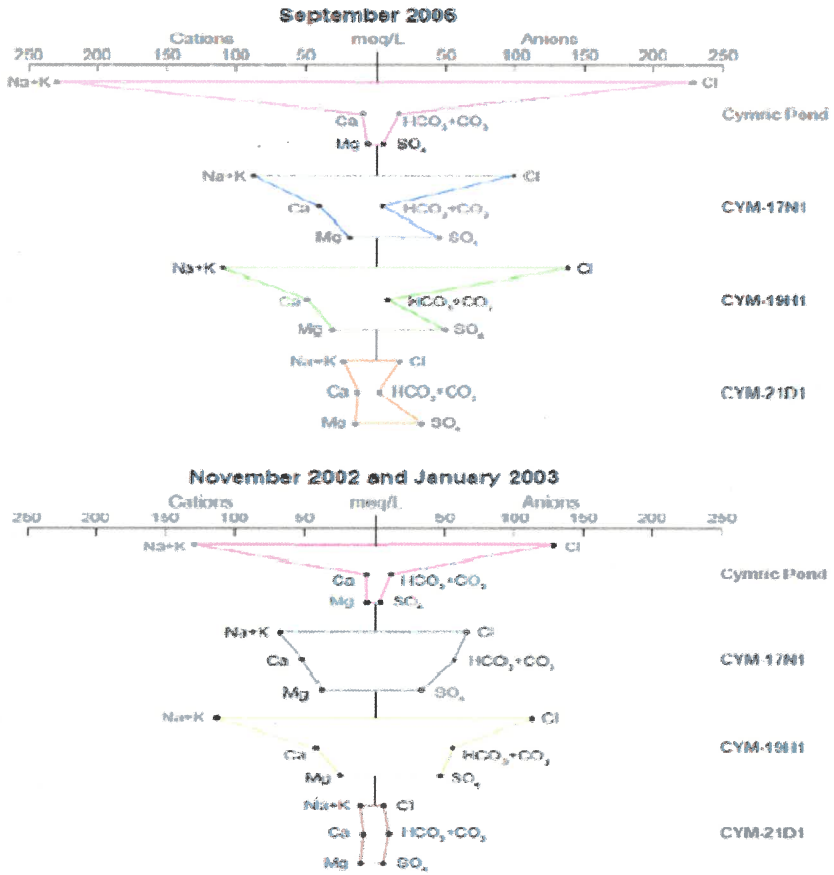
Valley Water Management Company - McKittrick Facility
Oxygen and Hydrogen Isotopic Compositions (May and June 2017)

Figure 4

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

Central Valley Water Board staff has suggested that water found early in the life of CYM-21D1 was suitable for agricultural use. The draft CDO at page 5, para. 24 states the following: "Water Quality for Agriculture, FAO Irrigation and Drainage Paper 29 Rev. 1 (1994) indicates that irrigation water use is severely restricted when the EC is greater than 3000 µmhos/cm, the TDS is greater than 2000 mg/L, the chloride is greater than 350 mg/L (surface irrigation), or the boron is greater than 3 mg/L."

Valley Water contends that the native groundwater sampled in CYM-21D1 exceeded those values in 2006 and most likely would have exceeded those values from the very beginning of sampling. In comparing the Stiff diagrams for 2006 (Figure 5 below), it is clear that CYM-21D1 is still monitoring native groundwater without the complications of mixing with produced water.



Valley Water Management Company - McKittrick Facility
Stiff Diagrams

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

In fact, the TDS was fairly consistent until 2012 (*see* Figure 3 above). Valley Water's conclusion is that native groundwater quality in CYM-21D1 (2002) did not meet the MUN designation criteria of < 3000 TDS and was marginal at best and not useful for long term agricultural use without using freshwater from another source for dilution and soil/salt management. (*See accord* Exhibit 14.)

In addition, the groundwater level in Valley Water's Lower Tulare Sand well CYM-21D1 has risen significantly, roughly five feet, since the June 2013 sampling event. The groundwater level in CH Lower Water Table wells MW-102RL and MW-170L has declined five to six feet during this same time, indicating a lack of connection between these wells. Moreover, CYM-21D1 appears to not be effectively sealed and to be influenced by shallow groundwater at that location. (Exhibit 23.)

TDS concentrations in CH Lower Water Table Zone well MW-102RL were stable between 2005 and 2014 and ranged between 3,100 and 3,400 mg/L, slightly increased to 3,700 mg/L in 2015 and have remained stable through 2017. TDS concentrations in downgradient well MW-170L slightly increased to 3,400 mg/L in 2007 and have decreased to a concentration of 2,600 mg/L in 2017. Boron concentrations in CH Lower Water Table Zone wells MW-102RL and MW-170L ranged from 8.4 to 11 mg/L between 2005 and 2017 with no time trends. Additionally, the pH value in CH Lower Water Table Zone well MW-102RL was 8.27 versus 7.4 in VWMC well CYM-21D1. This indicates no influence on CH wells from groundwater similar to that within well CYM-21D1. This technical information refutes many of the allegations and premises relied upon in the tentative CDO.

IV. LEGAL ISSUES AND ARGUMENTS

A. RELEVANT LEGAL BACKGROUND

1. TULARE LAKE BASIN PLAN

The Tulare Lake Basin Plan contains the water quality regulations for the entire basin, including the McKittrick area on the west side of Kern County. (Attachment A, Tulare Lake Basin Plan.) However, this Basin Plan was adopted more than a decade *after* the McKittrick Facility began operations. The Tulare Lake Basin Plan expressly recognizes that "the water quality

objectives for ground water salinity control the rate of increase" and the Salinity objective specifies the maximum average annual increases allowed in different hydrographic units in the Basin. (*See* Attachment A, at p. 3-11.)

The Basin Plan concludes that "Controlled ground water degradation by salinity is the most feasible and practical short-term management alternative for the Tulare Lake Basin." (*Id.* at 4-2 and 4-33(emphasis added).) The Basin Plan also recognizes that "[t]he impact a discharge may have is relative to the volume, quality, and uses of the receiving waters" (*id.*at p. 3-1), and that "[d]ue to historical practices, degradation of ground water from oil field wastewater disposal occurred in some areas" (*id.* at 4-25). "The water quality objectives for ground water salinity control the rate of increase and maintain beneficial uses as long as possible. A valleywide drain to carry salts out of the valley remains the best technical solution to the water quality problems of the Tulare Lake Basin." (Basin Plan at pp. 4-33 to 4-34.)

The Basin Plan does not contain specific numeric groundwater quality objectives for constituents of salinity. The Basin Plan includes a narrative "Chemical Constituents" objective that states: "Ground waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses." (Att. A at p. 3-10.)

When implementing this narrative objective:

> "The Regional Water Board will consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for detrimental levels of chemical constituents developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs, the U. S. Food and Drug Administration, the National Academy of Sciences, the U. S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective.
>
> At a minimum, waters designated MUN shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation- by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. At a minimum, water designated MUN shall not contain lead in excess of 0.015 mg/l. To ensure that waters do not contain chemical

constituents in concentrations that adversely affect beneficial uses, the Regional Water Board may apply limits more stringent than MCLs." (Att. A at p. 3-10.)

The secondary MCLs referenced in this section need not be applied as instantaneous maximum values, and in fact should be applied as long-term averages to the groundwater, not to the produced water itself. Groundwater can be viewed on a volume-weighted average (mean) concentration basis for the entire groundwater basin, and should not be applied to first encountered groundwater that essentially constitutes the percolated produced water and was not present prior to this Facility's operations.

