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METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Executive Office

February 17, 2005

FEDERAL EXPRESS

Mr. Don Metzler
Moab Federal Project Director
U.S. Department of Energy
2597 B 3/4 Road
Grand Junction, CO 81503

Dear Mr. Metzler:

Draft Environmental Impact Statement for Remediation of the Moab Uranium Mill Tailings

The Metropolitan Water District of Southern California (Metropolitan) has received a copy of the Draft Environmental Impact Statement (Draft EIS) for Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah (Project). The U.S. Department of Energy (DOE) is proposing to clean up surface contamination and implement a groundwater compliance strategy to address contamination resulting from historical uranium-ore processing at the Moab Uranium Mill Tailings Site (Moab site), Grand County, Utah.

Metropolitan strongly believes that moving the Moab pile off-site is the only reliable and permanent alternative sufficient to protect the Colorado River from further contamination by radioactivity and inorganics. Metropolitan is the primary wholesale provider of supplemental water to Southern California and relies on the Colorado River to supply drinking water to over 18 million people in Southern California within our 5,200 square-mile service area. Filling our Colorado River Aqueduct requires pumping 1,250,000 acre-feet a year of Colorado River water. Metropolitan is providing the following comments on this Draft EIS as a potentially affected public agency.

1. Off-site Disposal is Only Reliable Option for Permanent Protection of Colorado River

Metropolitan strongly supports the off-site disposal option, as this is the only option which offers long-term, permanent protection to the quality of water received by downstream Colorado River users. Metropolitan agrees with the assessment reached by the State of Utah in their December 29, 2004 letter to you that states that any remediation other than an off-site option is unacceptable.

With both the no action and the on-site alternatives, contaminated seepage will continue to leak from the tailings pile and into the Colorado River. Although the volume of seepage may be reduced with the on-site alternative, Metropolitan finds any seepage into the Colorado River unacceptable. Metropolitan is also concerned about adverse impacts to the Colorado

700 N. Alameda Street, Los Angeles, California 90012 • Mailing Address: Box 54153, Los Angeles, California 90054-0153 • Telephone (213) 217-6000

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River from both the no action alternative and the on-site alternative as natural subsidence, river migration, flooding, incision, and disposal cell or tailings pile failure occur. Additionally, Metropolitan is disappointed there is insufficient analysis to quantify the increase in uranium concentrations to the Colorado River after a catastrophic flood, and what impacts this would have on downstream users. Metropolitan requests that this information be provided in the final EIS.

An example illustrating Metropolitan's concerns can be drawn from DOE studies evaluating current and future levels of contamination emanating from the waste pile. The Site Observational Work Plan for the Moab site (SOWP) characterizes the tailings pore water currently migrating from the bottom of the tailings pile as a composition of approximately 1,100 mg/L ammonia, 24,600 mg/L TDS and 7.87 mg/L uranium. The SOWP predicts contamination levels will worsen as water infiltrates into the upper portion of the tailings pile and salt deposits are dissolved. Ammonia concentrations are anticipated to increase to approximately 18,000 mg/L and TDS to approximately 213,758 mg/L (SOWP 6-7 item 6). Therefore, concentrations of ammonia and total dissolved solids (TDS) will roughly increase by an order of magnitude in tailings pore water with both the no action and the on-site alternative. Since previous work has confirmed that "ground water discharge from the Moab site has caused localized degradation of surface water quality (Draft EIS, Page 3-30, Paragraph 6",) these elevated levels of contamination will enter into the Colorado River. The off-site disposal alternative would eliminate this contamination of the Colorado River, as the source of the increasing concentrations of ammonia, TDS, and uranium would be moved along with the tailings.

For the no-action alternative, the pore water impacted with elevated concentrations resulting from dissolution of the salts is expected to enter the groundwater after 168 years from present and be completely depleted after 217 years. After 217 years, seepage of the pore fluids is anticipated to continue with a concentration of 1,100 mg/L ammonia indefinitely. Unfortunately, concentrations are not provided for TDS and uranium in the SOWP. For the on-site disposal alternative, the pore water impacted with elevated concentrations resulting from dissolution of the salts is expected to enter the groundwater at 1,094 years from the present and be completely depleted at 1,536 years. After 1,536 years, seepage of the pore fluids is anticipated to continue at 1,100 mg/L ammonia indefinitely. Again, concentrations are not provided for TDS and uranium in the SOWP. If ammonia contamination from pore water seepage is an indication of the trends expected for TDS and uranium, such contamination must be prevented from reaching the River. Future reliance on the Colorado River as a source of drinking water will only increase further, given the population growth projected for Southern California and this irreplaceable resource must receive the highest level of protection possible. Therefore, the off-site disposal alternative is the only option that reliably provides such permanent protection of the Colorado River.

2. Continued Seepage of Uranium from Pile Counter to Public Health Protection

As described in Section 1, if the waste pile is left in place, uranium will continue to leak from the site, and may significantly increase. Metropolitan is extremely concerned with any action that could possibly increase uranium levels in our source waters, as the Public Health Goal for uranium in California is 0.5 pCi/L, the Maximum Contaminant Level (MCL) is 20 pCi/L in California, and the federal MCL is 30 μg/L. An approximate conversion from μg/L to pCi/L is that 1 μg/L is equivalent to 0.67 pCi/L. Using this conversion factor, the maximum groundwater concentration of uranium found at the Moab site is reported at 23 mg/L, which is over 750 times higher than the federal MCL.

