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August 20, 2020

Thomas Buschatzke, Director
Arizona Department of Water Resources
1110 W. Washington St., Suite 310
Phoenix, AZ 85007

SUBJECT: Pinal Active Management Area Draft 4th Management Plan


Dear Director Buschatzke,

The San Carlos Irrigation and Drainage District (SCIDD) thanks you for the opportunity to review and submit comments regarding the Arizona Department of Water Resources' (ADWR) draft 4th management plan (4MP) for the Pinal Active Management Area (AMA). SCIDD appreciates ADWR's hard work in developing the 4MP, particularly given the tight deadlines set by ADWR to attempt to catch up with management period dates in the Groundwater Code.

The draft 4MP reflects many important issues, proposals, and analyses that will help advance the Pinal AMA towards achieving the management goal set in the Groundwater Code. The enclosed comments address a number of issues, clarifications, and corrections that SCIDD believes could improve the 4MP. Some of SCIDD's comments address issues that SCIDD contends are critical to the success of the 4MP and compliance with the Groundwater Code, as noted in the enclosed comments. SCIDD respectfully requests that ADWR incorporate those comments in the final 4MP.

Thank you for your consideration of these comments. If you have any questions, please do not hesitate to ask.

Sincerely,



Shane Lindstrom
SCIDD General Manager

Chapter 1

Page 1-1, Paragraph 1

This paragraph states that the Groundwater Code “does not specify the quantity of water that must be preserved for non-irrigation uses, nor does it list any criteria by which to determine how long agricultural economies should be preserved.” Although ADWR states that it interprets preserving future non-irrigation supplies as ensuring long-term, reliable M&I supplies, there is no similar statement regarding ADWR’s interpretation of preserving agricultural economies. To evaluate the effectiveness of the management plan, regulatory proposals, and overall progress towards achieving the Pinal AMA management goal, it is equally important to understand how ADWR interprets preserving agricultural economies. This paragraph implies that ADWR interprets the Pinal AMA management goal as focused primarily on preserving water for future non-irrigation uses, while A.R.S. § 45-462(B) seeks to strike a balance among current development, preserving agricultural economies, and preserving future water supplies.

Page 1-2, Paragraph 1

This paragraph states that the assured water supply (“AWS”) program was created to preserve groundwater resources and promote long-term water supply planning. Elsewhere in the draft 4MP, ADWR describes the AWS program as primarily a consumer protection measure. Although the AWS program might result in preserving groundwater resources, it is not clear that groundwater preservation is a primary purpose of the program. ADWR should not imply that the AWS program is a potential regulatory tool for groundwater preservation measures outside of the context of the subdivision/consumer protection purposes of the AWS program.

Page 1-5, Paragraph 1

Consider stating more clearly that the 2019 AWS model run shows insufficient groundwater to satisfy the physical availability criterion of the AWS program. As currently written, this paragraph can be read to suggest that wet water will not exist for existing uses and AWS determinations during the 100-year projection period, which is misleading.

Page 1-5, Paragraph 2

This paragraph describes conditions such as an agricultural market downturn, CAP repayment obligations, distribution system debt, and CAP subcontract costs that led to irrigation districts filing for bankruptcy protection in the early 1990s. In several sections later in the document, ADWR compares agricultural demand from this period to current demand and states that current agricultural demand remains high despite reduced IGFR acres, which appears to raise questions as to current agricultural water usage. The market downturn, debt, and CAP cost issues described in this paragraph explain why agricultural demand during the late 1980s and early 1990s was not markedly higher than current demand despite greater IGFR acreage. For the same reasons, comparing current demand to demand from that time period is not only fails to convey useful information, but is misleading. ADWR should eliminate those comparisons in later sections, as noted below.

In addition, this paragraph states that the Ag Pool is scheduled to diminish over time, until it terminates starting in 2031. Consider clarifying that the end of the Ag Pool in 2031 does not mean that CAP water will no longer be available for agriculture, but rather eliminates the priority pool of reduced-cost CAP water that currently exists. The CAP Excess Water that formerly made up the Ag Pool still will be available except during shortages, however.

Page 1-5, Paragraph 3

The final sentence of this paragraph states that potential agricultural withdrawal increases in response to LBDCP shortages may result in water level declines and “reduced groundwater supply for future uses.”

The quoted language seems to reflect ADWR's stated interpretation of the Pinal AMA management goal, and implies that agricultural withdrawal increases during shortages would be inconsistent with the management goal. Consider rephrasing to avoid the suggestion that potential increased agricultural withdrawals would be inconsistent with the management goal.

