Reviewer 2:

General Comment*: The paper now consistently improved after the review. However, there are still some issues that should be addressed before submission.*

We are grateful for the constructive peer review from Reviewer 2 and have revised our draft manuscript to address most of the reviewer's comments. Please find below a detailed account of our responses to the review comments *(in Italics*) below.

Comment 1*: Pag.4: the list of key factors that made the drought as a record drought is interesting, however the language is confidential, rather than scientific and the factors are presented in a non-homogeneous style.*

Response: We've updated section 1.2 to address the comment. The key factors are now presented in a consistent style.

Comment 2*: p.18 "reservoir drought": I kindly suggest changing this way of saying here and elsewhere in the paper. In my opinion, "reservoir drought" is a definition that has many drawbacks. For instance, the reservoir is a structure that may exacerbate or attenuate drought, depending on the management measures. It cannot be associated to an extreme event itself, rather than to a management. Thus, reservoir drought refers maybe to the small inflow that causes low water levels, however, this is not its scientific definition, here we talk about hydrological drought.*

Response: We agree and now clarify in the Introduction (Line 43) that reservoir drought can be considered a subclass of Hydrological Drought, which broadly encompasses negative anomalies in surface and subsurface water, such as below-normal groundwater levels or water levels in lakes or decreased river discharge (Van Loon, 2015). Yet, it is also true that "There is no single quantitative definition of drought and drought can be defined by many metrics of water deficit (Kuwayama et al., 2018)". As you nicely articulate, reservoir drought has distinctive causes and effects compared to other forms of drought. As further detailed in our paper, reservoir drought is significantly affected by management decisions and has intricate linkage with meteorological, soil moisture (agricultural), and streamflow drought. The combined effect of increased demand and reduced supply for reservoirs can lead to reduced storage for prolonged periods of time – "reservoir drought" - that has cascading impacts across multiple sectors. Hence, we feel it is important to discuss reservoir drought as a distinct type of drought.

Van Loon, A. F.: Hydrological drought explained, Wires Water, 2, 359-392, 10.1002/wat2.1085, 2015.

Kuwayama, Y., Thompson, A., Bernknopf, R., Zaitchik, B., and Vail, P.: Estimating the Impact of Drought on Agriculture Using the Us Drought Monitor, Am J Agr Econ, 101, 193-210, 10.1093/ajae/aay037, 2019.

Comment 3*: Line 484: "To contextualize how unprecedented 2011 inflows were, the lowest inflows during the 1950's drought were approximately four times greater than in 2011", this sentence may be good for a local that knows how extreme the event in the 1950s was, to the others, it is not meaningful. Please consider to rephrase.*

Response: We added inflow volumes in million m^3/year to the text "...the lowest inflows during the 1950's drought (619 million m^3) were approximately four times greater than in 2011 (157 million m^3) (Austin Water, 2018)." Also, the following sentence provides the reduction of inflows in terms of average

annual values between 1942 and 2017: “In 2011, inflows to lower region reservoirs were the lowest on record, and only 10.6% of average annual inflows from 1942 to 2017 (Austin Water, 2018).”

Comment 4*: Figure 2. Reservoir drought is actually a consequence of hydrological drought, so it is not accurate to place it between the other type of droughts. Also, reservoirs may have different roles during drought events as they are structural measures that may either mitigate or exacerbate drought. Drought can be observed at the reservoir scale as the inflow may reduce and this leads to lower water level, however this may be seen as an impact of drought rather than the drought itself*.

Response: Regarding “reservoir drought,” please see our response to Comment 2. We modified Figure 2 by changing “Hydrological Drought” to “Streamflow Drought,” which makes “Reservoir Drought” a downstream impact of “Streamflow Drought.” We also added a connection from “Soil Moisture Drought” to “Reservoir Drought” to indicate that increased demand (for example from Irrigation) can contribute to “Reservoir Drought” in addition to reduced surface flows (“Streamflow Drought”). We have revised the text describing Figure 2 accordingly.

Comment 5*: Figure 4. It would be interesting to know if the change in groundwater use is due to a lower availability of groundwater itself. Indeed, it is interesting to see that during drought its use was high, while decreased after the drought period. this may suggest either an attempt to recover the aquifer or a low water availability in the aquifer or a management that preferred to use surface water once it was more available after the drought.*

Response: All the potential factors you list for the groundwater use behavior are possibilities. However, the underlying data and documents do not provide information about any specific coordinated efforts to reduce GW use after the drought. The preference in the basin, both from a management and economic consideration is to use SW as it is often much less expensive than GW. We have added the following statements to Section 3.1.1 (Figure 4 interpretation):

Lines 213-217: “Only upper region groundwater use declined in the post-drought period compared to the pre-drought period. In all three regions, post-drought agricultural groundwater use declined compared to the drought period (Figure 4a). The post-drought decline in agricultural groundwater use across the basin could be due to a combination of reduced irrigation demand due to the cessation of meteorological drought, more efficient irrigation technology/practices, and in the middle and lower regions also be influenced by a preference for lower cost surface water when available.”