Further, Metropolitan believes that it is important to safeguard the public's confidence in the reliability of the Colorado River as a drinking water source. Public perception of the negative health impacts from radioactivity must be considered when selecting a remediation alternative. Off-site disposal would ameliorate such concerns.

3. Salinity from Moab Pile Violates Colorado River Salinity Control Policy

A rise in salinity impairs the usability of any source of water. Increased concentrations of TDS in Colorado River water is of great concern to Metropolitan as it can affect plumbing systems and appliances through the deposit of dissolved salts, industrial processes that depend on lower salinity water, local recycling projects, and groundwater recharge, among numerous other activities. Metropolitan delivers water to our member agencies that does not exceed 500 mg/L TDS, which meets the secondary drinking water standard for California.

Therefore, the alternative selected should at least meet all Colorado River Basin Salinity Control Forum (Forum) policies. The Forum was created by the seven Colorado River Basin states. Forum policies are published in the "2002 Review, Water Quality Standards for Salinity, Colorado River System. " This report is prepared and submitted in response to Section 303(c) of the Clean Water Act and includes the water quality standards numeric criteria and the Plan of Implementation developed and adopted by the Forum. The Plan of Implementation includes implementation of Forum adopted policies. Each of the seven Colorado River Basin states includes the report as part of its own water quality standards, and through procedures established by each state, considers the report, potentially adopts it, and then submits the report to the appropriate Regional office of the U.S. Environmental Protection Agency (EPA) for approval. The California State Water Resources Control Board adopted the Review on April 30, 2003, and the EPA approved the Review on July 10, 2003. The "Policy for Implementation of Colorado River Salinity Standards Through the NPDES Permit Program for Intercepted Groundwater" (Enclosure A) states that the discharge of intercepted groundwater needs to be evaluated in a manner consistent with the overall

objective of "no-salt" return whenever practical. The no-salt discharge requirement may be waived at the option of the permitting authority in those cases in which the discharge salt load reaching the main stem of the Colorado River is less than one ton per day or 350 tons per year, whichever is less.

As cited earlier, the tailings pore water currently migrating from the bottom of the tailings pile has a composition of approximately 24,600 mg/L TDS and a flow rate of 20 gpm. This data indicates that the TDS loading to the Colorado River under the no action alternative is 2.9 tons/day, which clearly exceeds the Colorado River Basin Salinity Control Forum policy on intercepted groundwater. The SOWP indicates that the seepage rate will decline from 20 gpm, at present, to 8 gpm after approximately 20 years. Even so, the TDS loading to the Colorado River will remain above the threshold of one ton/day for the next 20 years under the no action alternative.

For the on-site alternative, the flow rate would decrease to 0.8 gpm, resulting in 0.12 tons/day being discharged to the Colorado River. Although this is less than one ton/day, this loading will increase to greater than one ton/day at 1,094 years from the present, when the pore water impacted by dissolution of salts in the pile enters the groundwater. Metropolitan offers this information to further illustrate that the off-site disposal alternative should be implemented.

4. Draft EIS Heightens Need for Off-Site Disposal

Given the drawbacks illustrated in the draft EIS for the no action and on-site alternatives, it is unclear how the DOE can choose any other alternative but off-site disposal. Metropolitan offers the following statements from the Draft EIS to further substantiate our concerns and underscore the need for off-site disposal of the Moab waste pile:

- "Under either the on-site disposal alternative or the No Action alternative, the combination of the processes of subsidence and incision would slowly affect the tailings pile by lowering it in relation to the Colorado River. This impact would not occur under the off-site disposal alternative because the pile would be removed." (Executive Summary, *Geology and Soils*, Page S-12)

- "Under the on-site disposal alternative, the tailings pile would be a continuing source of contamination that would maintain contaminant concentrations at levels above background concentrations in the groundwater and, therefore, potentially require the application of supplemental standards (institutional standards) in perpetuity to protect human health." (Executive Summary, Ground Water, Page S-13)

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- "…[u]nder the No Action alternative, groundwater beneath the Moab site would remain contaminated, would not be protective of human health, and would continue in perpetuity to discharge contamination to the surface water at concentrations that would not be protective of aquatic species. Modeling results indicate that under the on-site disposal alternative, contaminants from the potential salt layer would reach groundwater in approximately 1,100 years and would affect ground water and surface water for approximately 440 years. Because ground water treatment would have been discontinued after an estimated 80 years, surface water concentrations could revert to nonprotective levels." (Executive Summary, Ground Water, Pages S-13 - Page S-14)

- "In addition to natural subsidence described in the discussion of ground water impacts, a Colorado River 100- or 500- year flood could release additional contamination to groundwater and surface water under the on-site disposal or No Action alternatives." (Executive Summary, Surface Water, Page S-14)

- "However, the possibility of a catastrophic flood cannot be eliminated because part of the Moab site tailings impoundment is located within the 100-year floodplain of the Colorado River and within the floodplain of the PMF of both the Colorado River and Moab Wash." (Executive Summary, Table S-1. Consequences of Uncertainty, Item 10. Catastrophic Floods, Page S-41)

- "If river migration and encroachment were to occur to a great degree, significantly lessening the transport distance from the disposal cell to the river, surface water ammonia concentrations and concentrations of other contaminants of concern could revert to nonprotective levels, and additional engineered remedies or pile relocation could be necessary to meet UMTRCA requirements, potentially increasing program costs by tens to hundreds of millions of dollars." (Executive Summary, Table S-1. Consequences of Uncertainty, Item 9. Catastrophic Floods, Page S-41)