Page 1-6, Conclusion

This paragraph states that continued commitment is necessary to “reduce dependence on groundwater and to achieve the statutorily established water management goals.” Although the District generally agrees with that statement, it remains unclear how ADWR interprets the Pinal AMA management goal overall and what it would mean to achieve that goal. To the extent that ADWR views the goal as primarily focused on preserving future water supplies as suggested in Section 1.1, that goal arguably cannot be achieved because there always will be a future for which to preserve water supplies. It is important for ADWR and stakeholders to reach a common interpretation of the management goal to assess ongoing progress towards achieving the goal and develop useful measures for the 4MP and future management plans.

Chapter 2

Page 2-10 to 2-11, Section 2.5.1

The first paragraph of this section is confusing and can be read to be internally inconsistent. Moreover, although the second sentence currently indicates that annual groundwater pumping remained at peak levels through the late 1980s, Figure 2-7 shows that total annual groundwater pumping was less than half the reported 1953 peak volume each year starting in at least 1985. Consider rephrasing the second sentence, e.g., “Annual groundwater pumping increased beginning in the 1930s, peaked at approximately 1.4 million AF in 1953, and remained at relatively high levels of approximately [xxx,xxx] AF through the 1980s.”

The second paragraph of this section describes deliveries of CAP water to GSFs for use in lieu of groundwater. Throughout the document, it is unclear whether agricultural groundwater usage numbers reported by ADWR include water delivered to GSFs. Consider clearly stating whether in lieu water delivered to GSFs is accounted for separately from physical groundwater withdrawals for purposes of the 4MP. It also is important to ensure that ADWR is consistent in including or segregating GSF deliveries from groundwater usage numbers throughout the document.

The third paragraph of this section states that it is unlikely that all acres shown on historic University of Arizona agricultural maps were cropped in any given year, which may explain why the total area covered by irrigation districts is larger than the total cropped acres listed in agricultural statistics in most years. The district agrees that it is unlikely that all potential crop acres shown on any such maps actually were cropped in any single year at issue. This also helps explain why it is misleading to draw inferences about agricultural water demand trends based solely on the relative numbers of active IGFR acres during separate periods. As noted above and highlighted below, ADWR should remove comparisons and questions relating to current Agricultural demands and IGFR acres relative to demands and acres during prior management periods.

The last paragraph of this section states that double cropping has become a common practice resulting in increases in water demand in areas where it occurs. Although it may be reasonable to discuss double cropping practices in the context of describing agricultural demand in general, ADWR should not suggest that double cropping poses a problem requiring direct management or that it should be discouraged. ADWR's simple references to double cropping and water demands lack context regarding the numerous economic, agronomic, and practical reasons underlying double cropping practices. Double cropping allows farmers to maximize output while minimizing the acreage required for agriculture, which is crucial

for preserving agricultural economies given the fixed amount of farmland in the Pinal AMA and the need to produce feed for dairy and beef cattle industries all year long. Double crop rotations help alleviate pest issues, have beneficial soil impacts, and enable some farmers to implement practices that reduce overall water use relative to use that would be required to grow the same crops on separate acres, such as planting a second crop in stubble remaining after harvesting the first crop in the rotation.

Additionally, disincentivizing double cropping would not necessarily reduce agricultural demands and could have unintended consequences that exacerbate water management issues in the Pinal AMA. Farmers likely would crop more acres each year, particularly given the feed requirements of the dairy and beef industries. Increasing cropped acreage could increase agricultural pumping in areas where agricultural pumping currently is minimal or nonexistent. Likewise, the inability to implement highly efficient practices on double cropped farms potentially could increase overall agricultural water demand. Therefore, while ADWR should encourage efficient agricultural water usage in general, ADWR should not portray specific farming practices such as double cropping in simplistic ways that lead ADWR and readers to infer that the practice inhibits progress towards achieving the Pinal AMA management goal.

Page 2-12, Section 2.5.4.1

The first paragraph of this section identifies the recharge components in the Pinal AMA, which do not include GSF storage activities. Although GSF deliveries represent CAP water used in lieu of groundwater that otherwise would have been pumped, it is unclear why GSF storage is materially different than storage in constructed or managed USFs in the context of describing aquifer conditions. In addition, GSF storage includes a cut to the aquifer, which results in a net addition to the aquifer that would not exist if agricultural users instead pumped groundwater. ADWR should explain how GSF storage fits into the recharge discussion.

