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Via e-mail and hand delivery

Monterey County Board of Supervisors
County of Monterey
168 West Alisal Street, 1st Floor
Salinas, CA 93901
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Re: Harper Canyon Subdivision

Dear Members of the Board:

I write on behalf of LandWatch Monterey County to comment on the proposed Harper Canyon Subdivision project. The approvals sought should be denied because the environmental review is inadequate and because the Board cannot make the required findings that the project would be consistent with General Plan policies related to traffic and water supply.

A. The analysis of water supply impacts is inadequate

As LandWatch has previously commented, the FEIR's inconsistent and wholesale revision of the water supply analysis denied the public an opportunity for meaningful comment and response and thus requires recirculation in a revised draft EIR. LandWatch engaged Tim Parker, a geologist and hydrologist, to review the EIR and evaluate its analysis. As his attached letter explains, the water supply analyses in the DEIR and FEIR are fundamentally inconsistent and the new water supply analysis in the FEIR is deeply flawed.

1. The EIR improperly relies on a fundamentally new water supply analysis presented for the first time in the Final EIR, and that analysis is inconsistent with the analysis presented in the draft EIR

CEQA requires that the public have a meaningful opportunity for comment and response on an analysis presented in the draft EIR. Recirculation is required when new information reveals that the analysis in the draft EIR was so inadequate that the public was denied an opportunity for meaningful comment. CEQA requires that environmental setting (baseline) information be presented in the draft EIR, not later in the review process. CEQA also provides that information in an EIR be clearly stated and consistent because inconsistencies and lack of clarity preclude substantial evidence.

As LandWatch previously objected and Mr. Parker confirms, the EIR here does not meet these requirements. The DEIR and FEIR provide entirely different and inconsistent

descriptions of the relevant groundwater basins. They provide diametrically opposed conclusions about the status of the project's aquifer, with the DEIR claiming a surplus of recharge over pumping and the FEIR admitting the basin is in overdraft. The DEIR claims that the past operations of the Nacimiento and San Antonio have benefited the project's aquifer. However, the FEIR, admitting the aquifer is in overdraft, revises this claim to promise only that there will be a future benefit from the Salinas Valley Water Project ("SVWP").

The DEIR and FEIR also provide fundamentally different analyses of project impacts. The DEIR relies on the expectation that the purported surplus of recharge over pumping will continue. The DEIR's analysis of project-specific impacts relies on this claim, not the SVWP, as the basis of the conclusion that impacts will be less than significant. By contrast, the FEIR admits the aquifer is in overdraft, and it appears to find continued mining of the aquifer to be an acceptable water supply, even though it identifies a net deficit in aquifer volume as a significant impact. The FEIR relies solely on the expected benefits of the SVWP as the basis of its conclusion that project-specific and cumulative impacts will be less than significant.

The inconsistencies between the DEIR and FEIR demonstrate that the analysis in the draft EIR was so inadequate that the public was denied an opportunity for meaningful comment. The complete reversal in the characterization of baseline conditions means that the baseline information was not presented timely. And the lack of clarity, inconsistencies between the DEIR and FEIR, and the inconsistencies within the FEIR preclude substantial evidence on which to base conclusions.

2. **The EIR does not justify the conclusion that there are no significant cumulative water supply impacts and that the project will not make a considerable contribution to such impacts because it did not explain how the SVWP benefits the upgradient project aquifer**

The analysis in the FEIR expressly superseded the analysis in the DEIR. As Mr. Parker explains, the FEIR's conclusions that project-specific and cumulative impacts would be less than significant is based on the unsupported assertion that the SVWP will somehow recover and maintain groundwater levels in the project aquifer. This contention is based only on an unattributed opinion from MCWRA and is not supported by any quantitative analysis, modeling, or statements from the primary technical report relied upon by the FEIR, the Geosyntec report.

The sole piece of evidence upon which the FEIR apparently relies is the contention that there is a hydrologic connection between the project aquifer and the Salinas Valley groundwater basin. However, Mr. Parker explains that the hydrologic connection results in groundwater flows <u>from</u> the project aquifer, not groundwater flows to it, because groundwater levels in the project aquifer are 250-350 feet higher than the levels in the Salinas Valley groundwater basin. The EIR presents no evidence that the SVWP, even if it were effective at stabilizing groundwater levels in the Salinas Valley groundwater

basin, could in fact halt the flows from the project aquifer or that this would remedy the overdrafting conditions in that aquifer.

3. Even if there were some potential benefit to the project aquifer from stabilizing the Salinas Valley groundwater levels, the EIR fails to admit that the SVWP will not stabilize those groundwater levels or to discuss the uncertainty and environmental impacts of projects that might be undertaken to stabilize groundwater levels

As Mr. Parker explains, the EIR fails to disclose that the SVWP has not been effective at stabilizing groundwater levels in the Salinas Valley groundwater basin. In fact, the MCWRA has now admitted that another major water supply project is required in order to do this.

An EIR must not only disclose the availability of a water supply, but it must also discuss the uncertainty and environmental impacts of providing that water supply. As discussed below, even if there were some demonstrable potential benefit to the project aquifer from projects to stabilize Salinas Valley groundwater levels, the EIR fails to acknowledge the fact that necessary projects are not yet funded, that they have not been subjected to environmental review, and that they are certain to have significant environmental impacts. Under the circumstances, the EIR has failed to disclose what CEQA requires.

a. <u>The SVWP EIR did not project that the SVWP would halt long-term seawater intrusion</u>

MCWRA prepared and certified an EIR for the SVWP in 2001 and 2002. MCWRA, SVWP EIR, 2002. Based on specific assumptions about future demand and safe yield (discussed below), the SVWP EIR projected that the proposed SVWP "would reverse the annual reduction in groundwater storage to an approximately 2,500 AFY increase in groundwater storage." SVWP FEIR 3-30. Thus, it projected that seawater intrusion could be halted. However, the SVWP EIR qualified this conclusion in two critical respects.

First, the SVWP EIR cautioned that "any additional water needs within an intruded groundwater basin would exacerbate seawater intrusion." SVWP EIR, p. 7-7. So the conclusion was tied to specific assumptions regarding water use. As documented in LandWatch's DEIR comments, future water use is projected to exceed the levels projected in the SVWP EIR. Indeed, MCWRA's Rob Johnson acknowledged to the Planning Commission that the SVWP EIR demand projections were not accurate and that pumping was more than projected. Ferrini Subdivision Planning Commission hearing video, Oct. 29, 2014, hour 2:23 to 2:24.

Second, the SVWP EIR acknowledged that the proposed project would only halt seawater intrusion based on <u>1995 levels of demand</u>:

> "While the SVIGSM indicates that seawater intrusion will be halted by the project (in conjunction with the CSIP deliveries) based on current (1995) demands, with a projected increase in water demands (primarily associated with urban development) in the north valley area in the future, seawater intrusion may not be fully halted based on year 2030 projections. For the year 2030, modeling indicates seawater intrusion may be 2,200 AFY with surface water deliveries only to the CSIP area." SVWP EIR, p. 3-23.

The Department of the Interior pointed out that the SVWP EIR admits that "hydrologic modeling shows that the project may not halt seawater intrusion in the long-term future." SVWP FEIR, p. 2-82, comment 2-12. In response, the SVWP FEIR again acknowledged that its modeling only showed that the SVWP would "halt seawater intrusion in the near term" based on 1995 water demand. SVWP FEIR, p. 2-91. However, with anticipated 2030 demand, that modeling showed that "seawater intrusion with implementation of the proposed project may total 2,200 acre-feet per year (AFY) (10,500 AFY of intrusion is anticipated to occur without the project). For this reason, the Draft EIR/EIS reports that the SVWP may not halt seawater intrusion in the long term." SVWP FEIR, p. 2-91. The 2010 General Plan EIR itself acknowledges that the SVWP may only halt seawater intrusion in the short term. 2010 General Plan EIR, p. 4.3-38.

Questioned about this at the October 29 Planning Commission hearing, MCWRA's Rob Johnson acknowledged that the SVWP would only halt seawater intrusion based on 1995 land use. Ferrini Subdivision Planning Commission Hearing video, Oct. 29, 2014, hour 2:23-24. As discussed below, Mr. Johnson also acknowledged that groundwater pumping is higher than anticipated by the SVWP EIR and that an additional 58,000 af/y of groundwater, beyond that provided by the current suite of water supply projects, is still needed to halt seawater intrusion. *Id*. at hour 2:13, 2:23, 2:26.

b. <u>As MCWRA admits, groundwater pumping has exceeded the level assumed in the SVWP EIR, and this vitiates its analysis, which was expressly based on the assumption that groundwater pumping would decline over time</u>

MCWRA reports show that pumping is much higher than predicted by the SVWP EIR. To determine the extent of overdrafting and seawater intrusion, the SVWP EIR relied on modeling provided by the Salinas Valley Integrated Ground and Surface Water Model ("SVGISM'), which in turn was based on assumptions regarding land use, population, and water use. SVWP EIR, pp. 5-1 (identifying baseline and future conditions), 5.3-10 to 5.3-11 (overview of SVGISM), 7-4 to 7-5 (detailing major assumptions used in the SVGISM regarding population and irrigated acreage).

As set out in the table below, the SVWP EIR reported its assumptions and modeling results for two scenarios: 1995 baseline conditions and 2030 future conditions:

SVWP EIR: population and land use assumptions with baseline and projected water use	1995	2030
Population	188,949 persons	355,829 persons
Urban water pumping	45,000 afy	85,000 afy
Farmland	196,357 acres	194,508 acres
Agricultural water pumping	418,000 afy	358,000 afy

Source: SVWP EIR, pp. 1-7 (Table 1-2, "Estimated Existing and Future Water Conditions"); pp. 5-1, 6-3, 7-3, 7-10 (identifying baseline and future conditions).

The SVWP EIR assumed that agricultural water use would decline by 60,000 afy from 1995 to 2030 due to a 5% increase in water conservation, changes in crop uses, and a 1,849 acre decrease in irrigated agricultural acreage. SVWP EIR pp. 1-7, 7-5, 7-10. The SVWP EIR assumed that urban water use would increase by 40,000 afy between 1995 and 2030 based on population growth and an assumed 5% per capita reduction in water demand due to conservation. SVWP EIR, pp. 1-7, 7-5.

In sum, the SVWP EIR assumed that groundwater pumping in Zone 2C would decline from a total of 463,000 afy in the 35 years from1995 to 443,000 afy in 2030.

In fact, in the first 19 years since 1995 pumping has greatly exceeded the SVWP EIR projection. Reported groundwater pumping in Zones 2, 2A, and 2B has averaged 500,986 afy. Adjusted to include an estimate for non-reporting wells in these zones, the average is 528,699. These data are based on the annual Ground Water Summary Reports published by MCWRA in 1995-2014, available at http://www.mcwra.co.monterey.ca.us/groundwater_extraction_summary/groundwater_extraction_summary.php. The data are summarized in the table below.

Year	Ag	Urban	Total	Percent of wells not reporting	Total divided by percent of wells reporting to adjust for non-reporting wells
1995	462,268	41,884	504,512	2%	514,808
1996	520,804	42,634	563,438	4%	586,915
1997	551,900	46,238	598,139	7%	643,160
1998	399,521	41,527	441,048	7%	474,245
1999	464,008	40,559	504,567	9%	554,469
2000	442,061	42,293	484,354	11%	544,218
2001	403,583	37,693	441,276	18%	538,141
2002	473,246	46,956	520,202	7%	559,357
2003	450,864	50,472	501,336	3%	516,841
2004	471,052	53,062	524,114	3%	540,324
2005	443,567	50,479	494,046	2%	504,129
2006	421,634	49,606	471,240	4%	490,875
2007	475,155	50,440	525,595	3%	541,851
2008	477,124	50,047	527,171	3%	543,475
2009	465,707	45,517	511,224	3%	527,035
2010	416,421	44,022	460,443	3%	474,684
2011	404,110	44,474	448,584	3%	462,458
2012	446,620	42,621	489,241	3%	504,372
2013	462,873	45,332	508,205	3%	523,923
19 year average			500,986 afy		528,699 afy

Source: Ground Water Summary Reports published by MCWRA, 1995-2014, available at http://www.mcwra.co.monterey.ca.us/groundwater_extraction_summary/groundwater_extraction_summary.php.

The reported pumping data does not include any pumping from the portion of Zone 2C that is located outside of Zones 2, 2A, and 2B. 2010 General Plan FEIR, pp. S-13, S-127. The County estimated that this pumping amounted to at least 4,574 afy in 2005. 2010 General Plan FEIR, p. S-136. Adding this to the adjusted average pumping total for Zones 2, 2A, and 2B, average pumping has been 533,273. This is 70,273 afy higher than the SVWP EIR's 1995 baseline and 90,273 afy higher than its projected 2030 demand.

As noted, the SVWP EIR analysis was based on specific assumptions about future water demand, and it cautioned that "any additional water needs within an intruded groundwater basin would exacerbate seawater intrusion." SVWP EIR, p. 7-7.

In sum, for more than half of the planning period covered by the SVWP EIR's 1995-2030 projections, groundwater pumping has greatly exceeded its assumed demand levels. The amount by which actual demand exceeds assumed demand is two to three times greater than the amount of water that the SVWP was expected to provide.[1]

MCWRA's Rob Johnson acknowledged that actual demand has exceeded the SVWP EIR's projections. Ferrini Subdivision Planning Commission Hearing, Oct. 29, 2014, hour 2:23. Mr. Johnson acknowledged that additional water supply projects delivering at least 58,000 afy will be required to halt seawater intrusion. *Id.* at hour 2:13, 2:23, 2:26.

The growth in pumping is associated with increases in agricultural land use. As noted, the SVWP EIR assumed that irrigated agricultural acreage would decrease from 196,357 acres in 1995 to 194,508 acres in 2030. SVWP EIR, p. 7-10. However, agricultural acreage has actually increased since 1995.

- The SVWP Engineers Report reports that there were 212,003 acres of irrigated farmland in Zone 2C as of 2003. SVWP Engineers Report, pp. 3-10, 3-15 (Tables 3-5 and 3-9 providing acreage totals for "Irrigated Agriculture"), available at http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_I/salinas_valley_water_project_I.php. This is substantially more irrigated acreage than the 196,357 acres that the SVWP EIR reported for 1995. SVWP EIR, p. 7-10. The SVWP Engineers Report data were based on "parcel information, including land use, acreage, zone and other data" developed by MCWRA. Engineers Report, p. 3-10.

- The 2010 General Plan EIR reported Department of Conservation farmland mapping data showing an increase of 8,209 acres of habitat converted to new farmland from 1996-2006 but only 2,837 acres of existing agricultural land lost to urban use. 2010 General Plan DEIR, pp. 4.9-46 and 4.2-7 (showing farmland gains and losses 1996-2006 based on FMMP data). This represents a net gain of farmland of 5,372 acres.

Furthermore, there is every reason to believe that the increase in irrigated acreage will continue and that the decrease in irrigated agricultural land between 1995 and 2030 projected in the SVWP EIR will not occur. Based on the past data related to conversion of habitat to farmland, the 2010 General Plan DEIR projected that future agricultural acreage would increase from 2008 to 2030, and the General Plan FEIR admitted that the

[1] The SVWP was intended retain up to an additional 30,000 afy of water in dams and then provide about 9,700 afy of that water to the Castroville Seawater Intrusion Project ("CSIP") to replace groundwater pumping, about 10,000 afy to increase basin recharge, and another 10,000 afy for instream flow augmentation. 2010 General Plan DEIR, pp. 4.3-36 to 4.3-38; 2010 General Plan FEIR 2-68 to 2-71.

large future net increase in farmland would create additional water demand not anticipated by the SVWP EIR: 17,537 afy of water. 2010 General Plan DEIR, p. 4.9-64 (Table 4.9-8); 2010 General Plan FEIR, pp. 2-38, 4-129 (revised table 4.9-8), S-19 to S-20, S-137 to S-138 (revised Table 4.3-9(c), note 7).

c. MCWRA acknowledges that the existing SVWP will not halt seawater intrusion and that additional water supply projects are required

The MCWRA has acknowledged that the SVWP will not in fact be sufficient to halt seawater intrusion. In testimony to the Planning Commission, MCWRA's Rob Johnson stated that the SVWP is not be the final water project needed to halt seawater intrusion and that it will in fact be necessary to find additional water supplies totaling at least 58,000 afy to achieve this. Ferrini Subdivision Planning Commission hearing, Oct. 29, 2014, hour 2:13, 2:23, 2:26. The 58,000 afy figure is based on modeling performed by MCWRA in connection with its efforts to secure surface water rights on the Salinas River in order to mitigate seawater intrusion.