For "Salinity," the Basin Plan requires:

"All ground waters shall be maintained as close to natural concentrations of dissolved matter as is reasonable considering careful use and management of water resources, except for those areas with specific beneficial use exceptions as listed in Table 2-3.

No proven means exist at present that will allow ongoing human activity in the Basin and maintain ground water salinity at current levels throughout the Basin. Accordingly, the water quality objectives for ground water salinity control the rate of increase.

The maximum average annual increase in salinity measured as electrical conductivity shall not exceed the values specified in Table 3-4 for each hydrographic unit shown on Figure 3-1, except for those areas with specific beneficial use exceptions as listed in Table 2-3.

TABLE 3-4
TULARE LAKE BASIN
GROUND WATER QUALITY OBJECTIVES FOR SALINITY

Hydrographic Unit	Maximum Average Annual Increase in Electrical Conductivity (µmhos/cm)
Westside (North and South)	1
Kings River	4
Tulare Lake and Kaweah River	3
Tule River and Poso	6
Kern River	5

The average annual increase in electrical conductivity will be determined from monitoring data by calculation of a cumulative average annual increase over a 5-year period." (Att. A, at p. 3-11 (emphasis added).)

The Central Valley Water Board has not presented evidence as to whether there has been an average annual increase in violation of the Basin Plan's prescribed increases in useable

groundwater basins underlying or near the Facility based on the last ten 5-year periods that can be attributed to Valley Water's Facility.

The Basin Plan also provides some effluent limitations in the Implementation Plan provisions, such as that the "incremental increase in salts from use and treatment must be controlled to the extent possible" and "maximum EC shall not exceed the EC of the source water plus 500 micromhos/cm." (Attachment A at p. 4-20.) While some "maximum salinity limits for wastewaters in unlined sumps overlying groundwater with existing and future probable beneficial uses" were set in the Basin Plan's "Policies regarding the disposal of oil field wastewater", the Basin Plan expressly states that "[d]ischarges of oil field wastewater that exceed the above maximum salinity limits *may be permitted* to unlined sumps, stream channels, or surface waters if the discharger successfully demonstrates to the Central Valley Water Board in a public hearing that the proposed discharge will not substantially affect water quality nor cause a violation of water quality objectives." (Attachment A at p. 4-26 (emphasis added).) Therefore, exceeding these policy limits does not necessarily mean that the Basin Plan provisions have been violated since these are not water quality objectives.

2. STATE ANTIDEGRADATION POLICY

The Basin Plan also references other State Board policies, including Resolution No. 68-16 "Statement of Policy with Respect to Maintaining High Quality of Waters in California" in 1968. (Att. A at p. 4-33; Attachment C.) Resolution No. 68-16, also known as the "Antidegradation Policy" was adopted by the State Water Board in response to a requirement by the federal government that all States adopt an antidegradation policy for surface waters (40 Code of Federal Regulations (C.F.R.) Section 131.12). (*See* Attachment G, SWRCB Order No. 86-8 at p. 29.) Although some have referred to this policy as the "Non-degradation Policy," the State Water Board has declined to characterize this policy as such because the term "non-degradation" was not used in the resolution. (Attachment G at p. 28, n. 10.)

Resolution No. 68-16 set forth the circumstances under which changes to high quality waters would be allowed. Specifically, Resolution No. 68-16 provides:

> "1. Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.
>
> 2. Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained." (Attachment C.)

This policy does not apply to less than high quality waters and does not absolutely require that existing high water quality be maintained. Rather, any change or degradation to high quality water must be both consistent with maximum public benefit and not unreasonably affect beneficial uses. (Attachment G at p. 29.) Resolution No. 68-16 is not a "zero-discharge" standard, but rather a policy statement that existing high quality be maintained <u>when it is reasonable to do so</u>. *Id.* The resolution is consistent with state statutes, including Water Code Section 13000, which states in part:

> "[A]ctivities and factors which may affect the quality of the waters of the state <u>shall be regulated to attain the highest water quality which is reasonable</u>, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." (Emphasis added.)

In addition, Water Code Section 13241 provides in pertinent part:

> "It is recognized <u>that it may be possible for the quality of water to be changed to some degree without unreasonably affecting beneficial uses</u>. Factors to be considered by a regional board in establishing water quality objectives shall include, but not necessarily be limited to, all of the following:
>
> (a) Past, present, and probable future beneficial uses of water
>
> (b) Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.
>
> (c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.
>
> (d) Economic considerations.
>
> (e) The need for developing housing within the region." (Emphasis added.)

3. STATE SOURCES OF DRINKING WATER POLICY

The Basin Plan also references Resolution No. 88-63, the "Sources of Drinking Water" policy adopted by the State Water Board. (Att. A at p. 5-2; Attachment D.) This policy was the result of Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986. (Health & Saf. Code, §25249.5 *et seq.*; Cal. Code Regs., tit. 27, §27001 *et seq.*) Proposition 65 defined "source of drinking water" as "either a present source of drinking water which is identified or designated in a water quality control plan adopted by a regional board as being suitable for domestic or municipal uses." (Health & Saf. Code, §25249.11(d).)[3]

In 1988, the State Water Resources Control Board ("SWRCB") passed Resolution 88-63 in an effort to clarify Proposition 65's reference to "sources of drinking water" for purposes of enforcement of that statute. Resolution 88-63, adopted on 19 May 1988, specifies that, *except under specifically defined exceptions*, all surface and ground waters are suitable or potentially suitable for MUN. The specific exceptions are for waters with existing high total dissolved solids (TDS) concentrations (greater than 3,000 mg/l), aquifers with low sustainable yield (less than 200 gallons per day for a single well), water with contamination that cannot be treated for domestic use using best management practices ("BMPs") or best economically achievable treatment practices, waters within particular municipal, industrial and agricultural wastewater conveyance and holding facilities, and regulated geothermal ground waters/exempted aquifers.

Resolution 88-63 was rejected by the Office of Administrative Law ("OAL") under the California Administrative Procedure Act ("APA"). (Gov. Code, §§11346-11346.8.) In its Determination No. 8, the OAL held that Resolution 88-63 was a "regulation" subject to the APA, and that its adoption violated Government Code §11347.5 (now §11340.5) because the SWRCB failed to comply with the APA. Thus, Resolution 88-63 was invalidated and could not have been

---

[3] The California Supreme Court has held that "source of drinking water" includes any water currently destined to be used as drinking water. Treating all water as an existing use, when it is only a potentially suitable source of drinking water "would greatly extend the reach of the statute, and would lead to absurd circumstances (like, for example, protecting brackish lagoons which never could be used for drinking water, but would still be designated 'potentially suitable.')" *See People of the State of California and the City of San Diego v. Kinder Morgan Energy Partners, L.P. et al*, US Dt. Ct for Southern District, Case No. 07-CV-1883 W (AJB), ORDER on Motion to Dismiss (2008) citing *People ex rel. Lungren v. Superior Court*, 926 P.2d 1042, 1049 (Cal. 1996).

lawfully applied by any agency. (Gov. Code, §11340.5(a).)

Nevertheless, Regional Water Boards adopted this invalidated resolution into the various Basin Plans around the State in 1989. In Resolution 89-098 (Attachment F), on page 2, the Regional Water Board resolved that "all surface and ground waters within the Tulare Lake Basin which currently have no beneficial use designation are hereby designated municipal and domestic supply (MUN), *with the exception of*: (emphasis added)

1. Surface and ground waters where:
   a. The total dissolved solids (TDS) exceed 3,000 mg/L (5,000 µs/cm, electrical conductivity) and is not reasonably expected by the Central Valley Water Board to supply a public water system; or
   b. There is contamination, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices; or
   c. The water source does not provide sufficient water to supply a single well capable of producing an average sustained yield of 200 gallons per day…."