The second paragraph of this section states that table 2-2 lists rates of “natural incidental recharge and natural discharge.” “Natural incidental recharge” does not appear to be a term used elsewhere in the document, and it is unclear what it means.

Page 2-14, Paragraph 2

This paragraph states that the components of incidental recharge include agricultural recharge, urban irrigation recharge, artificial lake recharge, artificial recharge, and effluent recharge. This definition appears to be more inclusive than suggested by the recharge components described on Page 2-12, which distinguish incidental recharge and artificial recharge. It also is unclear what ADWR means by “effluent recharge.” It would be helpful to clarify how ADWR views effluent recharge, whether it occurs via underground storage, discharge into streams, agricultural use, or any other applicable means.

Page 2-14, Paragraph 4

This paragraph states that ADWR applies a 15-20 year lag time for agricultural incidental recharge to account for the time it takes for water to percolate through the unsaturated zone, during which time that water cannot be measured as part of the total water in storage. This statement suggests that water known to exist is not accounted for in any way during the lag period. Consider explaining how, if at all, ADWR accounts for incidental recharge during the lag time.

Page 2-14, Paragraph 5

This paragraph describes seepage from unlined SCIP canals from 1985-2014. SCIP canals are being lined, and much of the lining work likely will be completed during the 4th management period. BOR’s 2017 Final Environmental Assessment for the ongoing phase of the lining project explained that incidental recharge from seepage in the unlined canals instead will occur over a broader area through irrigation use. To the extent the expected shift in the location of incidental recharge is relevant to ADWR’s 4MP discussion, consider addressing.

Page 2-14, Paragraph 6

This paragraph describes small amounts of incidental recharge from other sources, including seepage from Picacho Reservoir. Although Picacho Reservoir was designed to be a regulatory reservoir, it no longer functions as a water delivery facility and water that enters Picacho Reservoir today generally does not come out. To the extent that ADWR has not done so already, it may be worth revisiting the estimated amount of recharge from Picacho Reservoir in the context of current operations.

Page 2-27, Section 2.8.2, Paragraph 2

This paragraph describes the storage of CAP water at GSFs, and explains that the storer receives a credit that can be used in the future. A portion of the water stored at GSFs cannot be used in the future due to the cut to the aquifer, however. ADWR should acknowledge the net benefits to groundwater in storage that result from GSF storage relative to groundwater pumping.

Chapter 3

Page 3-1, Section 3.1

The second paragraph of this section concludes by stating that “[a]lthough the use of Colorado River water delivered through the CAP infrastructure (CAP water) increased and groundwater decreased from 1985 through 1993, overall water demand has increased in the municipal, industrial, and tribal use sectors, and agricultural demand continues to fluctuate.” It is unclear why this observation is significant. The statement indicates that the use renewable water supplies increased and the use of groundwater decreased over the period, which is consistent with the purposes of the Groundwater Code and management plans. The statement implies that ADWR seeks to reduce overall water demand in the Pinal AMA from all sources of supply through the 4MP, which is beyond the scope of this process and ADWR’s regulatory purpose.

The third paragraph of this section states that groundwater “remains the primary source of water supply for the PAMA agricultural, municipal, industrial and tribal water use sectors.” Although groundwater is and will remain a significant source of supply for agriculture during the 4th management period, Table 3-1(B) indicates that groundwater typically has constituted approximately 50% or less of the total agricultural water supply since CAP water became available.

Pages 3-4 to 3-5

The last paragraph on page 3-4, which runs to page 3-5, states that in lieu deliveries are counted as groundwater overdraft in ADWR’s calculations. Throughout the document, ADWR should clarify whether in lieu water usage is included in agricultural groundwater numbers, and ADWR should ensure that it is using consistent methods to account for groundwater pumping and in lieu water.

Page 3-5, Paragraph 2

This paragraph states that agricultural demand has fluctuated over time, but that groundwater has remained the predominant supply. This appears to be an overstatement based on Table 3-1(B), unless ADWR counts in lieu water as groundwater in this discussion. ADWR should clarify what specifically counts as groundwater for purposes of the 4MP.

Page 3-11, Paragraph 3

This paragraph states describes factors that could affect dairy water use. Based on the preceding paragraph, ADWR appears not to consider population growth to be a factor that could affect dairy water use. Future population growth could affect dairy water use, however, through development on land currently used to grow feed and urban encroachment.

Page 3-12, Table 3-4

This table indicates that groundwater constituted approximately 46% of the total agricultural water supply in 2017. Like Table 3-1(B), Table 3-4 seems to conflict with previous statements that groundwater has remained the predominant agricultural water supply.

