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June 18, 2010

DOCKET
09-AFC-8
DATE JUN 18 2010
RECD. JUN 18 2010

California Energy Commission
Attn Docket No. 09-AFC-8
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

Re: Genesis Solar Energy Project; 09-AFC-8

Dear Docket Clerk:

Enclosed are an original and one copy of **TESTIMONY OF ERIC D. HENDRIX ON BEHALF OF THE CALIFORNIA UNIONS FOR RELIABLE ENERGY ON SOIL AND WATER RESOURCES OF THE GENESIS SOLAR ENERGY PROJECT**. Please docket the original, conform the copy and return the copy in the envelope provided.

Thank you for your assistance.

Sincerely,

/S/

Rachael E. Koss

REK:bh
Enclosures

2364-077a

STATE OF CALIFORNIA

Energy Resources Conservation and Development Commission

In the Matter of: The Application for Certification for the GENESIS SOLAR ENERGY PROJECT	Docket No. 09-AFC-8

TESTIMONY OF ERIC D. HENDRIX ON BEHALF OF THE CALIFORNIA UNIONS FOR RELIABLE ENERGY ON SOIL AND WATER RESOURCES OF THE GENESIS SOLAR ENERGY PROJECT

June 18, 2010

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I. INTRODUCTION

I have been working for the California Unions for Reliable Energy ("CURE") as a consultant on the Application for Certification ("AFC") for the Genesis Solar Energy Project ("Project" or "GSEP") since the data adequacy phase. I have reviewed numerous documents and have conducted my own investigations and analyses regarding the Project's potential impacts on water resources.

My testimony is based on the activities described above and the knowledge and experience I have acquired during more than 24 years of working on hydrogeology and engineering geology issues. A summary of my education and experience is attached to this testimony as Attachment 1.

This testimony provides an analysis of hydrogeologic conditions and potentially significant unmitigated impacts associated with the Project. Opinions expressed herein result from review of the technical documents listed in the references section below, including but not limited to the AFC, several groundwater resource investigation reports prepared by consultants to the Project applicant, Genesis Solar, LLC ("Applicant"), the Staff Assessment and Draft Environmental Impact Statement ("SA/DEIS"), and the Revised Staff Assessment ("Revised SA") for the Project. We also describe additional analyses that are needed to address the impacts associated with the Project.

With the information reviewed to date, I have determined that the Project would result in the following: (1) potentially significant unmitigated impacts to the Chuckwalla Valley Groundwater Basin ("CVGB") water balance; (2) potentially significant unmitigated impacts to groundwater supply for both existing and other proposed projects within the CVGB; and (3) significant unmitigated impacts to groundwater supply within the Palo Verde Mesa Groundwater Basin ("PVMGB") and adjudicated Colorado River. My determinations are based on the fact that the technical analyses used to evaluate significant impacts in the Revised SA: (1) are insufficient to determine the adequacy of existing groundwater supply to meet proposed Project needs; (2) rely on an existing groundwater well data set with several salient gaps, the uncertainties of which have not been quantified properly with respect to long-term Project water demands and available supply; (3) do not accurately account for extractions of groundwater in storage from the adjacent PVMGB or the Colorado River; (4) erroneously assume that *total groundwater in storage* within the CVGB may be considered accessible to both the proposed Project and other foreseeable projects, without proper consideration of long-term *sustainability* of the water supply; (5) do not account for the uncertainty in future potential CVGB recharge and Colorado River water "accounting surface" levels resulting from prolonged drought and/or climate changes; and (6) do not fully

anticipate pending changes in the acquisition process for water entitlements within the fully-appropriated Colorado River.

