

**UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION**

\_\_\_\_\_) )  
Utah Board of Water Resources, ) )  
Lake Powell Pipeline ) Project no. P-12966-000  
\_\_\_\_\_) )

**MOTION TO INTERVENE BY CITIZENS FOR DIXIE’S FUTURE, GLEN CANYON  
INSTITUTE, SIERRA CLUB, LIVING RIVERS, AMERICAN RIVERS, AND TOWN OF  
SPRINGDALE, UTAH**

Pursuant to 18 C.F.R. § 385.214, Citizens for Dixie’s Future, Glen Canyon Institute, Sierra Club, Living Rivers, American Rivers, and the Town of Springdale, Utah intervene in this proceeding in response to the “Notice of Application Accepted for Filing and Soliciting Motions to Intervene, Protests, and Comments” (Nov. 2, 2007).

**I.  
INTERESTS OF INTERVENORS**

Pursuant to 18 C.F.R § 385.214(b), Intervenors describe below our respective legal status, purposes, and interests in the proposed pipeline.

**Citizens for Dixie’s Future**

Citizens for Dixie’s Future (CDF) is a non-profit corporation based in Hurricane, Utah. As a local grassroots conservation organization, CDF is dedicated to the protection of natural resources and quality of life in southwest Utah through smart-growth planning. More than 3,000 local residents have supported CDF’s mission through donations of money, time, phone calls, letter writing and other efforts.

Founded in May 2006, CDF initially focused on educating citizens about the proposed Washington County Growth and Conservation Act of 2006, which would have disposed of 25,000 federal land for growth and authorized the Lake Powell Pipeline corridors, including rights-of-way and reservoir and pump station sites without public participation. The legislation was tabled in November 2006, due, in part, to CDF’s successful education campaign. In 2007, CDF turned our attention to the proposed Lake Powell Pipeline. CDF has substantial interests in the outcome of this permitting proceeding, which is intended to “...secure and maintain priority in the licensing process, while undertaking activities to determine the feasibility of the project and support an application.” Cover letter from Utah Department of Natural Resources, Division of Water Resources (Aug. 21, 2007).

Many CDF members and supporters live near and recreate in areas across the Colorado Plateau and Great Basin that will be occupied or otherwise affected by the proposed pipeline, if

*Intervention by CDF, GCI, Sierra Club, Living Rivers, American Rivers, and Town of Springdale  
Lake Powell Pipeline (P-12966)*

licensed. These areas are particularly attractive due to their character as undisturbed and uninhabited wildlands. They include: Little Creek Mesa and the Little Creek Area of Critical Environmental Concern (ACEC), Kanab Creek ACEC, the Arizona Strip, the Cockscomb, and the Grand Staircase-Escalante National Monument. These areas provide unique opportunities for hiking, camping, trail running, geocaching, mountain biking, appreciation of archaeological resources and natural quiet, journaling, birdwatching, ecosystem research, photography and more. As stated in the Presidential Proclamation which established the Grand Staircase Escalante National Monument, this is a "...vast and austere landscape [that] embraces a spectacular array of scientific and historic resources...This unspoiled natural area remains a frontier, a quality that greatly enhances the Monument's value for scientific study." Presidential Proclamation 6920 September 18, 1996, "Establishment of the Grand Staircase-Escalante National Monument," *available at* <http://www.ut.blm.gov/monument/planning-proclamation.php>. We are concerned that the proposed pipeline would degrade the region's character as wildlands and may contribute to urban sprawl, resulting in traffic congestion, decreased air quality, and increased property taxes and cost of living. Further, many of our members and supporters own or are employed by businesses that depend on the continued protection of these wildlands. These businesses include: outdoor guiding, recreation hard goods, tourism hospitality, real estate, home construction, health and wellness spas, and retirement services (financial planning, and health maintenance).

The pipeline would increase the diversion from the Colorado River at a time when existing water supply diversions, as well as ecological needs, already result in a functional deficit during droughts and other periods. We are concerned that the pipeline would worsen water deficits for other beneficial uses of the Colorado River below Lake Powell and otherwise cause significant, unmitigable impacts on such uses.

We will actively participate in this permitting and any subsequent licensing proceeding to assure the protection and enhancement of such uses of these wildlands, the Colorado River below Lake Powell, and other public resources. Such participation is in the public interest pursuant 18 C.F.R. § 385.214(b)(iii).

Pursuant to 18 C.F.R. § 385.214(b)(ii), nearly all of our members are customers of federal power generated by the U.S. Bureau of Reclamation at Lake Powell. They live in cities and towns served by the Western Area Power Administration with such federal power. By diverting water from that lake, the pipeline would reduce the generation and supply of federal power, over a period when the annual flow of the Colorado River is already expected to decline due to climate change. Further, the estimated \$1.7 billion cost of the proposed pipeline, if licensed, would be financed through local fees, rates, or assessments. This may result in a significant economic burden on local communities.

## **Glen Canyon Institute**

The Glen Canyon Institute is a non-profit membership corporation incorporated in Utah with offices in Salt Lake City, Utah and Durango, Colorado. We are dedicated to addressing water and natural resource management issues in the Colorado River Basin and particularly Glen Canyon. The Glen Canyon Institute and its members are concerned about impacts associated with water management and loss of ecological integrity in the Colorado River Basin. We are involved in multiple reviews of government actions in the seven-basin state watershed. We have over 2,000 paid members located throughout the United States and have a long history of involvement in environmental review of the Colorado River Basin.

In 1963, the gates at Glen Canyon Dam on the Colorado River were closed and Lake Powell reservoir began to flood one of the world's most spectacular and unexplored environments. Located in southwest Utah, Glen Canyon is the biological heart of the Colorado River. Home to 189 species of birds and 34 species of mammals, Glen Canyon also has more than 3,000 documented ruins from ancient cultures. Many more cultural ruins were not documented before the waters of the reservoir began to flood them. The Colorado River basin is a continuum ranging from the high elevation mountains of the Colorado Rockies to the terminus at the Sea of Cortez. Glen Canyon exists within the middle of the landscape continuum and represented the ecological heart of the Colorado River system.

When full, the reservoir known as Lake Powell, floods 186 miles of the Colorado River, including all of Glen Canyon and many of its tributaries. Downstream, the fragile Grand Canyon ecosystem has been in steady decline, historically dependent upon spring floods to deposit millions of tons of vital sediment and nutrients in Grand Canyon. Native fish, which had evolved and flourished in the dynamic, pre-dam environment, have been unable to adapt, several have become endangered, and two are extirpated from the Grand Canyon. During the initial twenty years following construction of Glen Canyon Dam, the wetlands of the Colorado River Delta and its estuary rapidly declined due to an insufficient supply of water and supply of nutrients.

Future hydrologic predictions by the government and academic institutions forecast the virtual end to having enough water to utilize Lake Powell in the manner that it was originally authorized by Congress. Hydrologic models on the future flows of the Colorado River demonstrate that Lake Powell will remain nearly empty for most of the next century.

For the last ten years the Glen Canyon Institute has been addressing Federal, State and private issues related to the operations and management of the Colorado River and especially Lake Powell. We are concerned that the proposed pipeline, if licensed, would have significant, unmitigable impacts on the environmental quality of the Colorado River. We are also interested in the impacts of the proposed project on wildlands and local economic welfare, as described above. Finally, the proposed project may cross Native American lands. The Glen Canyon Institute has a long history of working with Tribes culturally and socially affiliated with the Grand and Glen Canyon. Issues related to potential impacts to their cultural and spiritual

properties must be addressed, and the Glen Canyon Institute stands ready to assist them in identification and resolution of those significant concerns.

### **Sierra Club**

The Sierra Club is a national nonprofit organization of approximately 750,000 members dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. The Sierra Club's concerns encompass all federal lands in Utah. The Sierra Club has approximately 750,000 members across the United States. Sierra Club members enjoy the public lands in Utah. Many frequently travel to Utah and enjoy the landscapes of southern Utah. The Utah Chapter of the Sierra Club has approximately 4300 members in the state of Utah. The Sierra Club involves itself in multiple issues related to the quality of life for its members and the public. Such issues include uncontrolled growth of population centers that ignore local and ecological restraints on growth. We have a special interest in Glen Canyon Dam and the management of the reservoir behind it. The Sierra Club has been involved in planning the management of the dam and the flows of water through the Grand Canyon. We have members in the St. George area that are very concerned about the excessive growth in the arid lands of Washington County.

### **Living Rivers – Colorado Riverkeeper**

Living Rivers is a Utah corporation based in the city of Moab and recognized by the Internal Revenue Service as a non-profit 501(c)(3) organization. We represent individual members and networks with many non-profit organizations. Living Rivers was designated as the Colorado Riverkeeper in 2002 by the Waterkeeper Alliance, a 501(c)(3) organization based in Irvington, New York.

Living Rivers has substantial interests in assuring that federal and state regulatory agencies study and consider potential environmental and financial impacts, as well as engineering feasibility, in the course of any preliminary permit granted for this proceeding. Since our inception in 2000 it has been active in matters concerning the management of the Colorado River and its tributary streams, and specifically in regards to the preservation and restoration of its ecosystem, and for the ecological services that it provides for human needs. The ecosystem of this area is sensitive to development due to its natural characteristic as a wild land, undisturbed and uninhabited.

Living River's trustees, partners and members live, work and recreate on the Colorado Plateau and the Colorado River. They further rely on the river for water supply. It is our current understanding that the demand for the resources of the Colorado River is presently over-allocated, and the supply has been declining naturally since the inception of the Colorado River Compact in 1922. We also believe that the supply of the Colorado River will continue to decline as a result of continued atmospheric warming, as already determined by the International Panel on Climate Change. Based on existing information we believe that diverting water from Lake

Powell through this pipeline is neither reasonable nor prudent under the present circumstances. Additionally, the estimated \$1.7 billion cost of the proposed pipeline may be financed through local property taxes, impact fees and/or water rates, resulting in an unprecedented local financial burden for a single infrastructure development.

### **American Rivers**

American Rivers (“AR”) is a non-profit corporation whose headquarters are at 1101 14th St. NW Ste. 1400, Washington, DC 20005. American Rivers is the national organization that stands up for healthy rivers so our communities can thrive. We believe rivers are vital to our health, safety and quality of life. AR pioneers and delivers locally- oriented solutions to protect natural habitats and build sustainable communities. AR also leads national campaigns to raise awareness of river issues and mobilizes an extensive network that includes more than 65,000 members and activists to help safeguard our rivers for today and tomorrow.

AR represents more than 500 members and activists in the state of Utah, many of whom recreate in areas that would be impacted by the proposed project. In addition to our members in the state of Utah, AR has many members that live and recreate within the Colorado River basin, and have a strong interest in protecting that river and its resources. AR also has broad organizational interests in the Commission's equal consideration of power and non-power values in hydropower licensing pursuant to FPA §§ 4(e) and 10(a). AR has intervened in a long list of hydropower proceedings before the Commission in order to assure that the Federal Power Act is administered in a manner that protects and restores natural resources impacted by hydropower projects. These organizational interests are consistent with the above-captioned proceeding.

### **Town of Springdale, Utah**

The Town of Springdale is an incorporated town in Washington County, Utah, located at the mouth of Zion National Park. The town has nearly 550 residents. Springdale is a pioneer town with a rich and colorful heritage spanning over 100 years. Access to Springdale can only be made through Toquerville, Hurricane or Kanab, Utah, all of which may be directly affected by the proposed pipeline. The areas that must be crossed between these cities and Springdale are particularly attractive due to their character as largely undisturbed and uninhabited wildlands. Springdale is greatly interested in preserving the scenic corridors that provide access to it, including the corridor leading to Zion National Park. Many of our residents own or employed by businesses that provide services to tourists who use these corridors. Since Springdale is near the route of the proposed pipeline, its residents may in the future be customers of its water, and may pay taxes for its installation. Springdale is interested in the impacts of the proposed project on local economic welfare, as described above.

## **II. POSITION ON PRELIMINARY PERMIT**

We support the Utah Board of Water Resources’ “Description of Proposed Studies” to be undertaken if the preliminary permit is granted. Application, pp. 11-12. Intervenors request that

the Board encourage and permit active participation of parties and other stakeholders in the design and conduct of such studies. Such participation will assist in converting general topics, such as “Land Use,” into specific issues for study and analysis. We request that the studies address the following issues, among others.

1. By management unit, which public or tribal wildlands would be occupied by the 60-foot right of way for the buried pipeline (Application, p. 7), project powerhouses, and transmission lines?
2. By management unit, how would such occupancy affect public access, recreational use, scenic quality, and cultural resources of such wildlands?
3. Would such occupancy be consistent with the specific management direction, standards, or requirements for each applicable management unit?
4. What would be the estimated maximum and annual diversion of water from Lake Powell?
5. What would be the legal basis for such diversion? Would such diversion comply with requirements of the Endangered Species Act, Clean Water Act, and the Colorado Compact for the management of the Colorado River below Lake Powell?
6. How would such diversion affect the actual and reliable storage of Lake Powell?
7. How would global warming affect the availability of water for such diversion?
8. How would the pipeline, including its construction and subsequent supplies of water and power, affect the rate and nature of growth of towns and cities in the region? Please include a range of foreseeable scenarios.
9. What alternatives exist for the power and water supplies which the pipeline would provide?
10. What would be the estimated charge for repayment of project costs, in any assessments, fees, or rates? What approvals would be necessary for such charges?
11. How would such diversions affect existing power users and senior water right holders, including, but not limited to, the Navajo Generating Station, the City of Page, Utah; California; Arizona; Nevada; and Mexico?

### **III.** **SERVICE**

We request that the following representatives be added to the service list for this proceeding:

*Intervention by CDF, GCI, Sierra Club, Living Rivers, American Rivers, and Town of Springdale Lake Powell Pipeline (P-12966)*

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*Intervention by CDF, GCI, Sierra Club, Living Rivers, American Rivers, and Town of Springdale  
Lake Powell Pipeline (P-12966)*

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Dated: January 2, 2008

Respectfully submitted,

Duane L. Ostler  
TOWN OF SPRINGDALE, UTAH

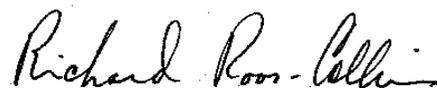
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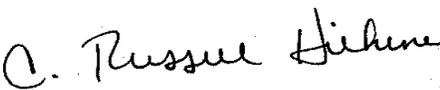
Attorneys for CITIZENS FOR DIXIE'S FUTURE

**DECLARATION OF SERVICE**

**Utah Board of Water Resources, Lake Powell Pipeline (Project no. P-12966-000)**

I, C. Russell Hilken, declare that I today served the “MOTION TO INTERVENE BY CITIZENS FOR DIXIE’S FUTURE, GLEN CANYON INSTITUTE, SIERRA CLUB, LIVING RIVERS, AMERICAN RIVERS, and TOWN OF SPRINGDALE, UTAH,” by electronic mail, or if no electronic mail address is provided, by first-class mail, to each person on the official service list compiled by the Secretary in this proceeding.

Dated: January 2, 2008

By: 

\_\_\_\_\_  
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July 7, 2007

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E., Room 1A  
Washington, DC 20426

Re: FERC Project No. 12966-002. Scoping of environmental issues for the proposed Lake Powell Pipeline Project, Utah and Arizona.

Dear Ms. Bose,

Thank you for this opportunity to provide scoping comments concerning environmental impacts from the proposed Lake Powell Pipeline (LPP), which would convey Colorado River water to counties in southwestern Utah.

Living Rivers is a nongovernmental organization whose mission is to restore the biological integrity of the Colorado River. We have been working on Colorado River issues since our founding in 2000 at Moab, Utah, which is next to the Colorado River and 60 miles above Lake Powell.

### **Introduction**

In this scoping letter we will explain to the Federal Energy Regulatory Commission (FERC) that this proposed project is not feasible, because the seven basin states of the Colorado River and Mexico, continue to operate under a situation of over-appropriated water supplies.

The annual yield of Colorado River water has declined over 2 million acre-feet since the Colorado River Compact was initiated in 1922, and federal scientists have alerted the nation that this decline is expected to continue, which includes the 50-year term of this license now under FERC review. It is highly likely before this term expires, the water in storage at Lakes Mead and Powell will be completely exhausted despite new federal guidelines (described below).

**PO Box 466 • Moab, UT 84532 • 435.259.1063  
Fax 435.259.7612 • [www.livingrivers.org](http://www.livingrivers.org)**

Unfortunately, this imbalance of demand over supply with continued atmospheric warming, will keep these reservoirs empty in the subsequent 50-year term.

Contrarily, the assessment of federal engineers at the Bureau of Reclamation (Reclamation), as published in their most recent Environmental Impact Statement (EIS) for the coordinated operations of Glen Canyon and Hoover dams (Shortage Criteria), indicate that proposed water development projects for the upper basin states of the Colorado River can move forward without any cumulative impacts to the water storage capacity of Lakes Mead and Powell.

It must be fully understood that Reclamation's EIS did not address excessive evaporation losses as a direct result of human-induced atmospheric warming, nor did Reclamation comprehensively address the conditions of severe and sustained drought as revealed in the paleoclimate record provided by a scientific assessment of tree-rings (dendrochronology).

Before we explain our concerns in greater detail below, we respectfully insist FERC must conduct an EIS that transparently engages long-term climate modeling (past and future) of the Colorado River and its reservoirs, and not just according to the modern-day instrument record, which is the data source directly responsible for the current over-appropriation problem.

FERC's main objective should be to provide the comprehensive and bold determination that Reclamation was reluctant to do. Otherwise, additional burden and harm will come to existing wildlife, federal reserve lands, people and the economy.

Furthermore, FERC must also analyze any proposed plans by the seven basin states to augment the Colorado River with water imports from the ocean and distant rivers, such as the Columbia and the Mississippi. The situation of impending water scarcity for the entire nation, combined with extraordinary energy demands for such projects to become operational, will have considerable cumulative impacts beyond the boundaries of the Colorado River basin. Such projects are controversial, because the public recognizes the federal government must provide leadership toward achieving long-term energy and water resource sustainability, without causing further dependency on finite natural resources from outside sources.

### **Institutional History**

In the arid west the situation of over-extending water supplies was brought to the attention of water managers by John Wesley Powell in 1893. This message was also presented to Congress during hearings for the Colorado River Project Storage Act (1956) and the Colorado River Basin Storage Act (1968). Sadly, this message continues to be ignored and will ultimately result in lawsuits over water rights, because surplus water in the basin simply does not exist anymore.

The LPP is not the only upper basin project being proposed (or under construction) in the upper basin. For example: Flaming Gorge Reservoir Pipeline, Animas-La Plata Project, Navajo-Gallup Pipeline, Western Navajo-Flagstaff Pipeline, nuclear power plants near Green River, Utah, and various oil shale and uranium processing projects. The cumulative investment of these projects is in the billions of dollars, yet are completely dependent on the availability of useable Colorado River water, which is anything but assured according to the results of scientific modeling delegated by various administrative agencies.

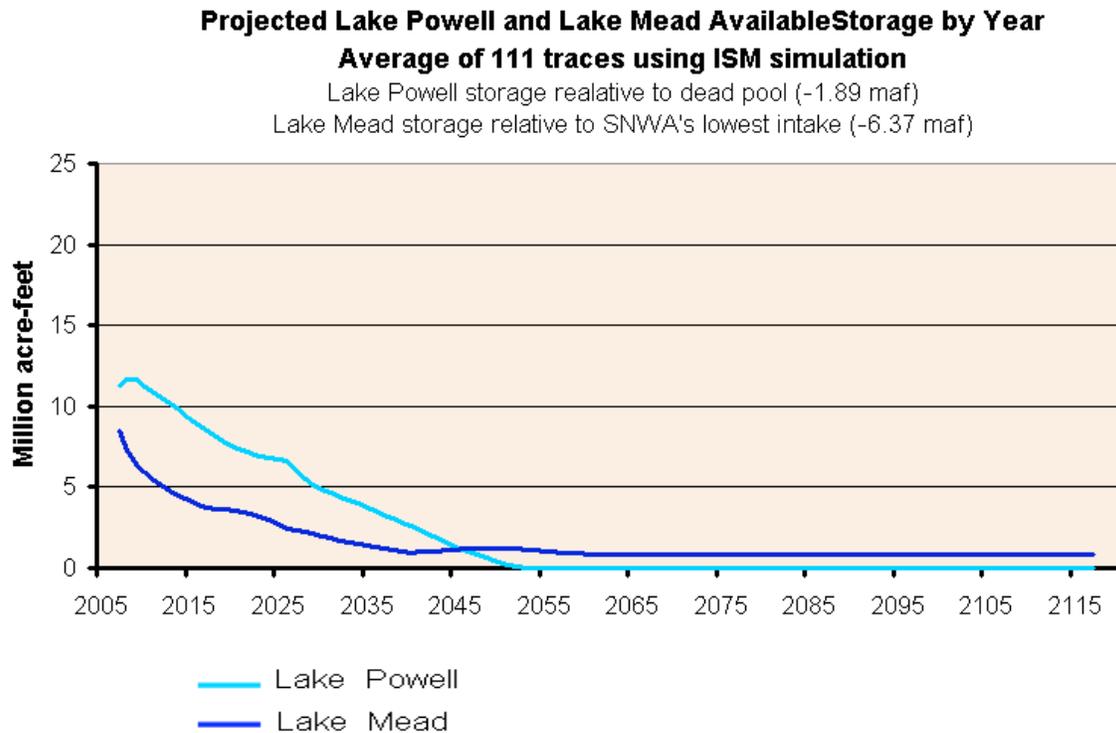
There are also other situations that remain unresolved by water managers in the discussion of future water rights. For example, adjudicating federal reserve rights, instream flows for the Colorado River delta, water for sediment removal from reservoirs, water for recharging human-depleted aquifers, and water to keep salinity levels in compliance.

### **Reduction of Water Quantity**

A warming atmosphere due to human-caused air pollution is exasperating the problem of water scarcity in the Colorado River basin. While some physical provinces on the planet will receive more precipitation than normal, the consequence of warming for the Colorado River basin will be increased evaporation that significantly reduces its annual streamflow.

For example, the managers of Navajo Generating Station at Lake Powell have already demonstrated that the elevation of the reservoir will likely drop to dead pool (no active water storage) through their planning to relocate their water intake below 3370 feet, which is the dead pool elevation at Glen Canyon Dam. The Southern Nevada Water Authority has planned the same relocation for their intake at Saddle Island, Lake Mead.

In February the Scripps Institute produced a peer-reviewed paper that provided compelling evidence that our warming atmosphere would cause both Lakes Mead and Lake Powell to empty despite the guidance of Reclamation's Shortage Criteria, and also provided a timetable: 10% chance by 2013, 50% chance by 2021, and 100% by 2036. The report is based on an annual reduction of Colorado River flows at 10% for the present and 30% by 2060, which is displayed as a graphic below according to the open source simulator CROSS found at [www.onthecolorado.org/Cross.cfm](http://www.onthecolorado.org/Cross.cfm) .



As can be observed by the simulation above, by the time the LPP is fully operational, the water for the intended communities will not be available. This will cause an unnecessary legal and financial burden for all the water users of the Colorado River basin, but especially for the Utah residents of Washington, Kane and Iron counties.

### **Reduction of Water Quality**

Even if the water managers could legally eke water for conveyance from a diminished Lake Powell, the water quality of the reservoir as it approaches dead pool may be unsafe for the public to drink unless treated; this potential water quality problem must be determined in this analysis by FERC.

For example, the remobilization (by flowing rivers and storm water) of perched sediment deposits above the reservoir at dead pool will likely taint the water with high levels of turbidity, salts, heavy metals, industrial toxins, hydrogen sulfide, extraordinary nutrients, and low dissolved oxygen. New or improved facilities to treat this kind of tainted water have not been proposed by the Utah water managers for this project, but should be considered since the problem is likely to materialize in the next 50 years as a management consequence of exceeding the real-time supply.

At present, most of the reservoir sediment in Lake Powell is currently stored between the full pool elevation (3700 feet asl) and the dead pool elevation (3370 feet asl), specifically in the uppermost river canyons of Cataract, Narrow, Dirty Devil, Escalante and San Juan.

The storage volume of the reservoir below 3370 feet is 1.9 million acre-feet. As of 1986, the volume of sediment in Lake Powell was estimated by Reclamation to be 800,000 acre-feet. It would be reasonable to assume that an additional 800,000 acre-feet of sediment has entered the reservoir since 1986, for a total of 1.6 million acre-feet of sediment fill. This is the potential amount of sediment that could be mobilized and transported into the dead pool storage as it approaches dead pool. This will cause serious sediment management challenges for all water operations at Lake Powell and why this potential problem should be addressed by FERC in the EIS.

### **Exotic Species**

Though Lake Powell may not harbor an adult population of exotic quagga or Zebra mussels at the present time, it is only a question of time before it does, considering the confirmed presence of exotic mussels in the many reservoirs of the lower basin states. The impacts of controlling these invasive species must be considered in this analysis for the LPP.

### **Enabling Utah's Poor Record of Water Management**

The average consumption of water supplies by citizens of southwest Utah is excessive when compared to other cities in the arid west. For example, the city of St. George, Utah, will consume twice the water per person/day, as does Tucson, Arizona. This statistic clearly indicates that the leadership of Utah State, and Washington County in particular, is not well grounded in the wise use of our natural resources. Such poor leadership should not be indulged by FERC under this review, since they are overtly consumptive, and seem uninterested in improving their current performance as overseers of scarce water supplies. The water managers of the Colorado River basin should not be wasting the water they already have, while implementing more expensive infrastructure for future supplies at the same time. Such managerial inconsistencies should be addressed in this EIS by FERC with the goal of providing instead, a management alternative of water conservation and improved efficiency.

### **Electric Energy Production**

This project provides several opportunities to generate electricity as the water in conveyance falls downhill. This circumstance allows the project to offset a portion of the total energy cost; substantial energy is of course still required to make the project fully operational. The proposed plan is to use traditional fossil fuels for supplemental power generation, which will contribute to the atmospheric warming problem. To be responsible stewards, Utah water managers must demonstrate some creativity and leadership in their planning by providing energy that ultimately reduces harm to the nation by decreasing atmospheric temperatures, which is in their best interest as well.

### **Conclusion**

It is unfortunate that the seven basin states and Congress have created a situation of uncertainty about the availability of water in the future for the Colorado River basin, which will eventually unravel in the court system. Instead of providing leadership to work with the resources we have in affordable and sustainable ways, the government agencies continue to bludgeon the people with their century old playbook of development that forces them to accept excessive consumption as if it were the only alternative.

Though these parties insist that Colorado River water laws have built-in flexibility, the truth is it does not as long as a skewed 100-year instrument record of annual

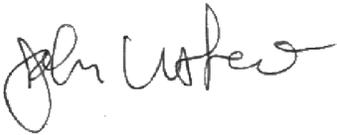
Page 7  
Ms. Kimberly D. Bose

flow remains sacrosanct. This situation, unless quickly changed, is handing unprecedented power to willful water purveyors who are forcing the people to accept yet another stack of complex infrastructure based entirely on the continuation of consuming finite energy resources that are controversial, expensive, and culturally and environmentally demoralizing.

We sincerely hope that FERC will take a hard and thorough look at this proposal because it will have significant consequences and impacts for Utah, Arizona, and the rest of the nation.

If there is anything we can do to assist you, please do not hesitate to contact us.

Sincerely yours,

A handwritten signature in black ink, appearing to read "John Weisheit". The signature is fluid and cursive, with the first name "John" being more prominent than the last name "Weisheit".

John Weisheit  
Conservation Director

**UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION**

\_\_\_\_\_)  
Utah Board of Natural Resources, )  
Lake Powell Pipeline Project ) P-12966-001  
\_\_\_\_\_)

**COMMENTS OF THE LAKE POWELL PIPELINE COALITION ON SCOPING  
DOCUMENT 1 AND PRE-APPLICATION DOCUMENT,  
AND ADDITIONAL STUDY REQUESTS**

The Lake Powell Pipeline Coalition (Coalition) provides these comments in response to the Commission’s “Scoping Document 1” (SD1) (*see* e-Library no. 20080505-3014 (May 5, 2008) and the Pre-Application Document (PAD) for Utah Board of Natural Resource’s (Applicant) proposed Lake Powell Pipeline Project (P-12966) (Project). The Coalition consists of: Citizens for Dixie’s Future, American Rivers, Glen Canyon Institute, Grand Canyon Wildlands Council, Living Rivers - Colorado Riverkeeper, Sierra Club, the Town of Springdale, Utah, and Western Resource Advocates.

Our comments are organized into six sections. Section I describes the interests of the individual Coalition members. Section II states our objection to the Commission’s assumption of lead agency responsibility under the National Environmental Policy Act for this proceeding. Section III states our specific comments on SD1. Section IV states our comments on the Pre-Application Document. Section V states our additional study requests. Section VI states our recommendations for further procedures.

**I.  
DESCRIPTION OF COALITION MEMBERS**

The Coalition is comprised of the following groups whose interests in this proceeding are sufficiently aligned to warrant coordination. We provide a brief description of each group below.

**Citizens for Dixie’s Future**

The leader of the Lake Powell Pipeline Coalition, Citizens for Dixie’s Future (CDF), is a non-profit corporation based in Hurricane, Utah. As a local grassroots conservation organization, CDF is dedicated to the protection of natural resources and quality of life in southwest Utah through smart-growth planning. More than 3,000 local residents have supported CDF’s mission through donations of money, time, phone calls, letter writing and other efforts. Our headquarters are located at 134 South Main Street, Hurricane, Utah 84737.

Founded in May 2006, CDF initially focused on educating citizens about the proposed Washington County Growth and Conservation Act of 2006, which would have disposed of 25,000 acres of federal lands for growth and authorized the Pipeline corridors, including rights-of-way and

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reservoir and pump station sites without public participation. The legislation was tabled in November 2006, due, in part, to CDF's successful education campaign. In 2007, CDF turned our attention to the proposed Pipeline. CDF has substantial interests in the outcome of this permitting proceeding, which is intended to "...secure and maintain priority in the licensing process, while undertaking activities to determine the feasibility of the project and support an application." Cover letter from Utah Department of Natural Resources, Division of Water Resources (Aug. 21, 2007).

Many CDF members and supporters live near and recreate in areas across the Colorado Plateau and Great Basin that will be occupied or otherwise affected by the proposed Pipeline, if licensed. These areas are particularly attractive due to their character as undisturbed and uninhabited wildlands. They include: Little Creek Mesa and the Little Creek Area of Critical Environmental Concern (ACEC), Kanab Creek ACEC, the Arizona Strip, the Cockscomb, and the Grand Staircase-Escalante National Monument. These areas provide unique opportunities for hiking, camping, trail running, geocaching, mountain biking, appreciation of archaeological resources and natural quiet, journaling, birdwatching, ecosystem research, photography and more. As stated in the Presidential Proclamation which established the Grand Staircase Escalante National Monument, this is a "...vast and austere landscape [that] embraces a spectacular array of scientific and historic resources ... This unspoiled natural area remains a frontier, a quality that greatly enhances the Monument's value for scientific study." Presidential Proclamation 6920, "Establishment of the Grand Staircase-Escalante National Monument" (September 18, 1996), available at <http://www.wilderness.org/Library/Documents/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=3132>

We are concerned that the proposed Pipeline would degrade the region's character as wildlands and may contribute to urban sprawl, resulting in traffic congestion, decreased air quality, and increased property taxes and cost of living. Further, many of our members and supporters own or are employed by businesses that depend on the continued protection of these wildlands. These businesses include: outdoor guiding, recreation hard goods, tourism hospitality, real estate, home construction, health and wellness spas, and retirement services (financial planning, and health maintenance).

Nearly all of CDF's members are customers of federal power generated by the U.S. Bureau of Reclamation at Lake Powell. They live in cities and towns served by the Western Area Power Administration with such federal power. We are concerned that pipeline diversions from the lake would reduce the generation and supply of federal power, over a period when the annual flow of the Colorado River is already expected to decline due to climate change. Further, the estimated \$1.7 billion cost of the proposed Pipeline, if licensed, would be financed through local fees, rates, or assessments. Thus our members and supporters have an economic interest in the proposed project.

CDF is further concerned that the proposed Pipeline would increase the diversion from the Colorado River at a time when existing water supply diversions, as well as ecological needs, already result in a functional deficit during droughts and other periods. We are concerned that the Pipeline would worsen water deficits for other beneficial uses of the Colorado River below Lake Powell and otherwise cause significant, unmitigable impacts on such uses.

CDF intends to participate actively in this licensing proceeding to assure the protection and enhancement of such uses of these wildlands, the Colorado River below Lake Powell, and other public resources.

### **American Rivers**

American Rivers (AR) is a non-profit corporation whose headquarters are at 1101 14th St. NW Ste. 1400, Washington, D.C. 20005. American Rivers is the national organization that stands up for healthy rivers so our communities can thrive. We believe rivers are vital to our health, safety and quality of life. AR pioneers and delivers locally-oriented solutions to protect natural habitats and build sustainable communities. AR also leads national campaigns to raise awareness of river issues and mobilizes an extensive network that includes more than 65,000 members and activists to help safeguard our rivers for today and tomorrow.

AR represents more than 250 members and activists in the state of Utah, many of whom recreate in areas that would be impacted by the proposed project. In addition to our members in the state of Utah, AR has many members that live and recreate within the Colorado River basin, and have a strong interest in protecting that river and its resources. AR also has broad organizational interests in the Commission's equal consideration of power and non-power values in hydropower licensing pursuant to Federal Power Act sections 4(e) and 10(a). AR has intervened in a long list of hydropower proceedings before the Commission in order to assure that the Federal Power Act is administered in a manner that protects and restores natural resources impacted by hydropower projects. These organizational interests are consistent with the above-captioned proceeding.

### **Glen Canyon Institute**

The Glen Canyon Institute is a non-profit membership corporation incorporated in Utah with offices in Salt Lake City, Utah and Durango, Colorado. We are dedicated to addressing water and natural resource management issues in the Colorado River Basin and particularly Glen Canyon. The Glen Canyon Institute and its members are concerned about impacts associated with water management and loss of ecological integrity in the Colorado River Basin. We are involved in multiple reviews of government actions in the seven-basin state watershed. We have over 2,000 paid members located throughout the United States and have a long history of involvement in environmental review of the Colorado River Basin.

In 1963, the gates at Glen Canyon Dam on the Colorado River were closed and Lake Powell reservoir began to flood one of the world's most spectacular and unexplored environments. Located in southwest Utah, Glen Canyon is the biological heart of the Colorado River. Home to 189 species of birds and 34 species of mammals, Glen Canyon also has more than 3,000 documented ruins from ancient cultures. Many more cultural ruins were not documented before the waters of the reservoir began to flood them. The Colorado River basin is a continuum ranging from the high elevation mountains of the Colorado Rockies to the terminus at the Sea of Cortez. Glen Canyon exists within the middle of the landscape continuum and represented the ecological heart of the Colorado River system.

When full, the reservoir known as Lake Powell, floods 186 miles of the Colorado River, including all of Glen Canyon and many of its tributaries. Downstream, the fragile Grand Canyon, which was historically dependent upon spring floods to deposit millions of tons of vital sediment and nutrients in Grand Canyon, has been in steady decline. Native fish, which had evolved and flourished in the dynamic, pre-dam environment, have been unable to adapt. Several have become endangered, and two are extirpated from the Grand Canyon. During the initial twenty years following construction of Glen Canyon Dam, the wetlands of the Colorado River Delta and its estuary rapidly declined due to an insufficient supply of water and supply of nutrients.

Future hydrologic predictions by the government and academic institutions forecast the virtual end to having enough water to utilize Lake Powell in the manner that it was originally authorized by Congress. Hydrologic models on the future flows of the Colorado River demonstrate that Lake Powell will remain nearly empty for most of the next century.

For the last ten years the Glen Canyon Institute has been addressing Federal, State and private issues related to the operations and management of the Colorado River and especially Lake Powell. We are concerned that the proposed Pipeline, if licensed, would have significant, unmitigable impacts on the environmental quality of the Colorado River. We are also interested in the impacts of the proposed project on wildlands and local economic welfare, as described above. Finally, the proposed project may cross Native American lands. The Glen Canyon Institute has a long history of working with Tribes culturally and socially affiliated with the Grand and Glen Canyon. Issues related to potential impacts to their cultural and spiritual properties must be addressed, and the Glen Canyon Institute stands ready to assist them in identification and resolution of those significant concerns.

### **Grand Canyon Wildlands Council**

Grand Canyon Wildlands Council is dedicated to the protection and restoration of wild nature in the Grand Canyon region. Grand Canyon Wildlands Council formed in March 1996 to design a science-based reserve network for the southern Colorado Plateau region. Within this region, Grand Canyon National Park forms the largest potential core reserve. The Colorado River corridor is its heart.

### **Living Rivers – Colorado Riverkeeper**

Living Rivers is a Utah corporation based in the city of Moab and recognized by the Internal Revenue Service as a non-profit 501(c)(3) organization. We represent individual members and networks with many non-profit organizations. Living Rivers was designated as the Colorado Riverkeeper in 2002 by the Waterkeeper Alliance, a 501(c)(3) organization based in Irvington, New York.

Living Rivers has substantial interests in assuring that federal and state regulatory agencies study and consider potential environmental and financial impacts, as well as engineering feasibility, in the course of any preliminary permit granted for this proceeding. Since its inception in 2000 it has been active in matters concerning the management of the Colorado River and its tributary

streams, and specifically in regards to the preservation and restoration of its ecosystem, and for the ecological services that it provides for human needs. The ecosystem of this area is sensitive to development due to its natural characteristic as a wild land, undisturbed and uninhabited.

Living River's trustees, partners and members live, work and recreate on the Colorado Plateau and the Colorado River. They further rely on the river for water supply. It is our current understanding that the demand for the resources of the Colorado River is presently over-allocated, and the supply has been declining naturally since the inception of the Colorado River Compact in 1922. We also believe that the supply of the Colorado River will continue to decline as a result of continued atmospheric warming, as already determined by the International Panel on Climate Change. Based on existing information we believe that diverting water from Lake Powell through this Pipeline is neither reasonable nor prudent under the present circumstances. Additionally, the estimated \$1.7 billion cost of the proposed Pipeline may be financed through local property taxes, impact fees and/or water rates, resulting in an unprecedented local financial burden for a single infrastructure development.

### **Sierra Club**

The Sierra Club is a national nonprofit organization of approximately 750,000 members dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. The Sierra Club's concerns encompass all federal lands in Utah. The Sierra Club has approximately 750,000 members across the United States. Sierra Club members use and enjoy the public lands in Utah. Many frequently travel to Utah and enjoy the landscapes of southern Utah. The Utah Chapter of the Sierra Club has approximately 4300 members in the state of Utah. The Sierra Club involves itself in multiple issues related to the quality of life for its members and the public. Such issues include uncontrolled growth of population centers that ignore local and ecological restraints on growth. We have a special interest in Glen Canyon Dam and the management of the reservoir behind it. The Sierra Club has been involved in planning the management of the dam and the flows of water through the Grand Canyon. We have members in the St. George area that are very concerned about the excessive growth in the arid lands of Washington County.

### **Town of Springdale, Utah**

The Town of Springdale is an incorporated town in Washington County, Utah, located at the mouth of Zion National Park. The town has nearly 550 residents. Springdale is a pioneer town with a rich and colorful heritage spanning over 100 years. Access to Springdale can only be made through Toquerville, Hurricane or Kanab, Utah, all of which may be directly affected by the proposed Pipeline. The areas that must be crossed between these cities and Springdale are particularly attractive due to their character as largely undisturbed and uninhabited wildlands. Springdale is greatly interested in preserving the scenic corridors that provide access to it, including the corridor leading to Zion National Park. Many of our residents own or employed by businesses that provide services to tourists who use these corridors. Since Springdale is near the route of the

proposed Pipeline, its residents may in the future be customers of its water, and may pay taxes for its installation. Springdale is interested in the impacts of the proposed project on local economic welfare, as described above.

**Western Resource Advocates**

Western Resource Advocates is a nonprofit conservation organization dedicated to protecting the Interior West's land, air, and water. With more than 22 employees and offices in Colorado, Utah, Arizona, and Nevada, we promote river restoration and water conservation, advocate for a clean and sustainable energy future, and protect public lands for future generations. We meet our goals in collaboration with other environmental and community groups, and by developing solutions appropriate to the environmental, economic and cultural framework of this region.

## **II.**

### **OBJECTION TO THE COMMISSION AS SOLE LEAD AGENCY UNDER NEPA**

The cover memorandum for the SD1 states: “Pursuant to NEPA, [the Federal Energy Regulatory Commission] intend[s] to prepare an environmental impact statement (EIS) for the entire Pipeline Project, in cooperation with other federal agencies, that would be used by the Commission to determine whether, and under what condition, to issue an original hydropower license for the Hydro System and that would be used by other federal agencies for their decisions.”

The Coalition would object to the Commission’s serving as sole lead federal agency of the Pipeline Environmental Impact Statement (EIS). We share the concerns expressed by other stakeholders that the scope of the proposed project extends beyond the Commission’s certain expertise in hydropower. “[T]he project will also have broader regional impacts. For example, the project will cause a significant annual depletion of water from Lake Powell...” Letter from Patricia Mulroy, Southern Nevada Water Authority, to FERC, e-Library no. 20080613-0107 (June 4, 2008). The Commission

“lacks the broad expertise of other agencies to act as lead agency in a complex water supply project that will affect an entire geographic region. The narrow scope of the Commission’s focus is illustrated by a startling statement at page 11 of the Scoping document that “we have not identified any resources as potentially cumulatively affected by construction and operation of the Lake Powell Pipeline Project” and “This new use of Colorado River water increases risk of shortage for all other Colorado River water users.”

*Id.*

The criteria for selecting a lead agency under NEPA on a federal action when more than one agency is involved include:

- A. Magnitude of agency’s involvement
- B. Project approval/disapproval authority
- C. Expertise concerning the action’s environmental effects
- D. Duration of agency’s involvement
- E. Sequence of agency’s involvement

40 C.F.R. § 1501.5. We discuss each criterion below.

## **A. Magnitude of Agency’s Involvement**

If the proposed project is permitted, the BLM would have a large and wide-reaching role in Pipeline issues. The Commission's jurisdiction would be limited to issuing hydropower licenses for four plants on 50 acres totaling 51 MW and a remotely possible fourth plant with 300 additional MW (with 350 additional acres of impact). BLM-specific jurisdictional issues would affect more acres (750 acres, as well as the 50 to 400 acres affected by hydropower facilities) and cover a wider range of issues than any other federal agency. These jurisdictional issues would include: Soils and Geology, Public Health and Safety, Invasive Species, Visitor Use and Experience in sensitive areas including the Grand Staircase-Escalante National Monument, Cultural Resources, Clearance of new Rights-of-Way way through undisturbed lands including the Kanab Creek Area of Critical Environmental Concern (ACEC), Plan amendments, Wildlife habitat impacts, Sensitive Species and Habitats, and Threatened and Endangered Species, Visual Resources, Growth Inducing Effects.

The footprint of the proposed hydropower project is much smaller than the footprint of the project as a whole. According to the Department of the Interior’s Office of Environmental Policy Compliance, the proposed Pipeline would affect approximately 1,300 acres, including approximately 800 acres of Federal lands (National Park Service – 50, Bureau of Land Management (BLM) Utah – 600, BLM Arizona – 150), 100 acres of State lands (Utah – 80, Arizona - 20), and 400 acres of private lands. *See* U.S. Department of Interior, “Comments Regarding Notice Of Application For Preliminary Permit Application For Preliminary Permit; Project; FERC No. 12966-000; Kane, Washington and Iron Counties, Utah and Coconino and Mohave Counties, Arizona,” e-Library no. 20071228-5027 (Dec. 28, 2007). Tribal trust lands under the administration of the Bureau of Indian Affairs would also be affected. Hydropower-related land disturbance under the Commission’s jurisdiction would affect approximately 50 acres of BLM land unless the proposed Hurricane Cliffs Pumped Storage Project is constructed. The additional project would add approximately 350 acres of BLM land disturbance. In either case, the magnitude of hydropower-related land disturbance would be much smaller than water conveyance-related disturbances of lands under BLM jurisdiction.

If the proposed Pumped Storage project is built, Commission-regulated land disturbance directly related to the proposed licensed hydropower system would only affect approximately 27% of the total project area. Non-Commission related BLM impacts would affect 58% of the project. Total BLM impacts would include 83%. If the Pumped Storage Project is not built, the numbers are 5% (Commission), 42% (BLM) and 47% (BLM total).

## **B. Project Approval or Disapproval Authority**

The Commission does not have the authority to approve or disapprove the entire Pipeline project. Both the Commission and Utah have publicly acknowledged that hydropower is a secondary purpose of the proposed water conveyance project. The proposed project, absent the hydropower generators, could proceed without permits from the Commission. However, the project could not proceed in any form without BLM permits.

In addition, the proposed Hurricane Cliffs Pumped Storage Project could be licensed by the Commission completely independent of the proposed water conveyance system, even if the proposed Pipeline were not built. If the applicant wished to generate hydropower from the Pumped Storage Project by pumping water from nearby Sand Hollow Reservoir without constructing the proposed water conveyance system from Lake Powell, the Commission could justifiably license this project independent of the proposed water conveyance system. As a result, the proposed water conveyance system is not necessary to facilitate the proposed Pumped Storage Project.

#### **C. Expertise Concerning The Action’s Environmental Effects**

Plainly the Commission is the expert with regard to hydropower,<sup>1</sup> but we are concerned the Commission does not share the same level of familiarity with water supply and public lands related resource issues affecting the region.<sup>2</sup> The BLM has limited knowledge of hydropower, but extensive expertise<sup>3</sup> regarding the proposed project’s potential environmental effects due to its mission and 70-plus year involvement in southern Utah/northern Arizona land management issues. Clearly, both agencies are needed to assess the action’s environmental effects. However, it appears BLM’s expertise addresses a significantly larger portion of the proposed action’s environmental effects than the Commission’s expertise.

#### **D. Duration of Agency’s Involvement**

The BLM has been actively involved in the proposed project since 1992. By contrast, Pipeline proponents did not actively engage the Commission until 2007. Under the current project proposal, BLM will be actively involved in post-licensing permitting and regulation for decades after any Commission license issues, including rights-of-way, public safety, threatened and endangered species and invasive plants. The BLM would continue facing numerous Pipeline-related jurisdictional issues for many decades. It is unlikely that the Commission’s post-licensing permitting will be as active.

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<sup>1</sup> The Commission’s mission is to ensure “oversight and development of electric power and natural gas, petroleum pipeline[s] and hydroelectric projects.”

<sup>2</sup> We understand the Commission has retained the extensive services of The Louis Berger Group, Inc., as an outsourced consultant for this Project.

<sup>3</sup> The BLM’s mission is to “sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.”

## **E. Sequence of Agency's Involvement**

Department of Interior agencies – primarily the BLM – must first approve the entire right of way for the proposed water conveyance project before construction can begin to deliver water to the proposed hydropower turbines under the Commission's jurisdiction. Approximately 25 miles of pipeline must be constructed before water can be conveyed to the first hydropower plant. Under the Federal Power Act (FPA), the Commission's authority is limited to only those elements associated with the proposed hydropower system – not the proposed water conveyance system. The water conveyance system must be approved and constructed before the Commission's role may begin. The Commission has acknowledged this by indicating that it only has jurisdiction over the *downhill* portions of the proposed project. To our knowledge the Commission has not formally indicated which agency should have jurisdiction over the *uphill* sections of the project, but the BLM is the logical choice.

As mentioned above, the BLM became involved in the proposed project approximately 15 years before the Commission. Utah filed an Application for Transportation and Utility Systems and Facilities on Federal Lands for the proposed project with the BLM on December 8, 2006, more than 8 months prior to submitting an Application for a Preliminary Permit with the Commission on August 21, 2007.

In sum, BLM approval of the water conveyance system is a prerequisite to Commission licensing. The proposed Project cannot proceed in any form without a right-of-way from BLM, whereas a form of the project without hydropower capability could proceed without a Commission license. Each of the five factors for selecting a lead agency under 40 C.F.R. § 1501.5 indicates that Commission is not the appropriate choice as sole lead agency for this proposed project. We recommend that either the BLM or the U.S. Department of the Interior generally should be designated as the lead agency for the non-hydropower elements of this project. The Department of the Interior has a federally mandated responsibility to protect the public's resources including all Native American interests. The Secretary of the Interior is responsible for management of the Colorado River system and coordination with the Basin states. In order to comply with the Commission's *ex parte* rule while permitting party status, we support an approach whereby BLM or Interior would separate staff preparing the EIS while other staff would participate fully in this licensing proceeding.

### **III. SPECIFIC SCOPING COMMENTS**

We comment on the issues and alternatives described in the Scoping Document 1 (SD1) and Pre-Application Document (PAD). For ease of reference, we show proposed changes to the document text by underlining proposed changes. Our comments track the title and outline number in SD1 and PAD for each section where we have a comment.

#### **1. Purpose and Need Statement**

The SD1 and PAD do not adequately define the proposed project's Purpose and Need. The Coalition requests that the Commission adopt Utah's stated purpose, as stated in its Notice of Intent, as the basis for the Commission's identification of project alternatives:

The PAD states that the Pipeline would be “a water supply project to be constructed for the purpose of conveying Upper Colorado River Basin water for which the State of Utah has a federal water right, from Lake Powell in Arizona to locations in southwest Utah.” PAD Volume 1, p. 1. Thus, the proposed project's primary purpose is that of water conveyance.

This purpose statement is not accompanied by an adequate statement of the need. The PAD states the project is needed to service population growth in southwest Utah; however, we do not agree the PAD demonstrates this need. We understand that Utah's forecasted water demands are based in part on Boyle Engineering, *Water Supply Needs for Washington and Kane Counties and Lake Powell Pipeline Study* (1998). Based on our preliminary review, we are concerned that this study is outdated,<sup>4</sup> flawed,<sup>5</sup> and generally provides an insufficient basis to support the need for the proposed project. We request that the EIS contain adequate information to demonstrate this need. We are concerned that conveying water without a proven need risks exacerbating the delicate situation among Colorado River Compact states.

During the Project's Scoping Meetings in Kanab, St. George and Cedar City, Utah stated that the Pipeline's purpose would be to provide needed water to service population growth in southwest Utah in addition to developing Utah's Colorado River water rights. We request that Commission Staff independently investigate Utah's assumptions regarding need for increased water supply to service population growth. Based on our research and review of the record, we believe that future water demand in the three counties can be satisfied with expanded development of local

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<sup>4</sup> Further, when, in 2026, Reclamation revisits the *Colorado River Interim Guidelines for the Lower Shortages and Coordinated Operations for Lake Powell and Lake Mead* (2007) (*Interim Operations Guidelines*), available at <http://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf>, the amount of available water for the proposed Pipeline could be changed. Therefore, the Pipeline's operations under the existing guidelines would not be 50 years but closer to 20 years. This issue must be addressed in the EIS as it is a central issue in the management of Colorado River water.

<sup>5</sup> Defects of this study are identified in Hydrosphere Resource Consultants, *Review of Water Supply Needs in Washington County, Utah* (2000).

water supplies and increased water conservation and improved efficiencies. We provide data which supports this finding in 4.2.2. Water Resources comments herein.

The EIS also should evaluate the project purpose and need in light of likely changes in the Colorado's hydrologic flow regime, long-term drought related reductions in water availability, and the sharing of deficits among the seven Colorado River Basin states as defined in the *Interim Operation Guidelines* that will be in place only until 2026 and will be revisited then subject to the agreement of all Compact Basin states.

The Coalition requests that the EIS rigorously study alternatives to the proposed action that may achieve Utah's stated purpose. Because Utah states that conveying water under Utah's federal water right is the project's purpose, the Coalition submits alternatives to achieve the state purpose, *infra*, which we believe merit further study.

## **2.2 Comments and Scoping Meetings**

Commission Staff will consider whether to prepare a Scoping Document 2 following scoping meetings and initial scoping comments. See SD1, p. 2. We believe that a revised document should be published to modify the description of issues and incorporate additional issues or information, as appropriate in response to scoping comments made during the scoping meetings and site visits held June 9-12, 2008, and in written form. See 40 C.F.R. § 1502.7(a)(2), (c). The SD2 should describe responsibilities for preparation of the EIS as between the Commission and any co-lead, or cooperating agencies. See *id.*, § 1501.7(a)(4).

## **3.0 Proposed Action and Alternatives**

Commission Staff propose that the EIS include and analyze one ultimate alternative to Utah's proposals for a new license. See SD1, p.8. That proposed action will by default function as the preferred alternative of Commission Staff.

The scoping document identifies a narrow list of alternatives. This list of alternatives presumes the proposed action is the only means to increase water supply to serve anticipated growth. Based on the evidence in the record, we disagree with Utah's estimates for water demand and population to be served. We also disagree with Utah's analysis of existing water supply in the three counties, as stated in the PAD. Given the disagreement regarding Utah's forecasts for water demand and existing water supplies, we request that the EIS analyze all reasonable alternatives to the proposed action.

The EIS should include an in-depth analysis with a reasonable range of alternatives to the State of Utah's proposal, including those submitted herein by the Coalition and other parties. The National Environmental Policy Act (NEPA) requires rigorous evaluation of alternatives in the environmental document.

Alternative proposals submitted by the Coalition and other parties should be displayed as action alternatives, not just as accepted (or rejected) elements of Staff's preferred alternative. The

purpose of scoping is to allow the public to interact and provide options that should be reviewed as part of the NEPA process. This approach permits systematic comparison of the costs, benefits, and other impacts of all reasonable action alternatives. See 40 C.F.R. § 1502.14(a)-(b). This approach is necessary to compare alternative minimum flow schedules and other elements of regulation of proposed power operations. Thus, SD1 should be amended as follows:

"In accordance with NEPA, our environmental analysis will consider the following alternatives, at a minimum: (1) Utah's proposed action, (2) staff's and other modification of the proposed action, (3) other reasonable alternatives, and (4) no action."

SD1, p. 8.

We submit the following action alternatives for analysis in the EIS:

### **Water Conservation Alternative**

The Commission should consider whether conservation measures can meet forecasted demand for water supply. This alternative should include increased water conservation, and improved efficiency in Kane, Washington and Iron Counties (*see* Water Resources at 4.2.2 herein). The analysis should assess the potential for augmenting local existing water sources in Kane,<sup>6</sup> Washington<sup>7</sup> and Iron<sup>8</sup> counties. As with all proposed alternatives, the Draft EIS should estimate the costs to ratepayers and taxpayers in the affected region under this alternative.

### **Big Water Alternative**

We recommend the EIS analyze the potential for Utah to use its Colorado River water right by delivering it to locations in eastern Kane County near Big Water, where it could be used for agricultural development, residential development, surface storage and aquifer storage. We

<sup>6</sup> Primary options for more efficient use of existing water resources in Kane County include: (1) water conservation; (2) Increased utilization of groundwater stored in the Navajo aquifer below the County's; (3) Increased conversion of agricultural water for culinary purposes based on water that has already been sold by irrigators to developers; and (4) smarter land use planning.

<sup>7</sup> Primary options for more efficient use of existing water resources in Washington County include: (1) water conservation; (2) increased utilization of Santa Clara River water through an aquifer recharge system based on expansion of the Sand Cove Reservoir system; (3) conversion of groundwater agricultural wells in south Washington Fields and south Hurricane Fields for municipal use including multiple analyses of viable treatment processes; (4) increased utilization of groundwater stored in the Navajo aquifer below the surface of Washington County; (5) increased utilization of Virgin River high water that cannot be diverted by the Quail Lake Diversion due to the limited size of the diversion pipe; (6) increased conversion of agricultural water for culinary purposes based on water that has already been sold by irrigators to developers; and (7) smarter land use planning.

<sup>8</sup> Primary options for more efficient use of existing water resources in Iron County include: (1) water conservation; (2) increased utilization of Coal Creek's Spring flows through a new storage reservoir/aquifer recharge system; (3) increased development of water in the West Desert; (4) increased conversion of agricultural water to municipal uses; and (5) smarter land use planning.

recommend this alternative *not* extend the Pipeline west of East Clark Bench. If Utah’s highest priority in this proposed action alternative is to use their allocation of Colorado River water before the *Interim Operations Guidelines* are revisited in 2026, the EIS should analyze whether there are other areas closer to the river for delivery of imported water to avoid the added cost of pumping and create options for future use of the water. The EIS should estimate the costs to ratepayers and taxpayers in the affected region by county.

### **Aquifer Recharge Alternative**

In its EIS, the Commission should analyze an Aquifer Recharge Alternative, in which the proposed Utah Colorado River water right is delivered to other suitable aquifer recharge locations adjacent to the Colorado and Green Rivers along their lengths in Utah. As in the above alternative, if Utah’s highest priority in this proposed action alternative is to use its allocation of Colorado River water before *the Interim Operations Guidelines* are revisited in 2026, then the EIS should consider aquifer storage in other areas with lower pumping needs and create options for the future use of this water. The EIS should estimate the costs to ratepayers and taxpayers in the affected region.

#### **4.1 Cumulative Effects**

SD1 states: “Based on information in the Pre-Application Documents, we have not identified any resources as potentially cumulatively affected by construction and operation of the Pipeline Project. By this document, we are asking for recommendations on resources that may be affected cumulatively.” SD1, p.11

SD1 further states:

“According to the Council on Environmental Quality regulations for implementing NEPA (Section 1508.7), a cumulative effect is the impact on the environment that results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, to include hydropower and other land and water development activities.”

SD1, p. 11. Thus, the EIS must consider cumulative impacts that would take place over a period of time, including hydropower and other land and water development activities occurring in the geographic area that will receive water from the project.

To meet this requirement, the Commission should present clear analysis of the cumulative impacts of the no action alternative versus the cumulative impacts of the proposed project.

- Under the no action alternative, the Commission should analyze the effects of population growth-related impacts in the three counties absent the Pipeline. This would include modeling of cumulative environmental effects in all categories to the point of population

build out, or the point at which either local land or water resources are exhausted to the maximum by population growth.

- Under the proposed action alternative, the Commission should analyze the cumulative effects of population growth-related impacts in the three counties after the full 100,000 acre-feet allotment of water is conveyed to the proposed project areas. This includes modeling of cumulative environmental and socioeconomic effects in all categories. These effects should be quantified separately from, but in addition to, the impacts of the no action alternative.

With this comparison, the public will be able to discern the cumulative impacts associated specifically with the proposed project versus the cumulative impacts that would occur without the Pipeline. The EIS should include an in-depth analysis of the cumulative impacts under the No Action Alternative. This alternative establishes the baseline of growth-induced impacts that will occur even if the Pipeline is not built. This baseline is necessary for decision makers and citizens to isolate and evaluate the impacts of the Pipeline.

As currently framed, the SD1 and PAD focus almost exclusively on direct impacts of the construction of the Pipeline. The Commission suggests in SD1 that it has not identified the cumulative impacts from the proposed action alternative. Based on our review of the existing record, we believe the proposed project will have significant cumulative impacts on a number of resource areas. The EIS should analyze the cumulative impacts of Pipeline-induced changes on land use, population size and density, wildlife habitat (and associated recreational enjoyment of wildlife), open space, historical and prehistoric cultural resources, air quality, traffic, taxes (and potential increases as a result of enhanced infrastructure), traffic, urban sprawl, crime, scenic landscapes, and naturally functioning ecosystems.

For example, the Commission should analyze whether the proposed Pipeline will contribute to a cumulative increase in population and growth-related impacts and related housing development on acreage that would not be developable without the water from the Pipeline. Based on our preliminary analysis, the imported water could triple the population in three county area. The Washington County Water Conservancy District (WCWCD) states, “the currently estimated build out for Washington County is expected to be reached in 2050 with a build out population of 607,334.” *See Capital Facilities Plan*, p.7, available at [www.wcwcd.state.ut.us](http://www.wcwcd.state.ut.us). WCWCD further states that the population served by the Pipeline is only approximately 453,125.<sup>9</sup> *See id.* The Coalition’s research indicates that there is enough water to support Washington County’s build out of 607,334 people by allotting less water per residential unit than does the WCWCD. Using data from the cities’ general plans, total population build-out was estimated to be only 328,000.<sup>10</sup> Therefore, the environmental and socioeconomic impact of building the Pipeline could have enormous direct impacts on local communities by enabling additional population growth.

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<sup>9</sup> The Coalition can identify numerous instances where WCWCD officials have overestimated the need for water by using outdated water demand forecasting policies and misleading water use figures. We discuss this further in Water Resources at Section 4.2.2, *infra*.

<sup>10</sup> Hydrosphere Resource Consultants, *Review of Water Supply Needs in Washington County, Utah*, *supra*, p. 7..

The EIS should also include a cumulative impacts analysis on socioeconomic and environmental resources that would result from the sale of public lands. In particular, these cumulative impacts should include the land sales proposed in the 2008 Washington County Growth and Conservation Act, which authorizes the sale of 9,000 acres of public land. This cumulative analysis should also include a reasonable estimate of public land converted to public uses such as schools, parks and city, county buildings that would be developed under BLM's Recreation and Public Purposes (R&PP) and normal land disposal practices over the next 50 years. We recommend that the Commission estimate potential land conversions by forecasting based on the rate of land conversions since the R&PP statutes were established, approximately 10,000 acres every ten years and increasing.

The EIS should also analyze the cumulative effects of the proposed Pipeline on water supplies throughout the Colorado River basin. Specifically, the EIS should include a detailed analysis of potential cumulative impacts due to other water development projects currently planned including (but not limited to) projects in the Upper Basin such as the Navajo-Gallup Pipeline, the Million Pipeline, and the Yampa Pumpback Project; and projects in the Lower Basin such as the Drop 2 Storage Reservoir.

#### **4.1.1 Geographic Scope**

SD1 states: “For any resources that participants recommend we analyze for cumulative effects, we are also asking them to recommend the geographic scope that they think is appropriate.” SD1, p. 11.

The geographic scope of the proposed project should be defined to include all private and State Trust land that could potentially receive Colorado River water from the proposed project in the entire Colorado River basin and those areas served by Colorado River supplies not located within the basin.

This geographic scope would include all developable private and State Trust land in the urbanizing areas of the Washington, Kane, and Iron counties based on existing development trends and reasonably foreseeable trends (e.g., density increases in downtown areas, conversion of agricultural land, etc). Developable private and state trust lands in Arizona’s Coconino and Mohave Counties should be included to anticipate the possibility that Utah and Arizona may develop an agreement to deliver Arizona water through the Pipeline. The geographic scope also should include all acres of public land that would be authorized for conversion to private development from the Washington County Growth and Conservation Act of 2008. It also should include a reasonable estimate of public land that would be developed under BLM’s Recreation and Public Purposes (RP&P) statutes. The number of acres in this category should be determined by forecasting RP&P conversions based on trends since the RP&P statute was authorized. Adjacent private, State Trust developable land, and other water source areas in Arizona should be considered as well.

#### **4.1.2 Temporal Scope**

SD1 states:

“The temporal scope of a cumulative effects analysis includes a discussion of past, present, and future actions and their effects on each resources that could be cumulatively affected. For any resource that we identify as potentially having cumulative effect, our temporal scope will look 30 to 50 years into the future, based on the potential term of the new license.”

SD1, p. 11.

Due to the highly influential nature of elements considered in the temporal scope analysis, the EIS should include the anticipated effects over a full 50 years, not 30 years. For purposes of environmental analysis, the temporal scope should extend 50 years from the commencement of project operation.

If built, the proposed project would affect and be affected by long-term climate and land use changes. Most significantly, changes in water supply reliability and climate parameters could dramatically affect the project’s functionality over 50 years. The contribution of greenhouse gases will continue beyond 50 years as long as the project functions, so 50 years should be the minimum

period of analysis. The project potentially will significantly affect land use patterns in perpetuity, which in turn will cause significant impacts on multiple resources beyond the 50 year scope, so this period should be the minimum length of analysis.

### **Water Supply Reliability**

The EIS should include a thorough assessment of the impacts of the proposed Pipeline on existing water use throughout the Colorado River Basin. The recent history of drought in the Colorado River basin underscores the significant impacts that even modest reductions in inflows can have on system storage. With the adoption of coordinated reservoir management and shortage management guidelines, system storage decreases are certain to have water supply impacts on major urban areas throughout the Southwestern United States, including the metropolitan areas of Las Vegas, Phoenix and Tucson. Moreover, climate change and increased development in the Upper Basin will likely lead to reduced inflows into Lake Powell. This further increases the likelihood of a Compact call on the Colorado River. The impact of a Compact call on water supply reliability should be thoroughly analyzed by the EIS. Finally, while the United States and Mexico have not yet entered a formal agreement regarding Mexico's share of Colorado River shortages, it is likely that such an agreement will be negotiated within the lifetime of the proposed project.

In addition to a basin-wide assessment of shortage impacts, the EIS should carefully assess the impact of additional Colorado River development in Utah. As noted above, in the event of long-term reduced system storage, Upper Basin water users may be called upon to curtail water use in satisfaction of the Compact. The Upper Basin States do not yet have formal operating procedures to implement curtailment in the event of a Compact call, but nevertheless the EIS should develop a series of likely scenarios that project curtailment requirements in each of the states of the Upper Basin. Within Utah, the EIS should assess further the impacts of the proposed project and curtailment requirements on other in-state Colorado River water users. Because the proposed Pipeline is expected to supply municipal and industrial water uses, the EIS must not only consider the probability of shortages to the Pipeline's water users, but secondary impacts, such as how water supply agencies would replace the Pipeline supplies in the event of a shortage. Precedent for this approach is found in Reclamation's *Final EIS for Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead*, available at <http://www.usbr.gov/lc/region/programs/strategies/FEIS/index.html> (*Colorado Basin Shortage EIS*). See *id.*, §§ 4.14.2 and 4.14.3.1.

Finally, the EIS should analyze the impact of the proposed project on river flows throughout the Colorado River, particularly in those reaches vulnerable to days of "zero flow" and those reaches for which environmental flows have been defined. Specifically, the EIS should assess the impact of the proposed project on the magnitude and frequency of flows to the limitrophe reach of the Colorado River in Southern Arizona, the Colorado River in Mexico, and the delta region. In addition, the EIS should assess the impact of the proposed project on instream flows (including mean flows) in the Upper Basin where such flows have been legally established for the protection of natural and recreational resources. The analysis should also include all areas potentially impacted by shortage conditions in the Lower Colorado River basin. To the degree that the proposed project increases the probability of Lower Basin shortage conditions, impacts including economic losses

and shortage water replacement (including economic costs such as employment, income, and tax revenue, as well as environmental impacts) should be assessed. In addition, the scope should include the Lower Colorado River itself, in particular those areas vulnerable to reductions in flows including the limitrophe reach and habitat in the delta of the Colorado River.

### **Climate Change**

This scope should include the anticipated effects of climate change on water supplies in the Upper Colorado River Basin that are being estimated by the Bureau of Reclamation's Riverware program in cooperation with academic, private and federal agency researchers. These effects should be estimated by applying the Riverware model (as modified as described in comments on PAD Section 5.2.4, *infra*) and by considering the data in related studies by the U.S. Department of Agriculture, U.S. Geological Survey, Intergovernmental Panel on Climate Change, National Academy of Sciences, among others. These data should be presented as a vulnerability analysis of the Colorado River as the Pipeline's water source for the next 50 years. *See* comments on PAD section 5.2.4, *infra*.

Recognizing that Reclamation is addressing a complex issue for multiple purposes, we recommend the licensing schedule be developed in a manner that will accommodate completion of climate change modeling for the Upper Colorado River Basin to the satisfaction of Reclamation and intervening parties. Reclamation's modeling must be completed in a timely fashion to be useful for this proceeding. If Reclamation's effort proves to be untimely, an alternate model should be selected upon mutual agreement of the applicant and intervening parties. *See* comments on PAD Section 5.2.4, *infra*.

### **Greenhouse Gases**

The EIS should analyze the effects of greenhouse gas emissions over a term of 50 years resulting from Pipeline construction, operation, and maintenance (*e.g.*, use of fossil fuel-based electricity to power proposed pumps). Experts suggest that the Pipeline would require 500 – 580 MW of power; although some of this power would be recaptured in hydropower plants, the system would consume 100 – 180 MW of power – potentially increasing demand for a new power plant in the region. If powered by fossil fuels, the Pipeline would further accelerate climate change and its expected impact on water resources in the Colorado River basin.

### **Change in Land Use**

Since the Pipeline would be a permanent project, the EIS should quantify reasonably foreseeable environmental and socioeconomic effects of population growth-related impacts in the three counties. This analysis should include all lands that would receive water from the Pipeline. It should estimate the area of land that would be developed in the three counties at maximum foreseeable buildout with this supply.<sup>11</sup> The analysis of land use changes should estimate the

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<sup>11</sup> The analysis should take into account various scenarios for use per person. *See, e.g.*, Hydrosphere, *Review of Water Supply Needs in Washington County, Utah, supra*, p. 27, which estimates 150 gallons per capita per day (gcpd).

conversion of public or private open land to housing or other forms of development, including new energy facilities which receive water supply from the Pipeline. It should consider the potential indirect effects of such development, including traffic congestion and air pollution, loss of endangered species habitat, loss of urban open space, and degradation of tribal cultural resources. See 42 U.S.C. § 204(4). In addition, the EIS should include an analysis of all associated costs of complete build out such as the cost of schools, infrastructure, power and public services that are paid by ratepayers and taxpayers.

