UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Utah Board of Water Resources,	)
Lake Powell Pipeline Project	) P-12966-001
	)

LAKE POWELL PIPELINE COALITION'S COMMENTS ON STUDY PLANS AND DRAFT STUDY REPORTS

Pursuant to 18 C.F.R.§ 5.15.The Lake Powell Pipeline Coalition (Coalition) hereby comments on the State of Utah's "Initial Draft Study Reports of Utah Board of Water Resources" (Applicant) for the Lake Powell Pipeline Project, eLibrary no. 20110314-5094 (March 14, 2011).

The Coalition consists of: Citizens for Dixie's Future, American Rivers, Glen Canyon Institute, Grand Canyon Wildlands Council, Living Rivers - Colorado Riverkeeper, Sierra Club, and the Town of Springdale, Utah. The descriptions and interests of member groups are stated in our Scoping Document (SD1) Comments (July 7, 2008), e-Library no. 20080707-5206.

I.
COMMENTS ON STUDY PLANS AND DRAFT STUDY REPORTS

We appreciate the Federal Energy Regulatory Commission's (Commission) consideration of issues raised during the scoping process, and are pleased that a number of our recommendations were integrated into the study plan. However, we are concerned that all of the environmental studies were based on faulty population and water demand estimates that are used as the basis for the need for the Lake Powell Pipeline project by 2020. Several of our most important concerns from the scoping process have not been integrated in a satisfactory way into the study reports. .

In Scoping Document 2 (SD2) the Commission stated that scoping was intended to serve as a guide to issues and alternatives to be addressed in the Environmental Impact Statement (EIS). The public expressed concerns in the scoping process that should be addressed in the EIS, the Commission's comments read:

> "*As shown in both the transcripts of the scoping meetings and in Appendix A, many individuals have provided either oral or written scoping comments, or both, concerning the Lake Powell Pipeline proposal. Many of the public comments express similar concerns or issues:*
>
> 1. *increased water conservation can delay the need for the pipeline or other water supply projects;*

2. *supplying water to allow the predicted population growth will diminish the quality of life in the region;*

3. *the estimated cost of the pipeline is increasing and little is known about how the final cost of the pipeline will affect fees and the taxes and rates paid by water users; and*

4. *continued droughts and climate effects from human activity could put the supply of water from Lake Powell Reservoir at risk."*[1]

These important issues should have been addressed in the study plan reports. Some of the proposed reports fall short and should not be considered as complete by the Commission because they did not address adequately these core controversial issues of the Lake Powell Pipeline project. Our comments in the following sections re-emphasize the importance that the environmental studies be completed with high quality data, and attempt to clarify our concerns with specific comments below. We are commenting on the Washington County's portion of the Lake Powell Pipeline project.

II.
SPECIFIC COMMENTS ON INITIAL STUDY REPORTS

We comment on the issues and alternatives described in the Initial Study Reports and the Water Needs Assessment (WNA). For ease of reference, our comments track the title and outline number in these documents for each section where we have a comment. Quotations from the approved study plans are in italics.

Land Use Plans and Conflicts Study Plan and Report #6

The 2008 Study Plan's purpose was to analyze the impacts and land use effects the Lake Powell Pipeline would have on the region. The report misinterpreted key data, skipped essential steps and varied from the study plans intent. In addition, the report was conducted based on anomalous conditions for growth assumptions. We outline our basis for asserting that this study report is not complete below.

Study Plan 6.2 Study Description and Objective
Source identified in the land use analysis pertaining to development and growth will be utilized in the socioeconomic study as well as other resource area studies evaluation project effects on growth.

Comment.

The over-all basis and approach to this growth study report is flawed. Between Scenario 1 and Scenario 2B available lands are simply reduced by environmental and other development constraints, these constrains, soils, rock out crops, endangered species, flood plains , proximity

[1] FERC elibrary 20080821-3005, Scoping of Environmental Issues for the proposed Lake Powell Pipeline Project, August 21, 2008, p.7

of services, washes, etc, should all be considered up front when determining the amount of land available for development. Therefore, available lands should begin with 2-B, leveling the unfavorable lands permanently unavailable in Scenario 3.

The second flaw with the study report is that all scenarios assume that the growth number is a constant and that only density would change based on non-available lands. If this document is to create scenarios for growth that are to be used as a basis for deciding how much potential water will be need by the county and to justify the construction of a pipeline, the study should be creating scenarios that alter density, land use patterns, and possibly waster use practices.

Third, this study report assumes a growth rate as a constant far into the future. As discussed previously, this projection is based on inflated numbers. Further, because the county population was at such a rapid rate of increase at the time population numbers were gathered it is faulty to assume that this number would remain a constant for 50 years and beyond. Instead the study could use that figure as a worst case scenario, and then demonstrate other, lesser growth rate scenarios to determine the correct growth demand on the St George region.

The study report is not sufficient because the Applicant varied from the specific requirements of the study plan in that the effects of growth would also be in the Socioeconomic Study Report #10 and other resource area studies that would be related and the approved studies were not conducted as provided for in the approved study plan.

The Coalition's comments from SD2 pp. 4-5[2] on growth refers to comments of the Commission, the Fish and Wildlife Service and EPA.

We recommend the report include these issues below into this study report. The Coalition's comments on growth in SD2 read:

SD2 Cumulative Impacts of Growth

> SD2 states that "FWS recommends the EIS evaluate the cumulative impacts of project induced land development, urbanization, and population growth on surface water quality, included nutrient loading, pollutant runoff, and sediment loads." SD2, p. 16. The Commission responded: "we have modified section 4.2.2 of SD2 to include indirect effects of induced growth on water quality parameters, where such effects can be reasonably foreseen, and are due to building the pipeline or an alternative."
>
> We echo the comments of the FWS and emphasize the importance of analyzing the impacts of a new water supply on land use and regional growth. In their scoping comments, the Environmental Protection Agency (EPA) offered to do an analysis on the environmental impacts of population growth.[3]

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[2] Coalition scoping Comments SD2, 2008 pp. 4-5 available at http://www.powellpipelinefacts.org/images/pdf/Pipeline/cdf%20scoping%20comments%20pdf.pdf

[3] U.S. Environmental Protection Agency, "Comments on Pre-Application Document" (July 15, 2008), eLibrary 20080724-0151.

The Commission in SD2 states:

> "We have revised section 4.2.9 to indicate more specifically that the EIS will address issues related to reasonably foreseeable population growth that would be associated with the proposed action and any other alternatives addressed in the EIS." SD2, p. 21.

Study Plan *6.3.1.9 Growth Trends Analysis*

> *To extent possible, the growth analysis will rely and be documented based upon published plans and polices addressing growth issues. It is recognized that the types of growth and how and where growth will be a result of current and future land use ordinances, building and zoning codes that get formally adopted through State, county, and municipal general and comprehensive planning processes.*

Comment

The approved studies were not conducted as provided for the in the approved study plan because it included BLM land in the growth analysis thus they used the wrong data. The Applicant should not have used 498,580 acres in the growth analysis study area that includes BLM land. It should have followed the study plan and just used state, county and municipal general and comprehensive planning. The Applicant should have used state land which is about 101,040 acres and private land 255,060 in the analysis instead.[4]

BLM land

The Applicant should take into consideration that BLM is doing a Resource Plan Amendment to its 1999 Resource Management Plan and coordinate information for this study report with their comprehensive land use planning BLM is currently doing. This BLM planning will identify land for special protection of special status species. The Applicant included BLM land in the assumptions that BLM land will be sold, however, BLM land should be deleted from the amount of developable land. In the Vision Dixie results,[5] people want to retain BLM lands in public ownership for recreation and preservation of scenic open space. The Applicant identifies BLM land for development and misinterprets that all BLM land will eventually be sold.

The Applicant should not include BLM land in the developable acres in the county, because it confuses the public on what may or may not be available for sale. Using BLM land skews the model numbers.

Study Report Comments

The Applicant used the Wrong Data in the Study Report:

[4] BLM's Resource Management Plan, 1999, page 1.3 shows the amount of acreage of land in Washington County available at

[5] Vision Dixie Report, available at www.visiondixie.org

We disagree with the Applicant's population projections as the basis for the study report due to they used the wrong data. The current estimates used in the study report are from January 2008 population estimates released by the Governor's Office of Planning and Budgets (GOPB). Growth, and therefore land-use considerations have changed significantly since 2008. In the GOPB 2011Economic Outlook Report, State wide growth has gone down dramatically and is now projected much lower at only 65% of 2008 projections. The GOPB is aware of the change in growth climate and will be releasing revised and current reports in 2012. We recommend that this study report not be considered complete until more current and accurate population projections to 2020 are taken into consideration.

ES-3.11 Growth

We disagree with the sufficiency of the model and question if the correct data was used for the study report that concludes: the growth area population would have an average housing density of 2 units per acre for a 500,000 projected population. The Applicant's assumption in the study is not correct, and the density will be denser in the future. The Applicant including BLM land for development in the scenarios which skews the model. In St George they are building 12 units per acre for new housing developments. We very seldom would you find less than 4 units per acre now.

We also disagree with the assumption that migrants will not want to move here because of landscape ordinances and restrictions on water use. People move to Scottsdale, Las Vegas and many other desert communities that conserve much more water than our area.

The study needs to consider people may not move here in the future because of high water impacts fees in future that have to pay for Lake Powell Pipeline (LPP). In 2006 the state legislature approved that repayment of the debt incurred for building the Pipeline will come from impact fees.[6] However, since the cost of constructing the pipeline has tripled, the assumption that impact fees will fund the pipeline is no longer valid. The 2006 WCWCD's report listed the price of LPP about $562,000,000 and impact fees by 2040 would be $24,000 per water hook up[7]. A new analysis must be completed in the study report to determine impact fees required to cover current cost estimates. As impact fees increase to pay for the pipeline, the increased building costs will put downward pressure on an already depressed new construction market.

Any significant increase in water impact fees, and cost of living, through property taxes or water rates, would reasonably effect the housing market in the future growth. This issue was a major concern of the public in scoping. Thus, the Commission should not consider this report complete until the Applicant clearly explains how the LPP will be paid for. These costs should be included in the growth analysis before this study report is considered complete. The increase in impact fees should be as considered an adverse impact on the local economy in the future in the report.

[6] Utah Code Title 73, Chapter 28, available at www.utah.gov
[7] WCWCD Regional Water Capital Facilities Plan and Impact Fee Analysis, 2006, page 54 available at http://wcwcd.state.ut.us/Plans,%20Studies%20&%20Reports.htm

The Applicant did not properly conduct a study on the topic of growth diminishing quality of life. Quality of life concerns was the purpose of growth being included in the EIS.

This study report does not answer the core concern brought up in scoping above that:

> *supplying water to allow the predicted population growth will diminish the quality of life in the region. .”*[8]

The Applicant missed the point why the conflicts of growth are included in this study. The concern about the diminishing quality of life issues is what people are concerned about identified in scoping. For example, how will growth impact air pollution from increased traffic; and urban water runoff into the streams degrading water quality; and taxes increasing to pay for schools, police, fire protection and other community services; high water impacts fees just to name a few.

The assumptions within the study report, that all available land should be filled to capacity are in conflict with residents desires. The Applicant should include a growth scenario in a manner that consistent with the Vision Dixie report and principles, rather than assuming the county is filled to capacity.

The Applicant Used the Wrong Data

The Applicant did not use the results in Vision Dixie Report and polling results in the study report. We recommend community desires expressed in Vision Dixie be included as part of this study report. The study report does mention smart growth but, does not include the results of $500,000 Vision Dixie Report that was a year and half land use planning exercise where 3000 people participated. The Vision Dixie process revealed that 75% of residents polled felt inward growth and compact communities with open space surrounding it should be encouraged and protects the *quality of life*. We submit Vision Dixie data for the study report. Inclusion of community perceptions and desires for each scenario is essential if this study report is to be considered complete. Polling of residents and reflection of their general desires should be included in this section as well as in the Alternatives Development Study Report #22.

Poll Results, available at:
http://www.citizensfordixie.org/images/pdf/VisionDixie/Weighted%20results%20-%20july.pdf

Vision Dixie Report, available at:
Vision Dixie Final Report http://www.visiondixie.org/pdf/VisionDixie-Book-SM.pdf

3.2.11 Growth

[8] FERC elibrary 20080821-3005, Scoping of Environmental Issues for the proposed Lake Powell Pipeline Project, August 21, 2008, p.7

Between 2000 and 2009, Washington County Utah was the 16th fastest growing county in the nation in terms of housing units with an increase of 20,571 new units, an increase of 56.4 percent (U.S. Census Bureau, 2010).

The Applicant is not using the correct data in the study report. If the Applicant is able to include data from the US Census 2010, then base 2010 population estimates should be adjusted to reflect this actual information. The 2008 GOPB Report projected Washington County 2010 population to be at 168,078. Yet, the 2010 US Census reported population 18% below this estimate[9]. Using selective data to build the case for the pipeline would show bias. Consideration of the census population estimates should be included in the study reports.

4.4.1.11 Growth

We disagree with the conclusion in the study report that the LPP does not have an impact on growth because it clearly does. We would assert that increased impact fees to pay for the pipeline will directly impact future growth in a negative way. This adverse effect must be considered in conjunction with current, relevant growth projections by the Applicant for this report to be considered complete.

We disagree with the data used and the sufficiency of the study results to arrive at the proposed LPP Alternatives.

5.2 No Lake Powell Water Alternative

5.2.1.1 Land Ownership and Management

We recommend this section be deleted because it misinterpreted the results of the study that considered the wrong data and the environmental impacts of xeriscapes. The Applicant has no basis in fact or reason that communities would have to implement dust and particulate suppression and controls on residential landscape and common area converted to desert xeriscapes. The Applicant shows a real bias against the success of using xeriscape landscaping that is used in all the desert communities of the southwest.

6.2.1 Land Ownership and Management

We recommend this section be deleted because it misinterpreted the results of study due to the using the wrong facts. The Applicant has no basis in fact or reason that communities would have uncontrolled particulate emissions causing chronic unavoidable adverse impacts on spoil erosion, visibility, and air quality during wind storms.

Specific comments on maps:

1. Figure 4-7. Many of the lands on the urban interface of St George City slated for disposal in the BLM's 1999 Land Use Plan (LUP) have been determined not suitable for development /disposal due to , but not limited to, Sensitive or endangered plants and

[9] US Census 2010

archeological resources. This research and analysis does not take into consideration current activity level planning, including the Red Bluff ACEC, Santa Clara River Reserve and others.

2. Most of the State Trust Lands known as the "Tonaquint parcel" have been slated for open space and are 95% bed rock in the City of St George.

3. Scenario 1 is faulty as is assumes lands available for development can be developed that are not available as set forth in the criteria for this study. Check for recent and current conditions and analysis of the lands available for development.

4. There are land use conflicts in Figure 4-8 Scenario 1 Developable Areas, on the east side of I-15 next to urban core where the public wants open lands for recreation and not to be developed. Many special status species also occupy the land there. Also, more land in Warner Valley is home to special status species and there would be conflicts with that area being developed. The area identified as conflict should be enlarged.

5. Lands shown for development in R 16 W Sec 10 & 11 contain bear claw poppy habitat and are currently being managed for its protection.

6. Parcels in Warner Valley are shown ideal for water storage in the WCWCD Master Plan Sections on Sand Mountain are located on active dunes.

7. Figure 4-8, change favorable development to available for development and analyze only the lands in the category " highly favorable " to get a more realistic picture of growth patterns within the study area.

#10
Water Resource Economic/Socioeconomics Study Plan and Report

The Applicant veered away from the specific requirements of the approved study plan. We outline the issues below. The following issues were not considered in the study report or were left out completely:

Study Plan 10.2.1 Primary Goals and Objectives

> *the economics of conservation measures and available water right changes/transfers from irrigated agriculture or other water supply sources, as designated by the water supply study.*

Comment

The Applicant varies from the specific requirement of the approved study plan by not including the economics of water conservation measures and available water changes from irrigated agriculture water to culinary and also an inventory of all water supply sources to account for the water not counted by the Washington County Water Conservancy District.

Study Plan 10.3 Agency Resource Management Goals

> *Determine the supply and cost-effectiveness of water conservation and management programs that may be developed, with or without the Project.*

Comment

The approved study report did not determine the cost effectiveness of water conservation and management programs thus, it was not conducted as provided for in the approved study plan

Study Plan 10.3 Agency Resource Management Goals

> *In terms of new water supply options and marginal costs, consider the general economic impacts to the districts and to the state; clarify the likely fiscal impacts.*

Comments

The study report did not include this goal above thus, the study was not conducted as provided for in the approved study plan.

The public's interest of being informed on how the project will be financed and repaid is not included in the study report. This is the main concern of residents, and the controversy needs to be addressed this study report.

Numerous people commented during scoping that a major concern was:

> *"that the estimated cost of the pipeline is increasing and little is known about how the final cost of the pipeline will affect fees and the taxes and rates paid by water users.*[10]

We recommend in the study report the Applicant disclose how the cost of the Lake Powell Pipeline (LPP) will be financed and how the debt will be paid for and by whom. The following issues need to be included in the study report, they include:

- The cost and benefits of water conservation.
- What is the financial impact if the water supply for LPP is reduced by shortage or drought?
- Explain the effects of the pipeline not being full of water until 2037 and is this considered in the economic analysis? The Applicant will only receive 2000 acre feet initially in 2020 and that doubles each year; does this change the economic benefit of the LPP in the current analysis?
- The Lake Powell Pipeline pumps are at ground level 3745 (msl). Is the cost of pumping from different intakes being considered in the economic analysis?

[10] FERC elibrary 20080821-3005, Scoping of Environmental Issues for the proposed Lake Powell Pipeline Project, August 21, 2008, p.7, http://www.powellpipelinefacts.org/images/pdf/Pipeline/ferc%20scoping%20doc.%202.pdf

The report should include what the cost difference is of pumping from the different pipe intake level into Lake Powell from 3575 (msl) the pipe would be 170 feet long, at intake level 3475 (msl) it would be 100 feet more and at proposed intake level 3375 (msl) the pipe would be another 100 feet longer.

- How will the state finance the project? Detailed information of financing terms should be included.

- How will financing this project affect the states bond rating?

- How will the residents pay the state back?

- How much will impact fees have to go up now that the project has tripled in price to pay for the project? What will the steep increase of impact fees have on the housing industry in the future?

- Does the state have a contingency plan if impact fees are not enough to cover the payments? Has a thorough probability analysis of each repayment option been constructed?

- Page Electric has said they do not have the capacity in the switchyard for the pipeline pumps and state will have to pay for the upgrade; this should be included in the study report.