The Central ValleyWater Board by this action seemingly blanket designated MUN for all waters without any on-the-ground evaluation or assessment.[4] (*See* Exhibit 22, p. 26 (Creedon: "[m]any of our aquifers and surface waters were automatically designated without any action by the Regional Board." (highlighted).) In 2000, the State Water Board approved the Central Valley Water Board's resolution as a Basin Plan amendment notwithstanding OAL's disapproval of the basis for Resolution No. 88-63, and the Tulare Lake Basin Plan thereafter has stated:

> Due to the "Sources of Drinking Water Policy," all ground waters are designated MUN (the **use may be existing or potential**)[5] unless specifically exempted by the Regional Water Board and approved for exemption by the State Water Board. (Tulare Lake Basin Plan, at pg. 2-3 (emphasis added).)

---

[4] If designated, the presumption should be that the water is designated only as "potential" unless evidence in the record demonstrates that the designated MUN use is an actual, existing use. A Central Valley Water Board decision must adequately consider all relevant factors and evidence, and demonstrate a rational connection between those factors/evidence, the choices made, and the purposes of the enabling statutes. (*See California Hotel & Motel Ass'n v. Industrial Welfare Comm.*, 25 Cal.3d 200, 212 (1979).) Without evidence of an existing use, such a designation would be legally infirm.

[5] Unlike other Basin Plans in the State, the Central Valley's Basin Plans do not include a chart defining which waters are existing and which are potential or intermittent uses.

The groundwater under and near the McKittrick Facility in 1989 met the criteria of both 1.a. and 1.b. set forth in Resolution No. 89-098 in 1989. (*See e.g.,* Final SNMP for Central Valley Water Board Consideration: December 2016, https://www.cvsalinity.org/docs/committee-document/technical-advisory-docs/conceptual-model-development/3678-snmp-section-3-s-n-conditions/file.html , p. 3-13, Table 3-9 of Region Board's "Salt and Nitrate Conditions in Central Valley Region," showing the shallow groundwater for the Initial Analysis Zone (IAZ) closest to McKittrick exceeded 3,000 mg/L TDS in the decade from 1980-1989.) Therefore, under the clear language of that resolution, waters meeting these criteria were NOT designated MUN. The phrase "*with the exception of*" means "not including" according to common usage. (*See* Merriam-Webster, accessible at https://www.merriam-webster.com/dictionary/with%20the%20exception%20of, last accessed March 20, 2019.) In the legal context, an "exception" means:

> The act of excepting or excluding from a number designated or from a description; that which is excepted or separated from others in a general rule or description; a person, thing, or case specified as distinct or not included; an act of excepting, omitting from mention, or leaving out of consideration. Express exclusion of something from operation of contract or deed. An exception operates to take something out of a thing granted that would otherwise pass or be included.

(West's Encyclopedia of American Law, edition 2. Copyright 2008 (emphasis added).)[6] The intent of the exception cannot be other than to exclude waters meeting the listed criteria from the act of MUN designation. No other meaning can be validly given to these clear words.

Contrarily, the Central Valley Water Board contends that if one of the exceptions applies, it may only remove the MUN designation for the particular water body through a formal Basin Plan amendment, which includes a public hearing. This exception would not become effective until approval by the State Water Board and OAL. Such an interpretation ignores the fact that no findings or evidence were presented in 1989 to demonstrate that an existing MUN use was present everywhere designated, and that existing MUN uses were maintained. In fact, Res. 89-098

---

[6] *See Blumenfeld v. San Francisco Bay Conservation etc. Com.* (1974) 43 Cal. App. 3d 50, 59 (The interpretation fo an administrative regulation is subject to the same principles as the interpretation of a statute)'' *Env'l Charter High School v. Centinela Valley Union High School Dist.* (2004) 122 Cal. App. 4th 139, 148-9 (The plain meaning of the regulatory text must be employed.).)

expressly states that, "the above criteria not withstanding, waters presently used for municipal and domestic supply are hereby designated for protection as MUN…."

At most, if a valid designation did somehow occur, then only a ***potential*** MUN use was designated for the groundwater underlying the Facility since Res. No. 98-089's exceptions applied. Potential uses need not be protected in the same manner as an existing use. Different objectives could apply to potential uses, or substantially longer compliance schedules could be allowed to meet current objectives. (*See Cal-SPA v. SWRCB* (2008) 160 Cal. App. 4th 1625, 1641 ("the adoption of site-specific [ ] objectives is demonstrated by the record to be protective of this possible beneficial use.").) The Porter–Cologne Act requires the Central Valley Water Board to set water quality objectives at limits or levels that provide for the "***reasonable,***" not complete and total, protection of beneficial uses of water in the specific area. (*County of Sacramento v. SWRCB*. (2007) 153 Cal.App.4th 1579, 1583 *citing* Wat. Code § 13050, subd. (h).)

Additionally, the State Water Board held that, where an MUN use had been designated, but was unlikely to exist, the Central Valley Water Board "must diligently pursue a basin plan amendment to consider dedesignating MUN." (See *City of Vacaville*, SWRCB Order No. WQO 2002-0015 at p. 22.) In that case, as here, there was no evidence in the record that anyone had directly used local waters for drinking at any time. Further, the water quality was probably not adequate to support an MUN use. Deeming the first encountered groundwater below this Facility, which did not exist prior to and only exists because of the Facility, to have ever have had an MUN use is inaccurate and unreasonable.

B. THE ISSUANCE OF A CDO IS UNNECESSARY.

1. THE PROPOSED CEASE AND DESIST ORDER IS UNREASONABLE AND CONTRAVENES WATER CODE SECTION 13000.

The California Legislature has found and declared that activities affecting water quality "shall be regulated to attain the highest water quality which is ***reasonable***, <u>considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible</u>." Water Code § 13000 (emphasis added). This section of the Water Code sets State policy and imposes an overriding requirement

on the Central Valley Water Board that all issued orders be *reasonable* considering all circumstances.

Here, proposed CDO includes a requirement to cease discharge at the Facility by July 1, 2020, "unless those discharges are in compliance with waste discharge requirements issued by the Central Valley Water Board." (Tentative CDO, Provision 4, p. 11.) Assuming that the Central Valley Water Board's presumption is that Valley Water is *not* currently meeting its WDR, and that compliance with some new, undefined WDR is required, this less than 13 month deadline to adopt a new permit and ensure compliance is not reasonable, considering all of the related circumstances.

The Proposed CDO also sets unattainable and unreasonable deadlines for compliance with the next phases of the investigations already underway or for actions that may be wholly unnecessary if the CDO presumptions are inaccurate. For example, as currently proposed, the CDO requires that Valley Water submit a report of waste discharge, which has been submitted with this response (see Exhibit 2). The CDO also requires Valley Water to submit a closure plan and time schedule and remediation workplan by January 1, 2020. Not only are these deliverables unnecessary given the facts provided herein, this schedule is less than 7 months after the CDO's adoption. Deadlines that all but ensure Valley Water's noncompliance are inherently unreasonable.[7]

The requirements contained in CDO are also unreasonable because many are unnecessary. Prior to its receiving a 13267 Order from the Central Valley Water Board on September 13, 2018, Valley Water had already begun voluntarily pursuing extensive investigations at the Facilities in an effort to both hasten the analyses and to work cooperatively with the Central Valley Water Board. (Exhibit 1.) Valley Water has demonstrated diligence and commitment to continue in a cooperative manner, by negotiating and accepting an updated MRP, Order No. R5-2018-0808 (Attachment J), from the Central Valley Water Board in 2018.[8] Staff now propose adoption of a

[7] *See also* footnote 1, *supra,* that demonstrates that remediation is not feasible or economically reasonable.

