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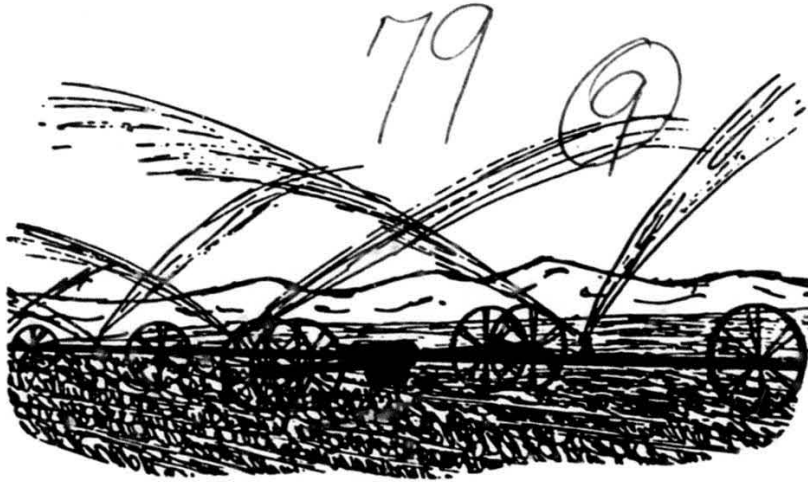
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COLORADO RIVER
SALINITY CONTROL PROGRAM
FINAL ENVIRONMENTAL IMPACT STATEMENT

for

BIG SANDY RIVER UNIT
SUBLETTE AND SWEETWATER COUNTIES, WYOMING



Lead Agency

Soil Conservation Service, USDA

Cooperating Agencies

Agricultural Stabilization and Conservation Service, USDA
Cooperative Extension Service, USDA
State of Wyoming
State Engineer's Office
Department of Environmental Quality
Wyoming Game and Fish Department
Department of Agriculture



PREPARED BY

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
CASPER, WYOMING

September 1987

ORIGINAL

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Abstract

Voluntary implementation by individual landowners of the Selected Plan (low-pressure sprinkler irrigation with individual onfarm pumping) on 15,700 acres will increase the present average onfarm efficiency from 39 percent to 68 percent and average project efficiency from 32 percent to 50 percent. The change in onfarm efficiency will result in less deep percolation from the farm area and resulting return flow from the saline seeps along the Big Sandy River. This will result in a reduction of 52,900 tons of salt annually entering the river system. This reduction will translate to a decrease in salinity concentration in the Green River at the town of Green River, Wyoming, of 27 milligrams per liter and a decrease of 5 milligrams per liter at Imperial Dam on the lower Colorado River.

If voluntary program participation occurred on 15,700 acres of the 18,370 eligible cropland acres, about 3,775 acres of irrigation-induced and supplemented wetlands (USFWS Circular 39 types 1, 2, 3, 4, 9, and 10) will be adversely affected. Of this total, 1,010 acres will experience reduced water supply and an estimated 2,765 acres will be eliminated. The majority of these wetland acres are classified as types 1 and 2 wetlands. Wildlife habitat values foregone will be replaced through voluntary cost-shared assistance for the development and enhancement of wetlands and adjacent upland vegetation. Various salinity control and conservation practices will be installed or implemented to create and enhance wildlife habitat (vegetation) around ponds, ditches, wetlands, field edges, and odd areas.

Questions on this Environmental Impact Statement should be directed to Frank S. Dickson, State Conservationist, Soil Conservation Service, Room 3124, Federal Building, 100 East B Street, Casper, Wyoming 82601. The telephone numbers are (307) 261-5201 or FTS 328-5201.

I

FOREWORD

Authority for Study

The Colorado River Basin Salinity Control Act (P.L. 93-320) and a memorandum of agreement between the U.S. Bureau of Reclamation (USBR) and the Soil Conservation Service (SCS) gives the SCS responsibility to study the effects of onfarm improvements and the resulting reduction in salinity of the Colorado River.

EIS Development

On May 17, 1977, USBR and the SCS published the Colorado River Water Quality Improvement Program Final Environmental Statement. Additional information now available from the SCS environmental evaluation of USDA federally-assisted onfarm improvements (nonproject action) underway indicates that implementation of various onfarm irrigation water management practices in the Big Sandy River Unit will cause significant adverse local impacts on the environment. As a result, the SCS has prepared this EIS for the Big Sandy River Unit. This document supplements the Colorado River Water Quality Improvement Program Final Environmental Statement. Salinity control and conservation practices to accomplish the onfarm improvements are funded by the U.S. Congress using Colorado River Salinity Control funds administered by the Agricultural Stabilization and Conservation Service (ASCS). ASCS, the Cooperative Extension Service (CES), and the State of Wyoming's State Engineer's Office, Game and Fish Department, Department of Environmental Quality, and Department of Agriculture are cooperating agencies in the development of this document.

Several onfarm alternatives and one off-farm alternative were considered in order to achieve salt load reduction in the Colorado River while:

- (1) minimizing adverse effects on local fish and wildlife resources, and
- (2) enhancing the efficiency of irrigated agricultural production. Applicable onfarm practices include adjusting the number and frequency of irrigations, proper time of set and flow rate; pipelines; land leveling; change in irrigation methods; water measurement devices; automated timing devices; and development, preservation, and enhancement of fish and wildlife habitat.

The information in this document is based on the Colorado River Water Quality Improvement Program Final Environmental Statement; USDA Salinity Reports for the Lower Gunnison Basin Unit (September 1981); the Uintah Basin Unit (July 1979 and supplemented November 1980); Colorado River Water Quality Improvement Program, Final Environmental Impact Statement for Lower Gunnison Basin Unit, Montrose and Delta Counties, Colorado and Uintah Basin Unit, Duchesne, Wasatch and Uintah Counties, Utah (April 1982); and the Big Sandy River Unit (November 1980 and supplemented May

1986). In accordance with the Council on Environmental Quality (CEQ) Regulation (40 CFR 1502.21), some information in these studies is handled by reference and is not repeated.

On June 19, 1986, a Finding of No Significant Impact (FONSI) was mailed to interested agencies and organizations. The FONSI was published in the local newspapers twice, and it appeared in the Federal Register on June 26, 1986. Comments to the FONSI were received during the period June 19 to August 22, 1986. The USFWS asked for and was granted an extension of the comment period to September 5, 1986. A public participation meeting was held at Farson, Wyoming, on July 2, 1986, from 12 noon until 4 p.m. to solicit comments concerning the FONSI and Selected Plan. On July 28, 1986, SCS chaired a meeting in Cheyenne, Wyoming, with the EPA, USFWS, COE, and various state agencies to discuss various concerns about the FONSI. A field tour of the Big Sandy River Unit was conducted by the SCS on October 15, 1986, for representatives of the EPA and USFWS. On October 30, 1986, a tour was also conducted for the WGFD and BLM. The responses to the FONSI and discussions during the field tours scoped the unresolved environmental issues. Several comments on the FONSI and commentors' responses were discussed at a public hearing of the Colorado River Basin Salinity Control (CRBSC) Advisory Council meeting and CRBSC Forum in San Diego, California, on October 29, 1986. A Notice of Intent to Prepare an EIS (NOI) was published in the Federal Register on November 20, 1986, and in the local newspapers. All commentors on the FONSI were sent a copy of the NOI.

The DEIS was sent to interested agencies, organizations, and individuals on February 27, 1987. The Notice of Availability of the Draft EIS appeared in the Federal Register on March 13, 1987. The initial 45-day review period was over on April 27, 1987. The comment period was extended to May 12, 1987, by request from the EPA and Wyoming Farm Bureau.

Environmental Constraints and Conflicts

The SCS and USDA have no specific authority other than to encourage voluntary participation to implement salinity control and fish and wildlife habitat replacement measures. P.L. 95-320 did not provide any new authority in this regard. USDA advocates retention of wetlands and seeks to ensure that such lands are not irreversibly converted to other uses unless other national interests override the importance of preservation or otherwise outweigh the environmental benefits derived from their protection [SCS rules for Compliance with NEPA, 7 CFR Part 650, paragraph 650.3 (b)(9); Federal Register Vol. 44, No. 169, August 29, 1979, page 50580]. For nonproject activities, the state conservationist may grant exceptions on a farm-by-farm basis if irrigation water management (water quality and water conservation) objectives conflict with wetland protection. SCS will evaluate economic, environmental, and other pertinent factors in such proposed actions [7 CFR Part 650.25(c)(3)(ii), Federal Register Vol. 44, No. 147, July 30, 1979, p. 44467, as corrected by Federal Register Vol. 44, No. 186, September 24, 1979].

The concept of improving irrigation efficiency to reduce the salt load (improved water quality) carried by the Colorado River presents a conflict with the environmental values of protecting irrigation-induced fisheries and wetland wildlife habitat. Since P.L. 93-320 established that the purpose of salinity studies is to develop alternative actions to reduce salt load carried by the Colorado River, this document presents the tradeoffs.

Compliance with NEPA Regulations, 40 CFR Part 1502, CEO, Final Rule, May 27, 1986

The final amendment to 40 CFR Part 1502 of NEPA requires all federal agencies to disclose the fact of incomplete or unavailable information when evaluating reasonably foreseeable significant adverse impacts on the human environment in an EIS and to obtain that information if the overall costs of doing so are not exorbitant. If the agency is unable to obtain the information because overall costs are exorbitant or because the means to obtain it are not known, the agency must (1) affirmatively disclose the fact that such information is unavailable; (2) explain the relevance of the unavailable information; (3) summarize the existing credible scientific evidence which is relevant to the agency's evaluation of significant adverse impacts on the human environment; and (4) evaluate the impacts based upon theoretical approaches or research methods generally accepted in the scientific community. The amendment also specifies the impacts which have a low probability of occurrence, but catastrophic consequences, if they do occur, should be evaluated if the analysis is supported by credible scientific evidence and is not based on pure conjecture and is within the rule of reason. The requirement to prepare a "worst case analysis" is rescinded. As stated below, this EIS meets the requirements of this NEPA amendment.

Data on the level of fish and wildlife habitat replacements and potential habitat developments are unavailable. This is because of the voluntary nature of program participation and the subsequent voluntary replacement of fish and wildlife habitats. The unavailable data; primarily the location, quality, and acreage of voluntary fish and wildlife replacements and the potential reservoir releases; are relevant to assessing the level of impacts on fish and wildlife habitats. A reader who is familiar with the Colorado River Salinity Control Program may be inclined to recommend the use of voluntary participation and habitat replacement data from other ongoing salinity control projects. However, that data will not be credible for use in the Big Sandy River Unit Selected Plan.

This Selected Plan is the first salinity control plan to use the new criteria authorized by the 1984 amendments to P.L. 93-320. These new criteria provide the following:

- (1) Technical and cost-sharing assistance through contracts and agreements with local governments and nongovernmental entities (i.e., state game and fish agencies, environmental organizations, and irrigation districts).

- (2) Cost sharing for fish and wildlife habitat replacements using salinity control funds.
- (3) Cost sharing at a maximum rate of 70 percent federal - 30 percent local for fish and wildlife habitat replacements and an increase to \$100,000 for the total federal cost share per individual.

In contrast, the pre-1984 Amendment authority provided the following:

- (1) Salinity control funds were not authorized for fish and wildlife habitat replacements. Replacements were funded through the ASCS's existing Agricultural Conservation Program at a cost-share rate of 75 percent federal and 25 percent local.
- (2) The maximum federal cost share per individual for all practices was \$10,000.
- (3) Local governments and nongovernmental entities were not eligible for cost-share assistance.

Since there is no data available on the amended salinity program, a credible comparison on the level of program participation and replacements of fish and wildlife habitat cannot be made.

Tables S-1 and S-2 in the Summary and Tables 2-1 and 2-2 in Chapter 2 do not include effects of potential and voluntary fish and wildlife habitat replacements. These tables and supporting narratives present what the SCS believes to be the highest potential level of adverse impacts on fish and wildlife habitats for each alternative.

As outlined by NEPA, several economic and environmental alternatives were developed and analyzed that were beyond the authority or jurisdiction of the SCS (NEPA 40 CFR Part 1502.14). In addition, the State of Wyoming or the landowners did not support various alternatives. Chapter 2 describes alternative plans. Chapter 5 explores additional conflicts between objectives.

The exact level and type (avoiding, minimizing, rehabilitating, or replacing) of fish and wildlife habitat replacements will ultimately depend on:

- (1) the voluntary replacement of wildlife habitats onfarm by individual landowners under a 70 percent federal and 30 percent local cost-share program,
- (2) the voluntary replacement of fish and wildlife habitats off-farm by the Eden Valley Irrigation and Drainage District under a 70 percent federal and 30 percent local cost-share program,
- (3) the design, location, and number of irrigation-regulating reservoirs and wasteways (new wildlife habitats),

- (4) the operation of the Big Sandy and Eden Reservoirs by the Eden Valley Irrigation and Drainage District (improvement of existing fish and wildlife habitats),
- (5) the voluntary implementation of waterfowl development potentials in the area by the Wyoming Game and Fish Department (WGFD), Bureau of Land Management (BLM), and private wildlife organizations (new and improved wildlife habitats). Cost sharing will be available to nonfederal entities.

Environmental Costs

A mandatory replacement of fish and wildlife habitat values is outside the authority of USDA and P.L. 93-320. P.L. 93-320 did not authorize funds for replacing wetlands or other fish and wildlife habitat. However, the "1984 Amendment to Title II of P.L. 93-320" did provide the authority and funds for the voluntary replacement of fish and wildlife habitat values foregone at a maximum cost-shared rate of 70 percent federal and 30 percent local.

The Big Sandy River Unit Selected Plan includes measures to replace fish and wildlife habitat values. Based on this improved funding authority granted by the "1984 Amendment to P.L. 93-320" and the higher total federal cost-share limit allowed for individual and group contracts, the SCS believes that the potential for voluntary replacement of fish and wildlife habitat values in this project are greater than those in the other ongoing salinity control projects in the Colorado River Basin.

Projects of Other Agencies

The USBR has also conducted investigations for salinity reduction for the Big Sandy River Unit. Their work has consisted of identifying the saline aquifers that contribute the bulk of the salt load to the Big Sandy River and determining the mechanisms by which these aquifers are recharged. The potential of intercepting these aquifers and use of the saline waters for industrial purposes prior to their discharge into the Big Sandy River has been examined and an experiment in desalting by natural freezing was conducted.

The USBR drilled a total of 100 test wells between 1975 and 1978 to locate and characterize the various saline aquifers. These holes range in depth from 30 to 300 feet and cover an area that extends from the Big Sandy Reservoir to the Gasson Bridge on the Big Sandy River, which is a distance of about 25 miles. The wells have been monitored for water level and quality. All the test wells have been pump tested to determine the extent and transmissibility of the aquifer. The ground water levels in the project area respond quickly to irrigation. The water table rises when water is turned into the Eden Valley irrigation project in the spring and recedes in the fall. The magnitude of rise and fall depends on climatic conditions and water supply delivered to irrigation project in any given year.

Eighteen of the test wells were drilled near the Big Sandy Reservoir. It appears that the reservoir does not contribute significantly to the salinity problem.

The USBR has concluded its studies and, at the present time, does not anticipate recommending construction of off-farm salinity control features. If the need for additional salinity control develops in the future, installation of off-farm features in the Big Sandy Unit may be considered further if the more cost-effective units in the Colorado River Basin have already been developed.

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SUMMARY

The Selected Plan proposes the installation of the following structures on 15,700 acres of irrigated land in the Big Sandy River Unit to reduce salinity in the Colorado River Basin. (See Figure S-1, Location Map.)

