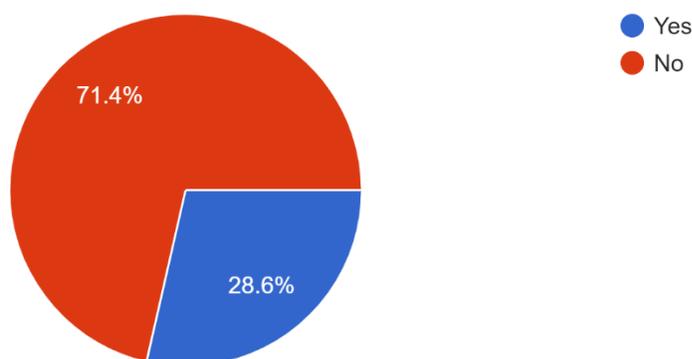


## July 7th, 2020 Safe-Yield Technical Subgroup Meeting Questionnaire Responses

These are responses collected from a questionnaire distributed during the July 7, 2020, Safe-Yield Technical Subgroup Meeting.

Do you believe we have a consensus on the annual calculation of safe-yield?

7 responses



(\*Note: Different colors are different responses)

### Please explain your answer here:

Overall, ADWR has included the appropriate inflow and outflow components. But we have additional questions on the data and methods used for a few of those components. First, for the groundwater inflows component, can ADWR modelers explain why this is a constant value in the safe-yield calculation and whether they've done an analysis on the variability of this component in the Phoenix AMA? Is the groundwater model not that sensitive to changes in groundwater inflows? Should that value be updated more frequently even if it's held constant for a period? Second, is there a better way for ADWR to estimate tribal groundwater demands? Are some withdrawals reported pursuant to Settlement Agreements and/or are there other data sources that ADWR could utilize? And third, AMWUA agrees the Agricultural Incidental Recharge component could be calculated as a portion of water use rather than modeled, but we would like to see the results of additional analyses before concurring with the use of a single AMA-wide value. Can individual incidental recharge percentages be developed for each Irrigation District as a function of historic water use, irrigation method, E/T, consumptive use by crop type, etc.? The level of understanding developed by such an analysis would better inform the subgroup of whether a single percentage is indeed appropriate. Additionally, we encourage ADWR to commit via the 5MPs to reviewing the agricultural incidental recharge rate every 10 years.

The proposed inflow and outflow components are appropriate, but we have a couple of questions. First, we would support a better way to estimate tribal groundwater demand, especially considering that their demand includes multiple land use types. If some of the estimates are based on settlement agreements or other information sources, then it would be helpful to break it down further. Second, Phoenix echoes AMWUA's comments on the Agricultural Incidental Recharge component. We would like to see more analysis done before using a single AMA-wide value. Can individual incidental recharge values instead be based on historic water use, irrigation method, E/T, consumptive use by crop type, etc.? It would be prudent to evaluate that before deciding on the appropriate method. The level of understanding developed by such an

This information was gathered by the Arizona Department of Water Resources.

analysis would better inform the subgroup of whether a single percentage is indeed appropriate and whether that rate should be reevaluated at regular intervals.

For the most part. I think people are starting to become comfortable with the idea of needing to communicate two different ideas with two different tools: (1) on the ground aquifer health using water levels and modeling; (2) long-term spreadsheet based assessment of regulatory environment and trends--this latter component being where I see the safe-yield assessment headed. Misc. comments: I think visualizing net inflows or outflows by activity would be beneficial to start the solutions / who's contributing conversation. The charts with inflows above and outflows below, make it hard to see what activities are contributing. For example, municipal providers are extracting groundwater, but some of that is offset by incidental recharge and some of it is offset by CAGR replenishment. That leaves the extinguishment credits and phase-in allowances that are truly extracting actions with respect to safe-yield. I agree that we shouldn't divvy up natural recharge at this point, too controversial and distracting. Is Ag I.R. only based on non-In Lieu deliveries? Any in-lieu deliveries, including associated IR, are subject to later extraction as LTSCs. I agree that an ag district level estimate for IR should be done before settling on an AMA-wide figure. The potential scale is too big to smooth over up front. Not necessarily for this particular exercise, but for safe-yield linked aquifer health exercises, I think ADWR needs to look at the location of all extraction spatially over time regardless of recharge. I think the annual storage & recovery rules need to be looked at as my belief is we are over relying on the aquifer to be a pipe, treatment plant, and reservoir.