Page 3-13, Paragraph 1

This paragraph states that more than 160 IGFRs have been partially or fully extinguished since 1996. ADWR should clarify whether that total represents IGFRs that were extinguished to create extinguishment credits, or whether it includes all IGFRs that were extinguished or otherwise retired from production.

Page 3-13, Paragraphs 2 to 4

These paragraphs describe water usage by CAIDD, MSIDD, and HIDD, and distinguish CAP water usage from groundwater and in lieu water usage. ADWR should be clear and consistent throughout the document as to whether reported agricultural groundwater numbers include in lieu water usage. ADWR also should acknowledge the beneficial impact of the cut to the aquifer in the in lieu water context.

Page 3-13, Paragraph 5

This paragraph states that “[i]n 2017, SCIDD used about 150,330 AF of water including loss and use by IGFRs within the district who used their own wells for groundwater. SCIDD provided 125,187 AF of surface water in 2017. The remaining demand was met mostly with groundwater” These statements are confusing. Does ADWR mean that 150,330 AF of water was used within SCIDD, including surface water, groundwater, and CAP water delivered by SCIDD and groundwater pumped by IGFR owners who operated their own wells? Consider rephrasing to clarify.

Page 3-13, Paragraphs 7 to 8; Page 3-14, Table 3-5

These paragraphs and Table 3-5 contend that agricultural demand has not decreased over time despite the retirement of nearly 27,000 acres, and compare irrigation acres and water demands in the 1MP with those in 2017. For the reasons explained above, these observations and comparisons are misleading and should be removed from the 4MP. The 1MP demands on which ADWR relies for its comparison coincide with the market, debt, water cost, and bankruptcy issues that ADWR describes in previous sections. In the proper context, the comparison shows that agricultural demand during the 1MP was deflated by those previously described issues, not that current farming practices may be inflating current demands. For the same reasons, the fact that more irrigation acres existed during the 1MP is irrelevant. The comparison serves no useful purpose and should be removed.

Chapter 4

Page 4-3, Paragraph 1

This paragraph states that agricultural demand does not appear to have decreased despite the loss of approximately 20,400 irrigation acres since 2002, and asserts that increased double cropping might be the reason why demand has not decreased. ADWR should avoid speculating and targeting a specific farming practice such as double cropping, with the implication that discouraging such practice could yield demand reductions that did not result from observed reductions in irrigation acres. There are numerous potential reasons why merely retiring irrigation acres might not result in proportionate demand reductions, including ADWR’s prior observation that not all acres are likely to be cropped in any single year. Please see the comment above for additional context regarding double cropping practices.

Page 4-3, Paragraph 2

This paragraph describes agricultural use of CAP and in lieu water. Please clarify whether ADWR counts in lieu water usage as groundwater usage for purposes of the 4MP, and ensure that ADWR uses a consistent method throughout the document.

Page 4-3, Paragraph 4

This paragraph states that CAP Excess Water supplies are likely to diminish, and therefore GSF CAP water is not anticipated to remain a significant agricultural water supply. Although CAP Excess Water historically has been a large source of GSF water, GSFs also receive significant quantities of CAP long-term subcontract water. The District anticipates that those deliveries will remain a significant agricultural water supply.

Page 4-3, Paragraph 5

This paragraph explains that the Ag Pool volume reduces over time, and reaches zero after 2030. The Ag Pool is a priority pool of reduced cost CAP Excess Water for agricultural users. Except during shortages, the CAP Excess Water that currently makes up the Ag Pool still will be available after 2030. Agriculture's continued use of at least some of the available CAP Excess Water after 2030 will be important in achieving the Pinal AMA management goal, and should be acknowledged and openly encouraged.

Page 4-8, Paragraph 2

This paragraph states that BMP farms applied about 29% more water per irrigation acre than non-BMP farms in 2017. Comparing water use per total irrigation acre on BMP and non-BMP farms in this manner is misleading and does not convey useful information. As ADWR acknowledges, this observation can be explained by numerous factors, including that fewer irrigation acres are actively cropped on non-BMP farms in a given year. ADWR's comparison does not indicate that the BMP program fails to meet the statutory direction to design BMPs to achieve conservation equivalent to the Base Program. The comparison fails to recognize that BMP and non-BMP farmers are self-selecting and have different farm operations, and that many BMP farms previously depended on flexibility credits. Thus, it is not clear that BMP farms would use less water under the Base Program, which undermines ADWR's ostensible reason for evaluating relative water usage under each program. Moreover, obviating the need for flexibility credit usage and transactions offers relief from administrative burdens for ADWR and users, which is consistent with the purposes of the BMP program. To evaluate the effectiveness of the BMP program and agricultural conservation requirements, ADWR should instead compare (1) total agricultural water use by Base Program and BMP farms to the total use allowed if all farms were regulated by the Base Program, or (2) BMP farm water use to water use by those same farms prior to enrolling in BMPs. The District contends that, if total agricultural water use is equal to or less than the total use that would be allowed if all IGFRs remained in the Base Program, the BMP program successfully achieves conservation at least equivalent to conservation required by the Base Program as provided in the Groundwater Code.