- Distribution Pipeline and Risers
- Motor, Pumps, and Valves
- Low Pressure Sprinkler Irrigation Systems
- Semi-Automated and Automated Border Irrigation Systems
- Irrigation-Regulating Reservoirs and Wasteway System
- Voluntary Replacement of Fish and Wildlife Habitat Values

Economic and environmental analyses are based on the estimated 15,700 acres of participation. Actual acreage will vary depending on individual participation in the program. Participation will be voluntary and implemented through long-term contracts administered by the ASCS. Technical assistance for salinity control and conservation planning, implementation of planned practices, assistance to realize irrigation water management objectives, and installation of fish and wildlife practices will be provided by the SCS. An SCS project team will consist of soil conservationists, an irrigation water management specialist, engineers, a biologist, civil engineering technicians, and soil conservation technicians. Additional technical assistance will be provided by the CES.

Implementation of the Selected Plan will result in a reduction of an estimated 52,900 tons of salt annually entering the Big Sandy River. This will decrease salinity concentration in the Green River at the town of Green River, Wyoming, by 27 milligrams per liter and decrease salinity concentration by 5 milligrams per liter at Imperial Dam on the lower Colorado River.

The Selected Plan will also increase hay production by an average yield of more than 2 tons annually. Present average yields of hay vary from 1.6 tons/acre to 3.7 tons/acre. In addition to the increased yields, irrigators will be able to maintain pure stands of alfalfa or higher-value crops. These benefits will include: stands maturing earlier, remaining productive longer, and may produce an additional cutting yearly.

If 15,700 acres were converted to sprinkler irrigation, about 3,775 acres of irrigation water induced and supplemented wetlands (USFWS Circ. 39, Types 1, 2, 3, 4, 9, and 10) will be affected. See Glossary for definition of wetland types. Typical wetlands in the project area are shown in Figures 4-5 and 4-6 in Chapter 4. Reduced water supply will occur on about 1,010 acres of wetlands, and 2,765 acres of wetlands will be eliminated. The majority of the 3,775 acres of wetlands are Types 1, 2, and 9. To replace wildlife habitat values foregone, the habitat quality of about 860 acres of Types 3, 4, and 10 wetlands will be voluntarily preserved and enhanced by pond lining, livestock exclusion, seeding, and installation of nesting islands. Landowners, the Irrigation and Drainage District, units of government, and private

organizations will also install various conservation practices to create and enhance wildlife habitat (vegetation) around ponds, regulating reservoirs, wasteways, ditches, field edges, and odd areas. All wildlife habitat (wetland and vegetation) will be inventoried in the before and after individual salinity reduction plan condition in order to determine wildlife values needed to replace values foregone. The Habitat Evaluation Procedures (HEP) developed by the U.S. Fish and Wildlife Service (USFWS) will be used by the SCS salinity team biologist and other HEP certified SCS team members for these inventories. Interagency biologists will participate in the inventories as time and resources permit.

Water remaining in the reservoir or as a result of improved efficiencies could be released on a schedule that will replace and enhance fish habitat and reduce downstream flood damages. Potential release schedules have been developed by SCS with assistance from the WGFD. An annual release schedule will require concurrence from the Wyoming State Engineer and the Eden Valley Irrigation and Drainage District. Reduced annual reservoir drawdowns will improve fish habitat and related recreational activities.

Implementation of the salinity control project will change flows in Bone Draw from perennial to intermittent. Bone Draw, located about 5 miles below the project, is a small tributary with flows that usually range between 0.5 to 1.5 cfs of water from saline seeps that are fed and maintained by irrigation return flows. During drought years, Bone Draw has ceased to flow. Aware of these flow regimes and the potential for a salinity control project, the BLM and a local sportsman's group fenced and continued to develop Bone Draw for a trout fry nursery.

Installation of the Selected Plan is not expected to have any adverse effects on endangered species that may occur in the project area. A Section 7 "no jeopardy opinion" has been issued by the USFWS for this project.

There are several cultural resource sites and areas of high potential, such as the Oregon Trail, located on or near the irrigated lands. Since participation in the project will be voluntary, cultural resource reviews and surveys will be conducted according to SCS rules and regulations (7 CFR 656) during individual on-farm salinity control planning and when specific project construction sites are identified.

The installation of structures will have short-term adverse impacts as a result of construction activities. Disturbed areas will be reseeded with adaptable vegetative cover favorable to wildlife. Short-term impacts are not considered significant. Long-term impacts are either beneficial, not significant, or are a tradeoff between conflicting environmental issues (maintenance of irrigation-induced wetlands and a perennial stream vs. salinity reduction and water quality improvement).

The initial work for the Big Sandy River Salinity Control Study was done in 1978 and 1979. A report entitled Big Sandy River, Colorado River Basin Salinity Control Study, USDA Report, was completed in November 1980. However, the USDA report did not identify a viable alternative

which could be supported by the State of Wyoming, the SCS, and the irrigators in the area. The report did discuss environmental impacts and mitigation for several alternatives.

Early in 1984, the Governor of Wyoming asked that the SCS evaluate an additional alternative, installation of a low-pressure sprinkler irrigation system. After the evaluation, the State of Wyoming, SCS, and many irrigators were in favor of the low-pressure sprinkler alternative. The State of Wyoming and Big Sandy Conservation District asked the SCS to prepare a USDA Selected Onfarm Low-Pressure Sprinkler Plan. This EIS addresses that alternative.

A large range of alternatives was evaluated during the course of the salinity control study. The alternatives range from no project action to various levels of irrigation water management including irrigation retirement, which provided greatest salinity reduction benefits. In addition to those alternatives requested by the Local Coordinating Committee, an environmentally preferable alternative was developed.

The alternatives evaluated and displayed in this EIS are listed as follows:

- Alternative 1 - Future Without a Project (No Action)
- Alternative 2 - Improved Water Management and Minimum Structural Improvements
- Alternative 3 - 15,700 Acres Irrigated with Sprinklers (High Pressure, Individual Pumping)
- Alternative 4 - 14,200 Acres Irrigated with Automated Border Systems and 1,500 Acres Sprinkler Irrigated
- Alternative 5 - Irrigation Retirement (Livestock Operation)
- Alternative 6 - Sublettes Flat Reservoir and Wildlife Refuge (Environmentally Preferred Alternative)
- Alternative 7 - Selected Plan - 15,700 Acres Irrigated With Sprinklers (Low-Pressure, Individual Onfarm Pumping)

NOTE: With the exception of the irrigation retirement, all alternatives evaluated and displayed in Tables S-1 and S-2 assume that the existing agricultural conservation programs administered by the ASCS, with technical assistance provided by the SCS, will continue to be offered and utilized at the same rate as in the past few years.

Alternatives 2 through 7, as displayed in Tables S-1 and S-2, used Alternative 1 Future Without a Project (No Action) as an evaluation base. All values shown in the tables are incremental to Alternative 1.

TABLE S-1
 COLORADO RIVER BASIN SALINITY CONTROL PROJECT
 BIG SANDY RIVER UNIT - Wyoming
 SUMMARY OF ENVIRONMENTAL IMPACTS

ALTERNATIVE	Existing Total Acres Of Wetlands in the Big Sandy River Unit (ac)	Wetland Acres			Reservoirs ^{1/} Average Annual Surface Acres	Water Quality Salinity Reduction (mg/liter)		Big Sandy River Streamflow Changes (ac-ft/yr) ^{3/}		Bone Draw Flow Regime
		Lost	Water Regime Altered	Gained		Green River ^{2/}	Imperial Dam	Reach #1	Reach #2	
1. Future Without (No Action Alt.)	10,171	0	0	0	No Change	0	0	0	0	Perennial
2. Minimal Structural Improvements	10,171	0	3,775	0	Slight Increase	1	0.2	+ 2,490	0	Perennial
3. High Pressure Sprinkler (Individual Pumping)	10,171	2,765	1,010	NA ^{4/}	Increase	27	5	+ 20,470	0	Intermittent
4. Automate Border (90% High Pressure (10%))	10,171	130	3,445	NA ^{4/}	Increase	22	6	+ 17,860	0	Intermittent
5. Irrigation Retirement	10,171	2,765	1,010	NA ^{4/}	Increase	67	15	+ 57,620	+ 26,190	Ephemeral
6. Saline Water Pumping (Sublette Flats - Env. preferred Alt.)	10,171	0	0	8,000 ^{5/}	Substantial Increase ^{5/}	39	6	0	- 13,400	Intermittent
7. Low Pressure Sprinkler (Individual Pumping - Selected Alt.)	10,171	2,775	1,010	NA ^{4/}	Increase	27	5	+ 20,470	0	Intermittent

Price Index: 1986 Discount Rate at 8 5/8 APR

^{1/} Big Sandy and Edin Reservoirs

^{2/} Green River at the town of Green River

^{3/} Reach #1 is from Big Sandy Reservoir to Big Bend; Reach #2 is from Big Bend to Green River

^{4/} Not included is the quantity of wetlands created by voluntary replacement, installation of regulating reservoirs, stock ponds, and pumping pits.

^{5/} Includes 8,000 acres created by pumping into Sublette Flats

TABLE S-2
 COLORADO RIVER BASIN SALINITY CONTROL PROJECT
 BIG SANDY RIVER UNIT - Wyoming
 SUMMARY OF ECONOMIC & SOCIAL WELLBEING IMPACTS

ALTERNATIVE	Salinity Reduction ton/yr	Estimated Total Cost (\$1,000)	Average Annual Cost ^{1/} (\$1,000)	Cost/Ton of Salt Removed		Average Annual Benefits			Increased Electrical Demand (1000KWH)	Increased Employment to Wyoming ^{4/} (man/yr)	Social Well Being ^{3/}
				Total (\$)	Federal (\$)	Salinity		Agric. Products (\$1,000)			
						Wyoming (\$1,000)	Lower Colo. (\$1,000)				
1. Future Without (No Action Alt.)	0	0	0	0	0	0	0	0	0	0	---
2. Minimal Structural Improvements	2,700	1,858.5	232.7	102.41 ^{2/}	52.82 ^{2/}	22.0	103.2	124.2	0	27	---
3. High Pressure Sprinkler (Individual Pumping)	52,900	22,143.1	3,020.5	57.93 ^{2/}	26.42 ^{2/}	489.0	2,834.1	1,318.8	8,695	30	A,B,C
4. Automate Border (90%) High Pressure (10%)	42,600	16,746.1	2,292.4	54.84 ^{2/}	25.85 ^{2/}	326.6	2,341.0	326.8	1,230	346	A,B,C
5. Irrigation Retirement	124,900	26,767.8	2,391.3	19.15	18.78	1,235.8	8,275.6	0	86	0	A,B,C
6. Saline Water Pumping (Sublette Flats - Env. preferred Alt.)	81,300	15,638.8	2,069.1	25.45	25.45	706.8	3,571.0	0	12,051	280	D,E,F
7. Low Pressure Sprinkler (Individual Pumping - Selected Alt.)	52,900	17,053.0	2,170.6	41.86 ^{2/}	19.09 ^{2/}	489.0	2,834.1	1,318.8	3,238	306	A,B,C

Price Index: 1986 Discount Rate at 8 5/8 APR

^{1/} Average Annual Cost includes O&M costs for the alternative.

^{2/} Includes \$43,800 annual cost for SCS monitoring & Evaluation.

^{3/} SOCIAL WELL BEING LEGEND:

A - Improved fishing opportunities on Big Sandy River
 B - Improved fishing opportunities on Big Sandy & Eden Reservoirs
 C - Improved waterfowl hunting on Big Sandy & Eden Reservoirs

D - Improved waterfowl hunting on private lands
 E - Develop public hunting area on Sublette Flats
 F - Improve birdwatching opportunities

^{4/} From construction of salinity control practices only. Construction employment from powerline installation is not included.

CHAPTER 1

PURPOSE AND NEED FOR THIS ACTION

Colorado River Basin

The Colorado River system naturally carries a large load of salts (dissolved solids) and suspended sediment. Streamflow depletions resulting from transbasin diversions and for irrigation, municipal, and industrial uses significantly reduce the supply of water available for dilution of salt loads in the lower river system. In recent years, salinity concentrations in the Colorado River have adversely affected downstream irrigated crop production and other uses of the water. The problem is especially severe for water delivered to California, Arizona, and Mexico. The problem is so severe that the United States is committed by agreement with Mexico to maintain salinity at a specific level for water arriving at the Mexican border. Minute 242 of the United States' agreement with Mexico states that water delivered to Mexico will be no more than 115 ± 30 mg/L above the water arriving at Imperial Dam. It is in the national interest to continue efforts to meet this goal.

Recognition of this water quality problem in the region has caused a number of studies to be made since about 1960. The Colorado River Basin Water Quality Control Project was established in 1960 by the Division of Water Supply and Pollution Control, U.S. Public Health Service. Studies by the EPA (1971) produced a series of reports on "The Mineral Quality Problem in the Colorado River Basin." Salinity in the river also is documented by the Bureau of Reclamation (1971 and 1974) Status Reports; Colorado River Water Quality Improvement Program Biennial Progress Reports "Quality of Water, Colorado River Basin;" and U.S. Geological Survey Professional Paper 441, "Water Resources of the Upper Colorado River Basin - Technical Report" by Irons and others (1965). Section 201(c) of P.L. 93-320 directs the Secretary of the Interior, the Administrator of the EPA, and the Secretary of Agriculture to cooperate and coordinate their activities effectively to carry out objectives of Title II of P.L. 93-320 as the basin states continue developing their compact apportioned water. In addition, the Big Sandy River Unit is one of sixteen irrigation source control units listed in Section 203 of P.L. 93-320 for the expeditious completion of a planning report as a means to implement the salinity control policy adopted for the Colorado River.

Title II of P.L. 93-320 was amended in 1984. These amendments clarified several issues important to USDA implementation, including: (1) inter-agency cooperation, (2) expedition of planning reports; and (3) establishment of a voluntary cooperative salinity control program with landowners, units of government, and nongovernmental entities to improve onfarm water management and reduced watershed erosion on nonfederal lands.

A selected summary of items to be used by the Secretary of Agriculture in carrying out such a program include:

- 1) Identify salt-source areas and determine the salt load resulting from irrigation and watershed management practices;
- 2) Develop, with consultation, plans to reduce salt loads by improving management of onfarm irrigation water and related laterals and by improving watershed erosion management practices--such measures to include voluntary replacement of incidental fish and wildlife values foregone;
- 3) Provide technical and cost-sharing assistance for the voluntary implementation of plans through contracts and agreements with individuals, groups, local governments, and nongovernmental entities;
- 4) Provide continuing technical assistance for irrigation water management, as well as monitoring and evaluating changes in salt contribution to the Colorado River;
- 5) Carry out related research, demonstration, and educational activities;
- 6) Enter into contracts or agreements pursuant to Section 202(c)(2)(c) of the Act.

The USDA studies carried out under P.L. 93-320 were done using funds available under "Section 6 of P.L. 83-566, the Watershed Protection and Flood Prevention Act." In the course of these studies, the SCS cooperated with the USBR in the development of the Colorado River Water Quality Improvement Program Final Environmental Statement (May 19, 1977). The Program EIS covers alternative methods for salinity control as well as the overall impacts of structural measures and onfarm management measures. These discussions will not be repeated in this supplement. Additional information is now available from SCS environmental evaluations of USDA federally assisted nonproject actions already underway. This information indicates that implementation of various onfarm irrigation water management measures in the Big Sandy River Unit could cause significant adverse local impacts on the environment. Therefore, the SCS has prepared this supplement to the Colorado River Water Quality Improvement Program Final Environmental Statement to more specifically reflect these local impacts and to display alternative solutions.

