**Document #696 Bruno, Jeanne-Marie Park Water Company**

# Park Water Company

#696

February 18, 2005

Mr. Don Metzler
Moab Federal Project director
U.S. Department of energy
2597 B ¾ Road
Grand Junction, CO 81503

Dear Mr. Metzler:

Park Water Company appreciates the opportunity to provide comments on the Draft Environmental Impact Statement for Remediation of the Moab Uranium Mill Tailings. Park Water Company (PWC) is an investor-owned water utility providing water service to approximately 150,000 people in Los Angeles and San Bernardino Counties.

The Colorado River is a critical primary and supplemental source of drinking water for over 20 million consumers in Southern California. PWC consumers in Los Angeles County receive 90% of their water from the Metropolitan Water District of Southern California, a major contractor of Colorado River water. Protection of this vital resource is of paramount importance.

The Moab uranium mill tailings, however, threatens drinking water quality of the downstream users. Uranium concentrations in the tailings pore water are already over 750 times higher than the federal maximum contaminant level, and there is indication that these levels will increase. Groundwater concentrations at the site also exceed federal and/or California drinking water standards for other constituents including arsenic, mercury, thallium and radium.

With both the "no action" and "on-site" alternatives, contaminated seepage will continue to leak from the tailings pile and into the Colorado River. Reliable and permanent protection can only be achieved by moving the tailings pile off-site. This is consistent with the State of Utah's December 29, 2004 letter received by your agency that states that any remediation other than an off-site option is unacceptable. We strongly urge you to relocate the tailings pile.

Should you have any questions on this comment letter, please feel free to call me or contact me via email at jmbruno@parkwater.com.

Very truly yours,

Jeanne-Marie Bruno

Jeanne-Marie Bruno
Senior Vice-President and General Manager

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## Document #699 Livermore, Dave and Bellagamba, Susan The Nature Conservancy

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February 18, 2005

Remediation of the Moab Uranium Mill Tailings DEIS
Attention: Don Metzler, Moab Federal Project Director
U. S. Department of Energy
2597 B ¾ Road
Grand Junction, CO 81503

Dear Mr. Metzler:

The Nature Conservancy ("Conservancy") appreciates this opportunity to review and provide comments on the Remediation of the Moab Uranium Mill Tailings Draft Environmental Impact Statement ("DEIS"). The Conservancy is a non-profit organization with a mission of preserving the plants and animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. Supported by approximately one million members and 1,800 corporate sponsors, the Conservancy owns over 1,400 preserves - the largest private reserve system in the world. One such preserve is the Scott M. Matheson Wetlands Preserve ("Matheson Preserve")[1], which is located immediately across the Colorado River from the Moab Uranium Mill Tailings site. The Matheson Preserve is home to over 220 species of birds and is the last significant remaining wetlands on the Colorado River in Utah. As one of the nearest private landowners to the Moab Mill Site, we have much at stake and are very concerned that the Department of Energy ("DOE") selects the appropriate course of action to protect our private property and the biological integrity of the Colorado River. The Conservancy believes that the best alternative will be to relocate the Moab Uranium Mill Tailings to either the Klondike Flats or Crescent Junction disposal sites.

Proceeding from our purpose as an organization and our need to protect our investment in the Matheson Preserve, this letter will focus on the DEIS's treatment of the native biotic resources of the Moab Valley and the Colorado River. More specifically, the comments in the remainder of this letter are arranged in the sequence as outlined in the list below.

- Findings by Dr. D. K. Solomon and Phillip M. Gardner in a *"Summary Report of Hydrologic Studies of the Scott M. Matheson Wetlands Preserve."*
- Findings of the U.S. Geological Survey ("USGS") in "*Initial-Phase Investigation of Multi-Dimensional Streamflow Simulations in the Colorado River, Moab Valley, Grand County, Utah, 2004.*"
- Potential Impacts to the Matheson Preserve.
- Potential Impacts to Species of Concern.

