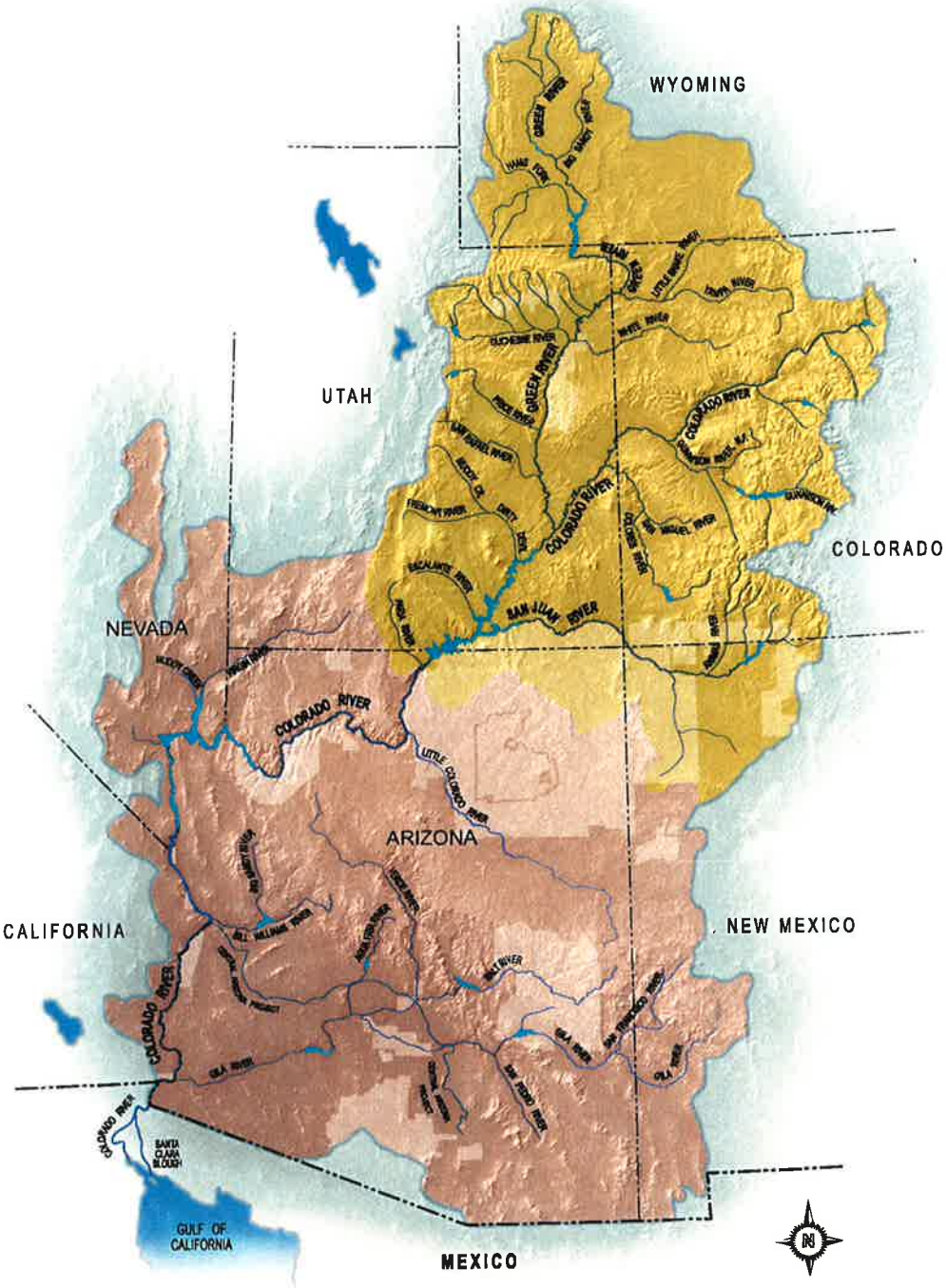
2002 Review

Water Quality Standards For Salinity Colorado River System



October 2002
Colorado River Basin Salinity Control Forum

2002 REVIEW

WATER QUALITY STANDARDS FOR SALINITY COLORADO RIVER SYSTEM

October 2002

Prepared by
Colorado River Basin Salinity Control Forum

COLORADO RIVER BASIN SALINITY CONTROL FORUM
MEMBERS

ARIZONA

Thomas G. Carr, Section Manager
Department of Water Resources
Linda C. Taunt, Environmental Program Manager
Department of Environmental Quality
Larry R. Dozier, Deputy General Manager
Central Arizona Water Conservation District

CALIFORNIA

Gerald R. Zimmerman, Executive Director
Colorado River Board of California
Celeste Cantu, Executive Director
State Water Resources Control Board
Dennis B. Underwood, Vice-President for Colorado River Resources
The Metropolitan Water District of Southern California

COLORADO

Rod Kuharich, Director
Colorado Water Conservation Board
Department of Natural Resources
J. David Holm, Director
Water Quality Control Division
Department of Public Health and Environment
David W. Robbins, Attorney at Law

NEVADA

Phillip S. Lehr, Environmental Programs Manager
Colorado River Commission of Nevada
Allen Biaggi, Administrator
Division of Environmental Protection
Freeman Johnson, Assistant Director
Department of Conservation and Natural Resources

NEW MEXICO

Thomas C. Turney, State Engineer
New Mexico State Engineer Office

UTAH

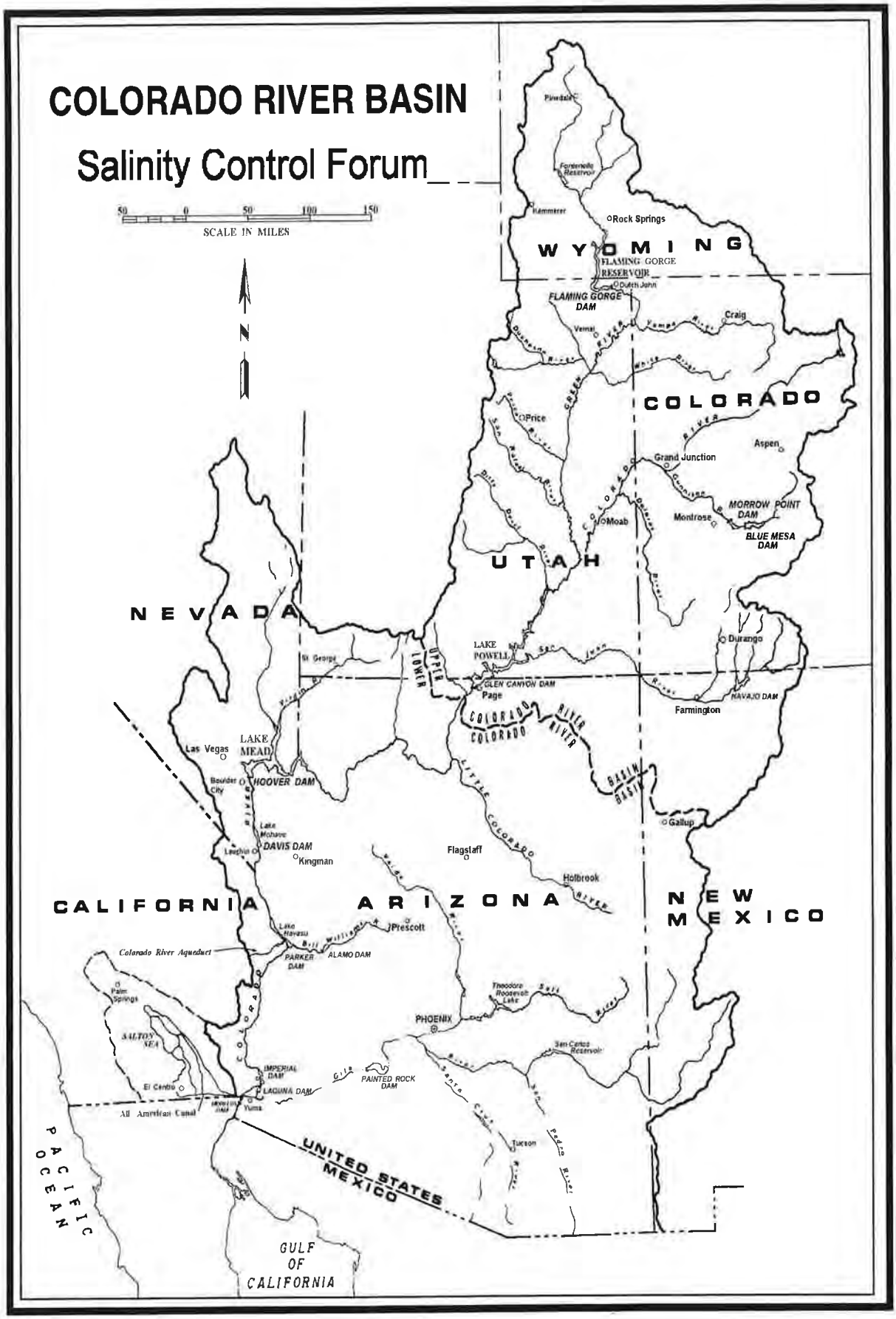
D. Larry Anderson, Director
Division of Water Resources
Department of Natural Resources
Jay B. Pitkin, Assistant Director
Division of Water Quality
Department of Environmental Quality

WYOMING

Patrick T. Tyrrell, State Engineer
State Engineer's Office
Gary Beach, Administrator
Division of Water Quality
Department of Environmental Quality
Dan S. Budd, Interstate Stream Commissioner

FORUM

Jack A. Barnett, Executive Director
Colorado River Basin Salinity Control Forum
106 West 500 South, Suite 101
Bountiful, Utah 84010-6232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Salinity Control Forum
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Vernal
Price
Aspen
Grand Junction
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Montrose
MORROW POINT DAM
BLUE MESA DAM
Durango
LAKE POWELL
GLEN CANYON DAM
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Farmington
NAVAJO DAM
St George
Las Vegas
LAKE MEAD
HOOVER DAM
Boulder City
DAVIS DAM
Kingman
Lake Mohave
Flagstaff
Holbrook
Gallup
Prescott
Lake Havasu
PARKER DAM
ALAMO DAM
Colorado River Aqueduct
Palm Springs
SALTON SEA
El Centro
IMPERIAL DAM
LAGUNA DAM
Yuma
All American Canal
PAINTED ROCK DAM
PHOENIX
Theodore Roosevelt Lake
San Carlos Reservoir
Tucson
UNITED STATES
MEXICO
PACIFIC OCEAN
GULF OF CALIFORNIA

TRANSMITTAL LETTERS

The Federal Water Pollution Control Act requires that at least once every three years the Colorado River Basin states review water quality standards relating to the salinity of the waters of the Colorado River. The states collectively initiated this review under the auspices of the Colorado River Basin Salinity Control Forum, prepared a proposed report; and after holding public meetings, the Forum prepared this final report.

Upon the Forum's adoption of the final report, it is transmitted by letter to the governors of the individual states for their independent action. The following governors in each of the seven Colorado River Basin states shall receive this report:

Honorable Jane Dee Hull
Governor of Arizona
Statehouse
Phoenix, AZ 85007

Honorable Gray Davis
Governor of California
State Capitol
Sacramento, CA 95814

Honorable Bill F. Owens
Governor of Colorado
State Capitol
Denver, CO 80203

Honorable Kenny Guinn
Governor of Nevada
State Capitol
Carson City, NV 89701

Honorable Gary E. Johnson
Governor of New Mexico
State Capitol
Santa Fe, NM 87503

Honorable Mike Leavitt
Governor of Utah
State Capitol
Salt Lake City, UT 84114

Honorable Jim Geringer
Governor of Wyoming
State Capitol
Cheyenne, WY 82002

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SUMMARY

This report is a review of the water quality standards for salinity for the Colorado River. It summarizes the Colorado River salinity control program and its proposed Plan of Implementation for continued salinity control. Economic damages due to elevated salinity levels have been significantly reduced through this program at very modest costs. In Arizona, California, and Nevada, economic damages have been reduced by $300 million per year, accomplished at a federal funding level of less than $20 million per year. The Salinity Control Program is a unique cooperative watershed effort between several federal agencies and seven states designed to meet national, international and state water quality objectives.

Section 303 of the Clean Water Act requires that water quality standards be reviewed from time to time, but at least once during each three-year period. Accordingly, the seven-state Colorado River Basin Salinity Control Forum (Forum) has reviewed the existing state-adopted and Environmental Protection Agency (EPA)-approved water quality standards for salinity consisting of numeric criteria and a Plan of Implementation for salinity control for the Colorado River System. Since the issuance of the 1999 Review, the U.S. Bureau of Reclamation (Reclamation) has continued work on developing a new model to analyze the Colorado River System, including salinity. The model development is not yet completed, however, upon prior Review projections and current estimates by Reclamation, salinity control needs through 2020 are described herein. This 2002 Review updates funding and needed salinity control measures to be implemented. The Forum's recommendations are to be submitted to each of the Basin states for consideration at a public hearing prior to adoption.

The Forum recommends no change in the numeric salinity criteria at the three stations located on the lower mainstem of the Colorado River. The numeric criteria at these stations will remain:

Station	Salinity in mg/L[1]
Below Hoover Dam	723
Below Parker Dam	747
At Imperial Dam	879

The Plan of Implementation as set forth in this 2002 Review is designed to meet the objective of maintaining the salinity concentrations at or below the numeric criteria while the Basin states continue to develop their compact-apportioned waters. The plan is based on maintaining the numeric criteria under a long-term mean water supply of 15 million acre-feet annually at Lee Ferry, the Compact Point. The Forum recommends that the Plan of Implementation described in this report

[1]Flow-weighted average annual salinity.

be carried out. The Plan of Implementation includes:

1. Completion of Reclamation, U.S. Department of Agriculture, and Bureau of Land Management salinity control measures to the extent that each unit remains viable and appropriately cost-effective.

2. Implementation of the Forum's recommended and adopted policies for effluent limitations, principally under the National Pollutant Discharge Elimination System (NPDES) permit program established by Section 402 of the Clean Water Act as amended. The implemented policies (included in Appendix B of this Review) are the following:

   "Policy for Implementation of Colorado River Salinity Standards Through the NPDES Permit Program;"[2]

   "Policy for Use of Brackish and/or Saline Waters for Industrial Purposes;"

   "Policy for Implementation of the Colorado River Salinity Standards Through the NPDES Permit Program for Intercepted Ground Water;" and

   "Policy for Implementation of the Colorado River Salinity Standards Through the NPDES Permit Program for Fish Hatcheries."

3. Implementation of nonpoint source management plans developed by the states and approved by EPA.

Item 1 of the plan listed above is to be implemented by federal agencies in conjunction with state, local, and private participants. The Forum works jointly with federal agencies on developing measures to be implemented. The Forum also urges Congress to ensure that the funds necessary to successfully fulfill this Plan of Implementation are appropriated as needed. Items 2 and 3 above are primarily implemented by each of the Basin states.

Major components of this Review's Plan of Implementation are the federal programs. Table 1 summarizes the salinity control measures in place by federal participants through 2001 (800,000 tons). Salinity control measures leading to the removal of an additional 1,000,000 tons per year of salt must be implemented by 2020 to meet the Program goal of approximately 1.8 million tons of salt-load reduction annually. The adopted Plan of Implementation requires federal appropriations to Reclamation of at least $10.5 million and USDA of at least $13.8 million annually. The federal programs are described in detail in Chapter 4 of this Review.

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[2]The Policy for Implementation of Colorado River Salinity Standards Through the NPDES Permit Program was revised on October 30, 2002.

The Plan of Implementation is designed to control enough salt to maintain the numeric criteria under a long-term mean water supply of 15 million acre-feet per year. It is recognized that the Colorado River system is subject to highly variable flows. Consequently, salinity will vary from year to year and may temporarily exceed the adopted numeric criteria in some years and remain well below the criteria in others.

Table 1
Colorado River Basin Salinity Control Program
Plan of Implementation
By 2020
(Values in Tons of Salt Load Reduction Per Year)

AGENCY	MEASURES IN PLACE (2001)	POTENTIAL NEW MEASURES	TOTAL
Bureau of Reclamation	482,000	500,000	982,000
U.S. Department of Agriculture	318,000	437,000	755,000
Bureau of Land Management[3]	_____	_____	_____
Unidentified	0	63,000	63,000
TOTAL	800,000	1,000,000	1,800,000

Salinity concentrations at the three stations on the Lower Colorado River in 2001 were:

Station	Salinity Concentration[4] in mg/L
Below Hoover Dam	587
Below Parker Dam	589
At Imperial Dam	681

[3]BLM is required by P.L. 106-459 to submit a status report to Congress on its basinwide salinity control program. When this report is submitted, the salinity control target for BLM will be determined.

[4]Flow-weighted average data based on 2001 provisional records.

Based on the data available, the Forum concludes that the measured salinity will not exceed the numeric criteria during the next three years. The Plan of Implementation adopted herein by the Forum provides for the control of about 1,800,000 tons of salt load reduction annually by the year 2020.

Should more water development projects be completed than are projected to occur before salinity control measures are identified or brought on line, temporary increases above the numeric criteria could result. However, these increases will be deemed in conformance with the standards if appropriate salinity control measures are included in the plan.

Increases above the criteria as a result of below normal annual river flows and/or low reservoir storage conditions will also be considered in conformance with the standards, provided that when river flows return to normal, and satisfactory reservoir conditions prevail, concentrations will then be at or below the criteria level.

The Forum has reviewed the impact of the program on projected salinities and finds that through the year 2020 the plan will control salinity levels so that, with long-term mean water supply conditions, salinity levels will be below the numeric criteria at the three stations. The salinity standards provide protection from long-term increases in economic damage to downstream users.

Because of the long lead-time required to conduct salinity studies; complete environmental and feasibility reports; implement; and achieve full salinity reduction effects at the lower Colorado River mainstem stations, continued funding is necessary for the recommended Plan of Implementation to proceed as set forth in this Review. Non-federal funds are available to cost-share with federal appropriations, and Basin irrigators stand ready with cost-share dollars to install salinity reducing measures.

Table of Contents

TABLES

FIGURES

APPENDICES

List of Abbreviations

208 Plan	Section 208 of the Clean Water Act amendments of 1972 and 1977 requiring integrated area-wide plans and programs for dealing with water pollution problems
ADEQ	Arizona Department of Environmental Quality
AWT	Advanced Waste Treatment
BCC	Nevada's Clark County Board of Commissioners
BLM	United States Bureau of Land Management
BMI	Basic Management Inc.
CCSD	Clark County Sanitation District
CLV	City of Las Vegas
CNLV	City of North Las Vegas
CRM	Coordinated Resource Management (group)
CRSS	Colorado River Simulation System
CSCB	Colorado Soil Conservation Board
CWA	Clean Water Act
DEQ	Wyoming Department of Environmental Quality
DPA	Designated Planning Agency
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ESI	Ecological site inventory
FAIRA	Federal Agriculture Improvement and Reform Act (P.L. 104-127) (1996)
FSRIT	Farm Security and Rural Investment Act (P.L. 107-171) (2002)
Forum	Colorado River Basin Salinity Control Forum
FY	The federal government's Fiscal Year
HMA	Herd Management Area
IBWC	International Boundary and Water Commission
MGD	Million gallons per day
mg/L	milligrams per liter
NACOG	Northern Arizona Council of Governments
NDEP	Nevada Division of Environmental Protection
NEPA	National Environmental Policy Act
NMWQMT	New Mexico Water Quality Management Plan
NPSMP	Nonpoint Source Management Plan (New Mexico)
NPDES	National Pollutant Discharge Elimination System
NPS	Non Point Source
NRCS	Natural Resources Conservation Service
NRI	National Resource Inventory
PPM	parts per million
Reclamation	U.S. Bureau of Reclamation (USBR)
RMHQ	Requirements to Maintain Higher Quality (in Nevada)
RMP	Resource Management Plan
RO	Regional Office

SRF	State Revolving Fund (EPA low-interest loans for non-point sources)
SSC	Suspended Sediment Concentration
TDS	Total dissolved solids
The Act	The Colorado River Basin Salinity Control Act (P.L. 93-320) (1974), as amended by P.L. 98-569 (1984), P.L. 104-20 (1995), and P.L. 106-459 (2000)
TMDL	Total Maximum Daily Load
T/AF	Tons per Acre-foot
UIC	Underground Injection Control (EPA)
USBR	United States Bureau of Reclamation
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UWA	Unified Watershed Assessment (part of Clean Water Action Plan)
WACOG	Western Arizona Council of Governments
WLA	Waste Load Allocation
WQCC	Water Quality Control Commission (Colorado)

CHAPTER 1 - INTRODUCTION

Purpose of Report

This report, the 2002 Review, Water Quality Standards for Salinity, Colorado River System (Review) is prepared and submitted in response to Section 303(c) of the Clean Water Act[5]. Prepared by the seven-state Colorado River Basin Salinity Control Forum (Forum), on behalf of the governors of their respective states, this Review of the water quality standards includes the numeric criteria and the Plan of Implementation developed and adopted by the Forum. It also includes modifications to previous reviews that have become necessary as a result of changed conditions and the availability of additional information. This is the ninth triennial review conducted by the Forum. Section 303(c)(1) of the Clean Water Act requires that:

> *The governor of a state or the state water pollution control agency of such state shall from time to time (but at least once each three-year period beginning with the date of enactment of the Federal Water Pollution Control Act Amendments of 1972) hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards. Results of such review shall be made available to the Administrator.*

This Review is consistent with the Environmental Protection Agency (EPA)-approved 1975 standards and deals only with that portion of the Colorado River Basin above Imperial Dam. While this Review will recap past events in an abridged format, its focus is on information gathered since issuance of the 1999 Review. Background information and activities regarding historical actions relative to the development and adoption of salinity standards is contained in the June 1975 standards report[6]. The prior eight Reviews, from 1978 to 1999, contain more specific information on the eight 3-year periods.

Below Imperial Dam, salinity is controlled as a federal responsibility to meet the terms of the agreement with Mexico contained within Minute No. 242 of the International Boundary and Water Commission (IBWC), entitled "Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River." Minute No. 242 requires that measures be taken to assure that Colorado River (River) water delivered to Mexico upstream from Morelos Dam will have an average annual salinity concentration of no more than 115 ± 30 parts per million (ppm) total dissolved solids (TDS) higher than the average annual salinity concentration of Colorado River water arriving at Imperial Dam.

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[5]Public Law [P.L.] 92-500 as amended by P.L. 95-217 and P.L. 100-4.

[6]Water Quality Standards for Salinity, Including Numeric Criteria and Plan of Implementation for Salinity Control, Colorado River System, Colorado River Basin Salinity Control Forum, June 1975.

Nothing in this report shall be construed to alter, amend, repeal, interpret, modify, or be in conflict with the provisions of the Boulder Canyon Project Act (45 Stat. 1057), the Boulder Canyon Project Adjustment Act (54 Stat. 774), the Colorado River Basin Project Act (82 Stat. 885), the Colorado River Compact, the Colorado River Storage Project Act (70 Stat. 105), the Upper Colorado River Basin Compact, or the Treaty with the United Mexican States (Treaty Series 994).

History and Background

In the 1960's and early 1970's, the seven Colorado River Basin states[7] and representatives of the Federal Government discussed the problem of salinity levels increasing in the lower reaches of the Colorado River. In 1972, the Federal Government enacted the Clean Water Act which mandated efforts to maintain water quality standards in the United States. At the same time, Mexico and the United States were discussing the increasing salinity of Colorado River water being delivered to Mexico.

The Basin states established the Colorado River Basin Salinity Control Forum in 1973. The Forum is composed of representatives from each of the seven Basin states appointed by the governors of the respective states. The Forum was created for interstate cooperation and to provide the states with the information necessary to comply with Section 303(a) and (b) of the Clean Water Act.

Congress enacted the Colorado River Basin Salinity Control Act (Public Law (P.L. 93-320) (the Act) in June of 1974 with the Forum's support (see Appendix A). Title I of the Act addresses the United States' commitment to Mexico and provided the means for the United States to comply with the provisions of Minute No. 242. Title II of the Act created a water quality program for salinity control in the United States. Primary responsibility for the federal program was given to the Secretary of the Interior, with the Bureau of Reclamation (Reclamation) being instructed to investigate and build several salinity control units. The Secretary of Agriculture was instructed to support the effort within existing authorities (see Chapter 4 for more detail regarding these authorities).

The EPA promulgated a regulation in December 1974 (see Appendix A), which set forth a basinwide salinity control policy for the Colorado River Basin. The regulation specifically stated that salinity control was to be implemented while the Basin states continue to develop their compact-apportioned water. This regulation also established a standards procedure, and required the Colorado River Basin states to adopt and submit for approval to the EPA water quality standards for salinity, including numeric criteria and a Plan of Implementation, consistent with the policy stated in the regulation.

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[7]The seven Colorado River Basin states (Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming) are referred herein as the "Basin states."

The Basin states, acting through the Forum, initially responded to this regulation by developing and submitting to the EPA a report entitled Water Quality Standards for Salinity Including Numeric Criteria and Plan of Implementation for Salinity Control - Colorado River System dated June 1975. Since the states' initial adoption, the water quality standards have been reviewed every three years (1978, 1981, 1984, 1987, 1990, 1993, 1996, and 1999) as required by Section 303(c)(1) of the Clean Water Act.

The Colorado River Basin Salinity Control Act was amended in 1984 by P.L. 98-569 to authorize two additional units for construction by Reclamation and directed the Bureau of Land Management (BLM) to implement a comprehensive program to minimize salt loading in the Colorado River Basin. The amendments directed the Secretary of the Interior and the Secretary of Agriculture to give preference to the salinity control units with the least cost per unit of salinity reduction. The Act was also amended to establish a voluntary on-farm salinity control program to be implemented by the U. S. Department of Agriculture (USDA) and provided for voluntary replacement of incidental fish and wildlife values foregone on account of the on-farm measures. Many cost-effective salt-load reducing activities were accomplished in the decade following that authorization.

Reclamation and the Forum in 1994 concluded that the existing Act, as amended, with its unit-specific approach and authorization ceiling, was limiting salinity control opportunities. In 1995, the Act was amended by P.L. 104-20 to authorize new procedures (Basinwide Salinity Control Program) for Reclamation to follow in implementing salinity control. Reclamation's Basinwide Salinity Control Program opens the program to competition through a public process and has greatly reduced the cost of salinity control. In 2000, P.L.106-459 increased the authorization ceiling for the Basinwide Salinity Control Program from $75 million to $175 million.

The Federal Agriculture Improvement and Reform Act (FAIRA) of 1996 (P.L. 104-127) further amended USDA's role in salinity control by creating a new conservation program known as the Environmental Quality Incentives Program (EQIP) which combined four conservation programs, including USDA's Colorado River Salinity Control Program. FAIRA provided authority for funding the nationwide EQIP through the year 2002. USDA has created rules and regulations concerning how EQIP funds are to be allocated. The Forum's experience has been that the enacted rules and regulations for EQIP do not consider the significant benefits in downstream states, thus creating a situation which disadvantages salinity control efforts when compared to other local initiatives. The past authority for the states to cost-share from the Basin funds was retained in the new EQIP with linkage to Reclamation's authority to distribute Basin funds for cost-sharing.

The Farm Security and Rural Investment Act (FSRIA) of 2002 (P.L. 107-171) reauthorized EQIP from 2002 through 2007 at significantly increased funding levels. The EQIP funds dedicated to the Colorado River Salinity Control Program totaled more than $10 million, which is about double the funds available in 2001, and could possibly rise to a high of $33 million in 2007, the final year of FSRIA. Final rules have not been published and the full input of FSRIA on salinity control have not been analyzed.

Figure 1-1 displays a cumulative estimation of the annual salt removal by the Colorado River Basin Salinity Control Program.

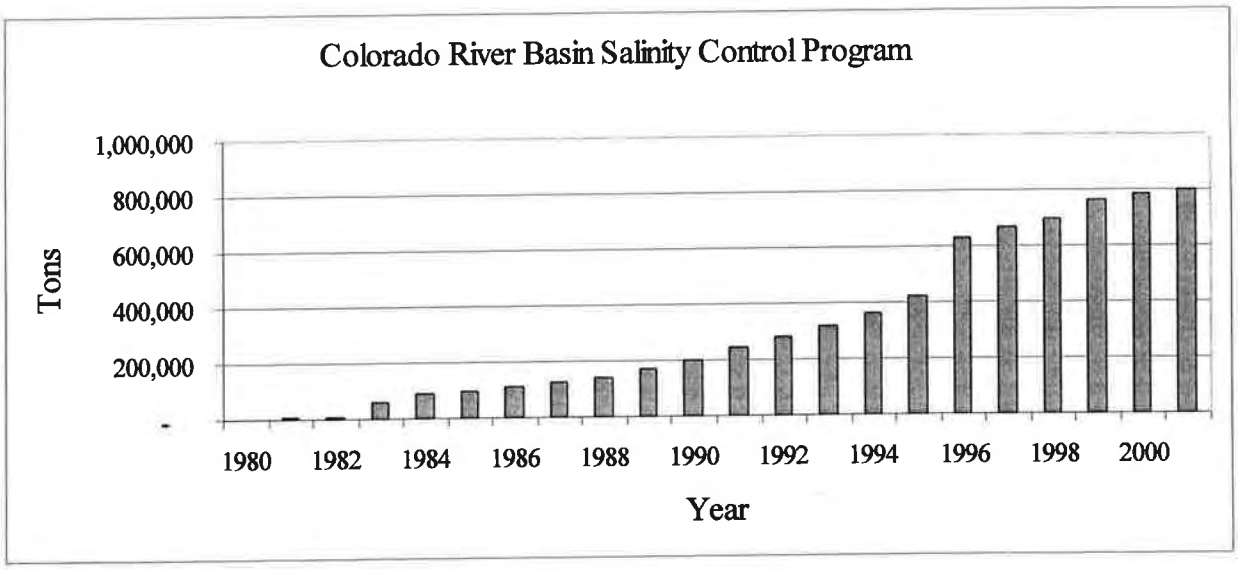


Figure 1-1. Measures in Place

Overview of Standards

In 1975, the Forum proposed, the states adopted, and the EPA approved water quality standards, which included numeric criteria and a Plan of Implementation to control salinity increases in the River. The standards require that a plan be developed which will maintain the flow-weighted average annual salinity at or below the 1972 levels while the Basin states continue to develop their compact-apportioned water supply. The Forum selected three stations on the mainstem of the lower Colorado River as being appropriate points to measure the salinity of the Colorado River. These stations are located at the following points on the Colorado River: (1) below Hoover Dam; (2) below Parker Dam; and (3) at Imperial Dam. Numeric criteria were established for these points as required by the 1974 regulation. A Plan of Implementation was also developed in 1975 by the Forum and participating federal agencies as part of the standards. It was designed to ensure compliance with the numeric criteria for salinity. The numeric criteria and Plan of Implementation are further described in Chapters 3 and 4 of this Review.

During each triennial review, the numeric criteria are reviewed and the Plan of Implementation is updated to ensure continuing compliance with the standards. The Forum relies on the Basin states' projections of use of compact-apportioned waters. The salinity projections are based on the long-term mean water supply of 15 million acre-feet (maf) per year at Lee Ferry, Arizona.

The Colorado River water quality standards for salinity, and the approach taken by the Basin states in complying, are unique. The numeric criteria selected as the water quality standards were established to protect infrastructure and crop production rather than human health or fish and wildlife values. Also, the program is a coordinated effort between federal, state, and local agencies and participants with the goal of protecting the watershed.

Program Funding

Adequate funding is required to meet the standards. Funds are provided from federal and non-federal sources. Federal appropriations and non-federal funds including Basin states cost-share funds and local participant dollars are used to implement the Colorado River Basin Salinity Control Program. The Basin states and the local producers have funds available and stand ready to implement the program proposed in this report.

Figure 1-2 shows federal appropriations for the Colorado River Basin Salinity Control Program over the past fourteen years. Annual appropriations to Reclamation were as large as $34.6 million as recently as 1992, but for Fiscal Year (FY) 2003 the Administration has requested an appropriation of $9.8 million. The Basin states believe the appropriation to Reclamation can be smaller than in the past because of improved cost-effectiveness, but finds that about $10.5 million is needed each year through the planning period of this report.

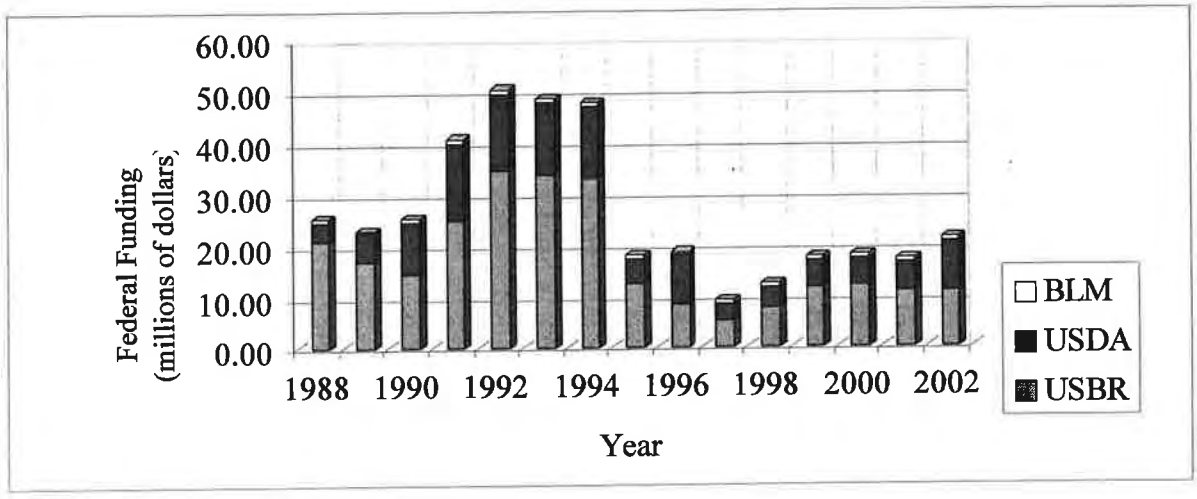


Figure 1-2. Historic Federal Funding Levels

Following the passage of FAIRA in 1996, federal funding was provided to the USDA each year for distribution for environmental enhancement efforts through the nationwide EQIP. In 1991 and 1992, when salinity control was a separate line-item, $14.8 million was made available to the USDA's Colorado River Salinity Control Program by Congress, but in 1998 the USDA allocated only $3.9 million. A partial solution to this under-funding was found when USDA designated the

Colorado River Basin as a national conservation priority area at the urging of Congress and the Basin states. For the past few years, since that designation, the federal funding has been at about $5 million. The Basin states find that under the new EQIP authorization, funding for the USDA salinity control program needs to be at least $13.8 million per year.

The BLM has an important role to play in controlling salt contributions from nonpoint sources from the very sizeable amount of federal land it manages. BLM is required by P.L. 106-459 to submit a status report to Congress on its basinwide salinity control program. When this report is submitted, the salinity control target for BLM will be determined. The Forum has renewed its effort to work with this agency, which has the responsibility to care for vast areas in the Colorado River drainage from which significant amounts of salts are being contributed to the River.

CHAPTER 2 - SALINITY OF THE RIVER

Overview

The Colorado River drains 246,000 square miles (approximately 157 million acres) of the western United States and a small portion of northern Mexico. Its waters serve some 7.8 million people within the United States' portion of the Colorado River basin, and through export provides full or supplemental water supply to another 23 million people outside the basin. The regional economy is based on irrigated agriculture, livestock grazing, mining, forestry, manufacturing, oil and gas production, recreation and tourism. About 3.5 million acres are irrigated within the Colorado River Basin and hundreds of thousands of additional acres are irrigated by waters exported from the Basin. Hydroelectric power facilities along the Colorado River and its tributaries generate approximately 12 billion kilowatt-hours annually which is used both inside and outside of the Basin. The Colorado River also serves about 2.3 million people and 500,000 irrigated acres in Mexico.

Salinity has long been recognized as one of the major problems of the river. The Colorado, like most western rivers, increases in salinity from its headwaters to its mouth, carrying an average salt load of approximately nine million tons annually past Hoover Dam, the uppermost location at which numeric criteria have been established. In addition to total salt load which measures the total mass of salt carried in the River (tons per year), this report also examines salinity in terms of concentration as expressed in milligrams per liter (mg/L).

The salts in the Colorado River system are indigenous and pervasive. Many of the saline sediments of the Basin were deposited in prehistoric marine environments. Salts contained within the sedimentary rocks are easily eroded, dissolved, and transported into the river system. The Colorado River Basin Salinity Control Program is designed to prevent a portion of this abundant salt supply from moving into the river system.

In a 1971 study[8], the EPA analyzed salt loading in the Colorado River Basin and divided it into two categories, naturally occurring and human-caused. The EPA concluded that about half (47 percent) of the salinity concentration measured in water arriving at Hoover Dam is from natural causes including salt contributions from saline springs, ground water discharge into the river system (excluding irrigation return flows), erosion and dissolution of sediments, and the concentrating effects of evaporation and transpiration. The natural causes category also included salt contributions from non-point (excluding irrigated agriculture) or unidentified sources or from the vast, sparsely-populated regions of the drainage, much of which is administered by the BLM or other governmental agencies. Of the land within the Colorado River Basin, about 75 percent is owned and administered by the Federal Government or held in trust for Indian tribes. The greatest portion of

[8]The Mineral Quality Problem in the Colorado River, Summary Report, Environmental Protection Agency, Regions VIII and IX, 65 pp., 1971.

the naturally-occurring salt load originates on these federally-owned and administered lands. Human activities can influence the rate of natural salt movement from rock formations and soils to the river system and include: livestock grazing, wildlife management, logging, mining, oil exploration, road building, recreation and urbanization.

Approximately 53 percent of the salinity concentration in the water arriving at Hoover Dam, as identified by EPA, results from various human activities. EPA estimated that out-of-Basin exports account for about 3 percent of the salt concentration at Hoover Dam, with irrigation accounting for 37 percent, reservoir evaporation and phreatophyte use accounting for about 12 percent, and about 1 percent attributed to municipal and industrial uses. Much of the salt load contribution from irrigated agriculture is from federally-developed irrigation projects.

Salinity control activities necessarily include a water quality monitoring and analysis component that provides basinwide information for program evaluation. The monitoring and analysis component provides an essential database for future studies, supports state and regional planning activities, and provides an objective basis for evaluating the effectiveness of salinity control measures.

Continuing evaluations of the salinity of the Colorado River are made by Reclamation, the U.S. Geological Survey (USGS) and BLM. The results of several studies have been published by the agencies since the last Review (1999-2001). To evaluate changes in salinity, water quality and streamflow data are obtained on a daily, weekly, monthly, and/or quarterly basis at various points on streams throughout the Colorado River Basin by the USGS in cooperation (through financial and/or direct services) with private entities, the states and other federal agencies. Figure 2-1 shows the gaging stations in the Colorado River Basin which are of significance to the program and for which streamflow and water quality records are available. Data and salinity reports are available from Reclamation at www.uc.usbr.gov/progact/salinity/index.html.

Salinity data are based on total dissolved solids (TDS) as the sum of constituents, whenever possible. The sum of constituents values are defined to include calcium, magnesium, sodium, chloride, sulfate, a measure of the carbonate equivalent of alkalinity and, if measured, silica and potassium. If a sum of constituents value could not be computed, TDS as residue on evaporation (at 180 degrees Celsius) is substituted. Further, some reported salinity values are based on correlation with specific conductance measurements. In this Review the terms "salinity," "TDS" and "concentration" in mg/L are used interchangeably.

Average annual salinity concentrations and salt loads are determined on a flow-weighted average annual salinity concentration. The flow-weighted average annual salinity is the concentration determined from dividing the annual total salt load passing a measuring station by the total annual volume of water passing the same point during a calendar year. The flow-weighted average annual salinity is calculated by first multiplying the daily concentration values by the daily flow rates. These values are then summed over a calendar year and then divided by the sum of the daily flow rate.