"Section 303 of the Clean Water Act" requires adoption of water quality standards applicable to interstate waters. The Act's objective is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (Section 101), and the Administrator of EPA is required, in cooperation with other federal, state, and local agencies, "to develop comprehensive programs for preventing, reducing, or eliminating the pollution of navigable waters and ground waters (Section 102a)."

The seven states of the Colorado River Basin acting through the Colorado River Basin Salinity Control Forum developed and agreed upon basinwide

water quality standards for salinity, including numeric criteria and a plan of implementation for salinity control in 1975 (1975 Forum Report). Each of the Basin-adopted water quality standards was subsequently approved by EPA. The 1975 report described the rationale for the selection of the criteria stations.

In response to "Section 303(c) of the Clean Water Act," the Forum in 1978 reviewed the standards. The Forum determined that these 1975 criteria were appropriate. The Forum also reviewed and modified the plan of implementation in 1978. Appropriate documents were adopted by the states.

Again, in 1981, the Forum in response to Section 303(c) reviewed the criteria and determined that the 1975 criteria are still appropriate. The numeric criteria are:

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

As in 1978, the plan of implementation was reviewed and modified to reflect changes that have occurred since 1978. The principal components of the plan are:

1. Prompt construction by the Department of the Interior of two salinity control units authorized by Section 202, Title II of P.L. 93-320, namely the Paradox Valley and Grand Valley Units.
2. Expeditious authorization and construction by the Department of the Interior of the Meeker Dome Unit and 10 of the units listed in Section 203(a)(1), Title II of P.L. 93-320, or their equivalents after receipt of favorable planning reports.
3. Expeditious implementation by the Department of Agriculture of onfarm and related improvement measures for salinity control.
4. Implementation of salinity control measures by the BLM to reduce salt contribution from public domain lands.
5. The placing of effluent limitations, principally under the National Pollutant Discharge Elimination System (NPDES) permit program, provided for in "Section 402 of the Clean Water Act of 1977" on industrial and municipal discharges based on the Forum's 1977 policy on salinity control through the NPDES permits.
6. Implementation of the 1980 Forum policy for the use of brackish and/or saline waters for industrial purposes.
7. Inclusion of the "208 Water Quality Management Plans." Individually, the Basin states have developed water quality management plans to conform to the requirements of

"Section 208 of the Clean Water Act." The water quality management planning process is continuing. As the plans are redefined or new elements added and after such changes have been adopted by the states and approved by EPA, those portions of the plans dealing with salinity control will become part of the implementation plan.

Big Sandy River Unit

Prior to the introduction of irrigation, small springs along the Big Sandy River were observed by early ranchers. These springs produced minimal amounts of water and salt from the underground aquifer. However, due to irrigation and resulting deep percolation, additional water is being transported through the underground aquifer and out of newly developed and enlarged existing springs into the Big Sandy River. Table 4-4 (Chapter 4) shows the 18-year (1960 through 1977) water budget tabulation. Figure 4-1A (Chapter 4) shows a schematic flow diagram of the water budget as averaged for the 18-year evaluation period.

Water not used by crops is percolating into the ground and dissolving large quantities of salt from the aquifer bedrock, which is made up of the Bridger and Green River Rock Formations. The major salts contributing to the total dissolved solids in the Big Sandy River are sulfates, sodium, and magnesium.

Annual salt contributions to the Big Sandy River are shown in Table 4-5 in Chapter 4. The average annual salt loading for the 18-year period (1960-1977) is estimated at 149,180 tons (at Casson Bridge).

CHAPTER 2

ALTERNATIVE PLANS AND THEIR IMPACTS

Introduction

This section discusses seven alternative plans that address several levels of resource development for reducing the river's salt load. These levels are: continuation of the ongoing USDA program (the no accelerated action), improved onfarm irrigation water management (the nonstructural alternative), change to sprinkler irrigation, irrigation retirement, and deep well pumping to evaporation reservoirs. Seven alternatives are summarized in Tables 2-1 and 2-2. Prior to the descriptions of the alternative plans, explanations of plan formulations and the development of values and replacement methodology for the replacement of wildlife values are provided.

Plan Formulations

The initial work for the Big Sandy River salinity study was done from 1977 through 1979. A USDA report was published November 1980. Copies of this report are available for public reference and review at the Rock Springs and Green River libraries and at the SCS office in Rock Springs. That USDA report contains descriptions of alternatives, some of which are summarized in this section. However, the report did not identify a viable alternative which can be supported by the State of Wyoming, the SCS, and the irrigators in the area.

Early in 1984, the Governor of Wyoming asked the SCS to evaluate an additional alternative and update the landowner benefits that might be derived from installation of a low-pressure sprinkler irrigation system. The economic evaluation and development of a low-pressure sprinkler irrigation plan was completed in 1984. This alternative was presented to the State of Wyoming in November 1984 and at a public meeting in December 1984 with the Eden Valley Irrigation and Drainage District. Consensus was favorable to the low-pressure sprinkler alternative. The State of Wyoming and the Eden Valley Irrigation and Drainage District asked the SCS to prepare an Onfarm Low-Pressure Sprinkler Alternative (Alternative 7, Selected Plan).

On February 27, 1986, a meeting was held with the representatives of various State agencies to explain the contents of the USDA Selected Plan (Alternative 7). As a result of this meeting, the State indicated their support and willingness to participate in finalization and implementation of the Selected Plan. On April 2, 1986, a public information meeting was held in Farson to explain, in detail, the Selected Plan and its impacts on the local irrigators and the irrigation district. Reaction of the local irrigators was favorable. The consensus of those attending the meeting was for SCS to finalize the USDA Selected Plan.

Development of Values and Replacement Methodology for Replacement of Fish and Wildlife Values Foregone

In 1978 and 1979, an interagency team of biologists from the SCS, USFWS, and WGFD toured the Big Sandy River Unit and held several meetings to develop and review mitigation plans (hereafter referred to as voluntary replacement of fish and wildlife habitat) for various salinity control alternatives. Several potential water release schedules from the Big Sandy Reservoir to benefit downstream fisheries habitat were also developed during this period. Voluntary replacement of wildlife habitat included the following installation measures and assumptions used by the interagency team during environmental assessment activities in 1978 and 1979:

1. Types 3, 4, and 10 wetlands have the highest overall value. These wetlands should be saved and enhanced. The assumption was made that fenced, enhanced, and managed Types 3, 4, and 10 were approximately four times more valuable than grazed, unmanaged Types 1, 2, and 9. See Glossary for definition of wetland types. Refer to Tables 4-6 and 4-7 for more information on wetlands.
2. Developing, preserving, and enhancing Types 3, 4, 9, and 10 wetlands compensates for losses and/or alterations described in the environmental analysis for each alternative.
3. Terrestrial habitat adjacent to the wetlands (one-half the wetland acreage) should be preserved, managed, and enhanced in conjunction with the wetlands. Public ownership and management increases the habitat value of wetland complexes.
4. Adding managed terrestrial habitat to wetland areas would compensate for habitat lost along ditches, border dikes, and canals.

The wetland habitat analysis and replacement methodology, developed by the interagency biologists in 1979, were used in this EIS to illustrate various impact levels between alternatives. A new wetland habitat analysis and replacement methodology has been selected for use during the installation of the Selected Plan. Details of the selection process and methodology are provided in Chapter 6.

Costs were determined in 1979 for developing, preserving, and enhancing Types 3, 4, 9, and 10 wetlands for most alternatives. It was assumed that all existing Types 3, 4, and 10 wetland areas would need to be lined. Lining was the most expensive element of wetland replacement, followed by water delivery costs. Enhancement measures included seeding, fencing, island building, and deepening of the water areas.

It is expected that the per acre and total costs for wetland replacement for the Selected Plan will be substantially less than those displayed in the summary comparison of alternatives. During an October 1986 field tour with the WGFD, BLM, and SCS biologists, several potential wetland

habitat replacement areas were identified. One of the better potential areas for wetland replacements was identified as the flood plain along the Big Sandy River. Wetland developments (level ditching, pit ponds) in this area will have a high natural water table. The need for high-cost lining and water delivery will be eliminated. Wetlands will also be created as a result of installing irrigation-regulating reservoirs, pump pits, sediment basins, and wasteways. Wildlife benefits will occur, but costs incurred for these measures will not be considered wildlife habitat replacement costs.

Most of the alternative plans identified (#3, #4, #5, #6, and #7) will have significant adverse environmental effects on Bone Draw. Selection and implementation of any one of these five alternatives will cause the irrigation-induced seeps that feed Bone Draw to dry up. The impact will be that the perennial flow (0.5-1.5 cfs), which presently occurs in the last one-half mile of Bone Draw, will change to an intermittent flow. Implementation of any of these five alternatives will also adversely impact approximately 40 acres of Types 2 and 3 wetlands that exist because of the same irrigation-induced seeps.

An analysis of possible replacement options was made to determine the potential for offsetting the wildlife values anticipated being lost in the Bone Draw area. See Figure 2-1. A brief explanation of what would be involved to implement these options follows Figure 2-1.

1. PIPELINE - Construction of a buried (12-inch diameter) PVC pipeline 24,000 feet long from Big Sandy River to Bone Draw with a diversion structure on Big Sandy River. The pipeline would be gravity flow and could deliver from 1.0 to 1.5 cfs into Bone Draw. NOTE: The pipeline could be shortened to 5,000 feet long if power lines were extended to the river near Bone Draw and pumping of 1.0 to 1.5 cfs of water could be done. The operation, maintenance, and replacement (OM&R) costs would be similar to Option #3.
2. DEEP WELLS - Drilling of two 1,000-foot-deep wells (1- to 10-inch diameter and 1- to 12-inch diameter) that would flow under artesian pressure to deliver from 0.5 to 1.0 cfs into Bone Draw. Concrete outlet structures would also be required.
3. SHALLOW WELL - Drilling one 250-foot-deep well (12-inch diameter) that would be pumped to deliver from 1.0 to 1.5 cfs into Bone Draw. Installation of 2 miles of power line and purchase of a 70 hp electric motor would also be necessary.
4. CANAL DIVERSION - Release of water from the Eden Lateral irrigation canal to provide for a flow of 1.0 to 1.5 cfs into Bone Draw. This option would require construction of a 20-foot-high earthfill dam on Washington Draw to store water for irrigation off-season release. The dam would create 600 surface acres and about 2,800 ac-ft of storage. Additionally, 7,000 feet of 12-inch-diameter pipeline would be needed to divert discharges from the Eden lateral into the new reservoir. This option would have significant OM&R costs.

FIGURE 2-1
DISPLAY OF BONE DRAW REPLACEMENT OPTIONS

REPLACEMENT OPTION #	ESTIMATED COST	PERMITTING AND LEGAL ISSUES	ADVANTAGES AND/OR BENEFITS OF IMPLEMENTING OPTION	DISADVANTAGES AND/OR PROBLEMS OF IMPLEMENTING OPTION	POTENTIAL IMPLEMENTING AGENCY OR ORGANIZATION	PROBABILITY OF IMPLEMENTING
#1 PIPELINE	\$ 412,000	WY ST. ENGR 404 PERMIT BLM SPECIAL USE PERMIT	+ Irrigation induced wetlands (approx. 40 ac.) could be maintained. + Irrigation induced flow in Bone Draw (approx. 2,600 ft. long, 0.5-1.5 cfs) could be replaced. + Potential for lengthening the perennial flow reach of Bone Draw to 1 mile.	+ No assured source of installation costs. + Salinity reduction benefits of project reduced. + Water temperatures will vary greatly, can exceed 70 degrees in summer. Salinity level reduced from 2000 ppm to 400 ppm. Will not support existing fishery. + Frequent maintenance of diversion structure because of sand in river.	+ IRR DIST ^{1/} + BLM + USFWS + WGF D ^{2/} + SCWA ^{3/} + USDA ^{4/}	0% Less than 10% Less than 5% 0% Less than 5% 0%
#2 DEEP WELLS	\$ 280,000	WY ST. ENGR BLM SPECIAL USE PERMIT	+ Irrigation induced wetlands could be maintained. + Irrigation induced flow in Bone Draw could be replaced. + Potential for lengthening the perennial flow reach + Would support similar fisheries and habitat. + Maintain Class IV stream.	+ No assured source of installation costs. + Salinity reduction benefits of project reduced.	+ IRR DIST + BLM + USFWS + WGF D + SCWA + USDA	0% Less than 20% Less than 5% 0% Less than 5% 0%
#3 SHALLOW WELL	\$ 130,000 \$ 67,000 Annual O&M Cost	WY ST. ENGR. BLM SPECIAL USE PERMIT NPDES PERMIT	+ Irrigation induced wetlands could be maintained. + Irrigation induced flow in Bone Draw could be replaced. + Water temperature and salinity level will be similar to existing and would likely support present fisheries and habitat. + Maintain Class IV stream.	+ No assured source of installation costs. + Salinity reduction benefits of project reduced slightly. + No assured source of funds for annual O&M.R. + Potential conflicts with Wyoming Water Quality Standards. TDS will range from 1500-3000 ppm.	+ IRR DIST + BLM + USFWS + WGF D + SCWA + USDA	0% Less than 10% Less than 5% 0% Less than 5% 0%
#4 CANAL DIVERSION	\$ 420,000 \$ 12,600 Annual O&M Costs	WY. BOARD OF CONTROL WY. ST. ENGR. BLM SPECIAL USE PERMIT USBR AGRMT. IRR. DIST.	+ Irrigation induced wetlands could be maintained. + Irrigation induced flow in Bone Draw replaced. + Potential for lengthening the perennial flow reach and increasing the riparian areas along Bone Draw. + Creation of a 600 ac./ 2,800 ac-ft reservoir. + Maintain Class IV stream.	+ No assured source of installation costs. + Substantial reduction in projects salinity reduction benefits. + Higher water temperature. Salinity level reduced from 2,000 ppm to 200 ppm. Will not support existing fisheries or habitat. + Significant increase in Irr. Dist. O&M costs. + Loss of 2,800 ac-ft. of irrigation water.	+ IRR DIST + BLM + USFWS + WGF D + SCWA + USDA	Less than 5% Less than 10% Less than 5% Less than 5% Less than 5% 0%

1/ IRR DIST - Eden Valley Irrigation & Drainage District

2/ WGF D - Wyoming Game & Fish Department

3/ SCWA - Sweetwater County Wildlife Association

4/ USDA - USDA CRSC Funds

Implementation of any of these four options will be extremely expensive with the major limiting factors being a source of funding, water right and permits, and finding an agency or organization willing to assume responsibility for OM&R. Informal contacts with the Eden Valley Irrigation District, WGFD, USFWS, and BLM did not provide any indication of future plans to undertake any of the four options.

Alternative Plans

Alternative 1 - Future Without a Project (No Action)

This alternative was prepared to develop a base for the study. It shows that irrigated agriculture can be expected to net an average income of about \$47.00 per acre per year. The present average onfarm irrigation efficiency of 39 percent and an overall project efficiency of 32 percent will be expected to continue. Present salt delivery to the Big Sandy River is estimated at 157,600 tons per year, of which 133,300 tons are the result of irrigation.

It is anticipated that the future without a project condition will be the same as the present condition. Therefore, this alternative was not selected because project irrigation efficiencies and salt contributions will continue in the future as they presently occur.

Alternative 2 - Minimal Structural Improvements

This alternative consists of cleaning out farm head ditches so they will have the capacity to carry a flow of 6 cfs. In addition, concrete turnout gates will be installed on approximately 40 percent of the project area. The remaining project lands (60 percent) have existing improved turnout gates. To improve efficiency and onfarm irrigation water management, 2,500 acres of land will be leveled.

Onfarm irrigation efficiencies will increase from an average of 39 percent to 41 percent and project efficiency from 32 percent to 34 percent. Salt loading to the Green River will be reduced by 2,700 tons per year. Total dissolved solids will be reduced by 0.2 mg/L at Imperial Dam and 1 mg/L at Green River, Wyoming.