[1]Note: The DEIS indicates that the Matheson Preserve is owned by the Utah Department of Wildlife Resources; in actuality the northern portion (425 acres) is owned by the Utah Division of Wildlife Resources and the southern portion (470 acres) is owned by the Conservancy. This should be corrected in the Final Environmental Impact Statement.

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**Findings by Dr. D. K. Solomon and Phillip M. Gardner in a *"Summary Report of Hydrologic Studies of the Scott M. Matheson Wetlands Preserve."***

In 2002, the Conservancy and the Utah Division of Wildlife Resources ("UDWR") contracted with the University of Utah to investigate the hydrology of the Matheson Preserve, including sources of water to the wetland and the hydrologic connection between the wetland and the Moab Mill Tailings. Tritium, dissolved noble gas concentrations, and oxygen and deuterium isotope ratios were used to examine the sources and the history of the water present. Lithologic composition of the subsurface beneath the wetland was investigated by logging cores at three boreholes and examined together with the logs of 14 wells drilled by the DOE and borehole data presented by Doelling (2002). These methods, coupled with the analysis of groundwater uranium and ammonia concentrations, were used to explore the groundwater connection between the wetlands and the Moab Mill Tailings.

The results of the Solomon/Gardner Report indicate the following information (discussed in more detail in this letter) pertinent to the DEIS:

1. The Colorado River is not a hydrologic barrier, as the DOE's model indicates.
2. The Moab Mill Tailings literally rest on a foundation of sand, with the potential to be scoured away in future flood events.
3. The Colorado River has occupied the present location of the Moab Mill Tailings, in the recent past.

Hydrologic Connection Between the Matheson Preserve and the Moab Mill Tailings
The river is not an absolute hydrologic barrier to groundwater movement. By examining and comparing borehole drill cores and logs, Solomon and Gardner were able to map the minimum extent of the thick permeable channel gravels which underlie the entire site (See Illustration A). These gravel deposits create a pathway for groundwater to underflow the Colorado River. Further, comparison of noble gases and tritium levels between the Glen Canyon Group Aquifer and the Matheson Preserve groundwater leads to the conclusion that water beneath the wetlands is coming from the north side of the river though these river gravels. Lastly, spatial distribution of uranium and ammonia found in wells on the Matheson Preserve suggests that uranium is migrating from the Moab Mill Tailings beneath the river and into the subsurface Matheson Preserve.

A Foundation of Sand and Future Flood Events
The core samples drilled on both sides of the river show that the Moab Mill Tailings rest on overbank deposits of very fine sands and silts that are 8 to15 feet deep. Found beneath these fine soils is a large, continuous package of gravel and cobbles, up to 150 feet thick, that was deposited by the Colorado River during periods of large and very forceful floods. To determine the date of such past flood events, Solomon and Gardner used carbon -14 dating on organic matter found in the boreholes at depths of 24 and 30 feet. At 24 feet the organic matter was less

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than 100 years old, and at 30 feet less than 1000 years old. These tests clearly illustrate that two flood events within the past 1,000 years have scoured to depths of 24 feet and 30 feet thus eroding away the foundation of sand and silt upon which the tailings currently sit.

River Migration
By mapping the known *minimum* extent of the subsurface channel gravel deposits as reconstructed from the well logs from both sides of the Colorado River, geologists can indicate the extent of past river migration. Illustration A clearly shows that the river has migrated to both the northwest and the southeast, and that the historic river bed is present beneath the current Moab Uranium Mill site. The DEIS uses engineering calculations to imply that the river will migrate only toward the southeast, and recognizes that there is some "uncertainty" in their migration model. However, the Solomon/Gardner findings unmistakably show that the river has historically occupied, and undoubtedly will again migrate in the direction of, the Moab Mill site.