#### **4.2.1. Geology and Soil Resources**

The EIS should analyze the following:

- Effects of evaporation above and subsurface infiltration below the proposed Hurricane Cliffs Pumped Storage Project reservoirs.
- Effects of proposed storage reservoirs in Kane and Washington Counties on the potential for subsurface recovery through wells similar to Sand Hollow Reservoir.
- Effects of pumped storage reservoirs on Hurricane Cliffs active faults (e.g., fault lubrication, potential for increased seismic activity resulting from new weight distribution).
- Effects of the proposed forebay and afterbay reservoirs on triggering of landslides or slump blocks along the Hurricane Cliffs at that location, including examining the history, geometry, ages, locations of rotational landslides and slumps along the cliffs including the Hurricane Canal near Pah Tempe Hot Springs.
- Effects on Pipeline and storage or dam facilities resulting from landslides, slump blocks or other features of collapse or mass wasting.
- Effects of proposed forebay and afterbay reservoirs on geologic stability of Hurricane Cliffs, taking into account recent earthquake in 1990 and fractures, fissures, minor faults, breccias and fault gouge in the lavas, limestones, and any other rock types underlying the proposed sites.
- Effects of a clay reservoir lining as a potential lubricating substance if entrained in water.
- Effect on ecosystem function resulting from the spread of non-native plant species in all affected areas and on undisturbed wildlands from the Pipeline's construction and operation.

#### **4.2.2 Water Resources**

The EIS should provide an in-depth analysis of the following elements:

- Effect of new 25% by 2050 water conservation targets established by the Utah Division of Water Resources and the Washington County Water Conservancy District on future water demand in the three counties.
- Effects of the potential loss of surface water to evaporation above and subsurface infiltration below the proposed pumped storage reservoirs.
- The potential for subsurface recovery from pumped storage reservoirs through wells similar to Sand Hollow Reservoir.
- Increased evapotranspiration losses from Quail Lake and Sand Hollow Reservoirs that would occur if the Pipeline maintains a larger volume of water in these reservoirs than was stored under pre-Pipeline conditions.
- Effects on water quality parameters, including quagga mussel invasion and potential chemical or biological treatment, on the Virgin River resulting from increased output from the St. George wastewater treatment facility.
- Effects on water quality and aquatic ecosystems resulting from pressure, cleaning, regulating reservoirs or accidental releases of water from the Pipeline of variable scales into drainages with perennial, ephemeral or intermittent natural waters, including the effects of zebra and quagga mussels and the chemical or biological treatment of mussels, and the potential for spread of mussels to pristine or nearly pristine drainages in Grand Canyon National Park via the Pipeline route through the Paria River and Kanab Creek stream beds and elsewhere.
- Effects of project construction, operation and maintenance on water quality in Lake Powell and in the Colorado River in all downstream sections including through the Grand Canyon and on to the Colorado River Delta that result from withdrawing low TDS water from near the surface of Lake Powell; effects should include (but not be limited to) Interstate and International salinity control agreements.
- Effects of potential water right claims to increased wastewater effluent by Arizona and or Nevada water users resulting from delivery of Upper Basin water to the Lower Basin.
- Effects of the proposed Pipeline on the following:
  - 1944 Treaty with Mexico;
  - Lower Basin Colorado River Compact States and delivery of water;
  - Effects on Native American water rights, specifically the existing and anticipated future water right agreements with Navajo, Ute, Paiute, Hopi and other tribes;<sup>12</sup>

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<sup>12</sup> Native American tribes are becoming increasingly successful in winning their claims to Colorado River water that pre-date the 1922 Compact. Experts estimate that tribes own between 3 and 5 million acre-feet. As these

- Wildlife habitat throughout Colorado River basin.
- Effects of increased cost of drinking water regulation standards and treatment requirements of pollutants in Lake Powell water such as arsenic, selenium, uranium and other compounds that would increase operation and maintenance costs over the life of the project.
- Effects of water quality on human health of Lake Powell water.<sup>13</sup>
- Effects of increased growth and the accompanying higher levels of water in the existing sewer lagoons in the three counties.
- Effect of population-induced increases of water treatment on the Navajo sandstone aquifer under Hurricane's sewer lagoons.
- Effects of the Pipeline diverting water below Lake Powell's minimum power pool elevation and the effects on the Pipelines legal priority to continue to draw water from Lake Powell.
- Effects on major water rights in the upper and lower Colorado Basin, including graphical display of water rights in the upper and lower basins by priority.<sup>14</sup>
- Effects of the Pipeline system expanding and being able to tap other aquifers elsewhere in the three counties and in Arizona and move that water via the Pipeline to other areas.

The Commission should analyze the proposed project's impact on culinary water resources and water rights within the three counties. The conversion from culinary water use to re-used water for irrigation purposes may increase the amount of potable water resources available for municipal use, without developing new water rights. However, a preliminary analysis by the Coalition found omissions and inconsistencies among various studies of total developable water supplies in Washington County. The studies include:

- Regional Water Supply Agreements (RWSA), *available at* <http://wcwcd.state.ut.us/Agreements/Regional%20Water%20Supply%20Agmt.final.w%20implementation.pdf>;
- WCWCD, *Capital Facilities Plan, available at*

claims are satisfied prior to, during, or after Pipeline construction, less water will be available for the proposed Pipeline.

<sup>13</sup> In addition to reduced storage capacity, scientists have observed increasing concentrations of chemical pollutants in Lake Powell when reservoir levels drop. The EIS should perform an in-depth analysis of the potential ramifications of increased health risks and drinking water treatment costs associated with low reservoir levels.

<sup>14</sup> The EIS should analyze how upper basin water shortages would be managed to include the additional demand from the pipeline. The study should inform the public and decision makers should be aware of the order in which water allocations will be reduced during long periods of drought.

- *Water Delivery Financing Task Force Report (September 2004)*, available at <http://www.lakepowellpipeline.org/documents/WDFTaskForceReport.pdf>.

The EIS should analyze the effect of the proposed project on existing municipal water supply. In the Regional Water Supply Agreement (RWSA) signed by WCWCD and the City of St. George, Washington City, Hurricane City, Ivins City, and LaVerkin City, the existing developed water supplies of the cities are set out as the “baseline equivalent residential units,” or “ERUs.” The conversion factor selected by the WCWCD for acre-feet (AF) to ERU’s is 0.89. The existing baseline ERUs set out in paragraph 8.2.2 (p. 24) of the respective RWSAs for the signing municipalities are as follows:

St. George City	23,977
Hurricane City	5,384
Washington City	7,655
Ivins City	2,430
<u>LaVerkin City</u>	<u>1,504</u>

**Total** 40,950 ERU x 0.89 AF/ERU = 36,445 AF<sup>15</sup>

An evaluation of existing municipal water supplies available from cities within Washington County is provided in the following table that sets out the respective municipalities’ water supply and the District’s portion of the water supply recognized as baseline ERUs in the RWSA.

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<sup>15</sup> However, in some instances these “baseline ERU’s include water supplied under existing contracts between a municipality and the WCWCD. A listing of the existing District contracts is found in WCWCD’s *Capital Facilities Plan*, p. 23.

<b>City</b>	<b>RWSA baseline</b>	<b>Municipal Supply</b>	<b>District Supply</b>
St. George City	23,977 ERU	12,741 ERU (11,340 AF)	11,236 <sup>16</sup> (10,000 AF)
Hurricane City	5,384 ERU	5,384 (4,792 AF)	0
Washington City	7,655 ERU	7,655 (6,813 AF)	0
Ivins City	2,430 ERU	745 (663 AF)	1,685 <sup>17</sup> (1500 AF)
LaVerkin City	1,504 ERU	380 (338 AF)	1,124 <sup>18</sup> (1000 AF)
<b>Total</b>	<b>40,950 ERU</b>	<b>26,905 (23,946 AF)</b>	<b>14,045 (12,500 AF)</b>

In addition, the following communities have not entered into the RWSA, but have developed water supplies for use in their respective municipalities.

Santa Clara City	2,740 AF
Leeds Town	500 AF <sup>19</sup>
Winchester Hills Water Co.	475 AF <sup>20</sup>
Toquerville Town	380 AF <sup>21</sup>
Virgin Town	175 AF <sup>22</sup>
<b>Total</b>	<b>4,270 AF</b>

These figures indicate that Municipalities' current water supply is approximately 28,216 AF.

These identified supplies do not appear to include water supplies used for major irrigation projects within the communities, such as city parks, schools and cemeteries. Preliminary research indicates that many of these projects could be converted to reuse or recycled water. The EIS should include an in depth analysis of total developable water supplies in Washington County from all sources regardless of current ownership. This should include the total potential available through wastewater reuse projects. For example, St. George City uses reuse water from its waste water

<sup>16</sup> Existing St. George City contract with District is for 10,000 AF (11,236 ERU).

<sup>17</sup> Existing Ivins City contract with District is for 2,000 AF. We assume 1,000 AF of this contract and that 500 AF under the Kayenta Users contract were utilized for this supply.

<sup>18</sup> Existing LaVerkin contract with District is for 1,000 AF. We assume this full contract is utilized for this supply.

<sup>19</sup> Based upon information from the Division of Water Rights database.

<sup>20</sup> *Id.*

<sup>21</sup> *Id.*

<sup>22</sup>

treatment plant to water the Sunbrook, Southgate, Sun River,<sup>23</sup> Bloomington County Club, and Entrada golf courses.<sup>24</sup> This also makes available more irrigation water to be treated for culinary use. If Hurricane City built a waste water treatment plant, it could service Coral Canyon, Sky Mountain and Sand Hollow Resort. The EIS should consider a scenario whereby new golf courses, power plants, major industrial facilities, parks, and medians would be required to use reuse water.

**Additional Irrigation and Groundwater Supplies.**

In assessing additional water supplies, the EIS should consider whether existing irrigation water could potentially be made available for culinary uses.

**Santa Clara River**

Ivins Irrigation Co.	1,000 AFA
New Santa Clara Field Canal Co.	2,163 AFA
St. George-Clara Field Canal Co.	3,278 AFA
Shivwitts Band	<u>1,900 AFA</u>
<b>Total</b>	<b>8,341 AFA</b>

**Virgin River**<sup>25</sup>

LaVerkin Bench Canal Co.	2,650 AFA
Hurricane Canal Co.	<u>12,000 AFA</u> <sup>26</sup>
<b>Total</b>	<b>14,650 AFA</b>

A substantial amount of groundwater has been privately developed and is used mainly for irrigation in the St. George metropolitan area (Hurricane City, Washington City, St. George City, Santa Clara City, and Ivins City). This water could be acquired as development takes place and

<sup>23</sup> SunRiver golf course has an independent private water supply, but is currently using reuse water for irrigation.

<sup>24</sup> City of St. George, *Water Conservation Plan Update* (January 2008), p. 3.

<sup>25</sup>

The LaVerkin Bench Canal Co. and Hurricane Canal Co. diversions are made through the District’s diversion above Pah Tempe hot springs and delivered through the District’s Quail Creek pipeline under separate agreements with the District. Because these diversions are above the hot springs, these waters are not commingled with the mineralized hot springs and are therefore more appropriate for conventional treatment. These supplies are included here because of their deliverability and treatability through existing District facilities. Further, as WCWCD buys up the Washington Fields water rights, it could divert more water above the Pah Tempe Hot Springs and not commingle water with mineralized water from Pah Tempe Hot springs, subject to U.S Fish and Wildlife restrictions on flows for the Endangered Virgin River fishes.

<sup>26</sup> Paragraph 4(b) of the Water Conveyance Agreement dated March 19, 1991, between Hurricane Canal Co. and the District provides for the delivery of 12,000 AF of water when the Virgin river flow is below average and 15,000 AF/yr in years when the Virgin river flow is average or above average.

irrigated acreage is retired. All of these water rights have been developed and placed to beneficial use. The following is a cursory listing of these water rights based on data obtained from the Division of Water Rights database.

South of Hurricane and East of Sand Hollow Reservoir	
T42S, R13W	670 AF
T43S, R13W	8 AF
Sand Hollow area	
T42S, R14W	4,437 AF
T43S, R14W	1,108 AF
Washington Fields/West of Sand Hollow Reservoir	
T42S, R15W	2,803 AF
T43S, R15W	6,819 AF
West St. George/Santa Clara/Ivins area	
T42S, R16W	1,434 AF
T43S, R16W	810 AF
T42S, R17W	<u>40 AF</u>
<b>Total</b>	<b>18,129 AF</b>

The EIS should identify the water quality of these groundwater wells. We request that the EIS compare the costs of the Pipeline to the alternative of treating and delivering this water for culinary use. This analysis should be reported both in terms of cost per AF as well as total project-by-project cost.

This total of 26,469 AF is developed groundwater rights and Santa Clara River irrigation water rights that do not appear in WCWCD's potential future water supply studies. *See WCWCD Capital Facilities Plan, supra.* The EIS should include this water in estimated total water supply potential. Agricultural water rights have been rapidly converted to municipal uses in recent years. The EIS should assess the impact of the No Action and proposed alternatives on agricultural water use and conversion rates in the region.

Finally, the EIS should assess the potential for using groundwater aquifers in the region to meet new water demands. The EIS should include an objective, detailed analysis of the Navajo Aquifer's feasibility as a storage aquifer and/or back up water source during sustained drought. We recommend that the Commission examine WCWCD's estimate of 200,000 acre-feet aquifer storage potential below Sand Hollow Reservoir. The Commission should also explore additional aquifer recharge projects in Washington County, including capturing and storing storm water runoff as well as capturing more high water flow in the Santa Clara and Virgin Rivers.

## Utah's Level of Service for Water

We request that the EIS investigate the suggested level of water delivery service as stated in WCWCD's *Capital Facilities Plan*. This plan establishes the level of water service at 0.89 AF per equivalent residential unit (ERU), which the plan defines as the standard demand for a single-family residential unit on a ¼ acre lot.<sup>27</sup> The plan states that the WCWCD will “not include the potential reductions in water demands through conservation in the projection of water demands until significant and stable conservation is achieved.”<sup>28</sup> It is worth noting that the Utah Division Water Resource indicates that Washington County's system wide water use dropped to 330 gcpd during its 2007 use survey.<sup>29</sup>

We recommend the EIS include detailed, actual water use data for the three counties as basis for the project need statement. The Utah Division of Water Resources' current water use estimating system depends on voluntary reporting by water users; we recommend that agencies collect empirical, measured data as part of the EIS process.

Further, the EIS should include reliable estimates from the Utah Division of Drinking Water and Utah Division of Water Resources that include:

- Water use consideration (also referred to as demands) that include existing “wet” water rights—paper rights attached to water that is actually developed and currently used. Water use can be measured in terms of consumptive use, gross diversions or total deliveries. Categories of water use include municipal (domestic and commercial), industrial, and agricultural;
- The estimated population build-out based on maximum use efficiency of all developable intra-basin water sources including but not limited to the Navajo aquifer below Washington County; and
- Determination of a change to levels of service requirements that will accompany the Division's goal of 25% water use reduction by 2050.

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<sup>27</sup> *Capital Facilities Plan*, supra, p. 23

<sup>28</sup> *Capital Facilities Plan*, supra, p. 22.

<sup>29</sup> We have been unable to locate documentation to support a determination that this level of service is the actual amount of water being provided to existing residents within the municipalities. Every residential unit is considered to have the same high water use rate without consideration for other types of residences that use less water such as condos, apartments, and smaller lots. Further, the Utah Division of Drinking Water (Division) has an 800 gallons per day (gpd) requirement per residential unit for just indoor use. This high rate is allocated for peak use and drought. This does not allow for the long term benefits of water conservation to reduce water demand forecasting. Communities then have to build excess (redundant) water supply simply to facilitate cutbacks during drought. This is highly uneconomical and misleading to ratepayers. R309-510-4; R309-510-7(2). Therefore, if available water data supports a reduced water use rate for indoor use, this actual” level of service” could be reduced and the amount of water required for future growth would be reduced.

The EIS should incorporate this estimated level of service into calculated scenarios of future water needs for the three counties.

The Washington County *2035 Housing Study* (2007)<sup>30</sup> indicates that national trends will likely lead to a reduction in average lot sizes in Washington County and a drop in residents per unit to 2.5 by 2040. The EIS should reflect these trends in terms of build out populations and future estimated water demand over the 50-year term of the proposed license.

### **Water Conservation Savings Potential**

The EIS should examine and set a standard for the volume of water that could be saved through moderate water conservation measures, such as increased indoor efficiency and water-wise outdoor landscaping. Currently the WCWCD's *Capital Facilities Plan* assumes that all residential units use 0.89AF annually. Of that 0.89 AF, 0.45 AF is dedicated to indoor use while 0.44 AF is dedicated to outdoor use.<sup>31</sup> Given current occupancy levels in Washington County of 2.85 people per household, this equates to 141 gallons per person per day (gpcd) used indoors and 138 gpcd used outdoors; for total daily use of 279 gpcd in the residential sector alone.<sup>32</sup>

Studies show that average indoor use in a typical U.S. home is 69 gpcd while in an efficient home indoor use is 45 gpcd.<sup>33</sup> If all homes in Washington County reduced their indoor use to these levels by 2035, between 33,116 AF and 44,195 AF could be saved annually in the residential sector alone.<sup>34</sup> The savings potential of outdoor conservation produces an additional 26,000 AF.<sup>35</sup> The Commission should further examine saving potential for both indoor and outdoor water conservation measures and use a reasonable range of alternative scenarios for per capita water use.

Currently, Washington County, Utah, has some of the highest levels of system wide use in the nation, and planning documents project those levels to remain the same through 2039 with no long term conservation savings potential factored into these projections, despite Washington County Water Conservancy District's adoption of the State of Utah's goal to reduce use 25% system-wide

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<sup>30</sup> See [www.visiondixie.org](http://www.visiondixie.org).

<sup>31</sup> Calculation by Western Resource Advocates. Data from WCWCD, *Capital Facilities Plan*, *supra*, p. 9.

<sup>32</sup> *Id.*

<sup>33</sup> Amy Vickers, *Handbook of Water use and Conservation* (WaterPlow Press 2001), pp. 15-19.

<sup>34</sup> Calculation by Western Resource Advocates. Housing data from Strategic Planning Group, Inc., *Vision Dixie 2035 Housing Study Report*, Table IV-3. Scenario A -Washington County Housing Tenure Forecast, IV-12.

<sup>35</sup> Calculation by Western Resource Advocates. Assumes 50% of the 2035 population participates at a moderate level. Methodology from *Facing our Future: A Balanced Solution for Colorado*, 2005, Irrigation requirements from Southern Utah University, *Historical Irrigation Requirements*, <http://www.conservewater.utah.gov/ET/ETSite/SouthernUtahUniversity.htm>.

from 2000 levels by 2050.<sup>36</sup> If implemented, this very moderate reduction would decrease water use in Washington County by 86 gpcd—saving nearly 39 million gallons of water each day by 2039. That is 43,651AF annually, a significant portion of the entire Pipeline project.<sup>37</sup>

Based on our preliminary analysis, this level of reduction appears attainable. By comparison, Clark County, Nevada (serviced by the Southern Nevada Water Authority) is a hotter and drier community than Washington County Utah but is currently using less water per capita. On average Clark County is seven degrees warmer and receives 4.2 inches less precipitation annually than Washington County.<sup>38</sup> Yet, system wide, Clark County uses 78 gallons per person per day less water and the Southern Nevada Water Authority (SNWA) has set a goal to reduce that a further 19 gallons by 2035.<sup>39</sup> Furthermore, recent studies have shown that SNWA customers could reduce their use by more than 86,000 AF annually through increased efficiency.<sup>40</sup> Therefore, implementation of moderate and reasonable conservation and efficiency measures throughout Washington County now and into the future would likely save significant volumes of water and be more cost effective than traditional supply development.

SNWA has experienced significant success in reducing per capita water use through restrictions on new lawns and/or turf buy-back programs. The Coalition requests an analysis of potential water conservation through a similar program in the three counties.

### **Existing Conservation Efforts**

Currently Washington has limited conservation measures in place. They include:

- Educational & outreach programs
- Rebate for installation of SMART Irrigation Controllers
- Free residential lawn water audits.

Two other conservation programs (a water efficient appliance rebate program and an ultra low flow toilet replacement rebate) were terminated due to lack of funds. The rebate for installation of SMART Irrigation Controllers has very low participation and is therefore not as successful in saving water as it could be with broader levels of participation from the community. For a rapidly

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<sup>36</sup> *Capital Facilities Plan, supra*, p. 8. See also Lake Powell Pipeline.org; [http://www.lakepowellpipeline.org/washington\\_water\\_conservation.html](http://www.lakepowellpipeline.org/washington_water_conservation.html). June 26, 2008.

<sup>37</sup> Calculation by Western Resource Advocates. Assumes current levels of use to be 342 gpcd system wide (from Washington County Water Conservancy District, *Regional Water Capital Facilities Plan and Impact Fee Analysis, supra*, p. 8.

<sup>38</sup> <http://www.weatherbase.com/>

<sup>39</sup> Pacific Institute and Western Resource Advocates, *Hidden Oasis: Water Conservation and Efficiency in Las Vegas* (November 2007), p. 16.

<sup>40</sup> *Id.*, p. 36.

growing community located in an arid environment, much more should be in place to incentivize or regulate efficient use of limited water resources.

The EIS also should consider water rates set to encourage efficient use of water and reward those who conserve. The City of St. George has implemented an inclining block rates structure. However, the structure does not work effectively to convey a conservation price signal to consumers due to the high monthly base charge and the nominal increase in per unit price from one block to the next. Combined together, these elements form an average price curve which fails to send a price signal to customers.

In order for inclining block rates to be an effective conservation tool consumers must understand that the more water they use the more they will pay per unit; this is reflected in a steep positive slope on the average price curve, which does not occur with St. George's current rate structure.<sup>41</sup> Adequate water rate structures should be examined as part of the NEPA process.

A list of conservation and efficiency measures in place in other communities that have proven to reduce water use follows. The Commission should analyze water savings available through these and other measures.

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<sup>41</sup> Western Resource Advocates, *Water Rate Structures in Utah: How Utah Cities Compare Using This Important Water Use Efficiency Tool*, 2005.

## Indoor Conservation Measures<sup>42</sup>

	Southern Nevada Water Authority	Metropolitan Water District of Southern California	Seattle Public Utilities	Irvine Ranch Water District	Albuquerque Bernalillo County Water Utility Authority	Tucson
<b>Audits</b>						
Audits	MFR	C&I	C&I	ALL	ALL	MFR, SFR
Targeted sector water audits		ALL		ALL		
<b>Rebates</b>						
Ultra-low-flush toilet		ALL	ALL	ALL		
High-efficiency or dual-flush toilet	MFR, C&I	ALL	ALL	ALL	ALL	
High-efficiency urinal		C&I	C&I	C&I		
Waterless urinal	MFR, C&I	C&I		C&I		
Clothes washer		ALL	ALL	ALL	ALL	
Retrofit kit giveaways <sup>(1)</sup>	SFR, MFR		SFR, MFR	ALL	ALL	SFR, MFR
Hot water recirculating system			SFR, MFR		ALL	
Appliances in new construction that exceed standards <sup>(2)</sup>	MFR, C&I	SFR, MFR	MFR, C&I			
Laundry water ozonation or recycling system	C&I	C&I	C&I	C&I		
Dishwasher	C&I	C&I	C&I	C&I		
Cooling tower retrofits	C&I	C&I	C&I	C&I		
Replacement of once-through cooling systems	C&I	C&I	C&I	C&I		
Connectionless food steamers	C&I	C&I	C&I	C&I		
Medical air and vacuum systems	C&I	C&I	C&I	C&I		
Restaurant low-flow spray nozzles	C&I	C&I	C&I	C&I		
Pressurized water brooms	C&I	C&I	C&I	C&I		
Process improvements: performance-based	MFR, C&I	C&I	C&I	C&I		
Air-cooled refrigeration systems	C&I	C&I	C&I	C&I		
Steam sterilizer retrofit	C&I	C&I	C&I	C&I		
Hospital X-ray water recycling unit	C&I	C&I	C&I	C&I		
<b>Regulatory Program</b>						
Regional or city plumbing codes <sup>(3)</sup>						ALL
<b>Educational Program</b>						
School programs	ALL	ALL	ALL	ALL		ALL
Water Smart Home <sup>(4)</sup>	SFR, MFR					
Water Upon Request <sup>(5)</sup>	ALL	ALL	ALL		ALL	
Advertising/community events	ALL	ALL	ALL	ALL	ALL	ALL

**Notes:**

- (1): low-flow nozzles, aerators, dye tablets, showerheads
- (2): rebates to home builders for installation of appliances that exceed current efficiency standards
- (3): can include showerheads, urinals, and so on
- (4): branding/labeling program for new homes
- (5): available at restaurants

All = program available to single-family, multi-family, commercial, and industrial customers  
 SFR = program available to single-family residential customers  
 MFR = program available to multi-family residential customers  
 C&I = program available to commercial and industrial customers

<sup>42</sup> *Hidden Oasis: Water Conservation and Efficiency in Las Vegas, supra*, p. 26.

## Outdoor Conservation Measures<sup>43</sup>

	Southern Nevada Water Authority	Metropolitan Water District of Southern California	Seattle Public Utilities	Irvine Ranch Water District	Albuquerque Bernalillo County Water Utility Authority	Tucson
<b>Audits</b>						
Audits	MFR	C&I	C&I	ALL	ALL	MFR, SFR
Large landscape	ALL	ALL		ALL	ALL	ALL
<b>Rebates</b>						
Artificial turf incentive	C&I	ALL				
Garden sprayer with shut-off valve				ALL		
Grant program <sup>(1)</sup>		C&I				
Irrigation timer/controller <sup>(2)</sup>	ALL		ALL		ALL	
Irrigation ET controller <sup>(3)</sup>	ALL	ALL	ALL	ALL	SFR, MFR	
Irrigation upgrades:						
performance-based	C&I	MFR, C&I	MFR, C&I	C&I		
Irrigation water budget		MFR, C&I		MFR, C&I		
Water-efficient landscaping	ALL				ALL	
Pool covers	ALL					
Pressure-regulating valves			MFR, C&I		MFR, C&I	
Rain sensor	ALL	MFR, C&I	ALL		ALL	
Rainwater harvesting			ALL		ALL	
Rotating sprinkler nozzle		ALL	C&I	ALL	ALL	
Soil moisture sensor			ALL			
Sprinkler to drip/micro conversion			MFR, C&I			
<b>Regulatory Program</b>						
Landscape efficiency codes	ALL			ALL		ALL
Seasonal watering schedule	ALL					
Time of day restrictions	ALL				ALL	
Water waste ordinance	ALL			ALL	ALL	ALL
<b>Educational Program</b>						
School programs	ALL	ALL	ALL	ALL		ALL
Water Smart Home <sup>(4)</sup>	ALL					
Demonstration gardens	ALL	ALL			ALL	ALL
Landscape training for public	ALL	ALL	ALL	ALL	ALL	ALL
Landscape training for irrigation professionals	ALL	ALL		ALL		
Plant labeling program/plant list	ALL	ALL	ALL	ALL	ALL	
Published irrigation schedules		ALL	ALL	ALL		

**Notes:**

- (1): grant reward based on a request for proposal process
- (2): capable of multiple programming schedule
- (3): determines irrigation based on current or historical weather conditions
- (4): branding/labeling program for new homes

- All = program available to single-family, multi-family, commercial, and industrial customer
- SFR = program available to single-family residential customers
- MFR = program available to multi-family residential customers
- C&I = program available to commercial and industrial customers

Because Washington County’s current water conservation efforts are limited, the Commission should consider future water savings scenarios consistent with the results achieved by other southwestern cities.

### **4.2.3 Aquatic Resources**

<sup>43</sup> *Hidden Oasis: Water Conservation and Efficiency in Las Vegas, supra*, p. 28.

The EIS should analyze the following:

- Effects of Zebra, Quagga and other invasive mollusk species infesting existing water delivery systems, including municipal and residential systems, within the three counties.
- Effects on water quality from Zebra and Quagga mussel waste products (e.g. sulfites, sulfates, nitrogen, ammonia, etc.) and decomposition within the Pipeline and their ability to spread toxic algae causing problems with drinking water supplies.
- Financial and human health effects of chemical and/or other mussel treatments on water quality parameters in Kane, Washington, and Iron Counties.
- Effect on project design, construction, operation and maintenance activities and costs related to minimizing and managing for possible zebra and quagga and other invasive mollusk species infestation.
- Effect on the construction, operation and maintenance of municipal water supply systems in the three counties after possible introduction of invasive mollusk species
- Effect on the operation and maintenance of Sand Hollow and Quail Creek Reservoirs, resulting from introduction of invasive mollusk species shells
- Effects of Zebra and Quagga mussels and mussel shells entrained in system on pumping, on-line hydropower plants and conveyance facilities
- Analysis of the effects on fish and other aquatic populations of mussel infestations resulting from the Pipeline as a vector.
- Effects on pumping costs, conveyance and pressure management facilities resulting from intentional physical and/or chemical removal of Zebra and Quagga mussels from Pipeline.
- Analysis of mussel removal effectiveness at the Hoover Dam and in the Great Lakes region, including the effectiveness of chlorine and other chemical or physical treatments at removing or controlling Zebra and Quagga mussels.
- Effects of each proposed alternative on the potential proliferation differentials of the mussels in each alternative.
- Effect of the economic impacts of the mussel on aquatic resources, i.e. loss of recreational fisheries due to population crashes.

#### 4.2.4 **Terrestrial Resources**

The EIS should analyze the following:

- Effects of project construction, operation, and maintenance on terrestrial resources in all locations that could potentially receive water from the Pipeline. This includes all developable private land, State Trust Land and acreage managed by the Bureau of Land Management that is likely to be sold or exchanged in the foreseeable future.
- Effects of project construction, operation, and maintenance on terrestrial resources specifically located within the Kanab Creek Area of Critical Environmental Concern and elsewhere.
- Effects of perennially moist soil on Pipeline structures at the Paria River and Kanab Creek stream bed crossings.<sup>44</sup> The EIS should identify a management protocol for leaks at river crossings and on the land as well as identify appropriate mitigation measures if damage occurs.
- Direct and indirect effects on local wildlife populations and habitat as a result of habitat alteration and loss. Analysis of these effects should include the full geographic scope of the proposed project including all developable land proposed to directly or indirectly receive water from Lake Powell. Habitat alteration and loss directly associated with Pipeline construction would be an insufficient geographic scope due to the Pipeline's cumulative effects.
- Effects of project construction, operation, and maintenance on the migration corridors for the Kaibab deer herd and other wildlife species.
- Cumulative fragmentation effects on terrestrial resources, including wildlife, due to road building, electric infrastructure and other development facilitated by the new supply of water to undeveloped areas of the Arizona Strip and rural or remote regions of the three counties.

#### 4.2.6 **Recreation**

The EIS should analyze the following:

- Effects of project construction, operation, maintenance and change in land use on dispersed recreation in the three counties and within the sight of visitors along the proposed routes across the Arizona Strip and elsewhere.

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<sup>44</sup> The Quail Creek Pipeline has experienced extensive leaking problems at the Virgin River crossing. This has causing several environmentally destructive streambed excavations.

- Effects of the Pipeline being routed under the Virgin River and its floodplain at Confluence Point in Hurricane and LaVerkin, Utah on the endangered species habitat values protected by a Utah Division of Natural Resources conservation easement
- Effect on the region's wildland character resulting from the Pipeline's infrastructure including power supply lines.<sup>45</sup>

#### 4.2.7 **Aesthetics and Noise**

The EIS should analyze:

- Effects of Pipeline's operation and maintenance, and resulting population growth, on the night sky of the three counties.
- Effects on the scenic landscapes of the Colorado Plateau and the disruption to the visitors' visual experience of remoteness from the imprint of the Pipeline's electric infrastructure, specifically effects on the Cockscomb, Three Pigs, Grand Staircase Escalante National Monument, and along the highway corridor elsewhere.
- Effect of the Pipeline's pumping noise on wildlife and their migration corridors and the recreational experience.
- Effects of seasonal construction periods to minimize potential impacts to migrating wildlife or nesting avifauna.

#### 4.2.8 **Socioeconomic Resources**

##### **Cost**

The EIS should analyze the following:

- Estimated total project costs prorated to each Water Conservancy District.
- Comparison of total project cost to total population in each Water Conservancy District service area.

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<sup>45</sup> The Arizona Strip is known as the place "Where the West Stays Wild" and is managed by the BLM to retain its remote landscape character. The Pipeline would cross through spectacular landscapes and ecologically important wildlands on and near the Arizona Strip including the Glen Canyon National Recreation Area, the Grand Staircase-Escalante National Monument, pass near proposed wilderness areas and a BLM Area of Critical Environmental Concern, and the Arizona Strip wildlands to reach St. George, and Cedar City, Utah. Five proposed hydroelectric turbine stations and four pumping stations with power lines connecting to existing power grids, substations, access roads, regulating tanks and reservoirs, manholes, blow off valves, fencing, continued maintenance, repair and excavation would significantly degrade the region's wildland character.

- Estimated debt burden both per capita and per taxpayer.
- Effects on Pipeline financing resulting from annual growth rates during years that do not reach predicted rates. WCWCD's *Capital Facilities Plan* indicates that impact fee revenue was projected to reach \$13,000,000 annually, but 2007 revenues were approximately \$4,000,000. In addition to considering impact fee revenue data from the district's annual reports, the Commission should also consider actual building permit approvals (reliable data is available from Southern Utah Title Company).
- Effects of increased WCWCD impact fees and surcharges on performance and nationwide competitiveness of the residential housing and commercial real estate market in the three counties. The EIS should evaluate whether fees, surcharges, and taxes for the Pipeline could inflate the cost of housing and thereby cause declines in population growth especially among service providers (such as school teachers, police, fire fighters). The EIS should evaluate whether subscribing Counties could lose their competitive advantage to other similar southwestern communities with lower taxes and fees. The EIS should evaluate whether these negative results could be avoided by pursuing less expensive local water sources, recycling, and conservation.
- Effects of increased impact fees, surcharges and property taxes on the ability of the Counties and local governments to impose fees, surcharges, or taxes to pay for other services (e.g. roads, sewers, libraries, etc.) needed as a result of growth induced by the Pipeline.
- The effects on operation and maintenance costs resulting from reduced Colorado River flow and the incremental expense of pumping water as the elevation of Lake Powell rises and falls. For example, what would the added cost be if Lake Powell is less than 50% full more than 50% of the Pipeline's projected lifetime? What added costs would occur when the price of electricity for the pumps increases in price by 1%, 2%, 3%, 4%, and 5% by the time of construction in 2015?
- Socioeconomic effects if the Pipeline is unable to deliver the expected amount of water due to severe sustained drought, climate change, or conflicts among the Compact Basin states.
- Effects on cost of electricity to residents resulting from increased regional power grid demand for Pipeline pumps.
- Effects of Pipeline-related cost of living increases in the three counties, e.g., increased cost of locally purchased and provided goods and services due to increased community wide tax burden.
- Effects of Pipeline-related increases in felony crimes in the three counties based on established crime trends in the Southwest associated with population growth.

- Effects of the Pipeline on the State’s ability to maintain high bond ratings in consideration of Utah’s priority to also bond more than \$2 billion for reconstruction of I-15 from Draper to Payson.
- Incremental cost-effectiveness of different water supply scenarios. Utah’s preferred action alternative assumes that the full allotment of water will be delivered by the Pipeline and makes no reference to impacts resulting from a reduction of water delivery due to drought sharing. Since the cost-effectiveness of the Project (both revenues and associated costs) appears to be related to the amount of water supplied, the EIS should evaluate the incremental cost-effectiveness of different supply scenarios.
- Effects of recent increases in the costs of fuel, steel, cement and other construction materials on the estimated cost of Pipeline construction. Utah’s estimates appear to omit many cost items, including fuel, transmission lines, rights-of-way, extending the pipe from Lone Rock Bay to the Colorado River mainstem. The EIS should include all relevant cost items and should forecast to 2020, allowing time for possible project delays.

According to the WCWCD's *Capital Facilities Plan*, the cost of the proposed Pipeline project, including interest on bonds, will exceed \$1.7 billion dollars. Utah proposes to fund this project through property taxes, impact fees and water rates without significant financial assistance from federal or state agencies. The EIS should estimate the direct impact of funding the project on the residents of Washington, Kane and Iron Counties. The Commission's analysis should also estimate the impact on residents and taxpayers if the recent economic downturn continues and population growth slows. This analysis should also estimate the full socioeconomic impacts on residents and taxpayers if the project is built, the population grows but then water becomes unavailable due to climatic, biological or political reasons. The Commission should consider whether state or federal funding would be available to mitigate the burden of impact fees on Project beneficiaries, and how the net benefits of the Project may vary depending on funding source.<sup>46</sup>

It is foreseeable that the Pipeline, like other large government projects, may exceed its budget. As such, it is critical that the Commission ensure the costing methodology is fair, objective and comprehensive.

Until recently the WCWCD stated that impact fees on new construction will cover the cost of this project. Based on public comments, the recent economic downturn has caused second thoughts about this claim among WCWCD officials. Property taxes and water rate surcharges have also been identified as additional funding sources. In the EIS the Commission should provide a thorough assessment of funding sources and a “back up plan” in the case that impact fees do not cover the costs of construction. Furthermore, if water rates and surcharges on existing residents will be used to fund the project, the Commission should, in coordination with the WCWCD, provide a

<sup>46</sup> In *The Proposed Lake Powell Pipeline: A report on its Effect on Socioeconomic Resources (June 20, 2008)*, David Tufle (Associate Professor, School of Business, Southern Utah University) concluded that the economic benefit of the Pipeline for current residents would be marginal if outside money is not used to fund the Pipeline.

detailed description of the ratemaking process. The Commission's role in ensuring reliable cost data for this conversation is crucial.

#### **4.2.11 Air Quality Resources**

The EIS should analyze the following:

- Effects of Pipeline project construction, operation and maintenance on regional haze. This includes the potential of effects for PM 2.5, PM 10, mercury, particulates, ozone and all other regulated pollutants. The sources could include dust from construction activities, population growth-induced air pollution from increased number of automobiles, particulates resulting from new local power sources associated with the Pipeline, or increased use of existing power sources (e.g. St. George City's diesel generators).

#### **5.0 Request For Information**

SD1 requests information to assist in the "accurate and thorough analysis of the site-specific and cumulative impacts" of the project. SD1, p. 17. To that end, we recommend that the Commission use the following documents.

1. Boyle Engineering Corporation, *Water Supply Needs for Washington and Kane Counties and Lake Powell Pipeline Study* (1998), available at <http://wcwcd.state.ut.us/Plan.%20Studies/Purpose&Needs/Report%20Dec%201998.pdf>.
2. Citizens for Dixie's Future, press articles about Lake Powell Pipeline, available at <http://www.powellpipelinefacts.org/content/category/2/26/128/>
3. Niklas S. Christensen *et al*, "The Effects of Climate Change on the Hydrology and Water Resources of the Colorado River Basin" (2004), available at [http://wwa.colorado.edu/resources/colorado\\_river/Christensen\\_2004.pdf](http://wwa.colorado.edu/resources/colorado_river/Christensen_2004.pdf).
4. Hydrosphere Resource Consultants, *Review of Water Supply Needs in Washington County, Utah* (July 2000) (attached);
5. Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (2007)*, available at <http://www.ipcc.ch/ipccreports/ar4-wg1.htm>;

6. IPCC, *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007), available at <http://www.ipcc.ch/ipccreports/ar4-wg2.htm>;
7. IPCC, *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007), available at <http://www.ipcc.ch/ipccreports/ar4-wg3.htm>.
8. Robert Kunzig, "Drying of the West," *National Geographic* (Feb. 2008), available at <http://www.citizensfordixie.org/images/pdf/Pipeline/drying%20of%20the%20west%20nat%20geo%20feb.%202008.pdf>;
9. L.L. Nash and P.H. Gleick, "The Sensitivity Of Streamflow In The Colorado Basin To Climatic Changes," *Journal of Hydrology* Vol. 125 (1991), pp. 221-241;
10. P.W. Mote, A.F. Hamlet, and D.P. Lettenmaier, *Variability and Trends in Mountain Snowpack in Western North America* (2005), available at <http://www.cses.washington.edu/db/pdf/moteetalvarandtrends436.pdf>;
11. National Aeronautics and Space Administration, *Scientific Assessment Of The Effects Of Global Change On The United States: A Report Of The Committee On Environment And Natural Resources National Science And Technology Council* (2008), available at <http://www.climate-science.gov/Library/scientific-assessment/Scientific-AssessmentFINAL.pdf>
12. National Research Council, *Colorado River Basin Water Management: Evaluating and Adjusting to Hydroclimatic Variability* (2007), available at [http://books.nap.edu/catalog.php?record\\_id=11857#toc](http://books.nap.edu/catalog.php?record_id=11857#toc);
13. Natural Resources Defense Council, *In Hot Water: Water Management Strategies to Weather the Effects of Global Warming* (July 2007), available at <http://www.nrdc.org/globalWarming/hotwater/hotwater.pdf>.
14. Natural Resources Defense Council, *Hotter & Drier, The West's Changed Climate* (March 2008), available at <http://www.nrdc.org/globalWarming/west/west.pdf>.
15. R.R. Revelle and P. E. Waggoner, *Effects Of A Carbon Dioxide-Induced Climatic Change On Water Supplies In The Western United States. Changing Climate* (National Academy Press 1983);
16. Rocky Mountain Climate Organization, *Less Snow, Less Water: Climate Disruption in the West* (2005), available at <http://www.rockymountainclimate.org/website%20pictures/Less%20Snow%20Less%20Water.pdf>.

17. Ron Thompson, testimony before the House Science Subcommittee on Energy and Environment (October 30, 2007), *available at* [http://democrats.science.house.gov/Media/File/Commdocs/hearings/2007/energy/30oct/Thompson\\_testimony.pdf](http://democrats.science.house.gov/Media/File/Commdocs/hearings/2007/energy/30oct/Thompson_testimony.pdf);
18. State of Utah, "Application for Preliminary Permit" (August 2007);
19. State of Utah, *Delivery Financing task Force Report: Financing the Lake Powell Pipeline and Bear River Projects* (September 2005), *available at* <http://www.lakepowellpipeline.org/documents/WDFTaskForceReport.pdf>;
20. Town of Springdale, Utah, Resolution 2008-11 (July 25, 2008) (attached);
21. C.W. Stockton and W.R. Boggess, *Geohydrological Implications of Climate Change on Water Development* (U.S. Army Coastal Engineering Research Center 1979), *available at* <http://stinet.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA204483>;
22. U.S. Department of Agriculture, *The Effects of Climate Change on Water Resources in the United States* (2008), *available at* [http://www.usda.gov/oce/global\\_change/files/SAP4\\_3/WaterBrochure.pdf](http://www.usda.gov/oce/global_change/files/SAP4_3/WaterBrochure.pdf);
23. U.S. Department of Interior, Bureau of Reclamation, *Final Environmental Impact Statement for Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead*, *available at* <http://www.usbr.gov/lc/region/programs/strategies/FEIS/index.html>;
24. U.S. Geological Survey, *Warming May Create Substantial Water Supply Shortages In The Colorado River Basin* (2007), *available at* <http://citizensfordixie.org/images/pdf/Pipeline/usgs%20warming%20may%20create%20substantial%20water%20shortages.pdf>;
25. Washington County, *2035 Housing Study* (2007), *available at* <http://visiondixie.org/pdf/WASHINGTON%20COUNTY%202035%20HOUSING%20STUDY.pdf>;
26. Washington County, *Water Conservancy Audits* (various dates), *available at* [http://wcwcd.state.ut.us/our\\_mission\\_and\\_info.htm](http://wcwcd.state.ut.us/our_mission_and_info.htm);
27. WCWCD, *Population Management Study* (1994), *available at* <http://wewcd.state.ut.us/Plan,%20Studies/PopulationManagement/ReportDocument.PDF>
28. Wikstrom Economic and Planning Consultants, *Prospective Regional Planning Implications of BLM land Sales Proposed Under the Washington County Land Use Bill* (February 2006) (attached);
29. "Vision Dixie Principles," *available at* [www.visiondixie.org](http://www.visiondixie.org); and

30. Vision Dixie, *Critical Lands Report and Maps*, available at <http://www.fcaog.state.ut.us>;

## **7.0 EIS Outline**

We request that the “EIS Outline” should be amended, and specifically Section 5 therein (“Conclusions and Recommendations”), to include recommended conditions for a new license. This approach, standard practice under the Integrated Licensing Process, will benefit all parties in these proceedings, because it would clearly state the conclusions in the form that matters most: namely, as recommended license conditions.

We further request that Commission Staff should make specific findings of fact as the basis for each such recommended condition. The Draft EIS should identify the evidence on which it relies for a given finding, explain why that evidence is probative, and also explain why Commission Staff reject competing evidence on the same issue. *See* 5 U.S.C. §§ 556, 557, 706(2); Fed. Rules Evid. 702; and 40 CFR § 1502.14(a). *See also* *Daubert v. Merrell Dow Pharmaceuticals*, 113 S.Ct. 2786 (1993); *Motor Vehicle Manufacturers Association v. State Farm Insurance*, 463 U.S. 29 (1983); *Burlington Truck Lines v. United States*, 371 U.S. 156 (1962); *Farmers Union Central Exchange v. FERC*, 734 F.2d 1486 (D.C. Cir. 1984); *Scenic Hudson Preservation Conference v. Federal Power Commission*, 354 F.2d 608, 620-1 (2nd Cir. 1965).

## **8.0 List of Comprehensive Plans**

We request that EIS consider all comprehensive plans related to the management of Lake Powell, the allocation of Colorado River water, the management of aquifers and surface supplies by the potential customers of the Pipeline. Such plans include:

- Reclamation, *Colorado River Interim Guidelines for the Lower Shortages and Coordinated Operations for Lake Powell and Lake Mead* (2007), available at <http://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf>; and
- Other plans listed in the PAD related to management and allocation of Colorado River waters.

The EIS should analyze and display the consistency of each action alternative with the specific management objectives or requirements in each of the sixteen comprehensive plans listed in SD1. We respectfully request that the Commission not follow its standard practice of summarily concluding that a preferred alternative is consistent with such management objectives or requirements.

**IV.**  
**COMMENTS ON PRE APPLICATION DOCUMENT**

The Coalition comments on the PAD to the limited extent necessary given our prior comments on SD1.

**5.2.4 Climate Change**

One of the most profound impacts of climate change in the Western United States will likely be on water resources, including impacts on the timing and annual amount of precipitation as well as related impacts on river flows and reservoir storage levels. In its initial scoping document, Utah asserts that the impacts of climate change are not well known in the Upper Colorado River basin. On the contrary, the Colorado River basin is one of the most intensely studied basins. In a 2007 report on hydrologic variability in the Colorado River Basin, the National Research Council concluded “based on analysis of many recent climate model simulations, the preponderance of scientific evidence suggests that warmer future temperatures will reduce future Colorado River streamflow and water supplies. Reduced streamflow would also contribute to increasing severity, frequency, and duration of future droughts.”<sup>47</sup> In order for its EIS to be sufficient, the Commission should examine the impact of climate change on the availability of water supplies throughout the Colorado River basin and in Lake Powell.

The EIS should address at least the following primary impacts of climate change on the proposed Pipeline and water supplies:

- Determine how much water from the Colorado River Basin System will be available to meet Utah's future water need for the Pipeline.
  - Hydrology – varies in time, location and amount. Agreement on how to consider these factors in a water availability study will be important to gain greater understanding and acceptance of the study conclusion. As described below, the hydrology study should focus on issues in a period of known hydrology (post 1890) and a period of estimated hydrology (pre-1890).
  - Water Availability - will include both legal and physical supply considerations. Initially legal availability will consider current demands.
- Water Use – water use consideration (also referred to as demands) should include existing absolute water rights. Water use can be measured in terms of consumptive use, gross diversions or total deliveries. Categories of water use include municipal (domestic and commercial), industrial, agricultural, water rights for instream environmental flows and water rights for recreational in-channel diversions. The Study should examine: 1) how non-consumptive uses within the priority system may affect Utah's ability to fully develop its

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<sup>47</sup> National Research Council, *Colorado River Basin Water Management: Evaluating and Adjusting to Hydroclimatic Variability* (2007), p. 16.

consumptive use apportionment; and, 2) how much water would remain for non-consumptive uses if Utah fully developed its apportionment. At various locations within the state, initial water availability should be evaluated using the following formula: Water Availability = Physical Supply - Current Water Use (includes downstream demands).

- The two possible modes of Pipeline “failure”: physical shortage (Lake Powell is too low) or legal shortage (Compact call). A compact call would also prolong a physical shortage, as water that might have been used to recover the reservoir will have to be bypassed to downstream users.
- The reliability of water supplies, given projected climate change scenarios. This reliability analysis should consider both hydrologic changes and the Bureau of Reclamation’s guidelines for operation of Glen Canyon and Hoover Dams. In addition, the EIS should address the impact of the proposed project, given projected climate change scenarios, on water-dependent habitat for endangered species in the Colorado River basin.
- The impact of declining reservoir water levels on additional electricity needs for pumping water from Lake Powell into the proposed Pipeline. This analysis should include additional costs and greenhouse gas emissions.
- The impact of increasing levels of salinity (resulting from decreased flows in the Colorado River basin) on additional energy used, cost incurred, and greenhouse gases emitted for water treatment.

### **Reliability of Supplies**

The EIS should examine both the availability of water to supply the proposed Pipeline as well as the impact of the proposed project on the reliability of water supplies throughout the Colorado River basin, including Mexico. The Bureau of Reclamation leads federal efforts to manage the Colorado River and has developed decision support tools to assess the impacts of projects and policies throughout the Basin. Reclamation has made recent efforts to improve these tools based on newly available information including both climate change projections and paleoclimate history.

We recommend that Reclamation's Riverware (CRSS) model be used to assess the impacts of the proposed project on streamflow and water supply throughout the basin. Any such use should include several modifications of the modeling assumptions. The model is only a re-sequencing of historic years. It should be modified to reflect any change in mean flows caused by climate change. In addition the model does not represent the Colorado River Compact and thus cannot quantify the effect of a compact call on Utah. Any analysis that includes legal availability will have to modify CRSS to include the Compact.

Modeling of system impacts should incorporate analyses based on the paleoecological record of streamflow, as was prepared for Reclamation’s *Colorado Basin Shortage EIS*. See Appendix N,

“Analysis of Hydrologic Variability Sensitivity.” Since any license for this project will have a term of 30 - 50 years, the EIS should go beyond historical reconstructions and include an analysis of the impact of climate change on mean flows.

This EIS should take into account Reclamation’s latest efforts to improve its capacity to model the impact of climate change in the Colorado River Basin. Reclamation’s climate technical work group for the Colorado River published a preliminary set of recommendations in the *Colorado Basin Shortage EIS* (Appendix U). The EIS should consider recommendations of the climate technical work group, including those that post-date the *Colorado Basin Shortage EIS*. Stakeholders throughout the Colorado River basin have learned from the historic drought of the last decade that water supply planning cannot simply consider “most probable” projections of future water supply based on a reiteration of the historic record.

Given the magnitude of the Pipeline (both in terms of water withdrawals and fiscal investment), we recommend that the hydrologic analysis include at minimum the “direct paleo” and “nonparametric paleo conditioning” inflow scenarios developed by Reclamation for the *Colorado Basin Shortage EIS*, where dry spells last as long as 21 years, as well as the extreme drought single trace analysis based on the dry period from observed in the paleoclimate record from 1130 to 1154, where the mean flow for the 25-year period is 84 percent of the mean observed inflow from 1906 to 2005.

Finally, given the projections in recent publications considering climate change in the basin (e.g. Milly et al. [2005] projecting that runoff in the Colorado River basin will be reduced by 10 – 30% by the period 2041 to 2060), we recommend that the hydrologic analysis include an additional sensitivity analysis that projects 30% reduced inflows to Lake Powell for the entire period of analysis.

### **5.12.3. Water Supporting Population and Economic Growth**

The PAD states: “Execution of water conservation programming has been calculated into anticipated water demands for the Water Conservation Districts, however future Demands are anticipated to significantly increase because of increased population.” PAD, p. 5-110. Based on research by Coalition members, we believe this statement is inaccurate, because WCWCD did not sufficiently include potential conservation savings.

The *Capital Facilities Plan, supra*, stated: “the WCWCD will not include the potential reductions in water demands through conservation in the projection of water demands until significant and stable conservation is achieved.” In other southwestern areas, water savings through conservation and efficiency measures have been proven to be stable and significant. We recommend that the Commission consider updated Water Conservation and Efficiency Plans as an action alternative or element thereto.

The PAD states: “it is the intent of Washington County Planners that urban growth should occur with the incorporate boundaries of existing cities. This has resulted in policies to encourage development/infill within existing city boundaries, and to annex areas of pending development in

existing cities.” PAD, p. 5-110. The Washington County Commission sponsored visioning process, Vision Dixie, recommended 10 planning principals including infill development, which are appropriate for consideration in the EIS.<sup>48</sup> The commission and all cities in Washington County have since officially adopted the Vision Dixie Principles. Infill developments and “smart growth” policies may reduce residential water demands. The EIS should address the proposed project’s consistency with these principles and the impact of this type of growth on water demand estimates.

### **5.12.3.1 Water Resources in WCWCD Service Area**

The PAD states: “Water Resources in WCWCD projected water demand increased to five times 47,000 ac ft x 5 need 235,000 acre ft by 2050.” PAD, p. 5-110. However, demand would not increase to that extent if water conservation and efficiencies measures are implemented.

WCWCD’s *Capital Facilities Plan* (p. 7) states that “the currently estimated build out for Washington County is expected to be reached in 2050 with a build out population of 607,334.” The Coalition suggests there is enough water for the community to grow to build out of 607,334 people. We are concerned that WCWCD may overestimate the need to water by using outdated water demand forecasting policies. See comments at Section 4.2.2, *supra*.

## **6.12 Energy Issues**

In its EIS, the Commission should provide thorough analyses of electricity needs, greenhouse gas emissions, electricity costs, and the risk of climate change over a fifty year time period. In these analyses, the Commission should provide independent estimates for energy *use* and energy *generation*; the analyses should not only estimate *net* energy demands. For example, we estimate the project will only have a net demand of 150 - 200 MW, but it will require a total of 500 – 550 MW of power and generate 351 MW of power. The Commission should analyze these elements independently, and report its findings in terms of MW hours, gigawatt (GW) hours, and the size of the of power pump (in GW, GW hours, MW and MW hours) that would be needed to operate the Pipeline’s pumps..

We recommend that the Commission perform these analyses for the proposed action, no action alternative, and other proposed alternatives. In the following paragraphs, we outline important elements for each of these analyses.

### **Energy Use**

The EIS should assess at least four elements of energy use:

- Total (annual) electricity use;
- Projected temporal patterns of electricity use and generation, including time of day and year;

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<sup>48</sup> *Vision Dixie Principles*, available at [www.visiondixie.org](http://www.visiondixie.org).

- The anticipated source of the power for pumping stations; and
- The electricity use of water supply projects that will be developed throughout the Colorado River basin to mitigate the shortages caused by the proposed project.

The EIS should provide an estimate of annual electricity demands throughout the 50-year period of analysis. The Commission's analysis should estimate when the Pipeline will operate at full capacity, and projected water deliveries and power demands in preceding years.

In addition, the EIS should specify what time of day and year the pumping plants will require electricity, for several reasons. The timing of electricity use directly impacts the type of power (and fuel source) demanded by the Pipeline, the cost of electricity, and greenhouse gas emissions. The EIS should also specify the source of electricity. If electricity will be acquired from electric utilities, the EIS should note which utilities, and whether those utilities have capacity available on their systems to meet the new load. The EIS should specify the anticipated source of new power – i.e. coal, gas, solar, or wind power. Finally, the EIS should identify water supply projects that are being developed to mitigate shortages in the Lower Colorado River basin (such as brackish and ocean water desalination plants), identify electricity demands of these water supply projects, and in particular identify the portion of these projects and their electricity use that will be used to mitigate for shortages induced by the proposed Pipeline.

#### **Greenhouse Gas Emissions and 6.14**

For each proposed alternative, the EIS should assess annual and cumulative greenhouse gas emissions. Greenhouse gas emissions should be calculated based on the source of the electricity. For example, if the Pipeline in any way contributes to the construction or expansion of a fossil fuel power plant – even if it is constructed by an independent electric utility – the GHG emissions estimate should reflect the emissions associated with a fossil fuel plant, *not* the average rate of emissions from the electric grid.

#### **Operations Costs**

The annual operations cost estimates provided in the EIS should specify the cost of electricity for operation. The analysis should distinguish between the cost of power consumed by the Pipeline and revenues from power generated by hydropower facilities in the Pipeline. It should not be limited to *only* the net electricity costs. The hydroelectric power produced by the Pipeline will not meet the project's entire pumping needs, and will likely be sold to electric utilities at peak price rates. Both the price of electricity sold and purchased by the Pipeline could fluctuate; in order to provide a thorough analysis, data on both price rates should be provided. The EIS also should identify a range of projected costs of electricity (in c/kWh) for the analysis. Specifically, in 2006, the industrial price of electricity was 4.21 c/kWh in Utah, 5.69 c/kWh in Arizona, and 8.03 c/kWh in

Nevada.<sup>49</sup> The initial cost of electricity for the project should fall within this range, and should reflect the likely source of the power (e.g. a gas plant in Nevada or a coal plant in Utah). Many factors influence the price of electricity; the EIS also should assess costs using a range of electricity price escalation rates. We recommend performing the analysis using annual escalation rates of 1%, 2%, and 4%.

In addition, the EIS should include operating costs associated with greenhouse gas regulation. The Boxer-Warner-Lieberman bill, recently debated in the Senate, represents a likely trajectory of climate change regulation. The EPA has estimated the cost of emissions (in \$/ton) under this legislation; the EIS should incorporate these cost estimates into its analysis of annual operating costs.

In all cost analyses, the Commission should provide an estimate of the impact on ratepayers, given both the projected population in 2050 (approximately 600,000 residents for Washington County) and alternate projections and scenarios.

#### **Appendix A. Socioeconomics/water Resource Economic Impacts** **Draft Work Plan**

Lake Powell Pipeline stakeholders cannot currently discern the difference between pre-pipeline and post-pipeline resource impacts. We are concerned that current studies and proposed study plans do not specifically provide a comparison between a pre-pipeline future and a post-pipeline future regarding socioeconomic impacts such as increased taxes/fees/surcharges and environmental impacts such as loss of open space or increased traffic. The socioeconomic study should provide this comprehensive differential analysis.

PAD states at Section 5.1.1 that baseline condition “is defined as projected 2015 population, employment and regional income, water Demand and supply.” The 2015 date seems early since water delivery from the proposed project would not begin until 2018 at the earliest. However, we note that the WCWCD began imposing a monthly surcharge, and has imposed higher impact fees.

Based on our initial analysis of the Draft Work Plan, we believe the proposed baseline conditions insufficiently address the social elements of socioeconomic impacts. The study should analyze the proposed project’s impacts on the conversion of public or private recreational urban open space to housing development; increased traffic congestion and air pollution; increased water-related cost of living; increased infrastructure costs including roads, police and fire protection, sewers and schools; increased water-related taxes, fees and/or surcharges; pipeline-related power costs; increased crime; decreased watchable wildlife and/or endangered species habitat; degraded tribal cultural resources. The study should estimate the area of land that would be developed in the

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<sup>49</sup> Energy Information Administration, *State Electricity Profiles*, Table 8: Retail Sales, Revenue, and Average Retail Price by Sector, 1990 Through 2006.

three counties at the maximum predictable extent that would occur with local water supplies and efficient use (below a system wide 170 gallons per day per person)<sup>50</sup>.

The EIS should analyze how the cost-effectiveness of the Pipeline may vary as a function of available water supply as well as source of financing. *See* comments, *supra*, regarding SD1 section 4.2.8.

The PAD proposes to define the impact area primarily as the “St. George to Cedar City corridor.” PAD , p. A-2. The impact area should also include the Big Water to Hildale corridor including Kanab in Utah because these rural areas could be significantly impacted by increased water availability. This analysis should include all lands that would receive water from the Pipeline.

Based on our preliminary analysis, the PAD Significance Criteria for Each Impact Topic (p. 7) proposes an incomplete focus on impact topics. In addition to employment and population impacts, the Socioeconomic study should also include the range of sociological impacts that the pipeline would facilitate *See* 42 U.S.C. § 204(4). We propose the following Significance Criteria for additional Impact Topics:

- A significant impact would be a 10 percent near-term increase and/or a 20 percent long-term increase to local communities in land use changes including the conversion of public, State Trust or private open land to housing development.
- A significant impact would be a 10 percent near-term increase and/or a 20 percent long-term increase to local communities in traffic congestion.
- A significant impact would be a 10 percent near-term decrease and/or a 20 percent long-term decrease to local communities in availability of recreational urban open space.
- A significant impact would be a 5 percent near-term increase and/or a 10 percent long-term increase to local communities in water-related cost of living.
- A significant impact would be a 5 percent near-term increase and/or a 10 percent long-term increase to local communities in the cost of infrastructure including roads, police and fire protection, sewers and schools due to pipeline-facilitated population growth.
- A significant impact would be a 5 percent near-term increase and/or a 10 percent long-term increase to local communities in water-related taxes, fees and/or surcharges.
- A significant impact would be a 5 percent near-term increase and/or a 10 percent long-term increase to local communities in pipeline-related power costs.

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<sup>50</sup> Hydrosphere Resource Consultants, *Review of Water Supply Needs in Washington County, Utah, supra*, p. 27.

- A significant impact would be a 5 percent near-term increase and/or a 10 percent long-term increase in air pollution.
- A significant impact would be a 5 percent near-term increase and/or a 10 percent long-term increase to local communities in crime.
- A significant impact would be a 5 percent near-term decrease and/or a 10 percent long-term decrease to local communities in watchable wildlife and/or endangered species habitat.
- A significant impact would be a 2 percent near-term increase and/or a 4 percent long-term increase to local communities in disturbance of tribal cultural resources.

V.  
**ADDITIONAL STUDY REQUESTS**

Pursuant to 18 CFR § 5.9 (b), the Coalition requests the following studies, additional to those proposed in the PAD:

- A. Alternative Intra-basin Water Sources for Future Use in Kane, Washington and Iron Counties, Utah;
- B. Navajo Sandstone Aquifer Storage Parameters near Big Water, Utah; and
- C. Impacts of Climate Change on Project Operations.

The Coalition looks forward to working with the Commission, Utah, WCWCD, other public agencies, and other stakeholders in further development of the study plan for this licensing proceeding.

**A. Alternative Intra-basin Culinary Water Sources for Future Use in Kane, Washington and Iron Counties, Utah**

**1. Study Goal**

The study goal is to identify water sources as alternatives to the Pipeline for culinary uses in Kane, Washington, and Iron Counties, Utah over the planning horizon of 50 years.

**2. Applicable Resource Goals and Objectives**

Utah law requires management of all water for maximum beneficial use. *See, e.g.*, Utah Code Annotated §§ 73-1-3, 73-1-5. This study will examine the comparative feasibility and merits of using existing sources to meet the future demands for culinary uses in the three Counties.

**3. Public Interest Considerations**

The Commission's licensing decision for the Pipeline turns on whether the Pipeline is superior to alternatives to meet the Project purpose of culinary water supply. That also applies to the decision by BLM whether to grant rights-of-way for use of federal lands, or the decision by Reclamation whether to permit the diversion from Lake Powell. The study will provide information necessary for the comparative evaluation of the Pipeline and existing water sources for the purpose of culinary water supply.

**4. Existing Information**

Existing information includes:

- Boyle Engineering Corporation, *Water Supply Needs for Washington and Kane Counties and Lake Powell Pipeline Study* (1998), *supra*;
- Pacific Institute and Western Resource Advocates, *Hidden Oasis: Water Conservation and Efficiency in Las Vegas* (November 2007), *supra*;
- Hydrosphere Resource Consultants, *Review of Water Supply Needs in Washington County, Utah* (July 2000), *supra*;
- Utah Department of Natural Resources, Division of Water Resources, *Municipal and Industrial Water Conservation Plan* (2003), available at <http://www.conservewater.utah.gov/Final71403AACC.pdf>;
- WCWCD, *Capital Facilities Plan* (2006), *supra*; and
- Washington County, *2035 Housing Study* (2007), *supra*.

None of these documents specifically analyze the comparative merits of the Pipeline and alternative water sources.

## **5. Nexus with Project**

Water supply is one of the purposes of the Pipeline. The study will evaluate the comparative feasibility and merits of alternative water sources to meet this purpose.

## **6. Consistency with Generally Applicable Practice**

The method involves a Blue Ribbon task force of experts who will evaluate existing information to evaluate the comparative merits and feasibility of the Pipeline and alternative water sources. Government agencies often use this approach to address complex factual issues where objective science alone cannot resolve data gaps or differences in interpretation of results, and more specifically, where expert collaboration has a reasonable prospect of producing consensus in their interpretation of such results. *See, e.g.,* National Research Council, *Hydrology, Ecology, and Fishes of the Klamath River Basin* (2008), available at [http://books.nap.edu/catalog.php?record\\_id=12072#toc](http://books.nap.edu/catalog.php?record_id=12072#toc).

## **7. Method, Level of Effort and Cost, and Related Considerations**

### **Method**

- Assemble a Blue Ribbon panel of experts representing all interested parties in the proceeding.
- Convene a preliminary field workshop to identify every possible future water source through an independently facilitated charette process.
- Develop a mutually agreeable target list of specific parameters that are likely to limit the viability of each water source, likely including: (a) average annual yield, (b) average drought yield, (c) dollar cost per delivered AF, (d) environmental consequences, (e) legal barriers, (f) engineering barriers, (g) regulatory barriers.
- Engage the Blue Ribbon team to produce a mutually agreeable list of viable water projects to pursue.
- Engage each expert to produce a draft analysis of the specific parameters for each viable project and a prioritized alternatives list.
- Re-assemble the Blue Ribbon team to resolve differences of opinion and produce a consensus-based prioritized alternatives list.
- Create basemaps of the three county region using existing GIS databases to identify the geographical location of water sources.
- Conduct appropriate field studies (e.g. drill test wells, determine geological suitability for dam structures, assess water quality, estimate aquifer recharge rates, etc.) over the appropriate field seasons (e.g. two runoff cycles for analysis of surface water impoundments) to objectively determine prioritization of alternatives.
- Digitize, compute, and compile field data once fieldwork is completed.
- Construct project suitability ratings for each viable project studied.
- Produce a report detailing the justification for a prioritized project recommendation.
- Convene a symposium in St. George, Utah for experts, managers, elected officials and the public, where the Panel presents its findings. This symposium should occur prior to the submittal of the license application.

### **Study Area and Study Sites**

This geographic scope would include all developable private and State Trust land in the urbanizing areas of the Washington, Kane, and Iron counties based on existing development trends and reasonably foreseeable trends (e.g., density increases in downtown areas, conversion of agricultural land, etc). Developable private and state trust lands in Arizona’s Coconino and Mohave Counties should be included to anticipate the possibility that Utah and Arizona may develop an agreement to deliver Arizona water through the pipeline. The geographic scope also should include all acres of public land that would be authorized for conversion to private development from the Washington County Growth and Conservation Act of 2008.

The study would address at least the following alternative sources:

- Expansion of the existing Sand Cove Reservoir system into a series of up to five significantly-sized aquifer recharge reservoirs with well fields to capture water stored underground. This system would augment the storage capacity of Baker and Gunlock reservoirs and increase the ability to capture more Santa Clara River spring runoff. It would also produce pristine culinary water for delivery to the Pipeline system from the Gunlock wells to the St. George regional water delivery system.
- Conversion of privately owned groundwater agricultural wells producing water under beneficial use around Washington County for municipal use including multiple analyses of viable treatment processes including wells located at:

T42S, R13W	670 AF
T43S, R13W	8 AF
T42S, R14W	4,437 AF
T43S, R14W	1,108 AF
T42S, R15W	2,803 AF
T43S, R15W	6,819 AF
T42S, R16W	1,434 AF
T43S, R16W	810 AF
T42S, R17W	40 AF

- Increased delivery of subsurface water from the Navajo Aquifer at the most advantageous (i.e. shallowest, highest water quality) locations throughout the three County area.
- Increased utilization of Virgin River high water that cannot be diverted by the Quail Lake Diversion due to the limited size of the diversion pipe.
- Water conservation that produces maximum results in the three County area.