MONITORING STATIONS

1 Green River near Green River, WY
2 Green River near Greendale, UT
3 Yampa River near Maybell, CO
4 Duchesne River near Randlett, UT
5 White River near Watson, UT
6 Green River near Green River, UT
7 San Rafael River nr Green River, UT
8 Colorado River nr Glenwood Springs, CO
9 Colorado River near Cameo, CO
10 Gunnison River near Grand Jct, CO
11 Dolores River near Cisco, UT
12 Colorado River near Cisco, UT
13 San Juan River near Archuleta, NM
14 San Juan River near Bluff, UT
15 Colorado River at Lees Ferry, AZ
16 Colorado River near Grand Canyon, AZ
17 Virgin River at Littlefield, AZ

Numeric Criteria Stations:
18 Colorado River below Hoover Dam
19 Colorado River below Parker Dam
20 Colorado River at Imperial Dam

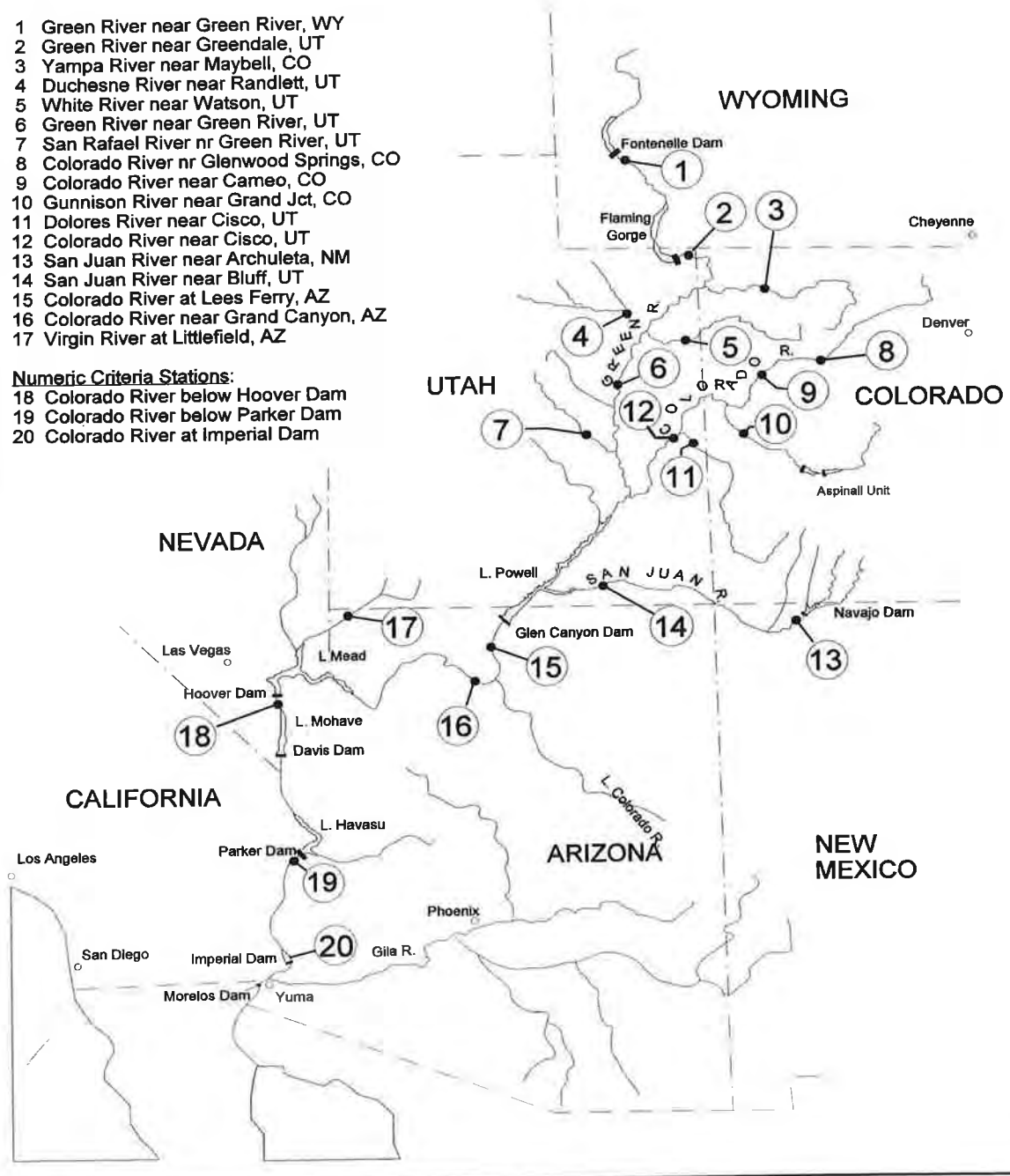


Figure 2.1. Colorado River water quality monitoring stations

Observed Salinity

Salinity of the River has fluctuated significantly over the period of record (1941-1999; Figure 2-2). Salinity generally decreases in periods of high flow and increases in periods of low flow as can be seen in Figure 2-2.

In the past two decades, the Colorado River has experienced both record high flows and sustained drought. Record high flows during the mid-1980's caused lower salinities in the Lower Basin (577 mg/L at Imperial Dam). Conversely, the period from 1988 to 1992 was the driest five years on record. As a result, salinity at Imperial Dam gradually increased to 803 mg/L. Moderately high flows later in the 1990's caused salinity to decline again. Given that the hydrologic fluctuations over the past three decades are likely to be repeated in the future, it is expected that concentrations will fall within the observed range of 577-896 mg/L at Imperial Dam if appropriate salinity control measures are implemented. Similar ranges might be expected from the observed data at Hoover Dam (517 mg/L - 667 mg/L) and Parker Dam (535 mg/L - 671 mg/L).

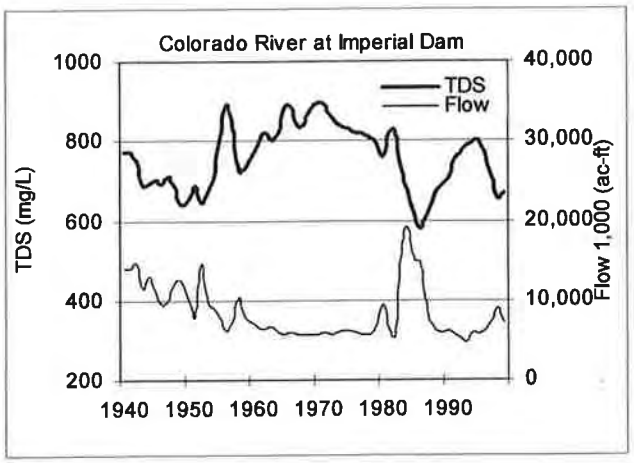


Figure 2-2. Salinity at Imperial Dam.

Water Use and Associated Impacts of Salinity

The Colorado River, from its headwaters in the Rocky Mountains to its mouth in the Gulf of California, is utilized for a variety of purposes. A significant portion of the average supply of the River is transported out of the Colorado River Basin for use in adjacent river basins. In the Colorado River Basin, irrigation, municipal and industrial, hydroelectric power generation, power plant cooling, fish and wildlife, and recreation are the major uses of the water.

Table 2-1
Observed Flow-Weighted Average Salinity
at the Numeric Criteria Stations
(Total Dissolved Solids in mg/L)[9]

Calendar Year	Below Hoover Dam	Below Parker Dam	At Imperial Dam
1970	743	760	896
1971	748	758	892
1972	724	734	861
1973	675	709	843
1974	681	702	834
1975	680	702	829
1976	674	690	822
1977	665	687	819
1978	678	688	812
1979	688	701	802
1980	691	712	760
1981	681	716	821
1982	679	713	827
1983	659	678	727
1984	598	611	675
1985	556	561	615
1986	517	535	577
1987	519	538	612
1988	529	540	648
1989	564	559	683
1990	587	600	702
1991	629	624	749
1992	657	651	767
1993	665	631	785
1994	667	673	796
1995	654	671	803
1996	618	648	768
1997	625	612	710
1998	604	559	655
1999	580	591	681
2000	582	580	658
2001	587	589	681

[9] Determined by the U.S. Geological Survey (USGS) from data collected by the U.S. Bureau of Reclamation and USGS and published in *Quality of Water, Colorado River Basin, Progress Report No. 20*, 2001

Colorado River water users in the Lower Basin have suffered significant economic losses due to long-term continued use of water with elevated salinity levels. Figure 2-3 shows known salinity damages in Arizona, California, and Nevada resulting from long-term continued use at various levels of salinity based on the Metropolitan-Reclamation Salinity Management Study conducted by Reclamation and The Metropolitan Water District of Southern California. At the 1999 salinity level of 669 mg/L at Imperial Dam, Figure 2-3 shows direct economic damages currently nearing $200 million per year. This would increase to $500 million per year if salinity were allowed to return to the numeric criteria levels of the standard (879 mg/L at Imperial Dam). Salinity impacts from the use of 1.5 maf per year of water delivered to Mexico have not been quantified but Mexico has indicated that they are significant.

Agricultural water users suffer economic damage as a result of using highly saline waters through reduced crop yields, added labor costs for irrigation management, and added drainage requirements. Urban users incur additional costs due to more frequent replacement of plumbing and water using appliances, use of water softeners and the purchase of bottled water. Industrial users and water treatment and waste water utilities incur reductions in the useful life of system facilities and equipment from higher levels of salinity.

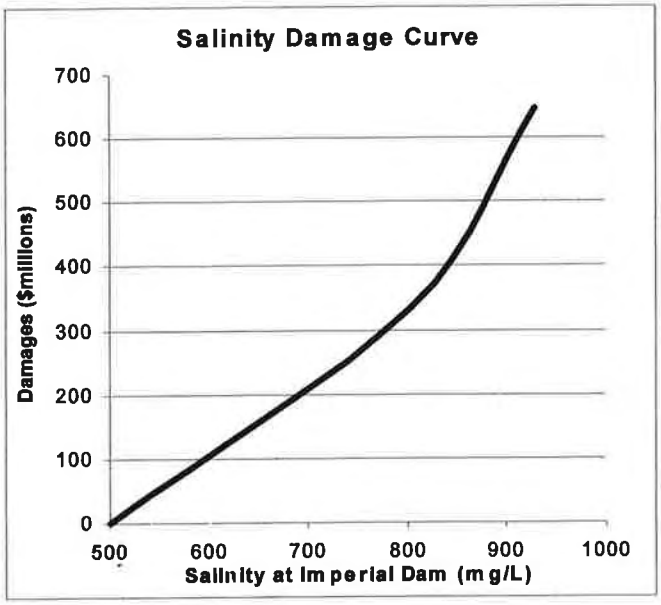


Figure 2-3. Salinity Damages in Lower Basin.

Another significant economic loss in the Lower Basin results from the regulatory restrictions imposed by local and regional water quality standards and management programs which protect ground water supplies. Regulatory agencies have placed restrictions on reuse or recharge of waters that exceed specified salinity levels. If the salinity levels of the Colorado River increase, these regulatory actions result in additional expensive treatment of water prior to reuse or disposal instead of reuse of the waters. If disposal options are selected, additional costly water must be developed or imported to meet the demands previously met or that could be met by water reuse. These costs are not currently captured in the above damage curve.

Future Water Depletions

One of the significant factors affecting salinity concentrations is water use. Estimates of projected water use through the year 2020 were developed by the Basin states for the 2002 Review. Table 2-2 presents a summary of these estimated water depletions in the Upper Colorado River Basin, and from the mainstem of the Lower Colorado River.

Table 2-2
Summary of Projected Water Depletions
(1,000 acre-feet)

	2005	2010	2015	2020
Upper Basin[10]	5,019	5,278	5,341	5,429
Lower Basin[11]	7,500	7,500	7,500	7,500
Total	12,519	12,728	12,741	12,929

Salinity Control Targets

The goal of the Colorado River Basin Salinity Control Program is to maintain the flow-weighted average annual salinity at or below the numeric criteria listed below in Table 2-3. The effort is not intended to counteract the salinity fluctuations that are a result of the highly variable flows caused by short-term climatic variations in temperature, precipitation, and snowmelt.

Table 2-3
Comparison of Numeric Criteria to Observed Salinity (2001)

Station	Numeric Criteria (mg/L)	Observed Salinity[12] (mg/L)
Colorado River below Hoover Dam	723	587
Colorado River below Parker Dam	747	589
Colorado River at Imperial Dam	879	681

The Forum develops a Plan of Implementation that will maintain salinity at or below the numeric criteria identified in Table 2-3. The Plan of Implementation provided in this Review

[10]Depletions include Colorado River Storage Project reservoir evaporation estimated by Reclamation to average 574,000 acre-feet per year under full development.

[11]Lower Colorado River mainstem only. Diversions from the mainstem less returns. Data do not include mainstem reservoir evaporation, stream losses, and surplus water deliveries.

[12] Flow-weighted average data based on 2001 provisional records.

describes the amount of salinity control needed between now and 2020. Salt reduction targets contained within the Plan of Implementation were created by computing the salinity control needed to offset future water development using mass balance techniques. In determining these targets, the Forum looks at a number of factors.

In preparing the 1996 Review report, which considered the quantity of additional salinity control needed between 1996 and 2015, the Forum was guided by river model simulations conducted by Reclamation. Since 1996, Reclamation has been working to create a new river model that could be used to predict future salinity levels in the Colorado River Basin. Because the model was not functional in 1999, the 1999 Review used salinity control targets established by the 1996 simulations. This resulted in a projected salinity control effort that specified an average control level of 47,000 tons per year of additional salinity control between 1999 and 2015. Reclamation's efforts to develop and refine the river model's capabilities for projecting the River's salinity concentrations continue. For this reason, simulations of the River's salinity concentration are not yet available for this Review. Accordingly, the Forum has decided the current target salinity control level through 2020 for this Review should not be less then the target computed using the last available simulations. Utilizing that philosophy and the rate of control identified in the 1999 Review the target for 2020 would be 1.76 million tons per year.

In order to verify that the 1999 Review methodology is still valid for today's conditions, Reclamation was asked to make additional analyses of today's conditions and project salinity control needs. Using a computer spreadsheet approach, Reclamation reviewed current salinity concentrations at Hoover Dam and factored in water use anticipated between today and 2020. Reclamation estimates that in order to maintain existing (2001) salinity levels, approximately 1.86 million tons per year will need to be controlled by 2020.

Reclamation has also begun analyzing the concept not included in previous analyses, that existing measures will most likely become less effective or may potentially be abandoned over a sufficiently long interval of time. Reclamation's concept anticipates that measures installed through the USDA program have a life expectancy of 15 to 20 years before they begin to deteriorate, need major maintenance or fail. Significant funding and implementation of salinity control activities under the USDA program began in 1986. Those measures first installed are now older than 15 years and, by the year 2020, almost all USDA measures now in place will be 20 years or more old. Measures installed by Reclamation are not of major concern during the next 10 years on account of the longer life expectancy of these measures (such as canal lining). Reclamation has preliminarily estimated that potentially up to 250,000 tons per year of previously installed USDA salinity control measures may not be functioning at their full installed level by 2020 due to aging and deteriorating performance. It is again emphasized that these estimates are very preliminary in nature. Studies are already underway to verify these estimates and to begin to quantify this need and are not included in either the 1.76 million or 1.86 million figure.

After comparing the two methodologies described above, the Basin states determined a reasonable target for salinity control to be 1.8 million tons per year, which is the approximate mid-

point between the two methods. The mid-point was selected in recognition of two factors: there is no apparent information indicating the target should be less than previously adopted, and, there is information indicating the target may need to be increased when analyses associated with the impact that reduced efficiencies and performance of existing projects in accomplishing salinity control are having on program implementation are completed. With the selection of 1.8 million tons per year as the salinity control target, the computation of needed measures is obtained by subtracting from that total the 800,300 tons of salinity per year currently being controlled, leaving 999,700 tons per year to be controlled by new measures. The salinity control requirements are shown in Table 2-4 below.

Table 2-4
Salinity Control Requirements

Total Target (2020)	1.8 million tons per year
Measures in Place (2001)	800,000 tons per year
Plan of Implementation Target (new measures)	1,000,000 tons per year

The Forum anticipates that when the 2005 Review is undertaken, new river model simulations will be made from a refined computer model. This model, it is anticipated, will allow the states and the federal government to simulate a number of future scenarios and receive projections as to long-term salinity control needs. During the next three years, the Forum finds, with the two above analyses having been made, that 1.8 million tons per year of total control must be in place by 2020.

The target was calculated without a complete understanding as to whether activities on BLM administered lands produce a net gain or loss to salinity of the Colorado River. The calculation for the controls in place includes a component for the BLM activities. BLM has not yet submitted its status report to Congress on its basinwide salinity control program as required by P.L. 106-459. Once the report is submitted and its supporting data are analyzed, the Plan of Implementation's salinity control target may have to be adjusted.

Future salinity concentrations will depend not only upon human activities but upon natural phenomena factors, including, but not limited to, runoff conditions, natural evapotranspiration, and dissolution and mixing within the major storage reservoirs. Even with full implementation of the Colorado River Basin Salinity Control Program's current Plan of Implementation which offsets the human impacts since 1972 and through 2020, the actual concentrations at the three numeric criteria stations (and elsewhere in the Colorado River Basin) will continue to fluctuate in response to hydrologic conditions.

CHAPTER 3 - NUMERIC CRITERIA FOR SALINITY

Overview

As discussed earlier in this report, the EPA promulgated a regulation which set forth a basinwide salinity control policy for the Colorado River Basin. This policy required that the flow-weighted average annual salinity in the lower mainstem of the Colorado River be maintained at or below the 1972 levels. The Basin states, acting through the Forum, addressed this requirement in its first Review entitled Water Quality Standards for Salinity Including Numeric Criteria and Plan of Implementation for Salinity Control - Colorado River System dated June 1975.

In the 1975 Review, the Forum proposed three stations as appropriate points in the lower mainstem of the Colorado River at which to measure the flow-weighted average annual salinity. These stations are located at the following points: (1) below Hoover Dam; (2) below Parker Dam; and (3) at Imperial Dam. The basis for selecting these stations is their proximity to key diversion facilities on the lower Colorado River. Nevada diverts Colorado River mainstem water from Lake Mead for use in the Las Vegas area. The Metropolitan Water District of Southern California and the Central Arizona Project divert water from Lake Havasu, impounded behind Parker Dam, for millions of water users in southern California and central Arizona, respectively. The large agricultural areas in the Imperial and Coachella Valleys in California and the Yuma area in Arizona are served by diversions at Imperial Dam.

The flow-weighted average annual salinity for these stations was determined by Reclamation from daily flow and salinity data collected in 1972 by USGS and Reclamation and became the numeric criteria. The fact that 1972 was chosen as the basis for establishing the numeric criteria creates no inference that 1972 represented a typical or average year from either a hydrologic or water quality perspective. The numeric criteria for each of those stations is as follows:

Below Hoover Dam	723 mg/L
Below Parker Dam	747 mg/L
At Imperial Dam	879 mg/L

The criteria were established to protect infrastructure and crop production rather than human health or fish and wildlife values. The salinity concentrations that are anticipated in the future, even without salinity control efforts, have not been shown to have adverse effects on human health or wildlife. Thus, the Colorado River Salinity Control Program is different from most other water quality standards compliance programs.

Natural Variations

The standards require that a plan be developed which will maintain the flow-weighted average annual salinity at or below the 1972 levels while the Basin states continue to develop their compact-apportioned water supply. The plan is not, however, intended to offset the salinity fluctuations that are a result of the River's highly variable annual flows (natural variations in the hydrologic cycle). Analyses have shown that the impact of natural variations in the hydrologic cycle can have a significant impact on salinity. These natural variations in runoff can cause a fluctuation in average annual salinity concentration of as much as 450 mg/L TDS at Imperial Dam. Recognizing the variability of the river, the plan for maintaining the criteria is developed using a long-term mean water supply of 15 maf. When River flows are at or above the long-term mean, and reservoirs are full, concentrations are expected and have been observed to be below the numeric criteria. Conversely, when flows are dramatically below the long-term mean, and reservoirs are depleted, salinities may increase above the numeric criteria.

Temporary Increases

The federal regulations provide for temporary increases above the 1972 levels if sufficient control measures are included in the Plan of Implementation. Should additional water development projects take place beyond those anticipated to occur before control measures are brought on line, temporary increases above the numeric criteria could result. However, these increases will be deemed to conform with the standards if appropriate salinity control measures are included in the plan. During the next three years, or the period of this review, no increases above the 1972 levels are anticipated.

Provision for Reviewing and Revising Standards

The Forum, in its statement of "Principles and Assumptions for Development of Colorado River Salinity Standards and Implementation Plan," approved by the Forum on September 20, 1974, stated, under Principle 7:

> "The Plan of Implementation shall be reviewed and modified as appropriate from time to time, but at least once every three years. At the same time, the (numeric) standards, as required by Section 303 (c) (1) of P.L. 92-5(K) shall be reviewed for the purpose of modifying and adopting standards consistent with the plan so that the Basin states may continue to develop their compact-apportioned waters while providing the best practicable water quality in the Colorado River Basin."

Considerable knowledge has been gained through a wide range of research, and technical studies since the Forum took this position. Procedures for reducing the volume of saline irrigation return flows have been developed. Reclamation and the USDA are implementing voluntary cost-sharing programs with individual farmers, irrigation districts, and canal companies in order to accomplish salt loading reductions to the river system by improving off-farm and on-farm water delivery and drainage systems as well as on-farm water management practices.

Reclamation and the USDA work in cooperation with the Forum's Work Group. The Work Group holds meetings on a more frequent basis than the Forum to review technical information which is generated by the federal agencies. Membership on the Work Group is composed of technical representatives from each of the Basin states and the Executive Director of the Forum. The Work Group keeps current with salinity control efforts and suggests revisions to the Plan of Implementation as appropriate. The Work Group operates under a schedule which enables the states to take action on any potential revision in a timely manner.

Review of the Numeric Criteria

Based on the Forum's statement quoted above, this document is the appropriate setting to review the numeric criteria and recommend any changes if necessary.

The existing numeric criteria were adopted nearly 27 years ago. Since then, the Forum has seen a shift in the water use patterns in the lower mainstem of the Colorado River. While agriculture still remains the predominant user there has been a shift within this sector from growing mostly low value salt tolerant crops to growing higher value, less salt tolerant crops. Current trends and discussions among the Basin states indicate there will be a continued shift in the use by the agricultural sector to the municipal and industrial sector. Because of this shift, the need for water conservation and efficiency within the agriculture sector continues to put an emphasis on reducing salinity. As this shift continues, there will likely be more pressure to remove additional salt from the water and more emphasis on maintaining the salinity below the current numeric criteria.

Because uses are changing over time, it is appropriate to review the numeric criteria to determine if they still adequately protect water uses in the Lower Basin. Both California and Arizona have begun to evaluate the effect of higher salinity on the municipal and industrial sectors in their states. As these efforts progress, it will continue to be appropriate to revisit the numeric criteria associated with the water quality standards for salinity in the Colorado River system.

Based on the current use patterns in the Lower Basin and the ongoing progress toward accomplishing all measures identified in the Plan of Implementation as described in this Review, the Forum finds the current numeric criteria are adequate for the next three years and recommend no changes at this time.

CHAPTER 4 - PLAN OF IMPLEMENTATION

Overview

The purpose of the Plan of Implementation is to offset the effects of water resource development and human activities in the Colorado River Basin after 1972. The Plan of Implementation is not intended to address the salinity of the River caused by human activity prior to 1972, nor salinity caused by natural variations in river flows.

The Forum assesses whether the Plan of Implementation maintains salinity at or below the numeric criteria at some interim point in time as the Basin states develop their compact apportioned waters. Historically, the Forum designed the Plan of Implementation to maintain the numeric criteria for a period of 15-20 years (e.g., the 1990 Review contained a Plan of Implementation through the year 2010). For this Review, the Plan of Implementation has been designed to maintain the salinities of the Colorado River at or below the numeric criteria below Hoover Dam through the year 2020. The Hoover Dam station was chosen because this point requires the most salinity control to accommodate the numeric criteria through this time period.

The Forum determined that 1.8 million tons of salt must be removed or prevented from entering the system annually to maintain the numeric criteria through 2020. The Plan of Implementation includes projects which remove the required salt tonnage. This will principally be accomplished by reducing the salt contributions to the River from existing sources and minimizing future increases in salt load caused by human activities.

The Plan of Implementation is composed of many actions contemplated by the federal government and many of its agencies, and by each of the seven Basin states and many of their agencies. For this Review, the Plan of Implementation can be briefly summarized as follows:

1. Completion of Reclamation, USDA, and BLM salinity control measures to the extent that the measures remain viable and appropriately cost-effective.

2. Implementation of the following Forum recommended and adopted policies (text of policies included in Appendix B of this Review).

   "Policy for Implementation of Colorado River Salinity Standards Through the NPDES Permit Program"

   "Policy for Use of Brackish and/or Saline Waters for Industrial Purposes;"

   "Policy for Implementation of the Colorado River Salinity Standards Through the NPDES Permit Program for Intercepted Ground Water;" and

"Policy for Implementation of the Colorado River Salinity Standards Through the NPDES Permit Program for Fish Hatcheries."

The Forum started with an initial NPDES policy and, from time to time, has considered amendments or additions to this policy. The Forum gave initial approval to a revised policy for NPDES discharges, in June 2002, and received public comments on the proposed revisions during the summer of 2002. After consideration of the comments received, the Forum modified the policy and formally adopted it on October 30, 2002. This revised policy replaces the "POLICY FOR IMPLEMENTATION OF COLORADO RIVER SALINITY STANDARDS THROUGH THE NPDES PERMIT PROGRAM" adopted by the Forum in 1977.

The revised policy is included as Appendix B of this Review. The major modifications in the revised policy include:

- A clarification of the provision for allowing a waiver of the "no salt return" requirement where the total salt load is less than one ton/day or 366 tons/year;
- New provisions addressing the discharge of water that has been used for once-through non-contact cooling water purposes;
- Provisions addressing new industrial sources that have operations and associated discharges at multiple locations;
- A new provision allowing a waiver of the "no salt return" requirement for "fresh water industrial discharges" where the discharged water does not cause or contribute to exceedances of the salinity standards for the Colorado River system; and
- Language encouraging 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 discharges of all salt from proposed new construction.

Existing policies related to brackish water, intercepted groundwater, and discharges from fish hatcheries are also contained in Appendix B, and they remain unchanged.

3. Implementation of nonpoint source management plans developed by the states and approved by EPA.

Item 1 of the list above is to be implemented by federal agencies in conjunction with state, local and private participants. The Forum participates with federal agencies in developing the measures to be implemented. The Forum also urges Congress to appropriate the funds needed for implementation, and recommends legislative changes when necessary. Items 2 and 3 above are primarily implemented by each of the Basin states.

Table 4-1 illustrates that the Program has controlled a total of 800,000 tons per year of salt. In order to meet the target of 1.8 million tons per year of salinity control through 2020, it will be necessary to fund and implement potential new measures which ensure the removal of an additional 1,000,000 tons per year. Over the next three years, cost per ton for salt control is estimated to be $30 per ton for Reclamation and $45 per ton for USDA.

Table 4-1
Colorado River Basin Salinity Control Program
Plan of Implementation Summary
(Values in Tons Per Year)

AGENCY	MEASURES IN PLACE (2001)	NEW MEASURES PROPOSED (2020)	TARGET (2020)
Bureau of Reclamation	482,000	500,000	982,000
U.S. Department of Agriculture	318,000	437,000	755,000
Bureau of Land Management	----------	----------	----------
Unidentified	0	63,000	63,000
TOTAL	800,000	1,000,000	1,800,000

In order to achieve this level of salt reduction, the federal departments and agencies would require the following capital funding: Reclamation appropriation - $10.5 million per year (bringing the total Reclamation program with cost-sharing to $15 million per year); and USDA EQIP appropriation - $13.8 million per year (bringing the total on-farm program to $19.7 million per year with Basin states parallel program). In addition, there is a need for an annual appropriation of approximately $3 million for operations and maintenance of Reclamation measures in place. These estimated cost values are substantiated through salinity control expenditure experience to date and the technical ability to actually implement these efforts through the Salinity Control Program. No new measures for BLM are proposed in this review. Even though BLM has estimated potential salt retention measures, the Forum questions if other activities on BLM administered lands result in a net increase in salt contributions to the River. It is anticipated that when measures are identified they will be included in the Program. BLM has not yet submitted its status report to Congress on its basinwide salinity control program as required by P.L. 106-459. Estimates for cost-effectiveness of the BLM program has not been provided because past accounting procedures used by BLM have not allowed for an analysis to occur as to expenditures for salinity control measures being implemented by the agency.

Table 4-2
Summary of Federal Salinity Control Programs

UNIT	TONS PER YEAR REMOVED
MEASURES IN PLACE BY USBR (2001)[13]	
USBR Basinwide	129,300
Meeker Dome	48,000
Las Vegas Wash Pittman	3,800
Grand Valley	127,500
Paradox Valley	109,000
Lower Gunnison Winter Water	41,400
Dolores	23,000
SUBTOTAL	482,000
MEASURES IN PLACE BY USDA (2001)[14]	
Grand Valley	85,500
Price-San Rafael	13,200
Uinta Basin	106,000
Big Sandy River	37,000
Lower Gunnison	58,900
McElmo Creek	17,700
SUBTOTAL(rounded)	318,000
MEASURES IN PLACE BY BLM	
Nonpoint Sources	unknown
Well-Plugging	unknown
TOTAL	800,000
POTENTIAL NEW MEASURES	
USBR Basinwide	500,000
Price San Rafael (USBR/USDA)	133,700
Grand Valley (USDA)	46,500
Uinta Basin (USDA)	34,500
Big Sandy River (USDA)	15,900
Lower Gunnison (USDA)	127,100
McElmo Creek (USDA)	28,300
Mancos River (USDA)	9,000
USDA unidentified	41,700
Other Unidentified	63,000
New Well Plugging and Nonpoint Source (BLM)	unknown
SUBTOTAL(rounded)	1,000,000
TOTAL	1,800,000

[13] As reported by USBR, oral communication, 2002.

[14] As reported in Federal Accomplishment Report for Fiscal Year 2001

Federal Programs

Overview

Major components of this 2002 Review's Plan of Implementation are the federal programs. Table 4-1 summarizes the salinity control achieved by the federal participants under the original and current authorities and the salinity control measures which must be implemented in order to meet the goal of approximately 1.8 million tons of salt load reduction annually through 2020.

The involved federal agencies, working in close cooperation with the Forum, have identified salinity control measures that have been and may be implemented. The collective efforts of Reclamation, the USDA, and the BLM are identified and summarized in Table 4-2.

It should be recognized that over time some of the salinity control measures now in the Plan of Implementation might not remove all of the projected salt, and the costs of removal may increase. Other salinity control measures would then be implemented to maintain the numeric criteria while the Basin states continue to develop their compact-apportioned waters.

The following sections briefly describe Reclamation's, USDA's, BLM's and EPA's activities which constitute the federal portion of the recommended Plan of Implementation.

Reclamation/USDA Units

Since the original salinity control act passed in the 1970's, Reclamation's and USDA's participation in the Plan of Implementation has changed in several ways. Both programs were restructured in 1995-96 with changes to their authorizations. Reclamation's program now encourages open competition for all types of salinity control. The USDA salinity control program was incorporated into a larger, national program (EQIP) with multiple purposes.

Although Reclamation projects may address any type of effective salinity control, many Reclamation projects concentrate on improving the efficiency of irrigation delivery systems, while the USDA program concentrates on improving on-farm systems. The two programs have purposely been designed to be highly integrated. This has improved the overall performance of the combined program beyond what either agency might have done individually.

The following paragraphs briefly describe the Reclamation and USDA units included in the recommended Plan of Implementation. Detailed information on each unit can be found in the following reports:

Quality of Water - Colorado River Basin, Progress Report No. 20, January 2001, U.S. Department of the Interior, U.S. Bureau of Reclamation.

Monitoring and Evaluation Report-2001 - for each of the salinity control units currently being implemented by the USDA Colorado River Salinity Control Program.

Units Completed

Five Reclamation units (Meeker Dome, Las Vegas Wash, Grand Valley, Paradox Valley, and Dolores/McElmo) are all essentially completed.

Units Being Implemented

Paradox Valley (Reclamation): Local ground water comes into contact with the top of a natural salt formation where it becomes nearly saturated with sodium chloride and surfaces in the Dolores River channel in Paradox Valley, Colorado. The River picks up over 205,000 tons of salt annually from this saline ground water source as it passes through the valley.

The Salinity Control Program involves pumping the saline ground water, thereby lowering the water table and reducing saline inflows to the Dolores River. The pumped brine is injected into a deep well in the Paradox Valley. About 109,000 tons of salt are being removed annually by this unit. The injection well, the brine pipeline, the surface treatment building, and the injection building have been completed and tested. The facility went into operation in FY 1997.

Grand Valley (Reclamation and USDA): The area within the Grand Valley Unit in western Mesa County, Colorado, contributes 580,000 tons of salt annually to the Colorado River. Most of the salts are leached from the soil and underlying Mancos Formation by ground water that is recharged by deep percolation from canal and lateral leakage and on-farm application.

The Reclamation program in the Grand Valley Unit was implemented in two stages. Stage I, encompassing about 10 percent of the unit area, consisted of concrete lining 6.8 miles of the Government Highline Canal (GHC), consolidating 34 miles of open laterals into 29 miles of pipe laterals and installing an automated moss and debris removal structure. This work was completed in April 1983 to test and demonstrate the viability of the project. Stage II construction began on the GHC system in the fall of 1986. Construction of the Price and Stubb Ditch systems started in 1991 under cooperative agreements with the Palisade Irrigation District and the Mesa County Irrigation District. Work on the Stage II systems was completed in 1998. The Unit is expected to reduce salt loading by 127,500 tons per year.

USDA published its plan for the Grand Valley on-farm program in 1977, and in 1980 prepared a supplement to include improvements to lateral systems. The plan, updated in 1994, identified a salt load reduction goal of 132,000 tons. The USDA program includes the installation of on-farm salinity reduction practices and lining or piping certain off-farm lateral systems which are needed to support the on-farm improvements. Implementation was initiated in 1979 under existing USDA authorities, and in 1987 funding became available under the USDA Colorado River Salinity Control Program, and is continuing under the EQIP.

Uinta Basin (Reclamation and USDA): The area covered by the Uinta Basin Unit in northeastern Utah contributes about 450,000 tons of salt annually to the Colorado River. Return flows from 204,000 acres of irrigated land account for most of the salt contribution. Projects in this area may apply under Reclamation's new Basinwide Salinity Control Program. Several projects within the unit area are nearing completion and additional proposals are under consideration at this time.

USDA published the Uinta Basin Salinity plan in 1970, and in 1987 prepared a supplement to include lateral systems. In 1991, the Uinta Basin Unit was expanded to include treatment on adjacent irrigated land. The plan identifies a salt load reduction goal of 106,000 tons annually based on a projected treatment rate of 84 percent of the irrigated acres in the project area. In fact, participation has exceeded expectations. Consequently, USDA intends to continue implementing measures that are cost-effective. The USDA program includes the installation of on-farm salinity reduction practices and lining or piping lateral systems. The major emphasis is conversion of inefficient surface irrigation to sprinkler systems. Implementation was initiated in 1980 under existing USDA authorities, and in 1987 funding became available from the Colorado River Salinity Control Program and is continuing under EQIP.

Lower Gunnison Basin (Reclamation and USDA): The Lower Gunnison Basin Unit is located in west-central Colorado. An estimated 360,000 tons of salt are contributed annually to the Colorado River. P.L. 98-569 authorized portions of the unit for construction by Reclamation. Construction of the winter water portion of the unit is designed to eliminate ditch seepage during the non-irrigation season by providing a piped delivery system for livestock water. This component was completed in 1996 and is estimated to reduce salt loading by 41,400 tons per year. Studies on ways to reduce costs of the canal and lateral lining portion of the project have been completed. These measures would potentially reduce salt loading by an additional 64,000 tons per year and may apply for funding under Reclamation's new Basinwide Program. A joint selenium/salinity control demonstration project at Montrose Arroyo, has been completed and proven effective based on monitoring by the USGS.

The Lower Gunnison Basin USDA plan, updated in 1994, identifies a salt load reduction goal of 166,000 tons. The USDA program includes the application of on-farm salinity reduction practices and improving off-farm irrigation laterals. Implementation was initiated in 1988 and is continuing under EQIP.

Big Sandy River (USDA): The Big Sandy River Unit is located in southwestern Wyoming. Below Big Sandy Reservoir, water is diverted to irrigate lands in the Eden Project. Irrigation seepage into shallow aquifers near the Big Sandy River is the source of saline seeps. These seeps and springs below the Eden Project contribute about 116,000 tons of salt, and tributaries contribute about 48,000 tons of salt annually to the Green River.

The USDA Big Sandy River Unit plan was published in 1988. The USDA salinity control program consists of converting 15,700 acres of on-farm surface irrigation to low-pressure sprinkler

systems. When fully implemented, the on-farm program will reduce the salt loading by an estimated 52,900 tons per year. Implementation is continuing under EQIP.

Dolores Project/McElmo Creek (Reclamation and USDA): Irrigation and other nonpoint sources in the McElmo Creek area of southwestern Colorado result in an estimated salt load of 119,000 tons per year to the Colorado River.

Salinity control, as an added feature of the Dolores Project, already under construction by Reclamation in 1984, was authorized by the 1984 Salinity Control Act. Reclamation modified the design of Towaoc Canal to allow abandonment and consolidation of certain ditches, and has lined other ditches and installed pipe laterals and has reduced salt loading from ditch seepage. These improvements, completed in 1996, reduced salt loading by an estimated 23,000 tons per year.

The McElmo Creek Unit plan was described in the Natural Resources Conservation Service's (NRCS) 1989 Environmental Impact Statement. The plan, updated in 1994, will remove an estimated 46,000 tons per year of salt from the Colorado River. Implementation of the plan is continuing under EQIP.

San Juan River-Hammond (Reclamation and USDA): The San Juan River Unit drainage contributes approximately one million tons of salt annually to the Colorado River Basin. In the Hammond area, Reclamation has completed a planning report/EA and begun implementation. The project will line sections of the Hammond Project Irrigation system. The estimated salt load reduction would be about 48,000 tons per year. The project is scheduled for completion in 2002.

The NRCS completed an investigation in 1992 to explore the potential for a USDA program in the San Juan River Basin in the Hammond area. Investigations indicated that a USDA on-farm program is not cost-effective at this time.

Price-San Rafael Rivers (Reclamation and USDA): An estimated 430,000 tons of salt annually reaches the Colorado River from these two river basins. The Price and San Rafael Rivers, tributaries of the Green River, are 120 miles southeast of Salt Lake City. The final planning report/EIS was completed and issued in December 1993. The preferred plan would reduce salt loading to the Colorado River by an estimated 161,000 tons per year based on a projected treatment rate of 65 percent of the irrigated acres in the project area. In fact, participation has exceeded expectations. Consequently, Reclamation and USDA intend to continue implementing measures that are cost-effective. Portions of the project are under construction with funding from USDA's EQIP, and from Reclamation's new Basinwide Salinity Control Program (P.L. 104-20 which, in 1995, authorized the competitive "Request for Proposal" process).

USBR Basinwide Program: The Salinity Control Act as amended by P.L. 104-20 in 1995 and P.L. 106-459 in 2000 (see Appendix A), authorized the Secretary of the Interior to undertake a variety of salinity control measures without returning to Congress for individual construction authorizations and to implement salinity control measures by funding State, local, or private-sector

initiatives which achieve salinity reduction. The Basinwide Salinity Control Program solicits a wide variety of proposals for salinity control efforts from both private and public sectors. On four separate occasions, Reclamation has formally asked for proposals thru a competitive Request for Proposals (RFP) process. In each case, a ranking committee made up of both state and federal representatives convened to evaluate the proposals. The committee ranks proposals competitively based on their cost per ton (cost-effectiveness) and other performance risk factors.

Reclamation is nearing completion of 15 out of 16 construction cooperative agreements awarded in earlier RFP's and is negotiating 10 new agreements for proposals received in 2001. The cost of this new, competitive approach to salinity control is about $30 per ton, as shown in Table 4-3. This is nearly a three-fold reduction when compared to Reclamation's old program at approximately $80 per ton. The 1995 and 2000 amendments to the Act authorize federal appropriations of $175 million to carry out the Title II Salinity Control Program. With cost-sharing from the Basin states authorized in 1996, the total funds available for Reclamation's Basinwide Salinity Control Program are $250 million. It is anticipated that these funds will be expended over the next 10 to 15 years.

Table 4-3
Reclamation Basinwide Salinity Control Project Summary

Unit/Project	Method	BOR portion of Controls (tons/yr)	Proposed Total Controls (tons/yr)	Uniform Cost Effectiveness 6.375% 25yrs
Hammond	Canal Lining	48,130	48,130	$22
Uncompahgre Demo	Pipe Lateral	2,295	2,295	$31
Ashley	Sewage Lagoon	9,000	9,000	$29
PRICE-SAN RAFAEL UNIT				
Allen Lateral	Combined System	2,031	8,125	$33
North Carbon	Combined System	1,921	7,684	$44
Cottonwood	Winter Water	8,506	8,506	$20
Ferron	Combined System	11,852	47,407	$29
Seeley-Collard	Combined System	226	905	$26
Moore Group	Combined System	4,397	17,587	$31
Wellington	Combined System	17,688	17,688	$22
UINTA BASIN UNIT				
Burns Bench	Combined System	6,675	21 [illegible]8	$24
BIA - Ute Tribe	Line & Combined System	50,306	53 [illegible]4	$30
Duchesne County	Pipe Canals	20,417	20,417	$36
Farnsworth	Pipe Canals	9,557	9,557	$28
L. Brush Cr. (Sunshine)	Combined System	721	2,763	$33
Western Uintah	Combined System	16,205	25,780	$18
2001 RFP PROJECTS				
Duchesne Irr Co-S Canal	Pipe Canal	1,250	1,250	$20
River Canal	Pipe Canal	4,060	4,060	$25
Union Canal	Pipe Canal	5,255	5,255	$25
Uintah Basin Irr Co	Pipe Canal	3,578	3,578	$25
Dry Gulch E	Pipe Canal and Lateral	12,973	12,973	$25
Dry Gulch C	Pipe Laterals	15,324	15,324	$25
Tropic & East Fork	Pipe Canal	3,100	3,100	$28
Lawrence South	Pipe Canal + USDA Sprinkler	1,304	5,217	$29
Ouray Park Irr Co	Pipe Canal	10,131	10,131	$29
Duchesne WCD	Pipe Canal + possible Sprinkler	42,800	42,800	$30
	Total	309,702	404,344	$27

USDA is implementing on-farm salinity control measures in six project areas in Colorado, Utah, and Wyoming. Approximately one-half of the total annual salt control has been implemented. Table 4-4 summarizes the salinity control and costs for the USDA project areas.

