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March 4, 2015

Please accept these comments from the Yakima Basin Storage Alliance (YBSA) in response to the Draft Environmental Impact Statement (DEIS) for the proposed Kachess Drought Relief Pumping Plant (KDRPP) and Keechelus Reservoir-to-Kachess Reservoir Conveyance (KKC) projects. YBSA's mission is to ensure an adequate supply of water for now and future generations for all water interests in the Yakima Basin. While we support the Integrated Plan in their goal to propose and implement projects that enhance aquatic ecosystems, improve drought-year supplies for agriculture, and provide for future municipal needs, we have concerns about the proposed projects.

The following statements are taken from the Executive Summary (page ES-xviii):

> *<u>Third Paragraph</u> - - KDRPP (Alterative 2A and 2 B) would increase water supply to proratable irrigation districts from 19 to 23 percent and bring the supply close to 70 percent of entitlement goal.*
>
> *<u>Fifth Paragraph</u> - - Combined operation of KDRPP and KCC (Alternative 4) would have the same impacts as the individual projects, but would provide a greater benefit to proratable water supply than KDRPP alone and KCC would help to refill Kachess Reservoir more rapidly following operation of KDRPP.*

These statements imply that the proposed projects would beneficially supply water to irrigators. **However**, **what we subsequently found in the document are the following "realities":**

- For KDRPP (Alternative 2A) the water supply improvements are for the single drought years of 2001 and 2005 with continuation of the historical hydrograph. The irrigation proration levels are 64 percent (2001) and 65 percent (2005). With the moderately adverse climate hydrograph, which is used in the DEIS to illustrate climate change impacts, the irrigation proration levels in these two years are 35 and 31 percent respectively.[1]
- For the combined operation of KDRPP+KCC (Alternative 4) and continuation of the historical hydrograph, the irrigation proration levels for 2001 and 2005 improve to 65 percent (2001) and 69 percent (2005), almost attaining the 70 percent goal. However, the proration level with the moderately adverse climate hydrograph remains below this goal at 42 percent and 36 percent respectively. In addition, the three-year dry period of

[1] The years referred to are calendar years.

1992 thru 1994 has now expanded into a four-year drought of 1992 thru 1995 with proration levels of 43, 42, 13, and 55 percent (See Attachment 2, Table 2).

- With respect to the Kachess inactive pool contents, we find it has been significantly drawn-down by the end of September in consecutive drought years such as 1992 thru 1995 with the residual contents of the 200,000 acre-feet available as follows: 100,000 acre-feet (1992), 9,000 acre-feet (1993)[2], empty (1994), and 15,000 acre-feet (1995), with full refill of the inactive pool not occurring until **March 1996**.

This DEIS defines cumulative impacts as "the effects that may result from the incremental impact on an action when added to past, present, and reasonably foreseeable future actions" (pages ES-xxix and 4-341). It is noted that for cumulative effects, Reclamation and Ecology generally define the analysis area as the Yakima River Basin. In this case however, reasonable future projects are identified as those in the Kachess and Keechelus Reservoir areas and indicated to include two projects of the "Integrated Plan Initial Development Phase" (page 4-343).[3] The Initial Development Phase is stated to be "the period from the State's authorizing legislation for the Integrated Plan in 2013 through 2023" encompassing elements identified by Reclamation and Ecology as "those providing tangible improvements in streamflow, habitat, and fish passage as well as provide increased security of existing out-of-stream water needs" (emphasis added).

Noticeably missing from the cumulative impacts as reasonably foreseeable future actions are the other two major water storage projects; Wymer Dam, Reservoir, and Pumping Plant (162,500 acre-feet) and Bumping Lake Enlargement (190,000 acre-feet). These two projects will influence the operations of KDRPP+KCC which in this DEIS is based solely on an independent operation. It is our understanding Wymer and Bumping Lake Enlargement are to be addressed in separate environmental impact statements and feasibility reports at a later date.

The ultimate goal of this DEIS review is to prepare a Final EIS in which a proposed action is identified and for Reclamation to then issue a Record of Decision on that action concluding this specific NEPA process. The December 2014 Workgroup meeting notes report that the Implementation Committee is currently working on an authorization bill for the KKC, KDRPP, Cle Elum Pool Raise Project, fish passage, and water conservation initiatives.

