STATE OF CALIFORNIA

Energy Resources Conservation and Development Commission

In the Matter of:	
APPLICATION FOR CERTIFICATION FOR THE GENESIS SOLAR ENERGY PROJECT	DOCKET NO. 09-AFC-8

THE CENTER FOR BIOLOGICAL DIVERSITY

OPENING TESTIMONY, EXHIBIT LIST, EXHIBITS, AND PROOF OF SERVICE

June 18, 2010

Lisa T. Belenky, Senior Attorney
Center for Biological Diversity
351 California St., Suite 600
San Francisco, CA 94104
Direct: 415-632-5307
Fax: 415-436-9683
lbelenky@biologicaldiversity.org

Ileene Anderson
Public Lands Desert Director
Center for Biological Diversity
PMB 447, 8033 Sunset Boulevard
Los Angeles, CA 90046
(323) 654-5943
ianderson@biologicaldiversity.org

INTRODUCTION

Pursuant to the Revised Notice of Prehearing Conference and Evidentiary Hearing and Order issued April 1, 2010, and the Revised Committee Scheduling Order issued May 28, 2010, Intervenor Center for Biological Diversity (the "Center") provides this Opening Testimony regarding the application for certification of the proposed Genesis Solar Energy Project.

All of the testimony presented herein was prepared by the person testifying, a signed declaration and resume has also been provided for each person.

Center Attorney Lisa T. Belenky and Public Lands Desert Director Ileene Anderson assisted in compiling this testimony and the documents submitted. An Exhibit List and copies of the documents referenced in the opening testimony are filed concurrently with this testimony. The Center will file a copy of the complete exhibit list in Word Format as required by the Order along with the Prehearing Conference Statement in this matter.

The Center for Biological Diversity reserves the right to supplement and/or revise this testimony at any time up to and including the close of the evidentiary hearings. Moreover, many of the factual issues discussed in this Opening Testimony involve both legal and factual questions while others are predominately legal issues. Therefore, the Center respectfully reserves the right to address all disputed issues identified at the hearings through testimony, rebuttal, cross-examination, or at later stages of this process including in briefing following the evidentiary hearing.

The Center for Biological Diversity objects to the extremely accelerated schedule for this matter and incorporates by reference herein the Center's Request for Continuance of Pre-Hearing Schedule filed on June 15, 2010.

TESTIMONY SUBMITTED

1. **Testimony of Tom Myers, Re: Impacts to Water Resources from the Proposed Genesis Solar Energy Project, Declaration, Resume**

2. **Testimony of Ileene Anderson Re: Impacts to Sensitive Plants and Wildlife from the Proposed Genesis Solar Energy Project, Declaration, and Resume**

3. **Testimony of Bill Powers, P.E., Regarding Alternatives, Declaration, Resume**

EXHIBIT LIST

Intervenor Center for Biological Diverstity's Exhibits No. 800- 899.

Doc. No.	Author and title
Exhibit 800:	Anderson, T.W., 1995. Summary of the Southwest Alluvial Basins, Regional Aquifer-System Analysis, South-Central Arizona and Parts of Adjacent States. U.S. Geological Survey Professional Paper 1406-A. Docketed on June 18, 2010.
Exhibit 801:	Avon, L., and T. J. Durbin, 1994. Evaluation of the Maxey-Eakin method for estimating recharge to ground-water basins in Nevada. Water Resources Bulletin 30(1):99-109. Docketed on June 18, 2010.
Exhibit 802:	Constantz, J., K.S. Adams, and D.A. Stonestrom, 2007. Ground-Water Recharge in the Arid and Semiarid Southwestern United States – Chapter C. U.S. Geological Survey Professional Paper 1703C. Docketed on June 18, 2010.
Exhibit 803:	Leake, S.A., Greer W., Watt, D., and Weghorst, P., 2008, Use of superposition models to simulate possible depletion of Colorado River water by ground-water withdrawal: U.S. Geological Survey Scientific Investigations Report 2008-5189, 25 p. Docketed on June 18, 2010.
Exhibit 804:	Barrows, C.W. 1997. Habitat relationships of the Coachella Valley fringe-toed lizard (Uma inornata). Southwestern Naturalist 42(2): 218-223.
Exhibit 805:	Barrows, C.W., M.F. Allen and J.T. Rotenberry. 2006. Boundary processes between desert sand dune community and encroaching suburban landscape. Biological Conservation 131: 486-494.
Exhibit 806:	Brooks, M.L. 2000. Competition Between Alien Annual Grasses and Native Annual Plants in the Mojave Desert. American Midland Naturalist 144: 92-108.
Exhibit 807:	Brooks, M. L. and J. V. Draper. 2006. Fire effects on seed banks and vegetation in the Eastern Mojave Desert: implications for post-fire management, extended abstract, U.S. Geological Survey, Western Ecological Research Center, Henderson, Nevada, 3 p.
Exhibit 808:	Brooks, M.L. and R.A. Minnich. 2007. Fire in the Southeastern Deserts Bioregion. Chp 16 in: Sugihara, N.G., J.W. van Wagtendonk, J. Fites-Kaufman, K.E. Shaffer, and A.E. Thode (eds.). Fire in California Ecosystems. University of California Press, Berkeley.

Exhibit 809: Brown, D.E. and R.A. Minnich. 1986. Fire and Changes in Creosote Bush Scrub of the Western Sonoran Desert, CA. American Midland Naturalist 116(2): 411-422.

Exhibit 810: Dunn, R.R. 2005. Modern Insect Extinctions, the Neglected Majority. Conservation Biology 19 (4): 1030-1036.

Exhibit 811: Dutcher, K. E. 2009. The effects of wildfire on reptile populations in the Mojave National Preserve, California. Final Report to the National Park Service, California State University, Long Beach. Pgs 28.

Exhibit 812: Erickson, W.P., G. D Johnson, and D.P. Young, Jr. 2005. A Summary and Comparison of Bird Mortality form Anthropogenic Causes with an Emphasis on Collisions. USDA Forest Service Gen. Tech. Rep. PSW-GTR-191. pgs. 1029-1042.

Exhibit 813: Esque, T.C., K. E. Nussear, K. K. Drake, K. H. Berry, P.A. Medica, and J.S. Heaton 2009. Amendment to Desert Tortoise Translocation Plan for Fort Irwin's Land Expansion Program at the U. S. Army National Training Center (NTC) & Fort Irwin. Prepared for U.S. Army National Training Center, Directorate of Public Works. May 1, 2009. Pgs 24.

Exhibit 814: Gowan,T. and K.H. Berry 2010. Health, Behavior and Survival of 158 Tortoises Translocated from Ft. Irwin: Year 2. Desert Tortoise Council Symposium Abstracts 2010. http://www.deserttortoise.org/abstract/2010DTCSymposiumAbstracts.pdf

Exhibit 815: Institute for Bird Populations (IBP) 2008. Breeding Burrowing Owl Survey Newsletter, Spring 2008. pgs.4.

Exhibit 816: Kelly, A.E. and M. L. Goulden. 2008. Rapid shifts in plant distribution with recent climate change. Proceedings of the National Academy of Sciences 105(33): 11823-1126.

Exhibit 817: Klem, D. 1990. Collisions Between Birds and Windows: Mortality and Prevention. Journal of Field Ornithology 61(1): 120-128.

Exhibit 818: Leppig, G. and J.W. White. 2006 Conservation of peripheral plant populations in California. Madrono 53(3): 264-274.

Exhibit 819: Lovich, J. E. and D. Bainbridge 1999. Anthropogenic Degradation of the Southern California Desert Ecosystem and Prospects for

Natural Recovery and Restoration. Environmental Management 24(3): 309-326.

Exhibit 820: McCrary, M.D. 1986. Avian Mortality at a Solar Energy Power Plant. Journal of Field Ornithology 57(2): 135-141

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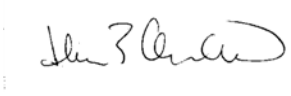
Respectfully submitted,

Date: June 18, 2010



Ileene Anderson
Public Lands Desert Director
Center for Biological Diversity
PMB 447, 8033 Sunset Boulevard
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ianderson@biologicaldiversity.org

Lisa T. Belenky, Senior Attorney
Center for Biological Diversity
351 California St., Suite 600
San Francisco, CA 94104
Direct: 415-632-5307
Fax: 415-436-9683
lbelenky@biologicaldiversity.org

STATE OF CALIFORNIA

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In the Matter of:	
APPLICATION FOR CERTIFICATION FOR THE GENESIS SOLAR ENERGY PROJECT	DOCKET NO. 09-AFC-8

INTERVENOR CENTER FOR BIOLOGICAL DIVERSITY

Testimony of Tom Myers

Re: Impacts to Water Resources from the Proposed Genesis Solar Energy Project

Docket 09-AFC-8

Summary of Testimony

The proposed project will have a significant impact to water resources that have not been adequately addressed to date. The SA and Revised SA and the hydrology reports from the applicant's contractor vastly underestimate the impacts the proposed project will have on the groundwater balance and flow systems of Chuckwalla Valley and the nearby Colorado River. As an initial matter, the recharge to the basin is overstated by many times which leads to a significant overestimate of the perennial yield. Moreover, the discussion of the deep aquifer and the impacts of the proposed pumping of up to 1650 af/y on the shallow aquifer are based on unsubstantiated assumptions of the aquifer and inaccurate groundwater modeling. As a result, the identification and analysis of impacts of the proposed water use is inadequate.