Table 4-4
USDA Salinity Control Progress Summary

Unit	Salt Controlled thru FY 01 (tons per year)	Planned Salt Control (tons per year)	Expenditure thru FY 01 ($1000's)	Projected Total Cost[1] ($1000's)	Cost Effectiveness[2] thru FY 01 ($ per ton)
McElmo Creek	17,662	46,000	10,253	26,704	48
Lower Gunnison	58,870	166,000	31,235	88,076	44
Uinta Basin	106,040	106,800	52,748	53,126	41
Grand Valley	85,505	132,000	39,322	60,704	38
Big Sandy River	36,994	52,900	11,913	17,035	27
Price- San Rafael[3]	13,278	120,220	2,569	23,260	16
Totals	318,349	623,920	148,040	268,905	39

[1] Total costs estimated as a ratio of existing costs and tons controlled to planned tons controlled.
[2] Cost-effectiveness computed using 6.625% planning interest rate over 25-year life.
[3] Integrated Reclamation and USDA irrigation improvements program.

Bureau of Land Management

The Bureau of Land Management (BLM), it is felt, should have a commitment to help meet state and federal water quality standards within the Colorado River Basin. Included in this commitment would be the goal of reducing the contribution of salts to the Colorado River from BLM-administered public lands. Although salt reduction is achieved by controlling both point and nonpoint sources of salt contributions, the majority of salt derived from public lands is of nonpoint-source origin. The greatest reductions in salt may be achieved through management practices that minimize soil disturbances, repair disturbed surface environments, and protect water quality. It is recognized that due to the nature and behavior of nonpoint sources of salinity, the imprecise boundaries encompassed by many management decisions, the large areas involved, and the uncertainties concerning salt transport in arid environments, it is difficult to quantify actual impacts on total dissolved solids in the Colorado River with any reasonable degree of precision or accuracy. In contrast, the calculation of salt reduction from point-source control activities is relatively easy and precise. The BLM has used, in the past, a three-pronged approach to salinity control:

- Control of point sources, such as saline springs and seeps and abandoned flowing wells that yield saline water (larger projects are referred to the Bureau of Reclamation)

- Control of nonpoint sources through cost-effective land management techniques that result in multiple-resource benefits
- Prevention of nonpoint-source salt mobilization through land-use planning, permit stipulations, land-use authorizations, best management practices, watershed protection strategies, and ecological restoration

The BLM should establish and rely on a water-quality monitoring effort to determine suitable areas for nonpoint-source control projects and to assess individual project effectiveness and overall program effectiveness.

Point Source

Well plugging represents one of the few opportunities to eliminate salt from point sources. Occasionally, old or improperly abandoned wells deteriorate and discharge flowing saline waters to the surface. Where the operator is not known or no longer exists, these wells are referred to as orphan wells. Plugging these wells and stopping the discharge of large volumes of saline water results in considerable quantities of salt retained. For example, the Spring Creek well in Colorado was plugged in 2000, preventing approximately 160 tons/year of salt from reaching the surface.

The BLM will continue to identify saline springs and seeps through its water-source inventories. When identified, saline springs and seeps will be analyzed for potential salinity control projects.

Nonpoint Sources

The BLM should be committed to identifying, understanding, and controlling nonpoint sources of salinity on BLM-administered public lands. The BLM has used the results of the unified watershed assessment characterization process, soil salinity maps, watershed assessments, watershed analysis tools, reconnaissance water-quality studies, and water-quality monitoring to identify salinity "hot spots." The BLM has been involved with nonpoint source control in the past using the following tools or activities.

Resource Management Plans: The Federal Land Policy and Management Act requires the BLM to prepare land use plans that provide management direction for the public lands. BLM's planning process is the principal mechanism for making land-use decisions and the first step in implementing salinity control actions. The BLM has developed a resource management planning process to make basic land-use decisions. Although all resource values and land uses on BLM-managed public lands are included, the development of solutions to specific planning issues is emphasized in resource management planning. The Forum hopes that salinity goals and objectives will be used in a more focused way as Resource Management Plans are developed.

The BLM's planning process is used to develop Resource Management Plans (RMP) that examine management alternatives for all resources and land uses on BLM public lands. All resource

management programs must utilize the planning system to identify management options. Thus, a comprehensive approach to salinity control on public lands must first be addressed in RMP's. Nonpoint sources are identified through water-use inventories, watershed assessments, and reconnaissance studies in high-priority watersheds. Land management actions tend to fit under one of the following aspects of resource management: planning and administrative actions, vegetative management, construction and maintenance, or use authorizations.

Planning and Administrative Actions: These are broad, general management actions that establish a foundation or framework for future land-use decisions. They include planning documents of all types, studies, inventories and other commitments to data collection, and science-based management decisions. Although impacts on Colorado River Basin salinity are often not a direct consideration during the formulation of management strategies, salinity reduction is often a peripheral benefit that is realized as the strategies are implemented. The Forum would like salinity control to be directly addressed in the future.

Vegetative Management: Actions taken to improve vegetative cover result in slower runoff velocities, decreased amount of runoff, and decreased soil erosion. Decreasing the amount of runoff and soil erosion on upland areas results in a decrease in the potential amount of salt leaving the treated area. Vegetative management actions include; riparian area improvements, noxious weed control, reclamation or revegetation, and prescribed burns. More knowledge is needed about the favorable impacts related to salinity control by vegetation management.

Wild horse and burro herds can put additional pressure on fragile soils and riparian areas by disrupting soils and plants through their physical movements and by the removal of ground cover through grazing. The BLM can reduce such damage only by intensively managing the herds, by influencing their movements, or protecting fragile or vulnerable areas from exposure. Quantification of wild horse and burro herd control efforts has not been made with respect to salinity control.

Construction and Maintenance Activities: Construction and maintenance activities are concerned with engineering and construction of facilities that are primarily designed to decrease or intercept runoff and soil erosion, and thereby limit the offsite movement of saline water and sediment. Once these facilities are constructed, they require periodic maintenance in order to keep them working efficiently. Construction and maintenance activities include; road and trail maintenance and closures, protective fencing and access control, development of springs and water sources to improve livestock distribution, and erosion control and sediment-trapping structures. It is not known what the total impact is from these construction and maintenance activities as to salt contributions from BLM-administered lands.

Use Authorizations: The BLM must issue use authorizations before certain land-use activities can take place on the public lands. Where saline soils are present, these use authorizations contain stipulations designed to minimize offsite movement of water and soil. Some important uses that occur in saline areas and require authorizations; oil and gas development, grazing and off-road

vehicle use. The impact of these uses on salt contributions to the river system needs to be better understood.

Analysis of BLM Effort

Congress has, by law, instructed that the BLM should prepare a report to Congress outlining a BLM program for salinity control. That report is in review and had not been released at the time of the writing of this report. Future efforts planned by the BLM to control salt contributions from lands administered by the agency may be better understood upon the release of the report. In past triennial reviews, there has been reported tons of salt controlled by BLM efforts. It has now come to be understood by the Forum that the BLM does not know if its management of lands over the last several years has resulted in more or less salt being contributed to the river from these lands. If, in fact, more salt is being contributed then it would be inaccurate for the Forum to credit past favorable actions and to project, at this time, salt savings by BLM management in the future. Therefore, this report does not predict gains or losses with respect to salinity control by BLM efforts.

Environmental Protection Agency

National Pollutant Discharge Elimination System (NPDES) permits are issued by EPA for the two non-delegated states in the Basin (Arizona and New Mexico), and for all Indian tribes. In Arizona, the State drafts the permits for Arizona waters consistent with the Forum's NPDES policies. The State also provides the public notices. EPA Region IX issues the state-drafted Arizona permits and drafts and issues permits for tribal waters consistent with the Forum's policies. EPA Region IX issues permits for Navajo lands in all three EPA regions. EPA Region VI drafts and issues permits for Tribal and State waters in the New Mexico portion of the Basin consistent with Forum policies. EPA Region VIII issues the NPDES permits for Indian facilities in Region VIII's portion of the Colorado River Basin, and all federal facilities within the State of Colorado. Salinity requirements for these permits are reviewed and added where needed during the permit re-issuance process.

State Programs

Overview

A major element of the state programs is the ability of the Basin states to cost-share in the Reclamation and the USDA programs. This allows, for additional funds to be made available from the Basin states' fund through up-front cost-sharing to move the salinity control effort ahead. At current federal funding levels, the Basin states contribute about $8 million each year. Basin states' funds are available to cost-share in a larger program if federal dollars were to be increased.

The states' portion of the Plan of Implementation, as set forth in this and earlier Forum Reviews, also includes effluent limitations on industrial point source discharges with the objective

of no-salt return whenever practicable, as well as a program which parallels USBR and USDA efforts and which is funded from the Basin states' funds.

Forum's NPDES Policies

In 1977, the Forum adopted its "Policy for Implementation of Colorado River Salinity Standards Through the National Pollution Discharge Elimination System (NPDES) Permit Program." This policy provides guidance for the regulation of municipal and industrial point source discharges of saline water. In 1980, the Forum adopted a policy to encourage the use of brackish and/or saline waters for industrial purposes where it is environmentally sound, and economically feasible. A third policy dealing with intercepted ground water was adopted by the Forum in 1982. In 1988, the Forum adopted a fourth policy which addresses the salinity of water discharges from fish hatcheries.

Important components of the Plan of Implementation for salinity control are the Basin states' activities associated with the control of total dissolved solids through the National Pollutant Discharge Elimination System (NPDES) Permit program, and the water quality management plans. As previously indicated, the Forum approved needed changes to its NPDES policies on October 30, 2002. The original policy allowed for a waiver to be granted by the permitting agency if the proposed discharge of water contained less than a ton of salt per day. In recent years, concern has been expressed where new development of resources, most likely in the energy industry, could result in many point discharges that would total much more than a ton a day but would not total more than a ton at any one discharge point. An example of this type of development is the growing coal bed methane industry where in discreet areas hundreds of wells are proposed. The Forum created a Policy Committee and that committee presented to the Forum on June 5, 2002 proposed policy changes. After undergoing public review, various revisions were made to the policy by the committee. The Forum accepted the committee's report and approved the policy on NPDES discharges at its October 30, 2002 meeting. The newly adopted policy is included in Appendix B.

Each of the states has adopted the Forum policies presented in Appendix B. A listing of the NPDES permits in force within the Colorado River Basin are presented in Appendix C. During the period of this review, the status of implementation of the NPDES permits and the water quality management plans in each of the states is as follows:

Arizona

NPDES Permits

The NPDES Program is currently administered by the EPA in Arizona, however, the Arizona Department of Environmental Quality has submitted a program primacy package to EPA Region IX and anticipates receiving the program delegation on July 1, 2002. Until full program delegation, the permitting workload is shared between the two agencies, each drafting permits which are then issued by EPA. EPA is responsible for issuance of all permits on tribal lands, including the Navajo Nation,

who like the State, assist EPA in drafting permits. The State and EPA follow Forum policy in the administration of the NPDES Program.

There are currently 58 NPDES permits in the Colorado River Basin portion of the state. Nineteen of the facilities are on tribal lands: 17 are municipal wastewater discharges or water treatment plants; 3 are major facilities. The two industrial discharges, Peabody Coal Company and Energy Fuels, are both on the Navajo Nation lands and are "major" facilities with numerous outfalls. There are 37 non-tribal facilities in the basin: 8 industrial (1 major); one national fish hatchery and 28 municipal systems, of which 5 are majors. Many of the facilities discharge to ephemeral drainages many miles from the river.

Water Quality Management Planning

The Northern Arizona Council of Governments (NACOG) is the designated planning agency for the Colorado River and its tributaries in the northeast and north-central portions of the state. Along the lower mainstem of the river, Mohave, La Paz and Yuma counties, have each been delegated the planning responsibilities for their areas. NACOG and the three counties along the mainstem of the river are experiencing tremendous residential growth and have also been targeted for development of merchant power plants. With the delegation, each county must prepare and maintain a water quality management plan that addresses both point and nonpoint sources of pollution. The plans encourage local control and the voluntary use of Best Management Practices to reduce nonpoint source pollution. As the plans are updated, the State is encouraging inclusion of salinity control issues and the importance of working cooperatively with the Salinity Control Forum in implementing its policies.

To support both the Forum goals for a basinwide approach to salinity control and to ensure compliance with the numeric criteria set for the river through the NPDES Program, in the 2002 Review of its surface water quality standards, Arizona has adopted the Forum's Plan of Implementation contained in the "1999 Review of Water Quality Standards." Another key change in Arizona's water quality standards is the proposed repeal of the turbidity standard in favor of a Suspended Sediment Concentration (SSC) standard coupled with a narrative bottom deposit standard. The State's research has shown that the existing turbidity standard is not a good predictor of impacts to aquatic life in southwest arid environments and has proposed to replace that standard with a numeric standard for SSC and the narrative standard which includes implementation procedures.

Over half of the waters on the State's 1998 303(d) list are listed for turbidity and coliform bacteria. Nearly all of the watersheds on non-tribal lands within the Colorado River Basin have been assessed as Category 1 watersheds under the Clean Water Action Plan, Unified Watershed Assessment (UWA). The goal of the State's Nonpoint Source Management Program, developed pursuant to Section 319 of the Clean Water Act, is to develop and implement a program which will reduce human-induced pollutants from nonpoint sources from entering surface and groundwaters. Arizona's program has been in place for over a decade and steady progress is being made in

identifying, controlling and abating Nonpoint Source (NPS) pollution from various activities. In support of the program, the State has entered into cooperative agreements with other state and federal land and resource management agencies to carry out portions of the NPS plan on their lands. The State will update its NPS Management Plan in FY03.

Section 319 also provides federal grants for demonstration projects which are reviewed by ADEQ for consistency with the NPS Plan. The State has recently revamped the Water Quality Improvement Grant Program to facilitate the funding of Section 319 eligible projects to improve water quality including projects such as well plugging, salinity control impoundments, and rangeland management.

Other Activities

Arizona continues to support a basinwide approach to salinity control through its participation in the Colorado River Salinity Control Forum and the Advisory Council. In addition to the Water Quality Improvement Grant Program, the State has recently amended the State Revolving Fund rules to allow use of funds for NPS projects consistent with the State's NPS Plan, including salinity control projects.

ADEQ has taken a lead role in the Colorado River Source Water Assessment Project which involves the seven Basin states developing and implementing an interstate source water plan to protect and sustain safe drinking water quality for the border states along the River. The primary goal of the project is to provide a common approach to delineate the watershed along the Colorado River and define the process for determining those land use activities that may impact the river. A secondary goal is to provide a forum for these states to meet, discuss issues and exchange information related to source water assessment and protection.

California

NPDES Permits

The California Regional Water Quality Control Board, Colorado River Basin Region (Regional Board), issues the NPDES permits for navigable waters and Waste Discharge Requirements for land discharges within the Colorado River drainage portion of the state. In issuing and reissuing waste discharge requirements, the Regional Board complies with all Forum policies. In addition, the Regional Board has included in the discharge permit requirements for land discharges, a prohibition against brine backwash from water softeners into evapo-percolation ponds which overlie ground waters which are in hydraulic continuity with the Colorado River System. Industrial discharges are to be confined in impervious evaporation basins.

Water Quality Management Planning

The Water Quality Control Plan for the Colorado River Basin was adopted by the Regional Board in November 1993. Following public hearings, the updated plan was adopted by the Regional Board and approved by the State Water Resources Control Board in February 1994. The revised plan became effective upon approval of the Office of Administrative Law in August 1994. The salinity control component of the Water Quality Control Plan is consistent with the Forum's Plan of Implementation for salinity control. The Regional Board is working with local entities and the Colorado River Board of California to ensure that implementation of the water quality plan is achieved.

The Colorado River Basin Regional Board initiated a Triennial Review of the Water Quality Control Plan in September 2001. The purpose of this review is to reaffirm and/or revise water quality objectives and beneficial uses for ground and surface waters, and evaluate the adequacy of the Basin Plan for protecting water quality. Several projects that require Basin Plan amendments are underway and include Total Maximum Daily Loads (TMDL) for the Salton Sea, New and Alamo Rivers, and localized septic tank prohibitions.

Other Activities

State Water Resources Control Board policy 75-58 established priorities for the use of poor quality waters for cooling of inland power plants, and has been in effect since 1975. The State Water Resources Control Board has included salinity control in the Colorado River among its top priority items.

Colorado

NPDES Permits

The NPDES permit program has been delegated to the State of Colorado by the EPA since 1978. The Water Quality Control Division ("WQCD") of the Colorado Department of Public Health and Environment administers the NPDES program in Colorado. The Water Quality Control Commission ("WQCC") has adopted regulations which reflect all of the current Forum policies for implementation of the Colorado River Salinity Standards. Permits issued for discharges tributary to the Colorado River require compliance with these regulations and monitoring of discharged salt loads. Consistent with the Forum's policies, industrial and municipal permittees who cannot meet the no salt discharge objective of those policies, and do not otherwise qualify for a waiver of the objective, are required to conduct studies to demonstrate that meeting these standards is not practicable. The State of Colorado administers far more NPDES permits in the Colorado River Basin than any other Basin state. As of December 31, 2001, there were approximately 370 NPDES permits in the Colorado River Basin portion of the state, of which 44% were for domestic or municipal dischargers and 56% were for industrial facilities (which category includes discharges from municipal potable water treatment plants).

Water Quality Management Planning

Pursuant to Section 319 of the Clean Water Act, Colorado has developed a "Nonpoint Source Assessment Report" ("NSAR") which identifies stream segments impacted by nonpoint source pollution. The report recognized the impacts caused by salinity from nonpoint sources on several stream segments and principally attributed the elevated salinity levels in those segments to agricultural activities (i.e. irrigation and soil erosion due to grazing). It further recognized the significance of the salinity control efforts which have been made pursuant to the Colorado River Basin Salinity Control Act. The assessment report also recognized the need for development of best management practices (BMPs) to control nonpoint source pollution, and a handbook of BMPs was prepared. This information is included in the biennial Section 305(b) (of the CWA) report, "Status of Water Quality in Colorado". The "Colorado Nonpoint Source Management Program", completed by the State and approved by EPA, is intended to provide an implementation strategy for the future treatment of water quality problems identified in the NSAR. The program sets forth the roles and responsibilities of the various parties responsible for implementing the nonpoint source program in Colorado. The program includes: a priority system for reviewing, ranking and recommending nonpoint source control projects for funding and BMP's that can be utilized to achieve water quality objectives. The program has been updated to include EPA's "9-Key Elements".

In the Colorado River Basin of Colorado there are four water quality planning regions. Region 9 covers primarily the San Juan Basin portion of Colorado. Salinity control projects in this area include McElmo Creek and portions of the Dolores Project. The Region 10 plan covers primarily the Gunnison and Dolores River Basins. Salinity control projects in this region include the Lower Gunnison and Paradox Valley units. Region 11 includes the Colorado main stem below Dotsero, and the lower reaches of the White and Yampa Rivers. Salinity control projects in this region are the Grand Valley and Meeker Dome units. Region 12 is comprised primarily of the high mountain headwaters of the Colorado River and produces little salt loading to the river system. Regional plans direct salinity control efforts towards control of point sources and local control of nonpoint sources in the form of urban runoff restrictions and contain lists of stream classifications and the NPDES permits within each area. Opportunities for salinity control have been identified in the management plans for all areas of the Colorado River Basin within Colorado. Critical salt yielding areas have been assessed by the USDA, the Colorado Soil Conservation Board, the local soil conservation districts, and in some cases the Bureau of Land Management. The USDA's Natural Resources Conservation Service and the WQCD's staff cooperated in preparing a Unified Watershed Assessment which identified watersheds to be targeted for water quality improvement projects. All of the high salinity load contributing watersheds in western Colorado were assigned the highest priority for the use of additional funds made available to the Nonpoint Source Program established by Section 319 of the CWA.

Other Activities

Colorado has continued its support of the basinwide approach to salinity control through its participation in the Colorado River Basin Salinity Control Forum and active promotion of

participation in salinity control projects by local water users. The Colorado Water Conservation Board has been assisting Reclamation in refining and improving the data in the new CRSS model. The Colorado Soil Conservation Board (CSCB), with support from other state agencies, is continuing its work with the NRCS, FSA and local soil conservation districts, as appropriate, to direct available federal soil conservation programs towards improvement of on-farm irrigation practices and to identify additional areas for program implementation. The salinity control benefits of improved practices are one of the reasons for this effort. Since 1997 the CSCB has managed a program for the Forum that provides for the cost-sharing required for salinity control provided through the USDA EQIP.

Selenium, a naturally occurring element that is essential in trace amounts, and yet may be toxic to fish and birds at higher concentrations, is liberated by the same processes which load salt to the river systems. The Colorado Nonpoint Source Council has funded a Clean Water Act Section 319 grant to target selenium loading in the Gunnison and Uncompahgre Valleys, with the goal of reducing the selenium load. Selenium Task Forces have been formed in both the Gunnison/Uncompahgre and Grand Valley Basins to address selenium at the local level to facilitate meeting state water quality standards in the Uncompahgre, Gunnison, and Colorado Rivers and associated tributaries. The National Irrigation Water Quality Program (NIWQP), a Department of Interior program comprised of representatives from the USBR, USFWS, USGS and BIA has been charged with identifying and remediating selenium loading as a result of the construction and operation of Federal irrigation projects. Two USBR projects, the Grand Valley and Lower Gunnison units have been identified by the NIWQP as contributing more than 50% of the total selenium load to the upper Colorado River Basin.

In 2000, a demonstration project placed 7.5 miles of earthen canals into piped laterals within the Lower Gunnison unit in an area identified as Montrose Arroyo. This demonstration project was built using a cost share of 44% of the total cost of the project provided by the NIWQP and Uncompahgre Valley Water Users Association (UVWUA) thereby, "buying down" the portion provided by the USBR's cost competitive salinity control program. Prior to construction of the project comprehensive baseline data were gathered to determine existing salinity and selenium loads emanating from the basin. Once the project was completed, extensive monitoring was instituted to quantify the amount of selenium and salt loading reduction. The first year's data showed a 28% decrease in downstream selenium loading and a 16% decrease in salinity loading (USGS Water Resources Investigation Report 01-4204, 2001). Selenium and salt loading from the basin is continuing to be monitored to determine long term effects. In addition, all wildlife habitat that was lost due to the reduction in seepage from the canals was replaced in kind as a portion of the cost of this project.

Due to the success of this demonstration project the UVWUA has put in a request through the Energy and Water Appropriations Bill for the Departmental Irrigation Drainage Program to provide $750,000 to initiate and continue remediation of selenium loading from Federal irrigation projects in the Lower Gunnison River Basin. This proposal, if funded, will be part of a ten year 15 million dollar cooperative effort between the USBR Salinity Control Program, UVWUA and the

NIWQP to aggressively reduce selenium loads within the Lower Gunnison River Basin, with benefits realized locally and downstream into the Lower Basin.

Nevada

NPDES Permits

EPA has delegated the Nevada Division of Environmental Protection (NDEP) authority to issue NPDES Permits. The industrial companies located at the Basic Management, Inc. (BMI) complex have eliminated industrial wastewater discharges to the Las Vegas Wash. The companies now pipe wastewater to lined evaporation ponds. Two of the companies have been issued permits which allow discharge of cooling water to Las Vegas Wash with a limit of no more than 75 mg/L TDS greater than the water supply. Another company has been issued a permit which allows discharge of surface stormwater runoff.

In the past, the Nevada Power Company discharged brackish cooling water from both the Clark and Sunrise Power Plants into the Las Vegas Wash. Permits now prohibit such discharges and the Company treats and recycles water for further cooling before final disposition into lined evaporation ponds. The new recycling process has reduced the cooling water requirement by about 75 percent.

The City of Las Vegas (CLV), Clark County Sanitation District (CCSD), and the City of Henderson (COH) were issued new discharge permits in July, 2001. The permits allow a flow up to 91 million gallons per day (MGD) for the CLV, 110 MGD for the CCSD and 42.5 MGD for the COH. The new permits continue the standards from the previous permits including Waste Load Allocations (WLA), for total phosphorus and total ammonia, whole effluent toxicity testing, chlorine residual limits, and an ambient monitoring program in Las Vegas Wash and Las Vegas Bay. The WLA for total phosphorus will apply from March through October and ammonia from April through September. The WLA does not apply to other periods of the year. The existing and proposed NPDES permits recognize that the WLA is based upon each Las Vegas Valley discharger's proportionate share of flow as approved by NDEP and agreed to by each Las Vegas Valley discharger.

Both the CLV and CCSD continue providing reclaimed water from their central treatment facilities. The CLV and the Las Vegas Valley Water District (LVVWD) completed a jointly owned 10 MGD satellite reclamation and distribution facility in 2001, and the CCSD and LVVWD will complete another jointly owned 5 MGD (expandable to 10 MGD) satellite reclamation and distribution facility in 2002. Both of these facilities will provide reclaimed water for turf irrigation.

The CCSD makes direct discharge of part of Laughlin's wastewater effluent into the Colorado River, and reuses the remainder on the local golf course. The CCSD estimates that by the year 2003, Laughlin, a resort area located adjacent to the Colorado River, will have 4,000 acre-feet per year of treated effluent available, of which 550 acre-feet per year will be reused, with the

remaining 3,450 acre-feet per year being returned to the Colorado River for credit. An NPDES permit has been issued. The quality of the waters affected by this permit will be closely monitored and all necessary programs to protect water quality standards will be implemented.

Nevada is continuing to apply the policies adopted by the Forum.

Water Quality Management Planning

After passage of Senate bill 468 by the Nevada State Legislature in May 1975, area-wide water quality management planning duties and power were vested to certain counties. The Clark County Board of Commissioners (BCC) was designated the Area-Wide Water Quality Management Planning organization within Clark County. The initial 208 Water Quality Management Plan (208 Plan) was adopted by the BCC in 1978 and was approved by the EPA.

In 1997, the BCC adopted the Las Vegas Valley 208 Water Quality Management Plan Amendment. The Las Vegas Valley 208 amendment included updates to planning area boundaries, wastewater flow projections, reclaimed water demands, nonpoint source management, Las Vegas Wash Wetlands planning, integrated planning coordination, and overall water quality planning.

The main purpose of this 208 Plan Amendment is to:

- Revise the 1990 208 Plan Amendment
- Include effects of sustained regional growth and development
- Revise stormwater permitting to a more inclusive nonpoint section
- Provide water quality planning to a horizon year of 2020

Update aspects of the plan include the planning area boundaries, wastewater flow projections, reclaimed water demands, nonpoint source management, Las Vegas Wash Wetlands planning, integrated planning coordination, and overall water quality planning. The Las Vegas Valley 208 Water Quality Management Plan Amendment was further updated in 2002 to include the Areawide Reuse Study, and the Comprehensive Adaptive Management Plan for the Las Vegas Wash.

Clark County adopted the Northeast Clark County 208 Water Quality Management Plan in June, 2000. The amendment area is located in the northeast area of the county including the communities of Bunkerville, Logandale, Overton, Moapa and Moapa Valley, and the City of Mesquite. Two rivers are located in the area, the Muddy and Virgin Rivers. The Virgin River is currently listed on the State's 303d list. Both rivers have aquatic endangered species and drain into Lake Mead.

On December 17, 1998, the Southern Nevada Strategic Planning Authority (Authority) adopted a strategic plan for southern Nevada. The Authority was created in the 1998 State of Nevada legislative session. The Authority's task is to develop objectives and strategies to address

growth related issues such as wastewater and water quality. The plan will be passed on to the 1999 legislative session.

Expansions of the CCSD and CLV wastewater treatment facilities are underway in accordance with approved 201 facilities plans. Industrial pre-treatment permits are being required by the CCSD for reverse osmosis treatment of shallow groundwater and on-site treated gray water to be used by the Mirage/Treasure Island development in its landscaping and decorative water features. This represents a new beneficial use of shallow saline ground water which is pumped for dewatering around building foundations. Local government entities within urban Clark County are also participants in the NPDES Stormwater Quality Management Committee to identify and implement measures to meet State stormwater permitting requirements. Future 208 amendments are expected to address gray water issues and shallow ground water issues, to update population projects, and to incorporate BMPs identified in the stormwater permit for the Las Vegas area entities.

In June 1998, the State Environmental Commission adopted revised water quality standards for the Las Vegas Wash and Lake Mead. The revision were based on data collected from 1991 through 1996 and include changes to total dissolved solids (TDS) requirements to maintain higher quality (RMHQs). RMHQs are established when the existing water quality is better than the criteria necessary to protect the beneficial uses. For the upper Las Vegas Wash, the TDS RMHQ was lowered from 2,300 mg/l to 1,900 mg/l; and for the lower Las Vegas Wash, the TDS RMHQ was lowered from 2,600 mg/l to 2,400 mg/l. The lower TDS concentrations seen in the Las Vegas Wash in recent years most likely results from dilution of the saline groundwater which discharges to the Wash by the increasing, but relatively low TDS flows discharged from the wastewater treatment plants.

Facilities Plans

The City of Henderson recently completed a Facility Plan which defines various stages of wastewater treatment expansion to address growth and potential changes in regulatory requirements. The existing Water Reclamation Facility was upgraded to 20 MGD in 1998 and will be expanded to 30 MGD by 2002. The Facility will have the capability of discharging to the Las Vegas Wash on a year-round basis. However, the City will continue to encourage the use of reclaimed water and will continue to use the existing rapid infiltration basins as a means of disposal.

The CCSD is nearing completion of expanding its treatment facilities to a capacity of 110 MGD. The expanded facility will continue to use biological nutrient removal processes to remove phosphorus and nitrogen. Advanced treatment consists of additional filters and ultraviolet light disinfection.

The capacity of the City of Las Vegas' treatment plant is 66 MGD. The treatment plant provides secondary treatment, phosphorus removal, and nitrification to remove ammonia. The treatment facility treats the flows of both the Cities of Las Vegas and North Las Vegas. Construction permit applications are pending for expansion to 91 MGD.

The three entities, CLV, CCSD, and COH have joined together to form the Clean Water Coalition, and in 1998, began the Alternate Discharge Study, which is an effort to find alternative methods for disposal of increasing amounts of reclaimed wastewater back to the Colorado River System to insure return flow credits for Nevada while also insuring the environmental standards are met. The study, which has a 30 year planning horizon, has resulted in a number of options including improved treatment processes, pipelines to new locations and diffusers in Lake Mead or the Colorado River, which are currently under study and environmental review.

Other Activities

A program has been developed by CCSD, CLV, and CNLV to coordinate investigate, and encourage the implementation of management practices resulting in reduction of wastewater salinity. The principal emphasis of this program will be directed toward salinity control to meet the requirements of the NPDES permits issued to Clark County, the City of Las Vegas, and Henderson.

New Mexico

NPDES Permits

Authority for issuing permits has not been delegated to the state of New Mexico. Currently, the program is being administered by EPA, Region VI, except for facilities located on the Navajo Indian Reservation, which are administered by Region IX. EPA is following Forum policy in the administration of the permit program. All new or renewed discharge permits contain language requiring the permittee to adhere to Forum policy regarding salt discharges.

In the Colorado River Basin within the state, the following permits have been issued:

a. Industrial permits: electric power generation (3), coal mines (6), uranium mines (3), sand and gravel operations (3), small domestic sewage treatment plants (3), small process water treatment facility (2), and a drinking water treatment plant (1).
b. Municipal discharge permits: major sewage treatment plants (3) minor sewage treatment plants (2), and federal/Indian wastewater facilities (11).

Water Quality Management Planning

Work elements of the State of New Mexico Water Quality Management Plan (NMWQMP) and the New Mexico Nonpoint Source Management Plan (NPSMP) applicable to the Colorado River Basin are stream bottom deposits and sediment control from many different sources, including hydromodification, silviculture and irrigated agriculture. The New Mexico Water Quality Control Commission is required to approve and adopt the NMWQMP's for New Mexico. The initial Plan was adopted in two parts in October 1978 and May 1979. The most recent update to the NMWQMP was adopted in 1991. The most recent update of the NPSMP was in December 1999. Both plans

recognize the importance of working cooperatively with the Colorado River Basin Salinity Control Forum.

The NMWQMP and the NPSMP cover the entire state except for that portion of the Navajo Reservation lying therein. Planning within the reservation is the responsibility of the Navajo Tribe. Much of the Colorado River Basin in New Mexico is within the reservation.

Both plans encourage the voluntary use of BMPs to control or reduce nonpoint source pollution. The NMWQMP currently designates the San Juan River Basin in New Mexico as one of the four priority basins for implementation of sediment control. Water quality segments 2405 and 2401 of the San Juan River are both listed on the State's 1998-2000 Section 303(d) list of impaired waters for stream bottom deposits, and for turbidity and fecal coliform respectively. Segments 2403 and 2404 of theAnimas River are currently listed on the Section 303(d) list for stream bottom deposits. The San Juan River Basin is scheduled for an intensive water quality survey and possible Total Maximum Daily Load development by December 31, 2004 under a federal court order Consent decree stemming from the case of Forest Guardians and Southwest Environmental Center v. Carol Browner, Administrator, U.S. Environmental Protection Agency, Civil Action No. 96-0826 LH/LHF. The San Juan Basin and its tributaries are also a Category 1 watershed under the Clean Water Action Plan, Unified Watershed Assessment (UWA). The UWA prioritizes the use of certain 319(h) monies and State Revolving Load Fund monies (SRF) toward the implementation of Nonpoint Source Management Projects in the various priority watersheds.

The NMWQMP includes designated management agencies responsible for implementation of the nonpoint source control programs set forth therein. The agencies designated for portions of New Mexico lying within the Colorado River Basin are:

- New Mexico Forestry Division for silviculture;
- New Mexico State Highway Department, New Mexico State Park and Recreation Division, and Jicarilla Apache Tribe for rural road construction and maintenance;
- New Mexico State Land Office and U.S. Bureau of Land Management for sediment control;
- U.S. Forest Service for sediment control, rural road construction and maintenance, and silviculture, and;
- U.S. Bureau of Indian Affairs for sediment control, rural road construction and maintenance, silviculture, and irrigated agriculture.

Additional management strategies used to control nonpoint source pollution were developed by the State under Section 319 of the 1987 Amendment to the federal Clean Water Act. Section 319 required each state to develop an assessment of its nonpoint source impacted waters and a management plan for controlling pollution from these sources (NPSMP). Both the assessment and the management program have been approved by EPA. The goal of the NPSMP is to develop and implement a program which will reduce human-induced pollutants from nonpoint sources entering surface and ground waters. The New Mexico Nonpoint Source Pollution Management Program has

been in effect for nine years. The State is making steady progress in identifying, controlling and abating existing nonpoint source pollution problems, and in preventing additional nonpoint source concerns. Several State and federal land management agencies listed in the NMWQMP, such as the U.S. Forest Service, BLM, and the State Land Office, are participating, along with many other federal, State and Local agencies, in nonpoint source activities.

Other Activities

The State of New Mexico, through the Colorado River Basin Salinity Control Advisory Council and the New Mexico Water Quality Control Commission, supports the Colorado River Basin Salinity Control Program, and passed a motion in January, 1999, to support projects using State Revolving Loan Funds (Sec. 201 of the Clean Water Act) (SRF) and other funds. State actions include: (l) support of federal legislation including appropriations to implement the program, (2) inclusion of salinity control measures in the Section 208 plans, (3) dissemination of information on salinity sources and control measures to the water users and the public in the Colorado River Basin area of the state, (4) consultation with industries on potential salinity reduction measures, (5) implementation of Forum policy through existing legal and institutional mechanisms, e.g. NPDES permits, (6) providing matching funds to support the USGS water quality data collection program in the Colorado River Basin portion of the state, and (7) maintaining a continuous water quality planning program whereby new or additional salinity control measures can be addressed. A decrease in funding for item (6) above has caused a reduction in this program since 1986.

Utah

NPDES Permits

The Utah Division of Water Quality administers the discharge permit program. The State has the responsibility for issuance and compliance for all new permits and permit renewal applications received since July 7, 1987.

Thirty-seven discharge permits are in effect for industrial facilities in the Utah portion of the Colorado River Basin. Most of the permits are for facilities with no discharge, or for discharge of intercepted ground water from mining operations in accordance with Forum policy. Additional storm water permits have been issued for construction activities.

There are 16 (number to updated) active permits for municipal treatment facilities in the Colorado River Basin of Utah.

Water Quality Management Planning

Water quality management plans pursuant to section 208 of the Clean Water Act for the Uinta Basin, Southeastern Utah, and Wayne County certified by the State and approved by the EPA are in place, and portions of these plans have been implemented.

Other Activities

Utah's Nonpoint Source Management Plan was approved by EPA on September 15, 2000. The plan contains Utah's strategy for the control of nonpoint source pollution in the state. Utah has relied on USDA Natural Resource Conservation Service EQIP funds and Reclamation salinity control funding to implement salinity control projects in the Colorado River Basin.

Major construction of irrigation improvements for salinity control ccontinues in the Price River and San Rafael River Drainages and the Uinta Basin. The principle funding source for the off-farm conveyance and distribution systems of these projects is Reclamation's Basinwide Program. The on-farm projects use EQIP funding along with local cost-share. The local cost-share for both programs is generally a combination of landowner monies and state program monies. Utah operates a low interest loan program which provides funding for soil and water conservation and water quality improvement practices for farms. Utah has committed a substantial amount of funding through this program to irrigation improvement projects which provide salinity reduction from on-farm sources. This program operates under the guidance of the Soil Conservation Commission and local soil conservation districts. In addition, low interest loans are available to irrigation companies from the Board of Water Resources for the improvement of irrigation transmission and delivery systems. These improvements increase efficiency and decrease seepage losses, thereby contributing less deep percolation water for salt loading to the Colorado River system.

Wyoming

NPDES Permits

The Wyoming Department of Environmental Quality, Water Quality Division administers the NPDES Program within the boundaries of the State of Wyoming. The Forum's "Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program" is used and followed to evaluate industrial and municipal discharges. A total of forty-three active NPDES permits are associated with facilities in the Wyoming portion of the Colorado River Basin.

There are currently 24 active NPDES permits issued to industrial facilities located in the Wyoming portion of the Colorado River Basin. The primary industrial source of salinity in the Green River Basin introduced through a point-source discharge is Pacificorp's Naughton Plant which discharges approximately six tons of salt per day into a tributary of the Green River. The permit for this facility was issued on the basis that it was not "practicable" to implement the Forum policy of no discharge of salt from industrial sources, following a decision based upon a comparison of the costs of removing salt and downstream benefits associated with eliminating the discharge. The current permit, due to expire on July 31, 2003, requires the benefit/cost analysis to be reevaluated and resubmitted by July 31, 2001. However, as of the date of this report, this analysis has not been submitted and the DEQ will contact the facility requesting this information.

Two industrial permits, issued to the Wyoming Game and Fish Department have not submitted water quality data for total dissolved solids. Monitoring for the total dissolved solids concentrations is a requirement of the permit and the DEQ will contact the operator to gather this data. Discharges from these facilities will be evaluated in greater detail to determine compliance with the policy, and, if necessary, the permits may be modified such that policy compliance is achieved. The remaining industrial facilities are in compliance with the policy, have not discharged during the reporting period, or have permits that were allowed to expire. Several permits do not currently require TDS monitoring. These permits will be modified to incorporate monitoring necessary to assess compliance with Forum policy as the permits are renewed.

Nineteen permits are associated with domestic wastewater effluents. These permitted facilities serve a population of approximately 44,000. Of this total population, 33,000 are in Rock Springs and Green River. The wastewater treatment plant discharges at Rock Springs and Kemmerer/Diamondville are out of compliance with the policy in that their incremental increases are 433 mg/l and 600 mg/l respectively. The total population associated with these towns are 20,000 in Rock Springs, and 3900 in Kemmerer/Diamondville. The average flow volumes contributed to the system are 2.31 and 0.37 MGD respectively. For these permits, when the permits are renewed the DEQ will work with the municipalities to determine the feasibility of reducing TDS in conformance with the Forum policies.

Four permits (Fort Bridger Sewer District, Regency of Wyoming, LaBarge, and Mountain View) contain compliance schedules requiring the operator to submit an analysis of the ability to comply with the Forum policies. These reports were not required to be submitted this reporting period but will be evaluated in the future. There were several other permits that do not require monitoring for TDS. At the time of each permit renewal, DEQ will re-assess whether monitoring is necessary to assess compliance with Forum policy.

Water Quality Management Planning

The Water Quality Management Planning and Nonpoint Source Implementation Programs in Wyoming are under the direction of the Water Quality Division of the Department of Environmental Quality. The Clean Water Report for Southwestern Wyoming addressed water quality in Lincoln, Uinta and Sweetwater Counties. This report was adopted at the local level, certified by the Governor and conditionally approved by the EPA on October 9, 1980. The Governor's certification recognized a salinity control program for the Green River Basin as a major water quality priority. The State strongly supports the ongoing USDA-initiated salinity control effort on the Big Sandy River Unit.

