Comments and Responses Yakima River Basin Study				
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Responses Prepared by: Graham, Montgomery				
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Section	**Page**	**Source**	**Comment**	**Response**
All		Malloch	This piece of work is the best summary of how water is used in the basin that I've seen.	No response needed.
All		Garrity	I agree with Steve that the information in this report will be very helpful.	No response needed.
All		Malloch	It's going to be difficult to justify the construction project in an alternatives analysis without the economic analysis of economic returns to water. And its going to be difficult to push back on those who push nonstructural alternatives, like super conservation (California's 20% water use reduction by 2020 for instance), markets, and simply dry year fallowing without the economics.	The water needs assessment, by itself, was not scoped as an economic analysis. However the Yakima Basin Study does include two levels of economic analysis: 1.) cost-effectiveness data on individual projects; and 2.) modeling of the economic effects of the final, recommended Integrated Plan, compared with economic effects of No-Action. These results will be available later in 2010.
All		Malloch	The big hole is economics and price– its one thing for Districts to say they want/need water in a drought year, its another thing to pay for it. What is the willingness to	See response to prior Malloch comment. Willingness to pay has not been identified in the

			pay for drought year water? The Blackrock analysis suggested that the price was far in excess of anyone's willingness or ability to pay. I should think that we would want to know something about the ability to pay before we get into planning the project. We really need an economic analysis as well as this technical analysis.	scope of the project at this time.
1.4	4	Benitz	In prior review comments, we suggested the following: In the 4th paragraph, reference is made that the major sub-areas affecting water management are the upper Basin above the Parker gage, the lower basin below the Parker gage, and the Naches River basin. It is suggested the information on current and future water use be presented for four subareas as was done in the 2001 Yakima River Basin Watershed Assessment: Upper Yakima, Naches, Middle Yakima, and Lower Yakima (see Exhibit 2.3 of the June 2000 Final Review Document). This is important because of the surface and subsurface return flows from irrigation and the hydrogeology information to be published shortly by the U.S.G.S. We note the three subareas remain as previously drafted and there has been no indication if our suggestion was considered and, if so, why rejected?	The geographic breakdown of water needs was based primarily on input from the Out-of-Stream Subcommittee. The Subcommittee said it was vital to separate water needs above Parker from water needs below Parker. The consultant team decided to also separate out the Naches River Subbasin , simply because the federal water supply system has a "Naches Arm" and federally supplied needs in that subbasin must be met from the Naches Arm. The Lower Basin from the 2001 Watershed Plan is essentially identical to "Below Parker" in the current study. The Naches Subbasin from the 2001 Watershed Plan is the same as in the current study. So the only difference between the current study and the watershed plan is in how needs above Parker were split for the Watershed Plan into the "Upper" and "Middle" Yakima River Subbasins. Based on subcommittee and Workgroup discussions, making this split has not seemed necessary, and therefore the extra work needed to do so was not carried out.
2.1	6	Garrity	As I've noted previously, the costs and benefits of providing certainty of achieving 70% proratable	To provide additional information, deficiencies will also be calculated at pro-ration levels of 50%