The proposed project in itself as well as in conjunction with other cumulative projects would significantly impact groundwater resources and cause far larger drawdown of the aquifer than acknowledged in the SA and Revised SA.

Qualifications

My qualifications are provided on my Resume attached to this Testimony and as discussed below.

I have over 25 years of experience as a hydrogeologist, primarily in Nevada but also including California and the Mojave Desert. Approximately 16 of those years have been

as an independent consultant based in Nevada and working throughout the western United States, including the Great Basin and Mojave Desert of California.

I have a Ph.D and M.S. in Hydrology/Hydrogeology from the University of Nevada Reno. I have a B.S. in Civil Engineering from the University of Colorado. I have continuing education in various aspects of hydrogeology, including fractured rock analysis, groundwater monitoring, and environmental forensics from MidWest Geosciences and National Groundwater Association.

I have published articles on hydrological issues, including groundwater modeling, stochastic modeling, and river morphology in peer-reviewed scientific journals such as the *Journal of Hydrology* and presented papers/posters at professional meetings of hydrologists and water resource professionals.

I have provided expert testimony on hydrological issues and water resources in proceedings before the Nevada State Engineer, Nevada State Environmental Commission, and Billings Federal District Court.

Statement

The project applicant's Groundwater Resources Investigation (GWRI) and Supplement Groundwater Resources Investigation (SGWRI) are inaccurate. The Discussion of Water Resources in the Staff Assessment (SA) and Revised SA are also incomplete and inaccurate. This statement is a review of those documents and is organized into three broad categories: Water Balance, Groundwater Model, and Impact on the Colorado River, along with a References section.

Water Balance

The GWRI discusses various aspects of the water balance and perennial yield for Chuckwalla Valley. With the exception of discharge, the GWRI grossly overestimates all of the water balance components, as explained in the following comments.

1) Water balance is a simple concept in that inflow equals outflow. In groundwater hydrology, it is common to consider water balance at steady state or for pre-development conditions. In this case for predevelopment conditions, recharge plus interbasin inflow equals discharge through evapotranspiration (ET) and springs plus interbasin outflow.
2) The GWRI (at 34) estimates discharge to evapotranspiration (ET) at Palen Lake to be approximately 350 af/y. The discharge is mostly through exfiltration. This estimate is reasonable.
3) The GWRI (at 31) estimates interbasin outflow to Palo Verde Valley to be approximately 400 af/y. This estimate also appears reasonable although it is not possible to examine the original reference. Rather, considering the cross-section from the GWRI, Figure 4, the flow passes a trapezoidal area about 1500 foot thick at its thickest point and about six miles wide for an area about 35,000,000 ft^2 or

4) The estimate for interbasin inflow from Pinto and Orocopia Valley, at 3500 af/y, is very high. To be correct there must be that much recharge in those valleys. Considering the discussion below on recharge for Chuckwalla Valley, such an estimate appears to be very high. Also, the width of the boundary with Chuckwalla Valley, shown on GWRI Figure 6, appears to be less than the boundary with Palo Verde Valley which had been estimated to have just a little more than one-tenth of the estimated inflow from Pinto Valley.
5) Pumping is not part of the pre-development, steady state discharge. It should not be included in the GWRI Table 3-5.
6) Ignoring the pumpage (discussed in the GWRI (at 26-30)), the natural discharge from the valley appears to be approximately 750 af/y.
7) Recharge and interbasin inflow therefore must balance the steady state discharge.

The GWRI has a long discussion on recharge trying to justify an estimate that exceeds the natural discharge by ten times or more. For many reasons, the estimate of recharge is incorrect.

8) The in-basin recharge estimate is grossly too high, based on a comparison with other methods used in the southwest and based on a detailed consideration or understanding of the principles of recharge.
9) The applicant cites favorably the Maxey-Eakin method as an empirical method used in arid basins throughout the Southwest (GWRI, at 23). The report fails to note that application of the method in the Chuckwalla Valley would yield an estimated recharge equal to zero. This is because the Maxey-Eakin method established a recharge efficiency coefficient equal to zero for precipitation zones less than 8 inches/year (in/y) (Avon and Durbin, 1994, at 100). (I used Avon and Durbin (1994) to reference the Maxey-Eakin method because it best describes the methodology and assesses its accuracy.)
10) The GWRI criticizes the Maxey-Eakin recharge methodology citing to Lerner et al (1990); the reference list does not include the citation for this reference so the basis of the criticism cannot be assessed.
11) Avon and Durbin (1994, at 109) estimated new coefficients, finding that for basins with precipitation less than 8 inches the coefficients would be 1.1%; the GWRI does not mention this. Thus, Avon and Durbin's coefficient for areas with less than 8 in/y precipitation implicitly acknowledges that recharge will occur in any basin because there will be wetter years with runoff that does infiltrate into the fans causing recharge. If 1.1% applies to the Chuckwalla basin, the recharge would be about 3465 af/y, or about 1/3rd the value estimated in the GWRI (at 24).
12) Another methodology used in the Southwest and developed by the US Geological Survey is the Anderson method (Anderson, 1995) which also limits recharge to basins which have average precipitation in excess of eight inches (*Id.*, at A16).
13) The GWRI references a US Geological Survey study to claim that basinwide recharge rates, for arid Southwestern basins, vary from 3 to 7% of the basinwide precipitation (GWRI, at 23). The citation is to USGS (2007), which is a

14) The USGS recharge sites described in Constantz et al (2007) differ substantially from Chuckwalla Valley in that they have significantly higher elevation and would have significantly less potential ET (PET) than does the Chuckwalla Valley. The Mojave River site faces north and the Amargosa River site is both higher and significantly further north. Both would lead to lower PET than in Chuckwalla Valley. More PET would increase the amount of exfiltration of the infiltrated runoff, thereby decreasing the amount of alluvial fan infiltration which actually becomes recharge.
15) The Mojave River and Amargosa River sites (Constantz et al 2007) are closest in climate and geology to the Chuckwalla Valley. The altitude of the two gages is 1003 and 1234 m amsl (3290 and 4048 ft, respectively), which exceeds the elevation of the lower end of Chuckwalla Valley by from 3000 to 3800 feet. Both of these USGS study watersheds have significantly higher elevation areas which likely have much higher precipitation than does the higher elevations in the Chuckwalla Valley.
16) Waste water and irrigation return flow is not part of the steady state recharge.

The overall groundwater budget discussion mixes development stresses and natural fluxes, as if they should balance (GWRI, at 34, 35). When development occurs, the new discharge initially causes groundwater to be released from storage. As the water table or potentiometric surface lowers, the new discharge begins to capture natural discharge from some area. In this case, it appears the basin is currently being pumped at rates exceeding the perennial yield, as noted below.

17) The GWRI cites a perennial yield estimate of 12,200 af/y, based on Hanson (1992). This reference is a letter, not a peer-reviewed or even agency-reviewed analysis of the amount of water available from the basin. It should not be considered authoritative and should not be relied upon when considering water availability.
18) The GWRI does not estimate perennial yield, but provides a groundwater balance table to suggest that the amount of water available is of the order of the Hanson perennial yield.
19) The groundwater budget table (GWRI, Table 3-5 at 35) shows substantial pumpage – most is in western Chuckwalla Valley. The 1992 groundwater contour map (GWRI, at Figure 11) does not include this area around Desert Center. The hydrographs presented for western Chuckwalla Valley do not continue into the 21st century, the time period for which most of the reported pumping has occurred. Therefore, there is no estimate of the drawdown which must be occurring. At no point does the GWRI consider this flux from storage to the water balance. It would be part of a current water balance for the valley, but the GWRI does not present such a water balance.