The MCWRA now seeks, under a settlement agreement with the State Water Resources Control Board, to perfect surface water rights to 135,000 afy of Salinas River water in order to construct yet another Salinas Valley water project to attempt to halt seawater intrusion. See MCWRA, Salinas Valley Water Project Phase II, Overview, Background, Status, available at http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_II/salinas_valley_water_project_II_overview.php. MCWRA seeks to retain the right to the surface water entitlement by asserting the need for another project to halt seawater intrusion. Modeling undertaken for the MCWRA in 2013, and referenced by Mr. Johnson in his comments to the Planning Commission on October 29, 2014, establishes that an additional 135,000 afy of surface water flows will be needed in order to supply the additional 60,000 afy of groundwater that is now projected to be required to maintain groundwater elevations and a protective gradient to prevent further seawater intrusion. Geoscience, Protective Elevations to Control Seawater Intrusion, Nov. 13, 2013, p. 11, available at http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_II/salinas_valley_water_project_II_overview.php (link to "Technical Memorandum.") The MCWRA has not yet conducted environmental review for a new project to supply the needed water. See MCWRA, Salinas Valley Water Project Phase II, Status, available at http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_II/salinas_valley_water_project_II_project_status.php. There is no assured funding source for it.

Although the MCWRA website refers to the currently proposed new project as "SVWP Phase II," it is not the same project that was identified as a potential second phase of the SVWP in the 2001/2002 SVWP EIR. The second phase of the SVWP envisioned in the 2001/2002 SVWP EIR would have consisted of only an additional 8,600 afy of Salinas river diversion, increased use of recycled water, supplemental pumping in the CSIP area, and a pipeline and delivery to an area adjacent to the CSIP area. SVWP EIR, p. 3-23 to 3-24. The currently proposed project is much larger in scope and would include different

and more extensive infrastructure: it would divert 135,000 afy at two new diversion facilities and would deliver that water through injection wells, percolation ponds, direct supply of raw water, or a treatment system. MCWRA, SVWP Phase II website, Project Description, available at http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_II/salinas_valley_water_project_II_overview.php.

Neither the SVWP Phase II project identified at the conceptual level in the 2001/2002 SVWP EIR nor the newly proposed SVWP Phase II have been planned at any level of detail or environmentally reviewed. The SVWP EIR and the 2010 General Plan EIR both acknowledge that impacts related to the initially conceived second phase project have not been evaluated, and the 2010 General Plan EIR treated these impacts as significant and unavoidable because they remain unknown. SVWP FEIR, pp. 2-92, 2-243; 2010 General Plan, p. 4.3-146. The phase two project now being discussed has not had any environmental review, but it would clearly result in significant environmental impacts, as acknowledged in MCWRA's determination that an EIR is required. MCWRA Notice of Preparation of EIR, Salinas Valley Water Project Phase II, June 2014, available at http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_II/salinas_valley_water_project_II_project_status.php.

In sum, the water supply provided by the SVWP is now admitted to be insufficient to prevent cumulative groundwater pumping from further aggravating ovdrafting, declining groundwater levels, and seawater intrusion. Major additional water supply projects with currently unknown environmental impacts will be required to address this significant cumulative impact, which the Harper Canyon EIR fails to disclose. Again, an EIR must not only identify an adequate water supply, but it must discuss the uncertainty of that water supply and the environmental effects associated with obtaining it. In light of significant new information demonstrating that the SVWP will not be sufficient to provide a long term water supply without causing significant environmental impacts, and information demonstrating that alterative supplies with unknown environmental impacts will be required, the EIR must be revised and recirculated.

B. Source capacity tests are not relevant to cumulative impacts, and, to the extent they are relevant to the environmental analysis, they should have been provided in the EIR

The applicant now proposes to undertake new source capacity tests in a vain effort to demonstrate a long term water supply. As Mr. Parker explains, these tests are focused on determining whether there is groundwater capacity available to be pumped where the project wells happen to be located. These tests do not address whether there is a long term water supply or whether the project pumping would aggravate overdrafting. The tests are simply not relevant to determining the project's effect on the admittedly overdrafted aquifer.

Furthermore, to the extent that new source capacity tests are relevant to any conclusions related to the environmental impacts of the project, they should have been be included in the EIR. CEQA requires that the information relied on by the agency in determining environmental impacts be in the EIR, not provided in last minute staff reports.

Finally, as Mr. Parker explains, the source capacity test undertaken in 2002 for the project's back-up well demonstrates that it does not have sufficient capacity to meet the regulatory requirement that the back-up well be able to supply the project water supply if the primary well is unavailable.

C. The project is inconsistent with the 1982 General Plan Policy 26.1.4.3

1982 General Plan Policy 26.1.4.3 requires proof of an assured long term water supply as follows:

> "A standard tentative subdivision map and/or vesting tentative and/or Preliminary Project Review Subdivision map application for either a standard or minor subdivision shall not be approved until:
> (1) The applicant provides evidence of an assured longterm water supply in terms of yield and quality for all lots which are to be created through subdivision. A recommendation on the water supply shall be made to the decision making body by the County's Health Officer and the General Manager of the Water Resources Agency, or their respective designees.
> (2) The applicant provides proof that the water supply to serve the lots meets both the water quality and quantity standards as set forth in Title 22 of the California Code of Regulations, and Chapters 15.04 and 15.08 of the Monterey County Code subject to the review and recommendation by the County's Health Officer to the decision making body." 1982 General Plan Policy 26.1.4.3.

In light of the absence of evidence that the there is an assured long term water supply, and in light of the evidence to the contrary, the County cannot reasonably make a finding of consistency with this policy. Any such finding would amount to acceptance of the proposition that the County should permit new subdivisions to mine the aquifers to the detriment of existing water users.

D. The analysis and mitigation of traffic impacts is inadequate

1. Mitigation of project-level impacts is inadequate because it relies on uncertain traffic improvements

The RDEIR identified significant project-level impacts to four intersections and four segments of SR 68. RDEIR pp. 3.10-23 to 3.1-31. The RDEIR concluded that payment of the Regional Development Impact Fee ("RDIF") would mitigate impacts to two intersections and one segment to a less than significant level. This conclusion was based on the inclusion of the State Route 68 Commuter Improvements program in the nexus

study used to calculate the RDIF itself. The State Route 68 Commuter Improvements include 2.3 miles of segment widening between the existing 4 lane highway at Toro Park and Corral de Tierra Road that may eventually be constructed.

As discussed below, because the State Route 68 Commuter improvements are not committed or funded within the time horizon of the EIR's analysis of background conditions they do not constitute effective or certain mitigation. It is evident from the RDEIR, the traffic report, and public documents that the improvements necessary to mitigate project-level impacts are not part of a funded, committed plan of improvements.

Preliminarily, we note that the FEIR failed to provide critical information in response to comments. LandWatch's comments on the RDEIR asked when the State Route 68 Commuter Improvements were scheduled for construction. Comment 23-1. The FEIR failed to provide a response to that question. This failure violates CEQA's requirement for good faith reasoned fact-based analysis in response to comments

The DEIR defines "background conditions" as including existing traffic plus traffic from approved projects as well as certain traffic improvements expected to be in place within 5 years of the date of the December 2009 traffic study. RDEIR, p. 3.10-12 to 3.10-13.

Under "background conditions," the DEIR identifies significant impacts to the SR 68 intersections 2, 4, 5, and 6 (SR 68 at Corral De Tierra, San Bernancio, Laurels Grade, and York Road) and to SR 68 segment 2, 3, 4, and 5 (the segments between York Road and San Bernancio Road). RDEIR, 3.10-23 to 3.10-30.

EIR mitigation measure 3.10-1 identifies payment of a fair share of SR 68 Commuter Improvements as sufficient mitigation for significant impacts to segment 5 and intersections 5 and 6. RDEIR 3.10-31; FEIR 3-37. The RDEIR's conclusion is based on its determination that the State Route 68 Commuter Improvements program, if constructed, would provide acceptable levels of service at these facilities. The RDEIR states that the State Route 68 Commuter Improvements program was included in the 2008 Regional Development Impact Fee update and that this project would widen a 2.3 mile segment of SR 68 west of the existing four-lane section to Corral de Tierra Road. RDEIR 3.10-28 to 3.10-29.

The 2014 Monterey County Regional Transportation Plan ("2014 RTP") is the most recent RTP prepared by TAMC to update the 2010 RTP. TAMC, 2014 RTP, available at http://www.tamcmonterey.org/programs/rtp/. The RTP is focused on regionally significant projects described individually in the plan and included in AMBAGs Regional Travel Demand Model. 2014 RTP p. 23. The RTP includes the projects that are to be funded by Monterey County Regional Development Impact Fee ("RDIF") Program administered by TAMC. 2014 RTP p. 23. The RDIF program was updated in concert with development of the 2014 RTP. *Id.* That RDIF update is set out in the TAMC Regional Development Impact Fee Program Nexus Study Update 2013 ("2013 RDIF

Update") , available at http://www.tamcmonterey.org/programs/devimpfee/pdf/2013-TAMC-RDIF-Nexus-Study.pdf.

The 2014 RTP identifies the SR 68 Commuter Improvements project as widening the roadway to 4 lanes between the existing 4 lane highway at Toro Park and Corral de Tierra Road. 2014 RTP p. 30. The project is included in the Regional Transportation Plan Project List, but its funding is listed in the column for the year 2035 rather than 2020. 2014 RTP Appendix C. In response to an inquiry as to whether there is a construction schedule for the SR 68 Commuter Improvements, TAMC Executive Director Debbie Hale responded, "[n]ot at this time. We don't have funding but plan to fund it from development impact fees." Debbie Hale, email to Janet Brennan, Aug 1, 2014. Ms. Hale explained that the fact that the funding for the SR 68 Commuter Improvements was listed in the 2035 column rather than the 2020 indicates that funding is not projected to be available until 2035. *Id.*

The EIR for the Ferrini Ranch Subdivision project also admits that the State Route 68 Commuter Improvements project "is not currently funded or scheduled for completion." Ferrini Ranch Subdivision FEIR Response 36-46.

As noted, the DEIR's background conditions traffic analysis is based on conditions as of 2015. Funding and constructing the SR 68 Commuter Improvements in 2035 will not provide timely mitigation.

Furthermore, there is no current evidence that the SR 68 Commuter Improvements will ever be adequately funded because fair share payments from developers can only be used to pay for a portion of the cost and there are no currently identified sources for the balance of the cost. Developer exactions must be based on a nexus between new development and transportation impacts; thus, new development cannot be forced to pay to remedy existing deficiencies. Accordingly, the 2013 RDIF Update explains that revenue from the development impact fee "funding mechanism only represents a portion of the required funding for each of the proposed projects. The share of funding corresponding to existing traffic and out-of-County (and Fort Ord Reuse Authority) traffic is planned to come from other sources." 2013 RDIF Update, pp 2-3, see also p. 4. New development is responsible only for 16.5% of the cost of the SR 68 Commuter Improvements. 2013 RDIF p. 34. Thus, TAMC may not fund the remaining 83.5% of the project's $25.5 million cost from development impact fees; it must find the balance of needed funds from other sources. Ms. Hale's indication that there is no construction schedule and no funding plan at this time is consistent with the statements in the 2014 RTP that revenues available to transportation are decreasing in a period of increasing needs; that local street and road maintenance is underfunded; and that state and federal transportation revenues are decreasing and becoming less consistent. 2014 RTP, p. i. It is also consistent with statements in the 2013 RDIF update that the RDIF cannot "ensure a mechanism for complete funding of all RDIF program projects at this time." 2013 RDIF Update, p. 35. The RDIF Update lists possible funding sources and then qualifies this list as follows: "Note that the percentage contribution, if any, form the

aforementioned public/private funding sources are generally unknown or un-ascertainable at this time on an improvement project-by-project basis." *Id.*

In sum, given the lack of a commitment to construct the needed improvements at the time they are projected to be required, the fact that they are not currently planned until 2035, and the fact that there is no currently identified plan for 83.5% of the necessary funding, there is no evidence that mitigation will be timely or certain.

2. Mitigation of cumulative impacts is inadequate because it relies on uncertain traffic improvements

The EIR also improperly relies on payment of impact fees as mitigation for significant cumulative impacts even though 1) there is no evidence that necessary improvements will be constructed timely or at all, and 2) there is substantial evidence, including statements in the EIR itself, that they will not be constructed.

The RDEIR identifies significant cumulative impacts to all 6 study intersections and all 5 study segments using the same thresholds of significance used to evaluate project-level impacts, e.g., contribution of any traffic to an intersection or segment operating at LOS F. RDEIR 3.10-35 to 3.10-40. The RDEIR concludes that implementation of the State Route 69 Commuter Improvements would improve operations at intersections 5 and 6 to an acceptable level of service. RDEIR 3.10-41.

The RDEIR concludes that four sets of additional intersection improvements would be required to improve operations sufficiently at the other intersections; however, it concludes that these improvements are "not considered feasible" because they are "not included in any CIP [Capital Improvement Program]." RDEIR, p. 3.10-42.

The RDEIR does not discuss what improvements would be necessary to mitigate cumulative impacts to the six study segments. However, the RDEIR traffic report concludes that widening of SR 68 to a 4-lane facility would improve operations to acceptable levels of service. RDEIR, Traffic Impact Analysis, p. 21; see alos Traffic Report Appendix K and FEIR comment response 24-2 (assuming that cumaultive mitigated conditions include widening SR 68 to four lanes). The RDEIR states that there are no short or long-term funding sources to widen SR 68. RDEIR, p. 3.10-10. We note that the Ferrini Ranch Subdivision EIR also makes the same conclusion. Ferrini Ranch Subdivision DEIR 3.12-23, 34.12-14 to 15.

The RDEIR and FEIR conclude that payment of the TAMC RDIF and other fair share traffic impact fees, including Monterey County ad hoc mitigation fees, will be sufficient to mitigate the project's cumulative traffic impacts. RDEIR 3.10-43; FEIR 3-51. This conclusion cannot be supported and is inconsistent with CEQA's requirements for impact fee mitigation.

First, as discussed above, the State Route 68 Commuter Improvements identified as essential to mitigate cumulative impacts to two intersections is not funded or committed any sooner than 2035. This is five years after the time horizon of the 2030 cumulative conditions analysis, so the improvements would not be timely.

Second, as discussed above, there is no certainty that the State Route 68 Commuter Improvements will ever be constructed because there is no construction schedule or identified source of funding for 83.5% of their cost.

Third, with respect to the impacts to the other four intersections and to the State Route 68 segments, the EIR admits that the necessary improvements are not feasible due to lack of funding. RDEIR 3.10-42, 3.10-10.

Fourth, the finding that improvements to address cumulative segment impacts on SR 68 are infeasible is consistent with the conclusion of the 2010 General Plan EIR. The 2010 General Plan EIR projects SR68 will operate at LOS F for all segments from Forest Avenue to Portola Drive in the "Existing plus Project Development to the Year 2030 Scenario." 2010 General Plan DEIR, p. 4.6-36, available at http://www.co.monterey.ca.us/planning/gpu/GPU_2007/FEIR_Information/FEIR_Information.htm. This scenario considers only existing traffic plus future development in the unincorporated area. The impact is identified as unavoidable and the EIR acknowledges that no mitigation is feasible due to lack of funding. *Id.* at 4.6-44 to 45. Projected impacts that include cumulative traffic under cumulative 2030 conditions, i.e., existing plus future growth from both unincorporated and incorporated areas, are even worse. Again, the General Plan EIR projects LOS F from Forest Avenue to Corral de Tierra under 2030 conditions, but with even worse volume to capacity ratios. *Id.* at 4.6-65. The cumulative impact under 2030 conditions is unavoidably significant due to financial constraints. *Id.* 4.6-68 to 69.

In sum, there is no evidence that payment of impact fees will lead to construction of needed improvements and there is substantial evidence to the contrary. A finding that cumulative impacts have been mitigated would violate CEQA's requirements for mitigation via impact fees because the fees do not support a committed, funded, and timely plan of improvements.