The Statewide Water Quality Management Plan establishes an institutional framework under which planning and implementation activities can proceed in Wyoming. Implementation of most aspects of the program depends on the availability of funds and the acceptance of responsibilities by the designated management agencies. The Wyoming Statewide Water Quality Management Plan is amended regularly through adoption of the triennial review.

After three years of effort, beginning in March, 1998 and final adoption in July, 2001, the Water Quality Division has established new water quality standards affecting all surface waters in the State. The surface water standards are contained in Chapter 1 of the Water Quality Rules and Regulations.

The new standards are substantially different than the rules that have been in effect since 1990. There are only a few sections of Chapter 1 that remain unchanged and four new sections have been added. In most instances, the revisions do not reflect a change in the philosophy or direction of the surface water program but have been made to clarify and enhance the meaning and application of the rules. The numeric criteria for toxic pollutants have all been updated to the nationally recommended 304(a) criteria, published by EPA in April, 1999.

Some of the modifications, however, are profound and will have a substantial effect in how the department assesses and regulates surface water quality. The most important of these are the revisions of the water classification approach and how protected uses are designated on individual waters. Because classifications are so basic to how a water is regulated, changes in water class affect both the criteria and regulatory procedures that apply to that water. Wyoming continues to support the salinity standards established by the Colorado Basin Salinity Forum and incorporates the Forum's numeric standards and implementation plans into its overall program. There were no changes made for salinity measures in the revised standards.

The last approved Wyoming 303(d) list of waters requiring the development of TMDLs was published in April, 1998. A total of 17 stream segments in the Colorado Basin appeared on that list. Only 2 streams in the Colorado drainage were listed with credible impairments and neither were salinity related. Exceedences of the pH standard were found on the Hams Fork River near Kemmerer and Haggerty Creek in the Little Snake Basin was listed for impairments associated with past hard rock mining activities. A draft 2002 list was published for public review in January 2002 and will be finalized and submitted to EPA for approval later in the year. In addition to the Hams Fork and Haggerty Creek, five new streams are proposed for priority listing. These include:

Bitter Creek, a tributary to the Green River, drains a large arid area (an outlying part of the Red Desert) in the eastern portion of the watershed, including a western fringe area of the Red Desert basin. Monitoring conducted by DEQ in 1998 on Bitter Creek near Rock Springs and a tributary, Killpecker Creek, indicates that both these streams are impaired for recreational use due to elevated fecal coliform bacteria counts. Bitter Creek is classified as a non-game fishery (Class 2C). A fish kill was noted on Bitter Creek during sampling in 1998. Chloride samples collected by DEQ indicate that Bitter Creek below Killpecker Creek is partially impaired for its non-game fishery use due to chloride concentrations above the standard of 230 mg/L. Chloride has been added as a cause of impairment on the 303(d) List. Diurnal oxygen fluctuations and habitat degradation are also concerns on these streams.

The Blacks Fork from its confluence with the Hams Fork upstream to an undetermined point above the Smiths Fork is proposed for impairment of contact recreation uses due to exceedences of

the standard for fecal coliform bacteria. The source of fecal contamination and the extent of contamination above and below the sample point is unknown at this time, so further monitoring will be planned to identify the sources. The Blacks Fork below the Granger WWTP has also been slated for re-evaluation of the TMDLs for ammonia, fecal coliform and chlorine associated with routine renewal of the discharge permit.

In the same area, the Smiths Fork is proposed for listing after DEQ monitoring determined the stream was only partially supporting its aquatic life uses as a Class 2 water due to loss of biological integrity and physical degradation of the stream. Smiths Fork from the confluence with the Blacks Fork upstream an undetermined distance is also proposed for listing because fecal coliform monitoring showed the stream was not meeting its use for contact recreation. Additionally, a reach of the Smiths Fork below the Mountain View WWTP is scheduled for a re-evaluation of the TMDLs for ammonia, fecal coliform and chlorine associated with routine renewal of the discharge permit.

Haggarty Creek is the site of an inactive copper mine, the Ferris-Haggarty/Osceola Tunnel, which dates from 1898. Haggarty Creek originates near the Continental Divide and confluences with Lost Creek to form West Fork Battle Creek. Haggarty Creek has been on past 303(d) lists due to metal exceedences (primarily copper with less toxic amounts of silver and cadmium) discharging from the Ferris-Haggarty Mine. Review of data during the TMDL process on Haggarty Creek revealed that copper standards are also exceeded on the West Fork of Battle Creek, downstream of Haggarty Creek, so this stream is proposed to be added as a priority on the 303(d) List.

In addition to the priority impairments mentioned above, there are a number of lower priority activities in the Green and Little Snake Basins to address various water quality issues. In the Green River Basin, Reardon Draw had a watershed improvement project in place to correct physical degradation of the stream channel, which reportedly was threatening aquatic life use support and impacting the Green River. Because there has not been a report documenting water quality improvements, the lower three miles of Reardon Draw is on Table C of the 303(d) List and the Green River below Reardon Draw has been scheduled for monitoring.

The East and West Fork of Smiths Fork, and Willow Creek above the Blacks Fork were placed on Table C of the 1998 303(d) List due to threats of aquatic life use support due to physical degradation of the stream channels. Currently, a Section 319 watershed improvement project is in place to improve the physical condition of the stream channels and riparian areas.

In the Little Snake Basin, recent monitoring indicates that aquatic life uses are fully supported on the portions of the Savery Creek and North Fork Little Snake drainages within the National Forest and much of the upper watershed of Little Savery Creek. However, physical degradation of lower Savery Creek and Loco Creek is threatening full aquatic life use support, and these streams are on Table C of the 303(d) List. Currently, a Section 319 watershed improvement project is in place in the lower Savery Creek drainage to address those threats.

The Upper Muddy Creek drainage currently has a Section 319 watershed improvement project in place to address threats from physical degradation of the stream channels and riparian areas. Muddy Creek below Littlefield Creek and McKinney Creek below Eagle Creek are listed on Table C of the 303(d) List. However, this project has resulted in considerable improvement to stream stability, aquatic habitat and riparian areas. As a result of this project, Muddy Creek and Littlefield Creek above their confluence, and McKinney Creek above Eagle Creek are now meeting their aquatic life uses. Because of the improved water quality, Colorado River Cutthroat Trout have been re-introduced into their former habitat in Littlefield Creek.

Another project was implemented on Muddy Creek, west of Highway 789, to address physical degradation of the stream channel, which threatens its aquatic life support. This reach of Muddy Creek is on Table C of the 303(d) List.

Other Activities

The Wyoming Nonpoint Source Management Plan was initially approved by EPA in September 1989. The Plan calls for a cooperative, voluntary approach in the implementation of BMP's targeted at water quality improvements. As with the Statewide Water Quality Management Plan, implementation hinges upon acceptance of responsibilities by designated management agencies and upon the availability of funding under Section 319. The State began a revision of the Nonpoint Source Management Plan in 1998 to conform to new EPA guidelines. The revised plan was completed and adopted in 2001.

Wyoming has experienced a boom in coal bed methane development over the past three years. Most of the activity is centered in the northeast quarter of the state in the Powder, Belle Fourche, Cheyenne, and Tongue River Basins, however, there remains a potential for similar development in the Green and Little Snake drainages. New salt loading to the Colorado River is a primary concern to the State as it reacts to proposals for exploratory development in that Basin. Wyoming is actively working with the other Basin states to develop innovative approaches and policies to ensure continued achievement of the goals of the Colorado Basin Salinity Control Program.

CHAPTER 5 - MEANS OF MAKING PLAN OPERATIONAL

Overview

The Forum has as its objective the overall coordination and implementation of projects, and the continuing review of salinity changes and program effectiveness. At least every three years, the Forum considers existing and projected water depletions and salt concentrations and, as needed and feasible, recommends revisions in the schedule for implementing salinity control measures and/or modifications of the numeric criteria. The Review includes examination of both federal and non-federal programs. The Review is transmitted to the EPA and state water resources and pollution control agencies, and is made available to others interested in the Colorado River Basin Salinity Control Program. A key conclusion of this Review was set forth in Chapter 3 wherein the Basin states find that the present numeric criteria are appropriate and no change in them is recommended at this time.

The means of making the Plan of Implementation operational consists of having coordinated planning for additional salt removal and seeking the necessary appropriations for carrying out those goals. Accomplishment of the Salinity Control Program is dependent upon funding of the efforts included in the Plan of Implementation. This is dependent upon agency budgetary requests being made, Congressional appropriations being secured, and irrigation modifications and other salt loading reduction practices being put into place and then kept operational.

Program Development and Implementation

Several significant legislative changes concerning the Salinity Control Program have occurred over the last decade. These changes have affected both Reclamation and USDA's salinity control programs and have given direction to the BLM. The Salinity Control Program is not static; it is dynamic, and hence, the program needs to be evaluated, with changes being identified and implemented, if needed. This year Congress enacted a new farm bill and as a result of that action, changes are being implemented in the USDA salinity control program.

The Basinwide Salinity Control Program authorized in 1995 for Reclamation has proceeded in a very timely way to implement cost-effective measures. When the legislation was enacted, a $75 million ceiling was imposed by the Congress with the thought that the Basinwide Salinity Control Program would be reviewed after a period of time to see if it was as successful as had been anticipated. During the last three years, the program has been recognized as being very cost-effective and Congress has acted to increase the ceiling by $100 million. The legislation to accomplish this was drafted by and supported by the Forum.

USDA's Salinity Control Program, since the passage of FAIRA, has been inadequately funded. The EQIP authorized by FAIRA has been funded nationwide at a level far below the total funding of previous conservation programs that EQIP replaced. Even though within the EQIP the Colorado River Salinity Control Program was recognized as a National Priority, the funds made available for the program have only been about 40 percent of the amount that the Forum has determined to be necessary to implement the USDA portion of the Plan of Implementation. With the authorization of the 2002 farm bill, the USDA program will be adequately funded. It is also hoped, that when funding allocations are considered, downstream benefits of the Salinity Control Program are recognized.

The management philosophy of BLM has not allowed for a direct approach to salinity control by this agency. Congress has directed the Secretary of the Interior to prepare a report on the status of implementing a comprehensive program for minimizing salt contributions to the Colorado River from lands administered by BLM. Recent efforts to coordinate with BLM shows some prospect that there will be more attention given to water quality issues, specifically to the Colorado River Basin Salinity Control Program.

The USGS streamflow gaging and water quality sampling activities, and the long-standing periods of record at existing stations, are essential to the monitoring and evaluation of salinity control effectiveness. USGS should continue to seek funding under its existing authority for flow gaging and water quality stations in order to provide necessary data for the evaluation of the short-term and long-term effectiveness of the Colorado River Basin Salinity Control Program.

Continuation of the USGS cuts in funding for its cooperative gaging program will impact the ability to adequately assess the effectiveness of salinity control projects through the loss of data from needed gaging stations.

Education and Public Involvement

Salinity in the Colorado River is a basinwide problem, with implications ranging over the entire 246,000 square mile drainage area. The Basin's immense size highlights the need for effective public education and public involvement programs due to the physical and cultural diversities which exist across the seven states. Implementation of measures to control complex problems such as salinity requires awareness, concern and involvement, along with recognition that a problem many miles away may have direct impacts. The states individually, and together, as the Forum, have and will continue to work with concerned agencies, both state and federal, to increase the public understanding of the salinity problem and its control.

Although irrigation is the principal human-induced source of salinity, a major thrust of the public education/public involvement effort focuses on educating irrigators as to the sources, impacts and methods of controlling salinity. Further improved irrigation practices will reduce the input of

salts into the River system. The goal is to encourage desirable changes in water application technology and management practices. The Basin states work within the framework of ongoing efforts by federal, state and local organizations to achieve this goal. Assistance from the Executive Director of the Forum is also provided. The plan formulation phase of Reclamation, USDA, and BLM salinity control efforts provide an excellent opportunity for public education with regard to Colorado River salinity and the means for its control.

Meetings of the Colorado River Basin Salinity Control Forum are open, and the public is welcome to attend. All input, whether oral or written, is considered and acted on as appropriate by the Forum. The Forum also provides for public involvement in the water quality standards review process as public meetings are held to receive comments on the salinity standards during each triennial review. As a result of public input, appropriate adjustments to the program are made.

As each of the Basin states proceeds with its own process to review the standards, one or more state-wide public hearings are held. In addition, there is widespread announcement of Forum and state hearings, and copies of the Review and associated state standards are mailed to interested agencies, groups and individuals. Forum members participate with their own state's water quality planning agencies in matters related to salinity and salinity control, and will continue to do so as the need arises.

Forum Activities

The Forum meets at least twice a year, or as needed, to discuss the Salinity Control Program, the efforts of the federal agencies and the states, and the need for additional policy and/or action by the Forum. During the last triennial review effort, the Forum met on May 27, 1999 in Durango, Colorado and adopted the review report for 1999. The Forum then held public meetings on August 23, 1999 in Los Angeles, California and on August 24, 1999 in Lyman, Wyoming and, after receiving comments, prepared a supplemental report dated October 1999.

During the current reporting period, the Forum met on October 7, 1999 in San Francisco, California; May 24, 2000 in Price, Utah; October 27, 2000 in Henderson, Nevada; May 17, 2001 in Jackson, Wyoming; and November 7, 2001 in Phoenix, Arizona. Since the creation of the Forum in November 1973, the Phoenix meeting was the 65th meeting. The Forum has published a three-volume compilation of all of the minutes of the Forum meetings, one volume from 1973 through 1985, another from 1986 through 1991, and one from 1992 through 1996. The Forum held its 66th meeting on June 5, 2002 in Silverthorne, Colorado, approved the 2002 Review as a proposed report, and authorized its publication. Five public meetings were held throughout the Colorado River Basin. The comments received and the Forum's response are included in Appendix D.

A Work Group, created by the Forum, holds meetings on a more frequent basis to review technical information which is generated by the federal agencies. Membership on the Work Group

is composed of technical representatives from each of the seven Basin states, and the Executive Director of the Forum. Federal agency representatives, however, attend meetings of the Work Group and informally exchange information, ideas and viewpoints. The Work Group coordinates the efforts of the Basin states and reports back to the Forum any actions which the Work Group believes the Forum should consider.

Positions have been taken on many issues, such as the need for appropriation of funds by the Congress. Federal agencies have also prepared numerous reports in the three-year period. The Forum has compiled a library of many reports relating to Colorado River salinity. The Work Group and the Forum have had the opportunity to review and comment on these reports in draft form. Notable among the reports done since the last triennial review is a report which is prepared by the Bureau of Reclamation and submitted to Congress every two years. The last of these publications is Quality of Water, Colorado River Basin, Progress Report No. 20, January 2001, U.S. Department of the Interior. In addition, the Forum and the Work Group have, over the last three years, assisted the Colorado River Basin Salinity Control Advisory Council in the preparation of three annual reports.

Financing Salinity Control Activities

By enacting the 1974 Act, Congress recognized the federal role and responsibility for controlling the salinity of the Colorado River, and adopted a cost-sharing formula which provided that 75 percent of the costs of the four originally authorized Department of the Interior salinity control projects under Title II of the Act are non-reimbursable. The remaining 25 percent of the costs are to be repaid from the Upper and Lower Basin funds over a 50-year period without interest. The maximum allocation to the Upper Basin fund is not to exceed 15 percent of the total costs to be repaid from the two funds, with the remainder to be repaid by the Lower Basin fund.

The 1984 amendments to the 1974 Act changed the cost-sharing formula. For the Department of the Interior program, the non-reimbursable portion was reduced to 70 percent, with the remaining 30 percent to come from Upper and Lower Basin funds in the same proportionate share as under the 1974 Act. However, the Upper Basin fund could repay its share over 50 years with interest, and the Lower Basin could reimburse its share of the annual expenditure during the year that costs are incurred.

The USDA Salinity Control Program, as amended in 1996, requires at least a 25 percent non-federal cost-share for participation. In addition, the legislation allows for the Basin Funds to cost-share up to 30 percent. Money is available in the Basin Funds for this purpose.

Table 5-1 provides a compilation of the amount of funding provided to Reclamation, USDA, and BLM for the Colorado River Basin Salinity Control Program from FY 1988 to the present.

Funding levels for salinity control activities by BLM continue to be difficult to ascertain due to the fact that the BLM budget does not contain a specific line item for salinity control.

Table 5-1
Summary of Colorado River Basin Salinity Control Program
Funding For the Bureau of Reclamation,
the Department of Agriculture and the Bureau of Land Management
By Federal Fiscal Year Since 1988
(In Dollars)[15]

Federal Fiscal Year	Bureau of Reclamation	Department of Agriculture	Bureau of Land Management
1988	20,783,000	3,804,000	500,000
1989	16,798,000	5,452,000	500,000
1990	14,185,000	10,341,000	700,000
1991	24,984,000	14,783,000	873,000
1992	34,566,000	14,783,000	873,000
1993	33,817,000	13,783,000	866,000
1994	32,962,000	13,783,000	800,000[16]
1995	12,540,000	4,500,000	800,000
1996	8,205,000	9,561,000	800,000
1997	5,000,000	3,152,000	800,000
1998	7,600,000	3,906,000	800,000
1999	11,500,000	5,132,000	800,000
2000	12,044,000	5,330,000	800,000
2001	10,850,000	5,660,000	800,000
2002 (est.)	10,800,000	9,700,000	800,000

[15] Numbers do not include funds provided for the Reclamation and Agriculture programs as up-front cost-sharing from the Basin Funds

[16] Funds expended by BLM for salinity control cannot accurately be determined. This amount reflects what has been reported as having been designated within the BLM budget.

While the USDA program has proven to be a cost-effective component of the Colorado River Basin Salinity Control Program, Administration and Congressional funding support for the program has dramatically declined. Table 5-1 reflects the significant reduction in USDA appropriations from 1994 to the present. Funding of the USDA program at recent levels jeopardizes the ability of the Plan of Implementation to be executed in a manner that assures compliance with the numeric criteria.

The 1984 Amendments to the Act (P.L. 98-569) provide that Reclamation is authorized to reimburse the costs of operation and maintenance expenses in excess of those that would have occurred for the thorough and timely operation and maintenance of the unimproved system. Those amendments also allow the federal government to pay for replacement costs of the facilities and the costs of operation and maintenance of works to replace impacted fish and wildlife values.

The 1995 Amendments to the Act (P.L. 104-20) did not change the cost-sharing and repayment relationships among the states or the federal government, but it did provide additional flexibility to Reclamation if the proposed project has other associated indirect benefits of federal interest, i.e., other water quality or environmental benefits. The cost of this assistance will not be considered a salinity control cost. The 1996 Amendments to the Act (P.L. 104-127) permit up-front cost-sharing by the Upper and Lower Basin Funds in lieu of repayment.

Revenues accruing to the Lower Basin fund for the Salinity Control Program are derived from a 2½ mill per kilowatt hour levy on California and Nevada purchases of hydro power generation. Revenues accruing to the Upper Basin fund are collected by the Western Area Power Administration. The Plan of Implementation, as presented earlier in this Review, incorporates a construction schedule which at the current rate of expenditure, when completed, will have a total estimated cost of $594 million, of which $178 million will come from the Basin states' funds. Under this Plan, the required salinity reduction can be made throughout the planning period (2020). The Basin funds will be adequate to provide the up-front cost-sharing.

Two potential sources of funding to assist salinity control efforts exist under the Clean Water Act. Section 319 funds are available for implementing state-adopted EPA-approved nonpoint source management programs. The construction grant program has now essentially been replaced by the State Revolving Fund (SRF) program, which provides low interest loans for pollution control projects. Under Section 603(c)(2), the SRF program can be used to fund implementation of Section 319 projects.

Responsibility for Accomplishing Salinity Control Measures

The Plan of Implementation recognizes that the Forum, participating federal agencies, and the Basin states each have specific responsibilities for furthering the Salinity Control Program. The elements of the Plan of Implementation are premised on completion of all of the salinity control measures discussed in Chapter 4 of this report. Specifically, the Forum will continue to provide

overall coordination, a continuing review of salinity changes, program effectiveness, and the need to make further program changes and improvements. At least every three years, the Forum considers existing depletions and salt concentrations and, when needed and feasible, recommends revisions in the schedule for implementing salinity control measures and/or modifications of the numeric criteria. This review includes both federal and non-federal programs. The review is then transmitted to the EPA and to state water resources and pollution control agencies and made available to others interested in the Salinity Control Program.

Federal agencies must complete planning efforts and seek authorization and funding for salinity control efforts in accordance with Title II of P.L. 93-320, P.L. 98-569, P.L. 104-20, and P.L. 104-127. The Basin states will continue to encourage the agencies to request funding and to lend their support to obtaining needed funding from the Congress.

Interagency Coordination

Combined Efforts

The Colorado River Basin Salinity Control Program is truly a unique program, and it cannot be successful without the cooperation of a multitude of agencies and governments involved at the local, state and federal levels. First, the program is reliant upon the cooperation of land owners in implementing important and cost-effective salinity control measures. Secondly, the program is dependant upon a multitude of agreements between the seven Colorado River Basin states which have always been accomplished by consensus. Lastly, the program depends upon the cooperation of a number of federal agencies for its success. P.L. 93-320, the Colorado River Basin Salinity Control Act, gives to the Secretary of the Interior responsibilities for implementing salinity control policies adopted for the Colorado River, and gives to the Secretary of the Interior many other responsibilities through various sections of the Act.

The Act states: "The Secretary [of the Interior], the Administrator of the Environmental Protection Agency, and the Secretary of Agriculture are directed to cooperate and coordinate their activities effectively to carry out the objectives of this title." The Act further provides that "the Secretary [of the Interior] or the Secretary of Agriculture, as the case may be, shall give preference to those additional units or new self-contained portions of units which reduce salinity of the Colorado River at the least cost per unit of salinity reduction." It is obvious that the federal implementing agencies, that is, Reclamation, BLM, and USDA, must coordinate and cooperate in order to advance, as required by the Act, a cost-effective Salinity Control Program. The lead in fostering this cooperation has been taken by Reclamation. The success of the program is dependent upon this coordination and cooperation. The federal agencies need to continue to communicate to ensure that the programs being implemented are being coordinated.

In addition to the three implementing agencies, there are other federal agencies which are involved in the Salinity Control Program, and cooperation and coordination with these agencies is also most essential. Three agencies are notable, USGS, USFWS and EPA.

Colorado River Basin Salinity Control Advisory Council

Cooperation between the federal agencies and the Basin states is also essential, and the program has advanced because of a spirit of good will and a desire to succeed in controlling the salinity of the Colorado River expressed by all of the states and the federal agencies. Congress created the Colorado River Basin Salinity Control Advisory Council, which is to be composed of no more than three members from each state appointed by the Governors of each of the Colorado River Basin states. The Act directs that the Council shall, among other things, "act as a liaison between both the Secretaries of Interior and Agriculture and the Administrator of the Environmental Protection Agency and the states in accomplishing the purposes of this title." The Act further directs that the Secretary will make reports to the Advisory Council, and that the Advisory Council will "recommend to both the Secretary and the Administrator of the Environmental Protection Agency appropriate studies to further projects, techniques, or methods for accomplishing the purposes of this title."

U.S. Fish and Wildlife Service (USFWS)

Pursuant to authorities and responsibilities as set forth in the Endangered Species Act, Fish and Wildlife Coordination Act, Clean Water Act, National Environmental Policy Act, and the Migratory Bird Treaty Act, the U.S. Fish and Wildlife Service (USFWS) is an active participant in the Colorado River Basin Salinity Control Program. It is primarily through these legislative authorities that the USFWS coordinates with lead Federal agencies and the Basin states.

The Colorado River Basin supports a biological diversity of fish and wildlife resources, as well as a significant number of unique species and important habitats. The Colorado River system has one of the largest number of threatened and endangered species of fish and wildlife in the United States, while providing important habitats for other biological resources of regional, national, and international significance, including: Neotropical migratory birds, migratory waterfowl (ducks, geese, and shorebirds), rare non-migratory birds such as sage grouse, and many economically important species of big game. In addition, specialized habitats such as wetlands and riparian areas provide nesting/rearing habitat for over 200 species of mammals, birds, and amphibians.

In general, USFWS activities consists of coordination with lead Federal agencies in evaluating potential impacts to fish and wildlife resources resulting from proposed salinity control projects. Documentation of USFWS concerns and recommendations are typically in the form of Fish and Wildlife Coordination Act reports, Planning Aid Memorandum, biological opinions, and comments on Draft and Final Environmental Assessments and Environmental Impact Statements.

Follow-up coordination with project sponsors to ensure appropriate mitigation is also a major thrust of the USFWS. The Salt Lake City, Utah Field Office (Ecological Services) provides overall program coordination for the USFWS.

USFWS participation in the planning process for salinity control projects is provided through a variety of planning/working/coordinating activities and interactions with Reclamation, BLM, EPA, NRCS, the Forum, state agencies, Indian tribes, and the general public. General fish and wildlife information, as well as lists of threatened and endangered species and their critical habitats which may occur within salinity control project areas, are provided by the USFWS to the lead Federal agencies and other interested parties. Biological opinions rendered under authority of the Endangered Species Act are provided for projects where threatened and endangered species may be affected. Concerns continue to arise over the anticipated effects of salinity control measures on endangered species and wetlands.

Authorization of new salinity control projects will still require in-depth review by the USFWS to ensure the appropriate protection for endangered species and their critical habitats, as well as the replacement of wetland values potentially lost due to construction and operation of new features. The USFWS will need to more closely monitor the effectiveness of EQIP in achieving adequate mitigation/compensation, both in proportion to, and concurrent with, various salinity reducing construction practices. Concepts such as mitigation banking may be explored by all participating State and Federal agencies to accomplish satisfactory compensation/mitigation results.

U.S. Geological Survey (USGS)

The USGS's Water Resources Division provides and analyzes hydrologic information to assess the Nation's water resources. Programs are developed with cooperation and financial support from state, local and other federal agencies. The programs provide hydrologic and geochemical information for evaluation of surface and ground water systems, as well as for management and policy decisions.

To provide information required by the federal, state and local agencies to address Colorado River water quantity and quality issues, the USGS operates and maintains a network of about 520 stream gaging stations and 140 water quality stations in the Colorado River Basin. Streamflow and water-quality information from these stations provide input to the hydrologic database for Reclamation's Colorado River Simulation System. In addition to collecting hydrologic data, the USGS conducts specific studies on surface water, ground water, and water quality.

Environmental Protection Agency (EPA)

The major EPA programs relating to Colorado River salinity control are: (1) water quality management planning; (2) water quality standards; (3) National Pollutant Discharge Elimination

System (NPDES) permits; (4) review of National Environmental Policy Act (NEPA) documents; (5) nonpoint source control under Section 319 of the Water Quality Act of 1987; (6) wetlands protection; and (7) the Underground Injection Control (UIC) Program. For the most part, these programs are either implemented by the states under federal statute, (such as the water quality standards program), or delegated to the states by EPA (such as the NPDES program). EPA maintains oversight responsibilities for the assumed and delegated programs, and has responsibility for reviewing and approving water quality standards, including those for salinity. EPA continues to encourage the Basin states to develop and implement the basinwide and state salinity control strategies.

Section 303 of the Clean Water Act (CWA) requires states to adopt water quality standards pursuant to their own laws which are consistent with the applicable requirements of the CWA. The Colorado River Basin Salinity Control Forum, through its Work Group, has been re-affirming the numeric criteria for salinity and developing a new Basinwide Plan of Implementation for salinity control for the seven Basin states every three years to satisfy the triennial review requirements of the CWA. Following adoption of the standards by each state, it is the responsibility of the EPA regional administrators to approve or disapprove the standards based on consistency with CWA requirements.

Pursuant to Section 309 of the Clean Air Act, EPA reviews NEPA environmental assessments and environmental impact statements for both salinity and non-salinity control projects of other agencies. Through review of NEPA documents, EPA urges the identification of potential salinity impacts and encourages discussion of mitigation of adverse impacts as required by the Council on Environmental Quality regulations for implementing NEPA (40 CFR Parts 1500-1508). For example, EPA can comment on potential salinity impacts, when appropriate, when reviewing EIS's for grazing and land management, recreational developments, mining, and water development projects. In addition, EPA encourages the development of mitigation measures for adverse impacts to satisfy state and Forum policies for salinity control and through CWA Section 401 certifications for activities subject to federal permitting actions. The Forum policy encouraging the use of water with higher total dissolved solids for industrial purposes is being supported primarily through NEPA review responsibilities.

The basis for wetland protection and mitigation is established in the regulations for compliance with NEPA, Section 404 of the CWA, Executive Order 11990, and USDA policy. However, preserving irrigation-induced wetlands and reducing salt loading to the Colorado River may present conflicts between authorizing legislation and other regulatory programs. A portion of the salt load in the Colorado River system is attributed to seepage and deep percolation from leaking irrigation canals and laterals, and inefficient on-farm irrigation systems and water management. Some of these inefficient irrigation systems and practices are the source of water for many of the wetlands associated with salinity control units. As seepage from irrigation systems is reduced and irrigation efficiencies are improved, some portion of these irrigation-induced wetlands may be impacted or lost. The concept of replacing irrigation-induced wetlands and the need to reduce the salt load in the Colorado River presents difficult choices between environmental values of improved water quality and wetland preservation. Landowners are volunteering to implement wildlife habitat

practices, including wetland replacement, as was contemplated by the Salinity Control Act. EPA utilizes NEPA review and other types of coordination with state and federal agencies as the means to participate in wetland assessment, monitoring, replacement, and reporting activities.

Section 319 funds have been appropriated since FY 1990 for the states to implement nonpoint source water pollution control programs. EPA encourages the states to consider salinity control benefits as they make decisions on Section 319 funding for their priority watersheds.

EPA Region VIII administers the Underground Injection Control permit for the Paradox Well salinity control project in Colorado.

CHAPTER 6 - SALINITY STANDARD ADOPTION & IMPLEMENTATION PROCESS

Standards Review Procedures

The Forum, on September 20, 1974, approved a statement of "Principles and Assumptions for Development of Colorado River Salinity Standards and Implementation Plan." Under Principle 7, it is stated:

> *The plan of implementation shall be reviewed and modified as appropriate from time to time, but at least once each 3 years. At the same time, the (numeric) standards, as required by Section 303(c) (l) of P.L. 92-500 shall be reviewed for the purpose of modifying and adopting standards consistent with the plan so that the Basin states may continue to develop their compact-apportioned waters while providing the best practicable water quality in the Colorado River Basin.*

The Colorado River Basin is a large and complex area with many water-quality and water-supply problems. A wide range of research, technical studies, and actions are underway, and much knowledge is yet to be gained. Such studies can bring to the issues a better understanding of natural and human induced salinity sources, and a better comprehension of trends in salt concentrations in the River. This will assist in predictions of future water quality. Reclamation is advancing a new computer model of the Colorado River to help in this regard. Studies are underway to allow for a better understanding of the impacts of salts in the Colorado River on water users. These efforts point to the need for ongoing review of the standards. They also promise a more comprehensive understanding of the River system, which will assist in accomplishing future reviews.

The Forum's Work Group keeps current with salinity control efforts, and suggests revisions as appropriate. The Work Group was particularly active in preparing drafts of the 2002 Review, will assist in the preparation of a supplement, if needed, and will aid the Forum in holding public meetings. The Work Group meets often, as needed, and operates under a schedule which enables the Forum to take action on potential revisions in a timely manner.

For this 2002 Review, after Forum approval, and prior to state action on the review of the numeric criteria and Plan of Implementation, public review and discussion will be sought by the Forum through public meetings. The Forum will hold at least two regional meetings in the Colorado River Basin to describe the basinwide nature of the salinity problem, the ongoing control program and Plan of Implementation as recommended in this report, and to solicit comments and views from interested agencies, groups and individuals.

No change has been made in the numeric criteria since their adoption in 1975 by the Basin states and approval by EPA. After having conducted this Review, the Forum has again found the

numeric criteria to be appropriate, and recommends no changes in this criteria. By this Review, as has been the case every three years, the Forum has adopted an updated Plan of Implementation.

Adoption by States

After the final adoption of this report by the Forum in the fall of 2002, each of the seven Colorado River Basin states will include the report as a part of its own water quality standards, and through procedures established by each state, consider the Review, potentially adopt it, and then submit the report to the appropriate Regional office of EPA for approval. Because the Colorado River Basin contains portions of three EPA regions, Utah, Colorado and Wyoming will make submittals to the EPA Region VIII in Denver, Colorado; New Mexico to EPA Region VI in Dallas, Texas; and Nevada, Arizona and California to EPA Region IX in San Francisco, California.

Action

Although the planning horizon in this report for the Plan of Implementation extends through the year 2020, there is an urgency to accomplish parts of the plan prior to the next triennial review in the year 2005. With the adoption of this report, the Forum and the states become committed to that end. The federal agencies are a critical part of the Colorado River Basin Salinity Control Program. It is believed that by their involvement in the preparation of this report, those federal agencies will support the Plan of Implementation and its programs. It is also anticipated that EPA, by approval of the states' submittals, will fully support this salinity control effort.

APPENDIX A

Regulatory History

Colorado River Basin Salinity Control Act
as Amended

REGULATORY HISTORY

(Does not exist in current CFR)

Title 40 - Protection of Environment
Chapter 1 - ENVIRONMENTAL PROTECTION AGENCY
[FBL 298-5]
Part 120 - WATER QUALITY STANDARDS

Colorado River Systems; Salinity Control Policy and Standards Procedures

The purpose of this notice is to amend 40 CFR Part 120 to set forth a salinity control policy and procedures and requirements for establishing water quality standards for salinity and a plan of implementation for salinity control in the Colorado River System which lies within the State of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming pursuant to section 303 of the Federal Water Pollution Control Act, as amended (33 U.S. C. 1313). A notice proposing such policy and standards procedures was issued on June 10, 1974 (39 FR 20703, 39 FR 24517).

High salinity (total dissolved solids) is recognized as a significant water quality problem causing adverse impacts on water uses. Salinity concentrations are affected by two basic processes: (a) Salt loading - the addition of mineral salts from various natural and man-made sources, and (b) salt concentrating - the Loss of water from the system through stream depletion.

Studies to date have demonstrated that the high salinity of stream systems can be alleviated. Although further study may be required to determine the economic and technical feasibility of controlling specific sources, sufficient information is available to develop a salinity control program.

Salinity standards for the Colorado River System would be useful in the formulation of an effective salinity control program. In developing these standards, the seven States must cooperate with one another and the Federal Government to support and implement the conclusions and recommendations adopted April 27, 1972, by the reconvened 7th Session of the conference in the Matter of Pollution of the Interstate Waters of the Colorado River and its Tributaries.

Public hearings on the proposed regulation were held in Las Vegas, Nevada on August 19, 1974, and in Denver, Colorado, on August 21, 1974. Public comments were provided at the hearings and also by letter during the review period. A summary of major comments and Environmental Protection Agency response follows:

(1) The Colorado River Basin Salinity Control Forum stated that it did not object to the proposed regulations, and believed that it satisfied the requirements of section 303 (b)(2) of P.L. 92-500 until October 18, 1975. The Forum reported that the seven Colorado River Basin States were

actively working on the development of water quality standards and a plan of implementation of salinity control.

(2) The Colorado River Water Conservation District inquired as to whether the definition for the Colorado River Basin contained in Article II(f) of the Colorado River Compact of 1922 would be followed in the development of salinity standards and the salinity control plan.

The requirement of establishing water quality standards and an implementation plan apply to the Colorado River System as defined in Part 120.5(a) of this regulation. This definition is consistent with the definition of the Colorado River System contained in Article II(f) and II(g) define the Basin to include the System plus areas outside the drainage area which are served by the Colorado River System. The Environmental Protection Agency (EPA) will require that the standards and implementation plan consider the impacts of basinwide uses, e.g. transmountain diversions, on salinity effects in the System, but the establishment of standards and implementation plans pursuant to this regulation will not be required for streams located outside the System.

The District also questioned the feasibility of relying on irrigation improvement programs as a means of alleviating the salinity problem.

EPA believes that adequate information is available to initiate controls for irrigated agriculture, yet at the same time acknowledges that additional work is needed to demonstrate the efficacy of certain control measures. Projects presently being supported by EPA and others should demonstrate the adequacy of various control measures including management and non-structural techniques. These measures will be considered during the development of the implementation plan.

(3) The Environmental Defense Fund (EDF) testified that it believed that EPA was not complying with the requirements of the Federal Water Pollution Control Act, as amended, chiefly because of EPA's late response to the timetable delineated in the Act for establishing standards, and also because numerical standards still have not been set for the Colorado River System. EDF called upon EPA to withdraw the proposed regulation and promptly promulgate numerical limits for salinity.

EPA believes that a move to promulgate numerical standards at this time should cause even further delays in controlling salinity due to the problems involved with obtaining interstate cooperation and public acceptance of such a promulgation.

(4) The Sierra Club raised a number of objections to the proposed regulation, principally because, in its opinion, it permits further development of the water of the Colorado River without requiring that adequate salinity controls be on line prior to development. Specific suggestions are:

(a) Section 120.5(e)(3). Shorten the deadline for submission of the standards and implementation play to May 30, 1975.

EPA believes that this would not allow adequate time due to the complexities of the problem, the interstate coordination needed and the time requirements for public hearings. The October 18, 1975 date is consistent with the requirements of the Federal Water Pollution Control Act, as amended, for the three year review and revision of standards. The schedule set forth by the Colorado River Basin Salinity Control Forum calls for development of draft standards and an implementation plan by February 1975 in order to allow time for public participation prior to promulgation.

(b) Section 120.5(c)(2). Delete "as expeditiously as practicable."

The date of July 1, 1983, remains the goal for accomplishment of implementation plans as stated in § 120.5(c)(2)(iii). It is the purpose of this language to accelerate progress by the States toward this goal where possible.

(c) Delete "while the basin States continue to develop their compact apportioned waters."

In recognition of the provisions of the Colorado River Compact of 1922 and until such time that the relationship between the Compact and the Federal Water Pollution Control Act, as amended, is clarified, EPA believes that development may proceed provided that measures are taken to offset the salinity increases resulting from further development.

(d) Section 120.5(c)(2)(iv). Add language to describe conditions under which temporary increases above the 1972 levels will be allowed.

EPA believes that this matter should be addressed in further detail in the formulation review and acceptance of the implementation plan, not in the regulation.

(e) Add a new subsection on financing on control measures.

EPA believes that this, too, is an issue that should be handled as part of the implementation plan.

(f) Add a new subsection delineating requirements for evaluating control plans and restricting consideration of controls for the Blue Spring on the Little Colorado River.

EPA believe these issues should also be addressed as part of the implementation plan. It should be noted that nothing in this regulation removes the requirement for assessing environmental impacts and preparing environmental impact statements for control measures.

(g) Add a new section requiring public hearings.

EPA's public participation regulations appear at 40 CFR 105 and apply to all actions to be taken by the States and Federal Government pursuant to the Act. States have provided for public

participation throughout the initial water quality standards review process. We expect the States to do so in this situation and see no need to set forth additional requirements.

(h) Add a new section stating that the implementation plan will be published in the Federal Register.

EPA expects there will be substantial public participation at the State and local level prior to adoption of the plan. The salinity standards are expected to be published in the Federal Register, but the size and complexity of the plan may militate against its publication. At the very least, the plan will be available for review at appropriate EPA and State offices. Notice of its availability will be published in the Federal Register, and 60 days will be allowed for public review and comment.

(i) Add new subsection stating that EPA will promulgate standards if the States fail to do so as prescribed in this regulation.

Section 303 of the Federal Water Pollution Control Act provides for promulgation by EPA where the States fail to adopt standards requested by the Administrator, or where the Administrator determines Federal promulgation is necessary to carry out the purpose of the Act. EPA's responsibility to promulgate standards if the States fail to do so is thus expressed in the Statute itself; the Agency does not believe that recitation of the statutory duty in this particular rulemaking is necessary.

(5) The American Farm Bureau Federation, California Farm Bureau Federation, Nevada Farm Bureau Federation, and the New Mexico Farm and Livestock Bureau believe that standards should not be set until further evaluation of the problems and opportunities for control are completed.

EPA believes that adequate information is available for setting standards and formulation controls, and while it recognizes that additional work is needed on specific aspects of solutions, it believes that further delay without any action is not appropriate.

Records of the hearings and comments received by letter during the review period are available for public inspection at the regional offices of the Environmental Protection Agency at 1860 Lincoln Street in Denver, Colorado, at 100 California Street in San Francisco, California, at 1609 Patterson Street in Dallas, Texas, and at the Environmental Protection Agency Freedom of Information Center at 401 M Street SW in Washington, D.C.

This regulation sets forth a policy of maintaining salinity concentrations in the lower main stem of the Colorado River at or below 1972 average levels and requires the Colorado River System States to promulgate water quality standards. The first step will be the establishment of procedures within 30 days of the effective date of these regulations which will lead to adoption on or before October 18, 1975, of water quality standards for salinity including numeric criteria and an implementation plan of salinity control.

Except as provided in this regulation the interstate and intrastate standards previously adopted by the States of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming and approved by the Environmental Protection Agency are the effective water quality standards under section 303 of the Act for interstate and intrastate waters within those States. Where the regulations set forth below are inconsistent with the referenced state standards, these regulations will supersede such standards to the extent of the inconsistency.