There appears to be agreement with the methodology but not on the data used to calculate safe-yield. Based on the data, as presented, the Phoenix AMA will never achieve or maintain safe-yield.

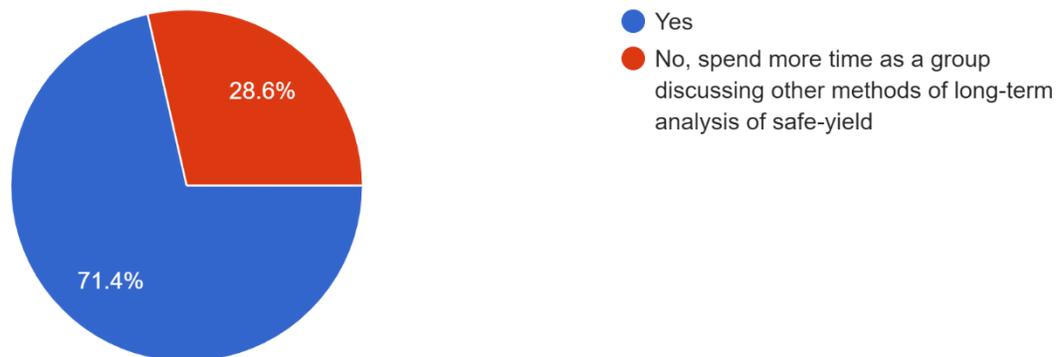
It's hard to judge whether there is a consensus without talking to others. That being said, ADWR has done (and is doing) a great job explaining its thought process, and the new dashboard is amazing. So, I'm impressed.

Safe-yield carries it's own constraints. Consensus on those constraints is present.

Based on today's discussion and comments received, the concept of "annual" calculation seems a daunting challenge.

Do you believe we should we move forward with using the proposed method of long-term analysis of safe-yield that was presented at today's (July 7th) meeting?

7 responses



### Please explain your answer here:

If we correctly understand the proposal dashboard, ADWR would be using a 20-year running average of natural components, and a 5-year running average of artificial components. We agree with this methodology. It makes sense to have the artificial components evaluated on a shorter time-scale, so that issues could be recognized and responded to more quickly. Further, ADWR should not attribute natural flows by sector in the safe-yield evaluations. This practice would not improve or advance the interpretation of safe-yield. Instead, it could mislead water users to believe one sectors' water use contributes more or less to overdraft than others, and a sector-based approach is contrary to the overall AMA-wide management goal. AMWUA encourages ADWR to finalize and document its methodology as soon as possible, so that the long-term status of safe-yield in the AMAs can be communicated before the 5MPs are written, and management strategies to drive the AMAs toward a long-term safe-yield balance can be adequately included in the 5MPs.

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Use a 15-20 year average for natural components to smooth variability and use a 3 year average for artificial components (same as L&U and GPCD). Anything longer than 15 or 20 starts to be too delayed to react to climate change. A 5 year average is too delayed to show a change in trend slope or direction should things go awry. I would avoid tying this to any natural component (ENSO, drought, etc.) as that is the point of smoothing those components.

It seemed like deserved a little more discussion.

The problem isn't ADWR's efforts--it is the fact that everyone including ADWR is hamstrung by the definition of "safe yield" in ARS Section 45-561. If you analyze the definition, ADWR should not consider natural outflows from a groundwater basin when determining whether a basin is at safe yield. Under the definition, preserving groundwater levels (except in the Santa Cruz AMA) to address environmental concerns should not be considered. Lots to talk about here.

N/A

Good start -- food for thought, but more discussion needed. Comment on Municipal Incidental Recharge --- many entities require "retention" of stormwater (100-yr., 2-hr. recurrence interval is common). That water is typically recharged via dry-wells. Can that water be accounted if the municipality chooses to do so? Comment on Safe-Yield --- Each AMA consists of groundwater sub-basins. It would be more accurate to recognize and make determinations by sub-basins and then roll-up that data to the AMA level. This is analogous to physical availability of water recharged in an area of the the AMA and recovered in another area not hydrologically connected.