- Increased utilization of stormwater catchment basins in urbanizing areas combined with aquifer storage and withdrawal systems.
- Increased utilization of residential and commercial stormwater catchment systems to provide secondary water for outdoor use.
- Increased conversion of agricultural water in the three county area for culinary purposes based on:
  - water that has already been sold by irrigators to developers; and
  - all agricultural water currently being put to beneficial use.
- In Iron County, increased utilization of Coal Creek's spring flows through a new storage reservoir/aquifer recharge system.
- In Iron County, increased development and delivery of groundwater from Utah's portion of the West Desert.
- Increased water recycling.

**Schedule**

We propose the following schedule.

- Assemble Blue Ribbon panel by September 15, 2008.
- Hold preliminary field workshop by November 1, 2008.
- Release targeted parameters list by December 15, 2008.
- Release viable water projects list by February 15, 2009.
- Release draft parameters analysis by May 15, 2009.
- Begin field work by June 1, 2009.
- Release prioritized alternatives list and basemaps by August 15, 2010.

- Release field data analysis by November 1, 2010.
- Release project suitability ratings by February 15, 2010.
- Release prioritized project recommendation by April 15, 2010.
- Hold findings symposium by May 15, 2010.

**Level of Effort and Cost**

Blue Ribbon Panel Assembly & Parameters Research	\$ 25,000
Blue Ribbon Panel Workshops	\$ 30,000
Fieldwork	\$200,000
Analysis	\$ 30,000
Reports	\$ 30,000
Findings Symposium	\$ 10,000
<b>Total</b>	<b>\$ 325,000</b>

**Relationship to Other Studies**

The PAD does not specifically propose to study the comparative merits and feasibility of any alternative water sources. The "Draft Surface Water Resources Work Plan" (March 2008) does not mention alternatives and instead focuses on how the Pipeline would affect existing surface waters. The "Socioeconomics/Water Resources Economics Impacts Draft Work Plan" (March 2008) mentions as an Impact Topic "alternatives for meeting new water resource supplies, with and without the LPP Project; but it does not propose any specific method of study to identify and evaluate the alternatives.

**B. Storage Capacity of Navajo Sandstone Aquifer near Big Water, Utah**

**1. Study Goal**

The goal of this study request is to analyze the storage capacity of the Navajo Sandstone Aquifer near Big Water, Utah. The aquifer underlies 55,000 acres of Utah State Trust Lands and is a potential alternative location for storage, given proximity to Lake Powell and the proposed Pipeline corridor.

**2. Applicable Resource Goals**

Same as for Study Request A.

### **3. Public Interest Considerations**

Same as for Study Request A.

### **4. Existing Information**

The aquifer characteristics of Navajo Sandstone are known generally. Geological studies of the Navajo Sandstone are numerous and the physical characteristics of the stratum are generally well known. Nevertheless, no academic aquifer studies of the Big Water area have been completed. Numerous private wells have been drilled in the area, however. Data from these wells may be available to be collected and analyzed.

### **5. Nexus with Project**

Water supply is one of the purposes of the Pipeline. The study will evaluate the comparative feasibility and merits of alternative methods of delivering and storing water to achieve that purpose.

### **6. Consistency with Generally Accepted Practice**

The method involves a Settlement Team whose members will collaboratively design and implement studies to evaluate the storage capacity of the Navajo Sandstone Aquifer. FERC Staff has often used this approach to evaluate project alternatives and effects.

### **7. Method, Schedule, Level of Effort and Cost, and Related Considerations**

#### **Method**

The overall objectives of this study are to: 1) provide a review of existing information and identify information gaps; 2) construct an initial model of groundwater storage and flow for a portion of Utah's Colorado River allotment in the Navajo Sandstone near Big Water, Utah; 3) conduct field studies to fill information gaps; and 4) refine the model with those additional data. This will be achieved through the following tasks:

- Convene Settlement Team to discuss a scope of work for the study elements listed below, receive training in consensus-based decision making processes and determine mutually agreeable course of action.
- Solicit proposals from agencies and contractors to fulfill the scope of work, giving preference to experts with direct research experience with the Sand Hollow Reservoir aquifer recharge project.
- Select contractors on a consensus basis.

- Determine the sufficient buffer size to understand subsurface geological strata and aquifer characteristics.
- Determine the most reliable methods for identifying fracture characteristics, directional trends and transmissivity of subsurface water in the study area.
- Determine the geologic origins of springs at Wahweap Creek Fish Hatchery and any other springs in the area.
- Identify, collect and analyze well distribution, well pump test data, and water quality testing in the study area.
- Estimate energy requirements for water augmentation and withdrawal (to the surface).
- Identify the economic cost/benefit and carbon footprint of aquifer augmentation in the study area.
- Develop a long-term vulnerability study for this aquifer in the context of predicted climate changes.
- Conduct appropriate field studies over a two-year period. Winter and summer seasonal data are necessary for determining transmissivity and annual variation.
- Digitize, compute, and compile field data once fieldwork is completed and create base maps of the study area with layers of existing and new data.
- Produce a report detailing the findings regarding the parameters identified in the long-term vulnerability study described above.

### **Study Area and Study Sites**

The proposed study site is the 55,000 acre parcel administered by the Utah State Institutional Trust Lands Administration surrounding Big Water, Utah and a sufficient buffer to understand subsurface geological strata and aquifer characteristics.

### **Schedule**

Sufficient time for observation and analysis of transmissivity and annual variability in this aquifer will be necessary. We recommend the following:

- Convene Settlement Team on or before September 1, 2008
- Solicit proposals by November 1, 2008.
- Select contractors by December 1, 2008.
- Determine the sufficient buffer size February 1, 2009.
- Determine the geologic origins of springs by March 1, 2009.
- Determine the most reliable study methods by April 1, 2009.
- Analyze existing well data by May 1, 2009.
- Conduct appropriate field studies between April 1, 2009 and April 1, 2011.
- Compile field data by August 1, 2011.
- Estimate energy requirements by September 1, 2011.
- Identify the economic cost/benefit and carbon footprint by September 1, 2011.
- Develop a long-term vulnerability study by March 1, 2011.
- Produce a draft report by May 1, 2011.
- Comment by Settlement Team on draft report by June 1, 2011.
- Produce final report by July 1, 2011.

### **Level of Effort and Cost**

FERC and Settlement Team meetings & communication	\$ 20,000
Fieldwork	\$ 350,000
Analysis	\$ 60,000
Reports	<u>\$ 30,000</u>
<b>Total</b>	<b>\$ 460,000</b>

**Relationship to Other Study Plans**

The PAD does not propose any study of the storage potential of the Navajo Sandstone Aquifer.

**C. Impact of Climate Change on Project Operations**

**1. Study Goal**

The goal of this study is to analyze the impact of climate change on the availability of water for diversion by the Pipeline.

**2. Applicable Resource Management Goals**

Reclamation's *Interim Operations Guidelines* establish goals to manage the storage and other operations of Lake Powell and other facilities to adapt to the impacts of climate change on the hydrology of the Colorado River.

**3. Public Interest Considerations**

Both the operation and the effects – direct, indirect, and cumulative – of the project have a clear nexus to management of the Colorado River. The recent history of drought in the Colorado River basin has underscored the significant impacts that even modest reductions in inflows can have on system storage. With the adoption of coordinated reservoir management and shortage management guidelines, system storage decreases are certain to have water supply impacts on major urban areas throughout the Southwestern United States including the metropolitan areas of Las Vegas, Phoenix and Tucson. Moreover, as circumstances including climate change, periodic climate cycles such as El Nino and the Pacific Decadal Oscillation, and increased development in the Upper Basin result in reduced storage in Lake Powell, Upper Basin water users will at some point be required to curtail use in the event of a call on water deliveries by the Lower Basin under the Colorado River Compact. Finally, while the United States and Mexico have not yet entered a formal agreement regarding Mexico's share of Colorado River shortages, it is likely that such an agreement will be negotiated well within the lifetime of the proposed project.

#### 4. **Existing Information**

Existing information relevant to this study request includes:

- Niklas S. Christensen *et al*, “The Effects of Climate Change on the Hydrology and Water Resources of the Colorado River Basin” (2004), available at [http://wwa.colorado.edu/resources/colorado\\_river/Christensen\\_2004.pdf](http://wwa.colorado.edu/resources/colorado_river/Christensen_2004.pdf);
- Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007), available at <http://www.ipcc.ch/ipccreports/ar4-wg1.htm>;
- IPCC, *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007), available at <http://www.ipcc.ch/ipccreports/ar4-wg2.htm>;
- IPCC, *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007), available at <http://www.ipcc.ch/ipccreports/ar4-wg3.htm>.
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## **5. Nexus with Project**

The study will evaluate how climate change may affect the availability of water for diversion by the Pipeline. Water supply is a Project purpose.

## **6. Consistency with Generally Applicable Practice**

The study will use Reclamation's Riverware model. This is a hydrologic model of the type generally used for the purpose of evaluating alternative operations at a facility. This specific model is generally accepted for that purpose on the Colorado River.

## **7. Level of Effort, Cost, and Other Considerations**

## **Method**

- Use Reclamation's Riverware model.
- Incorporate analyses based on the paleoecological record of streamflow, as was prepared for the *Colorado Basin Shortage EIS*, Appendix N, "Analysis of Hydrologic Variability Sensitivity."
- Reflect Reclamation's latest efforts to improve its capacity to model the impact of climate change in the Colorado River Basin. Reclamation's climate technical work group for the Colorado River published a preliminary set of recommendations in Appendix U of the *Colorado Basin Shortage EIS*. The analysis should incorporate the subsequent work of this climate technical work group.

## **Level of Effort and Cost**

The total cost is expected to be \$430,000. There is also data that has already been collected from the Division of Natural Resources. To make an informed decision about flows that will be available for the Pipeline we need this evaluative information.

Develop paleo-hydrology	\$50,000
Develop climate change hydrology	\$200,000
Modify CRSS to represent Compact	\$30,000
Runs and analyses	\$50,000
Reporting, meetings, outreach	\$100,000
<b>Total</b>	<b>\$430,000</b>

Another option is to partner with the State of Colorado and use Colorado's Big River analysis and take the tools and data that would be adaptable.

## **Relationship to other Studies**

The PAD does not propose any study how climate change may affect the availability of water for conveyance by the Pipeline. Instead, the "Draft Surface Water Resources Work Plan" (March 2008), p. A-2, expressly states that MWH, as Utah's consultant, will use MODSSIM model to evaluate operations of existing facilities and the Pipeline; and that "No new analyses will be performed....for the Colorado River system." Section 6.1 (p. A-3) further states that MWH will use historical hydrologic data. This suggests that Utah does not intend to study how climate change may affect the availability of water for conveyance by the Pipeline.

**VI.**  
**RECOMMENDATIONS FOR FURTHER PROCEDURES**

**A. SD2**

We request that the Commission publish Scoping Document 2, including its responses to public comments on SD1. This is appropriate in light of the significance of the resources affected by the Pipeline, the complexity of the issues of fact and law that will arise in this proceeding, and public controversy.

**B. Cooperation of Other Agencies in the EIS Preparation**

SD2 should describe the results of the Commission's efforts to involve other public agencies in the preparation of the EIS. We request the opportunity to comment on the specific arrangements for such participate, before finalized.

**C. Schedule**

The schedule proposed by the SD1 and the PAD largely adheres to the timelines specified in Commission regulations. We agree that it is vitally important to complete the environmental review of the proposed project in as timely a manner as possible, but we strongly believe that the quality of the environmental review should be the driving factor in these proceedings, and we believe the schedule must be flexible enough to ensure that such quality is achieved. Given the significance of the affected resources, the complexity of the issues, and the breadth of the project's expected impact, we believe that the Commission should seriously consider the sufficiency of the proposed schedule. For example, evaluating the effect of climate change on the project, on Lake Powell, and on the competing rights of other parties to water from the Colorado River will be a fundamental step in the review process. It will also be complicated, and, we expect, relatively slow, given that such a study will lack established precedent for the Commission and other agencies to follow. It will be vitally to this proceeding, and to future proceedings, for the climate change study to be conducted in a rigorous, scientific, and wholly complete manner. The Commission must be careful not to sacrifice the quality of this and other studies in adherence to an overly ambitious schedule.

**D. Formation of Topical Committees**

The schedule proposed by the PAD also states that Utah will hold the meetings required by the Commission's regulations as well as other meetings as needed. We recommend modification of the Process Plan to provide that Utah structure these meetings by convening topical committees that will address the numerous overarching subject areas. These committees would consist of experts in the respective fields that would perform the necessary "heavy lifting," freeing up resources that can be more efficiently focused elsewhere. A topical committee should be formed for each study plan area, to review and implement the study called for.

**E. Service List**

We request that the Secretary of the Commission add the following representatives to the service list for this proceeding:

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## CONCLUSION

We respectfully request that the Commission consider these scoping comments and additional study requests.

Dated July 7, 2008

Respectfully submitted,



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**DECLARATION OF SERVICE**

**Utah Board of Natural Resources,  
Lake Powell Pipeline Project (P-12966-001)**

I, John Tighe, declare that I today served the attached "**Comments Of The Lake Powell Pipeline Coalition On Scoping Document 1 And Pre-Application Document, And Additional Study Requests,**" by electronic or first-class mail to each person on the official service list compiled by the Secretary in this proceeding.

Dated: July 10, 2008

By:



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**UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION**

\_\_\_\_\_)  
Utah Board of Water Resources, )  
Lake Powell Pipeline Project ) P-12966-001  
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**LAKE POWELL PIPELINE COALITION’S COMMENTS ON PROPOSED STUDY  
PLAN AND SCOPING DOCUMENT 2**

The Lake Powell Pipeline Coalition (Coalition) hereby comments on the Commission’s “Scoping Document 2” (SD2) for the Lake Powell Pipeline Project, eLibrary no. 20080821-3005 (Aug. 21, 2008). Pursuant to 18 C.F.R. § 5.12, we also comment on Utah Board of Water Resources’ (UBWR) Proposed Study Plan (PSP), e-Library no. 20080822-5016 (Aug. 22, 2008), and related documents.

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

These comments are organized into five sections. Section I comments on UBWR’s Scoping Document 2. Section II replies to UBWR’s responses to preliminary study requests, as stated in PSP, Attachment B. Section III replies to UBWR’s “Responses to Questions and Comments Regarding Colorado River Water Supply and Operations,” as provided in PSP Attachment C. Section IV comments on the Phase I Water Needs Assessment (2008)(WNA), available at <http://www.water.utah.gov/lakepowellpipeline/projectupdates/default.asp>. Section V comments on the PSP, Attachment A.

**I.  
COMMENTS ON SCOPING DOCUMENT 2**

We appreciate the Commission’s consideration of issues raised during the scoping process, and are pleased that a number of our recommendations from SD1 were integrated into SD2. However, several of our most important concerns have not been integrated in a satisfactory way.

We comment on the issues and alternatives described in the SD2, the Study Plan and the Water Needs Assessment (WNA). For ease of reference, we show proposed changes to

the document text in ***bold italicized text***. Our comments track the title and outline number in these documents for each section where we have a comment.

## **2.2. Scoping Meetings and Written Comments**

SD2 states that scoping is 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, including:

- A. Increased water conservation can delay the need for the pipeline or other water supply projects and avoid substantial cost burdens on the region's current and future residents.
- B. The supply of water for the predicted population growth will diminish the quality of life in the region.
- C. Continued droughts and the impacts of climate change could put the supply of water for the Pipeline at risk.

These important questions must be analyzed in the study plans, yet the proposed plans fall short. These significant questions were not adequately addressed by the Federal Energy Regulatory Commission's (Commission) responses in SD2; our comments in the following sections re-emphasize the importance of these studies, and attempt to clarify our initial study plan requests.

### **2.2.1 Issues Raised During Scoping**

We realize that SD2 came out at the same time as the study plan, so that some of the conclusions in SD2 are not included in a study plan. Therefore, we are pointing out issues that need to be included in the study plans. The concerns with the Commission's responses in SD2 include the following.

#### **Population Growth**

SD2 states that the "EIS will include population growth-related effects of the proposed pipeline and alternatives where such effect can be reasonably foreseen." SD2, p. 9. However, this objective is not in a study plan and we request it be included.

#### **Water Conservation**

SD2 states that "some level of conservation effort appears to be part of water conservation districts ongoing plans. The EIS will include any conservation measures that we conclude could be achievable." SD2, p. 10.

In the Water Need Assessment, UBWR projects conservation measures will reduce per capita water use by only 25% by the year 2060. Substantially more conservation savings are available, however, and this projection does not adequately integrate achievable water conservation into future demand projections. Twenty-five percent is an unreasonably low target for water use efficiency. As the Coalition explained in detail in its comments on SD1, water conservation savings could be much higher. *See* Coalition SD1 Comments, p. 28. Current trends clearly show water demand could be reduced significantly by the year 2060. *See* Section IV, section ES-5.1.2, *infra*. The study plan should include a smart growth water conservation scenario as a part of the analysis.

### **Storage in Navajo Sandstone Aquifer**

SD2 states that “the Navajo Sandstone Aquifer is not a reasonable alternative to the LPP.” SD2, p. 11.

In order for the EIS to be complete and thorough, the project alternatives studied must assess the potential for other water supplies to meet participants’ demands. These supplies should include, among others, the Navajo Sandstone aquifer’s potential to provide more water. Indeed, water rights information shows there are existing developed private water rights that could be converted to culinary use over time. According to SD2, these rights are not being considered in this study. Although the Navajo Sandstone aquifer is over-appropriated and closed to any new appropriations there is still a significant amount of existing water rights held by private individuals and public agencies that could convert to culinary use by 2060. UBWR infers in the No Action alternative that without the Pipeline there are no other options for development of the aquifer. However, 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.”<sup>1</sup> The community water supply systems coming from Navajo Sandstone wells and springs were 41,470<sup>2</sup> acre-feet (AF) which represent a small percentage of that. A thorough study of water supplies must include all water rights as part of the analysis. In addition, in its Dec. 28, 2007 letter, eLibrary 20071228-5027, the U.S. Department of Interior’s Office of Environmental Policy and Compliance stated that “the evaluation information should clearly state the water rights of the Virgin River Drainage.”

The amount of water available in Navajo Sandstone aquifer is still debated by the experts and more water resources may be found with more study. In its *10 Years of Water Conservation 1995-2005 Report*, the Washington County Water Conservancy District

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<sup>1</sup> Washington County Water Conservancy District (WCWCD), *Petition for classification of the Navajo/Kayenta and Upper Ash creek aquifers (July 2005)*.

<sup>2</sup> Division of Water Resources, “Municipal and Industrial Water Supply and Uses in the Kanab Creek/Virgin River Basin,”] (2008), Table 13; p.38]: wells are limited to 50% of their “maximum” capacity for reliable supply.

(WCWVD) claims “[t]he Virgin River Upper Basin total available groundwater supply has been estimated at 2.2 million acre feet. The Central Basin groundwater supply has been estimated at nearly 200 million acre feet.”<sup>3</sup>

Furthermore, The Navajo Sandstone Aquifer Storage Project (Project) has been very successful at storing water under Sand Hollow Reservoir. Since 2002, 70,000 AF of water has been recharged into the aquifer and UBWR claims only 8,000 acre feet of it as a culinary source by the 2060. The Washington County Water Conservancy District (WCWCD) stated in their Water Line newsletter that this aquifer could hold up to 200,000 AF of water. As annual recharge increases this Project could supply more future culinary water supply and drought storage by 2060.

### Conversion of Agricultural Wells

SD2 states: “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.

Private agricultural well water could credibly yield substantial volumes of culinary water. The Commission’s analysis of water supplies for the No Action and Action alternatives 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 that there are still other water resources available that are not being considered by UBWR as possible future culinary water supplies<sup>4</sup>. We disagree that UBWR provided an acceptable, thorough estimate of potential water supply; UBWR only considered agricultural conversion of 4,000 AF<sup>5</sup> to culinary use and 12,400 AF of agricultural water to secondary use by 2060 – an unacceptably low estimate. *See* Section IV, WNA 4.1.5.5, *infra*. 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.

### Cumulative Impacts of Growth

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<sup>3</sup> Calvin G. Clyde, Utah Water Research Laboratory, *Groundwater Resources of the Virgin River Basin in Utah* (1987).

<sup>4</sup> 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.

<sup>5</sup> 4,000 AF is from Quail Lake exchange. *See* Section IV, WNA p. 4-18.

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.<sup>6</sup> We strongly urge the Commission to accept EPA’s offer. In addition, a smart growth initiative was considered in the Utah Department of Transportation’s *Southern Corridor Highway EIS*, p. 6-1, available at <http://www.udot.utah.gov/sc/>, and the same data could be used for the Pipeline’s EIS since the growth would occur in the same area.

SD2 states that “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. We do not find this objective in 4.2.9 and request that it is be included in a study plan.

### **Net Demand for Electricity**

SD2 states: “The Lake Powell Pipeline Coalition comments that the EIS should address the effect of the project’s net demand for electricity on the local cost of electricity.” The Commission Responded: “Because of how interconnected power systems operate, we can trace the effects of a new pumping load from the proposed project to local rates; we have revised section 4.2.9 to include effects of the proposed pumping load on the regional power system.”

The Coalition wishes to clarify its request to the Commission. While we agree that the impact of a new pumping load on the regional power system should be integrated into the Socioeconomic Study Plan, our original intended request described a different analysis. In our comments on SD1, the Coalition states that the EIS should assess the impacts of rising electricity rates, greenhouse gas emissions, and climate change regulation on the Lake Powell Pipeline’s annual operational costs. This analysis should include a range of scenarios (i.e. various electricity costs that reflect the rising and volatile rates in recent years, and various

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<sup>6</sup> U.S. Environmental Protection Agency, “Comments on Pre-Application Document” (July 15, 2008), eLibrary 20080724-0151.

estimates of the costs of greenhouse gas emissions, starting with but not limited to EPA estimates associated with the Warner-Lieberman Bill on climate change (2007).

### **3.2 Our Alternatives to the Proposed Action**

SD2 states: “The Lake Powell Coalition recommends that the Commission consider a Water Conservation Alternative in the EIS. The Coalition recommends that the alternative include increased water conservation, improved efficiency in Kane, Washington and Iron counties: and the potential for augmenting local existing water sources.” SD2, p. 9. SD2 also states, however, that “we will consider and assess all reasonable alternatives to the proposed project.” The Coalition’s viable alternative, proposed in our SD1 Comments, pp. 12-13 was rejected without serious review and should be reconsidered for study.

In both the Purpose and Need Statement for the EIS and the Water Needs Assessment, conservation and water use efficiency measures must be included. We provided extensive information in our initial scoping comments on measures implemented in other Southwestern cities today, and conservation measures that could save extensive volumes of water in Washington, Kane, and Iron Counties. Perhaps most importantly, as noted in detail under Water Needs Assessment in Section VI, the need for the proposed action is flawed due to incomplete and inaccurate data on per capita use by communities. The study plan must address these shortcomings by more accurately reflecting the actual needs of the participants and updating water use data.

Furthermore, the study plan arbitrarily drops consideration of alternatives that could better comport with 40 C.F.R. § 1502.14 including, among other things, water conservation, water reuse, land use planning strategies, and other mechanisms for providing water (or reducing demand) that might equally well meet future water demands in a more economic and sustainable manner.<sup>7</sup>

In conclusion, the Coalition requests that, in its Action Alternative, the Commission include smart growth, water conservation, water reuse, and the potential for alternative water supplies to meet future needs. This alternative should include:

#### **Coalition’s Alternative to the Lake Powell Pipeline**

1. Reevaluation of the high growth rate projected by Governor Office Planning and Budget’s (GOBP) population projections. Washington County experienced exceptionally high rates of growth between 2000 and 2005, but given the national economic downturn since SD1, these high rates of growth are not likely to continue indefinitely. In developing its Purpose and Need, the

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<sup>7</sup> See Council on Environmental Quality (CEQ), “Forty Most Asked Questions Concerning CEQ’s NEPA Regulations,” 46 Fed. Reg. 18026 (1981).

Commission should model several population growth rates and water demands. *See* Section IV, WNA ES-3.1, ES-3.2, *infra*.

2. Updated water use data for participant cities using water retail sales. Estimates of water use for the participants are from various years, and include different valuation methodologies. Future demand projections should be based on updated levels of use. Using the correct per capita use would reduce demand by a significant amount. *See* Section IV, WNA 2.3, *infra*.
3. Consideration of reasonable water conservation measures. Reasonable water conservation measures could provide the 59,000 AF of water by the year 2030.<sup>8</sup> Other measures that could reduce demand include updating building codes with plumbing and appliance standards. Using pricing to reduce water demand is more cost-effective than implementing a non-price conservation program. Investing in water infrastructure efficiency is also a cost effective alternative.
4. Reevaluation of water demand in a scenario that would reduce demand by using a progressive, realistic conservation goal greater than 25%. *See* Section IV, WNA ES-5.1.2, *infra*.
5. Reevaluation of the potential yield of the Sand Hollow Reservoir. Sand Hollow is a 50,000 AF reservoir, which has a 20,000 AF of drought reserve and 30,000 AF of active pool. UBWR only counts 7,500 AF of yield for culinary water, but we suggest it could yield more water by 2060. *See* Section IV, WNA 4.1.5.7, *infra*.
6. Counting 50% (40,000 AF) of agricultural water converting to culinary use by 2060. UBWR is only counting 4,000 AF converting to culinary use by 2060. In addition, treat agricultural water for culinary use. *See* Section IV, WNA 4.1.5.5, *infra*.
7. Consideration of potential yield from the Sand Hollow Aquifer Storage Project. Sand Hollow Aquifer Storage Project is now holding 70,000 AF of recharged water, and gaining water every month, but UBWR only counts 8,000 AF by 2060. As the annual recharge increases the yield could increase in the future. In its Capital Facilities Plan (2006), p. 50, WCWCD stated a yield of 15,000 AF would be possible. *See* Section IV, WNA 4.1.6.3, *infra*.
8. A study of other reasonable future water supply projects, including:

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<sup>8</sup> *See* Coalition SD1 Comments, (July 7, 2008), e-Library no. 20080707-5206, p.29.

- a. Capture and storage of Santa Clara river spring runoff by recharging of the aquifer under Gunlock Reservoir.
  - b. Development of an aquifer storage project above Snow Canyon area wells.
  - c. Capture of more of the Virgin River high flows that now go downstream because of the limited size of the diversion pipe (which only captures flows up to 150 CFS) by diverting high flows and piping them to the proposed Sand Stone Reservoir near Leeds to recharge the aquifer.
9. Reduction of the WCWCD's Level of Service of .89 AF to .45 AF per residential unit for inside and outside use, which would cut water demand in half. *See* Section IV, WNA 4.1.2, *infra*.
  10. Conversion of private wells to culinary use. The Coalition identified 18,000 AF of private wells that may be converted to culinary use by 2060. *See* Coalition SD1 Comments, p. 27.
  11. Conversion of more existing private surface (900,000 AF) and underground water rights (330,000 AF) to culinary use for future supplies. The UBWR predicts none will convert to culinary use by 2060.
  12. Using smarter land use planning by including Vision Dixie principles on how to grow. The way that we use land (the types of use and the level of intensity) relates directly to water use, water supply, and water quality. By better understanding land use changes, we will use less water and could plan to accommodate future changes successfully. *See* [www.visiondixie.org](http://www.visiondixie.org). In addition, data from a smart growth initiative was considered in the *Southern Corridor Highway EIS*, p. 6-1, and should be considered in the Pipeline's EIS.
  13. Increases in participants' capacity to treat, distribute, and reuse wastewater by building new plants. WNA Table ES-8 predicts only 16,900 AF of waste water will be available by 2060. However, WNA Table 6-1 states 54,500 AF could be available by 2060.
  14. A yield given to Sand Hollow well expansion. *See* Section IV, WNA 4.1.5.3, *infra*.
  15. A study of Navajo Sandstone Aquifer for possible development.

16. Elimination of dependence on the proposed Pipeline that is vulnerable to drought and political conflict.

#### **4.0 Scope of Cumulative Analysis and Resource Issues**

SD2 states that “based on the information in the Pre-Application documents, we have identified land use, water, wildlife, threatened and endangered species, riparian vegetation and habitat, and socioeconomic resources as potentially cumulatively affected by construction and operation of the Lake Powell Pipeline Project and other basin activities.” SD2, p. 25.

The Coalition is concerned that the analysis is too narrow and only considers the direct impact of construction and operation of the Pipeline itself in the study plans. The analysis must also consider the indirect and cumulative impacts created by the water supply project.

One of the public’s major concerns from scoping was that the population growth would diminish their quality of life. Therefore, population growth and its consequences on the human and natural environment must be part of the analysis. Other federal agencies, including the EPA and U.S. Fish & Wildlife Service have also asked that impacts of growth be analyzed in the study plan. In addition, in its Dec. 28, 2007 letter, *supra*, the U.S. Department of Interior stated that “other environmental issues requiring analysis” include “growth inducing effects” and “long term effects such as human population growth.” However, population growth as a result of this is “major water supply project”<sup>9</sup> is not adequately addressed in the study plan.

While SD2 acknowledges the need to address “issues related to reasonable foreseeable population growth that would be associated with the proposed action and any other alternatives addressed in the EIS,” it continues, “However, we note that population growth, either with or without the proposed project in place, would have a myriad of impacts, both positive and negative, on the local area. Predicting effects not associated with the proposed project and alternatives are beyond the scope of the EIS.” *See* SD2, p.21.

The Coalition believes population growth and change of land use caused by the water supply project should be addressed in a study plan. In order to fully assess the impacts of the pipeline on population growth and land use, the EIS must present a “baseline” scenario that provides an analysis of population growth and land use in the region if the pipeline is *not* developed. Again, we recommend the EPA assist the Commission in the analysis.<sup>10</sup>

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<sup>9</sup> UBWR, PAD Vol. I, § 1.4 (General Information).

<sup>10</sup> EPA, Comments on PAD, *supra*.

“EPA stated in their scoping comments on SD1 that “while it may be true this area would grow without this project, the impacts of this growth should be addressed in the DEIS as either indirect or cumulative impacts. . . . The impacts of growth can be analyzed by estimating the additional people, homes and /or cars, and their impacts to: water quality; air quality (from additional driving); habitat, wildlife and plants; infrastructure costs; and energy use. EPA would be happy to work with FERC on this type of analysis.”<sup>11</sup>

The Coalition asserts the impact of population growth on the natural and human environment must be included in the analysis to fully analyze those impacts in advance. Based on our close review, the analysis planned for in the study plan thus far fails to satisfy the requirements of The National Environmental Policy Act (NEPA). These include:

- 42 U.S.C. § 4331(a). “The Congress, recognizes the profound impact of man’s activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth [and] high-density urbanization.”
- 40 C.F.R. §1502.16(g). The EIS section on environmental consequences must include discussions of “[u]rban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures.”
- 40 C.F.R. §1508.8. Three types of impacts should be studied in an EIS: direct, indirect, and cumulative.<sup>12</sup> Direct impacts are those that “are caused by the action and occur at the same time and place.”<sup>13</sup> Indirect effects are those “which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.”<sup>14</sup> They may include “...growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.”<sup>15</sup> A cumulative impact is “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions . . . . Cumulative impacts can result from

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<sup>11</sup> *Id.*

<sup>12</sup> *Id.* at § 1508.25(c); *see also id.* at §§ 1508.7, 1508.8.

<sup>13</sup> *Id.* at § 1508.8(a).

<sup>14</sup> *Id.* at § 1508.8(b).

<sup>15</sup> *Id.*

individually minor but collectively significant actions taking place over a period of time.:<sup>16</sup>

- 40 C.F.R. § 1508.14. "Human environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. . . . This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment."

In addition, we disagree with the Commission's decision not to analyze the cumulative effects of the proposed Pipeline on water supplies throughout the Colorado River basin. Specifically, the study plan must include a detailed analysis of potential cumulative impacts due to other water development projects currently planned including (but not limited to) projects in the Upper Basin such as the Navajo-Gallup pipeline, the Million pipeline, and the Yampa pumpback project; and projects in the Lower Basin such as the Drop 2 Storage Reservoir.

#### **4.1.1 Geographic Scope**

SD2 states that "[f]or land use and socioeconomics, we will consider cumulative effects to include areas that could potentially receive Colorado River water from the proposed project or alternative water supplies considered in the EIS." SD2, p. 26. However, this objective is not in a study plan and request that the study plan be updated to reflect this goal.

#### **4.2.2 Water Resources**

SD2 states that it will consider "[e]ffects of any reasonably foreseeable effects of building the project and alternatives, such as related changes in land use, population density, or population growth, on surface water quality, including nutrient loading, pollutant runoff, and sediment loading." SD2, p. 28. However, the complete objective is not in the study plan and we request that the study plan is updated to reflect this goal.

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<sup>16</sup> *Id.* at § 1508.7. *See also Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1379 (9th Cir. 1998) (with respect to a cumulative impacts analysis, an agency must provide "some quantified or detailed information" because "[w]ithout such information, neither courts nor the public . . . can be assured that the [agency] provided the hard look that it is required to provide.").

#### **4.2.5 Threatened and Endangered Species**

SD2 states that it will consider “[e]ffects of project induced land development, urbanization, and population growth on surface water quality, including nutrient loading, pollutant runoff and sediment loading, wildlife populations and their habitat and threatened and endangered species.” SD2, p. 31. However, this entire objective is not in the study plan and we request that the study plan is updated to reflect this goal.

## **II.**

### **REPLIES TO UBWR’S RESPONSES TO STUDY REQUESTS**

In PSP Attachment B, UBWR provides its “Response to Study Requests.” Our replies track the title and outline number in the Response for each section for which we have a comment.

#### **1. Coalition’s Request for an Alternative Water Supply Sources Study**

UBWR responds:

“The Coalition requests a study to identify potential alternative sources of water supply for the portions of Kane, Washington, and Iron Counties proposed to be served by the [Project] over the license term. In brief, the Coalition proposes a consensus-based review of potential, alternative local water sources, development of multiple parameters to assess the possible viability of potential alternatives, field studies to collect data to better evaluate the preliminary viability determinations, and a consensus based report on the results. UBWR agrees that this issue needs to be addressed, but, as explained below, submits that the record in this regard is already nearly complete, so the requested study is not necessary.”

UBWR, PSP Attachment B, p. 1.

We disagree that the record with regard to alternative water supply sources is near complete. Based on our close review of the Water Needs Assessment, it does not include all the possible water sources that could be developed in the future. Rather, it focuses on a narrow scope of the WCWCD and municipal supplies and excludes private water rights and augmenting of local water supplies. For the Commission to make an informed decision on the validity of the participants’ need for water, it must have adequate information regarding water rights and storage. *See* Section IV, WNA 6, *infra*.

Further, UBWR’s assumptions regarding future demand for water supply do not appear to be reliable. UBWR assumes that Washington County has developed culinary water

supplies of 83,910<sup>17</sup> AF today, and only has future supplies of 11,000 AF of culinary and 14,100 AF of secondary water to develop by 2060. This does not seem creditable with 332,760 AF of private underground and 900,000 AF of surface water rights (which includes cities', agencies' and private water rights) in the County. The study plan must comprehensively assess the volume of water rights available in the County that could be developed in the future. An assumption could be made that a certain percentage could convert to culinary use for by 2060. See Section I, section 3.2, *supra*.

UBWR further responds: "The Coalition is free to identify any alleged deficiencies in the information existing and to be gathered, and to offer its own comparative evaluation of the Project and potential alternative water sources." *Id.*, pp. 2-3. We disagree with UBWR's attempt to place the burden of environmental studies on the Coalition. We previously provided details on water alternatives that should be studied as they potentially could be impacted by the Project. See Coalition Comments SD1, p. 13 and pp. 55-66. In the absence of definitive data that the project will not have potential impacts on water supply, the burden of study is on UBWR as the discretionary permit applicant to determine the extent of potential effects.

We reiterate our request for an Alternative Water Supply Sources Study as described in our SD1 Comments at pp. 52-57.

### **3. Coalition's Request for Climate Change Study**

In PSP Attachment B, UBWR states: "The Coalition . . . makes no effort to explain how a climate change-related reduction in water availability for the project would be related to implementation of Interim Guidelines."

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) the U.S. Bureau of Reclamation (BOR) states: "acknowledging the potential for impacts due to climate change and increased hydrologic variability, the Secretary proposes that these guidelines be interim in duration and extend through 2026."<sup>18</sup> 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.

UBWR suggests that the Commission should rely on modeling done for the Interim Guidelines for information on the hydrologic impacts of the Lake Powell Pipeline. However,

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<sup>17</sup> WNA, Chart ES-8, p.19.

<sup>18</sup> 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").

the modeling for the EIS did not include rules for an Upper Basin Compact call. Given that the Lake Powell Pipeline is a major new diversion of water in the Upper Basin, with a priority date of 1959 that places it junior to many other Upper and Lower Basin water rights, it could likely be subject to shortage in a compact call.

When new modeling that includes climate change is completed it will show more accurately the impacts of the Lake Powell Pipeline withdrawals on existing senior water rights holders. It is essential that project participants and decision makers have a complete analysis of the reliability of pipeline supplies.

UBWR incorrectly assumed the Coalition was not asking for something more than the current CRSS model.<sup>19</sup> See Coalition's Comments re Climate Change Study Plan Request in, Level of Effort and Cost, *infra*, see also SD1 Comments, pp. 45, 64. The model should develop paleo-hydrology, include climate change hydrology, and represent the Colorado River Compact. We explain these same concerns about CRSS model in our comments on UBWR's Study Plan 19: Climate Change, see Section V., Coalition Comments re PSP, *infra*.

### III.

#### **REPLIES TO UBWR'S RESPONSE TO QUESTIONS AND COMMENTS REGARDING COLORADO RIVER WATER SUPPLY AND OPERATION OF LAKE POWELL**

In PSP Attachment C, UBWR responds to comments regarding Colorado River water supply. We reply to certain responses.

##### **Longevity of Water Supply**

**Comment:** What is the longevity of the water supply from Lake Powell since the lake is silting up?

**UBWR's Response:** "In December 1986 the U.S. Department of Interior, Bureau of Reclamation completed a report titled, "1986 LAKE POWELL SURVEY," which presented the results of the 1986 Lake Powell sedimentation survey. This was the first survey of the lake since it began filling in March 1963. The purposes of the report were to document the present water storage capacity, loss of storage capacity by sedimentation and the rate of sediment deposition. The average rate of sediment deposition since closure of the dam and September 1986 (23.5 years) was 36,946 acre-feet per year. The annual rate of sediment deposition is approximately 43 percent of the original estimate of 85,400 acre-feet per year. Assuming the rate of sedimentation remains constant Lake Powell has a useful life of hundreds of years." PSP, Attachment C, p. 1.

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<sup>19</sup> See PSP Attachment B, p. 8.

**Coalition Response:** Given the variation in flow rate exhibited since the 1986 Lake Powell sedimentation survey the conclusions reached by it are no longer valid. While sediment deposition rate will decrease as flow decreases other factors come into play. A Duke University-led study published in the peer-reviewed journal *Geology* in November 2008 found that “diminished river flows crossing existing deltas became so choked with sediment that periodically they entered the lake essentially as submarine avalanches, carrying much of the sediment deep into the lake. While this re-deposition will increase the net total capacity of the reservoir it will also greatly accelerate the sedimentation rate at the bottom of the reservoir (~22 yr river input) drastically decreasing the time before sediment buildup will reach the level of the river outlet works 237 feet above river level, rendering it unsafe in the occurrence of an earthquake or flood.”<sup>20</sup> This will require expensive modifications to keep the dam operating. This study plan must address this issue, which could have a major impact on the viability of the proposed pipeline. The study plan needs to provide for a full analysis of his eventuality and its possible impacts on the proposed Pipeline project.

### **Impact on Lower River Flows**

**Comment:** What effects will the LPPP have on the Colorado River drainage all the way to Mexico?

**UBWR’s Response:** “The ‘Law of the River,’ including the Colorado River Compacts and the recently adopted Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Mead, require and prescribe the release volume of water from Lake Powell. The release volumes from Lake Powell are set based upon the above documents regardless of the development of the LPPP or any other Upper Basin project. The effects of the LPPP depletions on the Lower Colorado River Basin will be immeasurable.” PSP, Attachment C, p. 2.

**Coalition’s Response:** “With the occurrence of drought, various ambiguities and uncertainties no doubt would surface to challenge the Law of the River. Not securely in place are the necessary legal and institutional mechanisms to interpret the priorities, define various options and devise strategies for dealing with drought.”<sup>21</sup>

While the hydrologic modeling for the Interim Guidelines did include a hypothetical Upper Basin development schedule, as submitted by the Upper Colorado River Basin Commission, it did not analyze the specific impact of the Lake Powell Pipeline with respect to the date planned for its development or the volume of water it would divert. The impact

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<sup>20</sup> Lincoln Pratson et al., “Drought And Sediment Shift Lead To Increase In Lake Powell’s Capacity To Hold Water,” *Geology* (2008), available at <http://www.gsjournals.org/perlserv/?request=get-document&doi=10.1130%2FG24733A.1>.

<sup>21</sup> Joe Gelt. “Sharing Colorado River Water: History, Public Policy and the Colorado River Compact.” *Arroyo*, Vol. 10 No. 1 (August 1997), available at <http://ag.arizona.edu/AZWATER/arroyo/101comm.html>

of a new 100,000 acre-foot diversion in the near term will be indisputably significant, and should be assessed independently. Of particular interest is the frequency of flows in the limitrophe reach of the Colorado River in Arizona. This reach of the Colorado River depends on flows in excess of Mexico's treaty deliveries. For the past several decades these flows have occurred with regular frequency due to floods on both the Colorado and Gila Rivers. The study plan should quantify the probability of flows to the limitrophe reach in Arizona both with and without the project. See Section V, Study Plan 19.

### **Federal Reserved Water Rights**

**Comment:** What effects will the LPP project have on federal reserved water rights, the 1944 Treaty with Mexico, Lower Colorado River Basin States and delivery of water to Native American Tribes and the Colorado River Delta?

**UBWR's Response:** "The obligations to the Republic of Mexico, the Lower Basin States and Native American tribes will not be affected by the LPPP. Utah and the other Upper Division States will continue to meet their obligations under the 'Law of the River:' Development of Utah's compact allocation is fully intended by the 'Law of the River,' and Utah can use its allocation for the LPPP or other projects and still fully comply with its legal obligations." PSP, Attachment C, p. 2.

**Coalition's Response:** "Recognizing the likelihood of a Colorado River treaty with Mexico the compact designed that water for that country would come from unallocated 'surpluses' then thought to be available. Upper and Lower Basin states would equally make up any resulting 'deficiency.' A 1944 U.S.-Mexico Treaty allocated 1.5 million AF of Colorado River water to Mexico. In the absence of surpluses, it would seem that Upper and Lower Basin states, according to the compact, must each provide 750,000 AF for Mexican use."<sup>22</sup> "The delivery obligation to Mexico is legally binding even during severe, sustained drought."<sup>23</sup> A settlement with Mexico will come during the lifetime of the Pipeline; therefore the Treaty with Mexico should be addressed in the study plan.

We disagree with UBWR that the Law of River and the Interim Guidelines will protect the water for Pipeline in a time of sustained drought conditions. Thus, the UBWR's responses do not answer the questions. The risks of drought to the water supply for the Pipeline are of great concern to stakeholders and need to be analyzed in a study plan. David H. Getches, in "Law of the Colorado River: Coping with Severe Sustained Drought," writes:

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<sup>22</sup> *Id.*

<sup>23</sup> Lawrence J. MacDonnell *et al.*, "The Law of the Colorado River: Coping with Severe Sustained Drought." *Water Resources Bulletin*, Vol. 31 No. 5 (Oct. 1995), available at <http://www.hydrosphere.com/publications/ssd/TheLawofTheColoradoRiver.pdf>

“The Law of the River creates certain priorities in drought... and there may be serious environmental consequences and related legal restraints on how the water is used in times of shortage. The Law of the River effectively shifts the burden of the consequences of sever, sustained drought, to Arizona and ultimately to the Upper Basin. The amount actually available for use depends on available supplies and quantities in storage. Utah’s allocation is 23 percent of storage. Shortages begin to arise in some states as annual flows decline below 14 million acre feet. In anticipation of possible shortages, the 1948 Compact established the Upper Colorado River Commission (“Commission”) and empowered the Commission to order curtailments of consumptive uses in the Upper Basin as required to meet downstream delivery obligations.”<sup>24</sup>

A discussion of reduced flows for the Pipeline and a possible compact call must be included in the study plan analysis.

Moreover, regardless of the impact of the Pipeline on the ability of the Upper Basin states to meet compact deliveries, the project will have impacts on Lower Basin shortages. The study plan should identify the impact of the Pipeline on Lower Basin water deliveries, notwithstanding legal obligations.

### **Long-term Depletion in Compact Hydrology**

**Comment:** Annual depletion of LPPP is significant and will affect the seven states dependent on the Colorado River. The project will affect the entire geographic region of the West and will cause broader regional impacts.

**UBWR’s Response:** “The Colorado River Compact, Upper Colorado River Basin Compact, the Colorado River Storage Project Act and other elements of the ‘Law of the River’ contemplate development and use of each of the seven Colorado River Basin States apportionments. The study plan does not specifically address annual depletion in Lake Powell, since the project develops Utah’s Colorado River apportionment as intended in the ‘Law of the River’ and the annual depletion is not significant, 1/240<sup>th</sup> of the capacity of Lake Powell.” PSP, Attachment C, pp. 2-3.

**Coalition’s Response:** In “most scenarios of Colorado River at Lees Ferry (which separates the upper from the lower basin) indicate that, within 20 years, discharge may be insufficient to meet current consumptive water resource demands. The recent experience illustrates that ‘critical’ conditions already exist in the basin. Climate variability and change, together with increasing development pressures, will result in drought impacts that are beyond the institutional experience in the region and will exacerbate conflicts among water

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<sup>24</sup> *Id.*

users.”<sup>25</sup> Therefore, due to reduction in flows of the Colorado River, the seven Basin States and broader impacts must be included in a study plan.

In March 2007, Don Ostler, Executive Director of the Upper Colorado River Commission, addressed the consequences of the Upper Basin’s plans to develop its full compact apportionment of water. He discussed the reality that the river was over apportioned in 1922 and that “no upper basin states are blindly developing water without looking at what is available.”<sup>26</sup> He raised the questions of “planning on an even smaller supply, addressing global warming and the issue of over-development in the Lower Basin.” He concluded his presentation with the question, “What happens when the Upper Basin develops their full share?” He believes it will be less likely that Lake Powell will equalize or spill high flows to Lower Basin, and more likely that legal conflict will break out between basin states.<sup>27</sup>

### **Impacts of Downstream Fish Communities**

**Comment:** An assessment is needed to describe potential impacts on the fish community in Lake Powell and native and endangered species downstream of Glen Canyon Dam that may result from construction and operation of LPPP.

**UBWR’s Response:** “The small impact of the withdrawals by the LPPP on the Lake elevation should have no measurable impact on the fish community in the Lake. Upper Basin precipitation will play a much larger role in the elevation and supply of water in Lake Powell.

“The releases required by the ‘Law of the River’ will still be made from Lake Powell after the LPPP is operational, so the LPPP should have no impact on native and endangered species below the dam. The Bureau of Reclamation’s Colorado River Interim Guidelines for Lower Basin Shortage and Coordinated Operations EIS includes the LPPP depletions, and the U.S. Fish and Wildlife Service’s December 12; 2007 Biological Opinion for that EIS concluded that it was not likely to jeopardize the continued existence of the endangered species downstream of Glen Canyon Dam.”

**Coalition’s Response:** “The requirements of the Endangered Species Act may impose the most noticeable constraints in allocating water during the shortages that would arise in the event of a severe sustained drought. Moreover, virtually the entire Colorado River has been

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<sup>25</sup> Intergovernmental Panel on Climate Change, *Climate Change and Water* ( June 2008), p.105, available at <http://www.scribd.com/doc/5065346/climatechangewateren>.

<sup>26</sup> Don Ostler, "Upper Basin Plans to Develop its Full Compact Apportionment of Water. What are the Consequences?" (University of Utah) (Mar 24, 2007), available at <http://www.law.utah.edu/media/show-media.asp?MediaID=180&TypeID=4>.

<sup>27</sup> *Id.*

designated as “critical habitat” for one or more of the endangered fish species. During a prolonged drought, it is probable that the Secretary of the Interior would have to take account of the flow-related needs of the fishes as well as consumptive use commitments under the Law of the River.”<sup>28</sup> Thus, a study plan must address how Endangered Species will be protected during drought.

**IV.**  
**COMMENTS ON PHASE 1 WATER NEEDS ASSESSMENT**

The Coalition hereby provides comments on the *Lake Powell Pipeline Study Water Needs Assessment Phase 1 Report* (Aug. 19, 2008) (WNA). The WNA is integral to evaluating the need for the project as water delivery and supply to water users in southwest Utah is one of the primary purposes of the proposed Project. Our comments track the title and outline number in these documents for each section where we have a comment.

**ES-1. Introduction**

One purpose of the WNA is to “Determine the validity of the participants’ (Water Districts) requests based on estimates of future supplies and demands.” WNA, p. 1. Based on our review of the WNA, we are concerned that it does not provide sufficient detail and may be based on inaccurate assumptions. We do not believe the WNA provides adequate factual basis for the PSP.

**ES-3.1. Population Projections**

The WNA provides: “A range of population projections was determined for each of the Districts based on population projections data from the GOPB.” WNA, p. 6. We disagree with the population projections.

Due to the economic downturn, population growth will not be as robust as projected by the GOPB’s model in Table ES-1 which projects an annual growth rate of 5.59% from 2005-2010 and 5.10% from 2010-2020. These growth rates need to be re-evaluated to be

<b>Chart A</b>	
<b>Washington County Building Permits Issued <sup>(1)</sup></b>	
Year	Single Family
2000	1241
2001	1561
2002	1887
2003	2262
2004	2901
2005	3479
2006	1845
2007	1422
2008	478 YTD
	October
<b>Washington County Existing Home Sales <sup>(1)</sup></b>	
2007	6095
2008	2238 YTD
	October
<sup>(1)</sup> Data from Southern Utah Title Company	

<sup>28</sup> MacDonnell *et al.* 2005, *supra*.

more reasonable before the study plans precede. The study plan must consider the number of building permits as a measure of actual growth because they accurately reflect the need for new water hookups.

Chart A provides actual building permit information taken from Southern Utah Title Company in St. George. These data differ from the projections in the WNA. The GOBP estimates that about 10,000 plus people are moving here every year. However, the majority of these people are buying an existing home, not a new home. See chart A on Home Sales. We request that different growth scenarios be used. More information on building permits can be found in the Strategic Planning Group Study Washington County 2035 Housing Study, p. III-5.<sup>29</sup>

### **ES-3.2. Per Capita Water Use**

The WNA estimates current and future per capita water use rates. See Section IV, WNA, p.6. We disagree with how these rates were determined.

Averaging all the rural agricultural communities' secondary water use to get the per capita water use rate distorts the need for water. Based on our review, it appears a significant amount of irrigation water is included in per capita use.

Based on our review of the WNA, Table ES-2, p.7, estimating the culinary water use of 276 gallons per person per day (gpcd) for Washington County and adding more secondary use of 53.3 gpcd for a total of 328.3 gpcd inflates the water demand. The current information lacks detail on how the numbers were derived. As stated below, actual current retail water sale data needs to be collected to reflect current use.

### **ES-5.1.2. Conservation Savings**

The WNA estimates the progress of the conservation program in Washington County. WNA, p. 15. We are concerned that the UBWR's 25% water conservation goal, as stated in the WNA, should be increased and different scenarios should be used to show how demand is reduced with conservation. While it is understood Southern Utah is hotter and dryer than the cities evaluated in the WNA – St. George, Washington, Santa Clara, Ivins, Hurricane and La Verkin – these cities are good examples of water conservation potential in Utah. Numerous water providers throughout the state have also adopted the states goal of 25% by 2050, and many have nearly attained those savings today. They include:

- The Jordan Valley Water Conservancy District provides water to the cities of West Jordan, South Jordan, Sandy, Midvale, Riverton and South Salt Lake as well as numerous irrigation districts, committed to reduce use by 25% from

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<sup>29</sup> Available at [www.visiondixie.org](http://www.visiondixie.org).

2000 levels by 2025.<sup>30</sup> As of 2004, the Jordan Valley Water Conservancy District already had seen a 20 percent reduction, lowering their per capita water use from 250 to 207 gpcd in only four years.<sup>31</sup>

- ” Data compiled by the Division of water Resources indicate daily per capita water consumption in Salt Lake City dropped from 250 gallons to 208 gallons, a decrease of 17 percent. Similarly, daily per capita water consumptions in the Logan area dropped from 248 gallons in 1998 to 200 gallons in 2003, a decrease of 19 percent. The Ogden-Clearfield area is also experiencing a drop in water use, with daily per capita consumption dropping from 189 gallons to 153 gallons from 2001 to 2003.”<sup>32</sup>
- Salt Lake City’s LEED Program aims for Sustainable Urban Growth. As an exemplar western city poised on the edge of a desert, Salt Lake City can show the way for others to sustain urban growth by utilizing water resources wisely, both indoors and outdoors, to promote a healthy, sustainable ecosystem and economy. Salt Lake City has established ambitious water efficiency and pollution prevention goals including: Reduce per capita water use from 2000 yr levels (232 gpcd) by 25 percent by the year 2010 (188 gpcd) while reducing energy demands and pollution and, concurrently, promoting biodiversity. In this way, Salt Lake City hopes to reduce the need for additional water supplies to accommodate growth in the region. <sup>33</sup>

We believe that the WNA underestimates current water conservation savings in Washington County. For example, “St George City, which is the largest city in the county had an estimated population in December 2007 of 83,364. If the population counted second homes, the population served increases to 102,234. Per capita water use for all residential water use was approximately 243 gpcd. If second homes were included, water use drops to 198 gpcd. In 2002 the average monthly water use was 23,891 gpd. In 2007 the average water use was 18,685 gpd, a drop of approximately 27%.”<sup>34</sup> UBRW could use St George City’s Water Conservation Plan on conservation water savings to calculate water conservation for the next 50 years. The Utah State Intuitional Trust Lands (SITLA) is one of the largest

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<sup>30</sup> Jordan Valley Water Conservancy District, *2004-2005 Summary of Operations (date)*, p. 49.

<sup>31</sup> *Id.*

<sup>32</sup> University of Utah, “Water Use and Residential Rate Structures in the Intermountain West .” *Utah Economic and Business Review* (March/April 2005).

<sup>33</sup> “Salt Lake City LEED Program Aims for Sustainable Urban Growth.” *Water Wiser Newsletter* (Oct. 2004). Available at: <http://www.awwa.org/waterwiser/watch/index.cfm?ArticleID=365&navItemNumber=3348>.

<sup>34</sup> City of St. George, *Water Conservation Plan Update* (January 2008), p. 3.

developers of mixed use communities in the County. Coral Canyon and Sienna Hills residential communities both of which use much less water than the county average. These communities could be used to demonstrate achievable water conservation savings. Sienna Hills development has smaller lots, mandates open spaces, natural vegetation, limits the amount of lawns, requires drought tolerant plants, and limits the amount of land that can be landscaped. In addition, SITLA will develop 10,000 acres called the south block which is state land south of St. George. Data from a smart growth initiative for the south block was considered in the *Southern Corridor Highway EIS* (p. 6-1) and should be considered in the Pipeline's EIS.<sup>35</sup>

Further, in Washington County the median lot sizes have decreased from 10,000 square feet in 1990 to about 8,500 square feet in 2005.<sup>36</sup> In St George the average is seven homes per acre.<sup>37</sup> The smaller lots use less water; the trend toward smaller lot sizes should also be considered in the analysis for the WNA.

Lastly, the WNA uses Boyle report assumptions which do not account for price elasticity, i.e. water demand does not respond to changes in water prices. Changes in water prices result, in this case, from the development on new supply sources in Washington County.

Increased prices can affect demand: "Using pricing to manage water demand is more cost-effective than implementing non-price conservation program. The gains from using prices as an incentive for conservation come from allowing households to respond to increased water prices in the manner of their choice, rather than by installing a particular technology or reducing particular uses, as prescribed by non-price approached. Price-based approached also have important advantages in terms of monitoring and enforcement."<sup>38</sup>

Public opinion supports water conservation in Washington County. The polls include the following:

- WCWCD hired VanGuard Media in 2008 to do a survey to gage public opinion on the Pipeline and found high favorability for water conservation and a preference for tiered pricing.

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<sup>35</sup> Utah Dept. of Transportation, *Southern Corridor Highway Environmental Impact Statement* (Oct. 2005). Available at <http://www.udot.utah.gov/sc/>.

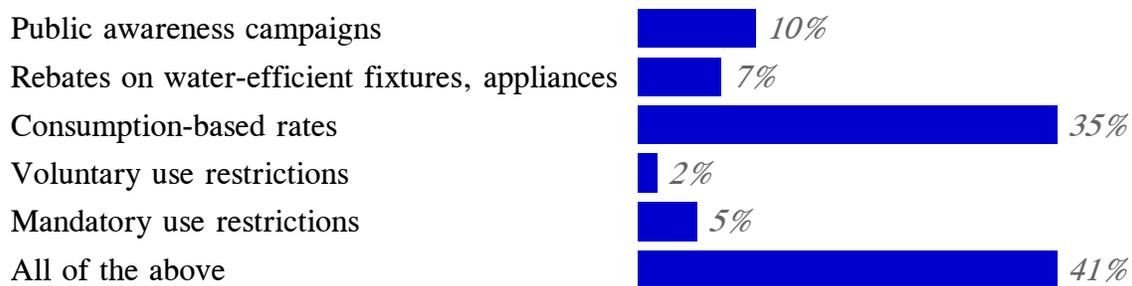
<sup>36</sup> Washington County, *2035 Housing Study* (2007), p. IV -2, available at [www.visiondixie.org](http://www.visiondixie.org)

<sup>37</sup> UDOT, *Southern Corridor EIS, supra*, Chapter 6.

<sup>38</sup> Olmstead, *Comparing Price and Non-price Approaches to Urban water Conservation* (Sept. 2008), p.18.

- Vision Dixie principles are being adopted by all the communities in the county. Principle 2 is water conservation, which was a high priority in Vision Dixie public polling survey results. The Vision Dixie principle states: “We all need to take actions to use less water.”<sup>39</sup> It continues: “Water conservation can have a positive impact on economic development. There are many businesses and individuals that will be attracted to this area because we are managing our resources wisely.”<sup>40</sup>
- “Conservation pricing is an important component of any effective demand management program and should be utilized in any community that is seeking new sources of water. In fact, in a recent poll by the American Water Works Association, responders stated that conservation oriented rates, or consumption-based rates, were the best individual mechanism to get customers to use less water (Table 6).”<sup>41</sup>

**Table 1**  
**Results of AWWA Quick Poll<sup>42</sup>**



Additionally, the municipalities that have the most effective conservation oriented rates, i.e. structures that clearly communicate *the more you use the more it will cost per unit*, are the communities who provide an initial block of water at a low and affordable rate, but increase rates noticeably from one block to the next.

#### **ES-6.4. No Action alternative**

The WNA states: “The supply and demand for the No Action Alternative is shown in Figure ES-14. Demand would be met up to 2020, but there would be a shortage of

<sup>39</sup> Vision Dixie, *2035 Land Use & Transportation Vision* (2007), p.14, 25 at [www.visiondixie.org](http://www.visiondixie.org).

<sup>40</sup> *Id*

<sup>41</sup> American Water Works Association, “Results of Survey: What’s the best way to get customers to use less water?” Available at <http://www.awwa.org/QuickPollResults.cfm?itemnumber=1663>.

<sup>42</sup> *Id*.

approximately 145,200 ac-ft per year by end of the planning period (2060).” WNA, p. 25. We disagree with the WNA’s assessment of the consequences under the No Action Alternative.

The assumptions that there will be a water shortage of 145,200 acre feet in 2060 is skewed by assuming a very high population rate and distorted per capita use rates. The Coalition has provided options to augment other local water supplies not counted by UBWR and provide solutions to reducing water demand. *See* Section I, section 3.2, *supra*.

Stating that there will be water shortages that will limit economic development is unfounded in fact and should be deleted from this alternative.

### **2.3. Methodology**

The WNA states, “Various methods are used by cities throughout the United States to calculate per capita water use.” WNA, p. 2-11. As described below, we disagree with some of the assumptions and methods used to calculate water use.

The WNA states “agricultural water use was not to be used” in per capita use. WNA, p. 2-12. However, Table 17, Secondary water use chart in the DWR 2008 report shows that a significant amount of agricultural water from irrigation companies is included. This has to be redone using updated retail sales information to make sure agricultural irrigation water is not included in the rate.

Furthermore, a review of earlier DWR water use reports reveals that secondary use has not increased although population growth has doubled. The level of secondary water use of 7, 445.5<sup>43</sup> acre feet 2005 in the WNA has actually gone down over the years. The reports are summarized in the table below.

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<sup>43</sup> DWR 2008 report, p. 42, Table 17.

Secondary Water Use Estimates DWR

Acre feet	Year	Reference
11,170	1990	Utah State Water Plan Kanab/Creek/Virgin River Basin , August 1993, on p. 9-24, Table 9-8, also includes part of Kane County to Johnson Wash
10,587	1998	Boyle Engineering Corporation ,Water Supply Needs for Washington and Kane Counties & Lake Powell Pipeline Study, p.21-22. December 1998, Table 2.3. <sup>44</sup>
9,770.3	1998	1998 DWR M & I report, p. x, table II Washington County
7,818.6	2002	DWR 2002 report p. 42 Table 17
7,445.5	2005	DWR 2008 report p. 42 Table 17

This information indicates secondary water does not increase with population growth. Thus, it is not justified to add 52 gpcd of secondary use in per capita use for 50 years, because it distorts the need for water.<sup>45</sup> Secondary use is also seasonal, and not used 365 days a year.

Secondary systems that are not metered should be reevaluated because they are the irrigation water shares that have been turned over to the cities due to changing from flood irrigation to a pressurized system. Basing estimates solely on water rights and making assumptions based on unmetered water skews the per capita use rate.

Using Division of Water Resources (2008) estimate (*see* Table 16, p. 41) for gallons per capita per day isn't realistic because DWR is comparing the small agricultural communities that push up the figures for gallons per person per day. Another option could be to use the cities in the urban core that are served by the WCWCD and get updated information, making sure to separate out agricultural water, and use the average (gpcd) of those cities to more accurately assess the need for the Pipeline.

WNA states “per capita water use data were determined by dividing total water use by the permanent population (i.e. non-permanent resident population was not included in the calculation of per capita water use).” WNA, p. 3-12. If non-residents, which are 25% of

<sup>44</sup> Boyle Engineering, *Corporation Water Supply Needs for Washington and Kane Counties & Lake Powell Pipeline Study* (1998), pp. 21-22, available at <http://wcwcd.state.ut.us/Plans,%20Studies%20&%20Reports.htm>. Table 2.3, p. 21, shows the secondary use is from the irrigation companies. The report includes this use in per capita use, although UBWR states agricultural water is deleted from per capita use.

<sup>45</sup> *See* Lake Powell Pipeline Study, Water Needs Assessment, Phase 1 Report, Final Draft (Aug. 2008) (WNA), p. 3-12, Table 3-10, available at <http://www.water.utah.gov/lakepowellpipeline/projectupdates/default.asp>

the population, are not counted that also inflates the per capita use. Non- residents should be counted in another scenario.

The assumptions of the Boyle report need to be reevaluated in the WNA used to predict water demand. “The Boyle report aggregated all classes of water; it assumed that these sectors will grow in direct proportion to population growth. This is not the case—commercial and industrial water use typically grows at a slower rate than population. Boyle Report’s assumption that secondary water use will increase with population is particularly suspect. Secondary water is an artifact of low-density residential development into agricultural area.” Defects of Boyle report study are identified in Hydrosphere Resource Consultants, *Review of Water Supply Needs in Washington County, Utah* (2000) p. 5.<sup>46</sup>

New methodologies need to be developed to more accurately reflect water need in the future in the WNA. UBWR should set a standard way of counting per capita use using water retail sales so it can accurately be measured and compared.

## 2.6. Existing Water Supplies

The WNA addresses the concept of demand hardening:

“As per capita water use is reduced, the ability to use demand management as a drought protection strategy is also reduced. The decrease in flexibility of per capita water use is referred to as ‘demand hardening.’ It is important that reliable yield estimates for the Districts are not overestimated because of demand hardening that will occur in the future as additional conservation measures are enacted.”

WNA, p. 2-14. The WNA uses demand hardening as a justification for not implementing long term drought measures. The concept of demand hardening is defined as follows: “By saving water, long-term conservation can also reduce the water savings potential for short-term demand management strategies during water shortages.”<sup>47</sup> While demand hardening can be a concern, much research has been done in recent years on the topic and according to the Colorado’s Statewide Water Supply Initiative (SWSI) phase II report demand hardening is only a concern “during a water shortage if conserved water is used to serve new customers.”<sup>48</sup>

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<sup>46</sup> Available at [http://www.citizensfordixie.org/images/pdf/hydrosphere\\_original\\_water\\_supply\\_report.pdf](http://www.citizensfordixie.org/images/pdf/hydrosphere_original_water_supply_report.pdf).

<sup>47</sup> J.E. Flory *et al.*, *Long-term Water Conservation and Shortage Management Practices: Planning that Includes Demand Hardening*, prepared for California Urban Water Agencies (1994).

<sup>48</sup> *Colorado SWSI Phase II Report* (Nov. 2007), § 2.3.2 at 2-11, available at <http://www.cdm.com/NR/rdonlyres/0ED27922-DFB9-431F-A9DF-4328B0CE3FC4/0/ColoradoStatewideWaterSupplyInitiative.pdf>.

- Customers who have reduced their demand through technological changes or who join a system as efficient users (such as new customers) can still achieve behavioral reductions during a shortage.<sup>49</sup>
- By modeling the demand impacts of long-term conservation programs on current customers, and the potential for drought curtailment in new and existing customers, it is possible for water providers to determine what portion of achieved conservation savings should be held to maintain (or improve) system reliability and what portion can be used to serve new customers.<sup>50</sup>

Additionally, encouraging wasteful use is not good policy and is in fact inconsistent with state and federal law.

#### **3.1.4. Tourism Population**

The WNA evaluates water use by the tourist population. *See* Section IV, WNA, pp. 3-11, Table 3-8. It estimates an annual average of 16,013,000 tourist visits to Washington County. *See id.* It does not describe the basis for this number, and thus the estimate cannot be verified. Alpha Engineering’s assumption that a motel visit uses 150 gallons per day (gpd) is not valid. In a chart of per capita use, the WNA estimated water use of 70 gpd for a person in a house.<sup>51</sup> Thus, an estimate of 150 gpd for a person who stays in a motel room only for the night is not valid.

#### **4.1.2. WCWCD Regional Water Supply Agreement**

The WNA states:

“WCWCD has executed a Regional Water Supply Agreement (RWSA) with five municipalities in Washington County, beginning with the City of St. George, effective April 23, 2006, and followed in 2006 by Washington, Ivins, Hurricane and LaVerkin. Toquerville has approved its execution and other municipalities are likely to follow. The RWSA is the vehicle by which WCWCD will provide water throughout the county in the future.... [¶] “The RWSA operate under a new approach in contrast to the typical take or pay contracts traditionally relied upon by the District. Capital costs for water development are paid for largely by new growth in the form of impact fees.”

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<sup>49</sup> *Id.*, p. 2-11.

<sup>50</sup> *Id.*, p. 2-12.

<sup>51</sup> WNA, p. 3-12, Table 3-10.

WNA, p. 4-2. The WNA further provides: “The impact fees are structured to provide for a baseline amount of water, set as 0.89 acre feet, as required by the Utah Division of Water Quality, for one equivalent residential unit.” WNA, p. 4-3.

We have been unable to locate documentation to support a determination that 0.89 acre feet of water is an appropriate baseline amount of water being provided to existing residents within the municipalities. Every residential unit is considered to have the same high water use without consideration for other types of residences that use less water such as condos, apartments, and smaller lots. Further, the Utah Division of Drinking Water (Division) has an 800 gpd requirement per residential unit for just indoor use. This high rate is allocated for peak use and drought. The shortcoming of this estimate is that it does not consider the long term benefits of water conservation in its forecast of reduced water demand. As a result, communities then have to build excess (redundant) water supply simply to facilitate cutbacks during drought. This is highly uneconomical and misleading to ratepayers. The Division indicates that the 800 gpd is an *estimate*, “in the absence of firm water use data.” R309-510-4; R309-510-7(2). Therefore, if available water data supports a reduced water use rate for indoor use, this actual “level of service” could be reduced and the amount of water required for future growth would be reduced by a significant amount.

The state rule on drinking water systems, R309-510-6 (Water Conservation), provides as follows:

“This rule is based upon typical current water consumption patterns in the State of Utah. They may be excessive in certain settings where legally enforceable water conservation measures exist. In these cases the requirements made in this section may be reduced on a case-by-case basis by the Executive Secretary.