In consideration of the foregoing, 40 CFR Part 120 is amended as follows:

1. Section 120.5 is added to read as set forth below:

§ 120.5 Colorado River System Salinity Standards and Implementation Plan.

(a) "Colorado River System" means that portion of the Colorado River and its tributaries within the United States of America.

(b) It shall be the policy that the flow weighted average annual salinity in the lower main stem of the Colorado River System be maintained at or below the average value found during 1972. To carry out this policy, water quality standards for salinity and a plan of implementation for salinity control shall be developed and implemented in accordance with the principles of paragraph (c) below.

(c) The States of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming are required to adopt and submit for approval to the Environmental Protection Agency on or before October 18, 1975:

(1) Adopted water quality standards for salinity including numeric criteria consistent with the Policy stated above for appropriate points in the Colorado River System; and

(2) A plan to achieve compliance with these standards as expeditiously as practicable providing that :

(i) The plan shall identify State and Federal regulatory authorities and programs necessary to achieve compliance with the plan.

(ii) The salinity problem shall be treated as a basinwide problem that needs to be solved in order to maintain lower main stem salinity at or below 1972 levels while the basin States continue to develop their compact apportioned waters.

(iii) The goal of the plan shall be to achieve compliance with the adopted standards by July 1, 1983. The date of compliance with the adopted standards shall take into account the necessity for Federal salinity control actions set forth in the plan. Abatement measures within the control for the States shall be implemented as soon as practicable.

(iv) Salinity levels in the lower main stem may temporarily increase above the 1972 levels if control measures to offset the increases are included in the control plan. However, compliance with 1972 levels shall be a primary consideration.

(v) The feasibility of establishing an interstate institution for salinity management shall be evaluated.

(d) The States are required to submit to the respective Environmental Protection Agency Regional Administrator established procedures for achieving (c)(1) and (c)(2) above within 30 days of the effective date of these regulations and to submit progress reports quarterly thereafter. EPA will on a quarterly basis determine the progress being made in the development of salinity standards and the implementation plan.

§ 120.10 [Amended]

§ 120.10 is amended by adding to the paragraphs entitled "Arizona", "California", "Colorado", "Nevada", "New Mexico", "Utah", and "Wyoming" a salinity control policy and procedures and requirements for establishing water quality standards for salinity control in the Colorado River System.

(Sec. 303, Pub. L. 82-500, 56 Stat. 816 (33 U.S.C. 1313))

Effective date: December 18, 1974.
Dated: December 11, 1974

COLORADO RIVER BASIN

SALINITY CONTROL

ACT

TITLE II

Public Law 93-320, "COLORADO RIVER BASIN SALINITY CONTROL ACT," Approved June 24, 1974.

AS AMENDED BY:

Public Law 98-569, "AN ACT TO AMEND THE SALINITY CONTROL ACT," Approved October 30, 1984.

Public Law 104-20, "AN ACT TO AMEND THE SALINITY CONTROL ACT," Approved July 28, 1995.

Public Law 104-127, "FEDERAL AGRICULTURE IMPROVEMENT AND REFORM ACT OF 1996," Approved April 4, 1996.

Public Law 106-459, "AN ACT TO AMEND THE SALINITY CONTROL ACT," Approved November 7, 2000.

CONTENTS

Section by Section Description

COLORADO RIVER BASIN SALINITY CONTROL ACT
(AS AMENDEI))

Public Law 93-320
as amended by
Public Laws
98-569, 104-20, 104-127

An Act to authorize the construction, operation, and maintenance of certain works in the Colorado River Basin to control the salinity of water delivered to users in the United States and Mexico.

TITLE II--MEASURES UPSTREAM FROM IMPERIAL DAM

Section 201

(f) The Secretary of the Interior shall implement the salinity control policy adopted for the Colorado River in the "Conclusions and Recommendations" published in the Proceedings of the Reconvened Seventh Session of the Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and Its Tributaries in the States of California, Colorado, Utah, Arizona, Nevada, New Mexico and Wyoming, held in Denver, Colorado on April 26-27, 1972, under the authority of section 10 of the Federal Water Pollution Control Act (33 U.S.C. 1160), and approved by the Administrator of the Environmental Protection Agency on June 9, 1972.

(g) The Secretary is hereby directed to expedite the investigation, planning, and implementation of the salinity control program generally as described in chapter VI of the Secretary's report entitled, "Colorado River Water Quality Improvement Program, February 1972." In determining the relative priority of implementing additional units or new self-contained portions of units authorized by section 202, the Secretary or the Secretary of Agriculture, as the case may be, shall give preference to those additional units or new self-contained portions of units which reduce salinity of the Colorado River at the least cost per unit of salinity reduction.

(h) In conformity with section 201(a) of this title and the authority of the Environmental Protection Agency under Federal laws, the Secretary, the Administrator of the Environmental Protection Agency, and the Secretary of Agriculture are directed to cooperate and coordinate their activities effectively to carry out the objective of this title.

Section 202

(a) The Secretary is authorized to construct, operate, and maintain the following salinity control units and salinity control program as the initial stage of the Colorado River Basin salinity control program:

(1) The **Paradox Valley** unit, Montrose County, Colorado, consisting of facilities for collection and disposition of saline ground water of Paradox Valley, including wells, pumps, pipelines, solar evaporation ponds, and all necessary appurtenant and associated works such as roads, fences, dikes, power transmission facilities, and permanent operating facilities, and consisting of measures to replace incidental fish and wildlife values foregone.

(2) The **Grand Valley** unit, Colorado, consisting of measures and all necessary appurtenant and associated works to reduce the , seepage of irrigation water from irrigated lands of Grand Valley into the ground water and thence into the Colorado River. Measures shall include lining of canals and laterals, replacing canals and laterals with pipe, combining of existing canals and laterals into fewer and more efficient facilities, implementing other measures to reduce salt contributions from the Grand Valley to the Colorado River, and implementing measures to replace incidental fish and wildlife values foregone. Prior to initiation of construction of the Grand Valley Unit, or portion thereof, the Secretary shall enter into contracts through which the non-federal entities owning, operating, and maintaining the water distribution, systems, or portions thereof, in Grand Valley, singly or in concert, will assume the obligations specified in subsection (b)(2) relating to the continued operation and maintenance, of the unit's facilities to the end that the maximum reduction of salinity inflow to the Colorado River will be achieved.

PL 98-569 deleted authority for the Crystal Geyser Unit.

(3) The **Las Vegas Wash** unit, Nevada, consisting of facilities for collection and disposition of saline ground water of Las Vegas Wash, including infiltration galleries, pumps, desalter, pipelines, solar evaporation facilities, and all appurtenant works including but not limited to roads, fences, power transmission facilities, and operating facilities, and consisting of measures to replace incidental fish and wildlife values foregone.

(4) Stage I of the **Lower Gunnison Basin** Unit, Colorado, consisting of measures and all necessary appurtenant and associated works to reduce seepage from canals and laterals in the Uncompahgre Valley, and consisting of measures to replace incidental fish and wildlife values foregone, essentially as described in the feasibility report and final environmental statement dated February 10, 1984. Prior to initiation of construction of Stage I of the Lower Gunnison Basin Unit, or of a portion of Stage 1, the Secretary shall enter into contracts through which the non-federal entities owning, operating, and maintaining the water distribution systems, or portions thereof, in the Uncompahgre Valley, singly or in concert,

Subsection 202(a) Continued

will assume the obligations specified in subsection (b)(2) relating to the continued operation and maintenance of the Unit's facilities.

Subsection (4) authority was provided by PL 98-569.

(5) Portions of the **McElmo Creek** Unit, Colorado, as components of the Dolores Participating Project, Colorado River Storage Project, authorized by Public Law 90-537 and Public Law 84-485, consisting of all measures and all necessary appurtenant and associated works to reduce seepage only from the Towaoc-Highline combined canal, Rocky Ford Laterals, Lone Pine Lateral, and Upper Hermana Lateral, and consisting of measures to replace incidental fish and wildlife values foregone. The Dolores Participating Project shall have salinity control as a project purpose insofar as these specific facilities are concerned: *Provided*, That the costs of construction and replacement of these specific facilities shall be allocated by the Secretary to salinity control and irrigation only after consultation with the State of Colorado, the Montezuma Valley Irrigation District, Colorado, and the Dolores Water Conservancy District, Colorado: *And provided further*, That such allocation of costs to salinity control will include only the separable and specific costs of these facilities and will not include any joint costs of any other facilities of the Dolores Participating Project. Repayment of costs allocated to salinity control shall be subject to this Act. Repayment of costs allocated to irrigation shall be subject to the Acts which authorized the Dolores Participating Project, the Reclamation Act of 1902, and Acts amendatory and supplementary thereto. Prior to initiation of construction of these specific facilities, or a portion thereof, the Secretary shall enter into contracts through which the non-Federal entities owning, operating, and maintaining the water distribution systems, or portions thereof, in the Montezuma Valley, singly or in concert, will assume the obligations specified in subsection (b)(2) relating to the continued operation and maintenance of the unit's facilities.

(6) A **basinwide salinity control program** that the Secretary, acting through the Bureau of Reclamation, shall implement. The Secretary may carry out the purposes of this paragraph directly, or may make grants, commitments for grants, or advances of funds to non-Federal entities under such terms and conditions as the Secretary may require. Such program shall consist of cost-effective measures and associated works to reduce salinity from saline springs, leaking wells, irrigation sources, industrial sources, erosion of public and private land, or other sources that the Secretary considers appropriate. Such program shall provide for the mitigation of incidental fish and wildlife values that are lost as a result of the measures and associated works. The Secretary shall submit a planning report concerning the program established under this paragraph to the appropriate committees of Congress. The Secretary may not expend funds for any implementation measure under the program established under this paragraph before the expiration of a 30-day period beginning on the date on which the Secretary submits such report.

Subsection (6) authority was provided by PL 104-20.

(b) In implementing the units authorized to be constructed pursuant to subsection (a), the Secretary shall carry out the following directions:

(1) As reports are completed describing final implementation plans for the unit, or any portion thereof, authorized by paragraph (5) of subsection (a), and prior to expenditure of funds for related construction activities, the Secretary shall submit such reports to the appropriate committees of the Congress and to the governors of the Colorado River Basin States.

(2) Non-federal entities shall be required by the Secretary to contract for the long-term operation and maintenance of canal and lateral systems constructed pursuant to activities provided for in subsection (a): *Provided*, That the Secretary shall reimburse such non- federal entities for the costs of such operation and maintenance to the extent the costs exceed the expenses that would have been incurred by them in the thorough and timely operation and maintenance of their canal and lateral systems absent the construction of a unit, said expenses to be determined by the Secretary after consultation with the involved non-federal entities. The operation and maintenance for which non-federal entities shall be responsible shall include such repairing and replacing of a unit's facilities as are associated with normal annual maintenance activities in order to keep such facilities in a condition which will assure maximum reduction of salinity inflow to the Colorado River. These non-federal entities shall not be responsible, nor incur any costs, for the replacement of a unit's facilities, including measures to replace incidental fish and wildlife values foregone. The term replacement shall be defined for the purposes of this title as a major modification or reconstruction of a completed unit, or portion thereof, which is necessitated, through no fault of the non-federal entity or entities operating and maintaining a unit, by design or construction inadequacies or by normal limits on the useful life of a facility. The Secretary is authorized to provide continuing technical assistance to non-federal entities to assure the effective and efficient operation and maintenance of a unit's facilities.

(3) The Secretary may, under authority of this title, and limited to the purposes of this Act, fund through a grant or contract, for any fiscal year only to such extent or in such amounts as are provided in appropriation acts, a non-federal entity to organize private canal and lateral owners into formal organizations with which the Secretary may enter into a grant or contract to construct, operate, and maintain a unit's facilities.

(4) In implementing the units authorized to be constructed or the program pursuant to paragraphs (1), (2), (3), (4), (5), and (6) of subsection (a), the Secretary shall comply with procedural and substantive State water laws.

(5) The Secretary may, under authority of this title and limited to the purposes of this Act, fund through a grant or contract, for any fiscal year only to such extent or in such amounts as are provided in appropriation acts, a non-Federal entity to operate and maintain measures to replace incidental fish and wildlife values foregone.

Subsection 202(b) Continued

(6) In implementing the units authorized to be constructed pursuant to subsection (a), the Secretary shall implement measures to replace incidental fish and wildlife values foregone concurrently with the implementation of a unit's, or a portion of a unit's, related features.

(c) The Secretary of Agriculture shall carry out salinity control measures (including watershed enhancement and cost-share measures with livestock and crop producers) in the Colorado River Basin as part of the environmental quality incentives program established under chapter 4 of subtitle D of title XII of the Food Security Act of 1985.

Subsection 202(c) of the 1984 Act was replaced PL 104-127

Section 203

(a) The Secretary is authorized and directed to–

(1) Expedite completion of the planning reports on the following units, described in the Secretary's report "Colorado River Water Quality Improvement Program, February 1972":

(i) Irrigation source control:
Lower Gunnison
Uintah Basin
Colorado River Indian Reservation
Palo Verde Irrigation District

(ii) Point source control:
LaVerkin Springs
Littlefield Springs
Glenwood-Dotsero Springs

(iii) Diffuse source control:
Price River
San Rafael River
Dirty Devil River
McElmo Creek
Big Sandy River

In addition to the above, PL 96-375 added feasibility study authority for Meeker Dome and Lower Virgin River.

Subsection 203(a) Continued

(2) Submit each planning report on the units named in section 203(a)(1) of this title promptly to the Colorado River Basin States and to such other parties as the Secretary deems appropriate for their review and comments. After receipt of comments on a unit and careful consideration thereof, the Secretary shall submit each final report with his recommendations, simultaneously, to the President, other concerned Federal departments and agencies, the Congress, and the Colorado River Basin States.

(b) The Secretary is directed–

(1) in the investigation, planning, construction, and implementation of any salinity control unit involving control of salinity from irrigation sources, to cooperate with the Secretary of Agriculture in carrying out research and demonstration projects and in implementing on-the-farm improvements and farm management practices and programs which will further the objective of this title;

(2) to undertake research on additional methods for accomplishing the objective of this title, utilizing to the fullest extent practicable the capabilities and resources of other Federal departments and agencies, interstate institutions, States, and private organizations;

(3) to develop a comprehensive program for minimizing salt contributions to the Colorado River from lands administered by the Bureau of Land Management and submit a report which describes the program and recommended implementation actions to the Congress and to the members of the Advisory Council established by section 204(a) of this title by July 1, 1987;

(4) to undertake feasibility investigations of saline water use and disposal opportunities, including measures and all necessary appurtenant and associated works, to demonstrate saline water use technology and to beneficially use and dispose of saline and brackish waters of the Colorado River Basin in joint ventures with current and future industrial water users, using, but not limited to, the concepts generally described in the Bureau of Reclamation Special Report of September 1981, entitled "Saline water use and disposal opportunities"; and

(5) to undertake advance planning activities on the Sinbad Valley Unit, Colorado, as described in the Bureau of Land Management Salinity Status Report, covering the period 1978-1979 and dated February 1980.

Section 204

(a) There is hereby created the Colorado River Basin Salinity Control Advisory Council composed of no more than three members from each State appointed by the Governor of each of the Colorado River Basin States.

(b) The Council shall be advisory only and shall--

(1) act as liaison between both the Secretaries of Interior and Agriculture and the Administrator of the Environmental Protection Agency and the States in accomplishing the purposes of this title;

(2) receive reports from the Secretary on the progress of the salinity control program and review and comment on said reports; and

(3) recommend to both the Secretary and the Administrator of the Environmental Protection Agency appropriate studies of further projects, techniques, or methods for accomplishing the purposes of this title.

Section 205

(a) The Secretary shall allocate the total costs (excluding costs borne by non-federal participants) of the on-farm measures authorized by section 202(c), of all measures to replace incidental fish and wildlife values foregone, and of each unit or separable feature thereof authorized by section 202(a) of this title as follows:

Subsection (a) modified slightly by PL 104-127

(1) In recognition of Federal responsibility for the Colorado River as an interstate stream and for international comity with Mexico, Federal ownership of the lands of the Colorado River Basin from which most of the dissolved salts originate, and the policy embodied in the Federal Water Pollution Control Act Amendments of 1972 (86 Stat. 816), 75 per centum of the total costs of construction, operation, maintenance, and replacement of each unit or separable feature thereof authorized by section 202(a)(1), (2), and (3), including 75 per centum of the total costs of construction, operation, and maintenance of the associated measures to replace incidental fish and wildlife values foregone, 70 per centum of the total costs of construction, operation, maintenance, and replacement of each unit or separable feature thereof authorized by paragraphs (4) through (6) of section 202(a), including 70 per centum of the total costs of construction, operation, and maintenance of the associated measures to replace incidental fish and wildlife values foregone, and 70 per centum of the total costs of implementation of the on-farm measures authorized by section 202(c), including 70 per centum of the total costs of the associated measures to replace incidental

Subsection 205(a) Continued

fish and wildlife values foregone, shall be non-reimbursable. The total costs remaining after these allocations shall be reimbursable as provided for in paragraphs (2), (3), (4), and (5), of section 205(a).

(2) The reimbursable portion of the total costs shall be allocated between the Upper Colorado River Basin Fund established by section 5(a) of the Colorado River Storage Project Act (70 Stat. 107) and the Lower Colorado River Basin Development Fund established by section 403(a) of the Colorado River Basin Project Act (82 Stat. 885), after consultation with the Advisory Council created in section 204(a) of this title and consideration of the following items:

(i) benefits to be derived in each basin from the use of water of improved quality and the use of works for improved water management;

(ii) causes of salinity; and

(iii) availability of revenues in the Lower Colorado River Basin Development Fund and increased revenues to the Upper Colorado River Basin Fund made available under section 205(d) of this title: *Provided*, That costs allocated to the Upper Colorado River Basin Fund under section 205(a)(2) of this title shall not exceed 15 per centum of the costs allocated to the Upper Colorado River Basin Fund and the Lower Colorado River Basin Development Fund.

(3) Costs of construction and replacement of each unit or separable feature thereof authorized by sections 202(a)(1), (2), and (3) and costs of construction of measures to replace incidental fish and wildlife values foregone, when such measures are a part of the units authorized by sections 202(a)(1), (2), and (3;), allocated to the upper basin and to the lower basin under section 205(a)(2) of this title shall be repaid within a fifty-year period or within a period equal to the estimated life of the unit, separable feature thereof, or replacement, whichever is less, without interest from the date such unit, separable feature, or replacement is determined by the Secretary to be in operation.

(4) (i) Costs of construction and replacement of each unit or separable feature thereof authorized by paragraphs (4) through (6) of section 202, costs of construction of measures to replace incidental fish and wildlife values foregone, when such measures are a part of the on-farm measures authorized by section 202(c) or of the units authorized by paragraphs (4) through (6) of section 202, and costs of implementation of the on-farm measures authorized by section 202(c) allocated to the upper basin and to the lower basin under section 205(a)(2) of this title shall be repaid as provided in subparagraphs (ii) and (iii), respectively, of this paragraph.

(ii) Costs allocated to the upper basin shall be repaid with interest within a fifty-year period, or within a period equal to the estimated life of the unit, separable feature thereof, replacement, or on-farm measure, whichever is less, from the date such unit, separable feature thereof, replacement or on-farm measure is determined by the Secretary or Secretary of Agriculture to be in operation.

(iii) Costs allocated to the lower basin shall be repaid without interest as such costs are incurred to the extent that money is available from the Lower Colorado River Basin Development Fund to repay costs allocated to the lower basin. If in any fiscal year the money available from the Lower Colorado River Basin Development Fund for such repayment is insufficient to repay the costs allocated to the lower basin, as provided in the preceding sentence, the deficiency shall be repaid with interest as soon as money becomes available in the fund for repayment of those costs.

(iv) The interest rates used pursuant to this act shall be determined by the Secretary of the Treasury, taking into consideration average market yields on outstanding marketable obligations of the United States; with remaining periods to maturity comparable to the reimbursement period during the month preceding the date of enactment of the act entitled "An Act to amend the Colorado River Basin Salinity Control Act to authorize certain additional measures to assure accomplishment of the objectives of Title II of such Act, and for other purposes" for costs outstanding at that date, or, in the case of costs incurred subsequent to enactment, during the month preceding the fiscal year in which the costs are incurred.

(5) Costs of operation and maintenance of each unit or separable feature thereof authorized by section 202(a) and of measures to replace incidental fish and wildlife values foregone allocated to the upper basin and to the lower basin under section 205(a)(2) of this title shall be repaid without interest in the fiscal year next succeeding the fiscal year in which such costs are incurred. In the event that revenues are not available to repay the portion of operation and maintenance costs allocated to the Upper Colorado River Basin Fund and to the Lower Colorado River Basin Development Fund in the year next succeeding the fiscal year in which such costs are, incurred, the deficiency shall be repaid with interest calculated in the same manner as provided in section 205(a)(4)(iv). Any reimbursement due non-federal entities, pursuant to section 202(b)(2), shall be repaid without interest in the fiscal year next succeeding the fiscal year in which such operation and maintenance costs are incurred.

(b) **(1)** Costs of construction, operation, maintenance, and replacement of each unit or separable feature thereof authorized by section 202(a), costs of construction, operation, and maintenance of measures to replace incidental fish and wildlife values foregone, and costs of implementation of the on-farm measures authorized by section 202(c), allocated for repayment by the lower basin under section 205(a)(2) of this title shall be paid in accordance with subsection 205(b)(2) of this title, from the Lower Colorado River Basin Development Fund.

Subsection 205(b) Continued

(2) Section 403(g)(2) of the Colorado River Basin Project Act (43 U.S.C. 1543(g)) is hereby amended as follows: strike the word "and" after the word "Act," in line 8; insert after the word "Act," the following "(2) for repayment to the general fund of the Treasury the costs of each salinity control unit or separable feature thereof, the costs of measures to replace incidental fish and wildlife values foregone, and the costs of on-farm measures payable from the Lower Colorado Basin Development Fund in accordance with sections 205(a)(2), 205(a)(3), 205(a)(4), 205(a)(5), and 205(b)(1) of the Colorado River Salinity Control Act and"; and change paragraph (2) to paragraph (3).

(c) Costs of construction, operation, maintenance, and replacement of each unit or separable feature thereof authorized by section 202(a), costs of construction, operation, and maintenance of measures to replace incidental fish and wildlife values foregone, and costs of implementation of the on-farm measures authorized by section 202(c) allocated for repayment by the upper basin under section 205(a)(2) of this title shall be paid in accordance with section 205(d) of this title from the Upper Colorado River Basin Fund within the limit of the funds made available under section 205(e) of this title.

(d) Section 5(d) of the Colorado River Storage Project Act (43 U.S.C. 620d(d)(5)) is hereby amended as follows: strike the word "and" at the end of paragraph (3); strike the period after the word "years" at the end of paragraph (4) and insert a semicolon in lieu thereof followed by the word "and"; and add a new paragraph (5) reading:

> "(5) The costs of each salinity control unit or separable features thereof, the costs of measures to replace incidental fish and wildlife values foregone, and the costs of the on-farm measures payable from the Upper Colorado River Basin Fund in accordance with sections 205(a)(2), 205(a)(3), 205(a)(4), 205(a)(5), and 205(c) of the Colorado River Salinity Control Act."

(e) The Secretary is authorized to make upward adjustments in rates charged for electrical energy under all contracts administered by the Secretary under the Colorado River Storage Project Act (70 Stat. 105, 43 U.S.C. 620) as soon as practicable and to the extent necessary to cover the costs allocated to the Upper Colorado River Basin Fund under section 205(a)(2), and in conformity with section 205(a)(3), section 205(a)(4), and section 205(a)(5) of this title: provided, that revenues derived from said rate adjustments shall be available solely for the construction, operation, maintenance, and replacement of salinity control units, for the construction, operation, and maintenance of measures to replace incidental fish and wildlife values foregone, and for the implementation of on-farm measures in the Colorado River Basin herein authorized.

(f) The Secretary may expend funds available in the Basin Funds referred to in this section to carry out cost-share salinity measures in a manner that is consistent with the cost allocations required under this section.

Subsection (f) was added by PL 104-127

Section 206

Commencing on January 1, 1975, and every two years thereafter, the Secretary shall submit, simultaneously, to the President, the Congress, and the Advisory Council created in section 204(a) of this title, a report on the Colorado River Salinity Control Program authorized by this title covering the progress of the investigations, planning, and construction of salinity control units for the previous fiscal year, the effectiveness of such units, anticipated work needed to be accomplished in the future to meet the objectives of this title, with emphasis on the needs during the five years immediately following the date of each report, and any special problems that may be impeding progress in attaining an effective salinity control program. Said report may be included in the biennial report on the quality of water of the Colorado River Basin prepared by the Secretary pursuant to section 15 of the Colorado River Storage Project Act (70 Stat. 111; 43 U.S.C. 602n), section 15 of the Navajo Indian irrigation project and the initial stage of the San Juan-Chama Project Act (76 Stat. 102), and section 6 of the Fryingpan-Arkansas Project Act (76 Stat. 393).

Section 207

Except as provided in section 205(b) and 205(d) of this title, with respect to the Colorado River Basin Project Act and the Colorado River Storage Project Act, respectively, nothing in this title shall be construed to alter, amend, repeal, modify, interpret, or be in conflict with the provisions of the Colorado River Compact (45 Stat. 1057), the Upper Colorado River Basin Compact (63 Stat. 31), the Water Treaty of 1944 with the United Mexican States (Treaty Series 994; 59 Stat. 1219), the decree entered by the Supreme Court of the United States in Arizona against California and others (376 U.S. 340), the Boulder Canyon Project Act (45 Stat. 1057) Boulder Canyon Project Adjustment Act (54 Stat. 774; 43 U.S.C. 618a), Section 15 of the Colorado River Storage Project Act (70 Stat. 111; 43 U.S.C. 620n), the Colorado River Basin Project Act (82 Stat. 885), section 6 of the Fryingpan-Arkansas Project Act (76 Stat. 393), section 15 of the Navajo Indian irrigation project and initial stage of the San Juan-Chama Project Act (76 Stat. 102), the National Environmental Policy Act of 1969, the Federal Water Pollution Control Act as amended.

Section 208

(a) The Secretary is authorized to provide for modifications of the projects authorized by this title as determined to be appropriate for purposes of meeting the objective of this title. No funds for any such modification shall be expended until the expiration of sixty days after the

Subsection 208(a) Continued

proposed modification has been submitted to appropriate committees of the Congress, and not then if disapproved by said Committees, except that funds may be expended prior to the expiration of such sixty days in any case in which the Congress approves an earlier date by concurrent resolution. The Governors of the Colorado River Basin States shall be notified of these changes.

(b) The Secretary is hereby authorized to enter into contracts that he deems necessary to carry out the provisions of this title, in advance of the appropriation of funds therefor. There is hereby authorized to be appropriated the sum of $125,100,000 for the construction of the works and for other purposes authorized in section 202(a) or 202(b) of this title, based on April 1973 prices, plus or minus such amounts as may be justified by reason of ordinary fluctuations in costs involved therein, and such sums as may be required to operate and maintain such works. The funds authorized to be appropriated by this section may be used for construction of any or all of the works or portions thereof and for other purposes authorized in subsection (a), including measures as provided for in subsection (b), of section 202 of this title. There is further authorized to be appropriated such sums as may be necessary to pay condemnation awards in excess of appraised values and to cover costs required in connection with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 90-646).

PL 98-569 provided authority but no additional ceiling for Lower Gunnison and McElmo Creek Unit (see solicitors opinion dated October 25, 1989).

(c) In addition to the amounts authorized to be appropriated under section (b), there are authorized to be appropriated $175,000,000 for subsection 202(a), including constructing the works described in paragraph 202(a)(6) and carrying out the measures described in such paragraph. Notwithstanding subsection (b), the Secretary may implement the program under paragraph 202(a)(6) only to the extent and in such amounts as are provided in advance in appropriations Acts.

PL 104-20 and PL 106-459 provided additional ceiling for entire USBR program including those units authorized by PL 93-30 and PL 98-569.

Section 209

As used in this title--

(a) all terms that are defined in the Colorado River Compact shall have the meanings therein defined;

(b) "Colorado River Basin States" means the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming.

APPENDIX B

Forum Policies

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.

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.

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.

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

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

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

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).

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.

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 th 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:

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.

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.

POLICY FOR USE OF
BRACKISH AND/OR SALINE WATERS
FOR INDUSTRIAL PURPOSES

Adopted by
The Colorado River Basin Salinity Control Forum

September 11, 1980

The states of the Colorado River Basin, the federal Executive Department, and the Congress have all adopted as a policy that the salinity in the lower main stem of the Colorado River shall be maintained at or below the flow-weighted average values found during 1972, while the Basin states continue to develop their compact-apportioned waters. In order to achieve this policy, all steps which are practical and within the framework of the administration of states' water rights must be taken to reduce the salt load of the river. One such step was the adoption in 1975 by the Forum of a policy regarding effluent limitations for industrial discharges with the objective of "no-salt return" wherever practicable. Another step was the Forum's adoption in 1977 of the "Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program." These policies are part of the basinwide plan of implementation for salinity control which has been adopted by the seven Basin states.

The Forum finds that the objective of maintaining 1972 salinity levels would be served by the exercise of all feasible measures including, wherever practicable, the use of brackish and/or saline waters for industrial purposes.

The summary and page 32 of the Forum's 1978 Revision of the Water Quality Standards for Salinity state: "The plan also contemplates the use of saline water for industrial purposes whenever practicable,..." In order to implement this concept and thereby further extend the Forum's basic salinity policies, the Colorado River Basin states support the Water and Power Resources Service (WPRS) appraisal study of saline water collection, pretreatment and potential industrial use.

The Colorado River Basin contains large energy resources which are in the early stages of development. The WPRS study should investigate the technical and financial feasibility of serving a significant portion of the water requirements of the energy industry and any other industries by the use of Basin brackish and/or saline waters. The Forum recommends that:

I. The Colorado River Basin states, working with federal agencies, identify, locate and quantify such brackish and/or saline water sources.

II. Information on the availability of these waters be made available to all potential users.

III. Each state encourage and promote the use of such brackish and/or saline waters, except where it would not be environmentally sound or economically feasible, or would

significantly increase consumptive use of Colorado River System water in the state above that which would otherwise occur.

IV. The WPRS, with the assistance of the states, encourages and promotes the use of brackish return flows from federal irrigation projects in lieu of fresh water sources, except where it would not be environmentally sound or economically feasible, or would significantly increase consumptive use of Colorado River System water.

V. The WPRS considers a federal contribution to the costs of industrial use of brackish and/or saline water, where cost-effective, as a joint private-government salinity control measure. Such activities shall not delay the implementation of the salinity control projects identified in Title II of P.L. 93-320.

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.

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.

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.

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

Adopted by
The Colorado River Basin Salinity Control Forum

October 28, 1988

The states of the Colorado River Basin in 1977 adopted the "Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program." The objective was for "no-salt return" whenever practicable for industrial discharges and an incremental increase in salinity over the supply water for municipal discharges. The Forum addressed the issue of intercepted ground water under the 1977 policy, and adopted a specific policy dealing with that type of discharge.

A specific water use and associated discharge which has not been here-to-fore considered is discharges from fish hatcheries. This policy is limited exclusively to discharges from fish hatcheries within the Colorado River Basin. The discharges from fish hatcheries need to be addressed in a manner consistent with the 1977 and 1980 Forum policies.

The basic policy for discharges from fish hatcheries shall permit an incremental increase in salinity of 100 mg/l or less above the flow weighted average salinity of the intake supply water. The 100 mg/l incremental increase may be waived if the discharged salt load reaching the Colorado River system is less than one ton per day, or 350 tons per year, whichever is less. Evaluation is to be made on a case-by-case basis.

I. The permitting authority may permit a discharge in excess of the 100 mg/l incremental increase at the time of issuance or reissuance of a NPDES discharge permit. Upon satisfactory demonstration by the permittee that it is not practicable to attain the 100 mg/l limit.

II. Demonstration by the applicant must include information on the following factors relating to the potential discharge:

A. Description of the fish hatchery and facilities.

B. Description of the quantity and salinity of intake water sources.

C. Description of salt sources in the hatchery.

D. Description of water rights, including diversions and consumptive use quantities.

E. Description of the discharge, covering location, receiving waters, quantity salt load, and salinity.

F. Alternative plans for minimizing salt discharge from the hatchery. Alternative plans should include:

1. Description of alternative means of salt control.

2. Cost of alternative plans in dollars per ton, of salt removed from discharge.

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

III. In determining what permit conditions shall be required, the permit-issuing authority shall consider the following criteria including, but not limited to:

A. The practicability of achieving the 100 mg/l incremental increase.

B. Where the 100 mg/l incremental increase is not determined to be practicable:

1. The impact of the proposed salt input of each alternative on the lower main stem in terms of tons per year and concentration.

2. Costs per ton of salt removed from discharge of each alternative plan.

3. Capability of minimizing the salt discharge.

IV. If, in the opinion of the permitting authority, the database for the hatchery is inadequate, the permit will contain the requirement that the discharger monitor the water supply and the discharge for salinity. Such monitoring program shall be completed within two years and the discharger shall then present the information as specified above.

V. All new and reissued NPDES permits for all hatcheries shall require monitoring of the salinity of the intake water supply and the effluent at the time of peak fish population.

A. Analysis for salinity may be either as total dissolved solids (TDS) or be electrical conductivity where a satisfactory correlation with TDS has been established. The correlation should be based on a minimum of five different samples.

APPENDIX C

List of NPDES Permits

LEGEND

NPDES PERMITS
EXPLANATION CODES

COLORADO RIVER BASIN SALINITY CONTROL FORUM
Through December 31, 2001

NPDES permits are reviewed under two different criterium under Forum policy; these being municipal and industrial. In order for a permittee to be in compliance under the municipal criterium, the increase in concentration between inflow and outflow can not be greater than 400 mg/L. Forum industrial criterium requires that no industrial user discharges more than 1.00 ton/day. Under Forum policy there can be granted exceptions to these limitations by the states. The following gives an explanation of the current status of the NPDES permits. Because at any given time many of the approximate 650 permits identified in this list are being reviewed, reissued, and/or terminated, and new discharge permits are being filed, this list must be considered as being subject to frequent change.

MUNICIPAL

(M) Municipal user in compliance with Forum policy.

(M-1) Permit has expired or been revoked. No discharge.

(M-2) Permittee did not discharge during the reporting period.

(M-3) Measurement of TDS is not currently required, but the state and/or EPA plans to require measurements of both inflow and outflow when the permit is reissued.

Measurements of inflow are not consistent with Forum policy;

(M-4A) Therefore, it is not known whether or not this municipal user is in compliance.

(M-4B) However, since outflow concentration is less than 500 mg/L it is presumed that this permit is not in violation of the ≤400 mg/L increase.

(M-5) Permittee is in violation of Forum policy in that there is an increase in concentration of >400 mg/L over the source waters.

(M-5A) The state is currently working to bring permittee into compliance.

(M-6) This permit requires no discharge or discharge only under rare and extreme hydrologic conditions. Thus, flow and concentration measurements are not required.

(M-7) Insufficient data to know the status of this permit.

* Permit issued to a federal agency or an Indian tribe and the responsibility of EPA.

INDUSTRIAL

(I) Industrial user in compliance with Forum policy.

(I-1) Permit has expired or been revoked. No discharge.

(I-2) Permittee did not discharge during the reporting period.

(I-3) Measurement of TDS is not currently required, but the state and/or EPA plans to require measurements of both volume and concentration of outflow when the permit is reissued.

(I-4) Either concentration or volume of outflow are not currently being reported, thus the permittee is in violation of Forum policy. It is not known if the discharge is in excess of the <1.00 ton/day requirement.

Permittee appears to be in violation of Forum policy in that discharge of salts is >1.00 ton/day.

(I-5A) No provision has been made allowing this violation of Forum policy.

(I-5B) Though discharge is >1.00 ton/day, in keeping with Forum policy the permittee has demonstrated the salt reduction is not practicable and the requirement has been waived.

(I-5C) The use of ground water under this permit is for geothermal energy and only heat is extracted. The intercepted salt and water are naturally tributary to the Colorado River System and hence, this discharge does not increase salt in the river. The permit is covered by the Forum's policy on intercepted ground waters.

(I-5D) This permit is in compliance with the Forum's policy for fish hatcheries. The use of the water is a one-time pass through, and the incremental increase in salinity is ≤ 100 mg/l.

(I-5E) This permit is for the interception and passage of ground waters and thus is excepted under the Forum's policy on intercepted ground waters .

(I-6) This permit requires no discharge or discharge only under rare and extreme hydrologic conditions. Thus, flow and concentration measurements are not required.

(I-7) Insufficient data to know the current status of this permit.