- "However, under the on-site disposal and No Action alternatives, natural basin subsidence would result in permanent tailings contact with the ground water in 7,000 to 10,000 years, at which times surface water concentrations would temporarily revert to levels that are not protective of aquatic species in the Colorado River." (Draft EIS, Page 2-119)

- "Under the on-site remediation alternative and No Action alternative, a disposal cell or tailings pile failure could pose a risk under the residential scenario and could result in adverse impacts to aquatic receptors from uranium and ammonia concentrations in the Colorado River. The risk would be much lower for the off-site disposal locations

because the sites are not located near a river, do not have historical seismic activity, are not prone to subsidence attributed to salt dissolution below the alluvial basin, and are located away from population centers and sensitive habitats." (Draft EIS, Disposal Cell or Tailings Pile Failure, Page 2-137)

5. Clean-up Objective for Groundwater Should Protect Public Health as well as Aquatic Life

Metropolitan diverts water from the Colorado River near Parker Dam to supply supplemental drinking water for over 18 million people in Southern California, and protection of water quality is of key importance. Since previous work has confirmed that "groundwater discharge from the Moab site has caused localized degradation of surface water quality (Draft EIS, Page 3-30, Paragraph 6)" and "discharge of contaminated ground water has resulted in elevated concentrations of ammonia and other site-related constituents in the Colorado River adjacent to the site (Executive Summary, Page S-10, Paragraph 2)", Metropolitan requests that all constituents found at elevated levels in groundwater be targeted for removal, in order to prevent those constituents from further degrading water quality in the Colorado River. Our review of the groundwater data shows that the maximum groundwater concentrations at the site exceed U.S. Environmental Protection Agency (USEPA) drinking water standards and/or California Title 22 drinking water standards for arsenic, cadmium, fluoride, mercury, nitrate, selenium, thallium, radium 226, radium 228, gross alpha and uranium. Therefore, all of these constituents should be targeted for removal from the groundwater and should have remediation goals.

It is unknown why uranium is not specified like ammonia as a target for treatment, especially when the document itself states " The constituents with concentrations that are most consistently elevated in samples from the Colorado River are ammonia and uranium." (Draft EIS, Page 3-30, Paragraph 7)

In addition, it is premature to focus solely on ammonia as a constituent of concern, as changing the oxidation-reduction potential content in the pile may also change the chemical composition of the pore fluid of the tailings pile and subsequently the potential impacts to the Colorado River. The oxidation-reduction potential of the tailings does not appear to have been adequately characterized, as indicators of both oxidizing and reducing environments in the tailings pile have been presented in the SOWP. For example, the SOWP states "Dissolved oxygen concentrations in the pore water samples range from 0.82 to 6.7 mg/L with a mean of 2.1 mg/L, suggesting relatively oxidized conditions. In a few samples, dissolved Fe and Mn concentrations of up to 211 mg/L and 64.8 mg/L, respectively, suggest reducing conditions." (SOWP, Page 5-61)

The data presented pertaining to the oxidized state of the tailings is inconclusive, and therefore the potential for metals to leach into the subsurface through the pore fluids of the tailings as the tailings undergo oxidation or reduction has not been adequately assessed. Metropolitan requests that this issue be adequately addressed in the Final EIS.

6. Effectiveness of Proposed Remediation Scheme is Unknown and Unpredictable

Metropolitan is concerned with the effectiveness and impacts of the groundwater remediation system on the Colorado River, as insufficient information was provided on the selection and design of the extraction and treatment system. Also, Metropolitan disagrees with the presumption that the proposed groundwater remediation designed to achieve an ammonia groundwater concentration of 3 mg/L "…would also clean up other contaminants to their appropriate and respective clean-up levels." (Executive Summary, Table S-1. Consequences of Uncertainty, Item 15. Other Contaminants of Concern, Page S-43)

This assumption is erroneous, as removal efficiencies will vary, depending on the target contaminant and the remediation technology selected. In fact, "…DOE acknowledges that there is uncertainty in this assumption due to factors such as differences in solute transport and sorption mechanics." (Executive Summary, Table S-1. Consequences of Uncertainty, Item 15. Other Contaminants of Concern, Page S-43)

To address these uncertainties, the appropriate treatment technologies should be selected at the onset to target ammonia as well as all other identified contaminants of concern. The appropriate treatment technologies selected for the on-site alternative should be identified in the Final EIS.

7. Groundwater Remediation Options Need to be Carefully Weighed

Metropolitan also has the following specific concerns related to the groundwater remediation options:

- If water is returned to the Colorado River, the water quality discharged to the Colorado River should be equal to or better than upstream ambient concentrations in the Colorado River.

- If water is returned to the Colorado River, the Colorado River Basin Salinity Control Forum's "Policy for Implementation of Colorado River Salinity Standards Through the NPDES Permit Program" should be met (Enclosure B).

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- Metropolitan opposes the clean water application, as this approach relies on dilution as a solution for elevated concentration rather than removing contamination before it enters the Colorado River. The clean water application may address reducing the concentration of contaminants in the discharge, but it does not reduce the total load of contaminants to the Colorado River.

- Metropolitan is concerned with placing large, solar evaporation ponds in the floodplain area as these ponds are vulnerable to flooding events, which may then transport contamination concentrated in the ponded water to the Colorado River.