[8] Because Valley Water believed the MRP required monitoring for non-existent uses and contained unreasonable timelines given the site issues, this MRP was appealed to protect Valley Water's rights, but was placed in abeyance (Exhibit 16).

CDO, even though the Regional Board members opined in 2018 that such an action would be unnecessary unless "we see any foot dragging with respect to getting those wells installed, that isn't well-justified." (Exhibit 22 at p. 23 (highlighted).)

Central Valley Water Board staff acknowledged that well drilling at these sites would be difficult at the 2018 hearing on Resolution R5-2018-0015. (*See accord* Exhibit 22, p. 3 (Rodgers: "The natural area between the McKittrick and Clean Harbors facilities has proven difficult to access by drill rigs because of the endangered species being present."); p. 21 (Rodgers: "since access has been such an issue, I think I've finally got arranged a meeting for the 19th of this month, to meet with Valley Water, Chevron representatives, Clean Harbors representatives all at the same place at the same time, to see if we can come to resolution and find some locations for the wells."); p. 21 (Pulupa: "that area right there is potential endangered species habitat. So, it is not the easiest to access, and you have to make sure that when you do access it to put a well in, that you do it with all due sensitivity for any special status species or habitat out there."); p. 23 ("in fairness to Valley Water, you know some of the endangered species have prevented us from moving as quickly as perhaps we could have.").

Valley Water has not been dragging its feet, but has been diligent about following the laws related to endangered species, and about working as quickly as was feasible to obtain access agreements from neighboring landowners. (*See* Exhibits 24, 17, and 1, ¶ 10.)

In light of the circumstances here — namely, Valley Water's ongoing commitment to voluntarily conduct the necessary investigations and to fully cooperate with the Central Valley Water Board — the additional enforcement layer and overly stringent deadlines proposed in the CDO are unreasonable under Water Code section 13000. The harsh deadlines are necessarily arbitrary and do nothing to improve the investigation, but rather serve only to increase the likelihood that Valley Water will be held liable for violations of the CDO in the future, particularly when unreasonably and unnecessarily compressed timelines set Valley Water up for failure when the endangered species issues preventing additional monitoring were well known to Central Valley Water Board staff. (Exhibits 22, 24.)

While the State Water Board's 2010 Enforcement Policy (Attachment B) recognizes that "[t]here is a point [] at which [the] cooperative approach should make way for a more forceful approach," Valley Water does not believe that cooperation with the Central Valley Water Board staff has broken down such that the highly compressed deadlines imposed by proposed CDO could be considered reasonable under California Water Code section 13000.

2. ONGOING DISCHARGES DO NOT POSE ANY IMMINENT THREAT

Extensive shallow and deep groundwater investigations and data evaluations, costing over $1,500,000 thus far, have been undertaken by Valley Water at the Facility. (Exhibit 1, ¶12.) From Valley Water's investigations thus far, no evidence has been found to indicate that impacts to useable groundwater have been caused by the activities at this Facility. (*See* Technical Analysis, Section III above.) These initial conclusions find no imminent threat of harm to offsite useable groundwater or groundwater users' water from Valley Water's Facility.

3. ADEQUATE TIME MUST BE PROVIDED TO EXPLORE ALTERNATIVES.

Valley Water understands that there are pressures on the Water Boards to deal with oilfield wastes (Exhibit 13), but the Central Valley Water Board has a history of embarking on collaborative approaches to deal with salinity issues, such as the one undertaken in the late 1950s at this Facility to site the ponds in an area of unusable groundwater (*See* Att. D, Order No. 69-199). One impetus for the CV-SALTS program was to address salts more holistically and regionally instead of focusing on specific enforcement actions against individual entities that are just one piece of a larger salinity puzzle in the Central Valley Region. This proposed CDO's reversal back to an enforcement-based approach goes against the goals of creating and implementing a reasonable salinity policy, through the adoption of Salt and Nutrient Management Plans, and through adoption of the Variance/Exception Policy. (*See* Attachment H.)

On June 16, 2014, the Central Valley Water Board adopted Resolution R5-2014-0074, which added policies for variances and exceptions from implementation of water quality objectives for salinity.[9] One of the minor modifications made to that policy on February 13, 2015,

[9] This resolution was approved by the State Water Board on March 17, 2015 in Resolution No. 2015-0010 (Attachment H) and by the Office of Administrative Law on June 19, 2015 (*approval accessible at:* http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/variances/2015-0507-02s.pdf.)

was to add language that contemplated the option of land disposal for saline waters. (Attachment H.) Valley Water already implements land disposal and should be eligible for either an exception from Basin Plan requirements, as applicable, or be allowed to demonstrate in the upcoming public hearing on this CDO that the discharge will not substantially affect water quality nor cause an offsite violation of any properly applicable water quality objectives. (Attachment A, Basin Plan at pp. 4-10 and 4-26.) Arguably, Valley Water makes the demonstration needed for this exception through the evidence and conclusions in this submittal.

Any potential alternatives to the current use of ponds will need time for planning, implementation, and potential environment impact review under the California Environmental Quality Act ("CEQA"), including but not limited to: 1) attempting to get an underground injection permit from the Division of Oil, Gas & Geothermal Resources ("DOGGR"); 2) treating and providing water to local Water Districts for supplemental supply and blending to reduce salinity to levels that can be provided to irrigation customers; or 3) moving the water to another Valley Water produced water management facility. Each of these alternatives will take time and substantial funding to complete. (*see* Exhibit 1, ¶13) Without time for review, it is unclear whether any of these alternatives provide more reasonable courses of action than continuing use of the Facility's ponds, which have been demonstrated not to be causing widespread impacts after 50 years of use. (*See supra* Section III; *see also* Attachment A at p. 4-36; 23 C.C.R. §2231 ("Time schedules should be included in requirements for existing discharges when it appears that the discharger cannot immediately meet the requirements.").) Instead of a CDO, a new WDR should be adopted to explore implementation of these options along with other alternative courses of action (e.g., de-designation, exceptions, etc.)

4. BASELINE WATER QUALITY MUST BE ANALYZED PER THE ANTIDEGRADATION POLICY.

The discharges of saline produced water permitted by the WDR for the Facility preceded both the Antidegradation Policy (Attachment C) and the Tulare Lake Basin Plan (Attachment A). Thus, the quality of the underlying ground water at the time that the Antidegradation Policy was adopted in 1968 represented the baseline. (*See Asociation de Gente Unida por el Agua, et al., v.*

Central Valley Regional Water Quality Control Board, 210 Cal.App.4th 1255, 1270 (3d DCA, 2012) ("The antidegradation policy measures the baseline water quality as that existing in 1968 and defines high quality waters as the best quality achieved since that date.").) It can be presumed that after 8-10 years of saline water discharges that the underlying groundwater reflected the mixing with or was produced water. Thus, groundwater quality as of 1968 should be the baseline upon which the Central Valley Water Board views any current "impairment" or degradation, and the underlying groundwater should not be considered "high quality" for EC, TDS, boron, or other constituents contained in the produced water.