LandWatch objected to the RDEIR's conclusion that payment of impact fees would mitigate cumulative impacts because there are no projects in TAMC's spending plans that address traffic facilities west of the State Route 68 Commuter Improvements. Comment 23-2. In response, the FEIR claimed that mitigation of cumulative impacts "works a little differently than project-specific impacts" and that payment of the RDIR "is recognized by the County of Monterey, TAMC, and Caltrans as the appropriate mechanism for mitigating cumulative, regional traffic . .." FEIR Response 23-2. While in some circumstances payment of impact fees may in fact provide sufficient mitigation for cumulative impacts, under these circumstances impact fee mitigation is uncertain.

Agency acceptance of an uncertain mitigation mechanism cannot make it consistent with CEQA.

Furthermore, the "project-level" and cumulative analyses are not in fact differently structured, other than with respect to their time horizons. The project-level analysis is based on a future horizon of 2015 and the cumulative analysis is based on a future horizon of 2030. The EIR uses the same thresholds of significance to determine the significance of both project-level and cumulative impacts. And the EIR relies on payment of the same impact fee as mitigation for both project-level and cumulative impacts. The only difference is that the project-level analysis admits that impacts to facilities west of the State Route 68 Commuter Improvements are significant and unavoidable and the cumulative analysis does not. This difference in conclusions is not justified.[2]

E. The project is inconsistent with 1982 General Plan transportation policies and the EIR failed to identify these plan inconsistencies

Approval of the project would be inconsistent with several policies on the 1982 General Plan.

Most obviously, the project is inconsistent with the mandatory language of Policy 37.2.1, which provides

> "Transportation demands of proposed development shall not exceed an acceptable level of service for existing transportation facilities, unless appropriate increases in capacities are provided for." (emphasis added.)

The 1982 General Plan and the EIR identify LOS C as the acceptable level of service. The General Plan inconsistency is evident from the traffic analysis in the EIR, which admits numerous significant and unmitigated traffic impacts involving unacceptable levels of service. For example, the DEIR admits that project-level impacts under background (2015) conditions will remain significant and unavoidable to intersections 2 and 4 and to segments 2, 3, and 4 and these facilities will operate at unacceptable levels of service. RDEIR, p. 3.10-31.

These are the admitted impacts involving project transportation demands exceeding acceptable levels of service without any provision for increases in capacity. As discussed above, there are clearly other significant unmitigated impacts that the EIR does not admit: there is no evidence that other impacts under background or cumulative conditions would

[2] If the EIR did intend to impose a higher mitigation burden for project-level impacts than for cumulative impacts, then it would presumably not merely propose to make the project pay a fair share of the State Route 68 Commuter Improvements. At most, the State Route 68 Commuter Improvements will address LOS impacts to one segment of SR 68 and two intersections. The EIR in effect permits the project to provide no mitigation whatsoever for project-level impacts to intersections 2 and 4 and to segments 2, 3, and 4.

be mitigated because the EIR's proposed mitigation is reliant on unfunded, unscheduled, and uncertain improvements.

The project is inconsistent with several other General Plan transportation policies. Policy 39.1.4 mandates that "new development shall be located where there is existing road and highway capacity or where adequate road and highway capacity will be provided." The project would be located in an area where there is not existing capacity and there is no evidence that capacity will be provided.

Policy 39.1.2 mandates that "the cost of new roads shall be borne as equitably as possible among benefiting property owners and/or users." The TAMC nexus study demonstrates that the RDIF does not contain an equitable fair share for the cost of improvements to address facilities west of the State Route 68 Commuter Improvements.

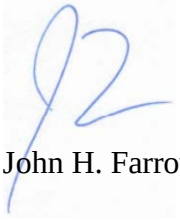
Policy 26.1.4 mandates that "the County shall designate growth areas only where there is provision for an adequate level of services and facilities such as water, sewerage, fire and police protection, transportation, and schools. Phasing of development shall be required as necessary in growth areas in order to provide a basis for long-range services and facilities planning." Permitting any additional growth in the SR 68 corridor is inconsistent with this policy because there is no provision for adequate level of service for transportation.

F. The County cannot make the required subdivision findings

Based on the evident inconsistencies with traffic and water policies in the 1982 General Plan and based on the demonstrably inadequate environmental review under CEQA, the County cannot make the required findings to support approval of the subdivision. It is clear that the project will conflict with General Plan policies and will cause substantial environmental harm.

Yours sincerely,

M. R. WOLFE & ASSOCIATES, P.C.



John H. Farrow

Cc: Amy White
Janet Brennan

Referenced documents, provided on separate CD:

- Annual Ground Water Summary Reports published by MCWRA in 1995-2014, available at http://www.mcwra.co.monterey.ca.us/groundwater_extraction_summary/groundwater_extraction_summary.php.
- MCWRA, SVWP Engineers Report, available at http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_I/salinas_valley_water_project_I.php
- MCWRA, Salinas Valley Water Project Phase II, Overview, available at http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_II/salinas_valley_water_project_II_overview.php
- Geoscience, Protective Elevations to Control Seawater Intrusion, Nov. 13, 2013, p. 11, available at http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_II/salinas_valley_water_project_II_overview.php (link to "Technical Memorandum.")
- MCWRA, Salinas Valley Water Project Phase II, Status, available at http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_II/salinas_valley_water_project_II_project_status.php.
- MCWRA, Notice of Preparation of EIR, Salinas Valley Water Project Phase II, June 2014, available at http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_II/salinas_valley_water_project_II_project_status.php
- TAMC, 2014 Monterey County Regional Transportation Plan, available at http://www.tamcmonterey.org/programs/rtp/.
- AMBAG, Final Environmental Impact Report, 2035 Metropolitan Transportation Plan/ Sustainable Communities Strategy And Regional Transportation Plans For Monterey, San Benito And Santa Cruz Counties, Appendix B, 2035 MTP/SCS project List, available at http://ambag.org/programs/met_transp_plann/documents/Final_2035_EIR/AMBAG%20MTP-SCS%20and%20RTPs%20FEIR%20with%20Appendices.pdf;
- AMBAG, 2035 Metropolitan Transportation Plan / Sustainable Communities Strategy, Appendix C, Projects Lists, available at http://www.ambag.org/programs-services/planning/metro-transport-plan
- TAMC, Regional Development Impact Fee Program Nexus Study Update 2013 ("2013 RDIF Update") , available at http://www.tamcmonterey.org/programs/devimpfee/pdf/2013-TAMC-RDIF-Nexus-Study.pdf
- Debbie Hale, Executive Director, TAMC, email to Janet Brennan, Aug 1, 2014.

ATTACHMENT – Letter from Tim Parker to John Farrow, Nov. 28, 2014

Technical Memorandum November 28, 2014

To: John H. Farrow, M.R. Wolfe Associates, P.C., Attorneys-at-Law
From: Timothy K. Parker, PG, CEG, CHG, Parker Groundwater

Subject: Technical Review of Harper Canyon (Encina Hills) Subdivision EIR

At your request, I have reviewed the water supply and hydrology analysis in the EIR for the proposed Harper Canyon subdivision project, including the draft and final EIR and pertinent associated technical documents. My conclusions are listed below.

I am a California Professional Geologist (License #5584), Certified Engineering Geologist (License # EG 1926), and Certified Hydrogeologist (License #HG 12), with over 25 years of geologic and hydrologic professional experience, and on that basis, I submit that I am qualified to undertake this review. (See attached Bio, Resume and Project Experience.)

A. The FEIR groundwater analysis is fundamentally different from and inconsistent with the DEIR analysis

I. Environmental setting – description of groundwater basins

a) The DEIR and FEIR analyses use fundamentally different methods of basin and subarea identification. The FEIR explains that the MCWRA 1991 and 1996 reports "used a topography/watershed-based methodology to define the limits of the study area and did not take into account MCWRA's Zone 2C boundaries nor the groundwater basins/subbasins recognized by the MCWRAS and the California Department of Water Resources (DWR)." FEIR 3.6-2 to 3.6-3. The Geosyntec report, on which the FEIR relied, states that these "watershed topographic boundaries … are not relevant to groundwater aquifers."

b) The DEIR analysis is based on Todd 2002/2003 and MCWRA 1991/1996. The DEIR incorrectly states that the project wells are in the San Bernancio Gulch subarea of the El Toro Groundwater Basin, a basin that does not exist – there is no "El Toro" groundwater basin. DEIR 3.6-5 and Figure 3.6-1. California Department of Water Resources has consistently referred to this area as the Corral De Tierra Area groundwater subbasin since at least 1975 (DWR Bulletin No. 118, September 1975).

c) The FEIR analysis is based on DWR 2004, 2010 and on Geosyntec 2007/2010, which it states supersede the MCWRA 1991 and 1996 reports cited by Todd and DEIR. FEIR 3.6-2. Note that the FEIR erroneously quotes 2004 and 2010 for DWR, but the Water Code statute recognized publication that defines groundwater basins is Bulletin 118

published in 1975, 1980 and 2003 (WC section 10752, and as updated to 10722 with the Sustainable Groundwater Management Act of 2014)

d) The FEIR correctly states that the project is in the El Toro Creek and San Bernancio Gulch subareas of the Corral de Tierra groundwater subbasin of the Salinas Valley Groundwater Basin. FEIR 3.6-1, 3.6-7, and suggests a small part of the open space portion of the project lies within the 180/400 Foot Aquifer groundwater subbasin area.

II. Environmental setting – aquifer status

a) The DEIR concludes that there will be a 320.7 afy surplus of recharge over pumping demand in the relevant aquifer upon future build out, which consists of four interconnected subareas: the El Toro Creek subarea, the San Bernancio Gulch subarea, the Corral de Tierra subarea, and the northern portion of the Watson Creek subarea as set out in Table 3.6-2. DEIR p. 3.6-13 to 3.6-14. This conclusion is based on the MCWRA/Fugro 1996 report. The DEIR further misses the facts reported in the Todd Report that in the San Benancio Gulch subarea where the proposed project wells are located, that some wells already showed long term declines. Todd Page 9. Finally, both the Fugro and the Todd analysis are limited evaluations, looking at the recharge and demands in the subareas within Coral De Tierra groundwater subbasin as though the subbasin is a closed box with no groundwater discharge.

b) In direct contradiction, the FEIR concludes that the relevant aquifer within the Geosyntec Study Area, is in fact already in "an overdraft condition." FEIR 3.6-12. This conclusion is based on the Geosyntec Report. Geosyntec pp. ES5 to ES6, 36. The Geosyntec report explains:

(1) "Downward trends for the majority of long-term hydrographs (e.g. Figures 4-6 to 4-10 and Appendix D) indicate that the rate of groundwater pumping from the El Toro Primary Aquifer System exceeds the rate of groundwater replenishment. Compilation of trend analyses for long-term hydrographs shows groundwater overdraft conditions in the northern portion of the El Toro Planning area near Hwy 68, where the majority of pumping occurs (Figures 4-11 and 4-12)." Geosyntec p. 35.

(2) Geosyntec notes that 80% of long-term hydrographs show a downward trend and that 90% of post-1999 trends are downward, leading to an average annual decline in groundwater levels of 1.8 ft/yr since 1999. Geosyntec at ES-4.

c) Geosyntec documents increased pumping coincident with increased building permits (Figures 3-7, 6-2). Geosyntec projects continued declines in groundwater levels due to this increased demand, even

assuming long-term water supply conservation and recycling. Id. p. 35, Figure 6-6.

d) The Geosyntec report specifically rejects the conclusion of the MCWRA/Fugro 1996 report, cited by the DEIR, that there would be a surplus of recharge over pumping at buildout. Geosyntec pp. 34-35.

(1) First, it notes that the limited saturated thickness of portions of the aquifer and "casts doubt on the existence of surplus groundwater supply in the Watson Creek subarea (Figures 4-13 and 4-14). Revision of the recharge modeling to account for limited saturated thickness of the El Toro Primary Aquifer System in the Watson Creek and the upper portions of the San Bernancio subareas was not part of the scope of this study, but would likely result in a range of recharge significantly lower than the estimated build-out demand." Id. at 35.

(2) Second, it notes that trend analyses for the majority of hydrographs already show overdraft conditions. Id.

(3) Again, the FEIR indicates that the Geosyntec report supersedes the 1996 report. FEIR 3.6-2. Consistent with the Geosyntec report, the FEIR deletes the DEIR's Table 3.6-2 purporting to show a long-term surplus on build-out. FEIR p. 3.6-24. (A revised Table 3.6-2 shows that the project itself will add an additional 13.1 afy to the existing overdraft.)

(4) Finally, unlike the DEIR, the FEIR makes the case that there is hydraulic interconnection between the Corral de Tierra Area groundwater subbasin and the 180/400 Foot Aquifer groundwater subbasin, based on Geosyntec 2007 & 2010. Groundwater levels show that groundwater is flowing along the El Toro Creek corridor to the northeast and discharging to the 180/400 Foot Aquifer groundwater subbasin.

III. Environmental setting – efficacy of the Salinas Valley Water Project reservoir operations in mitigating overdraft in the proposed project vicinity

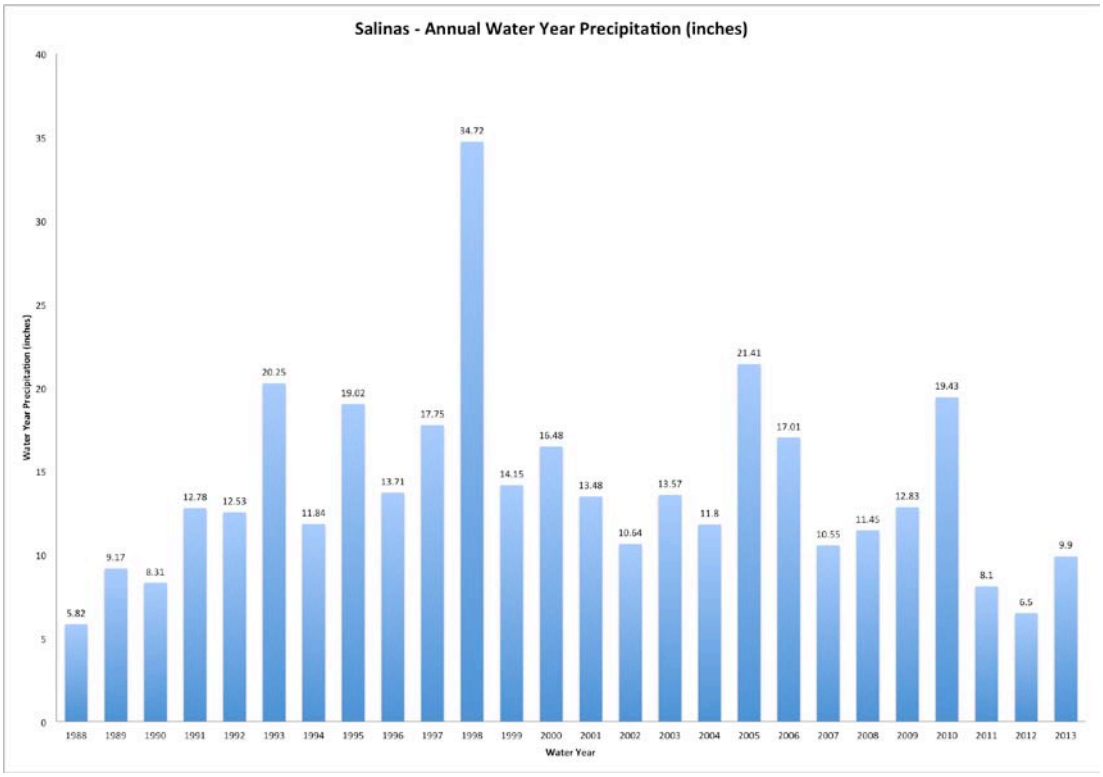
a) The Nacimiento and San Antonio Reservoirs were constructed in 1957 and 1965 and have historically been operated by MCWRA to increase recharge of the Salinas Valley Groundwater Basin. 2010 General Plan EIR, pp. 4.3-6 and 4.3-7. The Salinas Valley Water Project (SVWP) is intended to further mitigate seawater intrusion into the Salinas Valley Groundwater Basin by making certain changes to the structure and operations of the Nacimiento and San Antonio Reservoirs and by providing for some diversion of Salinas River water for seasonal irrigation. FEIR at 3.6-16 to 3.6-17; 2010 General Plan EIR, pp. 4.3-34 to 4.3-35; MCWRA website at

http://www.mcwra.co.monterey.ca.us/SVWP/SVWP_Project_Description.pdf. The SVWP became partially operational in 2009-2010.

b) The FEIR claims that "according to MCWRA" the proposed project area will "indirectly" receive benefits from the SVWP. FEIR 3.6-12. However, the FEIR acknowledges that "it is too soon to draw hard conclusions" as to the efficacy of the SVWP. FEIR p. 3.6-17. Further, the FEIR does not provide any specificity or quantify what those, benefits, direct or indirect, could possibly be.

c) The FEIR states that "The water bearing formations in the vicinity of the Oaks and New Well dip in a northeasterly direction towards the Salinas Valley. The geologic maps and cross sections indicate that there are no barriers restricting flow from this portion of the of the Geosyntec Study Area into the Salinas Valley." FEIR p. 3.6-12. However, groundwater flow is in fact restricted from flowing northeast in the proposed project area and where the proposed project supply wells are located. Groundwater instead flows to the northwest until it reaches the El Toro Creek corridor where it then makes a right turn to head towards the Salinas Valley. "Granitic rocks uplifted along the Harper Fault likely limit hydraulic connection to the northeast from the San Benancio subarea of the El Toro Planning Area to the Salinas Valley. However, the continuous presence of the Paso Robles Formation beneath the El Toro Creek, the Hwy 68 corridor, and Fort Ord military reserve to the northwest provides hydraulic connection between the El Toro Planning Area and the Salinas Valley." Geosyntec 2010. This brings further doubt that the proposed project area in the San Benancio subarea will benefit in some way, even indirect, from the SVWP.

d) Despite this, the FEIR cites monitoring data comparing just two years (2009 and 2011) to claim that groundwater levels have increased and that the rate of seawater intrusion has decreased. Yet, as previously outlined in comments by LandWatch, MCWRA has consistently explained that at least 10 years of data would be required before a valid judgment could be made. LandWatch, May 12, 2014, pp. 4-6. Based on the analysis of Geosyntec, overall precipitation has been decreasing. Looking at two years on the heels of some localized and limited precipitation increases as compared to the past 25 years is not to be considered evidence of long-term groundwater level recovery, but is more likely related to short-term higher precipitation (see annual precipitation table below). As Geosyntec acknowledges, rainfall variation results in short-term fluctuations of groundwater levels. Geosyntec p. 23. Note also that longer-term data is simply not available because MCWRA has not released biannual reports of groundwater elevation and seawater intrusion for the period 2011-2013.



