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Mark Johnson

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Good afternoon Mr. Johnson,

Thanks again for your thorough and thoughtful feedback. We've discussed your comments internally and developed the following responses (in italics):

1. TW Service Area-Figure 1.6 (Pg 1-6)-The Tortolita Preserve is not shown in green as a Preserve on this figure. The 2,400-acre Tortolita Preserve is Marana's premier natural resource asset and should be added to this figure and shown in green as a Preserve and on all other maps in the Plan and Appendices.

The Tucson Water Service Area map shows Major Parks in green. These include lands managed by the U.S. Forest Service, National Parks and Monuments, and Pima County's Sonoran Desert Conservation Plan. The next draft of the One Water 2100 plan (referred to as "the Plan" in the rest of this letter) will have the most recent version of our water service area policy map that uses the term "Major Parks" instead of "Preserves" in the legend.

2. TW Service Area (Pg 1-6)-Section 1.3.3 should include a description of Tucson Water Service Area Policy and Intergovernmental Agreements with other communities/water agencies. There should also be a statement that TW as no intention of serving areas that are outside its Obligated Service Area and in particular the areas in white in Dove Mountain (Marana) including the Tortolita Preserve and surrounding lands.

The next draft of the Plan will include additional language about the water service area policy and intergovernmental agreements.

3. Surface Water-Colorado River (Pg 3-2)-The Colorado River is over allocated by 3.5 million acre-feet per year (MAFY) and all Colorado River water allocations should be cut by 20% (3.5/16.5). See TA Comment Letter (9/1/22) to the United States Bureau of

Reclamation (USBR). All water agencies that receive Colorado River water should assume a 20% cut for water resource planning purposes.

The Central Arizona Project is the primary Arizona water agency that receives Colorado River water. We buy water from the Central Arizona Project. The water supply and demand scenarios in Section 4.5 of the Plan use two different reductions to our allocation of Colorado River water delivered through the Central Arizona Project for future planning purposes. The smallest supply reduction is 14% which corresponds to Tier 3 of the Drought Contingency Plan. This reduction is used in the Sustainable Oasis and Desert Oasis scenarios. The largest supply reduction is 50% and that is used in the Counting Buckets and Thirsty Desert scenarios.

4. Recharge & Recovery (Pg 3-4)-TW has been importing Colorado River Water for recharge and recovery since 2001. Non-native replenishment water has been mixed with the native groundwater for 22 years. This may lead to long-term in-situ groundwater and alluvium issues due to dissimilar water quality. The Plan should include an action item to study the long-term impacts of Colorado River Water replenishment in terms of water quality and alluvium mineral deposition.

Appendix E section 2.3 addressed water quality concerns with Colorado River water delivered through the Central Arizona Project, both before it is recharged and after it is recovered.

5. Groundwater (Pg 3-6)-There is no mention of TAMA in this section or throughout the document. The Plan should include a discussion of this comprehensive regional water resource planning effort and TW's role in that effort.

The Tucson Active Management Area will be introduced on p. 3-6 in the next draft of the Plan. It will tie to the Active Management Area description on p. 3-8.

6. Groundwater (Pg 3-6)-There is no mention of aquifer safe yield and the fact that the TAMA aquifer(s) accumulated overdraft from 1985-2020 is 1.8 MAF, i.e., the aquifer(s) is already in a deficit and needs to be paid back.

The next draft of the Plan will include a description of the Tucson Active Management Area and safe yield.

7. Groundwater-Figure 3.8 (Pg 3-7)-This figure shows improving groundwater levels in some TAMA regions but not in others. There should be a note associated with this figure that states that although groundwater levels are improving in some areas, each water agency's Designated Assured Water Supply (DAWS) dictates how much native groundwater can be withdrawn. For example, Marana DAWS (2018) has a native groundwater allowance of 25.5 MAFY and an incidental recharge allowance of 294.5 MAFY for a total of 320 MAFY. Yet Marana's water demands are 2,920 MAFY, requiring the balance to come from renewable water supplies via replenishment.