Further, even if the Antidegradation Policy did require comparison to or even attainment of the Basin Plan's water quality objectives for salinity, the "State's Antidegradation Policy does not require immediate compliance and the Policy does not prohibit time schedules or variances to allow time to develop a long-term solution to salt [ ] concerns in the Central Valley Region or for dischargers to identify and implement management practices that work for their industries. The variance coupled with the CV-SALTS effort will work to provide such solutions." (Attachment I; Response to Comments by SWRCB on Variance Policy at p. 10.) Thus, there is no need for either the relatively immediate cessation to the use of ponds that has been on-going for more than a half century, or the harsh timelines proposed by the CDO.

Finally, even if one were to assume for the sake of argument that the underlying groundwater was high quality and the Antidegradation Policy applied there or downgradient, that Policy would require a showing of the use of Best Practicable Treatment and Control ("BPTC"). As recently written in a letter from the Central Valley Water Board's Executive Officer to an irrigated agricultural coalition, "[t]he Central Valley Water Board considers <u>participation in a basin-wide salt management solution, such as CV-SALTS, to represent BPTC</u>, because the studies that CV-SALTS is taking on will help ensure compliance with [ ] performance standards for minimizing percolation of salts to groundwater." (Exhibit 18 at p. 3 (emphasis added).)

Valley Water has actively participated and funded CV-SALTS efforts since 2016. (Exhibit 22, pp. 17-18 (Pulupa: "…I think when Valley Water wants to make the comment that they are participating in CV-SALTS, that's a lot of what their participation will be looking at over

next 10 to 15 years. They've contributed financially and are continuing to contribute expertise into the design and execution of the P&O Study....")) Valley Water usually has one or two participants at every CV-SALTS meeting (Exhibit 15, CV-SALTS Committee Roster (March 2019)), and others participate by phone. Valley Water donates ample time and resources on CV-SALTS projects and helped to support the May 2018 Basin Plan Amendments. This participation should and would qualify as BPTC, assuming high quality water was at issue.

5. THE CDO IS INCONSISTENT WITH SALT AND NITRATE MANAGEMENT PLAN

One of the key goals of the Central Valley Water Board's Salt and Nitrate Management Plan (SNMP - https://www.cvsalinity.org/docs/central-valley-snmp/final-snmp.html (*last accessed* April 4, 2019) for the Central Valley is to "establish a balance of the mass of salt and nitrate in groundwater underlying each permitted or managed area, where reasonable and feasible. With regards to salt, balance is defined as achieving a state where inputs of salt (salt flux in) into a managed area are equal to outputs (salt flux out) from the same area." (See SNMP, Central Valley Salt and Nitrate Management Strategy at p. 4-2 (Goal 2)(emphasis added).) As discussed above, the technical analysis and data indicates no imminent threat to usable groundwater posed by the McKittrick Facility, thereby allowing time for further discussion and participation in a more comprehensive solution along with other sources of salinity in the valley.

The SNMP recognized that ***long-term*** solutions are needed for addressing salinity. For example, "the Strategic Salt Accumulation Land and Transportation Study (SSALTS) identified and evaluated potential salt management strategies (CDM Smith 2013, 2014, and 2016b). The study's findings showed that current salinity management activities may only address about 15% of the annual salt load; long-term solutions, including development of regional de-salters, a regulated brine line, or other projects that would allow containment or removal of salt, are needed to address the other 85%. These long-term management strategies will require significant state and federal funding to implement. In the meantime, the Central Valley Water Board must implement the Basin Plans through the adoption of WDRs/Conditional Waivers that consider the beneficial uses to be protected and the water quality objectives associated with those beneficial uses." (SNMP at p. 4-6.)

Because the solutions for addressing salinity are decidedly long-term in nature, the Central Valley Water Board needs be able to consider innovative salt management strategies for both the short term and the long term that move the region toward salt balance in impacted areas, where reasonable and feasible. This includes needing additional regulatory flexibility with respect to the issuance of WDRs with salinity-related requirements, *not issuing CDOs*, and including the use of Exceptions, potential re-classification of AGR uses, offsets, drought and conservation policies, and the implementation of the adopted Salinity Permitting Strategy for salinity discharges during implementation of the Salinity Management Strategy. (*Id.* at pp. 4-6 to 4-15; p. 4-52.)

The First Phase of the Salinity Management Strategy is anticipated to consist of developing a Prioritization and Optimization Study ("P&O Study") for salinity management for the entirety of the Central Valley Region in lieu of conservative regulatory programs as is being proposed for Valley Water in the draft CDO. As an active participant in CV-SALTS for many years, Valley Water was led to believe that participation in the P&O Study would be the main compliance activity during Phase I, not harsher requirements as proposed in this CDO.

The SNMP determined that "[i]t is reasonable to employ a long-term interim permitting approach." (SNMP at p. 4-55.) Because of the long-term nature and anticipated high costs for implementation of the Salinity Management Strategy, the SNMP also found that it is reasonable to expect that dischargers will not be able to implement such strategies individually, but will need to participate in a larger region-wide collective effort. (SNMP at p. 4-55.) Due to the anticipated costs of these efforts, the SNMP determined "it is appropriate that discharges not be subject to extensive and/or expensive salinity permit requirements during this interim period. In particular, individual discharge efforts would have little impact on Central Valley salinity management as a whole, and as such they are not reasonable, feasible or practicable." (SNMP at 5-55 to 4-56 (emphasis added).) The proposed CDO is inconsistent with the policies promoted in the SNMP, urged throughout the CV-SALTS process, and adopted in the recent 2018 Basin Plan Amendments (BPA).

//

6. THE PROPOSED CDO IS INCONSISTENT WITH OTHER CENTRAL VALLEY WATER BOARD ORDERS

The Central Valley Water Board adopted three General Orders ("GOs") in 2017 that were intended to fit most oil field produced water pond situations in the Central Valley. The Central Valley Water Board's "Priority Projects FY 2017-2018" cited "GENERAL ORDER ENROLLMENT" where "Staff will enroll dischargers currently operating under cleanup and abatement orders into one of the three General Orders for Oil Field Discharges to Land" as a priority for the Central Valley Water Board. Valley Water has consistently asserted that General Order Number Three ("GO3," Attachment L) should apply to the McKittrick Facility (Exhibit 22) since that Facility meets the following specified requirements for coverage:

> GO3 applies to owners and/or operators of oil and gas production facilities that:
>
> a. primarily discharge produced wastewater from oil and gas extraction operations to land, including but not limited to produced wastewater disposal ponds, but that may also discharge produced wastewater to land for dust control and for construction activities and may discharge road mix within Facility boundaries to enhance containment berms and roads;
>
> b. exceed the maximum oil field discharge salinity limits for electrical conductivity, chloride, and boron contained in the Water Quality Control Plan for the Tulare Lake Basin, Second Edition, Revised January 2015 (Basin Plan);
>
> c. discharge where the first encountered groundwater is of poor quality or there is no first encountered groundwater;
>
> d. discharge where the first encountered groundwater does not support beneficial uses as identified in the Basin Plan as Municipal and Domestic Supply (MUN), or Agricultural Supply (AGR), or Industrial Service Supply (IND) or Industrial Process Supply (PRO); and
>
> e. began discharge of wastewater to pond(s) prior to 26 November 2014.

The proposed CDO seems contrary to Finding 4 of GO3, which states: "It is the intent of the Central Valley Water Board that Facilities regulated by outdated WDRs [waste discharge requirements] can also apply for coverage under this General Order." The proposed CDO is also contrary to the direction of the Central Valley Water Board Members in Res. No. R5-2018-0015, which specifically directed Central Valley Water Board staff to:

> "take appropriate action to determine whether Valley Water's discharge may be regulated under General Order Number Two, General Order Number Three, or whether Valley Water should be directed [to] submit for the Board's consideration a report of waste discharge to be regulated under an updated set of individual waste discharge requirements. **Compliance options may include a consideration of the policies currently under development through the CV-SALTS initiative**."