Reference: http://www.ncdc.noaa.gov/cdo-web/datasets COOP:047668 Salinas

e) Although the EIR presents no factual basis for a claim that future operation of the SVWP EIR will benefit groundwater levels in the project area, it is clear from the Geosyntec report that the past operation of the Nacimiento and San Antonio Reservoirs has not prevented long-term trends of declining groundwater levels in the aquifer used by the project. Geosyntec documents long-term trends of declining groundwater levels despite the fact that MCWRA has operated both reservoirs for decades in order to improve groundwater levels. In this regard, it is notable that the FEIR retracts the DEIR's claim that the relevant aquifer has benefitted from the MCWRA's previous management of the reservoirs on the Salinas River.

f) In particular, the DEIR asserts that

(1) "According to the MCWRA, this portion of the El Toro Planning Area, including the project site, receive benefits of sustained groundwater levels attributed to the operation of both the Nacimiento and San Antonio Reservoirs and will receive benefits of the Salinas Valley Water Project upon completion." DEIR, 3.6-6, emphasis added.

g) The FEIR revises this section to eliminate any claim that there have been any past benefits to the relevant aquifer from past efforts to augment

groundwater recharge and instead claims only that there will be some benefit from the SVWP in the future:

(1) "According to MCWRA, this portion of the Corral de Tierra Area (groundwater) subbasin, including the project site, Oaks well site, and New Well site (both wells located in the San Bernancio subarea), indirectly receive benefits of sustained groundwater levels within the Basin attributed to the Salinas Valley Water Project." FEIR p. 3.6-12.

h) In sum, the DEIR claims that past reservoir operations have benefitted the project area, but the FEIR admits that the project area is in overdraft and rescinds this claim. The FEIR itself provides no basis for its contention that the SVWP will have future beneficial effects on the groundwater levels in the project area other than the unsubstantiated opinion of an unidentified spokesperson for MCWRA ("according to MCWRA . . ." – FEIR 3.6-12). As discussed below, the geologic data presented in the Geosyntec report provide no basis for concluding that the SVWP will in the future reverse the existing overdraft conditions in the project's aquifer. In fact to the contrary, the Geosyntec 2010 Report Addendum displays groundwater levels in the Corral del Tierra groundwater susbbasin 250 to 350 feet higher than those in the adjacent 180/400 Foot Aquifer groundwater subbasin. This creates a hydraulic gradient with groundwater flowing and discharging to the northeast from the Corral De Tierra Area groundwater subbasin to the adjacent 180/400 Foot Aquifer groundwater subbasin, making it clear that the only benefits being received from the SVWP are to the valley floor. Further with the declining groundwater levels noted by Geosyntec, that groundwater recharge to the valley floor coming from the Corral De Tierra Area groundwater subbasin is diminishing and will further diminish with the proposed project. Since none of the DEIR or FEIR referenced documents address the discharge from the Corral De Tierra Area groundwater subbasin to the 180/400 Foot Aquifer groundwater subbasin, it is not possible to qualify or quantify its impact, diminished or not. Finally, the wells for the proposed project lie off the main El Toro Creek corridor in an area where flow to the northeast is restricted by the Harper Fault and the presence of bedrock.

IV. Impact analysis

a) The DEIR's analysis of project-specific impacts to the local aquifer is based on the Project Specific Hydrogeology Report (Todd 2002, 2003), which relies on the expectation that there will be a water surplus upon buildout as reported by MCWRA/Fugro 1996. This is a limited analysis as noted in their report, and it treats the area as a closed box. DEIR 3.6-13 to 3.6-14. This surplus is set out in DEIR Table 3.6-2, "El Toro Groundwater Basin Water Balance Upon 1995 Estimated Build-Out."

DEIR 3.6-14. The DEIR's significance analysis for project-specific impacts makes no reference to any benefits of the SVWP. DEIR 3.6-13 to 3.6-14. The DEIR's analysis of the cumulative impacts to the relevant aquifer is also based on the purported local surplus and also makes no reference to the SVWP. DEIR 3.6-18 to 3.6-19. The DEIR concludes that there is no significant cumulative impact.

b) The DEIR's claim that there would be a surplus of recharge over pumping was essential to the conclusion that impacts would be less than significant because the DEIR standards of significance require a finding of significance if there is a "net deficit in aquifer volume." DEIR 3.6-9.

c) By contrast, the FEIR's analysis of project-specific impacts admits that the Geosyntec reports concludes that "the primary aquifer is in overdraft but current and increased groundwater pumping could be sustained for decades in the areas where large saturated thickness of the primary aquifer stored large volumes of groundwater." FEIR 3.6-24. In effect, the project-specific analysis concludes that there is a water supply if the County is willing to permit increased mining of an aquifer that is already in overdraft. As previously noted, this will also reduce recharge to the 180/400 Foot Aquifer groundwater subbasin from the Corral De Tierra Area groundwater subbasin.

d) As noted, the FEIR acknowledges that the Geosyntec report supersedes all prior studies and states that the Todd Engineering report was based on an analysis of subareas that is "not consistent with the terms used by MCWRA and DWR to describe groundwater basins." FEIR 3.6-2, 3.6-23. The FEIR deletes the DEIR's Table 3.6-2 showing a surplus in the El Toro basins on buildout. FEIR 3.6-24. Despite this, the FEIR reiterates the incorrect and unsubstantiated contention in MCWRA 1996 and Todd 2002/2003 that there is an "overall water surplus" in the four interconnected subareas. FEIR 3.6-23. Again, this treats these subareas as a closed box, and ignores the groundwater discharge into the 180/400 Foot Aquifer groundwater subbasin occurring to the northeast. This conclusion is also directly at odds with the conclusion in the Geosyntec report that the area is in fact in overdraft based on chronically declining groundwater levels and will remain so. And the FEIR fails to acknowledge that the Geosyntec report rejects the conclusion that there is or will be a surplus of recharge over pumping.

e) The FEIR attempts to merge the Todd report and the Geosyntec report by claiming that the Geosyntec report "differs slightly" from the Todd Engineering report and that the Todd Engineering Report is "based on many of the same reports and similar topographic divide" as the Geosyntec report. FEIR 3.6-24. However, it is unreasonable to suggest that a significance analysis can rely on both the Geosyntec Report and the

Todd 2002/2003 and MCWRA 1996 reports because these reports reach diametrically opposing conclusions as to the present and future state of the aquifer systems, with Todd concluding that demand will not exceed recharge and there is available groundwater supply, while Geosyntec indicates there is already a condition of overdraft with long-term groundwater declines evident .

f) The FEIR's analysis of cumulative impacts suffers from the same defects as the project-specific analysis. In particular, it also inconsistently cites the Todd's claim of a water supply surplus and the Geosyntec conclusion that the aquifer is in overdraft, and claims that their diametrically opposed conclusions are "similar." FEIR 3.6-34.

g) The FEIR and the DEIR both identify a "net deficit in aquifer volume or a lowering of the local groundwater table level" as a significant impact. DEIR 3.6-9; FEIR 3.6-20. The FEIR does not explain how the existing overdraft condition and the projection of continuing declines in the groundwater level in the Geosyntec report could be characterized as anything other than a significant cumulative impact.

h) What effects, if any, current and continued groundwater declines may have on surface water flows in the El Toro Creek and tributaries are not addressed in any of the DEIR or FEIR documents. Surface water and groundwater are interconnected, and the degree to which the quantity and quality effects one another is area specific and may be significant, but there is no information to draw any conclusions on.

i) Finally, although the DEIR does not mention the SVWP in its discussion of the significance of project-specific impacts and concludes that no mitigation is required (DEIR 3.6-12 to 3.6-14), the FEIR claims that "the project's impact on the groundwater basin is . . . mitigated by" the contribution of the SVWP through its Zone 2C assessment. FEIR 3.6-26. The FEIR makes the same claims in its analysis of cumulative impacts. FEIR 3.60-34 to 3.6-36.

B. The EIR fails to present evidence that the SVWP will mitigate project impacts to the overdrafted Corral de Tierra Area groundwater subbasin/Geosyntec study area

I. The EIR relies only on unattributed opinion from MCWRA that the SVWP will recover and maintain groundwater levels in the project area, and that all areas in the Zone 2C receive a justifiable benefit from the SVWP for which they pay a fee.

II. The EIR presents no information showing any quantitative relation between groundwater in the Corral de Tierra Area groundwater subbasin/Geosyntec Study area and the 180/400 Foot Aquifer groundwater subbasin (both of

which comprise part of the Salinas Valley groundwater basin), and by implication no validation of the contention that the SVWP may provide any sort of benefit or mitigate proposed project impacts. Geosyntec in their water balance analysis for the El Toro Planning area state: "most of the southern, eastern and northeastern margins of the El Toro Planning Area are underlain by relatively impermeable basement rocks, so influx of groundwater… is likely minor." Geosyntec 2007.

a) No modeling results are reported or even referenced.

b) No quantitative data on baseline or future cumulative water demand or groundwater elevations for the Salinas Valley Groundwater Basin are presented.

c) The EIR fails to provide critical information on basin yield and on baseline and future demand that would establish that the proposed project does not make considerable contribution to significant cumulative impact.

d) SVWP reservoir operations have not prevented overdraft in the Corral de Tierra Area groundwater subbasin in the past.

e) Notably, the Geosyntec report projects continuing declines in the groundwater elevations and makes no reference to the SVWP – even though the SVWP was designed, modeled, reviewed environmentally, and approved prior to the 2007 Geosyntec report.

f) Although the EIR in the Geosyntec 2010 update shows that there is groundwater flow from the Corral de Tierra Area groundwater subbasin into the 180/400 Foot Aquifer groundwater subbasin along El Toro Creek corridor, no estimates are provided as to the amount of groundwater discharged annually from the Corral De Tierra groundwater subbasin. No evidence is provided that increased groundwater levels hoped for in parts of the Salinas Valley Groundwater Basin from the SVWP are likely to be of sufficient magnitude to provide adequate hydraulic pressure to benefit groundwater levels or overcome the current groundwater flow and discharge from and benefit the Corral de Tierra Area groundwater subbasin area. Further, any groundwater outflow to the northeast into the adjacent 180/400 Foot Aquifer groundwater subbasin was ignored in the water balance estimated by Geosyntec (2007, 2010), Todd, and Fugro. This suggests that there is no scientific information to document benefit from the SVWP to the Corral de Tierra Area groundwater subbasin/Geosyntec Study area.

(1) The Corral de Tierra Area groundwater subbasin is upgradient from 180/400 Foot Aquifer groundwater subbasin. Corral de Tierra Area groundwater levels are 250-350 feet higher than the adjacent aquifer.

Thus, the magnitude of groundwater elevation changes needed to overcome the pressure and groundwater discharge occurring from the Corral De Tierra Area groundwater subbasin and to provide any sort of benefit, director indirect, would be significant if it is even possible.

(2) The EIR did not evaluate and completely ignores climate change, that precipitation and temperature tends are changing and how these changing trends are projected to effect the proposed objectives of the SVWP and the current CDT overdraft .

C. The current SVWP diversions are not sufficient to meet the Salinas Valley Water Project objectives

I. The project objectives of the SVWP are to stop seawater intrusion and providing adequate water supplies and flexibility to meet current and future (year 2030) needs; and to provide the surface water supply necessary to attain a hydrologically balanced groundwater basin in the Salinas Valley.

II. Even if the SVWP could conceivably have some benefit to the Corral del Tierra aquifer, that benefit would depend on reversing the existing overdrafting in the 180/400 foot aquifer. However, it is now evident that the existing SVWP is not adequate to address overdrafing and seawater intrusion in the 180/400 Foot Aquifer.

III. The Harper Canyon EIR fails to acknowledge that the SVWP has not been able to meet its objectives so far, with steady and continued seawater intrusion in the 180- and 400-foot aquifers. (see table below). Nor does the Harper Canyon EIR acknowledge that, based on the recent Geoscience Report 2013, which provides a technical approach to establishing protective groundwater elevations in the southern end of the Salinas Valley to halt seawater intrusion, current water supply and water rights are inadequate.

IV. The Geoscience report explains that the current 12,000 afy SVWP is not adequate to halt seawater intrusion and that an additional 48,000 afy must be delivered. The report provides the technical basis for an MCWRA effort to secure a 135,000 afy surface water right on the Salinas River to provide adequate water supplies for the additional project needed to augment the SVWP. This project, which has not yet been environmentally reviewed or funded, would include two new diversions, conveyance, delivery, and treatment facilities.

Time Interval	Aquifer	
	180-Foot	400-Foot
1994-1965	557	-
1959-1975	-	391
1965-1975	659	-
1975-1985	665	545

1985-1993	930	406
1993-1997	1028	1185
1997-1999	4086	1829
1999-2001	1418	1243
2001-2005	722	572
2005-2007	760	303
2007-2009	430	183
2009-2011	600	134

Table - Rate of Seawater Intrusion in the 180- and 400-Foot Aquifers in feet per year. Reference: Protective Elevations to Control Seawater Intrusion in the Salinas Valley. Geoscience, 2013.

D. The source capacity test is not relevant to determining whether the project makes a considerable contribution to a significant cumulative impact

I. A source capacity is conducted to ensure a public water supply well can meet its projected daily demand. This is a short-term pumping test based on existing aquifer conditions and current groundwater levels and basically makes the assumption that aquifer conditions are stable. The test can yield an estimate of localized aquifer transmissivity and hydraulic conductivity, and if a nearby monitoring well shows a groundwater level response, an estimate of the aquifer storage coefficient. A source capacity does not provide information to determine whether a short- or long-term significant impact will result from the added demand from the tested well, nor will the source capacity test yield any information on the state of the aquifer, whether it is in overdraft or sustainable.

II. In sum, a source capacity test is irrelevant to cumulative analysis. The Harper Canyon EIR fails to provide an adequate cumulative analysis, which we understand requires two separate determinations.