Page 4-9, Figure 4-4

For the reasons described above, Figure 4-4 is misleading. It is unclear what purpose Figure 4-4 serves in the discussion other than to negatively portray BMP farms relative to non-BMP farms. Figure 4-4 should be removed from the final 4MP.

Chapter 5

Page 5-6, Paragraph 4

This paragraph describes extinguishment credit generation and AWS rule modifications relating to groundwater allowances. Consider clarifying what an extinguishment credit is and how such credits are used.

Section 5.3.1

This section describes the NPCCP, which ADWR states is designed to achieve efficiency equivalent to the Total GPCD Program. To evaluate the overall effectiveness of Pinal AMA management plans and conservation requirements and clarify ADWR's interpretation of statutory requirements for designing BMP-type conservation programs, ADWR should explain how it analyzes the relative efficiencies achieved under the NPCCP and Total GPCD Programs.

Chapter 6

Page 6-8, Section 6.2.2.5

This section describes dairy water use demand, and states that "ADWR continues to identify new dairies in PAMA." What does ADWR mean that it "continues to identify new dairies?" Is this meant to indicate that new dairy operations have commenced since the ADWR completed the draft 4MP, that ADWR anticipates growth in the dairy sector during the 4th management period, or something else?

Chapter 7

Page 7-8, Section 7.4.4.2

The first paragraph of this section states that the AWS program is a consumer protection program that ensures that new subdivisions will have secure water supplies for at least 100 years. This statement better describes the purpose of the AWS program than the description on page 1-2, in which ADWR contends that the purpose of the AWS program is to preserve groundwater. ADWR should focus on the purpose of the AWS program as described in this section rather than characterizing the program as a general groundwater preservation measure. ADWR's description on page 1-2 can be construed to suggest that the AWS program is a regulatory tool that could, or should, be used to achieve groundwater preservation in all water use contexts, including those that are not subject to AWS requirements such as agricultural water use.

Section 7.7

The first paragraph of this section identifies human activity as a cause of groundwater quality degradation in three consecutive sentences. Consider striking the fourth sentence, which begins with "[c]ontamination of groundwater in the PAMA," to reduce repetition and improve reading.

Chapter 8

Page 8-1, Section 8.1

Paragraph 2 of this section defines "augmentation" and "recharge." The first sentence is unclear as to whether ADWR intends to include deliveries to GSFs in the "augmentation" definition. If ADWR does not intend for GSF deliveries to count as "augmentation," consider using language other than "in lieu of groundwater" to define "augmentation," since "in lieu of groundwater" is commonly used to describe GSF operations specifically.

Page 8-1, Section 8.2

The first paragraph of this section states that recharge is an effective tool to mitigate local water supply problems, "depending where storage and recovery activities occur?" Consider explaining why ADWR believes that the effectiveness of recharge in mitigating local water supply problems depends on where activities occur, and how its effectiveness could be improved. The District agrees that recharge is an important tool to mitigate local water supply and AWS physical availability issues, and further discussion of effective ways to address those issues through recharge could help guide efforts during the 4th management period.

Page 8-2, First Full Paragraph

This paragraph identifies particular issues for which recharge could have negative or positive effects, including “physical availability.” ADWR should clarify whether it means “physical availability” in the context of AWS program requirements, actual physical water supply challenges, or both. The potential effects of recharge activities on the ability to meet AWS program requirements are not necessarily the same as effects on the overall groundwater supply physically present in the aquifer, and identifying measures to enhance the positive effects of recharge may depend on the specific issue that ADWR and stakeholders seek to address.

Page 8-2, Section 8.2.2

The first paragraph of this section describes storage permits, including USF and GSF permits. Throughout the document, it is unclear whether ADWR’s discussions of underground storage/recharge relate to USF and GSF activities, or USF activities only. ADWR should clarify which storage activities are included in recharge discussions, and remain consistent throughout the 4MP.