Drinking water systems are encouraged to use the water resources of the state wisely. Conservation measures such as low flow toilets and low water demand landscaping (xeriscaping) may significantly reduce the demands on water systems.”<sup>52</sup>

Consistent with this rule, the WNA should verify that 0.89 AF of water is indeed “typical water consumption,” and provide detailed information on how this estimate was derived. An average home uses about 10,000 gallons per month for both inside and outside watering, or approximately 0.45 AFA. Actual retail water sales figures should be collected for this study.

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<sup>52</sup> R309-510-6, available at [http://www.drinkingwater.utah.gov/documents/rules\\_ddw\\_version/R309-510\\_3-8-06.htm](http://www.drinkingwater.utah.gov/documents/rules_ddw_version/R309-510_3-8-06.htm)

**4.1.3. WCWCD Existing Supplies**

The WNA states: “The yield estimates used for Washington County are considered reliable because ground water supplies and agricultural water curtailment for M&I use can be used to supplement surface water supplies to fully meet demands during extreme drought years.” WNA, p. 4-3. If this statement is correct, then the alleged consequences of the No Action Alternative should be lessened by the availability of ground water supplies and agricultural water curtailment. See Section IV, WNA section 4.1.3.3, *infra*.

**4.1.3.3. Summary of Existing WCWCD Culinary Supplies**

The WNA summarizes the reliable yield for existing WCWCD projects that can be used for culinary and secondary purposes. See WNA, Table 4-1, p. 4-9. Table 4-1 assumes 29,500 ac-ft/yr of reliable culinary quality water yield from Quail Creek and San Hollow Reservoirs. This is consistent with the data in Table 6-1, “WCWCD Summary of Existing and Future Supplies,” see Section IV, WNA, p. 6.3. Table 6-1 also reports 29,500 AFA from Quail Creek and Sand Hollow Reservoir. Based on our review, 29,500 AFA of culinary water from these two reservoirs, plus the well field of 8000 ac-ft, does not appear on its face to be an efficient yield of two reservoirs that hold large amount of water in storage. The WNA should disclose current storage protocols, and explain why more storage is not being considered as yield of culinary water for 2060. Further, the WNA’s assertion in its analysis of the No Action Alternative that there is not adequate storage for drought, is inconsistent with the storage capacity indicated in Table 4-1. The chart below shows the large amount of water in storage and a much smaller amount of water being sold and is an example of the small amount of yield of those resources.

**WCWCD reservoirs and aquifer storage only**

	Acre feet yield	Acre feet storage capacity 2008	Retail sales acre feet 2007 <sup>53</sup>
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

<sup>53</sup> See Melodie Sorensen, WCWCD, pers. comm. to Citizens for Dixie’s Future (Oct. 21, 2008).

#### **4.1.4.1. Potable Water Supplies**

The WNA states,

“The total reliable potable water supply for all public community systems in Washington County is about 72, 560 acre feet per year (DWRe2008a). Table 4-2 shows the reliable potable water supplies developed by each public community water system in Washington County. The annual potable water use in Washington County in 2005 was 39,291 ac-ft, representing about 54 percent of the reliable potable water supply.”

WNA, p. 4-10.

Table 2, “Reliable Potable Water Supplies – Washington County,” shows WCWCD’s surface water from the Virgin River to be 39,700 AF and 3,750 AF from wells which is not reflected in the current total supplies. However, Table 6-1, “WCWCD Summary of Existing and Future Supplies,” *see* Section IV, WNA, p. 6.3, states WCWCD provides less water of 29,500 AF of annual surface water supplies.

Over the years the amount of available water in county has gone down in various water reports. For instance, in the WCWCD’s Virgin River Management Plan potential M & I Water Supplies was 176,700 AF.<sup>54</sup> This study should reevaluate possible future water supplies of all reports.

#### **4.1.4.2. Secondary Water Supplies**

*See* Section IV, WNA section 2.2, *supra*.

#### **4.1.5.3. Sand Hollow Well Field Expansion**

This section discusses the potential for well expansion. However, a future yield is not noted in possible future supplies.

#### **4.1.5.4. Wastewater Reuse**

The WNA makes inconsistent statements about the availability of storage for reuse water, stating both that there is no storage for reuse water and that water can be stored in Warner Valley. WNA page 6-3 Table 6-1 shows 54,500 AF of reuse water that could be used in the future. However, WNA p.19 Table ES-8 only shows 16,900 AF of potential reuse by 2060.

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<sup>54</sup> *Virgin River Management Plan* (1999), Table 8 at p. 14, available at <http://wcd.state.ut.us/Plan,%20Studies/VRMP/VRMPFinal5.PDF>.

#### 4.1.5.5. Agricultural Conversion for M & I Supply

More irrigation water could be converted to culinary use than UBWR predicts. “Additional municipal water supplies become available from irrigation water rights appurtenant to land purchased for development. This water supply can constitute the majority or, in some cases, the totality of the water required by the developed uses. About 82,000 AF of water per year (page 3, Boyle report) were used on irrigated lands in Washington County. Assuming that agricultural efficiency is approximately 50% (as reported in the USGS 1995 National Water-Use data files<sup>55</sup>) then, roughly, this would be available for transfer to municipal uses.”<sup>56</sup> Thus more culinary water could be available by 2060. UBWR predicts only 4,000 acre feet will convert to culinary and that should be analyzed in WNA Phase II.

We request that, in developing its Action Alternative, the Commission consider all potential sources of water that could meet the project participants’ water needs. In Washington County, for example, 969,488 AF of surface water rights exist,<sup>57</sup> with only 40,198 AF of surface water supplies in public community systems.<sup>58</sup> UBWR shows 83,910 AF of developed water rights, with future supplies of 11,000 AF of culinary and 12,400 AF of secondary of undeveloped water rights.<sup>59</sup> Presumably most of the water rights in Washington County are currently used for agriculture. Although we do not endorse widespread dry up of agriculture, if fallowing or lease agreements are well-designed, they can be beneficial for agricultural communities. These supplies often are cost-competitive with structural alternatives, and should be considered in the Action Alternative.

#### 4.1.5.7. Lake Powell Pipeline

The WNA states, “WCWCD has requested the deliver of 70,000 ac-ft of water per year from the LPP project. In order to fully develop the 70,000 acre feet of Lake Powell water they will need to construct additional storage.” WNA, p. 4-20. However, in section 4.1.6.1, the WNA asserts the Fort Pearce Reservoir will not be used. This is a contradiction and needs to be discussed in Phase II WNA.

For decision makers to accurately assess the impact of Lake Powell water on Quail Lake and Sand Hollow Reservoirs, an accounting of how much water is actually diverted into the reservoirs needs to be included in the analysis. A 110-foot diversion dam was built on the

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<sup>55</sup> <http://water.usgs.gov/watuse/spread95.html>.

<sup>56</sup> Flaws in the Boyle study are identified in Hydrosphere Resource Consultants, *Review of Water Supply Needs in Washington County, Utah (2000)*, available at [http://www.citizensfordixie.org/images/pdf/hydrosphere\\_original\\_water\\_supply\\_report.pdf](http://www.citizensfordixie.org/images/pdf/hydrosphere_original_water_supply_report.pdf).

<sup>57</sup> *Virgin River Management Plan, supra*, Appendix B, p. B1-13.

<sup>58</sup> DWR (2008), Table 14 at 339.

<sup>59</sup> WNA, Table ES-8, p. 19.

Virgin River and a higher elevation reservoir was created behind it to create a big enough head to generate power. The WCWCD diverts 150 cfs (112,500 acre feet a year) constantly from the Virgin River at the Quail Lake Diversion to generate power and store water. They release 3 cfs over the diversion for the fish and then 3 miles downstream release an additional 30 cfs through the Pah Tempe Power Plant into the Virgin River for the endangered fish. According to water use input data from the Division of Water Rights, in 2007, the WCWCD provided water from the Virgin River; to Hurricane City 1230 acre feet; Hurricane Irrigation Company 12,856 acre feet; and to Hurricane Golf Course 643 acre feet among other small retail users. Then the balance is taken to Quail Lake 1 power plant and onto the reservoirs. As needed a small amount of water is returned to the river for the endangered fish before the Hurricane USGS gauge. The USGS hydrographs do not reflect the diversion of water because the diversion occurs between the Virgin and Hurricane USGS gauges.

The assumption that 4 AF of storage is needed for 1 AF of yield is inconsistent with how WCWCD manages the Quail lake Reservoir. It is managed with 1 AF of storage and 1 AF of yield, (20,000 acre feet of storage and 20,000 acre feet used for yield). Sand Hollow on the other hand is being managed as 8000 acre feet of yield with 4 times storage because of the Virgin River streamflow are variable. However, the current Quail Creek diversion is constant, so the variability of the Virgin River is not a limiting factor. There may be a more efficient way to operate the system to yield more water with just a change in WCWCD's management policy.

Sand Hollow Reservoir is essentially full. With only 2000 AF being sold today , there will be no room for Lake Powell water. This issue should be discussed in the analysis.

#### **4.1.6.1. Additional Virgin River Water Available for Development**

The WNA states: "After numerous studies by various State and Federal agencies, the DWRe and WCWCD have concluded there is no additional Virgin River water available to be developed for water supply in Washington County because of variable streamflow, poor water quality, lack of storage options, minimum streamflow requirements, and the potential for sedimentation of possible reservoir sites." WNA, p. 4-21. We disagree with this conclusion. See Section I, SD2 section 3.2, *supra*.

WNA Figure 4-4 (p. 4.22), "Daily Streamflow for Virgin River below Washington Fields (DWRe 2008b), shows that the size of the Virgin River diversion pipe (150 cfs) is insufficient during high flows to capture the water which is lost to overflow. In 2005, 273,281 acre feet out of an annual yield of 379,383 acre feet, was lost due to the size of pipe."<sup>60</sup> A study should be made on ways to capture this high water overflow so it can be

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<sup>60</sup> WCWCD, *Waterline* (winter 2008), available at [www.wcwcd.state.ut.us](http://www.wcwcd.state.ut.us).

piped down to the proposed Sand Stone Reservoir site and stored in the Navajo Sandstone aquifer.

Another option for future water supplies is to expand the existing Sand Cove Reservoir system into a series of up to five significantly-sized aquifer recharge reservoirs with well fields to capture water stored underground. This system would augment the storage capacity of Baker and Gunlock reservoirs and increase the ability to capture more Santa Clara River spring runoff. It would also produce pristine culinary water for delivery to the Pipeline system from the Gunlock wells to the St. George regional water delivery system.

In the Virgin River Management Plan it states there are about 900,000 acre feet of surface water rights in the county.<sup>61</sup> We understand these are paper water rights. But, a percentage of these rights could convert to culinary water development by 2060. These water rights must be part of the study on available water for the future.

#### **4.1.6.3. Ground Water Development**

The WNA states, “The Virgin River ground water basin in Washington County ... is considered to be over-appropriate by the Utah Division of Water Rights (DWRe 2008aa).” WNA, p. 4-24.

Although the Navajo Sandstone is over-appropriated and closed to any new appropriations, there is still a significant amount of existing water rights held by private individuals and public agencies that could convert to culinary use by 2060. In the proceeding on WCWCD’s Petition for Classification of the Navajo/Kayenta and Upper Ash Creek Aquifers, the Division of Water Rights reports that “there are 332,760 acre feet approved water rights.” Ground water rights must be part of a thorough study on water supplies. Private land comes with water rights and as land is developed some of these rights will convert to culinary water in the future. If the state is not going to let existing water rights holders develop their water rights in the future, the EIS is a good place to start discussing the issue to create public awareness of the problem and alleviate the implications of groundwater overdraft.

More is known about available water in the Navajo Sandstone aquifer under Sand Hollow Reservoir than this section reveals and should be included in the WNA. For instance a USGS report states that “estimated recharge volumes have ranged from about 200 to about 3500 acre-feet per month. Total ground-water recharge from March 2002 through August 2006 is estimated to be about 51,000 acre-feet.”<sup>62</sup> There is 200,000 AF of storage in the

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<sup>61</sup> See Virgin River Management Plan, *supra*, Appendix B, p. B1-13.

<sup>62</sup> USGS, *Assessment of Artificial Recharge at Sand Hollow Reservoir, Washington County, Utah, Updated to Conditions through 2006* (2007), p. 1.

aquifer. This is a significant amount of water and should be discussed in the water needs analysis. Current artificial recharge to the aquifer is estimated to be 70,000 AF.

More water from the Navajo Sandstone aquifer would be available if the pending Washington County Growth and Conservation Act passes. This legislation would change the status of the Red Cliffs Desert Reserve (Reserve) which is currently closed to water development to a National Conservation Area and the text in the bill would allow development of the Navajo Sandstone aquifer. The WCWCD also has wording the bill to be able to change the Red Mountain proposed wilderness area to a National Conservation Area to be able to drill new wells there in the Navajo Sandstone.

### **6.2.1.2. Water Supply and Demand**

The WNA states, “Existing and future water supplies under the No Action Alternative would meet project M&I water demand within the WCWCD service area through approximately 2020 (Figure 6-9). WNA, p. 6-15.

The assumption that more water will be needed by the year 2020 is not accurate as the list of available options in the Coalition’s Alternative to the Pipeline reveals. *See* SD2 comments 3.2 *supra*. The WRA states: that the No Action Alternative will not provide for a reserve supply for drought, emergencies, and other losses. However the chart below shows there is available water storage.

#### **Existing Drought Options**

Quail Lake Reservoir	20,000 acre feet
Sand Hollow Reservoir	20,000 acre feet
Sand Hollow Aquifer	60,000 acre feet
Agricultural water	40,000 acre feet, half of existing water rights

### **6.1.2 WCWCD Integrated Water Resources Plan**

The Coalition’s Alternative to the Pipeline should be integrated into water resources plan. *See* Section I, SD2 section 3.2, *supra*.

V.  
COMMENTS ON PROPOSED STUDY PLAN

We comment on the PSP as filed on August 22, 2008. We understand UBWR has revised some of the individual study plans as of November 13, 2008. We have not yet completed our review of the November 13 study plans. While not required under 18 C.F.R. § 5.12, where possible we have tried to address the November 13, 2008 study plan modifications. However, we reserve the right to amend our comments following completion of our review.

In addition to providing an environmental report with its license application, as required by 18 C.F.R. § 5.18, the license applicant must provide the following information for purposes of the Commission's compliance with NEPA:

- “ (1) Provide all necessary or relevant information to the Commission;
- (2) Conduct any studies that the Commission staff considers necessary or relevant to determine the impact of the proposal on the human environment and natural resources;
- (3) Consult with appropriate Federal, regional, State, and local agencies during the planning stages of the proposed action to ensure that all potential environmental impacts are identified. (The specific requirements for consultation on hydropower projects are contained in § 4.38 and § 16.8 of this chapter and in section 4(a) of the Electric Consumers Protection Act, Pub.L. No. 99-495, 100 Stat. 1243, 1246 (1986));
- (4) Submit applications for all Federal and State approvals as early as possible in the planning process; and
- (5) Notify the Commission staff of all other Federal actions required for completion of the proposed action so that the staff may coordinate with other interested Federal agencies.”

18 C.F.R. § 380.3(b)

Under 40 C.F.R. § 1502.16,<sup>63</sup> the Commission's EIS must analyze the environmental consequences of the proposed action, including direct, indirect, and cumulative effects:

“... The discussion will include the environmental impacts of the alternatives including the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be

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<sup>63</sup> Under 18 C.F.R. § 380.1, the Commission must comply with the Council on Environmental Quality's NEPA regulations.

involved in the proposal should it be implemented. ... It shall include discussions of:

- (a) Direct effects and their significance (§ 1508.8).
- (b) Indirect effects and their significance (§ 1508.8).
- (c) Possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned. (See § 1506.2(d).)
- (d) The environmental effects of alternatives including the proposed action. The comparisons under § 1502.14 will be based on this discussion.
- (e) Energy requirements and conservation potential of various alternatives and mitigation measures.
- (f) Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures.
- (g) Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures.
- (h) Means to mitigate adverse environmental impacts (if not fully covered under § 1502.14(f)).”

40 C.F.R. § 1502.16.

We are concerned the PSP will not yield adequate data for purposes of the Commission’s preparation of the EIS under NEPA, and its ultimate licensing decision under the FPA. Plainly the Commission has an obligation under NEPA to consider the Project’s effects in light of climate change, which will change the hydrology of the entire basin over the term of the license. The Commission is further obligated to consider the indirect biological and social impacts of changes to the region’s water supply. However, the PSP does not address these issues. It focuses on the direct effects on project construction and operations, and does not include studies of the potential indirect or cumulative effects of the Project in the context of changes to the Colorado River’s hydrograph as a result of climate change. We request that the Revised Study Plan required under 18 C.F.R. § 5.13 include studies which will yield information regarding the indirect and cumulative effects of the Project. We also request that the Revised Study Plan better articulate the nexus between project operations and effects on the resource to be studied, as required by 18 CFR § 5.9 (b)(5).

We further are concerned that the PSP provides inadequate time to complete field studies. We agree with the previous comments of the Department of the Interior, Office of Environmental Policy and Compliance (DOI):

[The] proposed time line is inconsistent with FERC's Integrated Licensing Process (ILP) regulations. The proposed time line compresses the ILP's structured 3 to 3.5 year filing process into an abbreviated 20-month program. Such a condensed approach will compromise the evaluation of environmental issues for this new and significant construction. The regulation contemplates that at least two field seasons of studies man be necessary to gather sufficient information. If a second year of study is required, it certainly cannot be completed with 13 months. To meet the proposed schedule, the Applicant may intend to conduct studies before a study plan is approved. This approach presents a risk that studies conducted will not conform to the approved study plan.

*See* DOI letter (Dec. 28, 2007), *supra*. The PSP does not address this concern, and so we request the Revised Study Plan provide more time for field studies.

We provide our specific comments on the individual study plans below. Our comments track the title and outline number in the PSP for each section where we have a comment.

#### **Study Plan 1: Air Quality**

Overall, the scope of the existing air quality study plan—which plans to analyze only the direct impacts of construction, operations, and maintenance of the pipeline—is too narrow. The study plan must include the cumulative and indirect impacts of population growth on air quality. *See, e.g.*, 40 C.F.R. § 1508.8. According to comments in the record, there is substantial public concern that the water supply project will facilitate additional population growth, which may diminish the quality of life in the region. Air pollution resulting from this additional population growth must be assessed in the air quality study plan analysis. In their comments on SD1, EPA offered to help with that analysis; we encourage the Commission to utilize EPA's expertise.<sup>64</sup>

In its Draft Air Quality Study Plan, the UBWR notes that its analysis will include, among other elements, the “determination of power sources for pumping and potential impacts of developing additional generating capacity (to the extent feasible)” (§1.4.3). This analysis is essential to a complete and thorough EIS. The power demands of the pipeline could have substantial impacts on air quality by increasing electricity generation at existing or new power plants. This air quality analysis should provide information on emissions of gases

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<sup>64</sup> EPA, PAD Comments, *supra*.

regulated under the Clean Air Act *and* greenhouse gas emissions. The Coalition is concerned about the phrase “to the extent feasible” and encourages the State to make every effort to assess increased air emissions resulting from power demands. If, for example, the UBWR decides it cannot determine the specific power plants responsible for providing electricity to the pipeline’s pumps, it should use typical emissions statistics for the state or region. *See* Coalition SD1 Comments, pp. 19, 39.

### 1.2.1. Goals and Objectives

We recommend the following *revisions* to the goals for this study:

“The goals of the air quality study plan are to determine potential impacts on air quality and identify measures to protect air quality to the extent that it may be affected by Project construction, operation, and maintenance. Specific impacts on air resources could include construction equipment emissions and fugitive dust emissions during Project construction and operation,” *as well as indirect and cumulative impacts of increased emissions as a result of population growth.*

### 1.6.2.3. Task 3 -- Data Analyses

We recommend the following *revisions* to this text:

“Data collected from the literature review and field investigations will be compiled and analyzed by experienced, licensed engineers. Data evaluations will focus on satisfying the identified goals and objectives; specifically, establishing *baseline air quality, and* determining how the Project construction will affect air quality, how the Project operations would affect air quality, and identifying potential mitigation measures. The analysis will involve air quality modeling utilizing the SCREEN3 model to simulate potential pollutant dispersion. Air quality simulation results will be compared to the National Ambient Air Quality Standards (NAAQS) and applicable state or local standards. The results of the data analyses will be used to determine the need for mitigation measures. The SCREEN3 model will be run as necessary to help determine the effectiveness of mitigation measures in controlling Project air emissions that would meet air quality standards.”

## **Study Plan 2: Aquatic Resources**

### 2.1. Introduction

We recommend the following *revisions* to the Introduction:

“The purpose of this study plan is to define the procedures and methodologies for analyzing potential impacts on aquatic resources, *including instream and riparian habitat*, for the Project. This study plan describes goals and objectives, provides a description of the study area, describes the Project nexus, presents the proposed methodology, presents staffing and equipment requirements, provides a budget for activities associated with the aquatic resources portion of the study, and provides a generalized project schedule. The study will identify potential impacts of the Project on aquatic resources during construction, operation, and maintenance, and identify measures to mitigate impacts on aquatic resources that could be affected by Project construction, operation and maintenance activities. The study plan addresses those aquatic resources issues that might reasonably be affected by Project construction, operations, and maintenance.”

### 2.2.1. Study Goals and Objectives

We recommend the *following revisions* to Section 2.2.1.

“Following are the primary objectives of the aquatic resources study:

...

- Identify the effect of invasive species transfer as a result of Project implementation, as well *as methods to control invasive species transfer*
- Determine long- and short-term *direct, indirect and cumulative* impacts that could occur on aquatic habitat from Project construction and operation
- Identify how the Project operation could affect the objectives of the Virgin River Management Plan and other management programs, *including linkages to other Colorado River Basin aquatic plans including the studies in Grand Canyon and the Multi-species conservation Plan in the lower Colorado River*”

### 2.2.2. Data Needed to Perform the Analysis

We recommend the following *revisions* to Section 2.2.2.

“The following data are required and will be collected in order to perform the analysis.

- Identification of open water, stream and riparian habitat available within the impact area
- Information on fish and aquatic species distributions, *densities*, life history (spawning areas and migration patterns, seasonal habitat use, etc.) and

*anticipated* responses to project-related activities (turbidity, increased human presence, etc.) *on both a short and a long-term basis.*

- Areas of important habitat and/or the distribution of aquatic species within the impact area need careful delineation, *(including scientifically qualified assessments of location, size and linkages), mapping, and documentation*
- Sport fish information for the lake, reservoirs and streams that support a game fish population *including potential impacts on forage fish and their distribution*
- *Evaluation of potential project operation based on future Lake Powell operations as related to reduced elevations associated with climate change and projections of impacts to water in reservoir (why important – reduced reservoir levels will change the limnology and fish dynamics of the reservoir)...*”

### 2.3. Agency Resource Management Goals (§5.11(d)(2))

We recommend the following *revisions* to Section 2.3.

“The existing information base for aquatic resources is considered adequate *by [name of agency, party]* to document baseline conditions but the study will confirm that assumption and will be prepared to augment the current database as necessary.”

### 2.4.2. Existing Information

We recommend the following *revisions* to Section 2.4.2.

*“The Colorado Plateau and Arizona Strip are notoriously affected by seasonal precipitation. Average or normal flow dynamics are inadequate to describe the situation. Specifically summer monsoon impacts and needs of species, and winter storm dynamics in respect to floods and sediment movement need to be included in the analysis.*

...Upstream users of the Kanab Creek in Utah divert flows for municipal and irrigation purposes, leaving it mostly dry in the summer season where the preferred alignment would cross the creek (BLM 2007a). *Studies have shown that humpback chub have been documented at the mouth of Kanab Creek in the Grand Canyon along with an assemblage of other native fish species. Impacts of construction and long-term management of the pipeline may affect the sediment and water quality conditions in lower Kanab Creek and should be included in the analysis.*

The Virgin River Resource Management and Recovery Program also aim to provide habitat to other native fish while allowing for continued use of the water resources.

***[Mention other lower basin fish management plans. The Colorado River system will be impacted by this transfer of water and it should be noted in the study plan]...***

“Zebra mussels (*Dreissena polymorpha*), quagga mussels (*Dreissena rostriformis bugensis*) and Asian clams (*Corbicula fluminea*) are exotic mollusk species whose occurrence is slowly moving west. Recent findings indicate ‘the presence of an extremely small number of individual, larval quagga or zebra mussels in Lake Powell’ (USFWS et al. 2007). The extent to which Lake Powell has been influenced to date by these mussels remains minimal. ***Based on evidence of impacts of exotic mussels on downstream environments, it appears these species will soon impact Lake Powell. The study plan will look beyond today and anticipate what the impacts will be under an expanded mussel population and changing water quality conditions due to drought.*** Measures to prevent the spread and infestation of mussels in Lake Powell include boat decontamination stations available in Glen Canyon National Recreation Area marinas. Quagga and zebra mussels and Asian clams are present in Lake Mead and have been documented to foul water intake structures. The Utah Division of Wildlife Resources has hired aquatic resource biologists and technicians, and has purchase mobile sprayers for use in decontaminating boats. ***[Identify proposed measures to treat mussels at pipeline intake.]*** . . . Biologists believe that the Spiny water flea may displace native zooplanktons in Lake Powell (Trophy 2007). ***The study plan will evaluate this eventuality...***

The invasive New Zealand mudsnail (*Potamopyrgus antipodarum*) has recently been found in several trout streams in Utah and throughout the West, however this species has not been reported (*or surveyed*) within the Paria River, Kanab Creek, or the Virgin River drainage and has not been reported within the Project area....”

#### 2.4.3. Identified Data Sources

We recommend the following ***revisions*** to Section 2.4.3.

“The following data sources have been identified to date.

- Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operation for Lake Powell and Lake Mead, 2007. ***See projections on reservoir elevations in future hydrologic conditions included in the EIS.***
- ***Spring data from Grand Canyon Wildlands Council....”***

#### 2.4.4. Additional Data Needed

We recommend adding the following items to Section 2.4.4.

- *Evaluation of mussel management at pipelines (see Lake Mead, Lake Havasu, etc. plans)*
- *Evaluation of potential impacts of reservoir limnologic dynamics at the pipeline intake – what changes will occur under present day and anticipated future reservoir conditions in relation to reduced elevations.*
- *Impacts of season water transfer on reservoir (Lake Powell) and receiving reservoirs (Sand Hollow and Quail Creek).*
- *Impacts of water withdrawal from Powell on regional groundwater system as related to springs on the Arizona Strip*
- *Impact of annual maintenance-related water releases to the Paria River and impacts on native fish assemblage and downstream Grand Canyon ecosystem.*
- *Scientific assessment of intake impacts on fish species in Lake Powell, including how to screen and how to avoid loss of juvenile fish to pipeline.*

## 2.5. Nexus to Project (§5.11(d)(4))

We recommend the following *revisions* to Section 2.5.

“The diversion of water from Lake Powell to Sand Hollow Reservoir in the Virgin River drainage and potential for annual maintenance-related water releases to the Paria River may result in a biota transfer of potentially harmful species. In addition, it will be important to develop a Lake Powell intake structure that will not entrain or trap fish or other valuable resources. ***This is a critical issue, since the Corp of Engineers spends millions of dollars on this issue in the NW Columbia and Snake River system.***”

The design of the water intake and intake structure will need to meet all appropriate regulatory standards [*cite standards*] for escapement (screen size, intake velocity, etc.) to protect fish. Typically the selection of the proper criteria (well defined) has been demonstrated to reduce entrainment of fish to an acceptable level. [*Explain “proper criteria” and how it will be selected.*]....”

### 2.6.1. Define Baseline Conditions

We recommend the following *revisions* to Section 2.6.1.

“Aquatic resources baseline conditions, ***including density and distribution,*** will be defined for the existing fish and other critical aquatic species and populations and habitat conditions in the immediate impact area and surrounding area....”

All available local and state records, creel census, Utah Division of Wildlife Resources information, Arizona Game and Fish Department information, ***[relevant Tribes]***, and academic research papers will be collected, catalogued and used to analyze the aquatic resource within the potential impact areas.”

### 2.6.2. Analyze Impacts

We recommend adding the following ***revisions*** to Section 2.6.2.

“Disturbances caused by pipeline crossing of streams and channels will be identified in detail and the surrounding areas of direct and indirect, short- and long-term potential impact mapped to determine if any critical species may be affected.

***[Add assessment of indirect and cumulative impacts from this and other water management projects.]***

The Project alternatives will be evaluated with regard to significance criteria to define measurable potential impacts and determine the need for mitigation.

There are ~~no~~ specific regulatory guidelines for supporting aquatic species populations or aquatic habitat loss or impacts ***in the Endangered Species Act and other applicable laws....***

The following criteria will be used initially to determine significant impacts on aquatic species and the various aquatic habitats:

- Activities that could have a measurable effect or disturbing influence (***short and long-term***) on any aquatic species or their habitat, ***including wetlands and springs***, in the project impact area will need to be carefully analyzed....
- ***Limnological impacts in Lake Powell Reservoir and its impacts on forage and sport fish populations.***
- Biota transfer of native and invasive species ... would require monitoring and periodic assessment....It may not be possible to absolutely manage this potential problem to any practical extent for all species; however, the ability to monitor the problem is a critical factor, ***as is mitigation within the control of the project.*** Control and mitigation measures, where possible, will be investigated, ***and*** their ***potential*** impacts analyzed, ***and management actions identified.*** The impact of the application of management methods and maintenance (i.e. chemicals, pipeline cleaning, etc.) will be identified ***and assessed in respect to their biological potential and economic cost.***

- Any project activity that reduces or limits the quality of the aquatic resource or habitat (*including wetlands*) either through disturbance or reduction will need to be identified and considered a significance criterion to be monitored and mitigated. Improvements to aquatic environments such as the use of pressurized water for the Hurricane irrigation system resulting in enhanced flow management in the Virgin River must be determined.
- Project activities that could restrict or prevent the natural movement, migration or use of aquatic habitat will need to be considered *on a seasonal and multi-year basis...*

The analysis of impacts on aquatic resources will be based on standard operating procedures and measures to avoid or reduce impacts that have been used in similar water intakes, pipeline and power generation and transmission projects. The significance criteria for aquatic resources will then be applied to determine if any impact would require modification of the project or mitigation. Mitigation measures would then be developed to offset significant impacts. The mitigation measures will be based on applicable state and Federal statutes and regulations, past experience and best professional judgment to either satisfy a legal requirement or to satisfy the public interest. In some cases significant impacts may not be able to be mitigated. All reasonably foreseeable mitigation options will be evaluated by the Federal Energy Regulatory Commission, Bureau of Land Management, and other responsible federal agencies and factored into the respective decision documents. *A multi-agency monitoring group, including the tribes, needs to be established and vested with power to force changes in operations if negative impacts occur to ecosystem.*”

### 2.6.3. Cumulative Impacts Analysis

We recommend the following *revisions* to Section 2.6.3.

“The aquatic resources cumulative impacts analysis will address the combined impacts of the alternatives and any past or future proposed or planned actions that have or are likely to affect the aquatic species and resources in the impact areas. The inter-related projects and project elements will be identified for analysis of cumulative impacts. *[Provide more detail.]*”

### 2.6.4. Invasive Aquatic Species Analysis

We recommend Section 2.6.4 be revised to specify who will conduct the workshop discussion sessions.

### **Study Plan 6: Land Use Plans and Conflicts**

We recommend that Study Plan 6 be revised to include the change of land use to include more development, and its indirect and cumulative impact on the human and natural environment. The study plan should analyze the effects of increased all-terrain vehicle (ATV) use along the pipeline and new transmission line corridors as well as new roads needed to access the blow off values.

This was the only study plan that listed what the issues were from scoping and how each issue would be addressed. All study plans should follow this example.

### **Study Plan 10: Socioeconomics/Water Resources Economics**

#### **10.2. Study Description**

The scope of the study plan is too narrow and will only study the direct impacts of construction, operations and maintenance of the Pipeline. The study needs to include indirect and cumulative impacts as well, consistent with 40 C.F.R. § 1508.8.

##### **10.2.1. Goals and Objectives**

We recommend *adding* the following to the primary objectives of the socioeconomic and water resources economics study listed in Section 10.2.1.

- ***Identify potential cumulative impacts to land uses.*** (SD2 states at p. 26: “For land use and socioeconomics, we will consider cumulative effects to include areas that could potentially receive Colorado River water from the proposed project or alternative water supplies considered in the EIS.)
  
- ***Quantify the project impact on population growth.*** (SD 2 states at p. 21: “We have revised section 4.2.9 to indicate more specifically that the EIS will address issues to reasonable foreseeable population growth that would be associated with the proposed action and any other alternatives addresses in the EIS.” EPA stated in their scoping comments on SD1 that, “while it may be true this area would grow without this project, the impacts of this growth should be addresses in the DEIS as either indirect or cumulative impacts.” “The impacts of growth can be analyzed by estimating the additional people, homes and /or cars, and their impacts to: water quality; air quality (from additional driving); habitat, wildlife and plants; infrastructure costs; and energy use. EPA would be happy to work with FERC on this type of analysis.”<sup>65</sup>)

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<sup>65</sup> *Id.*

- ***Identify and evaluate potential impacts to quality of life.*** (SD2 states at p. 2: “A major public concern from scoping was the possibility that “supplying water to allow the predicted population growth will diminish the quality of life in the region.” There is nothing in the study plan that addresses this issues. Quality of life issues include air pollution; loss of critical environmental areas; fiscal impact of infrastructure.<sup>66</sup>)

### 10.4.3 . Issues and Data

We recommend that Section 10.4.3 be expanded to state ***alternatives*** which will be included in the analysis, such as:

- ***Water conservation program.*** (see Section I, Comments re SD2 section 3.2 *supra*; and Section IV, WNA section ES 5.1.2, *supra*.)
- ***Water rate pricing to reduce water demand.*** (see Section IV, Comments re WNA section 3.4, *supra*.)

We recommend that Section 10.4.3 be expanded to include the following ***issues*** for analysis.

- ***Consider the costs of water treatment plant upgrades for Lake Powell water and greenhouse gases emitted from water treatment.*** (See Coalition SD1 Comments, p. 48.)
- ***Study the electrical cost of pumping the water from Sand Hollow reservoir to cities through the WCWCD’s regional pipeline.***
- ***Study the cost-effectiveness of the project if non-rate funds are unavailable for construction, operation, and maintenance.*** (The economic benefit of the Pipeline for current residents will be marginal if outside money is not used to fund the Pipeline.<sup>67</sup> The analysis should also estimate the impact on residents and taxpayers if the recent economic downturn continues and population growth slows. This analysis should also estimate the full socioeconomic

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<sup>66</sup> EPA formulated a smart growth initiative that was considered in the *Southern Corridor Highway EIS* page 6-1 available at <http://www.udot.utah.gov/sc/> The same data could be used for the Pipeline’s EIS since the growth would be in the same area.

<sup>67</sup> David Tufte, *The Proposed Lake Powell Pipeline: A report on its Effect on Socioeconomic Resources* (June 20, 2008, available at <http://www.powellpipelinefacts.org/images/pdf/Pipeline/pipeline%20report%20d.%20tufte%207-08.pdf>).

impacts on residents and taxpayers if the project is built, the population grows, but water becomes unavailable due to climatic, biological or political reasons. The study should consider whether state or federal funding would be available to mitigate the burden of impact fees on Project beneficiaries, and how the net benefits of the Project may vary depending on funding source.)

- ***Determine the cost to the poor and fixed income residents from higher water fees.*** (There are thousands of households in the three counties that live on less than median annual income. The expected price tag of the Pipeline will be a tremendous burden to the poor as water assessments go up. The study must consider “the natural and physical environment and the relationship of people with that environment. “ 40 C.F.R. §1508.14.)
- ***Determine how the increase in impact fees will impact the cost of building and deter home building in the service area in the future.***
- ***Analyze the effects on operation and maintenance costs resulting from the incremental expense of pumping water as the elevation of Lake Powell rises and falls.*** (For example, what would the added cost be if Lake Powell is less than 50% full more than 50% of the Pipeline’s projected lifetime? What added costs would occur when the price of electricity for the pumps increases in price by 1%, 2%, 3%, 4%, and 5% by the time of construction in 2015? The WCWCD stated that water will be purchased in small blocks as needed therefore the economic benefit will be gradual.)

### **10.6.2.3. Task 3 – Data Analyses**

We recommend the study plan be revised to include existing data compiled by the Environmental Protection Agency regarding the costs of growth in the region.<sup>68</sup>

## **Study Plan 11: Special Status Aquatic Resource Species and Habitat**

### **11.3. Agency Resource Management Goals (§5.11(d)(2))**

We recommend that Section 11.3 be expanded to include water- and species-management plans in the lower Colorado River Basin.

#### **11.4.1. Background Description**

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<sup>68</sup> Environmental Protection Agency, Comments on PAD, *supra*.

We recommend that Section 11.4.1 be expanded to include *site-specific assessment along the Project alternative alignments*.

#### **11.4.2. Study Area Definition**

We recommend that Section 11.4.2 be expanded to include *connected and linked habitats*.

#### **11.4.3. Issues and Data Needs**

We recommend that Section 11.4.3 be expanded to add *density* to habitat, distribution of listed species background information,

#### **11.5. Nexus to Project (§5.11(d)(4))**

We recommend that Section 11.5 be expanded to *include indirect impacts to endangered or sensitive fish species resulting from the introduction of Colorado River water into the Project area and/or the construction of the Project pipeline*.

This section states in part, “While the risk of a direct impact as a result of the water diversion or construction is slight, the potential impact as a result of the inadvertent introduction of an invasive species is higher.” PSP, p. 88. We disagree. The study plan assumes there is no change in future hydrograph, consequently effects could be minimal. But, given the climate change, the study needs to consider possible changes in flows and channel stability to Lake Powell and the Colorado River. The flow regimes need to be sufficient for stream channel integrity, riparian plant communities and habitat. This study plan must consider reduced flow scenarios.

#### **11.6.2.2. Task 2 - Field Investigations**

This section proposes no field investigations. The study plan should include the option for field investigations if need is determined.

#### **11.6.2.3. Task 3 - Data Analyses**

This section states: “The Project is not likely to negatively impact these species as a result of construction or the actual transfer of water.” PSP, p. 90. This statement is pre-decisional and otherwise inappropriate because it assumes there is no change to flows from drought and is pre-decisional.

### **Study Plan 13: Wildlife Resources**

The temporal and geographic scope of the existing Wildlife Resources study plan is too narrow. It should include the impact to Colorado River riparian habitat in the Southern Arizona reach known as the limitrophe, due to the reduced frequency and magnitude of excess flows released from Hoover Dam. The limitrophe is habitat for two endangered species, the Southwest Willow Flycatcher and the Yuma Clapper Rail, as well as a number of other species of concern. Analysis of impacts to these species must be included in the applicant's study plan.

The scope of the study should also be broadened to include indirect and cumulative impacts of the Pipeline, rather than just the direct impacts of construction, operations and maintenance of the Pipeline.

### **Study Plan 17: Surface Water Quality**

#### **17.4.1. Background Description**

We recommend that the background description be *expanded* to describe how the Quail Lake Diversion system works.

*The WCWCD diverts 150 cfs (112,500 AFA) constantly from the Virgin River at the Quail Lake Diversion to generate power and store water. They release 3 cfs over the diversion for the fish and then 3 miles downstream release 30 cfs through the Pah Tempe Power Plant into the Virgin River for the endangered fish. According to water use input data from the Division of Water Rights in 2007, the WCWCD delivered from the Virgin River; 1230 AF to Hurricane City; 12,856 AF to Hurricane Irrigation Company; and 643 AF to Hurricane Golf Course among other small retail users. Then the balance is taken to Quail Lake 1 power plant and onto the reservoirs. As needed a small amount of water is returned to the river for the endangered fish before the Hurricane USGS gauge. The USGS gauge hydrographs cannot be used for average flows because the diversion occurs in between the Virgin and Hurricane USGS gauges.*

#### **17.4.4. Sand Hollow Reservoir**

The description of Sand Hollow Reservoir should be corrected: it is a 50,000 AF reservoir. The reservoir has an active pool of about 30,000 AF and drought pool of 20,000 AF. The 30,000 AF active pool is not considered in the culinary water reliable yield information used in the WNA. The existing annual reliable yield of surface water from Sand Hollow Reservoir was only estimated to be 7,500 AF. It is not clear why the active 30,000

AF pool is not reflected in the available water estimate, as it would add 22,500 AF to current supplies. This should be explained in the study plan.

The study plan should describe the Navajo Sandstone Aquifer Storage Project (Project), which has been very successful at storing water under Sand Hollow Reservoir. Since 2002, 70,000 AF of water has been recharged into the aquifer and UBWR claims only 8,000 AF of it as a current yield for the Sand Hollow well field. WCWCD stated in their Water Line newsletter that this aquifer could hold up to 200,000 AF. As recharge increases this Project should also be included as possible future culinary water supply and drought storage.

#### **17.6.2.2. Task 2 -- Field Investigations**

This task should be expanded to include the following topics:

- Water quality analysis of recharge of Sandy Hollow aquifer storage project.
- Evaluation of the impact of the raising water table from Lake Powell and its possible impacts to housing subdivisions.
- Survey of new springs should be done around the Sand Hollow Reservoir.
- Impacts of the use of higher concentrations of chlorine to treat exotic mollusk species, specifically the impacts to human health as a result of the creation of carcinogenics when chlorine reacts with organic matter trihalomethanes (THM).

#### **Study Plan 18: Surface Water Resources**

This study will only identify potential impacts of the Project on surface water resources during construction, operation, and maintenance. As discussed in the Coalition SD1 Comments at length, the proposed study plan is not sufficient because it does not do an analysis of the indirect and cumulative impacts of the water supply project.

It is questionable whether the proposed study plan can assess a thorough range of conditions in one field season (for the areas where they don't already have data). For instance, if the water year is "wet", water quality parameters may be "better" than if the data is collected during a "dry" year. The study plan should at a minimum acknowledge the potential inaccuracy of their data.

#### **18.2.1. Study Description**

We recommend that Section 18.2.1 be expanded to include *indirect and cumulative impacts on surface water resources*, consistent with SD2:

**“Comment:** FWS recommends the EIS evaluate the cumulative impacts of project induced land development, urbanization, and population growth on surface water quality, including nutrient loading, pollutant runoff, and sediment loads.

**Response:** We have modified section 4.2.2 of SD2 to include the 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.”

SD2, p. 16.

#### **18.4.2. Study Area Definition**

We recommend that Section 18.4.2 be expanded to include *the Colorado River downstream of Lake Powell below Lake Mead*. Assuming no change in future hydrograph, effects could be minimal. But given climate change scenarios and drought, the study needs to consider effects to both Lake Powell and Colorado River downstream due to reduced flows.

#### **18.3. Issues and Data Needs**

We recommend that Section 18.3 address the following questions.

*What Standard Construction Procedures (SCPs) would be adopted to protect crossings of streams and washes?*

*Furthermore, how would they be maintained over the long term?*

*Is there funding set aside for this work?*

We further recommend that the study add *fill permits* (i.e. roads, pipelines, culverts) to the list of federal and state permits needed for discharging water.

We recommend that the study include *channel erosion* as a potential project impact.

We recommend that the study include an estimate for *funding for mitigation and long term monitoring/maintenance of mitigation sites*.

#### **18.6.2. Task 1 – Define Baseline Conditions**

We recommend that this section should include *baseline conditions for stability of stream channels*. For example, what are the current sediment loads? What are levels of

erosion and deposition that occur in stream channels? What channel conditions are necessary to support current function?

### **18.6.3. Task 2 – Alternatives Analysis**

Task 2 states: “The State of Utah has concluded that the Project will not affect water levels in Flaming Gorge Reservoir or Lake Powell, and will not affect streamflows in the Colorado River. Documentation will be provided by the Division of Water Resources to verify this conclusion.” PSP, p. 166. This is a conclusion, not a method of analysis. As a conclusion, it is premature, preceding the relevant study. Among other things, UBWR is not considering reduced flows from climate change and sustained drought. *See Coalition Comments on Study Plan 19, infra.*

### **Study Plan 19:** **Water Supply and Climate Change** **Comments on Climate Change**

#### **19.1. Introduction**

Overall, water managers in the seven states of the Colorado River Basin cannot adequately plan for a future of increased climate variability unless they can anticipate how future climate will affect streamflows in the Colorado River.<sup>69</sup> This process is absolutely necessary to ensure sustainable future water supplies and to evaluate the impacts climate change on the affected the human and natural environment and the over-allocation of Colorado River water rights. The PSP will not answer the public’s question from SD1 of whether the continued drought and climate effects will put the water supply for the Pipeline at risk from physical shortage. We acknowledge that this is a basinwide issue which extends beyond the Pipeline project. We request that UBWR engage in a collaborative effort to develop and implement a comprehensive climate change study for the basin. To this end we propose changes to Study Plan 19to provide for a more comprehensive study of climate change.

UBWR stated in its response to public comments on the Colorado River Supply, *see* PSP, Attachment C, that the impact of Lake Powell Pipeline on the Colorado River system was already included in the Bureau of Reclamation’s EIS hydrologic modeling for the Interim Guidelines and that the “Law of River” provides protection to their water right for the Pipeline. However, climate change changes were not included in the Bureau of Reclamation’s Colorado River Simulation System (CRSS) model.<sup>70</sup> Revisions to this model are necessary for this study, as discussed in Section 19.6.3 below.

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<sup>69</sup> Brad Udall, “Recent Research on the Effects of Climate change on the Colorado River.” *Intermountain West Climate Summary* (May 2007), p. 1.

<sup>70</sup> Bureau of Reclamation, *Final EIS: Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead*, Appendix U (Oct. 2007), page U-11.

### 19.2.1. Study Description

The Coalition contends that both the temporal and geographical scope of the proposed study plan is too narrow. In order to be sufficient, the study plan must include the *entire Colorado River Basin* and all areas that receive deliveries of Colorado River water.

The PSP does not include studies of the potential indirect or cumulative effects of the project in the context of changes to the Colorado River's hydrograph as a result of climate change. The PSP should be revised to include such studies. The PSP also should be revised to better articulate the nexus between project operations and effects (indirect, direct and cumulative) on the resource to be studied, as required by 18 CFR § 5.9 (b)(5).

### 19.2.2. Goals and Objectives

The first bullet point in this section is unclear and should be revised. Any climate change, regardless of its genesis, must be considered in this analysis. The reason to include climate change in the hydrologic analysis is to develop the best possible projections of future hydrologic conditions in the basin, and to assess the impact of the project in that context.

### 19.4.1. Study Area Definition

The study area should include *Mexico* because of the 1944 U.S.-Mexico Treaty, which allocated 1.5 MAF of Colorado River water to Mexico. The study plan should discuss to what degree the basin states will need to contribute to Mexico's Treaty delivery, to the extent that such deliveries cannot be comprised of unallocated surpluses (as specified in the 1922 Compact). In addition, the study should consider the real impact on the frequency and volume of flows below Morelos Dam (the last delivery point on the river) and how the changed flows will impact the viability of habitat on the Colorado River in Southern Arizona and in Mexico.

### 19.4.3. Issues and Data Needs

The study should address the over-allocation of the Colorado River and the current reduced Colorado river mean flows.

This section, it is critical to note, separates the analysis of project impacts from review of climate change studies; these two elements must be integrated.

The study should consider the State of Colorado's Colorado River ("Big River") analysis that will be included in the Interbasin Compact Committee's Water Supply Availability Study.<sup>71</sup>

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<sup>71</sup> Available at <http://ibcc.state.co.us/Process/Needs/WaterSupplyAvailability/>.

The fifth and sixth bullet points do not clearly explain why the study plan has to determine the potential causes of climate variability and estimate the extent to which human activity had affected climate change.

The ninth and tenth bullet points state:

“Colorado River streamflow and proposed LPP diversions will be simulated using the Bureau of Reclamation’s existing Colorado River Simulation (CRSS) model to determine the long-term sustainability of the proposed diversion and potential obligations under the Colorado River Compact....The Bureau of Reclamation CRSS model will be used to determine potential effects on downstream water rights such as those associated with the Navajo, Ute, Paiute, and Hopi tribes.”

It is important to note that these evaluations use an enhanced CRSS modeling and are not limited to the index sequential method applied to historic data of 15 Million Acre Feet Annually (AFA). Instead these evaluations should include reduced flow scenarios of 14 million AFA and 13 million AFA, paleo sequences, as in the Interim Guidelines EIS (Appendix N), and incorporate climate change information, such as those developed by Christensen *et al.*, *infra*.

The analysis of downstream impacts should go beyond the sustainability of the proposed project (which would project how often and by what quantity the pipeline would not be full, presumably due either to a compact call or physical limitations) and compact requirements (which would be limited to how often upper basin states are called to curtail use based on their compact delivery requirements). The water supply analysis also needs to include assessment of lake levels at Lake Mead and shortage projections for downstream water users.

The study should include more than the surface area and water availability at Lake Mead. It should also evaluate:

- ***the impact the probability of shortage conditions in the Lower Basin***
- ***the impact on the probability of surplus conditions in the Lower Basin.***

The eleventh bullet point reads: “Potential impacts to water supply associated with reasonably foreseeable activities such as other proposed diversions from Lake Powell will be estimated.” This should be expanded to include ***other diversions from the Upper Colorado River basin.***

The twelfth bullet point reads, “The potential effects of reasonably foreseeable water development projects on the yield of the LPP Project will be determined by simulating

streamflow using the Bureau of Reclamation CRSS model (reasonably foreseeable projects will be limited to those incorporated in the CRSS model).” However, the Upper Basin Commission projections for future development of the Colorado River in the CRSS did not include specific projects. Therefore, the model needs to be enhanced. *Yampa pumpback and Million pipeline as well as depletions for energy development* should be considered in the study plan.

### **19.6.1. Overall Approach**

The study plan claims, “Climate change methodology will include review of existing literature and use of existing models to determine potential effects of climate change on the availability of water supply for the proposed LPP diversion.” However, the Coalition is concerned that current modeling will not model the impacts of the Pipeline’s diversion unless they are enhanced.

There is some doubt about UBWR’s intent to even use a model. The study plan states, “Colorado River streamflow and water supply availability may be simulated using existing models developed by Federal or State agencies.” PSP, p. 171. We reemphasize the important of modeling projecting future river flows, and request that “may be” be deleted from the study plan.

The Western Governors' Association has called for greater use of climate change information in water supply planning, believing that “[c]limate change scenarios need to be integrated with projections of long-term demands planning for climate changes should be undertaken at all levels, from the federal government to private and public water utilities.”<sup>72</sup>

### **19.6.3. Task 2—Climate Change Evaluation**

The first bullet point in the Nov. 13<sup>th</sup> version of the study plan should be amended. The study should not address the causes of climate change.

The third bullet point should be amended to include the No Action Alternative.

The seventh bullet point should be amended to provide that the study should determine impacts of water availability for existing projects as well as for proposed projects, particularly other Upper Basin projects such as those under discussion in the State of Colorado.

The eighth bullet point should be amended to provide that the climate change information must be integrated into the main body of analysis and not relegated to an appendix.

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<sup>72</sup> Western Governors’ Association, *Water Needs and Strategies for a Sustainable Future* (2006), available at <http://www.westgov.org/wga/publicat/Water06.pdf>.

The Study Plan should also consider the following existing information:

- Richard Seagar *et al*, *Model projections of an Imminent transition to a more Arid Climate in Southwestern North America, Vol May 25, 2007* available at <http://www.onthecolorado.org/Resources/ClimateDocs/2007Seager.pdf>.
- P.C. D. Milly, *Stationarity is Dead: Whither Water Management*, Climate change undermines a basic assumption that historically has facilitated management of water supplies, demands, and risks. available at <http://www.onthecolorado.org/Resources/ClimateDocs/MillyBetancourt2008.pdf>.

### Enhancements of CRSS

We now turn to the use of CRSS in this study plan. We support such use, provided that the model is enhanced as described immediately below. Public comments to BOR on the Interim Guidelines have identified the following enhancements, which we support.

- “The model makes assumptions based on a very short historic data set (1906-2006) and assumes that 15 million AF (MAF) will be available. Scientifically peer reviewed analysis performed and reported by the National Academy of Sciences indicate that at Best Case, no more than 14.5 MAF should be used, and more likely the actual volume should be closer to 13.5 MAF. If everything else remains the same the BOR’s assumptions that the flow will be 500,000 AF higher than the long-term mean amounts to 5 MAF in ten years and 12.5 MAF in 25 years. The Upper Basin depletions uses a figure of 5.4 MAF when in fact the Upper Basin is proclaiming to want to deplete 6.0 MAF. This difference amounts to 3 MAF by the year 2030.”<sup>73</sup>
- “The potential for shortage on the Colorado River have been mounting long before the emergence of the current drought. The over-allocation of water due to improper assumptions as to the Colorado River’s mean inflow has reached the point where shortages, which never occurred in the past, will shortly be inevitable. Reclamation is repeating the same mistake in its modeling by using 15.0 million acre-feet (MAF) mean flow projection well above the paleo-climate reconstruction estimates of 13.0-14.7 MAF. If the observed flows of 14.2 MAF of the past 50 years were used as a guide....the Upper Basin water

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<sup>73</sup> David L. Wegner, *Comments on the Bureau of Reclamation Draft EIS Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead* (April 27, 2007), available at <http://www.usbr.gov/lc/region/programs/strategies/FEIS/comments/SpecialInterestNGO.pdf>.

users would be destined to restrict their consumption to meet their delivery requirements to the Lower Basin.”<sup>74</sup>

- In addition, the CRSS model only uses gage data from 1906-2006 and “with the growing recognition of the inadequacy of the gaged record as a baseline for planning, the use of paleoclimate data has received increased interest in the water resources profession. In the Upper Colorado River basin, tree-ring data have been used to reconstruct streamflow over the past five centuries and longer using dendrochronological techniques.”<sup>75</sup> Thus the BOR and UBWR should consider Paleo-reconstruction in water planning.

As described in the Coalition’s SD1 Comments, we further recommend additional enhancements to CRSS.

- Paleo hydrology and long-term mean flows
- Revised, accurate hydrology, based on long term historic flows and the projected impacts of climate change (based on current models)
- Legal constraints such as the Colorado River Compact (present perfected rights are not in the model)<sup>76</sup>

The study should include a range of future hydrologic conditions derived from at least the following two methodologies:

- Resampling of both direct and indirect historic data (both the gage records and the tree ring records)
- Development of future inflow projections that preserve key statistical elements of the historic record (such as variability) but use physically-based models to simulate runoff using precipitation, temperature, and other climate data from projections developed in models of climate change, specifically the data released in 2008 by the Intergovernmental Panel on Climate Change.<sup>77</sup> See references in Coalition SD1 Comments, pp. 39-40.

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<sup>74</sup> John Weishet, *Comments on the Bureau of Reclamation Draft EIS Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead* (April 30, 2007), available at <http://www.usbr.gov/lc/region/programs/strategies/FEIS/comments/SpecialInterestNGO.pdf>

<sup>75</sup> Bureau of Reclamation, *Final EIS: Colorado River*, *supra.*, p. U-71.

<sup>76</sup> *Id.*, p. U-50.

<sup>77</sup> IPCC, *Climate Change and Water*, June 2008 available at <http://www.onthecolorado.org/Resources/ClimateDocs/IPCCvolFour2008.pdf>

The analysis used for the Interim Guidelines relied primarily on gage records. Several factors require that the impact assessment for the proposed Pipeline includes an analysis based on inflow scenarios developed under the second methodology above.

- While the Interim Guidelines introduced new management rules for existing reservoirs, the Pipeline proposed a new, supplemental use of water from the Colorado River, with considerable implications for the reliability of water supply for the proposed project as well as existing water use in downstream areas.
- Since this is a permanent project to supply water to homes and communities that are yet to be built the residents will expect a permanent water supply. For that reason, the approach used the USBR Interim Guidelines is not appropriate. If you consider Appendix N, N-4 in the Interim Guidelines EIS the 10<sup>th</sup> percentile of Lake Powell's elevation (figure N-11 is related) USBR estimates that there is a 10% probability that Lake Powell will at this elevation or lower and this figure may be useful in assessing physical shortage.

Furthermore, this study plan should consider single-trace and index sequential modeling (ISM) procedures for the following scenarios concerning Colorado River hydrology. They include:

- The tree-ring record should be modeled using the full spectrum of regression approaches as discussed (see chart on page 104) by the National Research Council.<sup>78</sup>
- Specifically, the four approaches of regression include: stepwise (Woodhouse et al., 2006)<sup>79</sup>; best subsets (Michaelsen et al., 1990); principle components analysis (Stockton and Jacoby, 1976);<sup>80</sup> and, alternative principle components analysis (Hidalgo et al., 2000).<sup>81</sup>

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<sup>78</sup> National Research Council, *Colorado River Basin Water Management: Evaluating and Adjusting to Hydroclimatic Variability* (2007), available at: [http://dels.nas.edu/dels/rpt\\_briefs/colorado\\_river\\_management\\_final.pdf](http://dels.nas.edu/dels/rpt_briefs/colorado_river_management_final.pdf).

<sup>79</sup> Connie Woodhouse et al, *Updated Streamflow Reconstructions for the Upper Colorado River Basin* (2006), available at: <http://www.onthecolorado.com/Resources/ClimateDocs/WoodhouseGrayMeko2006.pdf>

<sup>80</sup> Charles Stockton and Gordon Jacoby, *Long-term Surface Water Supply and Stream Trends in the Upper Colorado River Basin* (1976), available at: <http://www.onthecolorado.com/Resources/ClimateDocs/StocktonJacoby1976.pdf>

<sup>81</sup> Hugo Hidalgo et al., *Alternative principal components regression procedures for dendrohydrolic reconstructions* (2000), available at: <http://www.onthecolorado.com/Resources/ClimateDocs/Hildago2000.pdf>.

The study plan should model the Medieval Warming Period using the full spectrum of regression approaches as mentioned above. Especially the twelfth century and thirteenth century, since the tree-ring record reveals periods of severe and sustained drought during this specific time-period.

Future trends in streamflow reduction for the Colorado River basin should also be modeled and using the full spectrum of modeling procedures. For example, in a 2005 article in *Nature*, C.D. Milly *et al.* concluded: "Global pattern of trends in streamflow and water availability in a changing climate." The authors analyzed 21 simulations of climate change using prescribed external forcing of the late nineteenth century and the whole twentieth century to predict future global trends in streamflow. For the Colorado River basin, the trend indicates a decrease in flows from 10% to 30% by year 2050. It would be appropriate for the study plan to model the full spectrum, namely both 10% and 30%.<sup>82</sup>

In a 2007 paper, Martin Hoerling *et al.* analyze future streamflows for the Colorado River basin according to the parameters of the Palmer Drought Severity Index (PDSI). This method of predicting future trends in streamflow indicate a 45% decline in Colorado River streamflow between years 2035-2060. It would therefore be appropriate for this study plan to model streamflow according to the PDSI and as the worst case scenario.<sup>83</sup>

In addition, this study plan should consider the findings in NOAA-funded Reconciling Projections of Future Colorado River Stream Flow study that will be completed in 2009. The study is about understanding the difference among climate change modeling projections in order to provide water managers with more useful information. Moreover, this study plan should consider reduced model inflows to Lake Powell to assess the possible impacts on the natural environment and Colorado River water rights for the entire period of analysis to anticipate the new information on climate change that will result from NOAA study that comes out in 2009.<sup>84</sup>

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<sup>82</sup> C.D. Milly *et al.*, "Global Patterns of Trends in Streamflow and Water Availability in a Changing Climate, *Nature* (November 2005), available at <http://www.onthecolorado.com/Resources/ClimateDocs/MillyDunneVecchia2005.pdf> .

<sup>83</sup> Martin Hoerling *et al.*, "Past Peak Water in the Southwest, *Southwest Hydrology* (2007), available at: <http://www.onthecolorado.com/Resources/ClimateDocs/Hoerling2007.pdf>. See also Niklas S. Christensen *et al.*, "The Effects of Climate Change on the Hydrology and Water Resources of the Colorado River Basin" (2004), available at [http://wwa.colorado.edu/resources/colorado\\_river/Christensen\\_2004.pdf](http://wwa.colorado.edu/resources/colorado_river/Christensen_2004.pdf), and P.W. Mote, *Variability and Trends in Mountain Snowpack in Western North America* (2005), available at <http://www.cses.washington.edu/db/pdf/moteetalvarandtrends436.pdf>.

<sup>84</sup> Information about the study is available at: [http://wwa.colorado.edu/colorado\\_river/docs/reconciling\\_projections\\_future\\_coriver\\_flow\\_overview.pdf](http://wwa.colorado.edu/colorado_river/docs/reconciling_projections_future_coriver_flow_overview.pdf)

## Public Participation in Climate Change Study

We request that the next version of the PSP propose specific procedures for meaningful participation by stakeholders, since this study is fundamental to the analysis of the proposed pipeline's impacts on water resources.

### 19.6.4. Task 3- Effects on Other Water Users

We recommend addition of a bullet point: *Determine potential effects on existing and proposed upstream water rights in the event of a compact call.*

## Study Plan 19: Water Supply and Climate Change (Comments on Water Supply)

### 19.2.2 . Goals and Objectives

We recommend that Section 19.2.2 be expanded to include the following goals:

- *Provide a comprehensive analysis of both population growth and water demands in the proposed service area.*

In its current form, the Water Needs Assessment does not accurately address population growth or water demands. The analysis must use various sources of population growth estimates, and should model a range of growth scenarios (ranging from low to high growth rates). The recent national economic downturn has influenced housing and population growth rates throughout the nation. These shifts can have dramatic and expensive consequences for large water supply projects. Scenarios modeling different rates of growth and water use rates will provide the necessary foundation for project participants, the State, and others to make an informed decision on the Pipeline. See Section IV, WNA section ES-3.2, 2.3, 4.1.4.2, *supra*.

The study plan must consider the complete picture of water supplies in the county within existing approved private water rights for surface and underground water because some of these rights will be sold for development by the year 2060. UBWR states there are no other water resources beyond the 83,000 AF currently identified, plus future supplies of 11,000 AF of culinary and 14,100 AF of secondary water. This is not reasonable because a large percentage of existing private water rights could convert to culinary use in the future. All water supplies must be evaluated and discussed in the study plan, not only the WCWCD's water supply.

- *Evaluate water demand in water conservation scenarios that would reduce demand by using a progressive, realistic conservation goal greater than 25%.*
- *Study the effects of a raising water table in the Navajo Sandstone aquifer under Sand Hollow Reservoir and its possible impact on the homes in the Dixie Springs subdivision that sits below the elevation of the dike and Sand Hollow.*

#### 19.4.1. Background Description

See comments about the deficiencies of the WNA methodology in Section IV, WNA section 2.2.

#### 19.6.2.1. Task 1a -- Water Efficiency

We offer preliminary comments on the November 13, 2008 version of this study plan. We reserve the right to amend these comments pending further review of the November 13 plan.

The first bullet point in the Nov. 13<sup>th</sup> version should be expanded to *disaggregate secondary water*. From our review of the water use data the issue of how unmetered secondary water was accounted for needs to be addressed because it inflates the per capita use rate. See comments in Section IV, WNA section 2.2.

The approach proposed, creates hurdles to improving conservation than implementing it. We recommend that the “Evaluation of Potential Conservation” should focus on the first two bullets to determine potential savings and not use an arbitrary “screening process.

Western Resource Advocates (WRA) report on the cost-effectiveness of conservation, called Smart Savings –Available at <http://www.westernresourceadvocates.org/media/pandp.php#waterreports> as well as WRA reports on water rate structures (most recent would be the “Water Meter” which looked at 12 cities may be helpful in the study plan analysis).

The analysis should make sure to include the entire served population. The standard measure for indoor use is winter-time consumption (if landscapes require no outdoor use in Dec, Jan, and Feb). Estimates of outdoor use should include any “secondary” (i.e., non-potable) water, even if not delivered by the water utility, because reductions in outdoor use can be affected by local government through time-of-day watering, landscape type, water rates, as well as other programs, and the savings can lead to greater local water availability.

We recommend the second bullet, DSS Model, include calculations for future (not yet built) communities and businesses, including the water savings (indoor and outdoor) that

should be expected based on more efficient indoor water appliances and the trend toward more Xeri outdoor landscapes.

We recommend the third bullet, screening criteria, include objective screening criteria. Studies should determine not what is “typical” in the service area, but those technologies. The State of Colorado recently completed a study that determined the potential savings from different conservation programs and measures (and total state-wide savings potential) and the range of cost per AF saved for each element.

A process recently undertaken by the State of Colorado, with help from a stakeholder group that **included** water utilities, engineers, and conservation groups, generated a table of potential water savings through several different sources and, from that table, generated a potential state-wide conservation savings (basically took the savings possible per 1 million residents and multiplied by the State’s population. Available at, [http://cwcb.state.co.us/NR/rdonlyres/C65D6406-3EE0-4E44-9C5E-E1655D814CB8/0/S2\\_ConservationEfficiency.pdf](http://cwcb.state.co.us/NR/rdonlyres/C65D6406-3EE0-4E44-9C5E-E1655D814CB8/0/S2_ConservationEfficiency.pdf)

We also recommend the following **revisions**.

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.

We suggest using the word “**scenarios**” instead of programs which is clearer since the latter is often synonymous with “measures” **Scenarios** are often described as “low”, “med” or “high” efficiency.

#### **Study Plan 20: Wetlands and Riparian Resources**

The scope of the existing Wetlands and Riparian Resources study plan is too narrow and will only study impacts resulting from construction, operations and maintenance of the Pipeline. The study plan must consider indirect and cumulative impacts as well.

The study plan is inadequate due to the limitation of the study area. It should be expanded to include the Colorado River riparian habitat in the Southern Arizona reach known as the limitrophe, due to the reduced frequency and magnitude of flows to Mexico. The applicant must include this analysis in their review.

## **VI. CONCLUSION**

We thank the Commission for considering these comments. We look forward to working with UBWR and the Commission to develop and implement the Revised Study Plan.

Dated November 19, 2008

Respectfully submitted,



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**DECLARATION OF SERVICE**

**Utah Board of Natural Resources,  
Lake Powell Pipeline Project (P-12966-001)**

I, Alison Koppe, declare that I today served the attached Lake Powell Pipeline Coalition's Comments on Proposed Study Plan and Scoping Document 2 by electronic or first-class mail to each person on the official service list compiled by the Secretary in this proceeding.

Dated: November 19, 2008

By:

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**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 REVISED STUDY  
PLAN**

The Lake Powell Pipeline Coalition (Coalition) hereby comments on the Utah Board of Water Resources’ (UBWR) “Revised Study Plan” for the Lake Powell Pipeline Project, eLibrary no. 20081222-5008 (Dec. 22, 2008), including attachments.

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

These comments are organized into three sections. Section I comments on UBWR’s Revised Study Plan. Section II replies to UBWR’s Attachment B, Responses to Comments on Proposed Study Plan. Section III comments on the “Lake Powell Pipeline Hydrologic Modeling” (unnumbered attachment following Attachment B) (“Hydrologic Modeling Attachment”).

**I.  
COMMENTS ON THE REVISED STUDY PLAN**

We appreciate UBWR’s consideration of issues raised during the draft study plan process, and are pleased that a number of our recommendations were integrated into the study plans. However, we have substantial continuing concerns about the proposed approach to hydrologic modeling, which will of course influence the study of downstream and other environmental impacts.

For ease of reference, we show proposed changes to the document text in ***bold italicized text***. Our comments track the title and outline number in these documents for each section where we have a comment.

**Study Plan 2:  
Aquatic Resources**

**2.3. Agency Resource Management Goals (§5.11(d)(2))**

We recommend *deleting* the statement: “~~while the proposed Project is not currently anticipated to significantly alter the aquatic habitat or fishery of either the Colorado River and the Virgin River drainage.~~” UBWR may not reach such a conclusion prior to completion of the studies.

**2.4.1 Study Area**

We recommend adding the following *revision*:

***Downstream impacts will be included in the analysis, based on modeling of climate change and other depletion scenarios.***

**2.6.2 Analyze Impacts**

We recommend *deleting a portion of bullet point two*: “~~Significant impacts are not expected to occur on any aquatic species as a result of the project.~~” UBWR may not reach such a conclusion in advance of climate change modeling.

**Study Plan 6:  
Land Use Plans and Conflicts**

**6.3.1.2 Wild Lands**

We recommend adding the following *revision*:

***Indirect and cumulative impacts will be included in the analysis.***

The electric infrastructure along the pipeline route will change the character of scenic open space lands (world-class wildlands).

**6.6.1 Data Collection**

We recommend the study plan include an additional source of data:

*Ken Sizemore (Five County Governments), GPS maps of critical lands in the "Washington County Critical Lands Resource Guide," available at: <http://www.fcaog.state.ut.us/criticallands.html>.*

**Study Plan 19:  
Water Supply and Climate Change**

**19.4.3 Issues and Data Needs**

We recommend the following *revisions*.