II. STATEMENT

A. The Project Would Result in Potentially Significant Unmitigated Impacts to CVGB Balance

The Revised SA states that the Project would not significantly impact basin balance in the CVGB under existing conditions because Project pumping plus other existing basin outflows would not exceed net average recharge (inflows) to the basin.[1] According to the current water budget of the CVGB provided by the Applicant, the CVGB is estimated to have a net available water supply of approximately 2,608 acre-feet per year ("AFY").[2] The Project proposes to pump 1,605 AFY during operation.[3] Thus, Staff concludes that because there will be a net positive budget balance of 1,003 AFY with full Project operation, Project pumping will not cause an overdraft in the CVGB.[4] However, Staff's analysis fails to account for: (1) impacts to the CVGB water budget from uncertainties in the number and water demands of other proposed projects; (2) uncertainties regarding outflow from CVGB to PVMGB; and (3) uncertainties associated with the Applicant's groundwater investigations and flow model. Furthermore, the Revised SA's proposed mitigation for potential impacts to the CVGB balance is inadequate.

First, the 2,608 AFY figure includes groundwater pumping, but ***excludes cumulative impacts*** from Project pumping and pumping by other proposed local solar power plant projects, including Chuckwalla Solar I, Eagle Mountain Soleil, Desert Lily Soleil, Desert Sunlight Solar Farm, Eagle Mountain Pump Storage, Mule Mountain Solar Project, Mule Mountain Soleil, and Solar Millennium Palen Solar Project.[5] Thus, in relying on the 2,608 AFY figure, Staff overestimated the CVGB's net available water supply.

The Revised SA states that because the estimated "total recoverable groundwater in storage" in the CVGB will be 15,000,000 AF over the construction and operation period of the Project, the Project's contribution to the cumulative impact to basin balance is less than significant.[6] However, total groundwater in storage is not a meaningful baseline for effective groundwater management; rather, the conventional standard for basin management is the *perennial yield* or *operational safe yield* of the basin, which is defined as that amount of groundwater

[1] Revised SA, p. C.9-46.
[2] Id., p. C.9-30, Soil & Water Table 8.
[3] Id., p. C.9-7, Soil & Water Table 1.
[4] Id., p. C.9-47.
[5] Tetra Tech EC and WorleyParsons, 2009, p. 10, Table 2.
[6] Revised SA, p. C.9-85.

outflow (extraction) which can be *sustained over time* without creating significant detrimental impacts, such as basin overdraft.[7] This concept of sustainability goes beyond the simple arithmetic of the water budget (inflow versus outflow), and must account for the effects of potential reduction in "expected" basin recharge during long-term droughts and climate change, and/or the ability of the basin to *naturally recharge* over time as groundwater exceeding "average" budget recharge is repeatedly extracted over a multiple-year period.[8]

Furthermore, no consideration for potential long-term drought or climate change effects have been presented by the Applicant, nor requested by Staff. Because of such uncertainties, and because large alluvial basins such as the CVGB and PVMGB do not "instantaneously recover" from such conditions, the net result is the "mining" of groundwater, which results in negative impacts such as those outlined by Staff in the Revised SA[9] (e.g., undesirable lowering of water levels in other CVGB basin wells) and the removal of groundwater in storage from the PVMGB and the Colorado River.[10] The proposed use of the estimated 15,000,000 AF of CVGB *total storage* as a basin "management bright-line" or basis for significance levels is thus erroneous; the "total basin inflow" of 13,719 AFY is the key operative quantity for basin management decisions, and is likely to more closely approximate the true *perennial yield* value for the CVGB.

Second, 2,608 AFY assumes that outflow/underflow from CVGB to PVMGB is 400 AFY.[11] However, in its response to CURE's data requests, the Applicant presented a revised estimate for the outflow from CVGB to PVMGB of 988 AFY,[12] more than double its earlier estimate of 400 AFY. Given the greater 988 AFY outflow, the available CVGB water budget must necessarily be readjusted downward to 2,020 AFY. Consequently, with Project operation there is a relatively small "margin of error" for water supply management of only 348 AFY. Given the poor water well control and water level data for the CVGB basin, such a small error-margin is unacceptable, particularly once other proposed pumpers (see above) are added into the equation. The small margin of error in the available water budget and yield poses serious concerns that the proposed Project groundwater pumping may, in combination with existing pumpers and other proposed projects, result in an overdraft situation in the CVGB.

