



San Pasqual Valley (SPV) Groundwater Sustainability Plan (GSP)
 Technical Peer Review (TPR) Meeting
 Meeting Summary

The following is a summary of the TPR discussion, comments, and questions. This summary reflects the general content and spirit of each discussion point, but is not a verbatim recording.

Date: Thursday May 14, 2020 from 9:00 to 11:30 am

Location: GoToMeeting

Purpose: Technical Peer Review Meeting

Attendees:	Technical Peer Review <ul style="list-style-type: none"> • Matt Wiedlin (MW), Wiedlin & Assoc • Will Halligan (WH), Luhdorff & Scalmanini • Peter Quinlan (PQ), Dudek 	City of San Diego (City) <ul style="list-style-type: none"> • Sandra Carlson (SC) • Niki McGinnis • Mike Bolouri
	Advisory Committee <ul style="list-style-type: none"> • Frank Konyn (FK) • Matt Witman (MWit) • Rikki Schroeder 	County of San Diego (County) <ul style="list-style-type: none"> • Leanne Crow • Jim Bennett
	Public <ul style="list-style-type: none"> • Anita Regmi, Dept of Water Resources • Dustin Meads, The Pinery • Brad Blaes, The Pinery • Lani Lutar, Responsible Solutions • Alicia Appel, City of Escondido • Hank Rupp, Rancho Guejito • John Flores, San Pasqual Tribe 	Consultant Team <ul style="list-style-type: none"> • John Ayres (JA), Woodard & Curran • Rosalyn Prickett, Woodard & Curran • Nicole Poletto, Woodard & Curran • Micah Eggleton, Woodard & Curran • Patsy Tennyson, Katz & Associates • Emily Michaelson, Katz & Associates • Nate Brown (NB), Jacobs • Paula Silva, Jacobs

Roll Call and Introductions

Rosalyn Prickett, Consultant Team, reviewed the list of participants signed onto GoToMeeting and asked all other phone participants to identify themselves. Patsy Tennyson, meeting facilitator, welcomed the group and reviewed basic instructions for GoToMeeting user tools. Sandra Carlson, City of San Diego, announced that Karina Danek’s baby boy was born on April 27th, and introduced Niki McGinnis as the City’s replacement on the Groundwater Sustainability Agency (GSA) Core Team (consisting of the City and the County).

Review

Patsy reviewed the meeting agenda and meeting objectives.

Refined Analysis – Basin Definition

John Ayres, Consultant Team, presented the definition of basin statement that was developed for the San Pasqual Valley Groundwater Basin (Basin). We are using the DWR Bulletin 118 definition of the

Basin. It was also acknowledged that we do not understand the interaction of the basin with underlying granitic rock. If groundwater conditions require the implementation of management actions, additional data collection, studies, aquifer testing and/or surveying may be recommended to improve understanding of this interaction, TPR members discussed the Basin definition:

- (PQ) Investigations would occur in coming 5 years, following Plan adoption, but only if the GSP determines that management actions are needed.
- (MW) Looking at water level data in the USGS monitoring well piezometer station on west side of Basin, there is an indication that there is a small downward vertical gradient between alluvium and bedrock. I presume that new monitoring wells will help us assess this condition as well. We do have some information to help us make this determination. We do not have vertical conductivity values, but we do have the basis for developing an approximation of whether this is important enough to build into the model. I have a question for Nate – is this something that could be addressed in the modeling?
 - (NB) Yes, water level data and water level difference between different intervals would help as calibration targets. That way, the model can help with not only water levels, but also help show if it produces those water level differences in the different completions.
- (MW) What about the head differences between the alluvium and bedrock?
 - (NB) The model will include layers that go into the bedrock, and we only have to report on the water budget information. The model domain extends past the Basin boundary including laterally and down into the bedrock. We can compare water levels in the two different units. At the end of the day for the water budget, those water level estimates will be rounded out based on interactions in the residuum and alluvium.
- (PQ) Knowing that we do not have horizontal or vertical conductivity, how are you going to approach that in the model?
 - (NB) Through the calibration exercise, there will be some guidance about using the level head differences to help with the calibration. Initially, those values will be based on literature review, and as we move further into calibration, we will use the head differences in the different completions.
- (PQ) Thinking about boundary conditions for flow in those lower layers. How far out are you extending the model domain?
 - (NB) The model domain used for the Salt & Nutrient Management Plan (SNMP) is being used for GSP modeling. The model domain is the surrounding watershed catchment so we can estimate inputs into the basin, except for where we have stream gage data which represents the sub-watershed upstream of that gage. We are not required to include all the surrounding catchment. Recharge that is occurring in contributing watershed areas above the Basin is included in the model.
- (SC) In understanding the vertical gradient, if we completed the aquifer testing, would we have the information we need? How would we get that information?
 - (NB) Aquifer testing would help give information for that specific location and show what those properties are. Calibration will help us to identify the best and most cost-effective data gaps to fill.
- (PQ) Could the isotope studies help guide you?
 - (NB) I am not familiar with that study and not sure.
- (MW) Will you develop a water balance for the fractured rock?