- Seventh bullet point: “Colorado River streamflow and proposed LPP diversion will be simulated using the Bureau of Reclamation’s existing Colorado River Simulation (CRSS) model *with an updated depletion schedule that includes climate change scenarios* to determine the long-term sustainability of the proposed diversion and potential obligations under the Colorado Compact.”
- *A climate change hydrologic model scenario will be developed and integrated into the study plan analysis to evaluate the Project.*
- Ninth bullet point: “Potential *cumulative* impacts to water supply associated with reasonably foreseeable activities such as other proposed diversions from Lake Powell will be estimated” *including all Upper Basin Colorado River Compact entitlements, present perfected rights and water deliveries to Mexico.*

The Study Plan must support the analysis of cumulative impacts. UBWR rejected inclusion of several proposed projects as speculative. However, permitting actions have been initiated for at least one of these projects, the “Million Pipeline.”

- Tenth bullet point: “The potential effects of reasonably foreseeable water development projects on the yield of the LPP Project will be determined by simulating streamflow with the *updated* Bureau of Reclamation CRSS model.” *Delete the end of sentence in parentheses (reasonably foreseeable will be limited to those incorporated in the CRSS model).*
- Eleventh bullet point: “Climate change effects on existing and future supplies in the *Colorado River Basin* and Virgin River drainage will be addressed.”
- Twelfth bullet point: “Requirements and stipulations for the proposed LPP diversions will be evaluated, including those described in the 1922 Colorado River Compact *as well as a discussion of the risk of a compact call from a severe sustained drought*

*under the 1922 Compact, on junior projects such as the LPP may not have water available for delivery.*

- *The impact of reduced flows caused by global warming .*

#### 19.6.1 Introduction and Overall Approach

We recommend the following *revisions*.

- *Include an analysis of downstream impacts from Glen Canyon Dam, including hydrology, biology (vegetation and wildlife), and water use economics, specifically in a valid comparison of the Project to a No Action Alternative. Similarly, include analysis of water supply impacts to other Upper Basin water users.*
- Second paragraph: “Climate change methodology will include review of existing literature *by using new climate change models with updated depletion schedules that include Upper Basin Colorado River Compact entitlements, present perfected water rights which predate the Colorado River Compact, water deliveries to Mexico and a severe sustained drought scenario, as well as scenarios with changes in the mean annual flow at Lee Ferry of 13 - 14 million acre-feet/year (MAFA)* to determine potential effects of climate change on the availability of water supply for the proposed LPP diversion and potential effects of the diversion on other water uses.”

#### 19.6.3. Task 2. Climate Change Evaluation

We recommend adding the following *revisions*.

- Fourth bullet point: “A No Action alternative (i.e., no Lake Powell Pipeline) will be modeled using the *updated* CRSS Model.” *Delete the rest of the bullet.* (See Coalition’s comments on Attachment B the No Action Alternative, *infra*.)
- Fifth bullet point: “Potential effects of climate variability will be evaluated using reputable sources in the scientific community, such as the U.S. Bureau of Reclamation and Western Water Assessment.” *A climate change model will be used to simulate effects on the Colorado River streamflow and will be integrated into the analysis of the study plan.*
- *Consider alternative lower long-term mean flows of 13 - 14 MAFA at Lee Ferry, taking into account climate change, rather than the static 15 MAFA used by the existing CRSS model.*

**Study Plan 22**  
**Alternatives Development**

**22.2.1. Study Description**

We recommend adding the following *revisions*.

“The study will describe possible combinations of water supply components that could be used to develop alternatives to meet water demands for the Project participants. The study also will describe alternatives that will be carried into the NEPA process as Action and No Action Alternatives. One action alternative developed under this study plan will involve a combination of *all* potential future *water* sources *including conversion of private water rights to culinary or secondary use, agricultural-urban transfers*, increased water conservation, *water use efficiency, water pricing, better management of existing supplies, smart growth land use planning*, reuse and recycling, and reverse osmosis treatment of Virgin River water, without supplying water via the LPP. *In addition, it will analyze a change of the high level of service for demand water forecasting used by UBWR to calculate the need for the LPP from .89 AF to the actual level of service which would cut water demand in half, consistent with Albuquerque’s usage of .25 AF for its water level of service.* The study will document pros and cons of each of the alternatives, including details of technical feasibility, land use requirements, environmental and physical characteristics, and cost estimates, in coordination with the other resource studies.”

**II.**  
**COMMENTS ON ATTACHMENT B**

**Impacts Downstream from Glen Canyon Dam**

We disagree with UBWR’s conclusion there will be no impacts downstream of Glen Canyon Dam from the proposed action. Attachment B, p. 1. The Hydrologic Modeling Attachment, which appears to be an essential basis for this conclusion, may over-estimate the annual flow of the Colorado River at Lake Powell, thereby preventing adequate, thorough comparison of the impacts of the Project with baseline conditions. Furthermore, the analyses and study plans are deficient because they do not adequately incorporate the impacts of climate change. In order to be sufficient, the study plans must quantitatively assess the impacts of climate change on runoff in the basin.

The modeling used in Reclamation’s *Shortage EIS*<sup>1</sup> projected 5.4 MAFA of depletion in the Upper Basin. The Interior Department had determined in 1988 that 6 MAFA was the

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<sup>1</sup> U.S. Department of the Interior, *Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead* (2007).

safe annual yield for the Upper Basin.<sup>2</sup> As discussed below, climate change will probably reduce the flow available for such diversion,<sup>3</sup> whether in the Upper Basin or by Utah. The Hydrologic Modeling Attachment, like the *Shortage EIS*, does not address that probable reduction in the current depletion schedule. This is a significant flaw that should be corrected before UBWR or any other party proposes conclusions about downstream environmental impacts.

Pursuant to NEPA, a proposed major federal action must undergo systematic analysis of potential environmental impacts over its expected life. Thus, as discussed at length in our prior comments, the hydrologic model used in this proceeding must be updated to examine the foreseeable future changes in hydrology, precipitation and runoff, rates of evaporation, and rates of sedimentation. In addition, the model must assess the impacts of a severe sustained drought.

UBWR states that “several commenters have recommended that the study plan provide for detailed studies of potential impacts from the Project on various resources below Glen Canyon Dam. UBWR believes that such studies are not necessary because the Project will have no discernable impact on the operation of Glen Canyon Dam or the volume and timing of downstream releases.” Attachment B, p. 1. Due to faulty hydrologic modeling analysis, UBWR has incorrectly concluded that it need not conduct analyses of downstream impacts on water resource economics/socioeconomics, special status aquatic resource species and habitats, special status plant species and noxious weed assessment, special status wildlife species and habitat assessment, vegetative community mapping, surface water quality, surface water resources, water supply and climate change, wetlands and riparian resources, and wildlife resources.

### **No Action Alternative and Cumulative Impacts**

The No Action Alternative in the Revised Study Plan is internally inconsistent. Attachment B correctly describes No Action as existing or baseline condition (pp. 4-5) in the absence of the Project. It states that “the impacts of any other potential diversions of Colorado River by Utah that may be considered in the environmental document in this proceeding would be cumulative impacts. The alternative proposals for use of Utah’s allocation of Colorado River water are too speculative to be considered in the environmental document.” Attachment B, p. 5. At the same time, UBWR proposes to base its analysis of

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<sup>2</sup> U.S. Department of the Interior, *Hydrologic Determination 1988, Water Availability from Navajo Reservoir and the Upper Colorado River Basin for Use in New Mexico*, available at: <http://www.riversimulator.org/Resources/USBR/HydroDetermination1988.pdf>.

<sup>3</sup> David L. Wegner, “Comments on the Bureau of Reclamation Draft EIS Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead” (April 27, 2007), available at: <http://www.usbr.gov/lc/region/programs/strategies/FEIS/comments/SpecialInterestNGO.pdf>.

the No Action Alternative on the Hydrologic Modeling Attachment, which presumes future depletions of Colorado River water in Utah and elsewhere.

We agree that the No Action Alternative is a baseline of environmental conditions against which the Project will be evaluated. We believe that cumulative impacts must include foreseeable future uses of other Colorado River entitlements, as well as water deliveries to Mexico. 40 C.F.R. §§ 1508.7, 1508.8.

The Hydrologic Modeling Attachment is insufficient as the basis for the No Action Alternative. First, it effectively includes the proposed diversion in the No Action Alternative. Second, it includes speculative information about future Upper Basin depletions, including future Utah depletions. And finally, Project impacts cannot be assessed without comparing them to a valid baseline condition.

The No Action Alternative in the Hydrologic Modeling Attachment includes the maximum use of Utah's entitlement. Specifically, the definition of the No Action Alternative states that "total Utah depletions, both annual and monthly, for years 2009 to 2060 are the same as those used in the 2007 Shortage EIS." Hydrologic Modeling Attachment, p. 2. The LPP alternatives are defined such that

Utah's total annual depletions remain the same as was modeled in the 2007 Final EIS of the Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (2007 Shortage EIS). However, for [the LPP alternatives] . . . the spatial distribution of Utah's depletions was modified from the 2007 Shortage EIS to specify a depletion occurring directly at Lake Powell. To keep Utah's total depletions constant, depletions from six nodes upstream of Lake Powell were decreased.

*Id.*, p. 1. In other words, the No Action Alternative as described in the Hydrologic Modeling Attachment includes the *Shortage EIS*' generalized assumptions about future water development in Utah, while the Action Alternatives give further definition to the characteristics of that future water development. The No Action Alternative thus includes the depletions associated with the Project. The No Action Alternative may not properly assume the existence of the very plan being proposed. See *Friends of Yosemite Valley v. Scarlett*, 439 F.Supp.2d 1074, 1105 (E.D. Cal. 2006).

Second, the model includes speculative information about future water development in Utah and the Upper Basin. As stated above, the model uses an Upper Basin depletion schedule that was developed in 1999, and assumes future increases in Colorado River water use in Utah from 940,000 AFA in 2008 to 1.23 MAFA in 2060, while Upper Basin use of Colorado River water is assumed to increase from 4.523 MAFA in 2008 to 5.429 MAFA in 2060. A proper No Action Alternative should reflect baseline conditions rather than future conditions.

Finally, the flawed definition of the No Action Alternative in the Hydrologic Modeling Attachment is the basis for UBWR's argument that the Lake Powell Pipeline will result in "no measurable impacts from Glen Canyon Dam releases because the changes in flows are minimal and the impacts on resources are immeasurable in the Colorado River downstream from the dam." Attachment B, p. 1. NEPA (40 C.F.R. § 1504.14) requires agencies to take a hard look at the reasonably foreseeable direct, indirect, and cumulative effects of the proposed action as well as the alternative of not acting at all. The No Action Alternative here should not include the environmental impacts of future depletions by Utah.

### III. LAKE POWELL PIPELINE HYDROLOGIC MODELING

The Hydrologic Modeling Attachment does not contain sufficient information to fully assess environmental impacts, or to draw the conclusion that there will be no impact on downstream resources. The model was given to the public for comment on December 22, 2008, which was not enough time to give meaningful comments in light of the holidays. We thus reserve the right to make further comments on the modeling presented and climate change modeling.

In the Interior Department's *1988 Hydrologic Determination*, the Upper Basin's available flows were reduced from 7.5 to 6 MAFA<sup>4</sup> and then available water was reduced again in 2003 to "5.76 million acre feet."<sup>5</sup> The model does not include the Upper Basin's States' reduced available flow to 5.76 MAFA, or all present perfected water rights established before the compact. Nor does the Upper Basin States depletion schedule used in the model include water deliveries to Mexico.<sup>6</sup>

We request the Commission, in partnership with other agencies, develop an updated hydrologic modeling scenario. As a public interest consideration, we recommend that the Commission respond to stakeholders' concerns and require these issues be included in the modeling so that this project can be planned in a manner that protects environmental conditions in the Basin. Decision makers need to fully understand all the issues surrounding this proposed action and to assure the information in the hydrologic modeling is of high quality, up to date, and accurate. 40 C.F.R. §§ 1500.1, 1502.24. It would facilitate public officials making better planning decisions that are based on understanding of environmental

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<sup>4</sup> *1988 Hydrologic Determination, supra*, p.1.

<sup>5</sup> Resolutions of the Upper Colorado River Commission, Attachment B (June 2003), *available at* <http://www.usbr.gov/uc/envdocs/eis/navgallup/DEIS/vol1/attach-B.pdf>.

<sup>6</sup> U.S. Department of the Interior, *Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead* (2007), Appendix C, p. C-1.

consequences and then they can take actions to protect, restore, and enhance the environment. 40 C.F.R. § 1500.1(c).

NEPA requires federal agencies to assess the effects of their own actions on global warming within the context of other actions that also affect global warming. *Center for Biological Diversity v. NHTSA*, 538 F.3d 1172 (9th Cir. 2008). Similarly, NEPA requires that an agency consider the impacts of climate change on the baseline environment.

New information about global warming impacts must be used to re-assess future Upper Basin depletion schedules. The Upper Basin depletion schedule proposed for use in the Revised Study Plan was developed by the Upper Colorado River Commission in 1999, and assumes total Upper Basin depletions of 5.429 MAFA by 2060. “The manifestation of drought conditions in the Upper Colorado River Basin began in the fall months of 1999. A five year period of extreme drought occurred in water years 2000, 2001, 2002, 2003, and 2004 with unregulated inflow to Lake Powell only 62, 59, 25, 51, and 49 percent of average, respectively.”<sup>7</sup> Reclamation information developed since 1999 indicates that climate change impacts due to warming temperatures and changes in precipitation patterns will become increasingly pronounced with time, with significant changes in water availability in the Colorado River basin measurable as early as 2020 and dramatic decreases in water availability expected by 2050. These projections render obsolescent the old Upper Basin depletion schedules used in the existing CRSS model. Since the water available to the Upper Basin States fell to 5.76 MAFA in 2003, it is unlikely that there will be 5.429 MAF available by 2060 for the Upper Basin to use, as the existing CRSS model predicts.

The UBWR may not credibly use the *Shortage EIS* (Attachments A through H) as the basis for its conclusion in the Hydrologic Modeling Attachment that the Lake Powell Pipeline already went through the environmental process and will have no measureable impacts on the downstream environment. Because it had a different purpose of shortage guidelines for the lower basin states and the Upper and Lower Colorado River Basin states agreed to shortage criteria because they all believe that reduced flows are occurring. The *Shortage EIS* used a faulty hydrologic model that did not account for all future demands in the Upper Basin, and is only in effect until 2026 (Interim Guidelines) due to the changes the Secretary of Interior concerns that stream flow due to climate change and sustained drought could continue to reduce flows. Thus, it should not be used as environmental compliance of the NEPA process for the Lake Powell Pipeline which will be in place for at least 50 years.

We encourage the Commission to direct that a revised depletion schedule, reflecting climate change as well as other variables, be included in a new hydrologic analysis. The Colorado River should be analyzed in a holistic way incorporating all demands, instead of UBWR’s approach, which evaluates Lake Powell Pipeline in a piecemeal fashion without regard to future conditions. The Coalition believes a more extensive discussion and modeling

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<sup>7</sup> Rick Clayton, U.S. Bureau of Reclamation, “Current status, Upper Colorado River Basin Drought,” available at <http://www.usbr.gov/uc/water/crsp/cs/gcd.html>.

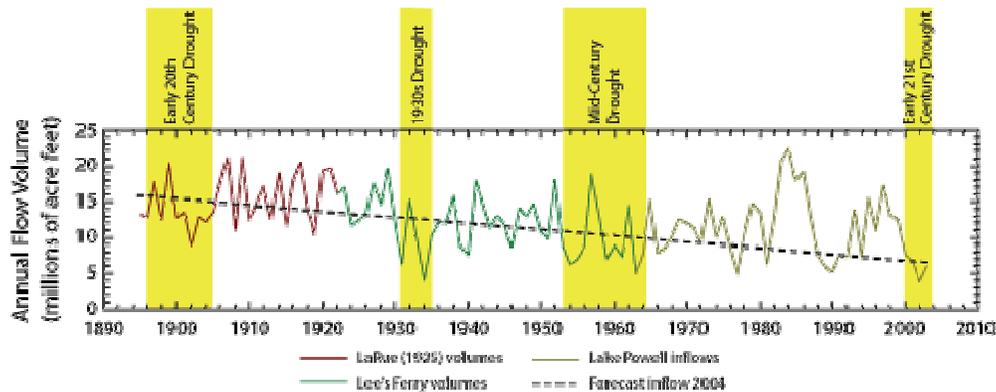
of climate change and its potential effects on the proposed action would better serve long-term, basin-wide water management planning. 40 C.F.R. § 1502.16 (f).

Reclamation's deputy manager for the Lower Colorado Region, Terry Fulp, stated publicly at the November 2008 USGS conference on the Colorado River in Scottsdale, AZ that the climate change inputs would be available for use in the CRSS model by February 2009. This date is well within the timeframe of the LPP studies. In addition, this study plan should integrate the findings in the NOAA-funded *Reconciling Projections of Future Colorado River Stream Flow* study that will be completed in 2009.

The Western Water Assessment, located at the University of Colorado, has conducted a review of the various climate change studies available for the Colorado River basin, and has suggested that the models converge on predictions by 2050 of a 20% reduction in basin runoff for a 10% reduction in precipitation (results presented at November 14, 2008 workshop at the Southern Nevada Water Authority in Las Vegas). The average Colorado River runoff based on the paleohydrologic record is in a range of 13-14.7 MAFA at Lee Ferry, which is less than the historic 100 year gaged record of 15 MAFA used in the existing CRSS model in the *Shortage EIS*. Yet, the average flow at Lee Ferry from 1922-1982 was lower at approximately 14 MAFA. A 20% reduction in 15 MAFA would result in an average of 12 MAF runoff by 2050. An updated model should include scenarios of the changes in the mean annual flow at Lee Ferry of 13-14 MAFA to assess possible future impacts of reduced flows on the environment.

To illustrate the reduction of Colorado River flows at Lee Ferry from 1890 to 2000 , we include a chart taken from a USGS article, "Climatic Fluctuations, Drought and Flow in the Colorado River Basin" (August 2004), available at <http://pubs.usgs.gov/fs/2004/3062/>.

"Calendar-year flow volumes were combined from three data sets that were measured or estimated using different techniques. Consumptive water uses in the basin upstream of the stream-gaging station at Lee's Ferry are not included in these data. The flow values represent the amount of water in the river at Lee's Ferry. Thus, variability in the flow values is due both to climatic fluctuations as well as to changes in consumptive water use upstream from the Lee's Ferry station."



**Figure 3.** Time-series plot of the annual flow volume (in millions of acre-feet) for the Colorado River at Lee's Ferry. Dashed line is the linear trend for the period. Vertical bars and shading delineate drought periods as defined using the Palmer Drought Severity Index for the climate divisions encompassing the upper Colorado River basin.

In addition, the Department of Energy Western Area Power Administration, in a letter to the Bureau of Reclamation, cited concerns with the existing CRSS modeling used in the Shortage EIS. It stated:

“We feel the use of this 99 year historical record of inflow data significantly overstates the probable future inflows and therefore calls into question the validity of the analysis of alternatives. The second factor is the effects of climate change [re not included]. In addition, the current state of the hydrologic conditions has changed substantially since the August 2006 data used in the analysis. Due to another poor snowpack in the Colorado River Basin, the inflow for the current year will be far below previous projections. This change would significantly reduce the initial reservoir levels used in the Draft EIS. In, summary, we do not believe that the water supply model in the Draft EIS accurately portrays the probabilities of future conditions due to overestimation of inflows and initial reservoir conditions. It does not seem reasonable to us to analyze alternatives for creating guidelines to address primarily the river operation during drought and low reservoir conditions using data that would likely overestimate the available water supply. We suggest that the alternative should be re-analyzed using more conservative projected water inflows that would result from incorporation of the information of the information from recent scientific studies in the area, not solely the recycling the limited period of recorded inflows.”<sup>8</sup>

The Coalition believes if the agencies do not plan or anticipate drought and climate change carefully, the Upper Basin water users will unquestionably risk a compact call under the 1922 Colorado River Compact, and junior projects like the Lake Powell Pipeline may not

<sup>8</sup> Western Area Power Association, “Comments on the Shortage EIS” (April 26, 2007), p. F-4, available at <http://www.usbr.gov/lc/region/programs/strategies/FEIS/comments/Federal.pdf>.

have water available for delivery. Reclamation's 2008 model runs using direct paleo-conditioned inflows already show some probability by 2060 that Upper Basin States will not be able to fulfill obligations of the 1922 Compact. These projections do not yet include climate change impacts on Colorado River Basin hydrology, prior perfected water rights, or water deliveries to Mexico, all of which are expected to further diminish water available for use in the Upper Basin.

Recent advances in the understanding of global warming impacts on water supply in the Colorado River basin require a revised approach to projecting future water developments. We respectfully request that the Revised Study Plan include specific analysis of (a) global warming impacts on Colorado River basin water supply in the no action and other alternatives, (b) the impacts of the LPP in the context of global warming impacts on Colorado River basin water supply, including risk of shortages in the Upper Basin associated with Compact delivery requirements, and risk of shortages in the Lower Basin due to decreased water levels at Lake Mead and (c) revised assumptions of future depletion schedules in the Upper Colorado River basin.

In particular, we request a strong focus in the Revised Study Plan on the impact of the LPP on future Colorado River water supply, once the required changes have been made to the No Action Alternative (see above). Even without considering climate change impacts, Reclamation has documented shortage risk to water users in both the Lower and Upper Basins. Lower Basin shortage risks are documented in different models in the 2007 Shortage EIS, and range from 5% to 45% reduction in flow. Reclamation's CRSS model has also been used to project a 1.5% probability that the 10-year rolling average delivery from the Upper Basin to the Lower Basin is less than 75 MAF in any given year through 2060 (Reclamation's published CRSS data using NPC inputs, fall 2008). These shortage probabilities will increase significantly when climate change data are included. The impact of the LPP must be evaluated in this context.

#### **IV. CONCLUSION**

The Coalition respectfully requests that the Commission consider these comments on the Revised Study Plan.

Dated: January 5, 2009

Respectfully submitted,



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**DECLARATION OF SERVICE**

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

I, Alison Koppe, declare that I today served “Lake Powell Coalition’s Comments on the Revised Study Plan,” by electronic or first-class mail to each person on the official service list compiled by the Secretary in this proceeding.

Dated: January 5, 2009

By:

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**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.”<sup>1</sup>*

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

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<sup>1</sup> 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<sup>2</sup> 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.<sup>3</sup>

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

<sup>3</sup>U.S. Environmental Protection Agency, "Comments on Pre-Application Document" (July 15, 2008), eLibrary [20080724-0151](https://www.epa.gov/epaleader/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.<sup>4</sup>

### **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,<sup>5</sup> 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:**

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<sup>4</sup> BLM's Resource Management Plan, 1999, page 1.3 shows the amount of acreage of land in Washington County available at

<sup>5</sup> Vision Dixie Report, available at [www.visiondixie.org](http://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 2011 Economic 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.<sup>6</sup> 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<sup>7</sup>. 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.

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<sup>6</sup> Utah Code Title 73, Chapter 28, available at [www.utah.gov](http://www.utah.gov)

<sup>7</sup> 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. .”<sup>8</sup>*

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**

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<sup>8</sup> 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<sup>9</sup>. 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 soil 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

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<sup>9</sup> 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 it 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.”<sup>10</sup>*

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?

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<sup>10</sup> 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 must 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) Increasing 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 through 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 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 <sup>11</sup>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

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<sup>11</sup> 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<sup>12</sup>).
- 14% reduction in flow equals 2.1 maf at Lees Ferry
- Equals only 12.9 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.<sup>13</sup>

## **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.

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<sup>12</sup> *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>

<sup>13</sup> 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).	<b>The Transmission Line Alternatives would likely adversely affect the California condor (UDNR 2011a:4-29).</b>	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	<b>The South Alternative would likely adversely affect the Utah prairie dog (UDNR 2011a:4-8).</b>	<b>The Existing Highway Alternative would likely adversely affect the Utah prairie dog (UDNR 2011a:4-)21.</b>	<b>The Southeast Corner Alternative would likely adversely affect the Utah prairie dog. (UDNR 2011a:4-).</b>	<b>The Transmission Line Alternatives would likely adversely affect the Utah prairie dog (UDNR 2011a:4-30).</b>	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)	<b>The South Alternative would likely adversely</b>	<b>The Existing Highway Alternative would likely</b>	<b>The Southeast Corner Alternative</b>	<b>The Transmission Line Alternatives</b>	<b>The No Lake Powell Water</b>

	<b>affect the MDT</b> (UDNR 2011a:4-17).	<b>adversely affect the Mohave desert tortoise.</b> (UDNR 2011a:4-22).	<b>would likely adversely affect the Mohave desert tortoise</b> (UDNR 2011a:4-26).	<b>would likely adversely affect the Mohave desert tortoise</b> (UDNR 2011a:4-).	<b>Alternative would likely adversely affect the Mohave desert tortoise</b> (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 rail. (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**

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

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

Common chuckwalla	<i>Sauromalus ater</i>	USPC	
Gila monster	<i>Heloderma suspectum</i>	USPC	
Northern sagebrush lizard	<i>Sceloporus graciosus graciosus</i>	BLM-S	
Sidewinder	<i>Crotalus cerastes</i>	USPC	
Utah milk Snake	<i>Lampropeltis triangulum taylori</i>	AGFD-WSC	
Western banded gecko	<i>Coleonyx variegatus</i>	USPC	
Western threadsnake	<i>Leptotyphlops humilis</i>	USPC	
Zebra-tailed lizard	<i>Callisaurus draconoides</i>	USPC	
Arizona toad	<i>Bufo microscaphus</i>	USPC	
Great plains toad	<i>Bufo cognatus</i>	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 Trihalomethanes (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 a 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.<sup>14</sup>

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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<sup>14</sup> *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.”<sup>15</sup>*

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

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<sup>15</sup> 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”<sup>16,17</sup>

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

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<sup>16</sup> 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

<sup>17</sup> 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<sup>18</sup>" 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

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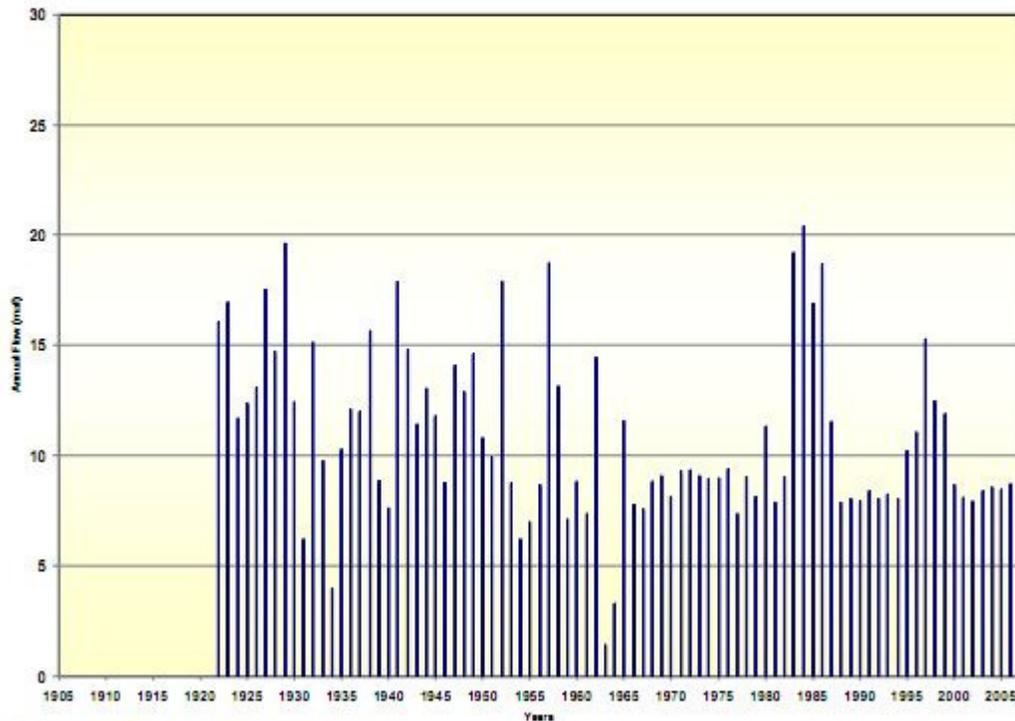
<sup>18</sup> Bureau of Reclamation Annual Operating Plan for Colorado River Reservoirs 2010, pg 7 Available at: [http://www.usbr.gov/lc/region/g4000/AOP2010/AOP10\\_FinalDraft.pdf](http://www.usbr.gov/lc/region/g4000/AOP2010/AOP10_FinalDraft.pdf)

Ferry gauging station. Chart 1 shows the historic annual flow as an average is an optimistic assumption of BOR still using 15 (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.<sup>19</sup> 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.

<sup>19</sup> GAO report, *Colorado River Basin Water Problems: How to Reduce their Impact Government Accountability Office* (formerly called Government Accounting Office) CED-79-11 May 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 10th, 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

Bureau of Reclamation  
Upper Colorado Region Reservoir Operations

Lake Powell

Pool Elevation

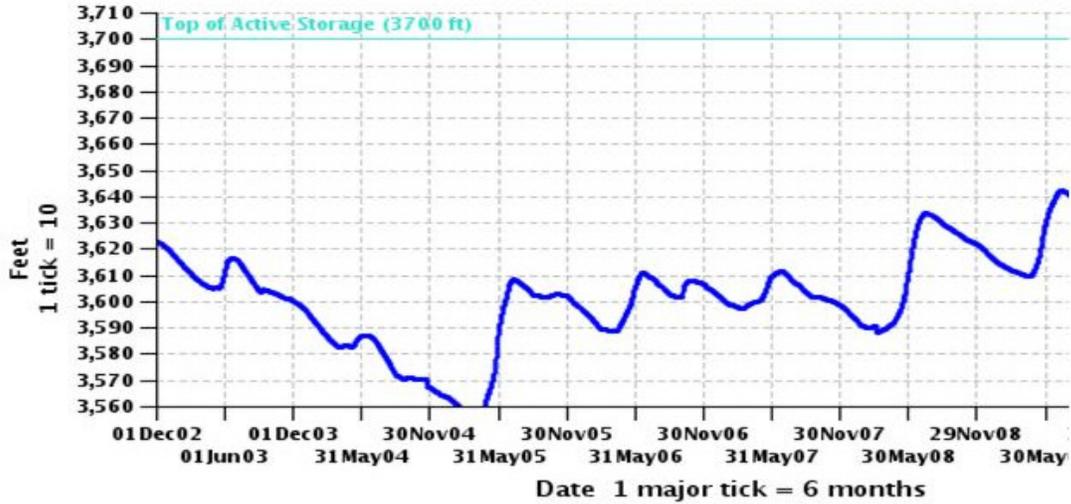
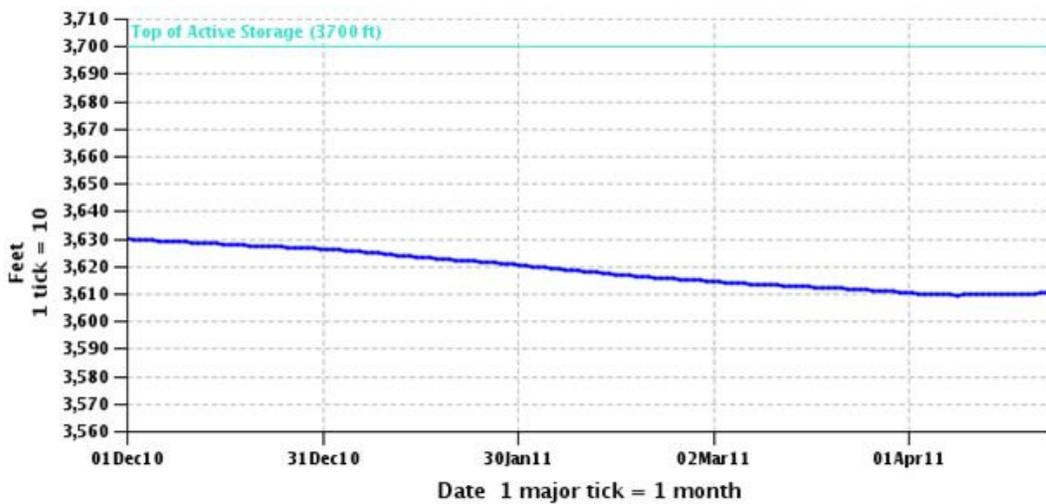


Chart 3

Bureau of Reclamation  
Upper Colorado Region Reservoir Operations

Lake Powell

Pool Elevation



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

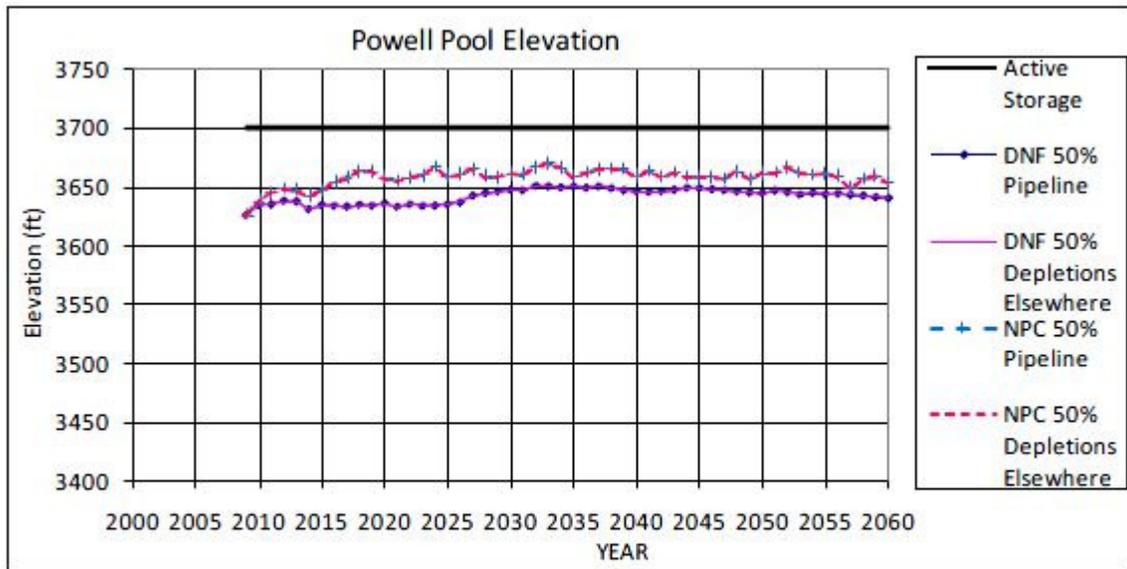
Examples of charts in the study report that predict optimistic levels for Lake Powell to 2060 include:

## Chapter 4 Environmental Consequences

### 4.4 Reservoirs

#### 4.4.1.1 Final Planning Study

Chart 4

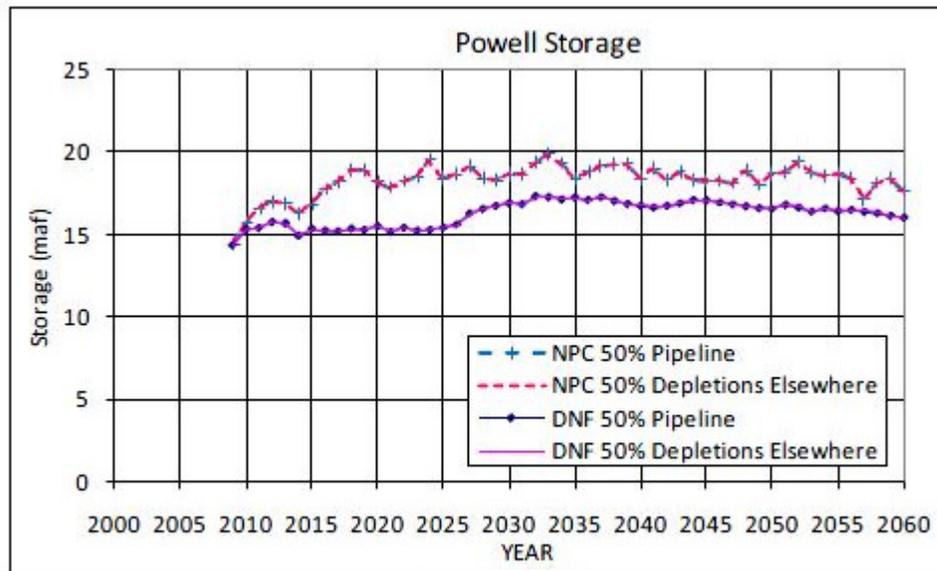


**Figure 4-20**  
86K AF Simulations, 50<sup>th</sup> Percentile Lake Powell Stage Results (FPS)

*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 (10<sup>th</sup> percentile), most probable (50<sup>th</sup> percentile), and maximum probable (90<sup>th</sup> percentile).*

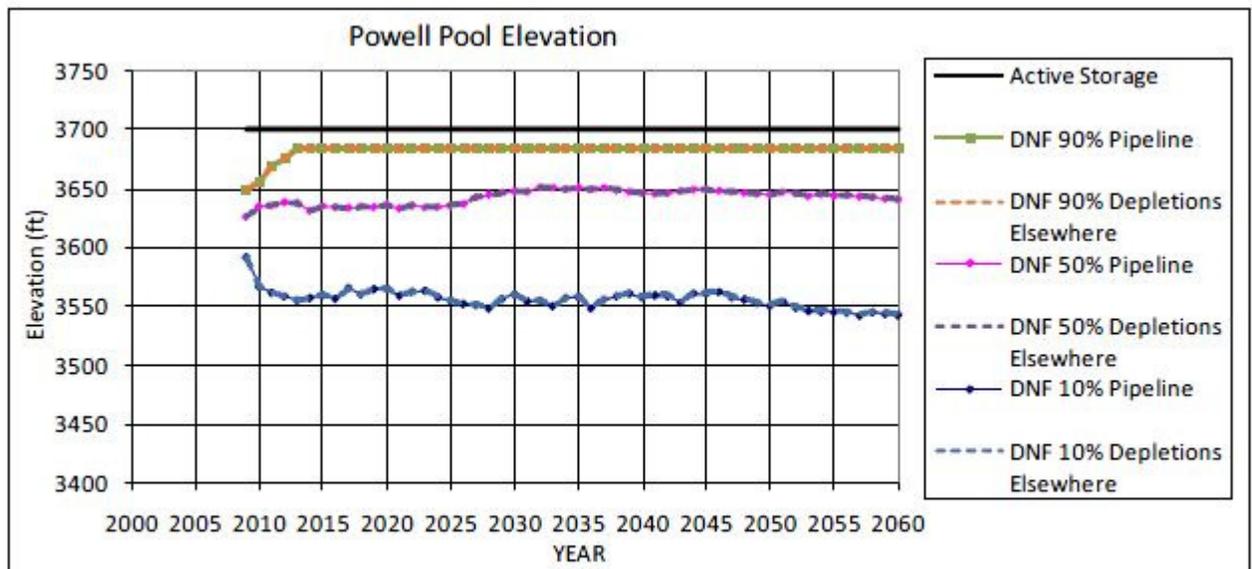
Chart 5



**Figure 4-21**  
**86K AF Simulations, 50<sup>th</sup> 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.*

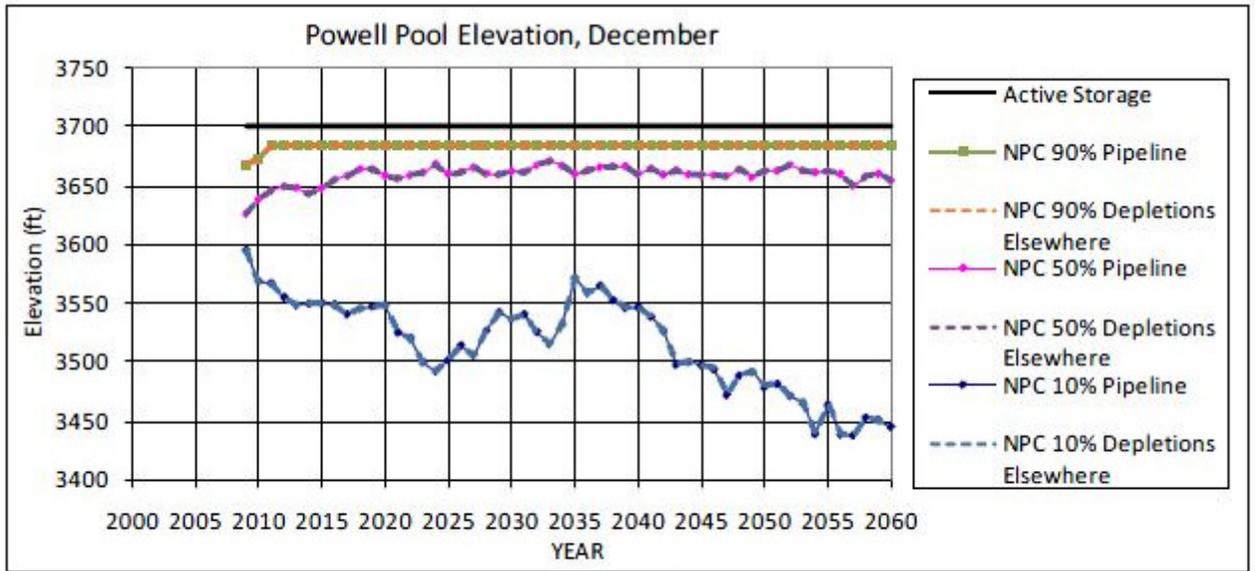
Chart 6



**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.*

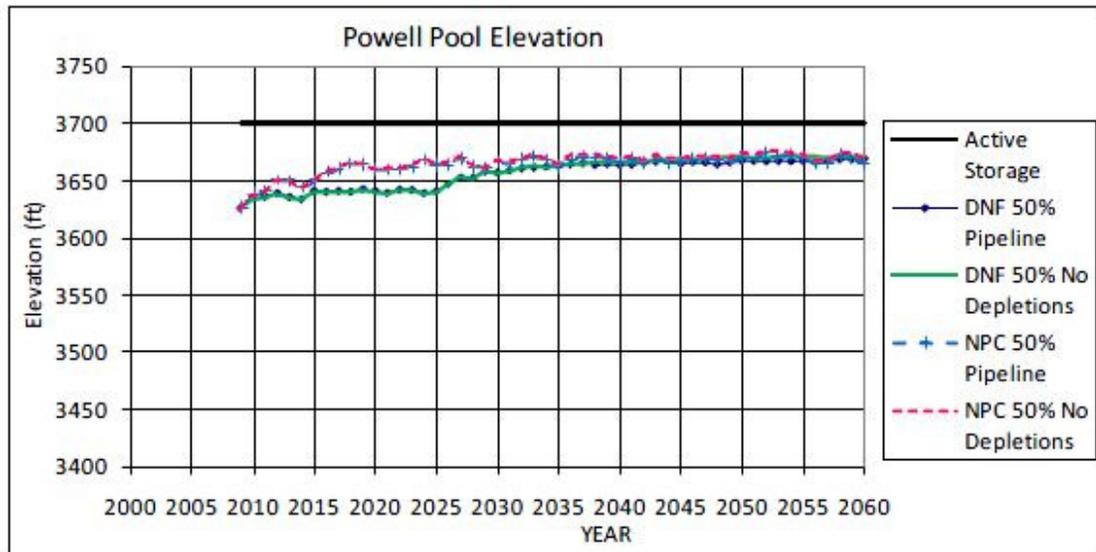
Chart 7



**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).

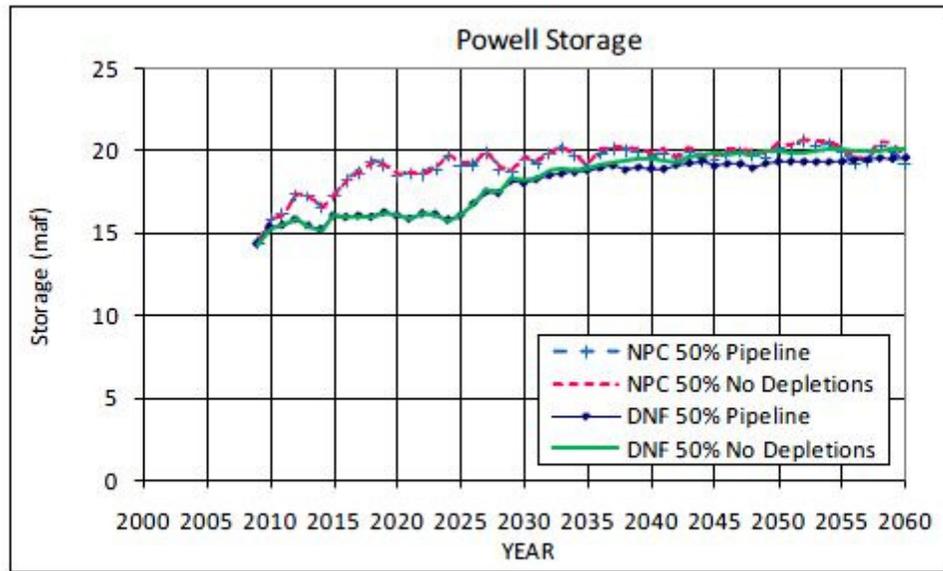
Chart 8



**Figure 4-25**  
**86K AF Simulations, 50<sup>th</sup> 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, 50<sup>th</sup> Percentile Lake Powell Storage Results (NAD)**

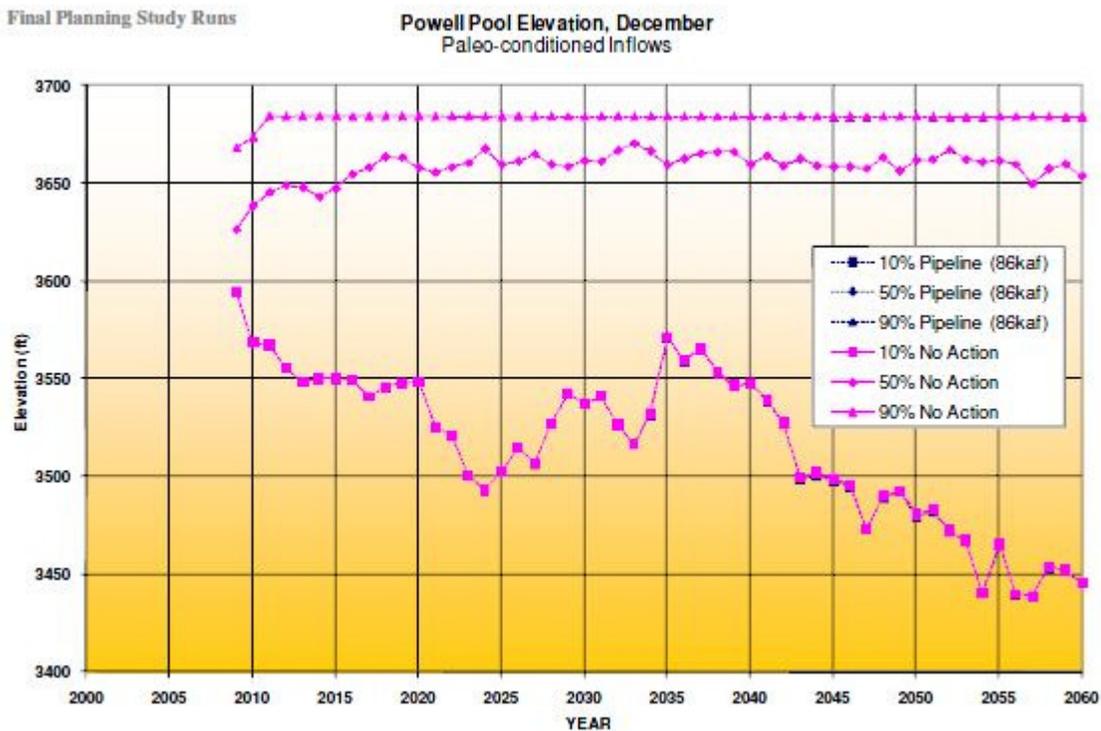
On page 4-24 Figure 4-26 also show above 15 (maf) in storage until 2060. In April Lake Powell was 52 percent full with only 12.7 (maf) of water in storage<sup>20</sup>

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

<sup>20</sup> 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](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

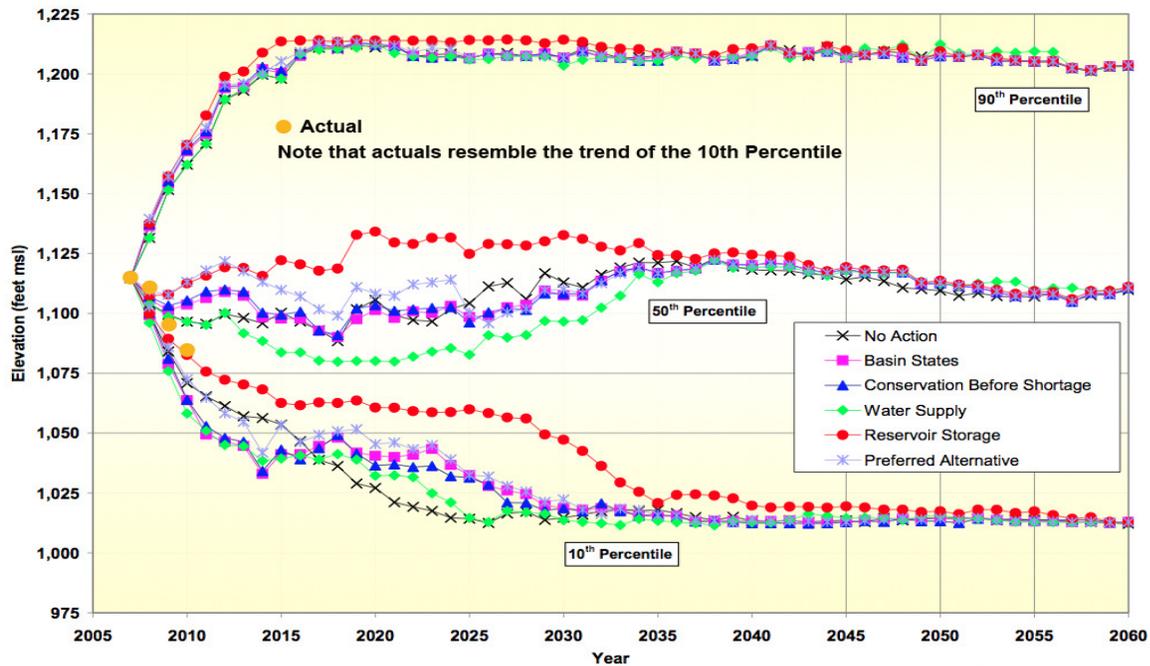


These optimistic elevations levels of Lake Powell used in the models are flawed and a range of possible drought scenarios must be considered in the study report.

*(the formula moves from minimum probable (10<sup>th</sup> percentile), most probable (50<sup>th</sup> percentile), and maximum probable (90<sup>th</sup> percentile).*

The model used for the Interim Guidelines CRSS predicted (*most probable*) 50<sup>th</sup> percentile and did not predict the fall of Lake Mead. The 10% percentile (*minimum probable*) correctly predicted the fall of Lake Mead. Using the 10<sup>th</sup> 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<sup>th</sup> percentile (minimum probable) and not the most probable at 50<sup>th</sup> percentile.*

*(the formula moves from minimum probable (10<sup>th</sup> percentile), most probable (50<sup>th</sup> percentile), and maximum probable (90<sup>th</sup> 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.<sup>21</sup>

### **Study Plan (19.2.1) Study Description**

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

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<sup>21</sup> 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.*<sup>22</sup>

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.*<sup>23</sup> 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**

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<sup>22</sup> FERC elibrary 20080821-3005, Scoping of Environmental Issues for the proposed Lake Powell Pipeline Project, August 21, 2008, p.7

<sup>23</sup> *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.<sup>24</sup> 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.*<sup>25</sup> However, in Chart 12 below, the NPC predicts drought at 2025 in the Interim Guidelines.<sup>26</sup> The study report also continues to misinterpret the science to state the highest probability of shortage for lower basin is after 2055.<sup>27</sup> However, in reviewing chart 13<sup>28</sup> 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 50<sup>th</sup> 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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<sup>24</sup> *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>

<sup>25</sup> #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>

<sup>26</sup> BOR, Interim Guidelines EIS 2007, Analysis of Hydrologic, Variability Sensitivity Appendix N, page N-18

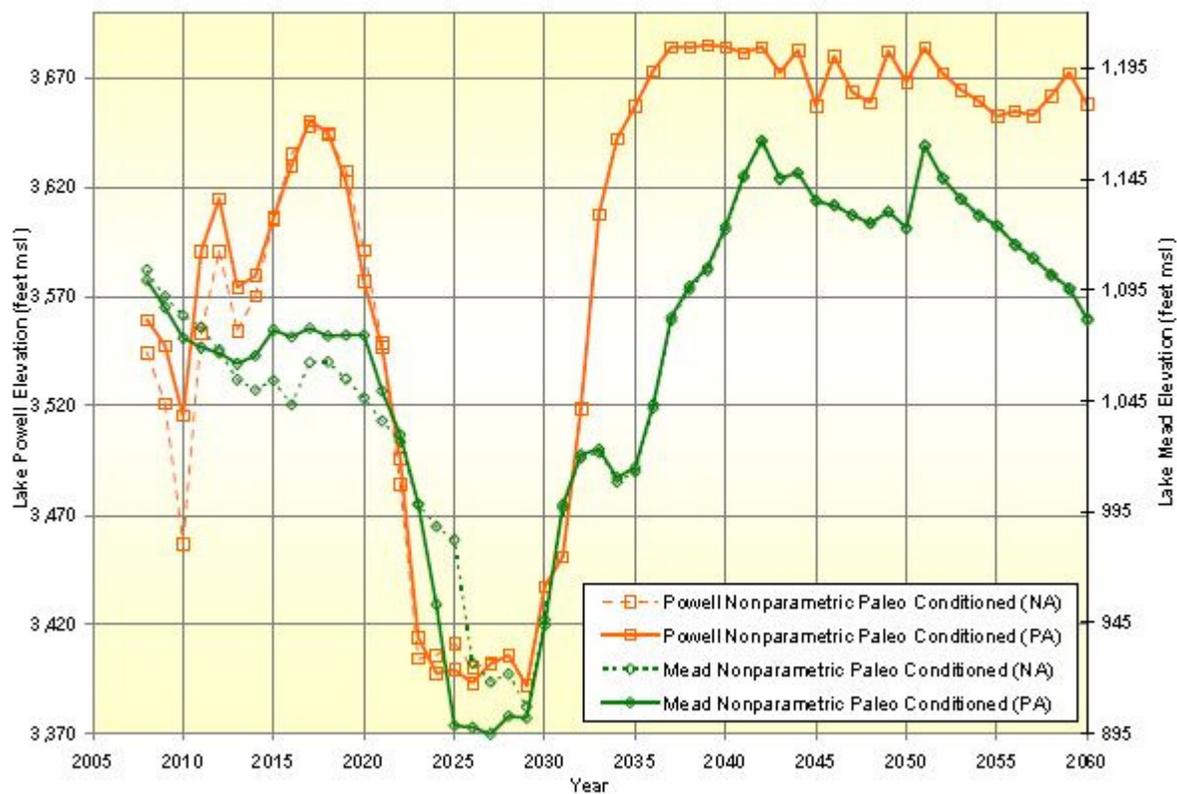
<sup>27</sup> #19 Climate Change Study report at page 2-3

<sup>28</sup> 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

**Figure N-10**  
**End-of-December Elevations**  
**Comparison of Single Trace using Nonparametric Paleo Conditioning with**  
**Meko et al. Reconstruction for No Action Alternative (NA) and Preferred Alternative (PA)**



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

**Chart 13**

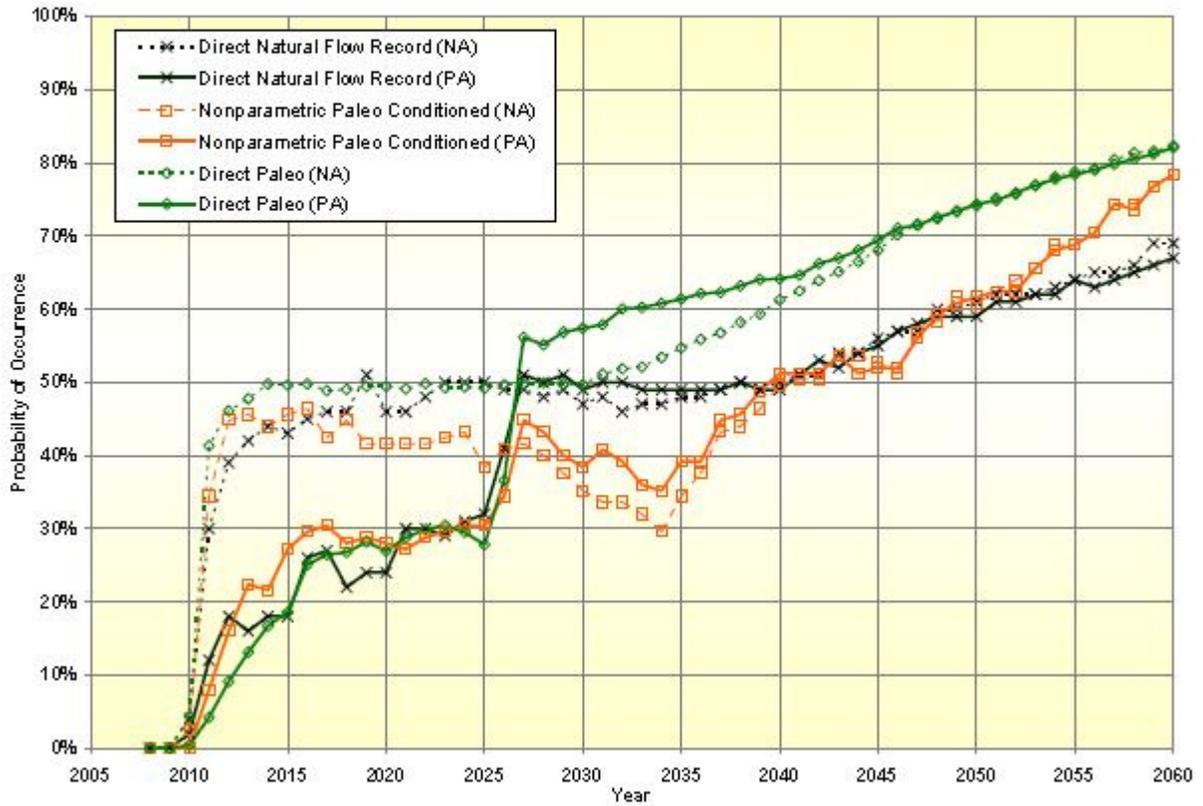
Interim Guidelines EIS 2007

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 patten 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.<sup>29</sup>

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*

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<sup>29</sup> 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](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.*”<sup>30</sup> 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:

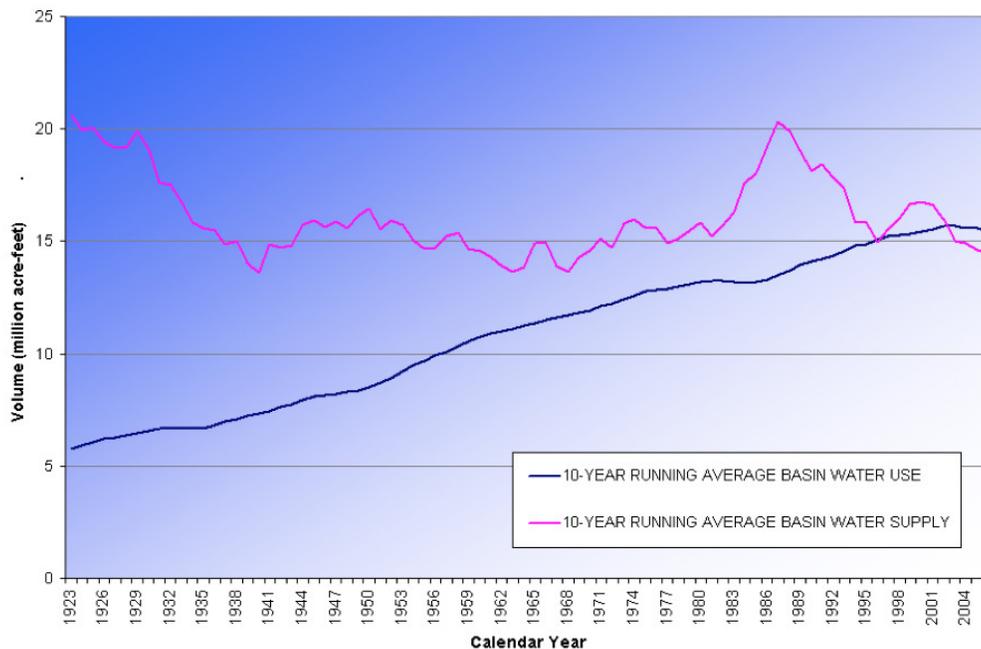
“There is growing consensus in the Upper Colorado River Basin that the existing demand for water now exceeds the available supply. The projects in the Upper Basin being planned today may be developing the unused apportionment of individual Upper Basin states, but from the system-wide perspective, these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

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<sup>30</sup> 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 severe 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.<sup>31</sup> 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.

<sup>31</sup> 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 al., 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 10 percent, could cause significant unacceptable impacts throughout the Basin.<sup>32</sup>

### **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

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<sup>32</sup> 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.<sup>33</sup> It will have a substantial effect on the supplies of water for agriculture, hydroelectric power, industrial, domestic supply, and environmental needs.

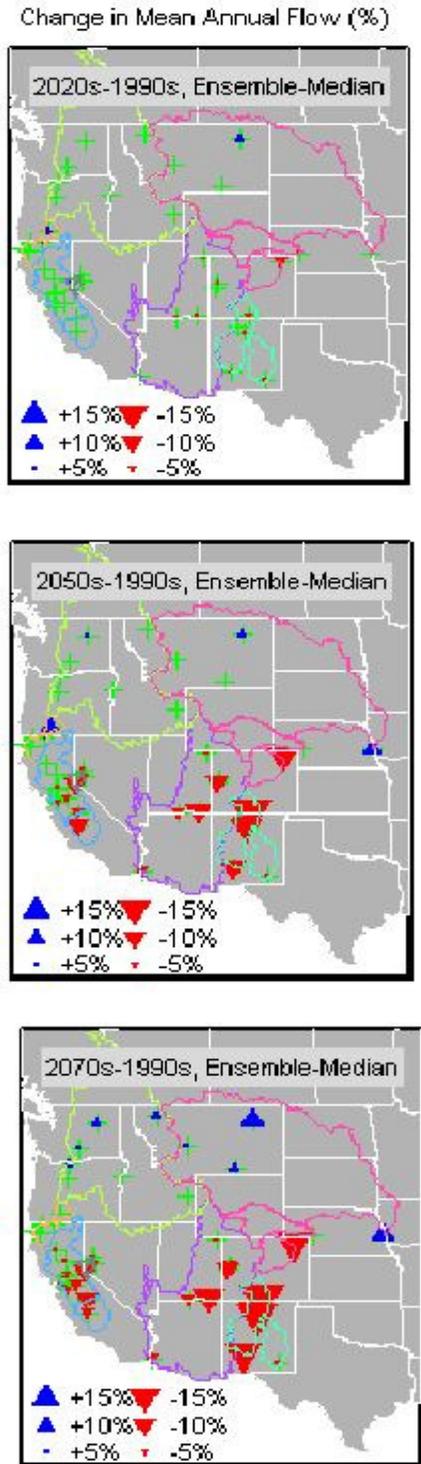
The chart below show predictions of lower flows for the Colorado River and should be included in this study report. The Applicant must include effects on resources and water availability over the term of license from 2020-2070 that include the estimated flow reductions of the Colorado River predicted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

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<sup>33</sup> *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 evidence 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/image/s/pdf/AttachmentA%20Pt1.pdf>

<http://www.powellpipelinefacts.org/image/s/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<sup>34</sup> 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:**

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<sup>34</sup> 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; Excerpts 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 reevaluation 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."*<sup>35</sup>

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

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<sup>35</sup> 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 through 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.<sup>36</sup>

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<sup>37</sup>. We disagree that the Applicant provided an acceptable, thorough estimate of potential water supply. The Applicant only considered agricultural conversion of 4,000 AF<sup>38</sup> 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<sup>39</sup> 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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<sup>36</sup> Washington County Water Conservancy District’s existing water rights, 2009. Available at: <http://www.powellpipelinefacts.org/images/pdf/WCWCD%20water%20rights.pdf>

<sup>37</sup> 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.

<sup>38</sup> 4,000 AF is from Quail Lake exchange. See Coalition Scoping comments 2 Section IV, WNA 2008 p. 4-18.

<sup>39</sup> 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 <sup>40</sup>
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."<sup>41</sup> The community water supply systems coming from Navajo Sandstone wells and springs were only 41,470 <sup>42</sup> acre-feet (AF) which represent a small percentage of total supply. In addition, in Washington County, there are 969,488 <sup>43</sup> 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.<sup>44</sup> 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.

<sup>40</sup> Melodie Sorensen, WCWCD, pers. comm. to Citizens for Dixie's Future (Oct. 21, 2008).

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

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

<sup>43</sup> Washington County Water Conservancy District, *Virgin River Management Plan 1999*

<sup>44</sup> 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.

#### **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 rationale 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. Reevaluate 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. Reevaluate 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. Reevaluate 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>

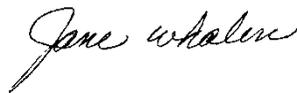
<http://www.powellpipelinefacts.org/images/pdf/AttachmentA%20Pt2.pdf>

**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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LIVING RIVERS – COLORADO  
RIVERKEEPER

Marion Klaus  
SIERRA CLUB UTAH CHAPTER

Duane L. Ostler  
TOWN OF SPRINGDALE, UTAH

# LIVING RIVERS

COLORADO RIVERKEEPER®

Green River Action Network  
Upper Green River Network  
Las Vegas Water Defenders  
Center for Biological Diversity

PO Box 466 • Moab, UT 84532 • 435-259-1063

August 3, 2018

BLM Arizona Strip Field Manager  
Lorraine Christian  
Arizona Strip Field Office  
345 E. Riverside Dr.  
St. George, Utah 84790

Sent Via eMail: [blm\\_az\\_asfo\\_comments@blm.gov](mailto:blm_az_asfo_comments@blm.gov).

RE: Proposed Arizona Strip Resource Management Plan Amendment

Dear Ms. Christian

Thank you for the opportunity to provide input during this NEPA process on the proposal to amend the Bureau of Land Management's (BLM) Arizona Strip Resource Management Plan (RMP) as part of its evaluation of the proposed Lake Powell Pipeline route in the Kanab Creek Area of Critical Environmental Concern (ACEC).

## **INTRODUCTION**

Living Rivers has approximately 1,200 members in Utah, Colorado, and other states. Since its inception, Living Rivers has been engaged in advocating for responsible management of the Colorado River system. We are based in Moab, Utah, which is located on the banks of the Colorado River 60 miles above Lake Powell. Living Rivers was designated as the Colorado Riverkeeper in 2002 by the Waterkeeper Alliance, comprised of 300 affiliate "Waterkeepers" on six continents. Living Rivers' trustees, partners, and members live, work, and recreate on stretches of the Green and Colorado Rivers that would be affected by the Lake Powell Pipeline, and in areas in and around the Kanab Creek Area of Critical Environmental Concern.

The Center for Biological Diversity ("Center") is a non-profit, public interest, conservation organization with more than 1.7 million members and online activists dedicated to the protection of endangered species and wild places. Our mission is to

conserve imperiled native species and their threatened habitat and to fulfill the continuing educational goals of our membership and the general public in the process. Many of our members live, work, recreate, and care deeply about the Green and Colorado Rivers and the environs that will be affected negatively by the Lake Powell Pipeline which depends on easement from the Bureau of Land Management through the Kanab Creek Area of Critical Environmental Concern.

## **PURPOSE OF THE PROPOSED ACTION**

The Utah Board of Water Resource (UBWR) is proposing a route for the proposed Lake Powell Pipeline (LPP) to traverse approximately 1.5 miles of the Kanab Creek Area of Critical Environmental Concern (ACEC). One mile of the pipeline would run within an existing utility corridor that overlaps the ACEC, and the remaining half mile would cross the ACEC outside the utility corridor.

Because this amendment is necessary for the proposed Lake Powell Pipeline to be completed, the entire scope of cumulative impacts for the Lake Powell Pipeline should be considered in this Environmental Impact Statement (EIS). The alternative routes identified for the proposed pipeline must be considered. Consultation with Kaibab Paiutes and US Fish and Wildlife Service must occur.

This route conflicts with the BLM approved 2008 Resource Management Plan (RMP) for the Arizona Strip Field Office (ASFO) Approved Resource Management Plan. The UBWR has selected this route for their convenience at the expense to critical habitat for living communities. This action speaks louder than words; UBWR has demonstrated to the public that they believe the proposed route should be approved because they are exceptional. This attitude of superiority over the commons is an opportunity for the public to take a higher ground position and respectfully ask the BLM to please deny any encroachment upon a designated ACEC. Lake Powell Pipeline is destructive and illogical; it is not in the public interest for the BLM to provide this amendment and easement to self-interested, pipeline promoters.