Furthermore, no apparent effort was made by the Applicant to evaluate future potential droughts in the greater Colorado River watershed (or continuation of the existing drought, which has resulted in a 110-foot water level decline in Lake

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[7] Bredehoeft, 2002; Devlin and Sophocleous, 2005.
[8] Alley and Leake, 2004; Kresic, 2008.
[9] Revised SA, p. C.9-58.
[10] Anderson and Woosley, 2005.
[11] Revised SA, p. C.9-47.
[12] Genesis Solar, LLC's Data Responses to CURE's Data Requests Set 2 (1-9), Item 6.

Mead, according to the U.S. Bureau of Reclamation)[13] upon Colorado River flows or water levels, and resultant impacts on water levels and replenishment to the PVMGB. Such fluctuations may significantly alter (increase) the outflow from CVGB into PVMGB, and negatively impact available CVGB water budget for the proposed Project.

Third, the Applicant's groundwater studies and resultant conclusions are based upon large uncertainties. A primary source of uncertainty originates from the dearth of adequate existing water well data essential to developing and calibrating a reliable conceptual groundwater flow model and numerical model for the groundwater basins, including both the limited well locations, type of well construction (e.g., wells shallower than the proposed Project pumping depths and flow model depths; wells which screen across multiple aquifers and confining units; wells for which no screen depth information is available) and absence of available information regarding historical water level measurements in existing wells. Each of these "data gaps" introduces significant uncertainty to a numerical flow model.[14]

For example, both the Applicant and Staff identify 54 wells within the Project well database,[15] but only 16 of these wells screen at depths within the proposed Project groundwater extractions depths (> 800 feet below ground surface).[16] Furthermore, many of these wells have been abandoned, according to the California Department of Water Resources and the National Well Information System, and are thus not available for the long-term monitoring program recommended by Staff as a mitigation measure.[17]

In addition, in its response to Staff's Data Requests Set 1A, number 149, the Applicant provided Figure WR-DR149b which indicates only two nearby wells (#9 and #15) with water level data collected during the time period of greatest interest to evaluating groundwater response to proposed Project pumping (i.e., 1988 to present, the period when local prison expansion and pumping increases occurred). This is a very limited data set of historical water levels from which to determine how the CVGB will respond to Project pumping. The Applicant acknowledged that limited well-construction details (screened intervals) are available for these wells,[18] and that the wells apparently screen depths shallower than the depth intervals proposed for Project groundwater pumping (i.e., 800 – 1800 foot depth).[19] Therefore, water level trends in these nearest wells are of limited use in evaluating long-term groundwater response to pumping in the CVGB.

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[13] US Dept. of Interior, USBR web site, 2010.
[14] Zheng and Bennett, 2002.
[15] Revised SA, p. C.9-40; Soil & Water Table 11.
[16] Id., p. C.9-5.
[17] Id., p. C.9-100, Soil & Water-2.
[18] See Applicant Response to CURE Water Resources Data Requests 1-9, Item #2, April 2010.
[19] Worley-Parsons, 2010b.

The limitations of the well data set make it unfeasible to calibrate the Applicant's existing flow model to water levels (heads), which is a conventional recommended procedure for proper flow model development and calibration.[20] Consequently, the Applicant has presented an initial model which is calibrated only to water budget and groundwater *flux*, rather than calibrated to heads. *The Applicant's own groundwater consultant has acknowledged this fact, and the limitations of its model.*[21]

Because of the numerous uncertainties associated with refining the flow model for the CVGB, the Revised SA proposes to mitigate potential impacts to the basin with a groundwater monitoring plan and a water supply plan.[22] However, the proposed plan is inadequate for several reasons. First, Staff recommends use of only *existing* groundwater wells within the CVGB for the monitoring program. However, there are no existing monitoring wells within three miles of the Project location, few existing wells screen the depths below 800 feet where proposed pumping is to occur, and existing wells largely screen across multiple aquifers and confining units as opposed to across discrete zones where Project pumping is to occur. Each of these factors diminishes the intended use and effectiveness of the *existing* wells within the Staff-recommended monitoring network.[23] Second, there are no proposed monitoring wells within the PVMGB which eliminates the ability for "early-warning" detection and mitigation of potential overdraft in the PVMGB and removal of Colorado River waters during Project pumping. Third, there are *NO* wells located within or in reasonable proximity to the critical basin boundary *between* the CVGB and PVMGB.[24] The absence of monitoring wells directly along the boundary minimizes the ability to verify the speculative flow conditions across this important boundary, and likewise decreases the ability for "early warning" detection of adverse extractions from the PVMGB and Colorado River, to which the Applicant is not legally entitled.