**Findings of the U.S. Geological Survey in "*Initial-Phase Investigation of Multi-Dimensional Streamflow Simulations in the Colorado River, Moab Valley, Grand County, Utah, 2004*."**

The USGS recently completed a multi-dimensional stream flow model of the Colorado River near the Moab Mill Tailings. This model clearly shows the potential for developing a flow regime that exceeds the critical shear stress needed to scour the fine-grained deposits on which the Mill Tailings are founded. Although the application of rip rap at the toe of the Mill Tailings might armor the surface of the pile, it cannot prevent the river from undercutting the rip rap leading to failure. Unless the fine-grained deposits beneath the toe of pile are removed completely and replaced with rip rap that is founded on the underlying channel gravels, the rip rap armoring scheme is fundamentally flawed. As the cost of excavating the fine-grained deposits was not included in the cost estimates for the cap-in-place alternative, it too is fundamentally flawed.

Conclusions from the Above Studies
The DEIS treats the findings of the Solomon/Gardner study by acknowledging that uncertainties exist in their hydrologic and river migration model and that the State of Utah disagrees with DOE's conclusions. The Conservancy's interest in the immediate area and Colorado River system cause us to recommend vigorously that DOE, in the Final Environmental Impact Statement (FEIS), not gloss over the above findings as mere "disagreements" in models that are acknowledged to have "uncertainties". Rather, the FEIS must seriously consider and examine the data collected and conclusions of the Solomon/Gardner report and the latest information published by the USGS. Failure to do so may result in a potential mistake of catastrophic proportions – one that could have enormous, long-term adverse impacts on the Colorado River and the Matheson Preserve, including the species which depend upon these systems for their survival.

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**Potential Impacts to the Matheson Preserve**

The Matheson Preserve was created to ensure the lasting protection of an important desert wetland system and its associated biological diversity. To this end, the Conservancy and UDWR are managing the area to allow for the natural processes, such as flooding, that help to sustain the natural communities and critical wildlife habitat. Remediation of the Moab Mill Tailings has the following potential impacts to the Matheson Preserve.

Cap-in-Place Alternative
The On-site Disposal or Cap-in-Place alternative presents numerous concerns for the Conservancy and potential adverse impacts to the Matheson Wetlands Preserve. This alternative will reduce, but not eliminate, the leaching of contaminants into the groundwater beneath the wetlands. If this is the selected action, then the FEIS should include a ground water remediation system that protects, and does not negatively affect the Matheson Preserve. The estimated cost of such a system should be added to the cost of the Cap-in-Place Alternative.

Further, under this alternative a rip rap wall is designed to help prevent the possibility of flood events eroding the foundation of the pile.[2] Rip rapping the northwest shore of the Colorado River will certainly alter the morphology of the Colorado River, impact the opposite shoreline and add detrimental erosional forces on the shores of the Matheson Preserve.

Catastrophic failure of the Cap-in-Place alternative is possible due to 100 and 500 year flood events. The DEIS addresses this by indicating that there would be "only small and transitory consequences downstream." However, a Landsat satellite image taken on May 26, 1984, while the Colorado River was flowing 66,500 cfs (less than a 100 year flood event) shows that the river would be lapping at the base of the tailings and flowing through the Matheson Preserve and neighboring properties. Therefore, in future floods of this magnitude or greater, contaminants currently leaching from the tailings into the river will be deposited in hot spots throughout the Matheson Preserve and surrounding residential areas. If this were to occur, the Conservancy would have no choice but to close the preserve to the public, and could do little to prevent resulting potential mortality to native animals and plants.

Slurry Pipeline to White Mesa
The slurry pipeline route to White Mesa Mill disposal site indicates that the pipeline will cross the Matheson Preserve adjacent to an existing pipeline. The Conservancy will not willingly permit any further impact of either directional drilling or pipeline installation via open ditch through our property. The current pipeline easement allows one and only one pipeline. Therefore, this alternative as shown in the DEIS is not viable – unless the DOE asserts eminent domain and forces the issue by condemning a pipeline easement through our private property.

[2] Note: The Solomon/Gardner and USGS report illustrates that normal flood events will undermine the rip rap wall, erode away the fine silt and sand underlying the tailings, thus causing the tailings to spill into the Colorado River, questioning the effectiveness of any rip rap.