- This study report does not comply with the Commission's regulations in CFR Title 18, 5.18. in that it does not explain the effects of the applicants proposal on resources in the No Action Alternatives; it also does not include any unavoidable adverse impacts. It does not discuss whether any such impacts are short- or long-term, minor or major, cumulative or site-specific. It does not discuss the plans and ability of the applicant to operate and maintain the project in a manner most likely to provide efficient and reliable electric service, including efforts and plans to (1) increase capacity or generation at the project; or (2) discuss the need of the applicant over the short and long term for the electricity generated by the project.

- The Applicant did not include all the procedures of the National Economic Development Procedures (NED) in this study report to address the Risk and Uncertainty Sensitivity Analysis of the LPP. NED should address how drought and uncertainty of the water supply for LPP should be considered in the economic analysis of the project. Also, as reservoir levels fall environmental impacts increase mush be an economic consideration.

- *Include NED 2.2.3 to the study plan report:*
  (1) Existing water supplies. Existing water supplies are included in the with or without-project condition. Make adjustments to account for anticipated changes in water supply availability because of the age of facilities or changed environmental requirements.

  (3) Additional water supplies. The without-project condition includes water supplies that are under construction or authorized and likely to be constructed during the forecast period.

(4) Probability of water supply. Include calculation and specification of the probability of delivery for each source of water supply in the analysis.

(5) Water quality. Water use is based on both the quantity and the quality of water supply. Different uses may require different qualities as well as quantities of water. Supplies also vary according to quality and quantity. Because water quality is a critical factor in water supply, it should be specified in any consideration or presentation related to water quantity. The degree of detail used to describe water quality should be suitable to permit differentiation among water sectors or available water supply sources.

(6) Nonstructural measures and conservation. The without-project condition includes the effects of implementing all reasonably expected nonstructural and conservation measures. These measures include:

(1) Reducing the level and/or altering the time pattern of demand by metering, leak detection and repair, rate structure changes, regulations on use (ie, plumbing codes), education programs, drought contingency planning; and

(2) Modifying management of existing water development and supplies by recycling, reuse, and pressure reduction; and

(3) lncreasing upstream watershed management and conjunctive use of ground and surface waters.

- NED should also consider the risk of a quagga mussel invasion into the pipeline system for the 50 year term of license and what that will do to future costs of LPP in the economic analysis.

- The Washington County Water Conservancy District's (Water District) existing 147 water right certificates with amount of water need to be included in the report. Available at: http://www.powellpipelinefacts.org/images/pdf/WCWCD%20water%20rights.pdf

- The accounting of Water District's Quail Creek project of how much water annually is diverted off the Virgin River and how much is returned though its hydropower plants to the Virgin River needs to be part of the report. The regional pipeline is built to link all the community water systems together.

The Applicant's results of the studies under the approved study plan did not consider these issues listed above. We recommend that these studies be included in the study report before the Commission considers them complete.

Study Plan 10.3 Agency Resource Management Goals

Costs of meeting new water resource needs for the Project area, including conservation and Project alternative costs.

Comment

The study report did not include costs of meeting new resource needs in common sense dollar amount so the public could understand the costs of the alternatives, thus it was not conducted as provided for in the intent of approved study plan.

Study Plan 10.4.3 Issues and Data Needs

> *Availability and costs of new electric power supplies directly related to Project.*

Comment

The study report did not include this goal, thus, the study report was not conducted as provided for the in the intent of approved study plan.

Study Plan 10.4.3 Issues and Data Needs

> *An accounting of the State's Colorado river water rights allocated to the Project; any potential water right impairment issues*

Comments

The study report did not include this issue of water impairment due to reduced flows, thus, the study results do not represent conditions over the term of the license.

The Coalition's is concerned the State of Utah has a potential water right impairment issue and does not actually have the legal right to take water at the low reservoir level they claim assures water for a permanent water project at the same amount of water until 2070.

According to the Utah State Engineer's powerpoint from 2009 [11]it seems there is a question whether the LPP can legally divert at low levels for example:

In the presentation mentioned above, it states Utah currently consumes 1,007,500 acre-feet of its apportionment of the Colorado River.

- It says also that about 185,000 acre-feet is reserved for the tribes, Ute and Navajo. These are very old water rights, that can't be ignored. The state acknowledges this fact in their powerpoint.

- The current consumption plus Indian water rights equals 1.193 maf

[11] Utah State Engineer's powerpoint from 2009, available at: http://www.riversimulator.org/Resources/States/UtahStateEngineerCurrentStatus2009.pdf

- 8.23 (maf) must be delivered to the lower basin states
- Utah gets 23% of the Upper Colorado Basin allocation
- Factor in an 8 to 14% reduction in flows at Lees Ferry (conclusion of Reclamation's new report[12]).
- 14% reduction in flow equals 2.1 maf at Lees Ferry
- Equals only12.9 maf (total annual river flows) at Lees Ferry - 8.23 (maf) (lower basin allocation) = 4.67 (maf) (upper basin allocation in 2050)
- Utah's Colorado River share of 23% of 4.67 maf = 1.0741 maf
- With the reduction in river flows and the current Utah consumption plus Indian water rights equals 1.193 maf which does not leave enough water for the LPP after you subtract the projected reduction in flow.

In the range of probabilities, there is not enough water for the LPP because Utah has a junior water right of (1996) and with predictions of less Colorado River future flows by the Bureau of Reclamation's new April 11, report the amount of water available will be reduced. The Applicant claims it can divert water to the pipeline even in dire conditions. We recommend the study report verify how the Applicant can legally divert water in dire conditions with a zero active pool of water in Lake Powell; the same amount of water until 2070 for the LPP. Water availability is a key nexus of the Climate Change Study Plan #19.[13]

Wildlife Resources Study Report #13

Conservation of Arid Land Habitats

The Draft Study Report 13 Special Status Wildlife Species (UDNR 2011a:4-35) offers a systematic summary of the anticipated affects on special status wildlife. We are very concerned that the proposed project, along with its other numerous economic and environmental liabilities, will simply exacerbate deterioration of public lands locate on the Arizona Strip and southwestern Utah.

[12] *Reclamation Managing Water in the West, Secure Water Act Section 9503 (c)–Reclamation Climate Change and Water 2011* , Colorado River Basin sections, pages 17-40 ,179-183,, available at:
http://www.powellpipelinefacts.org/images/pdf/AttachmentA%20Pt1.pdf
http://www.powellpipelinefacts.org/images/pdf/AttachmentA%20Pt2.pdf

[13] Climate Change Study Plan #19 at 19.5 Nexus to Project. The availability of water for the pipeline would affect the ability of the Project to supply water to communities in Utah and generate hydroelectric electric power. Therefore, the availability of water supply is directly related to the Project's purpose.

As Table 1s below indicates, the listed (threatened) Mohave desert tortoise would be adversely impacted by all proposed alternatives. All alternatives except the "No Lake Powell Water" alternative would adversely affect the threatened Utah prairie dog. Of particular concern is the adverse effect of the Transmission Line alternative on the endangered California condor. While report, summarized below in Table 3, indicates minimal effects on Wildlife Species of Concern and Tribal Wildlife of Species of Cultural Concern, we emphasize that aridlands, such as the entire project area, already drier and more variable than other habitat types, are predicted to get even drier, warmer, and more variable. In addition, aridlands ecosystems are highly susceptible to invasion by nonnative species. Facilitated by climate change and soil disturbance, invasion by nonnative species alters the type and quantity of food for birds (North American Bird Conservation Initiative 2010). More than 50% of aridland bird species show medium or high vulnerability to climate changes (North American Bird Conservation Initiative 2010). The Secretary of Interior has repeatedly stressed that public lands are very important for the conservation of aridland species; more than half of U.S. aridlands are publicly owned yet many aridland birds continue to decline. Public lands are critically important for species such as sage-grouse, sage sparrow, and Le Conte's thrasher, with over 75% of their U.S. distribution on public lands (North American Bird Conservation Initiative 2011).

Table 1: Affects of Alternatives on T&E and Sensitive Species

Species	**South Alt**	**Existing Highway**	**Southeast Corner**	**Transmission Line**	**No Lake Powell Water**
California Condor	May affect, but not likely adversely affect (UDNR 2011a:4-5).	The Existing Highway Alternative may affect, but is not likely to adversely affect the California condor	The Southeast Corner Alternative may affect, but is not likely to adversely affect the California condor. (UDNR 2011a:4-24).	**The Transmission Line Alternatives would likely adversely affect the California condor (UDNR 2011a:4-29).**	The No Lake Powell Water Alternative would have no effect on the California condor (UDNR 2011a:4-35).
Mexican Spotted Owl	May affect, but not likely adversely affect Mexican spotted owl (UDNR 2011a:4-7).	The Existing Highway Alternative may affect, but is not likely to adversely affect the Mexican spotted owl (UDNR 2011a:4-21).	The Southeast Corner Alternative may affect, but is not likely to adversely affect the Mexican spotted owl (UDNR 2011a:4-25).	The Transmission Line Alternatives may affect, but are unlikely to adversely affect the Mexican spotted owl (UDNR 2011a:4-30).	The No Lake Powell Water Alternative would have no effect on the Mexican spotted owl (UDNR 2011a:4-35).
SW	The South	The Existing	The Southeast	The	The No

Willow Flycatcher	Alternative would have no effect on the southwestern willow flycatcher (UDNR 2011a:4-7).	Highway Alternative may affect, but is not likely to adversely affect the southwestern willow flycatcher. (UDNR 2011a:4-21).	Corner Alternative may affect, but is not likely to adversely affect the southwest willow flycatcher. (UDNR 2011a:4-25).	Transmission Line Alternatives may affect, but are not likely to adversely affect the southwest willow flycatcher (UDNR 2011a:4-30).	Lake Powell Water Alternative would have no effect on the southwest willow flycatcher (UDNR 2011a:4-35).
Utah Prairie Dog	**The South Alternative would likely adversely affect the Utah prairie dog** (UDNR 2011a:4-8).	**The Existing Highway Alternative would likely adversely affect the Utah prairie dog** (UDNR 2011a:4-)21.	**The Southeast Corner Alternative would likely adversely affect the Utah prairie dog.** (UDNR 2011a:4-).	**The Transmission Line Alternatives would likely adversely affect the Utah prairie dog** (UDNR 2011a:4-30).	The No Lake Powell Water Alternative would have no effect on the Utah prairie dog (UDNR 2011a:4-35). (UDNR 2011a:4-).
Yellow-Billed Cuckoo	The South Alternative would have no effect on the yellow-billed cuckoo. (UDNR 2011a:4-13).	The Existing Highway Alternative would have no effect on the yellow-billed cuckoo. (UDNR 2011a:4-21).	The Southeast Corner Alternative would have no effect on the yellow-billed cuckoo (UDNR 2011a:4-25).	The Transmission Line Alternatives would have no effect on the yellow-billed cuckoo (UDNR 2011a:4-31).	The No Lake Powell Water Alternative would have no effect on the yellow-billed cuckoo (UDNR 2011a:4-36).
Greater Sage-Grouse	The South Alternative would have no effect on the greater sage-grouse (UDNR 2011a:4-13).	The Existing Highway Alternative would have no effect on the greater sage-grouse (UDNR 2011a:4-22).	The Southeast Corner Alternative would have no effect on the greater sage- grouse (UDNR 2011a:4-25).	The Transmission Line Alternatives would have no effect on the greater sage-grouse (UDNR 2011a:4-31).	The No Lake Powell Water Alternative would have no effect on the greater sage-grouse (UDNR 2011a:4-36).
Mohave Desert Tortoise (MDT)	**The South Alternative would likely adversely**	**The Existing Highway Alternative would likely**	**The Southeast Corner Alternative**	**The Transmission Line Alternatives**	**The No Lake Powell Water**

	affect the MDT (UDNR 2011a:4-17).	**adversely affect the Mohave desert tortoise.** (UDNR 2011a:4-22).	**would likely adversely affect the Mohave desert tortoise** (UDNR 2011a:4-26).	**would likely adversely affect the Mohave desert tortoise** (UDNR 2011a:4-).	**Alternative would likely adversely affect the Mohave desert tortoise** (UDNR 2011a:4-36).
Yuma Clapper Rail	The South Alternative would have no effect on the Yuma clapper rail (UDNR 2011a:4-17).	The Existing Highway Alternative would have no effect on the Yuma clapper rai. (UDNR 2011a:4-22).	The Southeast Corner Alternative would have no effect on the Yuma clapper rail. (UDNR 2011a:4-26).	The Transmission Line Alternatives would have no effect on the Yuma clapper rail (UDNR 2011a:4-32).	The No Lake Powell Water Alternative would have no effect on the Yuma clapper rail. (UDNR 2011a:4-37).
Relict Leopard Frog	The South Alternative would have no effect on the relict leopard frog. (UDNR 2011a:4-17).	The Existing Highway Alternative would have no effect on the relict leopard frog. (UDNR 2011a:4-22).	The Southeast Corner Alternative would have no effect on the relict leopard frog. (UDNR 2011a:4-26).	The Transmission Line Alternatives would have no effect on the relict leopard frog (UDNR 2011a:4-31).	The No Lake Powell Water Alternative would have no effect on the relict leopard frog (UDNR 2011a:4-37).
Kanab Ambersnail	The South Alternative would have no effect on the Kanab ambersnail (UDNR 2011a:4-17).	The Existing Highway Alternative would have no effect on the Kanab ambersnail (UDNR 2011a:4-22).	The Southeast Corner Alternative would have no effect on the Kanab ambersnail (UDNR 2011a:4-26).	The Transmission Line Alternatives would have no effect on the Kanab ambersnail (UDNR 2011a:4-31).	The No Lake Powell Water Alternative would have no effect on the Kanab ambersnail (UDNR 2011a:4-37).

Table 2: Wildlife Species of Concern and Tribal Wildlife of Species of Cultural Concern

Common Name	**Scientific Name**	**Status**	
Allen's big-eared bat	*Idionycteris phyllotis*	USPC	
Big free-tailed bat	*Nyctinomops macrotis*	USPC, AGFD-WSC	
Dwarf shrew	*Sorex nanus*	AGFD-WSC	
Fringed myotis bat	*Myotis thysanodes*	USPC	
Greater western mastiff	*Eumops peroti*	AGFD-WSC	

bat	*scalifornicus*		
Kit fox	*Vulpes macrotis*	USPC	
Long-eared myotis bat	*Myotis evotis*	BLM-S	
Pygmy rabbit	*Brachylagus idahoensis*	USPC	
Small-footed myotis bat	*Myotis ciliolabrum*	BLM-S, AGFD-WSC	
Townsend's big-eared bat	*Corynorhinus townsendii*	USPC	
Western red bat	*Lasiurus blossevillii*	USPC	
Abert's towhee	*Pipilo aberti*	PIF	
Bald eagle	*Haliaeetus leucocephalus*	FWS, BLM, NPS	
Bell's vireo	*Vireo bellii*	BCC	
Belted kingfisher	*Ceryle alcyon*	AGFD-WSC	
Bendire's thrasher	*Toxostoma bendirei*	BCC	
Black-chinned sparrow	*Spizella atrogularis*	PIF	
Black-throated gray warbler	*Dendroica nigrescens*	BCC	
Black-chinned sparrow	*Spizella breweri*	PIF	
Black-throated gray warbler	*Dendroica nigrescens*	BCC	
Brewer's sparrow	*Spizella breweri*	BCC	
Burrowing owl	*Athene cunicularia*	USPC, BCC	
Crissal thrasher	*Toxostoma crissale*	BCC	
Ferruginous hawk	*Buteo regalis*	USPC, BCC	
Golden eagle	*Aquila chrysaeto*	BCC	
Gray vireo	*Vireo vicinior*	BCC	
Lecontes's thrasher	*Toxostoma lecontei*	PIF	
Lewis's woodpecker	*Melanerpes lewis*	USPC, BCC	
Loggerhead shrike	*Lanius ludovicianus*	BLM-S, BCC	
Long-billed curlew	*Numenius americanus*	USPC, BCC	
Lucy's warbler	*Vermivora luciae*	PIF	
Northern goshawk	*Accipiter gentilis*	CS	
Northern harrier	*Circus cyaneus*	BCC	
Peregrine falcon	*Falco peregrinus anatum*	FWS, BLM, NPS	
Pinyon jay	*Gymnorhinus cyanocephalus*	BCC	
Prairie falcon	*Falco mexicanus*	BCC	
Red-naped sapsucker	*Sphyrapicus nuchalis*	AGFD-WSC	
Sage sparrow	*Amphispiza belli*	BCC	
Sage thrasher	*Oreoscoptes montanus*	AGFD-WSC	
Short-eared owl	*Asio flammeus*	USPC, BCC	
Swainson's hawk	*Buteo swainsoni*	BCC	
Virginia's warbler	*Vermivora virginiae*	BCC	
Western grasshopper sparrow	*Ammodramus savannarum perpallidus*	AGFD-WSC	
White-throated swift	*Aeronautes saxatalis*	PIF	

Common chuckwalla	*Sauromalus ater*	USPC	
Gila monster	*Heloderma suspectum*	USPC	
Northern sagebrush lizard	*Scleoporus graciosus graceosus*	BLM-S	
Sidewinder	*Crotalus cerastes*	USPC	
Utah milk Snake	*Lampropeltis triangulum taylori*	AGFD-WSC	
Western banded gecko	*Coleonyx variegatus*	USPC	
Western threadsnake	*Leptotyphlops humilis*	USPC	
Zebra-tailed lizard	*Callisaurus draconoides*	USPC	
Arizona toad	*Bufo microscaphus*	USPC	
Great plains toad	*Bufo cognatus*	USPC	

Abbreviations: USPC = Utah Species of Concern; CS = Species with Conservation Agreements; AFGD – WSC = Arizona Fish and Game Department Wildlife Species of Concern; BLM-S = BLM Sensitive Species; BCC = USFWS Birds of Conservation Concern; PIF = Partners in Flight Watch List; FWS = Fish and Wildlife Service; NPS = National Park Service
Sources: Utah Conservation Data Center; Bureau of Land Management, Arizona Strip Field Office Proposed Plan/FEIS, 2007; USFWS Birds of Conservation Concern, 2002; Arizona Game and Fish Department Natural Heritage Program and Comprehensive Wildlife Conservation Strategy; Partners in Flight (PIF 2008); US Fish and Wildlife Service.