B. The Project Would Result in Potentially Significant Impacts to Groundwater Supply for Both Existing Uses and Proposed Projects in the CVGB

Results of pumping tests in CVGB existing wells, coupled with results of the existing Applicant groundwater flow model indicate that other existing and proposed groundwater pumpers are within the physical capture zone limits of the proposed Project extraction wells. Thus, the proposed Project would potentially

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[20] ASTM, 1993; Hill, 1998; Zheng and Bennett, 2002.
[21] Genesis Solar, LLC's Data Responses to CURE's Data Requests Set 2 (1-9), Items 2 and 3.
[22] Revised SA, pp. C.9-100-105.
[23] Id., p. C.9-40, Soil & Water Table 11.
[24] Worley-Parsons, 2010a, Figs. 6 and 10; Galati & Blek Responses to CURE Data Requests 1-9, 2010a Fig. CDR 7-1.

create a significant impact on local and regional water resources in that it will have negative impact upon water levels within wells operated by other existing groundwater pumpers and projects including State prisons pumping south of the proposed Project in the Eastern CVGB, agricultural pumping in the PVMGB to the east, and the contiguous water supplies of the Colorado River to the east, as well as several *proposed* projects with groundwater extractions in these basins (Chuckwalla Solar I, Eagle Mountain Soleil, Desert Lily Soleil, Desert Sunlight Solar Farm, Eagle Mountain Pump Storage, Mule Mountain Solar Project, Mule Mountain Soleil, and Solar Millennium Palen Project, Solar Millennium Blythe Project).[25]

The groundwater monitoring plan and water supply plan recommended by Staff to mitigate potentially significant impacts to the groundwater supply in the CVGB[26] are inadequate for several reasons. First, Staff recommends use of only existing groundwater wells within the CVGB for the monitoring program. However, there are no existing monitoring wells within three miles of the Project location, few existing wells screen the depths below 800 feet where proposed pumping is to occur, and existing wells largely screen across multiple aquifers and confining units as opposed to across discrete zones where Project pumping is to occur.[27] Each of these factors diminishes the intended use and effectiveness of the *existing wells* within the Staff-recommended monitoring network. Second, there are no proposed monitoring wells within the PVMGB. As a result, there is no ability for "early-warning" detection and mitigation of potential overdraft in the PVMGB and removal of Colorado River waters during Project pumping. Third, there are *NO* wells located within or in reasonable proximity to the critical basin boundary *between* the CVGB and PVMGB. The absence of monitoring wells directly along the boundary minimizes the ability to verify the speculative flow conditions across this important boundary, and likewise decreases the ability for "early warning" detection of adverse extractions from the PVMGB and Colorado River, to which the Applicant is not legally entitled.

C. The Project Would Result in Significant Unmitigated Impacts to the PVMGB and Colorado River

The Revised SA correctly concludes that the Project will result in significant impacts to the PVMGB and the Colorado River. However, an adequate understanding of the hydraulic continuity between the CVGB and the PVMGB is necessary to adequately analyze the extent of the Project's significant impacts to the PVMGB and the adjudicated Colorado River. To better understand this connection, in its Data Requests Set Two, CURE requested that the Applicant provide an evaluation of PVMGB water demand and water level response using both historic

[25] Tetra Tech EC and WorleyParsons, 2009, p. 10, Table 2
[26] Revised SA, pp. C.9-100-105.
[27] Id., p. C.9-40, Soil & Water Table 11.

well pumping (production) data and water levels from existing PVMGB wells.[28] The Applicant did not provide a conventional well-production analysis as requested; rather, it provided only well hydrograph (water levels vs. time) data.[29] In the absence of a comprehensive comparison between groundwater pumping versus water level data in the PVMGB, the potential increase in outflow from the CVGB to the PVMGB as a result of future increased pumping in the PVMGB cannot meaningfully be assessed. As such, the potential reduction in available CVGB water budget for the proposed Genesis (and other) solar projects, and the removal of water from the Colorado River to replace future groundwater extracted from storage via PVMGB pumping, cannot be evaluated reliably.

