

May 15, 2018

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Subject: Response to Comments GSP for Borrego Valley March 2019.

Dear Mr. Bennett

It is encouraging to see the progress that has been made regarding the hydrological parameters of the Borrego Valley aquifer. This basin has been monitored for almost 40 years and it has been long established as being in critical overdraft. The work completed for the GSP is positive steps to alleviate this adverse condition.

In my review of the draft GSP I would like to offer the following comments in the record regarding the document:

- 1) On page ES-2 it is stated that "In the southeastern part of the Subbasin, where less groundwater has been pumped, groundwater levels have remained relatively constant during the same time period." This does not adequately cover the hydrographic trends within this area of the Valley. As an example the Well MW-5, which is located east north east of the Borrego Sink, has fallen 8.94 feet in the last 10 year (49.22 feet below ground surface in October 2008 to a current level of 58.38 ' in November 2018). This well is located in the discharge area of the basin and likely reflects groundwater level declines in the Mesquite Bosque which in in critical decline. Also this statement "relatively constant" does not document significant groundwater level declines (greater than 3 feet per year) in the southeastern portions of the basin. Specifically Monitoring well MW-3 has shown a substantial decline (57.51 feet below ground surface November 2015 to 70.65 feet in March 2019). This is also seen in Figure 2.2-13E where well number 011S006E23J002S has almost a 20 foot decline in 3 years. The report must reflect accurate trends in the basin and should be modified to represent current groundwater trends in this area of the basin.

- 2) It has been well known and long established that Borrego Valley drains (flows) toward the Borrego Sink and down Borrego Sink Wash toward the east. Various technical studies including those from the USGS and DWR point toward the basins discharge point being through the Borrego Sink wash. Figures 2.2-13 C and 2.2-13 D accurately reflects this flow path. However Figures 2.2-13 A (Spring 2018) and 2.2-13 B (Fall 2018) represents a different flow path with the discharge point (or basin low) appearing to be near the Borrego Valley Airport. Also on page 2-51 the statement is made that groundwater flow is *“toward the center of the valley near Palm Canyon Drive about 2 miles north of Borrego Sink”*. This *“reversed northern flow direction from the sink”* would be significant modification to historical flow path within the basin. This condition would be either produced by 1) a significant overdraft occurring in the area of the Borrego Springs Airport produced by extensive production (which we know is not the case), or 2) the potential incorrect interpretation of the data due to extreme lack of adequate groundwater level data from monitoring wells in this area of the basin. As given in response #5 below there is a significant data gap on a north\south line (almost 6 miles long) from the north of Henderson Canyon Road to the County Road Station. Along this path only one data point exists (at the County Airport). It is very hard to accurately produce a groundwater level flow contour map with little to no data. If the contour lines are estimated or guessed they should be dashed and/or left out entirely. These two figures imply something that is very important (reserved flow direction north toward the airport from the sink) and it is based on extremely limited information. In science we should not arrive at a conclusion unless there is significant data to support that conclusion.
- 3) Just as a correction Figure 2.2-15 has our town center (Christmas Circle) listed as an active hazmat cleanup site as the Carrizo Impact Site. The text on page 2-61 provides additional detail that the Carrizo Impact bombing range covers ~400 square miles. It is suggested that some detail be added to the Figure to clarify this point.
- 4) Figure 2.2-21 B documents water use within the basin between 1945 and 2017. The figure identifies a significant decrease in annual total water use from ~18,500/yr. to ~14,500/yr. This is a significant trend of approximately 20%. If this is true why isn't the decline in water extraction reflected in Figure 2.2-22 B which represents the cumulative change in storage by year? This figure (2.2-22 B) implies a constant rate of consumption. The only way

both figures would be correct is if a significant decrease in the amount of groundwater recharge had occurred and this is not considered to be the case. There seems to be a disconnect between Figure 2.2-21B which shows a significant decrease in extraction and Figure 2.2-22B which represents a consistent change (depletion) in storage over the same period.