The exclusion at this time of the other two major storage projects as reasonably foreseeable future actions, the approach being taken for storage authorization and appropriations, the significant unavoidable adverse impacts indicated in this DEIS, and stakeholders adamantly opposing this action and a somewhat similar action with respect to the existing Bumping Lake is not very reassuring that joint water storage operations presented to date in the Integrated Plan will be a reality. It is most apparent however, that the KDRPP and KCC projects will not

[2] The inactive pool is full in May 1993.
[3] While two projects are referred to only the Cle Elum Pool Raise Project is specifically identified and discussed.

meet drought year water needs and will very adversely impact the immediate area. Under these circumstances is this a wise investment?

Operations

We chose to look at the combined KDRPP and KKC Alternative 4 with regard to our input on proposed projects to improve instream flows and to provide supplemental out-of-stream irrigation water to KRD, RID, and WIP in drought years.

1. Period of Record - - Up to this point all of the evaluations of proposed water supply elements of the Integrated Plan have been based on a 25-year period of record of 1981-2005 with two predominate single drought years (2001 and 2005) and three consecutive drought years (1992, 1993, and 1994). This DEIS however, uses an 85-year period of record of 1925-2009 which includes not only the foregoing referenced drought years but also the early 1930s and 1940s of single and consecutive drought years. There is no explanation of why this was done at this point in the planning study and how it might affect prior decisions regarding the four proposed IP storage projects. We strongly suggest an explanation and comparison be included in the DEIS.

Water Supply - - Section 4.3.8.2 beginning on page 4-41 addresses the "Surface Water Resources" and the operations of KDRPP+KCC. We assume the information in the tables is based on "continuation of the historic hydrologic scenario" for Alternative 1 (No Action) and Alternative 4 (Action).

2. Table 4-18 (page 4-42) is completely void of pre-1981 irrigation proration levels. We suggest some of the drought-year information from this period be included. Further, Alternative 4 with the moderately adverse climate change scenario should be added and the percent change between this scenario and Alternative 4 historic hydrologic scenario should be included. The reason for this is that we cannot find similar information for the moderately adverse climate change scenario elsewhere in the DEIS to compare KDRPP+KCC operations based on historical and climate change hydrographs. We also suggest the volume of water associated with the percent change in irrigation proration be indicated. A hydrograph similar to figure 4-7 should also be provided for Alternative 4 with the moderately adverse climate change scenario or this information included in Figure 4-7.

3. Table 4-19 (page 4-46) is a summary of "Kachess Reservoir Pool Elevations Under all Alternatives". What is the situation with regard to pre-1981 drought years and the moderately adverse climate change scenario for Alternative 4?

4. We do recognize that information on effects of the moderately adverse climate change scenario is presented in pages 4-228 thru 4-244 but not in the detail as provided for the historic hydrologic scenario provided in pages 4-42 thru 4-45. Consequently, the reader of

the DEIS is not informed on how KDRPP+KCC are impacted if moderately adverse climate change scenario were to occur. We anticipate there could be quite a difference with respect to Kachess inactive storage contents, etc. This information is necessary to fully inform the stakeholders of the ramifications of the KDRPP proposal. In addition, information on the time required to refill the inactive storage space in drought years is a necessity to understand the capability of the watershed and the reliability of the stored water supply.

Recreation

Adequacy of Information Provided - - An assessment of the impacts on Kachess Reservoir slack water recreation and resident fishery resources necessities simulated system operation studies using the YAKRW model and the following climate scenarios:

1. No Action (historical scenario).
2. No Action (moderately adverse scenario).
3. Action Alternative with KDRPP+KCC (historical scenario).
4. Action Alternative with KDRPP+KCC (moderately adverse scenario).

5. The DEIS assesses the Action Alternative impacts by comparing items 3 and 1 and items 4 and 1. However, there is no comparison of how well the Action Alternative(s) addresses a transition from a historical climate scenario at the time of implementation to a future climate change scenario adversely modifying the historical conditions of water volume, runoff, and occurrence. This requires a comparison of items 4 and 3. Also, as indicated in the prior "Operation" discussion, information provided for the moderately adverse climate change scenario is not presented in the same detail of that provided for continuation of the historical scenario. Consequently, impacts on slack water recreation including reservoir fishing resulting from reservoir drawdown and refill may not be adequately addressed.