The next draft of the Plan will describe the fact that some areas of the aquifer are not recovering as quickly because they depend on a mix of renewable Colorado River supplies and groundwater.

8. Groundwater Remediation (Pg 3-10)-PFAS compounds in the aquifer is a regional problem and impacting other water agencies. The Plan should include an action item to study and remediate PFAS compounds on a regional basis.

The first and second groundwater strategies and implementation actions include working with partners to remediate and protect our groundwater supplies.

- *GW-1: Partner with regional water organizations to protect the aquifer.*
- *GW-2: Accelerate groundwater cleanup efforts to make local supplies more available.*

9. Stormwater (Pg 3-19)-The Plan should include an item to conduct basic cost/benefit analysis before embarking on large-scale stormwater capture projects. It seems doubtful that a positive cost/benefit can be achieved in a region that has an average rainfall of less than 12" per year and two large aquifers that have been accepting natural runoff for eons.

An analysis of the green stormwater infrastructure fee was conducted in 2019 before Mayor and Council approved the Storm 2 Shade program. This analysis presents some of the costs and benefits associated with stormwater capture projects:

https://www.tucsonaz.gov/files/water/COT_GSI_Report_2019_08_12_FULL.pdf

10. Water Demands (Pg 4-2)-Section 4.1.1 states that residential water demands have declined to about 100 gpcd yet on the following page, Figure 4.4 shows residential

demands declining to 75 gpcd. This needs to be corrected. Figure 4.4 does not match Figure 9 in Appendix J as 4 more years have been added and should state as such.

The next draft of the Plan will correct these labels.

11. Seasonal/Non-Seasonal Demands-Figure 4.5 (Pg 4-4)-This figure compares non-seasonal and seasonal water consumption. It was developed using some very sketchy assumptions whereby winter use was averaged and multiplied by 12 to obtain non-seasonal use (indoor) and that was subtracted from the total use to get the seasonal use (outdoor). The Plan states that seasonal use (outdoor) is about 20% of total use. This is not a scientific study and it is well known that in arid regions the outdoor water use can be 50%-75% of total use, especially if weather-based irrigation controllers are not used. This figure should be removed and replaced with some scientific indoor/outdoor water use data.

Using the winter average to determine seasonal demand is the same method that Pima County Wastewater and Reclamation uses to determine wastewater charges. Outdoor water use has declined significantly in our region due to water conservation education and tiered rates.

12. Rebates & Incentives (Pg 4-6)-Weather-based irrigation controllers are not mentioned. They can save up to 12,250 gallons per year per home. Weather-based irrigation controllers should be included in the Plan and offered by TW free of charge and the building codes should be changed to require them. See TA's Smart Irrigation To Save Water.

Tucson Water recently had a temporary smart irrigation controller incentive this spring. The amount of water savings and the overall costs of proposed incentive programs have to be prioritized along with our existing incentive programs. Our program's capacity to manage new incentives is also limited.

13. Rebates & Incentives (Pg 4-6)-Hot water recirculation pumps are not mentioned. They can save 9,000 to 12,000 gallons of water per year per home. Hot water recirculation pumps prevent wasting of water while waiting for the water to warm up for showers, etc. and should be included in the Plan. TW should offer a hot recirculation

pump rebates and the building codes should change to require them. See TA's Tidbits #39.

We are working with our Planning and Development Services Department to ensure that code improvements address the length of hot water runs in new homes.

14. Population Projections-Figure 4.11 (Page 4-11)-Tucson service area population is expected to grow to 947,000 by 2100 for an average annual increase of 0.3 percent. This is a reasonable and sustainable growth rate compared to other communities like Marana which has a projected growth rate of 7.48% over the period 2021-2041. See TA's Marana DAWS Modification Part II-Analysis.