- Metropolitan is concerned with on-site drying of tailings, as this would have the "…potential for tailings to be transported off-site and into the Colorado River and Moab Wash" (Draft EIS, Page 4-12, Paragraph 4) if a flood with greater than a 25-year return interval should occur."

- Metropolitan is concerned that a pump-and-treat system may cause added contamination to the Colorado River. According to the SOWP, "freshwater in the unconfined alluvial system at the Moab site is underlain by a brine zone. Pumping from the shallow fresher water system (during pump-and-treat remediation) may cause the salt-water to rise to a higher elevation and intrude the fresher water. Salt-water intrusion would result in degradation of the overlying fresher water, which could adversely affect the tamarisk plant communities that are providing beneficial phytoremediation at the site. Besides causing saltwater intrusion into the shallow ground water, rising salt water may bring higher ammonia concentrations to the surface and cause added contamination to the river." Therefore, impacts from groundwater pumping should be addressed in the final EIS.

We appreciate the opportunity to provide input to your planning process and we look forward to receiving the Final EIS on this project. If we can be of further assistance, please contact Ms. Leslie Palencia of the Water Quality Section at (909) 392-5431 or Ms. Laura Simonek, Manager, Environmental Planning Team at (213) 217-6242.

Very truly yours,

Dennis Underwood
Vice President, Colorado River Resources

LSP/LIM/rdl
(Public Folders/EPU/Letters/03-FEB-05A.doc –Don Metzler)
Enclosures: (2)

POLICY FOR IMPLEMENTATION OF COLORADO RIVER SALINITY STANDARDS THROUGH THE NPDES PERMIT PROGRAM FOR INTERCEPTED GROUND WATER

Adopted by
The Colorado River Basin Salinity Control Forum

October 20, 1982

The States of the Colorado River Basin in 1977 agreed to the "Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program" with the objective for industrial discharge being "no-salt return" whenever practicable. That policy required the submittal of information by the applicant on alternatives, water rights, quantity, quality, and costs to eliminate or minimize the salt discharge. The information is for use by the NPDES permit-issuing agency in evaluating the practicability of achieving "no-salt" discharge.

There are mines and wells in the Basin which discharge intercepted ground waters. The factors involved in those situations differ somewhat from those encountered in other industrial discharges. Continued development will undoubtedly result in additional instances in which permit conditions must deal with intercepted ground water.

The discharge of [1]intercepted ground water needs to be evaluated in a manner consistent with the overall objective of "no-salt return" whenever practical. The following provides more detailed guidance for those situations where ground waters are intercepted with resultant changes in ground-water flow regime.

I. The "no-salt" discharge requirement may be waived at the option of the permitting authority in those cases where the discharged salt load reaching the main stem of the Colorado River is less than one ton per day or 350 tons per year whichever is less. Evaluation will be made on a case-by-case basis.

II. Consideration should be given to the possibility that the ground water, if not intercepted, normally would reach the Colorado River System in a reasonable time frame. An industry desiring such consideration must provide detailed information including a description of the topography, geology, and hydrology. Such information must include direction and rate of ground-water flow; chemical quality and quantity of ground water; and the location, quality, and quantity of surface streams and springs that might be affected. If the information adequately demonstrates that the ground water to be intercepted normally would reach the river system in a reasonable time frame and would contain approximately the same or greater

[1]The term "intercepted ground water" means all ground water encountered during mining or other industrial operations.

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salt load than if intercepted, and if no significant localized problems would be created, then the permitting agency may waive the "no-salt" discharge requirement.

III. In those situations where the discharge does not meet the criteria in I or II above, the applicant will be required to submit the following information for consideration:

A. Description of the topography, geology, and hydrology. Such information must include the location of the development, direction and rate of ground-water flow, chemical quality and quantity of ground water, and relevant data on surface streams and springs that are or might be affected. This information should be provided for the conditions with and without the project.

B. Alternative plans that could substantially reduce or eliminate salt discharge. Alternative plans must include:

1. Description of water rights, including beneficial uses, diversions, and consumptive use quantities.

2. Description of alternative water supplies, including provisions for water reuse, if any.

3. Description of quantity and quality of proposed discharge.

4. Description of how salts removed from discharges shall be disposed of to prevent their entering surface waters or ground-water aquifers.

5. Technical feasibility of the alternatives.

6. Total construction, operation, and maintenance costs; and costs in dollars per ton of salt removed from the discharge.

7. Closure plans to ensure termination of any proposed discharge at the end of the economic life of the project.

8. A statement as to the one alternative plan for reduction of salt discharge that the applicant recommends be adopted, including an evaluation of the technical, economic, and legal Practicability of achieving no discharge of salt.

9. Such information as the permitting authority may deem necessary.

IV. In determining whether a "no-salt" discharge is Practicable, the Permit-issuing authority shall consider, but not be limited to, the water rights and the technical, economic, and legal practicability of achieving no discharge of salt.

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V. Where "no-salt" discharge is determined not to be Practicable the permitting authority shall, in determining permit conditions, consider:

A. The impact of the total proposed salt discharge of each alternative on the lower main stem in terms of both tons per year and concentration.

B. Costs per ton of salt removed from the discharge for each plan alternative.

C. The compatibility of state water laws with each alternative.

D. Capability of minimizing salinity discharge.

E. The localized impact of the discharge.

F. Minimization of salt discharges and the preservation of fresh water by using intercepted ground water for industrial processes, dust control, etc. whenever it is economically feasible and environmentally sound.