LEGEND (continued)

NPDES PERMITS
REACH DEMARCATIONS

COLORADO RIVER BASIN SALINITY CONTROL FORUM

In order to provide a better understanding of the location of the various NPDES permits and the geographical sequence in the Colorado River System, each of the following NPDES permits is identified with a Colorado River reach number. The reach numbers have their origin in the old CRSS river model. Though this model is no longer used, the reach numbers assist in understanding the general location of the permits. The reaches are defined as:

100	Upper Main Stem	from headwaters of Colorado River to Colorado River near Cameo
190	Taylor Park	from headwaters of Gunnison River to above Blue Mesa Reservoir
200	Blue Mesa	from above Blue Mesa Reservoir to below Blue Mesa Dam
210	Morrow Point	from below Blue Mesa Dam to Crystal Reservoir
220	Lower Gunnison	from Crystal Reservoir to confluence with Colorado River
300	Grand Valley	from Colorado River near Cameo to confluence with Green River
310	Dolores River	from headwaters of Dolores River to confluence with Colorado River
401	Fontenelle	from headwaters of Green River to Green River near Green River, WY
411	Flaming Gorge	from Green River near Green River, WY to confluence with White and Duchesne Rivers
500	Yampa River	from headwaters of Yampa River to confluence with Green River
510	White River	from headwaters of White River to confluence with Green River
600	Green River	Green River from confluence with White and Duchesne Rivers to confluence with Colorado River
610	Duchesne River	from headwaters of Duchesne River to confluence with Green River
700	Lake Powell	Colorado River from confluence of with Green River to Lees Ferry
710	San Rafael River	from headwaters of San Rafael River to confluence with Green River
801	Upper San Juan River	from headwaters of San Juan River to San Juan near Bluff
802	Lower San Juan River	from San Juan near Bluff to confluence with Lake Powell
900	Glen Canyon to Lake Mead	Colorado River from Lees Ferry to backwaters of Lake Mead
905	Virgin River	from headwaters of Virgin River to backwaters of Lake Mead
910	Lake Mead	from backwaters of Lake Mead to Colorado River below Hoover Dam
920	Lake Mohave	Colorado River from below Hoover Dam down to I-40 bridge
930	Lake Havasu	Colorado River from I-40 bridge to below Parker Dam
940	Parker Dam to Imperial Dam	Colorado River from below Parker Dam to above Imperial Dam
945	Imperial Dam	Colorado River from above Imperial Dam to Gila and Yuma users

NPDES PERMITS
Colorado River Basin Salinity Control Forum
Through December 31, 2001

NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
AZ0023311	900	APS/CHOLLA POWER PLANT		273.600		I-3
AZ0023655	905	BEAVER DAM ESTATES		0.038		M-3
AZ0110167	900	BIA HUNTERS POINT SCHOOL	<400	0.014		M*
AZ0024147	900	BIA JOHN F. KENNEDY SCHOOL				M*
AZ0022560	900	BIA KEAMS CANYON		0.030		M-3*
AZ0110213	900	BIA LOW MOUNTAIN BOARDING SCHOOL		0.014		M*
AZ0110043	802	BIA NAZLINI BOARDING SCHOOL	<400	0.013		M*
AZ0110175	900	BIA PINE SPRINGS SCHOOL	<400	0.040		M*
AZ0110183	900	BIA SEBA DALKAI BOARDING SCHOOL	<400	0.010		M*
AZ0110094	801	BIA TEEC NOS POS SCHOOL	<400	0.080		M*
AZ0024473	900	BISON RANCH		0.040		M-3
AZ0023507	930	BLAKE RANCH RVP		0.003		I-3
AZ0023035	930	BLUE BEACON OF KINGMAN		0.030		I-3
AZ0021610	900	CAMERON TRADING POST		0.054		M-3
AZ0023990	930	CAWCD-HAVASU PLUMBING PLANT		1.500		I-3
AZ0022462	940	COLORADO RIVER INDIAN TRIBE WTP		0.040		M-3*
AZ0021415	940	COLORADO RIVER JOINT VENTURE	240	1.200	0.47	M*
AZ0022268	930	CYPRUS BAGDAD COPPER DIV		0.000		I-3
AZ0020427	900	FLAGSTAFF, CITY OF, WILDCAT HILL		6.000		M-3
AZ0023639	900	FLAGSTAFF, CITY OF, - RIO DE FLAG		4.000		M-3
AZ0024279	900	HIGH COUNTRY PINES		0.036		M-3
AZ0020257	900	HOLBROOK, CITY OF		1.300		M-3
AZ0022489	920	KINGMAN/DOGTOWN	<400	0.520		M-7
AZ0023647	920	MOHAVE TOPOCK COMPRESSOR STATION	710	0.202	0.11	I
AZ0022195	900	NTUA/GANADO	<400	0.400		M*
AZ0022471	802	NTUA/KAIBETO		0.100		M-3*
AZ0022802	900	NTUA/ROUGH ROCK LAGOONS		0.007		M-3*
AZ0020265	802	NTUA/CHINLE	<400	0.783		M*
AZ0020281	802	NTUA/KAYENTA	<400	0.900		M*
AZ0021920	802	NTUA/MANY FARMS		0.070		M-6*
AZ0024228	900	NTUA/PINON SCHOOL				M*
AZ0020290	900	NTUA/TUBA CITY	<400	1.100		M-6*
AZ0021555	900	NTUA/WINDOW ROCK-FT.DEFIANCE	<400	1.320		M-3*
AZ0022284	940	PARKER, TOWN OF WTP		0.013		M-2
AZ0022179	900	PEABODY COAL CO.		0.000		I-7*
AZ0022756	930	PETRO STOP CENTER/KINGMAN		0.008		I-3
AZ0024406	940	PLANET TRUCK WASH		0.007		I-3
AZ0023752	940	QUARTSZITE, CITY OF WWTF		0.045		M-3
AZ0022772	900	ST. JOHNS, CITY OF POTW		0.500		M-3
AZ0024422	900	SANDERS SCHOOL DISTRICT NO. 6		0.040		M-3
AZ0024287	900	SHOW LOW, CITY OF		1.420		M-3
AZ0024252	900	SNOWBASE		0.040		M-3
AZ0024287	900	SNOWFLAKE, CITY OF		0.330		M-3
AZ0023477	900	SOUTH GRAND CANYON S.D.		0.750		M-3
AZ0110248	920	USBR/DAVIS DAM		0.027		M-3*
AZ0110019	700	USBR/GLEN CANYON CRSP	385	0.015	0.01	M*
AZ0110329	910	USBR/HOOVER DAM	300	0.055	0.03	M*
AZ0000132	920	USFWS/WILLOW BEACH FISH HATCHERY	17	6.800	0.48	I-5D*
AZ0023612	900	USNPS/GRAND CANYON/ DESERT VIEW		0.040		M*
AZ0110426	900	USNPS/GRAND CANYON/NORTH RIM		0.150		M-3*
AZ0023621	900	USNPS/GRAND CANYON/INDIAN GARDENS	<100	1.008	0.25	M*

NPDES PERMITS
Colorado River Basin Salinity Control Forum
Through December 31, 2001

NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
AZ0022152	900	USNPS/GRAND CANYON/SOUTH RIM		0.750		M*
AZ0023523	920	USNPS/KATHERINE'S LANDING WTP	<100	0.200	0.00	M*
AZ0024015	900	VALLE-WILLIAMS AIRPORT		0.045		M-3
AZ0024007	900	WESTWOOD SUBDIVISION		0.016		M-3
AZ0020346	900	WILLIAMS, CITY OF WWTP		0.540		M-3
AZ0023361	900	WILLIAMS WTP		0.033		M-3
AZ0023833	900	WINSLOW, CITY OF POTW		2.200		M-3
CA7000005	940	USBR, PARKER DAM AND POWER PLANT DWF	45	0.006	0.00	M
COG584012	190	ALMONT WWTP	401	0.013	0.02	M
CO0042447	100	AMERICAN ATLAS #1, LTD, LLP	2854	0.030	0.36	I
CO0026468	801	AMORELLI, JOE AND CHERYL	450	0.002	0.00	M
CO0039683	510	ANDRIKOPOULOS, A.G., RESOURCES	5163	0.386	8.31	I-5A
CO0026387	100	ASPEN CONSOLIDATED SAN DISTRCT	567	2.093	4.95	M
COG600078	100	ASPEN SKIING COMPANY				I-4
CO0022721	100	ASPEN VILLAGE, INC.	371	0.027	0.04	M
CO0042501	100	ASPEN, CITY OF				I-2
COG600255	100	ASPEN, CITY OF				I-2
COG600371	100	ASPEN, CITY OF		100.000		I-4
COG640066	100	ASPEN, CITY OF	309	0.057	0.07	I
COG500376	100	B&B EXCAVATING, INC.				I-2
CO0021491	100	BASALT SANITATION DISTRICT	316	0.350	0.46	M
COG584063	100	BASALT SANITATION DISTRICT				I-2
COG640078	100	BASALT, TOWN OF				I-1
COG640068	100	BATTLEMENT MESA METRO DISTRICT				I-2
COG584028	100	BATTLEMENT MESA METRO. DIST.	780	0.357	1.16	M
CO0039276	801	BAYFIELD SANITATION DISTRICT				M-1
CO0020273	801	BAYFIELD SANITATION DISTRICT	327	0.233	0.32	M
COG582037	801	BAYFIELD SANITATION DISTRICT	398	0.015	0.02	M
CO0044377	220	BEAR COAL COMPANY				I-4
CO0042111	801	BEAR, RUEDI				I-4
COG581011	801	BENSON, LARRY W & MABEL A.	311	0.007	0.01	M
CO0038024	510	BLUE MOUNTAIN ENERGY, INC.	940	0.011	0.04	I
COG600155	801	BOC GASES		0.005		I-4
COG850039	220	BOWIE RESOURCES LIMITED				I-1
CO0033685	220	BOWIE RESOURCES LIMITED				I-2
CO0044776	220	BOWIE RESOURCES LIMITED	485	0.021	0.04	I
CO0021539	100	BRECKENRIDGE SAN DISTRICT	325	0.877	1.19	M
CO0029211	100	BRECKENRIDGE SAN DISTRICT	160	0.005	0.00	M
CO0027197	100	BRECKENRIDGE SANITATION DIST.	128	0.002	0.00	M
COG640020	100	BRECKENRIDGE, TOWN OF				I-2
COG640053	100	BRECKENRIDGE, TOWN OF				I-2
COG500306	220	C & C SAND & GRAVEL				I-2
COG500307	500	CAMILLETTI AND SONS, INC.				I-2
COG584003	100	CANYON CREEK ESTATE HOA	2009	0.013	0.11	M
COG500179	801	CANYON SAND AND GRAVEL				I-2
CO0026751	100	CARBONDALE, TOWN OF				M-1
COG584050	100	CARBONDALE, TOWN OF	347	0.597	0.86	M
COG640027	100	CARBONDALE, TOWN OF				I-2
CO0031984	220	CEDAREDGE, TOWN OF	337	0.166	0.23	M
COG640015	220	CEDAREDGE, TOWN OF	73	0.018	0.01	I

NPDES PERMITS
Colorado River Basin Salinity Control Forum
Through December 31, 2001

NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
COG500229	100	CENTRAL AGGREGATES, INC.				I-2
CO0033260	300	CLIFTON SANITATION DISTRICT #1	743	0.211	0.65	M
CO0033791	300	CLIFTON SANITATION DISTRICT #2	722	0.421	1.27	M
CO0000248	100	CLIMAX MOLYBDENUM COMPANY				I-1
CO0035394	190	CLIMAX MOLYBDENUM COMPANY	879	0.313	1.15	I-5B
COG600141	500	CO. DEPT. OF TRANSPORTATION				I-4
CO0040487	100	COLLBRAN, TOWN OF	794	0.123	0.41	M
COG584032	100	COLO DEPARTMENT OF CORRECTIONS	394	0.033	0.05	M
CO0042579	220	COLO DIV PARKS & OUTDOOR REC	351	0.004	0.01	M
CO0042731	100	COLO. DEPARTMENT OF HIGHWAYS	495			M
CO0044091	100	COLO. DIVISION OF WILDLIFE	476	0.001	0.00	I
COG130001	100	COLORADO DIVISION OF WILDLIFE	262	10.129	11.05	I-5D
COG130004	190	COLORADO DIVISION OF WILDLIFE	93	11.089	4.29	I-5D
COG130005	801	COLORADO DIVISION OF WILDLIFE	221	2.657	2.44	I-5D
COG130006	190	COLORADO DIVISION OF WILDLIFE	160	5.327	3.56	I-5D
COG130007	100	COLORADO DIVISION OF WILDLIFE	150	2.613	1.63	I-5D
COG130011	100	COLORADO DIVISION OF WILDLIFE	272	5.882	6.67	I-5D
COG500184	100	COLORADO YULE MARBLE COMPANY				I-1
COG850017	500	COLOWYO COAL COMPANY L.P.				I-1
CO0045161	500	COLOWYO COAL COMPANY L.P.	884	0.084	0.31	I
COG500245	500	CONNELL RESOURCES, INC.		0.707		I-4
COG500350	500	CONNELL RESOURCES, INC.		0.036		I-4
CO0038440	100	CONRAD, JOHN J.	320	0.001	0.00	M
COG600036	100	COPPER MOUNTAIN, INC				I-2
CO0021598	100	COPPER MTN. CONSOLIDATED S.D.	297	0.256	0.32	M
CO0020125	801	CORTEZ SANITATION DISTRICT	685	0.223	0.64	M
CO0027545	801	CORTEZ SANITATION DISTRICT	689	0.165	0.47	M
CO0027880	801	CORTEZ SANITATION DISTRICT	542	0.592	1.34	M
CO0036251	310	COTTER CORPORATION	1760	0.012	0.09	I
CO0043893	100	COVERED BRIDGE BUILDING LTD.				I-1
COG600254	100	COVERED BRIDGE BUILDING ASSCN.		0.026		I-4
CO0040037	500	CRAIG, CITY OF	524	0.940	2.05	M
CO0037729	220	CRAWFORD, TOWN OF	238	0.031	0.03	M
CO0031836	190	CRESTED BUTTE SOUTH METRO DIST				M-1
COG584045	190	CRESTED BUTTE SOUTH METRO DIST	303	0.047	0.06	M
CO0020443	190	CRESTED BUTTE, TOWN OF	206	0.171	0.15	M
CO0034142	500	CYPRUS EMPIRE CORPORATION	982	0.533	2.18	I-5A
CO0031445	801	DAVIS, JR., ROBERT H. DBA				M-1
COG584054	801	DAVIS, ROBERT H., JR.				I-2
CO0023418	100	DEBEQUE, TOWN OF				M-1
COG584043	100	DEBEQUE, TOWN OF	931	0.019	0.07	M
COG500209	220	DELTA SAND AND GRAVEL COMPANY	747	1.670	5.20	I-5E
CO0039641	220	DELTA, CITY OF	1390	1.215	7.04	M
COG640006	100	DILLON, TOWN OF	39	0.032	0.01	I
CO0040509	801	DOLORES, TOWN OF	420	0.053	0.09	M
CO0037702	801	DOSH, JOHN C., SR. DBA	433	0.025	0.04	M
CO0023434	310	DOVE CREEK, TOWN OF				M-1
COG582039	310	DOVE CREEK, TOWN OF	696	0.045	0.13	M
COG500243	500	DUCKELS CONST. DBA YAMPA AGGRE	365	0.526	0.80	I
CO0023876	100	DUNDEE REALTY USA, INC.	235	0.006	0.01	M
COG582024	801	DURANGO WEST METRO. DIST. #2	520	0.099	0.21	M
CO0024082	801	DURANGO, CITY OF	423	1.947	3.44	M

NPDES PERMITS
Colorado River Basin Salinity Control Forum
Through December 31, 2001

NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
CO0021369	100	EAGLE RIVER WATER & SAN. DIST.	391	1.816	2.96	M
CO0024431	100	EAGLE RIVER WATER & SAN. DIST.	894	1.980	7.38	M
CO0037311	100	EAGLE RIVER WATER & SAN. DIST.	624	1.020	2.66	M
CO0021059	100	EAGLE, TOWN OF	650			M
COG640031	100	EAGLE, TOWN OF				I-2
CO0040720	190	EAST RIVER REGIONAL SAN. DIST.	218	0.034	0.03	M
COG850019	100	EASTSIDE COAL COMPANY, INC.				I-2
COG500402	500	ED HOCKIN TRUCKING				I-2
CO0040266	801	EDGEMONT RANCH METRO DISTRICT	421	0.019	0.03	M
CO0039691	801	EDMUNDS GEOFFREY & MARK ZEMPEL	488	0.024	0.05	M
COG500039	300	ELAM CONSTRUCTION, INC.				I-2
COG500108	300	ELAM CONSTRUCTION, INC.				I-2
COG500210	300	ELAM CONSTRUCTION, INC.	1001	0.515	2.15	I-5E
COG500225	300	ELAM CONSTRUCTION, INC.				I-2
COG500353	300	ELAM CONSTRUCTION, INC.				I-2
CO0031551	801	ELLIS, JAMES M. III				M-1
COG582035	801	ELLIS, JAMES M. III	545	0.008	0.02	M
COG500292	100	EVERIST, L.G., INC.				I-2
COG500316	100	EVERIST, L.G., INC.	223			I-4
COG500318	100	EVERIST, L.G., INC.	421			I-4
CO0038270	100	EXXON COMPANY, USA				I-2
CO0000051	100	FANCHER OIL LLC	2141	0.895	7.99	I-5E
COG584002	801	FITZ PROPERTIES, INC.	286	0.003	0.00	M
COG500114	100	FLAG SAND AND GRAVEL	770	0.004	0.01	I
CO0044067	310	FLEET RESOURCES, INC.				I-4
COG584025	801	FOREST LAKES METRO DISTRICT	385	0.033	0.05	M
COG584030	801	FORREST GROVES SEWAGE TRTMNT	475	0.006	0.01	M
COG500403	801	FOUR STATES AGGREGATES, LLC				I-2
CO0042480	100	FRANK & COWLES ENV MGMT SVCS	3642	0.396	6.01	I-5A
CO0040142	100	FRASER SANITATION DISTRICT	234	0.402	0.39	M
CO0020451	100	FRISCO SANITATION DISTRICT	455	0.672	1.27	M
COG640067	100	FRISCO, TOWN OF	57	0.133	0.03	I
COG583002	100	FRUITA, TOWN OF	985	0.571	2.34	M
COG640072	100	GATEWAY OF SNOWMASS MESA SUBD				I-1
COG310138	220	GEOLOGIC SERVICES&CONSULTANTS		0.004		I-4
COG310121	220	GEOLOGIC SRVCS&CONSULTANTS INC		0.002		I-4
CO0000141	100	GLENWOOD HOT SPGS LODGE & POOL		3.950		I-1
COG600308	100	GLENWOOD HOT SPGS LODGE & POOL	19900	4.380	363.47	I-5C
CO0020516	100	GLENWOOD SPRINGS, CITY OF				M-1
COG640052	100	GLENWOOD SPRINGS, CITY OF				I-2
CO0020699	100	GRANBY SANITATION DISTRICT	311	0.365	0.47	M
COG640044	100	GRAND COUNTY W&S DISTRICT				I-2
CO0032964	100	GRAND COUNTY W&s DISTRICT #1				M-1
COG640087	100	GRAND COUNTY W&SD #1				I-2
COG500161	300	GRAND JUNCTION PIPE & SUPPLY				I-2
COG500308	300	GRAND JUNCTION PIPE & SUPPLY				I-2
COG500321	300	GRAND JUNCTION PIPE & SUPPLY				I-2
COG500326	300	GRAND JUNCTION PIPE&SUPPLY CO.	2693	0.140	1.57	I-5E
COG500348	300	GRAND JUNCTION PIPE&SUPPLY CO.	3973	0.160	2.65	I-5E
COG500364	300	GRAND JUNCTION PIPE&SUPPLY CO.	2366	0.340	3.35	I-5E
COG640004	220	GRAND JUNCTION, CITY OF				I-2
COG500252	100	GRANT BROS. CONSTRUCTION LLC				I-2

NPDES PERMITS
Colorado River Basin Salinity Control Forum
Through December 31, 2001

NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
CO0041530	220	GUNNISON, CITY OF	377	1.289	2.03	M
COG640041	220	GUNNISON, COUNTY OF				I-2
COG500342	100	GYPSUM RANCH LLC				I-2
COG584001	100	GYPSUM, TOWN OF	511	0.262	0.56	M
COG850008	500	HAYDEN GULCH TERMINAL, INC.				I-2
CO0040959	500	HAYDEN, TOWN OF	466	0.145	0.28	M
COG584010	801	HERMOSA SANITATION DISTRICT	510	0.123	0.26	M
CO0022756	190	HOMESTAKE MINING COMPANY				I-1
COG850024	310	HONEYWOOD COAL COMPANY				I-2
COG584026	801	HORNBAKER, REX	370	0.004	0.01	M
CO0024350	100	HOT SULPHUR SPRINGS, TOWN OF	336	0.035	0.05	M
COG640019	100	HOT SULPHUR SPRINGS, TOWN OF	137	0.011	0.01	I
CO0044903	220	HOTCHKISS, TOWN OF	1026	0.161	0.69	M-5A
COG600377	500	INDUSTRIAL COMPANY, THE				I-4
COG584029	100	INGELHART, FRED B & FRED R.	474	0.009	0.02	M
CO0045420	100	IOWA HILL WATER RECLAMATION	313	0.653	0.85	M
CO0045217	190	IRWIN TEN, L.L.C.	492	0.004	0.01	M
COG584020	801	J & J WALLS & CO.	753	0.004	0.01	M
CO0021636	100	KREMMLING SANITATION DISTRICT	433		1.81	M
CO0042561	801	KURPIUS, THOMAS E. & SHARON E.				I-2
COG584052	200	L & N, INC.	938	0.005	0.02	M-5
COG500001	500	LAFARGE				I-2
COG500003	100	LAFARGE				I-2
COG500088	100	LAFARGE	1614	0.070	0.47	I
COG500120	500	LAFARGE	129	0.725	0.39	I
COG500155	100	LAFARGE				I-2
COG500160	220	LAFARGE				I-2
COG500175	500	LAFARGE	198	0.855	0.70	I
COG500267	100	LAFARGE				I-2
COG600330	500	LAKE CATAMOUNT #1 METRO DIST				I-2
CO0040673	200	LAKE CITY, TOWN OF	247	0.074	0.08	M
CO0034738	801	LAKE CAPOTE WASTEWATER FACILITY				M-2*
COG584005	310	LAST DOLLAR PUD IMPS. ASSOC.	406	0.004	0.01	M
COG584049	100	LAZY GLEN HOA	398	0.028	0.05	M
CO0020303	100	LAZY GELN HOMEOWNER'S ASSN, INC				M-1
COG582023	801	LEE, RICHARD O.	368	0.010	0.02	M
CO0038342	100	LODESTAR ENERGY, INC.	898	0.029	0.11	I
CO0040827	100	LODESTAR ENERGY, INC.				I-2
COG582028	801	LOMA LINDA SANITATION DISTRICT	587	0.046	0.11	M
COG600186	220	LOUISIANA-PACIFIC CORPORATION		7.700		I-4
COG500371	510	LOVE, SAM F.				I-4
COG500380	300	M.A. CONCRETE				I-2
COG500379	300	M.A. CONCRETE	5222	0.467	10.16	I-5A
CO0041548	300	MACTEC-ERS				I-2
COG600345	100	MAIN ST. STATION BRECKENRIDGE				I-2
COG640065	801	MANCOS RURAL WATER COMPANY				I-4
CO0021687	801	MANCOS, TOWN OF				M-1
CO0022781	510	MEEKER SANITATION DISTRICT				M-1
COG584042	510	MEEKER SANITATION DISTRICT	587	0.210	0.51	M
CO0040053	300	MESA CO./GRAND JUNCTION - CITY	922	7.908	30.41	M
COG600307	100	MESA INSULATION	1731	0.027	0.20	I
COG583001	300	MESA WATER & SANITATION DIST.	483	0.021	0.04	M

NPDES PERMITS
Colorado River Basin Salinity Control Forum
Through December 31, 2001

NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
COG584007	100	MID VALLEY METROPOLITAN DIST.	521	0.250	0.54	M
CO0000396	100	MID-CONTINENT RESOURCES, INC.				I-1
COG850026	100	MID-CONTINENT RESOURCES, INC.				I-2
CO0029599	100	MINREC, INC.	1400	0.036	0.21	I
COG850009	100	MINREC, INC.				I-2
CO0038806	100	MOBILE HOME MANAGEMENT CORP.				M-1
COG584035	100	MOBILE HOME MANAGEMENT CORP.	719	0.032	0.09	M
CO0037621	500	MOFFAT COUNTY IMPROVEMENT DIST				M-1
COG581016	500	MOFFAT COUNTY IMP. DISTRICT	463	0.010	0.02	M
CO0039624	220	MONTROSE, CITY OF	1147	2.480	11.86	M
CO0022969	220	MORRISON CREEK METRO W&SD	210	0.068	0.06	M
COG640049	500	MOUNT WERNER WATER & SAN DIST				I-2
CO0038776	220	MOUNTAIN COAL COMPANY, LLC	1185	0.258	1.27	I-5B
COG500291	801	MOUNTAIN GRAVEL & CONST. CO.	237	0.106	0.10	I
COG500310	801	MOUNTAIN GRAVEL & CONST. CO.	1245	0.062	0.32	I
COG500328	801	MOUNTAIN GRAVEL & CONST. CO.				I-2
COG500367	801	MOUNTAIN REDI MIX	2208	0.163	1.50	I-5A
CO0027171	190	MT. CRESTED BUTTE W&S DISTRICT	253	0.301	0.32	M
COG850001	801	NATIONAL KING COAL, LLC				I-2
COG600076	300	NATURAL SODA				I-2
CO0024007	310	NATURITA, TOWN OF	638	0.034	0.09	M
COG850005	100	NCIG FINANCIAL, INC.				I-2
COG584062	100	NEW CASTLE, TOWN OF	868	0.158	0.57	M
CO0040479	100	NEW CASTLE, TOWN OF - WWTP	783	0.187	0.61	M
COG500354	300	NICHOLS, JOHN AND MIKE	603	0.025	0.06	I
COG500385	300	NICHOLS, TERRY				I-2
COG500368	801	NIELSONS INC.				I-2
COG584031	190	NORTH ELK MEADOWS HOA	361	0.009	0.01	M
CO0032191	310	NORWOOD SANITATION DISTRICT				M-1
COG582038	310	NORWOOD SANITATION DISTRICT	557	0.032	0.07	M
COG582002	310	NUCLA SANITATION DISTRICT	1165	13.587	66.01	M
COG640038	310	NUCLA, TOWN OF	158	0.110	0.07	I
CO0041106	500	OAK CREEK, TOWN OF	506	0.245	0.52	M
COG640057	500	OAK CREEK, TOWN OF	160	0.094	0.06	I
CO0045802	100	OAK MEADOWS SERVICE COMPANY	2608	0.011	0.12	M-5
COG850027	801	OAKRIDGE ENERGY INC.				I-2
CO0029947	100	OCCIDENTAL OIL SHALE, INC.	1288	0.001	0.00	I
CO0033961	100	OCCIDENTAL OIL SHALE/TRACT C-B				I-2
CO0020907	220	OLATHE, TOWN OF	1852	0.283	2.19	M-5A
COG640016	220	ORCHARD CITY, TOWN OF -- WTP				I-1
COG640081	220	ORCHARD CITY, TOWN OF	81	0.159	0.05	I
CO0028860	100	OURAY RANCH HOMEOWNERS ASSOC.				M-1
COG584041	100	OURAY RANCH HOMEOWNERS ASSN.	215	0.004	0.00	M
CO0043397	220	OURAY, CITY OF	631	0.255	0.67	M
CO0043222	220	OURAY, CITY OF - HOT SPGS POOL	1470	0.536	3.28	I-5C
CO0000132	220	OXBOW MINING, INC.	3113	0.892	11.58	I-5B
CO0034193	300	PABCO				I-1
CO0038032	801	PAGOSA AREA W&SD - HIGHLANDS WWT				M-1
CO0041343	801	PAGOSA AREA W&SD-STEVENS WTP	214	0.015	0.01	I
CO0031755	801	PAGOSA AREA WATER & SAN. DIST.	436	0.527	0.96	M
COG582040	801	PAGOSA AREA WATER & SAN. DIST.	484	0.091	0.18	M
COG640007	801	PAGOSA AREA WATER & SAN. DIST.				I-2

NPDES PERMITS
Colorado River Basin Salinity Control Forum
Through December 31, 2001

NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
COG640022	801	PAGOSA AREA WATER & SAN. DIST.	43	0.014	0.00	I
COG640077	801	PAGOSA AREA WATER & SAN. DIST.	168	0.075	0.05	I
CO0022845	801	PAGOSA SPRINGS SAN. DIST.	671	0.272	0.76	M
COG584004	300	PALISADE, TOWN OF	415	0.215	0.37	M
COG640037	300	PALISADE, TOWN OF				I-2
COG584015	300	PANORAMA IMPROVEMENT DISTRICT	650	0.065	0.18	M
CO0021709	220	PAONIA, TOWN OF	954	0.213	0.85	M-5A
COG500263	300	PARKERSON CONSTRUCTION, INC.				I-2
COG600178	500	PETE LIEN & SONS				I-2
COG900008	500	PHILLIPS PETROLEUM COMPANY				I-2
CO0039551	100	PITKIN IRON CORPORATION				I-2
CO0032638	500	PITTSBURG & MIDWAY COAL MINING	3349	0.468	6.54	I-5A
CO0027146	300	POWDERHORN COAL COMPANY	1148	0.140	0.67	I-5B
CO0023485	300	POWDERHORN METRO DISTRICT NO 1	356	0.014	0.02	M
COG500289	500	PRECISION EXCAVATING, INC.				I-2
COG500396	500	PRECISION EXCAVATING, INC.				I-2
CO0000027	300	PUBLIC SERVICE CO. OF COLORADO	535	10.612	23.67	I-5B
CO0000523	500	PUBLIC SERVICE CO. OF COLORADO	323	0.031	0.04	I
COG581010	801	PUR'GATORY METROPOLITAN DIST.	805	0.080	0.27	M
CO0028525	100	RA'.CH AT ROARING FORK HOA, INC				M-1
COG584051	100	RA 'CH AT ROARING FORK HOA, INC	396	0.049	0.08	M
CO0026972	510	RANGELY, TOWN OF				M-1
COG584044	510	RANGELY, TOWN OF	430	0.239	0.43	M
CO0021385	100	RED CLIFF, TOWN OF				I-4
COG640012	100	RED CLIFF, TOWN OF	170	0.341	0.24	I
CO0023922	100	REDSTONE WATER & SAN DISTRICT	390	0.020	0.03	M
CO0029106	220	RIDGWAY, TOWN OF				M-1
COG584047	220	RIDGWAY, TOWN OF	418	0.081	0.14	M
COG584024	100	RIFLE, CITY OF	1057	0.630	2.78	M
COG584053	100	RIFLE, CITY OF	578	0.063	0.15	M
CO0030970	100	RIFLE, CITY OF – SOUTH WWTF				M-1
COG584006	100	RIVERBEND SUBDIVISION WWTF	2598	0.006	0.06	M
COG584048	510	RIVERSIDE SANITATION, INC.				I-2
COG500287	500	ROARING FORK REDI-MIX, INC.				I-4
CO0039209	100	ROARING FORK RESOURCES				I-2
COG500369	100	ROARING FORK RESOURCES				I-2
COG500408	100	ROARING FORK RESOURCES, INC.				I-2
CO0044750	100	ROARING FORK WATER & SAN DIST	2178	0.014	0.13	M-5
COG582020	500	ROUTT CO. FOR PHIPPSBURG COMM	467	0.013	0.03	M
CO0039705	500	ROUTT CO. FOR MILNER COMMUNITY				M-1
COG584037	500	ROUTT COUNTY FOR MILNER COMM.	565	0.015	0.03	M
COG584013	801	SAN JUAN RIVER VILLAGE METRO	305	0.022	0.03	I
COG500241	801	SANDCO, INC.				I-2
CO0000221	500	SENECA COAL COMPANY	2273	0.168	1.60	I-5B
COG500312	500	SENECA COAL COMPANY	295	0.170	0.21	I
COG600162	510	SHELL FRONTIER OIL & GAS, INC.	440	10.000	18.35	I-5A
COG500356	100	SIERRA MINERALS CORPORATION	175	4.400	3.21	I-5A
CO0036978	801	SIERRA VERDE ESTATES, INC.				I-2
CO0029181	100	SILT, TOWN OF				M-1
COG584046	100	SILT, TOWN OF	982	0.139	0.57	M
CO0020826	100	SILVERTHORNE/DILLON JNT SWR	384	1.379	2.21	M
CO0020311	801	SILVERTON, TOWN OF	268	0.143	0.16	M

NPDES PERMITS
Colorado River Basin Salinity Control Forum
Through December 31, 2001

NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
COG640008	801	SILVERTON, TOWN OF	148	0.005	0.00	I
CO0023086	100	SNOWMASS WATER & SAN DISTRICT	231	0.804	0.77	M
CO0031810	100	SOPRIS VILLAGE HOA, INC.	514	0.030	0.06	M
CO0041262	801	SOUTH DURANGO SANITATION DIST.				M-1
COG584057	801	SOUTH DURANGO SANITATION DIST.	489	0.095	0.19	M
CO0022853	801	SOUTHERN UTE TRIBE	295	0.190	0.23	M*
COG584033	310	ST. BARNABAS CHURCH CAMPS, INC	416	0.001	0.00	M
CO0032280	500	STEAMBOAT HEALTH & REC ASSOC.		0.008		I-4
CO0035556	500	STEAMBOAT LAKE W&SD	366	0.012	0.02	M
CO0020834	500	STEAMBOAT SPRINGS, CITY OF				M-1
COG600127	500	STEAMBOAT SPRINGS, CITY OF	408	132.000	224.58	M
CO0045373	500	STEHLE PRODUCTION COMPANY				I-2
CO0029955	100	SUMMIT CO BOARD OF COMMISS	371	0.637	0.99	M
COG850041	500	SUNLAND MINING CORPORATION				I-2
CO0038598	100	SUNLIGHT, INC.	364			M
CO0027529	801	SUNNYSIDE GOLD CORPORATION	1860	1.922	14.90	I-5B
CO0036056	801	SUNNYSIDE GOLD CORPORATION				I-2
CO0044601	220	SUNSHINE MINING & REFINING CO.	184	0.500	0.38	I
CO0045501	100	TABERNASH MEADOWS W&SD	408	0.002	0.00	M
CO0035815	100	TALBOTT ENTERPRISES, INC	1515	0.056	0.35	M
COG584061	100	TALBOTT ENTERPRISES, INC.	1418	0.053	0.31	M
COG584021	310	TELECAM PARTNERSHIP II LIMITED	436	0.006	0.01	I
CO0041840	310	TELLURIDE, TOWN OF				M-1
COG640024	310	TELLURIDE, TOWN OF	64	0.001	0.00	I
COG500281	500	TEMPLE CONSTRUCTION, INC.				I-2
COG850028	220	TERROR CREEK COMPANY				I-2
CO0037681	100	THREE LAKES W&SD - WILLOW CREEK				M-1
CO0032115	500	TRAPPER MINING, INC.	1877	0.154	1.21	I-5B
COG500255	200	TRI COUNTY GRAVEL	1658	0.125	0.86	I
CO0000540	310	TRI-STATE GENERATN &TRANSMISSN	1938	0.230	1.86	I-5B
COG900009	500	TRUE OIL COMPANY				I-2
CO0027154	500	TWENTYMILE COAL COMPANY	2279	0.159	1.51	I-5A
CO0036684	500	TWENTYMILE COAL COMPANY	3933	0.011	0.17	I
CO0042161	500	TWENTYMILE COAL COMPANY	4163	0.095	1.65	I-5B
CO0043591	300	UMETCO MINERALS CORP-JHN BROWN	435	0.023	0.04	I
COG600277	100	UNION PACIFIC RAILROAD COMPANY		6.600		I-4
COG500412	300	UNITED COMPANIES				I-2
COG500216	300	UNITED COMPANIES OF MESA CNTY	5768	0.173	4.15	I-5E
COG500218	300	UNITED COMPANIES OF MESA CNTY	2371	0.198	1.95	I-5E
COG500299	300	UNITED COMPANIES OF MESA CNTY	7328	0.203	6.19	I-5E
COG500119	100	UNITED COMPANIES OF MESA CNTY.	1448	0.233	1.40	I-5E
COG500400	220	UNITED COMPANIES OF MESA CNTY.	1355	0.680	3.84	I-5E
COG500329	190	UNITED COMPANIES OF MESA CNTY.				I-2
COG640058	100	UPPER EAGLE REGIONAL WTR AUTH				I-2
COG584011	801	UPPER VALLEY SANITATION, INC.	225	0.018	0.02	M
CO0034398	801	USDA-NPS MESA VERDE NATIONAL PARK	395	0.063	0.10	M*
		(second outfall from Mesa Verde)	340	0.041	0.06	M*
CO0034622	801	USDINPS-MESA VERDE NATIONAL PARK				M-2*
CO0000086	220	USFWS HOTCHKISS NATIONAL FISH HATCHER				I-1*
COG640070	300	UTE WATER CONSERVANCY DISTRICT	469	0.240	0.47	I
COG600242	100	VAIL ASSOCIATES, INC.		0.500		I-4
COG600381	100	VAIL ASSOCIATES, INC.				I-2

NPDES PERMITS
Colorado River Basin Salinity Control Forum
Through December 31, 2001

NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
COG500134	220	VALCO, INC.				I-2
CO0042617	220	VOLUNTEERS OF AMERICA CARE FAC	411	0.008	0.01	M
CO0037206	220	WALKER RUBY TRUST MINING CO.	77	0.031	0.01	I
COG581002	100	WASTE WATER TREATMENT SERVICES	1467	0.086	0.52	M
COG584008	100	WEST GLENWOOD SPRINGS SAN DIST	348	0.247	0.36	M
CO0030449	220	WEST MONTROSE SANITATION DIST				M-1
CO0000213	310	WESTERN FUELS-COLORADO, LLC	2176	0.359	3.25	I-5B
COG500358	220	WESTERN GRAVEL, INC.				I-2
CO0034665	801	WESTERN MOBILE NORTHERN INC.	185	1.000	0.77	I-5A*
		(second outfall from Western Mobile)	451	0.290	0.55	I-5A*
COG500378	100	WESTERN SLOPE AGGREGATES, INC.				I-2
CO0031062	500	WHITEMAN SCHOOL	193	0.006	0.00	M
COG500123	220	WHITEWATER BUILDING MATERIALS				I-2
COG500127	220	WHITEWATER BUILDING MATERIALS	1329	0.040	0.22	I
COG500062	500	WILLIAMS FORK COMPANY				I-2
CO0026051	100	WINTER PARK WATER & SAN DIST	403	0.165	0.28	M
COG310133	500	WITHER OIL COMPANY				I-2
CO0030635	100	YAMPA, TOWN OF	290	0.024	0.03	M
NV0021261	910	CCSD AWT Plant 1	1265	96.000	506.40	M-5A
NV0021563	920	CCSD Laughlin	1043	4.000	17.40	M-6*
NV0022837	910	Circle K Stores Inc		0.001	0.00	I-5E
NV0022730	910	D&G Oil		0.001	0.00	I-5E
NV0022721	910	Exxon # 7-3868			0.00	I-5E
NV0022845	910	Harrah's Las Vegas	1305	0.001	0.01	I
NV0022098	910	Henderson WRF	1225	24.000	122.60	M-5A
NV0021750	910	Hilton Hotel & Casino	2891	0.075	0.90	I-5E
NV0023060	910	Kerr McGee	1000	1.200	5.00	I
NV0000078	910	Kerr McGee (001a)	302	0.026	0.03	I
NV0000078	910	Kerr McGee (001b)	229	0.026	0.02	I
NV0000078	910	Kerr McGee (002a)	379	0.026	0.04	I
NV0000078	910	Kerr McGee (002b)	229	0.026	0.02	I
NV0000078	910	Kerr McGee (003)	0	0.000	0.00	I-2
NV0022691	910	Lake Las Vegas	1767	12.700	93.65	I
NV0020133	910	Las Vegas WWTP	1200	72.000	360.29	M-5A
NV0022748	910	Las Vegas, City of (Bonneville)	1242	0.018	0.09	I-5E
NV0022250	910	Lowes HIW, Inc	4180	0.020	0.35	I-5E
NV0021950	910	LV-Municipal Storm Drain Syst	2778	20.400	236.49	M-5A
NV0022641	910	Marnell Corrao for Bellagio	0	0.000	0.00	I-2
NV0020192	910	NDOW - Lake Mead	610	4.883	12.43	I-5D
NV0020923	910	Pioneer Chlor Alkali #7	0	0.000	0.00	I-2
NV0022446	910	Rebel Oil Company	0	0.000	0.00	I-2
NV0022896	910	Red Rock Mini Mart	0	0.000	0.00	I-2
NV0022594	910	SECOR/7-eleven # 13702	1935	0.001	0.01	I-5E
NV0022608	910	SECOR/7-eleven # 29643	8180	0.003	0.09	I-5E
NV0022772	910	Signature Homes	1300	0.001	0.01	I-7
NV0022802	910	Southland Corp - # 20084	1620	0.001	0.01	I-5E
NV0022829	910	Southland Corp - # 20687	2911	0.001	0.01	I-5E
NV0022811	910	Southland Corp - # 29644	2625	0.007	0.08	I-5E
NV0022870	910	Southland Corp - #19653	4040	0.002	0.03	I-5E
NV0021679	910	Stallion Mountain Country Club	5523	0.370	8.53	I-5B/E
NV0000060	910	Titanium Metals (TIMET)	521	4.630	10.07	I

NPDES PERMITS
Colorado River Basin Salinity Control Forum
Through December 31, 2001

NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
NV0022781	910	Tomiyasu Basement Dewatering	3795	0.051	0.81	I-5E
NV0022420	910	Union Oil Company	407	0.000	0.00	I-5E
NV0021865	910	US NPS - Callville Bay	574	0.023	0.06	M
NV0021873	910	US NPS - Echo Bay WTP	545	0.010	0.02	M
NV0021881	910	US NPS - Las Vegas Bay WTP	576	0.006	0.01	M
NV0021890	910	US NPS - Overton Beach	559	0.017	0.04	M
NV0022543	910	USA #100	2987	0.001	0.01	I-5E
NV0022195	910	Valley Hospital	2230	0.038	0.35	I-5E
NV0022888	910	Venetian,The	2315	0.017	0.16	I-5E
NM0000019	801	ARIZONA PUBLIC SERVICE CO. - FOUR CORNE	742	8.500	26.32	I-5B*
NM0028193	801	BHP MINERALS NAVAJO COAL	0	0.000	0.00	I-6*
NM0028142	801	Bloomfield Municipal Schools	705	0.002	0.006	I*
NM0030350	801	Bloomfield Water	n/a	n/a	n/a	I-1*
NM0029319	801	Central Consolidated School District	730	0.034	0.103	I*
NM0020168	801	City of Aztec	520	0.68	1.47	M*
NM0020770	801	City of Bloomfield	501	0.72	1.50	M*
NM0000043	801	City of Farmington	327	2.75	3.75	I*
NM0023396	900	City of Ramah	-	0.058	-	M-7*
NM0028584	801	CONSOLIDATION COAL CO.	0	0.000	0.00	I-1
NM0000051	801	Farmington Drinking Water	n/a	n/a	n/a	I-1*
NM0029572	801	Farmington Municipal Op.	n/a	n/a	n/a	I-1*
NM0028258	801	Farmington Sand & Gravel Co.	-	-	-	I-2*
NM0020583	801	Farmington WWTP	918	4.79	18.34	M*
NM0027995	801	Four Corners Materials, Inc./DBA	1093	0.27	1.23	I*
NM0020672	900	Gallup WWTP	1131	2.61	12.31	M*
NM0029025	801	Harper Valley Subd.	672	0.025	0.070	I*
NM0020630	900	NTUA CROWNPOINT WWTP	N/A	0.000	0.00	M*
NM0030333	801	NTUA LAKE VALLEY				M-6*
NM0020613	900	NTUA NAVAJO WWTP	N/A	0.000	0.00	M-6*
NM0020621	801	NTUA SHIPROCK WWTP	N/A	0.000	0.00	M-6*
NM0030325	900	PINE HILL SCHOOL				M-6*
NM0028606	801	Public Service Co of NM - San Juan	-	-	-	I-2*
NM0020524	900	QUIVIRA MINING COMPANY - CHURCH ROCK	0	0.000	0.00	I-1
NM0029505	801	San Juan Coal Co. - La Plata	-	-	-	I-2*
NM0028746	801	San Juan Coal Company - San Juan	-	-	-	I-2*
NM0000027	801	San Juan Concrete Co.	n/a	n/a	n/a	I-1*
NM0020401	900	United Nuclear Corp.	n/a	n/a	n/a	I-1*
NM0028550	900	United Nuclear Corp.	n/a	n/a	n/a	I-1*
NM0026751	801	USBIBIA - Jicarilla Agency, Dulce	-	0.236	-	M-3*
NM0020869	801	USDIBIA, CRYSTAL BOARDING SCHOOL	N/A	0.000	0.00	M*
NM0021016	801	USDIBIA, LAKE VALLEY BOARDING SCHOOL	N/A	0.000	0.00	M-2*
NM0020800	801	USDIBIA, NENAHNEZAD BOARDING SCHOOL	N/A	0.000	0.00	M-6*
NM0020991	801	USDIBIA, PUEBLO PINTADO BOARDING SCHOC	N/A	0.000	0.00	M-1*
NM0020958	900	USDIBIA, WINGATE BOARDING SCHOOL	N/A	0.000	0.00	M-2*
NM0029432	801	Yampa Mining Co. (De-na-zin Mine)	-	-	-	I-2*
NM0029475	801	Yampa Mining Co. (Gatew.)	-	-	-	I-2*
UT0021091	610	ALTAMONT, CITY OF	0	0.000	0.00	M-1
UT0000167	510	AMERICAN GILSONITE CO			1.97	I-5B*
UTG040008	600	ANDALEX - PINNACLE COAL MINE	0	0.000	0.00	I-2
UTG040007	600	ANDALEX WILDCAT LOADOUT	0	0.000	0.00	I-2