Page 8-3, Section 8.2.3

The first paragraph of this section states that “[n]et storage’ in [Table 8-1] means water delivered to be stored minus annual recovery and does not account for physical or other losses (evaporation, cut to the aquifer, etc.)” Although the cut to the aquifer represents stored water that is not recoverable, it results in additions to groundwater in storage, not a “loss” similar to evaporation. Consider rephrasing, or explain why ADWR treats the cut to the aquifer as a “loss” rather than an addition to net groundwater in storage.

Page 8-3, Paragraph 4

This paragraph states that the total permitted capacity for Pinal AMA GSFs is 312,000 AF/year. Consider clarifying that that was the permitted volume as of the date of drafting, and that the permitted capacity may change when permits expire and/or are renewed.

Page 8-9, Section 8.3

This paragraph states that “[r]ecycling treated effluent stretches the water supply and has other benefits related to water quality.” Consider explaining what ADWR means by recycling treated effluent, and how doing so has water quality benefits.

Page 8-9, Section 8.3.1.1

The second paragraph of this section describes factors that could influence agricultural water users’ response to future CAP Ag Pool reductions. The cost of CAP Excess Water that will be available after the reduction and/or termination of the CAP Ag Pool also is a critical factor that will affect the extent to which agricultural users rely on groundwater to meet future demands. Agriculture’s continued use of available CAP water supplies over the long term will significantly benefit the achievement and maintenance of the management goal and should be a priority for ADWR and all Pinal AMA stakeholders.

Page 8-10, Paragraph 2

The first sentence states that “delivery scheduling” has implications for the use of CAP water in the Pinal AMA. It is unclear what ADWR means by delivery scheduling and implications for CAP water use. Consider explaining what delivery scheduling issues exist and related implications for CAP water use.

Page 8-11, Paragraph 3

This paragraph falls under the heading “Tribal Supply of Central Arizona Project Water,” but describes the total entitlement for GRIC from all sources of supply. Consider specifically describing the CAP portion of that entitlement.

Page 8-13, Section 8.5

The first paragraph defines and distinguishes “augmentation” and “recharge.” The “augmentation” definition, however, appears to include activities that also fall within the definition of “recharge.” Consider rephrasing the “augmentation” definition to avoid using “in lieu of groundwater,” to the extent that ADWR does not consider GSF deliveries to qualify as “augmentation.”

Page 8-20, Section 8.6.1.2

This section includes ADWR’s recommendations to AWBA, including a recommendation that AWBA continue to hold withdrawal fee credits in reserve because those credits may be used to meet the State’s AWSA obligations. AWBA can continue to accrue or acquire credits on an ongoing basis to meet AWSA obligations, and using credits to satisfy those obligations is likely to occur incrementally during shortages, not in a lump annual sum. ADWR should carefully analyze realistic future scenarios, and evaluate whether reserving all withdrawal fee credits is reasonably necessary to meet AWSA obligations. The potential benefits of extinguishing credits and likely impacts on AWSA obligations warrant further analysis.

Page 8-21, Paragraph 4

The third sentence appears to be missing “the storage” between “but” and “is not contributing.”

Page 8-22, Section 8.7

The third paragraph states that the “focus should not be a debate between conservation and augmentation, but rather, efficiently using water.” The District agrees with that statement. ADWR’s analysis of agricultural water use in prior sections, however, appears to focus primarily on achieving net reductions, even at the expense of efficiency. The District believes that ADWR should refocus its agricultural water use analyses to prioritize efficiency as stated in this section.

The fifth paragraph of this section indicates that ADWR may need to scale back augmentation incentives, because they purportedly encourage use of alternative supplies at the expense of conservation. With the limited renewable supplies currently available in the Pinal AMA, incentivizing water users to bring in new supplies should be, and remain, a priority.

Page 8-23, Section 8.8

The first paragraph states that available tools might not be sufficient to meet Pinal AMA “water management objectives.” To the extent “water management objectives” means something other than the Pinal AMA management goal, please explain ADWR’s understanding of those objectives.

Page 8-24

These paragraphs purportedly are the conclusion of the 4MP’s underground storage, savings, and replenishment chapter. The discussion, however, focuses on broad water use reduction, pumping, and AWS physical availability issues, among other things. These paragraphs seem to have no relation to underground storage, savings, and replenishment. Consider revising, striking, or moving these paragraphs to more appropriate chapters.