### Do you have any ideas for how we might best communicate the status of each AMA in regard to its goal?

Referring to the four strategies proposed at the meeting, it seems that the current definition of safe-yield is already an annual numeric target (zero overdraft), so developing another numeric target isn't any more useful. Nor is communicating

the status by sector because that is not how the goal is defined. It could be a combination of the "how far are we?" and the directionality proposals. When ADWR finalizes its long-term analysis, those results can be used to communicate the directionality and provide a general sense of 'how far.' We'd assume that this information would then be updated annually as each new year of data are available to update the long-term analysis. As we stated during the meeting, the most important question that follows and must also be better communicated to the public is, what is being done to reach safe-yield? What is ADWR doing to address the overdraft? Safe-yield is ADWR's managerial goal, and we should avoid making it seem like the current status is out of our control when it is not.

Referring to the four strategies proposed at the meeting, it seems that the current definition of safe-yield is already an annual numeric target (zero overdraft), so developing another numeric target isn't any more useful. Nor is communicating the status by sector because that is not how the goal is defined. It could be a combination of the "how far are we?" and the directionality proposals. When ADWR finalizes its long-term analysis, those results can be used to communicate the directionality and provide a general sense of 'how far.' We'd assume that this information would then be updated annually as each new year of data are available to update the long-term analysis. This would simplify the message to be communicated to the public: what is being done to reach safe-yield or address the overdraft? Safe-yield is ADWR's managerial goal, and we should avoid making it seem like the current status is out of our control when it is not.

Start by throwing out the idea that some particular message must be made or tone must be taken to "soften the blow" to the economic development community. I think the public can understand scale (in context) and a trend. I also agree that we need to talk about storage and how it makes things look better now, but it's really for the future. Be completely open that looking at safe-yield in this way is about seeing today if our future is sustainable as opposed to looking around and smiling at our situation while the meteor falls on our head. To me, it's kind of like making the same nuanced argument the Pinal AMA groundwater model makes--no, Pinal is not out of water today and probably won't run out for 70-80 years; however, this model tells us we are not on a sustainable path and gives us time to course correct. ADWR does great infographics. I think you guys could do some really nice AMA-specific infographics explaining how safe-yield is assessed and what it tells us. I think the public can look at a line graph and see whether we are above or below a line and what direction it's headed. Please avoid using percentages as advocated by Dave Roberts of SRP. Saying that the percentage of outflows has decreased and only represents a small percentage of total use is entirely misleading. The aquifer (excluding LTSCs) is not on a better trajectory because we now use 2 MAFY instead of 1 MAFY while still extracting 300 KAFY. The aquifer does not care about percentages, the only number that matters in this example is the 300 KAFY.

The online dashboard appeared to present the data in a more user friendly manner. This is a great effort by ADWR.

Not much. GUAC meetings are a good place to start.

On the dashboards a longterm overdraft should be included, there is still much work to be done to recharge our aquifers beyond the safe-yield goals and these conversations should continue.

## How could we improve these online work group meetings?

Provide a little more lead time for the subgroup members to review datasets you've provided. Provide homework assignments to the technical group. Leave more time for comments and discussion after each agenda item. Continue developing these follow up questionnaires! Thank you.

Provide a little more lead time for the subgroup members to review datasets you've provided. Provide homework assignments to the technical group, or send out more of these questionnaires. Leave more time for comments and discussion after each agenda item.

The meeting today (7/7) went very well. The chat feature works well and is better than rudely talking over each other or listening to one participant talk the entire time. I think opinion polls could be utilized more throughout to take the pulse of how many people are nodding or shaking their heads.

The meetings have worked well. Don't hesitate readdressing issues that may need more discussion. Be willing to flush these out before moving the discussion down the timeline.

ADWR's efforts are amazing. The meeting program that you use works phenomenally well. You guys should get an award (or something). I don't know if other agencies are doing as well as ADWR, but I hope so.

shorter introductions