## **CLIMATE CHANGE AND THE COLORADO RIVER**

The wildlife and people of the Colorado River Basin are in the unprecedented 19th year of drought; Arizona's drought has been reported to be 21-years in length. The aridification, or long-term drying, of the Colorado River Basin is predicted to continue through the century, impacting our water distribution and delivery systems.<sup>1</sup>

“The Colorado River supplies water to 27 million users in 7 states and 2 countries and irrigates over 3 million acres of farmland. Global climate models almost unanimously project that human-induced climate change will reduce runoff in this

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<sup>1</sup> Barnett, Tim and David Pierce. 2009. Sustainable water deliveries from the Colorado River in a changing climate. PNAS May 5, 2009. 106 (18) 7334-7338; <https://doi.org/10.1073/pnas.0812762106>.

region by 10–30%....If climate change reduces runoff by 10%, scheduled deliveries will be missed 58% of the time by 2050. If runoff reduces 20%, they will be missed 88% of the time.” (Barnett & Pierce 2009)

Current state and federal water management policies in the Colorado River Basin do not accurately reflect the world we now inhabit due to a changing climate. This water management predicament has the potential to eliminate the intended goal of securing food and water resiliency. In fact, the policies in place do not even reflect adaption to the climate regime that is accepted by compacts and treaties. For example, since the US Senate ratified a water treaty with Mexico in 1944, Colorado River and Rio Grande water managers have failed to adapt to the over-allocation problem. The Lake Powell Pipeline proposal clearly indicates that water managers will not be adapting to any climate regime. This disregard for reality is very disturbing.

The failure to acknowledge the consequences of a serious water scarcity problem leaves natural ecosystems and communities entirely vulnerable. This basin is at risk of both Lake Powell and Lake Mead dropping to critically low levels as seen by the graph entitled “Historical and Future Projected Lake Mead End-of-December Elevations” produced by the Bureau of Reclamation.<sup>2</sup> It is important to look at the “stress-test” hydrology based off flows from recent history (1988-2015) which many scientists think more accurately reflect our current state than “full hydrology” which includes an abnormally wet time early in the historical record. Notice that these predictions only go through 2026, about the time that the Lake Powell Pipeline would come online. It is extremely likely to continue to decline throughout the century, causing all states to be required to decrease water use.

In the 2012 executive summary of the Colorado River Basin Supply and Demand Study, the Bureau of Reclamation claims, “climate change may put water users and resources relying on the river at risk of prolonged water shortages in the future.”<sup>3</sup> They go on to analyze current climate predictions and come up with a median expected decrease in Colorado River flow of about 9% by 2060.<sup>4</sup> This number is very low compared to other studies that suggest a conservative estimate could be closer to 20%,<sup>5</sup> but even at a 9% decrease in river flow, the Lake Powell Pipeline is in danger of shortages because their

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<sup>2</sup> <http://www.riversimulator.org/Resources/States/ContingencyPlanning/Reclamation/MasterPresentationLBDCPandReclamationJune2018.pdf>

<sup>3</sup> Reclamation. 2017. Colorado River Basin Water Supply and Demand Study Executive Summary. p 26. [https://www.usbr.gov/watersmart//bsp/docs/finalreport/ColoradoRiver/CRBS\\_Executive\\_Summary\\_FINAL.pdf](https://www.usbr.gov/watersmart//bsp/docs/finalreport/ColoradoRiver/CRBS_Executive_Summary_FINAL.pdf)

<sup>4</sup> Reclamation. 2017. Colorado River Basin Water Supply and Demand Study Executive Summary. p 7. [https://www.usbr.gov/watersmart//bsp/docs/finalreport/ColoradoRiver/CRBS\\_Executive\\_Summary\\_FINAL.pdf](https://www.usbr.gov/watersmart//bsp/docs/finalreport/ColoradoRiver/CRBS_Executive_Summary_FINAL.pdf)

<sup>5</sup> Udall, B. and J. Overpeck (2017), The twenty-first century Colorado River hot drought and implications for the future, *Water Resour. Res.*, 53, 2404– 2418, doi:10.1002/2016WR019638.



## Utah's Upper Colorado River Entitlement & Current Depletions

**Utah's Apportionment (23%) 1,369,000 AF**

**Current Depletion 1,007,500 AF**

**Remaining Depletion 361,500 AF**

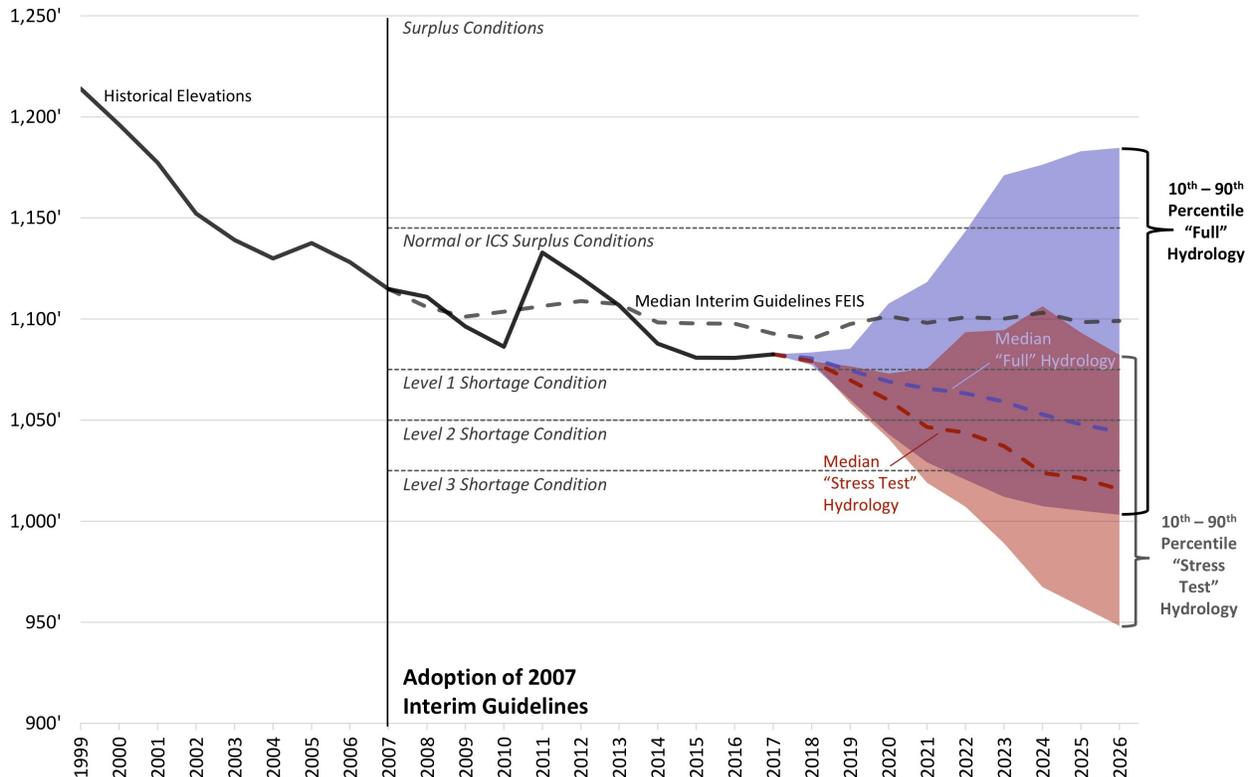
### Potential Depletion

Approved Applications (Undeveloped)

<u>Applicant</u>	<u>Quantity (Ac Ft)</u>
San Juan County WCD	30,000
Central Utah WCD	29,500
Board of W R (et al)	158,000*
Wayne County WCD	50,000*
Kane County WCD	30,000
Sanpete WCD	5,600
Uintah County WCD	5,000
Navajo Nation ?	80,000
Ute Tribe ?	105,000
<b>TOTAL</b>	<b><span style="border: 1px solid red; border-radius: 50%; padding: 2px;">493,100</span></b>

water rights are junior to the Central Utah Project.

### Historical and Future Projected Lake Mead End-of-December Elevations<sup>1,2,3</sup>



<sup>1</sup> Median Interim Guidelines FEIS from June 2007 CRSS projections using 100 hydrologic inflow sequences based on resampling of the observed natural flow record from 1906-2005.

<sup>2</sup> "Full" Hydrology from April 2018 CRSS projections modeled using 110 hydrologic inflow sequences based on resampling of the observed natural flow record from 1906-2015.

<sup>3</sup> "Stress Test" Hydrology from April 2018 CRSS projections modeled using 28 hydrologic inflow sequences based on resampling of the observed natural flow record from 1988-2015.



### UTAH'S OVER-ALLOCATION OF WATER FROM THE COLORADO RIVER

What does a 9% decrease in total river flow look like for Utahns? Well, for context, the entire state of Utah gets about 9% of the Colorado right now. The way in which the loss of water will get distributed among basin states is complicated, and a new drought management plan is sure to unfold in the next few years, but what we know now is that the loss of flow will require that Upper Basin States (Utah included) to decrease water depletions.

This is a problem because right now, the State of Utah is busy trying to develop every last drop of our allocation based on flows that we'll likely rarely see again. These major new water users include the Northern Ute Tribe (105,000 acre feet per year (afy)), the Utah Navajo (81,500 afy), the Green River Block for Uintah County (72,600 afy), and the Lake Powell Pipeline (86,000 afy), among others (the Green River Block and the

Lake Powell Pipeline are seen together on the slide as “Board of W R (et al.)”<sup>6</sup> These new developments increase Utah’s depletions to above the current maximum depletion levels allowed to Utah.<sup>7</sup> The Lake Powell Pipeline has the youngest priority date for the water rights mentioned. In the law of western water the most recently dated water rights get cut first. So, if a shortage comes, which is looking quite likely, the Lake Powell Pipeline will be the first of these to lose out.

The Northern Ute and Navajo have federally reserved water rights under the Winter’s Doctrine (that have yet to be agreed upon or developed) dating back to the creation of the reservations and thus much stronger rights to the water in Utah than most users, including the Lake Powell Pipeline. These federally reserved tribal rights, and the much anticipated new Drought Contingency Plan for the Colorado River Basin should be settled before going forth with the Lake Powell Pipeline.

Given the likelihood of continued aridification, water shortages, and the junior priority dates of the water rights held by the State of Utah for the Lake Powell Pipeline, it is not in the interest of the public for the BLM to amend the Arizona Strip RMP to facilitate a ROW through the Kanab Creek Area of Critical Environmental Concern for the Lake Powell Pipeline. It would be a shame to alter the existing RMP, destroy valuable habitat for the Southwestern Willow Flycatcher, and then find out that the pipe doesn’t have access to the water in the first place.

## **A NEED FOR THE LAKE POWELL PIPELINE HAS NEVER BEEN FULLY IDENTIFIED**

Water conservation and development of local water sources can fulfill the water needs of the growing Washington and Kane Counties. Former Utah Division of Water Resources Director Dennis Strong has stated that St. George can meet their water needs and continue to grow if they simply use their zoning laws to limit and control water use. According to Director Strong, if St. George does so, they will “eliminate” the need for the Lake Powell Pipeline Project. Specifically, on February 9, 2016, Director Strong said,

“...Community by community, people should make their positions clear and move to have their zoning laws limit use and define landscapes...If this is what you choose,

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<sup>6</sup>Division of Water Resources. Upper Colorado River Basin, Current Policy and Issues Powerpoint Presentation. 2009. Slide 5. Accessed at [https://www.waterrights.utah.gov/meetinfo/m20090930/upper\\_colorado.ppt](https://www.waterrights.utah.gov/meetinfo/m20090930/upper_colorado.ppt).

<sup>7</sup>Division of Water Resources. Upper Colorado River Basin, Current Policy and Issues Powerpoint Presentation. 2009. Slide 4 & 5. Accessed at [https://www.waterrights.utah.gov/meetinfo/m20090930/upper\\_colorado.ppt](https://www.waterrights.utah.gov/meetinfo/m20090930/upper_colorado.ppt).

then local community leaders will not need water for growth. They will not need water for future needs. Their water needs will be met by present supplies. And that will mean that they will not purchase water from the water district and the Lake Powell Pipeline Project will be delayed or eliminated.”<sup>8</sup>

A *High Country News* article examining a State audit on water use in Utah says,

“On May 5 [2015], Utah’s Legislative Auditor General released a damning report revealing that the water agency’s forecasts are based on unreliable data and failed to adequately account for the possible contributions of conservation and irrigation water freed up as new homes consume farmland. “By excluding this added water supply,” the auditors write, “the projections accelerate the timeframes for developing costly, large-scale water projects.”<sup>9</sup>

St. George residents use 294 gallons of water per person per day. This number is roughly twice what people in Phoenix and Denver use. With adequate conservation and zoning measures, the Lake Powell Pipeline becomes unnecessary.

### **THE PROPOSED LAKE POWELL PIPELINE ROUTE THROUGH THE ACEC ALSO THREATENS SACRED SITES AND CULTURAL PROPERTIES**

The BLM must consult with the Kaibab Paiute Tribe because their their aboriginal culture and heritage extended way beyond the sovereign boundaries of their reservation. The state of Utah has identified three pipeline routes in the Arizona Strip. For example, alternative pipeline routes include following highway corridors rather than pristine lands. Consultation with the Tribe is necessary for the reason of identify a route that would not impair sacred sites, burials and other cultural values. The BLM must evaluate all three pipeline alternatives in this NEPA process.<sup>10</sup>

### **THE LAKE POWELL PIPELINE FURTHER ENDANGERS RIVER HEALTH AND THREATENS ENDANGERED SPECIES**

The Colorado River is already a strained ecosystem. This fact is demonstrated by the many endangered species found along its stretch. These species include, Humpback Chub, Razorback Chub, Bonytail Chub, Colorado River Pikeminnow, Southwestern Willow Flycatcher and Yuma Clapper Rail. The status of the Colorado River and the fate of its dependent endangered species must be examined and included by the BLM in this EIS.

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<sup>8</sup> [https://www.youtube.com/watch?reload=9&v=oY\\_KXDS6hbQ&feature=youtu.be](https://www.youtube.com/watch?reload=9&v=oY_KXDS6hbQ&feature=youtu.be)

<sup>9</sup> Sarah Gilman. 2015, May 7. “Utah vastly overstating future water shortages.” *High Country News*. Accessed at <https://www.hcn.org/articles/utah-may-be-overstating-future-water-shortages>.

<sup>10</sup> See comments to FERC by the Kaibab Paiute Tribe, 2008. <http://www.riversimulator.org/Resources/Pipelines/PaiuteCommentsLakePowellPipelineOpt.pdf>

The Final EIS for the Arizona Strip Field Office RMP states “Designating the Kanab Creek ACEC and following strict management prescriptions associated with that designation would help maintain, possibly improve, water quality in the Kanab Creek area.”<sup>11</sup> The EPA commended the BLM for the designation of the ACEC because of this<sup>12</sup>.

Studies have shown that humpback chub and razorback sucker have been documented at the mouth of Kanab Creek in the Grand Canyon.<sup>13</sup> Impacts of construction and disturbance in the upstream riparian area may affect the sediment and water quality conditions in lower Kanab Creek and should be included in the analysis. Long-term water shortages in the Colorado River System caused by further withdrawals would effect the endangered species listed above.

### **THE KANAB CREEK ACEC IS A SENSITIVE RIPARIAN AREA AND SHOULD BE PROTECTED**

We support the BLM in upholding the original intent of the Kanab Creek ACEC. The Kanab Creek ACEC was specifically designated “for the protection of endangered SW flycatcher habitat and riparian, scenic, and cultural resources,” according to the Arizona Strip Field Office RMP.<sup>14</sup> The document also goes on to state, “No new corrals or water developments will be authorized or constructed within the ACEC boundaries.”<sup>15</sup>

The RMP goes on to elaborate about the Kanab Creek ACEC, “The riparian area is a natural system that includes rare, endemic plant communities and suitable unoccupied

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<sup>11</sup> BLM. 2007. Proposed Resource Management Plan and Final Environmental Impact Statement for the Arizona Strip Field Office, the Vermilion Cliffs National Monument, and the BLM Portion of Grand Canyon-Parashant National Monument, and a Proposed General Management Plan/Final EIS for the NPS Portion of the Grand Canyon-Parashant National Monument. p. 4-24

<sup>12</sup> Letter from EPA to Arizona Field Office BLM. 2006, January 30. Accessed at <https://archive.epa.gov/region9/nepa/web/pdf/arizona-strip-deis.pdf>.

<sup>13</sup> Argonne National Laboratory. (2009). Annotated bibliography of the Humpback Chub (*Gila cypha*) with emphasis on the Grand Canyon population. Environmental Science Division. [Accessed June 23, 2018]; p. 41. [https://www.gcmrc.gov/library/reports/biological/Fish\\_studies/Goulet2009.pdf](https://www.gcmrc.gov/library/reports/biological/Fish_studies/Goulet2009.pdf).

<sup>14</sup> BLM. 2008. Arizona Strip Field Office Resource Management Plan and Record of Decision. Signed January 29, 2008. p 2-120. Accessed at [https://eplanning.blm.gov/epl-front-office/projects/lup/95271/130322/158471/ApprovedPlan\\_Ch\\_2.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/95271/130322/158471/ApprovedPlan_Ch_2.pdf)

<sup>15</sup> Ibid., p 2-125.

habitat for endangered SW willow flycatcher. It has regional significance. The riparian area is fragile, irreplaceable, and unique and is vulnerable to adverse change. Cause for concern is dewatering, loss of habitat due to development, flooding, and alteration of the stream channel.”<sup>16</sup>

Because of all the reasons outlined in the RMP, an amendment to the Kanab Creek ACEC should not be made to allow further disturbance of this sensitive riparian environment.

Thank you for your close consideration of all the facts outlined above. The Lake Powell Pipeline is an irresponsible and unnecessary venture put forth by the State of Utah in a time when we should be investing in water conservation measures around the state rather than over-developing precarious Colorado River water rights. I encourage the BLM to hold to the original RMP which protects these valuable riparian resources and the endangered species they support.

Thank you for your work to administer our public lands.

Sincerely yours,

Sarah Stock  
Program Director  
Living Rivers  
Moab, Utah

Dr. Robin Silver  
Co-founder, Center for Biological Diversity  
Flagstaff, AZ

John Weisheit  
Co-founder, Living Rivers  
Colorado Riverkeeper  
Moab, Utah

Lauren Wood  
Program Director  
Green River Action Network  
Salt Lake City, Utah

Rica Fulton  
Program Director  
Upper Green River Network  
Laramie, Wyoming

Richard “Tick” Sergerblom  
Program Director  
Las Vegas Water Defenders  
Las Vegas, Nevada

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<sup>16</sup>Ibid., p H-2.





PO Box 466 • Moab, UT 84532 • 435-259-1063

November 2, 2018

Mr. Jared Baxter  
Bureau of Reclamation  
Provo Area Office  
302 East 1860 South  
Provo, UT 84606-7317

Sent via email to: [greenriverblock@usbr.gov](mailto:greenriverblock@usbr.gov)

Re: Comments on the Draft Environmental Assessment for the Green River Block Water Rights Exchange Contract

Dear Mr. Baxter,

Living Rivers & Colorado Riverkeeper submit the following comments for the Draft Environmental Assessment (DEA) of the Green River Block Water Exchange Contract. Thank you for the opportunity to participate in this public process. We also thank you for extending the comment period from October 18 to November 2.

## **INTRODUCTION**

Living Rivers is a nonprofit organization based along the Colorado River in Moab, Utah. Moab is the county seat of Grand County and the western boundary of our county is the Green River. Living Rivers has approximately 1,200 members. Since its inception in 2000, Living Rivers has been engaged in advocating for responsible management of the Colorado River system. Living Rivers was designated as the official Colorado Riverkeeper in 2002 by the Waterkeeper Alliance, comprised of more than 350 on-the-water advocates who patrol and protect more than 100,000 miles of rivers, lakes and coastlines on 6 continents. Many Waterkeepers in the Western US depend on the scarce water resources of the Colorado River basin. Living Rivers' trustees, partners, and members live, work, recreate and rely on the waters of the Green and Colorado Rivers.

This DEA examines the impacts of a contract between the State of Utah and the Bureau of Reclamation (Reclamation) which outlines agreements on water released from Flaming Gorge Dam, operated by Reclamation, for use in Utah by Utah water rights holders. The Green River Block water rights, held by private and public water suppliers, mostly along the Green River in Utah, amount to 72,641 acre-feet (af). This water from Flaming Gorge is available for consumption to the counties of eastern Utah.

Incidentally, we recognize a controversy amongst stakeholders that releases from Flaming Gorge Dam, in the Upper Basin Division, and conveyed by pipeline to Washington County, Utah, which is in the Lower Basin, may not be an appropriate use under the 1922 Compact. When the time comes for Reclamation to prepare the DEA for the Lake Powell Pipeline Contract of 86,000 acre-feet (annual), we would appreciate Reclamation's clarification on this matter, at that time.

From 2000 to 2005, Living Rivers, Colorado Riverkeeper and Center for Biological Diversity participated in the National Environmental Policy Act (NEPA) for an Environmental Impact Statement (EIS) process in regards to re-operations at Flaming Gorge Dam.<sup>1</sup> We participated fully in the NEPA process for the 2007 Interim Guidelines EIS.<sup>2</sup> In 2010, we provided comments on the Green River Pumping Project Environmental Assessment (EA).<sup>3</sup> Since 2012, we jointly participated in the EIS for Long Term Experimental Management Plan for operations at Glen Canyon Dam.<sup>4</sup> We also participated in the 2012 Water Supply and Demand Study (Basin Study), which was not a NEPA process, but was authorized by the 2009 SECURE Water Act.<sup>5</sup>

Joining this comment letter for the Green River Block DEA are the following groups: Green River Action Network, Upper Green River Network, Las Vegas Water Defender, Waterkeeper Alliance, Save The Colorado, Utah Chapter of the Sierra Club, Holiday River Expeditions, Colorado Outward Bound, Colorado River and Trails, Dinosaur River Expeditions, OARS, and One-Way River Works.

While we appreciate the attempt to tie the Green River Block water withdrawals to releases from Flaming Gorge Dam to protect critical habitat and maintain minimum flows in the Green River (Reaches 1, 2 & 3) we are concerned about the inadequate modeling of future hydrology in the DEA and the lack of a basin-wide comprehensive Environmental Impact Statement evaluating how future Drought Contingency Plans (DCP) will influence Flaming Gorge reservoir levels. Additionally, we question which specific water rights will be left in tributaries by the State of Utah in exchange for water out of Flaming Gorge Reservoir and how these will be accounted for. We also question the legal validity of these water rights, since the appropriate intention by Reclamation, in 2009, was to let them lapse (50-years after 1959).<sup>6</sup>

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<sup>1</sup> <http://www.livingrivers.org/archives/article.cfm?NewsID=90>

<sup>2</sup> <http://www.livingrivers.org/archives/article.cfm?NewsID=766>

<sup>3</sup> <http://www.livingrivers.org/pdfs/LRletterGreenRiverPumpingProject.pdf>

<sup>4</sup> <http://www.riversimulator.org/Resources/NGO/LTEMP/LTEMPeisCommentsLivingRivers31Jan2012.pdf>

<sup>5</sup> <http://www.livingrivers.org/pdfs/LivingRiversCBDCComments2013.pdf>

<sup>6</sup> <http://www.riversimulator.org/Resources/Pipelines/UltimatePhase/ExtensionRequestDuchesneWater-ConservancyDistrict2009Reclamation.pdf>

Moreover, the DCP for the Upper Basin Division explains that there is flexibility within the Record of Decision (ROD) for dam operations at Flaming Gorge, Aspinall Unit, and Navajo, to release water annually (up to 2 million acre-feet has been proposed) to maintain the safe generation of hydropower at Glen Canyon Dam to the expiration date of the DCPs in 2026. The emergency evacuation of water from reservoirs in the upper basin might work for one year, but it is uncertain it would work in subsequent years. We worry that the measures proposed in the Upper Basin DCP may empty the upper basin reservoirs, threaten critical habitat below, and eventually compromise the recovery programs for the endangered fish. This situation would also negatively alter water quality for human uses, such as the degradation of drinking water and irrigation water. Such actions resemble a quote from Aldo Leopold, “Girdling the old oak to squeeze one last crop out of the barnyard has the same finality as burning the furniture to keep warm.”

Demand Management strategies for the Upper Basin Division DCPs are premature for implementation. For example, large-scale forbearance agreements have yet to be negotiated, as are the funding mechanisms. The uncertainties that surround DCP and the basin-wide impacts that will result make it premature and difficult to impossible to consider those impacts, as NEPA requires they must, in the DEA for the Green River Block Water Rights Exchange.<sup>7</sup>

Furthermore, it is not clear to us if the proposed action has been properly defined in the DEA. For example, the users of this water are not defined, the locations of the withdrawals are not defined, the amount that the users would divert at such locations has not been defined, and an accounting system to ensure that the State of Utah is leaving water in tributaries in exchange for water from Flaming Gorge as not been defined. Without having empirical information, it is difficult for the public to understand what the impacts might be to the ecosystems of the Green River and its tributaries, such as the Yampa River, the White River, the Duchesne River, the Price River, the San Rafael River, and finally the tributaries of Lake Powell which include the Dirty Devil River and the Escalante River. If the public can't assess the proposed action and its potential impacts properly, then we have to assume that neither can the US Fish and Wildlife Service, the Tribes or other cooperating agencies.

The heightened concern for us are the endangered and threatened fish in the lowermost section of Reach Three, starting at the vicinity of the San Rafael River mouth where the last diversion occurs. We understand the nursery habitat at lower Reach Three suffers from incidental water withdrawal by natural evaporation and evapotranspiration (ET), along with a much-slowed river current and a general shallowness in this particular reach. On our river trips in the summer, we have witnessed fish mortality due to heat stress and low oxygen levels, especially for the flannelmouth sucker. We have witnessed juvenile fish being stranded in detached backwaters that heat in the sun and make for easy foraging by fish-eating predators. A release from Flaming Gorge dam to augment the flows and reduce river temperatures and reconnect backwaters in Reach

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<sup>7</sup> <http://www.livingrivers.org/pdfs/Press/ColoradoRiverLeadersToDiscussIdeaOfMandatoryWaterCuts-AcrossState.pdf>

Three would take many days to arrive; a delay of time that a suffering and vulnerable fish does not have. This situation is happening right now and we expect future water scarcity issues will make this situation only worse.

Consequently, we also worry about river navigation through the submerged sandbar sections of the Green River in lower Reach Three. For example, in the first week of July, in the low water year of 2012, and during a science trip in Canyonlands National Park, it was necessary to off load passengers from row boats and push them into deeper water—twelve times—and specifically the 40 river miles between Fort Bottom and the Confluence with the Colorado River.<sup>8</sup>

## HISTORY

These water rights were originally held in Flaming Gorge Reservoir by Reclamation as part of the “Ultimate Phase” of the Central Utah Project. This water was originally intended to supply the Uintah Unit (partially completed) and the Ute Indian Unit (never completed) of the Central Utah Project. In 1992, Congress signed the Central Utah Project Completion Act which deauthorized the Ultimate Phase, compensated the Northern Ute Tribe for construction projects not completed by the United States, and encouraged the tribe to quantify their water rights. Thus far, a Ute Water Compact has not been ratified by all bands of the Ute Tribe.

Reclamation held the Ultimate Phase water rights until 1996, when it transferred those rights to the Utah Board of Water Resources who, instead of granting them to the Northern Ute Tribe as originally intended, opened these rights up for development in Utah. Some water has been put to use by private and public users along the Green River and, potentially, in the drainage of the Colorado River in Grand County and San Juan County. These rights are collectively referred to as the Green River Block. All of the undeveloped rights from the Ultimate Phase have transferred back to the Utah Board of Water Resources, and they are planning on using them to supply the Lake Powell Pipeline for consumptive use in Washington and Kane Counties. Incidentally, this water exchange to Kane and Washington counties are now junior in priority to the developed Central Utah Project.<sup>9</sup> The Utah Division of Water Rights has granted extensions of time to put the water to beneficial use to all the public water suppliers holding undeveloped Ultimate Phase water rights. According to Reclamation, all of the undeveloped Ultimate Phase water rights were supposed to lapse on October 6th, 2009. The majority of the rights being discussed in the Green River Block should have lapsed on that date; the exceptions are the ones already developed and being put to beneficial use by private users.

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<sup>8</sup> Personal Communication with John Weisheit in Moab, Utah.

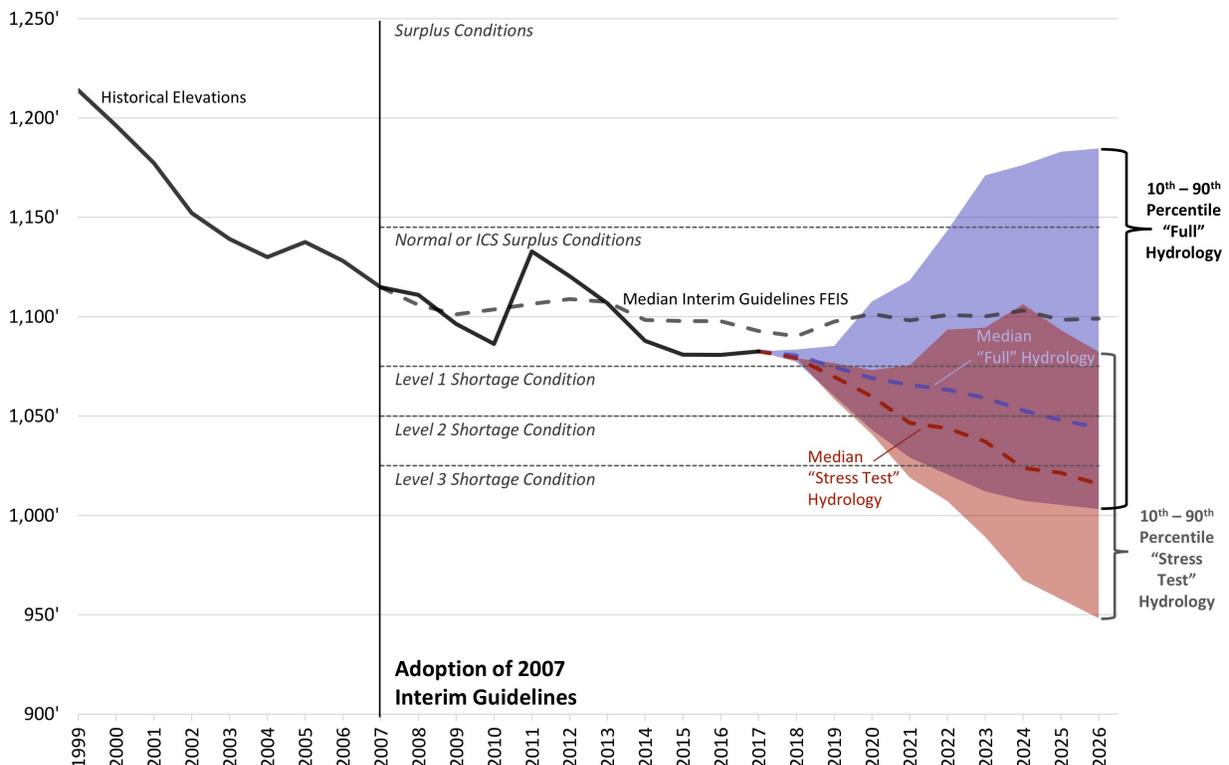
<sup>9</sup> <http://www.riversimulator.org/Resources/Pipelines/FedAgreementWithUtah2011.pdf>

# 1. THE DRAFT EA MUST ADDRESS CHANGING HYDROLOGY DUE TO CLIMATE CHANGE IN MODELING AND IN SECTION 3.3.1.5. CUMULATIVE EFFECTS

The DEA put forth by Reclamation uses quite complex modeling (Colorado River Simulation System, CRSS) to verify the existence of water in Flaming Gorge Reservoir for the water rights exchange. Given that, we are surprised that the model does not use the most current data available. The model needs to reflect the fact that our future inflow hydrology cannot be expected to mirror the first hundred years. We are in an era of unprecedented climate change, as acknowledged by Reclamation in the 2012 Colorado River Basin Supply and Demand Study.<sup>10</sup> The Colorado River Basin is in its nineteenth year of drought. Using hydrology from the last one hundred years (beginning in 1906) is inaccurate as a base for modeling future inflow hydrology, and it puts communities relying on the river at risk.

In the 2012 executive summary of the Colorado River Basin Supply and Demand Study, Reclamation claims, “climate change may put water users and resources relying on the

## Historical and Future Projected Lake Mead End-of-December Elevations<sup>1,2,3</sup>



<sup>1</sup> Median Interim Guidelines FEIS from June 2007 CRSS projections using 100 hydrologic inflow sequences based on resampling of the observed natural flow record from 1906-2005.

<sup>2</sup> "Full" Hydrology from April 2018 CRSS projections modeled using 110 hydrologic inflow sequences based on resampling of the observed natural flow record from 1906-2015.

<sup>3</sup> "Stress Test" Hydrology from April 2018 CRSS projections modeled using 28 hydrologic inflow sequences based on resampling of the observed natural flow record from 1988-2015.



<sup>10</sup> <https://www.usbr.gov/lc/region/programs/crbstudy.html>

river at risk of prolonged water shortages in the future.”<sup>11</sup> They go on to analyze current climate predictions and come up with a median expected decrease in Colorado River flow of about 9% by 2060.<sup>12</sup> This number is very low compared to other studies that suggest a conservative estimate could be closer to 20%,<sup>13</sup> but even at a 9% decrease in river flow, the Upper Basin will be required to finalize DCPs that involve such interconnected operations of reservoirs, including Flaming Gorge.

Lake Powell and Lake Mead are at risk of dropping to critically low levels before 2026 as seen by the graph (preceding page) entitled “Historical and Future Projected Lake Mead End-of-December Elevations” produced by Reclamation.<sup>14</sup> It is important to look at the “stress-test” hydrology based on flows from recent history (1988-2015) which many scientists think more accurately reflect our current state than “full hydrology” which includes an abnormally wet time early in the historical record. Stream flows are extremely likely to continue to decline throughout the century, causing all states to be required to use less water than was originally allocated by the Law of the River.

The 30-year average of unregulated flows into Lake Powell, which is used for the determinations of the Annual Operating Plan<sup>15</sup> for dam operations of the Colorado River Basin, will lower significantly in 2020. The current and last 30-year averages both include the pluvial that occurred during the 1980s (1971-2000 and 1981-2010). The time frame 1971-2000 averaged 12.6 million acre-feet per year (AFY). The more recent 30-year average (1981-2010) was 10.83 million acre-feet per year, a de-

#### The 30-year average in Annual Operating Plans

Lake Powell Unregulated Inflows	AOP Reference (hyperlinked above)	30-year average
1906 - 1968 (mean)	1970 AOP	No entry ??
1971-2000	2005 AOP	12.06
1971-2000	2010 AOP	12.04
1981-2010	2015 AOP	10.83
1981-2010	2018 AOP	10.83
1991 - 2020	To be determined	9.0 ??

<sup>11</sup> Bureau of Reclamation. 2017. Colorado River Basin Water Supply and Demand Study Executive Summary. p 26. [https://www.usbr.gov/watersmart//bsp/docs/finalreport/ColoradoRiver/CRBS\\_Executive\\_Summary\\_FINAL.pdf](https://www.usbr.gov/watersmart//bsp/docs/finalreport/ColoradoRiver/CRBS_Executive_Summary_FINAL.pdf)

<sup>12</sup> Bureau of Reclamation. 2017. Colorado River Basin Water Supply and Demand Study Executive Summary. p 7. [https://www.usbr.gov/watersmart//bsp/docs/finalreport/ColoradoRiver/CRBS\\_Executive\\_Summary\\_FINAL.pdf](https://www.usbr.gov/watersmart//bsp/docs/finalreport/ColoradoRiver/CRBS_Executive_Summary_FINAL.pdf)

<sup>13</sup> Udall, B. and J. Overpeck (2017), The twenty-first century Colorado River hot drought and implications for the future, *Water Resource. Res.*, 53, 2404– 2418, doi:10.1002/2016WR019638.

<sup>14</sup> Bureau of Reclamation. <http://www.riversimulator.org/Resources/States/ContingencyPlanning/Reclamation/MasterPresentationLBDCPandReclamationJune2018.pdf>

<sup>15</sup> <https://www.usbr.gov/uc/water/rsvrs/ops/aop/index.html>

crease of 1.77 MAF.<sup>16</sup> The next 30-year average of unregulated flows into Lake Powell will decrease again because of the millennial drought, which was due in large part simply to increased temperatures in the basin.<sup>17</sup>

### Live Storage Capacity of Colorado River Basin Reservoirs by % and by Decade

Water Year	Capacity%	Water Year	Capacity%	Water Year	Capacity%	Water Year	Capacity%
1980	90.3	1990	72.76	2000	85.1	2010	55.46
1981	82.07	1991	70.75	2001	77.87	2011	64.86
1982	89.49	1992	69.21	2002	63.54	2012	57.05
1983	97.74	1993	81.2	2003	57.13	2013	50.21
1984	95.03	1994	75.48	2004	50.03	2014	50.37
1985	91.98	1995	86.36	2005	58.59	2015	50.83
1986	92.14	1996	84.83	2006	56.21	2016	50.62
1987	90.98	1997	92.53	2007	53.88	2017	55.2
1988	87	1998	93.65	2008	57.12	2018	46.97
1989	80.38	1999	93.65	2009	57.38	2019	
<b>Average</b>	<b>89.65%</b>		<b>82.04%</b>		<b>61.69%</b>		<b>53.51%</b>
<b>Notes:</b>	Impacts to hydropower production may occur at capacities near or below 35%						
	Impacts of low capacity reservoirs include degradation to water quality						
	Lake Powell filled for the first time in 1980; filling of the reservoir began in 1963						

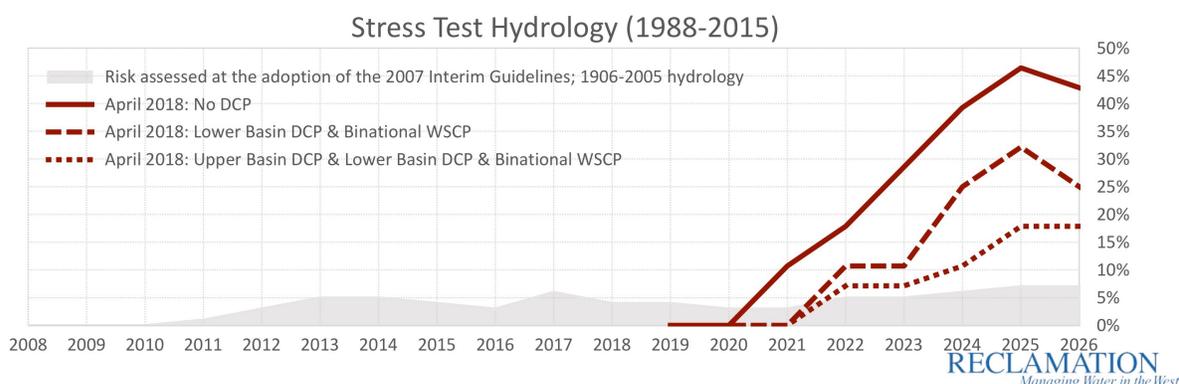
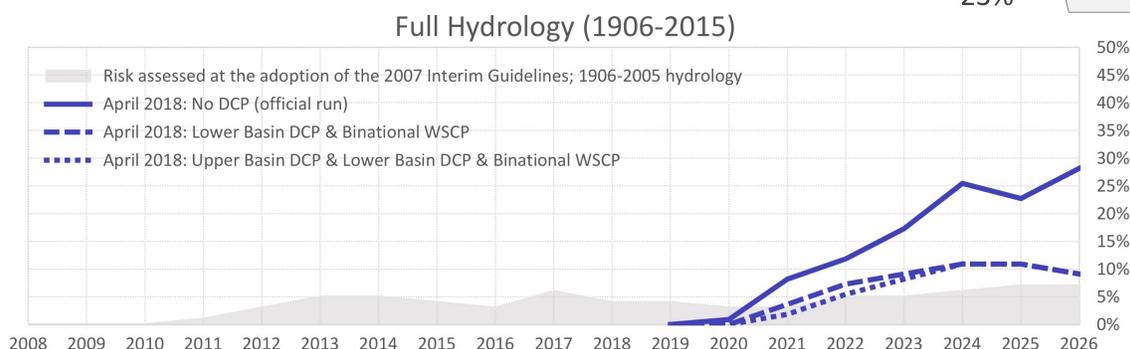
The Reclamation modeling for the 2007 Interim Guidelines has proven to be wrong.<sup>18</sup> Like this DEA, the 2007 modeling used CRSS and sampled the historical natural flow record (1906-2005). It is crucial that we stop using modeling that fails to play out in the real world, especially when we are living with the consequences right now. The seven basin states are currently preparing emergency Drought Contingency Planning (DCP) documents because the 2007 models failed to predict the situation we are in. If we had accurately predicted and planned for this scenario, we might be in better shape to deal with the consequences of the 19-year Millennial Drought. Notice in the graph (next page) the “risk assessed at the adoption of the 2007 Interim Guidelines” compared to the risk reassessed in 2018.

<sup>16</sup> Annual Operating Plans: <https://www.usbr.gov/uc/water/rsrvs/ops/aop/index.html>

<sup>17</sup> Xiao, M., Udall, B., Lettenmaier, P. (2018). On the causes of declining Colorado River streamflows. American Geophysical Union. p. 10-12, 39. doi: 10.1029/2018WR023153.

<sup>18</sup> CAP Press Release. Feb. 13 2008. “Lake Mead not going dry.” Accessed at <http://www.riversimulator.org/Resources/Press/LakeMeadDryCAPdozierFulp.pdf>

# Risk of Lake Mead reaching 1,025' in December



In a 2007 letter to the Upper Colorado River Commission, Rick Gold (UC Regional Director) outlined what Reclamation believes to be a safe allowable annual release from Flaming Gorge Dam, which is 165,000 acre-feet. The letter says, “The analysis presumes that Wyoming, Utah, and Colorado will continue to develop their water supplies.”<sup>19</sup> Was a contract for releases from Flaming Gorge for the Ute Tribe assumed in this modeling? Was the Green River Block also counted in modeling as a “future depletion?” Were climate change or DCPs accounted for in this analysis? Would Reclamation still claim there is 165,000 acre-feet available in Flaming Gorge for development? The DEA needs to address these questions.

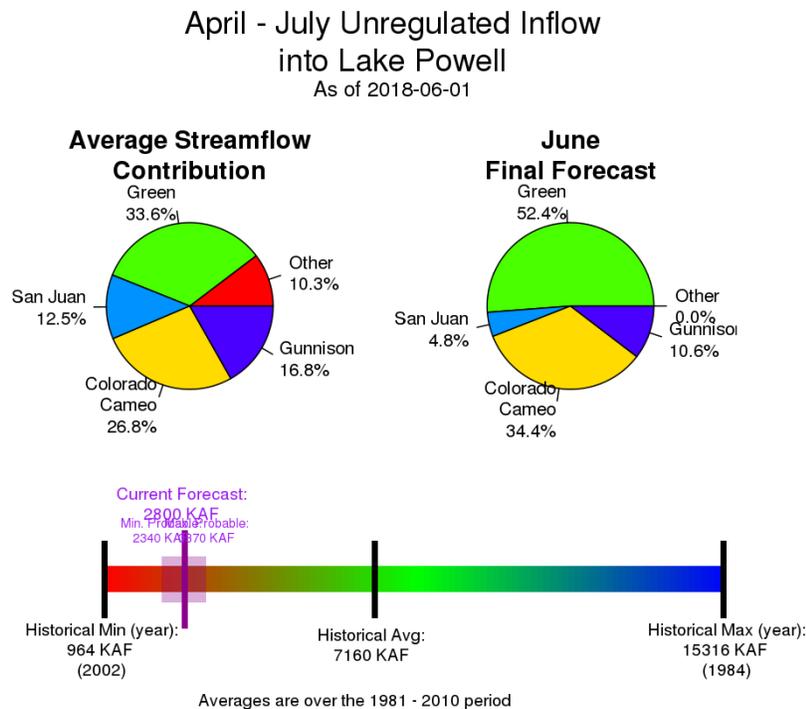
Given the reality of diminishing Colorado River water, and the fact that Reclamation is acknowledging the changing hydrology in other situations, the DEA should include modeling that accurately reflects future climate models and does not rely on outdated numbers from the past century. The hydrologic situation due to climate change should be addressed in section 3.3.1.5. Cumulative Effects, of the DEA.

<sup>19</sup> Letter from Rick Gold, Bureau of Reclamation to Don Ostler, Upper Colorado River Commission (March 3, 2007). “Water Marketing from Flaming Gorge Reservoir.” Accessed at: <http://www.riversimulator.org/Resources/UCRC/UCRCflamingGorgeWaterAvailabilityReclamation2007.pdf>

**2. NEPA REQUIRES THAT A PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT ON THE UPPER BASIN DROUGHT CONTINGENCY PLAN BE PREPARED BEFORE THE DRAFT EA ON THIS CONTRACT CAN BE COMPLETED**

Currently, the Upper Basin States are in the process of negotiating a DCP to deal with the likelihood of future water shortages. A key element in this plan will be the coordinated operations of Navajo, Blue Mesa, and Flaming Gorge Dams. In order to determine whether there is sufficient hydrology for releases from the Flaming Gorge Dam to fulfill Utah’s Green River Block water rights, we need to understand these coordinated dam operations and include them in the modeling. The DEA for the Green River Block should be put on hold until the requirements of the DCP are clarified.

In addition, before the Upper Basin DCP can be finalized, and because it is a major federal action, a basin-wide Programmatic Environmental Impact Statement (PEIS) must be prepared that addresses the requirements and potential impacts of coordinated operations of the Navajo, Blue Mesa, and Flaming Gorge Dams. It is essential that this basin-wide PEIS be incorporated in planning for releases from Flaming Gorge Dam, because the operations of these dams will be tied together to ensure compact obligations are met and to prevent critical shortages in Lake Mead.



The importance of evaluating the Upper Basin DCP and its potential to affect Flaming Gorge discharges is illustrated by the pie charts (above),<sup>20</sup> which demonstrate that the Green River could maintain reasonable hydrology while the rest of the Colorado River Basin declines. Lake Powell and Lake Mead will require water from Flaming Gorge to maintain operational elevations. This is because as climate change progresses, the Green River is predicted to be more likely to maintain average snowpack than other drainages in the Colorado River Basin.<sup>21</sup> This year presents a good example of this pattern emerging. The Colorado River Basin Forecast Center under NOAA states:

“April-July unregulated inflow forecasts for some of the major reservoirs in the Upper Colorado River Basin include Fontenelle Reservoir 980 KAF (135% of average), Flaming Gorge 1120 KAF (114% of average), Blue Mesa Reservoir 270 KAF (40% of average), McPhee Reservoir 46 KAF (16% of average), and Navajo Reservoir 174 KAF (24% of average). The Lake Powell inflow forecast is 2.80 MAF or 39% of average. This would be the 5th lowest April-July inflow on record for Lake Powell dating back to 1964.”<sup>22</sup>

We specifically request that the Upper Basin DCP be the subject of a PEIS that is conducted when re-consultation of Interim Guidelines begins on January 1, 2021, if not before. We also request the preparation of a new Hydrologic Determination for the Upper Basin. Additionally, we request that this basin-wide PEIS include consultation with an independent science panel that is involved from the very beginning of the process and that the National Academy of Sciences also sign-off on the PEIS, as well.

The overarching problems that must be thoroughly studied in such a system wide, programmatic evaluation should include, but not limited to:

- Diminished water supply and water quality
- Increased water demand
- Over allocation of water rights
- Quantifying the water rights of the First Nations
- Impacts to national wildlife refuges, parks and monuments (including the international biosphere at the Colorado River delta)
- Removal of exotic species
- Sedimentation in the reservoirs
- Dam, spillway, and floodplain safety
- Modernizing the Law of the River
- Alternative energy production and conservation
- Water storage and conservation alternatives

Our request for a comprehensive PEIS for the Upper Basin DCP is supported by the federal district court of the District of Columbia, which confirmed, in its decision in EDF v. Higginson, that NEPA requires a comprehensive EIS to evaluate proposed federal

<sup>20</sup> Colorado River Basin Forecast Center, NOAA. June 1, 2018. Accessed at: <https://www.cbrfc.noaa.gov/dash/data/PowellPieChart.png>

<sup>21</sup> Xiao, M., Udall, B., Lettenmaier, P. (2018). On the causes of declining Colorado River streamflows. American Geophysical Union. p. 10-12, 39. doi: 10.1029/2018WR023153.

<sup>22</sup> Colorado River Basin Forecast Center, NOAA. June 1, 2018 Water Supply Forecast Discussion. Accessed at: <https://www.cbrfc.noaa.gov/wsup/pub2/discussion/current.pdf>

projects within the entire Colorado River Basin: “All parties to this action agree that NEPA requires the Department of Interior to prepare environmental impact statements that evaluate the synergistic and cumulative effects of the proposed federal projects.”<sup>23</sup>

Colorado River management is in critical flux right now with rapidly changing hydrology and the development of a new DCP that will significantly impact Flaming Gorge Dam operations. Jim Lochhead, CEO and manager of Denver Water, was quoted in Aspen Journalism as saying, “With the repeat of historic hydrology beginning in the year 2000, Lake Powell will be dry, and when I say dry I mean empty, within about three years. . . .What we are asking for is that the contingency plans be put into place. We need to have those plans in place before the system collapses.”<sup>24</sup>

Consequently, the DEA for the Green River Block Water Rights Exchange should be tabled as premature, since an accurate assessment of water availability in Flaming Gorge can only follow the development of dam operation guidelines under an Upper Basin DCP. In addition, a PEIS is necessary to meet NEPA requirements. Such a PEIS, focused on the Upper Basin DCP, must be completed before the DEA examining the Green River Block Water Exchange can be finalized.

### **3. THE LEGALITY OF THE MAJORITY OF GREEN RIVER BLOCK RIGHTS IS IN QUESTION**

The legality of the water rights that are the subject of the proposed exchange is in question. After 1996, the water rights of the Ultimate Phase were given out by the State of Utah to those who applied for them. The undeveloped rights should have been extinguished 50-years after 1959, if not developed, but instead the state has granted numerous extensions to public water suppliers.

Reclamation’s own Area Manager for the Provo Area Office, Bruce Barrett, lodged several protests to water rights from this block. In a protest letter to the Utah Division of Water Rights he states, “After the “Ultimate Phase” was deauthorized, Reclamation assigned this portion of the appropriation to the Utah Board of Water Resources with the understanding that any portion of this water right not developed within 50-years of the original approval date (ending on October 6, 2009) would lapse.”<sup>25</sup>

Rather than facilitate depletions based on these illegitimate rights (we are not referring to the small subset of water rights in the Green River Block that are already being put to

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<sup>23</sup> Environmental Defense Fund (EDF) v Higginson. June 21, 1978. (655 FR 2d, 1981). Accessed at <http://www.riversimulator.org/Resources/Legal/GCD/1981EDFvHigginson655FR2d.pdf>

<sup>24</sup> Gardner-Smith, Brent. Sept. 19, 2018. “Mandatory curtailment of water rights in CO raised as possibility.” Aspen Journalism. Accessed at: <https://www.aspentimes.com/news/local/mandatory-curtailment-of-water-rights-in-co-raised-as-possibility/>

<sup>25</sup> Letter from Bureau of Reclamation to Utah Division of Water Rights. December 7, 2009. Accessed at: [https://www.waterrights.utah.gov/asp\\_apps/DOCDB/DocImageToPDF.asp?file=/docSys/v920/y920/y92000nr.tif](https://www.waterrights.utah.gov/asp_apps/DOCDB/DocImageToPDF.asp?file=/docSys/v920/y920/y92000nr.tif)

use by private interests), we strongly recommend that the Bureau of Reclamation defer completion of the EA on the Green River Block Water Rights Exchange until a Ute Water Compact is ratified by all parties, sources for the water rights that the tribe is entitled to have been identified, and the legality of the rights that will be subject of the exchange has been clarified.

#### 4. UTAH'S OVERALLOCATION OF WATER THAT IS THE SUBJECT OF THE PROPOSED EXCHANGE

Currently, pursuant to the Colorado River Compact and associated "Law of the River, Utah has 1,369,000 AFY (acre-feet per year) water available to use. In 2009, the Utah Division of Water Resources claimed that Utah had already depleted 1,007,500 AFY, with an additional 493,100 AFY in approved applications that are awaiting development. As enumerated below, these major undeveloped water users include the Northern Ute Tribe (105,000 AFY), the Utah Navajo (81,500 AFY), the Green River Block for Uintah County (72,600 AFY), and the Lake Powell Pipeline (86,000 AFY), among others (the Green River Block and the Lake Powell Pipeline are grouped together as "Board of W R (et al.)."<sup>26</sup>

These new developments increase Utah's depletions to above the current maximum depletion levels allowed to Utah, not even considering the likely cutbacks necessary to uphold Colorado Compact requirements with a changing climate.<sup>27</sup> The uncertainties around what water rights Utah currently has and may have in the future, due to over-allocation, makes it difficult to impossible to determine at this point in time, whether there is sufficient hydrology for releases from the Flaming Gorge Dam to fulfill Utah's Green River Block water rights. Consequently, the DEA for the Green River Block should be

Utah's Upper Colorado River Entitlement & Current Depletions		Potential Depletion Approved Applications (Undeveloped)	
		Applicant	Quantity (Ac Ft)
Utah's Apportionment (23%)	1,369,000 AF	San Juan County WCD	30,000
Current Depletion	1,007,500 AF	Central Utah WCD	29,500
Remaining Depletion	<b>361,500 AF</b>	Board of W R (et al)	158,000*
		Wayne County WCD	50,000*
		Kane County WCD	30,000
		Sanpete WCD	5,600
		Uintah County WCD	5,000
		Navajo Nation ?	80,000
		Ute Tribe ?	105,000
		TOTAL	<b>493,100</b>

<sup>26</sup>Division of Water Resources. Upper Colorado River Basin, Current Policy and Issues Powerpoint Presentation. 2009. Slide 5. Accessed at [https://www.waterrights.utah.gov/meetinfo/m20090930/upper\\_colorado.ppt](https://www.waterrights.utah.gov/meetinfo/m20090930/upper_colorado.ppt).

<sup>27</sup>Division of Water Resources. Upper Colorado River Basin, Current Policy and Issues Powerpoint Presentation. 2009. Slide 4 & 5. Accessed at [https://www.waterrights.utah.gov/meetinfo/m20090930/upper\\_colorado.ppt](https://www.waterrights.utah.gov/meetinfo/m20090930/upper_colorado.ppt).

put on hold until it can be determined that Utah has the rights to sufficient water to be the subject of an exchange.

#### **5. A SYSTEM OF ACCOUNTING NEEDS TO BE DETAILED IN THE DEA THAT ENSURES UTAH LEAVES WATER IN TRIBUTARIES FOR EXCHANGED RELEASES**

The exchange contract and the DEA must outline and analyze a system set in place to ensure that an exchange of water is actually happening, and Utah isn't also diverting essential tributary flows. Where will tributary flows be measured? What are the target flows for specific tributary drainages? How will water users know how much to deplete in a given year? If it is a drought year and flows are lower than the 72,000 at maximum depletion, what mechanisms will ensure that Utah does not use more than the tributaries contribute and endanger critical habitat in the process? All of these questions need to be answered for water rights holders to know what to expect and for the public to be informed and able to fully participate in this NEPA process.

#### **5. FEDERAL WATER RIGHTS CLAIMS OF TRIBES SHOULD BE SETTLED AND WATER IDENTIFIED BEFORE THIS CONTRACT IS SIGNED**

Under the Winter's Doctrine, the Northern Ute and Navajo Tribes have federally reserved water rights, dating back to the creation of the reservations, if not since time immemorial, which have yet to be developed. The particular water rights assigned to the Ultimate Phase were intended to go to the Northern Ute tribe. When that project never materialized, the tribe settled with the federal government for the promise of future water rights. Thus far, a water contract has not been agreed upon and full water rights have not been assigned to the Ute tribe.

Because Utah's approved water rights are over-allocated, as acknowledged by the Utah Division of Water Rights,<sup>28</sup> the State of Utah must demonstrate where the water will come from to fulfill the Ute Water Compact before Reclamation further proceeds with this water rights exchange with the State. The DEA must not only include consideration of these factors in its calculation of available water, but must also incorporate this information in its modeling.

In all likelihood, the water to fulfill the Ute Water Compact will come from the Green River. In order to maintain minimum fish flows, this would require a contract with Reclamation for releases from Flaming Gorge Reservoir. As part of the Department of Interior, the Bureau of Reclamation has an obligation to tribes and native people. Secretarial Order 3335 states that, "The trust responsibility consists of the highest moral obligations that the United States must meet to ensure the protection of tribal and individual Indian lands, assets, resources, and treaty and similarly recognized rights."<sup>29</sup>

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<sup>28</sup> <http://www.riversimulator.org/Resources/Pipelines/LLP2018/ProposedUtahWaterRightsPolicy2009.pdf>

<sup>29</sup> Secretarial order 3335. August 20, 2014. Reaffirmation of the Federal trust responsibility to federally recognized Indian tribes and individual Indian beneficiaries. Accessed at <https://www.doi.gov/sites/doi.gov/files/migrated/news/pressreleases/upload/Signed-SO-3335.pdf>

Consequently, Reclamation should settle an exchange contract for releases from Flaming Gorge Reservoir with the Northern Ute Tribe before engaging with the State of Utah on an exchange of other, more junior water rights.

We urge Reclamation to put completion of this DEA on hold until the two crucial agreements that will significantly impact the existence and amount of water for the Green River Block water rights exchange are finalized: the Ute Water Compact and the Upper Basin DCP. The exchange contract must also outline an adequate system of accounting for the exchange of water from tributaries for Flaming Gorge water. In addition, we strongly recommend that the modeling for the DEA be expanded so that it does not rely solely on data from the last one hundred years and includes relevant climate forecasts.

Thank you for your consideration of these facts, comments and recommendations.

Sincerely yours,

Sarah Stock  
Program Director  
Living Rivers & Colorado Riverkeeper

John Weisheit  
Co-founder  
Living Rivers & Colorado Riverkeeper

Dr. Robin Silver  
Co-founder  
Center for Biological Diversity

Dan Estrin  
Kate Hudson  
General Counsel and Advocacy Director  
Waterkeeper Alliance

Gary Wockner  
Co-founder  
Save The Colorado

Richard Segerblom  
General Counsel and Program Director  
Las Vegas Water Defender

Lauren Wood  
Program Director  
Green River Action Network

Rica Fulton  
Program Director  
Upper Green River Network

Ashley Soltysiak  
Director  
Utah Chapter of the Sierra Club

John Wood  
President  
Holiday River Expeditions

Herman Hoops  
Owner  
One-Way Boatworks

Tyler Callantine  
Owner and Operator  
Dinosaur River Expeditions

Lance Plank  
SW Program Director  
Colorado Outward Bound School

David and Vicki Mackay  
Owners  
Colorado River & Trail Expeditions

Tyler Wendt  
President  
OARS

UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION

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Utah Board of Water Resources )	Docket No. P-12966
)	Sub Docket No. 004
Lake Powell Pipeline Project )	

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**LIVING RIVERS & COLORADO RIVERKEEPER MOTION TO INTERVENE IN THE ORIGINAL LICENSING FOR THE LAKE POWELL PIPELINE PROJECT**

Pursuant to 18 C.F.R. § 385.214 and the “Notice of Application Accepted for Filing, Soliciting Motions to Intervene and Protests, Ready for Environmental Analysis (REA), and Soliciting Comments, Recommendations, Terms and Conditions, and Prescriptions,”<sup>1</sup> as modified by the “Notice Suspending Procedural Schedule,”<sup>2</sup> Living Rivers & Colorado Riverkeeper hereby moves to intervene in the licensing proceeding for the Utah Board of Water Resources’ proposed Lake Powell Pipeline Project (LPPP). Living Rivers & Colorado Riverkeeper (LR/CR) intends to submit comments and recommendations relevant to the environmental analysis by Federal Energy Regulatory Commission’s (FERC), Cooperating Agencies and Tribes, in the near future.

**I. COMMUNICATIONS**

All correspondence, communications, pleadings, and other documents relating to this proceeding should be served upon the following representatives of Living Rivers and Colorado Riverkeeper:

Living Rivers & Colorado Riverkeeper  
John Weisheit  
Conservation Director  
Sarah Stock  
Program Director  
PO Box 466  
Moab, UT 84532  
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<sup>1</sup> Accession no. 20171211-3022; December 11, 2017.

<sup>2</sup> Accession no. 20180111-3085; January 11, 2018.

## **II. INTERESTS OF INTERVENOR**

Pursuant to 18 C.F.R. § 385.214(b), we describe our respective legal status, purposes, and interests in the proposed pipeline below:

Living Rivers & Colorado Riverkeeper (LR/CR) is a nonprofit organization based along the Colorado River in Moab, Utah, and in the geophysical province of the Colorado Plateau. Moab is the county seat of Grand County and the western county boundary is the left bank of the Green River. Our mission is to promote river restoration through mobilization, by articulating conservation and alternative management strategies to the public. We seek to revive the natural habitat and spirit of rivers by undoing the extensive damage done by dams, diversions and pollution in the Colorado River Basin. LR/CR was founded in 2000 and in 2002 our organization became a licensed and voting member of the Waterkeeper Alliance, which is comprised of more than 350 on-the-water advocates who patrol and protect more than 100,000 miles of rivers, lakes and coastlines on six continents. Our regional members and partners depend on the scarce water resources and the ecosystem values of the Colorado River Basin (CRB).

LR/CR joined a coalition of regional non-profit organizations called Lake Powell Pipeline Coalition (LPPC), which provided scoping comments to FERC on July 7, 2008.<sup>3</sup> Additionally, LR/CR provided independent scoping comments to FERC on July 7, 2008.<sup>4</sup> The LPPC filed as intervenors on January 2, 2008.<sup>5</sup> On May 6, 2011, LPPC submitted comments regarding the LPPP Study Plans and Draft Study Reports.<sup>6</sup> The LPPC submitted comments regarding the LPPP Modified Draft Study Reports on March 23, 2012.<sup>7</sup>

## **III. POSITION**

We respectfully petition FERC and Cooperating Agencies require the Utah Board of Water Resources (UBWR) to provide additional information and/or updated information prior to beginning the preparation of the Environmental Impact Statement (EIS), because new information has been revealed since initial scoping began in 2008. We will briefly provide a few examples (below) that support the pressing need for a fresh analysis. More detailed information from our organization is forthcoming.

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<sup>3</sup> Accession no. 20080707-5206; Citizens for Dixie's Future et al.; July 7, 2008; Citizens for Dixie Future is now known as Conserve Southwest Utah.

<sup>4</sup> Accession no. 20080915-5031; posted on September 15, 2008.

<sup>5</sup> Accession no. 20080102-5057; January 2, 2008.

<sup>6</sup> Accession no. 20110506-5125; May 6, 2011.

<sup>7</sup> Accession no. 20120323-5005; March 23, 2012.

## The Potential For Lower Basin Shortages and Compact Call Have Arrived

In December of 2007 the seven states of the Colorado River Basin (CRB) and the Department of Interior (DOI) signed a Record of Decision (ROD)<sup>8</sup> called Interim Guidelines to manage possible shortage declarations in the Lower Basin and to avoid a Compact Call in the Upper Basin. The ROD expires on midnight January 1, 2026; mandatory re-consultation of the ROD begins at midnight on January 1, 2021.

In the regional press of December, 2007, the states and DOI exclaimed their confidence that shortage declarations were very unlikely to ever occur between 2008 and 2026, and if shortages did indeed emerge, a cooperative planning document existed to provide equitable solutions. This confidence changed in 2014 to a position that shortages are very likely to occur before 2026.<sup>9</sup> In February of 2014, the seven basin states began a voluntary process known as Drought Contingency Planning (DCP)<sup>10</sup> and because the then current 24-Month Report<sup>11</sup> indicated that reaching the first tier of a shortage declaration (elevation 1075 feet) at Lake Mead appeared imminent. What also changed is the diminishing pool elevation of Lake Powell and the corresponding increase in the odds that a Compact Call for the Upper Basin states would likely occur.<sup>12</sup>

Almost five years have since passed and the present hope is that the DCPs will be signed sometime in 2019. When the DCPs are signed, shortages will indeed occur because the agreed-upon tier to declare a shortage at Lake Mead will rise from 1075 to 1090 feet. The current 24-Month Report confirms this shortage declaration will occur on January 1, 2020.<sup>13</sup> The assumptions of Colorado River Simulation System modeling used to develop the EIS for Interim Guidelines are not correct. When the Guidelines are formally replaced in 2026, it is almost certain that shortage volumes will increase, as will the volumes for demand management strategies. We respectfully ask FERC to require UWRB to demonstrate their modeling assumptions for LPPP include rigorous scenario planning to assess these risks into a future time-frame of 50-years, and that this analysis be peer-reviewed by a qualified, independent third party.

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<sup>8</sup> 2007 Record of Decision for Interim Guidelines. See: <https://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf>

<sup>9</sup> High Country News; December, 2014. See: <http://www.livingrivers.org/pdfs/Press/CitiesLookToFarmsForHelpInColoradoRiverDrought.pdf>

<sup>10</sup> Colorado Water Conservation Board. See: <http://www.riversimulator.org/Resources/States/McClowCWCBMemoToStakeholdersFeb2014.pdf>

<sup>11</sup> 24-Month Report of February 2014. See: <http://www.riversimulator.org/Resources/USBR/24month/24monthComplete/2014.2.pdf>

<sup>12</sup> KUNC Radio; June, 2018. See: <http://www.livingrivers.org/pdfs/Press/ColoradoRiverManagersSeeApossibleFutureAndItDoesntLookPretty.pdf>

<sup>13</sup> 24-Month Report of November, 2018. See: <http://www.riversimulator.org/Resources/USBR/24month/24monthComplete/2018.11.pdf>

### **The Projected Trend in Population Increase in Washington County is Moot**

The projected trend for the annual unregulated flow of the Colorado River has been steadily trending downward since the 1922 Compact was negotiated, and there is no evidence in the administrative record to support a claim that this downward trend will reverse itself the next 50-years.<sup>14</sup> If there is evidence, then UWRB is compelled to submit this evidence in the forthcoming review process. The age of abundance is clearly over and water users in the Colorado River Basin water must demonstrate restraint and prepare for curtailments, instead. Utah has the opportunity to demonstrate leadership by redirecting the cost of the pipeline into financing water resiliency programs for their communities. We respectfully ask FERC to require UWRB to provide a water conservation alternative for this review,

### **Cost of the Lake Powell Pipeline Project is Significantly Underestimated**

Based on an example of best management practices to construct the Southern Delivery System in the state of Colorado,<sup>15</sup> we believe the cost and interest payments for the LPPP will approximate 4 billion dollars. The UWRB has stated the cost of the project will range from 1.1 billion to 1.8 billion dollars. We respectfully ask FERC that the UWRB be required to update the projected cost analysis for this project and that the analysis is peer-reviewed by a qualified, independent third party.

### **Mitigation of the Quagga Muscle Infestation at Lake Powell is Necessary**

In 2008, quagga muscle infestations at the forebay of Glen Canyon Dam were suspected to become a possible reality. Ten years later, quagga muscles have been sited throughout the reservoir.<sup>16</sup> The UWRB should provide FERC with a mitigation plan for this problem (Lake Powell to Sand Hollow Reservoir to Virgin River) and explain how much the work plan will cost ratepayers and in the time-frame of 50-years, and that the analysis is peer-reviewed by a qualified, independent third party.

### **Mitigation of Impaired Water Quality During Low Reservoir Levels at Lake Powell**

According to 2007 Interim Guidelines, when Lake Mead reaches elevation 1025 feet, the corresponding level at Lake Powell will be at the bottom of the active pool. The Colorado River and the San Juan River will be incising into the stored sediment

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<sup>14</sup> CRB Supply and Demand Study. See: [https://www.usbr.gov/watersmart//bsp/docs/finalreport/ColoradoRiver/CRBS\\_Executive\\_Summary\\_FINAL.pdf](https://www.usbr.gov/watersmart//bsp/docs/finalreport/ColoradoRiver/CRBS_Executive_Summary_FINAL.pdf)

<sup>15</sup> Water Finance & Management. See: <http://www.riversimulator.org/Resources/Pipelines/LLP2018/HowColoradoFundedSouthernDeliverySystem.pdf>

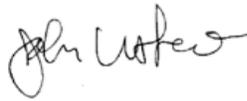
<sup>16</sup> Deseret News. See: <https://www.deseretnews.com/article/900020372/mussel-beach-lake-powell-has-trillions-and-trillions-of-these-things.html>

deposits in the Upper Arms of Lake Powell.<sup>17</sup> The river incision process mobilizes sediment, entrained heavy metals and entrained organic materials, which will seriously degrade water quality standards at the forebay intake of LPPP. We would ask that the UWRB develop a mitigation plan for this hazard and to also provide a cost analysis for this mitigation plan. The analysis should be peer-reviewed by a qualified, independent third party.