III. First, CEQA requires the EIR determine if there is a significant cumulative impact from all past, present and foreseeable future projects including the project under review. Since the EIR defines a net deficit in aquifer volume or a lowering of groundwater elevations as a significant impact, the Harper Canyon EIR should have determined that there is a significant cumulative impact. It failed to do so.

IV. Second, if there is a significant cumulative impact, CEQA then requires the EIR to determine whether the project itself will make a "considerable contribution" to it. The EIR fails to address this question meaningfully. To begin with, the FEIR claims the project's contribution would be "minimal" because it is in an area in where "recharge exceeds extraction." FEIR 3.6-34. Then, in the next paragraph, the FEIR inconsistently admits that the aquifer is in overdraft but that the pumping could be sustained for decades. Id. There is no explanation provided as to what level of pumping would be a

considerable contribution. Just because the project is well situated to exploit the remaining groundwater does not mean that its 13.1 afy demand is not making a considerable contribution to the overdraft.

V. Finally, the FEIR claims the project's impact on the groundwater basin is mitigated by participation in the SVWP. FEIR 3.6-36. But as explained, there is no evidence that the SVWP will reverse the documented current overdraft in the Corral del Tierra groundwater subbasin. In fact, to the contrary, the evidence indicates that the Corral del Tierra subbasin is, and will likely remain, a source of groundwater to the 180/400 Foot Aquifer on the valley floor, not a beneficiary of groundwater flows from the 180/400 Foot Aquifer. Since the groundwater levels in the project area of the Corral Del Tierra groundwater subbasin are 250-350 feet higher that in the valley floor, and groundwater is discharging from the Corral De Tierra Area groundwater subbasin, it is clear there will be no benefit, as the higher groundwater in the Corral del Tierra flows and drains to the streams and valley floor. In fact, the Coral Del Tierra recharges the adjacent 180/400 Foot Aquifer groundwater subbasin and valley floor, and declining groundwater levels and overdraft in the Corral del Tierra groundwater subbasin mean less recharge to the valley, which will be further diminished by the proposed project. Finally, less recharge to the 180/400 Foot Aquifer groundwater subbasin means increased potential for seawater intrusion and more water needed to offset the seawater intrusion.

VI. Source capacity test review

a) New source capacity tests are still being conducted for the two supply wells for the proposed project. Although not relevant to cumulative analysis, the tests are relevant to determining whether the wells would have sufficient capacity to serve the project, and they may be relevant to evaluating possible well interference. These will be reviewed once the test results are provided.

b) It appears that the initial capacity test undertaken in 2002 for the proposed new Harper Canyon backup well indicated that it did not have sufficient capacity to serve the project as required by state regulations. DEIR, Appendix F.

(1) The proposed project is for 17-units and the proposed project water source already serves 9-units, for a total of 26-units to be served.

(2) State regulations require that sufficient water is available from the water system's sources and distribution storage facilities to supply a minimum of three gallons per minute for at least 24 hours for each services connection, for an equivalent of 78 gpm. 22 CCR § 64215.

(3) The Source Capacity Testing Procedures note that state regulations require that water systems serving 15 or more residences must have two sources of supply and that these systems "are required to meet maximum daily demand with the highest producing sources offline," (22 CCR § 64554(c)) meaning each of the two wells proposed to meet the water supply for the proposed project of 78 gpm as outlined above.

(4) The Oaks Well has a practical yield of 92 gpm, and the 'new' Harper Canyon Well has a practical yield of 12 gpm (DEIR Appendix F), indication the Oak Well meets the minimum supply requirement and the Harper Canyon Well by itself does not.

Attachments
Bio
Resume
Project Experience

BIO

Timothy K. Parker, PG, CEG, CHG
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Tim Parker is Principal Hydrogeologist, Parker Groundwater, California, specializing in groundwater resources assessment, development and management. His experience includes water policy analysis, strategic water resources planning, groundwater management plan development and program implementation, regional and project scale groundwater monitoring for quantity and quality, and groundwater recharge & storage projects. He formerly worked for Schlumberger Water Services bringing oil and gas industry geophysical tools and technologies to water industry clients, and prior to that he was with the California Department of Water Services Conjunctive Water Management Program. Tim serves Groundwater Resources Association of California as Director and Legislative Chairman, California Groundwater Coalition as Director, and National Ground Water Association as Scientist's and Engineers Division Director. Tim is also actively involved with the Association of California Water Agencies Groundwater Committee activities. He is principal writer on *Sustainability from the Ground Up, Groundwater Management in California, a Framework* (ACWA 2011), and co-authored the books *Potential Groundwater Quality Impacts Resulting from Geologic Carbon Sequestration* (WRF 2009), and *California Groundwater Management* (GRA 2005).

RESUME

Timothy K. Parker, PG, CEG, CHG

Principal

WORK EXPERIENCE

2009 – Present: **Parker Groundwater, President.** Sacramento, California. Privately owned business, specializing in strategic groundwater planning, groundwater monitoring, groundwater modeling, groundwater recharge and aquifer storage recovery projects, program implementation, stakeholder facilitation, groundwater monitoring, policy and regulatory analysis, and environmental document review. Provides strategic planning, policy consulting and groundwater technical expertise to public and private sector clients to develop effective, sustainable solutions to complex problems in the water and evolving environmental and energy industries.

2010: **Layne Christensen Company, Layne Hydro, National Groundwater Management Practice Leader.** Sacramento, California. Publicly traded, Layne Christensen Company is recognized as the nation's leading water well drilling company using the most advanced technologies to locate and produce resources, including water resources, water quality and treatment, energy, mineral exploration, and geoconstruction divisions. Mr. Parker provided policy and technical consultation to internal and external clients on groundwater recharge and aquifer storage recovery projects, and strategic planning and business development for the water, environmental, and evolving energy and carbon industries.

2005 – 2009: **Schlumberger Water Services, Principal Hydrogeologist.** Sacramento, California. Provided hydrogeologic expertise and project management on groundwater recharge and aquifer storage recovery projects, groundwater monitoring, groundwater resources management, and groundwater contaminant projects for public and private sector clientele. Application of advanced oilfield tools and technologies to groundwater projects. Integration of groundwater quality monitoring and protection on CO2 sequestration projects; liaison to Schlumberger Carbon Services, including planning, scope development, technical implementation, facilitation, and oversight. **Business Development** activities included strategic planning, prospect assessments, sales presentations, targeted workshops, client development and exploitation. Mentored and provided direction to staff; developed, tracked and controlled projects;

worked closely with clients and other public and private organizations to implement projects on schedule, on budget with high level of quality.

2001 – 2005: **California Department of Water Resources, Division of Planning and Local Assistance, Conjunctive Water Management Branch, Senior Engineering Geologist.** Provided local technical and economic assistance to Sacramento and San Joaquin Valley groundwater authorities and water districts planning, developing, and implementing conjunctive water projects, groundwater recharge and aquifer storage recovery projects, and local and regional groundwater monitoring programs. Elements include developing technical scope, implementing work, providing geologic and groundwater technical expertise, attending and speaking at public meetings. **Central District, Groundwater Planning Section**, Sacramento, California (early 2001 prior to joining CWMB). **Senior Engineering Geologist, Groundwater Planning Section**. Elements included: Integrated Storage Investigations Program conjunctive use project technical support, coordination, and project management; technical support on local groundwater monitoring and subsidence programs; technical support on Bulletin 118; Proposition 13 groundwater grant applications screening and ranking process for Central District geographic area. Supervised and provided direction to staff; developed, tracked and controlled program budgets; worked closely with other DWR groups, agencies and outside organizations to develop additional local assistance opportunities for DWR.

2000-2001: California Department of Conservation, Division of Mines and Geology, Sacramento, California. **Associate Engineering Geologist**. Responsible for: multi-year aerial photograph review, identification of landslides and potentially unstable areas, field reconnaissance and confirmation, preparation of maps and images using MapInfo, Vertical Mapper, ArcView, Spatial Analyst, Model Builder, and ArcInfo working closely with GIS specialists; assisting in development of GIS methodologies and database for Northern California watersheds assessment/restoration project; review of timber harvest plans and pre-harvest inspections; review of regional CEQA documents as related to engineering geologic issues; watershed assessment; technical presentations at multi-agency meetings and landslide/mass wasting public workshops.

1997-2000: CalEPA Department of Toxic Substances Control, Stringfellow Branch, Sacramento, California. **Hazardous Substances Engineering Geologist**. Responsible for: groundwater monitoring and

analysis; developing approach and preparing a work plan for a Stringfellow site revised hydrogeologic conceptual model; researching, providing, and maintaining a comprehensive environmental data management system; assembling and contracting with an expert panel for consultation on the site; evaluating an existing MODFLOW porous media groundwater flow model; providing direction on the strategy and approach for the development of a revised groundwater flow and fate & transport model for the Stringfellow site; providing input on an as needed basis in support of the litigation and community relations elements of the project.

1993 - 1997: Law Engineering & Environmental Services, Inc., Sacramento, California. **Manager Project Management.** Responsible for supervising and providing direction to senior project managers; maintaining appropriate tracking system and controls for assurance of successful execution of scope, schedule and budget of major projects; maintaining quality assurance and controls on projects. Responsibilities included development/implementation of group budget spending plan, establishing performance standards and evaluating program progress and quality, staff recruiting, mentoring, maintaining utilization, business development, proposal preparation, commercial and government project marketing, client maintenance. **Project Manager** and **Senior Hydrogeologist** on hydrogeologic evaluations, site and regional groundwater quality monitoring programs, hazardous substance site investigations and remediation. Responsibilities included technical direction of projects, project scoping, schedule, budget, supervision of field activities, preparation of documents, developing cost-effective strategies for follow-on investigations and removal actions, and negotiating with state regulators on three Beale Air Force projects totaling more than $15 million.

1988 - 1993: Dames & Moore, Sacramento and Los Angeles, California. **Senior Geologist.** Provided hydrogeologic technical support, project management, regulatory compliance, technical/regulatory strategy, and on a variety of commercial and industrial DTSC- and RWQCB-lead hazardous substance sites. Responsibilities included project technical direction, scope implementation, budgetary control, groundwater quality monitoring and analysis, supervision of field investigations, document preparation, client interface, negotiation with regulatory agencies on projects totaling approximately $5 million.

1986 - 1988: California Department of Health Services, Toxic Substances Control Division, Southern California Region, Assessment and Mitigation Unit, Los Angeles, California. **Project Manager** in the

Assessment and Mitigation Unit. Responsibilities included development and implementation of work plans and reports for, and regulatory oversight of, State Superfund preliminary site assessments, groundwater quality monitoring and analysis, remedial investigations, feasibility studies, remedial action, and interim remedial measures. **Engineering Geologist**. Provided technical support to Permitting, Enforcement, and Site Mitigation Unit staff, including evaluation of hydrogeologic assessments, groundwater quality monitoring programs, work plans, and reports on federal and state Superfund sites and active facilities; assistance in budget preparation; assistance in zone drilling contract review.

1983-86: Independent Consultant, Sacramento, California. Provided technical assistance on variety of geologic and geophysics projects to other independent consultants in local area.

1982: Gasch & Associates, Sacramento, California. Geologic assistant conducting shallow seismic reflection surveys in the Sierra Nevada for buried gold-bearing stream deposits.

1981 - 1982: Geologic Assistant, Coast Ranges, Avawatz Mountains, White Mountains, and Kinston Peak Range. Geologic Assistant on various geological field studies, including gravity surveys, magnetic surveys, landslide and geologic mapping projects.

PROFESSIONAL REGISTRATION

California Professional Geologist No. 5594
California Certified Engineering Geologist No. 1926
California Certified Hydrogeologist No. 0012

PROFESSIONAL AFFILIATIONS

California Department of Water Resources, Public Advisory Committee, Water Plan Update 2013
*2010-2013**:** Appointed to participate on PAC and to lead new Groundwater Caucus*

Department of Interior, Advisory Committee on Water Information, Subcommittee on Ground Water
2010-Present: Member – Work Group for Pilot Project Implementation, Nationwide Groundwater Monitoring Network
2007-2010: Co-Chair - Work Group on Implementation for development of the Framework for a Nationwide Ground Water Monitoring Network

2007-2010: Member - Work Group on Network Design for development of the Framework for a Nationwide Ground Water Monitoring Network

National Ground Water Association
2014-Present: Director - Scientists and Engineers Division
2007- 2010: Director - Scientists and Engineers Division
2007 - 2009: Member - Government Affairs Committee
2007 - Present: Chair - Groundwater Protection and Management Subcommittee
2005 – Present: Chair - Regional Groundwater Management Task Force, Government Affairs Committee
2004 – 2005, 2007,2009-10: Chair – Theis Conference Committee
2002 – Present: Member – Theis Conference Committee
2002 – Present: Member - Regional Groundwater Management Task Force, Government Affairs Committee
2003 – Present: Member – Groundwater Protection and Management Subcommittee
2009 – Present: Member - ASR Task Force
2009 – Present: Member - Hydraulic Fracturing Task Force
2008 – 2009: Member – CO2 Sequestration Task Force

American Ground Water Trust
2009 – 2012: Chair
2005 - 2013: Director

California Groundwater Coalition
2007-Present: Director

Groundwater Resources Association of California
2000 – Present: Director
2000 – 2001: President State Organization
2001 – Present: Legislative Committee Chair
1998-1999 Vice President
1996-1997 Secretary
1995-1996 President Sacramento Branch
1993-1994 Member-at-Large Sacramento Branch

ACADEMIC BACKGROUND

BS 1983, Geology, University of California, Davis
Graduate studies in hydrogeology, hydrology, engineering geology, waste management engineering

ADDITIONAL TRAINING

EPA, USAF, DTSC, NGWA and other organization sponsored courses, seminars, and conferences including: Carbon sequestration tools and technologies, PMI project management courses; artificial groundwater recharge workshops; conjunctive use conferences; focused symposiums on arsenic, chromium, perchlorate, MtBE, and nitrates; ACWA meetings; maintaining forest & ranch roads in the Sierra; CEQA; sexual harassment; front line leadership; risk communication; cultural diversity; community relations; geographic information systems analysis; spatial modeling techniques; digital image generation and analysis; data visualization techniques; ATV riders course; DNAPLs in fractured rock media; remediation by natural attenuation; project management; groundwater geochemistry; vadose zone and groundwater monitoring; fate and transport of contaminants in the subsurface; aquifer analysis; surface and subsurface geophysical methods; aquifer restoration, groundwater monitoring; geophysical methods; air instrumentation; toxicology and risk assessment; EPA/OSHA-approved health and safety training meeting Section 126 of SARA and 29 CFR 1910.120.

PRESENTATIONS/COURSES/PUBLICATIONS

Technical and non-technical presentations at numerous public forums and meetings, state Superfund site public meetings, monthly regulatory meetings, and professional organization meetings and symposiums in public/private sector.

Selected Publications

California Groundwater Management, Second Edition, Groundwater Resources Association of California, co-author and project manager, 2005.

Water Contamination by Low Level Organic Waste Compounds in the Hydrologic System, in *Water Encyclopedia*, Wiley, 2004.

Potential Groundwater Quality Impacts Resulting from Geologic Carbon Sequestration, Water Research Foundation, co-author, 2009.

Aquifer Storage and Recovery in the US, ASR 9, American Ground Water Trust, Orlando Florida, September 2009 – a compilation of key ASR issues on DVD, contributing editor and speaker, 2010.

Sustainability From The Ground Up – Groundwater Management In California – A Framework, Association of California Water Agencies, principal author, 2011.

Presentations

"Technical Lessons Learned and Experience Gained from Managed Aquifer Recharge in California, Nevada and Florida," International Seminar on Aquifer Artificial Recharge, Belo Horizonte, Brazil, June 2012.

"What is Working and What is Challenging Managed Aquifer Recharge Progress and Why in California, Florida and Texas," International Seminar on Aquifer Artificial Recharge, Belo Horizonte, Brazil, June 2012.

"Status of Groundwater Monitoring and Well Log Data in California," 2012 Water Technology Conference, Clovis, California, May 2012.

"California - State of the State – Groundwater Challenges," Aquifer Recharge Conference, Status of Projects, Issues, and Solutions, ASR 11, American Ground Water Trust, Orlando, Florida, September 2011.

"Overview of Recent Groundwater-Related Policy Documents," Groundwater Caucus Meeting, California Water Plan Update 2013, May 2011.

"State of the State of Groundwater Management in California," Statewide Issue Forum, *The Next Chapter: How Do We Really Sustain California's Groundwater?* - ACWA Spring Conference, Sacramento, California, May 2011.