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POLICY FOR IMPLEMENTATION OF COLORADO RIVER SALINITY STANDARDS THROUGH THE NPDES PERMIT PROGRAM

Adopted by
The Colorado River Basin Salinity Control Forum

February 28, 1977
Revised October 30, 2002

In November 1976, the United States Environmental Protection Agency Regional Administrators notified each of the seven Colorado River Basin states of the approval of the water quality standards for salinity for the Colorado River System as contained in the document entitled "Proposed Water Quality Standards for Salinity Including Numeric Criteria and Plan of Implementation for Salinity Control, Colorado River System, June 1975, and the supplement dated August 25, 1975. The salinity standards including numeric criteria and a plan of implementation provide for a flow weighted average annual numeric criteria for three stations in the lower mainstem of the Colorado River: below Hoover Dam, below Parker Dam, and at Imperial Dam.

In 1977, the states of the Colorado River Basin adopted the "Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program." The Plan of Implementation is comprised of a number of Federal and non-Federal projects and measures to maintain the flow-weighted average annual salinity in the Lower Colorado River at or below numeric criteria at the three stations as the Upper and Lower Basin states continue to develop their compact-apportioned waters. One of the components of the Plan consists of the placing of effluent limitations, through the National Pollutant Discharge Elimination System (NPDES) permit program, on industrial and municipal discharges.

NPDES Policy for Municipal and Industrial Discharges of Salinity in the Colorado River

The purpose of this policy is to provide more detailed guidance in the application of salinity standards developed pursuant to Section 303 and through the NPDES permitting authority in the regulation of municipal and industrial sources. (See Section 402 of the Federal Water Pollution Control Act.) The objective of the policy, as provided in Sections I.A. and I.B., is to achieve "no salt return" whenever practicable for industrial discharges and an incremental increase in salinity over the supply water for municipal discharges. This policy is applicable to discharges that would have an impact, either direct or indirect on the lower mainstem of the Colorado River System. The lower mainstem is defined as that portion of the River from Hoover Dam to Imperial Dam.

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NPDES Policies Separately Adopted By The Forum

The Forum developed a separate and specific policy for the use of brackish and/or saline waters for industrial purposes on September 11, 1980. The Forum addressed the issue of intercepted ground water and adopted a specific policy dealing with that type of discharge on October 20, 1982. On October 28, 1988, the Forum adopted a specific policy addressing the water use and discharge associated with fish hatcheries. Each of these separately adopted policies is attached hereto.

NPDES Policies For Specified Industrial Discharges

On October 30, 2002, the Forum amended this policy for implementation of Colorado River salinity standards through the NPDES permit program in order to address the following three additional types of industrial discharges: (1) water that has been used for once-through noncontact cooling water purposes; (2) new industrial sources that have operations and associated discharges at multiple locations; and (3) "fresh water industrial discharges" where the discharged water does not cause or contribute to exceedances of the salinity standards for the Colorado River System. This policy was also amended to encourage new industrial sources to conduct or finance one or more salinity-offset projects in cases where the permittee has demonstrated that it is not practicable to prevent the discharge of all salt from proposed new construction.

Discharges Of Once-Through Noncontact Cooling Water

Section I.C. of this policy has been added to address discharges of water that has been used for once-through noncontact cooling water purposes. The policy for such discharges shall be to permit these uses based upon a finding that the returned water does not contribute to the loading or the concentration of salts in the waters of the receiving stream beyond a *de minimis* amount. A *de minimis* amount is considered, for purposes of this policy, as an average annual increase of not more than 25 milligrams per liter (mg/L) in total dissolved solids measured at the discharge point or outfall prior to any mixing with the receiving stream in comparison to the total dissolved solids concentration measured at the intake monitoring point of the cooling process or facility. This policy is not intended to supersede any other water quality standard that applies to the receiving stream, including but not limited to narrative standards promulgated to prohibit impairment of designated uses of the stream. It is the intent of the Forum to permit the return of once-through noncontact cooling water only to the same stream from which the water was diverted. Noncontact cooling water is distinguished from blowdown water, and this policy specifically excludes blowdown or any commingling of once-through noncontact cooling water with another waste stream prior to discharge to the receiving stream. Sections I.A. and I.B. of this policy govern discharges of blowdown or commingled water.

New Industrial Sources with Operations and Discharges at Multiple Locations under Common or Affiliated Ownership or Management

Recently there has been a proliferation of new industrial sources that have operations and associated discharges at multiple locations. An example is the recent growth in the development of energy fuel and mineral resources that has occurred in the Upper Colorado River Basin. This type of industrial development may involve the drilling of relatively closely spaced wells into one or more geological formations for the purpose of extracting oil, gas or minerals in solution. Large-scale ground water remediation efforts involving multiple pump and treat systems operating for longer than one year may share similar characteristics. With such energy and mineral development and ground water remediation efforts there is the possibility of a single major industrial operation being comprised of numerous individual point source discharges under common or affiliated ownership or management that produce significant quantities of water as a waste product or byproduct over a long period. Given the large areal scope of these types of major industrial sources and the often elevated concentrations of salinity in their produced water, the total amount of salt loading that they could generate may be very large in comparison to the Forum's past and present salt removal projects. Relatively small quantities of this produced water could generate one ton per day in discharges to surface waters. Since salinity is a conservative water quality constituent, such discharges of produced water, if uncontrolled, could have an adverse effect on achieving the adopted numeric salinity standards for the Colorado River System.