Table 3: Affects of Alternatives on Species of Concern

Species	**South Alt**	**Existing Highway**	**Southeast Corner**	**Transmission Line**	**No Lake Powell Water**
Mammal Species of Concern	Construction, operation and maintenance of the South Alternative would not cause significant impacts on mammal wildlife species of concern (UDNR 2011a:4-18).	Construction, operation and maintenance of Existing Highway Alternative facilities could cause some mortality of individual mammals, but would not exceed the significance criteria for impacts on populations of mammal wildlife species of concern. Habitat impacts would	Construction, operation and maintenance of the Southeast Corner Alternative Existing Highway Alternative facilities could cause some mortality of individual mammals, but would not exceed the significance criteria for impacts on populations of mammal	Periodic transmission line inspection and maintenance could cause some individual mammal mortality from vehicle traffic, but the number of animals lost would not place any species at risk and impacts would not exceed the significance criteria (UDNR	Impacts would be similar to those described in Sections 4.4.2.2.1, 4.4.2.2.2, 4.4.2.2.3 and 4.4.2.2.4. Impacts on tribal wildlife species of cultural concern would be similar to those described in Section 4.4.2.5.2.

		not be significant because of the large area of equivalent habitat in the surrounding region (UDNR 2011a:4-23).	wildlife species of concern. Habitat impacts would not be significant because of the large area of equivalent habitat in the surrounding region (UDNR 2011a:4-26).	2011a:4-32).	Impacts would not exceed the significance criteria. (UDNR 2011a:4-37).
Bird Species of Concern	Construction, operation and maintenance of the South Alternative would not cause significant impacts on avian wildlife species of concern (UDNR 2011a:4-19).	Construction, operation and maintenance of the Existing Highway Alternative would not cause significant impacts on bird wildlife species of concern (UDNR 2011a:4-23).	Construction, operation and maintenance of the Southeast Corner Alternative would not cause significant impacts on avian wildlife species of concern. (UDNR 2011a:4-27).	The Transmission Line Alternatives would not cause significant impacts on avian wildlife species of concern (UDNR 2011a:4-33).	Impacts would be similar to those described in Sections 4.4.2.2.1, 4.4.2.2.2, 4.4.2.2.3 and 4.4.2.2.4. Impacts on tribal wildlife species of cultural concern would be similar to those described in Section 4.4.2.5.2. Impacts would not exceed the significance criteria. (UDNR 2011a:4-37).
Reptile Species of Concern	Construction, operation and maintenance of the South Alternative	Construction, operation and maintenance of the Existing Highway	Construction, operation and maintenance of the Southeast	The Transmission Line Alternatives would not	(UDNR 2011a:4-).

	would not cause significant impacts on reptile wildlife species of concern (UDNR 2011a:4-19).	Alternative would not cause significant impacts on reptile wildlife species of concern (UDNR 2011a:4-23).	Corner Alternative would not cause significant impacts on reptile wildlife species of concern (UDNR 2011a:4-27).	cause significant impacts on reptile wildlife species of concern (UDNR 2011a:4-33).	
Amphibians Species of Concern	Construction, operation and maintenance of the South Alternative would not cause significant impacts on amphibian wildlife species of concern (UDNR 2011a:4-20).	Construction, operation and maintenance of the Existing Highway Alternative would not cause significant impacts on amphibian wildlife species of concern (UDNR 2011a:4-24).	Construction, operation and maintenance of the Southeast Corner Alternative would not cause significant impacts on amphibian wildlife species of concern (UDNR 2011a:4-27).	The Transmission Line Alternatives would not cause significant impacts on amphibian wildlife species of concern. (UDNR 2011a:4-33).	Impacts would be similar to those described in Sections 4.4.2.2.1, 4.4.2.2.2, 4.4.2.2.3 and 4.4.2.2.4. Impacts on tribal wildlife species of cultural concern would be similar to those described in Section 4.4.2.5.2. Impacts would not exceed the significance criteria. (UDNR 2011a:4-37).
Tribal Wildlife Species of Cultural Concern.	Construction, operation and maintenance of the South Alternative would not cause significant impacts on tribal	Construction, operation and maintenance of the Existing Highway Alternative would not cause	Construction, operation and maintenance of the Southeast Corner Alternative would not	Construction, operation and maintenance of the Transmission Line Alternatives would not	Impacts would be similar to those described in Sections 4.4.2.2.1, 4.4.2.2.2,

	wildlife species of cultural concern (UDNR 2011a:4-20).	significant impacts on tribal wildlife species of cultural concern. (UDNR 2011a:4-24).	cause significant impacts on tribal wildlife species of cultural concern (UDNR 2011a:4-27).	cause significant impacts on tribal wildlife species of cultural concern (UDNR 2011a:4-34).	4.4.2.2.3 and 4.4.2.2.4. Impacts on tribal wildlife species of cultural concern would be similar to those described in Section 4.4.2.5.2. Impacts would not exceed the significance criteria. (UDNR 2011a:4-37).

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Surface Water Quality Study Report Plan and Report #17

The Applicant varied from the specific requirements of the approved study plan. and must present results of its studies under the approved study plan and they did not. We ask that issues below in the study plan be included in the report before the Commission this report to be complete.

Study Plan 17.2 Study Description

> *The study will identify potential impacts and measures to protect surface water quality from potentially adverse effects associated with the Project.*

Comments

The study report results did not represent water quality conditions of reduced river flows over the term of license and used the wrong data and skipped a critical step in not considering conditions of reduced flows into Lake Powell over the term of license to 2070.

Study Plan 17.2.1. Goals and Objectives

> *Determine what impacts, if any, may occur on Lake Powell water quality*

Comments

The study results did not represent water quality conditions of reduced river flows over the term of license. Thus, we disagree with the sufficiency of the study results.

The study report states quagga mussels will be managed by the agencies which is not and a sufficient conclusion to protect the environment and mitigate the potential spread of quagga mussels.

4.2.2.3 Quagga Mussel Control

The eventual environmental consequences of quagga mussels being transported from Lake Powell to Sand Hollow Reservoir over the 50 year term of license is not considered in the study report. Treating quagga mussels poses water quality concerns because the treatment used creates Trihalamethanes (THM's) when chlorine reacts with organic matter in water. This combination of organic material and chlorine could cause high THM concentrations that could not only violate EPA standards, but also make the pipeline water carcinogenic. THM's are carcinogenic and are subject to federally regulated standards set by the EPA. THM's are a real issue with highly chlorinated water. The cost of treating water with THM's is very expensive because THMs cannot be filtered out through standard culinary water filtration systems. The primary treatment protocol for culinary systems is to avoid creating THM's in the first place; otherwise reverse osmosis treatment is required. This is the same reverse osmosis that the Water District claims is too expensive for treating Virgin River water. But the issue is, that once mussels enter

the pipeline, high concentrations of chlorine and the resulting THM concentrations would be the costly solution for controlling the mussels spread.

Another concern is the warming temperatures will cause mussels to spread more widely and be more of problem in water systems. "Projected climate changes are likely to have an array of interrelated and cascading ecosystem impacts (Janetos et. Al.2008). Warmer air and water temperatures could potentially improve habitat for quagga mussels and other invasive species that, in turn may additionally impact hydraulic structures.[14]

We recommend, due to temperature warming, invasive species will become more of a problem in Lake Powell during the term of license by 2020-2070 and these adverse impact need to be discussed in cumulative impact section of the study report. Stating in the report agencies will manage the quagga mussels is not sufficient and we need to know what are the costs and process of the mitigation program is to prevent this from occurring. There is an overarching concern of the effect on communities if the Washington County Water Conservancy District's regional pipeline, which spreads out all over the county, becomes infected. Discussion of the effects on various city water systems should be included in this study report.

4.2.3.1 Inflows

The study results do not consider the possibility of low lake levels thus, it uses the wrong data. The Total Dissolved Solids (TDS) concentration in the raw water is assumed to be 540 mg/L. from Lake Powell via LPP at a pipe intake level of 3575 (msl).

However, the study report's raw water analysis at the lowest pipe intake levels of 3475 (msl) and 3375 (msl) should also be included in the study report. If it is the applicant's conclusion is that they will be able to draw water in dire low lake conditions, then this low lake option needs to be included in the study report to be considered complete by the Commission.

4.2.4 Water Quality Impacts on Lake Powell

We recommend that the effects of drought and low reservoir levels on water quality must be included in the report for the 50 year term of the license until 2070.

4.2.5 Water Quality on the Virgin River

In some sections of the study report it mentions the LPP water will not get to river so there will be no change in the river's flow however that conflicts with the conclusion in the cumulative effect in the Surface Water Resources Study Report #18. Chapter 7 Cumulative Impacts, page 7-1, that concludes that urban growth from the Lake Powell Pipeline will impact water quality of the Virgin River.

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[14] *Reclamation Managing Water in the West, Secure Water Act Section 9503 (c)–Reclamation Climate Change and Water, page 38, 2011* available at
http://www.powellpipelinefacts.org/images/pdf/AttachmentA%20Pt1.pdf
http://www.powellpipelinefacts.org/images/pdf/AttachmentA%20Pt2.pdf

The Water District has a million dollar pump back project that will pump water back into the Virgin River from Sand Hollow Reservoir and this should be included in the report. They would pump water back into the river to lower the temperature for the endangered Virgin River fishes. The future plans and uses for this pumping system, along with any effects on water supply and quality should be included in the study report.

Study Plan 17.2 Study Description

> *Identify measures for mitigating impacts to surface water quality*

Comment

No mitigating impacts were identified in the study report, thus they did not consider low lake conditions and its impact on water quality over the term of license.

Study Plan 17.5 Nexus to Project

> *Water would be pumped from Lake Powell at multiple depths. That may affect stratification of water. FERC licensing, other federal agency permits, and Utah State Engineer approval of the Project design will require demonstration that these potential adverse impacts on surface water quality have been identified and avoided or mitigated in such a way that surface water quality is not adversely affected.*

Comments

We disagree with the sufficiency of the study results because the report does not consider multiple depths of the LPP intake pipe. No environmental evaluation of low lake levels or different intake pipe levels on water quality or temperature at different depths. We recommend the study report describe any anticipated environmental impacts of the continued operation of the project in the cumulative effects section over the term of license to 2070.

The Commission in SD 2 stated:

> "*We have modified 4.2.2 of SD 2 to include the cumulative effect of low Lake Powell water levels on water quality relative to human health."*[15]

Thus, this issue should be included into the report to be considered complete by the Commission.

The Surface Water Resources Study Report #18 at **3.4.1 Lake Powell** , notes the pipeline intakes are proposed at three intake elevations 3575 mean sea level (msl) 3475 (msl) and 3375 (msl). The water quality and temperature at each level needs to be included in the report. The 3375 (msl) elevation is 5 feet above dead pool and there is no active storage in Lake Powell. The Applicant needs to show their junior water rights with a late priority date of 1996 would have

[15] FERC Scoping Document 2, August 2008, page 15
http://www.powellpipelinefacts.org/images/pdf/Pipeline/ferc%20scoping%20doc.%202.pdf

priority over all the other senior water rights holders and be able to withdraw water at such low lake levels.

We recommend the environmental consequences of different pipe intake levels be included in the study report to be considered complete.

> "At the elevation of 3575 (msl) Lake Powell active storage is 9.52 (maf)
> At the elevation of 3475 (msl) Lake Powell active storage is <5.93 (maf)
> At the elevation of 3375 (msl) Lake Powell active storage is 0"[16,17]

The Coalition requests that the Applicant also provide more information in the study report before the Commission considers it complete. The Applicant should answer these questions below in the report, they include:

1. Why the LPP intake design does not drop into the dead pool zone?

2. The Salt River Project at Navajo Generating Station is modifying their intake at elevation into dead pool at 3370 feet (msl).

3. Is there a reason why the LPP is forbidden to drop their intake into dead pool because they have a junior water right?

4. Is this merely a demonstration by the Applicant to show confidence that reservoir levels will never drop to the dead pool elevation?

5. If the reservoir drops to dead pool, will LPP then extend their intake into the dead pool zone?

Surface Water Resources Study Report #18

Study Plan (Section 18.2.1) Goals and Objectives

The study plan (p.205) provides the following objective:

> *Determine effects of the proposed Project on streamflow and river stage within the study area.*

Study Report (Section 4) comment

(Page 4-19 to 4-26) However, the hydrologic model charts used in this report do not anticipate the continuing environmental effects of a change in hydrology of reduced river flows based on

[16] US Department of Interior, Press Release and fact sheet, Additional Water to be released from Lake Powell to Lake Mead-Avoiding Shortage in Lower Basin in 2012, April 12, 2011
[17] Draft Climate Change Study Report, 2011 page 2-2

the term of the 50 year license. We suggest using a range of flows be used to evaluate future availability of water for the LPP.

Study Plan (Section 18.2.1) Goals and Objectives

The study plan (p.205) provides the following objective:

> Estimate effects of the proposed Project on reservoir storage and water levels within the study area.

Study Report (Section 4)

(page 4-19 to 4-26) However, the study report results do not represent conditions over the term of license on reservoir storage with the predicted flow reduction. On the regional level, numerous analyses have suggested that climate change will impact the Colorado River over the coming decades. Consensus is growing about the nature and magnitude of those changes and the effects they will have on the patterns of precipitation, runoff, evapotranspiration, over allocation and other related forces. As a result, the Lake Powell Pipeline effects on Lake Powell and the Colorado River system will also change over the 50 year term of the license.

Study Report Chapter 4. Environmental Consequences

(Page 4-19 to 4-26) The Colorado River Simulated System (CRSS) modeling used in the *Interim Guidelines for Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lakes Powell and Mead*, *U.S. Bureau of Reclamation (2007)* (Interim Guidelines) is very optimistic that reservoir and river levels will be robust in the future. These higher levels are predicted based on Bureau of Reclamation's (BOR) use of a 100 year average (1906-2010) of the river's natural flow of 15 million acre feet (maf) measured at Lees Ferry gauging station below Glen Canyon Dam. Assuming flows of 15 (maf) to assess environmental impacts, water quality and quantity in their simulated hydrologic CRSS river modeling gives them the robust levels in the reservoirs and river flows. They are assuming that the past will predict the future. However, due to the 10 year drought the BOR stated in their "provisional calculations of natural flow of the Colorado River at Lee Ferry, Arizona, show that the average natural flow since calendar year 2000-2009 was only 11.982 million acre feet, the lowest ten-year average in over 100 years of record keeping on the Colorado River[18]" BOR's use of 15 (maf) creates the false sense that there is adequate water supply to keep reservoirs supplied with enough water for all the demands. The CRSS model does not include the Colorado River Compact apportionments which total 16.5 (maf) or water rights established before the Colorado River Compact was established called "Present Perfected Rights".

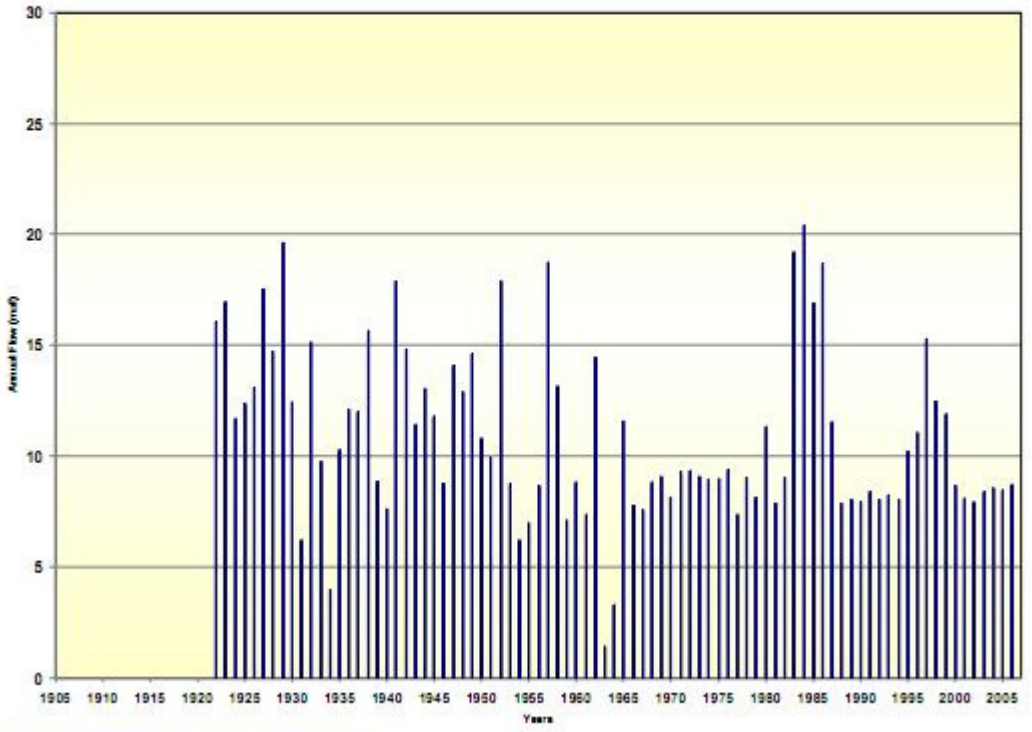
We disagree with continuing to use of 15 (maf) as the average annual flow to assess environmental impact of the LPP. The study report should consider a range of flows at the Lees

[18] Bureau of Reclamation Annual Operating Plan for Colorado River Reservoirs 2010, pg 7 Available at: http://www.usbr.gov/lc/region/g4000/AOP2010/AOP10_FinalDraft.pdf

Ferry gauging station. Chart 1 shows the historic annual flow as an average is an optimistic assumption of BOR still using15 (maf) for future water availability.

Chart 1
Interim Guidelines EIS 2007
Chapter 3 Affected Environment
Page 3-17

Figure 3.3-2
Historic Annual Flow of the Colorado River at Lees Ferry Gaging Station, Arizona
1922 through 2005



Data from Upper Colorado Hydrologic Database

To protect everyone's interest, it is time for Bureau of Reclamation (BOR) to abandon the scientifically unsound position that historical data provides the best basis for analyzing ongoing and future river management activities. The BOR has been dangerously slow in acknowledging climate change and its impacts on water resources.[19] Virtually all aspects of water management, from timing and availability of supply and demand are based on past conditions; past conditions are no longer a reliable predictor for future conditions. Yet, this is the currently the way the Applicant and BOR are evaluating the LPP.

[19] GAO report, *Colorado River Basin Water Problems: How to Reduce their Impact Government Accountability Office* (formerly called Government Accounting Office) CED-79-11May 4, 1979, page 134 conclusion: The basin states and federal agencies need to be brought together under a partnership arrangement to solve the problems and conflicts discussed in this and previous chapters and to prepare for the projected shortage. available at http://www.riversimulator.org/Resources/GAO/CRBwaterProblems1979.pdf

The Applicant is using two input hydrology scenarios to evaluate the LPP. We disagree the using of both of these models to evaluate the LPP:

- *One model uses, The Direct Natural Flow, Index Sequential Method (DNF) - Developed from the observed streamflow record from 1906 to 2006. The ISM results in a number of different future hydrologic sequences that allows calculation of uncertainty. This scenario was the primary inflow dataset used for the Interim Guidelines. DNF results in 101 simulated outcomes for each month which are summarized using non-parametric statistics including the l0th, 50th, and 90th percentiles.*

The BOR's CRSS (DNF) model is optimistic on future flows due to estimating average annual flow at 15 (maf) from (1906-2006) at Lees Ferry which does not account climate change. Despite the Upper Basin developing 1 million acre feet more in the future, miraculously the BOR's model shows, the river levels and reservoir storage remain robust, yet those levels have not been seen in 10 years.