Implementation of this alternative for salinity control will lower perennial flows in Bone Draw. Bone Draw, located about 5 miles below the project, is a small tributary (0.5 mi) that flows 0.5-1.5 cfs of water from irrigation-induced saline seeps. The BLM and a sportsman's group have fenced and developed Bone Draw for a trout fry nursery. Flow reductions will be minor and not have a significant effect on the trout fry nursery.

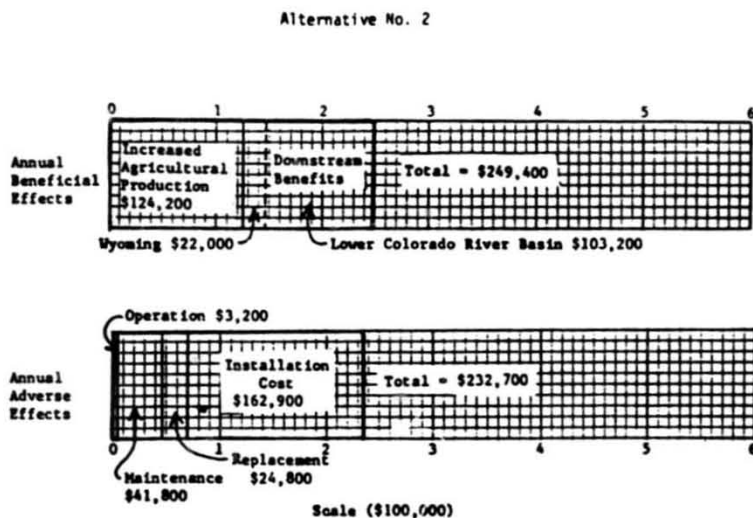
If 15,700 acres participate in this alternative, about 3,775 acres of irrigation water induced and supplemented wetlands (USFWS Circ. 39, Types 1, 2, 3, 4, 9, and 10) will be affected. Reduced water supply will occur on about 3,775 acres of wetlands. Wildlife associated with the wetlands will adjust to the new conditions or relocate to other wetlands.

To offset losses, voluntary replacement of fish and wildlife habitat values foregone will include installing wetland enhancement measures

(i.e., ponds, level ditches, nesting structures, livestock exclusion, seeding) on 180 acres of existing wetlands. A total of 90 acres of adjacent terrestrial habitat will need to be fenced, enhanced, and managed for waterfowl. Water not diverted to the farmland because of improved irrigation efficiency will be stored in the existing reservoirs for use during water-short years. This water will also improve fisheries habitat. This will amount to an average annual 2,500 acre-feet of water.

This alternative was not selected because it will not significantly meet the objectives of the salinity control project.

The following graph is an economic display of annual benefits and costs for Alternative 2.



Alternative 3 - Sprinkler Irrigation, High-Pressure, Individual Pumping

This alternative consists of sprinkler irrigation on 15,700 acres. Each farm will have an individual pumping plant, located at the present farm headgate. An onfarm distribution pipeline will replace existing open ditches. The type of sprinkler system will be optional (sideroll, center pivot, etc.). Annual electricity requirements for pumping will be about 8.7 million kilowatt hours. This alternative will require a water wasteway system to be used should there be power failure.

Onfarm irrigation efficiencies will increase from an average of 39 percent to 68 percent. Deep percolation, evaporation, and drift loss from the sprinklers will account for the remaining 32 percent loss. Under project conditions, the onfarm irrigation efficiencies will reduce the total volume of water used in the project area. However, the volume of the off-farm conveyance loss will remain at about the same level. Thus, the efficiency of off-farm conveyance will be reduced from the present condition level of 82 percent to a level of 72 percent. The onfarm improvements, therefore, result in a project efficiency increase from 32 percent to 50 percent. Salt loading in the Colorado River will be reduced by 52,900 tons per year. Total dissolved solids will be reduced by 5 mg/L at Imperial Dam and 27 mg/L at Green River, Wyoming.

Implementation of this alternative for salinity control will change flows in Bone Draw from perennial to intermittent. Bone Draw, located about 5 miles below the project, is a small tributary (0.5 mi) that flows 0.5-1.5 cfs of water from irrigation-induced saline seeps. The BLM and a sportsman's group have fenced and developed Bone Draw for a trout fry nursery. The trout fry nursery will be lost when the flow conditions are reduced to a level incapable of supporting adult trout and hatchery supplied eggs.

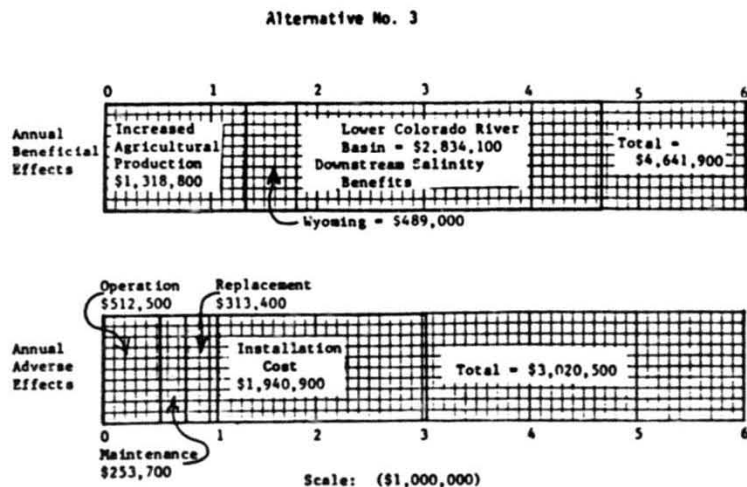
If 15,700 acres participate in this alternative, about 3,775 acres of irrigation water induced and supplemented wetlands (USFWS Circ. 39, Types 1, 2, 3, 4, 9, and 10) will be affected. Reduced water supply will occur on about 1,010 acres of wetlands, and 2,765 acres of wetlands will be eliminated. The majority of these wetlands are Types 1, 2, and 9. Wildlife associated with these wetlands will adjust to the new conditions or relocate to other wetlands. Wildlife incapable of adjusting or relocating will be lost.

To offset losses, voluntary replacement of fish and wildlife habitat values foregone will include installing wetland enhancement measures (i.e., ponds, level ditches, nesting structures, livestock exclusion, seeding) on 860 acres of wetlands. A total of 430 acres of adjacent terrestrial lands will need to be fenced, enhanced, and managed for waterfowl.

Water not diverted to the farmland because of improved irrigation efficiency will remain in the existing reservoirs as carryover storage for irrigation use during water-short years. An approximate average annual 20,500 acre-feet of water could be released on a schedule beneficial to stream fisheries. Any schedule of water releases requires the approval of the irrigation district and Wyoming State Engineer.

This alternative was not selected because landowner costs for installation, operation, maintenance, and replacement will exceed agricultural benefits.

The following graph is an economic display of annual benefits and costs for Alternative 3.



Alternative 4 - Automated Border Irrigation

This alternative consists of lining all onfarm irrigation ditches. Existing farm border systems will be used on 14,200 acres and semi-automated or automated gates and controls will be used to turn the water from border to border. A total of 1,500 acres will be sprinkler irrigated by individual farm pumping plants and 5,000 acres of land leveling will be included. Annual electricity requirements for pumping will be about 1.2 million kilowatt hours.

Onfarm irrigation efficiencies will increase from an average of 39 percent to 62 percent and project efficiency from 32 percent to 46 percent. Salt loading in the Colorado River will be reduced by 42,600 tons per year. Total dissolved solids will be reduced 4 mg/L at Imperial Dam and 22 mg/L at Green River, Wyoming.

Implementation of this alternative for salinity control will change flows in Bone Draw from perennial to intermittent. Bone Draw, located about 5 miles below the project, is a small tributary (0.5 mi) that flows 0.5-1.5 cfs of water from irrigation-induced saline seeps. The BLM and a sportsman's group have fenced and developed Bone Draw for a trout fry nursery. The trout fry nursery will be lost when the flow conditions are reduced to a level incapable of supporting adult trout and hatchery supplied eggs.

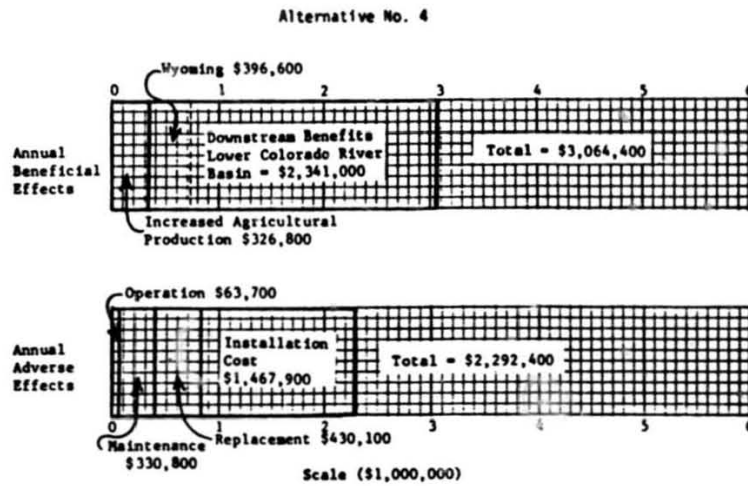
If 15,700 acres participate in this alternative, about 3,775 acres of irrigation water induced and supplemented wetlands (USFWS Circ 39, Types 1, 2, 3, 4, 9, and 10) will be affected. Reduced water supply will occur on about 3,445 acres of wetlands, and 130 acres of wetlands will be eliminated. The majority of these wetlands are Types 1, 2, and 9. Wildlife associated with the wetlands will adjust to the new conditions or relocate to other wetlands. Wildlife incapable of adjusting or relocating will be lost.

To offset losses, voluntary replacement of fish and wildlife habitat values foregone will include installing wetland enhancement measures (i.e., ponds, level ditches, nesting structures, livestock exclusion, seeding) on 180 acres of existing wetlands. A total of 90 acres of adjacent terrestrial land will need to be fenced, enhanced, and managed for waterfowl.

Water not diverted to the farmland because of improved irrigation efficiency will remain in the existing irrigation reservoirs for use during water-short years. An approximate average annual 17,900 acre-feet of water could be released on a schedule beneficial to stream fisheries. Any schedule of water releases requires the approval of the irrigation district and the Wyoming State Engineer.

This alternative was not selected because landowner costs for installation, operation, maintenance, and replacement will exceed agricultural benefits.

The following graph is an economic display of annual benefits and costs for Alternative 4.



Alternative 5 - Irrigation Retirement

This alternative will retire irrigation from the project area. The irrigated land will revert back to improved rangeland. Landowners will remain on the farm and retain ownership of the land and all mineral rights. The landowner will be compensated for loss of irrigated agricultural production by being paid a mutually agreeable value for giving up water rights, improvements, irrigation, and that farm equipment used in the irrigation operations. Alternative 5 assumes that all landowners will have a livestock operation in the project area and will receive compensation to transport hay and develop stockwater. Annual electricity requirements for stockwater facilities will be about 0.9 million kilowatt hours.

It should be noted that if the landowner does not have or want to retain a livestock operation, he will not be compensated for transportation of hay into the valley or for stockwater development.

Irrigation retirement will prohibit the application of water to the presently irrigated 15,700 acres causing these acres to revert back to native range. Water rights will be withdrawn from the remaining 2,670 eligible, but not presently irrigated, acres. The ranchers and farmers will need to supplement their livestock feeding program by purchasing hay in surrounding communities and transporting it into the valley. Present leases of associated rangelands can continue. The end result will be an increase in acres of rangeland.

Salt loading in the Colorado River will be reduced by 124,900 tons per year. Total dissolved solids will be reduced by 15 mg/l. at Imperial Dam and 67 mg/l. at Green River, Wyoming.

Implementation of this alternative for salinity control will change flows in Bone Draw from perennial to ephemeral. Bone Draw, located about 5 miles below the project, is a small tributary (0.5 mi) that flows 0.5-1.5 cfs of water from irrigation-induced saline seeps. The BLM and a sportsman's group have fenced and developed Bone Draw for a trout fry nursery. The trout fry nursery will be lost when the flow conditions are reduced to a level incapable of supporting adult trout and hatchery supplied eggs.

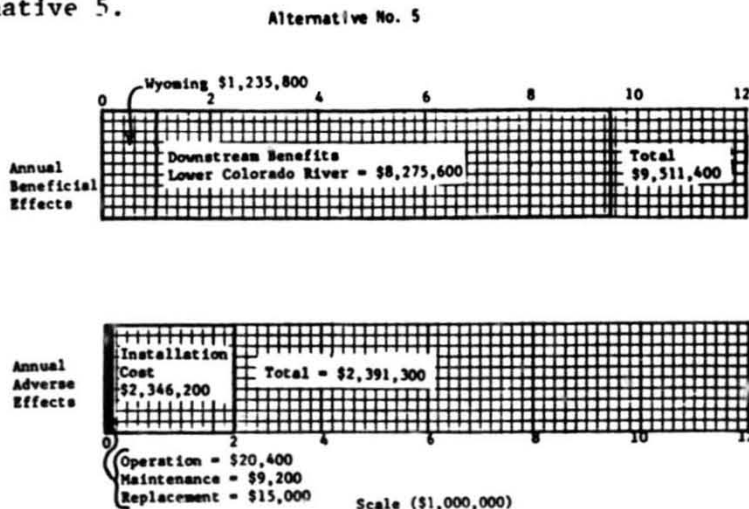
If all presently irrigated acres (15,700) participated in this alternative, about 3,775 acres of irrigation water induced and supplemented wetlands (USFWS Circ. 39, Types 1, 2, 3, 4, 9, and 10) will be affected. Reduced water supply will occur on about 1,010 acres of wetlands, and 2,765 acres of wetlands will be eliminated. The majority of these wetlands are Types 1, 2, and 9. Wildlife associated with these wetlands will adjust to the new conditions or relocate to other wetlands. Wildlife incapable of adjusting or relocation will be lost.

To offset losses, voluntary replacement of fish and wildlife habitat values foregone will include installing wetland enhancement measures (i.e., ponds, level ditches, nesting structures, livestock exclusion, seeding) on 860 acres of existing wetlands. A total of 430 acres of adjacent terrestrial land will need to be fenced, enhanced, and managed for waterfowl.

Water from the Big Sandy River and Little Sandy Creek stored in the existing reservoirs will be under the Wyoming State Engineer's jurisdiction. Any release schedule of the water from the reservoirs to enhance fish habitat and/or to reduce downstream flood damage requires the approval of the State Engineer. Excess water at the reservoirs will be 57,600 acre-feet on an average annual basis.

This alternative is beyond the authority of the SCS. Alternative 5 was supported during the 1976 through 1979 study by landowners who owned the majority of the irrigated land in the project area. However, the State of Wyoming did not support this alternative; therefore, it was not selected for implementation.

The following graph is an economic display of annual benefits and costs for Alternative 5.



Alternative 6 - Sublettes Flat Reservoir and Waterfowl Refuge

This alternative involves drilling and pumping 13,400 acre-feet of saline waters annually from wells located near Bone Draw to a proposed Sublettes Flat Reservoir for storage and disposal by evaporation (see Figure 2-2). The existing irrigated area will not be affected. This will require development of 15 water production wells, pumping plants, and a pipeline to the storage site. Annual electricity requirements for pumping will be about 12.1 million kilowatt hours. An approximate 20-foot-high dam will be required to provide storage capacity of approximately 32,500 acre-feet. The dam will provide a reservoir or lake of about 8,000 surface acres. The resulting lake could be utilized as a waterfowl refuge. Preliminary soil testing in the proposed reservoir basin indicates the soils to have a very low permeability. The reservoir basin will become increasingly tighter as the soils are exposed to the saline water and lining will not be required. Technical expertise needed to design this waterfowl development can be provided by the USFWS and the WGFD.