And regarding municipal groundwater use: Lines 227-231: “A consistent pattern in municipal groundwater use shared by all three regions was increased use during the drought followed by reduced use after the drought. This suggests a temporary shift towards groundwater to compensate for reduced surface water supply. The reduction groundwater use following the drought could also be due successful long-term demand management efforts implemented in response to the drought (3.2) and also a preference to use lower cost surface water when available.”

Comment 6: *Sect. 3.2 is a very interesting section providing further details on drought period. However, it is very long and subdivided into subsections. I would recommend shortening the text taking advantage of the figures and tables presented in the text. The section would highly benefit from discussing findings and data rather than being a list of data.*

Response: Much of the extensive revisions in response to the first round of reviews were targeted at condensing the text to only highlight key findings and features of the Figures/Tables. We respectfully disagree with the characterization that the revised text in Section 3.2 is a list of data. While some values are reported, Section 3.2 synthesizes high-level insights from our analysis and adds additional background information on water management and planning responses that are not apparent from inspecting the Figures/Table. In this regard, the text is *complementary* to the Figures/Table rather than a written summary or list of data. We do not think Section 3.2 can be shortened in any substantive way without removing key information and therefore no change has been made to this section.

Comment 7: *Figure 11 is very relevant for understanding the processes. However, some impacts may be synthetized in a unique box, while others should be at the same level. For instance, reduced reservoir flow, reduced fresh flow and reduced basin outlet flow can be synthetized as unique box as they are all reduction in river flow, then, the impacts may be different but all stemming from the same box. Again, I'd suggest renaming "reservoir drought". Please also consider changing this figure into a casual loop in which the reduction or increase of a variable is represented by a symbol - or +, respectively. It is better than adding "reduced" or "increased" in each box. Please, also consider subdividing variables into drivers and impacts as it would be easier being read.*

Response: Regarding the suggestion of grouping impacts, we are concerned that doing so could omit important granularity of state variables that are important for understanding what specific states contributed to drought impact propagation. Our preference is to retain the current, more detailed, presentation with no change made.

Regarding "reservoir drought," please see our response to Comment 2.

We have implemented the symbology recommendation. Reduction or increase of a variable is now represented by a symbol - or +, respectively, and each link is now annotated. The descriptive words "reduced" or "increased" have been removed from the state labels.

Subdividing drivers and impacts: In Figure 11, Drivers are not colored or labeled, and Impacts are. We now clarify this in the Figure 11 caption.

Comment 8: *The Discussion section reports a discussion on a limited amount of aspects linked to drought. It would be interesting to expand the discussion. For instance, the depletion of the aquifer could be discussed, there could be a further discussion on the change in management strategies to build a more resilient environment for possible future drought events.*

Response: Added Section 4.2 "Building a More Resilient and Sustainable Water Supply" to the Discussion.

Comment 9*: The Conclusions section is missing the key finding of this work. Moreover, in the Conclusions, the diagram is presented as a novel aspect, however it is simply a tool to show relationships between variable/impacts/drivers*.

Response: Due to the nuanced and complex nature of the drought impacts and responses there is not a single key finding to highlight. Instead, several key findings are highlighted in the Conclusion, such as:

(1) "Water supply infrastructure (reservoirs, pipelines, canals, and wells) and temporary demand management responses were key for averting severe shortages to non-agricultural sectors."

(2) “Our evaluation of regional water management plans revealed that the drought substantively affected water management planning with large increases in the variety of water supply strategies (supply diversification) and planned municipal supply volume.”

(3) “There is no “silver bullet” water management solution for the basin like building a large new reservoir. Instead, a mosaic of supply and demand management strategies are needed to achieve long-term water security.”

(4) “Evidence of proactive changes to water management and planning following the drought of record includes the development of more sophisticated water supply planning models, the enactment of more conservative drought management policies, and the passing of several new laws that regulate water planning.”

We do not claim that our use of an influence diagram is novel. Regarding the influence diagram, the Conclusions state: “We demonstrate the use of an influence diagram as an effective tool for summarizing cascading regional multisectoral impacts and interactions. Insight into the connectivity between impacts can support adaptative planning and help reduce the vulnerability of negative cascades in other regions (Lawrence et al., 2020).”

Comment 10: Regarding the title, the paper does not present a new method to assess drought and discuss impacts and adaptation strategies. I am not sure whether the structure proposed is relevant for other studies. It is important that the authors show why this paper is relevant to the scientific community, and which are the lessons learnt, otherwise it may look like a list of impacts, while it is more than that.

Response: Title modified to: “Multisectoral analysis of drought impacts and management responses to the 2008-2015 record drought in the Colorado Basin, Texas.” We have revised the following statement in the Conclusions accordingly: “~~As indicated in the title,~~ We feel this study offers a “blueprint” that can be followed by future regional drought analyses….”

Comment 11*: Please, also consider an extensive English language review.*

Response: The paper has been reviewed by a technical English writing specialist at our laboratory. Additionally, no concerns have been raised by Reviewer 1 or the Editor regarding the need for an English language review.