

SMC for Depletion of Interconnected Surface Water

Wednesday, October 7, 2020

Meeting Notes

Contact: Sam Magill, Practitioner Work Group Facilitator

Welcome and Work Group Purpose

Jay Jasperse, Sonoma Water welcomed the attendees and thanked them for their time and willingness to participate in the work group. Jasperse provided a brief overview of the work group structure.

Agenda Review and Work Group Introductions

Sam Magill, Work Group Facilitator walked through the agenda and meeting protocol before suggesting a round of introductions.

Work Group Background

Jay Jasperse presented the focus of the workgroup meetings. This group will assess options for developing Sustainable Management Criteria (SMC) for depletion of interconnected surface water due to groundwater pumping. The GSA technical staff will use the input from this subgroup to develop a recommended SMC methodology. Jasperse then provided a quick overview of Sustainable Management Criteria including the six indicators and key terms, followed by the role of the workgroup, Advisory Committee and Board. He covered key challenges (technical complexities, data and information limitations, surface water rights) for surface water depletion Sustainable Management Criteria.

Marcus Trotta, Sonoma Water gave an overview of the basin setting and groundwater conditions in the three basins followed by an integrated model overview for each basin.

Questions/Comments

Maurice Hall (chat) – Are there any areas where issues have or are arising from groundwater levels that are too high, e.g. flooding basements, saturated soils, etc.?

Trotta – I am not aware of reported serious problems with shallow groundwater conditions. I know there are areas of shallow groundwater that can cause problems for construction. There are reports of agricultural drains in some of the basins, but we don't have good mapping/documentation of where they are in the basins.

Sam Boland-Brien – I am wondering – at the GSA Board level, what is their appetite for this topic and their interest level, and where does it fit in their priorities?

Jasperse – It is a mixed bag. The three GSA Boards are made up of different interests and there are a variety of perspectives. We haven't discussed this topic too much with the Board yet so there hasn't been a great opportunity to provide detailed comments yet.

This SMC overlaps a lot of different interests. I know some of the Board members will be very interested in this.

Initial Work Group Feedback on Information Needs and Data Gaps

Sam Magill mentioned main points heard from meeting attendees before the meeting:

- Concern about selection of 2015 as baseline year
- Need to connect groundwater levels to interconnected surface water impacts
- Their organizations have already put together approaches on this SMC; staff has received the documents and will look at them.

Overview of Interconnected Surface Water (ISW) and Groundwater Dependent Ecosystem (GCE) Mapping Efforts

Andy Rich, Sonoma Water presented the mapping of interconnected surface waters in Sonoma Valley and Santa Rosa Plain; there is limited data available for Petaluma Valley. Interconnected surface water is defined in the GSP regulations as surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and overlying surface water is not completely depleted. A surface water body may be connected to groundwater during some periods and disconnected during other periods.

Questions/Comments

Rick Rogers – For the Sonoma Valley Basin, what specifically informed the determination of “interconnected surface water”, i.e. the blue lined map?

Rich – Basically, a combination of different factors which allowed us to decide at various times and various times of the year. We didn’t choose any one line of evidence, it required self-corroborating lines of evidence to allow us to choose.

Rogers – In Sonoma Valley it sounds like you are going to have a USGS groundwater surface model, are you planning on incorporating that into your determination of interconnected reaches, or have you already?

Rich – For Sonoma Valley, we already have a groundwater flow model, but we are opting to work with actual observations of groundwater exchange/seepage runs.

Rogers – So with the seepage runs, it looks like one run was done in May, are they done at different times of the year and is the data variability factored in?

Rich – The seepage runs generally are done on semi-annual basis and the major reaches perform the seepage runs monthly. 2010 and 2013 are the earliest time periods we had the seepage runs performed. Starting in 2016, we started to more aggressively do seepage runs as described.

Rogers – When looking at and factoring in seepage runs, was there any consideration of current groundwater impacts in a reach impacting seepage runs? Seems there is a gap of no seepage below Glen Ellen for a distance. Is it due to a geologic phenomenon, or is it a result of excessive unsustainable groundwater pumping in the area?

Rich – I think it is more of a presentation issue. Or maybe during this seepage run that area wasn’t measured or included. Generally, seepage runs are being performed along most reaches of Sonoma Creek

Rogers – In other areas, was there consideration for current groundwater pumping impacts and how they are affecting seepage rate?

Rich – No.

Boland-Brien – Some streams are losing in March 2017 and some are gaining in March 2017. I wonder, shouldn't there be some consistency in such a wet year?

Rich – The real hydrologic process going on where maybe the stage increase exceeded the groundwater level increase causing the stream loss or just the basic issue with an error in stream gage measurements. We try to account for error in the calculations.