These kinds of major industrial sources strain the conventional interpretation of the industrial source waiver for new construction set forth in Section I.A.1.a. of this policy, which authorizes a discharge of salinity from a single point source of up to one ton per day in certain circumstances. The Forum adopted this provision in 1977, well before most of the new major industrial sources that have operations and discharges at multiple locations began to appear in the Colorado River Basin. A new category of industrial sources is, therefore, warranted. NPDES permit requirements for "New Industrial Sources with Operations and Discharges at Multiple Locations under Common or Affiliated Ownership or Management" are set forth in Section I.D. of this policy. These new requirements are intended to apply to new industrial sources with operations that commence discharging after October 30, 2002.

For purposes of interpreting this policy, "common or affiliated ownership or management" involves the authority to manage, direct, superintend, restrict, regulate, govern, administer, or oversee, or to otherwise exercise a restraining or directing influence over activities at one or more locations that result in a discharge of salinity into the Colorado River System. Common or affiliated ownership or management may be through the ownership of voting securities or may be indicated where individual sources are related through one or more joint ventures, contractual relationships, landlord/tenant or lessor/lessee arrangements. Other factors that indicate two or more discharging facilities are under common or affiliated ownership or management include: sharing corporate executive officers, pollution control equipment and responsibilities, common workforces, administrative functions, and/or payroll activities among operational facilities at different locations.

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Fresh Water Industrial Discharges

Sections I.A. and I.B. of this policy have been amended to allow the permitting authority to authorize "fresh water industrial discharges" where the discharged water does not cause or contribute to exceedances of the adopted numeric salinity standards for the Colorado River System. Different end-of-pipe concentrations of salinity as shown in Table 1 of the policy, are appropriate for discharges to tributaries depending upon their location within the Basin. The concept of "benchmark concentrations" has been developed in order to address this need for different end-of-pipe concentrations. These benchmark concentrations are not to be interpreted as water quality standards. Rather, they are intended to serve solely for the establishment of effluent limits for implementing the waiver for "fresh water discharges." The allowance for freshwater discharges is intended to preserve flows from discharges in the Basin, which do not cause significant degradation of existing ambient quality with respect to salinity. Operations or individual discharges that qualify for the freshwater waiver shall not be subject to any further limitation on salt loading under this policy.

Salinity-Offset Projects

This policy has been amended to allow the permitting authority to authorize industrial sources of salinity to conduct or finance one or more salinity-offset projects when the permittee has determined that it is not practicable: (i) to prevent the discharge of all salt from proposed new construction; (ii) to reduce the salt loading to the Colorado River to less than one ton per day or 366 tons per year; or (iii) the proposed discharge is of insufficient quality in terms of TDS concentrations that it could be considered "fresh water" as defined below. Presently, the permitting authority can consider the costs and availability of implementing off-site salinity control measures to mitigate the adverse impacts of the permitted salt load. It is not intended that the applicant be required to develop or design an off-site salinity control project or establish a salt bank, but rather to assess the costs of conducting or buying into such projects where they are available. In the future the Forum or another entity may create a trading/banking institution to facilitate the implementation of a salinity-offset program, basin-wide. This would allow industrial sources to conduct or finance the most cost effective project available at the time an offset project is needed regardless of the project's location in the Basin.

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NPDES PERMIT PROGRAM POLICY
FOR IMPLEMENTATION OF COLORADO RIVER SALINITY STANDARDS

I. Industrial Sources

The Salinity Standards state that "The objective for discharges shall be a no-salt return policy whenever practicable." This is the policy that shall be followed in issuing NPDES discharge permits for all new industrial sources, and upon the reissuance of permits for all existing industrial sources, except as provided herein. The following addresses those cases where "no discharge of salt" may be deemed not to be practicable.

A. New Construction

1. "New construction" is defined as any facility from which a discharge may occur, the construction of which is commenced after October 18, 1975. (Date of submittal of water quality standards as required by 40 CFR 120, December 11, 1974.) Appendix A provides guidance on new construction determination. "A new industrial source with operations and discharging facilities at multiple locations under common or affiliated ownership or management" shall be defined for purposes of NPDES permitting, as an industrial source that commenced construction on a pilot, development or production scale on or after October 30, 2002.

   a. The permitting authority may permit the discharge of salt upon a satisfactory demonstration by the permittee that:

      i. It is not practicable to prevent the discharge of all salt from the new construction or,

      ii. In cases where the salt loading to the Colorado River from the new construction is less than one ton per day or 366 tons per year, or

      iii. The proposed discharge from the new construction is of sufficient quality in terms of TDS concentrations that it can be considered "fresh water" that would have no adverse effect on achieving the adopted numeric standards for the Colorado River System. The permitting authority may consider a discharge to be fresh water if the maximum TDS concentration is: (i) 500 mg/L for discharges into the Colorado River and its tributaries upstream of Lees Ferry, Arizona; or, (ii) 90% of the applicable in-stream salinity standard at the appropriate benchmark monitoring station for discharges into the Colorado River downstream of Lees Ferry as shown in Table 1, below

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Table 1

	Benchmark Monitoring Station	Applicable Criteria	Freshwater Discharge (mg/L)
1	Colorado River at Lees Ferry, Arizona	N/A	500
2	Colorado River below Hoover Dam	723	650
3	Colorado River below Parker Dam	747	675
4	Colorado River at Imperial Dam	879	790

b. Unless exempted under Sections I.A.1.a.ii. or iii., above, the demonstration by the applicant must include information on the following factors relating to the potential discharge:

(i) Description of the proposed new construction.
(ii) Description of the quantity and salinity of the water supply.
(iii) Description of water rights, including diversions and consumptive use quantities.
(iv) Alternative plans that could reduce or eliminate salt discharge. Alternative plans shall include:

(A) Description of alternative water supplies, including provisions for water reuse, if any;
(B) Description of quantity and quality of proposed discharge;
(C) Description of how salts removed from discharges shall be disposed of to prevent such salts from entering surface waters or groundwater aquifers;
(D) Costs of alternative plans in dollars per ton of salt removed; and
(E) Unless the permitting authority has previously determined through prior permitting or permit renewal actions that it is not practicable to prevent the discharge of all salt from the new construction in accordance with Section I.A.1.a.i., the applicant must

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include information on project options that would offset all or part of the salt loading to the Colorado River associated with the proposed discharge or that would contribute to state or interstate salinity control projects or salt banking programs.

(v) A statement as to the one plan among the alternatives for reduction of salt discharge that is recommended by the applicant and also information as to which of the other evaluated alternatives are economically infeasible.

(vi) Such other information pertinent to demonstration of non-practicability as the permitting authority may deem necessary.

c. In determining what permit conditions shall be required under I.A.1.a.i., above, the permit issuing authority shall consider, but not be limited to the following:

(i) The practicability of achieving no-discharge of salt from the new construction.

(ii) Where "no discharge" is determined not to be practicable:

(A) The impact of the total proposed salt discharge of each alternative on the lower mainstem in terms of both tons per year and concentration.

(B) Costs per ton of salt removed from the discharge for each plan alternative.

(C) Capability of minimizing salinity discharge.

(D) If applicable under I.A.1.b.(iv)(E), costs and practicability of offsetting all or part of the salt load by the implementation of salt removal or salinity control projects elsewhere in the Colorado River Basin. The permittee shall evaluate the practicability of offsetting all or part of the salt load by comparing such factors as the cost per ton of salt removal for projects undertaken by the Colorado River Basin Salinity Control Forum and the costs in damages associated with increases in salinity concentration against the permittee's cost in conducting or buying into such projects where they are available.

iii. With regard to subparagraphs, (b) and (c) above, the permit issuing authority shall consider the compatibility of state water laws with either the complete elimination of a salt discharge or any plan for minimizing a salt discharge.

B. Existing Facilities or any discharging facility, the construction of which was commenced before October 18, 1975

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1. The permitting authority may permit the discharge of salt upon a satisfactory demonstration by the permittee that it is not practicable to prevent the discharge of all salt from an existing facility.

2. The demonstration by the applicant must include, in addition to that required under Section I.A.1.b the following factors relating to the potential discharge:

    a. Existing tonnage of salt discharged and volume of effluent.

    b. Cost of modifying existing industrial plant to provide for no salt discharge.

    c. Cost of salt minimization.

3. In determining what permit conditions shall be required, the permit issuing authority shall consider the items presented under I.A.1.c.(ii), and in addition; the annual costs of plant modification in terms of dollars per ton of salt removed for:

    a. No salt return.

    b. Minimizing salt return.

4. The no-salt discharge requirement may be waived in those cases where:

    a. The discharge of salt is less than one ton per day or 366 tons per year; or

    b. The permitting authority determines that a discharge qualifies for a "fresh water waiver" irrespective of the total daily or annual salt load. The maximum TDS concentration considered to be fresh water is 500 mg/L for discharges into the Colorado River and its tributaries upstream of Lees Ferry, Arizona. For discharges into the Colorado River downstream of Lees Ferry the maximum TDS concentration considered to be afresh water shall be 90% of the applicable in-stream standard at the appropriate benchmark monitoring station shown in Table 1, above.

C. Discharge of Once-Through Noncontact Cooling Water

1. Definitions:

    a. The terms "noncontact cooling water" and "blowdown" are defined as per 40CFR 401.11 (m) and (n).

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b. "Noncontact cooling water" means water used for cooling that does not come into direct contact with any raw material, intermediate product, waste product or finished product.

c. "Blowdown" means the minimum discharge of recirculating water for the purpose of discharging materials contained in the water, the further buildup of which would cause concentration in amounts exceeding limits established by best engineering practice.

d. "Salinity" shall mean total dissolved solids as the sum of constituents.

2. Permits shall be authorized for discharges of water that has been used for once-through noncontact cooling purposes based upon a finding that the returned water does not contribute to the loading of salts or the concentration of salts in the waters of the receiving stream in excess of a *de minimis* amount.

3. This policy shall not supplant nor supersede any other water quality standard of the receiving stream adopted pursuant to the Federal Clean Water Act, including but not limited to impairment of designated uses of the stream as established by the governing water quality authority having jurisdiction over the waters of the receiving stream.

4. Noncontact cooling water shall be distinguished from blowdown, and Section 1.C. of this policy specifically excludes blowdown or any commingling of once-through noncontact cooling water with another waste stream prior to discharge to the receiving stream. Sections I.A. and I.B of this policy shall in all cases govern discharge of blowdown or commingled water.

5. Once-through noncontact cooling water shall be permitted to return only to the same stream from which the water was diverted.