"California Statewide Groundwater Elevation Monitoring (CASGEM)," National Ground Water Association, Groundwater Summit, Baltimore, MD, May 2011.

"NGWA Best Suggested Practice for Aquifer Storage & Recovery," National Ground Water Association, Groundwater Summit, Baltimore, MD, May 2011.

"Groundwater Management – New Initiatives at the State Capitol and in the Bay Area," Bay Area Water Forum, Oakland, CA, March 2011.

"Groundwater Monitoring: Can the State Plan Nice with the Locals?" California Water Policy Conference, Los Angeles, CA, March 2011.

"Santa Rosa Plain Preliminary Groundwater Management Planning Efforts," Santa Rosa Public Workshop, February 2011.

"Sonoma Valley Groundwater Management Program," California Roundtable on Water and Food Supply, Davis, CA, February, 2011.

"MAR Technical, Regulatory and Policy Challenges, Barriers and Evolving Solutions in the United States," ISMAR07, Abu Dhabi, United Arab emirates, October 2010.

"ASR Technical, Regulatory and Policy Challenges – Evolving Solutions," 40th Annual American Institute of Professional Geologists Meeting/10th Annual American Ground Water Trust ASR in Florida Meeting, Orlando Florida, September 2010.

"State of Sonoma County Water and Collaborative, Locally-Driven Solutions," NWRA 2010 Western Water Conference, Jackson, WY, July 2010.

"Development and Implementation of Pilots for a National Groundwater Monitoring Network," Towards Sustainable Groundwater in Agricultural, San Francisco, CA, June 2010.

Should There be a Separate Class of Underground Injection Well for Groundwater Replenishment?" NGWA Groundwater Summit, Denver, CO, April 2010.

"The California Legislature Mandates Statewide Comprehensive Groundwater Level Monitoring," NGWA Groundwater Summit, Denver, CO, April 2010.

"Sonoma's Buried Treasure: Groundwater," Water Wisdom and Energy workshop, Sonoma CA, February 2010.

"California ASR Status," Groundwater Protection Council Annual UIC Conference, Austin TX, January 2010.

"ACWA's Strategic Framework for Sustainable Groundwater Management," ACWA Fall Program, San Diego, California, December 2009.

"ASR Smorgasbord," Aquifer Storage and Recovery in the US, AGWT 9th Annual ASR Meeting, Orlando, FL, September 2009.

"National Water Quality Assessment Program Review," presented to National Academies of Science Committee to Review NAWQA Cycle 3 Proposed Program, on behalf of National Ground Water Association, Washington DC, September 2009.

"ASR Water Quality and Public Perception Challenges," ASR Issues Roundtable, Ground Water Protection Council, Salt Lake City, UT, September 2009.

"Opportunities and Challenges for Supplementing Water Supplies in California – a Local Approach," Ground Water Protection Council Energy and Water Forum, Salt Lake City, UT, September 2009.

"Managing Groundwater in the Wine Country: A Successful Approach in the Sonoma Valley," Napa Engineer's Society, Napa CA, September 2009.

"Wells and Monitoring – With Limited Groundwater Supplies How Do We Manage Our Resource Sustainably," Wine Country Water Forum, Rohnert Park, CA, July 2009.

"Sonoma Valley Groundwater Management Program," Sonoma Valley Citizen's Advisory Committee, Sonoma CA, April 2009.

"Geologic Carbon Sequestration Characterization and Monitoring Tools and Technologies," Groundwater Resources Association of California Groundwater Monitoring Conference, March 2009.

"Issues Surrounding Implementation of the Technology (ASR)", and moderator for ASR session, Ground Water Protection UIC Conference, San Antonio TX, January 2009.

"AWWA Research Foundation Study on The Potential Impacts of Geologic Carbon Sequestration on the Quality of Groundwater: A Summary of the Approach and Open Discussion of State Agency Stakeholders" (co-author), Ground Water Protection Council Annual Meeting, New Orleans, September 2008.

"Adapting to Increasing Demands in a Changing Climate with Managed Aquifer Recharge and Groundwater Storage: Do We Have the Right Tools?", Ground Water Protection Council Annual Meeting, New Orleans, September 2008.

"Implementation: Structure for Operation, Management and Oversight of the Nationwide Groundwater Monitoring Network," Ground Water Meeting, Department of the Interior, Advisory Committee on Water Information, Subcommittee on Ground Water, Sixth National Water Monitoring Conference, Atlantic City, New Jersey, May 2008.

"Implementation Structure Evolution, Framework for a Nationwide Ground Water Monitoring Network," Ground Water Monitoring Meeting, Department of the Interior, Advisory Committee on Water Information, Subcommittee on Ground Water, Reston, Virginia, March 2008.

"Citizen-Based Groundwater Resources Planning in California," Ground Water Summit, National Ground Water Association, Memphis, Tennessee, March 2008.

"Citizen-Based Groundwater Resources Planning on a Basin Scale, Sonoma Valley, California," co-author, Ground Water Summit, National Ground Water Association, Memphis, Tennessee, March 2008.

"Water Management Options Analysis Using a MODFLOW Ground Water Flow Model for the Sonoma Valley Groundwater Basin," co-author, Ground Water Summit, National Ground Water Association, Memphis, Tennessee, March 2008.

"Florida - Land Abundant in Water Resources, Drought and Regulation," National Ground Water Association EXPO, Orlando, Florida, December 2007.

"California's Quandary: Managed Aquifer Recharge under a Very Complex Regulatory Environment – Will it Work?" International Symposium on Managed Aquifer Recharge, Phoenix, Arizona, October 2007.

"So Many Tools, So Little time - Overview of Oilfield Tools and Technologies Applicable to Water Resources in Fractured Rock," Workshop, National Ground Water Association/EPA Fractured Rock Conference, Portland, Maine, September 2007.

"Technical and Policy Aspects of Managed Aquifer Recharge in California," National Ground Water Association Theis Conference, Park City, Utah, September 2007.

"California Ground Water Management - A Continuing Challenge in a Changing Environment," Keynote Presentation, Ground Water

Protection Council Annual Forum, San Diego, California, September 2007.

"Integrated Regional Water Management and Sustainability in California - Can We Have It All?" 2007 Southwest Regional Water Symposium, Tucson, Arizona, August 2007.

"Integrated Regional Water Management California Style: How is it Working?" Pima Association of Governments, Tucson, Arizona, June 2007.

"Increasing Groundwater Storage to Meet California's Future Demand - Introduction to the Challenges and Solutions," Long Beach, California, June 2007.

"California Groundwater Monitoring Programs", Ground Water Meeting, Department of the Interior, Advisory Committee on Water Information, Subcommittee on Ground Water, Reston, Virginia, May 2007.

"Oilfield Tools and Technologies: Applications to Contaminant Sites," Department of Energy, Research and Development, Washington DC, March 2007.

"High Resolution Characterization, Simulation, and Monitoring of Water Resources Projects", Groundwater Resources Association of California High Resolution Characterization and Monitoring Symposium, Long Beach, California, November 2006.

"Future Expertise and Resource Needs for a Developing Technology Environment," National Ground Water Association 21st Century Water Systems, Irvine, California, October 2006.

"California Groundwater Monitoring Programs," Ground Water Monitoring Meeting, Department of Interior, Advisory Committee on Water Information, Subcommittee on Groundwater, Washington DC, May 2006.

"Groundwater Tools and Technologies - From the Archaic to the Sublime," Texas Ground Water Management Workshop, National Ground Water Association Groundwater Summit, San Antonio, Texas, April 2006.

"Groundwater Management Goals, Objectives, and Actions - How Do You Get There?" Texas Ground Water Management Workshop, National

Ground Water Association Groundwater Summit, San Antonio, Texas, April 2006.

"Introduction to California Groundwater Policy Development", Groundwater Institute for Teachers, Sponsor American Groundwater Trust, Fresno. California, June 2005.

"Importance of Groundwater to the American River System," American River Science Conference, Public Session, April 2005.

"Some Groundwater Challenges for Conjunctive Use: ASR, Underground Storage Regulation, Arsenic, Viagra, and Yes There is More," California Department of Water Resources Workshop, Kern, November 2004.

"Groundwater 101" – Rohnert Park Public Session, Sponsored by Groundwater Resources Association of California, September 2004.

"California, Water and Sustainability in the 21st Century", Workshop on Water Sustainability in Silicon Valley: Vision for the Future, San Jose, California, April 2004.

"How Do We Balance Competing Needs on the Lower American River – Groundwater and Conjunctive Use", Lower American River Conference, Sacramento, California, June 2003.

"Levee Cutoff Walls and Groundwater Recharge", NGWA Southwest Focus Conference, Phoenix, Arizona, February 2003.

"Low Concentrations of Organic Compounds in the Hydrologic System," Groundwater Resources Association of California Annual Meeting, Newport Beach, California, September 2002.

"Comparing Two GIS Applications to Develop Relative Landslide Potential", ESRI Users Conference, San Diego, California, July 2002.

"Conjunctive Management of Groundwater and Surface Water", Central Sacramento County Groundwater Forum, Elk Grove, May 2002.

"Groundwater Wells Surveying or Mapping: Why We Need Flexibility in Well Location Data", California Land Surveyors Association, Lake Tahoe, March 2002.

"Overview of Groundwater Management Issues in California", Groundwater Resources Association, Fresno, California, January 2002.

"Where are we in West and Central Coast Basins?", Groundwater Law and Policy in California: Update on Recent Developments, Anaheim, California, October 2001.

"Groundwater Quality & Well Maintenance", Water Well Workshop, Sacramento, California, September 2001.

"Now That You Have Your Data What Do You Want to Do with it?", Association of California Water Agencies Workshop, Sacramento, California, August 2001.

"GIS in Developing a Relative Landslide Potential Framework, North Coast Ranges, California", ESRI Users Conference, San Diego, California, July 2001.

"Engineering Geologic Aspects of Timber Harvest in the Sierra Nevada", Association of Engineering Geologists/Groundwater Resources Association Annual Meeting, San Jose, California, September 2000.

"Industry Trends for Groundwater Cleanups: Where Have We Come From and Where Are We Going", Groundwater Resources Association Fifth Annual Meeting, Costa Mesa, California, October 1996.

"Selection, Design, Installation And Evaluation of Dedicated Groundwater Sampling Systems: a Case Study", Proceedings of the National Groundwater Sampling Symposium, Washington, DC, November 1992.

"Energy Dispersive X-Ray Fluorescence Analysis of Lead In Soil, Dust, and Paint Using Secondary Target Excitation and Scattered X-Ray Ratio Normalization", Workshop Proceedings, XRF Workshop, Denver X-ray Conference, 1994.

Workshops, Symposia and Courses

Hydraulic Fracturing and Water Resources – A California Perspective, Conference Co-Chair and Moderator, GRA Symposium, Long Beach, California, July 2012.

"Groundwater-Surface Water Interaction: California's Legal and Scientific Disconnection," Co-Chair, GRA Symposium, April 2011.

"Thinking Outside the Pipe – Exploring and Protecting Local Water Supplies," Conference Chair, GRA Annual Meeting, San Francisco, California, September 2010.

"ASR Issues Session," Session Moderator, 40th Annual American Institute of Professional Geologists Meeting/10th Annual American Ground Water Trust ASR in Florida Meeting, Orlando Florida, September 2010.

"Geophysics at the Beach," Conference Co-Chair and Moderator, GRA Symposium, Santa Ana, California, May 2010.

"Groundwater Monitoring: Methods, Needs, and Answers," Session Moderator, Sixth National Monitoring Conference, National Water Quality Monitoring Council, Atlantic City, New Jersey, May 2008.

"Geophysics for Fractured Rock Groundwater Systems," Session Moderator, Ground Water Summit, National Ground Water Association, Memphis, Tennessee, March 2008.

"The Changing Landscape of Regulatory Authority," Session Moderator, Long Range Policy and Water Planning in California, American Ground Water Trust, Ontario, California, February 2008.

"Groundwater Policy and Regional Management in Florida: a Changing World," Session Moderator, NGWA EXPO, Orlando, Florida, December 2007.

"Conjunctive Management of Ground Water and Surface Water: Application of Science to Policy," Co-Convener, National Ground Water Association Theis Conference, Park City, Utah, September 2007.

"Investing in Infrastructure - Pay Now or Pay Later," Session Moderator, Groundwater Biennial, Sacramento, California, September 2007.

"Increasing Groundwater Storage to Meet California's Future Demand - Challenges and Solutions," Chair Groundwater Resources Association of California Workshop, Long Beach, California, June 2007."

"Groundwater Management in New Mexico in the Year of Water - A Challenge of Increasing Demand, Limited Supply, and Statewide

Implementation," Workshop, Chair, National Ground Water Association Groundwater Summit, Albuquerque, New Mexico, May 2007.

"Geophysics in the Groundwater Industry: Basic Theory, Current and Future Application of Tools and Technology," Session Moderator, National Ground Water Association EXPO, Las Vegas, Nevada, December 2006.

"Groundwater Policy and Management in the Southwest – Focus on Nevada" Session Moderator, National Ground Water Association EXPO, Las Vegas, Nevada, December 2006.

"High Resolution Site Characterization and Monitoring," Co-Chair, Groundwater Resources Association of California Symposium, Long Beach, California, November 2006.

"Groundwater Management in Texas - A Continuing Challenge in a Changing Environment," Workshop Chair, National Ground Water Association Groundwater Summit, San Antonio, Texas, April 2006.

"Salinity Issues: Past Practices and Future Strategies," Session Moderator, 2005 Groundwater Biennial, Sacramento, California, October 2005.

"Basin Yield and Overdraft: Technical and Legal Perspectives," Chair Groundwater Resources Association of California Workshop, Pasadena, California, September 2005.

"Groundwater Policy, Law and Science: What Can be Done About the Disconnect?" Moderator, Water Education Foundation Water Law and Policy Briefing, San Diego, California, July 2005.

"California Groundwater Management Course", Instructor, Groundwater Resources Association of California Course, Glendale, California, May 2005.

"California Groundwater Management Course", Instructor, Association of California Water Agencies Pre-conference, San Jose, California, May 2005.

"Groundwater Law, Policy and the Tragedy of the Commons: Obstacles and Some Possible Solutions to Sustainable Groundwater Management in the Southwest," Session Chair, National Ground Water Association Groundwater Summit, San Antonio, Texas, April 2005.

"Artificial Recharge Workshop," Workshop Chair, Groundwater Resources Association of California, Sacramento, California, March 2005.

"Basic Groundwater Hydrology", California Department of Water Resources Basic Groundwater Course Sacramento, California, May 2004.

"Artificial Recharge Workshop," California Department of Water Resources –US Geological Survey Joint Sponsorship, Workshop Chair, Sacramento, April 2003.

WATER POLICY ANALYSIS, PRESENTATIONS, LEGISLATIVE TESTIMONY and BRIEFINGS

Reviews Federal and California State water and groundwater policy and legislation and provides comment and information dissemination to the groundwater industry through activities associated with the National Ground Water Association, American Ground Water Trust, and Ground Water Resources Association of California, and California Ground Water Coalition.

Annual National Groundwater Legislative Symposium - Presentations by Members of Congress and Staff, and Federal Administration - Visits to Congressional Offices at Capitol Hill - Groundwater Resources Association of California – attended years 2003-2011.

Annual State Groundwater Legislative Symposium - Presentations by State Legislators and Staff, and State Administration - Visits to Legislator Offices at the Capitol - Groundwater Resources Association of California – attended years 2002-2011.

"California Water Management Issues and Managed Underground Storage: Water Use and Water Rights Session," National Research Council Forum on Managed Underground Storage, Washington D.C., March 2008.

"Groundwater Storage in California," National Research Council Forum on Managed Underground Storage, Washington D.C., March 2008.

"Geologic Carbon Sequestration," 11th Annual Ground Water Industry Legislative Conference, National Ground Water Association, Washington D.C. - 2008.

California State Legislative Staff Briefing - California, Water, Sustainability, and Groundwater Basics - 2005.

California State Senate Select Committee on Air and Quality - Hearing on Status of Groundwater Management in California - 2005.

"California, Water, and Sustainability", Legislative Staff Briefing, State Capitol, Sacramento, California - 2004.

California State Senate Select Committee on Water Management, Storage, Conservation and Supply - Hearing on Perchlorate - 2004.