6. It appears the DEIS information on "important reservoir elevations" are predominately those associated with continuation of the historical climate scenario. As an example, Table 18 (page 4-42) appears to be based on the historical climate scenario as does Figure 4-7 (page 4-43) and Table 4-20 (page 4-44). Where is similar information for the moderately adverse climate scenario? Also, why is the more adverse climate change scenario completely ignored?

7. There is a footnote on page 3-117 of the DEIS referencing a source identified as "Reclamation and Ecology, 2014o" which led us to the *Technical Memorandum: Hydrologic Modeling of System Improvements, Phase 1 Report, November 2014*. Appendix C of this Technical Memorandum contains "Model Scenario Results Summary Tables" with monthly 1926 thru 2009 operation information for the projects addressed in the DEIS and the proposed Cle Elum Pool Raise. Our review of this data source indicates there are 32

drought years in this 84-year period (38% of the years) and consecutive drought years with significant drawdowns in July, August, and September following which full refill of the inactive pool does not occur until two to four years later. This brings into question the adequacy and reliability of this watershed to meet the "purpose of the Proposed Action to fulfill elements of the Integrated Plan ROD signed by Reclamation in July 9, 2013 to help restore ecological functions and provide more reliable and sustainable water resources for the health of the riverine environment and for agricultural, municipal, and domestic needs."[4]

Future Recreation Use - - The information on the effect of Lake Kachess drawdown of up to 80 feet, reducing 200,000 acre-feet of the current inactive pool, is distributed throughout the 700+ page document. This information states that such drawdown would significantly impact the usability and quality of recreation. The frequency and duration of drawdowns are a major concern for the future of slack water related recreational opportunities in this area as well as the quality of the environment for its full and part-time inhabitants.

- Loss of boat ramp usage may occur for months and even years when refilling of the reservoir does not occur in the subsequent year. The average use of the boat ramps is estimated at 11,000 people annually.

- The loss of fishing opportunities will occur such as trolling for silvers (Kokanee) because of reduced reservoir contents and Ling Cod (burbot) due to reductions in the lake bottom.

- The estimated campground average annual use of 23,000 people will decrease due to the receding shoreline of more than 100 feet below its current lowest level. Since this would occur for more than a year, access to the water from the campground and areas around the reservoir normally used will be significantly affected. The need to traverse mud flats will reduce activities on the reservoir and its shoreline.

8. The DEIS suggests the solution to these recreation impacts is to seek other locations for slack water recreation activities. No suggestions are offered for the adverse impacts on the full and part-time inhabitants of this area.

9. Adverse impacts to the local economy should be discussed, as permanently altering a popular recreation area will significantly affect the local businesses that depend on the influx of people.

[4] See "Purpose and Need for Action" statement in the Executive Summary of this DEIS on page ES-iii.

In the foregoing comments we refer to information in Appendix C of a November 2014 Technical Memorandum titled hydrologic Modeling of System Improvements Phase 1 Report. We have summarized some of this information in the Attachments to these comments.

Fish

10. Page 1-5: "Regarding bull trout…." The bull trout Enhancement package (BTE) should be implemented on an accelerated schedule with or without the implementation of any specific IP project. It is questionable if delaying bull trout recovery projects in order to correspond with the timing of IP project implementation is legal.

11. Pages 3-71-72, Sections 3.6.3.2-4: Estimates of historical abundance should be included so the reviewer can get a sense of the magnitude of the loss of anadromous fish in the Yakima Basin from the pre-development period.

12. Page 3-102, Section 3.0.6.2: The document should note that the projects included in this DEIS are in or very close to the North Cascades Grizzly Bear Recovery Zone.

13. Page 4-102, Table 4-33: It would appear from this table that the over-whelming impacts on fish are significantly negative. How then can the projects proceed? NO mitigation is even offered for the negative impacts involving water temperature, turbidity, and reduced food production. Are we to assume that these negative impacts cannot be ameliorated?