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Dike in the Colorado River
In the mid-1960's the Atlas Mineral Cooperation constructed a dike in the Colorado River from the southeast shore to a midstream island. The purpose of this dike was to rechannel the main river flow to the northwest shore. The construction of this dike has undoubtedly reduced the frequency of flooding events in the Matheson Preserve. Flooding is a critical natural process which helps to regenerate Fremont cottonwood trees and retain year-round surface water. The Conservancy suggests that the DOE remediate this situation by removing the man-made dike, no matter which alternative is chosen.

**Potential Impacts to Species of Concern**

Endangered Fish and Species of Concern in the Colorado River
The DEIS acknowledges that the Colorado River has been designated as critical habitat for four endangered fish species: the Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila cypha*), and the bonytail (*Gila elegans*). Of the eight native fish species in the Colorado River, seven are listed as either federal or state species of concern. In 2000, the Columbia Biological Laboratory of the USGS measured 100% mortality of fish placed in cages near Moab Uranium Mill shore. The level of ammonia contamination considered acutely lethal is approximately 2 mg/l; USGS measured levels of 1,500 mg/l in areas of the river adjacent to the Moab Mill Tailings. Since that time DOE has started a ground water remediation system. However, the DEIS indicates that 15,000 gallons of toxic chemicals continue to reach the river each day. The DEIS also states that "*At the upper limit of uncertainty, the actual concentrations of ammonia could be at least 10 times greater than predicted. Therefore, it is possible that the On-site Alternative would never achieve the 3-mg/L ammonia target goal. For the off-site alternative, there is no uncertainty that the target level would eventually be achieved, because the tailings which are the source of some of the ammonia would be removed.*"

This statement alone indicates that the best solution to protect the endangered aquatic species and species of concern would be to move the tailings away from the shores of the Colorado River and the Matheson Preserve.

White-Tailed Prairie Dog Colonies
Both the Klondike Flat and Crescent Junction disposal sites are in close proximity to White-tailed prairie dog (*Cynomys leucurus*) colonies. Further, the slurry pipeline transportation route to these disposal sites would cross through White-tailed prairie dog colonies. If one of these sites were to be chosen as the preferred disposal site or if a pipeline is the preferred mode of transportation, we would recommend conducting surveys, and working closely with the UDWR to minimize any potential disturbance to these prairie dog colonies.

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Gunnison Sage-grouse
The pipeline route to the White Mesa Mill site would impact historical habitat and be in close proximity to current populations of Gunnison sage-grouse (*Centrocercus minimus*), a federal candidate for listing as an endangered species. Coupled with the impacts to the Matheson Preserve of the proposed route, the Conservancy adamantly opposes this alternative and transportation route.

Other State Sensitive Wildlife Species
Kit fox (*Vulpes macrotis*), burrowing owls (*Athene cunicularia*), black-footed ferrets (*Mustela nigripes*), golden eagles (*Aquila chrysaetos*) and ferruginous hawks (*Buteo regalis*) may all be impacted at the designated borrow areas or Klondike Flats and Crescent Junction disposal sites. The Conservancy recommends conducting onsite surveys in any disturbed areas and working closely with the UDWR to minimize any potential disturbance to these wildlife species of concern.

Plant Species of Concern
Although, the Conservancy knows of no occurrences of special status plants in the off site disposal areas, borrow sites, or pipeline routes, we still recommend on-site surveys be conducted, at the appropriate time of year for such plants in the selected disturbed sites.

**Summary**

The Nature Conservancy urges the DOE to select an action alternative that will reduce the number of uncertainties, protect the biological integrity of the Colorado River and Matheson Preserve, and avoid a catastrophic event of contaminated tailings being deposited in the Colorado River and Matheson Preserve. We encourage the DOE to refine their hydrologic model and river migration calculations to include the data and information gathered by Solomon and Gardner. With these considerations in mind, the only acceptable action is to move the tailings pile to either the Klondike Flats or Crescent Junction disposal sites. This is the obvious and safe alternative.