			deliveries in a bad drought year should be compared to those of improving water deliveries by a lesser extent (say 50 or 60%). What would be the economic costs and benefits if the worst droughts resulted in 50% deliveries instead of 38%, and milder droughts resulted in 70%? How would that compare to the costs and benefits making 70% the minimum that is delivered in the worst years? That question might not need to be answered in this report, but by referring to 70% as the goal now rather than referring to some level of increased deliveries that make the most economic sense, it creates expectations that might not be backed by economic analysis (or maybe they will – the point is, I don't think we can say for sure yet).	and 60% . It should be noted that the 70% threshold is not an absolute standard, and there is no guarantee that the Integrated Plan will achieve that level of proration in all droughts. It is simply a threshold that has been identified as a collective goal by the proratable water users in the Basin. Regardless of what levels are examined in the needs assessment, one key result of the Basin Study will be what the expected proration level is with the projects that are recommended for the Integrated Plan. That result will come from the RiverWare modeling work, rather than the needs assessment.
2.1		Dieker	In Table 1 the irrigated acreage of Yakima-Tieton Should be 27,900.	The table was corrected.
2.1	4	Lynch	[In the] last phrase in first paragraph you state, "and changes in operations of the Yakima Project to improve instream flow." I think this would apply for drought years but I question whether it applies to the trend. What is the rational? You may be right but I am not sure about it. (This is also stated later in the report. See page 16, last paragraph, last phrase).	Rationale was increased instream flow imposed on Yakima River at Parker. The increased instream flows had a small effect on TWSA. We are commenting on the past 60 years of diversions, not just recent history.
Multiple		Lynch	Have you figured out if the YTID CIR of 3.48 is correct or a mistake? See Tables 1, 14 and 16.	We reevaluated that estimate and lowered the CIR to 2.61 acre-feet/acre.
2.2	7	Benitz	This comment pertains to water use outside of the "federally-supplied districts" which we have interpreted	The consulting team has not researched the question of what has happened in past droughts or

			to mean all surface and ground water irrigation use by all those not within the six irrigation divisions. The 2nd paragraph of Section 2.2 states: *"Virtually all of the ground water rights and many of the surface water rights are "junior " to the surface water rights for the Yakima Project (federal system). This means that when water shortages occur, the federally supplied lands have priority for water supply over many of the non-federally supplied lands. "* What has this meant in past drought years and what does this mean in the future?	what may happen in the future, with respect to junior water uses. One Subcommittee member (Milton) has raised the issue of junior ("post-1905") water rights as an issue the Workgroup should seek to address. His concern is that those users could be vulnerable to legal challenges during water shortages.
2.3		Lynch	Sec 2.3 second paragraph. I'm just trying to clarify if the population is for the Yakima basin. Did you somehow segregate out the Yakima basin population from the 3 counties.	Yes, the population is estimated for the Yakima River Basin only. It includes all residents of Yakima and Kittitas counties; but only a portion of the residents in Benton County. (We recognize that not all of Kittitas County is in the Yakima Basin, but the population outside the basin is small, and this is a reasonable approximation).
2.0, 3.0		Benitz	…our comments … on Section 4.0 "Water Needs Assessment Results" and Section 5.0 "Municipal and Industrial Water Needs" … are applicable where appropriate to Section 2.0 "Summary of Findings" and Section 3.0 "Assessment Methods".	After edits to the document have been made, we will check the different sections and Summary for consistency.
3.2.1	12-14	Garrity	Mentions reduced demand due to conservation projects – does this also anticipate (as is anticipated for "aggressive" muni conservation scenario) a certain pace of technological innovation that allows for increased conservation on the ag. end over time? Seems like a	We are adding a discussion of what current levels of higher efficiency on-farm practices exist. We agree that changes in cropping patterns maybe offset to some degree by water conservation practices. The next draft has an estimate of future

			good place to use some credible (WSU?) professional judgment. Cropping patterns might become more water intensive over time due to economic or climatic changes, but might improvement in conservation/efficiency practices and technology offset that to some extent?	crop irrigation requirements assuming cropping patterns from about 20 years ago.
3.2.2	15	Garrity	Climate change could increase lawn watering, etc., but it might also have the opposite effect as people realize that low water landscaping is appropriate in light of circumstances. That is already a trend in some parts of the country, and will probably extend throughout much of society, as recycling has.	This comment is certainly plausible. However, at this time our approach takes the more conservative view that hotter temperatures and a longer growing season would most likely increase water use for urban landscaping, at least in the "no-action" scenario. The municipal/domestic conservation TM discusses a different scenario in which substantial changes would occur in residential landscaping, resulting in lower water use. This scenario envisions specific programs to promote low-water landscaping. The example of recycling seems to support this scenario: recycling became common in most communities after being heavily promoted by municipal solid waste utilities.
4.1		Garrity	[I have a] concern about making the 70% water delivery goal in drought years the de facto marker that the Yakima planning process … is looking to meet from an out-of-stream water supply perspective. From conversations at the subcommittee and elsewhere it appears that 70% is a good marker for the point at which irrigators begin to face some tough choices, choices that get tougher until an emergency point is reached somewhere around 50%. As part of the Basin Study process, I would like to see an analysis of what the basin-wide economic effects are of meeting various	See response to Garrity comment on Section 2.1.