NPDES PERMITS
Colorado River Basin Salinity Control Forum
Through December 31, 2001

NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
UT0024511	411	ASHLEY VALLEY SEWER BOARD	1100	0.250	1.15	M-5A
UT0025348	411	ASHLEY VALLEY WATER & SEWER (MECHANIC	490	2.100	4.29	M
UTG640003	411	ASHLEY VALLEY WATER & SEWER IDWTP	0	0.000	0.00	M-2
UTG640019	802	BLANDING CULINARY WATER TREATMENT	0	0.000	0.00	M-6
UTG040020	600	CANYON FUEL - DUGOUT	0	0.000	0.00	I
UT0023540	600	CANYON FUEL - SKYLINE	400	11.500	19.20	I-5E
UT0022918	700	CANYON FUEL - SUFCO	1100	4.000	18.36	I-5E
UTG040011	600	CANYON FUEL CO.	0	0.000	0.00	I-2
UT0023663	710	CASTLE VALLEY SPECIAL SERVICE-CASTLEDA	1482	0.230	1.42	M-5A
UT0022616	700	CONSOLIDATED COAL CO-UNDERGROUND	3024	0.730	9.21	I-5E
UTG040006	710	CO-OP MINING COMPANY	700	0.040	0.12	I
UTG040016	600	CYPRES BLACKHAWK	0	0.000	0.00	I-1
UT0023736	600	CYPRUS PLATEAU MINING COMPANY	0	0.000	0.00	I-2
UT0020095	610	DUCHESNE CITY CORP	0	0.000	0.00	M-2
UTG640014	411	DUTCH JOHN	0	0.000	0.00	M-2
UTG640012	600	E CARBON CITY - SUNNYSIDE CWTP	0	0.000	0.00	M-2
UT0000124	411	EQUITY OIL	1400	1.350	7.89	I-5E
UT0000035	411	EQUITY OIL CO	1400	1.340	7.83	I-5E
UT0020052	710	FERRON, CITY OF	1200	0.077	0.39	M
UT0024368	710	GENWAL RESOURCES, INC-CRANDALL	450	0.900	1.69	I-5E
UT0025232	600	GREEN RIVER, CITY OF	0	0.000	0.00	M-1
UT0023094	600	HIAWATHA COAL CO.	0	0.000	0.00	I-5E
UT0021792	411	HOLLANDSWORTH & TRAVIS	2000	0.147	1.23	I-5E
UTG040019	600	HORIZON COAL	400	0.034	0.06	I
UT0021296	710	HUNTINGTON, CITY OF	2942	0.130	1.60	M-5A
UT0024015	411	INTERMOUNTAIN CONCRETE	0	0.000	0.00	I
UT0023922	300	INTERNATIONAL URANIUM RIM MINE	0	0.000	0.00	I-2
UTG040013	600	IPA HORSE CANYON	0	0.000	0.00	I-2
UT0025259	510	LEXCO INC.				*
UT0024945	802	MK - FERGUSON (MEXICAN HAT UMTRA)	0	0.000	0.00	I-2*???
UT0020419	300	MOAB, CITY OF	450	1.200	2.25	M
UT0024503	802	MONTICELLO	0	0.000	0.00	M-2
UTG640015	802	MONTICELLO CITY (CULINARY WATER TREATM	0	0.000	0.00	M-6
UTG040004	600	MOUNTAIN COAL CO. - GORDON CREEK	0	0.000	0.00	I-2
UTG040005	600	MOUNTAIN COAL CO. C-VSPUR	0	0.000	0.00	I-2
UT0020133	802	MOUNTAIN STATES PETROLEUM			0.00	I*???
UTG040010	600	NEICO	0	0.000	0.00	I-2
UT0023001	610	NEOLA TOWN WATER & SEWER ASSOC.	0	0.000	0.00	M-2
UT0000094	600	PACIFIC CORP (CARBON)	1859	0.281	2.18	I-5B
UT0023426	710	PACIFIC CORP (HUNTER)	0	0.000	0.00	I-1
UTG040003	710	PACIFICORP - (TRAIL MOUNTAIN)	0	0.000	0.00	I-5E
UT0023604	710	PACIFICORP (DEER CREEK)	900	2.010	7.55	I-5E
UT0023591	710	PACIFICORP (DES BEE DOVE MINE)	0	0.000	0.00	I-2
UTG040009	710	PACIFICORP (HUNTER COAL PREP)	0	0.000	0.00	I-2
UT0022896	710	PACIFICORP (WILBERG MINE)	300	0.500	0.63	I-5E
UTG640035	600	PRICE CITY WTP	0	0.000	0.00	M-2
UT0021814	600	PRICE RIVER WATER IMP DIST	1051	1.820	7.98	M
UTG640034	600	PRICE RIVER WTP	0	0.000	0.00	M-6
UTG040012	600	RAG PLATEAU MINING CORP.	0	0.000	0.00	I-2
UTG130016	700	ROAD CREEK TROUT	170	4.600	3.26	I-5D
UT0023680	600	SOLDIER CREEK COAL CO	0	0.000	0.00	I-5E
UT0025224	905	SPRINGDALE	660	0.158	0.44	M

NPDES PERMITS
Colorado River Basin Salinity Control Forum
Through December 31, 2001

NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
UT0021776	905	ST GEORGE, CITY OF	1248	7.000	36.46	M
UT0024759	600	SUNNYSIDE COGENERATION ASSOCIATES	0	0.000	0.00	I-2
UTG640002	610	TRIDELL - LAPOINT WATER (IDWTP)	0	0.000	0.00	M-2
UTG640006	700	US NATIONAL PARK (CAPITOL REEF WTP)	0	0.000	0.00	M-2
UTG640004	700	US NATIONAL PARK (GLEN CANYON WTP)	0	0.000	0.00	M-2
UT0020338	411	USBOR - FLAMING GORGE DAM	800	0.000	0.00	M
UTG130001	411	USFWS - JONES HOLE NFH	174	13.000	9.44	I-5D
UTG130003	700	UTAH DIV OF WILDLIFE - J PERRY EAGON	162	11.100	7.50	I-5D
UTG130007	700	UTAH DIV OF WILDLIFE - LOA	168	8.600	6.03	I-5D
UTG130012	610	UTAH DIV OF WILDLIFE - WHITEROCK	216	6.000	5.41	I-5D
UTG040021	600	WHITE OAK	639	0.015	0.04	I
UT0023868	510	ZIEGLER CHEMICAL AND MINERAL				*
WY0033448	411	AMOCO PRODUCTION COMPANY	0	0	0.00	I-2
WY0028886	401	BLACK BUTTE COAL COMPANY	0	0	0.00	I-3
WY0030261	401	BLACK BUTTE COAL COMPANY	0	0	0.00	I-3
WY0030350	401	BRIDGER COAL COMPANY	0	0	0.00	I-3
WY0035114	401	CELSIUS ENERGY COMPANY	0	0	0.00	I-1
WY0035882	401	CELSIUS ENERGY COMPANY	0	0	0.00	I-1
WY0035891	401	CELSIUS ENERGY COMPANY	0	0	0.00	I-1
WY0035904	401	CELSIUS ENERGY COMPANY	0	0	0.00	I-1
WY0035912	401	CELSIUS ENERGY COMPANY	0	0	0.00	I-1
WY0035921	401	CELSIUS ENERGY COMPANY	0	0	0.00	I-1
WY0035939	401	CELSIUS ENERGY COMPANY	0	0	0.00	I-1
WY0035947	401	CELSIUS ENERGY COMPANY	0	396	0.01	I
WY0036129	401	CELSIUS ENERGY COMPANY	0	0	0.00	I-1
WY0036137	401	CELSIUS ENERGY COMPANY	0	0	0.00	I-1
WY0036145	401	CELSIUS ENERGY COMPANY	0	0	0.00	I-1
WY0032697	411	CHEVRON U.S.A. PRODUCTION CO	0	0	0.00	I-2
WY0023132	411	CHURCH AND DWIGHT CO INC	0	0	0.00	I-6
WY0020443	401	CITY OF GREEN RIVER	704	1.31	3.85	M-5A
WY0022357	401	CITY OF ROCK SPRINGS	857	2.311	8.26	M-5
WY0032727	401	COLORADO INTERSTATE GAS CO	0	0	0.00	M-3
WY0023124	401	DANIELS MOBILE HOME PARK	0	0	0.00	M-2
WY0035858	401	DOUBLE EAGLE PETROLEUM & MINING COMPA	2196	0.036	0.33	I-3
WY0042145	401	DOUBLE EAGLE PETROLEUM & MINING COMPA	0	0	0.00	M-7
WY0036803	401	ELLSWORTH PECK	0	0	0.00	I-1
WY0032450	401	EXXONMOBIL PRODUCTION COMPANY	0	0	0.00	I-2
WY0032689	401	EXXONMOBIL PRODUCTION COMPANY	0	0	0.00	I-2
WY0032701	401	EXXONMOBIL PRODUCTION COMPANY	0	0	0.00	I-1
WY0031763	401	F M C CORPORATION	0	0	0.00	I-2
WY0022071	411	FORT BRIDGER SEWER DISTRICT	0	0	0.00	M-7
WY0000027	401	GREEN RIVER/ROCK SPRINGS JPWB	0	0	0.00	I-2
WY0000116	411	KEMMERER-DIAMONDVILLE JPB	0	0	0.00	I-3
WY0020320	411	KEMMERER-DIAMONDVILLE JPB	948	0.37	1.46	M-3
WY0020311	411	PACIFICORP	1130	1.38	6.51	I-5B
WY0000051	411	PITTSBURG AND MIDWAY COAL CO	0	0	0.00	I-3
WY0027626	411	PITTSBURG AND MIDWAY COAL CO	0	0	0.00	I-2
WY0036099	401	QUESTAR EXPLORATION & PRODUCTION COM	0	0	0.00	I-2
WY0022128	704	REGENCY OF WYOMING, INC.	0	0	0.00	M-7
WY0023825	401	ROCK SPRINGS ROYALTY COMPANY	0	0	0.00	I-3
WY0033111	411	SF PIPELINE LIMITED COMPANY	750	0.0173	0.05	I

APPENDIX D

Comments and Responses

Overview

In preparation of this Review, the Forum held five public meetings across the Upper and Lower Basin to receive both oral and written statements. Meetings were held in Rock Springs, Wyoming, on August 13th; Montrose, Colorado, on August 14th; Price, Utah, on August 15th; Farmington, New Mexico, on September 4th; and Phoenix, Arizona, on September 5, 2002. All oral and written statements have been reviewed and considered in preparing the Review. In the following two sections, the Forum has capsulized each comment and provided its response. The Forum is appreciative of these comments and found them helpful.

Oral Comments and Forum Response

1. Mr. Catlin, General Manager, Upper Compaghre Valley Water Users Association, at the public meeting in Montrose, Colorado expressed his interest and appreciation of the Salinity Control Program. He specifically commented that it would be helpful if Reclamation could offer more frequent requests for proposals (RFPs). He also suggested that opportunities be further investigated to combine salinity and selenium funds available to implement joint projects.

   Forum's response: The Forum appreciates the support of the Upper Compaghre Valley Water Users Association. The Forum notes that the frequency of the RFPs is in part tied to the appropriation of federal funding for the Basinwide Salinity Control Program. The Forum has consistently requested an increase in Reclamation's funding for this effort.

   With regard to the combining of efforts to control selenium as well as salinity, the Forum notes that it has already participated in two such partnerships. The Forum has asked its Water Quality Committee to look further into the roles the Forum might provide in the future.

2. Mr. Scott Rupp, from the Uintah County Water Conservancy District, at the public meeting in Price, Utah commented on the funding levels available for salinity control, noting that in view of the significant damages downstream additional funding should be provided.

   Forum's response: The Forum has consistently urged the Administration to request and the Congress to provide a larger annual appropriation for Reclamation's Basinwide Salinity Control Program and has supported a larger allocation of EQIP funds be spent for the Salinity Control Program. At the funding levels recommended by the Forum, the Plan of Implementation will meet the numeric criteria through the year 2020.

3. Mr. Keith Mortensen, from the Duchesne County Water Conservancy District, at the public meeting in Price, Utah expressed his appreciation for the local benefits that have been derived from the implementation of the Salinity Control Program to date.

   Forum's response: The Forum acknowledges this expression of appreciation.

4. Mr. Verdis Barker, from the Price Canal Company (Wellington, UT), at the public meeting in Price, Utah requested clarification on the status of existing proposals under Reclamation's Basinwide Salinity Control Program. Mr. Barker represented a specific project (Price Canal) that has been a successful applicant in the RFP process, however, only part of the project has been implemented. He expressed concern with respect to funding of the remainder of the Project.

   Forum's response: The Forum thanks Mr. Barker for his participation. This comment has been referred to the USBR for follow-up.

5. Mr. Roger Barton, Salinity Workgroup Chairman, San Rafael Soil Conservation District, at the public meeting in Price, Utah expressed appreciation for the Forum's past efforts and supports the concept of offset salinity control projects.

   Forum's response: The Forum acknowledges Mr. Barton's longstanding participation and support of the salinity control effort. The Forum expresses its appreciation for his involvement and his comment.

6. Mr. Bill Du Bois, California Farm Bureau Federation, at the public meeting in Phoenix, Arizona, expressed his support for the Forum's longstanding and effective efforts to control salinity in the Colorado River Basin.

   Forum's response: The Forum thanks Mr. Du Bois for his participation in the Phoenix public meeting and for expressing the support of the California agricultural entities for the Salinity Control Program's efforts.

Written Comments and Forum Response

Written statements were received from the following organizations:

BHP Billiton
Coachella Valley Water District
Colorado River Board of California
U.S. Bureau of Reclamation
Southern California Salinity Coalition
The Metropolitan Water District of Southern California
Navajo Nation-Department of Water Resources.
Petroleum Association of Wyoming
U.S. Department of Agriculture
U.S. Fish and Wildlife Service
Western Slope Environmental Resources Council

The full text of the written comments are included at the end of this Appendix.

1. BHP Billiton, letter signed by John Grubb, President BHP Billiton. Letter dated September 4, 2002 and received September 4, 2002 in Farmington, New Mexico. General support for the program, however, had a personalized comment concerning the application of the standards to "stormwater discharge permits".

   Forum's response: The proposed policy deals with processed wastewater discharges. Stormwater runoff is currently and more appropriately addressed within the individual state's NPDES permitting program.

2. Coachella Valley Water District (CVWD), letter signed by Tom Levy, General Manager-Chief Engineer. Letter dated August 21, 2002 and received by mail on August 29 at the Forum's office. Support for the 2002 Review but commented on the need for increased Federal funding.

   Forum's Response: The Forum appreciates the support of the CVWD. With respect to the need for increased Federal funding, the Forum agrees and the Forum will continue it's effort to request the Congress and the Federal Administration to appropriate the needed funding.

3. Colorado River Board of California, letter signed by Gerald R. Zimmerman, Executive Director. Letter dated September 5, 2002 received by FAX on September 5 and hard copy on September 6, 2002. Support for maintaining the numeric criteria and Plan of Implementation.

Forum's response: The Forum appreciates California's ongoing support of the Forum's activities and its efforts in seeking Federal appropriations for the Salinity Control Program.

4. U.S. Bureau of Reclamation, letter signed by David Trueman, Program Manager for Reclamation's Basinwide Salinity Control Program. Letter dated August 14, 2002, and received in Rocks Spring, Wyoming, supporting the program.

   Forum's response: The Forum appreciates the agency's support and looks forward to a continuing partnership relationship as the Basinwide Salinity Control Program continues to be implemented.

5. Southern California Salinity Coalition, statement presented by Richard Atwater, president of the SCSC. Statement dated September 5, 2002, and received in Phoenix, Arizona. Statement supported the recommended federal funding level in the 2002 Review.

   Forum's response: The Forum not only appreciates the support of the salinity program expressed in the comment but is also pleased to learn of the creation of the coalition and looks forward to working with it in the future.

6. The Metropolitan Water District of Southern California, statement presented by Dennis Underwood, Vice President, Colorado River Resources. Statement dated September 5, 2002, and received in Phoenix, Arizona, urging the Forum to consider creating an institutional structure to permit offsite salinity projects to be funded when on-site salinity mitigation is infeasible.

   Forum's response: The new policy on NPDES Discharges provides the opportunity for individual states to require or allow the establishment of salinity-offset measures. The Forum and its Policy Committee will continue to investigate arrangements for such institutional measures throughout the Basin. The Forum will work with each of the affected States to determine the most effective structure and means to implement salinity-offset procedures.

7. Navajo Nation, Department of Water Resources, Division of Natural Resources, statement dated September 4, 2002. Statement received September 5, 2002, at Farmington, New Mexico addresses the opportunities that exist to control salinity both on-farm and off-farm within the Navajo Nation but have not been implemented due to cost-effectiveness.

   Forum's response: The Forum thanks the Water Management Branch for its comments and will continue to explore opportunities for salinity control as described in its statement. The Forum appreciates the Navajo Nation's continuing efforts to identify salinity control projects.

8. Petroleum Association of Wyoming (PAW), letter signed by John Robitaille, Vice President, dated August 12, 2002 and received in Rock Springs, Wyoming on August 13, 2002. Letter makes various comments on the proposed Policy for Implementation of Colorado River Salinity Standards Through the NPDES Permit Program.

a. PAW believes the revisions as written may have negative effects on the efficient production of coal bed natural gas and may well render operations in the Colorado River Basin economically unfeasible.

Forum's response: The Forum agrees that depending upon the quality of the produced water and the cost and availability of treatment or disposal alternatives there may be proposed developments that are not both economically feasible and environmentally sound. The Forum agrees that it is appropriate for the state permitting authority to consider "whole project economics" and cost-benefit analyses when making permitting decisions. The proposed policy establishes clear environmental goals and strives to allow a good deal of discretion to the permitting authority in making economic feasibility determinations.

In order to accent this intent, the Forum has changed Section I.A.1.b.v. to read:

> *A statement as to the one plan among the alternatives for reduction of salt discharge that is recommended by the applicant and also information demonstrating any of the other evaluated alternatives that were determined to be economically infeasible.*

This information will allow the permitting authority to consider not only the cost of alternative plans in relation to the tons of salt removed but also the cost of alternative treatment and disposal options in relation to the viability of the proposed development. The Forum does not believe these revisions will render all operations in the Basin economically infeasible.

b. PAW does not believe multiple discharging facilities should be considered as a *single industrial source*.

Forum's response: This issue was carefully considered in the formation of the policy and was deemed to be necessary to ensure that the salinity standards would not be exceeded due to industrial development in the Basin. This rational is explained in the preamble to the policy on page B-3 under the heading "New Industrial Sources with Operations and Discharges at Multiple Locations under Common or Affiliated Ownership or Management."

c. PAW questioned the ability to obtained a "fresh water waiver" if the discharging facility has common ownership with discharging facilities that do not qualify.

Forum's response: The policy can be best clarified by referring to Section D.3.c., on page B-11. This portion of the policy assures that individual discharges that qualify for fresh water waiver will be authorized even if they are part of an non-qualifying industrial source with multiple discharging locations.

d. PAW proposed that a procedure should be established to determine if salt removal is not economically feasible.

Forum's response: It is not the purpose of the Forum's policy to determine what is feasible and what is not but rather to require that such a determination be made by the proper permitting authority before allowing a discharge in excess of one ton per day or 366 tons per year of salt. The policy does provide guidance on the type of information that is necessary to make such a determination. But because of the great variety of industries and discharges affected by this policy and the many variables to consider, it would not be reasonable for the basinwide policy to be more detailed that it is. This is another area where discretion must be left to the individual states and permitting authorities based on site specific circumstances.

e. PAW questioned how the policy for pilot projects would be administered?

Forum's response: The purpose of the allowance for pilot projects is to provide a means for gathering information, not to provide a permanent exemption for a limited number of wells to avoid compliance with the policies. It is hard to see how a pilot project that itself cannot meet the normal salinity requirements could lead to a determination that full production would. The Forum intended that the salt loading from pilot wells be combined with any other wells the company drills if they are to be retained for production after the information gathering phase is completed. This has been clarified in Section D.5 of the policy.

f. PAW asked for an exemption for discharges to total containment ponds.

Forum's response: The policy applies to NPDES discharges to the Colorado River system. True total containment is an alternative means of disposal that does not result in a load to the Colorado River system and as such is not affected by these policies. Permitting of this alternative will be left to the state processes and discretion.

g. PAW asked a number of questions regarding implementation of the policy related to permit processing time frames, pilot project permitting, permit duration, permit renewal, and grandfathering of existing activities.

Forum's response: Questions 1 through 4 cannot be addressed within the Forum policy but are rather a subject for the individual states' permitting regulations and procedures. In regard to question No. 5, the Forum policy does allow for grandfathering of several aspects. The combining of salt loads from discharges at multiple locations applies only to new industrial sources (initiated after adoption of these policies) as stated in the preamble under "new industrial sources with operations and discharges from multiple locations" and in the proposed policy at I.A.1. Likewise, existing discharges that are operating under a waiver based on a previous feasibility study do not necessarily have to address the new salinity offset requirements upon renewal as detailed at I.A.1.iv.E.

h. PAW requested a clarification of whether one or all of the criteria in Section I.D.2. need to be met.

Forum's response: The policy is written such that all of the criteria must be met to be considered a "new industrial source with operations and discharging facilities at multiple locations."

i. PAW suggested including definitions for the terms "interrelated and integrated" in Section I.D.2.a. in the context of oil and gas development activities.

Forum response: The Forum believes it is best to leave the referenced terms undefined in the Forum policy to allow states and permitting authorities adequate flexibility to interpret the meaning in the context of their own programs and circumstances and to avoid unintended consequences. Additionally, the concept does not only apply to oil and gas development activities.

j. PAW recommended adding language to address facilities located in an "oil and gas field" and requested a clarification of what constitutes the 8-digit hydrologic watershed unit.

Forum's response: An 8-digit hydrologic unit is a watershed or watershed segment delineated and mapped by the U.S. Geological Service (USGS). Watershed boundary maps are readily available from the USGS or multiple state agencies throughout the U.S. There are many considerations to be made when determining which facilities should be combined as a "single industrial source". The Forum believes it is appropriate to amend the language in Section I.D.2.b. to read *"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"* to reflect the intent of the policy that those are examples of logical groupings, not an exhaustive list of all the

possibilities. The Forum does not believe it is necessary to address and define "oil and gas field" as proposed by the commentor.

k. PAW believes the language in Section I.D.2.c. regarding common or affiliated ownership will cause confusion for regulatory agencies and owner/operators of oil and gas development projects.

Forum's response: The Forum agrees that there may be some difficulties and challenges in administrating the policy, especially in relation to the buying and selling of properties, company mergers, and permit transfers. The Forum subcommittee attempted in earlier versions of the policy to more precisely define these terms and concluded that greater definition would only constrain the application and result in greater regulatory confusion. The Forum believes, however, that the policy allows sufficient flexibility and that the states are capable of managing the program in a reasonable and fair manner. The concept of combining discharges under common ownership is important to achieving the goals of the program.

9. U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), statement presented by Travis James, Colorado Salinity Coordinator, Natural Resources Conservation Service. Statement dated August 13, 2002, and received in Rock Springs, Wyoming. Statement acknowledges that the NRCS continues to be an active partner in working to accomplish the Plan of Implementation to comply with the water quality standards for salinity of the Colorado River.

Forum's response: The Forum acknowledges the important and beneficial accomplishments of the NRCS to control the River's salinity and USDA's recognition of its continuing, pivotal role in the basinwide salinity control program.

10. U.S. Fish and Wildlife Service (USFWS), letter signed by Henry R. Maddux, Utah Field Supervisor. Letter dated September 3, 2002, and received in Price, Utah, providing additional language for updating the language describing salinity control activities in Colorado.

Forum's response: The Forum thanks the USFWS for providing the description of Colorado activities in the "State Programs." Section entitled *Other Activities* on page 4-19 has been revised consistent with the language recommended by USFWS.

11. Western Slope Environmental Resource Council (WSERC) and High Country Citizens' Alliance (HCCA), letter signed by Jeremy D. Pickett, Assistant Director/Public Lands Coordinator, Western Slope Environmental Resource Council. Letter dated August 30,

2002, and received in Price, Utah, recommending that the revised policy proposal apply the one-ton per day limitation to each "field" of oil and/or gas production, regardless of ownership or management affiliation.

Forum's response: The Forum thanks WSERC and HCCA for their joint written comments. These entities recommend in their statement that the revised policy proposal apply the one-ton per day limitation to each "field" of oil and/or gas production, regardless of ownership or management affiliation. The Forum considered their suggestion of applying the one-ton per day to each field regardless of owner/management affiliation and determined it would be even more burdensome administratively than the proposed policy. The implications of the concept of common or affiliated ownership or management were carefully considered by the revised policy. The Forum recognizes the administrative challenges identified and believe the policy is the most effective means of regulating these activities.

The Water Quality Standards for Salinity developed by the Forum contain numeric criteria at three stations in the Lower Basin. The Forum believes those points are the appropriate locations and the basinwide numeric criteria are at the appropriate concentrations. The concluding sentence asks that the Forum explore ways to mitigate potential damages "upon the environment or agricultural uses as a result of the cumulative impacts of permitted industrial discharges." The numeric criteria was established based on ambient levels in the River in1975 to maintain or improve the existing water quality and to reduce cumulative impacts in the Lower Basin. Impacts on agricultural production (including sensitive crops) are a major focus of the Program. Impacts to municipal and industrial water users are also of significant concern to the Forum.

Since salinity is primarily an economic pollutant, costs of treatment need to be considered in determining whether waivers of the no-salt-discharge policy are appropriate. However, the permitting state may have water quality standards to protect designated uses for given stream segments that are more stringent than the numeric standards or waivers available under the proposed policy.

Written Comments Received

This section contains the written comments
provided to the Forum for the 2002 Review

New Mexico Coal

bhpbilliton

BHP Billiton
300 West Arrington, Suite 200
Farmington, New Mexico 87401 USA
Tel + 1 505 598 4350 Fax + 1 505 598 4300
bhpbilliton.com

September 4, 2002

Jack A. Barnett, Executive Director
Colorado River Basin Salinity Control Forum
106 West 500 South, Suite 101
Bountiful, UT 84010

Re: Comments of BHP Billiton on 2002 Review, Water Quality Standards for Salinity, Colorado River System

Dear Mr. Barnett:

BHP Billiton ("BHP") received and reviewed the Colorado River Basin Salinity Control Forum's 2002 Review, Water Quality Standards for Salinity, Colorado River System (Proposed). BHP, through its subsidiaries, owns and operates three coal mines in the San Juan River Basin. As part of those operations, BHP has various NPDES permits, both for purposes of traditional point source discharges and for stormwater discharges.

BHP generally supports the efforts of the Colorado River Basin Salinity Control Forum, and as a general matter, supports the Forum's efforts documented in the 2002 Review, Water Quality Control Standards for Salinity for the Colorado River System ("Proposed Standards"). However, in its current form, BHP believes the Proposed Standards contain a serious ambiguity regarding the applicability of the implementation of the standards in the NPDES Permit Program. The Proposed Standards are clear that the implementation of the "no salt discharge" will apply to traditional "end of pipe" municipal and industrial discharges. However, the Proposed Standards are ambiguous as to whether the "no salt discharge" requirement also will apply to NPDES stormwater discharge permits. Although it may be appropriate to implement a no salt discharge to traditional end of the pipe municipal and industrial discharges, it would be inappropriate to apply such a standard to stormwater permits. Indeed, such a standard would not be practical because it would not be achievable in the stormwater context. BHP does not believe it was the Forum's intent to include stormwater permitting within the ambit of the "Policy for Implementation of Colorado River Salinity Standards Through the NPDES Permit Program." Accordingly, the Proposed Standards should be clarified to reflect that the policy is not intended to apply to stormwater permits.

Thank you for the opportunity to provide these comments. Please feel free to contact me should you have any questions regarding our comments.

Very truly yours,

John Grubb
President

cc: Jay C. Groseclove, P.E., New Mexico Interstate Stream Commission

ESTABLISHED IN 1918 AS A PUBLIC AGENCY

COACHELLA VALLEY WATER DISTRICT

POST OFFICE BOX 1058 • **COACHELLA, CALIFORNIA 92236** • TELEPHONE (760) 398-2651

August 21, 2002

Jack A. Barnett
Executive Director
Colorado River Basin Salinity Control Forum
106 West 500 South, Suite 101
Bountiful, Utah 84010-6232

Dear Mr. Barnett:

The Coachella Valley Water District has received the (proposed) *2002 Review of Water Quality Standards for Salinity in the Colorado River System* and welcomes an opportunity to offer the following observations:

We concur with the *2002 Review's* conclusions that the numerical criteria already in place for salinity on the Colorado River need not be modified from those that were established in 1974. This criteria is based on the presence of partially dissolved solids in the river in about 1972 at three locations: Lake Mead, Lake Havasu and Imperial Dam.

In recent years, however, federal funding to address the issue of salinity in the Colorado River has been far from adequate. Bureau of Reclamation salinity-control money, which peaked at $34 million in 1992, dropped to a paltry $9.8 million in the last approved fiscal year budget. Funding for the United States Department of Agriculture's salinity-control programs has gone from $14.8 in 1992 to less than $4 million in 1998.

Thus, CVWD is strongly in support of the *2002 Review's* recommendations that federal funding of at least $10.5 million for the Bureau of Reclamation's on-going off-farm salinity-control efforts; and at least $13.8 million for USDA's on-farm salinity-control efforts, is essential. Congress recently approved a milestone farm bill, so the money *is* available.

As you no doubt are aware, California is in the midst of a crisis with respect to Colorado River water. The state is using nearly 800,000 acre-feet per year in excess of its guaranteed allotment of 4.4 million acre-feet. Significant agreements—such as the Quantification Settlement Agreement (QSA)—are edging toward approval and implementation, and will go far toward addressing the problem of water quantity.

Water quality is a separate issue, however, and for the QSA and other accords to succeed it is crucial that the salinity in the Colorado River be decreased or—at the very worst—maintained at current levels and not allowed to increase. Salinity control programs, even with modest funding, have been credited with eliminating $300 million in economic losses tied directly to salinity; but economic losses from the status quo with respect to salinity are estimated still to be in excess of $200 million a year.

Annually Coachella Valley Water District provides its agricultural constituents with more than 300,000 acre-feet of Colorado River water, which is used to irrigate nearly 80,000 of the most productive acres of cropland in the entire nation (Average gross value per acre: $8,962).

Terms of the QSA call for CVWD to obtain significant amounts of additional Colorado River water, which will be used to offset the demand on the aquifer that serves the entire Coachella Valley's ever-increasing need for groundwater to meet domestic and related demands.

We are in the process of approving a 35-year *Water Management Plan*, which calls for increased use of Colorado River water for agricultural purposes, irrigation of golf courses and other private and public areas and specialized, outdoor uses in new housing developments.

CVWD also plans to increase the amount of Colorado River water it uses to directly replenish the aquifer through existing percolation ponds and other facilities being planned, developed and tested.

Increased salinity in Colorado River water would diminish the quality of water being delivered to our constituents now, and the overall quality of our groundwater supplies. This is unacceptable to our dedicated efforts to bring the highest quality water possible to our constituents.

Su again, we support the findings of the *2002 Review* and urge Congress to authorize the funding necessary to make its recommendations effective.

Very truly yours,

Tom Levy
General Manager-Chief Engineer

JP

STATE OF CALIFORNIA – THE RESOURCES AGENCY

SEP 09 2002

GRAY DAVIS, Governor

COLORADO RIVER BOARD OF CALIFORNIA
770 FAIRMONT AVENUE, SUITE 100
GLENDALE, CA 91203-1035
(818) 543-4676
(818) 543-4685 FAX

September 5, 2002

Mr. Jack Barnett
Executive Director
Colorado River Basin Salinity Control Forum
106 West 500 South, Suite 101
Bountiful, UT 84010

Dear Mr. Barnett:

The Colorado River Board of California (CRB) has reviewed the "2002 Review - Water Quality Standards for Salinity Colorado River System" and concurs there is no need to modify the standards at this time. The CRB also supports the plan of implementation in order to meet the water treaty obligations of the United States to Mexico on the Colorado River as well as the water quality objectives of the Clean Water Act.

Salinity has long been recognized as one of the major problems associated with the use of Colorado River water in the Lower Basin States. In the 2002 Review, the economic damages in the Lower Basin States is estimated to be at least $200 million per year. Without additional salinity control measures, the salinity of the Colorado River is projected to increase above the numeric criteria, and if the salinity levels were to increase back to 1972 existing conditions, economic damages could approach approximately $500 million per year. Salinity control is both a western interstate water quality issue as well as an international water quality issue in meeting the requirements of Minute No. 242 pursuant to the 1944 Mexican Water Treaty. These obligations are a federal obligation and the CRB strongly believes that the Congress must provide the funding to its federal agencies to meet these obligations.

The CRB urges the adoption of the 2002 Review by the Basin states, its approval by the U.S. Environmental Protection Agency, and increased federal funding for the Colorado River Basin Salinity Control Program.

Sincerely,

Gerald R. Zimmerman
Executive Director

United States Department of the Interior

BUREAU OF RECLAMATION
Upper Colorado Regional Office
125 South State Street, Room 6107
Salt Lake City, Utah 84138-1102

AUG 1 4 2002

IN REPLY REFER TO:
UC-240
RES-9.00

HAND DELIVERED

Colorado River Basin
Salinity Control Forum
106 West 500 South
Bountiful, UT 84010

Subject: Statement by the Bureau of Reclamation on the Triennial Review of the Water Quality Standards

Dear Mr. Chairman:

Thank you for the opportunity to comment on the Triennial Review of the Water Quality Standards and the Plan of Implementation to meet the standards.

Reclamation is a long standing supporter of the Colorado River Basin Salinity Control Program and the Triennial Review process. As lead Federal agency in managing the Program, Reclamation helped develop the Review along with the numerous other State and Federal agencies. Having actively participated in the Review, we find that the standards and plan of implementation should continue to meet the purposes of the Colorado River Basin Salinity Control Act and the Clean Water Act in both an efficient and highly effective manner.

Over the past 25 years, the Program has been successful at maintaining salinity below the standards in part due to the unprecedented cooperation between the Federal agencies, the seven Basin States, and the Congress. However, the largest portion of the credit should go to our many local supporters who actually put the improvements on the ground and make these improvements effective. We in Reclamation appreciate the cooperative efforts of all participants and look forward to continuing our role in the Program.

Sincerely,

D. P. Trueman

David Trueman
Program Manager

A Century of Water for the West
1902 – 2002

STATEMENT

OF

SOUTHERN CALIFORNIA SALINITY COALITION

SEPTEMBER 5, 2002

EXECUTIVE DIRECTOR JACK BARNETT AND MEMBERS OF THE SALINITY CONTROL FORUM:

My name is Richard Atwater and I am testifying on behalf of the Southern California Salinity Coalition. The Salinity Coalition is a non-profit corporation and represents the wastewater (POTW's), groundwater, water supply agencies in Southern California plus other interested public agencies and interest groups seeking solutions to salinity problems affecting Southern California.

The Coalition grew from the U.S. Bureau of Reclamation and Metropolitan Water District of Southern California joint Salinity Management Study. This study was adopted by the Metropolitan Water District Board in June 1999.

RECOMMENDATION

1. The Southern California Salinity Coalition supports the recommended federal funding level in the 2002 Review. Controlling salinity concentrations in the Colorado River is a very high priority for all the members of the Southern California Salinity Coalition.

2. The Coalition supports the efforts of the Metropolitan Water District of Southern California to implement the action plan included in the Salinity Management Study. These include:

   - Source control salinity measures to reduce the concentration of imported supplies (Colorado River and California State Water Project);

   - Control of local sources of salt, including the regulation of water softeners;

   - Construct brine sewers to export salts within the watershed's of Southern California to the Pacific Ocean; and

   - The desalination of wastewater and brackish groundwater to allow reuse and recycling of salinity impaired local suppliers will reduce our dependence on Colorado River imported supplies (and State Water Project).

CONCLUSION

On behalf of the Southern California Salinity Coalition, thank you for the opportunity to testify and we look forward to working with members of the Forum in implementing the 2002 Review, Water Quality Standards for Salinity for the Colorado River.

Seeking Salinity Management Solutions

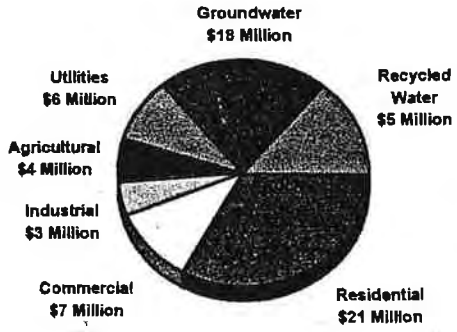
Where does salt come from?

Salt comes naturally from certain soil formations in contact with groundwater and from ocean intrusion. Agricultural and urban uses contribute greatly to salinity in water.

Why is salt a problem?

Recent Salinity Management Study conducted by Metropolitan Water District and the US Bureau of Reclamation estimates that $95 million per year of economic benefit would result if imported supplies experienced a 100-mg/l reduction in salt content over their historic average.

Annual Benefits of 100 mg/L Salinity Decrease in Imported Water Supplies in Southern California ($95 Million)



On a larger scale, the impacts to the Lower Colorado River Basin community are estimated at $750 Million/year ($382.5 M for Residential, $180 M Infrastructure Utilities and $37.5 M Industry). Degradation of existing groundwater basins usually recharged with imported and recycled waters is another major impact. This impact determines limitation on the wastewater recycling.

How has the salt problem been affected by regulatory actions?

Recycling and compliance with state and federal wastewater discharge permits becomes difficult to accomplish with salinity. The upcoming Salinity Summit II will address regulatory actions needed to help solve the salinity problem in the Southern California region.

Salinity is a measure of mineral salts dissolved in water. At salinity levels of about 1000 mg/l, potable and recycled water uses are significantly impaired, and alternate lower salinity supplies are typically sought.

Disposal Solutions

An obstacle to treatment is the lack of enough brine disposal alternatives. Brine is the concentrate formed by the salt removed. Brine is normally disposed to the ocean via pipelines or outfalls. Several outfalls are required to provide the brine disposal.

Hardness, a part of salinity, causes deposits in plumbing systems and appliances. Water softeners reduce hardness, but adds other salts to the water and wastewater in the process.

What can be done?

A long-term solution require concurrent management of both imported and local sources of salt for the region. Investments in source control measures are necessary to avoid the expensive process of remediation.

At the region level, treatment is an alternative that will focus on the removal of salt by physical actions.

What is the Southern California Salinity Coalition?

The Southern California Salinity Coalition was formed to fill a need for a collaborative regional partnership to seek solutions for the region's salinity problems.

Salinity Summit

The coalition is organizing a second salinity summit that will address the impact of regulatory and legislative actions on the solution of the salinity problem and propose a list of projects that have been identified as solutions to the problem.

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SOUTHERN CALIFORNIA ALLIANCE OF PUBLICLY OWNED TREATMENT WORKS

AGWA

WATEREUSE ASSOCIATION

What will solutions cost and how will they be funded?

Funding for the projects will require commitment from federal, State and local agency levels. The Salinity Coalition has estimated the cost of a salinity management program to be over $1 billion during the next twenty years (See table for breakdown).