14. Page 4-116, last paragraph: Entrainment may pose a serious risk to the larval life stages of some species. However, there is very little discussion of this subject, other than to say that it poses a risk. The DEIS needs to include much more information on the type of fish screens that will be provided at the pump plant, including design criteria. It is NOT acceptable to simply refer the reader to other documents for additional technical information. All relevant information should be included in this document, so the adequacy of the DEIS can be judged. This is especially true of something as critical as fish screens.

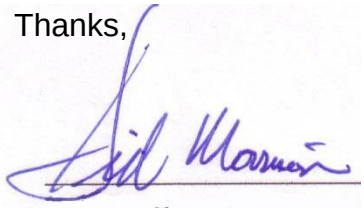
15. Page 4-133, Section 4.6.9.2: This section is TOTALLY inadequate. For example: First paragraph-"Reclamation is evaluating a number of conceptual passage projects." Second paragraph-"Reclamation would adaptively manage…." What does this mean? What changes would be made? Where? Under what conditions? Fourth paragraph: "Reclamation would support a study…." Mitigation cannot be concepts or studies, particularly when an ESA listed species is involved.

16. Page 4-171, last paragraph: No mitigation is offered for the decrease in bull trout food base, increased turbidity, or increased water temperature. These serious negative impacts on a species listed pursuant to ESA would appear to be a violation of that law.

17. A July target flow of 500 cfs is proposed for the Keechelus Reach which is to be achieved by bypassing some reservoir releases being made for downstream irrigation needs by means of the proposed KCC project. Table 4-34, page 4-107 indicates that with the combined KDRPP+KCC projects (Alternative 4) and the historical hydrograph the 500 cfs goal is attained in 93.8 percent of the Julys. However, Attachment 3 shows a different result for the KKDRP+KCC historical hydrograph; 54 percent of the Julys are in the "0 to10 percent below target" category and 40 percent of the Julys are in the "greater than 10% percent below target" category. For the KDRPP+KCC operation with the moderately adverse hydrograph, Attachment 3 indicates 87 percent of the Julys are in the "greater than 10 percent below target" category.

18. We note the DEIS claims an increase in spring Chinook from 169 to 1,477 will occur in the Keechelus Reach when summer target flows of 500 cfs are met for a **minimum of 10 consecutive years**. Do you think it is realistic to assume the target flows will be met for 10 consecutive years in any given 10-year period?

Thanks,



Sid Morrison
Chairman, Yakima Basin Storage Alliance

Attachments

Attachment 1 - - Irrigation Proration Levels Less than 70% for 1926 thru 2009 with the Historical and the Moderately Adverse Hydrograph.

Attachment 2 - - Irrigation Proration Levels for Single and Consecutive Drought Years with the Moderately Adverse Climate Change for 1926 thru 2009.

Attachment 3 - - Keechelus Reach July Target Flow Accomplishments with Historical and Moderately Adverse Climate Scenarios.

Attachment 1

Attachment 1 shows the years in which irrigation proration levels are less than 70%. There are several items that should be noted**. First,** the period of record has changed from that previously used in the Integrated Plan of 1981 thru 2005 (25 years) to an expanded period of 1926 thru 2009 (84 years). For the historical hydrograph this results in an additional 9 years of proration less than 70%, a total of 15 years compared to the previous 6 years. **Second**, with the moderately adverse climate there are 32 years of proration less than 70% (see lower part of the table titled "additional").

Table 1: Irrigation Proration Levels Less Than 70% Period for 1926-2006					
Year	**Historical Hydrograph**			**Moderately Adverse Hydrograph**	
	Baseline	**With Conservation**	**With KKC+ KDRPP**	**With Conservation**	**With KKC+KDRPP**
Column No.	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
1926	40	45	69	22	45
1929	56	58	- -	28	47
1930	34	38	56	8	11
1931	38	38	43	36	38
1940	62	68	67	47	64
1941	19	23	45	2	7
1942	57	59	61	41	44
1944	43	49	52	21	32
1977	44	46	68	0	21
Period of Record Used in Past Integrated Plan Studies (1981 – 2005)					
1987	69	- -	- -	48	56
1992	63	67	67	23	43
1993	59	62	- -	35	42
1994	26	30	48	13	13
2001	40	43	65	19	42
2005	45	50	69	31	36
Years of Irrigation Proration Less Than 70%					
# Yrs. From Table Above	15	14	12	15	15
Additional Years	None	None	None	40	17
Total Yrs.	**15**	**14**	**12**	**55**	**32**
84-Year Avg. Proration Amount	**87%**	**88%**	**90%**	**67%**	**69%**