			prorationing levels during drought years, …It seems like the ECONorthwest study might be a good home for this analysis….	
4.1		Malloch	Looking ahead to convincing outsiders of the great job that has already been done in the basin, I think comparing this data with the last available BuRec Land and Water Use reports (I think that is 1994) would be really useful. I'd bet that efficiency is way up, conveyance loss down, total water use down.	Good suggestion, we will see what data is available from those and other reports to characterize what improvements have been made. The end result shows up in Figure 1, which illustrates the trend in diversions.
4.1		Malloch	We need to look at the returns to water. Again a comparison with the Land and Water Use reports, which as I recall include economics, would be useful.	See response to prior Malloch comment about economic analysis.
4.1.1		Lynch	Sec 4.1.1 in the first paragraph two points. 1) TWSA is based on reservoir storage, runoff forecast and return flow estimates. I say this because the runoff forecast is based on more than just snowpack conditions, i.e. antecedent runoff, precipitation, and snowpack all go into it. 2) Proratable water rights are those that have a priority date of May 10, 1905. (Not "after 1905". This is an important point when it comes to water rights in the basin. The post-1905 water rights get curtailed in a year of prorationing, i.e. post-1905 users get nothing if the proratables get less than 100%.)	Text has been corrected to reflect these comments.
4.1, 4.1.1	15-16	Benitz	It is suggested further clarification of what physically constitutes the Yakima Project contrasted with those entities to which the water is supplied may be desirable. For instance, page 15 states there are six water delivery divisions operated by irrigation entities (note that WIP is operated by the Bureau of Indian Affairs) and a storage	We will clarify what comprises the Yakima Project versus other diverters. We are only looking at water needs from Yakima Project entities in that section.

			division (consisting of five major reservoirs of approximately 1 million acre-feet of capacity operated by the Bureau of Reclamation). On page 16 however, Table 6 titled "Yakima Project Entitlements above Parker Gage" includes more entities than KRD, RID, YTID, WIP, and SVID. Table 7 then lists the water diversions for only the six divisions. (see next comment).	
4.1.1, 4.1.2		Benitz	It is suggested in Tables 7 and 8 an additional column be inserted after Yakima-Tieton showing the subtotal of the 5 Yakima Project divisions above Parker. Also, include a total column in Table 8.	The extra column was added in Table 7. Table 8 has a different purpose than showing the total acreage, but we will list the total acreage in the Yakima Project in the text.
4.1.1	17	Benitz	In the discussion titled "Diversions above Parker gage", can you be more specific on what is attributed to the declining trend in diversions? For instance, is it associated with specific entities who have recently implemented conservation measures? If so, what entities? What is the situation regarding idle lands within WIP and the diversions? Where have major cropping changes occurred and what are specifically the changes in Yakima Project operations that have resulted in this declining trend?	As indicated in the comment, there are probably several factors that contribute to the declining trend. At this time we are not scoped to examine all of them. However we plan to at least look at the trends on cropping patterns; and to quantify the idled land in WIP and whether that land may be brought back into crop production.
4.1.2	18-19	Garrity	The discrepancy between the WSDA and District Survey data here makes me a bit uncomfortable with the trustworthiness of the results. Some of the data is pretty old, and in places like KID and KRD there has probably been quite a lot of conversion from ag to residential between 1998 and 1993 (respectively) and now.	The study team has used the most recent data that was available. At the big-picture level, the changes in land conversion since the 1990's is not expected to dramatically shift the results of the needs assessment.