- (NB) The model domain extends beyond the Bulletin 118 boundary because the model extends farther out to capture interaction of flow between the Basin and surrounding watershed. We will isolate the Bulletin 118 areas for the GSP.
- (MW) If these nested wells provide years of data on the interaction between the 3 aquifers, wouldn't it be easier to just use those head differences for the term of the model? What we really want to know is how much water is going out of the Basin. If there is consistency in the gradient in areas that are not being pumped, we just need to figure out what the flux is out of the bottom of the alluvial aquifer over the course of roughly 10 years.
 - (NB) We need to be careful not to generalize. This does not mean that the Bulletin 118 Basin doesn't receive water from the bedrock. It is a valley, a low point in the catchment.
- (MW) We have multiple locations with nested wells (three USGS plus two City) that we can study. From a regional flow perspective, I am not sure there is water discharging from bedrock into the basin.
 - The City (SC) noted that we can provide water level data for new City wells, but there is no history on those wells.
 - (NB) We're not starting from scratch with the SNMP model. These are important data and we will certainly use them in the model process.
- (PQ) By going out to the Basin boundary, you get to the "no flow" boundary. You are having to estimate how much flow goes into the fractured rock. How much does the SNMP model do that?
 - (NB) We have lots of streamflow data and we will use the gage data. Recharge estimates in upland areas need to be estimated and defensible as they relate to the transient groundwater response. What is the groundwater response to precipitation? How much streamflow does that generate? Calibration helps us to refine this and needs to match basic observations over time.
- (MW) The Basin boundary leaves out a chunk of alluvium in Cloverdale Ranch in the north (Cloverdale Road/San Pasqual Valley Road and up that canyon). The Basin is terminated before the alluvium ends. It appears that there is probably pumping going on above that Basin boundary.
 - The City (SC) explained that DWR redefined the lateral basin boundary in 2017. We can check with them on why they established the basin as they did.
 - (MW) It would be nice to understand that rationale.
- (JB) I wanted to clarify that the model would extend beyond the basin boundary to understand how the basin connects to the watershed. The basin definition will be consistent with Bulletin 118.
- (WH) The basin definition should be consistent with DWR. That is not to say that flux between alluvium and fractured bedrock will not be accounted for in the water budget development.

AC Comments on Basin Definition

AC members provided the following comments:

- AC member (FK) voiced general concern about not including bedrock wells in the modeling process. TPR members appeared to support including those wells in the analysis. AC members had sent letters to John expressing concern about this issue and those were not addressed. I wanted to state that there is a mysterious turn-around in the TPR group about whether to include bedrock wells or not – it has not been proven that those wells are NOT connected to the Basin.
 - (JA) We are following the formal definition in Bulletin 118 and the Water Code. The follow-up language gives us the option of doing investigations if Basin management is needed. Performing an inventory of wells in the Basin is not in the scope or required by SGMA.