(Attachment K, Res. No. R5-2018-0015 at p. 4 (emphasis added).) The CDO does none of these things, and takes an enforcement action instead of the permitting action directed.

GO3 puts permittees under that permit on a path for de-designation of MUN, AGR, and/or industrial supply (IND or PRO) uses. Such de-designation is possible in instances where there is contamination or pollution, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic or agricultural use using either Best Management Practices or best economically achievable treatment practices. (*See* Attachment L, GO3 at Findings 23.b. and 24.a.(both sub-sections).) MUN designation was not appropriate where "The total dissolved solids (TDS) exceed 3,000 milligrams per liter (mg/L) (5,000 micromhos per centimeter (μmhos/cm) electrical conductivity) and it is not reasonably be expected by the Central Valley Water Boards to supply a public water system." Under Resolution 89-098, these waters were exempt from being designated and should not have been designated in the first place since local groundwater exceeded 3,000 mg/L in 1989. (Attachment F.)

GO3's Finding 31 recognizes that: "Hydrogeological conditions, particularly in the oil fields on the west side of the Central Valley, have resulted in areas where first encountered groundwater is petroleum or hydrocarbon producing and/or is of such poor quality that it cannot reasonably be expected to be used, now or in the future, for the Basin Plan assigned beneficial uses, even with the implementation of best management practices or best economically achievable treatment practices." (Attachment K (emphasis added).) Finally, Findings 56 and 57 recognize that the CV-SALTS process may "necessitate the re-opening of" GO3, and that exceptions from water quality objectives may be obtainable. (*Id.*)

Notwithstanding all of these findings, Central Valley Water Board staff has held firm that Valley Water cannot qualify for GO3 and has pre-judged the ability to qualify for any de-designation decision by seemingly disallowing that pathway. (*But see,* Draft CDO Staff Report at

19 ("The groundwater directly under the Facility appears to be primarily produced water from the Facility ponds and possibly other Valley Water facilities. This groundwater may be suitable for dedesignation."); Exhibit 22, p. 7.)

Instead of the collaborative GO3 path, Central Valley Water Board staff is insisting on the proposed CDO with more stringent enforcement than anticipated either by the oil field GO program, or the CV-SALTS program (notwithstanding the voluntary monitoring and other data available to the Central Valley Water Board). Because of Central Valley Water Board staff's prohibiting Valley Water from the GO3 path, Valley Water has filled out a Report of Waste Discharge/Form 200 ("ROWD") and created an updated and revised WDR for consideration by the Central Valley Water Board. (*See* Exhibits 2 and 3.) Instead of issuing a CDO that requires timelines and anticipates a new future permit, the Board should just adopt a new permit that contains a time schedule and several potential pathways to compliance, consistent with the SNMP, recent Basin Plan Amendments, and Res. No. R5-2018-0015.

7. TREATMENT IS CURRENTLY NOT ECONOMICALLY FEASIBLE

Valley Water has studied costs for treating produced water to the level that would support MUN beneficial reuse, and provided the results to the Regional Board in the October 19, 2016 report Pilot Test of Water Treatment Technologies. (Exhibit 21; Exhibit 22, p.11.) The pilot test was conducted at Valley Water's Edison, California facilities, and determined that treatment was not currently cost effective. Since the produced water quality at Valley Water's Edison facilities was better than at McKittrick, treatment costs at McKittrick would be even greater.

Valley Water conducted the Pilot Test over a 60-day period. The treatment technology consisted of a multi-step produced water treatment system that culminates in reverse osmosis. Valley ran two pilot tests, one by ECT (EnviroClean Technologies), and the other by AGT (Absolute Graphic Technologies) Water Systems. Both systems culminated in reverse osmosis. After an initial start-up and commissioning period, both pilot facilities demonstrated the ability to consistently treat the produced water to below the limits contained in the Effluent Specifications.

However, from an economic standpoint, the operating cost for a full-scale facility, including brine disposal, would likely range from $1.18 to $3.87 per barrel of incoming produced

water. This equates to an estimated operating cost of $17.18 to $56.45 per barrel of oil produced with the water, based on a water-to-oil ratio of approximately 14.6 to 1. Operating costs in this range render this approach economically infeasible, because adding these costs to the costs to explore and develop the oil reservoir could exceed the value of the oil produced. (Exhibit 21.)

Valley Water also considered the November, 2014 report by the San Joaquin River Restoration Program titled Cost Appendix: Produced Water in the San Joaquin Valley Technical Report. (Exhibit 20.) The projected cost developed by Valley Water's site-specific Pilot Test fell within the range cited by this regional study, validating the results. Therefore, treatment of the produced water to meet a MUN beneficial use standard is not currently economically feasible.

One large component of the cost is brine disposal. If the P&O Study determines the feasibility of constructing a region-wide brine line and one is ultimately constructed that serves Kern County, the economics of such treatment may become more favorable. Also, desalination treatment technologies are emerging rapidly, so additional, more economical options may be available in the future. However, this does not change the present determination that current treatment technologies are not practicable.

D. THE CENTRAL VALLEY WATER BOARD STAFF FAILED TO COMPLY WITH LEGAL REQUIREMENTS.

1. FAILURE TO PROVIDE ADEQUATE FINDINGS AND EVIDENCE.

Most all of the findings in the proposed CDO *presume* degradation has occurred that is causing adverse impacts to existing beneficial uses without more than theories to support these allegations. A decision of a State agency, such as the Central Valley Water Board, must be in writing, and include a statement of the factual and legal basis for each decision. (Gov. Code, §11425.10(a)(6); §11425.50(a).) The agency must undertake a detailed analysis of the evidence in the record and the applicable legal factors or standards, and must set forth its determinations in writing to make clear how it undertook its analysis and reached its final conclusions. (*Id.*) Thus, findings in any order must "bridge the analytical gap between the raw evidence and ultimate decision or order." (*Topanga Assn. for a Scenic Community v. County of Los Angeles*, 11 Cal.3d 506, 515 (1974).)

The Central Valley Water Board must adequately consider all relevant factors and evidence, and demonstrate a rational connection between those factors/evidence, the choices made, and the purposes of the enabling statutes. (*See California Hotel & Motel Ass'n v. Industrial Welfare Comm.*, 25 Cal.3d 200, 212 (1979).) The level of detail that must be included in the Central Valley Water Board's consideration of the statutorily mandated factors is governed by a rule of reason. However, it must be reasonably clear from the Order that the Central Valley Water Board addressed all available evidence and each of the mandatory factors and traveled the "analytical route" contemplated under *Topanga*. (*See Department of Corrections v. State Personnel Board*, 59 Cal.App.4th 131, 151 (1997); *City of Carmel by the Sea v. Bd. of Supervisors*, 71 Cal.App.3d 84, 93 (1977) (held written findings of fact were insufficient as a matter of law because they were merely a recitation of the statutory language).)

Further, specific requirements regarding the factual basis must be followed, including "a concise and explicit statement of the underlying facts of record that support the decision." (Gov't Code §11425.50(b); applicable through 23 C.C.R. §648(b).) The Central Valley Water Board's draft CDO fails to meet these requirements.

Without the requisite analysis and a transparent view of the evidence and analytical route followed, the Central Valley Water Board violates the requirements needed for a valid final decision. "[T]he agency which renders the challenged decision must set forth findings to bridge the analytic gap between the raw evidence and ultimate decision or order." (*Environmental Protection Information Center v. California Dept. of Forestry & Fire Protection* 44 Cal.4th 459, 516 (2008).) While the findings need not be "extensive or detailed," "<u>mere conclusory findings without reference to the record are inadequate</u>." (*Id.* at pp. 516-517 (emphasis added).) The Central Valley Water Board has not supplied evidence of a single existing and utilized MUN or AGR well impacted by the Facility, and Valley Water has supplied evidence to the contrary.