#### IV. CONCLUSION

Living Rivers and Colorado Riverkeeper respectfully request the Federal Energy Regulatory Commission to grant us our Motion to Intervene in this proceeding as a party with full rights to participate in all further proceedings.

Dated: November 16, 2018  
Respectfully submitted,



By: John Weisheit \_\_\_\_\_

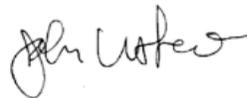
John Weisheit; Living Rivers & Colorado Riverkeeper; Conservation Director; PO Box 466; Moab, UT 84532; Phone: (435) 259-1063; Mobile: (435) 260-2590; Fax: (435) 259-7612; eMail: [john@livingrivers.org](mailto:john@livingrivers.org)

#### DECLARATION OF SERVICE

Utah Water Resources Board and Utah Department of Natural Resources' Division of Water Resources Lake Powell Pipeline Project (P-12966)

I, John Weisheit, declare that I today served the attached Motion to Intervene by Living Rivers & Colorado Riverkeeper in the Original Licensing for the Lake Powell Pipeline Project by electronic mail, or by first-class mail if no eMail address is provided, to each person on the official service list compiled by the Secretary in this proceeding.

Dated: November 16, 2018



By: John Weisheit \_\_\_\_\_

John Weisheit; Living Rivers & Colorado Riverkeeper; Conservation Director; PO Box 466; Moab, UT 84532; Phone: (435) 259-1063; Mobile: (435) 260-2590; Fax: (435) 259-7612; eMail: [john@livingrivers.org](mailto:john@livingrivers.org)

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<sup>17</sup> UA News. See: <http://www.livingrivers.org/pdfs/Press/ExposedUpperColoradoRiverDeltalsRapidlyErodingIntoLakePowell.pdf>



PO Box 466 • Moab, UT 84532 • 435-259-1063

November 19th, 2018

Ms. Kimberly D. Bose  
Secretary Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, D.C. 20426  
Filed via FERC eFiling website

Ms. Courtney Hoover  
Regional Environmental Officer  
Office of Environmental Policy and Compliance  
Denver Region  
P.O. Box 25007 (D-108)  
Denver Federal Center  
Denver, CO 80225-0007  
Sent via email to: [courtney\\_hoover@ios.doi.gov](mailto:courtney_hoover@ios.doi.gov)

Regarding: Docket # P-12966-004

“Notice of Application Accepted for Filing, Soliciting Motions to Intervene and Protests, Ready for Environmental Analysis (REA), and Soliciting Comments, Recommendations, Terms and Conditions, and Prescriptions,”<sup>1</sup> as modified by the “Notice Suspending Procedural Schedule.”<sup>2</sup>

Dear Ms. Bose and Ms. Hoover,

Thank you for the opportunity for members of the public to provide comments on the scope of the Environmental Impact Statement (EIS) for the proposed Lake Powell Pipeline Project. As this Project has cumulative impacts to people living in the Colorado River Basin, we take this opportunity to provide comments very seriously.

## 1. INTRODUCTION

The Lake Powell Pipeline Project proposes to move up to 82,249 acre-feet per year (AFY) of water from Lake Powell through northern Arizona and southern Utah to Sand Hollow Reservoir (which stores water from watershed of the Virgin River) to be used by the county seat of Washington County, St. George, Utah. Additionally, up to 4,000 AFY of water will also be transported for use in Kane County near the county seat of Kanab.

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<sup>1</sup> FERC eLibrary; Accession no. 20171211-3022; December 11, 2017.

<sup>2</sup> FERC eLibrary; Accession no. 20180111-3085; January 11, 2018.

A contract between the State of Utah and Reclamation will outline the agreements on water released from Flaming Gorge Dam, operated by Reclamation, for use by the Lake Powell Pipeline Project. The release from Flaming Gorge Dam will be diverted from Lake Powell at a proposed pumping station near Glen Canyon Dam in the state of Arizona. The project will involve the construction of a 140-mile pipeline from the Lake Powell to Sand Hollow Reservoir in Washington County. This water conveyance system includes pump stations to lift the water up-and-over watershed divides and will generate net hydropower electricity when the water in the pipeline falls to lower elevations.

The Colorado River Basin (CRB) provides water for roughly 40 million people in seven US States as well as two Mexican States. It supplies water to over 5 million acres of agricultural land and supports a thriving recreation economy, as well as one of the most unique and beautiful ecosystems in the world. In developing this EIS, we encourage you and your departments to take the long view. This river is a crucial resource for all who live in and on the edges of the majestic Colorado River Basin. Why would the economic growth of St. George, a community that has never relied on the river before, be considered more important than maintaining the economies of dozens of cities that already rely on the highly sought waters of the Colorado River? The continued growth of St. George is not in question, with or without the Lake Powell Pipeline, but the continued existence of many western farmers are actually on the line, even in Utah. Every time we take water out of the river, we are taking from someone or something that relies on that same water. The Colorado River is all used up, our “growth” and “prosperity” has already led to the decimation of the delta fishing community in Mexico. The sandbars, river channels, and floodplains are changing, invasive plants and animals encroach with diminished flows and the waves of rapids disappear as the exposed boulders take their place.

The risk of both Lake Powell and Lake Mead dropping below the point of power generation in the next few years is high. We have yet to adapt to the existing infrastructure, water delivery schedules, nor to the hydrology of this changing time-period. Adding the Lake Powell Pipeline to this already strained system is unneeded and cannot be sustained from either an environmental or an economic perspective. For example, when the Central Arizona Project was unwisely pushed through and financed, Arizona agreed to take a junior water right. Today, Arizona is reckoning with that choice, and it has repercussions around the entire Colorado River Basin. People, who have become dependent on that water, will lose their lifeline. Economies will suffer. It is not responsible to knowingly repeat the same mistake again. The Lake Powell Pipeline has junior water rights; the Central Utah Project holds the senior water rights. Considering all of this, the cost is too high for residents of Washington and Kane Counties to bear for unsecured water rights in this politically tumultuous system.

As stewards of the Colorado River, we understand the multiple layers of policies that come into play in the management of this valuable lifeline and the rippling repercussions that they will have. On behalf of the members and partners of Living Rivers and Colorado Riverkeeper, we submit the following comments. In the spirit of

public participation we've broken down some of the main issues surrounding the Lake Powell Pipeline Project, including expanding aridification, over-appropriation, the development of Drought Contingency Plans (DCP), re-consultation of Interim Guidelines, and the economic and social justice dynamics at play. We urge FERC and the Cooperating Agencies to analyze these bigger concepts in developing a rigorous and robust EIS. The decisions we make in the critical years to come will hold incredible importance for our future here in these deserts. Your agency, and the other Cooperating Agencies, must begin to acknowledge and adapt to the unique challenges of our time. If you do prepare a comprehensive and forward looking EIS, consistent with our comments below, we are confident that you will conclude that the Lake Powell Pipeline is not in the public's best interest, and that this Project should not move forward to licensing.

### 1a. History of Organizational Involvement

Living Rivers is a nonprofit organization based along the Colorado River in Moab, Utah. Moab is the county seat of Grand County, the western boundary of the county is the Green River. Living Rivers has approximately 1,200 members. Since its inception in 2000, Living Rivers has been engaged in advocating for responsible management of the Colorado River system. Living Rivers was designated as the official Colorado Riverkeeper in 2002 by the Waterkeeper Alliance, comprised of more than 350 on-the-water advocates who patrol and protect more than 100,000 miles of rivers, lakes and coastlines on 6 continents. Many Waterkeepers in the Western US depend on the scarce water resources of the Colorado River basin. Living Rivers' trustees, partners, and members live, work, recreate and rely on the waters of the Green and Colorado Rivers.

#### Living Rivers: Lake Powell Pipeline Admin Record

Date	Comments or Intervention	Archival Hyperlink
1/2/2008	Motion to Intervene	<a href="#">LPP Coalition</a>
7/7/08	Initial Scoping (SD1)	<a href="#">Living Rivers</a>
7/7/08	Initial Scoping (SD1)	<a href="#">LPP Coalition</a>
11/19/08	Initial Scoping (SD2)	<a href="#">LPP Coalition</a>
1/5/09	Revised Study Plan	<a href="#">LPP Coalition</a>
5/6/11	Study Reports	<a href="#">LPP Coalition</a>
8/3/18	BLM AZ Strip Amended RMP	<a href="#">Living Rivers</a>
11/2/18	Green River Block EA	<a href="#">Living Rivers</a>
11/16/18	Motion to Intervene	<a href="#">Living Rivers</a>

The Lake Powell Pipeline Coalition, Living Rivers and Colorado Riverkeeper has a long history of involvement in the public review process surrounding the permitting of the Lake Powell Pipeline and our timely correspondence with FERC and Cooperating Agencies are tabled in the preceding page.

From 2000 to 2005, Living Rivers, Colorado Riverkeeper and Center for Biological Diversity participated in the National Environmental Policy Act (NEPA) for an Environmental Impact Statement (EIS) process in regards to re-operations at Flaming Gorge Dam.<sup>3</sup> We participated fully in the NEPA process for the 2007 Interim Guidelines EIS.<sup>4</sup> In 2010, we provided comments on the Green River Pumping Project Environmental Assessment (EA).<sup>5</sup> Since 2012, we jointly participated in the EIS for Long Term Experimental Management Plan for operations at Glen Canyon Dam.<sup>6</sup> We also participated in the 2012 Water Supply and Demand Study (Basin Study), which was not a NEPA process, but was authorized by the 2009 SECURE Water Act.<sup>7</sup>

### **1b. Historical Background: Colorado River Compact of 1922 & Law of the River**

- The Colorado River Basin was divided in half, one mile below Lee Ferry, AZ; now 16 river miles below Glen Canyon Dam.<sup>8</sup>
- The Upper Basin is obligated to deliver 75 million acre-feet per year (MAFY) every 10 years to the Lower Basin division.<sup>9</sup>
- The Upper and Lower Basin are each required to deliver half (750,000 acre-feet, each) of Mexico's 1.5 MAFY allocation.<sup>10</sup>
- The Lower Basin states may share surplus water supplies of 1 MAFY.
- Federal Reserve Water Rights are allocated in the state(s) of origin.
- Utah is entitled to 23% of the Upper Basin's share, after ensuring delivery obligations are met to the Lower Basin and Mexico.<sup>11</sup>

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<sup>3</sup> <http://www.livingrivers.org/archives/article.cfm?NewsID=90>

<sup>4</sup> <http://www.livingrivers.org/archives/article.cfm?NewsID=766>

<sup>5</sup> <http://www.livingrivers.org/pdfs/LRletterGreenRiverPumpingProject.pdf>

<sup>6</sup> <http://www.riversimulator.org/Resources/NGO/LTEMP/LTEMPeisCommentsLivingRivers31Jan2012.pdf>

<sup>7</sup> <http://www.livingrivers.org/pdfs/LivingRiversCBDCComments2013.pdf>

<sup>8</sup> Colorado River Compact (1922)

<sup>9</sup> Ibid.

<sup>10</sup> Treaty with Mexico (1944)

<sup>11</sup> Upper Colorado River Basin Compact (1948)

- In case of a “Compact Call” (a mandatory water delivery to the Lower Basin), all Upper Basin states will be shorted, based on the proportion of water used the year before and compared to the total usage in the Upper Basin.<sup>12</sup>

### **1c. History of Utah’s Ultimate Phase Water Rights**

The water rights that would fill the Lake Powell Pipeline were originally held in Flaming Gorge Reservoir by the Bureau of Reclamation (Reclamation) as part of the “Ultimate Phase” of the Central Utah Project. This water was initially intended to supply the Uintah Unit (partially completed) and the Ute Indian Unit (never completed) of the Central Utah Project. In 1992, Congress signed the Central Utah Project Completion Act which deauthorized the Ultimate Phase, compensated the Northern Ute Tribe for construction projects not completed by the United States, and encouraged the tribe to quantify their water rights for future settlement and development. Thus far, a Ute Water Compact has not been ratified by the Northern Ute Tribe and their senior water rights are still pending.

Reclamation held the Ultimate Phase water rights until 1996, when it transferred those rights to the Utah Board of Water Resources who, instead of granting them to the Northern Ute Tribe as originally intended, opened these rights up for development in Utah. Some water has been put to use by private users along the Green River and in the Colorado River watershed in Grand County and San Juan County. Some of the rights are set aside for public water suppliers along the main rivers. These rights are collectively referred to as the Green River Block water rights. All of the undeveloped and unclaimed rights from the Ultimate Phase have transferred back to the Utah Board of Water Resources, and they are planning on using them to supply the Lake Powell Pipeline for consumptive use in Washington and Kane Counties. According to Reclamation, all of the undeveloped Ultimate Phase water rights were supposed to lapse on October 6th, 2009. Regardless of this, the Utah Division of Water Rights has granted extensions of time to put the water to beneficial use to all the public water suppliers holding undeveloped Ultimate Phase water rights.

## **2. SUMMARY OF CONCERNS**

We urge FERC and the Cooperating Agencies to put completion of this EIS on hold until crucial agreements are completed that will significantly impact the existence and amount of water for the Lake Powell Pipeline and Green River Block Water Rights Exchange Contract (we submitted timely comments for Green River Block<sup>13</sup>). These critical agreements also include Ute Water Compact, Upper Basin Drought Contingency Planning, and the reconsultation of 2007 Interim Guidelines.

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<sup>12</sup> Ibid. Article IV (c)

<sup>13</sup> Living Rivers et al., Comments for Green River Block Water Rights Exchange Contract. See: <http://www.riversimulator.org/Resources/USBR/ExchangeContracts/LRcommentsDEAgrbWEC2018Nov.pdf>

- The EIS for the Lake Powell Pipeline should be put on hold until it can be determined that Utah has the rights to sufficient water in tributaries to be the subject of an exchange, and that those rights are tied to actual wet water that may not exist.
- NEPA requires a programmatic EIS on the Upper Basin Drought Contingency Plan before this EIS can be completed.
- Reclamation must clarify whether releases from Flaming Gorge Dam, in the Upper Basin Division, and conveyed by pipeline to Washington County, Utah, which is in the Lower Basin, is an appropriate use under the 1922 Compact.
- This EIS must be put on hold until the Federal Reserved Water Rights claims of the Tribes in Utah are settled and source water identified for the Lake Powell Pipeline Project.
- Re-consultation of 2007 Interim Guidelines is imminent and will very likely affect the 50-year feasibility of the Lake Powell Pipeline Project.

FERC and the Cooperating Agencies MUST require UBWR to provide additional information on the concerns and additional project costs brought up in this letter prior to beginning to prepare the EIS.

- The project budget must outline the costs of treating Colorado River water, or diluting Colorado River water with local groundwater, and upgrading municipal plumbing systems to deal with introducing chemically unique Colorado River water into the public utility lines in Washington County. This would include changes to water quality when reservoir levels at Lake Powell are approaching the bottom of the active pool and the top of the inactive pool; the result of river currents remobilizing stored sediment deposits in the upper reaches of Lake Powell.
- The mitigation of invasive quagga mussels that have infested Lake Powell must be assessed for the entire conveyance system, and return flows to Lake Mead via the Virgin River, including the economic impacts of this problem.
- The project documents for the Lake Powell Pipeline need to include the details of the underlying water rights exchange for the Project, including the mechanism for monitoring and accounting the exchange and the costs associated with it.
- FERC and the Cooperating agencies should require UBWR to develop a more accurate and complete project budget and submit it to the public for review.

The EIS must more fully and completely describe the entire scope of the proposed project. The EIS must fully address the broad range of potential impacts from the proposed project, and must examine a reasonable range of alternatives to the project.

- Climate Change and continued aridification of the Colorado River Basin must be analyzed in the EIS as it relates to water supply.
- The EIS must fully evaluate all alternative pipeline routes, in consultation with the Kaibab Paiute Tribe, to identify a route that would not impair sacred sites, burials and other cultural values.
- The EIS must address impacts of the Lake Powell Pipeline and associated water withdrawal on Colorado River health and endangered species. This would include the ecosystem of the Virgin River.
- The EIS should require an in-depth look at tributary flows on the Green River to determine how they may be impacted by climate change and over-appropriation.
- Because the consumptive use of water for the Lake Powell Pipeline will put current water users with junior water rights in jeopardy of losing their water rights, given ongoing aridification, the USBR must analyze the economic and cultural impact that a Compact Call or a curtailment would have on other water users in Utah's Colorado River Basin.
- The EIS should fully explore alternatives to the Lake Powell Pipeline Project, including conservation and alternative sources of water in the region, that could obviate the need for the Project.

### **3. NARRATIVE OF COMMENTS**

#### **3a. Climate change and continued aridification of the Colorado River Basin must be analyzed in the EIS as it relates to water supply.**

Climate change in the Colorado River Basin is already taking a toll on our water supply. This can be seen in a myriad a ways: from the fist ever curtailment of water users on the Yampa River<sup>14</sup> to the scrambling of the Colorado River Basin states to update and adopt Drought Contingency Plans this year.<sup>15</sup> Data used by the the Bureau of Reclamation for Glen Canyon Dam operations is useful in understanding this:

“During the 19-year period 2000 to 2018 . . . the unregulated inflow to Lake Powell, which is a good measure of hydrologic conditions in the Colorado River Basin, was above average in only 4 out of the past 19 years. The period 2000-2018 is the lowest 19-year period since the closure of Glen Canyon Dam in 1963, with an

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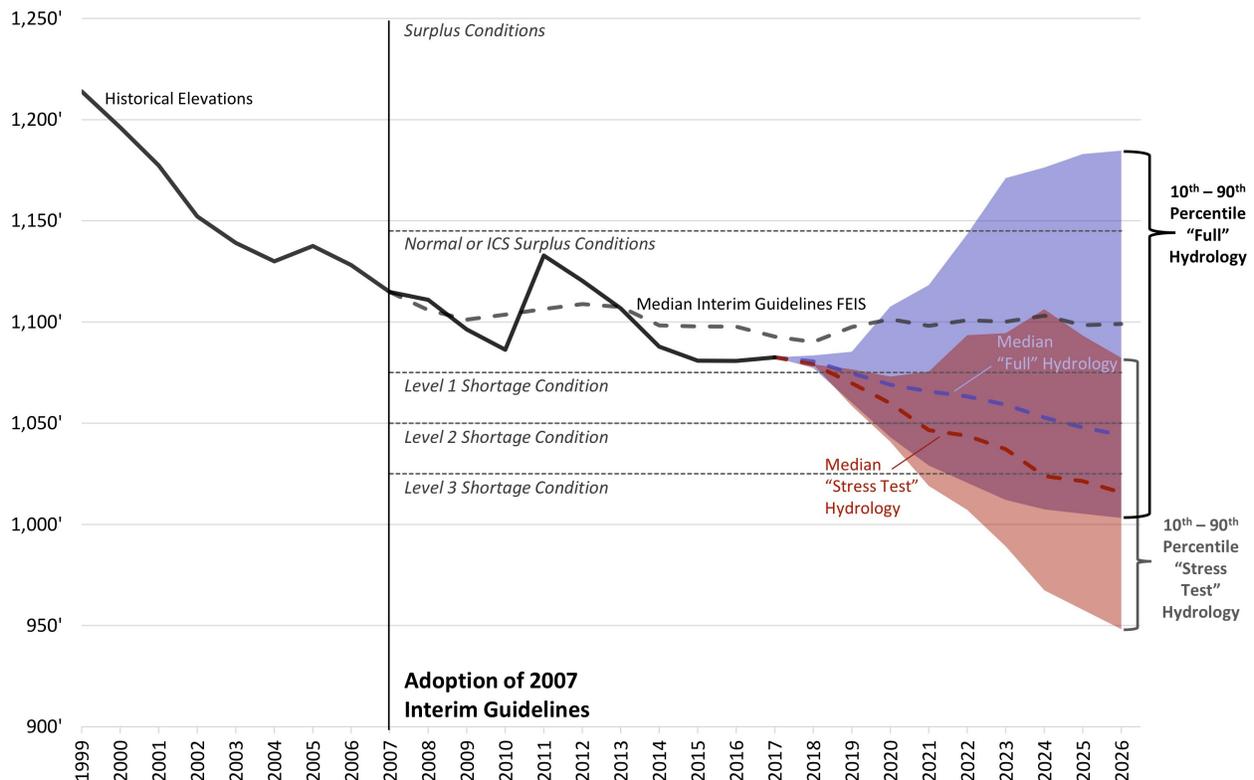
<sup>14</sup> Hasenbeck, Eleanor. Sept. 5, 2018. Steamboat Pilot and Today. “Yampa River is placed on call for 1st time ever.” Accessed at <https://www.steamboatpilot.com/news/yampa-river-is-placed-on-call-for-1st-time-ever/>

<sup>15</sup> Romeo, Jonathan. Oct. 12, 2018. The Journal. “Drought plan aims to curtail water loss at Lake Powell, Lake Mead.” Accessed at <https://the-journal.com/articles/113368-drought-plan-aims-to-curtail-water-loss-at-lake-powell-lake-mead>

average unregulated inflow of 8.54 maf, or 79 percent of the 30-year average . . . In water year 2018 unregulated inflow volume to Lake Powell was 4.6 maf (43 percent of average), the third driest year on record above 2002 and 1977. Under the current most probable forecast, the total water year 2019 unregulated inflow to Lake Powell is projected to be 7.6 maf (70 percent of average).”<sup>16</sup>

Currently, the Upper Basin Division States are using old data, which doesn’t factor the impact of climate change on hydrology, to decide how much each state is entitled to, and therefore, to grant state water rights. When the Colorado River Compact was signed, after an especially wet time in the early 20th century, the amount of water flowing past the Compact Point near Lee Ferry, 16 river miles below Lake Powell, was assumed to be 16.4 MAFY (million acre-feet per year) on average.

### Historical and Future Projected Lake Mead End-of-December Elevations<sup>1,2,3</sup>



<sup>1</sup> Median Interim Guidelines FEIS from June 2007 CRSS projections using 100 hydrologic inflow sequences based on resampling of the observed natural flow record from 1906-2005.

<sup>2</sup> “Full” Hydrology from April 2018 CRSS projections modeled using 110 hydrologic inflow sequences based on resampling of the observed natural flow record from 1906-2015.

<sup>3</sup> “Stress Test” Hydrology from April 2018 CRSS projections modeled using 28 hydrologic inflow sequences based on resampling of the observed natural flow record from 1988-2015.



<sup>16</sup> Bureau of Reclamation, Upper Colorado Region. “Glen Canyon Dam” Accessed on Nov 2, 2018 at <https://www.usbr.gov/uc/water/crsp/cs/gcd.html>.

The most recent Hydrological Determination done by Reclamation in 2007<sup>17</sup> (this document explains the availability of water for consumptive use, exclusive to the states of the Upper Basin) was based off the last 100-years of records and doesn't account for the changing climate. This report stated that there is 5.76 MAFY of water to be used in the Upper Basin and assumes 7.5 MAFY for the Lower Basin and a 1.5 MAFY for Mexico for a total of 14.76 MAFY. Adding 1.2 MAFY for incidental evaporation in the Lower Basin (the "structural deficit") brings the total demand to 15.92 MAFY. For comparison, stream flows in the current Millennial Drought are well below 15.92 MAFY. Udall and Overpeck find, "Between the start of the drought in 2000 and the end of 2014, our analysis period, annual flow reductions averaged 19.3% below the 1906–1999 normal period."<sup>18</sup> For context, a 20% decrease in naturalized flow near Lee Ferry is 12 MAFY. The research scientists go on to say that,

"[C]ontinued business-as-usual warming will drive temperature-induced declines in river flow, conservatively 20% by midcentury and 35% by end-century, with support for losses exceeding 30% at midcentury and 55% at end-century."<sup>19</sup>

As presented here, there is a disconnect between how states are accounting for their shares of the Colorado River and the actual current and future hydrology. The only reason this system of division has worked so long is that the dams along the Colorado River are capable of storing huge amounts of water, but we've used up that surplus and are unlikely to see it restored in the future, except sporadically, which is a situation that is not reliable for any planning review.

Lake Powell and Lake Mead are at risk of dropping to critically low levels before 2026 as seen by the graph entitled "Historical and Future Projected Lake Mead End-of-December Elevations" produced by Reclamation.<sup>20</sup> It is important to look at the "stress-test" hydrology based on flows from recent history (1988-2015) which many scientists agree more accurately reflect our current state than "full hydrology" which includes an abnormally wet time early in the historical record. Stream flows are extremely likely to continue to decline throughout the century, causing all Upper Basin states to be required to use less water than was allocated by the 2007 Hydrologic Determination.

Here are some specific recommendations for including climate change in the scope of the EIS:

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<sup>17</sup> 2007 Hydrologic Determination: <http://www.riversimulator.org/Resources/USBR/2007HydrologicDetermination.pdf>

<sup>18</sup> Udall, B. and J. Overpeck (2017), The twenty-first century Colorado River hot drought and implications for the future, *Water Resource. Res.*, 53, 2404– 2418, doi:10.1002/2016WR019638.

<sup>19</sup> Ibid.

<sup>20</sup> Bureau of Reclamation. <http://www.riversimulator.org/Resources/States/ContingencyPlanning/Reclamation/MasterPresentationLBDCPandReclamationJune2018.pdf>

1. The EIS must use modeling that takes climate change into account. This means not using models that are based on the last 100-years of records, but are instead based off relevant peer-reviewed science about current and future climate impacts in the Colorado River Basin and include the “stress test” hydrology described above (scenario planning).<sup>21</sup>
2. The EIS must not rely solely on the Record of Decision on Flaming Gorge Dam Operations in 2006 to assess water availability for the Lake Powell Pipeline. Similar modeling used to develop the 2007 Interim Guidelines has completely failed to predict the current risk for shortages we face in Lakes Mead and Powell, leading to the need to develop emergency Drought Contingency Plans in both basins that will likely impact dam operations basin-wide.
3. The Hydrological Determination completed by Reclamation in 2007<sup>22</sup> is no longer relevant and must be revised, and by using accurate modeling data in order to understand the impact that the Lake Powell Pipeline will have on basin-wide water supplies.
4. The EIS must analyze the increased risk of Lake Powell levels falling below minimum power pool and the effect that would have on regional power supply. St. George fulfills its electric power and energy requirements through, in part, the purchase of federal power and energy generated by the Colorado River Storage Project (CRSP).<sup>23</sup>
5. The EIS must examine the impacts on the project cost of decreasing water quality due to aridification and diminishing streamflows. If needed, the EIS and project budget must include the cost of filtration systems needed to actually use the water for drinking and culinary uses.

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<sup>21</sup> A few articles on climate change and the Colorado River Basin to consider:

- Udall, B. and J. Overpeck (2017), The twenty-first century Colorado River hot drought and implications for the future, *Water Resource. Res.*, 53, 2404– 2418, doi:10.1002/2016WR019638.
- Xiao, M., Udall, B., Lettenmaier, P. (2018). On the causes of declining Colorado River streamflows. *American Geophysical Union*. p. 10-12, 39. doi: 10.1029/2018WR023153.
- Barnett, Tim and David Pierce. 2009. Sustainable water deliveries from the Colorado River in a changing climate. *PNAS* May 5, 2009. 106 (18) 7334-7338; <https://doi.org/10.1073/pnas.0812762106>.
- Reclamation. 2017. Colorado River Basin Water Supply and Demand Study. Executive Summary. [https://www.usbr.gov/watersmart//bsp/docs/finalreport/ColoradoRiver/CRBS\\_Executive\\_Summary\\_FINAL.pdf](https://www.usbr.gov/watersmart//bsp/docs/finalreport/ColoradoRiver/CRBS_Executive_Summary_FINAL.pdf)

<sup>22</sup> 2007 Hydrologic Determination: <http://www.riversimulator.org/Resources/USBR/2007HydrologicDetermination.pdf>

<sup>23</sup> City of St. George, Energy Services Department. June 2010. Integrated Resource Plan. Accessed at <https://www.wapa.gov/EnergyServices/Documents/StGeorgeUtilRP2010.pdf>

6. The EIS must include detailed analysis of the impacts on water quality, downstream of Glen Canyon Dam, and as it relates to the Salinity Control Act of 1974.<sup>24</sup>

7. The EIS should examine the impacts of the mobilization of perched reservoir sediment when reservoir levels diminish. Reservoir sediment contains organic material when mobilized can deplete oxygen in the water column of the reservoir and negatively impact the critical habitat below Glen Canyon Dam. The mobilized sediment can also liberate toxins and heavy metals into the water column and affect water quality for wildlife and humans.<sup>25</sup>

8. The EIS must analyze the possibility of a Compact Call and the affect this would have on the communities dependent of the Lake Powell Pipeline Project, should the project be approved. For example, it should analyze the effect on the repayment schedule for the construction of the project if full water capacity is not available for the Lake Powell Pipeline.

### **3b. NEPA requires a programmatic EIS on the Upper Basin Drought Contingency Plan before this EIS can be completed.**

Jim Lochhead, CEO and manager of Denver Water, was quoted in Aspen Journalism as saying,

“With the repeat of historic hydrology beginning in the year 2000, Lake Powell will be dry, and when I say dry I mean empty, within about three years. . . .What we are asking for is that the contingency plans be put into place. We need to have those plans in place before the system collapses.”<sup>26</sup>

Colorado River management is in critical flux right now with rapidly changing hydrology. The adopted 2007 Interim Guidelines to prevent Lower Basin shortages have failed to keep Lake Mead and Lake Powell at safe levels during this 19-year drought. Currently, the Upper Basin States are in the process of negotiating a Drought Contingency Plan that will significantly impact operations at Flaming Gorge Dam, Aspinall Unit, and Navajo Dam, which are a key element in this DCP. FERC and the Cooperating Agencies need to understand these coordinated dam operations and include them in the EIS modeling in order to determine whether there is sufficient hydrology for releases from the Flaming Gorge Dam to fulfill Utah’s Ultimate Phase water rights.

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<sup>24</sup> Salinity Control Act. See: <http://www.onthecolorado.com/Resources/LawOfTheRiver/SalinityControl1974.pdf>

<sup>25</sup> Pratson, Lincoln et. al. November 2008. “Timing and patterns of basin infilling as documented in Lake Powell during a drought.” *Geology* 36(11). DOI: 10.1130/G24733A.1

<sup>26</sup>Gardner-Smith, Brent. Sept. 19, 2018. “Mandatory curtailment of water rights in CO raised as possibility.” *Aspen Journalism*. Accessed at: [https://www.aspentimes.com/news/local/mandatory-  
curtailment-of-water-rights-in-co-raised-as-possibility/](https://www.aspentimes.com/news/local/mandatory-curtailment-of-water-rights-in-co-raised-as-possibility/)

Additionally, because the Upper Basin DCP will incite major federal actions in regards to reservoir operations, a basin-wide Programmatic Environmental Impact Statement (PEIS) must be prepared that addresses the requirements and potential impacts of coordinated operations of the Aspinall Unit, the Navajo Dam, and Flaming Gorge Dam. It is essential that this basin-wide PEIS be incorporated in planning for releases from Flaming Gorge Dam because the operations of these dams will be tied together to ensure Compact obligations are met, including compliance for the Clean Water Act and the Endangered Species Act.<sup>27</sup>

Consequently, the EIS examining the Lake Powell Pipeline, the Environmental Assessment (EA) for the Green River Block Water Rights Exchange (we submitted timely comments<sup>28</sup>) and the forthcoming EA for Lake Powell Pipeline Water Rights Contract, should be tabled as premature, since an accurate assessment of water availability at Flaming Gorge Reservoir can only follow the development of coordinated dam operation guidelines under an Upper Basin DCP that is in full compliance with the National Environmental Policy Act.

We specifically request that:

1. The Upper Basin DCP and the Lower Basin DCP be the subject of a basin-wide PEIS.
2. The basin-wide PEIS include consultation with an independent science panel that is involved from the very beginning of the process and that the National Academy of Sciences also review and approve the PEIS.
3. All of these steps must be taken before preparing the EIS for the Lake Powell Pipeline since a complete understanding of the DCP is needed to model likely future scenarios regarding Flaming Gorge Dam and Lake Powell.

### **3c. Need for the Lake Powell Pipeline has never been fully identified. EIS must fully examine alternative water supplies and conservation.**

The need for the Lake Powell Pipeline has long been contested. Water conservation and development of local water sources can likely fulfill the water needs of the growing

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<sup>27</sup> Our request for a comprehensive PEIS for the Upper Basin DCP is supported by the federal district court of the District of Columbia, which confirmed, in its decision in *EDF v. Higginson*, that NEPA requires a comprehensive EIS to evaluate proposed federal projects within the entire Colorado River Basin: "All parties to this action agree that NEPA requires the Department of Interior to prepare environmental impact statements that evaluate the synergistic and cumulative effects of the proposed federal projects."

Environmental Defense Fund (EDF) v Higginson. June 21, 1978. (655 FR 2d, 1981). Accessed at [www.riversimulator.org/Resources/Legal/GCD/1981EDFvHigginson655FR2d.pdf](http://www.riversimulator.org/Resources/Legal/GCD/1981EDFvHigginson655FR2d.pdf)

<sup>28</sup> Living Rivers et al., Comments for Green River Block Water Rights Exchange Contract. See: <http://www.riversimulator.org/Resources/USBR/ExchangeContracts/LRcommentsDEAgrbWEC2018Nov.pdf>

Washington and Kane Counties. A *High Country News* article examining a State audit on water use in Utah says,

“On May 5 [2015], Utah’s Legislative Auditor General released a damning report revealing that the water agency’s forecasts are based on unreliable data and failed

to adequately account for the possible contributions of conservation and irrigation water freed up as new homes consume farmland. “By excluding this added water supply,” the auditors write, “the projections accelerate the timeframes for developing costly, large-scale water projects.”<sup>29</sup>

Las Vegas, a nearby city with even warmer weather than Washington County, can serve as a good metric for what can be achieved through water conservation. Conservation efforts in the Las Vegas region have reduced the community’s use of the Colorado River by 28 billion gallons (86,000 af) between 2002 and 2017. In this same time, the population has actually increased by 660,000 residents. Southern Nevada residents now use 127 gallons of water per capita per day.<sup>30</sup> For comparison, Washington residents use 293 gallons of water per person per day, or 2.3 times the amount of water used in Las Vegas per person.<sup>31</sup>

The EIS should fully explore the impact that conservation, water pricing, and zoning measures could have on the need for the Lake Powell Pipeline. It should also fully explore the safe yield use of the Navajo Sandstone aquifer and other regional options as alternative sources of water in the region after conservation.

Utah’s Upper Colorado River Entitlement & Current Depletions		Potential Depletion Approved Applications (Undeveloped)	
		Applicant	Quantity (Ac Ft)
Utah’s Apportionment (23%)	1,369,000 AF	San Juan County WCD	30,000
Current Depletion	1,007,500 AF	Central Utah WCD	29,500
Remaining Depletion	<b>361,500 AF</b>	Board of W R (et al)	158,000*
		Wayne County WCD	50,000*
		Kane County WCD	30,000
		Sanpete WCD	5,600
		Uintah County WCD	5,000
		Navajo Nation ?	80,000
		Ute Tribe ?	105,000
		<b>TOTAL</b>	<b>493,100</b>

<sup>29</sup> Sarah Gilman. 2015, May 7. “Utah vastly overstating future water shortages.” *High Country News*. Accessed at <https://www.hcn.org/articles/utah-may-be-overstating-future-water-shortages>.

<sup>30</sup> Ibid.

<sup>31</sup> USGS. “Water Use Data for Utah.” [https://waterdata.usgs.gov/ut/nwis/water\\_use/](https://waterdata.usgs.gov/ut/nwis/water_use/)

### **3d. The EIS must examine the over-allocation of Utah's Colorado River water rights as it relates to Lake Powell Pipeline Project water**

The State of Utah has vastly over-appropriated water rights to the Colorado River. Pursuant to the Colorado River Compact and associated "Law of the River," Utah has 1,369,000 AFY of water available for use. In 2009, the Utah Division of Water Resources claimed that Utah had already depleted 1,007,500 AFY, with an additional 493,100 AFY in approved applications that are awaiting development. As enumerated below, these major undeveloped water users include the Northern Ute Tribe (105,000 AFY), the Utah Navajo (81,500 AFY), the Green River Block for Uintah County (72,600 AFY), and the Lake Powell Pipeline (86,000 AFY), among others (the Green River Block and the Lake Powell Pipeline are grouped together as "Board of W R (et al.)."<sup>32</sup>

These new developments increase Utah's depletions to above the current maximum depletion levels allowed to Utah, and this is not even considering the likely cutbacks necessary to uphold Colorado Compact requirements with a changing climate. The uncertainties surrounding water rights in Utah make it difficult to impossible to determine whether there is sufficient hydrology for releases from the Flaming Gorge Dam to fulfill Utah's Lake Powell Pipeline Water Exchange Contract. Consequently, the EIS for the Lake Powell Pipeline should be put on hold until it can be determined that Utah has the rights to sufficient water to be the subject of an exchange, and that those rights are tied to actual wet water.

Because of the over-appropriated nature of water rights in Utah, use of water for the Lake Powell Pipeline will put current water users in jeopardy of losing their junior water rights with ongoing drought. The EIS should analyze and include the economic and cultural impact that a Compact Call or a curtailment would have on other water users in Utah's Colorado River Basin who have junior water rights to the Lake Powell Pipeline, but who already rely on the water.<sup>33</sup>

### **3e. EIS must substantiate the "exchange" concept outlined in the Draft Contract for Exchange of Water for the Lake Powell Pipeline.**

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<sup>32</sup> Division of Water Resources. Upper Colorado River Basin, Current Policy and Issues Powerpoint Presentation. 2009. Slide 4 & 5. Accessed at [https://www.waterrights.utah.gov/meetinfo/m20090930/upper\\_colorado.ppt](https://www.waterrights.utah.gov/meetinfo/m20090930/upper_colorado.ppt)

<sup>33</sup> As a note, the water rights for the Lake Powell Pipeline Block were all supposed to expire on Oct. 9th 2009 if not put to beneficial use. The State allowed extensions beyond that time, Reclamation's Area Manager for the Provo Area Office, Bruce Barrett, lodged several protests to water rights from this block. In a protest letter to the Utah Division of Water Rights he states, "After the "Ultimate Phase" was deauthorized, Reclamation assigned this portion of the appropriation to the Utah Board of Water Resources with the understanding that any portion of this water right not developed within 50-years of the original approval date (ending on October 6, 2009) would lapse."

Letter from Bureau of Reclamation to Utah Division of Water Rights. December 7, 2009. Accessed at: [https://www.waterrights.utah.gov/asp\\_apps/DOCDB/DocImageToPDF.asp?file=/docSys/v920/y920/y92000nr.tif](https://www.waterrights.utah.gov/asp_apps/DOCDB/DocImageToPDF.asp?file=/docSys/v920/y920/y92000nr.tif)

The State of Utah is preparing an Exchange Contract with Reclamation<sup>34</sup> for the release of 86,249 AFY of water from Flaming Gorge to be withdrawn at Lake Powell. The exchange contract has not been fully outlined and therefore it is difficult to review. In a draft contract from early in 2018, it states,

“On an annual basis, the direct flows that will be left in the river and used to meet ESA requirements will equal the FG project releases used for depletion by the State under the Assigned Water Right.”<sup>35</sup>

Nowhere does the exchange contract outline or describe the method of measuring and accounting the “direct flows” left in the river in order to equate those to the releases from Flaming Gorge Dam. We believe the project documents for the Lake Powell Pipeline need to include the details of this exchange. There would be costs associated with monitoring and accounting that also need to be included in the economic analysis.

We request that FERC and Cooperating Agencies require that the Utah Board of Water Resources (UBWR) and the Bureau of Reclamation provide more information on the mechanism of accounting for this water rights exchange. The EIS should require an in-depth look at tributary flows on the Green River to verify if such an exchange is even possible along side the settling of the Ute Water Compact (which would likely draw from tributary flows) and the Green River Block Exchange Contract of 72,641 AFY.<sup>36</sup> The UBWR and Reclamation should also run detailed analysis of these tributary flows (Price, Duchesne, Yampa, Muddy, San Rafael, White, Duchesne, Price, San Rafael, Dirty Devil, and Escalante rivers) and how they may be impacted by climate change and over-appropriation.

### **3f. The EIS must address the impact of introducing chemically unique Colorado River water into the public utility lines in Washington County.**

In 1992, the municipal water utility in Tucson, AZ introduced Colorado River water into the drinking supply of nearly half of its customer base. Almost immediately customers began complaining that their water was dirty, foul smelling, containing rust, or had caused their pipes to leak.

“This new resource exposed Tucson’s extensive water system to water with characteristics very different from the groundwater the city had relied upon for decades. Among these differences were a level of total dissolved solids (TDS) of 650 mg/L, approximately twice that of the average local groundwater, and a more aggressive corrosivity potential, primarily related to a pH of about 7.6 in the treated

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<sup>34</sup> Lake Powell Water Exchange Contract. See: <https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=61018>

<sup>35</sup>Draft Contract for Exchange of Water - Lake Powell Pipeline. p. 5 Accessed at [https://www.usbr.gov/uc/provo/pdf/DRAFT\\_LPP\\_ExchangeContract\\_Oct2017.pdf](https://www.usbr.gov/uc/provo/pdf/DRAFT_LPP_ExchangeContract_Oct2017.pdf)

<sup>36</sup> The Green River Block exchange contract is similar to the Lake Powell Pipeline exchange contract in that it also relies on direct flows from tributaries to exchange for Flaming Gorge Project Water.

CAP water compared to an average of 7.9 in groundwater. . . .In 1994, the Colorado River water supply was discontinued and the utility returned completely to using groundwater. By then, more than 14,000 complaints had been received and the utility ultimately had to pay more than \$2 million in damages to affected customers.”<sup>37</sup>

Residents of Tucson also passed an initiative blocking the delivery of Colorado River water because of its bad taste. Since then, the Tucson water utility has started injecting the Colorado River water into the ground to mix with naturally occurring aquifer water. It wasn't until 2001 that they delivered a treated blend of Colorado River water and aquifer water to customers.<sup>38</sup>

Like in Tucson, residents of Washington and Kane counties will likely reject the foul tasting Colorado River water given they have better local alternative sources of water. The project budget does not outline the costs of treating or injecting Colorado River water or upgrading municipal plumbing systems to deal with the unique chemical nature of the water.

Chapter 10 of the PLP submitted by the Utah Board of Water Resources refers to a “a future conventional water treatment facility located near the mouth of Johnson Canyon” without ever outlining the cost of this necessary component. The PLP makes no mention of the need for, or the cost of, a water treatment facility at the terminus of the pipeline in Washington County.<sup>39</sup> Omitting these two necessary features in the hydro system is a gross oversight in the project budget and plan and should be required in order to move forward with the project.

### **3g. FERC and Cooperating Agencies must require an accurate economic analysis of the Project from UBWR.**

The Lake Powell Pipeline permitting process has thus far been a quagmire of poorly drafted design concepts, water rights exchanges, and perhaps most important for everyone in Utah, economic analyses. The recent High Country News article titled “The Precarious Plan for the Lake Powell Pipeline” by Emma Penrod lays out good description of the controversy surrounding the economics of paying for this project.<sup>40</sup> The root of this issue is that thus far, no sound budget has been presented to the public that outlines a complete estimate of project costs; nor has the economic model

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<sup>37</sup> Basefsky, Mitchell. Southwest Hydrology. March/April 2006. p. 24. Accessed at: [http://www.swhydro.arizona.edu/archive/V5\\_N2/feature4.pdf](http://www.swhydro.arizona.edu/archive/V5_N2/feature4.pdf)

<sup>38</sup> City of Tucson Water Plan 2000-2050. p. 2-8 Accessed at <https://www.tucsonaz.gov/files/water/docs/waterplan.pdf>

<sup>39</sup> Utah Board of Water Resources. Preliminary Licensing Proposal, Revised Draft Socioeconomics/Water Resource Economics Study Report. 2015.

<sup>40</sup> Penrod, Emma. Oct. 29 2018. “The Precarious Plan for the Lake Powell Pipeline.” High Country News. Accessed at <https://www.hcn.org/issues/50.18/water-the-precarius-plan-for-the-lake-powell-pipeline>

needed to repay the debt incurred to finance the project been released and peer-reviewed. Both of these are necessary for understanding the social justice implications of the project as a whole because the residents of Washington and Kane County, including minority and low income populations, are expected to foot the bill.

The permitting documents should also examine the hidden costs associated with water shortages in the Upper Basin. When shortage occurs, Washington County will be in the same predicament as the Front Range of Colorado; they will seek water rights to buy and likely convert agricultural water rights to municipal water rights. Given the likelihood of future water shortages in the State of Utah, this hidden cost should be included in the economic models.

Colorado’s Southern Delivery System provides a good proxy for comparison to understand the potential economics of the Lake Powell Pipeline. The first phase of the Southern Delivery System was completed by Colorado Springs Utilities in 2016. It consists of 62 miles of buried 66 inch pipe, 4 pump stations, and a 50 million gallons per day water treatment facility. The total cost for this project, including financing was \$1.45 billion. The project was heralded as an example of great fiscal responsibility that

	Southern Delivery System	Lake Powell Pipeline
<b>Date Completed</b>	April 2016**	
<b>Length</b>	62 miles**	140 miles <sup>††</sup>
<b>Pipe Diameter</b>	66 inch*	69 inch <sup>†</sup>
<b>Daily Delivery Capacity</b>	50 mgd*	66 mgd
<b>Yearly Delivery Capacity</b>	56,000 AFY	86,429 AFY <sup>†</sup>
<b>Pump Stations</b>	4*	5 <sup>†</sup>
<b>Hydroelectric Facilities</b>	0	6 <sup>†</sup>
<b>Water Treatment Plant</b>	1 @ 50 mgd capacity*	0 included in plan <sup>†</sup> Likely 2 required
<b>Construction Costs</b>	\$825 million*	
<b>Cash funded</b>	\$352 million*	
<b>Debt funded</b>	\$473 million*	
<b>interest</b>	\$618 million over 30 years or more*	
<b>Total Cost</b>	\$1.45 Billion*	\$1.1-1.8 billion <sup>††</sup>

brought the project in under budget.<sup>41</sup> How then, can the Lake Powell Pipeline with its additional pump station, six hydroelectric stations, larger pipe, and more than twice the length, be expected to cost nearly the same amount? Above is a graphic comparing the two projects.<sup>42</sup> It should also be noted that the water intake apparatus at Lake Powell will be far more expensive and complicated than that at Pueblo Reservoir. As you can see, the given estimate for total cost of the Lake Powell Pipeline is far below what it will likely cost in the real world. We roughly estimate the project cost to be between \$3-5 billion dollars. Before completing an EIS, FERC and the Cooperating agencies should require UBWR to develop a more accurate and complete project budget and submit it to the public for review.

### **3h. The EIS should examine the environmental impacts on sensitive areas and cultural sites along the pipeline route.**

The Kanab Creek Area of Critical Environmental Concern is within the path of the proposed pipeline. Living Rivers & Colorado Riverkeeper submitted timely comments on the proposal to amend the Bureau of Land Management's (BLM) Arizona Strip Resource Management Plan (RMP) as part of its evaluation of the proposed Lake Powell Pipeline route in the Kanab Creek Area of Critical Environmental Concern (ACEC) earlier this year.<sup>43</sup> The Kanab Creek ACEC is important habitat for Southwestern Willow Flycatchers. The Kanab Creek ACEC was specifically designated "for the protection of endangered SW flycatcher habitat and riparian, scenic, and cultural resources," according to the Arizona Strip Field Office RMP.<sup>44</sup>

The BLM must consult with the Kaibab Paiute Tribe because their aboriginal culture and heritage extends way beyond the sovereign boundaries of their reservation. The state of Utah has identified three possible pipeline routes. For example, alternative pipeline routes include following highway corridors rather than pristine lands. Consultation with the Tribe is necessary in order to identify a route that would not

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<sup>41</sup> Water Finance and Management. August 12, 2016. "How Colorado Springs Funded its Landmark Southern Delivery System." Accessed at <https://waterfm.com/colorado-springs-funding-sds/>

<sup>42</sup> Sources for the graphic are:

\* Water Finance and Management. August 12, 2016. "How Colorado Springs Funded its Landmark Southern Delivery System." Accessed at <https://waterfm.com/colorado-springs-funding-sds/>

\*\*Southern Delivery System (SDS) Water Project, Colorado. Water Technology Webpage. Accessed at <https://www.water-technology.net/projects/southern-delivery-system-water-project/>

†Utah Board of Water Resources. Preliminary Licensing Proposal. 2015.

††The Lake Powell Pipeline Website. Washington County Water Conservancy District. Accessed at [lpputah.org](http://lpputah.org)

<sup>43</sup> Living Rivers-Colorado Riverkeeper comments on the proposal to amend the BLM's Arizona Strip Resource Management Plan can be accessed here [www.riversimulator.org/Resources/BLM/AZstrip/ProposedArizonaStripResourceManagementPlanAmendment2018LivingRivers.pdf](http://www.riversimulator.org/Resources/BLM/AZstrip/ProposedArizonaStripResourceManagementPlanAmendment2018LivingRivers.pdf)

<sup>44</sup> BLM. 2008. Arizona Strip Field Office Resource Management Plan and Record of Decision. Signed January 29, 2008. p 2-120. Accessed at [https://eplanning.blm.gov/epl-front-office/projects/lup/95271/130322/158471/ApprovedPlan\\_Ch\\_2.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/95271/130322/158471/ApprovedPlan_Ch_2.pdf)

impair sacred sites, burials and other cultural values. The EIS must evaluate all three pipeline alternatives in this NEPA process.<sup>45</sup>

**3i. The EIS must address impacts of the Lake Powell Pipeline and associated water withdrawal on river health and endangered species.**

The Colorado River is already a strained ecosystem. This fact is demonstrated by the many endangered species found along its stretch. These species include, Humpback Chub, Razorback Chub, Bonytail Chub, Colorado River Pikeminnow, Southwestern Willow Flycatcher and Yuma Clapper Rail. The status of the Colorado River and the fate of its dependent endangered species should be examined and included by the BLM in this EIS.

**3j. Legal Uncertainty surrounds the use of Colorado River Storage Project water in the Lower Basin of an Upper Division State.**

We recognize a controversy amongst stakeholders that releases from Flaming Gorge Dam, in the Upper Basin Division, and conveyed by pipeline to Washington County, Utah, which is in the Lower Basin, may not be an appropriate use under the 1922 Compact. We would appreciate Reclamation's clarification on this matter when the time comes for Reclamation to prepare the EIS for the Lake Powell Pipeline Water Rights Exchange Contract of 86,000 acre-feet (annual).

**3k. Federal Water Rights claims of the Tribes should be settled and source water identified before water is developed for the Lake Powell Pipeline Project.**

Under the Winter's Doctrine, the Northern Ute and Navajo Tribes have federally reserved water rights, dating back to the creation of the reservations, which have yet to be developed. The particular water rights assigned to the Ultimate Phase were intended to go to the Northern Ute tribe. When that project never materialized, the tribe settled with the federal government for the promise of future water rights. Thus far, a water contact has not been agreed upon and full water rights have not been assigned to the Ute tribe.

Because Utah's approved water rights are over-allocated, as acknowledged by the Utah Division of Water Rights, the State of Utah must demonstrate where the water will come from to fulfill the Ute Water Compact before Reclamation further proceeds with this water rights exchange with the State. The EIS must not only include consideration of these factors in its calculation of available water, but must also incorporate this information in its modeling.

In all likelihood, part of the water to fulfill the Ute Water Compact will come from the Green River. In order to maintain minimum fish flows, this would require a contract with

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<sup>45</sup> See comments to FERC by the Kaibab Paiute Tribe, 2008. <http://www.riversimulator.org/Resources/Pipelines/PaiuteCommentsLakePowellPipelineOpt.pdf>

Reclamation for releases from Flaming Gorge Reservoir. There is a limited amount of water available for contracts out of Flaming Gorge. In a 2007 letter to the Upper Colorado River Commission, Rick Gold of the Bureau of Reclamation outlined what Reclamation believes to be a safe allowable release from Flaming Gorge Reservoir of 165,000 AFY.<sup>46</sup> The combined total of both contracts for the Green River Block and the Lake Powell Pipeline total to 158,000 AFY, leaving only 7,000 AFY to be potentially used by the Northern Ute Tribe. As part of the Department of Interior, the Bureau of Reclamation has an obligation to tribes and native people. Secretarial Order 3335 states that,

“The trust responsibility consists of the highest moral obligations that the United States must meet to ensure the protection of tribal and individual Indian lands, assets, resources, and treaty and similarly recognized rights.”<sup>47</sup>

Consequently, Reclamation should settle an exchange contract for releases from Flaming Gorge Reservoir with the Northern Ute Tribe, who have senior water rights, before engaging with the State of Utah on an exchange of more junior water rights.

#### **4. CONCLUSION**

Thank you for your close consideration of all the facts outlined above. We urge FERC and the Cooperating Agencies to put the preparation of this EIS on hold until the crucial agreements that will significantly impact the existence and amount of water for the Lake Powell Pipeline and Green River Block Exchange Contracts are finalized, the Ute Water Compact and the Upper Basin DCP. In addition, the Exchange Contracts between Reclamation and the State of Utah must outline an adequate system of accounting for the exchange of water from tributaries for Flaming Gorge water before we can fully understand the implications of such an exchange and move forward with the permitting.

We request that FERC and Cooperating Agencies require Utah Board of Water Resources (UBWR) to provide additional information on the concerns and additional project costs addressed in our comments in Sections 2 & 3 of this comment letter prior to beginning to prepare the EIS.

Finally, we urge FERC to fully consider all of the potential impacts of this extremely questionable project. In particular, it is imperative that modeling for this project use the most up-to-date and relevant predictions of impacts from climate change on Colorado River Basin hydrology. We are in an incredibly important time. As a nation, we must

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<sup>46</sup> Letter from Rick Gold, Bureau of Reclamation to Don Ostler, Upper Colorado River Commission (March 3, 2007). “Water Marketing from Flaming Gorge Reservoir.” Accessed at: <http://www.riversimulator.org/Resources/UCRC/UCRCflamingGorgeWaterAvailabilityReclamation2007.pdf>

<sup>47</sup> Secretarial order 3335. August 20, 2014. Reaffirmation of the Federal trust responsibility to federally recognized Indian tribes and individual Indian beneficiaries. Accessed at <https://www.doi.gov/sites/doi.gov/files/migrated/news/pressreleases/upload/Signed-SO-3335.pdf>

begin to ground all of our infrastructure decisions on consideration of climate adaptation if we are to avoid catastrophic failure of that infrastructure. We hope that FERC and the Cooperating Agencies will prepare an EIS that considers all the facts and the broad range of potentially significant impacts of this unnecessary and costly water project, an EIS that will make it clear that the Lake Powell Pipeline should not be allowed to move forward.

Sincerely,

Sarah Stock  
Program Director  
Living Rivers & Colorado Riverkeeper

John Weisheit  
Co-founder  
Living Rivers & Colorado Riverkeeper

Robin Silver  
Co-founder  
Center for Biological Diversity

Dan Estrin  
General Counsel and Advocacy Director  
Waterkeeper Alliance

Gary Wockner  
Co-founder  
Save The Colorado

Richard Segerblom  
Program Director  
Las Vegas Water Defender

Lauren Wood  
Program Director  
Green River Action Network

Rica Fulton  
Program Director  
Upper Green River Network

# LIVING RIVERS

## COLORADO RIVERKEEPER®

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February 18, 2019

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Submitted via email to: [matthew.S.Wilson@usace.army.mil](mailto:matthew.S.Wilson@usace.army.mil)

RE: Public Comments on Utah Board of Water Resources / Utah Division of Water Resources' Lake Powell Pipeline Project (SPK-2008-00354) Application for Clean Water Act 404 Permit

Dear Mr. Wilson,

Please accept these comments on the U.S. Army Corps of Engineers (Corps) permit application number SPK-2008-00354 submitted by the Utah Board of Water Resources (UBWR or "Applicant") for its Lake Powell Pipeline Project ("the Project"). We request that Corps deny the Clean Water Act 404 permit and Section 10 Rivers and Harbors Act permit (hereafter "CWA 404 permit" or "404/10 permit") requested by the applicant because the Project violates the Clean Water Act and the Rivers and Harbors Act. The Project does not comply with the guidelines of 40 CFR Part 230 et seq, Section 404(b) (1). Its purpose and need are not adequately described and the Project would result in numerous impacts, including a massive water diversion from the already stressed Colorado River that will result in modification to critical habitat of protected endangered species, negatively affect water quality and availability for existing water users, and threatening wetlands. Commenters urge the Corps to deem the application legally and factually insufficient and to find that overall, the Project is not in the public interest because it will impose significant environmental and economic harm to the region. For the reasons detailed below, the Corps should deny the 404/10 permit for this Project.

With this transmittal, we are also providing our comments to the following agencies: U.S. Environmental Protection Agency, and the Water Quality Divisions of Arizona and Utah (see CC: list on the signatory pages of this letter).

We submit these comments on behalf of Living Rivers & Colorado Riverkeeper, Waterkeeper Alliance, Center for Biological Diversity, Utah Rivers Council, Save The Colorado, Green River Action Network, Upper Green River Network, and Las Vegas Water Defender.

Members of the above mentioned organizations have direct and personal interest in the proceeding, including reliance on the waters of the Colorado River for drinking, fishing, recreating, and for the

ecosystem services that the river provides, as well as an interest in preserving the rural aesthetic values along the pipeline route. Members also live in Utah, some in Washington County, and would be impacted by taxpayer and/or ratepayer financing of the Lake Powell Pipeline. Living Rivers and other commenters here have been recognized as parties to the proceedings and have submitted lengthy, substantive comments during other rounds of public comment for the Project. Our past comments are detailed in Table 1.

Commenters have also participated in relevant and related Colorado River

management proceedings. From 2000 to 2005, Living Rivers, Colorado Riverkeeper and Center for Biological Diversity participated in the National Environmental Policy Act (NEPA) Environmental Impact Statement (EIS) process in regards to re-operations at Flaming Gorge Dam.<sup>1</sup> We participated fully in the NEPA process for the 2007 Interim Guidelines EIS.<sup>2</sup> In 2010, we provided comments on the Green River Pumping Project

**Table 1: History of Living Rivers Comments on the Lake Powell Pipeline**

Date	Comments or Intervention	Archival Hyperlink
1/2/2008	Motion to Intervene	<a href="#">LPP Coalition</a> <sup>1</sup>
7/7/08	Initial Scoping (SD1)	<a href="#">Living Rivers</a> <sup>2</sup>
7/7/08	Initial Scoping (SD1)	<a href="#">LPP Coalition</a> <sup>3</sup>
11/19/08	Initial Scoping (SD2)	<a href="#">LPP Coalition</a> <sup>4</sup>
1/5/09	Revised Study Plan	<a href="#">LPP Coalition</a> <sup>5</sup>
5/6/11	Study Reports	<a href="#">LPP Coalition</a> <sup>6</sup>
8/3/18	BLM AZ Strip Amended RMP	<a href="#">Living Rivers et al.</a> <sup>7</sup>
11/2/18	Green River Block EA	<a href="#">Living Rivers et al.</a> <sup>8</sup>
11/16/18	Motion to Intervene	<a href="#">Living Rivers</a> <sup>9</sup>
11/19/18	Ready for Environmental Analysis Scoping Comments	<a href="#">Living Rivers et al.</a> <sup>10</sup>

<sup>1</sup> <http://www.livingrivers.org/archives/article.cfm?NewsID=90>

<sup>2</sup> <http://www.livingrivers.org/archives/article.cfm?NewsID=766>

Environmental Assessment (EA).<sup>3</sup> Since 2012, we have jointly participated in the EIS for the Long-Term Experimental Management Plan for operations at Glen Canyon Dam.<sup>4</sup> We also participated in the 2012 Water Supply and Demand Study (Basin Study),<sup>5</sup> authorized by the 2009 SECURE Water Act.

### Hyperlinked Sources for Table 1:

1. [www.riversimulator.org/Resources/Pipelines/LLP2018/LPPadmin/MotionToInterveneLPPcoalition2January2008.pdf](http://www.riversimulator.org/Resources/Pipelines/LLP2018/LPPadmin/MotionToInterveneLPPcoalition2January2008.pdf)
2. [www.livingrivers.org/pdfs/LR.FERC.LPP.pdf](http://www.livingrivers.org/pdfs/LR.FERC.LPP.pdf)
3. [www.riversimulator.org/Resources/Pipelines/LLP2018/LPPadmin/ScopingCommentsCoalition7July2008.pdf](http://www.riversimulator.org/Resources/Pipelines/LLP2018/LPPadmin/ScopingCommentsCoalition7July2008.pdf)
4. [www.riversimulator.org/Resources/Pipelines/LLP2018/LPPadmin/Scoping02CommentsCoalition19November2008.pdf](http://www.riversimulator.org/Resources/Pipelines/LLP2018/LPPadmin/Scoping02CommentsCoalition19November2008.pdf)
5. [www.livingrivers.org/pdfs/LPPcoalitionJan2009.pdf](http://www.livingrivers.org/pdfs/LPPcoalitionJan2009.pdf)
6. [www.riversimulator.org/Resources/Pipelines/LLP2018/LPPadmin/StudyReportsComments6May2011.pdf](http://www.riversimulator.org/Resources/Pipelines/LLP2018/LPPadmin/StudyReportsComments6May2011.pdf)
7. [www.riversimulator.org/Resources/BLM/AZstrip/ProposedArizonaStripResourceManagementPlanAmendment2018LivingRivers.pdf](http://www.riversimulator.org/Resources/BLM/AZstrip/ProposedArizonaStripResourceManagementPlanAmendment2018LivingRivers.pdf)
8. [www.riversimulator.org/Resources/USBR/ExchangeContracts/LRcommentsDEAgrbWEC2018Nov.pdf](http://www.riversimulator.org/Resources/USBR/ExchangeContracts/LRcommentsDEAgrbWEC2018Nov.pdf)
9. [www.riversimulator.org/Resources/Pipelines/LLP2018/LPPadmin/LivingRiversIntervention16November2018.pdf](http://www.riversimulator.org/Resources/Pipelines/LLP2018/LPPadmin/LivingRiversIntervention16November2018.pdf)
10. [www.riversimulator.org/Resources/Pipelines/LLP2018/LRcommentsLPPEISscoping2018FINAL.pdf](http://www.riversimulator.org/Resources/Pipelines/LLP2018/LRcommentsLPPEISscoping2018FINAL.pdf)

## PART I: INTRODUCTION

### Part I. A. Project Description

The Lake Powell Pipeline Project as proposed by the Utah Board of Water Resources (UBWR) would move up to 82,249 AFY (acre-feet per year) of water from Lake Powell through northern Arizona and southern Utah to Sand Hollow Reservoir (which stores water from the Virgin River watershed) to be used primarily in Washington County, Utah. Additionally, up to 4,000 AFY of water will be transported for use in Kane County near the county seat of Kanab, Utah. A contract between the State of Utah and the Bureau of Reclamation (Reclamation) will outline the agreements on water released from Flaming Gorge Dam, operated by Reclamation, for use by the Project. The release from Flaming Gorge Dam would flow down the Green River and into Lake Powell; the water would be diverted at a proposed pumping station near Glen Canyon Dam in the state of Arizona. The Project would involve the construction of a 140 miles of a 69-inch diameter pipeline from the Lake Powell to Sand Hollow Reservoir in Washington County; six lateral intake tunnels at the pumping station, a forebay, an afterbay, a regulating

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<sup>3</sup> <http://www.livingrivers.org/pdfs/LRletterGreenRiverPumpingProject.pdf>

<sup>4</sup> <http://www.riversimulator.org/Resources/NGO/LTEMP/LTEMPeisCommentsLivingRivers31Jan2012.pdf>

<sup>5</sup> <http://www.livingrivers.org/pdfs/LivingRiversCBDCComments2013.pdf>

tank, and a power transmission line (including substations and switch stations). This water conveyance system would also include booster pump stations to lift the water up-and-over watershed divides and will generate hydropower electricity at hydro stations when the water in the pipeline falls to lower elevations.

## **Part I. B. Colorado River Watershed**

The Colorado River Basin provides water for roughly 40 million people in seven U.S. States as well as two Mexican States. It supplies water to over 5 million acres of agricultural land and supports a thriving recreation economy, as well as one of the most unique and beautiful ecosystems in the world.

In the Colorado River Basin, climate change is already taking a toll on water supplies. This can be seen in a myriad of ways: from the first ever curtailment for water users along the Yampa River<sup>6</sup> to the scrambling by the states of the Colorado River Basin (CRB), beginning in 2014<sup>7</sup>, to update and adopt Drought Contingency Planning (DCP) documents by January 31, 2019.<sup>8</sup> Data used by Reclamation for Glen Canyon Dam operations is useful in understanding this:

“During the 19-year period between 2000 to 2018 the unregulated inflow to Lake Powell, which is a good measure of hydrologic conditions in the Colorado River Basin, was above average in only 4 out of the past 19 years. The period 2000-2018 is the lowest 19-year period since the closure of Glen Canyon Dam in 1963, with an average unregulated inflow of 8.54 maf, or 79 percent of the 30-year average . . . In water year 2018 unregulated inflow volume to Lake Powell was 4.6 maf (43 percent of average), the third driest year on record above 2002 and 1977. Under the current most probable forecast, the total water year 2019 unregulated inflow to Lake Powell is projected to be 7.6 maf (70 percent of average).”<sup>9</sup>

Lake Powell and Lake Mead are at risk of dropping to critically low levels before 2026 as seen by the graph (next page) entitled “Historical and Future Projected Lake Mead End-of-December Elevations” produced by Reclamation.<sup>10</sup> It is important to look at the

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<sup>6</sup> Hasenbeck, Eleanor. Sept. 5, 2018. “Yampa River is placed on call for 1st time ever.” Steamboat Pilot and Today. Accessed at [www.steamboatpilot.com/news/yampa-river-is-placed-on-call-for-1st-time-ever/](http://www.steamboatpilot.com/news/yampa-river-is-placed-on-call-for-1st-time-ever/).

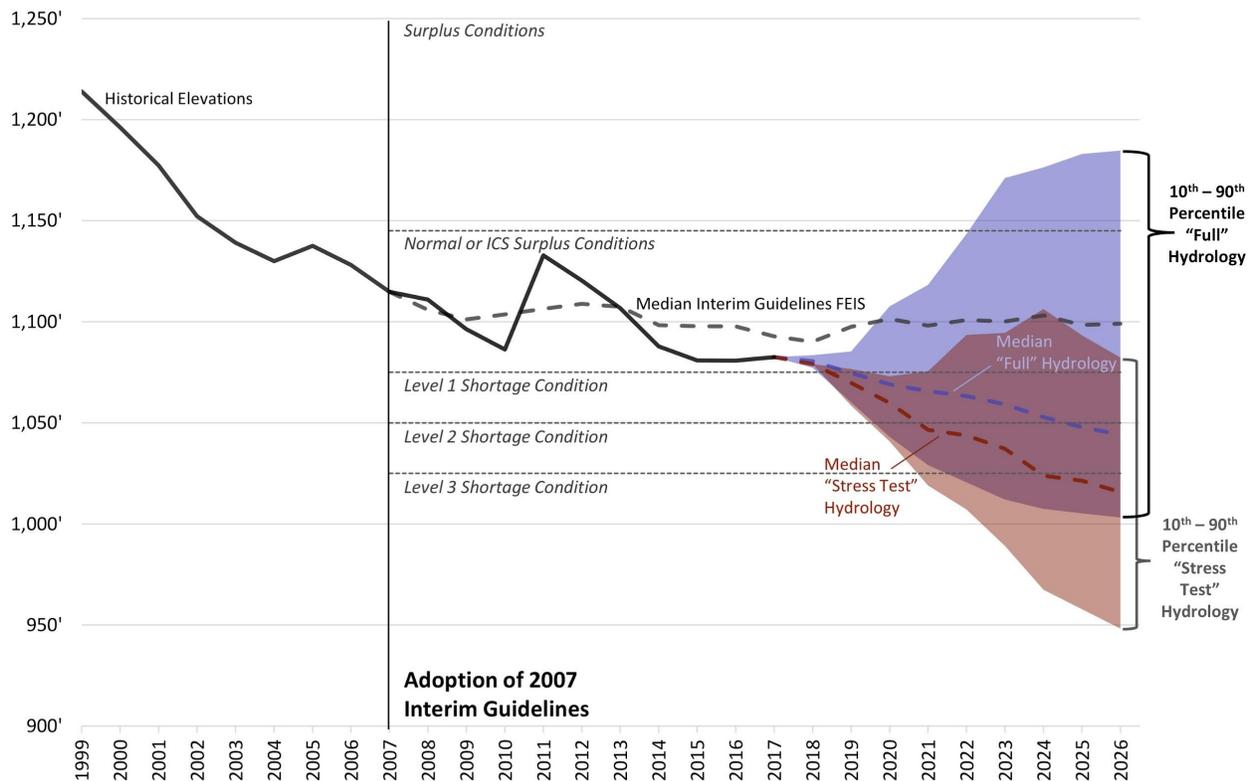
<sup>7</sup> <http://www.riversimulator.org/Resources/States/McClowCWCBMemoToStakeholdersFeb2014.pdf>

<sup>8</sup> Romeo, Jonathan. Oct. 12, 2018. “Drought plan aims to curtail water loss at Lake Powell, Lake Mead.” The Journal. Accessed at [www.the-journal.com/articles/113368-drought-plan-aims-to-curtail-water-loss-at-lake-powell-lake-mead](http://www.the-journal.com/articles/113368-drought-plan-aims-to-curtail-water-loss-at-lake-powell-lake-mead).

