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MEMORANDUM

To: East County Renewables Coalition
From: Peter Quinlan, Principal; Trey Driscoll, Senior Hydrogeologist
Subject: Critique of "Review of Cumulative Impacts on Water Resources of Large-Scale Energy Projects In Boulevard and Surrounding Communities," by Victor M. Ponce dated 30 April 2013
Date: May 7, 2013

EXECUTIVE SUMMARY

Thank you for the opportunity to review and critique Dr. Victor M. Ponce's whitepaper, *Cumulative Impacts on Water Resources of Large-Scale Energy Projects in Boulevard and Surrounding Communities, San Diego County, California*, dated April 30, 2013. In the whitepaper, Dr. Ponce recommends that the County of San Diego not allow renewable energy projects proposed in the Boulevard Planning Area to utilize groundwater resources for their construction or operational requirements, but instead, require that such projects import their entire water supply from outside the Boulevard Planning Area.[1]

This memorandum concludes that Dr. Ponce's whitepaper cannot be relied upon to justify land use decisions in general, nor can it be relied upon to justify the extreme recommendation Dr. Ponce makes in particular, because it lacks the specificity and accuracy necessary to support its conclusions and recommendations.[2]

For example, the whitepaper is largely comprised of generalities regarding surface water and groundwater characteristics of the continental United States, and global averages. It contains

[1] See Ponce, Executive Summary, at 2. The Ponce whitepaper has no page numbers. Accordingly, all page references in this memorandum are to the PDF page upon which the citation appears. The Ponce whitepaper is available at http://ponce.sdsu.edu/boulevardenergy.html

[2] This memorandum is not a comprehensive discourse on the issues and shortcomings we have identified in Dr. Ponce's whitepaper since it was made available to us a few days ago. Instead, this memorandum identifies key issues and shortcomings we have been asked to make known to the County of San Diego in the short time available to us at this point in time.

little information specific to the Boulevard Planning Area. What information is provided is often inaccurate or too general in nature to be applied to conditions specific to the Boulevard Planning Area.

Furthermore, the whitepaper fails to appropriately quantify and evaluate potential cumulative impacts on the region's water resources. In particular, the whitepaper inaccurately estimates existing water demands, disregards minimal long-term operational water use of proposed energy projects, and applies unsupported generalities to estimate recharge to groundwater in the Boulevard Planning Area.

Finally, the whitepaper's misunderstanding regarding the County's approach for managing groundwater use undercuts its conclusion that the County is using a groundwater management approach that has been discredited.

COUNTY APPROACH VERSUS PONCE APPROACH

The County method to evaluate groundwater pumping for a project is a conservative approach for putting natural resources to beneficial use for society. The County approach addresses estimates of recharge and aquifer storage and variability in precipitation over a 30-year period to evaluate potential impacts from pumping. Whereas the Ponce approach ties sustainable yield to anything in excess of the demand required for wetland and riparian habitat although he does not quantify this demand.

WATER DEMANDS

The Whitepaper Overestimates Existing Groundwater Demands

In Section 3.1, Table 2, *Existing water demand in the study area*, the whitepaper overestimates actual existing demand in the Boulevard Planning Area by approximately 80 percent.[3] For example, the whitepaper reports the water demand of the Golden Acorn Casino to be 168 acre-feet based on the sizing of the on-site wastewater treatment system (AECOM 2012). However, an estimate of water use for the Golden Acorn Casino and ancillary activities is presented in the *Groundwater Supply Evaluation: Campo Kumeyaay Nation, Proposed Golden Acorn Hotel and Amenities Project* (Environmental Navigation Services 2008), which indicates the existing water use is 20,000 gallons per day, or 22.4 acre-feet per year.[4] Thus, the whitepaper overestimates demand by up to 750%.

[3] See page 29.
[4] One acre foot is 325,851 gallons. [365*20,000] / 325,851 = 22.4 acre feet per year.

For the Boulevard Border Patrol Station, the whitepaper overestimates average usage to be 250 gallons per person per day. The 250 gallons per person per day rate clearly overestimates staff and agent use, especially when compared to the whitepaper's estimated residential use estimate for the area at 112 gallons per person per day. In fact, a site-specific study of water demand for the Boulevard Border Patrol Station estimated water use at 7.02 gallons per person per day (Winzler and Kelly 2011). Even applying a conservative estimate of water use of 25 gallons per day per person for the Boulevard Border Patrol Station would result in an annual demand of 7 acre-feet per year, not the estimated 70 acre-feet per year indicated by the whitepaper.[5]

The whitepaper also overestimates the water demand for the McCain Valley Conservation Camp to be 250 gallons per day person, or 38 acre-feet per year. Geologic and Associates, Inc. conservatively estimated water use of 120 gallons per day per person or 18.3 acre-feet per year (GLA 2012).[6]

The whitepaper also failed to include other existing groundwater use in its summary, including water use for Live Oak Springs Water Company and Rough Acres Ranch. These annual water demands are estimated at 15.2 acre-feet and 7.39 acre-feet, respectively (LOSWC 2012; GLA 2012).