	18-19	Garrity	Do we want to consider "irrigated residential" land the same as irrigation on ag. land? I don't think the economic need for a reliable water supply is nearly as high for residential land that receives ID water as it is for ag land that does, and it might mask a potential source of water for ag through markets, incentives, and/or regulation.	This is a policy question for the Workgroup to consider.
4.1.2	20	Garrity	What year(s) is/are the data in tables 11 and 12 from?	The dates are added to the text.
4.1.2		Lynch	On tables 9 and 10 you might include the dates when the data was compiled in the titles of the Tables.	The dates are added to the text.
4.1.2		Lynch	Figures 8, 9, 10 . It would be informative if Average use bars were also included.	Comment noted. We didn't add the average use bars as we thought it would complicate the graph and distract the reader from the primary purpose of the graph.
4.1.6	31	Lynch	Second paragraph. The discussion about adjusting the shortfall based on return flow from KRD. You might clarify that the reduction in shortfall is 0.5 times the increased portion only in the KRD diversion (not by total KRD diversion). The 274 KAF value indicates you did it the way I stated here but you haven't clarified that in the text.	We will clarify that calculation in the text.
4.1	22	Garrity	What would the delivery needs be here if all the IDs were using state-of-the-art efficiency practices on all their land? This would be good to know this before decisions are made to build new reservoirs to a certain size to meet needs under existing practices.	A discussion of current and potential future on-farm conservation practices has been added to the Future Needs section. However at this time the effects have not been quantified.

4.1.6	29	Garrity	See comments above about 70% standard.	
4.1.2, 4.1.3, 4.1.4	9-10	Benitz	The draft "Water Needs for Out-of-Stream uses" states in Sections 3.1.1 that the current irrigated agriculture needs on federally supplied lands were based on actual measured diversions over a 20-year period. The process for calculating deficiencies is then explained (last two sentences of this section). For non-federally supplied lands, a different process is used in estimating irrigation needs (Section 3.1.2) involving estimating irrigated acres and cropping, crop irrigation requirements, and on-farm and conveyance system efficiencies. However, Sections 4.1.2, 4.1.3, and 4.1.4 proceeds with an extensive discussion of irrigated acres, cropping, crop irrigation requirements and efficiencies for federally supplied lands. This appears to contradict the statements made in Section 3.1. The only reason we can see for this analysis is the desire to compare on-farm deliveries --one method using actual diversions and estimated conveyance losses and the other using irrigated acres, crop irrigation requirements, and on-farm losses. Is this the intent? If so, it would help to clarify this in Section 3.1.1 or at the beginning of Section 4.0 as to why this analysis is being conducted. Further, if this analysis is desirable why not include the information in an Appendix such as was done for the non-federally supplied lands? Was any attempt made to compare Sections 4.1 -4.14 with comparable work for the Acquavella Adjudication?	Better explanation added to TM
4.1	17-	Benitz	It appears what is being done is to limit the discussion to	The discussion of water needs is split into two

	18		the six divisions of the Yakima Project (Table 7 and Figure 1). For instance, in Figure 1 the 1999 diversion above the Parker gage is shown as about 1.700 million acre-feet. Referring to the Watershed Assessment Table 3-7, the April-September diversion above the Parker gage is shown as 2.000 million acre-feet. It is suggested the reason for proceeding in this manner should be adequately explained in an introduction to Section 4.0. The Yakima RiverWare hydrologic model to be used in assessing operation scenarios includes 56 major and minor diverters and canal systems above the Parker gage. Table 21 (page 24) titled Proratable Water Rights above Parker Gage" refers to the entitlements of those other than the 5 Yakima Project Divisions as Non-Division Entitlements. In Appendix A, it appears these are described as Non-Federal District.	sections – federally supplied and non-federally supplied water users. Most all of the shortfall in demand among proratables occurs in three entities – KRD, Roza I.D. and WIP. We will provide a better explanation of the process used to compute the demands as an introductory paragraph at the front of Section 4.0.
4.1.6	27-32	Benitz	These pages provide information on two methods considered in determining drought year "shortfalls" for KRD, WIP, and RID. Both methods involve use of diversions which occurred in the single drought years of 2001 and 2005. Page 31 refers to discussions with the irrigation districts on their water needs resulting in their opinion of the following supplemental supply needed: 117,500 acre-feet for KRD, 115,500 acre-feet for WIP, and 100,000 acre-feet of reservoir storage capacity for RID. The foregoing volumes approximate the "shortfall estimates" resulting from the methodology of comparing actual 2001 drought year diversions to 100 percent of nonproratable entitlements plus 70 percent of proratable entitlements (Table 23, page 29). As best we can determine, the TWSA in the year proceeding the single	The effect of multiple year droughts (such as 1992-1994) on water supply with proposed projects will be tested using the RiverWare model.