20) Using the Avon and Durbin (1994) Maxey-Eakin coefficient estimate and accepting for the sake of argument the 3500 af/y inflow from Pinto and Oracopia Valley, the total natural inflow to the valley would be 6965 af/y. Subtracting the 350 af/y ET discharge at Palen Lake, the interbasin flow to Palo Verde Valley would be 6615 af/y, which would require a conductivity of 28 ft/d, based on the cross-section for flow to Palo Verde Valley described in comment 3. This is much higher than any average that could be obtained using conductivity values in the GWRI. It is therefore reasonable to conclude that overall inflow to the basin is overestimated and that natural discharge is underestimated.
21) If an average of the inflow and outflow estimates is used, the flux through the valley would be an average of 6965 af/y and 750 af/y, as derived above in comments 2, 3, and 20, or about 3850 af/y. Note that this would require a discharge to Palo Verde Valley of 3500 af/y which would require conductivity equal to 14.8 ft/d, still a very high value. Based on this estimate, the project would pump, and consumptively use, about 41% of the natural flux through the basin.
22) Based on the estimate of 3850 af/y as pre-development flux through Chuckwalla Valley, the perennial yield is currently exceeded by the existing pumping near Desert Center and the prison. There is no water available in the Chuckwalla Valley based on the concept of perennial yield for the basin based on the average from comment 21 and the pumping estimates in the GWRI (at Table 3-5).

The summary of the water budget for the valley is as follows. The valley is arid with little in-basin recharge and interbasin flow passing through from upgradient to the Colorado River floodplain. The estimated fluxes that can be considered predevelopment values presented in the GWRI do not balance. The estimated inflow from Pinto/Oracopia Valleys is about three times the estimated ET discharge and interbasin flow to Palo Verde Valley; add any of the in-basin recharge estimates from the GWRI and the natural inflow to the basin far exceeds the natural discharge – a situation that cannot be correct, which demonstrates the GWRI contains errors that were not considered within the document.

Comments 21 and 22 lay out an argument for a perennial yield that is much less than the 12,000 af/y discussed in the GWRI and referenced by the SA. Using an average flux through the valley based on the pre-development estimates of recharge and discharge, the proposed pumping is about 41% of the perennial yield or flux through the basin. Current pumpage exceeds this natural flux by more than two times. Adding the project to the existing demands of 10,475 af/y (GWRI, Table 3-5), more than 12,000 af/y would be removed from the basin annually. This is about 3.1 times a reasonable perennial yield estimate of 3850 af/y.

Groundwater Model

The applicant's groundwater model is insufficient to predict the impacts of this project. It is poorly designed and calibrated. The following comments are specific to its development and use.

23) The authors call the model impact modeling (GWRI, at 44) which means they are only considering drawdown from pumping and not trying to implement the conceptual flow model of the valley. The model considers neither recharge nor discharge. The model does not account for the heterogeneous aquifers in the basin.
24) There is no justification for the number of layers chosen for the model. The model assumes each layer extends continuously over the entire model domain which ignores the heterogeneity present in the basin. Every layer with low conductivity is assumed to provide an unbroken barrier across the entire domain, again without justifying data.
25) The supplemental GWRI also indicates the layers are not continuous. "The general sequence of sediments described above appears substantially similar to other closely logged borings in the eastern Chuckwalla Valley; however, the **depths of specific coarse grained units cannot be widely correlated** based on the available data. Based on this observation and the results of the pumping test of units in the middle Bouse Formation, described below, **coarse grained units in this part of the basin appear to be of relatively limited lateral continuity**" (SGWRI, at 4).
26) If the coarse grained unit are of "limited lateral continuity", as indicated in the quote in the previous bullet, it is absolutely unjustified to model the coarse units as continuous layers, as was done in the model.
27) If the depths of the units cannot be "widely correlated", also as noted in bullet 25, dividing the domain into a dozen layers with valleywide continuity is absolutely unjustified.
28) The geophysical log provided for well OBS-2 does not justify the layering or assigned/calibrated conductivity values at the well, except, possibly the confining clay layer observed 260 to 280 ft bgs. However, the model simulates that clay in layers 3 and 4, which are 39 feet thick (GWRI, at Figure 21), not the 20 feet observed on the log.
29) All layers below the clay, in the model, have horizontal conductivity high enough to yield sufficient water to the proposed well ($Kh \geq 0.1$ ft/d), but the assigned vertical conductivity is very low, leading to a high vertical anisotropy and a tendency for the model to prevent vertical flow.
30) The geophysical log shows substantial poorly graded sand between 360 and 410 ft bgs. This zone should have the highest conductivity, based on gradation, but spans part of layers 7 and 8 with Kh=3 ft/d. Deeper layers which show more clay interbedded with the sand have higher conductivity, near 15 ft/d. The proposed pumping would be constructed in these lower layers. The model layers do not match nor are justified by the geophysical log; the high horizontal and low vertical conductivity values for layers that do not correspond with the geophysical log, could limit the drawdown so that most is limited to deeper layers.
31) The model simulates clay in layers 3 and 4. Because of its extremely low vertical conductivity, it controls the drawdown in overlying layers. The model assumes that the clay layer separating the Bouse formation from the overlying alluvium extends over the entire model domain. This assumption is absolutely without justification because the report provides **no supporting data** to show it is

The model calibration was based on a seven-day pump test completed for near the proposed project location. The GWRI presents a substantial amount of sensitivity analysis, which apparently is an attempt to substitute for a decent flow model of the basin and to adequately calibrate/validate it. The following comments demonstrate the problems with the calibration and sensitivity analysis and explain why it is no substitute for an accurate model.

32) The calibration effectively considers groundwater level responses measured during a 7-day pump test at one point in the valley. The **calibration is for essentially a single point** when the model is of a large basin.
33) The calibration pump test pumped at 87 gpm but the project will pump at 1000 gpm. The **pump test does not stress the aquifer sufficiently** to assess how it would perform with pump rates closer to that required for this project.
34) The pump test well was screened between 350 and 550 feet bgs (lithologic log for TW-1 in GWRI App 2), but the proposed pumping well will be screened from 800 to 1800 ft bgs. **Thus, the calibration data available for this project is for pumping an aquifer layer not targeted for pumping for this project**.
35) Fluctuations in the observed data for OBS #2_270 and Transducer #2_315 indicate that **barometric pressure may have affected the values**. The report does not indicate whether barometric pressure adjustments were made. Because the level changes for these wells were less than 1.5 feet, the variability induced by not considering pressure changes could have biased the calibration.
36) The calibration sensitivity analysis (GWRI, at Tables 4-4, 4-5) shows that the results depend on the chosen vertical conductivity in the clay layer. Drawdown in the layer 3 and layer 5 observation wells was roughly 2.5 to 3 times higher for a one order of magnitude increase in clay layer vertical conductivity. Although the absolute values are small, the drawdown in the unconfined well OBS-1 is **36 times greater** for the same increase in clay layer vertical conductivity. **The model depends on the (supposedly) calibrated vertical conductivity to limit drawdown in the unconfined alluvial layer**.
37) The validation model runs using the prison wells (GWRI, at 52) do not prove the model's ability to predict drawdown. **A three-day validation does not compare with a 33-year simulation period**. After just three days, the simulated drawdown varies from observed by from 15 to 25% - this is not reasonably close – based on the sensitivity analyses completed in the GWRI they suggest the transmissivity is off by a factor of 10, at least. The residuals in the validation are that the simulation underestimated the drawdown (GWRI, App 8, figures for WP-38 and -39)

The GWRI presents drawdown estimates for specific locations, a map of drawdown, and predicted changes in boundary flows. Because the model is based on so little data and lots of unwarranted assumptions, there is little confidence in the results. The sensitivity analyses actually demonstrate the lack of confidence in the predictions and the boundary

flows show that the impacts even with the "calibrated" data are significant. The following comments demonstrate the uncertainty in the predictions and the certainty that impacts are significant.

38) The magnitude of boundary flow changes is estimated with the model to be about 20% of the pumping rate after just 33 years (GWRI, Table 4-9). Even if pumping ceases at 33 years, the changes in boundary flow will continue to increase as drawdown recovers. This magnitude of change shows that this project will have a major effect on the water balance of the Chuckwalla Valley and significantly change flows to and from adjoin basins, such as the Palo Verde Valley (the Colorado River floodplain aquifer).
39) The GWRI (at 64) inappropriately calls this decrease in flow to Palo Verde Valley "insignificant" without considering the water budget of that valley. The decrease in flow is about 80% of the predicted 400 af/y flow to Palo Verde Valley (GWRI, at 31). This is most definitely significant. See also the discussion on water budget above.
40) Increasing the vertical conductivity in the clay layers 3-6 tripled the drawdown in the water table aquifer. The magnitude of the changes remains small which demonstrates the importance of the clay layering in the model to the results presented in the GWRI. The assumed clay layer in the model is necessary to "protect" surface aquifers and prevent deep pumping from drawing salty water into the deeper layers.
41) Decreasing the horizontal conductivity in the pumping layer to one tenth the "calibrated" value increased drawdown at the pumping well from about 10 to 70 feet. By itself, this is a huge difference in drawdown. However, this change increased the drawdown in the water table by more than six times, over twice as much as lowering the vertical conductivity, because the increased drawdown at the well increased the gradient drawing flow from the water table layer.
42) The GWRI completely fails to consider the effects of different drawdown by layer because it does not report the changes in flux among layers; because the project seeks to prevent drawing salty near-surface water into the deeper layers, the report should have honestly presented this important aspect of the sensitivity analysis.