6. Because the increase in temperature of the cooling water will result in some evaporation, a *de minimis* increase in the concentration of dissolved salts in the receiving water may occur. An annual average increase in total dissolved solids of not more than 25 milligrams per liter (mg/L) measured at the intake monitoring point, as defined below, of the cooling process or facility, subtracted from the effluent total dissolved solids immediately upstream of the discharge point to the receiving stream, shall be considered *de minimis*.

7. At the time of NPDES discharge permit issuance or reissuance, the permitting authority may permit a discharge in excess of the 25 mg/L increase based upon a satisfactory demonstration by the permittee pursuant to Section 1.A.1.a.

8. Once-through demonstration data requirements:

a. Description of the facility and the cooling process component of the facility.

b. Description of the quantity, salinity concentration and salt load of intake water sources.

c. Description of the discharge, covering location, receiving waters, quantity of salt load and salinity concentration of both the receiving waters and the discharge.

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d. Alternative plans for minimizing salt discharge from the facility which shall include:

(i) Description of alternative means to attain no discharge of salt.

(ii) Cost of alternative plans in dollars per ton of salt removed from discharge.

(iii) Such other information pertinent to demonstration of non-practicability as the permitting authority may deem necessary.

9. If, in the opinion of the permitting authority, the database for the salinity characteristics of the water source and the discharge is inadequate, the permit will require that the permittee monitor the water supply and the discharge for salinity. Such monitoring program shall be completed in two years and the permittee shall then present the once-through demonstration data as specified above.

10. All new and reissued NPDES permits for once-through noncontact cooling water discharges shall require at a minimum semiannual monitoring of the salinity of the intake water supply and the effluent, as provided below.

a. The intake monitoring point shall be the point immediately before the point of use of the water.

b. The effluent monitoring point shall be prior to the discharge point at the receiving stream or prior to commingling with another waste stream or discharge source.

c. Discrete or composite samples may be required at the discretion of the permitting authority, depending on the relative uniformity of the salinity of the water supply.

d. Analysis for salinity may be either total dissolved solids or electrical conductivity where a satisfactory correlation with total dissolved solids has been established. The correlation shall be based on a minimum of five different samples.

D. Discharges of Salinity from a New Industrial Source with Operations and Discharging Facilities at Multiple Locations

1. The objective for discharges to surface waters from a new industrial source with operations and discharging facilities at multiple locations shall be to assure that such operations will have no adverse effect on achieving the adopted numeric salinity standards for the Colorado River System.

2. NPDES permit requirements for a new industrial source with operations and discharging facilities at multiple locations shall be defined, for purposes of establishing effluent limitations for salinity, as a single industrial source if these facilities meet the criteria:

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a. The discharging facilities are interrelated or integrated in any way including being engaged in a primary activity or the production of a principle product; and

b. The discharging facilities are located on contiguous or adjacent properties or are within a single production area e.g. geologic basin, geohydrologic basin, coal or gas field or 8 digit hydrologic unit watershed area; and

c. The discharging facilities are owned or operated by the same person or by persons under common or affiliated ownership or management.

3. The permitting authority may permit the discharge of salt from a new industrial source with operations and discharging facilities at multiple locations if one or more of the following requirements are met:

a. The permittee has demonstrated that it is not practicable to prevent the discharge of all salt from the industrial source. This demonstration by the applicant must include detailed information on the factors set forth in Section I.A.1.b of the Policy for implementation of Colorado River Salinity Standards through the NPDES permit program; with particular emphasis on an assessment of salinity off-set options that would contribute to state or interstate salinity control projects or salt banking programs and offset all or part of the salt loading to the Colorado River associated with the proposed discharge.

b. In determining what permit conditions shall be required under I.A.1.a.i., above, the permit issuing authority shall consider the requirement for an offset project to be feasible if the cost per ton of salt removal in the offset project options (i.e. the permittee's cost in conducting or buying into such projects where they are available) is less than or equal to the cost per ton of salt removal for projects undertaken by the Colorado River Basin Salinity Control Forum or less than the cost per ton in damages caused by salinity that would otherwise be cumulatively discharged from the outfalls at the various locations with operations controlled by the industrial source; or

c. The pemittee has demonstrated that one or more of the proposed discharges is of sufficient quality in terms of TDS concentrations to qualify for a "fresh water waiver" from the policy of "no salt return, whenever practical." An individual discharge that can qualify for a fresh water waiver shall be considered to have no adverse effect on achieving the adopted numeric salinity standards for the Colorado River System.

4. For the purpose of determining whether a freshwater waiver can be granted, the quality of water discharged from the new industrial source with operations and discharging facilities at multiple locations, determined as the flow weighted average of salinity measurements at all outfall points, must meet the applicable benchmark concentration in accordance with Section I.A.1.a.iii., as set forth above.

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5. Very small-scale pilot activities, involving 5 or fewer outfalls, that are sited in areas not previously developed or placed into production by a new industrial source operations and discharges at multiple locations under common or affiliated ownership or management, may be permitted in cases where the discharge of salt from each outfall is less than one ton per day or 366 tons per year. However, no later than the date of the first permit renewal after the pilot activities have become part of a larger industrial development or production scale effort, all discharging facilities shall be addressed for permitting purposes as a single industrial source with operations and discharges at multiple locations under common or affiliated ownership or management.

6. The public notice for NPDES permits authorizing discharges from operations at multiple locations with associated outfalls shall be provided promptly and in the most efficient manner to all member states in the Colorado River Basin Salinity Control Forum in relation to this policy.

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