			drought years is representative of a wet year (2000) and an average year (2004). What is not clear to us is the situation such as occurred in the three years of 1992-1994. For instance, KRD has indicated a need for 117,500 acre-feet to address the shortfall with a repeat of a single drought year like 2001. What occurs when the TWSA in the two preceding years such as 1992 and 1993 is less than average? Is the proratable water supply criteria going to be "not less than 70 percent of the entitlement?" Also, RID is asking for use of 100,000 acre-feet of specific reservoir capacity. To date, specific reservoir storage space has not been contracted for in the Yakima Project. Is this going to be acceptable and consistent with the TWSA process and the 1945 Consent Decree?	
4.1.6	32	Benitz	1st paragraph --This paragraph indicates the total irrigation "shortfall" of 333,000 acre-feet would be reduced to approximately 274,000 acre-feet because of the estimated return flow from the supplemental water which would be provided to KRD. While it is noted the effect of return flows on water supplies will be more accurately determined by the Yakima RiverWare hydrologic model, it is important to keep in mind the water needs inputted to the model is not a net volume. Return flows are considered as a component of TWSA.	The explanation of reduction in shortfall was provided to ensure the total diversion need is accurately portrayed when discussing the yield from potential projects. Since a portion of the water diverted by KRD returns to the Yakima River, that return flow becomes a component of TWSA and supplies downstream water users.
4.1		Subcommittee meeting 7/14	Ron – concern about cropping patterns; numbers probably due to wine grapes currently planted; if this was converted to apples, would be significant change; need flexibility for future.	We are planning to add a discussion of how changes in cropping patterns would affect water needs.
4.1		Subcommittee	Comment – WIP has lots of acreage not being farmed	A discussion of currently-idled lands in WIP will

		meeting 7/14	now; plan to farm in future. 30,000-40,000 acres.	be added to the TM.
4.1		Subcommittee meeting 7/14	Jim Trull: Don't understand why doing this [crop irrigation requirements method] – using entitlements would be better, and those were thoroughly examined under the adjudication process	Looking at crop-irrigation on a per-acre basis allows us to carry out several assessments that can't be done with gross-level diversion numbers. The assessments this supports are: change in water needs due to potential changes in cropping patterns; change in water needs from on-farm conservation actions; and change in water needs from climate change. Since all of these are items Workgroup members have requested, we believe the CIR method is a constructive addition to the analysis.
4.1		Subcommittee meeting 7/14	Comment: should not include water that was purchased in droughts, as part of the diversion. The point is to quantify the shortfall, not diminish it by including steps that were taken to fix the shortfall.	The accounting of water leased by Roza and KRD during droughts has been added to the TM.
4.1		Subcommittee meeting 7/14	Ron: Table 4 seems wrong, since Roza is a larger district than KRD, but the table shows Roza having a smaller shortfall. 70% of a larger number should be a larger number.	When accounting for leased water, the Roza shortfall is greater than KRD's.
4.1		Subcommittee meeting 7/14	Jim Davenport – Why isn't 100% of entitlement used, instead of 70%?	The districts/divisions that rely solely or largely on proratable water rights have identified 70% as a threshold that would substantially reduce their economic losses in droughts and that provides a reasonable basis for water supply planning.
4.1		Subcommittee	Tom Ring –The pro-ratable water users have said they	Agreed.