- *The other model uses a Nonparametric Paleo-Conditioned Inflows model. The study report states that though the potential impacts of climate change have been studied in the Colorado River Basin, the data needed to quantitatively evaluate these potential impacts with CRSS was not yet available at the time of the LPP study. Therefore paleo-hydrologic record was chosen as a means to evaluate the potential impacts from a wider range of dry and wet spells in the Colorado River Basin than is represented by the observed hydrologic model.*

  The Nonparametric Paleo-Conditioned Inflows model is an inflow hydrology scenario using paleo-hydrologic state information (ie wet or dry) to conditionally sample from the historic natural flow record. The paleo-hydrologic state information was derived from annual streamflow reconstructions from tree-ring chronologies of the years 762 to 2005 on the Colorado River at Lee's Ferry. This technique generates flows with the same magnitudes as the historic record but with more variety in the sequencing of wet and dry spells. This type of study would provide a more accurate picture to base future flows upon. (Woodhouse 2006)

However, both these model runs consistently show overly optimistic robust reservoir levels of above 66% full at 3640 (msl) feet and high annual flows. The level of Lake Powell has not been over 3640 (msl) feet in elevation since 2003. (see Charts 2 & 3)

Chart 2

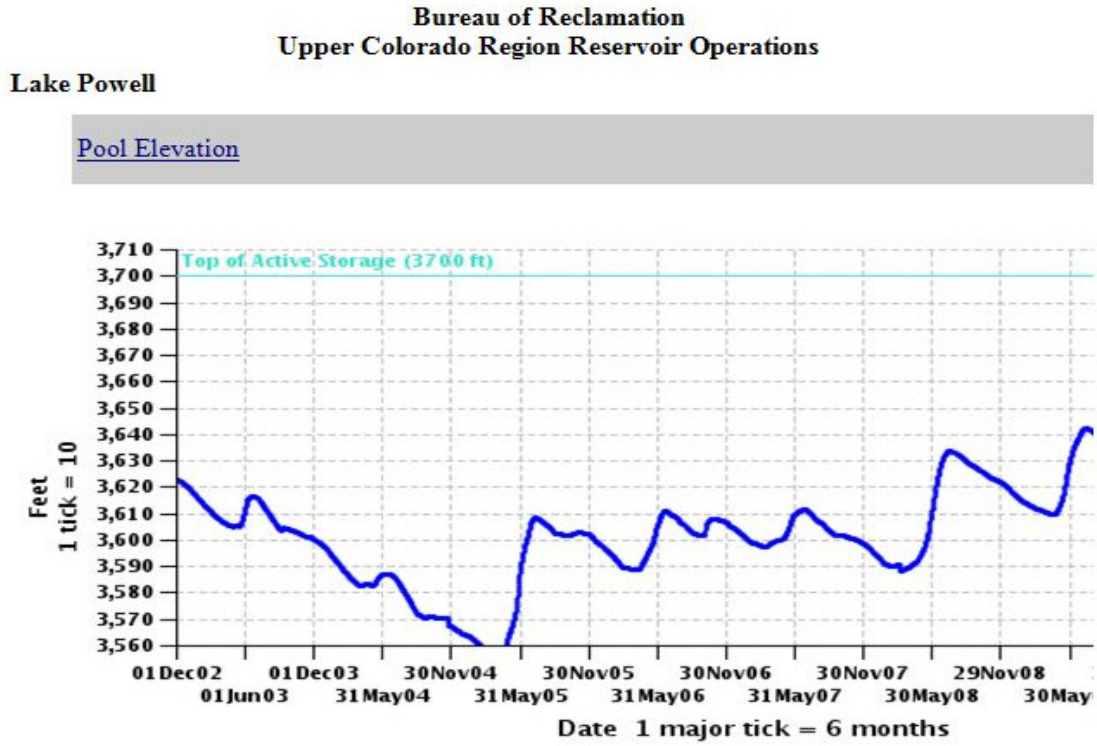
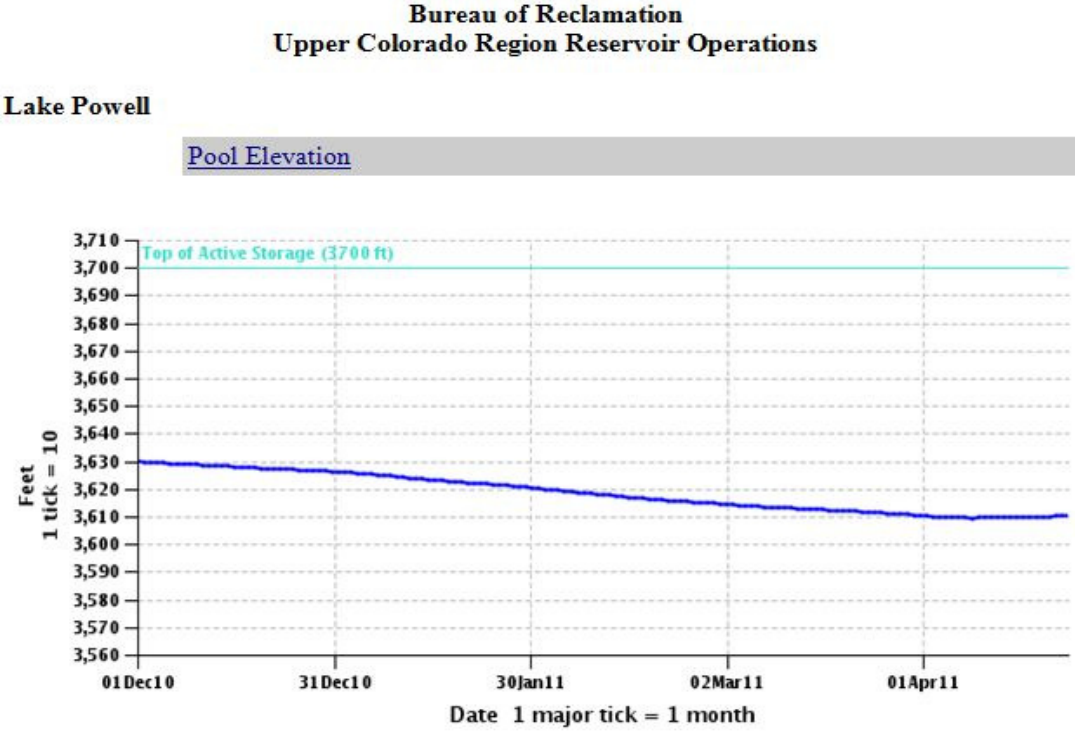


Chart 3



Available at: http://www.usbr.gov/uc/crsp/charts/displaysites.jsp

Examples of charts in the study report that predict optimistic levels for Lake Powell to 2060 include:

Chapter 4 Environmental Consequences
4.4 Reservoirs
4.4.1.1 Final Planning Study

Chart 4

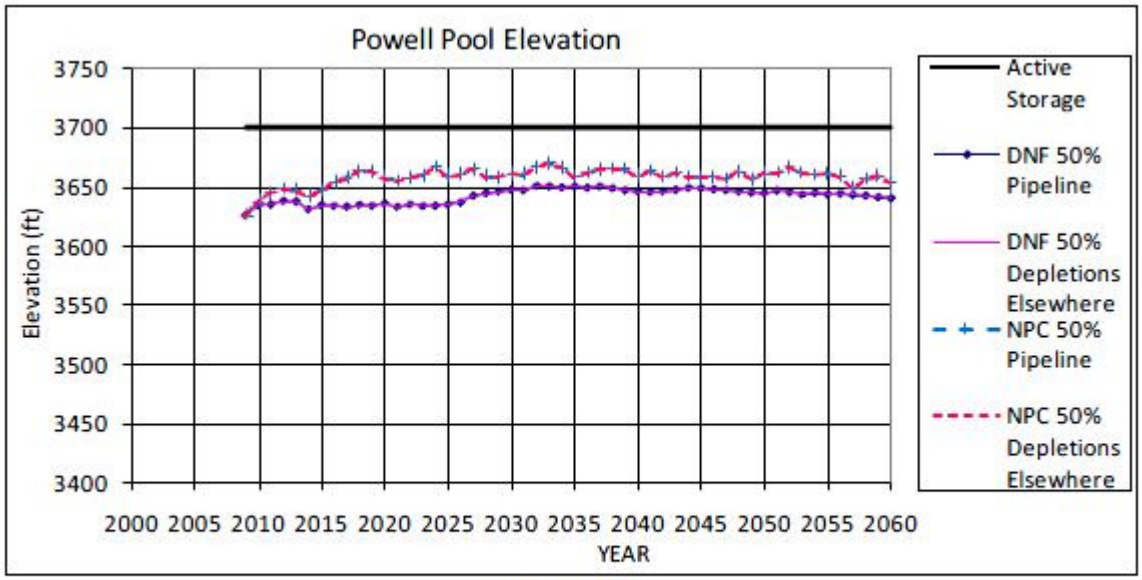


Figure 4-20
86K AF Simulations, 50th Percentile Lake Powell Stage Results (FPS)

> *On page 4-19, Figure 4-20 shows there is very little difference in reservoir levels from 2010 - 2060 and that the level would be close to 3640 (msl) and above 3650 (msl) which is (17,000,000 (maf) active storage)..*

(the formula moves from minimum probable (10th percentile), most probable (50thpercentile), and maximum probable (90th percentile).

Chart 5

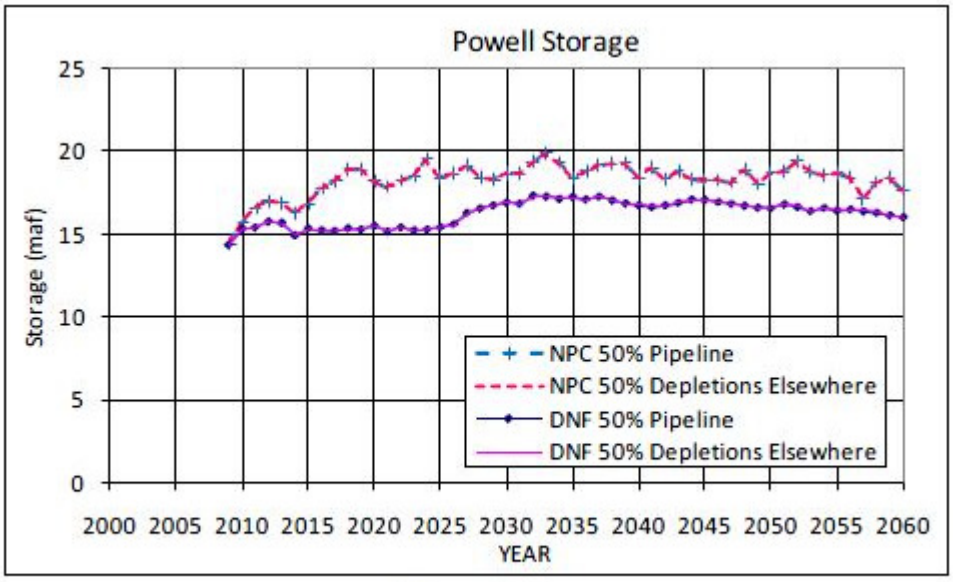


Figure 4-21
86K AF Simulations, 50th Percentile Lake Powell Storage Results (FPS)

On page 4-20 Powell Storage- Figures 4-21, predicts high levels of Lake Powell of over 66% full (3641 msl) and shows storage at always above 15 MAF until 2060.

Chart 6

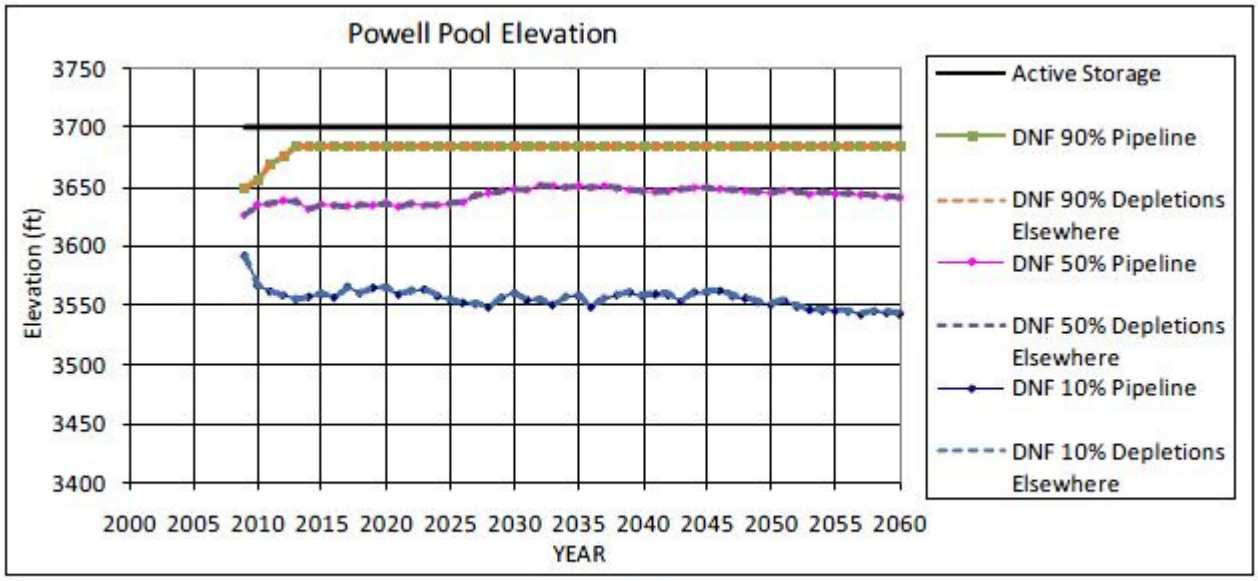


Figure 4-23
86K AF Simulations, DNF Lake Powell Stage Results (FPS)

On page 4-22, Figures 4-23, 4-24; and on page 4-23, figure 4-25 also predict Lake Powell levels above 3640 (msl) elevation until 2060.

Chart 7

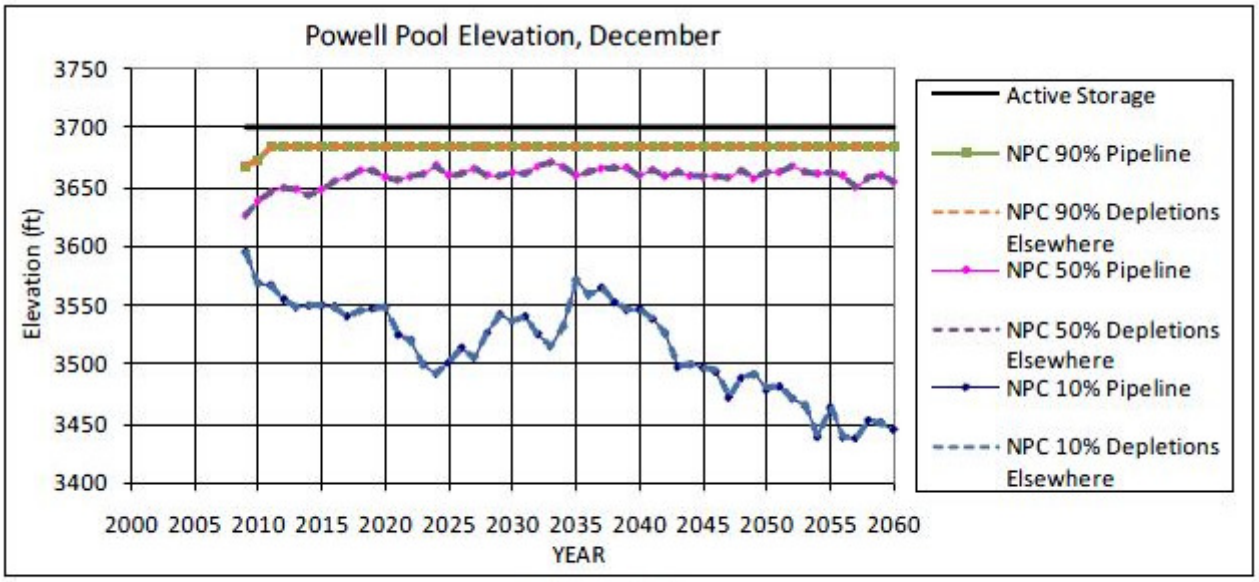


Figure 4-24
86K AF Simulations, NPC Lake Powell Stage Results (FPS)

Predicts Lake Powell levels above 3650 (msl) (*17,000,000 (maf) active storage).*

Chart 8

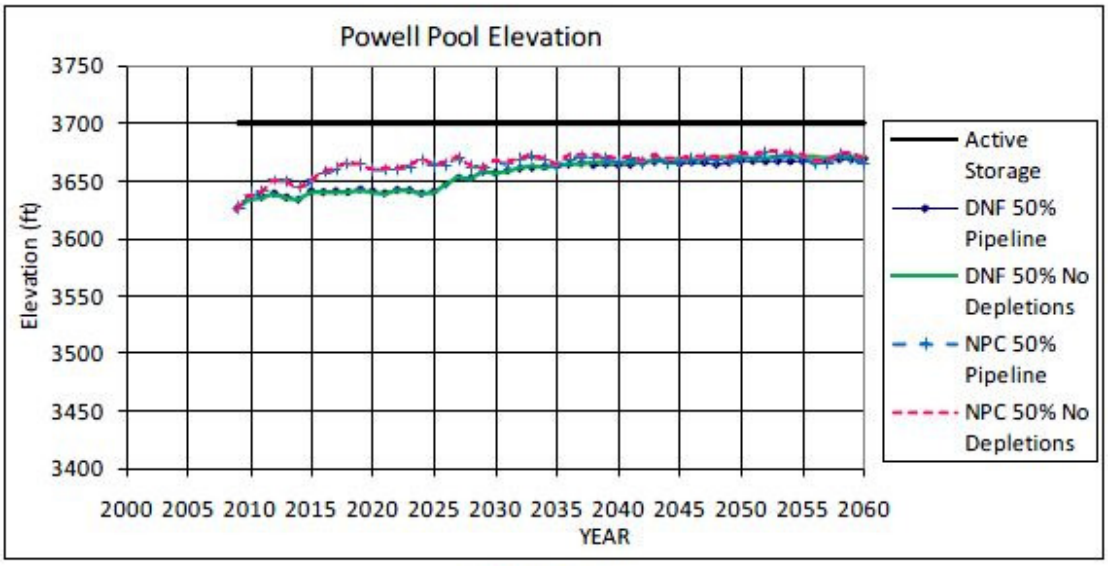


Figure 4-25
86K AF Simulations, 50th Percentile Lake Powell Stage Results (NAD)