Sincerely,

Dave Livermore
Utah State Director

Susan Bellagamba
Canyonlands Program Director

CC: Chris Montague, Director of Conservation Programs, The Nature Conservancy in Utah

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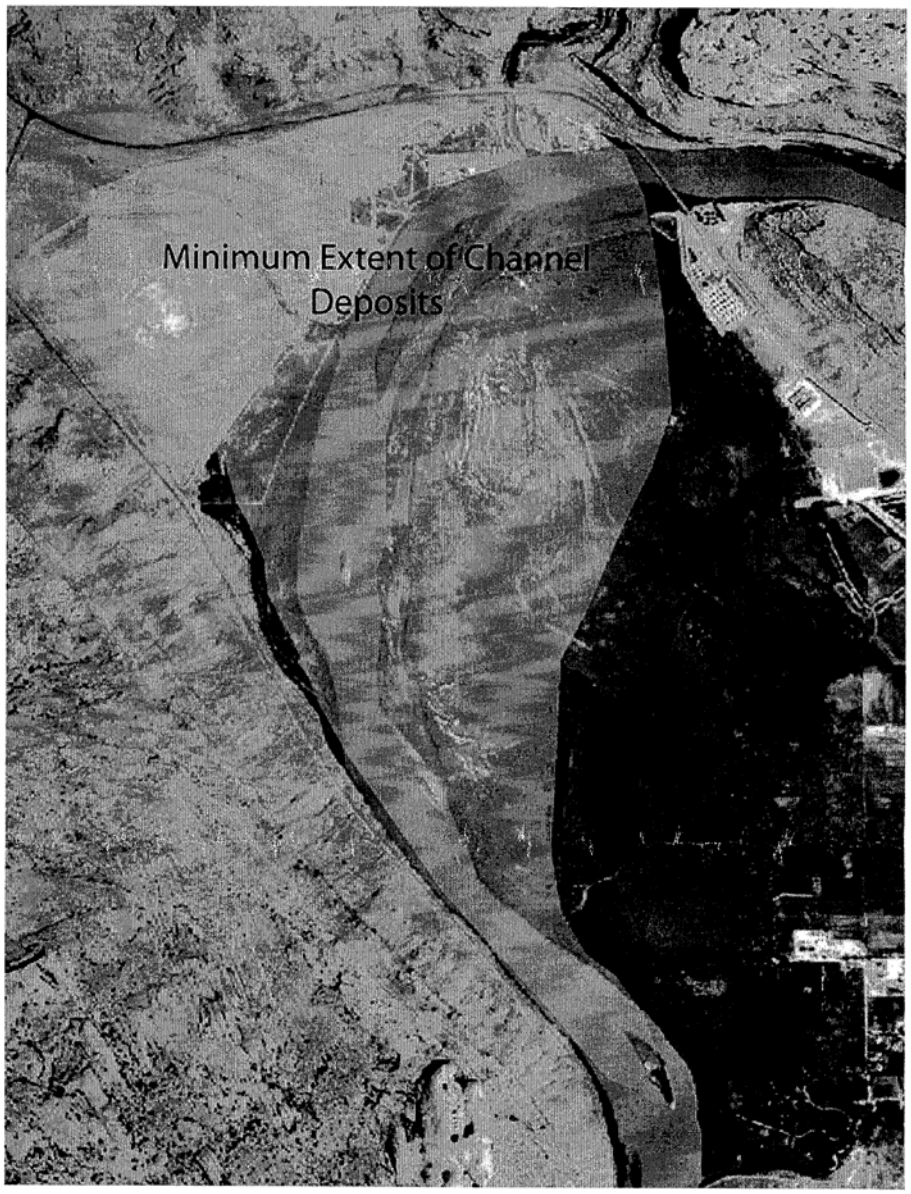
**Illustration A -** Minimum Extent of the Subsurface Channel Gravel Deposits as Mapped by Solomon and Gardner