		meeting 7/14	can get by with 70% during drought years.	
4.1		Subcommittee meeting 7/14	Jerry Kelso - Entitlements may not reflect efficient irrigation practices; want to show the Yakima Project is operated efficiently	No response necessary.
4.1		Subcommittee meeting 7/14	Tom – Diversion reduction agreements need to be reflected. For example, the Sunnyside Division does not receive 458,000 AF, but a quantity less than that. Similar situation for Yakima-Tieton. Bob responded that he has requested information from Ecology to reflect the adjudication results.	We received the adjudication summaries from Ecology and they will be included in the next draft.
4.1		Subcommittee meeting 7/14	Tom Ring – add to tables: number of acres authorized to be irrigated x consumptive use associated with high water use crop. Supposed everyone planted in a given year…calculate from there. But also need to consider inefficiencies that can be fixed.	We have calculated the CIR's based upon cropping patterns from 20 years ago and compared them to current CIRs. We believe that 100% conversion to high water use crops (like hay and orchards) is not a reasonable assumption.
4.1		Subcommittee meeting 7/14	Upper limit is no new irrigated acres (except on Reservation)	Comment noted.
4.1		Subcommittee meeting 7/14	Tom: Be careful in how the word "entitlement" is used – after the adjudication, it no longer is the equivalent of water rights for some districts. However it is still used in calculating relative shares of pro-rationed supply. Need to explain the difference	Comment noted.
4.1		Subcommittee	Factor in land converted to M&I (out of ag) for KID?	The discussion of agricultural land conversion

		meeting 7/14		addressed in Section 5.4 includes lands in Richland and West Richland, but not Kennewick. We will take another look at whether Kennewick's urban growth area should be included. We understand a lot of land has already undergone conversion in that area.
4.1		Subcommittee meeting 7/14	Ron – The statement that Roza needs 100,000 acre feet from storage is not accurate – that referred to the Large Bumping Reservoir option, which is no longer being considered. Should say that Roza would like to receive 70% when pro-rationing occurs.	Text changed to reflect the comment.
4.1		Subcommittee meeting 7/14	Table 15 (irrigation efficiencies) –Ron says some of these figures need to be changed. Almost all sprinklers in Roza are high efficiency, would be higher. Hand line definitely wrong. Bob – these are averages; Bob will make sure the sprinkler types are better defined.	Table changed to reflect the comment.
4.3		Garrity	[Will] any kind of "best conservation practices" criterion will be applied to agricultural irrigation as it looks like it is being applied (at least to illustrate one end of the future demand range) to municipal water use, to see what effect this will have on future agricultural water demand? Can we assume, as with municipal use, that agriculture will grow more efficient over time due to technological improvements and other factors, as it has in many cases in recent decades?	In the municipal context, the " bookend" scenarios were developed in order to help the Workgroup shape a reasonable set of conservation actions that could be funded and implemented. These were not characterized as best practices, and much more engagement with the communities involved would be needed for that type of characterization. In the agricultural context, much more attention has already been given to this subject in prior studies such as the irrigation district water conservation plans funded under YRBWEP. Therefore using the actual projects and water

				savings from those prior studies is viewed as a better approach to assessing water conservation savings, at least for district activities. Less attention has been directed in prior studies to on-farm savings potential from changes in irrigation practices. However farmers have improved efficiency due to water shortages, crop changes and other factors. More discussion has been added to Section 4.3 (Future Changes) to address this.
4.3.2	33	Garrity	[This] might be a good place to include discussion and analysis of the point I raised above in my comment re pp. 12-14 regarding anticipated improvements in ag. efficiency over time.	Discussion added.
5.2	36	Garrity	Similar point to my comment re pp. 18-19 – I don't think it will make for good policy decisions if we lump domestic "irrigation" with agricultural irrigation – we don't need to spend taxpayer money to provide for residential landscapes that use large amounts of water per acre – ag water should be separated from domestic water, even if supplied by an irrigation district	See prior response to this point.
5.2		Lynch	Observation. Figure 13. Perhaps the reason the Yakima Watershed plan and the City of Yakima value of 320 is so much higher than the others is because of industries in Yakima, perhaps.	No response necessary.
5.2		Lynch	Concerning domestic well usage; any indication from Dept of Ecology if the water table is declining anywhere in the basin?	This has not been researched for this project. Presumably it was covered in the recent USGS study.