Data Source:

Yakima River Basin Integrated Water Resource Management Plan Technical Memorandum: Hydrologic Modeling of System Improvements, Phase I Report, November 2014, Prepared by HDR Engineering, Appendix C: Modeling Scenario Results Summary Tables

Historical Hydrograph
Baseline- -Run: Baseline (EPOR) pages 1 and 2.
With Conservation- - Run: IPO (EPOR) pages 1 and 2
With KKC+KDRPP- -Run:IP2 (EPOR) pages 1 and 2

Moderately Adverse Hydrograph
With Conservation- -Run: IPO CC Adverse (EPOR) pages 1 and 2
With KKC+KDRPP- - Ru: IP2 CC Adverse (EPOR) pages 1 and 2

Attachment 2

Table 1: Irrigation Proration Levels with Moderately Adverse Climate Change and KKC+KDRPP Period of Record 1926 thru 2009 (84 Years)						
	Less Than					More Than 70%
	30%	40%	50%	60%	70%	
# Years	4	7	15	21	32	52
Percent Occurrence	4.8	8.3	17.9	25.0	38.1	61.9

Table 2: Single and Consecutive Drought Years with Moderately Adverse Climate Change and KKC+KDRPP Period of Record 1926 thru 2009 (84 Years)							
1-Year Drought		2-Year Drought		3-Year Drought		4- Year Drought	
Year	Proration %	Year	Proration %	Year	Proration %	Year	Proration %
1937	63	1926	45	1929	47	1992	43
1963	48	1927	62	1930	11	1993	42
1970	63			1931	38	1994	13
1973	66	1944	32			1995	55
1977	21	1945	62	1940	64		
1979	46			1941	7		
1981	68	1952	56	1942	44		
1988	69	1953	65				
2001	42			1985	51		
		1967	64	1986	52		
		1968	67	1987	56		
		2004	61				
		2005	35				
Years of Proration	**9**		**10**		**9**		**4**

Data Source:

Yakima River Basin Integrated Water Resource Management Plan Technical Memorandum: Hydrologic Modeling of System Improvements, Phase I Report, November 2014, Prepared by HDR Engineering, Appendix C: Modeling Scenario Results Summary Tables

Compiled from Run: IP2 CC Adverse (EPOR) pages 1 and 2

Attachment 3

Table 1: Keechelus Reach July Target Flow Accomplishments with Historical and Moderately Adverse Climate Scenarios (1926 thru 2009)				
Condition	**July Target 500 cfs**			
	0-10% Above	**0-10% Below**	**>10% Above**	**>10% Below**
Baseline Historical with Full Conservation				
% Occurrence	4	2	93	1
Number of Julys	3	2	78	1
Baseline Moderately Adverse with Full Conservation				
% Occurrence	2	2	23	72
Number of Julys	2	2	20	61
Historical with Full Conservation and KKC + KDRPP				
% Occurrence	2	54	4	40
Number of Julys	2	45	3	33
Moderately Adverse with Full Conservation and KKC +KDRPP				
% Occurrence	2	6	5	87
Number of Julys	2	5	4	73

Data Source:

Yakima River Basin Integrated Water Resource Management Plan Technical Memorandum: Hydrologic Modeling of System Improvements, Phase I Report, November 2014, Prepared by HDR Engineering, Appendix C: Modeling Scenario Results Summary Tables

Baseline Historical with Full Conservation- -Run: IPO (EPOR) page 3
Baseline Moderately Adverse with Full Conservation- -Run: IPO (EPOR) page 3
Historical Full Conservation and KKC+KDRPP - -Run: IP2 (EPOR) page 3
Moderately Adverse with Full Conservation and KKC+KDRPP- -Run: IP (EPOR) page 3