Chapter 9

Page 9-5, Section 9.5.2

This section describes challenges identified by the Demand and Water Supply Assessment, Pinal Active Management Area (“Assessment”). The first bullet identifies agriculture remaining the dominant sector as the first challenge. While the District recognizes that ADWR is referring to the Assessment, preserving agriculture in the Pinal AMA is an express purpose of the Pinal AMA management goal.

Thus, ADWR should avoid portraying agriculture in the Pinal AMA as a “challenge” hindering achievement of the management goal.

Chapter 10

Page 10-10 to 10-11, No. 3

This paragraph describes incidental recharge, and concludes with a discussion of effluent discharge and potential LTSC accrual. Based on effluent/recharge discussions in other sections, it is unclear whether ADWR considers effluent recharge to constitute incidental recharge, natural recharge, artificial recharge, or some combination thereof. Consider explaining how effluent recharge occurs and how it is accounted for in calculating water budgets.

Page 10-11, Paragraph 4

This paragraph states that the amounts of groundwater that can be withdrawn while preserving supplies for non-irrigation uses is not fixed, and apparently concludes by stating that the groundwater system will remain in a state of overdraft given current trends. The Pinal AMA management goal does not focus solely on preserving future water supplies for non-irrigation uses, but rather strikes a balance between preserving groundwater supplies for future uses and preserving agricultural economies. In addition, while assessing overdraft generally may be useful in evaluating current and future groundwater conditions, the fact that the system is or may remain in a state of overdraft does not show that the Pinal AMA has not achieved, or will not achieve, the management goal. To the extent that this paragraph reflects ADWR’s determination that the goal requires eliminating overdraft, ADWR has conflated the Pinal AMA management goal with the “safe yield” goals of other AMAs.

Chapter 11

Page 11-1, Section 11.1

The third sentence of this paragraph is confusing. If ADWR means to say that groundwater pumping is likely to increase if less GSF and CAP Ag Pool water is available, consider revising.

Page 11-1, Section 11.2

The first paragraph of this section explains that ADWR has moved away from characterizing the Pinal AMA management goal as a “planned depletion” goal because it does not represent the best water management approach. It is important for ADWR and stakeholders to have a clear understanding as to what the Pinal AMA management goal is, and for that understanding to remain stable through different management periods. Lacking a shared, consistent understanding of the management goal, it is impossible to assess progress and develop proper regulatory and non-regulatory measures to achieve that goal.

Page 11-1, Section 11.2.1

This paragraph describes the importance of distinguishing projections generated for planning purposes from projections generated for AWS purposes to avoid confusion regarding their respective assumptions and results. The District agrees, and urges ADWR to clarify its intended meaning of “physical availability” throughout the 4MP to reduce the likelihood that discussions of AWS program issues may be construed to reflect a determination that water quantities physically present in the Pinal AMA cannot support existing uses.

Page 11-2, Section 11.2.2

The fourth paragraph of this section describes potential shortage impacts to CAP water availability, and states that ADWR anticipates that AWBA will not use CAP Excess Water in the future. Whether or not AWBA uses CAP Excess Water in the future, CAP Excess Water will be available except during

shortages, including after 2030. Ensuring that agricultural users can continue to use available CAP Excess Water, either directly or through GSF storage, should be a long-term priority for the Pinal AMA.

Likewise, the fifth paragraph of this section states that ADWR anticipates that Colorado River shortages would negatively impact progress towards the Pinal AMA management goal. While this statement generally is reasonable, ADWR should consider acknowledging that shortage conditions are not permanent, that some Colorado River water realistically will remain available over the long term, and that incentivizing the use of those supplies in the Pinal AMA will be essential in achieving the management goal.

Page 11-3, Section 11.2.3

The first paragraph of this section states that groundwater uses that lack replenishment requirements contribute to overdraft, and that such uses may continue or increase over time under the “current regulatory framework.” As described in the immediately following paragraphs, agricultural withdrawals do not require replenishment. On the whole, these paragraphs seem to suggest that there might be an alternative regulatory framework by which ADWR could prevent the continuation of unreplenished IGFR withdrawals over time. The District strongly disagrees that ADWR could develop a regulatory framework that would discontinue or impose a replenishment requirement for IGFR withdrawals. Likewise, as discussed above, the District disagrees that eliminating overdraft is required by the Pinal AMA management goal. Reducing overdraft may be a useful benchmark for purposes of evaluating progress towards the management goal, but ADWR should avoid conflating the existence of overdraft conditions with the failure to satisfy Groundwater Code requirements.