5.3	44	Benitz	Table 34 We suggest this table may be misinterpreted with respect to future municipal water demand because of the following: • Reducing the municipal demand estimates by return flows . As indicated in our comment on page 32, return flows are considered as a component of TWSA. • The reason for deducting "off-season" consumptive use is not clear. How are the municipal needs during the non-irrigation season going to be met? Not only is there the need for surface water by the entities currently diverting, but isn't there the potential that groundwater withdrawals may have to be mitigated or is this only of concern during the irrigation season?	The Out-of-Stream Water Needs subcommittee asked us to carefully distinguish between consumptive uses and non-consumptives uses. Where water returns to the river it becomes available to other users as well as for aquatic habitat. Because of this, supply serving non-consumptive uses goes much farther than supply serving consumptive uses. The seasonal breakdown is useful in understanding the dynamics of municipal water use; and may help in shaping solutions that are developed to meet this need. How it affects supply depends, in part, on what supplies will be used to serve growth in municipal and domestic needs. However we agree that it may not necessarily reduce the need on a one-for-one basis.
5.3		Benitz	We do have the concern that municipal water needs reflecting 20 and 50-year projections may be underestimated and the adjustments overestimated.	Comment noted.
5.4		Subcommittee meeting 7/14	Ron van Gundy commented that in the Roza Irrigation District, these two-acre parcels generally use all the water they are entitled to. Some subcommittee members believe that water use is greater after conversion to an urban area. Dave Brown cautioned that lands that are converted inside City limits will be more dense. Tom Ring said that the less dense lands have a higher consumptive use, because they are using lots of their water for irrigation. The higher density, more urban lands will typically have less consumptive use. Michael Garrity commented that urban development may	We have re-examined contact made with City planning departments (Ellensburg, Yakima, Richland, Sunnyside, Grandview, Toppenish, Prosser, Zillah). The basin-wide average of 4 residential units per acre of land inside urban growth boundaries does seem reasonable in light of information they provided. However, we acknowledge that our analysis does not account for lands outside UGB's and densities will indeed be much lower there. To fully assess this issue would require substantial

			use as much water as agricultural lands; but can this be changed through policies or incentives? Saving water this way would be cheaper than building storage. Ron felt there is not enough quantity involved to make it worthwhile. Dave Brown said this would only work if customers pay for water use. Ron said that Roza does require payment for water use per unit, once the user gets above a certain quantity.	additional analysis. We suggest a simple adjustment be made: let's assume that 1/3 of the residences go outside UGBs and that water use per acre does not change in those areas. This will reduce the land-conversion amounts by 1/3.
		Subcommittee meeting 7/14	Michael Garrity commented that urban development may use as much water as agricultural lands; but can this be changed through policies or incentives? Saving water this way would be cheaper than building storage. Ron felt there is not enough quantity involved to make it worthwhile. Dave Brown said this would only work if customers pay for water use. Ron said that Roza does require payment for water use per unit, once the user gets above a certain quantity.	The land conversion analysis, as modified (see Van Gundy comment above) does result in lower water use in the future on converted lands in aggregate. The suggestion in this comment sounds like a policy action that could be included in the Integrated Plan, if the Workgroup determines it has value. That would either help reinforce the reduced need we have estimated; or prompt more water savings from land conversion. Should this be handled in the context of water conservation?
5.4	44	Garrity	In the last paragraph on this page, I would think that future per acre water use should be estimated below the mid-point of 1.65 and 3.15 acre-feet per acre, as it's fair to assume – as the rest of the muni analysis does – that cultural, economic, and regulatory factors will reduce municipal use from what it is today. It is probably more realistic to assume that water use will gradually decrease from the current mid-point to another figure over the coming decades.	We believe that this reduction has already been accounted for, but in a different part of the needs assessment. Table 34 shows a reduction in need due to "conservation trends." The conservation trends include both existing residents and future new residents. Since those future new residents are the people who would live on the converted lands, the savings on converted lands discussed in this comment are included.