- Analyzing the Basin in modeling (vertical gradients, as MW suggested) will allow us to better understand the Basin functionality.
- (JA) We need to park this topic for now, to continue with GSP process, and then re-visit it once we've gotten a little farther down the road. Things that are not specifically required in the regulations can be included in the GSP as implementation. For example: in the Cuyama GSP, where water cuts are needed, determining how those cuts will be done and who they impact will be handled after Plan adoption so there is time to really dig in.
 - (WH) In my opinion, there is a Basin definition provided by DWR in Bulletin 118. But that does not mean that we shouldn't account for the various stresses on the Basin, regardless of the formal definition. We should still account for all the stresses, including bedrock wells, assuming you have data available. There will be uncertainties and you address those in Plan implementation.

Technical Input – Approach

Groundwater Model

Nate Brown, Consulting Team, explained that the groundwater model code selected for this GSP has changed. The consulting team is now recommending that a solute transport model NOT be used, as it is not industry standard for GSPs. The consulting team is instead proposing to use the USGS “One-Water” model code (MODFLOW). In this Basin, groundwater is responsive to wet/dry cycles and this model code can estimate those swings well. This code can also estimate agricultural pumping flow rates based on irrigation-demand-driven land uses. TPR members discussed the model approach slides during Nate's presentation:

- (WH) We used One-Water for Westlands Subbasin GSP. It is a fairly complex code, but it is nice because it considers ground surface and groundwater budget. You use pumping data as calibration targets.
 - (NB) Yes, we've used predecessors, but this is more integrated code.
- (WH) One drawback: if you are considering folding in a solute transport element in future, you would need to do some code enhancements for the output or flux terms (for Mt3D). Keep that in mind in case solute transport modeling is desired in the future.

Nate continued his presentation with a discussion of how land use data and crop coefficients will be incorporated into the modeling process. The consulting team has developed a water year index for the San Pasqual Valley and recommends a 2005-2020 calibration period.

- (WH) Did you do a cumulative departure from the mean on this rainfall data? With that, how does the 2005-2020 calibration period relate to the cumulative departure? Is it similar to an annual average?
 - (NB) Yes, we did. This recommended range is on the drier side; there was more precipitation in the 1980s than in recent two decades.
- (WH) If it is an overly dry period, you will need to keep that in mind when interpreting historical water budget results.
- (PQ) Would be good to see the cumulative departure curve. It should include a wet and dry period and average around mean. The period you are selecting does emphasize the dry years. The Basin fills up during wet years, so we do not want to be pessimistic in the GSP.

Nate reviewed how the team selected precipitation data for this analysis. There are 2 rain gages within the model domain, and with data for an area outside of the basin. PRISM is based on a climate-elevation regression model in 4-Kilometer blocks based on the precipitation data.

Monitoring Networks

John provided an overview of the proposed approach to the monitoring networks: we propose to monitor groundwater levels and quality (TDS and Nitrate), then use those as a proxy for storage, subsidence and surface water depletion. Existing monitoring well network is pretty robust, though he asked Peter Quinlan for help identifying a well site in Rockwood Canyon.

- (WH) Has the Project Team looked at satellite data or UNAFCO ground-based stations in the Valley to look at subsidence?
 - (JA) No, we haven't been able to find either one of those.
- (PQ) There is an observation well (100 feet deep) in Rockwood Canyon, but it is dry. I can provide that data.
 - (NB) Was there a time when it wasn't dry?
 - (PQ) Yes, but that observation well and domestic well both went dry in the canyon.
 - (NB) It would be helpful to have that data to help calibrate the model.
- (MW) I am struck by the lack of monitoring wells between Well 19 and Well 154, There are extensive agricultural operations there, which means there is probably pumping.
 - (JA) Based on DWR guidance, the current monitoring density is sufficient. There are not monitoring wells in the area. There are production wells, but production wells are not ideal because of their pumping impacts. The GSP will include an evaluation of the adequacy of the monitoring network. We might include this recommendation in the GSP.
- (MW) It appears there are several groundwater quality monitoring sites that are not also groundwater level sites. Why? Can we include a recommendation to sample levels with quality?
 - (JA) The groundwater quality wells are NOT City wells, as the City just takes sample from private wells. The City wells are used for level monitoring.
 - The City (SC) explained that it is a separate PUD division that goes out to sample groundwater quality vs. levels.