The level of detail that must be included in the Central Valley Water Board's consideration of the evidence and the factors required by statute and under the State Water Board's Enforcement Policy must clearly demonstrate the "analytical route" traveled in making its ultimate decision. (*See Department of Corrections*, *supra* at 151.) It is insufficient for the Central Valley Water

Board to rely upon unsubstantiated findings without supporting evidence. The Central Valley Water Board must make findings based on evidence in the record and may not make findings without supporting evidence. (*See City of Carmel-by-the-Sea, supra,* at 93; *see also accord* Cal. Code Civ. Proc. §1094.5(b)(defining "abuse of discretion" where "the respondent [Central Valley Water Board] has not proceeded in the manner required by law, the order or decision is not supported by the findings, or the findings are not supported by the evidence.").) Until actual evidence of pollution or nuisance exists, findings on these topics are premature and unsupported, and the proposed CDO making these unsupported allegations should not be adopted.

The Central Valley Water Board has failed to prove imminent harm to groundwater basins with existing MUN and AGR uses, caused by the Facility, which would justify the imposition of the proposed CDO. (Water Code §13001.) Baseline water quality for this Facility would have been set in 1968 for antidegradation purposes, more than 10 years after the Facility had been percolating and evaporating produced water. Thus, by the time that the Antidegradation Policy, Res. 68-16, was adopted in 1968, the shallow ground water would have already been at a similar salinity level to those currently seen, and would not be considered to be "high quality" for those constituents. (*Id.*) In addition, any elevated salinity levels in groundwater are isolated and not causing an imminent threat of harm to any active local wells. In fact, the water users to the northeast have proposed to de-designate their own water. (Exhibit 14.)

2. FAILURE TO SEPARATE FUNCTIONS DENIES VALLEY WATER DUE PROCESS.

Where an agency acts as both prosecutor and adjudicator, a strict separation of prosecutorial and advisory functions must be maintained. (*See Morongo Band of Mission Indians v. State Water Resources Control Board* (2009) 45 Cal.4th 731, 737-742 ; *Department of Alcoholic Beverage Control v. Alcoholic Beverage Control Appeals Bd.* (2006) 40 Cal.4th 1, 10 ["[p]rocedural fairness does not mandate the dissolution of unitary agencies, but it does require some internal separation between advocates and decision makers to preserve neutrality" (emphasis added)]; *see also Quintero v. City of Santa Ana* (2003) 114 Cal.App.4th 810, 817, *disapproved on other grounds in Morongo Band of Mission Indians v. State Water Resources Control Board,*

supra [holding that constitutional due process had been violated where the Deputy City Attorney had acted in both an advisory role to the state personnel board after acting in a prosecutorial role in the same matter, stating: "For the [personnel board] to allow its legal adviser to also act as an advocate before it creates a substantial risk that the [personnel board]'s judgment in the case before it will be skewed in favor of the prosecution."].)

The Central Valley Water Board's failure to separate functions in this matter, even though specifically requested by Valley Water (Exhibit 10), violated due process, and violated the requirement for a separation of duties. (Gov't Code §11425.10(a)(4).)

V. VALLEY WATER MANAGEMENT COMPANY'S EVIDENTIARY EXHIBITS AND ATTACHMENTS

A. EVIDENCE

The following evidentiary exhibits, authenticated by the signed Declaration of Jason Meadors (Exhibit 1) filed herewith, are being submitted by Valley Water by the revised April 8, 2019 deadline set forth in the Revised Supplemental Notice of Public Hearing:

EXHIBIT 1	Declaration of Jason Meadors in Support of Valley Water Management Company's Submission
EXHIBIT 2	Valley Water Management Company's Report of Waste Discharge for the McKittrick 1 and 1-3 Facility (signed April 2, 2019)
EXHIBIT 3	Draft Waste Discharge Requirements for the McKittrick 1 and 1-3 Facility (also provided in electronic form in Word)
EXHIBIT 4	Expert Resume – Dr. Daniel Tormey
EXHIBIT 5	Expert Resume – Dr. Ken Schmidt
EXHIBIT 6	Expert Resume – Dr. Stuart Childs
EXHIBIT 7	Expert Resume – Jim Waldron
EXHIBIT 8	Inspection Report Timeline and copies of inspection reports from 1990-2014

EXHIBIT 9 Notice of Public Hearing, Cease and Desist Order for Valley Water Management Company's McKittrick 1 and 1-3 Facility, Kern County and Tentative CDO (February 25, 2019)

EXHIBIT 10 Valley Water Objection to Lack of Formal Hearing Procedures (March 1, 2019)

EXHIBIT 11 Supplemental Notice of Public Hearing (March 18, 2019)

EXHIBIT 12 Valley Water Objections to Hearing Procedures (March 19, 2019) and Revised Notice of Public Hearing (March 22, 2019)

EXHIBIT 13 Joint Stipulation to Stay Proceedings and Order, Case No. BCV-18-102201, Kern County Superior Court (March 27, 2019)

EXHIBIT 14 Westside Water Quality Coalition, Basin Plan Amendment Work Plan (September 19, 2016)

EXHIBIT 15 Copies of Figures, including those used in text of Valley Water's Submission

EXHIBIT 16 Petition for Review and Request for Abeyance appealing Central Valley Water Board Order No. R5-2018-0808, McKittrick MRP (April 25, 2018)

EXHIBIT 17 Central Valley Water Board Interaction Timeline and associated documents (2017-2019)

EXHIBIT 18 Central Valley Water Board letter to Tule Basin Water Quality Coalition (January 8, 2019)

EXHIBIT 19 Central Valley Water Board email of March 27, 2019 explaining naming of Starrh irrigation wells; photos of Starrh farms

EXHIBIT 20 Cost Appendix, Produced Water in the San Joaquin Valley, Technical Report, Cost Appendix (November 2014)

EXHIBIT 21 Final Report, Pilot Test of Treatment Technologies, Valley Water Management Company (October 19, 2016)

EXHIBIT 22 Transcription of Central Valley Water Board's April 5, 2018 meeting regarding Valley Water's McKittrick Facility

EXHIBIT 23 Central Valley Water Board's 2009 correspondence related to Valley Water's Hydrogeologic Characterization Report from 2007; Hydrogeologic Characterization Report (April 24, 2007); Hydrogeologic Characterization Report (March 16, 2004)

EXHIBIT 24 Valley Water's 13267 Response and attached Biological Survey documents (October 3, 2018).

B. ATTACHMENTS

In addition to the evidence included and listed above, Valley Water includes copies of the following documents for ease of reference. Because these rules, regulations, permits, and policies are not necessarily "evidence" in this matter, Valley Water requests that official notice be taken of the existence and content of the following documents under Government Code section 11515 and 23 C.C.R. §648.2:

ATTACHMENT A Water Quality Control Plan for the Tulare Lake Basin (revised May 2018) (at http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/tlbp.pdf, last accessed March 22, 2019), without appendices.

ATTACHMENT B State Water Resources Control Board's Enforcement Policy adopted in 2017 and approved for state law purposes on October 5, 2017 (available at http://www.waterboards.ca.gov/water_issues/programs/enforcement/docs/enf_policy_final111709.pdf, last accessed on March 22, 2019)

ATTACHMENT C State Water Resources Control Board Resolution No. 68-16; Statement of Policy with Respect to Maintaining High Quality Waters in California (at http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1968/rs68_016.pdf, last accessed on March 22, 2019).