An accurate full groundwater model of the project is needed. There appears to be sufficient well and pumping data available in Chuckwalla Valley, and presented in the appendices of the GWRI, to develop a proper groundwater model using justifiable assumptions. Considering the magnitude of the proposed pumping with the flux in the water balance for the valley, a full groundwater model is the only way to estimate the long-term impacts of the project.

Impact on the Colorado River

The Chuckwalla Valley is tributary to the Colorado River, which means that all of the flux from the valley will eventually reach the river. It also means that all of the pumpage will eventually be lost to the Colorado River. This is basic water balance analysis.

However, it will take a long time and the management of the Colorado River is generally based on consideration of more finite time frames.

The GWRI applied Leake et al (2008) and found that the proposed pumping will occur in an area where just 1% of the pumping will be depleted from the Colorado River after 100 years. They are wrong. The one percent value would have been based on the lower transmissivity estimate by Leake et al (2008); this estimate is inaccurate because based on flow and cross-section values discussed in comment 3, the transmissivity is about 15,750 ft^2/d (although through the valley it would be variable). This is between the values used by Leake et al (2008), which suggests the depletion from the Colorado River from the proposed pumping would be between 1 and 10%.

Conclusions

I would like to summarize my conclusions as follows:

Current pumping in Chuckwalla Valley far exceeds the perennial yield, which has been estimated in the past and it the GWRI to be much higher than it should have been estimated. This project would make the pumping in the valley exceed a more reasonable perennial yield estimated by more than three times. The groundwater model used by the applicant is insufficient for analyzing the impacts and is biased, through clay layering in the model, to underestimate the drawdown. All of the water withdrawn for this project will eventually deplete flows in the Colorado River because the only interbasin discharge from Chuckwalla Valley is to Palo Verde Valley, an alluvial valley in significant connection with the Colorado River.

References

Exhibit 800: Anderson, T.W., 1995. Summary of the Southwest Alluvial Basins, Regional Aquifer-System Analysis, South-Central Arizona and Parts of Adjacent States. U.S. Geological Survey Professional Paper 1406-A.

Exhibit 801: Avon, L., and T. J. Durbin, 1994. Evaluation of the Maxey-Eakin method for estimating recharge to ground-water basins in Nevada. Water Resources Bulletin 30(1):99-109.

Exhibit 802: Constantz, J., K.S. Adams, and D.A. Stonestrom, 2007. Ground-Water Recharge in the Arid and Semiarid Southwestern United States – Chapter C. U.S. Geological Survey Professional Paper 1703C.

Exhibit 803: Leake, S.A., Greer W., Watt, D., and Weghorst, P., 2008, Use of superposition models to simulate possible depletion of Colorado River water by ground-water withdrawal: U.S. Geological Survey Scientific Investigations Report 2008-5189, 25 p.

Declaration of Tom Myers

Re: Impacts to Water Resources from the Proposed Genesis Solar Energy Project

Docket 09-AFC-8

I, Tom Myers, declare as follows:

1) I am currently a Hydrologic Consultant and have held this position for 16 years.

2) My relevant professional qualifications and experience are set forth in the attached resume and the testimony above and are incorporated herein by reference.

3) I prepared the testimony attached hereto and incorporated herein by reference, relating to the impacts of the proposed project on water resources.

4) I prepared the testimony above and incorporated herein by reference relating to the proposed Genesis Solar Energy Project in Riverside County, California.

5) It is my professional opinion that the testimony above is true and accurate with respect to the issues that is addressed.

6) I am personally familiar with the facts and conclusions described within the testimony above and if called as a witness, I could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: ____June 16, 2010_____ Signed: 

At: __Reno, NV_____

Tom Myers, Ph.D.
Consultant, Hydrology and Water Resources
6320 Walnut Creek Road
Reno, NV 89523
(775) 530-1483
tommyers@gbis.com

Statement of Qualifications

Tom Myers is a researcher and consultant in hydrogeology and water resources. Tom specializes in groundwater modeling, hydrogeology, environmental forensics, regulatory compliance, water rights, NEPA analysis, and environmental and water policy. He focuses on mining and water resource development issues, coal-bed methane development and groundwater contamination.

With a Ph.D. and M.S. in hydrology/hydrogeology and more than 28 years experience as a consultant, government planner, academic researcher, teacher and advocate for environmental responsibility and good science, Tom brings a strong technical, regulatory, and public relations background to his work. His work includes major hydrology studies for federal government, hydrogeologic assessments for county governments, expert and evidence reports for use in litigation and administrative hearings, expert witnessing for private industry and nonprofit groups, and testimony to Congress and National Academy of Science. Tom has testified as an expert before the Nevada State Engineer and State Environmental Commission. He has provided evidentiary testimony before federal court in Billings MT.

Because of his experience as a watchdog of government agencies and different industries, Tom has a unique background from which he draws on as a consultant. For example, he has worked to locate the source of pollution from many mines or to determine the cause of drawdown at private wells. He combines a strong technical background with a working knowledge of state environmental and federal NEPA, BLM mining, water law and Clean Water Act regulations which enables him to work with attorneys and conservation groups.

Tom's experience and training uniquely qualifies him to provide diverse and affordable services to clients ranging from nonprofit conservation groups to law firms, industry and governments in many areas of hydrogeology and environmental and water policy. His client base includes nonprofit conservation groups, Native American tribes, the federal government and private industry.

Client List

NON-PROFIT ORGANIZATIONS	***GOVERNMENTAL ENTITIES***
Natural Resources Defense Council	Pima County, AZ
Great Basin Resource Watch	White Pine County, NV
Greater Yellowstone Coalition	Anaconda-Deer Lodge County, MT
Great Basin Water Network	Town of Indian Springs, NV
Keep Local Water Local	Bureau of Land Management, Carson City, NV
Citizens Looking at Impacts of Mining	University of Nevada, Reno
Defenders of Wildlife	***PRIVATE INDUSTRY***
Northern Plains Resource Council	Yonkee and Toner, LLC, Sheridan WY
McCloud Watershed Council	Public Resource Associates, Reno, NV
	Kuipers and Associates, Butte, MT

Tom Myers, Ph.D.
Consultant, Hydrology and Water Resources
6320 Walnut Creek Road
Reno, NV 89523
(775) 530-1483
tommyers@gbis.com

Curriculum Vitae

Objective: To provide diverse research and consulting services to nonprofit, government, legal and industry clients focusing on groundwater modeling, hydrogeology, environmental forensics and compliance, NEPA analysis, federal and state regulatory review, fluvial morphology and environmental and water policy.

Education

Years	Degree	University
1992-96	Ph.D. Hydrology/Hydrogeology	University of Nevada, Reno Dissertation: Stochastic Structure of Rangeland Streams
1990-92		University of Arizona, Tucson AZ Classes in pursuit of Ph.D. in Hydrology.
1988-90	M.S. Hydrology/Hydrogeology	University of Nevada, Reno Thesis: Stream Morphology, Stability and Habitat in Northern Nevada
1981-83		University of Colorado, Denver, CO Graduate level water resources engineering classes.
1977-81	B.S., Civil Engineering	University of Colorado, Boulder, CO

Special Coursework

Years	Course	Sponsor
2009	Fractured Rock Analysis	MidWest Geoscience
2005	Groundwater Sampling Field Course	Nielson Environmental Field School
2004	Environmental Forensics	National Groundwater Association
2004 and -5	Groundwater and Environmental Law	National Groundwater Association
1998	MapInfo GIS Systems	MapInfo Corporation Tutorial
1993	Applied Fluvial Morphology	Wildlands Hydrology
1988	Fortran Programming	University of Nevada, Las Vegas

Professional Experience

Years	Position	Duties
1993-Pr.	Hydrologic Consultant	Surface, groundwater and systems modeling, hydrogeology studies, stream restoration design, watershed modeling studies and expert testimony for industry, nonprofit groups, and government agencies.
1999-2004	Great Basin Mine Watch Executive Director	Responsible for reviewing and commenting on mining projects with a focus on groundwater and surface water resources, preparing appeals and litigation, writing reports about mining, fundraising, organizational development, supervision and personnel management.
1992-1997	University of Nevada, Reno Research Associate	Research on riparian area and watershed management including stream morphology, aquatic habitat, cattle grazing and low-flow and flood hydrology.
1990-1992	University of Arizona, Tucson Research and Teaching Assistant	Research on rainfall/runoff processes and climate models. Taught lab sections for sophomore level "Principles of Hydrology". Received 1992 Outstanding Graduate Teaching Assistant Award in the College of Engineering
1988-1990	University of Nevada, Reno Research Assistant	Research on aquatic habitat, stream morphology and livestock management.
1983-1988	US Bureau of Reclamation, Boulder City, NV Hydraulic Engineer	Performed hydrology planning studies on topics including floodplains, water supply, flood control, salt balance, irrigation efficiencies, sediment transport, stream morphology, flood frequency, rainfall-runoff modeling and groundwater balances.
1981-1983	Faulkner-Kellogg and Assoc., Lakewood Co Design Engineer	Basic drainage, grading and subdivision design. Flood control studies.