"California's Hidden Resource: Groundwater," Hearing on Perchlorate, Assembly Select Committee on Water Management, Storage, Conservation and Supply, State Capitol, August 2003.

"Now What! The Conundrum of the Contaminant Du Jour and Emerging Contaminants in Groundwater", Assembly Committee Hearing on AB599, State Capitol, California - 2003.

California State Senate Select Committee on Water Management, Storage, Conservation and Supply - Hearing on Groundwater Basics, Regulatory, and Drinking Water Issues and Challenges - 2003.

California State Assembly Select Committee on Water Quality and Availability - Hearing on California Groundwater Management Challenges and Issues - 2003.

"California's Hidden Resource: Groundwater", Legislative Staff Briefing, Sacramento, California - 2003.

California State Assembly Select Committee on Water Quality and Availability - Hearing on Life Cycle of a Contaminant - 2003.

California State Assembly Select Committee on Water Quality and Availability - Hearing on Groundwater Basics, Groundwater Demand, Management and Monitoring - 2002.

PROJECT EXPERIENCE

Timothy K. Parker, PG, CEG, CHG
Principal

EXPERTISE
Hydrogeologic Evaluation
Managed Aquifer Recharge
Conjunctive Water Management
Environmental Document Review
Groundwater Monitoring and Aquifer Testing
Groundwater Management Planning & Implementation
Contaminant Hydrogeology/Groundwater Remediation
Special Project Research, Design and Management

2009 - Present: Parker Groundwater, Inc., Sacramento, California.

- **Sonoma County Water Agency -** Groundwater Management Planning, Program Implementation, and Technical Support.
  - *Sonoma Valley Groundwater Management Program* - The project involves providing technical support, strategic consulting and facilitation for groundwater management program implementation part of a larger county conjunctive use program, and includes optimizing the groundwater monitoring program, evaluating managed aquifer recharge, assessing groundwater extraction-related subsidence, installing additional monitoring wells, and pursuing other studies as described in the Plan.
  - *Santa Rosa Plain Groundwater Management Planning* **–** The project involves working with the SCWA, a facilitator and stakeholders on a Basin Advisory Panel and Technical Advisory Committee for developing a groundwater management plan development in the Santa Rosa Plain groundwater basin, part of a county conjunctive use strategy. This effort includes developing Basin Management Objectives (BMOs) for groundwater levels, water quality, surface water-groundwater interaction, inelastic land subsidence, and recharge area mapping. The project also involves a review of the preparation of a study by the US Geological Survey, including the development of a GSFlow model for the Santa Rosa Plain. =The Groundwater Management Plan was completed August 2014 and goes to the Sonoma County Water Agency Board for adoption in early October 2014.
- **Cadiz Inc. –** Cadiz Valley Water Conservation, Recovery, and Storage Project - Groundwater Stewardship Committee - Member of

Groundwater Stewardship Council to review operations and maintenance plan for the EIR for the Cadiz basin water conservation and groundwater-banking project. The goal of the Groundwater Stewardship Committee (GSC) is to provide an independent review, as well as evaluation and technical support, for the groundwater planning area for the Cadiz Valley Water Conservation, Recovery, & Storage project. The panel will ensure the project is implemented with best management practices while protecting Mojave Desert.

- **GEI Consultants –** Team member on groundwater banking feasibility study for Sonoma County Water Agency to evaluate potential conjunctive use opportunities, groundwater recharge, aquifer storage and recovery, and other strategies in the Santa Rosa Plain and Sonoma Valley groundwater basins.
- **ESA-PWA –** Team member on flood control and groundwater recharge scoping study for Sonoma County Water Agency to evaluate potential flood control and groundwater replenishment strategies in the Sonoma Creek watershed.
- **Indian Wells Valley Water District –** Hydrogeologic Consultant to the District. Assisting with development of a brackish water project. Provided leadership and input in the development of a revised groundwater management plan and BMOs. Completed a Water Supply Improvement Plan to redistribute pumping stresses spatially in the Indian Wells Valley. Assisted with preliminary planning for development of a basin wide groundwater management program, conjunctive use and managed aquifer recharge opportunities and strategies.
- **Law Offices of Michael W. Stamp – DEIR & FEIR Reviews –**
  - Ventana Inn Proposed Wastewater Collection and Treatment System - Technical review specific to hydrologic and groundwater analysis for omissions and whether the EIR process failed to fully consider and identify supporting evidence of lack thereof, and provided a brief narrative technical summary.
  - Corral De Tierra Neighborhood Retail Village Project – Technical review specific to hydrologic and groundwater analysis for omissions and whether the EIR process failed to fully consider and identify supporting evidence of lack thereof, and provided a brief narrative technical summary.
- **City of West Sacramento –** Regulatory interface and evaluation of hydraulic effects of a managed aquifer recharge facility consisting of a rainfall rooftop capture and infiltration system on the shallow groundwater flow field and possible interference with an adjacent in situ groundwater remediation system.

- **Eddie Robbins, P.E. –** Provided assistance with well siting, drilling and capacity testing of bedrock water supply wells in Marin County.
- **Kenyon Yeates -** Provided evaluation of cement batch plant draft EIR for groundwater resources sustainability issues and impacts.

2010: Layne Christensen Company, Sacramento, California.

- **Department of Toxic Substances Control –** Assisted with high-level oversight of Stringfellow hazardous waste site groundwater remediation system, including well maintenance, system operation and optimization.
- **Desert Sands Unified School District –** Provided regulatory and technical assistance for former underground tank monitoring and closure.
- **Yuima Water District –** Assisted with new water supply well siting and drilling along the Elsinore Fault zone.
- **AGLand –** Assisted with well siting and regulatory interface for new irrigation well installations along Ventura River.
- **Water Replenishment District of Southern California –** Provided groundwater flow modeling evaluation for comparative analysis of vertical versus horizontal well field for brackish water recovery and recharge project in West Coast Basin.
- **Confidential Site –** Provided evaluation of properties for well field capacity and preliminary estimate of safe yield.
- **Kenyon Yeates** – Provided evaluation of Monterey County draft EIR for water resources, and groundwater recharge and recovery issues and impacts.

2005 - 2009: Schlumberger Water Services, Sacramento, California.

- **Sonoma County Water Agency -** Groundwater Management Planning, Program Implementation and Technical Support of the broader Sonoma County Water Agency Conjunctive Use Strategy – Sonoma county currently uses considerable groundwater for residential and predominantly agriculture (grape growing for the wine industry), but had no groundwater management program. The area faces several groundwater management challenges including: groundwater quality degradation; localized groundwater overdraft; saline water intrusion; and population increase accompanied by increasing groundwater demands. The project involved development over a 16-moth period of an AB3030/SB1938 compliant, voluntary groundwater management plan, through a

facilitated process with a broad-based group of local stakeholders. The resulting GMP was adopted by SCWA, City of Sonoma and Valley of the Moon Water District.

- **MWH Global, Inc./AWWARF -** Study on Potential Groundwater Quality Impacts Resulting from Geologic Carbon Sequestration **-** This was a Rapid Research Study jointly funded by the Water Research Foundation and the AWWA under Cooperative Agreement conducted jointly with MWH Global, Inc. The objectives of this study were (1) document and assess the technology and understanding of the GCS process, (2) identify and characterize potential impacts of GCS on quality of groundwater supplies, (3) review existing approaches and recommendations for assessing and mitigating these impacts, and develop a monitoring guideline, and (4) perform a comprehensive evaluation of this information to ascertain knowledge gaps and research priorities. The report, *Potential Groundwater Quality Impacts from Geologic Carbon Sequestration*, was published in 2009 by the Water Research Foundation.
- **Water Replenishment District of Southern California -** The project involved geophysical logging of multiple boreholes ranging in depth from 1,000 feet to 2,000 feet below ground surface. Logging suites include the array induction tool, micro-cylindrically focused log, magnetic resonance, natural gamma ray, scintillation gamma ray, fullbore formation micro-imager, and sonic scanner. Services included interpretation of geophysical logs and consultation on monitoring well design, and aquifer yield.
- **Nobis Engineering, Inc. -** Focused technical review of a groundwater flow model developed for the OLIN Chemical Superfund Site, Wilmington, Massachusetts – This site involves dense aqueous phase liquid (similar to brine) contamination of a local glacial drift drinking water aquifer, with some drinking water wells shut down and a remedial program initiated. A finite element groundwater flow model, intended to be used in the future to support contaminant transport and remediation simulations, was developed and calibrated for the site by the RP consultant. The project involved detailed review of model documentation on behalf of US EPA to(1) identify potential documentation gaps, (2) identify potential flaws in the site conceptualization and, (3) identify possible problems with implementation of the numerical model.
- **MWH Global, Inc. - City of Roseville Aquifer Storage and Recovery Program** – City of Roseville plans to meet the future water demand of the growing population with a conjunctive use program involving a 10 to 15 well aquifer storage recovery program. The project involved providing advanced geophysical

logging and interpretation of ASR and monitoring wells, consultation on monitoring well and wellfield design, and technical support and policy for the city in development and pilot testing of the ASR well field.

- **Schlumberger Remediation - MEW Superfund Site, San Jose, California -** The MEW Superfund Site is a Silicon Valley semiconductor faculties, multi-site solvent-contaminated groundwater project. The program involved assessing and assimilating 25 years of groundwater monitoring and remedial data, developing a refined 3D hydrogeologic conceptual model, developing a revised groundwater flow model, and developing a fate and transport model. The data were evaluated and assimilated, conceptual and flow model completed and fate and transport modeling conducted.
- **Mojave Water Agency -** Mojave Water Agency Groundwater Model Development and Advanced Geophysical Logging for R-Cubed Groundwater Recharge Project – The project included advanced geophysical logging of one to two 1200-foot boreholes through a thick unsaturated zone (~600 feet), development of a conceptual site model using Petrel, and develop a groundwater flow model using Eclipse. The assignment was to provide hydrogeologic and conjunctive use consulting on an as-needed basis to support feasibility and planning level design of a groundwater recharge project in the desert.
- **City of Corona -** HydroGeoAnalyst project development. the project involved bringing limited groundwater and surface water data sets into HydrGeoAnalyst, installing the software and preliminary training of staff.
- **Confidential Client -** Beneficial Use of Coal Bed Methane Produced Water, Wyoming. the project involved field inspection, geophysical log evaluation, preliminary Petrel model development, water resources, legal and regulatory assessment, groundwater monitoring review and evaluation, treatment options and cost analysis, and recommendations for CBM produced water use and reuse.

2001 - 2005: California Department of Water Resources, Division of Planning and Local Assistance, Conjunctive Water Management Branch, Sacramento, California.

- **Sacramento Groundwater Authority (SGA)/American River Basin Cooperating Agencies Partnership Projects.** Technical

consultation and oversight on Proposition 13 $21 million grant regional conjunctive use program involving aquifer-storage-recovery wells, and infrastructure expansion. Provided input on groundwater management plan development. Provided technical assistance on SGA groundwater banking & exchange pilot project, groundwater monitoring program, and groundwater data management system development. Other tasks consisted of review of technical reports, interface with SGA and CWMB, coordination on source water assessment, coordination on multi-agency VOC and ambient monitoring programs.

- **Central Sacramento County Groundwater Forum – (Sacramento) Water Forum Successor Effort.** Worked with (Sacramento) Water Forum Successor Effort and Groundwater Forum through facilitated, consensus-based approach involving a group of 30 broad-based stakeholders charged with the assignment of selecting groundwater management governance in the Central Sacramento County area. Worked with the Center for Collaborative Policy facilitator, Water Forum Successor Effort and Contractor to conduct stakeholder identification, stakeholder assessment, and develop and implement educational and conjunctive use programs for Groundwater Forum**.** Assisted with groundwater management plan; completed and the GMP is currently being implemented.
- **San Joaquin County.** Worked with San Joaquin County, local water districts and agencies, CCP facilitator and Contractor to facilitate conjunctive water management projects and groundwater management program development in the San Joaquin County area. Groundwater management program included conjunctive use and groundwater recharge feasibility. Activities included attendance of coordinating committee meetings and public meetings, and assisting in development of stakeholder assessment. Worked with San Joaquin County to develop approach and managed installation of six groundwater-monitoring wells in Stockton area for salinity evaluation. Involved LLNL and USGS in initial well sampling and analysis. Developed cooperative approach with local agencies, USGS, and DWR for five year $2.6 million salinity assessment, groundwater monitoring, groundwater flowpath and geochemical conceptualization. Also assisted in developing groundwater management plan, including development of BMOs and initial groundwater management program implementation.
- **Stockton East Water District Proposition 13 Project.** Worked with the SEWD to implement a $7M pipeline and injection/extraction well program in the northeast San Joaquin County area, to be completed under a $3.5M Proposition 13 grant.

- **California State University of Sacramento Groundwater Monitoring Well Installation for Groundwater and Stream-Aquifer Interaction Evaluations.** Cooperative effort involving CSUS, LLNL, USGS, SGA, and SAFCA. Developed approach and managed installation of 12-groundwater monitoring wells at CSUS. Well installation funded by CWMB. Wells are used for assessment of groundwater flow and stream-aquifer interaction by CSUS and DWR, with data provided to SGA and SAFCA.
- **Yolo County Integrated Storage Investigation Project.** Provided technical consultation on the Water Resources Association of Yolo County technical group to prepare a preliminary white paper to summarize adequacy of the data for completing a basin analysis, conjunctive use and groundwater recharge opportunities, and the level of effort necessary to compile, organize, and interpret the data. The main emphasis of the basin analysis was potential conjunctive use and managed aquifer recharge project development in Yolo County, and evaluation of groundwater monitoring program in Yolo.
- **Proposition 13 and AB 303 Groundwater Grant Application Review and Ranking.** Reviewed and ranked Proposition 13 and AB 303 groundwater conjunctive use grant applications, including managed aquifer recharge feasibility and pilots, groundwater monitoring well installations, groundwater monitoring program reviews, groundwater management planning and recharge evaluations. Worked closely with the CWMB to complete the screening and ranking of groundwater grant applications submitted within the Central District.
- **Bulletin 118.** Provided technical support for Central District geographic coverage Bulletin 118 update, a "state of the data approach" to develop a revised groundwater budget for each basin including review and summary of boundaries and hydrographic features, hydrogeologic units, yield data, water budgets, managed aquifer recharge potential, well production characteristics, water quality and monitoring data, and ground subsidence information if available.

2000 - 2001: California Department of Conservation, Division of Mines and Geology, Watershed Assessment/Restoration, Sacramento, California.

- **Co-Founder of the Watersheds of the DMG's Component of the Interagency North Coast Watersheds Assessment Program (NCWAP).** Assisted with budget change proposals, program work plans and budgets; acquisition of capital support

items, response to questions from the Legislature and Resources Agency; attended interagency management meetings; helped develop presentations on landslide and fluvial geomorphology issues; participated watershed pilot studies; developed and tested GIS mapping and database protocols.

- **Researched methods and approach for on-screen mapping of landslides from stereo photographs**. Standard practice involved mapping landslides from stereo imagery on plastic overlays. Proposed approach involved use of software and high-end graphics workstation with stereo-analyst application to conduct the work on-screen, to reduce time required and improve work quality.
- **Responsible for aerial photograph review of a portion of the Noyo River Watershed, and field reconnaissance of geology.** Provided a quality control review of portions of the Noyo River watershed, through aerial photo review, and field geologic reconnaissance and landslide mapping.
- **Review of timber harvest plans for potential soil erosion and slope stability issues related to engineering geology, and proposed timber harvest activities**. Provided comments and recommendations to the California Department of Forestry and Fire Protection (CDF). Attended pre-harvest inspections on as-needed basis, and prepared reports describing the engineering geologic conditions observed and recommendations when warranted.
- **Responsible for review of multiple CEQA type documents for engineering geologic issues related to public safety.** Reviewed negative declarations, mitigated negative declarations, environmental impact statements, and environmental impact reports on various types of projects for engineering geologic issues relating to public safety and conformance with CEQA.
- **Review of Sustained Yield Plan, Red River Forests.** Responsible for review and comment on soil erosion and slope stability issues regarding forest harvesting practices, forest road construction and maintenance in relation to timber harvesting in the Modoc Plateau.
- **Review of Option A, Hawthorne Forests.** Responsible for review and comment on soil erosion and slope stability issues regarding forest harvesting practices, forest road construction and maintenance in relation to timber harvesting in the Northern California.