Although it is unlikely that 100% of the pumped Project groundwater will result in extraction from the Colorado River directly, the existing data uncertainties (discussed above) yield the possibility that a significant portion of the groundwater extracted by the Genesis Project will ultimately flow from the Colorado River. The existing numerical groundwater flow model developed by the Applicant[30] is incapable of simulating such flows or resolving the uncertainties, as discussed above.

Condition of Certification Soil & Water-19 allows the Applicant to develop a revised flow model to estimate the maximum predicted decrease in underflow from the CVGB to the PVMGB and Colorado River.[31] However, the same uncertainties found in the existing Applicant flow model will persist in this recommended revised flow model approach. It is likely that the same large (20 – 25%) residuals (simulated vs. observed water level and flux values) obtained within the Applicant's initial model calibration effort will result from this recommended revised model effort. Such large residuals are typically unacceptable for flow models.[32]

The Revised SA also recommends replacement of extracted Colorado River waters by the Applicant as mitigation for significant impacts to the Colorado River. However, given that: (a) the Applicant is not an adjudicated party to the existing Colorado River Quantification Settlement Agreement (QSA)[33] and has no existing legal entitlement to this water; (b) the Colorado River is fully appropriated; (c) the current multi-year drought condition affecting the lower Colorado River would restrict the local approval of replacement water transfers between adjudicated QSA parties (e.g., City of Needles) and the Applicant; and (d) existing uncertainties in how the USBR ultimately intends to implement management of the river "accounting surface," local replacement water entitlements is not a feasible means

[28] CURE Data Requests Set 2 (1-9).
[29] See Applicant's Response to CURE Water Resources Data Requests 1-9, April 2010.
[30] Worley Parsons, January 2010a.
[31] Revised SA, p. C.9-122.
[32] ASTM, 1993; Hill, 1998; Zheng and Bennett, 2002.
[33] *Arizona vs. California*, 547 U.S. 150 (2006).

to mitigate Project impacts to the Colorado River. The Applicant has not provided a plan for attempting to secure water rights transfers from pumpers within the PVMGB (either municipal or agricultural), nor has the Applicant provided an assessment of the likelihood of availability of such transfers. Thus, impacts to the Colorado River remain significant and unmitigated.

D. Supplemental Efforts Necessary to Adequately Analyze and Mitigate Impacts to Water Resources

My evaluation has resulted in recommendation for the following supplemental analyses by the Applicant to adequately analyze and mitigate the Project's impacts to water resources:

(1) Serious re-consideration of the design and implementation of a dry-cooling system for the proposed solar plant, to reduce consumptive groundwater use;

(2) Analysis of the potential impacts of prolonged drought conditions and climate change upon water levels in the CVGB, Colorado River and PVMGB during the 33-year proposed Project duration, and thus upon predicted groundwater flows across the boundary between the CVGB – PVMGB boundary, as well as the reasonableness for replacement water entitlements or transfers available to Genesis as part of impacts mitigation;

(3) The revision of the existing 3D Genesis numerical groundwater flow model to adequately simulate flows from groundwater in storage in the PVMGB and potential flows directly from the Colorado River in response to Project pumping. The revised model must be able to discriminate extractions of groundwater from storage in the PVMGB versus flows out of the Colorado River, and must be able to reasonably resolve the existing uncertainties in aquifer configuration, heads and flows across the CVGB-PVMGB boundary;[34] and

(4) Installation of groundwater monitoring well(s) along the CVGB-PVMGB boundary where limited well control exists presently, to serve as "sentry wells" against future excess flows out of the PVMGB and Colorado River due to long-term Project pumping. Wells should screen vertical intervals which match the same hydrostratigraphic intervals designated for Project well pumping. Dedicated water level transducers and a real-time recording interface, such as a telemetric system, is recommended, to provide maximum response time to potential future excess groundwater flux into the CVGB.