Representative Reports, Presentations and Projects

Myers, T., 2009. Monitoring Groundwater Quality Near Unconventional Methane Gas Development Projects, A Primer for Residents Concerned about Their Water. Prepared for Natural Resources Defense Council. New York, New York.

Myers, T., 2009. Technical Memorandum, Review and Analysis of the Hydrology and Groundwater and Contaminant Transport Modeling of the Draft Environmental Impact Statement Blackfoot Bridge Mine, July 2009. Prepared for Greater Yellowstone Coalition, Idaho Falls, Idaho.

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Myers, T., 2008. Hydrogeology of the Santa Rita Rosemont Project Site, Numerical Groundwater Modeling

of the Conceptual Flow Model and Effects of the Construction of the Proposed Open Pit, April 2008. Prepared for: Pima County Regional Flood Control District, Tucson AZ.

Myers, T., 2008. Technical Memorandum, Review, Record of Decision, Environmental Impact Statement Smoky Canyon Mine, Panels F&G, U.S. Department of the Interior, Bureau of Land Management. Prepared for Natural Resources Defense Council, San Francisco, CA and Greater Yellowstone Coalition, Idaho Falls, ID. Reno NV.

Myers, T., 2007. Affidavit: Effects of CBM Development by the Fidelity CX Ranch in the Montana Powder River Basin. Prepared for Northern Plains Resource Council.

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Myers, T., 2007. Review of Hydrogeology and Water Resources for the Final Environmental Impact Statement, Smoky Canyon Mine, Panels F and G and Supporting Documents. Prepared for Natural Resources Defense Council, San Francisco, CA and Greater Yellowstone Coalition, Idaho Falls, ID. Reno, NV. December 12, 2007.

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Myers, T., 2006. Review of Nestle Waters North America Inc. Water Bottling Project Draft Environmental Impact Report / Environmental Assessment. Prepared for McCloud Watershed Council, McCloud CA.

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Myers, T., 2005. Review of Draft Supplemental Environmental Impact Statement, Ruby Hill Mine Expansion: East Archimedes Project NV063-EIS04-34, Technical Report 2005-05-GBMW. Prepared for Great Basin Mine Watch.

Myers, T., 2005. Hydrogeology of the Powder River Basin of Southeast Montana, Development of a Three-Dimensional Groundwater Flow Model. Prepared for Northern Plains Resource Council, Billings, MT in support of pending litigation.

Myers, T., 2005. Nevada State Environmental Commission Appeal Hearing, Water Pollution Control Permit Renewal NEV0087001, Big Springs Mine. Expert Report. Prepared for Great Basin Mine Watch, Reno NV.

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STATE OF CALIFORNIA

Energy Resources Conservation and Development Commission

In the Matter of: APPLICATION FOR CERTIFICATION FOR THE GENESIS SOLAR ENERGY PROJECT	DOCKET NO. 09-AFC-8

INTERVENOR CENTER FOR BIOLOGICAL DIVERSITY

Testimony of Ileene Anderson

Re: Impacts to Sensitive Plants and Wildlife from the Proposed Genesis Solar Energy Project

Docket 09-AFC-8

Summary of Testimony

The proposed project will be detrimental to numerous rare species. In some instances the Revised Staff Assessment (Revised SA) fails to evaluate the presence of rare species and identify impacts. Elsewhere, the Revised SA fails to adequately avoid, minimize and mitigate the impacts to these rare species as required under CEQA (and NEPA).

The proposed project in itself as well as in conjunction with other cumulative and connected projects will further imperil already rare species driving them closer to extinction and will likely result in the need for additional species to be safeguarded under Endangered Species Act protection.

Qualifications

My qualifications are provided on my Resume attached to this Testimony and as discussed below.

I have over 20 years of experience in identifying, surveying for and documenting biological resources in southern California, including the Mojave desert.

I have a Master's of Science in Biology and a Bachelor's of Arts in Biology from the California State University, Northridge. I have continuing education in restoration/revegetation/reclamation of native habitats at the University of California, Riverside.

I have directed and participated in numerous field surveys for federal- and state-listed threatened and endangered species, as well as other rare and common species. I have written results in conformance with the California Environmental Quality Act and the National Environmental Policy Act.

I have written, implemented and monitored a variety of restoration and revegetation plans, primarily implemented as mitigation.

I have published articles on these subjects in peer-reviewed scientific journals and presented papers/posters at scientific meetings.

I have provided expert testimony on plant and animal issues at State Water Resources Control Board, California Public Utilities Commission and the California Energy Commission hearings.

I was a two-term federal appointee to the BLM's California Desert Advisory Council representing renewable resources, and served one year as chairperson.

I am currently a staff biologist with the Center for Biological Diversity, where I focus on native natural resource issues primarily in southern California, including desert regions of Riverside County.

Statement

After my review of the biological sections of the Revised Staff Assessment, I agree with Staff that the project as proposed would have major impacts to the biological resources near Ford Dry Lake, affecting sensitive plant and wildlife species and eliminating a broad expanse of relatively undisturbed Coloradan Desert habitat (Revised SA at C.2-1). However, I also found that the Revised SA appears to have been prepared without essential data sets being available. For example, the Revised SA notes "Staff has no information from the Applicant regarding the habitat types that would be permanently and temporarily impacted by the construction of the six power poles" (Revised SA at pg. C.2-69). Therefore it can not and does not comprehensively assess the impacts from all aspects of the proposed project on the biological resources as thoroughly as is needed to inform decision makers about the comprehensive impacts of the project. Typically a project of this size would involve many seasons of surveys to thoroughly document all of the resources that occur on the site. Multiple years of surveys are particularly important in the desert because of the unpredictable and variable precipitation patterns. Failure to conduct sufficient surveys prior to decision making for the project also effectively eliminates the most important function of surveys - using the information from the

surveys to avoid and/or minimize harm caused by the project and reduce the need for mitigation. Often efforts to mitigate harm are far less effective than preventing the harm in the first place. In addition, without understanding the scope of harm before it occurs, it is difficult to quantify an appropriate amount and type of mitigation.

Wildlife

The generalized strategy of 1:1 mitigation for the loss of tortoise habitat is also proposed by the Staff to mitigate a multitude of other species – golden eagles, migratory/special status species birds, bats, badger, kit fox, and rare plants. My overarching concern is that acquired mitigation lands which must be habitat for these impacted species, is already inhabited by the same species for which mitigation is sought. Effectively, this mitigation strategy ensures a *net decrease* in habitat for impacted species. To actually provide mitigation that benefits the species, the ratio must be higher than 1:1. I discuss additional species specific issues below.

Desert Tortoise

I recognize that based on the information provided in the Revised SA no recent desert tortoise sign was found on the proposed project site, and if desert tortoise do inhabit the site, it is likely at very low density. If desert tortoise are found on the proposed project site, the proposal is to move any desert tortoise through relocation. Gowan and Berry[1] reported at the Desert Tortoise Council Symposium on February 27, 2010, results of monitored desert tortoises on the Fort Irwin translocation site. An overall 45% mortality of translocated desert tortoise has been documented since the translocation occurred 2008 and the last surveys in 2009. In review of the Draft Desert Tortoise Translocation Plan for the Genesis Solar Energy Project[2], several issues fail to be addressed as part of that plan. Any desert tortoise located in the proposed project site is proposed to be relocated onto BLM lands north, east or west of the facility site[3]. However, the eastern part of the proposed project site and further east is part of the Palen McCoy sand transport corridor[4], which provides less suitable habitat for desert tortoise, and may not be the optimum place to relocate desert tortoises. Directly north of the proposed project site is the wilderness boundary for the Palen-McCoy Wilderness Area. In the past, the BLM has not allowed translocation and relocation of desert tortoise into wilderness areas[5].

Long-term monitoring of relocated desert tortoise is virtually absent from the Draft Desert Tortoise Translocation Plan. Because of the poor track record of successful relocation/translocation of desert tortoise[6], long-term post-relocation monitoring is essential to fully evaluate the success of any relocation effort.

[1] Gowan and Berry 2010. In DTC Symposium 2010 Abstracts at pg. 14-15.
[2] 2010-1-5 Draft Desert Tortoise Translocation Plan for the Genesis Solar Energy Project (TN-54701)
[3] Ibid at pg. 10.
[4] 2010-06-01 Revised Wind Shadow Estimations (TN-57309) at pg. 1.
[5] Esque et al. 2009
[6] Gowan and Berry 2010. In DTC Symposium 2010 Abstracts at pg. 14-15.