Boland-Brien – What is the total flows that this delta is based on?

Rich – It is labeled on there so net seepage is the delta CFS.

Boland-Brien – That is the delta, what are the absolute values?

Rich – It varies from 1 to 1000 CFS in a couple years.

Val Zimmer – Is the baseline analysis high resolution enough to analyze no flow actions such as restoration to ameliorate stream incision or groundwater recharge projects? Seems groundwater pumping may be impacted at certain times of the year (ag). If someone were to initiate a small- or large- scale recharge project would this baseline be sufficient to analyze the success of either of those kinds of projects?

Rich – Are you asking about how we address the SMC or a general question?

Zimmer – I am brainstorming a little bit.

Rich – The datasets would be useful to understand the various projects or actions, but I don't know about the resolution.

Boland-Brien (chat) – It would be helpful to think about SMC in the context of what might be done to manage those SMC.

Rogers – As far as the protocol you are using and results being generated, will they be put in a draft chapter or memo so we can comment?

Rich – I have a write-up we can share.

Maurice Hall – The process you described so far is a process by which you have used to define where there is interconnected surface water? Would be helpful to access documentation to help digest the material.

Rich – Yes.

Marcus Trotta followed with an update on Groundwater Dependent Eco-systems in the three basins and presented staff's proposed approach for GDE mapping and next steps.

Questions/Comments

Rogers – What time of year was the "30 feet depth to groundwater" measured?

Trotta – Those maps were based on springtime water levels.

Melissa Rohde – Which year?

Trotta – It varies by basin, either 2015 or 2016, I can follow up and let you know.

Possible Approaches for Developing SMC

Marcus Trotta shared existing data and said the objective was to identify opportunities for using shallow groundwater wells as a proxy for setting minimum thresholds for depletion of surface water. We feel incorporating groundwater data into this SMC is very important. Trotta introduced Stephen Maples, a recent hire at Sonoma Water, experienced with groundwater-surface water interaction.

Stephen Maples walked through his presentation with a look at how we can leverage measurements and models to characterize groundwater/surface water interactions and surface water depletion.

Outstanding Questions and Next Steps:

1. Are (1) simulated/observed heads in good enough agreement and (2) the regression relation robust enough to perform this assessment?
2. Can a regression be developed to assess other metrics, like duration of interconnection?
3. Are different regression relations needed for different periods within a year (i.e. wet/dry periods)? Or for different water year types?
4. What is the best approach for assessing the contribution from groundwater pumping? Differencing multiple simulations?

Questions/Comments

Rohde – I like the approach in terms of characterizing hydrologic variability, how do you bring it back to defining what an Undesirable Result is? With SGMA we are supposed to ensure groundwater pumping isn't affecting beneficial uses of groundwater. How do we integrate that into the assessment to ensure we aren't causing significant and unreasonable impacts?

Maples – A lot of the choice of Minimum Thresholds and Measurable Objectives comes down to the Advisory Committees and Boards. It is a question we have too.

Trotta – It comes to identifying what are significant and unreasonable conditions. Varying opinions would be helpful to hear from you on the specific insights on significant and unreasonable conditions that may have occurred in the past or what things you want to avoid in terms of surface water depletion due to groundwater pumping impacts to beneficial users.

Rohde – Cautionary advice, if we don't measure potential impacts on groundwater use to the Board, they aren't going to be able to make a decision. At this point, we should clarify what the cause and effect relationships could be and what measures we could use to assess if groundwater conditions are adversely impacting various beneficial users.

Trotta – Thank you, that is helpful.

Boland-Brien – I would probably say it stronger than "caution". I got very lost in the last few slides of the presentation as to *why* it is being done. It is missing the *why*. Maybe we are jumping too fast from local to regional, what are the impacts you are trying to consider? I would like to hear from the others what is undesirable and what is reasonable and insignificant.

Maples – I think the reason why we are looking at pairing local data is using groundwater levels as a proxy. Groundwater-surface water interactions are difficult to measure explicitly. They are being measured in Sonoma Valley by doing differential gaging to look

at the actual loss from one location to the next location or gain of water. Other than doing that, you can't really measure the process directly. By developing the relationship between the groundwater head – we have historical data and a quite robust monitoring network that includes it, you need to develop a relationship between and actual measurement and a response we are trying to get out of it. Thank you for the comment. Boland-Brien – It makes sense. It may be easier to say there is a choke point in the system from migration and needs to be preserved, put the monitoring there, and that is how we are protecting the reach. It might be simpler. Maples – Good way to think about it.