15. Demand Projections-Figure 4.12 (Pg 4.12)-This figure and discussion does not match the water demands presented in the Water Use Projections-Appendix J. There is no mention of including climate change and water conservation in the projections. Appendix J-Figure 9 show three projection scenarios (low-medium-high) that range from 116,000 AFY to 150,000 AFY with an average of 133,000 AFY in 2100. Figure 4.12 has two projections-increasing demand and decreasing demand ranging from 106,000 AFY to 127,000 AFY. This does not match the presentation in Appendix J and needs to be rectified or explained.

The water use projections in Appendix J were developed to support our scenario planning process. The projections in Chapter 4 were developed to reflect stakeholder feedback that was received during the scenario planning workshops. The next draft of the plan will label the projections in Chapter 4 as "Water Supply and Demand Scenarios".

16. Supply and Demand Comparison (Pg 4-13)-Section 4.5.3 is very confusing and should redone for the following reasons:

a. As mentioned in Item 15, the demands in section 4.5.3 are different than in Appendix J.

Please see the response to comment 15 above.

b. There is not a good explanation of the TW sources of supply.

Tucson Water's supplies are groundwater, surface water, recycled water, and stormwater. The groundwater shown in this section reflects our 2023 Designation of Assured Water application. The response to comment 3 explains the two reductions to our surface water supply (Colorado River water delivered through the Central Arizona Project; it is recharged and recovered locally).

c. Where does the 54,000 AFY of available groundwater come from? Is this related to Additional Groundwater Avra Valley Water Rights totaling 1.2 MAF?

Our 2023 Designation of Assured Water Supply application.

d. Assuming 50% reduction of Colorado River supplies is too conservative and should be 20%.

Please see the response to comment 3 above.

e. Figure 18 in Appendix J is much easier for the average person to understand. This type of graph should be used showing the range of demands versus two supply alternatives—one with 20% Colorado River cut and one without. See TA's Tucson Water One Water 2100 Analysis (10/9/22).

Please see the response to comment 15 above.

17. Strategies-TA agrees with most of the Strategies presented with the following additions:

a. SW-1-utilize 80% of Colorado River water supply as available for planning purposes.

Please see the response to comment 15 above.

b. GW-4-include ultimate replenishment of the 1.8 MAF of TAMA accumulated overdraft.

The state's Active Management Areas are subject to regulation pursuant to the Groundwater Code. In the Tucson AMA, the primary management goal is safe-yield by the year 2025. Safe-yield is accomplished when no more groundwater is being withdrawn than is being replaced

annually. There is no requirement in the Groundwater Code to replenish groundwater that was mined prior to achievement of safe-yield.

c. GW-5-all wheeling agreements should be required to perform a cost-of-service study and provide credits to the existing customers that paid for the infrastructure that will serve the new area covered by a wheeling agreement. See TA Letter to Tucson Water (1/16/21).

Tucson Water routinely performs cost of service studies and that information is the basis of our rate structure.

d. GW-6-add strategy to study the long-term impacts of Colorado River Water replenishment in terms of water quality and alluvium mineral deposition.

Please see the response to comment 4 above.

e. S-1-Perform cost/benefit analysis first-see Item 9.

Please see the response to comment 9 above.

f. I-2-include weather-based controllers and hot water recirculation pumps.

Please see the responses to comments 12 and 13 above.

g. I-3-consider budget based tiered rates.

Water use guidelines are part of our Drought Preparedness and Response Plan: <https://www.tucsonaz.gov/Departments/Water/Water-Resources-and-Drought-Preparedness>. Determining appropriate guidelines for our customer classes is the first step in developing water budgets.

h. E-2-support Smartscape HOA Transformation Program.

Tucson Water's conservation program sponsors Smartscape.



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i. GP5-the TW needs drastic improvements to provide better access to documents and phone/email listings for TW employees.

Our website is currently being reorganized. Please feel free to reach out to me or Kris LaFleur if you need assistance accessing documents.

Best wishes,

A handwritten signature in black ink that reads "Jaimie Galayda".

Jaimie Galayda
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