In order to assure that any relocated desert tortoises do not have to be moved subsequently as avoidance and mitigation for other projects, safeguards must be put in place to preserve lands onto which any animals are relocated/translocated.

Sand Dune Community/Mojave Fringe-toed Lizard

Bio-20 lays out criteria for compensation lands that in fact may not benefit the Mojave fringe-toed lizard. Because fringe-toed lizards require Aeolian sands and sandy substrate on which to live[7], it is inappropriate to identify acquisition of Sonoran creosote bush scrub as mitigation for this species or the sand dune community.

Additionally, the Revised SA notes that the indirect impact to the habitat for this rare species from disruption of the sand transport corridor will be 151 acres. Yet, the impact is only proposed to be mitigated at a 0.5:1 ratio (Revised SA at pg. C.2-68) despite that on average the disruption to sand transport corridor will result in varying sediment reduction ranging from 50-100% (as modeled)[8]. It is my opinion that in order to most accurately offset the impacts of the disruption of the sand transport corridor, a more accurate evaluation of mitigation ratios needs to be applied based on the modeling and acres involved. In addition, as explained above, mitigation of 1:1 or less does not result in any net benefit to the species. A ratio of 2:1 should be the *minimum* ratio for mitigation for rare species such as the Mojave fringe-toed lizard.

The Revised SA also fails to account for many impacts to Mojave fringe-toed lizard habitat including, but not limited to,

- the loss of habitat from the access road, gen-tie line, and substation,
- the increased edge effects on habitat the from the proposed project, access road, and substation, and
- the potential impacts of increases in predators attracted by the proposed project.

As Barrows et al. (2006)[9] found, edge effects are significant for fringe-toed lizards and, in addition, the increase in predators associated with developed edges may also have a significant adverse effect on lizards and other species.

Birds

The Revised SA fails to evaluate the impact for avian fatalities that have been documented to occur from birds running into mirrors as well, the Staff assumes this will not be an issue due to the lack of attractants (ponds and agricultural fields) (Revised SA at C.2-97). However, the proposed project is currently designed to have 6 eight-acre evaporation ponds or a total of 48 acres of ponds associated with the wet-cooling proposal from the applicant (Revised SA at C.2-99). The Revised SA notes that ravens, "waterfowl, shorebirds and other resident or migratory birds that drink or forage at the

[7] Barrows 1997.
[8] 2010-06-01 Revised Wind Shadow Estimations (TN-57309) at pg. 6.
[9] Barrows et al. 2006

ponds" (Revised SA at C.2-99). While Bio- 21 proposes netting and monitoring of the evaporation ponds, their presence will still likely attract birds to the general area, even if subsequently the birds are not able to directly access the ponds. The Revised SA fails to evaluate the impact to birds based on the McCrary[10] results, which estimated 1.7 birds deaths per week on a 32 ha (approx. 80 acre) site – a site over twenty times smaller than the proposed 728 ha (approx. 1800 acre) solar facility. Other data are available on injury and mortality associated with reflective surfaces and powerlines[11] which could have been used to evaluate impacts to birds. While avian point counts were done in 2009, these data are not folded into an analysis of the potential impacts to birds from attraction onto the site by the proposed evaporation ponds and subsequent mortality occurring from collisions with mirrors or powerlines. The impact may be significant.

These analyses needed to be done prior to the Revised SA being produced and still need to be done, because detailed surveys and analyses are the basis for the evaluation of impacts to biological resources. Using adequate survey data is necessary in order for the Staff to develop measures to avoid, minimize and then mitigate the effects of the project.

Golden eagle

The Revised SA recognizes that the results of the golden eagle surveys were not available to incorporate into the analyses of impacts (Revised SA at pg. C.2-3). It is my opinion that the Revised SA's Bio-28 condition of approval correctly lays out the requirements for acquiring data that should be incorporated into the environmental review and used as a basis for analysis of the impacts. Acquiring these data after construction of the project leaves no option for avoiding or minimizing impacts through project redesign.

Due to the lack of data, the Revised SA does not actually clearly identify or analyze the impacts to and mitigations for the golden eagle under CEQA or the Bald Eagle and Golden Eagle Protection Act.

Burrowing Owl

I agree with the Revised SA that the fate of passively relocated burrowing owls is undocumented and concerning (Revised SA at pg. C.2-88). Therefore I was surprised to find that Bio-18 (burrowing owl mitigation requirements) failed to require long-term monitoring of passively relocated burrowing owls. While burrowing owls were documented as occurring on the project site, the Revised SA failed to evaluate the potential impacts to the owls in the context of the regional population. Some data are available on burrowing owls in eastern Riverside County from the California Burrowing Owl Survey – 2006-2007[12] and this source should have been consulted by Staff.

[10] McCrary 1986
[11] Klem 1990, Erickson et al. 2005
[12] IBP 2009.

Insects

Sand dune habitats are notorious for supporting endemic insects, typically narrow habitat specialists[13]. The Revised SA fails to address insects on the proposed project site. In fact the biological surveys only identified a single genus of insect occurring on the project site[14].

Special Status Plants

I support late-season botanical surveys, however these types of surveys need to be undertaken prior to the assessment of impacts from the proposed project. As stated above, failure to conduct sufficient surveys prior to construction of the project effectively eliminates the most important function of surveys - using the information from the surveys to avoid and/or minimize harm caused by the project and reduce the need for mitigation. Often efforts to mitigate harm are far less effective than preventing the harm in the first place. In addition, without understanding the scope of harm before it occurs, it is difficult if not impossible to quantify an appropriate amount and type of mitigation. The mitigation as proposed in Bio-19, Section C and D (Revised SA at C.2-252 through 260) fail to take into consideration basic important botanical issues. For example, allowing for extirpation of the species on-site if the population is less than "10 percent of the species known and documented occurrences" (Revised SA at C.2-255). A single "occurrence" of a plant can range in size from one individual to tens of thousands of plants at the single occurrence location. Not only does this metric fail to include the size of an occurrence which is critical to evaluate the impact of the loss of the occurrence on the species as a whole, but this metric also fails to include issues of geographical distribution of the species. Populations at the edges of their range, especially in time of global climate change, are very important[15].

Habitat Loss and Compensatory Mitigation

For many of the rare wildlife species, "Bio-12" is proposed as the mitigation for impacts. "Bio-12" is focused on compensatory mitigation for desert tortoise through the acquisition and conservation of *at least* 1,864 acres, which I support. However, the mitigation measure needs to require that the mitigation actually benefit the other rare animals – just as it states for state jurisdictional water, where at least 132 acres of waters *must* be acquired. Rare or imperiled species that rely on "Bio-12" for mitigation include the burrowing owl, special status plants, sand dune habitats for Mojave fringe-toed lizard and golden eagle.

Even with rare species occurring on the mitigation lands, the SA must still recognize that if the 1:1 mitigation ratio is used, the proposed project is a net loss of occupied habitat and possibly individuals of these species.

[13] Dunn 2005.
[14] TetraTech 2010 at pg. D-1.
[15] Leppig and White 2006; Kelly and Goulden 2008

Decommissioning and Closure Plan

Desert lands are notoriously hard to revegetate or rehabilitate (Lovich and Bainbridge 1999) and revegetation never supports the same diversity that originally occurred in the plant community prior to disturbance (Longcore 1997). The task of revegetating almost three square miles will be a Herculean effort that will require significant financial resources. In order to assure that the ambitious goals of this revegetation effort is met post project closure, it will be necessary to bond the project, so that all revegetation obligations will met and assured. The bond needs to be structured so that it is tied to meeting the specific revegetation criteria.

The Draft Decommissioning and Closure Plan[16] is woefully inadequate in proposing how the almost three square miles is to be revegetated. The Draft Revegetation Plan[17] appears to only address the 59.8 acres of temporary construction impacts due to project and transmission line construction. Clearly a more comprehensive revegetation strategy needs to be developed for the entire site of approximately 1800 acres. The strategy needs to include locally developed and collected plant palettes including annual flora, clearly laid out implementation and schedule, success criteria that will over time achieve habitat for species, and include long-term monitoring and weed management plans among other issues.

Fire Threats

Fire in desert ecosystems is well documented to cause catastrophic landscape scale changes[18] and impacts to the local species[19]. While the Revised SA mentions the impacts of fire via the proliferation of non-native weeds (Revised SA at pg. C.2-20, pg. C.2-35 and many other places), it fails to adequately analyze the impacts of this issue for this proposed project that routinely relies on superheated liquids. It fails to adequately analyze the impact that a fire could have on the natural lands adjacent to the project site if fire escaped from the site or address the mitigation of this impact. Instead the Revised SA defers to the Worker Environmental Awareness Program (WEAP) and only requires "a discussion of fire prevention measures to be implemented by workers during project activities" (Revised SA at pg. C.2-219). A fire prevention and protection plan needs to be required to preclude the escape of fire onto the adjacent landscape (avoidance), lay out clear guidelines for protocols if the fire does spread to adjacent wildlands (minimization) and a revegetation plan if fire does occur on adjacent lands originating from the project site (mitigation) or caused by any activities associated with construction or operation of the site even if the fire originates off of the project site.