Even including these omitted uses, overall existing groundwater demand is far less than estimated by the whitepaper. Table 1 compares the whitepaper's estimated groundwater demand with project-specific estimates based on realistic water usage data. As Table 1 demonstrates, the whitepaper overestimates existing groundwater by approximately 80 percent.

Table 1. Existing Annual Water Demands in Study Area

Item	Description	Ponce estimated Water Demand (acre-feet)	Cited Water Demand (acre-feet)
1	Boulevard and surrounding communities (Residential demand)	187.5	187.5
2	Golden Acorn Casino	168	22.4[a]
3	Boulevard Border Patrol Station	70	7[b]

[5] [25 gallons * 250 staff * 365 days] / 325,851 gallons = 7.0 acre feet per year.
[6] [120 gallons * 136 staff & inmates * 365 days] / 325,851 gallons = 18.3 acre feet per year.

Item	Description	Ponce estimated Water Demand (acre-feet)	Cited Water Demand (acre-feet)
4	McCain Valley Conservation Camp	38	18.3[c]
5	Live Oak Springs Water Company	---	15.2[d]
6	Rough Acres Ranch	---	7.39[c]
Total Water Demand		**463.5**	**257.8**

a. Environmental Navigation Services. 2008
b. Winnzler and Kelly, 2011 and conservative estimate of 25 gallons per person per day.
c. GLA, 2012
d. LOSWC, 2012

The Whitepaper Overestimates Water Demands of Energy Projects

The whitepaper lists the construction water demands of 13 projects (12 energy projects and the Rough Acres Camp and Rock Crushing) with an estimated water demand of 509.6 acre-feet.[7] This estimate is inaccurate and misleading for a number of reasons. First, the whitepaper's water demands by project do not cite the most recent data available. Instead, the whitepaper relies on water use estimates that are out of date, and includes projects that may or may not proceed. Furthermore, the whitepaper's estimate does not take into account where energy projects have announced their intent to import water from other sources from outside the Boulevard Planning Area.

Second, although the whitepaper acknowledges that its annual water use totals for the energy projects described in Table 3 includes short-term construction water demand, it misleadingly presents project water demand in Table 4 as if each project will use the same amount of water every year it is in operation.[8] Table 4, *Future water demand in the study area*, presents the future water demand as being equal to the existing annual demand plus "Future energy projects," which includes short-term construction water demand.

Short-term construction water use (usually lasting less than one year) constitutes the bulk of water use for photovoltaic and wind energy projects, while water demand for operation and maintenance of photovoltaic and wind energy projects is a fraction of construction water demand. In fact, operational demands for the photovoltaic and wind energy projects described in

[7] See Table 3, page 31.
[8] See Table 4, page 32.

Table 3 are comparable to the maximum water demand at full General Plan buildout anticipated by the current land use designation as rural lands (RL) with 80-acre zoning (RL-80) that could be developed with one residence per 80 acres (i.e., 0.5 acre-feet annual water demand per 80 acres) (Dudek 2013).

In sum, the whitepaper's conclusion that "Total future [water demand]" will be 973.1 acre feet substantially overstates anticipated water demand for at least three reasons:

1. The whitepaper overestimates existing groundwater demand by approximately 44 %.

2. The whitepaper overestimates anticipated water demand from the energy projects listed in Table 3 by failing to use up to date information, account for projects that are unlikely to go forward, or to account for water that projects have already indicated would be supplied from outside the Boulevard Planning Area.

3. The whitepaper misleadingly assumes that short-term construction water demand, which in most instances will last less than one year, will continue throughout the life of the energy project.

RECHARGE

According to Section 4.2 of the whitepaper, the runoff coefficient is usually around 10% to 15% for arid climates.[9] In section 4.4, the whitepaper indicates that groundwater recharge is between 0.1% and 5% of mean annual precipitation (i.e., the recharge to runoff ratio is 0.1% to 33%). However, in 2012 the USGS modeled the San Diego Area using a basin characterization model and determined that recharge to runoff ratio for the San Diego River watershed, Sweetwater watershed and Otay watershed is 319%, 239% and 407%, respectively (Flint 2012).

While use of global values may prove useful for comparison, they should not be substituted for site-specific data. The entire analysis in Section 6 of the whitepaper is based on the assumption that recharge is equal to 5% of mean annual precipitation. In another report prepared by Dr. Ponce, *Thompson Creek Groundwater Sustainability Study* dated May 7, 2012, he states that, "for Thompson Creek with a Mediterranean climate and mean annual precipitation of 13 inches, the actual recharge to precipitation percentage may be higher than the upper limit of the Scanlon (2006) data (5%) (Ponce 2012)".

[9] See page 34.

REFERENCES

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