Predicts Lake Powell levels above 3650 (msl) (*17,000,000 (maf) active storage).*

Chart 9

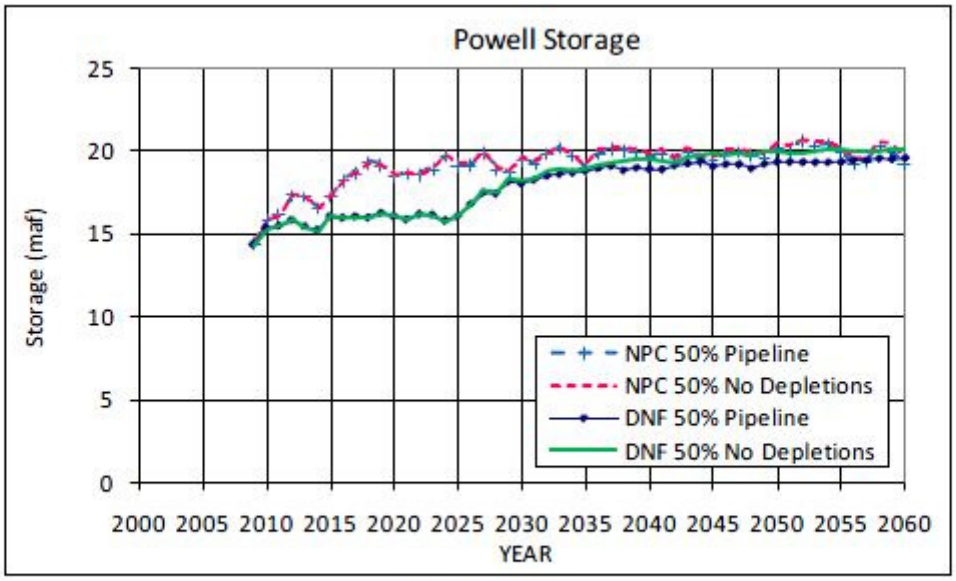


Figure 4-26
86K AF Simulations, 50th Percentile Lake Powell Storage Results (NAD)

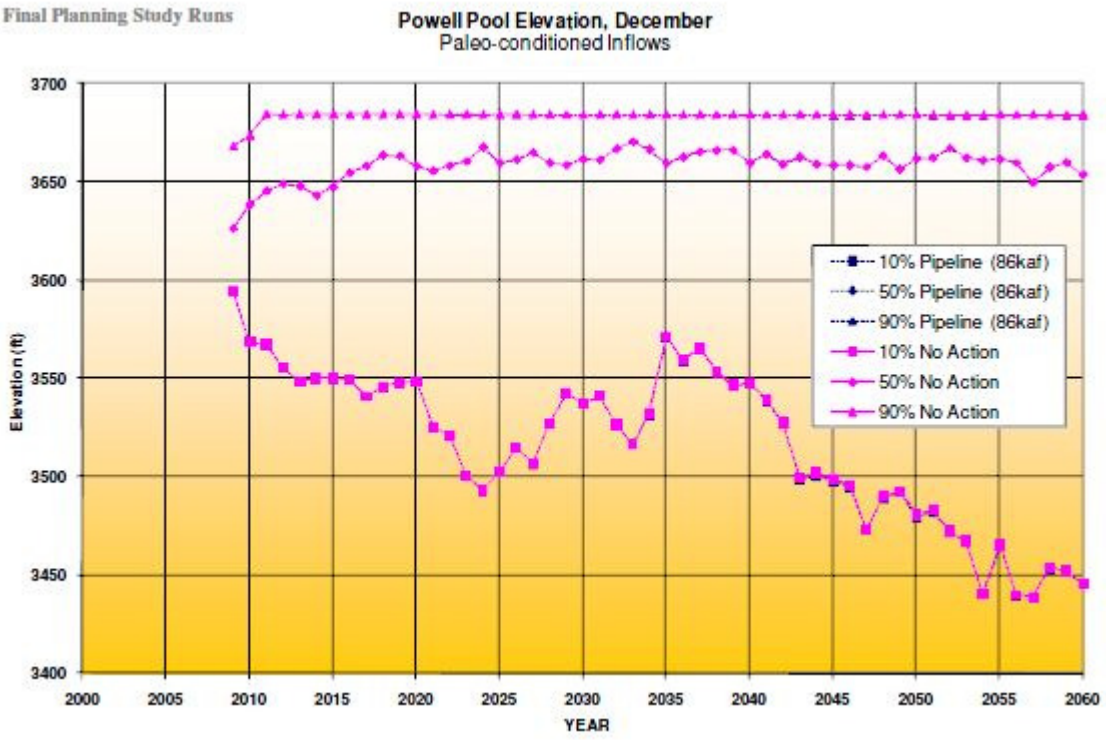
On page 4-24 Figure 4-26 also show above 15 (maf) in storage until 2060. In April Lake Powell was 52 percent full with only 12.7 (maf) of water in storage[20]

(the formula moves from minimum probable (10th percentile), most probable (50th percentile), and maximum probable (90th percentile).

[20] US Department of Interior, Press Release, Additional Water to be released from Lake Powell to Lake Mead-Avoiding Shortage in Lower Basin in 2012, April 12, 2011 available at: http://www.powellpipelinefacts.org/images/pdf/DOI_press_release_4-12-11.pdf

In Appendix 2- Reclamation Colorado River Model Report page 13, the lake levels are predicted to be over 3650 (msl) with 17,000,000 acre feet of storage over until 2060.

Chart 10

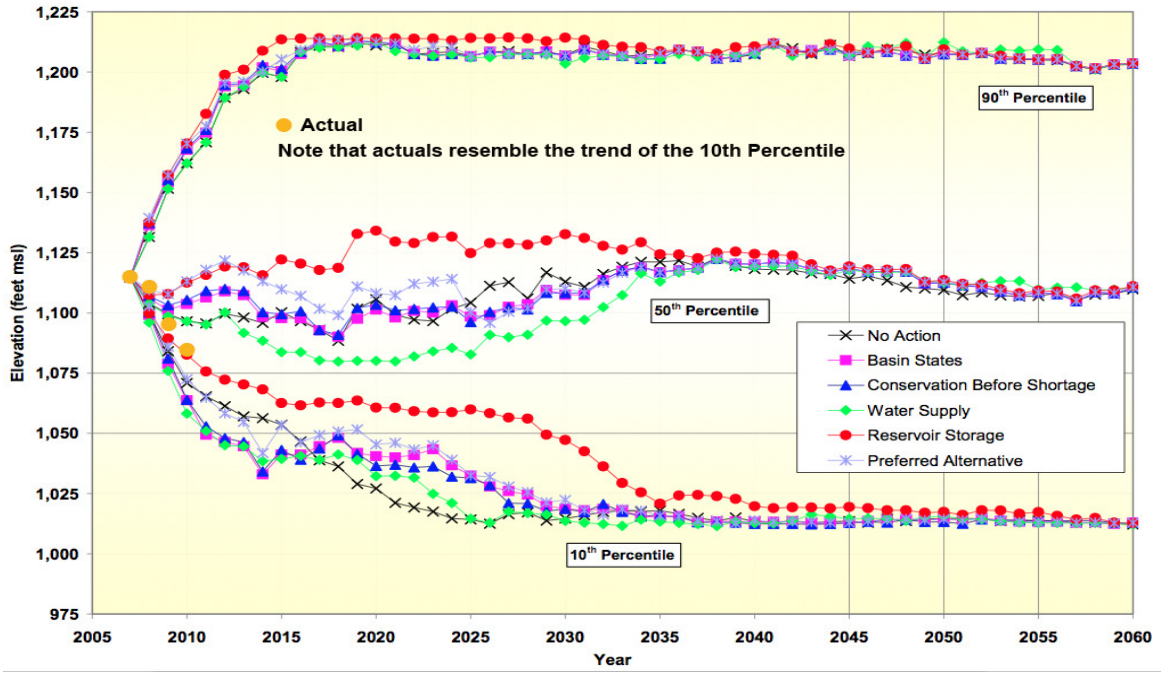


These optimistic elevations levels of Lake Powell used in the models are flawed and a range of possible drought scenarios must be considered in the study report.

(the formula moves from minimum probable (10th percentile), most probable (50thpercentile), and maximum probable (90th percentile).

The model used for the Interim Guidelines CRSS predicted (*most probable*) 50th percentile and did not predict the fall of Lake Mead. The 10% percentile (*minimum probable)* correctly predicted the fall of Lake Mead. Using the 10th percentile as most probable is proving to be a better predictor of future conditions and could be used for a range of conditions to access future environmental impacts on elevation and storage in Lake Powell.

Chart 11



**Special note-This is not a Reclamation graphic. It is altered to illustrate Reclamation's modeling in the Interim Guidelines was wrong and did not predict the fall of Lake Mead. The orange dots represent the actual elevation at Lake Mead from Dec 31, 2006 to Dec 31, 2010 which was predicted as the 10 th percentile (minimum probable) and not the most probable at 50th percentile.*

(the formula moves from minimum probable (10th percentile), most probable (50th percentile), and maximum probable (90th percentile).

Study Report #18 (Chapter 7) Cumulative Impacts

(page 7-1) This study report reads:

> "*Population growth would result in urban development and land use changes that would cause increased runoff from impermeable surfaces. Within WCWCD the population is expected to increase by more than 6 times the 2005 level of 127,090 to 860,378 by 2060.Increased runoff could affect peak flows and geomorphology in the urban centers in Kane, Iron, and Washington Counties. Impervious areas directly connected to channels and storm sewers can transport runoff more quickly than natural conveyances. The shortening of travel time quickens the rainfall-runoff response, causing flows in streams to peak faster and higher than under pre-developed site conditions."*

We recommend the study report assess the runoff and the effects on the endangered Virgin River Fishes over the 50 year term of the license before the Commission considers this report complete.

Study Plan (18.5) Nexus to Project

The study plan (p.209) provides the following objective:

> *The availability of water for the pipeline and limitations on streamflow or reservoir levels would affect the ability of the Project to supply water to communities in Utah and to generate hydroelectric power. Therefore, the surface water resources are directly related to the Project's purpose.*

Study Report (Chapter 4)

Yet, (on pages 4-19 to 4-26) the study results do not represent conditions and limitations on streamflow over the term of the license as we mentioned above thus, the report used the wrong data and was not conducted as provided for in the approved study plan that would consider limitations on streamflow.

Water Supply and Climate Change Study Plan and Report #19

The 2011 Climate Change study plan report is not complete because the Applicant did not interpret the 2008 approved study plan goals and objectives to address the potential of climate change and drought on water availability for the Lake Powell Pipeline project.[21]

Study Plan (19.2.1) Study Description

The study plan (p.) provides the following objective:

[21] Climate Change Study Plan #19 at 19.5 Nexus to Project. The availability of water for the pipeline would affect the ability of the Project to supply water to communities in Utah and generate hydroelectric electric power. Therefore, the availability of water supply is directly related to the Project's purpose.

..estimate potential effects of climate change and climate variability on Project operations and water deliveries… For the purposes of this study plan, effects will include direct effects, indirect effects and cumulative effects (those that would occur as a result of future reasonably foreseeable activities when combined with the proposed Project.)

Study Report (Chapter 4)

(on pages 4-19 to 4-26) The results of the studies were not conducted as provided for in the approved study plan. The study report results do not represent conditions over the term of the license.

One of major issues identified by the public to be addressed in the environmental analysis was that the:

continued droughts and climate effects from human activity could put the supply of water from Lake Powell Reservoir at risk."[22]

This issue is not addressed in the study report.

The Commission in SD2 ***comments***, at 4.2.2 Water Resources also stated:

- Effects of project proposal on water availability and water use***, including water availability during droughts or under other adverse hydrologic conditions.***[23] would be part of the study**.**

Study Plan 19.2.2. *Goals and Objectives*

The study plan (p.215) provides the following objective:

- *Provide a summary of the long-term water supply to Lake Powell and the potential effects on water supply from climate variation*

Study Report (Chapter 4)

(on pages 4-1 to 4-4) The Applicant did not properly conduct a study on this topic. The results of the study are not representative of conditions over the term of the license.

Study Plan (19.2.2.) *Goals and Objectives*

[22] FERC elibrary 20080821-3005, Scoping of Environmental Issues for the proposed Lake Powell Pipeline Project, August 21, 2008, p.7
[23] *Id*

The study plan (p.216) provides the following objective:

- *…..include an analysis of long-term water availability from Lake Powell under various water supply scenarios.*

Study Report (Chapter 4)

(on pages 4-1 to 4-4) The Applicant did not properly conduct a study on this topic. The results of the study are not representative of conditions over the term of the license.

Study Plan (19.4.3) Issues and Data Needs

The study plan (page 218.) provides the following objective:

- *The effects of the long-term drought affecting the Colorado River water supply will be assessed to determine the associated effects on the proposed LPP diversion.*

Study Report (Chapter 4)

(page 4-1 to 4-4) The study was not conducted as provided for in the approved study plan and did not represent the conditions over the term of the license.

Study Plan (19.2.2) Goals and Objectives

The study plan (page 216.) provides the following objective:

- *Potential impacts to water supply associated with reasonably foreseeable activities such as other proposed diversion from Lake Powell will be estimated.*

Study Report (#19)

#19 Study Report was not conducted as provided for in the approved study plan and the report did not include that information.

Study Plan (19.6.3 task 2)

The study plan (page 222.) provides the following objective:

> *Determine a reasonable range of future hydrologic conditions in the Colorado River Basin and Lake Powell, and assess the availability of water for the LPP diversion under these hydrologic conditions. This will include use of the Bureau of Reclamation's CRSS hydrologic simulation model to simulate effects of different hydrologic scenarios on LPP diversions. Various hydrologic scenarios will be determined by USBR by using long-term hydrology generated from tree ring data and input to the CRSS model. The combined effects of dry periods and the proposed LPP diversions on Colorado River streamflow will be evaluated with the CRSS model.*

Study Report (Chapter 4)

(on pages 4-1 to 4-4) The study did not determine a range of future hydrologic conditions in the Colorado River Basin and thus, the approved studies were not conducted as provided for in the approved study report. The study results do not represent conditions over the term of license according to the new study just released from the Bureau of Reclamation that predicts flow reduction for the Colorado River.[24] The Applicant also misrepresented the science of the paleohydrology studies. The Commission should consider the Colorado River Basin as a whole and do what is best to balance the protection of the environment with water and power development. The study report just concludes the Colorado River is likely to decline from climate change and this is not sufficient. This would be a water project that communities will depend on as a reliable permanent source of water. The Commission should consider an improved hydrological base line for the Colorado River management become a part of these environmental studies. This would entail a *new* estimate of long-term mean annual Colorado River Flows for sound water management decisions. It is critical for the Commission to protect the future sustainability of the Colorado River system to meet the existing and future demands.

In the report, the Applicant does review all the climate change studies on estimated shortage, yet, does not relate those studies to the physical risk of shortage to the LPP during the 50 year license. The applicant also misinterprets the science on paleohydrology in the report from the Interim Guidelines Appendix U and N. (see chart 13) for a drought predicted drought scenario.

The Applicant states in the study report: *When comparing the four models of hydrologic inflows to the likelihood of being below the minimum power pool elevation (3490 feet msl) for Lake Powell, the DNF model run shows nearly no chance of falling below, where the Nonparametric Paleo-Conditioned) (NPC) Inflow model (NPC) indicates the highest likelihood of occurrence by 26 percent after 2055.*[25] However, in Chart 12 below, the NPC predicts drought at 2025 in the Interim Guidelines.[26] The study report also continues to misinterpret the science to state the highest probability of shortage for lower basin is after 2055.[27] However, in reviewing chart 13 [28]below, drought and shortage are predicted for the Lower Basin within 50 years term of the license and risk of shortage is why the Interim Guidelines were developed for the Lower Basin States. In addition, in the Interim Guidelines EIS, under Environmental Consequences, page 4-101, figure 4.4-2 shows Lower basin shortage occurring in the 50th percentile, most probable, occurring by 2025. Scientific studies and evidence pointing to the possible risks of shortage to the LPP and Lower Basin cannot be ignored in these study reports.