Conclusions

[16] 2010-02-24 Draft Decommissioning and Closure Plan TN-55632.pdf
[17] 2010-02-03 Draft Revegetation Plan TN-55172.pdf
[18] Brown and Minnich 1986, Lovich and Bainbridge 1999, Brooks 2000, Brooks and Draper 2006, Brooks and Minnich 2007
[19] Ducher 2009.

I would like to summarize my conclusions as follows:

There is a paucity of identification of impacts, analysis, or mitigation requirements for many of the rare species. I find the review of impacts and suggested mitigations to be unsatisfactory. Without this basic information about the use of the area by a variety of wildlife and rare plants it is impossible to assess the extent of the impacts to species populations in this area from the proposed project.

The documents seem to indicate that the staff believes that all the potential wildlife impacts can be resolved by simply purchasing land elsewhere suitable for the desert tortoise. While desert tortoise habitat acquisition and protection in other areas is an essential keystone of mitigation for the loss of habitat at the proposed project site, it does not and cannot mitigate for the loss of habitat of other species if their habitat does not occur on the compensation lands.

I suggest that the missing field studies be conducted by knowledgeable researchers on the project site to fill in the missing data gaps which are the basis for analyzing impacts. Absent any real information in the field, any suggested mitigations of perceived impacts are pure conjecture. I also suggest that field studies be initiated on any proposed compensation lands to assure that proper habitat is acquired to help mitigate impacts to each species affected.

A fully developed revegetation plan needs be developed that addresses the entire site, post-construction temporary impacts, as well as the site closure and decommissioning.

In summary, I find the document to be sorely lacking as it pertains to biological resources. These deficiencies need to be addressed and remedied before in the next revision of the SA prior to project permitting.

Exhibit 804: Barrows, C.W. 1997. Habitat relationships of the Coachella Valley fringe-toed lizard (*Uma inornata*). Southwestern Naturalist 42(2): 218-223.

Exhibit 805: Barrows, C.W., M.F. Allen and J.T. Rotenberry. 2006. Boundary processes between desert sand dune community and encroaching suburban landscape. Biological Conservation 131: 486-494.

Exhibit 806: Brooks, M.L. 2000. Competition Between Alien Annual Grasses and Native Annual Plants in the Mojave Desert. American Midland Naturalist 144: 92-108.

Exhibit 807: Brooks, M. L. and J. V. Draper. 2006. Fire effects on seed banks and vegetation in the Eastern Mojave Desert: implications for post-fire management, extended abstract, U.S. Geological Survey, Western Ecological Research Center, Henderson, Nevada, 3 p.

Exhibit 808: Brooks, M.L. and R.A. Minnich. 2007. Fire in the Southeastern Deserts Bioregion. Chp 16 in: Sugihara, N.G., J.W. van Wagtendonk, J. Fites-Kaufman, K.E. Shaffer, and A.E. Thode (eds.). Fire in California Ecosystems. University of California Press, Berkeley.

Exhibit 809: Brown, D.E. and R.A. Minnich. 1986. Fire and Changes in Creosote Bush Scrub of the Western Sonoran Desert, CA. American Midland Naturalist 116(2): 411-422.

Exhibit 810: Dunn, R.R. 2005. Modern Insect Extinctions, the Neglected Majority. Conservation Biology 19 (4): 1030-1036.

Exhibit 811: Dutcher, K. E. 2009. The effects of wildfire on reptile populations in the Mojave National Preserve, California. Final Report to the National Park Service, California State University, Long Beach. Pgs 28.

Exhibit 812: Erickson, W.P., G. D Johnson, and D.P. Young, Jr. 2005. A Summary and Comparison of Bird Mortality form Anthropogenic Causes with an Emphasis on Collisions. USDA Forest Service Gen. Tech. Rep. PSW-GTR-191. pgs. 1029-1042.

Exhibit 813: Esque, T.C., K. E. Nussear, K. K. Drake, K. H. Berry, P.A. Medica, and J.S. Heaton 2009. Amendment to Desert Tortoise Translocation Plan for Fort Irwin's Land Expansion Program at the U. S. Army National Training Center (NTC) & Fort Irwin. Prepared for U.S. Army National Training Center, Directorate of Public Works. May 1, 2009. Pgs 24.

Exhibit 814: Gowan,T. and K.H. Berry 2010. Health, Behavior and Survival of 158 Tortoises Translocated from Ft. Irwin: Year 2. Desert Tortoise Council Symposium Abstracts 2010. http://www.deserttortoise.org/abstract/2010DTCSymposiumAbstracts.pdf

Exhibit 815: Institute for Bird Populations (IBP) 2008. Breeding Burrowing Owl Survey Newsletter, Spring 2008. pgs.4.

Exhibit 816: Kelly, A.E. and M. L. Goulden. 2008. Rapid shifts in plant distribution with recent climate change. Proceedings of the National Academy of Sciences 105(33): 11823-1126.

Exhibit 817: Klem, D. 1990. Collisions Between Birds and Windows: Mortality and Prevention. Journal of Field Ornithology 61(1): 120-128.

Exhibit 818: Leppig, G. and J.W. White. 2006 Conservation of peripheral plant populations in California. Madrono 53(3): 264-274.

Exhibit 819: Lovich, J. E. and D. Bainbridge 1999. Anthropogenic Degradation of the Southern California Desert Ecosystem and Prospects for Natural Recovery and Restoration. Environmental Management 24(3): 309-326.

Exhibit 820: McCrary, M.D. 1986. Avian Mortality at a Solar Energy Power Plant. Journal of Field Ornithology 57(2): 135-141

Declaration of Ileene E. Anderson

Re: Impacts to Sensitive Plants and Wildlife from the Proposed Genesis Solar Energy Project

Docket 09-AFC-8

I, Ileene Anderson, declare as follows:

1) I am currently a biologist for the Center for Biological Diversity. I have worked with the organization for five years.

2) My relevant professional qualifications and experience are set forth in the attached resume and the attached testimony and are incorporated herein by reference.

3) I prepared the testimony attached hereto and incorporated herein by reference, relating to the impacts of the Project on wildlife and plants.

4) I prepared the testimony attached hereto and incorporated herein by reference relating to the proposed Genesis Solar Energy Project adjacent to Ford Dry Lake in Riverside County.

5) It is my professional opinion that the attached testimony is true and accurate with respect to the issues that is addressed.

6) I am personally familiar with the facts and conclusions described within the attached testimony and if called as a witness, I could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: June 18, 2010 Signed: _____

At: Los Angeles, CA

Curriculum Vitae
For
Ileene Anderson

Education

- M.S. with Distinction, Biology, California State University, Northridge, 1992
- B.A. Cum Laude, Biology, California State University, Northridge, 1989
- A.S. with Honors, Electronics, Bakersfield College, 1981

Professional Experience

2005 – present

Biologist and Public Lands Desert Director with the non-profit Center for Biological Diversity. Provide scientific expertise necessary for the conservation of California's internationally recognized unique flora and fauna in a variety of public and private land use arenas. My primary projects focus on central and southern California, including the California deserts, Tejon Ranch, Santa Ana River issues, Santa Clara River issues and numerous projects that occur within their watersheds. I comment on California Environmental Quality Act and/or National Environmental Policy Act, write petitions for plant and animal protection under the federal and state Endangered Species Act, provide scientific expertise for lawsuit settlement agreements, do public/media relations, and organize volunteers for a variety of conservation issues.

1997- 2005

Southern California Regional Botanist for the non-profit California Native Plant Society (CNPS). Provided scientific expertise necessary for the conservation of California's unique vegetation types in a variety of public and private land use plans, including the Four Southern California Forests Updated Land Use Management Plan, the West Mojave Habitat Conservation Plan, the West Riverside Multiple Species Habitat Conservation Plan, the Northern and Eastern Colorado Desert Plan, the Northern and Eastern Mojave Desert Plan, and many other smaller planning efforts. I have commented on hundreds of California Environmental Quality Act and/or National Environmental Policy Act documents, written petitions for plant protection under the federal Endangered Species Act, provided scientific expertise for lawsuit settlement agreements, done public relations in both print and radio, ran CNPS internal consensus building meetings, and organized volunteers for a variety of conservation and fund-raising issues.