1997-2000: Cal EPA Department of Toxic Substances Control, Stringfellow Branch, Sacramento, California.

- **Task Manager for preparing an approach to develop a Stringfellow site revised hydrogeologic conceptual model.** Responsible for in-house preparation of a work plan for a revised hydrogeologic conceptual model of the Stringfellow site, utilizing oriented core, well installation, aquifer testing data, and other existing pertinent geohydrochemical data.
- **Task Manager for providing a comprehensive environmental data management system.** Established need, gained support and sponsorship from management, prepared scope and managed the development of a Stringfellow comprehensive environmental data management system for hydrologic, geologic, chemical, meteorological, geographic information. Established the need to develop standard operating procedures for data input into the data management system as the data are generated, which includes specifications for electronic data deliverables format. A variety of approaches were considered including acquiring Earth Visions. The approach taken was to have one of our Zone Contractors provide an existing, customizable data management system. The system utilized Map Info Professional as a platform and links with software applications such as MS Access and DBASE, EXCEL, SURFER, provides a 2-D and 3-D statistical geospatial interpolation module, and could write various groundwater modeling and visualization file formats including MODFLOW and AVS.
- **Task Manager for assembling a panel of experts and getting them on-board and contracts in-place. .** Established need, gained support and sponsorship from management, prepared scope and managed the development of a panel of experts to provide technical support on the Stringfellow project. Contracted with Lawrence Livermore National Laboratory (LLNL) to obtain public and private sector industry expertise. Worked with LLNL to put together a panel of experts for technical support on the various aspects of the projects including regional and local geology and structure; fractured rock media characterization; hydrogeologic conceptualization; contaminant fate & transport; remedial design and cleanup optimization.
- **Task Manager for 3-D visualization of 3-D seismic and electronic goniometer fracture data.** Data collected at the site include 3-D seismic and oriented core electronic goniometer fracture data. Responsible for developing approach to evaluate the two sets of corresponding fracture data. The approach involved overlaying the fracture data into a 3-D visualization model utilizing Advanced Visualization Systems software. Developed scope and managed

project through a Contract with Lawrence Berkeley National Laboratory to complete the work.

- **Task Manager to re-evaluate and photo-document all Stringfellow site core.** Geological investigations had been conducted at the site for nearly two decades, and involved many different geologists and correspondingly dissimilar interpretations of the geology. The objective was to evaluate all of the core and geology consistently, in order to provide a uniform understanding of the site geology in the hydrogeologic conceptualization. The cores were also photographed in digital and 35mm slide format to provide electronic as well as standard film record of the core for database storage and readily available future review.
- **Task Manager for 2-Phase Extraction Treatability Test.** Responsible for oversight and direction of Contractors to develop approach and work plans to perform a 2-Phase Extraction (TPE) treatability test at the site. A treatability test consisting of the Xerox TPE technology was conducted to support the Supplemental Feasibility Study. The objective of the tests was to collect the data necessary to assess if TPE is a viable remedial solution for the site. The test involved extraction from nine existing wells and monitoring eight to ten wells at each extraction point.
- **Task Manager for Soil Flushing Treatability Test.** Responsible for oversight and direction of Contractors to develop approach and work plans to perform a Soil Flushing treatability test at the site. A treatability test consisting of a variety of bench-scale tests was conducted to support the Supplemental Feasibility Study. The objective of the testing was to assess is natural soil flushing will enhance the remediation of the site. The testing involved soil physical and chemical analysis, bench-scale soil column flushing, and sequential extraction tests in a laboratory setting.
- **Responsible for groundwater modeling.** Responsible for: (1) technical review of existing MODFLOW porous media groundwater flow model; and (2) developing options and providing a recommended approach for a groundwater flow and fate & transport model utilizing the revised hydrogeologic conceptual model.
- **Responsible for oversight of coring and well installation activities/oriented core electronic goniometer data collection.** One of four geologists responsible for oversight of Contractor field activities at the Stringfellow site involving: (1) completion of 31 oriented core holes using rotary wash drilling methods; design and installation of 72 groundwater monitoring and extraction wells using dual tube percussion and air rotary casing hammer drilling methods; development and sampling of the new

wells. Also provided options and recommended approach for obtaining electronic goniometer data (versus mechanical with hard copy data) for the fracture information from the oriented core holes.

1993 – 1997: Law Engineering & Environmental Services, Inc., Sacramento, California

- **Delivery Order (D.O.) 4 Manager for Site and Basewide Investigations, Beale Air Force Base, California.** The D.O. 4 project consisted of conducting a basewide groundwater operable unit hydrogeologic evaluation; basewide groundwater monitoring program; basewide groundwater flow/fate & transport modeling; conducting a basewide background soil evaluation; developing/negotiating a risk consensus statement; conducting remedial investigation, feasibility study and remedial action plan on six sites; engineering evaluation/cost analysis on four sites; and supplementary remedial investigation of three sites. The sites included an aircraft ground equipment maintenance area, a bulk fuel storage area, a transportation refueling vehicle maintenance shop, vehicle fuel station, a fire protection training area, a jet test cell, an inactive hazardous waste landfill, and an inactive non-hazardous waste landfill. Contaminants included fuel hydrocarbons, metals, aromatic and chlorinated volatile organic compounds.
- **D.O. 16 Manager for Site 13 Investigations, Beale Air Force Base, California.** The D.O. 16 project consisted of the remedial investigation, feasibility study, preparation of the remedial action plan, design and implementation of a groundwater interim removal action at a 13 acre inactive hazardous waste landfill site. Site contaminants include chlorinated volatile organics, heavy metals, diesel- and jet-fuel range hydrocarbons, semivolatile organic compounds, and M-5 ointment. The soil and groundwater investigation included the completion of approximately 60 exploratory test pits, 30 soil borings, 20 soil boring/Hydropunch sample locations, 30 groundwater monitoring well installations and sampling, and aquifer testing. The groundwater removal action consisted of extracting TCE-impacted groundwater from nine wells, filtering and treating the water by air stripping, and discharging to the base waste water treatment facility.
- **D.O. 21 Manager for Site 13 Remedial Design, Beale Air Force Base, California.** The D.O. 21 project consisted of the preparation of the remedial design for soil remedial action at Site 13. The project also included a soil treatability test, and one year of operation &

maintenance of the Site 13 groundwater interim removal action system.

1988 - 1993: Dames & Moore, Sacramento and Los Angeles, California.

- **Senior Geologist and Project Manager for the Remedial Investigation (RI), Feasibility Study (FS), and preparation of the Remedial Action Plan (RAP) for the Union Pacific Railroad Yard Superfund site in Sacramento, California.** The former railroad maintenance yard is a 90-acre site consisting of an inactive area and active switching yard, situated on weakly consolidated fluvial sediments. Managed geological and hydrogeological evaluations, ancillary investigations, removal actions, interim remedial measures, and quarterly groundwater monitoring at the site. The soil and groundwater investigation included the completion of approximately 300 exploratory test pits, 26 soil borings, and 42 groundwater monitoring wells. Groundwater investigations also included the completion of more than 100 cone penetration test/Hydropunch in-situ groundwater sampling locations to assess the extent of off-site groundwater contamination and development of a MODFLOW groundwater flow and fate & transport model to effectively locate long-term groundwater monitoring wells, and refine the understanding of on-site groundwater contamination and potential sources. Additional evaluations/actions at the site have included:
  - Speciation and dissolution kinetics evaluation of selected samples - mineralogy and chemistry by X-ray fluorescence (XRF), X-ray diffraction (XRD), scanning electron microscopy (SEM), X-ray photoelectron spectroscopy (XPS), and surface analyses by laser ionization (SALI), phase association of metals by sequential extraction, and dissolution kinetics of metals by column rate studies at five different pH - results of the evaluation were utilized to assess potential environmental and human health impacts associated with slag present at the site.
  - Ambient air assessment for total suspended particulates, arsenic, lead, and asbestos by low volume samplers, and analysis for metals by XRF and for asbestos by transmission electron microscopy (TEM)
  - Removal of 1,000 yards of metal impacted soil from vacant and residential lots adjacent to the site
  - Classification and removal of 2,500 yards of non-hazardous material from the site
  - Removal of a 72,000 gallon concrete underground storage tank
  - Abandonment of a former yard water supply well which included an underground concrete water storage vault

  - Installation of dedicated sampling systems in selected quarterly groundwater monitoring wells
  - Preparation of Final RI/FS and submittal to the Cal EPA in 1991
  - Preparation of Draft RAP and submittal to Cal EPA in 1991
  - Preparation of Revised Draft RAP and submittal to Cal EPA in 1993
  - Implementation of on-site groundwater interim remedial measure to minimize off-site migration of impacted groundwater in 1993. Shallow groundwater is extracted from two existing groundwater monitoring wells, treated by a shallow-tray air stripper on site, and treated water discharged to the sanitary sewer. Effluent air from the shallow-tray unit is scrubbed through liquid-phase carbon.
  - Planning and implementation of an extensive community relations effort, including numerous public meetings, quarterly reports, issuing fact sheets on all site related activities to approximately 3,000 surrounding neighbors
- **Technical Support on two railyard investigation and remediation projects involving hydrocarbons, heavy metals and asbestos.** The projects involved development and implementation of site investigation work plans, groundwater monitoring programs, remedial action plans, impoundment closure plans, risk assessment hazardous waste characterization and regulatory compliance. Field activities included mitigation and impoundment closure activities, air, soil, and groundwater investigations.
- **Project Manager for the Defense Fuel Supply Point Ozol facility, (near) Martinez, California, Follow-on Investigation.** The facility is a jet fuel bulk storage and transfer terminal situated on complexly folded and faulted marine sediments. The California Regional Water Quality Control Board is the lead agency for the project. Managed preparation of work plans to complete additional soil borings, install additional groundwater monitoring wells, conduct groundwater monitoring and free product removal assessments, and evaluate site hydrogeology.
- **Technical Support on confidential truck stop leaking underground fuel tank site.** Provided litigation support for multiple responsible party cost apportionment based on review of existing documents, groundwater monitoring program data, and hydrogeological and contaminant fate and transport assessment.
- **Task Manager for a confidential evaluation of a former mining site.** Speciation and dissolution kinetics evaluation ongoing to assess form of arsenic in mine tailings, soil, and bedrock to preliminarily assess potential environmental and human health impacts from

arsenic in mine tailings. Microanalytical testing by XRD to evaluate mineralogy; SEM and EMPA to evaluate micromorphology, microchemistry, metal distribution within particles, and evidence of weathering on particle surfaces; XPS and SALI to evaluate metal distribution and form on particle surfaces. Chemical analysis by XRF for total metal concentrations; sequential extractions in a series of progressively more aggressive solvents to assess major metal phase associations; dissolution rate studies to evaluate dissolution kinetics and solubility of metals at several different pH levels.

- **Project Manager for a confidential site evaluation involving slag utilized as sandblasting material.** Initial evaluation to preliminarily assess type of slag, and to identify presence and distribution of metals in the slag. Speciation of metals in slag by XRF to evaluate chemistry and SEM to assess micromorphology, microchemistry, metal distribution within particles, and evidence of weathering on particle surfaces.
- **Project Manager for a confidential residential site evaluation involving lead contamination.** Evaluation conducted to characterize lead contamination, assess source of lead contamination, and to provide litigation support disputing claim that a nearby state Superfund had impacted the residential site. Speciation of soil, dust, and paint samples by XRF to evaluate chemistry, and SEM to assess micromorphology, microchemistry, and metal source distribution in dust and soil samples.
- **Project Manager for second party review of United Heckathorn, Federal Superfund Site, Richmond, CA,** former pesticide formulating and packaging facility located on Richmond Inner Harbor. Soils, sediments and biota in channels and the San Francisco Bay contaminated by DDT, dieldrin, aldrin and other pesticides. Reviewed RI/FS and provided interpretation of contaminant distribution, recommendations regarding suggested remedial strategies, proposed alternatives, interim remedial measures, and final remedial action for the site.
- **Project Manager for evaluation of potential for waste re-classification of molybdenum waste produced at the Cyprus Mine.** The molybdenum waste was classified as hazardous by the standard waste classification approach. However, the material was largely inert, available chemical data suggested the waste should not necessarily be classified as hazardous, and cost and other waste re-classifications supported additional testing and literature searches to assess the potential to re-classify the waste as non-hazardous. This project involved specialized chemical testing, including evaluation of the solubility of the waste at various pH and in a variety of solutions. Additionally, the project included speciation of the waste to determine

what species the molybdenum and associated trace chemicals were present as, and a literature search of the DTSC files to assess what successful waste re-classifications had been completed.
- **Project Manager** for numerous preliminary **site assessments for property transfers**.
- **Site Field Manager** for **aquifer testing and water quality investigation and groundwater monitoring** of a leaking underground storage tank site in Los Angeles, California.
- **Site Field Manager** for **aquifer testing and water quality investigation and groundwater monitoring** of a former manufactured gas plant Superfund site in Venice, California.
- **Field Geologist** for a **remedial investigation of a former manufactured gas plant** Superfund site in Venice, California.
- **Task Manager** for preparation of Work Plans for Remedial Investigations at hazardous waste sites in Norwalk and Dinuba, California.

1986 - 1988: California Department of Health Services, Toxic Substances Control Division, Southern California Region, Assessment and Mitigation Unit, Los Angeles, California

- **Geologist on Burmah Castrol, Inc., Richmond,** a petroleum lubricant storage and transfer facility. Reviewed hydrogeological evaluation and groundwater monitoring program of the proposed remedial action for the site.
- **Geologist on Chem Clear, Los Angeles,** a hazardous waste treatment facility. Reviewed seismic risk evaluation for the facility.
- **Geologist on Lockheed, Burbank,** an aircraft manufacturing facility. Reviewed groundwater monitoring program report for the site.
- **Geologist on Los Angeles Air Force Station, Los Angeles,** an aerospace research and development facility. Reviewed RI Work Plan.
- **Geologist on McColl, Fullerton,** an acid petroleum sludge waste site. Provided contractor oversight of well installation and groundwater sampling activities, and reviewed groundwater monitoring reports.
- **Geologist on McKesson, Santa Fe Springs,** a former chemical-blending and packaging facility. Reviewed site investigation work plan and groundwater monitoring program.
- **Geologist on Orange County Steel, Anaheim,** an auto shredder facility. Reviewed RI Work Plan and groundwater monitoring program

- **Geologist on San Fernando Valley Ground Water Basin,** a 20,000-acre groundwater basin impacted by solvents. Provided oversight of contractor well installations and reviewed and groundwater monitoring program, and groundwater remedial action design documents.
- **Geologist on Thomas Ranch, Corona,** an acid petroleum sludge waste site. Provided oversight of RI/FS activities and review of groundwater monitoring program and other documents.
- **Geologist on Marine Corps Air Stations, Tustin and El Toro**. Provided oversight of RI/FS activities, groundwater monitoring program and review of documents.
- **Project Manager on Boortz Oil Company, Los Angeles,** a former solvent-blending and packaging facility. Provided oversight of RI/FS activities, groundwater monitoring program and review of documents.
- **Project Manager on Chem-O-Lene, Ventura,** a specialty oil-drilling products blending and packaging facility. Provided oversight of RI/FS activities, groundwater monitoring program and review of documents.
- **Project Manager on Facet Energy, Long Beach,** a former oil recycling facility. Provided oversight of RI/FS activities, groundwater monitoring program and review of documents.
- **Project Manager on Southland Oil, Los Angeles,** a former oil recycling facility. Provided oversight of RI/FS activities, groundwater monitoring program and review of documents.

1983-1986: Private Consultant, Sacramento, California

Provided geologic and hydrogeologic consulting on a variety of geotechnical and hazardous waste site projects in northern California.

1982: Gasch & Associates, Sacramento, California

Geologic Assistant on various shallow seismic surveys in the northern Sierra Nevada providing geologic research and geologic field mapping, geophone placement and removal.

1981-1982: Geologic Assistant, Sacramento, California

Geologic Assistant on various field studies including gravity and magnetic surveys in the North Coast Range and Avawatz Mountains, landslide mapping in the Coast Range, and geologic mapping in the Coast Range, White Mountains, and Kinston Peak Range. Work involved providing geologic research and geologic field mapping, and surveying with gravity and magnetic instrumentation.

ATTACHMENT – Letter from Tim Parker to John Farrow, Nov. 28, 2014