The proposed Sublettes Flat Reservoir and waterfowl refuge will not affect the 15,700 acres of irrigated land nor the associated rangeland utilized with it. However, the 8,000 acres needed for the dam and reservoir site will reduce the rangeland acres by that amount. The reservoir site is in public ownership and is being managed by the BLM.

This alternative represents a tradeoff in itself. Foregone by a reservoir system will be critical antelope habitat, antelope migration routes, and sage grouse habitat. Information provided by the BLM's Sandy Grazing Environmental Statement indicated that the reservoir area may contain significant cultural resources. The Wyoming Department of Environmental Quality expressed concerns about the accumulation of dissolved solids through evaporation.

This alternative was evaluated with the present condition of irrigation. Salt loading in the Colorado River will be reduced by 81,300 tons per year. Total dissolved solids will be reduced by 6 mg/L at Imperial Dam and 39 mg/L at Green River, Wyoming.

Implementation of this alternative for salinity control will change flows in Bone Draw from perennial to intermittent. Bone Draw, located about 5 miles below the project, is a small tributary (0.5 mi) that flows 0.5 - 1.5 cfs of water from irrigation-induced saline seeps. The BLM and a sportsman's group have fenced and developed Bone Draw for a trout fry nursery. The trout fry nursery will be lost when the flow conditions are reduced to a level incapable of supporting adult trout and hatchery supplied eggs. Flows in the Big Sandy River from Bone Draw to the Green River will be reduced by 13,400 acre-feet annually. Impacts on Big Sandy River fisheries will be insignificant.

This alternative can be used at a lesser size and in conjunction with any of the other alternatives presented. All alternatives presented, with the exception of Alternative 1 and this alternative, include plans for the voluntary replacement of fish and wildlife habitat values. These

LEGEND

- Reservoir
- Highway
- Town
- Pumping Station
- Control Dikes
- Gulch
- Pipeline
- Water Wells
- Proposed Reservoir

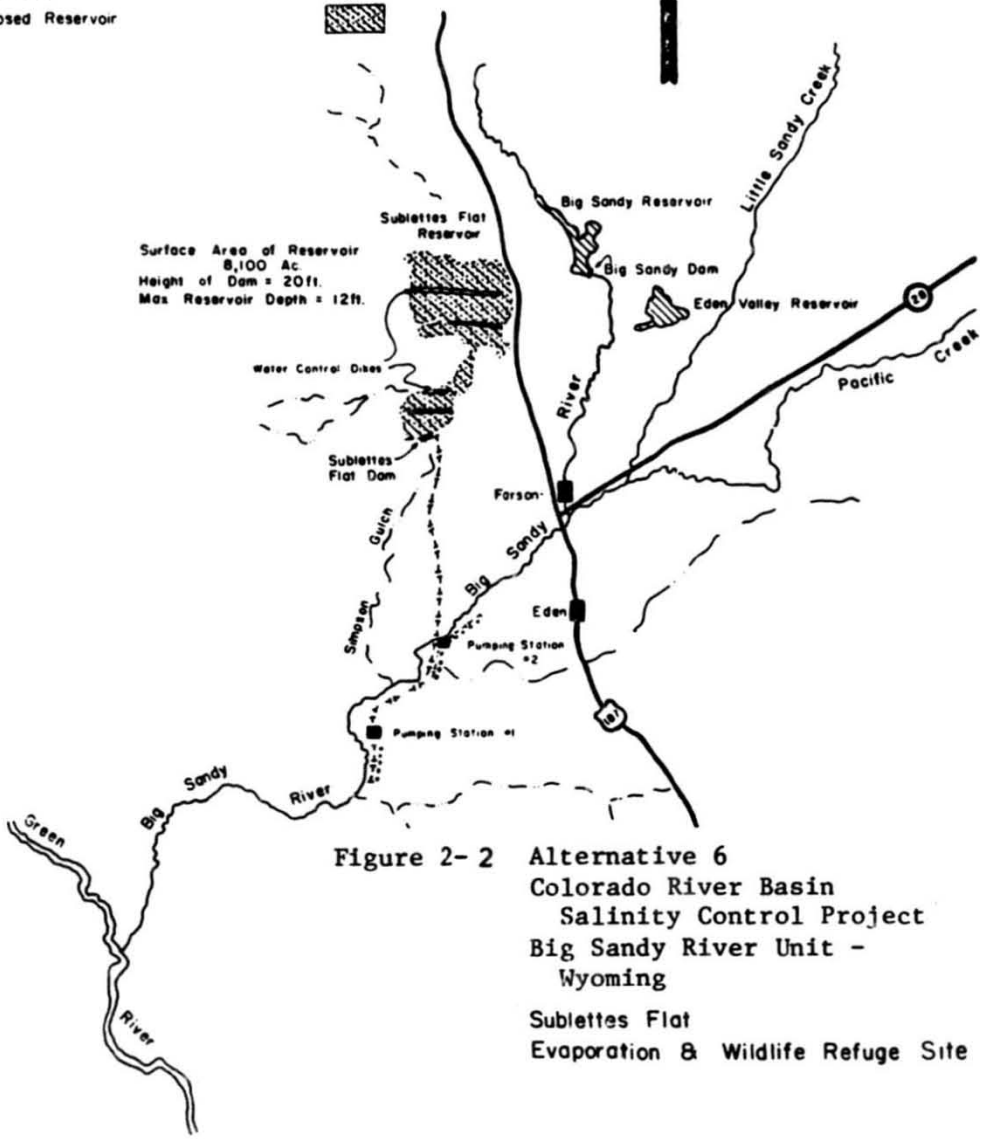
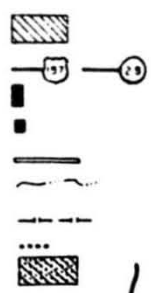


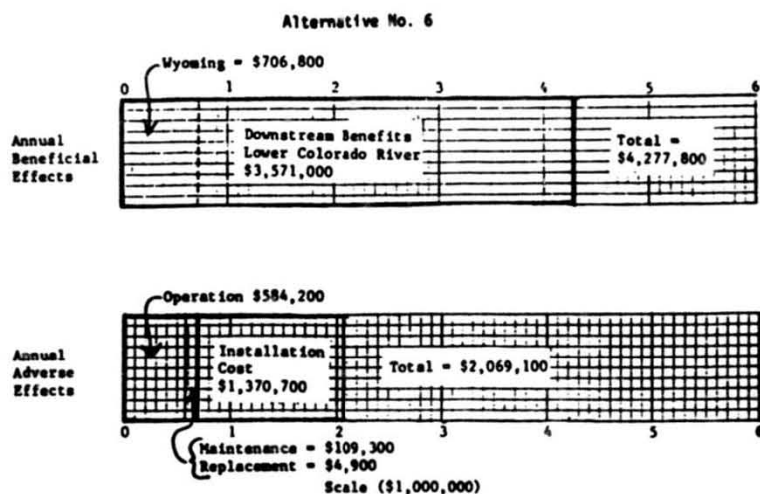
Figure 2-2 Alternative 6
 Colorado River Basin
 Salinity Control Project
 Big Sandy River Unit -
 Wyoming
 Sublettes Flat
 Evaporation & Wildlife Refuge Site

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plans include installation of various items to save, maintain, and enhance some of the open water wetlands that will be lost if water tables were lowered as a result of less water applied on the farms. Installation of Sublettes Flat Reservoir could create up to 8,000 acres of wetlands and offset onfarm wetland losses.

This alternative is beyond the authority and jurisdiction of the SCS. Alternative 6 was not selected because it is contrary to state water law regarding beneficial use of water and does not have the support of the State of Wyoming.

The following graph is an economic display of annual benefits and costs for Alternative 6.



Alternative 7 - Low-Pressure Sprinkler, Individual Pumping (Selected Plan)

The Selected Plan indicates the following structures will be installed on 15,700 acres of irrigated land in the Big Sandy River Unit to reduce salinity in the Colorado River Basin:

- Distribution Pipeline and Risers
- Motor, Pumps, and Valves
- Low-Pressure Sprinkler Irrigation Systems
- Semi-Automated and Automated Border Irrigation Systems
- Irrigation-Regulating Reservoir and Wasteway System
- Voluntary Replacement of Fish and Wildlife Habitat Values

Annual electricity requirements for pumping will be about 3.2 million kilowatt hours. Actual acreage will vary depending on individual participation in the program. Participation will be voluntary and implemented through long-term contracts administered by the USDA-ASCS. Technical assistance for conservation planning, implementation of

planned practices, assistance to realize irrigation water management objectives, and installation of fish and wildlife practices will be provided by the SCS. A project team will consist of soil conservationists, an irrigation water management specialist, engineers, a biologist, civil engineering technicians, and soil conservation technicians. Additional technical assistance will be provided by the CES.

Implementation of the Selected Plan will increase onfarm irrigation efficiencies from an average of 39 percent to 68 percent. Deep percolation, evaporation, and drift loss from the sprinklers will account for the remaining 32 percent loss. Under project conditions, the onfarm irrigation efficiencies will reduce the total volume of water used in the project area. However, the volume of the off-farm conveyance loss will remain at about the same level. Thus, the efficiency of off-farm conveyance will be reduced from the present condition level of 82 percent to a level of 72 percent. The onfarm improvements therefore result in a project efficiency increase from 32 percent to 50 percent. As a result of increased irrigation efficiency, it is estimated that 52,900 tons of salt will not enter the Big Sandy River annually. This will amount to a decrease in salinity in the Green River at the town of Green River, Wyoming, of 27 mg/L or a decrease of 5 mg/L at Imperial Dam on the lower Colorado River.

Implementation of this alternative for salinity control will change flows in Bone Draw from perennial to intermittent. Bone Draw, located about 5 miles below the project, is a small tributary (0.5 mi) that flows 0.5-1.5 cfs of water from irrigation-induced saline seeps. The BLM and a sportsman's group have fenced and developed Bone Draw for a trout fry nursery. The trout fry nursery will be lost when flow conditions are reduced to a level incapable of supporting adult trout and hatchery supplied eggs.

If 15,700 acres participated in this alternative, about 3,775 acres of irrigation water induced and supplemented wetlands (USFWS Circ. 39, Types 1, 2, 3, 4, 9, and 10) will be affected. Reduced water supply will occur on about 1,010 acres of wetlands, and 2,765 acres of wetlands will be eliminated. The majority of these wetlands are Types 1, 2, and 9. Wildlife associated with these wetlands would adjust to the new conditions or relocate to other wetlands. Wildlife incapable of adjusting or relocating would be lost.

To offset losses, voluntary replacement of fish and wildlife habitat values foregone will include installing wetland enhancement measures (i.e., ponds, level ditches, nesting structures, livestock exclusion, seeding) on 860 acres of wetlands. Various conservation practices will need to be installed and implemented on 430 acres which will create and enhance wildlife habitat (vegetation) around ponds, regulating reservoirs, wasteways, ditches, field edges, and odd areas.

Excess water in the reservoir of an approximate average annual 20,500 acre-feet could be released on a schedule that will enhance fish habitat and reduce downstream flood damages. Release schedules, adjusted annually, could be instituted. Any release schedule requires the approval of the Eden Valley Irrigation and Drainage District and the State Engineer.

This alternative was selected for implementation because the agricultural benefits will exceed the landowners costs for installation and OM&R. The State of Wyoming also supports this alternative.

The following is an economic display of annual benefits and costs for Alternative 7, the Selected Plan.

Alternative No. 7

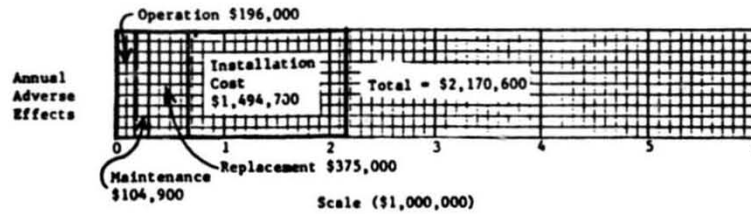
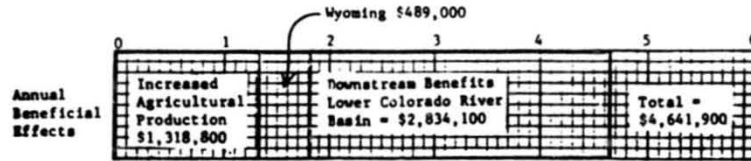


TABLE 2-1
 COLORADO RIVER BASIN SALINITY CONTROL PROJECT
 BIG SANDY RIVER UNIT - Wyoming
 SUMMARY OF ENVIRONMENTAL IMPACTS

ALTERNATIVE	Existing Total Acres Of Wetlands in the Big Sandy River Unit (ac)	Wetland Acres			Reservoirs ^{1/} Average Annual Surface Acres	Water Quality Salinity Reduction (mg/liter)		Big Sandy River Streamflow Changes (ac-ft/yr) ^{3/}		Bone Draw Flow Regime
		Lost	Water Regime Altered	Gained		Green River ^{2/}	Imperial Dam	Reach #1	Reach #2	
1. Future Without (No Action Alt.)	10,171	0	0	0	No Change	0	0	0	0	Perennial
2. Minimal Structural Improvements	10,171	0	3,775	0	Slight Increase	1	0.2	+ 2,490	0	Perennial
3. High Pressure Sprinkler (Individual Pumping)	10,171	2,765	1,010	NA ^{4/}	Increase	27	5	+ 20,470	0	Intermittent
4. Automate Border (90%) High Pressure (10%)	10,171	130	3,445	NA ^{4/}	Increase	22	4	+ 17,860	0	Intermittent
5. Irrigation Retirement	10,171	2,765	1,010	NA ^{4/}	Increase	67	15	+ 57,620	+ 26,190	Ephemeral
6. Saline Water Pumping (Sublette Flats - Env. preferred Alt.)	10,171	0	0	8,000 ^{5/}	Substantial Increase ^{5/}	39	6	0	- 13,400	Intermittent
7. Low Pressure Sprinkler (Individual Pumping - Selected Alt.)	10,171	2,775	1,010	NA ^{4/}	Increase	27	5	+ 20,470	0	Intermittent

Price Index: 1986 Discount Rate at 8 5/8 APR

^{1/} Big Sandy and Eden Reservoirs

^{2/} Green River at the town of Green River

^{3/} Reach #1 is from Big Sandy Reservoir to Big Bend; Reach #2 is from Big Bend to Green River

^{4/} Not included is the quantity of wetlands created by voluntary replacement, installation of regulating reservoirs, stock ponds, and pumping pits.