[34] *See* Applicant's Response to CURE Water Resources Data Requests 1-9, Item 2, April 2010.

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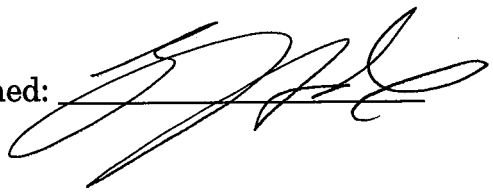
DECLARATION

I, Eric D. Hendrix, declare as follows:

I have reviewed the above testimony regarding the Genesis Solar Energy Project. To the best of my knowledge, all of the facts in my testimony are true and correct. To the extent that this testimony contains opinion, such opinion is my own.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct to the best of my knowledge and belief. This declaration is signed at IRVINE, California.

Dated: 6/18/10

Signed: 

ATTACHMENT 1

MISSION GEOSCIENCE, INC.
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RESUME OF ERIC D. HENDRIX

Vice President, Geology
Principal Hydrogeologist

Education

Master of Science, Geology
University of California, Los Angeles

Bachelor of Science, Geological Sciences
California State University, Long Beach

Registration

Certified Hydrogeologist, California, No. 431
Certified Engineering Geologist, California, No. 1531
Registered Professional Geologist, California, No. 4899
Registered Geologist, Arizona, No. 26977
Registered Environmental Assessor, California, No. 2495
California Community Colleges Instructor Credential

Professional Responsibilities

As Vice President of Geology for Mission Geoscience, Mr. Hendrix:

- Manages technical operations & business development for all water resources development & remediation, hydrology and seismic risk evaluation services
- Oversees Corporate Engineering Geologic & Hydrogeologic Technical Quality Control program.
- Coordinates litigation support services for water resources/water rights matters, environmental engineering standard-of-care, and environmental remediation, compliance ad toxic tort projects (CERCLA contribution, RCRA, SDWA, CWA)

Professional History

- Senior Hydrogeologist, Applied Environmental Services, Inc., Laguna Hills, California.
- Senior Engineering Geologist, Zeiser/Kling Consultants Inc., Costa Mesa, California.
- Engineering Geologist, Leighton & Associates, Inc., Irvine, California
- Research Assistant, Precambrian Paleobiology Research Group, UCLA

Experience Mr. Hendrix has over 25 years of complex hydrologic and hydrogeologic project experience, involving surface and ground water assessment, development, management, remediation, protection & litigation, including the following:

Remediation management for complex dissolved and separate-phase (NAPL) hydrocarbon groundwater plumes in multiple potable aquifers, large petroleum refinery, Carson, CA

Remediation management for complex dissolved and separate-phase (NAPL) hydrocarbon groundwater plumes in potable aquifer, large petroleum refinery, Paramount, CA

Remediation management of heavy-distillate NAPL contamination of complex faulted aquifer, petroleum refinery, Signal Hill, CA

Remediation of chlorinated solvent plume in potable aquifer, large aerospace manufacturing facility, Torrance, CA

Remediation of chlorinated solvent plume in potable aquifer, large aerospace manufacturing facility, Fullerton, CA

Aquifer testing & remediation of chlorinated solvent plume in Superfund NPL site, City of Industry, San Gabriel Valley Groundwater Basin

Aquifer characterization and fate & transport investigation, complex groundwater contamination site involving multiple chlorinated solvent sources, for litigation support, Santa Barbara, CA

Aquifer characterization, testing & assessment of potential contaminant plume capture by production wells, for litigation support, former Kaiser Steel Mill, Ontario, CA

Assessment of groundwater production sustainability for proposed large solar energy facility, Pleasant Valley Groundwater basin, Fresno County, CA (for State Energy Commission CEQA process)

CEQA / SB 610 water supply analysis for large commercial development project, Sacramento County, CA

CEQA Flood Hydrology & Coastal Erosion Investigation, City of Dana Point General Plan

Storm water runoff and pollutant loading study for harbor expansion, City of Dana Point

Surface flooding risk analysis for high-pressure MWD water pipelines, Rancho Santa Fe, CA