ATTACHMENT D McKittrick WDR, Central Valley Regional Water Quality Control Board Resolution No. 69-199 (adopted February 14. 1969) and amendments.

ATTACHMENT E State Water Resources Control Board Resolution No. 88-63; Adoption of Policy Entitled "Sources of Drinking Water" (available on SWRCB's site at http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1988/rs1988_0063.pdf, last accessed on March 22, 2019).

ATTACHMENT F Central Valley Regional Water Quality Control Board Resolution No. 89-98, Amendment to the Water Quality Control Plan for the Tulare Lake Basin (5D) (adopted May 26, 1989).

ATTACHMENT G SWRCB Order No. 86-8 (available on SWRCB's website at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/1986/wq1986_08.pdf, last accessed March 22, 2019).

ATTACHMENT H State Water Resources Control Board Resolution No. 2015-0010, approving amendments to the Tulare Lake Basin Plan to Add Policies for Variances and Exceptions from Implementation of Water Quality Objectives for Salinity, Central Valley Central Valley Water Board Resolution R5-2015-0074 (March 17, 2015) (at http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2015/rs2015_0010.pdf, last accessed on March 22, 2019).

ATTACHMENT I Response to Comments by SWRCB on Variance Policy at p. 10, accessible at http://www.waterboards.ca.gov/board_info/agendas/2015/mar/031715_3_rtc_r5_variance.pdf, last accessed March 22, 2019, which states: "the Antidegradation Policy does not require immediate compliance and the Policy does not prohibit time schedules or variances to allow time to develop a long-term solution to salt and nutrient concerns in

the Central Valley Region or for dischargers to identify and implement management practices that work for their industries."

ATTACHMENT J Central Valley Regional Water Quality Control Board Monitoring and Reporting Program No. R5-2018-0808, Monitoring and Reporting Program for McKittrick 1 and 1-3, issued April 4, 2018.

ATTACHMENT K Central Valley Regional Water Quality Control Board Resolution No. R5-2018-0015, Directing Staff to Prepare an Appropriate Order for Valley Water Management Company's McKittrick 1 and 1-3, issued April 5, 2018.

ATTACHMENT L Central Valley Regional Water Quality Control Board Order No. R5-2017-0036, Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Number Three ("GO3")

VI. WITNESS DESIGNATION

A. PERCIPIENT WITNESSES

Valley Water designates the following Percipient "fact" Witnesses to testify at the upcoming hearing:

1. **Jason Meadors, P.E.** – Mr. Meadors can and will testify about Valley Water, the history of the company and its activities, investigation costs, and the inspection and enforcement history of the facilities addressed by this proposed CDO (Exhibit 1). (Testimony of approximately 5-10 minutes for opening statement/direct testimony.)

2. **Chris Reedy** – Mr. Reedy can testify about the layout and operations at the Facilities. (Not intending to provide direct testimony, but available for questions.)

B. EXPERT WITNESSES

Valley Water also designates the following Expert Witnesses to testify and/or respond to cross-examination questions at the hearing on this matter:

1. **Dr. Daniel Tormey, Ph.D, P.G.** – Catalyst Environmental Solutions (B.S. Civil Engineering and Geology; Ph.D. Geology and Geochemistry; Cal. Registered Professional Geologist) - The topics for Dr. Tormey includes geology; hydrology; fate and transport; geochemistry; and environmental policy including CEQA, NEPA, and endangered species act. His resume can be found in Exhibit 4. (Approximately 35-45 minutes.)

2. **Dr. Ken Schmidt, Ph.D.** - Ken Schmidt and Assoc. (B.S. Geology, M.S./Ph.D. Hydrology; Registered Geologist and Certified Groundwater Hydrologist) - The topics for Dr. Schmidt include groundwater quality, impacts and influence of oil field produced water,

irrigation, and other sources on groundwater quality, and Piper trilinear diagram and stable isotope diagram interpretation. His resume can be found in Exhibit 5. (Approximately 10-20 minutes.)

3. **Dr. Stuart Childs, Ph.D.** – Senior Scientist, Kennedy/Jenks Consultants (B.S. Geology, M.S./Ph.D. Soil Science) – The topics for Dr. Childs include the planning, implementation and results of Facility investigations, modeling, and analysis. His resume can be found in Exhibit 6. (Available for questions.)

4. **Jim Waldron, P.G.** – SC Hydrology (B.S./M.S. Geology; California Professional Geologist and Certified Hydrogeologist) - The topics for Mr. Waldron include hydrogeology, groundwater investigations, and potential impacts related to groundwater. His resume and summary of testimony can be found in Exhibit 7. (Available for questions.)

VII. CONCLUSIONS

The results of Valley Water's experts' evaluation indicate that CH Upper Perched, Intermediate Perched, and Lower Water Table Zone wells are not affected by produced water from the McKittrick Facility in either the Upper Tulare Sand or Lower Tulare Sand. The data indicate that produced water from Valley Water's McKittrick Facility has not migrated further than depicted herein, using data and information derived from the model calibrations. Therefore, a CDO is not needed for this Facility, because the produced water from this Facility is not currently impacting useable municipal or agricultural water supplies or expected to threaten such water supplies in the near future.

Based on the Central Valley Water Board Staff Report accompanying the CDO, Valley Water acknowledges that Central Valley Water Board staff does not agree with some of Valley Water's conclusions. However, through our collaborative work with Central Valley Water Board Staff in 2018, we understand the source of disagreement is the Board Staff's concern that, although these data do not provide a direct indication of threat to groundwater, conditions in the field ***could indicate*** that a threat may exist. Clearly, and as the Central Valley Water Board Members agreed in the April 2018 hearing (Exhibit 22, transcribed hearing transcript), resolution of the key groundwater quality issues depends on installation and sampling of new monitoring wells, which Valley Water has worked diligently to

overcome endangered species and landowner access agreement hurdles and intends to install this year. (Exhibit 1, ¶¶10-11.) Once those data are available, Valley Water expects to continue working collaboratively with Central Valley Water Board staff to finalize the conceptual site model and make any required modification to the Valley Water flow model boundary and initial conditions. Valley Water also looks forward to further discussion with Central Valley Water Board staff about other model questions, so that we can resolve them and do final model runs that reflect consensus between Valley Water and Central Valley Water Board staff and will allow the Central Valley Water Board Members to make decisions based on a solid factual foundation.

Instead of a CDO, Valley Water has proposed a new WDR (Exhibit 3) consistent with that ordered by this Board in Resolution R5-2018-0015 (Attachment K), with embedded time schedules to allow for both additional modeling and other regulatory flexibility to be utilized in the future. (*See* Attachment K at p.4 ("Compliance options may include a consideration of the policies currently under development through the CV-SALTS process.").)

Central Valley Water Board staff has repeatedly indicated that the intent of the CDO was to provide time to adopt a permit. Valley Water believes that a permit is the more direct and appropriate path and urges the Board Members to adopt a new permit with time schedules, instead of an enforcement action, which is contrary to the letter and spirit of the entire CV-SALTS process.

For the reasons set forth above, Valley Water requests that the Central Valley Water Board Members defer adoption of the proposed CDO to instead proceed to adoption of a new WDR for this Facility. A draft WDR has been provided in Exhibit 3 for the Board's use and consideration.

Respectfully submitted,

Dated: April 8, 2018

DOWNEY BRAND LLP

By:

Melissa A. Thorme,
Special Counsel for
VALLEY WATER MANAGEMENT COMPANY