^{5/} Includes 8,000 acres created by pumping into Sublette Flats

TABLE 2-2
 COLORADO RIVER BASIN SALINITY CONTROL PROJECT
 BIG SANDY RIVER UNIT - Wyoming
 SUMMARY OF ECONOMIC & SOCIAL WELLBEING IMPACTS

ALTERNATIVE	Salinity Reduction ton/yr	Estimated Total Cost (\$1,000)	Average Annual Cost ^{1/} (\$1,000)	Cost/Ton of Salt Removed		Average Annual Benefits			Increased Electrical Demand (1000KWH)	Increased Employment to Wyoming ^{4/} (man/yr)	Social Well Being ^{3/}
				Total (\$)	Federal (\$)	Salinity		Agric. Products (\$1,000)			
						Wyoming (\$1,000)	Lower Colo. (\$1,000)				
1. Future Without (No Action Alt.)	0	0	0	0	0	0	0	0	0	---	
2. Minimal Structural Improvements	2,700	1,858.5	232.7	102.41 ^{2/}	52.82 ^{2/}	22.0	103.2	124.2	0	27	---
3. High Pressure Sprinkler (Individual Pumping)	52,900	22,143.1	3,020.5	57.93 ^{2/}	26.42 ^{2/}	489.0	2,834.1	1,318.8	8,695	30	A,B,C
4. Automate Border (90%) High Pressure (10%)	42,600	16,746.1	2,292.4	54.84 ^{2/}	25.85 ^{2/}	326.6	2,341.0	326.8	1,230	346	A,B,C
5. Irrigation Retirement	124,900	26,767.8	2,391.3	19.15	18.78	1,235.8	8,275.6	0	86	0	A,B,C
6. Saline Water Pumping (Sublette Flats - Env. preferred Alt.)	81,300	15,638.8	2,069.1	25.45	25.45	706.8	3,571.0	0	12,051	280	D,E,F
7. Low Pressure Sprinkler (Individual Pumping - Selected Alt.)	52,900	17,053.0	2,170.6	41.86 ^{2/}	19.09 ^{2/}	489.0	2,834.1	1,318.8	3,238	306	A,B,C

Price Index: 1986 Discount Rate at 8 5/8 APR

^{1/} Average Annual Cost includes O&M costs for the alternative.

^{2/} Includes \$43,800 annual cost for SCS monitoring & Evaluation.

^{3/} SOCIAL WELL BEING LEGEND:

A - Improved fishing opportunities on Big Sandy River
 B - Improved fishing opportunities on Big Sandy & Eden Reservoirs
 C - Improved waterfowl hunting on Big Sandy & Eden Reservoirs

D - Improved waterfowl hunting on private lands
 E - Develop public hunting area on Sublette Flats
 F - Improve birdwatching opportunities

^{4/} From construction of salinity control practices only. Construction employment from powerline installation is not included.

Other Alternatives

Other alternatives were evaluated and after scoping were no longer considered to be reasonable alternatives for further analysis. Some of the rationale for their elimination from further study are presented below.

- Entire Project Area Sprinkler Irrigated (pumping plant at Big Sandy Dam, entire distribution system in pipeline)
 - Landowner costs exceeded agricultural benefits
- Entire Project Area Sprinkler Irrigated (six separate pumping plants and distribution system)
 - Landowner costs exceeded agricultural benefits
- Fifty Percent of Cropland Irrigated by Automated Border and Fifty Percent by Sprinkler
 - Landowner costs exceeded agricultural benefits
- Land Retirement (acquisition of private land)
 - Not supported by the State of Wyoming
 - Beyond the authority of the SCS
- Irrigation Water Reduction (mandatory reduced water delivery)
 - Not supported by the landowners or the State of Wyoming
 - Beyond the authority of the SCS
 - Contrary to State water law
- Combination of Automated Borders and Sublettes Flat
 - Contrary to State water law and not supported by the State of Wyoming
 - Beyond the authority of the SCS

CHAPTER 3

SELECTED PLAN AND INSTALLATION

Selected Plan

The Selected Plan (Alternative 7) describes and evaluates a voluntary installation of modernized irrigation systems with individual onfarm pumping on 15,700 acres. An 85 percent participation rate is expected. The predominant type of installation will be low-pressure sprinkler irrigation systems, but may also include installation of automated border irrigation systems on odd-shaped or smaller fields not suitable to sprinkler irrigation. For cost estimating purposes, sprinkler irrigation systems were used since an analysis indicated no significant difference between low-pressure sprinkler and automated-border systems. The Selected Plan also provides for the voluntary replacement of fish and wildlife values which may be impacted.

The cost-shared salinity control, soil conservation, and fish and wildlife practices to be used in the implementation of the salinity control project are found in Table 3-1. This table also includes practices the irrigators may be required to install without cost-share assistance to achieve project objectives.

It was recognized during plan formulation that there may be smaller areas within the project that contribute somewhat greater salt loadings. However, no attempt was made to prioritize the project into smaller treatment units. This decision was made because the project is compact, well defined, and the Big Sandy River is the single outlet for water leaving the project area. This decision also recognizes that for maximum salinity control benefits to be realized, implementation needs to occur throughout the project area.

In determining project costs, the following assumptions were made:

- 1 - The power for onfarm pumping will be entirely electricity. This requires installation at local cost of a three-phase power line into the valley and to individual farm units.
- 2 - Side-roll-type low-pressure sprinkler systems will be installed on 15,700 acres of the 18,370 acres of water-righted acres in the project. NOTE: On odd-shaped and smaller fields, semiautomated- and automated-border systems will likely be installed at approximately the same installation costs. Also see footnote 1, Table 3-4.
- 3 - Individual onfarm pumping will be done by each irrigator from water supply canals, laterals, or reservoirs. No cooperative efforts by irrigators were assumed; however, this may likely occur.
- 4 - Pumping costs, based on information supplied by the Bridger Valley Power Company, were calculated on placing approximately 2 acre-feet of water per year on the fields to meet water requirements of the most common crops grown in the valley.

TABLE 3-1 LIST OF SALINITY CONTROL, FISH AND WILDLIFE, AND SOIL CONSERVATION PRACTICES

Colorado River Basin Salinity Control Project
Big Sandy River Unit - Wyoming

Practice Name and Unit

1. Practices eligible for cost-share
 - Critical Area Treatment (ac.)
 - Diversion (ft.)
 - Fencing (ft.)
 - Field Border (ft.) - (wildlife)
 - Fish Stream Improvement (ft.)
 - Grade Stabilization Structure (no.)
 - Grassed Waterway or Outlet (ac.)
 - Irrigation Canal or Lateral (ft.)
 - Irrigation Field Ditch (ft.)
 - Irrigation Land Leveling (ac.)
 - Irrigation Pit or Regulating Reservoir (no.)
 - Irrigation System - Trickle (no. and ac.)
 - Irrigation System - Sprinkler (no. and ac.)
 - Irrigation System - Surface & Subsurface (no. and ac.)
 - Irrigation Water Conveyance (ft.)
 - Land Smoothing (ac.)
 - Pipeline - Irrigation (ft.)
 - Pond (no.) - (wildlife)
 - Pond Sealing or Lining (no.)
 - Pumping Plant for Water Control (no.)
 - Sediment Control Basin (no.)
 - Streambank and Shoreline Protection (ft.)(fisheries and wildlife)
 - Structure for Water Control (no.)
 - Tree Planting (ac.) - (wildlife)
 - Wildlife Upland Habitat Management (ac.) -
(development and enhancement)
 - Wildlife Wetland Habitat Management -
(development and enhancement)

2. Other noncost-share practices that may be required
 - Conservation Cropping System (ac.)
 - Conservation Tillage System (ac.)
 - Crop Residue Use (ac.)
 - Irrigation Water Management (ac.)
 - Livestock Exclusion (ac.) - (wildlife)
 - Pasture and Hayland Management (ac.)
 - Pasture and Hayland Planting (ac.)
 - Toxic Salt Reduction (ac.)
 - Well (no.)

Funding and Cost-Sharing Policy

P.L. 93-320 was amended in 1984 by the U.S. Congress and signed into law on October 30, 1984, as P.L. 98-569. P.L. 98-569 states, in part, that the federal cost-share level be limited to a maximum of 70 percent, unless the Secretary of Agriculture determines that such a requirement would result in a failure to start needed onfarm measures. A minimum of 30 percent cost sharing is required from local sources.

The Selected Plan has been developed using a 70 percent federal and 30 percent local cost-share rate for eligible salinity control and fish and wildlife habitat replacement practices (see Table 3-2) even though the off-farm salinity benefits are greater than 70 percent.

An analysis was completed of potential sources available to the irrigators to secure loans for their share of implementation costs. Contacts were made with FmHA, FLB-PCA, Wyoming Economic Development and Stabilization Board, Wyoming State Farm Loan Board, and the Wyoming Water Development Commission. The results of interviews with officials from these agencies and lending institutions indicate that all, except the Wyoming Water Development Commission, have loan programs available that could be utilized either individually or collectively.

Water

The Selected Plan shows that irrigation diversion requirements are to be reduced by approximately 20,500 ac. ft. per year. It was not the intent or within the authority of SCS to determine the use of any saved water. The Wyoming State Engineer allocates water for all uses within the State of Wyoming. Any additional allocations may require a separate salinity and environmental analysis. It should be noted this so called "saved water" is not additional water to the Big Sandy River system. Instead of the water flowing from the irrigated area and then back into the river, it will be available for release from the reservoirs when the storage facilities are anticipated to fill or are full.

Installation Costs

The total estimated cost to be expended during the installation period of the Selected Plan is \$18,103,000.

Structural work is estimated to cost \$16,330,500, which includes \$11,010,900 for installation of the onfarm improved irrigation systems, \$691,900 for construction of the irrigation wasteway and regulating reservoir systems, \$2,298,700 for construction of a three-phase power line into the valley and to individual farms, and \$2,329,000 for technical assistance supplied by the SCS to plan and install the works of improvement.

Fish and wildlife habitat will be replaced through a cost-shared, voluntary effort for development and enhancement measures. These measures may include ponds, pond lining, islands, level ditching, field

TABLE 3-2 SELECTED PLAN - INSTALLATION COST DISTRIBUTION

Colorado River Basin Salinity Control Project
Big Sandy River Unit - Wyoming

Item	Installation Cost Federal Salinity Funds			Installation Cost Other Funds			Total Install- ation Cost	
	Installation	Technical Assistance	Land Rights	Total Salinity Cost	Installation	Land Rights		Total Other Costs
Distribution Pipeline and Risers	2,965,100	847,200	-	3,812,300	1,270,700	-	1,270,700	5,083,000
Motor, Pumps, and Valves	369,000	105,400	-	474,400	158,100	-	158,100	632,500
Wheel-Move Side-Roll Sprinklers	4,373,600	1,249,600	-	5,623,200	1,874,400	-	1,874,400	7,497,600
Wasteway and Regulating Reservoir System	443,700	126,800	-	570,500	190,200	58,000	248,200	818,700
Powerline to Eden Valley Project			-		1,883,500	-	1,883,500	1,883,500
Sub-Powerlines and Accessories to Farms			-		415,200	-	415,200	415,200
Wildlife Habitat Management	414,700	130,100	-	544,800	177,700		177,700	722,500
GRAND TOTAL	8,566,100	2,459,100 ^{1/}	-	11,025,200	5,969,800	58,000	6,027,800	17,053,000 ^{1/}

Price Index: 1986

^{1/} Does not include technical assistance for CES (\$550,000) and salinity monitoring (SCS - \$500,000).

borders, tree and shrub planting, food production areas, nesting cover, fencing, and livestock exclusion. The cost for development and enhancement of wildlife habitat measures is estimated to be \$722,500. This figure includes \$592,400 for construction and \$130,100 for technical assistance. For a more complete reference of estimated costs, see Table 3-3.

Other implementation costs for the project are estimated at \$1,050,000. This includes \$550,000 for the CES to carry out an information and education program and \$500,000 for the SCS to monitor and evaluate the project's effect on the Big Sandy River salinity.

Table 3-3 SELECTED PLAN - PROJECT INSTALLATION COST ANALYSIS

Colorado River Basin Salinity Control Project
Big Sandy River Unit - Wyoming

Project Component Cost	Federal Cost	Non-Federal Cost	Total Cost
Installation of Onfarm Irrigation Systems	\$ 7,707,700	\$ 3,303,200	\$11,010,900
Wasteway and Regulating Reservoir	443,700	248,200	691,900
Voluntary Fish and Wildlife Habitat Replacement	414,700	177,700	592,400
Power Line Installation	0	2,298,700	2,298,700
Technical Assistance (SCS)	2,459,100	0	2,459,100
Information and Education (CES)	550,000	0	550,000
Monitoring and Evaluation (SCS)	500,000	0	500,000
Totals	\$12,075,200	\$ 6,027,800	\$18,103,000

Price Index: 1986

Onfarm Irrigation Water Management

The Selected Plan of low-pressure sprinkler irrigation systems and other irrigation water management practices should increase onfarm irrigation efficiency by approximately 29 percent. This change will reduce deep percolation to the ground water aquifer by about 20,470 acre-feet per year. See Table 3-4 for the Present Condition vs. Future With Implementation of the Selected Plan.

TABLE 3-4 PRESENT CONDITION VS. FUTURE WITH PROJECT

Colorado River Basin Salinity Control Project
Big Sandy River Unit - Wyoming

	Present (1986)	Future With Project	Difference
Water-Righted Acres	18,370	18,370 <u>1/</u>	0
Irrigated Acres	15,700	15,700 <u>1/</u>	0
Conveyance Efficiency Percent	82	72 <u>2/</u>	-10 <u>2/</u>
Onfarm Efficiency Percent	39	68	+29
Annual Salt Load (Tons/Year)	157,570	104,670	-52,900
Salt Load From Irrigation (Tons/Year)	142,250	89,350	-52,900

1/ There are 18,370 water-riighted acres in the project area that receive water sometime during any 5-year period. But, due to limited water supply and with present irrigation efficiencies, only 15,700 acres receive water any one year. It is assumed that approximately 85 percent of the 18,370 water-riighted acres will have salinity plans at the end of the installation period.

2/ Assuming canals and laterals to continued seepage loss at an average of 10,200 ac-ft/yr. Reducing onfarm diversion requirement will result in a higher percentage of the total amount of water required being lost in the conveyance system.

Reducing the amount of waterflow through the underground aquifer will reduce the total dissolved solids (TDS) to the Big Sandy River by 52,900 tons/year. This translates to a reduced TDS of 27 mg/L in the Green River at Green River, Wyoming, and 5 mg/L in the Colorado River at Imperial Dam, California. This constitutes the downstream salinity reduction benefits as a result of implementing the Selected Plan.

Economic Benefits

Onfarm benefits will result from increased hay production of about 2 tons per acre per year. This value is based on actual interviews with landowners who are currently using low-pressure sprinkler systems in the project area. The actual average yields increased by more than 2 tons of hay annually for those interviewed, but for project analysis only 2 tons per acre were used. Present average yields of alfalfa vary from 1.6 tons/acre to 3.7 tons/acre. Increased yields are being realized because crops grown under low-pressure sprinkler systems start and grow

faster during the first 2 or 3 weeks in the spring. Low-pressure sprinklers allow irrigators to apply only the amount of water the crops need to begin growth, which provides the benefit. The low-pressure sprinkler method does not cool the soil like the present methods of irrigation. Flood irrigation early in the spring, in order to fill the soil profile, uses large quantities of very cold water, which reduces soil temperatures and slows plant growth. Low-pressure sprinkler irrigation thus provides a longer growing season and often a second cutting of hay is obtained annually. In addition to the increased yields, irrigators are able to grow pure stands of alfalfa and other high-value crops.

Installation of planned measures increases the average annual agricultural net benefits from \$159 per acre to \$243 per acre. This results in an \$84-per-acre or \$1,318,800 annual net benefit to the landowners of the 15,700 acres.

The publication, "Cost of Producing Crops in the Eden-Farson Area of Wyoming," was used extensively during the planning of this project. One must realize that landowners have their own set of financial circumstances and must consider them prior to committing to a salinity control contract. The SCS and the CES will provide economic and informational technical assistance to individual landowners requesting help regarding their participation in the program. The landowner is under no obligation to participate in the salinity project.