Surface water hydrology & pollutant loading study associated with large planned complex development, Irvine Lake, CA

Storm water runoff study related to wetlands development and CWA Section 404 streambed alteration, San Juan Capistrano

Groundwater model development to assess impacts of sewage discharge on production wells, Wrightwood, CA

Groundwater model development to assess impacts of hazardous waste landfill leachate on production well quality, Colton, CA

Groundwater model development to evaluate potential off-site migration of dissolved chlorinated solvent plume at large aerospace manufacturing facility, Torrance, CA

Seepage and groundwater source investigation for large landslide impacting hillside residential area, for litigation support, Anaheim, CA

Hydrologic investigation to determine sources of water causing hydrocollapse of fill slopes, for litigation support, Covina, CA

Watershed runoff and groundwater recharge study for new school construction, Cajon Valley, CA

Evaluation of seepage impacts to landslide occurrence, various sites throughout Orange, Los Angeles, Riverside and San Diego County

Surface and Subsurface Hydrogeologic Investigation & Production Well Feasibility Study, Wilder Ranch EIR & Specific Plan, Santa Cruz County, CA

Natural spring water supply feasibility investigations, La Jolla Indian Reservation, San Diego County, CA

Groundwater development investigations, Warner Springs and Lake Henshaw Basin, San Diego County, CA

Operational Yield Investigation and Draft AB 3030 Management Plan, Charnock Groundwater Basin, Los Angeles County, CA

Sentney Wellfield Development & Safe Yield Evaluation, Central Groundwater Basin, Los Angeles County, CA

Wellhead Protection, Aquifer Testing and Regional Contaminant Investigation, Concerto Wellfield, Forebay of Orange County Groundwater Basin

Wellhead Protection Investigation and Aquifer Testing, Claremont Groundwater Basin, Los Angeles County

Regional Groundwater Basin Evaluation, Groundwater Model Development and Wellhead Protection Study, USEPA Santa Monica Regional MTBE Contamination Project

Associations Member of Executive Committee,
Society of Sedimentary Geology (SEPM), Pacific Section
National Groundwater Association/Association of
Groundwater Scientists and Engineers (NGWA/AGWSE)
California Groundwater Resources Association (GRA)
Association of California Water Agencies (ACWA)
Association of Environmental & Engineering Geologists
American Society of Civil Engineers (ASCE)
American Association of Petroleum Geologists
(Division of Environmental Geosciences/Charter Member)
Geological Society of America *(Hydrogeology, Engineering Geology, Sedimentary Geology and Quaternary Geology Divisions)*

Awards & Honors

Dibblee Geological Foundation, Honorary Map Dedication DF-384, Rosamond & Rogers Lake Quadrangles, 2008

Sigma Xi Graduate Research Fellowship, UCLA, 1984-1986

Invited Speaker, Geological Society of America Penrose Conference, 1986, Ventura, CA, Miocene Tectonic Reconstruction of California

Invited Speaker, 2001 Geological Society of America Cordilleran Section Field Trip, Central Transverse Ranges & San Andreas Fault

Publications

(separate list available upon request)

PROOF OF SERVICE

I, Bonnie Heeley, declare that on June 18, 2010 I served and filed copies of the attached **TESTIMONY OF ERIC D. HENDRIX ON BEHALF OF THE CALIFORNIA UNIONS FOR RELIABLE ENERGY ON SOIL AND WATER RESOURCES OF THE GENESIS SOLAR ENERGY PROJECT**. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at http://www.energy.ca.gov/sitingcases/genesis_solar/Genesis_Solar_POS.pdf. The document has been sent to both the other parties in this proceeding as shown on the Proof of Service list and to the Commission's Docket Unit electronically to all email addresses on the Proof of Service list and by depositing in the U.S. Mail at South San Francisco, CA with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list to those addresses NOT marked "email preferred." I also sent a copy via email and an original and one copy via U.S. mail to the California Energy Commission Docket Office.

I declare under penalty of perjury that the foregoing is true and correct. Executed at South San Francisco, CA on June 18, 2010.

_____/S/_____
Bonnie Heeley

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