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[24] *Reclamation Managing Water in the West, Secure Water Act Section 9503 (c)–Reclamation Climate Change and Water April 2011* Available at:
http://www.powellpipelinefacts.org/images/pdf/AttachmentA%20Pt1.pdf
http://www.powellpipelinefacts.org/images/pdf/AttachmentA%20Pt2.pdf

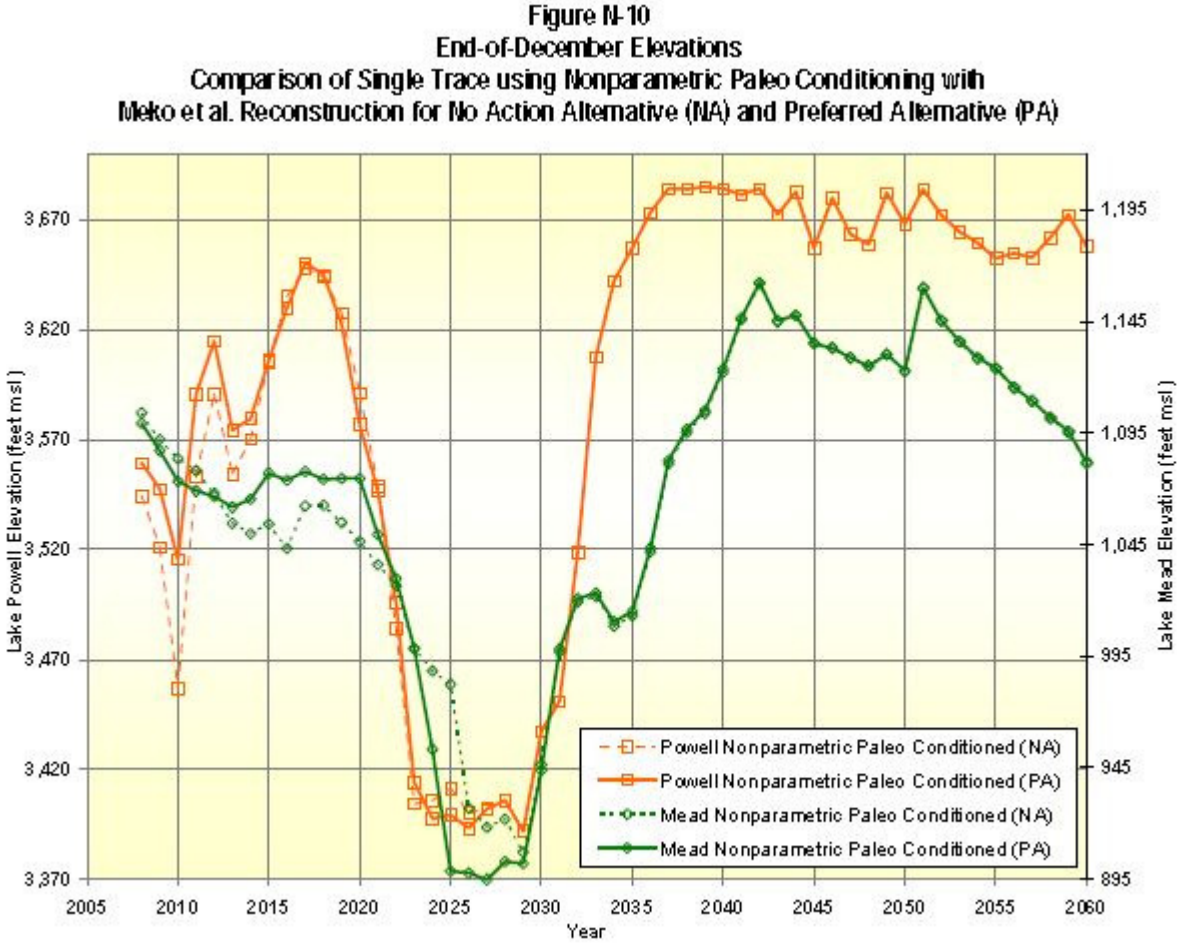
[25] #19 Climate Change Study report at page 2-3 at
http://www.powellpipelinefacts.org/images/pdf/Pipeline/Study%20Plan%2019%20Water%20Supply%20and%20Climate%20Change.pdf

[26] BOR, Interim Guidelines EIS 2007,Analysis of Hydrologic, Variability Sensitivity Appendix N, page N-18

[27] #19 Climate Change Study report at page 2-3

[28] Interim Guidelines EIS 2007, Appendix N, page N-23 Figure N-15, shows high probability of shortages in Lower Basin

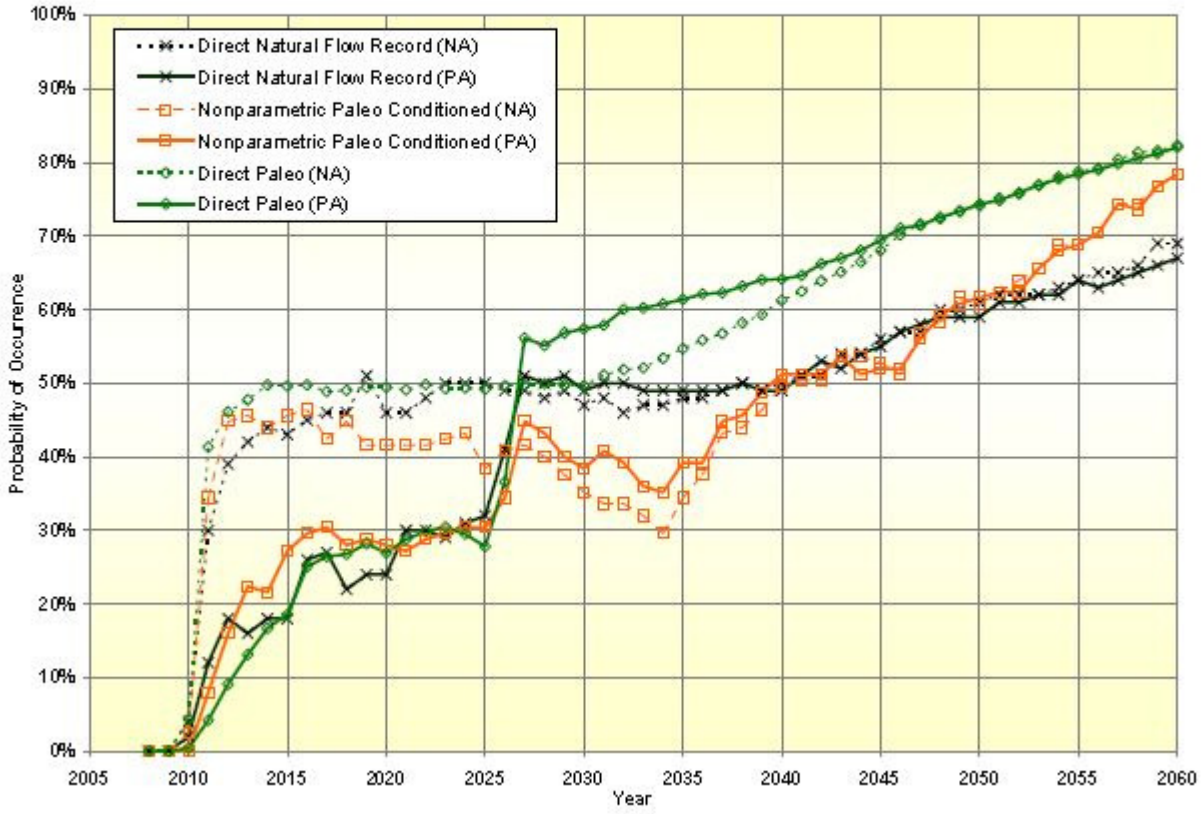
Chart 12
Interim Guidelines EIS 2007
Appendix N, page N-18
Analysis of Hydrologic
Variability Sensitivity



This chart shows drought occurring before 2055 as predicted in the report

Chart 13
Interim Guidelines EIS 2007
Appendix N
page N-23 Figure N-15,
shows high probability of
shortages in Lower Basin

Figure N-15
Lower Basin Shortages
Comparison of Direct Natural Flow Record to Meko et al. Reconstruction
No Action Alternative (NA) and Preferred Alternative (PA)
Probability of Occurrence



Study Report #19 ES-2

> *The long-term average annual flow was 14.7 MAF year which is lower than the long-term gaged record mean of 15.1 MAF year (source Woodhouse, et al 2006).*

The Applicant did not interpret the paleoclimate studies in the Interim Guidelines correctly, and stated the studies predicted a flow of 14.7 (maf) at Lees Ferry. However, the range was much lower from 13 (maf). see Appendix U, page U-72,

> *"This set of tree-ring based reconstructions illustrates the robustness of the estimated flows with regard to the temporal patter of flow over the past five centuries. One difference between the reconstructions is the long-term averages, which range from 13.0-14-7 maf, all of which are significantly less than the gage records average, 1906-1995, 15.2 maf."*

The Applicant took the highest estimated flow of 14.7 and used that in the study report. However, Connie Woodhouse studies varied from 14.1,14.5, 14.6, 14.7 (maf). Further, on page U-83,

> *"Paleoclimate information suggests that long-term average of natural flows the upper Colorado River Basin is 13.0 to 14.7 maf, compared to the gage record average 15.2 maf. The paleoclimate information may not necessarily represent future climate scenarios, but could be useful in framing assumed variability in future planning hydrologic sequences, with or without the joint consideration of future climate change."*

The Coalition suggests there is enough science on predictions of paleoclimate plus future climate change reductions to consider a drought scenario of 13 (maf) to assess impacts of the LPP in drought.

The Secretary of the Interior just announced three million acre feet of water will have to be released from Lake Powell to Lake Mead to avoid a shortage in the Lower Basin in 2011. The press release stated at the present time in April, Lake Powell was 52 percent full with only 12.7 (maf) of water in storage.[29]

Further, in the Interim Guidelines the U.S. Bureau of Reclamation states: "*acknowledging the potential for impacts due to climate change and increased hydrologic variability, the Secretary*

[29] US Department of Interior, Press Release, Additional Water to be released from Lake Powell to Lake Mead-Avoiding Shortage in Lower Basin in 2012, April 12, 2011 available at: http://www.powellpipelinefacts.org/images/pdf/DOI_press_release_4-12-11.pdf

proposes that these guidelines be interim in duration and extend through 2026."[30] Thus, the implementation of the Interim Guidelines are linked to the impact of climate change on the Colorado River, and are subject to re-consultation by the Secretary of Interior as new information becomes available. The Interim Guidelines criteria for managing shortages only apply to 2026 and most likely will be reconsidered sooner. The Applicant is using the Interim Guidelines for Lower Basin Shortages as a guarantee of future water available by 2070 in the Upper Basin for the LPP, but, misinterprets and the shortage criteria in Interim Guidelines.

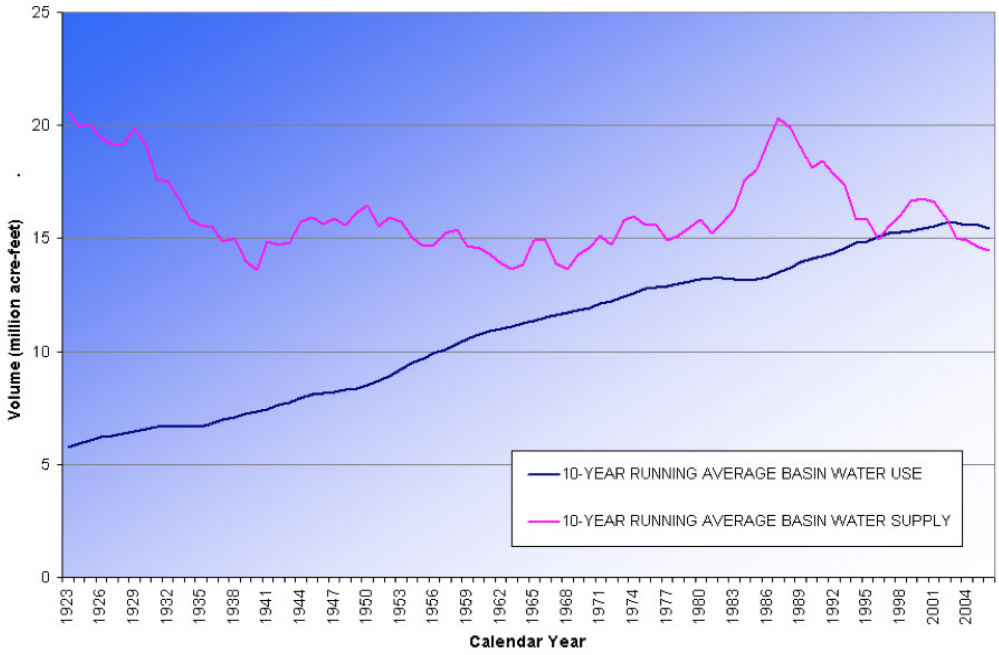
An article by Eric Kuhn "*Managing the Uncertainties on the Colorado River System*" explains the modeling of paleohydrology in the Colorado River Basin in the Interim Guidelines Appendix U. An excerpt from the article reads:

> "There is growing consensus in the Upper Colorado River Basin that the existing demand for water now exceeds the available supply. The projects in the Upper Basin being planned today may be developing the unused apportionment of individual Upper Basin states, but from the system-wide perspective, these projects are reallocating existing supplies. The Upper Basin's "unused" water is currently in use in the Lower Basin. (see chart #14 below)

[30] Bureau of Reclamation, *Interim Guidelines for Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lakes Powell and Mead,* p. ES-24 ("Climate Change Considerations").

Chart 14

Figure 2. Colorado River Basin Historical Supply and Use



This graph, provided by the U.S. Bureau of Reclamation, suggests that average annual water demands have already overtaken average annual water supplies in the Colorado River Basin.

A number of well known studies using the analysis of tree ring data have been published and have expanded the record back 500 yrs or more. These paleohydrology studies suggest a mean flow at Lees Ferry in the range of 13.5-14.9 million acre feet (maf) per year. These reconstructions also suggest that drought periods have occurred that are far more sever and longer lasting than what we have experienced in the post 1905 gage record.

My conclusion is that given the current demands on Colorado River water resources, even a small change in the mean natural flow at Lee Ferry will cause serious problems. Among the most optimistic of the climate impact studies published is this 2006 paper by Christiansen and Lettenmeyer.[31] This study suggested modest reductions in the mean flow at Lee Ferry in the range of 6-10 percent. Most recently, a project by the Western Water Assessment to narrow the results of the various studies suggests the floor for the estimated flow reduction is about 10 percent (Brad Udall Western Water Assessment, personal communication, September 2009).

Are there credible studies that model the current operation of the Colorado River with a sustained 10 percent reduction on natural flow at Lee Ferry? I believe the answer is yes.

[31] Christiansen and Lettenmeyer, A multimodel ensemble approach to assessment of climate change impacts on the hydrology and water resources of the Colorado River basin
Available at http://www.riversimulator.org/Resources/ClimateDocs/ChristensenLettenmaier2007.pdf

Reclamation's recent environmental impact statement on the Lower Basin shortage criteria included an alternative hydrology Appendix U (U.S. Bureau of Reclamation, 2007). The paleohydrology analysis used estimated flows at Lees Ferry (Woodhouse et a1.,2006). The paleohydrology-based trace for the period of 1620- 1674 is illustrative of my conclusion. This period has an estimated mean flow at Lees Ferry of approximately 13.5 maf per year. The model output shows a number of unacceptable and shocking results. For example, the Central Arizona Project (CAP) would experience 47 straight years of shortages, including a number of individual years when the project would divert no water at all. Lake Mead would drop below, and stay below, the minimum level for the Las Vegas Valley Water District to pump water to its customers (1000' msl) for a period of close to 20 yrs. California, which has the most senior of the prior perfected rights in the Lower Basin, would experience occasional large shortages.

In the Upper Basin, Lake Powell would operate below the minimum storage level necessary to produce hydroelectric power over 60 percent of the 50-yr period, and there would be two periods, one of 5 yrs and one of 12 yrs, when Lake Powell would be empty and the Upper Basin states would be unable to meet their obligations to the Lower Basin under the 1922 Colorado River Compact.

The lesson is, that without major changes in how we currently manage the Colorado River, even a modest decrease in system streamflows, as low as l0 percent, could cause significant unacceptable impacts throughout the Basin.[32]

Study Plan (19.6.3 task 2)

The study plan (page 222.) provides the following objective:

> *Potential effects of climate change will be evaluated on a relative basis, with effects on streamflow and water supply associated with climate change being applied to all LPP Project alternatives. For example, changes in streamflow associated with climate change would be included in each of the Project alternatives. Including effects of climate change in all potential alternatives will result in a relative comparison between alternatives where effects of climate*

Comment

The study was not conducted as provided for in the approved study plan and did not represent the reduction in flow conditions from climate change over the term of the license.

The Commission has a responsibility to consider a comprehensive plan for the Colorado River Basin in its license for the Lake Powell Pipeline. A new report from Bureau of Reclamation concludes that global climate change poses a significant challenge to the protection and use of

[32] Managing the Uncertainties on the Colorado River System, Eric Kuhn September 8, 2008, page 21, Kuhn is General Manager, Colorado River Water Conservation District, Glenwood Springs, CO. available at http://pubs.usgs.gov/sir/2009/5049/pdf/Kuhn.pdf

water resources in the Colorado River Basin.[33] It will have a substantial effect on the supplies of water for agriculture, hydroelectric power, industrial, domestic supply, and environmental needs.

The chart below show predictions of lower flows for the Colorado River and should be included in this study report. The Applicant must include effects on resources and water availability over the term of license from 2020-2070 that include the estimated flow reductions of the Colorado River predicted in Reclamation's new April 2011 report.

The Applicant must disclose these possible impacts of reduced flow in the study report so the Commission can make informed decisions on an adequate of the impact analysis of the LPP for the term of license. There is an inherent public trust in federal agency decisions. Thus, the Commission should take a hard look before you leap approach before the communities spend billions of dollars on a water project that will not provide a permanent water source.

[33] *Reclamation Managing Water in the West, Secure Water Act Section 9503 (c)–Reclamation Climate Change and Water, Colorado River Basin, pages 17-40 ,179-183, , 2011* available at
http://www.powellpipelinefacts.org/images/pdf/AttachmentA%20Pt1.pdf
http://www.powellpipelinefacts.org/images/pdf/AttachmentA%20Pt2.pdf

Chart 15 ***Reclamation Managing Water in the West, Secure Water Act Section 9503 (c)–Reclamation Climate Change and Water April 2011***

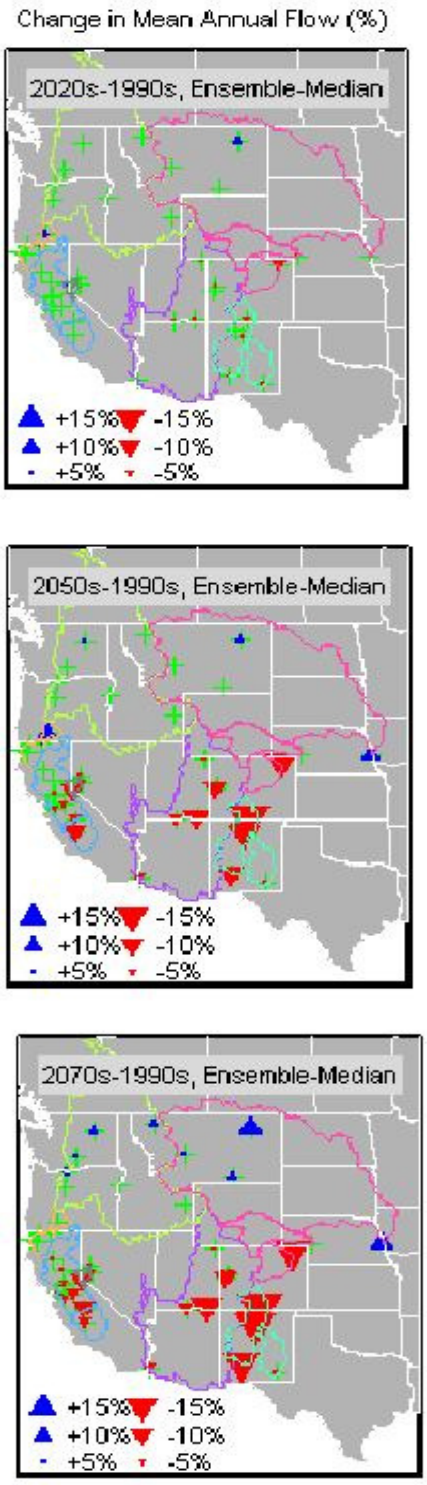


Figure 66. Change in percentage mean annual runoff distributed over the West.

The new Bureau of Reclamation's (BOR) report *Reclamation Managing Water in the West, Secure Water Act Section 9503 (c)–Reclamation Climate Change and Water April 2011* shows there is solid scientific evident of climate change in the Colorado River Basin. This report is a more accurate reflection of BOR's prediction of reduced future flow of the Colorado River due to Climate change and should be used in the study report,

Maps show a geographic consolidation of changes already occurring based on Reclamation's (2011a) simulated hydrologic effects under climate change.