<sup>9</sup> Bureau of Reclamation, Upper Colorado Region. “Glen Canyon Dam” Accessed on Nov 2, 2018 at <https://www.usbr.gov/uc/water/crsp/cs/gcd.html>.

<sup>10</sup> Bureau of Reclamation. <http://www.riversimulator.org/Resources/States/ContingencyPlanning/Reclamation/MasterPresentationLBDCPandReclamationJune2018.pdf>

### Historical and Future Projected Lake Mead End-of-December Elevations<sup>1,2,3</sup>



<sup>1</sup> Median Interim Guidelines FEIS from June 2007 CRSS projections using 100 hydrologic inflow sequences based on resampling of the observed natural flow record from 1906-2005.

<sup>2</sup> "Full" Hydrology from April 2018 CRSS projections modeled using 110 hydrologic inflow sequences based on resampling of the observed natural flow record from 1906-2015.

<sup>3</sup> "Stress Test" Hydrology from April 2018 CRSS projections modeled using 28 hydrologic inflow sequences based on resampling of the observed natural flow record from 1988-2015.



"stress-test" hydrology based on flows from recent history (1988-2015) which many scientists agree more accurately reflect our current and future state than "full hydrology" which includes an abnormally wet time early in the historical record. Stream flows are extremely likely to continue to decline throughout the century, impacting power generation and water delivery schedules. The states of the Colorado River Basin have yet to adapt to the existing water delivery schedules, as demonstrated by the Bureau of Reclamation's Commissioner Brenda Burman's mandate for the Basin States to adopt DCPs before March 4th of this year.<sup>11</sup> Adding the unnecessary Lake Powell Pipeline to this already strained system, at the same time that Upper Basin States are engaging in DCP for the first time, is not in the public's best interest.

When the Central Arizona Project, a 336-mile system that brings Colorado River water to central and southern Arizona, was unwisely pushed through Congress and financed, Arizona agreed to take a junior water right. Today, with ongoing drought, Arizona is reckoning with that choice, and it has repercussions around the entire Colorado River Basin. Eighty percent of the population of Arizona is served by the Central Arizona Project, and with the new DCPs being put in place, people who have become dependent

<sup>11</sup> <http://www.riversimulator.org/Resources/Press/DCP/FRNoticeDroughtContingencyPlanningUS-BR2019February.pdf>

on that water, will lose their lifeline;<sup>12</sup> the economy will suffer. It is not responsible to knowingly repeat the same mistake with the Lake Powell Pipeline while making the ratepayers and taxpayers bear the enormous economic burden of this Project. Like Arizona, UWRB has agreed to subordinate the water right for the Project to the Central Utah Project.<sup>13</sup>

The decisions we make in the critical years to come will hold incredible importance for our future here in the deserts. The Corps, and the other Cooperating Agencies, must acknowledge and adapt to the unique challenges of our time, including the overallocation of the Colorado River. The facts we present below, will clearly demonstrate this Project is not in the public's best interest, and therefore the applicant, UBWR, should not be granted a Clean Water Act 404 Permit for this Project.

### **Part I. C. History of Utah's Ultimate Phase Water Right**

The water rights for Lake Powell Pipeline were originally held in Flaming Gorge Reservoir by Reclamation as part of the "Ultimate Phase" of the Central Utah Project. This water was initially intended to supply the Uintah Unit (partially completed) and the Ute Indian Unit (never completed) of the Central Utah Project. In 1992, Congress signed the Central Utah Project Completion Act which deauthorized the Ultimate Phase, compensated the Northern Ute Tribe for construction projects not completed by the United States, and encouraged the tribe to quantify their water rights for future settlement and development. Thus far, a Ute Water Compact has not been ratified by the Northern Ute Tribe and their federally reserved water right decree, is still pending.

Reclamation held the Ultimate Phase water rights until 1996, when it transferred those rights to UBWR who, instead of granting them to the Northern Ute Tribe as originally intended, made these rights available to be developed in Utah. Some water has been put to use by private users along the Green River and in the Colorado River watershed in Grand County and San Juan County. Some of the rights are set aside for public water suppliers along the main rivers. These rights are collectively referred to as the Green River Block water rights. All of the undeveloped and unclaimed rights from the Ultimate Phase have transferred back to the Utah Board of Water Resources, and they are planning on using them to supply the Lake Powell Pipeline for consumptive use in Washington and Kane Counties. According to Reclamation, all of the undeveloped

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<sup>12</sup> Potter, Allie. January 15, 2019. "Gov. Ducey says Drought Contingency Plan will help Arizona's water crisis." KOVA News for Tucson. Accessed here <https://kvoa.com/news/local-news/2019/01/15/gov-ducey-says-the-drought-contingency-plan-will-help-arizonas-water-crisis/>

<sup>13</sup> <http://www.riversimulator.org/Resources/Pipelines/FedAgreementWithUtah2011.pdf>

Ultimate Phase water rights were supposed to lapse on October 6th, 2009.<sup>14</sup> Instead of extinguishing these water rights from the Utah's over-allocated ledger,<sup>15</sup> Utah Division of Water Rights granted extensions of time to put the water to beneficial use to all the public water suppliers holding undeveloped Ultimate Phase water rights.

## **PART II: COMPLIANCE WITH NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)**

It is incumbent on the Corps to also consider the issues raised throughout the Federal Energy Regulatory Commission (FERC) NEPA process. We are troubled by the fact that the Corps has issued a CWA 404 permit public notice before FERC and other cooperating agencies have produced a Draft Environmental Impact Statement (DEIS) on the Project. A DEIS would disclose important details on issues and impacts highly relevant to the CWA 404 permit and is an essential resource for the public in drafting comments. The decision to issue a Section 404 public notice before releasing a Draft DEIS undercuts and harms the public's ability to comment on the impacts of the Project, including commenting on CWA § 404(b)(1) Guidelines. For this reason, we encourage the Corps to suspend the processing of this application until a DEIS has been prepared. At a minimum, the Corps must incorporate all comments received on the Project during NEPA review in its decision-making concerning the Section 404 permit. In addition, we expect that past comments filed with FERC from stakeholders and intervenors be adopted in full as they relate to the Corps permitting process, and request that those FERC comments be included in the record of this CWA 404 permit application.

## **PART III: THE CLEAN WATER ACT, RIVERS AND HARBORS ACT AND IMPLEMENTING REGULATIONS**

### **Part III. A. The Clean Water Act**

The purpose of the Clean Water Act (CWA), 33 U.S.C. § 1251 et seq., is to restore and maintain the chemical, physical, and biological integrity of waters in the United States. Permits for the projects must be denied if the project activities involve 404 discharges

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<sup>14</sup> Reclamation's Area Manager for the Provo Area Office, Bruce Barrett, lodged several protests to water rights from this block. In a protest letter to the Utah Division of Water Rights he states, "After the "Ultimate Phase" was deauthorized, Reclamation assigned this portion of the appropriation to the Utah Board of Water Resources with the understanding that any portion of this water right not developed within 50-years of the original approval date (ending on October 6, 2009) would lapse."

Letter from Bureau of Reclamation to Utah Division of Water Rights. December 7, 2009. Accessed at: [www.waterrights.utah.gov/asp\\_apps/DOCDB/DocImageToPDF.asp?file=/docSys/v920/y920/y92000nr.tif](http://www.waterrights.utah.gov/asp_apps/DOCDB/DocImageToPDF.asp?file=/docSys/v920/y920/y92000nr.tif)

<sup>15</sup> <http://www.riversimulator.org/Resources/States/UtahStateEngineerCurrentStatus2009.pdf>

that would not comply with EPA's Section 404(b)(1) Guidelines found in 40 CFR Part 230 et seq. These Guidelines are binding to the Corps.<sup>16</sup>

**1.** These regulations prohibit the Corps from issuing any permit "if there is a practicable alternative . . . which would have less adverse impact on the aquatic ecosystem."<sup>17</sup> An alternative is "practicable" if it is "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes."<sup>18</sup>

**2.** In addition, the Guidelines prohibit permitting a discharge that will violate state water quality standards, violate of toxic effluent standards, jeopardize a species currently protected under the ESA, or violate of any requirement designed to protect a marine sanctuary under the Marine Protection, Research, and Sanctuaries Act.<sup>19</sup>

**3.** The 404 guidelines further provide that the Corps may not issue a dredge and fill permit "which will cause or contribute to significant degradation of the waters of the United States."<sup>20</sup> Such effects include adverse impacts to human health and welfare, the life stages of aquatic life or other wildlife dependent on a site, the overall integrity of an aquatic ecosystem, and human use such as recreation or economic values.<sup>21</sup>

**4.** Where impacts are unavoidable, the Guidelines require that there be appropriate and practicable steps taken to minimize harm to aquatic ecosystems by the discharge activity.<sup>22</sup> EPA separates into seven broad categories the factors the Corps must assess in regard to impact minimization: location of discharge, the material to be discharged, controlling the material after discharge, methods and technology used to disperse material, impacts to plant and animal populations, and impacts to current and potential human use.<sup>23</sup>

Any permit that does not conform to the Guidelines is invalid. The degree of analysis required under the Guidelines is commensurate with the impacts to the aquatic environment. As will be discussed throughout these comments, the Corps should not

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<sup>16</sup> 33 CFR § 320.4(a) (1).

<sup>17</sup> 40 CFR § 230.10(a)

<sup>18</sup> Id. at § 230.10 (a) (2).

<sup>19</sup> Id. at § 230.10(b).

<sup>20</sup> Id. § 230.10(c).

<sup>21</sup> Id. at §§ 230.10(c) (1)-(4).

<sup>22</sup> Id. § 230.10(d).

<sup>23</sup> Id. at §§ 230.70-76.

authorize the Section 404/10 permit for the Project because project activities involve 404 discharges that would not comply with EPA's 404(b)(1) guidelines.

### **Part III. B. The Rivers and Harbor Act**

Under Section 10 of the Rivers and Harbors Act, which has this requirement, the "decision whether to issue a permit will be based upon an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest."<sup>24</sup> The Section 10 review is intended to be broad, capturing all relevant issues that could impact the environment, human health and natural resources, and is guided by the implementing regulations promulgated by the Corps itself, 33 C.F.R. Parts 320- 330, which state:

"Pursuant to the Corps regulations, a permit "is issued following a case-by-case evaluation of a specific project involving the proposed discharge(s) ... and a determination that the proposed discharge is in the public interest pursuant to 33 CFR part 320."<sup>25</sup> In performing the review of an application, the Corps is required to undergo a "public interest review," which requires a determination of the "extent of public and private need for the proposed work," "the practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed ... work," and "the permanence of detrimental effects."<sup>26</sup> In making these determinations, the Corps must consider "[a]ll factors which may be relevant to the proposal," including "the cumulative effects" of the project."<sup>27</sup>

Proposed projects must align with the public interest requirement found in Section 10. This "public interest" review lies at the heart of the Corps' analysis and must guide the agency's review of the project.

The Corps must apply the following criteria when determining if the project is in the public interest:

- The relative extent of the public and private need for the proposed structure or work;
- Where there are unresolved conflicts as to resource use, the practicability of using reasonable alternative location and methods to accomplish the objective of the proposed structure or work; and

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<sup>24</sup> 33 CFR § 320.4(a) (1)

<sup>25</sup> 33 CFR § 323.2(g).

<sup>26</sup> 33 C.F.R. §§ 320.1(a) (1), 320.4(a) (2) (i)-(iii).

<sup>27</sup> 33 CFR § 320.4(a) (1).

- The extent and permanence of the beneficial and/or detrimental effects which the proposed structure or work is likely to have on the public and private uses to which the area is suited.<sup>28</sup>

The Corps' regulations include a non-exhaustive list of factors that may be relevant for each individual project. 33 CFR § 320.4(a)(1) states in part:

"All factors which may be relevant to the proposal must be considered including the cumulative effects thereof: among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people."<sup>29</sup>

Consistent with the mandate that the Corps consider "all those factors that become relevant," this non-exhaustive list of factors includes issues beyond those directly related to the impacts of in-water work.<sup>30</sup> By requiring an analysis of "cumulative impacts" and by including a non-exhaustive, but far reaching, list of factors, the Corps' regulations clearly require a broad analysis of the public interest that captures all impacts associated with the project and not just those that result directly from the permitted activities.

The Corps must deny the 404 permit because the Project is not in the public interest. For the reasons stated below, the Project fails to comply with the CWA, Rivers and Harbors Act, and their implementing regulations and therefore can not be granted a 404/10 permit.<sup>31</sup>

#### **PART IV: THE CORPS MUST DENY THE PERMIT BECAUSE THE PROJECT IS NOT IN THE PUBLIC INTEREST UNDER SECTION 10 OF THE RIVERS AND HARBORS ACT AND FAILS TO COMPLY WITH CORPS REGULATION 33 C.F.R. PART 320**

The Corps must deny the 404 permit because the Project is not in the public interest. According to Corps general policies, the public interest review "will be based on an evaluation of the probable impacts, including cumulative impacts" of the proposal "on the public interest." This evaluation requires a "careful weighing of all those factors

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<sup>28</sup> 33 CFR § 320.4(a) (2).

<sup>29</sup> 33 CFR § 320.4(a)(1).

<sup>30</sup> Id.

<sup>31</sup> 33 CFR § 320.4(b) (4); 40 CFR §§ 230.1-230.80.

which become relevant” to the particular case. The regulation enumerates several factors which must be considered by the Corps, each of which is addressed below. The permit must be denied if it does not comply with the 404(b)(1) EPA guidelines, or if the district engineer determines it would be contrary to the public interest.

The Corps must apply the following criteria when determining whether the Project and its components are in the public interest and reiterated here:

- The relative extent of the public and private need for the proposed structure or work;
- Where there are unresolved conflicts as to resource use, the practicability of using reasonable alternative location and methods to accomplish the objective of the proposed structure or work; and
- The extent and permanence of the beneficial and/or detrimental effects which the proposed structure or work is likely to have on the public and private uses to which the area is suited.

#### **Part IV. A. The Described Purpose and Need of the Project is Flawed**

The purpose and need for action for the Lake Powell Pipeline as stated by the Utah Board of Water Resources (UBWR) was summed as follows,

“UBWR proposes building LPP in order to bring a needed second source of water to Washington and Kane Counties in order to meet future water demands, to diversify the regional water supply portfolio and enhance its reliability, and to develop a clean, renewable energy source to meet area power demands.”<sup>32</sup>

The UBWR and Washington County Water Conservancy District (WCWCD) have not satisfactorily proved that there is indeed a need for the 82,249 AFY of water coming from the Lake Powell Pipeline, and that they have not accurately accounted for future water supply, conservation or demand. In addition, we will demonstrate that the water right from the Lake Powell Pipeline is far from a “reliable” secondary source and that developing a “clean renewable energy source” cannot be considered in the purpose and need at all.

#### **1. Future Water Demands Can Be Met With Alternatives**

The need for the Lake Powell Pipeline has been controversial since 1996, when the extension for the Ultimate Phase water right was approved by the state engineer. Water conservation and development of local water sources can almost certainly fulfill the water needs of Washington and Kane Counties through 2060 as examined by a citizen’s

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<sup>32</sup> Utah Board of Water Resources. “Lake Powell Pipeline - Refinements to Purpose and Need for Action.” Submitted to FERC November 16, 2018.

alternative from Western Resource Advocates called, "The Local Waters Alternative to the Lake Powell Pipeline."<sup>33</sup> In order to account for conservation, the UBWR application simply examines the impact of eliminating all future outdoor water use, which is a highly unpopular and unconventional water conservation measure, rather than using a robust assortment of proven techniques used by similar desert municipalities to successfully decrease water demand.

Las Vegas, a nearby city with even warmer weather than Washington County, can serve as a good metric for what can be achieved through water conservation. Conservation efforts in the Las Vegas region have reduced the community's use of the Colorado River by 28 billion gallons (86,000 acre-feet) between 2002 and 2017. In this same time, the population has actually increased by 660,000 residents. Southern Nevada residents now use 127 gallons of water per capita per day.<sup>34</sup> For comparison, Washington residents use 293 gallons of water per person per day, or 2.3 times the amount of water used in Las Vegas per person.<sup>35</sup>

Furthermore, calculations used by the applicant to predict future water demand scenarios have been examined by a state audit and found to be insufficient. A High Country News article covering the issue states,

"On May 5 [2015], Utah's Legislative Auditor General released a damning report revealing that the water agency's forecasts are based on unreliable data and failed to adequately account for the possible contributions of conservation and irrigation water freed up as new homes consume farmland. "By excluding this added water supply," the auditors write, "the projections accelerate the timeframes for developing costly, large-scale water projects."<sup>36</sup>

In addition, the Kane County Water Conservancy District (KCWCD) has not officially agreed to take the water from the Project. Originally, the Project included 13,000 AFY for Iron County, but this county has since withdrawn its request for water from the Project because of high costs. We believe that the KCWCD might do the same after being presented with the a true cost estimate and considering that they have very little need for project water. In the 404 permit application, UBWR states, "There would be a projected water shortage of approximately 1,334 AFY in 2060 within the KCWCD service

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<sup>33</sup> Nuding, Amelia. 2013. The Local Waters Alternative to the Lake Powell Pipeline. Western Resource Advocates. Available at <https://westernresourceadvocates.org/publications/the-local-waters-alternative/>

<sup>34</sup> Southern Nevada Water Authority. "Conservation facts and achievements." Accessed in Nov. 2018 at [www.snwa.com/importance-of-conservation/conservation-facts-and-achievements/index.html](http://www.snwa.com/importance-of-conservation/conservation-facts-and-achievements/index.html)

<sup>35</sup> USGS. "Water Use Data for Utah." [https://waterdata.usgs.gov/ut/nwis/water\\_use/](https://waterdata.usgs.gov/ut/nwis/water_use/)

<sup>36</sup> Sarah Gilman. 2015, May 7. "Utah vastly overstating future water shortages." High Country News. Accessed at [www.hcn.org/articles/utah-may-be-overstating-future-water-shortages](http://www.hcn.org/articles/utah-may-be-overstating-future-water-shortages).

area under the No Action Alternative."<sup>37</sup> This is telling because it mentions no water conservation measures, nor does it demonstrate a need for 4,000 AFY of water by Kane County. In fact, without any conservation measures taken, it appears that Kane County would only use one third of its full allocation under this application by 2060.

## 2. The Project Would Not Enhance Reliability of Water Supply

As mentioned in Part I.B, the Colorado River is a fully appropriated system and reservoir surplus has been exhausted to the degree that emergency contingency planning is underway. All of the water that flows down the river is used by the seven Basin States and Mexico. We will now describe how the system of allocation is currently imbalanced, and how the contingency plans that will likely affect all water users in the next five years.

**a. Baseline Data:** Currently, the states of the Upper Basin Division are using a model (Colorado River Simulation System; CRSS) based on 20th century data which, according to 1,200 years of gathering tree-ring data, was the wettest century for that time-period.<sup>38</sup> Neither does the model reflect updated science about the negative impacts that global warming is having on the basin's hydrology. This dubious data baseline decides the water allocation for each state in the basin and how dam operations will perform to deliver those allocations. When the Colorado River Compact was signed in 1922, the average annual natural flow<sup>39</sup> at the Compact Point near Lee's Ferry, 16 river miles below Lake Powell, was 18 MAFY; at Imperial Dam the annual natural flow in 1922 was 19.6 MAFY. Today, it is understood that this annual average is off by 3.2 MAFY at Lee's Ferry and by 3.6 MAFY at Imperial Dam (18% decrease).

**b. Consumption Data:** The most recent Hydrological Determination, completed by Reclamation in 2007 (used to determine the available consumptive use of the Upper Basin), was based on the last 100-years of records (1906 to 2005) and doesn't account for the persistent aridity of the last 13-years. This report states that there is 5.76 MAFY of water to be used in the Upper Basin and assumes 7.5 MAFY for the Lower Basin and a 1.5 MAFY for Mexico for a total of 14.76 MAFY.<sup>40</sup> The Upper Basin consumption total includes reservoir evaporation, which is not accounted for in the Lower Basin. The incidental system evaporation in the Lower Basin (the "structural

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<sup>37</sup> Insert to Application for Individual Permit Lake Powell Pipeline Coconino and Mohave Counties, Arizona Kane and Washington Counties, Utah Corps File No. SPK-2008-00354. P. 38 Accessed at [www.spk.usace.army.mil/Media/Regulatory-Public-Notices/Article/1716369/spk-2008-00354-lake-powell-pipeline-project/](http://www.spk.usace.army.mil/Media/Regulatory-Public-Notices/Article/1716369/spk-2008-00354-lake-powell-pipeline-project/)

<sup>38</sup> <http://www.riversimulator.org/Resources/ClimateDocs/Woodhouse2005.pdf>

<sup>39</sup> <https://www.usbr.gov/lc/region/g4000/NaturalFlow/current.html>

<sup>40</sup> 2007 Hydrologic Determination: <http://www.riversimulator.org/Resources/USBR/2007HydrologicDetermination.pdf>

### Live Storage Capacity of All Colorado River Basin Reservoirs by Percentage and by Decade

Water Year	Capacity %	Water Year	Capacity %	Water Year	Capacity %	Water Year	Capacity %
1980	90.3	1990	72.76	2000	85.1	2010	55.46
1981	82.07	1991	70.75	2001	77.87	2011	64.86
1982	89.49	1992	69.21	2002	63.54	2012	57.05
1983	97.74	1993	81.2	2003	57.13	2013	50.21
1984	95.03	1994	75.48	2004	50.03	2014	50.37
1985	91.98	1995	86.36	2005	58.59	2015	50.83
1986	92.14	1996	84.83	2006	56.21	2016	50.62
1987	90.98	1997	92.53	2007	53.88	2017	55.2
1988	87	1998	93.65	2008	57.12	2018	46.97
1989	80.38	1999	93.65	2009	57.38	2019	
<b>Average</b>	<b>89.65</b>		<b>82.04</b>		<b>61.69</b>		<b>53.51</b>
<b>Note:</b>	Impacts to hydropower production may occur at capacities near or below 35 %						
<b>Note:</b>	Impacts of low capacity reservoirs include degradation to water quality						
<b>Note:</b>	1980 is the year that Lake Powell filled for the first time; filling of the reservoir began in 1963						

deficit”) is estimated by Reclamation to be 1.2 MAFY. The total demand under this scenario to 15.92 MAFY. The average natural supply between 1906 and 2016, according to Reclamation’s Natural Flow Data Spreadsheet, tallies the total yield of the Colorado River at Imperial Dam to be 16.07 MAFY.<sup>41</sup> This system, designed under the generous climate regime of the 20th century, should be working but it is not. The reservoir system has been steadily trending downward since 1980 (see table above) and the Law of the River and its operating criteria has failed to adequately address this very different situation.

**c. Consequences:** Climate researchers Udall and Overpeck state: “Between the start of the drought in 2000 and the end of 2014, our analysis period, annual flow reductions averaged 19.3% below the 1906–1999 normal period.”<sup>42</sup> For context, a 20% decrease in naturalized flow near Lee Ferry is 12 MAFY. The research scientists go on to say that,

“[C]ontinued business-as-usual warming will drive temperature-induced declines in river flow, conservatively 20% by midcentury and 35% by end-century, with support for losses exceeding 30% at midcentury and 55% at end-century.”<sup>43</sup>

<sup>41</sup> <https://www.usbr.gov/lc/region/g4000/NaturalFlow/current.html>

<sup>42</sup> Udall, B. and J. Overpeck (2017), The twenty-first century Colorado River hot drought and implications for the future, *Water Resource. Res.*, 53, 2404– 2418, [doi:10.1002/2016WR019638](https://doi.org/10.1002/2016WR019638).

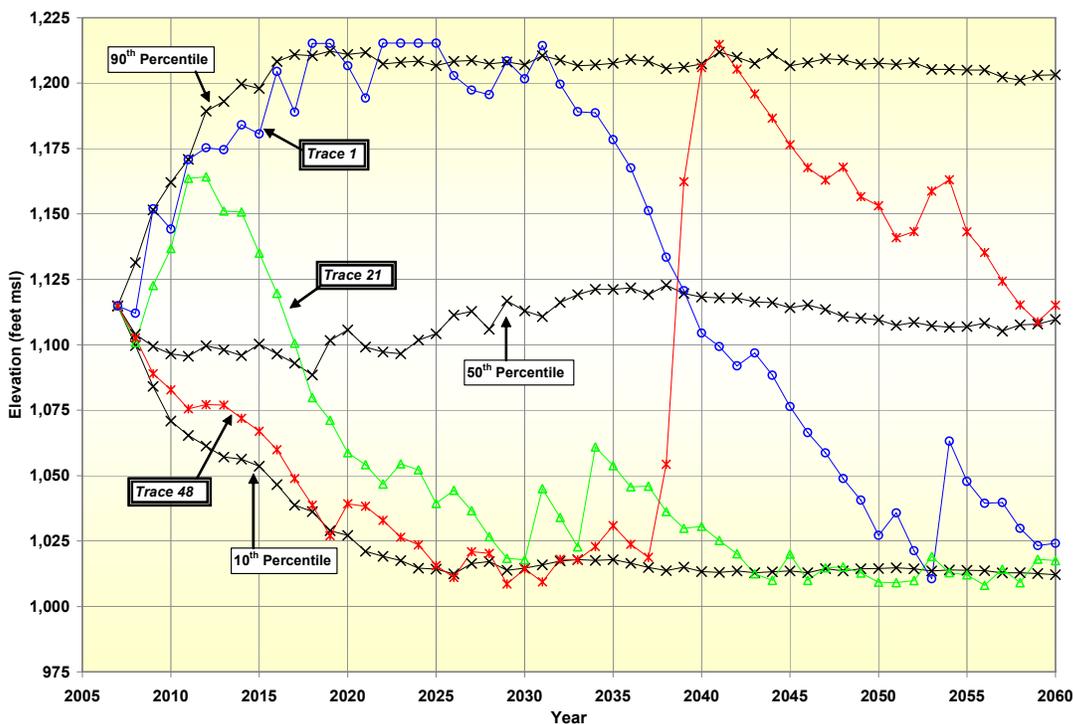
<sup>43</sup> Ibid.

As presented here, there is a disconnect between how states are accounting for their shares of the Colorado River with the actual current and future hydrology. The only reason this system of division has worked so long is that the dams along the Colorado River are capable of storing huge amounts of water, but that surplus is now gone surplus and it is unlikely to see it restored in the near future, except maybe sporadically, which is a situation that is not reliable for any planning review.

Chapter 4

Environmental Consequences

Figure 4.2-2  
 Lake Mead End-of-December Elevations Under the No Action Alternative  
 90<sup>th</sup>, 50<sup>th</sup> and 10<sup>th</sup> Percentile Values



We present the following graphic (above) from the Final EIS of 2007 Interim Guidelines, Figure 4.2-2, which models the future condition of Lake Mead under business-as-usual (No Action Alternative) to Year 2060. Possible scenarios of future conditions at Lake Mead are detailed above by Trace 1, Trace 21 and Trace 48, which are known flow regimes from the 20th century. This graphic indicates Lake Mead will be empty and for time-periods that are decadal in length. The subsequent analysis of increasing aridity in the 21st century makes the future even more consequential, then this graphic. Water conservation measures to mitigate the current supply deficit would have to amount to 3 million acre-feet annually (20%) to alleviate this problem immediately. When the 50-year license renewal is due for the Project, the deficit will be 4.5 MAFY (30%). Satisfying the permitting process for this Project is clearly a betrayal of the public trust and restraint is the appropriate need and purpose.

Within this context, every state in the basin has vastly over-appropriated its stated water rights to the Colorado River. Pursuant to the 2007 Hydrological Determination and “the Law of the River,” Utah has 1,369,000 AFY of water available for use. In 2009, the Utah Division of Water Resources claimed that Utah had already depleted 1,007,500 AFY. Approved applications awaiting development in the state of Utah amount to 493,100 AFY, which includes Lake Powell Pipeline with a priority date of 1967. The water rights for the Lake Powell Pipeline are junior to the vast majority of rights in Utah including the rights held by the Central Utah Project and the pending federally reserved water rights of the Northern Ute and Navajo Tribes. Because of the substantial over-allocation of both Utah’s water rights, and the water rights of the Colorado River Basin as a whole, the junior status of the Lake Powell Pipeline water rights leaves the project in danger of being impacted by future drought contingency measures and re-negotiations of the 2007 Interim Guidelines, which will start in January of 2021 and finalized in December of 2025.

Beyond all this, we recognize that there is legal uncertainty surrounding the use of water released from Flaming Gorge Dam, in the Upper Basin Division, and conveyed by pipeline to Washington County, Utah, which is in the Lower Basin. The Colorado River Water Conservancy District, on page four of their Notice to intervene<sup>44</sup>, stated a transfer from the upper basin to the lower basin “raises issues of fact and law under the (1922) Compact.” We concur with this statement.

For all of the above mentioned reasons, these rights cannot be reasonably considered “reliable” and thus do not fulfill the expressed purpose or need of the applicant. The applicant would be better served enhancing reliability through developing the diverse “Local Waters Alternative” submitted by the Western Resource Advocates to FERC, which we officially submit to the record (see attachments).

### **3. Hydroelectricity Generation is incidental to the Project, not a Purpose or Need**

Production of hydropower is considered by the applicant to be part of the expressed purpose of the Project. Nowhere in the Project description is it explained how much electricity would actually be generated after deducting the power required for the pumps. The applicant uses the total electricity generated at full capacity over a 2,691 foot run to make it seem like the Project would have more of an effect on the power grid than it really would. The Project would use electricity in pumping stations to transfer the water from the lowest intake (3,375 feet mean sea level (MSL)) to a high point (5,691 feet MSL) where it can then generate electricity as gravity pulls it down to

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<sup>44</sup> <http://www.riversimulator.org/Resources/Pipelines/LLP2018/MotionToInterveneCRWCD2018November.pdf>

Sand Hollow Reservoir (3,000 ft MSL)<sup>45</sup>. Due to the laws of thermodynamics, if water is being pumped up to a high point, it cannot possibly generate more energy on its way back down to that same elevation than was used to pump the water up to the high point, and actually would generate less electricity than was used because of friction on the water in the pipe. Given this, 375 feet (the net difference from of the intake to the outlet) is the total maximum run of water where more electricity could be generated than was used pumping. Using basic ratios, we can assume that if a 2,691 foot run at maximum capacity could generate 146.21 gigawatt-hours (GWh) yearly,<sup>46</sup> that a 375 foot net run would generate less than 14% of that, or 19.2 gigawatt-hours yearly at full capacity, and that is not subtracting any extraneous energy needs of the system or inefficiencies. Given that the Project description does not describe the net electricity generated, just the total electricity generated at maximum capacity, it is misleading and misconstrues the impact on the regional power grid, as well as the purpose and need for the Project.

Furthermore, water going through the Lake Powell Pipeline would otherwise be flowing through Glen Canyon Dam hydroelectric facility at some point, which supplies power to St. George. Considering that the water used for the Project could otherwise be available for another, greater capacity hydroelectric system, or perhaps more if the potential of also generating electricity at the Hoover Dam is included, the production of power cannot be considered as a purpose or a need for the Project.

#### **Part IV. B. The Project Fails to include Practicable Alternatives**

The Project fails to include practicable alternatives to the Lake Powell Pipeline. It does not realistically examine the impact that conservation, water pricing, and planning and zoning measures could have on the need for the Lake Powell Pipeline, nor does it fully explore the safe yield of the deep Navajo Sandstone aquifer. The applicant should be required to re-work the models used to predict future demand to fully incorporate a price driven demand use scenario as well as to accurately account for the conversion of irrigation waters to culinary use, as is done in the Local Waters Alternative. The burden is on the Applicant to show that there are no practicable alternatives.

#### **Part IV. C. Detrimental Effects and Cumulative Impacts of the Project**

In evaluating the probable impact of the proposed activity on the public interest, the Corps is directed to determine the extent and permanence of detrimental effects, including the cumulative effects of the Project. Corps' regulations include a list of factors that if relevant to the proposal, must be considered:

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<sup>45</sup> [Utah Division of Water Resources. Preliminary Licensing Proposal for the Lake Powell Pipeline. 2015. \(large file\)](#)

<sup>46</sup> Ibid.

“All factors which may be relevant to the proposal must be considered including the cumulative effects thereof: among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, considerations of property ownership and, in general, the needs and welfare of the people.”

The Corps’ regulations clearly require a broad analysis of the public interest that captures all impacts associated with the Project, and not just those that result directly from the permitted activities. The Corps’ analysis, therefore, is not limited to the region directly adjacent to the Project. Nor is the review limited to short-term impacts, but it must also consider the long-term impacts for the Project’s proposed 50-year license. In evaluating the probable impact of the proposed activity on the public interest, the Corps is directed to determine the extent and permanence of detrimental effects, including the cumulative effects of the Project. Corps’ regulations include a list of factors that if relevant to the proposal, must be considered:

“All factors which may be relevant to the proposal must be considered including the cumulative effects thereof: among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, considerations of property ownership and, in general, the needs and welfare of the people.”<sup>47</sup>

The Corps’ regulations clearly require a broad analysis of the public interest that captures all impacts associated with the Project, and not just those that result directly from the permitted activities. The Corps’ analysis, therefore, is not limited to the area directly adjacent to the Project. Nor is the review limited to short-term impacts. The review must also consider the long-term impacts both local and regional.

### **1. Concern for spread of invasive Quagga Mussels and the Impact on Fish and Wildlife**

In 2012 larvae, or veligers, of the invasive quagga mussel (*Dreissena rostriformis bugensis*) were found in Lake Powell. By 2013, adults had been detected, and by last year the lake shore, canyon walls, and the control gate of the Glen Canyon Dam were

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<sup>47</sup> 33 CFR § 320.4(a).

covered with layers of thousands and thousand of adults.<sup>48</sup> The adult mussels adhere to hard surfaces, causing physical blockages in fish screens, water intakes, pipes, tanks, and other drinking water infrastructure. By creating a buildup of sharp, smelly objects on docks and shorelines, the mussels also cause a significant decrease in the recreation experience.

Quagga mussels also have an impact on the environment, fish, and wildlife by altering the ecological food web and water quality.

“Infestation of source water bodies by dreissenid mussels can negatively affect water supply, water quality, and food web ecology within these systems. Heavy mussel infestations occasionally create conditions that promote blue-green algae blooms and negatively affect recreational fisheries and water treatment facilities that depend on these source waters.”<sup>49</sup>

We are very concerned that if the Lake Powell Pipeline is constructed, it will lead to quagga mussel infestation in Sand Hollow Reservoir. The National Park Service states, “It is crucial to keep the mussels from moving from Lake Powell to other lakes and rivers.”<sup>50</sup> The mussels could spread if any veligers survive transport through the pipeline. The applicant refers to chemical treatment stations as a way to mitigate this, but other entities trying to control mussel infestation in water treatment plants have had to use a multi-pronged effort including mechanical scrubbing and chemical treatments to keep water plants functional.<sup>51</sup> We do not believe the chemical treatment of veligers in the boosting stations will be enough to ensure that quagga mussel veligers do not ever enter Sand Hollow Reservoir and establish a colony.

## **2. Kaibab-Paiute Tribal Sovereignty**

It is important that the government heavily weigh tribal sovereignty and interests in its public interest analysis. The U.S. government has an obligation in this process to honor those rights and interests. The Corps must consult directly with the Kaibab-Paiute Tribe because they are a cooperating agency and all of the possible pipeline alignments extend into their traditional and sacred homelands. The applicant has identified three

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<sup>48</sup> Hollenhorst, John. June 2, 2018. “Mussel Beach: Lake Powell has ‘trillions and trillions’ of these things.” Deseret News. Accessed at [www.deseretnews.com/article/900020372/mussel-beach-lake-powell-has-trillions-and-trillions-of-these-things.html](http://www.deseretnews.com/article/900020372/mussel-beach-lake-powell-has-trillions-and-trillions-of-these-things.html)

<sup>49</sup> Chakraborti et al. August 2016. Costs for controlling dreissenid mussels affecting drinking water infrastructure: Case studies. Journal- American Water Works Association <http://dx.doi.org/10.5942/jawwa.2016.108.0104>

<sup>50</sup> “Mussel Update.” Glen Canyon National Recreation Area Website. Accessed Jan 2019 at [www.nps.gov/glca/learn/nature/mussel-update.htm](http://www.nps.gov/glca/learn/nature/mussel-update.htm)

<sup>51</sup> Chakraborti et al. August 2016. Costs for controlling dreissenid mussels affecting drinking water infrastructure: Case studies. Journal- American Water Works Association <http://dx.doi.org/10.5942/jawwa.2016.108.0104>

pipeline routes in the Arizona Strip. Consultation with the Tribe is necessary in order to identify a route that would not impair sacred sites, burials and other cultural values. The Corps must evaluate all three pipeline alternatives in this process. It should be noted that the applicant's proposed alternative, the South Alternative Alignment, is preferred because according to the applicant, it "avoids effects on the Kaibab-Paiute Indian Reservation."<sup>52</sup> This is concerning and perhaps alarming given that in the last round of comments to FERC, the Kaibab-Paiute Indian Tribe specifically requested that "the EIS must fully and objectively analyze and consider the existing highway alternative,"<sup>53</sup> which would cross the reservation. The Tribe's comments are extensive and detail many issues with the preferred alignment which crosses the BLM administered Kanab Creek Area of Critical Environmental Concern (ACEC). We request that the Tribe's comments be added to the record (see attachments below). This Project is not in the public interest because of its disproportionate negative impacts on tribes. A project cannot be in the "public interest" if it violates fundamental obligations to tribes.

### **3. Economic impacts of the Project cannot be fully understood because the applicant has failed to fully and accurately disclose Project costs**

In determining whether the applicant's project is in the public interest, the Corps must consider economic impacts. A key component of economic impact is the direct and indirect costs of the Project. The applicant failed to produce a sound cost estimate for the Project that accurately reflects the complex design, and mitigation requirements, and demonstrates how the water users and taxpayers of the State of Utah will be impacted by the payback structure of the debt incurred for the Project.

In light of the fact that the UBWR has not disclosed its own economic modeling for the Project to the public for peer review, Gabriel Lozada, an economist at the University of Utah, began to examine the issue independently nearly a decade ago. In a recent High Country News article titled "The Precarious Plan for the Lake Powell Pipeline," Emma Penrod provides a comprehensive description of the controversy surrounding the economics of paying for this project. She states that Lozada "now believes the water districts' plan to triple its water rates — potentially increasing residents' costs by more than \$300 per year — may, just barely, pay for the pipeline. But he doesn't believe residents will pay such prices without buying dramatically less water, negating the need for the pipeline."<sup>54</sup> The root of this issue is that thus far, no sound budget has been

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<sup>52</sup> Insert to Application for Individual Permit Lake Powell Pipeline Coconino and Mohave Counties, Arizona Kane and Washington Counties, Utah Corps File No. SPK-2008-00354. P. 39 Accessed at [www.spk.usace.army.mil/Media/Regulatory-Public-Notices/Article/1716369/spk-2008-00354-lake-powell-pipeline-project/](http://www.spk.usace.army.mil/Media/Regulatory-Public-Notices/Article/1716369/spk-2008-00354-lake-powell-pipeline-project/)

<sup>53</sup> The Kiabab Band of Paiute Indians' Comments and Proposed Right-of-Way Conditions, Lake Powell Pipeline Project No. 12966. Accessed at <http://www.riversimulator.org/Resources/Pipelines/LLP2018/KiababBandPaiuteCommentsROWlpp.pdf>

<sup>54</sup> Penrod, Emma. Oct. 29 2018. "The Precarious Plan for the Lake Powell Pipeline." High Country News. Accessed at <https://www.hcn.org/issues/50.18/water-the-precarious-plan-for-the-lake-powell-pipeline>

presented to the public by the applicant that outlines a complete estimate of Project costs; nor has the economic model needed to repay the debt incurred to finance the Project been released, peer-reviewed, and accepted by the public.

Colorado's Southern Delivery System provides a good proxy for comparison to understand the potential cost of the Lake Powell Pipeline. The first phase of the Southern Delivery System was completed by Colorado Springs Utilities in 2016. It consists of 62 miles of buried 66 inch pipe, 4 pump stations, and a 50 million gallons per day water treatment facility. The total cost for this Project, including financing was \$1.45 billion. The Project was heralded as an example of great fiscal responsibility that brought the Project in under budget.<sup>55</sup> How then, can the Lake Powell Pipeline with its additional pump station, six hydroelectric stations, larger pipe, and more than twice the length, be expected to cost nearly the same amount? Table 2 compares the two projects.<sup>56</sup>

<b>Information</b>	<b>Southern Delivery System</b>	<b>Lake Powell Pipeline</b>
<b>Date Completed</b>	April 2016**	---
<b>Length</b>	62 miles**	140 miles††
<b>Pipe Diameter</b>	66 inch*	69 inch†
<b>Daily Delivery Capacity</b>	50 mgd*	66 mgd
<b>Yearly Delivery Capacity</b>	56,000 AFY	86,429 AFY†
<b>Pump Stations</b>	4*	5†
<b>Hydroelectric Facilities</b>	0	6†
<b>Water Treatment Plant</b>	1 @ 50 mgd capacity*	0 included in plant† Likely 2 required
<b>Construction Costs</b>	\$825 million*	---
<b>Cash funded</b>	\$352 million*	---
<b>Debt funded</b>	\$473 million*	---
<b>Interest</b>	\$618 million over 30 years or more*	---
<b>Total Cost</b>	\$1.45 Billion*	\$1.1-1.8 billion††

<sup>55</sup> Water Finance and Management. August 12, 2016. "How Colorado Springs Funded its Landmark Southern Delivery System." Accessed at <https://waterfm.com/colorado-springs-funding-sds/>

<sup>56</sup> **Sources for the graphic are:**

\* Water Finance and Management. August 12, 2016. "How Colorado Springs Funded its Landmark Southern Delivery System." Accessed at <https://waterfm.com/colorado-springs-funding-sds/>

\*\* Southern Delivery System (SDS) Water Project, Colorado. Water Technology Webpage. Accessed at [www.water-technology.net/projects/southern-delivery-system-water-project/](http://www.water-technology.net/projects/southern-delivery-system-water-project/)

† Utah Board of Water Resources. Preliminary Licensing Proposal. 2015.

†† The Lake Powell Pipeline Website. Washington County Water Conservancy District. Accessed at [www.lpputah.org](http://www.lpputah.org)

It should also be noted that the water intake apparatus at Lake Powell will be far more expensive and complicated than that at Pueblo Reservoir. This clearly demonstrates that the applicant's given estimate for the total cost of the Lake Powell Pipeline is far below what it will likely cost in the real world. Roughly, a more realistic project cost estimate would be between \$3-5 billion dollars.

In addition, in order to provide the Corps with a more accurate cost estimate as the basis for evaluating the Project's economic impacts, the UBWR needs to expand and update their project budget to include the costs outlined above, which are currently not addressed by the budget.

**a. Chemical Unique Water:** The applicant must be required to examine in full the impact of introducing chemically unique Colorado River water into the public utility lines in Washington County. In 1992, the municipal water utility in Tucson, AZ introduced Colorado River water into the drinking supply of nearly half of its customer base. Almost immediately customers began complaining that their water was dirty, foul smelling, containing rust, or had caused their pipes to leak due to entrained salt.

"This new resource exposed Tucson's extensive water system to water with characteristics very different from the groundwater the city had relied upon for decades. Among these differences were a level of total dissolved solids of 650 mg/L, approximately twice that of the average local groundwater, and a more aggressive corrosion potential, primarily related to a pH of about 7.6 in the treated CAP water compared to an average pH of 7.9 in groundwater. In 1994, the Colorado River water supply was discontinued and the utility returned completely to using groundwater. By then, more than 14,000 complaints had been received and the utility ultimately had to pay more than \$2 million in damages to affected customers."<sup>57</sup>

Residents of Tucson passed an initiative blocking the delivery of Colorado River water in the municipal system because of its bad taste. Since then, the Tucson water utility has started injecting the Colorado River water into the ground to mix with naturally occurring aquifer water. It wasn't until 2001 that they delivered a treated blend of Colorado River water and aquifer water to customers.<sup>58</sup>

Like in Tucson, residents of Washington and Kane counties will likely reject the foul tasting Colorado River water given they have better local alternative sources of

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<sup>57</sup> Basefsky, Mitchell. March/April 2006. Southwest Hydrology. p. 24. Accessed at: [www.swhydro.arizona.edu/archive/V5\\_N2/feature4.pdf](http://www.swhydro.arizona.edu/archive/V5_N2/feature4.pdf)

<sup>58</sup> City of Tucson Water Plan 2000-2050. p. 2-8 Accessed at [www.tucsonaz.gov/files/water/docs/water-plan.pdf](http://www.tucsonaz.gov/files/water/docs/water-plan.pdf)

water. The Project budget does not outline the costs of treating or injecting Colorado River water or upgrading municipal plumbing systems to deal with the unique chemical nature of the water.

Chapter 10 of the Preliminary Licensing Proposal (PLP) submitted by the Utah Board of Water Resources refers to a “a future conventional water treatment facility located near the mouth of Johnson Canyon” without ever outlining the cost of this necessary component. The PLP makes no mention of the need for, or the cost of, a water treatment facility at the terminus of the pipeline in Washington County.<sup>59</sup> Omitting these two necessary features in the hydro system is a gross oversight in the project budget and plan and should be required in order to understand the true cost of the Project.

**b. Water Shortages:** The permitting documents also need to also examine the hidden costs associated with water shortages in the Upper Basin. When shortage occurs, Washington County will be in the same predicament as the Front Range of Colorado; they will seek water rights to buy and likely convert agricultural water rights to municipal water rights. Given the high likelihood of future water shortages in the State of Utah, this hidden cost should be included in the economic models.

**c. Cost of Compensatory Mitigation Techniques:** The cost of compensatory mitigation techniques briefly mentioned in the application, such as Virgin River revegetation and riparian area creation around Sand Hollow Reservoir, are also left out of the Project budget. The description of these possible mitigation efforts is brief, vague, and inadequate in order to understand the cost, impact, and scope of the proposed mitigation projects.

**d. Quagga Mussels:** The cost of managing the invasive quagga mussels needs to be considered in the immediate and long term cost of operations for the Lake Powell Pipeline Project. In 2016, the Journal of American Water Works Association reported the following:

“Maintenance of mussels in drinking water infrastructure is not only cumbersome and poses water quality threats that are also expensive. The potential cost for upgrades to 13 hydropower facilities in the Colorado River Basin alone has been estimated to be \$23.6 million, with chemical costs estimated at another \$1.3 million per year.”<sup>60</sup>

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<sup>59</sup> Utah Board of Water Resources. Preliminary Licensing Proposal, Revised Draft Socioeconomics/Water Resource Economics Study Report. 2015. ([hyperlink](#))

<sup>60</sup> Chakraborti et al. August 2016. Costs for controlling dreissenid mussels affecting drinking water infrastructure: Case studies. Journal of American Water Works Association <http://dx.doi.org/10.5942/jawwa.2016.108.0104>

The estimates mentioned above do not consider the cost of containment paid by the State of Utah or Department of Interior (DOI). In fiscal year 2017, the DOI spent \$8.6 million on quagga mussel containment nationwide. The DOI upped that request to \$11.8 million nationwide in fiscal year 2018.<sup>61</sup> At Lake Powell last year, federal agencies set up and staffed inspection checkpoints at docks, decontaminated boats, and led an aggressive public education campaign aimed at boaters. If quagga mussels infested Sand Hollow Reservoir, the state would have to implement a similar program for containing the threat and the cost of this would not be insignificant.

Based on the economic impacts associated with the direct and indirect costs of the Project detailed above, which the applicant has failed to fully and accurately disclose, we urge the Corps to determine the Project is not in the public interest. Moreover, the Corps is required to deny this permit because the applicant has failed to provide sufficient information to enable the Corps to make a reasonable judgement. The applicant has failed to present a project budget including necessary project components, failed to present the public or the cooperating agencies with a detailed economic plan including peer-reviewed debt payback structure, and generally failed to fully disclose the economic impact that this project will have on the public.

## **5. The Project will significantly impact the Municipal Water Supply of downstream users and other water users in Utah**

**a. Water Availability:** As we explained in Part I.B, the Colorado River System is a fully appropriated system which has been operating at a deficit for the past two decades, as can be observed by the diminishing water levels of both Lakes Mead and Powell. Currently, the Upper Basin States are in the process of negotiating DCPs that will significantly impact operations at Flaming Gorge Dam, Aspinall Unit, and Navajo Dam. Consumptive use of Project water would decrease water availability in Flaming Gorge Reservoir. Under the new set of Upper Basin DCPs, water from Flaming Gorge, and other Colorado River Storage Project reservoirs will be used to keep Lakes Powell and Mead from approaching dangerous levels that threaten water deliveries to the Central Arizona Project, the Metropolitan Water District of Southern California, and the Southern Nevada Water Authority. Therefore, consumptive use of Project water would decrease water availability for more than 20 million people who reside in the region served by the Metropolitan Water Authority,<sup>62</sup> the five million

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<sup>61</sup> Department of the Interior Press Release. February 28, 2018. "Interior Releases Report on Fight Against Invasive Mussels." Accessed at [www.doi.gov/pressreleases/interior-releases-report-fight-against-invasive-mussels](http://www.doi.gov/pressreleases/interior-releases-report-fight-against-invasive-mussels)

<sup>62</sup> <http://www.mwdh2o.com/WhoWeAre/Member-Agencies>

served by the Central Arizona Project,<sup>63</sup> as well as the 2 million residents supplied by the Southern Nevada Water Authority.<sup>64</sup>

**b. Water Rights:** If the Project is approved, although the water rights held for the Project are junior to most in Utah, they do have priority over a small subset of users along the Green and Colorado Rivers in Utah who would stand to lose the water they rely upon if and when the Upper Basin is required to make cuts to water use.

**c. Toxicity:** The Project would negatively affect the municipal water supply of St. George in Sand Hollow Reservoir by contributing large amounts of toxic disinfection byproducts from chemical quagga mussel containment methods.<sup>65</sup> As we've already demonstrated in Part 4.E. (Detrimental Effects) the likely accidental introduction of quagga mussels into Sand Hollow reservoir would also negatively affect the water quality for downstream industrial and municipal water users in Nevada who also depend on the Virgin River.

**d. Salinity and Selenium:** Salt levels have been trending upward since Year 2000 below Parker Dam in the Lower Basin.<sup>66</sup> Selenium levels have been trending upward, as well. Selenium levels increase in the heat of August, when agriculture diversions from the river are operating at peak demand. This month is a critical time-period to ensure good water quality for the nursery habitat that juvenile endangered fish must have to thrive.<sup>67</sup> Diversions in the Upper Basin is the major-most cause of increasing salinity in the Lower Basin and why the Salinity Control Act was authorized in 1974. The goal of Reclamation and the Salinity Control Forum is to remove 372,000 tons of salt from the Colorado River Basin by 2035.<sup>68</sup> The increased, cumulative diversions that would result from approval of this Project would enhance salinity problems in the Lower Basin. This is yet another long-term economic and ecosystem impact that the proposed Project will impose on water quality issues currently under stress due to increasing aridity and the over-consumption of a finite water resource.

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<sup>63</sup> Central Arizona Project Website. "About us." Accessed January 11, 2019 at [www.cap-az.com/about-us](http://www.cap-az.com/about-us)

<sup>64</sup> Southern Nevada Water Authority. May 2014. Water Conservation Plan. Accessed at [www.snwa.com/assets/pdf/reports-conservation-plan.pdf](http://www.snwa.com/assets/pdf/reports-conservation-plan.pdf)

<sup>65</sup> Chakraborti et al. August 2016. Costs for controlling dreissenid mussels affecting drinking water infrastructure: Case studies. Journal- American Water Works Association <http://dx.doi.org/10.5942/jawwa.2016.108.0104>

<sup>66</sup> <http://www.riversimulator.org/Resources/Salinity/ReviewSalinityControl2017.pdf>

<sup>67</sup> <http://www.livingrivers.org/pdfs/Press/StateTurnsAttentionToSeleniumLevelsInRiver.pdf>

<sup>68</sup> <http://www.riversimulator.org/Resources/Salinity/ProgressReport25Reclamation2017.pdf>

## **6. The Project will eventually have impacts on Hydropower Production at Glen Canyon Dam**

Similar to the point made in the above section, Project water would lower the elevation and water availability at Flaming Gorge Dam. Flaming Gorge Dam is a central component in the Upper Basin DCP, and will be used to safeguard hydropower production by keeping Lake Powell at an operational level. If more water is diverted from the Green River in the Upper Basin, such as the proposed Lake Powell Pipeline, Green River Block, and Water Horse Resources (Aaron Million, CEO), this will impact water availability for hydropower production at Glen Canyon Dam due to over-allocations at the same time as rising aridity.

### **Part IV. D. The Project fails the Public Interest Balancing Test**

The proposed Project will have numerous negative, harmful environmental effects, impacts on cultural resources, ramifications to water users across the Colorado River Basin, and an enormous and largely unknown economic burden placed on ratepayers of the district and taxpayers of the state. For all of these reasons, and because there are alternatives to meet the expressed need, the Project is contrary to the public interest.

### **PART V: THE CORPS MUST DENY THE 404/10 PERMIT BECAUSE IT DOES NOT COMPLY WITH 404(b)(1) GUIDELINES, 40 C.F.R. PART 230.**

Section 404 of the CWA prohibits the discharge of fill material without a permit.<sup>69</sup> Permits for the Project must be denied if the Project activities involve 404 discharges that would not comply with EPA's 404(b) (1) guidelines. These regulations prohibit the Corps from issuing any permit, as we summarize here:

- if there is a practicable alternative which would have less adverse impacts;
- if it will harm the aquatic ecosystem;
- if it will authorize a violation of state water quality standards or toxic effluent standard;
- if it jeopardizes a species currently protected under the ESA
- if it will cause or contribute to significant degradation of the waters of the USA;
- if it does not take appropriate and practicable steps to minimize harm.

The Corps cannot authorize the Clean Water Act 404/10 permit for the Lake Powell Pipeline Project because the Project does not comply with multiple requirements of the Corps' 404(b)(1) Guidelines. The following paragraphs in Part V will provide the details of our concerns.

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<sup>69</sup> 33 U.S.C § 1344

## **Part V.A. The Project fails to include Practicable Alternatives**

A critical component of the Corps' review under CWA § 404(b) (1) is the alternatives analysis. The Guidelines require a finding of noncompliance when there is a practicable alternative to the proposed discharge that would have a less adverse effect on the aquatic ecosystem.<sup>70</sup> The Corps must deny the proposed discharge of dredged and fill material because the applicant has failed to demonstrate that there are no practicable alternatives.<sup>71</sup>

As we have detailed in Part IV. C., the applicant fails to consider and fully evaluate, the alternatives to the Project of common conservation measures, the availability of the full amount of water that will result from conversion of irrigation water to culinary use, or a realistic estimation of reduction in future water demand. Therefore, the applicant's alternatives analysis in the Project application is wholly inadequate.

## **Part V. B. The Project will have Significant Adverse Effects on Aquatic Life, Aquatic Ecosystems, and Water Quality**

### **1. The Project Will Negatively Impact Wetlands**

The Project impacts the likelihood of future recovery of the Colorado River Delta. The riparian, freshwater, brackish, and tidal wetlands of the delta once covered 1,930,000 acres.<sup>72</sup> Due to complete appropriation and over-use in Colorado River Watershed, the delta has suffered significantly, losing most of its wetlands. Further development of water upstream can do nothing but harm the remaining wetlands of the Colorado River delta and impede recovery efforts by making surplus water less available.

### **2. The Project will Harm Endangered Species Act (ESA)-Listed Species and Critical Habitat**

The Colorado River is already a strained ecosystem. This fact is demonstrated by the many endangered species found along its stretch. These species include, humpback chub, razorback chub, bonytail chub, Colorado River pikeminnow, Southwestern willow flycatcher and Yuma clapper rail. The effects of further draining of the river's natural flows as a result of this Project will likely be to put these species at further risk.

The applicant's preferred alignment runs through the Kanab Creek ACEC. The applicant requested an amendment to the Kanab Creek ACEC Resource Management Plan in order to allow for the applicant's preferred pipeline alignment. The Final EIS for the Arizona Strip Field Office Resource Management Plan for the Bureau of Land

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<sup>70</sup> 40 CFR § 230.12(a) (3) (i).

<sup>71</sup> 40 C.F.R. § 230.10.

<sup>72</sup> Wikipedia Website. "The Colorado River Delta." Accessed on January 11, 2019 at [https://en.wikipedia.org/wiki/Colorado\\_River\\_Delta](https://en.wikipedia.org/wiki/Colorado_River_Delta)

Management (BLM) states "Designating the Kanab Creek ACEC and following strict management prescriptions associated with that designation would help maintain, possibly improve, water quality in the Kanab Creek area."<sup>73</sup> The EPA commended the BLM for the designation of the ACEC because of this.<sup>74</sup> Studies have shown that humpback chub and razorback sucker have been documented at the mouth of Kanab Creek in the Grand Canyon, which we too have observed and photographed on river patrols.<sup>75</sup> Impacts of construction and disturbance upstream in the Kanab Creek ACEC riparian area may affect the sediment, water quality, and endangered species in lower Kanab Creek.

In addition, likely impacts to endangered species could result from could include the mobilization of perched reservoir sediment when Lake Powell levels diminish due to further over-consumption. Reservoir sediment contains organic material and when mobilized can deplete oxygen in the water column of the reservoir and negatively impact the critical habitat below Glen Canyon Dam. The mobilized sediment can also liberate toxins and heavy metals into the water column and affect water quality for wildlife and humans.

These impacts to endangered species should be studied in depth in the FERC NEPA process which is in its early stages, with respect to which the Corps is a cooperating agency. The NEPA process for the Project should fully examine these impacts, and it is incumbent on the Corps to give full consideration to the studies that will be released during the NEPA process in order to have a complete understanding of the impact that this Project will have on ESA-listed species.

### **3. Probable invasive quagga mussel infestation in Sand Hollow Reservoir will have significant adverse effects on the Aquatic Ecosystem**

We demonstrated clearly in Part IV. B. (Detrimental Effects), that the risk is high that invasive quagga mussels would be transported from Lake Powell to Sand Hollow through the pipeline even with chemical treatment. The possible effects include alteration of the food web, promotion of blue-green algae blooms, changes in water quality, and negative effects on fisheries.

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<sup>73</sup> BLM. 2007. Proposed Resource Management Plan and Final Environmental Impact Statement for the Arizona Strip Field Office, the Vermilion Cliffs National Monument, and the BLM Portion of Grand Canyon-Parashant National Monument, and a Proposed General Management Plan/Final EIS for the NPS Portion of the Grand Canyon-Parashant National Monument. p. 4-24

<sup>74</sup> Letter from EPA to Arizona Field Office BLM. 2006, January 30. Accessed at <https://archive.epa.gov/region9/nepa/web/pdf/arizona-strip-deis.pdf>

<sup>75</sup> Argonne National Laboratory. (2009). Annotated bibliography of the Humpback Chub (*Gila cypha*) with emphasis on the Grand Canyon population. Environmental Science Division. [Accessed June 23, 2018]; p. 41. [https://www.gcmrc.gov/library/reports/biological/Fish\\_studies/Goulet2009.pdf](https://www.gcmrc.gov/library/reports/biological/Fish_studies/Goulet2009.pdf)

In conclusion, the applicants have not demonstrated that the Project will not adversely impact aquatic ecosystems because of the proposed activities related to construction and operation of the pumping stations and pipeline that will directly, indirectly, and cumulatively harm the aquatic ecosystem, biological diversity, productivity, and stability. Therefore, the Corps cannot authorize the 404/10 permit under 40 CFR 230.10(c).

### **Part V. C. The Project will cause or contribute to Significant Degradation of Waters of the United States**

- 1.** The proposed action would cause or contribute to significant degradation of the waters of the United States by increasing the levels of salinity and selenium in the lower Colorado River, causing significantly adverse effects on fish, wildlife, downstream municipal water users, irrigators, and special aquatic sites.
- 2.** In addition, the chemical treatment of mussels can put toxic byproducts into drinking water, causing difficulties in water treatment plants. This would surely be the case as constant chemical treatment will be required in the Lake Powell Pipeline. This issue is not addressed by the applicant.

### **Part V. D. The Project will result in significant Adverse Effects on Recreational, Aesthetic, and Economic Values**

- 1. Recreational impacts:** The route of the pipeline, along with transmission lines, pumping and hydroelectric stations are located in a uniquely beautiful region of rural Utah. Many who visit this region are driving the highway to connect wonders of the natural world: Bryce Canyon National Park, Zion National Park, Canyonlands National Park, Grand Staircase-Escalante National Monument, and points between. Further industrialization of this scenic corridor will diminish the recreational value of the area and will thereby cause related economic harm.
- 2. Aesthetic impacts:** Additionally, numerous residents of the neighborhoods near Sand Hollow Reservoir have written comments to FERC detailing complaints about the proposed overhead transmission lines routed through their neighborhoods. These comments cite major concern for changes in quality of life, obstruction of the natural view shed, and concern for diminishing property values because of this impact.
- 3. Economic Impacts:** As discussed in detail in Part IV. D., the UBWR has not been thorough in their economic modeling nor forthcoming with the public about the impact that the Project will have on rate-payers and taxpayers. However, others who have examined the issue have concluded that there is a significant risk that the Project will burden ratepayers and taxpayers with significant costs that have not been fully disclosed by the applicant in their documents. It is of utmost importance to have an accurate cost estimate for the Project in order to understand its full economic impact,

and the economic burden that the Project will put on the residents of Washington and Kane Counties and on the taxpayers of Utah for the better part of a century.

**4. Impacts to Human Health and Welfare:** The Project would also contribute to the ongoing and worsening risk of declining water availability in the Colorado River Basin due to a combination of over use and climate change. The chance of putting the water users throughout the Colorado River Basin in danger of severe water shortages is an unacceptable risk with far reaching ramifications for a situation that is worsening overtime. We have included in depth analysis of these issues from Part I to Part V.

#### **Part V. E. Violations of State Water Quality Standards**

Continuous chemical treatment for invasive quagga mussel veligers could lead to violations of State Water Quality Standards.

“Various chemicals, in particular oxidizing chlorine-based chemicals, have been used to control dreissenid mussels in water infrastructure...[T]hey can adversely affect the water quality of receiving waters (Chakraborti et al. 2013). The formation of disinfection by-products (DBPs) is one of several drawbacks of using oxidizing chemicals such as chlorine. For example, an increase in total organic carbon (TOC) and harmful algal blooms (HABs) mediated by dreissenid mussel activity in source waters may exacerbate DBP levels in the treated water and increase potential complications in treatment processes to eliminate this toxicity. DBP formation depends on TOC levels, water temperature, chlorine, pH, bromide, and contact time. Increased TOC may require altering the water treatment processes in order to meet state and federal regulatory limits for finished water before distribution.”<sup>76</sup>

The applicant completely fails to address this important issue in its application.

#### **Part V. F. The Applicant has failed to Adequately Avoid, Minimize, or Mitigate the Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem**

As mentioned in PART V. B. (ESA-Listed Species), the applicant’s preferred alignment runs through the Kanab Creek ACEC. These potential impacts on the sensitive riparian area within the ACEC and impacts on the razorback sucker and humpback chub downstream would be significantly reduced by following the existing highway alignment, which the applicant has failed to endorse.

In addition, the applicant has not discussed mitigation of impacts associated with the chemical treatment for quagga mussels in the application. Finally, the applicant has

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<sup>76</sup> Chakraborti et al. August 2016. Costs for controlling dreissenid mussels affecting drinking water infrastructure: Case studies. Journal- American Water Works Association <http://dx.doi.org/10.5942/jawwa.2016.108.0104>

failed to provide any detail on the compensatory mitigation techniques mentioned in the application. The applicant briefly outlines a few ideas about revegetation projects on the Virgin River and enhancing riparian areas around Sand Hollow Reservoir, but it does not go into sufficient detail to understand the potential acreage affected, how it might compare to the imprint of the Project, or what the cost would be.

In conclusion, the Project will negatively impact aquatic life, water quality, ESA-listed species, and the recreation and aesthetic values of the remote region it would traverse. The Project applicant has failed to demonstrate a sound purpose and need for the Project and has also failed to adequately avoid, minimize or mitigate identified Project impacts, including the economic impacts associated with the Project costs. For all the reasons outlined above, the Corps must deny the 404/10 permit for this Project because the applicant has failed to demonstrate that the Project will comply with the 404(b)(1) Guidelines, 40 CFR § 230 et seq.

#### **PART VI: THE CORPS MUST DENY THE PERMIT BECAUSE IT LACKS SUFFICIENT INFORMATION TO MAKE A REASONABLE JUDGEMENT**

The application does not include sufficient information for the Corps to make a reasonable judgment regarding compliance with the 404(b)(1) Guidelines, the CWA, or the Rivers and Harbors Act. Therefore, the Corps must deny the 404 permit; 40 CFR § 230.12(a) (3) (IV) requires a finding of noncompliance with restrictions on discharge when the application does not contain sufficient information. The Corps does not have sufficient information on the practicable alternatives, economics, impacts on water users downstream of the diversion, and the impacts of the proposed development on the ecology of the Colorado River. Moreover, as discussed above, several other natural resource agencies have just begun, or not yet begun, their assessments of the Project, and much information concerning the Project and its impacts is not understood fully by any party, nor disclosed to the public at this juncture.

The failure to possess significant information relevant to the Corps' decision-making and public interest analysis casts serious doubt on the Project application as a whole. If the application is incomplete or inaccurate—as this comment letter repeatedly shows—the Corps does not have sufficient information to determine whether the Project complies with the requirements of the 404/10 guidelines. The Corps' choices are to therefore deny the permit or request a new and accurate permit application

#### **PART VII: BEFORE THE CORPS MAY ISSUE THE PERMIT, CORPS MUST CONSULT WITH STATE AND FEDERAL WILDLIFE AGENCIES**

The Corps regulations place special emphasis on the need for consultation and “full consideration” of comments from the US Fish and Wildlife Service (FWS), and state

wildlife agencies.<sup>77</sup> Federal agencies are of course required to consult with the FWS or NMFS under section 7 of the ESA.<sup>78</sup> In addition, impacts to Essential Fish Habitat moreover require consultation with US Fish and Wildlife Service.<sup>79</sup> Moreover, the lack of consultation, and speculation as to its results, render the mitigation measures proposed by the applicant highly suspect and likely to change. Therefore, the Corps must first consult with state and federal wildlife agencies before authorizing the 404/10 permit.

### **PART VIII: REQUEST FOR A PUBLIC HEARING**

Commenters request one or more public hearings regarding the Section 404/10 permit application. Hearings are necessary in this case for meaningful public comment. Public delivery of public comment is a unique and valuable form of input that is not replicated in other settings. We request that this hearing be held in Salt Lake City where a majority of members of the public who would be impacted by taxpayer financing of the project are located and could comment.

### **PART IX: CONCLUSION**

In conclusion, the Corps cannot authorize the Clean Water Act 404 & Section 10 Rivers and Harbor Act permit for Lake Powell Pipeline Project because the applicant has not provided reasonable assurances that the Project complies with multiple requirements of the Clean Water Act and the Corps' 404(b)(1) Guidelines. In addition, the Section 404 permit should be rejected under the Rivers and Harbors Act for failure to meet the requirements of the Corp's public interest balancing test, in particular because the applicant has failed to articulate a sound purpose and need for this impactful Project. Therefore, the Commenters urge the Corps to deem the Lake Powell Pipeline Project application legally and factually insufficient and deny the 404/10 permit for the Project.

Thank you for this opportunity and for your considerations.

Sincerely yours,

(see next page)

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<sup>77</sup> 33 C.F.R § 320.4(c).

<sup>78</sup> 16 U.S.C. §1531.

<sup>79</sup> Id. §§ 1361, 305(b)(2)

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**Attachments:**

Local Waters Alternative. Western Resource Advocates  
<http://www.riversimulator.org/Resources/Pipelines/WRAcommentsFERCMay2011.pdf>

Comments of Kaibab Paiute Tribe  
<http://www.riversimulator.org/Resources/Pipelines/PaiuteCommentsLakePowellPipelineOpt.pdf>