Proposed State and Federal Funding

Program Area	Loan ($M)	Grants ($M)	Total ($M)
Desalinization	467.5	82.5	550
Brine Disposal	212.5	37.5	250
Wastewater Systems	85	15	100
Watershed/Source Control	25	25	50
R&D	0	50	50
Total Estimated Annual Expenditure		210	1,000

Seeking Salinity Management Solutions

Salinity Management Projects					
Region	Project Type	Project Name	Description	Cost in Millions of Dollars	Estimated Start Horizon (years)
San Jacinto Basin	Desalter	Menifee Phase 2	Extraction wells, feedwater pipelines and 4 mgd desalination facility	10.5	5
	Brine Line	Lake Elsinore -Temecula Brine Line Extension	Receiving station,pumps and 110,880 LF of 12" Pipeline	12	3
	Desalter	South Perris Desalter and Lakeview Groundwater Remediation	Recharge wells, extraction wells, pipelines and 4.5 mgd desalination facility	20.1	1
	Brine Line	Sun City - Winchester Brine Line Extension	28,776 LF of 20 " Pipeline	4.8	2
	Brine Line	Sun City to Perris and Moreno Valley Brine Line Extension	43,800 LF of 18" Pipeline and 34320 LF of 12" Pipeline	9.3	1
Chino Basin	Desalter	Chino Desalter Expansion	Addition of 5.8 mgd desalting capacity	12	1
	Manure Processing	Chino Organic Center		50	2
	Desalter	East Chino Basin Desalter	28.5 mgd desalination facility	43	2
	Desalter	West Chino Desalter	9.5 mgd desalination facility	17	8
Orange Co Basin	Brine Line	SARI Downstream Protection	Relocation to avoid river scour	35	2
	Desalting	Orange County Ground Water Replenishment System ($20 million is already authorized)	60 mgd wastewater treatment facility to groundwater recharge standards	325	1
	Brine Line	Orange County Regional Brine Line	21 miles of pipeline ranging from 6 to 16 inches	13.7	2
	Pipeline	MWD Diemer filtration Plant Bypass Pipeline	1,000 feet of 72 inch pipeline	3.5	1
	Desalting	Irvine Desalter	7 mgd desalter for groundwater cleanup	38	1
	Desalting	Frances Desalter	10 mgd desalter for cleanup Irvine Subbasin	24	1
Upper Santa Ana River Watershed	Desalter connections	Arlington Desalter Direct Deliveries	22,000 LF of 24" Pipeline and pumping facilities	15	1
	Desalter	Riverside Colton Desalter and Conjunctive Use project	18.9 mgd desalination facility	50	2
	Brine Line Improvements	SARI Upstream Protection	Improvements to existing brine line for flood control work	1	1
	Desalter	Western-Elsinore Valley Desalter	6 mgd desalination facility	16	5
Bunker Hill Basin	Desalter	San Bernardino Desalter and Conjunctive Use	12 mgd desalination facility	130	10
Ventura County	Brine Line	Ventura Co. Brine Disposal	37.2 miles of 35" Pipeline	41.3	5
LA County	Brine Line	San Fernanado Valley/West Basin Brine Disposal	32.3 miles of 36" Pipeline	44.3	5
	Brine Line	Raymond Basin Brine Disposal	14.1 miles of 21" Pipeline	9.9	5
	Desalter	West Basin Chevron	4.3 mgd desalination facility	15	5
	TDS Bypass Sewer	JOF Unit 4 Relief sewer project near Los Coyotes WRP and other WRP bypass Sewers	Sewer Modifications to bypass high TDS wastewater around Water Reclemation Plants	5	1-5 years
	Study	Technology Evaluation and Waste Stream Study	Study to evaluate BMP/technologies in the LACSD sewerage system to improve effluent TDS and water quality	1	1-5 years
San Diego County	Brine Line	San Diego Industrial Brine Export	23.5 miles of 18" Pipeline	16	5
	Brine Line	Bonsall Desalter Brine Disposal	10 miles of 10" pipeline	4.7	5
Southwest Orange County	Desalting	3A Water Reclamation Plan	Provides desalting at WRP for reclamation use requirements	0.7	10
	Desalting	J.B.Latham (SERRA) WWTP	Provides desalting at WRP for reclamation use requirements	3.1	10
	Desalting	San Clemente WRP	Provides desalting at WRP for reclamation use requirements	1.7	10
North San Diego County	Desalting	Carlsbad WRP	Provides desalting at WRP for reclamation use requirements	3.3	10
	Desalting	San Elijo WRF	Provides desalting at WRP for reclamation use requirements	0.75	10
	Desalting	San Pasqual WRF	Provides desalting at WRP for reclamation use requirements	1.6	10
	Desalting	North City WRF	Provides desalting at WRP for reclamation use requirements	10.6	10
South San Diego County	Desalting	South Bay WRP	Provides desalting at WRP for reclamation use requirements	5.3	10
	Desalting	Ralph C. Chapman WRP	Provides desalting at WRP for reclamation use requirements	3.3	10
	Desalting	San Pasqual WRF	Provides desalting at WRP for reclamation use requirements	1.5	10
			Total Cost (millions)	996.66	

STATEMENT

OF

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

BEFORE THE COLORADO RIVER BASIN SALINITY CONTROL FORUM[1]

SEPTEMBER 5, 2002

EXECUTIVE DIRECTOR BARNETT AND MEMBERS OF THE FORUM:

The Metropolitan Water District of Southern California (Metropolitan) appreciates the opportunity to submit this statement regarding the report "2002 Review, Water Quality Standards for Salinity, Colorado River System" (2002 Review) prepared by the Colorado River Basin Salinity Control Forum (Forum). Metropolitan supports the report's plan of implementation to maintain the salinity concentrations at or below the numeric criteria through the year 2020. We urge the adoption of the 2002 Review by each of the Colorado River Basin states. Metropolitan is a public agency created in 1928 to meet supplemental water demands of those people living in what are now portions of a six-county region of Southern California. Today, the region served by Metropolitan includes over 17 million people living on the coastal plain between Ventura and the international boundary with Mexico. It is an area larger than the State of Connecticut and, if it were a separate nation, would rank in the top ten economies of the world.

Included in our region are more than 225 cities and unincorporated areas in the counties of Los Angeles, Orange, San Diego, Riverside, San Bernardino, and Ventura. We provide more than half the water consumed in our 5,200-square-mile service area. Metropolitan's water supplies come from the Colorado River via the Colorado River Aqueduct and from northern California via the State Water Project's (State project) California Aqueduct.

Introduction

Metropolitan supports the federal funding level recommended in the 2002 Review. It is important that water source controls for salinity continue to be implemented to assist in achieving Metropolitan's imported water salinity target of 500 milligrams per liter. The high salinity concentration of Colorado River water results in financial impacts to residential, commercial, industrial, and agricultural water users as well as groundwater and recycled water resources and utility distribution systems. It is vital that the President and Congress provide the U.S. Bureau of Reclamation and the U.S. Department of Agriculture with the funding necessary to successfully carry out their commitment to natural resources conservation.

[1] Presented by Dennis B. Underwood, Vice President, Colorado River Resources in Phoenix, Arizona.

Salinity Impacts In Southern California

Salinity has always been a concern of water resource managers in Southern California. When salinity concentrations of imported water are reduced, the region benefits from improved use of local groundwater and recycled water and reduced costs to water consumers and utilities. Metropolitan estimates that $95 million (1998 dollars) of economic benefits would result annually if the Colorado River Aqueduct and State project waters were to simultaneously experience a 100 milligrams per liter reduction in salt content from their historic average. Conversely, about the same dollar amount of impacts would result if imported water salinity increased by 100 milligrams per liter.

In 1999, Metropolitan completed a Salinity Management Study (Study) in close collaboration with its member agencies and numerous other concerned agencies including the U.S. Bureau of Reclamation. The Study identified the impacts of salinity on the coastal plain of Southern California and recommends a long-term strategy and action plan.

About half of the region's salt is contributed by imported water, and the other half comes from local sources. Colorado River water constitutes Metropolitan's highest source of salinity, varying from 513 to 760 milligrams per liter since 1972. Hardness comprises about one-half of the Colorado River Aqueduct salt load and causes troublesome scaling problems to indoor plumbing appliances and equipment in homes, businesses and industries.

The State project provides Metropolitan with lower salinity water than from the Colorado River. State project salinity levels can change rapidly in response to hydrologic conditions however, and such changes are noticeable and disruptive as compared to the very gradual, almost imperceptible changes that occur in local streams, groundwater and wastewater collection systems. A CALFED Bay-Delta solution could lower State project salinity by 80 milligrams per liter and reduce its short-term variability. Local salinity sources include naturally occurring salts, salts added by urban water users, infiltration of brackish groundwater into sewers, irrigated agriculture, and confined animal waste management practices. Urban use salt contributions to wastewater range from 250 to 400 milligrams per liter or more in some locations.

In recognition of the increasing threat of elevated salinity levels in water supplies and wastewater discharges, a coalition of Southern California water and wastewater agencies were brought together in 2002 to formalize the Salinity Management Coalition. The Coalition proposes to address the critical need to remove high salt levels in Southern California's water supplies and wastewater discharges.

Metropolitan's Action Plan

Metropolitan's Board of Directors adopted a salinity management policy and corresponding Action Plan in April 1999. Metropolitan is committed to the following long-term policy to control salinity:

- Protect Metropolitan's imported source supplies from additional salinity, and where feasible seek reductions.

- Achieve, to the extent reasonable and practical, a total dissolved solids concentration objective of 500 milligrams per liter in Metropolitan's distribution system.
- Recognize that natural events beyond Metropolitan's control will at times increase the salinity of imported water supplies, hindering Metropolitan's ability to continuously meet its 500 milligram per liter objective.
- Optimize the long-term use of State project supplies in conjunction with Colorado River water in pursuing salinity management objectives and Metropolitan's integrated resource plan.
- Integrate water quality and quantity objectives in planning facilities and resources.
- Support regional regulatory and management actions to minimize salinity contributions to groundwater and recycled water resources.
- Make the Salinity Action Management Plan the primary strategy to carry out this policy. Regularly assess the implementation and results of the Action Plan, and make revisions based upon experience gained and changing conditions.

The Action Plan consists of four basic components:

- Imported water source control actions,
- Distribution system salinity management actions,
- Collaborative actions with other agencies, and
- Local actions to protect groundwater and recycled water supplies.

The foundation of Metropolitan's action plan is an imported water salinity target of 500 milligrams per liter. Managing imported water salinity through blending would be supplemented by source control in the two imported water river systems, storage and exchange operations along the Colorado River Aqueduct, and a CALFED solution.

Plan of Implementation for Colorado River Salinity Control

Metropolitan supports the Forum adopting the revised Policy for Implementation of Colorado River Salinity Standards through the National Pollutant Discharge Elimination System Permit Program contained in Appendix D of the report. In particular, Metropolitan is pleased that the Forum has chosen to address the discharge of water from new industrial sources with operations at multiple locations which are under common or affiliated ownership or management. While the discharge from one of these locations may contain less than one ton of salt per day, considering the operations collectively much more than one ton of salt per day would enter the Colorado River system, adversely affecting achievement of the water quality standards for salinity.

In order to conserve Colorado River system water, while not having an adverse effect on maintaining salinity at or below the numeric criteria, Metropolitan favors the inclusion of benchmark salinity concentrations in the policy for determining whether the discharge can be considered to be fresh water and therefore permitted. Maximum salinity concentrations of 500 milligrams per liter at or above Lees Ferry, Arizona, 650 milligrams per liter from that point to below Hoover Dam, and 675 milligrams per liter to below Parker Dam are appropriate benchmarks for that determination.

To minimize additional salt loading to the Colorado River system, Metropolitan is encouraged by the addition of the evaluation of offsetting all or part of the salt load from new construction through offsite salinity control projects to be undertaken by the Forum. This will facilitate implementation of the most cost effective salinity control projects basinwide. Metropolitan urges the Forum to consider creating an institutional structure to permit such offsite projects to be funded.

Colorado River Basin Salinity Control Program Funding

It is imperative that adequate federal funding be provided to meet the goals of the Colorado River Basin Salinity Control Program (Program). Metropolitan supports the 2002 Review's conclusion that about $10.5 million in federal capital funding and $3 million in federal operations and maintenance funding are needed each year through the planning period for the Bureau of Reclamation's portion of the Program. We believe that the U.S. Department of Agriculture should increase federal funding for the Colorado River salinity control activities of the Environmental Quality Incentives Program to at least $13.8 million per year. Metropolitan also recognizes the important role that the Bureau of Land Management (BLM) can play in controlling salt contributions from non-point sources and awaits BLM's submittal of its status report to Congress on its basinwide program.

Metropolitan supports continued analysis of the long-term effectiveness of existing salinity control measures recognizing that on-farm measures installed through the Department of Agriculture program have a life expectancy of 15 to 20 years, prior to a need for major maintenance. As significant funding of the Department of Agriculture program began in 1986, the implications of this life expectancy on future Department of Agriculture funding needs should be considered by the Forum annually.

Conclusion

We urge the adoption of the 2002 Review by the Basin states and its approval by the U.S. EPA, and increased federal funding for the Colorado River Basin Salinity Control Program. Thank you for your consideration of our statement.

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COMMENTS TO THE
COLORADO RIVER BASIN SALINITY CONTROL FORUM

Submitted to

Jack A. Barnett, Executive Director
Colorado River Basin Salinity Control Forum
106 West 500 South, Suite 101
Bountiful, Utah 84010

Pursuant to
PUBLIC LAW 104-20
An Act to Amend the Colorado River Basin
Salinity Control Act of 1974

Submitted by the

NAVAJO NATION
DEPARTMENT OF WATER RESOURCES
DIVISION OF NATURAL RESOURCES

September 4, 2002

INTRODUCTION

A the Hoover Dam, the Colorado River delivers approximately nine million tons. It has been estimated that salinity damages in the United States portion of the lower basin total $311 million annually. The Colorado River salinity control program has significantly reduced the economic damages. An additional concern in the San Juan River Basin is the water quality within the designated critical habitat of two endangered species, the Razorback Sucker and the Colorado Pikeminnow.

The U.S. Department of Agriculture conducted a salinity verification report which indicated that the San Juan River basin is a potential problem area within the Colorado River Basin. In response to these concerns and to Public Law 104-20, the Navajo Nation Department of Water Resources (NDWR) investigated opportunities to address salinity along this reach of the San Juan River.

The flow of saline water into the San Juan River is partly attributed to natural sources including leakage of saline water into the River's alluvium. Approximately half of the total is attributed to human induced effects such as discharges from wells drilled for oil and uranium exploration or irrigation return flows. The Navajo Nation has proposed projects that will decrease the salinity of the San Juan River which flows through the Navajo Nation. This strategy includes three distinct components:

1. The first component is to reduce saline discharges from the Navajo irrigation projects located along the San Juan River.

2. The second component is to improve on-farm irrigation water delivery on Navajo trust land along the San Juan River.

3. The third component is to reduce saline discharges from uncapped wells in the San Juan River Basin within the Navajo Reservation.

However, the Navajo Nation has been frustrated in its attempts to secure P.L. 104-20 funding to implement these programs. One of the obstacles facing the Navajo Nation's proposals in recent years has been that accurate information needed to verify the potential positive impacts of these salinity control measures has been lacking. However, the Navajo Nation working close with Reclamation, the Bureau of Land Management and the U.S. Department of Agriculture has greatly improved the quality of descriptive information in this area. With this additional information at hand, the time is right to address the salinity issue along this reach of the San Juan River.

COMPONENT #1 - NAVAJO IRRIGATION SYSTEM IMPROVEMENTS

The USGS records indicate that approximately 157,000 tons of salt are discharged annually into the San Juan River from the Fruitland, Hogback, and Cudei Irrigation areas in the Navajo Nation. A 1993 study by the US Department of Agriculture indicates that nearly 50,000 tons of salt, in addition to other nutrients and pesticides, may be picked up annually by excess irrigation water returning to the San Juan River.

The Fruitland, Hogback, and Cudei Irrigation Projects were constructed to provide water to approximately 12,000 acres of land through 304 miles of largely unlined canals and laterals. The irrigation delivery and return systems flow over terrain composed of rocks from the salt bearing Mancos Shale or from soils derived from that rock. The USDA estimated that approximately 14,400 tons of salt are picked up due to "off farm" canal seepage and 34,000 tons of salt are picked up due to on-farm water use. However, these ponding tests produced inconclusive results.

In the 1993 study the U.S. Department of Agriculture proposed pipe or concrete lining to repair about 200 miles, or two thirds, of the irrigation project canals and laterals. Based on that investigation the estimated amount of salt picked up due to the "off-farm" canal seepage could be reduced by two thirds. The Reclamation has indicated that lateral and canal improvements typically cost about $100 per ton or more. For this treatment to be cost effective, a cost sharing component of approximately 60 percent may be needed.

Additional study of these irrigation projects is needed to determine the cost per ton more accurately. The NDWR is proposing to conduct this type of investigation. If the results indicate that salinity control measures are warranted, proposals based on these findings will be submitted for future funding. The NDWR will rely on the Reclamation Farmington Construction Office for technical assistance and both office will need to coordinate manpower and other resources accordingly.

In 1997 the Bureau of Indian Affairs assisted the NDWR with interpretation of the soils that the Shiprock canals pass through. In addition, the digital soil map layers are available for the Shiprock Area and the digital map layers of the canal system based on 1999 areal photogrammetric surveys are complete.

The U.S. Department of Agriculture proposed using pipe or concrete lining to repair about 200 miles, or two thirds, of the irrigation project canals and laterals. Based on that proposal the salt picked up due to the "off-farm" canal seepage would be reduced by two thirds or 9,600 tons. This NDWR proposal is for a single year pilot program that would treat approximately 2.5 miles. Based on the average benefit per mile, this treatment would result in a reduction of approximately 150 tons of salt per year. However, this treatment would target specific sites where seepage and the salt loading are the greatest.

It is not unreasonable to assume that the worst 3,500 feet of canal and 10,000 feet of lateral may each lose 500 acre-feet per year. Based on the Water Salt Balance presented in the July 1993 USDA

Salinity Verification study, this volume of canal seepage may result in a salt load of 2,100 tons per year. For the purposes of the unit cost analysis, the assumed life expectancy of this treatment is 50 years. Canal lining and other system improvements require little long term active management and they can be expected to have long project lives. Given these factors and standard maintenance procedures, this treatment has a moderately low risk.

COMPONENT #2 - ON-FARM IRRIGATION WATER DELIVERY TO NAVAJO TRUST LAND

The USDA Salinity Verification investigation indicates that approximately 14,400 tons of salt are picked due to "Off Farm" canal seepage and 34,000 tons of salt are picked up due to on-farm water use. Component #2 addresses the on-farm salt loading. In addition to the direct reduction due to this component, the indirect benefits are significant. Technically, the Shiprock farming systems lag behind the farming practices of other parts of the United States. Special consideration should be made because these farmers lack the means to install systems which are more efficient.

In its Salinity Verification investigation USDA recommends an on-farm program to improve about 80 percent of the furrow and flood irrigated fields. Recommended treatment includes ditch lining, gated pipes, surge valves, water control structures, land leveling, and irrigation water management. The NRCS recommends a flexible approach to treatment depending on the on-farm circumstances and the potential for salinity reduction. The NRCS favors technically robust application combined with education. All of the eligible fields are Navajo trust land.

The PL104-20 salinity control funds would only be part of the overall on-farm package. This program would be combined with State, Federal and Tribal resources. Requests have been made to the USDA EQIP program, the New Mexico State legislature and the Navajo Nation to supplement this program. Farmers may be required to contribute 10 percent on a cost sharing basis. These treatments may coast $900 per acre. This cost sharing may include: 1) P.L. 104-20 at 450 $/acre, 2) Participants at 90 $/acre, and 3) Other Programmatic Funding at 360 $/acre. The P.L. 104-20 Annualized Cost is $30 per ton.

In 1997 the Bureau of Indian Affairs assisted the NDWR with interpretation of the soils that the Shiprock laterals pass through. In addition, the digital soil map layers are available for the Shiprock Area and the digital map layers of the farming units based on 1999 areal photogrammetric surveys are complete.

Based on the Salt Verification Study, a four million dollar on-farm program would treat approximately 6,000 acres of land and reduce salt loading by about 26,000 tons per year. A $355,000 on-farm program would reduce salt loading by 1,300 tons per year. Slightly less than 50 percent of the total project cost would be provided by PL 104-20 salinity control funds. These program criteria will target areas with the greatest potential for salt reduction. The overall life of this treatment is fifteen years.

COMPONENT #3 - REDUCTION OF SALINE WELL DISCHARGES

Abandoned, orphaned and unused wells will be permanently plugged throughout the entire depth of casing. This treatment will essentially eliminate the flow of saline water leaking into the San Juan River alluvium or discharging through surface flows. Salt production will be documented during the reconnaissance survey to determine the most effective candidate wells and verify salinity reduction. In its 1996 Largo Canyon Watershed Plan, the Bureau of Land Management estimated the cost of treating these wells and well pads to be between $10,000 and $15,000 per well. In the late 1990's the Navajo Nation, the Reclamation Salinity Control Program, and the Bureau of Land Management successfully plugged numerous wells in the San Juan River Basin within the Navajo Reservation.

Assuming an average rate of discharge of 15 gallons per minute each well potentially produces 100 tons of salt per year. Plugging five wells will eliminate 500 tons of salt per year. For the purposes of the unit cost analysis, the assumed life expectancy of this treatment is 50 years. The P.L. 104-20 annualized cost per ton is $11.60.

REFERENCES

This scope of work is based on the technical findings from the following investigations:

1. On-farm Irrigation Improvements, McElmo Creek Unit, Salinity Control Study, Colorado River Salinity Program, Soil Conservation Services, Denver, CO, January 1983.

2. Preliminary Evaluation of Potential Impacts of Abandoned Wells on Groundwater Quality in the Aneth Oil Field, San Juan County, Utah, Unpublished Reports, Uribe and Associates, Oakland CA 1992.

3. Records of wells in sandstone and Alluvial Aquifers and Chemical Data for Water from Selected Wells in the Navajo Aquifer in the Vicinity of the Greater Aneth Oil Field, San Juan County, Utah, USGS Open File Report 92-124, 1992.

4. Salinity Verification, Phase 1 Final Report for Navajo nation Unit, San Juan County, New Mexico, Salinity Control Study, USDA Soil Conservation Service, et al, July 1993.

5. Salinity Increase in the Navajo Aquifer in Southeastern Utah: David L. Naftz and Lawrence E. Spangler, Water Resources Bulletin, Vol. 30, No. 6, p. 1119-1135, December 1994.

6. Quality of Water Colorado River Basin, Progress Report No. 17, United States Department of Interior, January 1995.

7. Reconnaissance Report for Required Rehabilitation of the Shiprock Irrigation Projects in Fiscal 1995, Navajo Nation, Division of Natural Resources, and U.S. Bureau of Reclamation, Office of Native American Affairs, February 14, 1995.

8. Largo Canyon Watershed Restoration Plan, U.S. Bureau of Reclamation, 1996

PETROLEUM ASSOCIATION OF WYOMING

951 Werner Court, Suite 100
Casper, Wyoming 82601
(307) 234-5333

fax (307) 266-2189
e-mail: paw@pawyo.org
www.pawyo.org

August 12, 2002

Colorado River Salinity Control Forum
106 West 500 South, Suite 101
Bountiful, UT 84010

Dear Forum Members:

The Petroleum Association of Wyoming (PAW) welcomes this opportunity to present to the Colorado River Salinity Control Forum regarding the proposed revisions to the proposed Colorado River Salinity Policy revisions for NPDES permitting (appendix D) in the Colorado River Basin. PAW is Wyoming's largest and oldest oil and gas trade association, members of which account for over 90% of the natural gas and over 80% of the crude oil produced in the state.

PAW believes these revisions, as written, will do little to benefit the development of natural gas. We believe the revisions, as written, may have negative effects on the efficient production of coal bed natural gas and may well render operations in the Colorado River Basin economically unfeasible.

The policy authorizes a discharge of salinity from a single point source of up to one ton per day or 366 tons per year in certain circumstances. The revisions define facilities discharging at multiple locations as "a single industrial source" if the facilities are interrelated, located within a single production area, or owned or operated by affiliated ownership or management. Individual discharge locations that would by themselves contribute less than one ton of salt per day would probably exceed the limit when combined with other discharges as "a single industrial source." When determining effluent limitations for salinity, PAW does not believe multiple discharging facilities should be considered as a "single industrial source". The effluent limitations at each outfall should be measured separately. As proposed, the revisions restrict an operator with multiple outfalls to the same annual limits as an operator with a single outfall.

The policy revisions allow the permitting authority to "permit the discharge of salt from a new industrial source with operations and discharging facilities at multiple locations" if the discharge qualifies as fresh water and has no adverse effect on achieving the adopted numeric standards for the Colorado River. It is reasonable to assume areas exist within the Basin that could qualify for a "fresh water waiver". However, it is not clear if these areas would be permitted through the NPDES process with a "fresh water waiver" if they had common ownership with discharging facilities that do not qualify. The

policy should allow for a separate permit for facilities qualifying for a fresh water waiver. Fresh water facilities should not be combined with non-qualifying facilities as "a single industrial source". When it is shown fresh water is achievable, fresh water waivers should be granted under a permit by rule process rather than the general permit process.

The proposed policy revisions allow producers to prove that salt removal is not economically feasible. PAW believes this process, to determine if salt removal will render projects economically unfeasible, needs to become very well defined, simple and easily implemented for DEQ and industry.

In addition, the revisions make temporary allowances for very small-scale pilot projects with five or less discharge locations in undeveloped areas. This provides the operator an opportunity to determine a project capable of production, however, all the discharging facilities would be considered "a single industrial source" upon the date of the first permit renewal potentially putting the operator in the position of having wells capable yet unable to produce because an NPDES permit could not be re-issued due to limits set by this policy. PAW believes should a NPDES discharge be issued for total containment, this policy should not apply, and provisions for these actions should be included in the policy.

PAW supports the exclusion for the pilot projects; however, we offer the following questions regarding the administration of the policy:

1. How difficult will re-permitting be and how much time will be allotted for each re-permitting effort?

2. Will the wells that were permitted for pilot projects be required to be shut-in until such time as a new permit is issued?

3. What is the duration (in years) of permits for pilot projects?

4. Once a permit is re-issued, how many years will that permit be valid?

5. Will permits that have been previously issued be impacted by this decision, or will those permits be "grandfathered"?

PAW requests clarification on several issues:

1. Section I, (D), (2) – PAW believes there needs to be clarification if all of the criteria must be met or any one of the criteria must be met to qualify. (Is the intent of the policy to say "if one or more" or "meet all of the criteria set below"?)

2. Section I, (D), (2), (a) – If any of the criteria (a, b or c) can cause qualification then the language "any way" is too broad. For instance, two gas fields at opposite ends of the state could be considered to be "interrelated" if under common management. The term "interrelated or integrated" needs to be better defined for oil and gas operations. PAW suggests "interrelated" be defined as producing from the same horizon, while "integrated" be defined as sharing the same gathering and treating facilities.

3. Section I, (D), (2), (b) – PAW recommends language be added that will address facilities located in an "oil and gas field" as defined by the Wyoming Oil and Gas Conservation Commission or recognized literature. PAW requests clarity as to what constitutes the 8-digit hydrologic watershed unit. PAW believes if a field exists in two different hydrologic watershed units, the separate units should be considered as two different industrial sources.

4. Section I, (D), (2), (c) – PAW believes this language will cause confusion for regulatory agencies and owner/operators of oil and gas development projects when trying to administer the program. For instance, a company will hold leases over a large geographic area. Within that area multiple fields may be developed in different horizons or geologic zones. Administration of multiple fields under one permit would not be reasonable as each field would have its own specific water quality, quantity and other parameters to consider. Furthermore, if a single NPDES permit were issued for a geographic area containing a number of distinct oil and gas fields there would need to be a new permit issued to the purchasing company. Since the new company would acquire a new permit when by reason of selling properties there could be two or more permits issued each with its own limit for tonnage of salt discharged per year. The system does not appear to be manageable.

PAW requests NPDES permits are issued on a "field" (as defined in Manual of Oil and Gas Terms, by Williams and Meyers, 1971) [1] basis and they be further delineated by the 8-digit hydrologic watershed. PAW is requesting the inclusion of the offered definitions for "interrelated" and "integrated". In addition, PAW is asking for a simple, well-defined process to determine if salt removal will cause a project to become economically unfeasible.

Sincerely,

John Robitaille
Vice President

[1] The general area underlaid by one or more pools. Ore Rev. Stat. § 520.005. The words "field" and "pool" mean the same thing when only one underground reservoir is involved; however, "field", unlike "pool", may relate to two or more pools. The Supreme Court of Texas has observed that "The word 'field' as used in the oil industry has a meaning which is usually determined from the context in which it is used. It may refer to a certain geographical area from which oil is produced or it may be restricted to a particular reservoir." Railroad Commission v. Rio Grande Valley Gas Co., 405 S.W.2d 304 at 309, 24 O & G.R. 818 at 822-823 (Tex. 1966). In the instant case the court found that the term "field" as used in the Common Purchaser Act had the former definition.

United States Department of Agriculture

NRCS Natural Resources Conservation Service

P.O. Box 2890
Washington, D.C. 20013

August 13, 2002

Mister Chairman, my name is Travis James, Colorado River Salinity Coordinator, Natural Resources Conservation Service of the United States Department of Agriculture, Salt Lake City, Utah. Thank you for the opportunity to offer comments on behalf of USDA-NRCS. As you are aware, NRCS has been closely involved in the preparation of the 2002 Review document being presented for comments at this meeting.

USDA has been providing assistance to private landowners in the Colorado River Basin in a systematic fashion since the 1930's. The Agricultural Stabilization and Conservation Service (ASCS) and the Soil Conservation Service (SCS), in particular, provided financial and technical assistance to improve irrigation and cropping systems in the major agricultural areas in the Basin. These systems impacted salt delivery to the Colorado River. In the mid-1970's USDA began focusing its efforts on measures to improve irrigation efficiencies and reduce salt loading. Integrated area-wide planning with the Bureau of Reclamation began in earnest with enactment of the Colorado River Basin Salinity Control Act of 1974.

Agricultural practices to control salinity were first cost-shared in 1979 and 1980 in the Grand Valley and Uinta Basin areas through the Agricultural Conservation Program (ACP). In 1984, the Salinity Control Act was amended by Public Law 98-569. This amendment permitted the Secretary of Agriculture to establish a voluntary on-farm salinity control program to be administered by USDA. Funding for the program was initiated in 1987.

Six on-farm salinity control projects are currently being implemented by the Natural Resources Conservation Service (formerly the SCS) and the Farm Service Agency (formerly the ASCS). These projects are displayed in the table below:

Measures in Place through 2001

Project Location	**Annual Tons of Salt Controlled**
Big Sandy River, Wyoming	37,000
Grand Valley, Colorado	85,500
Lower Gunnison, Colorado	58,900
McElmo Creek, Colorado	17,700
Price-San Rafael, Utah	13,200
Uinta Basin, Utah	106,000
Total Tons	**318,300**

Planning is underway to implement salinity control measures in the Mancos River Valley, in Colorado and to expand the Price-San Rafael Project in Utah.

The 1996 Farm Bill combined the functions of several USDA conservation programs including the Colorado River Basin Salinity Control program into the Environmental Quality Incentives Program (EQIP). All USDA on-farm funding has been provided from EQIP. The 1996 Farm Bill also initiated the development of local conservation work groups that identify resource concerns and prioritize control measures. These groups have contributed greatly to the success and practicability of USDA's salinity control program. With enactment of the 2002 Farm Bill, EQIP will continue to be the funding vehicle for USDA's Colorado River salinity control programs. Congress has authorized significantly more funding for the next six years that can be used for salinity control.

The Basin States Cost Share Program has been made available by the Bureau of Reclamation to amplify the USDA on-farm program. Each USDA dollar spent for salinity control allows the Basin States program to provide 43 cents of additional salinity control activity. This program has helped to offset the "lean" years of USDA appropriations.

NRCS continues to be an active partner in working to accomplish the plan of implementation for the Colorado River Basin in order to comply with the water quality standards of the Clean Water Act. Investigations are underway to identify potential geographic areas for salinity control as well as innovative methods of salinity control. NRCS is cooperating with the Bureau of Land Management and state agencies to locate salt sources on grazing lands that might be controlled. NRCS is working with the U.S. Fish and Wildlife Service and state wildlife agencies to ensure that the salinity control program is minimizing impacts to wetlands and the wildlife species that depend on such habitat. NRCS is also cooperating with research agencies and universities to refine our techniques and science in determining the effectiveness of salt control measures.

NRCS accepts its role as a full partner with the States in meeting the water quality standards required for the Colorado River. NRCS recognizes the on-going commitment necessary to meet the schedule presented in the plan of implementation.

SEP 04 2002

United States Department of the Interior

FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

In Reply Refer To
FWS/R6
ES/UT

September 3, 2002

Jack A. Barnett, Executive Director
Colorado River Basin Salinity Control Forum
106 West 500 South, Suite 101
Bountiful, Utah 84010

Dear Mr. Barnett:

The U.S. Fish and Wildlife Service (FWS), has reviewed the draft 2002 Review Water Quality Standards for Salinity, Colorado Riv · System (draft 2002 Triennial Review). The document was circulated to all Upper Colorad· River Basin Ecological Services field offices. We are forwarding to you as an attachment comments prepared by our Western Colorado Field Office. These comments are intended to provide the most current information regarding the selenium reduction project recently completed in the Uncompahgre Valley. We believe that including the the information in the Western Colorado Field Office's memorandum in the 2002 Triennial Review will improve the accuracy and completeness of the document. Either Lucy Jordan, FWS representative to the Work Group, or Rick Krueger, Contaminants Specialist with our Western Colorado Field Office, would be willing to work with you to incorporate this information appropriately into a final document. Lucy Jordan will be attending the Work Group meeting in Phoenix on September 6, 2002, when final revisions to the document will be considered. Rick Krueger can be reached at (970) 243-2778 ext. 17, or email: rick_krueger@fws.gov.

If the FWS can be of further assistance, please contact Dr. Lucy Jordan at the letterhead address or telephone (801) 975-3330 ext. 143.

Sincerely,

Henry R. Maddux
Utah Field Supervisor

attachment

cc: Western Colorado Field Office (Attn: Rick Krueger), 764 Horizon Drive, Building B, Grand Junction, Colorado 81506-3946

BOR - Regional Office,(Attn: Dave Trueman), Colorado River Basin Salinity Control Program, 125 South State Street, Room 6107, Salt Lake City, Utah 84138-1102

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
764 Horizon Drive, Building B
Grand Junction, Colorado 81506-3946

IN REPLY REFER TO:
ES/CO:EC/Water Quality
MS 65412 GJ

August 26, 2002

Memorandum

To: Field Supervisor, Ecological Services, West Valley City, Utah, Mail Stop 65411

From: Western Colorado Field Supervisor, Ecological Services, Grand Junction, Colorado, Mail Stop 65412 Allan R. Foster

Subject: Comments on Draft 2002 Review Water Quality Standards For Salinity, Colorado River System

The Western Colorado Field Office received your July 30, 2002, subject draft report August 12, 2002. We are providing the following comments on the section describing efforts within Colorado where selenium is discussed (last paragraph, page 4-19). This paragraph is out of date because the demonstration project mentioned has since been completed and data on the effectiveness of reducing selenium has been published. We recommend the following language be substituted for the referenced paragraph:

> Selenium, a naturally occurring element that is essential in trace amounts, and yet toxic to fish and birds at slightly higher concentrations, is liberated by the same processes which load salt to the river systems. The National Irrigation Water Quality Program (NIWQP), a Department of Interior program comprised of representatives from the Service, Bureau of Reclamation, U.S. Geological Survey, and Bureau of Indian Affairs has been charged with identifying and remediating selenium loading as a result of the construction and operation of Federal irrigation projects. Two Bureau of Reclamation projects, the Grand Valley and Lower Gunnison units have been identified by the NIWQP as contributing more than 50 percent of the total selenium load to the upper Colorado River Basin.
>
> In 2000 a demonstration project placed 7.5 miles of earthen canals into piped laterals within the Lower Gunnison unit in an area identified as Montrose Arroyo. This demonstration project was built using a cost share of 44 percent of the total cost of the project provided by the NIWQP and Uncompahgre Valley Water Users Association (UVWUA) thereby, "buying down" the portion provided by the Bureau of Reclamation's cost competitive salinity control program. Prior to construction of the project comprehensive baseline data were gathered to determine existing salinity and selenium loads emanating from the basin. Once the project was completed, extensive monitoring

was instituted to quantify the amount of selenium and salt loading reduction. The first year's data showed a 28 percent decrease in downstream selenium loading and a 16 percent decrease in salinity loading (U.S. Geological Survey Water Resources Investigation Report 01-4204, 2001). Selenium and salt loading from the basin continues to be monitored to determine long term effects. In addition, all wildlife habitat that was lost due to the reduction in seepage from the canals was replaced in kind as a portion of the cost of this project.

Because of the success of this demonstration project, the UVWUA has put in a request to the Energy and Water Appropriations Bill: Departmental Irrigation Drainage Program to provide $750,000 to initiate and continue remediation of Federal irrigation projects in the Lower Gunnison River Basin. This proposal, if funded, will be part of a ten year 15 million dollar cooperative effort between the Bureau of Reclamation Salinity Control Program, UVWUA and the NIWQP to aggressively reduce selenium loading within the Lower Gunnison River Basin and provide additional benefits downstream.

Additionally, the Colorado Nonpoint Source Council has funded a Clean Water Act Section 319 grant to begin a process to target selenium loading in the Gunnison and Uncompahgre valleys, with the goal of further reducing the selenium load. Selenium Task Forces have also been formed in both the Gunnison/Uncompahgre and Grand Valley Basins to address selenium at the local level to facilitate meeting state water quality standards in the Uncompahgre, Gunnison, and Colorado rivers and associated tributaries.

If the above information is added to the Colorado section it will help identify the issues associated with selenium, which are relevant to the salinity program, and identify projects that have been completed or are proposed for the future. If you have any questions please feel free to call Rick Krueger of my staff at (970) 245-3920 or 243-6209, extension 17.

cc: Bureau of Reclamation, Grand Junction (Attn: Mike Baker)
Bureau of Reclamation, Denver (Attn: John Harb)

RKrueger:WtrQualSalinityReview.wpd:082602

Colorado River Basin Salinity Control Forum
106 West 500 South, Suite 101
Bountiful, UT 84010

To Whom It May Concern: August 30, 2002

We appreciate the opportunity to provide feedback to the Colorado River Basin Salinity Control Forum. The following comments regarding proposed policy changes for implementation of Colorado River salinity standards through the NPDES permit program are submitted on behalf of the Western Slope Environmental Resource Council (WSERC) and the High Country Citizens' Alliance (HCCA).

WSERC is a 25 year old, grassroots, non-profit citizens group dedicated to protecting and enhancing the natural environment and quality of life in Delta County and Colorado's Western Slope.

HCCA is a 25 year old, grassroots, non-profit organization actively working to protect, restore and enhance the natural ecosystems and quality of life in the Upper Gunnison River Basin, throughout the Mountain West.

We are particularly concerned about potential adverse impacts to the Colorado River System, which may result from recently proposed coal bed methane (CBM) development in both Delta and Gunnison Counties in Western Colorado. As such, we applaud the Forum's efforts to establish new policies regulating "New Industrial Sources with Operations and Discharges at Multiple Locations under Common or Affiliated Ownership or Management."

The proposed changes, which would limit the (unpermitted) discharge of saline water to one ton per day (or 366 tons per year) per "operator," are a significant step in the right direction. However, ownership and/or management of oil and natural gas wells is convoluted at best, as this industry often involves complicated partnerships, frequent transfer of mineral rights and infrastructure, and (sometimes) even abandonment of property such as derelict wells and related structures. In our estimation, the common or affiliated ownership or management definition constitutes a significant challenge in terms of administering regulations and ensuring compliance.

We suggest the following revision to the aforementioned policy. The one ton per day limitation would likely be more effective if applied to each "field" of oil and/or gas production, regardless of ownership or management affiliation. This approach would seemingly reduce the potential for lack of accountability and cumulative, adverse impacts at the local level, where a given field might be occupied by multiple operators.

With regard to permitting process, it appears that there are numerous instances in which exemptions for discharge of highly saline water can be obtained. This leads us to question whether some stretches of rivers in the Colorado Basin may be at higher risk of salinity contamination than others, depending on

Box 1612, Paonia CO 81428 Phone & Fax 970/527-5307 wserc@wserc.org

dilution from tributary sources or other factors. Likewise, we are also concerned about any potential conflicts that may arise as a result of reliance on salinity-offset programs.

It seems highly probable that exemptions and other special arrangements may result in localized, high-salinity discharge zones, where agricultural endeavors and the environment are likely to be damaged as a direct result of NPDES permits being issued to industrial operations. The fact that an industrial entity can claim salinity control measures to be impractical – thereby allowing them to exceed reasonable discharge limits – seems to create a situation ripe for conflict with potentially injured constituents.

In addition, we would like the Forum to revisit the standards regulating acceptable levels of salinity. Agricultural uses include both livestock watering and crop production, yet several crops are less tolerant of salinity than livestock. If established salinity limits do not protect these more sensitive uses, a reduction in productivity can be expected. Therefore, we ask that the Forum consider setting salinity standards at a level that will protect more sensitive crops.

In conclusion, we support the Colorado River Basin Salinity Forum's efforts to tighten policies regulating the discharge of high salinity water from "New Industrial Sources with Operations and Discharges at Multiple Locations," but we would ask that the policy be applied to each oil and gas field rather than "Common or Affiliated Ownership or Management." In addition, we request that the Forum explore ways to mitigate potential damages that may be inflicted upon the environment or agricultural uses as a result of the cumulative impacts of permitted industrial discharges which exceed the allowed one ton per day limit.

Sincerely,

Jeremy D. Puckett
Assistant Director/Public Lands Coordinator
Western Slope Environmental Resource Council

Steve Glazer
Water Program Director
High Country Citizens' Alliance

For additional information please contact:

Jack A. Barnett
Executive Director
Colorado River Basin Salinity Control Forum
106 West 500 South, Suite 101
Bountiful, Utah 84010-6232
ph. (801) 292-4663
jbarnett@barnettwater.com

Timothy J. Henley
Work Group Chairman
Colorado River Basin Salinity Control Forum
Arizona Water Banking Authority
500 North Third Street
Phoenix, Arizona 85004-3903
ph. (602) 417-2400, ext. 7327
tjhenley@adwr.state.az.us