1995 – 2005

Consultant on a variety of botanical projects, including rare plant surveys, quantitative and qualitative vegetation community characterization, restoration plans, vegetation monitoring and weed surveys. Project locations comprise a variety of plant communities in southern/central California including riparian, coastal sage scrub, alluvial fan scrub, alkali meadows, chaparral, and a variety of desert scrubs. A full list of projects is available upon request.

1996 – 1999

Part-time instructor at College of the Canyons (community college in Valencia, California). Courses included Introductory Biology for majors (Organismal/Environmental and Cellular/Molecular), Current Topics in Environmental Biology, and Botany. I also developed a course in Economic Botany.

1992 – 1995

Lead Botanist for The Chambers Group (an environmental consulting firm). Projects for which I was responsible included mapping, inventories, and rare plant surveys, which were written in compliance with NEPA and/or CEQA guidelines, including impact analysis and mitigation. This information was typically included in Biological Assessments (BAs), Environmental Assessments (EAs), Environmental Impact Reports (EIRs) or Environmental Impact Statements (EISs). Supervisory duties included coordinating two other botanists. Project management was also part of my duties.

1990 – 1994

Sales Associate at the Theodore Payne Foundation. This part-time job primarily included helping customers select appropriate native plant material for their gardens. Other duties included propagation and transplantation of native plant species.

2733 Cardwell Place, Los Angeles, CA 90046-1201
Phone: 323/848-7946 FAX: 323/650-4620 e-mail: ieanderson@roadrunner.com

1990-1992

Herbarium Curatorial Assistant at Rancho Santa Ana Botanic Gardens. Herbarium specimen mounting and curation from international collections was the primary responsibility.

Professional Courses/Seminars

Methods of Habitat Restoration - University of California, Riverside, Winter 1993
Desert Restoration - SERCAL, October 1993
Habitat Restoration Evaluation - University of California, Riverside, Winter 1994
Basic Wetlands Delineation - Wetland Training Institute, Inc. November 1995
Mycorrhizae in Habitat Restoration - University of California, Riverside, Winter 1995
Soils Workshop – Natural Resources Conservation Service, November 1998
Plant Community Characterization and Series Identification– Native Plant Society, June 1999
Statistical Analysis for the Modified Whittaker Plot – Colorado State University, August 2002

Professional Affiliations

BLM California Desert Advisory Council - Appointee Representing Renewable Resources (Chairperson 2001) from 1996-2002
California Botanical Society
California Native Plant Society – Conservation Committee; Legal Committee.
Friends of the Santa Clara River – Director at Large
Rancho Santa Ana Botanic Gardens – Research Associate.
Society for Ecological Restoration – Coastal Sage Scrub Guild Co-coordinator (1995-2001)
Southern California Botanists – Director at Large (1994-2002)

Expert Witness

State Water Resources Control Board – May 2007 – Testified on Santa Ana River plant and animal issues.
California Public Utilities Commission – March 2008 – Testified on plant issues for Sunrise Powerlink Project.
California Energy Commission – January 2010 – Testified on rare animal and plant issues for Ivanpah Solar Electric Generating System

Publications and Posters

Dickey, John, Maurice Hall, Mark Madison, Jason Smesrud, Margot Griswold, Quitterie Cotten, Mica Heilmann, Greg Roland, Jim Jordahl, Richard Harasick, Wayne Bamossy, Richard Coles, Lizanne Wheeler, Pat Brown, Kevin Burton, Rick Fornelli, Ileene Anderson, Melissa Riedel-Lehrke, Ron Tiller, and Jim Richards 2005. Managing salt to stabilize the Owens Playa with saltgrass. Presented at the Center for Water Resources, Salinity Conference, Sacramento California.

Rodgers, Jane and Ileene Anderson 2002. A Rare Mint (*Monardella robisonii*) in a Rock-Climbing Mecca. Joshua Tree National Park. April 2002. Pgs 25 + appendices.

Anderson, Ileene, Margot Griswold, Dana Kamada, and Adrian Wolf. 2001. Coyote Canyon Landfill: Native Vegetation Restoration Results in Habitat Creation for a Threatened Species. Poster given at Society for Conservation Biology. July 2001.

Hartman, Steve and Ileene Anderson 1999. California Deserts in Transition: Ecosystem Planning. Fremontia 27(2): 13-17.

Anderson, Ileene 1998. Status of Sensitive Plant Populations on Public Grazing Allotments within the California Desert Conservation Area. California Native Plant Society. August 1998 Pgs. 34.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE *GENESIS SOLAR ENERGY PROJECT*

Docket No. 09-AFC-8

PROOF OF SERVICE
(Revised 6/7/10)

APPLICANT
Ryan O'Keefe, Vice President
Genesis Solar LLC
700 Universe Boulevard
Juno Beach, Florida 33408
E-mail service preferred
Ryan.okeefe@nexteraenergy.com

Scott Busa/Project Director
Meg Russel/Project Manager
Duane McCloud/Lead Engineer
NextEra Energy
700 Universe Boulvard
Juno Beach, FL 33408
Scott.Busa@nexteraenergy.com
Meg.Russell@nexteraenergy.com
Duane.mccloud@nexteraenergy.com
E-mail service preferred
Matt Handel/Vice President
Matt.Handel@nexteraenergy.com
Email service preferred
Kenny Stein,
Environmental Services Manager
Kenneth.Stein@nexteraenergy.com

Mike Pappalardo
Permitting Manager
3368 Videra Drive
Eugene, OR 97405
mike.pappalardo@nexteraenergy.com

Kerry Hattevik/Director
West Region Regulatory Affairs
829 Arlington Boulevard
El Cerrito, CA 94530
Kerry.Hattevik@nexteraenergy.com

APPLICANT'S CONSULTANTS
Tricia Bernhardt/Project Manager
Tetra Tech, EC
143 Union Boulevard, Ste 1010
Lakewood, CO 80228
Tricia.bernhardt@tteci.com

James Kimura, Project Engineer
Worley Parsons
2330 East Bidwell Street, Ste.150
Folsom, CA 95630
James.Kimura@WorleyParsons.com

COUNSEL FOR APPLICANT
Scott Galati
Galati & Blek, LLP
455 Capitol Mall, Ste. 350
Sacramento, CA 95814
sgalati@gb-llp.com

INTERESTED AGENCIES
California-ISO
e-recipient@caiso.com

Allison Shaffer, Project Manager
Bureau of Land Management
Palm Springs South Coast
Field Office
1201 Bird Center Drive
Palm Springs, CA 92262
Allison_Shaffer@blm.gov

INTERVENORS
California Unions for Reliable
Energy (CURE)
c/o: Tanya A. Gulesserian,
Rachael E. Koss,
Marc D. Joseph
Adams Broadwell Joesph
& Cardoza
601 Gateway Boulevard,
Ste 1000
South San Francisco, CA 94080
tgulesserian@adamsbroadwell.com
rkoss@adamsbroadwell.com

Tom Budlong
3216 Mandeville Cyn Rd.
Los Angeles, CA 90049-1016
tombudlong@roadrunner.com

*Mr. Larry Silver
California Environmental
Law Project
Counsel to Mr. Budlong
E-mail preferred
larrysilver@celproject.net

Californians for Renewable
Energy, Inc. (CARE)
Michael E. Boyd, President
5439 Soquel Drive
Soquel, CA 95073-2659
michaelboyd@sbcglobal.net

*Lisa T. Belenky, Senior Attorney
Center for Biological Diversity
351 California St., Suite 600
San Francisco, CA 94104
lbelenky@biologicaldiversity.org

*Ileene Anderson
Public Lands Desert Director
Center for Biological Diversity
PMB 447, 8033 Sunset Boulevard
Los Angeles, CA 90046
ianderson@biologicaldiversity.org

OTHER
Alfredo Figueroa
424 North Carlton
Blythe, CA 92225
lacunadeaztlan@aol.com

ENERGY COMMISSION
JAMES D. BOYD
Commissioner and Presiding
Member
jboyd@energy.state.ca.us

ROBERT WEISENMILLER
Commissioner and Associate Member
rweisenm@energy.state.ca.us

*indicates change

Kenneth Celli
Hearing Officer
kcelli@energy.state.ca.us

Caryn Holmes
Staff Counsel
cholmes@energy.state.ca.us

Jennifer Jennings
Public Adviser's Office
publicadviser@energy.state.ca.us

Mike Monasmith
Siting Project Manager
mmonasmi@energy.state.ca.us

Robin Mayer
Staff Counsel
rmayer@energy.state.ca.us

DECLARATION OF SERVICE

I, Elaine Archer declare that on June 18 2010, I served and filed copies of the attached Opening testimony, exhibit List, exhibits: POS for CBD. 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://ww.energy.ca.gov/sitingcases/genesis_solar].**

The documents have 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, in the following manner:

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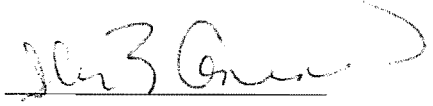
I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.



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