Installation of planned measures reduces average annual salinity damage to the Lower Colorado River Basin by \$2,834,100 and to the Green River in Wyoming by \$489,000. The benefits for the Lower Colorado River Basin were based on the 1986 value of \$566,820 per year per mg/L of salinity reduction at Imperial Dam, California. The \$566,820 per mg/L was derived from damage estimates and control program impacts prepared by a consortium of Water Resources Centers in Arizona, California, Colorado, and Utah. The benefits on the Green River were based on interview data with the Jim Bridger Power Plant, Trona Plants near Green River, and the towns of Green River and Rock Springs. Reduced water treatment costs to these industries and towns is estimated to be \$18,335 (1986 value) per mg/L.

Average annual project costs are estimated to be \$2,170,600 (50 years at 8 5/8 percent interest). The net beneficial effect of the project is \$2,471,300 annually. See Table 3-5 for a more complete reference of costs and benefits of the Selected Plan.

Installation

The project will be installed over a 9-year period. SCS technical assistance will begin 1 year prior to installation of salinity control practices and continue for 2 years after the practices have been installed. The installation schedule for the Selected Plan is shown in Table 3-6. The SCS will assist program participants with the development of individual or group salinity control plans (SCP). These plans will identify the type and extent of practices needed for salinity control and those for the voluntary

TABLE 3-5 SELECTED PLAN - AVERAGE ANNUAL COST-BENEFIT ANALYSIS

Colorado River Basin Salinity Control Project
Big Sandy River Unit - Wyoming

<u>ANNUAL ADVERSE EFFECTS</u> ^{1/}			
ITEM	ANNUAL PROJECT COSTS	ANNUAL FEDERAL COSTS	ANNUAL LOCAL COSTS
1 - Installation	\$1,279,200	\$750,800	\$ 528,400
Total Cost - \$14,593,900			
Federal Cost - \$8,566,100			
Local Cost - \$6,027,800			
2 - Technical Assistance (\$2,459,100)	215,500	215,500	0
3 - Operation	196,000	0	196,000
4 - Maintenance	104,900	0	104,900
5 - Replacement	375,000	0	375,000
TOTAL ADVERSE EFFECTS	\$2,170,600	\$966,300	\$1,204,300
<u>ANNUAL BENEFICIAL EFFECTS</u> ^{1/}			
A. Downstream Salinity Reduction			
1 - Lower Colorado River Basin	\$2,834,100		
2 - State of Wyoming	489,000		
B. Increased Agricultural Production	1,318,800		
TOTAL BENEFICIAL EFFECTS	\$4,641,900		
NET BENEFICIAL EFFECTS OF SELECTED PLAN	\$2,471,300		

SELECTED PLAN IMPACTS:

- Reduce salt loading by 52,900 tons or 5.00 mg/L annually.
- Annual cost per mg/L = \$434,120 (project) or \$193,260 (federal).
- Cost per ton of salt reduction = \$41.03 (project) or \$18.27 (federal).
- SCS monitoring cost of \$500,000 (annual = \$43,800) and Ag Extension Service information and education cost of \$550,000 (annual = \$48,200) not included in average annual cost-benefit analysis.

^{1/} 50-year life at 8 5/8 percent interest (0.08625).

Price Index: 1986

TARIF 3-6 SELECTED PLAN - INSTALLATION SCHEDULE

Colorado River Basin Salinity Control Project
Big Sandy River Unit - Wyoming

Activity	1st Year		2nd Year		3rd Year		4th Year		5th Year		6th Year		7th Year		8th Year		9th Year		10th Year		11th Year		12th Year		13th Year		Total All Funds	
	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other		
Powerline Installation	470.5		1,404.9		51.9		51.9		51.9		51.9		51.9		51.9		51.9		51.9		51.9		51.9		51.9		51.9	2,790.7
Canal Restroom and Regulatory Reservoir System			88.7	49.6	88.7	49.6	88.9	49.8	88.7	49.6	88.7	49.6																691.9
Onfarm Irrigation Water Management Practices			539.5	251.2	524.9	266.4	1,232.2	526.5	1,404.5	627.6	1,387.4	594.6	524.9	266.4	770.8	239.3	662.5	198.2										11,018.9
Voluntary Wildlife Replacement			29.8	12.4	49.8	21.3	88.4	38.4	78.8	35.8	74.9	32.8	49.8	21.3	41.5	17.8	24.9	10.7										592.4
Technical Assistance (SCS) Installation Monitoring and Evaluating	146		362.8		327.5		382.8		382.8		248.1		248.1		174.7		174.7		65		65							2,459.1
Information & Education (Ag Extension Service)			55		55		55		55		55		55		55		55		55		55		55		55		55	550
TOTAL	226	470.5	1,804.2	1,738.1	1,485.9	519.2	1,885.5	688.6	2,189.8	752.9	1,989.7	728.1	1,389.8	689.6	1082.8	688.8	757.1	288.8	148		148		20		20		18,101.8	

Note: All costs shown in \$1,000 units.
Price Index: 1985

Total Federal Cost = \$11,788.9
Total Local Cost = \$ 5,985.9

replacement of fish and wildlife values. Planned practices that are applicable to each farm or operating unit will be included in a long-term salinity control contract based on the SCP's between the USDA and the landowner.

The installation of the proposed canal and lateral wasteway and regulating reservoir systems will be an off-farm installation. They will be installed in stages as onfarm project participation develops in specific areas. Upon completion of onfarm salinity control measures, it is estimated that four to six wasteways and four to seven regulating reservoirs will have been installed to provide Eden Valley Irrigation and Drainage District with the ability to efficiently manage their irrigation system. The wasteways will control the 400 cfs flow in the canals and laterals by dumping water into 15 to 20 miles of intermittent flowing natural drainages if the area suffers extensive power outages. The regulating reservoirs will regulate canal flows and will be lined. They will have a water surface area of 150 to 300 acres and regulation storage capacity of 200 to 300 acre feet. The wasteways and regulating reservoirs will be located throughout the project area.

The SCS will provide technical assistance for designing, constructing, and certifying completion of practices identified in the long-term contracts. The ASCS will administer the cost-share provisions of the long-term contracts.

Conflicts between improved irrigation and loss of wetlands will be identified as part of the case-by-case environmental evaluation which SCS does routinely for every action. SCS wetland policy (7 CFR Part 650.25) requires land users be advised of alternatives to avoid or replace the incidental loss of wetlands. Replacement measures, insofar as practicable, will ensure that wetland habitat values obtained are equivalent to those lost. SCS provides assistance only if the alternatives selected for installation or adequate replacement have been or will be accomplished in the salinity control area. Provisions for managing these established wetlands will be made to ensure wetland habitat values obtained remain equal to or greater than those lost insofar as practicable. Persons, organizations, or agencies other than the land user may assume these management responsibilities. SCS encourages land users and project sponsors to consider and use programs of other federal, state, and local agencies and private organizations to preserve and enhance wetlands.

The SCS state conservationist may grant written exceptions to the SCS wetland protection rules on a farm-by-farm basis for installing irrigation water management, water conservation, water quality, or erosion control systems, or where small, low-value wetlands occur as minor inclusions within cropland, hayland, or pastureland fields. The exceptions must be based on documented findings that--

- 1) there are no practicable alternatives to the proposed activity, and
- 2) the proposed actions include all practicable measures to minimize any resulting loss to wetlands.

The WGFD has agreed to assist SCS in the design and location of fences and power lines to minimize hazards to whooping and sandhill cranes. In addition, SCS and WGFD will work together in the design and location of major wetland development, enhancement measures, and irrigation-regulating reservoirs. In addition, the SCS and WGFD will work with the irrigation district and the state engineer to explore and develop fish and wildlife habitat potentials relating to the operation of the Big Sandy and Eden Reservoirs.

Wherever possible, location of structural measures will avoid prairie dog colonies, the preferred habitat of black-footed ferret habitat. However, should a needed structural measure site contain a prairie dog colony, the SCS will consult with the WGFD and USFWS to eliminate the possibility of adversely impacting an area used by black-footed ferrets. The SCS will also conduct cultural resource reviews and surveys according to SCS rules and regulations (7 CFR 656) during individual onfarm salinity control planning and when specific project construction sites are identified.

Monitoring and Evaluation

Three general purposes for monitoring and evaluation activities are to--

- (a) Collect salinity control data;
- (b) Evaluate the effect of salinity reduction practices on salt load reduction; and
- (c) Verify project effectiveness, costs, economic benefits, and impacts on wildlife habitat.

The SCS will monitor and evaluate the salinity project throughout the installation period. Reduction of saline water flow into the Big Sandy River will take a period of time to be realized. Therefore, salinity reduction monitoring is to be continued for several years after the last salinity control measures are installed.

Technical Assistance

Providing technical assistance to implement the Selected Plan can be separated into three categories:

- 1 - Technical assistance for salinity control and conservation planning, implementation of planned practices, assistance to realize irrigation water management objectives, and installation of fish and wildlife practices. This technical assistance will be provided by the SCS. It is anticipated the SCS project team will consist of soil conservationists, irrigation water management specialists, engineers, biologist, civil engineering technicians, and soil conservation technicians. The staff will range from one to seven positions during the implementation period. Team makeup may also vary

during the implementation period with a greater need for planning assistance initially and for engineering assistance later in the implementation period. Appropriate disciplines will be involved in team activities prior to field planning. The WGFD will assist in design and installation of fish and wildlife habitats as their budget and program activities allow.

- 2 - Technical assistance for information and education (I&E) activities will be provided by the CES. I&E activities will include tours, demonstrations, distribution of irrigation water management information, assistance in developing irrigation scheduling programs, and crop water budgets. An extension specialist position will be established in the project area for a 10-year period to carry out these I&E activities.
- 3 - Technical assistance for monitoring and evaluating (M&E) the effectiveness of the implemented Selected Plan to reduce salt loadings will be provided by SCS. Efforts will concentrate on determining the impacts of improved irrigation water management and deep percolation on reducing salinity concentrations of the Big Sandy River system. This will be accomplished by monitoring total discharges from the Big Sandy River using data from established gauging stations as well as monitoring deep percolation from selected individual irrigation systems. To complete this effort will require from 0.5 to 1.0 staff years for 13 years.

Annual Report of Accomplishments

A report of accomplishments will be prepared annually summarizing accomplishments for the preceding year. The SCS has leadership responsibility for preparing the report. Information and data from various local, state, and federal agencies involved in this effort will be incorporated into a single report. The report will describe the amount of salinity control and conservation treatment installed, federal and local cost associated with installing treatment, effects of the treatment, impacts on wetland and terrestrial wildlife habitat, and progress of voluntary wildlife habitat replacement. A copy of the report will be provided to all local, state, and federal agencies involved in this effort.

Nondiscrimination

The salinity control program will be carried out in compliance with all requirements respecting nondiscrimination as contained in the Civil Rights Act of 1964, as amended, and the regulations of the Secretary of Agriculture (7 CFR 15.1-15.12), which provides that no person in the United States shall, on the grounds of race, color, national origin, sex, religion, age, physical or mental handicap, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any activity receiving federal financial assistance.

CHAPTER 4

AFFECTED ENVIRONMENT

Location and Land Ownership

The Big Sandy River Unit is located in southwestern Wyoming, approximately 30 miles north of the town of Green River. The study area encompasses parts of Sublette, Fremont, and Sweetwater Counties. The watershed, as outlined in Figure 4-1, is made up of two major drainages--the Big Sandy River and Little Sandy Creek. The Big Sandy River is a left-bank (looking downstream) tributary of the Green River.

The total watershed area is 1,918 square miles (1,227,520 acres) with 758 square miles in Sublette County, 91 square miles in Fremont County, and 1,069 square miles in Sweetwater County. Included in the Big Sandy Unit is a noncontributing area named Sublettes Flat lying directly north of the lower reach of the Big Sandy River.

The Big Sandy River and its major tributary, Little Sandy Creek, originate at elevations of about 13,000 feet mean sea level (msl) in the Wind River Range of the Bridger National Forest. These streams flow in a southwesterly direction--coming together within the irrigated area of Eden Valley near the community of Farson. From this confluence, the Big Sandy River continues southwesterly for another 26 miles before entering the Green River.

The Eden Valley Irrigation Project (Big Sandy River Unit) comprises about 90,000 acres of USBR withdrawal land, of which 18,370 acres are water-righted private lands. The remainder of land in the unit is owned by the State of Wyoming, USBR, BLM, and private citizens. Detailed investigation indicates approximately 15,700 acres are presently being irrigated on an average annual basis. The principal crops grown in order of acreage are alfalfa, other hay, pasture, and small grains.

Some 68 percent of the watershed is national resource lands administered by the BLM. About 15 percent is national forest land administered by the USFS and about 9 percent is USBR withdrawals for agricultural purposes. The remaining 8 percent is equally divided between private and state ownership.

The major land use is range or pasture lands which constitute 1,096,970 acres or 89.0 percent of the total watershed area. The forested land of the mountains totals 74,600 acres, of which 62 percent is suitable for grazing by domestic livestock. The water-righted cropland accounts for 18,370 acres or only about 1.5 percent of the area. No dry cropland exists in this area. Other land uses total 37,580 acres.

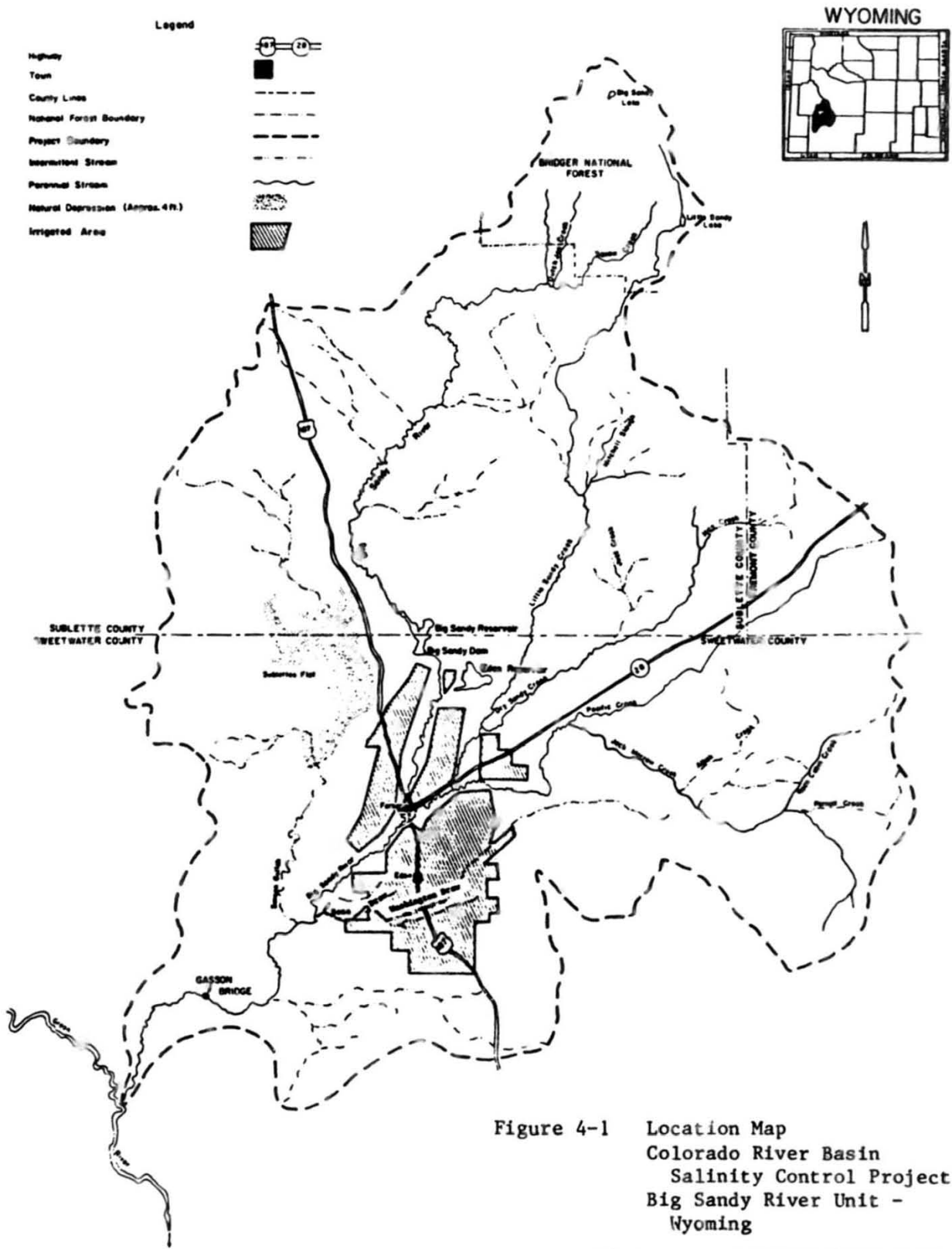
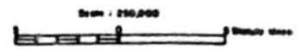


Figure 4-1 Location Map
 Colorado River Basin
 Salinity Control Project
 Big Sandy River Unit -
 Wyoming

FREMONT, SUBLETTE, SWEETWATER COUNTIES, WYOMING



Irrigation System Analysis, Including Water Quality, Water Budget,
Salt Budget, and Irrigated Land Use Distribution

During the irrigation system analysis, it was determined that the irrigated acreage in the project area continually changes. Table 4-1 defines the values, time periods, and relationships used in this report.