- 5) Monitoring well distribution is discussed on page 2-54, where it is concluded that lateral distribution of monitoring wells “appears adequate to meet SGMA requirements within all of the management areas”. However within the eastern central portions of the basin (south of Henderson Canyon road, east of Borrego Valley road and north of La Casa Del Zorro) there are only 4 monitoring wells. This area covers almost 25 square miles making an overall density of 1 monitoring well per 6 square miles. Also three of the four monitoring wells are clustered along Palm Canyon Drive near the County airport. Given that almost 90% of 25 square miles have no monitoring wells it is hard to understand how it has been deemed that the distribution of wells is adequate. The gross number of wells likely meets the minimum requirements of SGMA but that is not the important issue. The problem is that the **distribution and location** of wells within and central eastern portion of the basin is clearly not adequate. This is also shown and represented in Figure 2.2-12. It is suggested that this region be identified as a data gap and that efforts be completed in the future to add additional monitoring wells within this area of the basin.
- 6) I totally support the conclusion regarding identified data gaps within the groundwater quality network (pages 2-63 and 64). Monitoring groundwater quality trends is vital to the long term survival of the community and the basin. As identified in item #5 above the central eastern portion of the basin is not adequate covered by monitoring wells to estimate trends within the groundwater system. This includes both for groundwater levels and for groundwater quality. It is vitally important to develop a basic understanding of baseline groundwater characteristics throughout the basin. The central eastern portion of the basin (which is located in both the Central and Southern Management Areas) is under represented for monitoring wells. The GSP identifies this as a data gap for groundwater quality but ignores the data gap for groundwater levels.
- 7) On page 2-70 it refers to the Horse Camp well within the section addressing the GDE Unit 2 Palm Canyon area. The Horse Camp Well is in the Unit 1 Coyote Creek area.

- 8) Figure 3.3-1 “Key Indicator Wells” shows the significant gap in monitoring wells in the eastern central portion of the basin. Only one well (the Airport Well) is located in 20 square miles. This is clearly not adequate to represent the basin. Also Section 3.5.1 describes the monitoring network. Specifically Section 3.5.1.1 states that the **density** of wells meet the CASGEM requirements. As previously stated the issue with the draft GSP is not the number of wells rather the adequate **distribution** of monitoring wells. It goes without saying that you can have adequate **number** of wells (say 50 wells) in an area 30 square miles, but if all of those wells are located within a small specific area of 10 square miles the average density is adequate but the well distribution is inadequate. Throughout the GSP reference is made to the adequate number of wells. However what is ignored is if the distribution of wells is adequate. This issue should be identified as a clear data gap within the GSP. Specifically section 3.5.4.2 does not identify this area of the basin as an area that requires additional data points.
- 9) Appendix D2 by ENSI appears to be a high quality comprehensive report. It is the best water quality summary that I have seen for the basin. Overall it is a great job! However comments include: 1) No title page is offered for the ENSI team. No license numbers or contact information has been included with the report (as required by our State licensing Board). The only contact information I could find is in the title box of the figures. 2) Figure 5 shows a graphic representation for groundwater quality in the basin. However the locations of the data sites appears to be incorrect. The data is spread out throughout the basin, as an example many sites are shown in the northeastern area of the basin. However Figure 4 shows no monitoring wells in the area. There appears to be a disconnect between the wells shown in Figure 4 and the data presented in Figure 5. And 3) Appendix A of this report is from DWR? It is quite confusing on the reprinting of the various data. Is this one report or two? Many of the figures within the original report are also in the Appendix. Is this two reports using the same data? I cannot figure this out.

In summary it appears that significant technical work has been completed to assist in the development of the Borrego Valley GSP. However it is my professional opinion that a number of issues remain outstanding. These include:

- 1) Characterization that the southeastern portion of the basin have had stable groundwater levels.
- 2) Groundwater flow maps showing that the basin discharge has moved north to near the Borrego Springs Airport and away from the Borrego Sink.
- 3) Figure 2.2-21B represents that annual water use has declined by ~20% but Figure 2.2-22 B indicates a constant rate of groundwater overdraft.
- 4) Monitoring well distribution is not identified as a data gap in the report, although the central and southeastern portions of the basin are severely underrepresented with wells. The document states in a number of areas of the report that the number of wells meet the requirements of SGMA. That is NOT the issue. The issue is if the distribution of wells allows for an adequate technical understanding of the hydrological parameters of the basin. This is clearly not the case within the central eastern portions of the basin.

Thank you for the opportunity to offer these comments to the draft document. Please let me know if I can provide any assistance with this issues.

Sincerely

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