As of the April publication date of report, three of the four water supply scenarios have been quantified and analyzed in the Colorado River Basin Study.

Snow water equivalent are predicted to be down by 50% in 2020, down by 60% by 2050, and down by 66% in 2070.

(All happening within the 50 year license for the Lake Powell Pipeline 2020-2070)

Available at:
http://www.powellpipelinefacts.org/images/pdf/AttachmentA%20Pt1.pdf

http://www.powellpipelinefacts.org/images/pdf/AttachmentA%20Pt2.pdf

We outline more specific responses below to the *Applicant's study report conclusions.*

Study Report Executive Summary

ES-1 Introduction

Applicant:

> ***ES-1*** *This document was prepared to further the understanding of climate change and its potential effects on LPP water supply resources and environmental effects.*

Coalition Response:

The report does include all the climate change studies. However, the report ignores all the future predictions of lower flows outlined in those studies in the analysis. The report fails to make the connection of the potential effects of climate change on the water supply for the LPP and the effects on resources based on the 50 year license.

Applicant:

> ***ES-1*** *in general, a 10% reduction in precipitation results in a 20 percent decline in runoff.*

Coalition Response:

Yet, the report does not relate that effect on the water availability for the LPP in the analysis. The report should answer what a 10% -20% decline in flow over the 50 year life of the project will do to the water availability for the LPP.

Applicant:

> ***ES-2*** *If Interim Guidelines are adhered to, a 10 percent reduction in basin wide runoff would result in a 26 % chance Lake Powell could go dry by 2056 (Interim Guidelines 2007) at least once.*

Coalition Response:

It is not clear how the Applicant could make this reference of using the Interim Guidelines to make an assumption to water availability for the LPP to 2070 because they will be renegotiate in 2026 or before,

The Applicant using the Interim Guidelines for Lower Basin shortages as a guarantee of future water available by 2070 for LPP misinterprets and shortage criteria in the Interim Guidelines.

Applicant:

Aggressive shortage and demand management would reduce risk because federal agencies will act before Lake Powell goes dry.

Coalition Response:
It is not sufficient to say there is no risk to availability of water for LPP and federal agencies will act before Lake Powell goes dry. The Applicant is planning on an LPP intake only 5 five feet above dead pool. The Commission's regulations for a license require the studies must describe any anticipated continuing environmental impact of the continued operation of the project over the term of license which would be 2020-2070 and the report does not.

Applicant:

The LPP intake elevation is low enough to physically receive water from the reservoir under the most dire storage scenario.

Coalition Response:

The Applicant's conclusion that they do not have to consider future impacts on water availability because they can draw water in dire storage conditions is not correct and would not meet the Commission's regulations on getting a license to consider conditions from 2020-2070. In the report, the Applicant must illustrate that at low reservoir levels with only zero to 103,764 acre feet active storage [34] the Applicant would still have the legal right to divert remaining water through the proposed LPP intake of 3,375 volume (msl). The Applicant's 1996 water right is junior to senior water rights holders in the Upper and Lower Basin States. Our research questions if the LPP can draw water at that level.

Applicant:

Shortages will be handled by the 2007 EIS Interim Guidelines already in place.

Coalition Response:

The Applicant's conclusion in the report is not correct. The Interim Guidelines criteria to manage shortages are only interim to 2026 and explained in detail in our comments above. Since this is a permanent water project to supply water to homes and communities that are yet to be built the residents will expect a permanent water project after they spend billions to build it. For that reason, the approached used in the Interim Guidelines is not appropriate.

Applicant:

ES-3 *Future inflow to Lake Powell is likely to decline because of Climate Change.*

Coalition Response:

[34] BOR's Chart Lake Powell Water Surface Elevation to Storage Content. Available at: http://www.riversimulator.org/Resources/ClimateData/Elev.Stor.Area.Relationships.xls

The Applicant's conclusion is not sufficient to meet the Commission's licensing requirements for cumulative effects mentioned in our comments above. The report must list cumulatively the affected resources based on the Commission's Scoping Document and their effects on resources based on their term of the 50 year License from 2020-2070. In addition, the Applicant must evaluate in the study report the potential impact of reduced levels into Lake Powell as a result of changing climate on hydrologic regime of the Colorado River Basin.

Applicant

> ***ES-3*** *It is unknown at this time what impacts more stringent management strategies might have on Utah or LPP project. Currently no plans to curtail Upper Basin States water use.*

Coalition response:

It is the responsibility of the Applicant to take a hard look at the possible future shortages and impacts to the LPP from the predicted reduced future flows.

Chapter 1

Applicant:

1.1 Introduction

> *To further understand climate change and its potential effects on LPP water supply resources.*

Coalition Response:

But, the report does not provide any results on how climate change may affect water supply for LPP.

Applicant:

1.2 Methodology

> *All conclusions are based on interpretation of results from previous studies by others.*

Coalition Response:

Yet, the applicant misinterprets climate change studies' conclusions and the Nonparametric Paleo-Conditioned studies and does not apply them to the analysis of water availability for the LPP.

Chapter 3 Literature review

Applicant:

> ***3-1 Introduction***. *If Upper basin states are required to curtail uses to meet Lower Basin obligations, there could be upper basin water in Lake Powell most of the time because any Upper Basin water in Lake Powell cannot be diverted except through the LPP.*

Coalition Response:

We do not agree if Lake Powell falls to low levels the Applicant still has the legal right to divert water. The Upper Basin water rights are junior to the lower basin. They are also junior to Present Perfected Rights which are water rights established before the Colorado River Compact and other more senior rights like the Upper Basin and power plant rights. It is the responsibly of the Applicant to show that water near or at dead pool will be available for LPP.

Water Supply and Climate Change Study Plan #19

It is not clear where the results of the 2008 *Water Supply* part of the approved study plan goals, and objectives are reported. The 2011 #19 study report is now just about Climate Change. The question is, does the Water Needs Assessment meet the Commission's licensing requirement as a completed study report for water supply which is the key component of the proposed action? The Coalition does not believe so, as it does not clearly lay out the Commission's regulation requirements of the license in CFR 18, 5.18 in the Water Needs Assessment. The Water Needs Assessment should be changed to focus on why the *proposed action* of 69,000 acre feet of water from Lake Powell will be needed by 2020. It should be required to verify using high quality data with professional integrity that the county will run out of water in just 9 years.

The Water Needs Assessment does not have these elements of the 2008 study plan:

Study Plan *19.2. Study Description*

19.2.2.Goals and Objectives

> *Determine the validity of the participates' water supply requests based on estimates of future supplies and demands.*

However, the Water Needs Assessment (WNA) does not follow the Commission's regulations for study plans and is not similar to all the other study plans or study plan reports. It did not determine the validity of the water supply request. It should explain to the reader why agency action is necessary and serve as the basis for identifying the reasonable alternatives that meet the purpose and need of this project. To be considered complete, the Water Needs Assessment should be revised to fit the parameters set out in the 2008 Water Supply Study Plan goals and the Commission's regulations for licensing.

Our research shows the water district is not counting all the available water in the county that could be developed. A comprehensive inventory of all available water supplies must be included in the revised Water Supply Study Plan instead of the current WNA.

The Coalition submitted extensive comments on the WNA to the Commission during SD2 comments and is part of the record. We request that this report not be considered as complete until all the water district's water in storage and their extensive list of water rights is also counted as well as other private water rights. An open and accurate assessment of available water resources is necessary.

The applicants Purpose and Need in these environmental studies are based on faulty population and water demand estimates that are basis for the need for the Lake Powell Pipeline project by 2020. The study report needs to address this short coming to accurately reflect the actual needs of the Applicant by 2020.

Study Plan #19 Water Supply

The studies below were not conducted as provided for *in the approved study plan:*

19.6.2.1 Task 1a Water Efficiency Study (Evaluation of Potential Conservation)

- *Evaluate the conservation potential associated with each of the end uses. Disaggregate municipal and industrial per capita water use data presented in the Phase I Final Draft Water Needs Assessment Report into customer type and end uses, using monthly water use billing data from the local water suppliers and weather data as a basis. Monthly water use data will be used to calculate water use for each customer type: single family residential, multifamily residential, industrial, commercial, institutional (schools), and other (e.g. fire hydrants). Minimum winter and summer water use will be used to segregate historical data into indoor and outdoor use. Minimum winter water use will be assumed to equal indoor water use and outdoor water use will be calculated by subtracting minimum winter water use from total water use. Regional and national studies will be used as a basis for estimating end use consumption (e.9., toilets, laundry, baths/showers, dishwashers, faucet so and landscape irrigation) for each customer type.*

.

- *Develop end-use models, one for each of the water conservation districts (Washington, Central Iron and Kane) based on water billing data from St. George, Cedar City, and Kanab. The Least Cost Planning Water Demand Management Decision Support System Model (DSS Model) will be used for this analysis. The DSS Model calculates savings at the end use level, such as the amount of water saved in a single family account per day from installing a new toilet, and has been used to forecast demand and evaluate water conservation benefits and costs in over 150 cities world wide.*

- *Evaluate the effectiveness of the short-list of conservation measures described above using the end-use Decision Support System models. Produce a detailed baseline water demand forecast, a description of short listed conservation measures and the screening criteria used to screen the conservation measures, and the results of the cost-*

effectiveness evaluation with the DSS Model. Create three conservation programs by compiling the best conservation measures. Each program will contain increasing levels of conservation effectiveness and will be characterized as either low, moderate, or high.

- *Summarize results of Water Efficiency Study in a technical memorandum.*

19.6.2.2 Task 1 b Evaluation of Water Reuse Potential

- *Identify the location of potential sites for reusing water for secondary purposes using growth projections, land use plans, and a survey of potential reuse customers. Potential sites include: large turf areas, such as parks, golf courses, and roadway and common area landscaping; selected industrial uses such as sand and gravel operations, concrete batch plants, crop irrigation (currently using water that could be converted to culinary water), and other existing or planned uses identified by the Districts or prior studies.*

- *Develop separate water demand forecasts for culinary and secondary water uses based on existing ratio of secondary/culinary use and the survey of potential future reuse customers described above.*

- *Develop preliminary layouts of additional recycled water distribution systems, including expansion of existing facilities and construction of new water treatment facilities and/or distribution system for sites large enough to warrant reuse service.*

- *Prepare a Technical Memorandum to summarize the results of the recycled water potential evaluation and estimate the annual reliable yield and cost of potential water reuse/recycling projects that are deemed to be feasible for each of the three water conservancy districts.*

19.6.5 Task 4 Alternative Components Cost Estimate

The following tasks will be completed for the alternatives cost comparison:

- *Cost estimates of existing water supplies and potential future water supplies will be collected from water providers in the study area.*
- *Capital and operation and maintenance cost estimates for infrastructure that would be needed to implement non-potable or potable reuse options deemed to be feasible (e.g., cost estimates for wastewater treatment upgrades, pumping stations, distribution tanks and piping) will be estimated from similar water supply projects.*
- *Costs will be included for any advanced water treatment that would be necessary to meet culinary or secondary standards, depending on the water quality and planned use for each of the water supplies.*
- *Costs for various supply components will be adjusted to a consistent basis (e.g., 2009 dollars).*

- *A cost comparison will be completed for all of the water supply options considered, including options that were rejected as alternatives to the Lake Powell Pipeline.*
- *Cost estimates developed for each of the supply components will be used in development of potential water supply alternatives, as discussed in Study Plan #22,Alternatives Development.*

Comments

The Applicant did not implement the study plan tasks above from the Commission's approved study plan into the Water Supply part of study report. We recommend that these studies be included in the report before the Commission considers it complete.

Water Needs Assessment

ES-2.3 Conservation

We disagree that the Washington County Water Conservancy has a water conservation plan that meets state requirements stated in the WNA. The plan puts off implementation of many conservation measures until 2020 and 2035. The Washington County Water Conservancy District could save more water by 2020 if it implemented more water conservation measures.

Western Resource Advocates and Citizens for Dixie's Future commented on the Water District's proposed 2011 Water Conservation Plan.

According to Western Resource Advocates', letter dated February 11, 2011, the 2011 proposed Washington County Water District's Water Conservation Plan does not comply with state law. Utah Code Ann. § 73-10-32(2)(a)(i) (2010).

> The Plan should include an ordinance program that promotes water efficiency and prevents waste of water now and not leave this until 2025. It would be difficult for the District to justify the current need of costly future water supply projects that could cause significant impact to the environment while it leaves the task of dealing with common-sense waste of water and water efficiency measures 14-20 years into the future.
>
> Utah law requires the District to adopt:
> 1) A clearly stated overall water use reduction goal;
> 2) An implementation plan for each of the water conservation measures it chooses to use;
> 3) A timeline for action; and
> 4) An evaluation process to measure progress.
>
> 1. The Plan must explicitly state the District's water use reduction goal, it should include whether the reduction would be based on total water use or gallons per capita per day (GPCD), and provide the water use reduction baseline and target numbers. The water use reduction goal is not as clear as required by law - the Plan needs to explicitly state the water use reduction goal of the District.

2. The Plan should include and prioritize implementation of a formal water rate structure program, and establish a positive slope of the average price curve as an indicator to be used in the evaluation of rate structures. The Plan does not include a rate structure program within its selected conservation program

3. Key water use data should be included in order for the public to make an informed evaluation and be able to appropriately comment on the current and future implementation of the water conservation programs. The Plan needs to provide data regarding water use by sectors.

4. The Plan should proactively engage cities and towns to adopt well-designed conservation ordinances and promote smart growth practices within the next 5 years.

5. The Plan should include peak day reduction strategies. Peak reduction strategies are not currently included in any of the conservation programs

The Plan's timeline for action should include short-term and medium-term reduction goals that should be incorporated in the implementation plans of the conservation programs and used to assess how the District is moving towards its 2050 goal. The goals of the plan should be more specific in order for the Plan to be more effective

Citizens for Dixie's Future (CDF) also commented on the plan and found a need for the projects to be moved up in timing before 2020. Increased water conservation can delay the need for the pipeline or other water supply projects**;** Excepts from the comments:

1. Page 5, Region Water Supply Agreement (RWSA). While you infer the RWSA agreement imposes stipulations in a Landscape Ordinance, CDF in our research found none of the larger cities have an ordinance of this type that imposes water efficient standards. This is an opportunity for the District to require the cities and towns to adopt the District's Model Landscape Ordinance when they renew or revise contracts to purchase water.
2. Page 6, Table 1.The table should be listed as the District's Water Supply. Because, available water in cities and towns and private water rights are not included.
3. Secondary use is also seasonal, and not used 365 days a year. The District diverts Hurricane, La Verkin and St. George Canal Company irrigation water to its reservoirs in the winter and secondary water is turned off in the winter. This should be considered as a factor to lower gpcd use.
4. Page 29. W4. CDF is encouraged by this program to require new developments to include xeriscaping. However, this program should be linked to a larger vision that would require the cities to adopt the same program in any revision of their water contracts approved by the District.
5. Page 30. W21. CDF is not sure why the District should wait to 2030 to start to provide annual awards for green building. We recommend it starts now.
6. Page 31. W32. CDF encourages the District not to wait until 2020 to provide a rebate to install artificial grass in sports fields. We recommend it starts now.

7. Page 31. W36. CDF is not sure why the District is waiting until 2025 to prohibit waste of water in new project designs. We recommend it starts now.
8. CDF encourages the District and communities to lay secondary water lines now and not wait until 2020. Why wait until other large communities are built in the next nine years?

Potential Conservation Savings and Future Demand

The WNA's estimate of future water demands in Washington County is artificially high. Incorporation of unrealistic population forecasts, outdated water use data, and unreasonably low estimates of future water conservation make these estimates unreasonable. More realistic future water demands can be estimated by using:

1) population forecasts that are more accurate
2) a more aggressive, but achievable estimate of future conservation.
3) a standard for accounting for water use so conservation can be measured; everyone accounts for water differently
4) Better management of peak water use

Education is often the best way to achieve change. The water district could take advantage of another educational opportunity by informing the public of the expense of peak water use and how to limit peaks in the summer. This education could curb the expensive need to build larger than necessary infrastructure to just service summer's peak water demand. The District could use a slogan such as, "Beat the Peak" to educate the public on the problem of peak water usage. Any reduction in peak demand, including overwatering landscapes in the summer, will save money. If a water system adequately meets average day demand, but intense lawn watering in the summer causes "needle peaks" that stretch the system's capacity, the community will have to pay for the system to expand to cover those few peak days. If needle peaks are reduced through drought tolerant landscaping, public education and conservation, capital costs associated with new facilities such as the Lake Powell Pipeline can be reduced, postponed, or avoided.

ES-2-1 Population Projections

The WNA uses the wrong data to make their conclusions of the need for the LPP. If more accurate population projections were used, demand would be significantly lowered, eliminating the need for the LPP by 2020.

We recommend three population scenarios be used, low, medium and high instead of just a high rate of growth. According to the Water Needs Assessment, population in Washington County would continue to grow at a fast rate – over 5% annually – for the next 21 years.

The fundamental issue of managing growth to meet current and future residents' needs is well beyond the scope of this report. However, we note that regional planning processes, like Vision Dixie, suggest that current residents do not want growth to continue unabated or in conventional "sprawl" patterns. Importantly, the *character* of growth directly impacts water demands – compact, higher density residential developments typically have smaller individual lots and

lower rates of water use. In sum, although this report does not address the growth issue *per se*, local and regional growth planning directly affects water demands.

ES-3.1

> *The WCWCD area is considered to be fully appropriated and closed to further appropriations.*

However, for the study report to be complete all current already appropriated water rights need to be included so the Applicants can verify the conclusion the county is out of water by 2020 and the gpcd will have to be restricted to 10 gpcd.

4.1.8 Water Quality Effects of WCWC Future Supplies

The applicant states that the samples for TDS water quality were only taken from the 100 foot level. However, pipeline intakes are proposed at three intake elevations 3575 (msl), 3475 (msl) and 3375 (msl) and revaluation at the different intake levels need to be included for the study report to be complete.

4.1.5.14 Lake Powell Pipeline

In this section it mentions more storage facilities may need to be built to utilize the LPP water and in other sections it states there are no areas for more storage. This needs to be clarified in the study report.

4.1.6.1 Additional Virgin River Water

The Water District will use utilize 45,000 ac ft of Virgin River water to be stored in Warner Valley reservoir. Another alternative would be to consider diverting this water at the Quail Lake Diversion with redesign of the diversion and pipeline system. If the Virgin River high water is diverted above the Pah Tempe Hot Springs it could be piped to the proposed Sand Mountain Reservoir for storage near Leeds and there would be no need to treat the water through Reverse Osmosis. In this section it states rebuilding the diversion and pipeline would be needed to capture more the high flow. This is a clear alternative and needs be included in Conceptual No Lake Powell Water Alternative in the Alternative Developments Study Report #22.