AC Comments on Technical Approach

AC members provided the following comments:

- AC member (FK) asked what the source is for precipitation data. PRISM data appears to match my data tracking. CIMIS station that was originally installed in a cow pasture with no irrigation and is now in irrigated field. There is a concern the data may be contaminated; but since the correlation seems strong, it is okay.
- AC member (FK) asked if it is correct that One-Water modeling will also incorporate irrigation returns from the different types of crop use and irrigation methods.
 - (NB) Correct.
 - (PQ) I want to reiterate that land use maps for the watershed area need to be as accurate as possible, since that will be the basis for the agricultural pumping projections.

Preliminary Analysis Results

Undesirable Results

John explained how the information from the January AC meeting breakout groups and January TPR meeting discussion was used to develop the Undesirable Results matrix in Handout 2. The undesirable results matrix explains the “bad” basin conditions and defines how they can be measured. We are recommending a detect threshold of 25–35% (4 or 5 wells) for the undesirable result trigger for groundwater levels. TPR members discussed the Undesirable Results matrix:

- (PQ) 25–35% and 2–3 years sounds right and is consistent with what is being done in other GSPs.
- (WH) I echo what Peter just said; it is consistent with other GSPs.
- (MW) That sounds reasonable to me too.

Cross Sections, Contours, Groundwater Quality

John requested the TPR members to review all the maps and cross-sections in Handout 2. The consulting team will generate total of four groundwater contour maps and depth to water maps, each. TPR members discussed the figures:

- (MW) I am familiar with the monitoring well by Hwy 78 and Cloverdale Creek and the groundwater elevation doesn't appear to be correct for that area. The groundwater elevation appears to be 9 ft off, but depth to water is correct.
 - (JA) We will look into this.

John explained that surface water quality data is available from stream gages. Nitrate does not appear to be correlated with stream flows. TDS levels are more correlated, but not strongly. The western portion of the Basin appears to have higher concentrations. Stream gage data is also available from USGS gages.

- (MW) For high spikes, is there a correlation with wildfire in the watershed during that season?
 - (JA) That would be something to consider, especially for 4,000 mg/L TDS spike.
- (MW) Are the USGS stream gage charts for each of 3 gages, or 3 types of data for 1 gage?
 - (JA) We will look into this.

John reviewed the draft cross-sections using the well completion reports and groundwater levels in Spring 2015. He requested any additional geologic data from TPR members that could help refine the cross-sections.

- (MW) The elevation of bedrock contact at A–A at Well 00509 is shallow. In the model, it may have low transmissivity. You may want to look over well logs again to confirm that is real.
- (MW) At the last meeting, you showed a fault map and there was a fault along Santa Maria Creek. That may be the source of that very shallow area in the cross section.
- (MW) Lastly, you should show nested completions in the monitoring wells and show vertical gradient on the cross-sections.
 - (JA) We will look closer at Well 00509 and add screens on the cross sections.

AC Comments on Preliminary Analysis Results

AC members provided the following comments:

- AC member (FK) stated that he was not aware of a well in that location (where Well 00509 is mapped) and feels the data point is skewed. There may be a “dam” underlying Ysabel Creek Road. I have a well to the north of that point, so if Well 00509 were being pumped, my well would be lateral supply.

- (JA) We will look into this. It appears to be a saddle in the bedrock. We will add the Basin boundary to this map.
- AC member (FK) stated that he may have recently tried to put a well there and that he attempted to put a well there five to seven years ago, but it came up dry.
 - (JA) I will coordinate with Frank offline to discuss this issue.
- AC member (MWit) asked about the thresholds statements. He observed there is much more stability in groundwater levels in the west end than the east end. He suggested a 25% or lower threshold and that it be limited to two years.
- AC member (FK) asked about the USGS stream gage charts. He would like information on the watershed area that contributes to each of the gages, plus the timeline (average over how many years).
 - (JA) We will revise the stream gage charts for next time.
- (MW) In most cases, wells are only in one geologic unit, but some penetrate deeper rock. I would like to understand if the wells are completed in multiple units.
- (MW) We don't have a good handle on stream flow leaving the Basin. How will we handle this?
 - (NB) I agree we do not have this data, but previous studies may help us estimate it.
- (MW) Hodges Reservoir managers may have data on surface flows entering from that stream channel. This may be difficult because there is more than one stream the feeds into Lake Hodges, but it may be worth looking into. Is Sandra familiar with any of this data for Hodges?
 - The City (SC) will check to see what data is available.