Rogers – I want to relay my agency's thoughts on using groundwater. It is a common first stab at trying to solve this problem. Concern we have with using groundwater, is that when you look at the Undesirable Results of the streamflow it's significant and unreasonable impacts of beneficial uses of surface water. When it comes to steelhead, migration, etc. variables are informed by what the habitat is in the creek that supports the habitat. If you use groundwater as a correlation there needs to be some linkage between the groundwater level threshold and what that means to the streamflow level in the creek and how that stream flow levels protect habitat. Without the linkage, there needs to be significant correlation. What could be potential habitat condition thresholds, e.g. fish rearing habitat, we have a lot of studies in Sonoma County on low summer flows. If you disconnect stream reaches and de-water ripples, that is a threshold condition for juvenile salmonae. That is the kind of threshold that needs to be worked into whatever proxy you are using as a threshold level.

Maples – Thank you for that comment. It is the question we have for all of you. Looking at how much of the contribution comes from groundwater and looking at the change in contributions, especially if paired with additional analyses performed on certain reaches, it would help further inform decision making around measurable objectives.

Rogers – I think everybody understands whatever the level within the creek needed to avoid Undesirable Results that is a level impacted by groundwater pumping and surface flow diversion. The purpose is to identify it. SGMA is looking at impacts of groundwater pumping. What we can do is identify the component that SGMA is responsible for and look at other avenues that surface water diverters are having.

Trotta – Identifying the component that is surface water depletion is due to groundwater pumping, we recognize that as an important component for us to characterize. To the extent you can point us to any data points that would be helpful for us to identify habitat conditions that should be considered, would be very helpful.

Jasperse – This isn't really about sorting out the impacts of surface water and groundwater pumping. Groundwater wells can have surface water rights too and leads to complexity of sorting out the obligations of the GSA. It may change and needs to be considered.

Georgina King – I want to ask Rick Rogers if he can point us to a place where studies have been done where groundwater contribution is calculated. In lieu of any measured data we have, if you can respond to if there are any known studies that can throw out the groundwater contribution.

Rogers – I was speaking mainly of studies of habitat and flow levels. As far as trying to figure out how much groundwater is depleting surface water, I have never done that. I

think the groundwater-surface water model is trying to do that. A lot of the GSAs haven't been collecting this data. I think we will have to use the groundwater-surface water model; we will be hamstrung for the first few years. By the end of the 20-year period, we will have gathered more data and have a much better idea of what is going on. We won't have the answers at the get-go.

Hall – The analysis does a great job describing the connection of groundwater levels and stream flow. One would envision if you can maintain the groundwater level at the purple line, if the same things happens in the future, the groundwater wouldn't affect the stream flow any more than it was negatively affecting it when you first establish a negative issue. It fills in some of what some of my work colleagues call the multiple lines of evidence. My compliments to the analysis. It is another signal to me that Sonoma County has done a lot of work in this realm, sets a good bar and is a good educational tool. I am supportive of the analysis you have done.

Natalie Stork – A lot of good work has been done. It is great to have these analyses and to see what you are proposing. How does it relate to actual conditions in the basin? The concept of the 2015 baseline - the statute doesn't require GSAs to address conditions prior to January 2015. It might be something to consider when trying to relate impacts in the basin back to beneficial users. There were some great water level maps showing 2016 conditions. Is there anything for 2014 or 2015, have you had a look at those to see if depletions can be managed?

Trotta – We have data that spans across the 2015 baseline conditions. Much of the data is integrated into the models so it could be looked at as you suggest. I appreciate your comment.

Lisa Porta – A lot of discussion was focused on how you related this technical analysis to the conditions in the basin. It is always going back to the unreasonable condition and maybe that is where we can try to circle back to the significant unreasonable conditions we want to avoid before diving too much on Minimum Thresholds and Undesirable Results.

Boland-Brien – I agree with what Lisa Porta said. Generally, for the SMC, you might explore how flexible you might be. I think there are areas of flexibility, take advantage of that.

Jessie Maxfield (chat) – This may have come up at the GDE workgroup meeting, but the Department feels using 2015 as a baseline is not appropriate. This was the fourth year of a historic drought so stream depletion was already an issue and using 2015 as a baseline may not be protective of fish and wildlife.

Trotta – Thank you for all the different insights and perspectives. Bringing it back to significant and unreasonable is a critical step for us. Any input you have on that will be helpful to us. During the 2015 timeframe, I pose the question back to you – are there conditions that occurred that year that would be considered significant and you can point to?

Hall – Thank you for all the materials and good introduction. I look forward to further dialogue. Happy to respond to further inquiries by email until the next meeting.

Rohde – In addition, 2015 is only one year. We need multiple years of data to characterize groundwater conditions here in California’s Mediterranean climate.