Page 11-4, Paragraph 3

This paragraph references potential “physical availability” challenges for additional development based on the continuation of current pumping levels. ADWR should make clear that the “physical availability” challenges referenced in this section relate specifically to challenges in meeting AWS program requirements, rather than actual wet water supplies available in the Pinal AMA.

Page 11-5, First Full Paragraph

ADWR should clarify that the 2019 Pinal AMA Model Run and results relate specifically to the AWS program. It is important to keep the model discussion in the proper context. Inability to meet AWS physical availability criteria does not mean that there is insufficient groundwater in the Pinal AMA to support uses.

Page 11-5, Section 11.2.4

The second paragraph states that considerably less water will be stored in GSFs as CAP subcontractors grow into allocations and shortages reduce CAP supplies. This conclusion is conjecture. Shortages will reduce CAP supplies and may reduce GSF storage during shortage periods. CAP subcontractors largely already order their full allocations, however, and store some of that in Pinal AMA GSFs. Storage in GSFs is likely to continue in the future, potentially even at initial shortage tiers.

The third paragraph states that physical availability of groundwater may increasingly affect water management decisions. If ADWR means physical availability in the AWS context, please clarify. Whether or not ADWR means physical availability in the AWS context, the significance of this statement is unclear, as groundwater availability arguably already is the principal issue affecting Pinal AMA water management decisions.

Page 11-6, First Paragraph

The top paragraph, which begins on page 11-5, states that the benefits of recharge may be confined to areas where agricultural pumping has discontinued or lessened. Please explain the basis for this assertion.

Even in areas where agricultural pumping continues, recharge likely would mitigate water level declines that otherwise would occur.

Page 11-6, Section 11.2.6

This section states that ADWR's direct management of only one water source (groundwater) may weaken conservation requirements, and that the ability to directly manage all water supplies is a logical long-term goal to work towards reliable future water supplies. The Colorado River and surface water supplies available in the Pinal AMA are subject to extensive and complex state and federal laws, rules, agreements, and court decrees. Thus, ADWR's potential ability to directly manage those resources necessarily is limited. Moreover, it is not obvious why ADWR's inability to directly manage the use of water resources other than groundwater may weaken conservation requirements in the Pinal AMA. The District questions whether ADWR's direct management of all water resources in the Pinal AMA is feasible or a logical long-term goal.

Page 11-8, Paragraph 4

This paragraph states that BMP farms use about 57% more water per irrigation acre than non-BMP farms, and that agricultural water demand could continue to increase regardless of the source of supply if that trend continues. As explained above, the District contends that ADWR's comparative analysis of BMP and non-BMP farm water usage is flawed and misleading. The District also questions several specific assertions in this paragraph. For example, ADWR provides no supporting basis for the 57% figure cited in this paragraph, which is almost twice as high as the 29% figure cited on page 4-8. Likewise, the District disputes whether adopting the BMP program resulted in a meaningful shift in water use patterns for the reasons set forth above, including that many BMP farms previously relied on flexibility credits to support similar water use patterns. Changes to agricultural water use patterns result from changing market conditions, such as increased demand for feed crops to support dairy and beef industries. Such changes would occur even without the adoption of the BMP program.

In addition, ADWR's assertion that agricultural water demand could continue to increase regardless of the source of supply is unsupported. The two largest irrigation districts in the Pinal AMA are subject to annual groundwater pumping caps, which generally foreclose ADWR's speculative concern that total demand may continue to increase under the BMP program. Development is likely to occur on significant acreage in HIDD and SCIDD for which AWS determinations already have been issued, which is virtually certain to reduce agricultural demand in those districts.

ADWR's perception that the BMP program and current cropping patterns present problems to be addressed by the 4MP or future management plans is fundamentally flawed, and could lead ADWR to pursue regulatory measures that cause significant, adverse consequences for agricultural economies, in conflict with the Pinal AMA management goal. The District believes that ADWR should strike this paragraph from the final 4MP, as well as all paragraphs containing similar comparisons of BMP and non-BMP water usage in other sections.

Page 11-9, Paragraph 5

This paragraph states that some feel that municipal BMP-type programs are not effective in achieving water conservation, and that further evaluation will include analyses to evaluate program effectiveness and inform future program development. The statutory requirements for designing agricultural and municipal BMP programs are substantially similar. ADWR should engage both municipal and agricultural users to develop a proper set of metrics to evaluate the effectiveness of BMP programs before performing the additional analyses referenced in this paragraph or implementing changes to existing BMP programs intended to address ADWR's current perception that BMP programs are ineffective.