Field Program Update

John provided an update on the field program. Two monitoring wells were installed as part of the DWR grant. The Well Installation Report was circulated to the TPR as Handout 3. Isotope sampling for groundwater and stream gages has already occurred. One TPR member commented on the field program:

- (MW) Only two wells were put in Well SP129. Why not add a third one in the residuum aquifer?
 - (JA) I suspect that there was not enough wetted residuum, and/or it was too close to bedrock.
 - (SC) Yes. When the well was drilled, it was discovered that the residuum was too thin.

Public Comments

Public comments provided in the "Chat" during the meeting are listed below. No public comments were offered verbally by meeting participants.

Next Steps

The next TPR Group meeting is scheduled for Thursday, July 9, 2020 from 9 to 11:30 am.

Comments about today's meeting must be received by Thursday, May 28, 2020.

The TPR meeting ended at 11:28am.

GoToMeeting Chat Log from TPR Meeting

Rosalyn Prickett (to Everyone): 9:00 AM:

<https://www.sandiegocounty.gov/content/sdc/pds/SGMA/san-pasqual-valley.html>

Nicole Poletto (to Everyone): 9:09 AM: If you are having technical difficulties, please call 858-875-7405

Hank Rupp (to Everyone): 9:13 AM: Who issued the final approval for this PowerPoint?

John Ayres (to Everyone): 9:31 AM: That's my understanding

Lani Lutar (to Everyone): 9:31 AM: Convenience is a not a reason to go outside of Bullet 118.

Lani Lutar (to Everyone): 9:37 AM: The following is policy decision that has already been made by the City and County: The SPV Basin is defined by Bulletin 118 and includes the Alluvium and Residuum. The GSP will not make a determination as to whether or not specific wells are "in" or "out" of the Basin.

Lani Lutar (to Everyone): 9:37 AM: I have this in writing and I

Lani Lutar (to Everyone): 9:37 AM: I'm concerned about mission creep that I'm hearing through this discussion.

Patricia Tennyson (to Everyone): 9:39 AM: As a reminder, we will be responding to questions from members of the public attending during that part of the agenda, but I am keeping track of comments as they arrive. Thanks

Will Halligan (to Everyone): 9:43 AM: Basin definition should be consistent with DWR. That is not to say that flux between alluvium and fractured bedrock will not be accounted for in the water budget development, correct?

Anita Regmi (DWR) (to Everyone): 9:45 AM: The basin boundary was field checked and revised couple years ago. I was part of the revision team and I can look at the basin boundary you are working on or provide you with the revised basin boundary.

Will Halligan (to Everyone): 9:47 AM: response from will

John Ayres (to Everyone): 9:54 AM: ill be right back

Frank Konyn (to Everyone): 10:07 AM: so it includes irrigation return flows?

Will Halligan (to Everyone): 10:10 AM: question after Nate is done on this slide

Frank Konyn (to Everyone): 10:13 AM: what is the source for this data?

Will Halligan (to Everyone): 10:23 AM: question on subsidence monitoring when John is finished

Peter Q (to Everyone): 10:25 AM: There is a observation well in the northern part of Rockwood that is dry

Matt (to Everyone): 10:25 AM: I have a comment regarding water level monitoring well network.

matt Witman (to Everyone): 10:36 AM: CIMIS station

John Ayres (to Everyone): 10:41 AM: I am aware of the DWR Land-IQ data.

John Ayres (to Everyone): 10:42 AM: They did a good job, and we're looking into using them. I need to coordinate with Nate further on that

Patricia Tennyson (to Everyone): 10:42 AM: Almost ready to start the mtg again!

Peter Q (to Everyone): 10:44 AM: I'm back

Will Halligan (to Everyone): 10:53 AM: comment