Maxfield – The baseline should not be a point in time but based on habitat conditions.

Rogers – Re the 2015 baseline, the way we look at it, we are urging caution to use it as a baseline – it was during the height of the drought and it likely represented poor conditions for stream flow and instream habitat. When you are implementing your plan and need a federal permit, we are going to have to do a separate consultation and the plan. Our analysis of the plan is going to come in. If it is based on 2015 impacts on streams, it is likely to be a concern. Whether it leads to a jeopardy situation or adverse pond determination, it is a possibility. I am not making a pre-determination; I am just saying people should be aware of it.

David Manning, Sonoma Water – I am not hearing we have the ability for the model tell us the ripple effects related to groundwater pumping. Are we trending away what could be a likely impact on stream flows but not determining what that level is?

Maples – The groundwater models developed and resolution they are at, they can’t resolve specific ripples and disconnecting - they can tell us the regional response.

Rogers – I think I get the gist of what you are explaining, I think we are on the same page. I realize that in the startup of the GSP for the first few years, we won’t have all the answers. I would like to see a plan in the GSP to acquire the data so we can refine the model and have what we need at the end of the 20-year period.

Manning – That makes sense. Linking the mod should be part of the plan.

Stork – A lot of the data can be used to manage the SMCs. I think there is a lot in the model that can be used especially after a few more model runs. Folks are bringing up good points about using the models for specific ripples, but a lot can be done to get started.

Initial Discussion of Monitoring Methodologies and Approach

Marcus Trotta put this item on the agenda to get meeting participants thinking about it. We are initially thinking about using shallow wells as a proxy for specific SMCs. Initially we are hoping we can rely on some of the shallow monitoring wells as a proxy for the specific SMC. It is a good subject for the next work group meeting. If you have any ideas for monitoring methodologies and approaches, send them to staff.

Questions/Comments

Manning – The remote sensing concept is fantastic. Great to see how the conditions exist for species at a critical time of year.

Zimmer – If you are looking at additional monitoring or locations for groundwater monitoring or stream gaging, it might be good to think about areas that are critical for species and targets for restoration that reduce impacts for groundwater pumpers; either high value or target areas to improve streamflow conditions.

Trotta – That is helpful. In terms of GSP projects, they will be developed in the next six months as we wrap up the sustainable management criteria development.

Review Meeting Action Items and Discuss Scheduling

Marcus Trotta thanked the folks for attending and for the helpful input. We are looking at wrapping up some of the other work groups and will bring back information to you. We will take the input we received today and will put together a more built-out approach for establishing Minimum Thresholds and Measurable Objectives and how to characterize significant and unreasonable conditions for our next meeting.

Jay Jasperse said he appreciated the input and discussion. I agree putting our technical approach around the statement of significant and unreasonable conditions is essential. I am interested as we dive into more of the technical methodologies, one of the SMCs, seawater intrusion, don't have enough data, so we are going with an initial placeholder. I will be interested to see how this process works out as we examine data quality. I look forward to future discussions.

Sam Magill said an email would be sent out on next steps and to schedule a next meeting date.

Today's slides are available at https://gcc02.safelinks.protection.outlook.com/ap/p-59584e83/?url=https%3A%2F%2Fmysacstate-my.sharepoint.com%2F%3A%2F%2Fpersonal%2F%2Fmagill_csus_edu%2FEQ1pXkf1CXxLm6B3omBCp8B1gM_LDI2V9ZVdeb9DApC_g%3Fe%3DRBT3p2&data=02%7C01%7CSimone.Peters%40scwa.ca.gov%7C93a0761f57ae45bc3fac08d86edec512%7Cc93b7179f57841648fe1c2704c730887%7C0%7C0%7C637381250356972267&sdata=ilRigCKbextB8Ziy092%2BBJqJ7%2F0yl53LmlX2bf26KQY%3D&reserved=0

Attendees

Jessie Maxfield, CA Department of Fish and Wildlife
Natalie Stork, State Water Resources Control Board
Val Zimmer, State Water Resources Control Board
Sam Boland-Brien, State Water Resources Control Board
Maurice Hall, Environmental Defense Fund
Melissa Rohde, The Nature Conservancy
Rick Rogers, National Marine Fisheries Service
Lisa Porta, Montgomery & Associates
Georgina King, Montgomery & Associates
Jay Jasperse, Sonoma Water
Marcus Trotta, Sonoma Water
Andy Rich, Sonoma Water
Stephen Maples, Sonoma Water
David Manning, Sonoma Water
Sam Magill, Work Group Facilitator
Simone Peters, Sonoma Water (recorder of meeting notes)