Alternatives Developments Study Plan and Report #22

Study Plan (22.2.1) Study Description

> *This study plan will involve combinations of potential future sources, increased water conservation, reuse and recycling, and reverse osmosis treatment of Virgin River water.*

We disagree with the sufficiency of the study results. The studies were not conducted as provided for in the study plan. The study report did not include sufficient or the correct data to come a reasoned conclusion.

Population Data
We are concerned the environmental studies are based on faulty population and water demand estimates that are basis for the need for the Lake Powell Pipeline project by 2020. Estimates not based in fact or reason should not be the basis for the purpose and need section of the proposed action. The information on population projections should be of high quality, done with professional integrity and be objective.

To create an accurate picture of need, the Applicant should wait for new growth estimates from GOPB. As an illustration of the inflated past by projections, in 2008 the GOPB predicted Utah population to increase by 71,932 between 2011 and 2012. However, the recent 2011 Economic Outlook Report available at (http://www.nber.org/cycles/dec2008.html) released by the same entity reports total Utah growth in the same period to be only 47,000. Total growth projections in Utah have been slashed to 65% of their previous estimates. The same entity also states in their 2009 population estimates report (http://governor.utah.gov/dea/UPEC/2009%20Utah%20Population%20Estimates%20by%20County.pdf) that Washington County grew at a mere 0.5%. This is a vast divergence from the predicted rate of 5% predicted by Washington County Water Conservancy District until 2030.

Water Conservation
We recommend the objectives in the study plan of *increased water conservation*, and an accurate accounting of all future potential sources of water and *recycling* are considered in the Conceptual No Lake Powell Water Alternative section of the study report before the Commission approves this study plan as complete.

The Commission's Scoping Document 2 (SD2) comments mentioned that increased water conservation was a concern in scoping. It reads:

> *"As shown in both the transcripts of the scoping meetings and in Appendix A, many individuals have provided either oral or written scoping comments, or both, concerning the Lake Powell Pipeline proposal. Many of the public comments express similar concerns or issues:*
>
> *Increased water conservation can delay the need for the pipeline or other water supply projects."*[35]

The Washington County Water District has not increased its water conservation goal of 25% by 2060 or in the proposed No Lake Powell Water Alternative. The Coalition wrote extensive comments in SD2 describing how more water could be saved by 2060 with real water

[35] FERC elibrary 20080821-3005, Scoping of Environmental Issues for the proposed Lake Powell Pipeline Project, August 21, 2008, p.7

conservation and how others water districts in the state are meeting the 25% goal much sooner. The Conceptual No Lake Powell Water Alternative should consider increased water conservation measures and identify those that will target reducing peak water demand. The proposed study report does not address increased water conservation or recycling. Potential water savings from more aggressive conservation measures should be considered in the Conceptual No Lake Powell Water Alternative.

Many states have set and met more aggressive conservation goals. We outlined in SD2 that Utah water agencies are meeting the target of 25% much faster than the Washington County Water Conservancy District's forecast of only 25% saving by 2060. Before proceeding, the study report should look at a more aggressive conservation approach and consider the possible water savings. Rather than portraying a reasonable picture of conservation the study report in Conceptual No Lake Powell Water Alternative attempts to scare the public by describing an extreme interpretation of what real water conservation would mean to the county

WCWCD has outlined potential conservation measures and savings in this report http://www.powellpipelinefacts.org/images/pdf/Conwervation%20Cost%20And%20Savings.pdf However, many of these measures are not implemented until 2020-2037. Implementing these measures sooner would provide an additional 14,000 AF of water.

Alternatives
The Conceptual No Lake Powell Water Alternative is not an objective alternative that meets the NEPA requirements of a reasonable alternative for purpose and need for the project. The Commission must objectively evaluate all reasonable alternatives in enough detail so a reader can compare and contrast the environmental effects of the various alternatives. The report should just include how the applicant could replace the water needed from Lake Powell Pipeline by 2020. The Conceptual No Lake Water Alternative should be grounded in a "Rule of Reason" and take a hard look as well as make a good faith effort that study results are valid so better decisions are made to meet the need of proposed action.

Chapter 1

Planned and Potential Future Water Supply Projects

2.1.1 WCWCD

Agricultural Water
We disagree that only additional 12,400 acre feet of agricultural water will be available by 2037. This report must account for all the agricultural water in the county. The coalition gave extensive comments in SD1 and SD2 on identifying agricultural well water of 18,000 acre feet that could be available for future use that has not been counted by the district. The Water District now controls the largest local irrigation canal company. This company owns most of the irrigation water shares on the Virgin River. The Water District will also be taking over as the Virgin River Commissioner as well. The Water District is not forth coming on how much water their Quail Creek project diverts off the river every year and then returns to river though its hydropower plants. Given their unique position of power and informational control, a thorough,

neutral, assessment of water supplies must be completed in this study report. The report should assess how much water is diverted off the Virgin River to the reservoirs every year. The report should also include all the 147 water rights certificates with the amount of water the district owns.[36]

> The Commission stated in SD2 : "*Because the number of agricultural users that would give up their water rights and convert them to residential use is highly speculative, we cannot predict which agricultural wells might be available to convert to residential use in the future*." SD2, p.11.

However, private agricultural well and surface water could credibly yield substantial volumes of culinary water. The Commission's analysis of water supplies for the No Action and The Conceptual No Lake Powell Water Alternative would be deficient if it ignored agricultural land and water use conversions. Rather than disregard the potential for agricultural water use conversions based on their speculative nature, the Commission must develop reasonable assumptions. We recommend that the Commission rely on urban planning documents and patterns of growth to assess potential agricultural lands that will be converted to urban use, and quantify the water rights associated with these lands. The Coalition pointed out in SD1 and SD2 that there are still other water resources available that are not being considered by the Applicant as possible future culinary water supplies[37]. We disagree that the Applicant provided an acceptable, thorough estimate of potential water supply. The Applicant only considered agricultural conversion of 4,000 AF [38] to culinary use and 12,400 AF of agricultural water to secondary use by 2060 – an unacceptably low estimate. Given the rapid rate of development of agricultural lands in Washington County, the Commission's EIS must assess the potential for agricultural water conversions to meet future needs. We recommend that the Commission establish several scenarios, with varying conversion rates.

We recommend the study report include a detailed accounting of where the 86,670[39] acre feet of agricultural surface water went that was estimated by the state in 1990. If it is found that significant amounts of water still remain in the system that the Water District is not willing to count, the Conceptual No Lake Powell Water Alternative of a future community built of rocks and cement is unfounded and misleading and not based on any facts or reason.

The Applicant cannot describe such dire conditions in the Conceptual No Lake Powell Water Alternative when they don't account of all the agricultural water and secondary water not currently being included in the Conceptual No Lake Powell Water Alternative. The Applicant has to consider all the water supplies in county including the Water Districts current water rights. In addition total amounts of water in storage must be reported to give a complete picture of water that will be available for projected population by 2020.

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[36] Washington County Water Conservancy District's existing water rights, 2009. Available at: http://www.powellpipelinefacts.org/images/pdf/WCWCD%20water%20rights.pdf

[37] Coalition SD1 Comments, pp. 25-27. A substantial amount of groundwater has been developed and is used mainly for agriculture. This water could be acquired as development takes place when irrigated acreage is retired.

[38] 4,000 AF is from Quail Lake exchange. *See* Coalition Scoping comments 2 Section IV, WNA 2008 p. 4-18.

[39] WNA, page 4-42 2011

WCWCD Reservoirs and Aquifer Storage Only

	Annual Acre feet yield	Acre feet storage capacity 2008	Retail sales acre feet 2007[40]
Quail lake Reservoir	22,000	40,000	16,345
Sand Hollow Reservoir	7500	50,000	2,149
Sand Hollow wells	8000		?
Sand Hollow aquifer storage		70,000	
Total	37,000	160,000	18,494

Private Water Rights

A discussion of the existing private rights should also be in this study report to be considered complete. A thorough study of all water supplies must include all private water rights as part of the analysis of the need for water and the Lake Powell Pipeline by 2020. The District and State predict no private underground or surface water rights will convert to culinary use by 2060. The Coalition believes at least some of these rights would be available for future water supply and should be not ignored. In addition, the Water District only estimates it could develop about 110,000 acre feet annually for culinary use by the 2060. However, in our research there are water rights that could be converted to culinary use in the future that the District is unwilling to count as possible future water supply.

Under Ground Water Rights

The Division of Water Rights stated "there are 332,760 acre feet of approved water rights in the Navajo/Kayenta and upper Ash Creek aquifers."[41]." The community water supply systems coming from Navajo Sandstone wells and springs were only 41,470 [42] acre-feet (AF) which represent a small percentage of total supply. In addition, in Washington County, there are 969,488 [43]AF of surface water rights, with only 40,198 AF of surface water supplies in public community systems. Some of these rights will convert to culinary use by 2020-2037 and should be part of this report.

Surface Water Rights

A diversion pipe 66 " in size can convey 150 cfs continuously for one full year, it would translate to 108,595.04 ac-feet/year.[44] The Water District's diversion pipe at the Quail Lake is 66" and does divert 150 cfs which is 108,595 acre feet a year and some returns to the river through hydropower plants. A full accounting of where the water goes and how much is counted in the water supply should in the report.

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[40] Melodie Sorensen, WCWCD, pers. comm. to Citizens for Dixie's Future (Oct. 21, 2008).

[41] Washington County Water Conservancy District (WCWCD), *Petition for classification of the Navajo/Kayenta and Upper Ash creek aquifers (July 2005).*

[42] Division of Water Resources, Municipal and Industrial Water Supply and Uses in the Kanab Creek/Virgin River Basin (2008). p. 38,Table 13

[43] Washington County Water Conservancy District, Virgin River Management Plan 1999

[44] John M. Muhlfeld, Principal Hydrologist, River Design Group, Inc., 5098 Highway 93 South, Whitefish, MT 59937 http://www.riverdesigngroup.net

Chapter 3
Conceptual Project Alternatives

3.1.1. Equivalent Population Water Needs

> *The equivalent population of each district is the population level at which no additional water supplies are available to meet water needs. This assumes all conservation goals are met, all water rights have been fully developed*; *all secondary water conversions have been made.*

Comment

The Applicant used the wrong data and did not gather all the water supply information needed for the study. The basis for the alternatives conclusion is flawed because all the information stated above and also in the **Study Plan 22.2.1 Study Description above** is not in the study report and all water is not accounted for. Including:

1. The Water District's 147 water rights certificates with amounts of water are not in study report:
2. The Water District holds a lot of water in storage and that is not in the study report;
3. Private water rights which we have identified are not in study report;
4. Agriculture rights of 86,000 acre feet are not all accounted for;
5. No secondary water is accounted for in the report;
6. Sand Hollow aquifer holds 70,000 acre feet and more of that could be counted;
7. Increased water conservation over the 25% by 2060 is not accounted for;
8. Recycling is not accounted for;
9. More reuse could be counted, District counts a small amount;

3.1.1.1. WCWCD Equivalent Population Water Needs

The Applicant needs to verify that the population rate is valid and that the population will be 279,864 in 2020 just 9 years away, and 20 years later in 2035 almost double that to 516,422 before this study report is considered complete by the Commission. These numbers are speculative and should not be considered in the study report.

We recommend the Commission hire an independent, objective consultant to verify the population and water demand projections.

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3.2.5.1 WCWCD

Secondary Water
Table 3-17 shows 2009 Secondary water per capita use of 52.3. This water will still be used for outside use and is not considered in the No Lake Powell Pipeline Alternative. The prediction of dire conditions of only 10 gals for outside use is not valid.

3.3.1.3. Restricting Water Use for Outdoor Residential

We recommend the study report needs to be changed to reflect more water is available for outside use.

The No Lake Powell Water Alternative scenario is described as. Culinary outdoor water use was estimated by UDWR in 2005 at 97.4 gpcd. This water use rate is reduced by 30.5 gpcd to account for water conservation attained from 2005 through 2020. Yielding 66.9 gpcd residential outdoor water available for conversion to other M & I uses. The equivalent water use rate to generate 32,721 acre-feet per year of conservation is 56.6 gpcd for the 2037 population within the service area. Therefore, beginning in 2020 the existing rate of residential outdoor water use would be gradually be reduced and restricted to 10.3 gpcd.

The Applicant is not adding the residential outdoor secondary water detailed in the WNA on page 3-14, table 3-10 that shows there is 15.8 gpcd more gallons to add to the 10.3, to equal about 26 gpcd.

We recommend that this alternative cannot be considered an alternative in the study report because it has no basis in fact or reason.

4.1.2.1. WCWCD Environmental Consideration

The rational given in the study report should be deleted because it not reasonable, objective or based on facts. As mentioned previously, the study report does not account for the all the secondary water used for outside watering.

4.1.2.1 WCWC Total Relative Cost

This section does not give the public the information it needs to make a decision on the different costs and as a result make better decisions. It needs to explain the cost ratio and show how it was determined and what was considered in the cost. This section does not include the benefits of water conservation, and water recycling It also does not consider the risk and uncertainty that the LPP will not be full of water until 2035 and is subject to shortages.

6.1 Recommended No Lake Powell Water Alternative for WCWCD for NEPA Analysis.

As mentioned in our above comments this proposed alternative and the Conceptual No Lake Water Alternative does not meet the NEPA regulations and should not be in the study report.

Western Resource Advocates, experts in water conservation, state 69,000 acre feet of water could be saved in the county the same amount provided by the LPP. We recommend the Commission consider this as the recommended No Lake Powell Water Alternative for NEPA Analysis instead of the alternative currently being considered for approval in the report.

We also recommend the Applicant implement the Commission's approved 2008 study plan and consider alternative that includes increased water conservation, water recycling, consider all water supplies, private water rights, agricultural rights, all the Water District's water rights to get

the complete inventory of water in county to develop a reasonable alternative to the LPP in the EIS.

We submitted to the Commission in SD2, page 6, alternatives to the LPP. In these comments we suggest similar measures for more water by 2020 for and alternative for the LPP for NEPA Analysis:

1. The population growth rate needs to be changed from 5% for the next 20 years to be a more accurate rate of 2.50% to 2020 to measure water demand.
2. Increased water conservation;
3. More efficient use of existing supplies;
4. Water recycling;
5. Increase water reuse than what is projected now;
6. Counting all of Water District's water rights not in the WNA;
7. Diverting the Water District's Virgin River high water flow 45,000 acre feet above the Pah Tempe Hot Springs so it does not need to be treated. Build a pipeline to proposed Sand Mountain Reservoir in Leeds. We recommend a study of redesign and new piping at the Quail Creek Diversion to capture more high flows above the salty springs should be studied. This would avoid the need for reverse Osmosis.
8. Better accounting for water use to get more accurate water demand amounts.
9. Revaluate the amount of secondary water available;
10. Evaluate how much water the Water District holds in storage;
11. a full accounting of Water District's water diverted from the Virgin River annually which may yield water than is being accounted for.
12. Account for the 18,000 acre feet of water Identified by the Coalition's SD1 comments;
13. The Coalition questions the logic that you need 5 acre feet of storage for 1 acre foot of yield in Sand Hollow Reservoir because the Virgin River variable. The water district has successfully diverted at its 100 foot diversion with no trouble due to variability. Revaluate the possible future yield of water from Sand Hollow Reservoir mentioned in Coalition's SD1 comments add 10,000 acre feet additional water.
14. Inventory all private water rights to understand how much more water is available so the community does not become a place with restrictions of 10 gpcd for outside use is unfounded.
15. Include the 16,000 acre feet more aquifer water rights identified in the Boyle, Water Supply Needs for Washington and Kane Counties & Lake Powell Pipeline Study, 1998, p.79.
16. Revaluate agricultural water rights that are not being counted by the Water District;
17. WCWCD has outlined potential conservation measures and savings in this report http://www.powellpipelinefacts.org/images/pdf/Conwervation%20Cost%20And%20Savi

ngs.pdf However, many of these measures are not implemented until 2020- 2037. Implementing these measure sooner would provide an additional 14,000 AF of water.

18. Count more of the 70,000 ac ft of water in aquifer storage under Sand Hollow reservoir.

III.
PROPOSED MODIFICATIONS AND NEW STUDIES

The Coalition has appreciated the Commission's review of the Lake Powell Pipeline project though the Integrated Licensing Process (ILP). Based on our review of the Initial Study Report (ISR), it does not appear that the Applicant has complied fully with the terms of the study plan as approved, or has otherwise fully achieved the objectives of the study plans. The Coalition found in many instances the Applicant did not report vital environmental information that was supposed to be provided pursuant to the study plans. In some cases critical data was misinterpreted in the ISR, in others it was completely omitted. We ask that the Commission require the Applicant to perform studies which it has not conducted per the approved study plan, or add a new study where the ISR demonstrates that study objectives cannot be met pursuant to the existing study plan. We believe that absent the recommended changes the scientific record on which the new license is based will be fundamentally flawed due to its failure to consider Climate Change projected reductions in flow to the Colorado River, and its unsupported assumptions regarding projected population growth and water demand.

In light of this new information from the Bureau of Reclamation (BOR) report *Reclamation Managing Water in the West, Secure Water Act Section 9503 (c)–Reclamation Climate Change and Water 2011,* it appears there is solid scientific evident of climate change in the Colorado River Basin. We submit the report with our comments (Attachment A), and request that climate change impact of future flow reductions be included the environmental analysis of the Lake Powell Pipeline project. This report is a more accurate reflection of BOR's current prediction of reduced future flow of the Colorado River due to Climate change.

We ask the Commission to require the Applicant to implement Study Plan #19 goals and objectives, and tasks listed in approved plan detailed in our comments. We also ask the Commission to require the Applicant to implement other study plan requirements omitted from the study reports listed in our comments.

The requested information is very important because it influences communities' decisions to build a billion dollar project and then depend on this project to provide the same amount of water until 2070, the term of license. We request that Commission Staff modify the study plan consistent with our recommendations to assure the adequacy of the licensing record.

Attachment ("A")
Reclamation Managing Water in the West, Secure Water Act Section 9503 (c)–Reclamation Climate Change and Water 2011. The Colorado River Basin sections of report on pages 17-40 and 179-183.

Also just Colorado River Basin sections are available online at:

http://www.powellpipelinefacts.org/images/pdf/AttachmentA%20Pt1.pdf

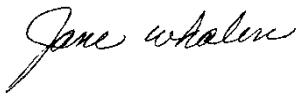
http://www.powellpipelinefacts.org/images/pdf/AttachmentA%20Pt2.pdf

VI.
CONCLUSION

We thank the Commission for considering these comments. We look forward to working with UBWR and the Commission on the Lake Powell Pipeline Environmental Impact Statement.

Dated: May 6, 2011

Respectfully submitted,



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