TABLE 4-1 HISTORIC EVALUATION VS. PRESENT CONDITION

Colorado River Basin Salinity Control Project
Big Sandy River Unit - Wyoming

	<u>Historic (1960-1977)</u>	<u>Present (1986)</u>
Water-Righted Acres	18,370	18,370
Irrigated Acres	14,320 ^{1/}	15,700
Conveyance Efficiency (Percent)	82	82
Onfarm Efficiency (Percent)	35	39 ^{2/}
Project Efficiency (Percent)	29	32
Annual Salt Load (Tons/Year)	149,180 ^{4/}	157,570 ^{3/}
Salt Load from Irrigation (Tons/Year)	133,860 ^{4/}	142,250 ^{3/}

^{1/} Average irrigated acreage from a low of 11,485 acres in 1961 to a high of 15,700 acres in 1976.

^{2/} The 4-percent increase of onfarm irrigation efficiency results from diverting a given average annual water supply of 57,620 acre-feet to 15,700 irrigated acres (present) instead of 14,320 irrigated acres (historic).

^{3/} Under present condition, the system is assumed to be in balance (no loss to ground water); therefore, outflow will increase from the historic outflow of 29,580 acre feet to present outflow of 31,430 acre feet. This increased outflow increases salt loadings to the river by 8,390 tons/year.

^{4/} Average value for 18-year evaluation.

A canal and lateral system analysis was conducted for the historic water record (1960 through 1977 irrigation seasons) on the Eden Valley Irrigation Project. This analysis indicated that 82 percent of the water diverted from the reservoirs is being delivered to the farms.

The average irrigation water requirement by crops grown in Eden Valley is estimated to be 1.17 acre-feet per acre for the 1960-77 evaluation period. The average irrigated acreage for this period was 14,320 acres. Dividing the irrigation water required by crops by the total water delivered to the farm, an average onfarm irrigation efficiency of 35 percent was derived. The overall project efficiency is approximately 29 percent, using an 82 percent conveyance efficiency (see Table 4-2).

The water not used by the irrigated crops (71 percent) can be accounted for by (1) phreatophyte use, including essentially all nonirrigated plants in the project area and along the river to Gasson Bridge, (2) evaporation from reservoirs and ponds, and (3) drainage ditch and deep percolation return flows to the Big Sandy River.

The irrigated acreage has expanded to 15,700 acres of the 18,370 water-righted acres being irrigated in 1986. The land use and irrigation system for the 15,700 acres is shown in Table 4-3.

The historic land use and the water requirements for irrigation were the basis for the water budget (see Table 4-4 and Figure 4-1A). This historic evaluation shows a significant change in species of forage grown over the 18-year period. The species of forage presently grown have proven to be the most efficient utiliziers of water. Over a long period, farmers have selected the species that are most adaptable to the 90-day growing season, soils, irrigation methods, and the available water supply. Historic data from USGS and the Eden-Farson Irrigation and Drainage District were used to develop Table 4-4.

Using the historic water supply and the 15,700 annual irrigated acres, the present onfarm efficiency is about 39 percent with a project efficiency of 32 percent. In addition, the water and salt budgets (see Table 4-5) show that during 1971-76 salt contributions were greater than the 1960-77 average. Using the present irrigated acreage and a balanced water budget, the revised annual salt budget produces 157,570 tons into the Big Sandy River. Under present conditions, it is estimated 142,250 tons of salt come from irrigation and 15,320 tons from runoff, erosion, and natural seeps. If irrigation in the project area were completely eliminated, contribution of salt from runoff, erosion, and natural seeps would increase to 32,720 tons. This increase results from lowering the water table, which allows natural interaction of river and aquifer flow to occur.

Water quality analyses show that flows into the unit area have low salinities. Samples from the Big Sandy River just upstream from Big Sandy Reservoir have shown a mean TDS concentration of 109 mg/L. Samples taken from Little Sandy Creek, above Eden, averaged 340 mg/L TDS concentration. Water quality decreases downstream through the unit area as a result of irrigation return flows and saline seep inflows to the river. The mean TDS concentration at Gasson Bridge is 2,200 mg/L.

TABLE 4-2 IRRIGATION WATER BUDGET FOR EDEN VALLEY IRRIGATION PROJECT FOR 1960-1977

Colorado River Basin Salinity Control Project
Big Sandy River Unit - Wyoming

Watershed Yield	Reservoir Evaporation	Total Water Diverted to Canals and Laterals	Average Irrigated Acreage	Canal and Lateral Losses	Farm Delivery	Onfarm Ditch Loss	Irrigation Water Requirement	Onfarm Irrigation Efficiency	Total Diversion Irrigation Efficiency
----- (Acre-Feet) -----				----- (Acre-Feet) -----			----- (Percent) -----		
88,570	6,810	57,620	14,320	10,210	47,440	5,220	16,720	35	29

TABLE 4-3 PRESENT IRRIGATION SYSTEM AND LAND USE DISTRIBUTION
EDEN VALLEY IRRIGATION PROJECT - 1985

Colorado River Basin Salinity Control Project
Big Sandy River Unit - Wyoming

Irrigation System And Land Use	Acres	Percent
<u>Border Irrigated</u> -----		
Small Grain	700	
Alfalfa Establishment	700	
Alfalfa	4,800	
Tame Hay	<u>4,900</u>	
TOTAL	11,100	70.7
<u>Sprinkler Irrigated</u> -----		
Small Grain	60	
Alfalfa Establishment	60	
Alfalfa	<u>480</u>	
TOTAL	600	3.8
<u>Sub-Irrigated</u> -----		
Small Grain	100	
Alfalfa Establishment	100	
Alfalfa	600	
Tame Hay	400	
Pasture	<u>300</u>	
TOTAL	1,500	9.6
<u>Combined Border-Sub-Irrigated</u> -----		
Small Grain	100	
Alfalfa Establishment	100	
Alfalfa	1,200	
Tame Hay	600	
Pasture	<u>500</u>	
TOTAL	2,500	15.9
<u>All Irrigation Systems</u> -----		
Small Grain	960	6.1
Alfalfa Establishment	960	6.1
Alfalfa	7,080	45.1
Tame Hay	5,900	37.6
Pasture	<u>800</u>	5.1
TOTAL	15,700	100.0

TABLE 4-4 WATER BUDGET, 1960-77
 Colorado River Basin Salinity Control Project
 Big Sandy River Unit - Wyoming

Year	Water Losses From Irrigation System				Change in Reservoir Storage 1/		Water Budget - Unaccountable Water 2/	
	Irrigation	Water	Surface	Total	Gain to	Loss to	Loss into	Gain from
	Requirement	Phreatophyte Use 3/	Evaporation	Losses	Storage	Storage	Irrigation System	Irrigation System
-----acre-feet----- (+)----- (+)----- (-)-----								
1960	12,691	17,570	2,270	32,531	160			8,630
1961	14,160	15,960	2,400	32,520	530			6,040
1962	18,970	17,460	5,790	42,220	8,260		21,220	
1963	17,590	15,520	5,500	38,610	870		9,480	
1964	16,430	14,610	5,800	36,840		5,220	9,990	
1965	13,550	11,250	6,850	31,650	31,220		13,470	
1966	18,020	14,780	8,070	40,870		29,570	460	
1967	15,370	12,150	7,510	35,030	14,800		8,120	
1968	14,130	10,490	8,710	33,330	6,520		6,240	
1969	16,620	13,300	8,730	38,650		15,120	8,530	
1970	16,600	13,020	6,320	35,940		6,170		1,020
1971	17,030	11,650	6,890	35,570	11,740		8,800	
1972	19,590	14,010	8,320	41,920	3,610		4,470	
1973	18,570	14,670	8,390	41,630	4,820			3,630
1974	21,590	17,190	9,270	48,050		8,450		3,870
1975	18,480	14,420	8,040	40,940	3,870		3,020	
1976	17,720	14,310	8,760	40,790		2,130	4,110	
1977	13,860	12,230	5,010	31,100		15,530		12,130
(Average 1960-77)	16,720	14,150	6,810	37,680	-230		3,470	

1/ Gain to storage would be a loss of water to the system for that year.

2/ Basic budget shows approximately 3,470 acre-feet per year of unaccountable water going into the irrigation system annually.

3/ Including nonirrigated plants such as sagebrush, saltbush, greasewood, trees, and native grasses using subsurface project waters.

Figure 4-1A

BIG SANDY RIVER UNIT SALINITY STUDY SCHEMATIC WATER BUDGET

Average Annual Volumes
(Acre-feet)
1960 - 1977 Period

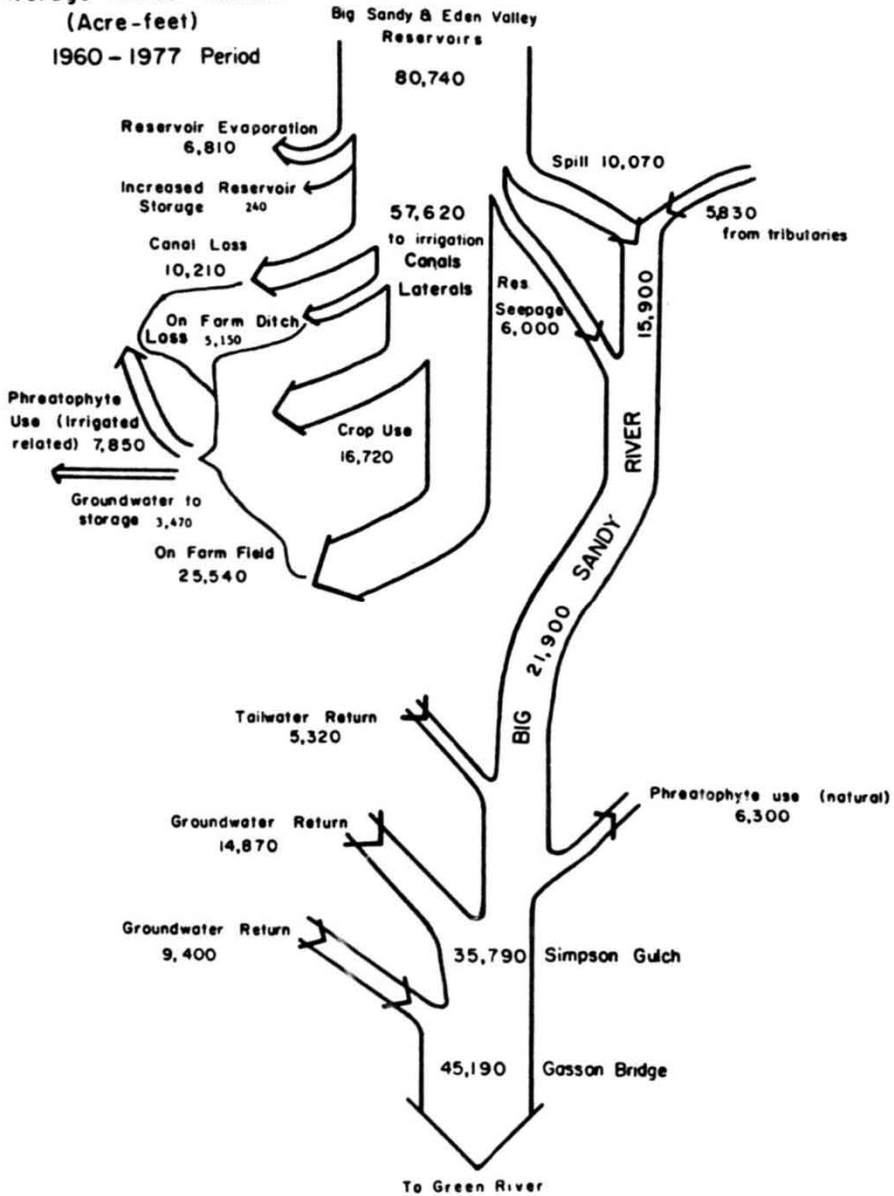


TABLE 4-5 SALT LOAD ANALYSIS 1960-77

Colorado River Basin Salinity Control Project
Big Sandy River Unit - Wyoming

Year	Water ^{1/} Volume at Casson Bridge ----- (ac-ft)	Water Volume at Simpson Gulch (ac-ft)	Difference in Volume -----	Salt ^{2/} Gain (tons)	Salt at Simpson Gulch (tons)	Salt at Casson Bridge (tons)
1960	16,990	11,145	5,845	46,530	37,800	84,330
1961	13,010	8,202	4,878	38,830	27,900	66,730
1962	35,520	26,516	9,004	71,670	52,500	124,170
1963	24,160	16,862	7,298	58,090	57,800	115,890
1964	26,940	19,159	7,781	61,940	58,700	120,640
1965	45,940	35,879	10,061	80,090	72,700	152,790
1966	49,280	38,960	10,320	82,150	75,100	157,250
1967	60,570	49,645	10,925	86,960	77,700	164,660
1968	49,640	39,290	10,350	82,390	78,600	160,990
1969	72,070	60,890	11,180	88,990	87,200	176,190
1970	30,580	22,240	8,340	66,390	68,300	134,690
1971	41,980	32,270	9,710	77,290	75,300	152,590
1972	76,110	64,970	11,140*	89,900	92,500	182,400
1973	58,170	46,690	11,480*	97,100	100,600	197,700
1974	65,850	54,350	11,500*	94,100	100,800	194,900
1975	57,910	47,820	10,090*	81,300	98,500	179,800
1976	54,400	44,060	10,340*	70,600	105,700	176,300
1977	34,150	25,280	8,870*	72,600	70,640	143,240
TOTAL					1,338,340	2,685,260
AVERAGE ANNUAL					74,350	149,180

^{1/} Computed from volume at Casson Bridge = 6.1045 x (Volume at Simpson Gulch)^{.85109}
(for 1960-71), measured flow 1972 through 1977.

^{2/} Mean annual salt concentration gain between Simpson Gulch and Casson Bridge
for the period of 1972-77 are actual measured values. The salt gain water factor
is estimated at 7.96 tons per acre-foot for the period 1960-71.

*/ Measured change from gauges.

Water quality in Bone Draw can vary considerably each year. Seasonal changes in water quality occur each year as indicated below.

BONE DRAW WATER QUALITY^{1/}

<u>Date</u>	<u>Temperature °C</u>	<u>pH</u>	<u>Hardness mg/L</u>	<u>Alkalinity mg/L</u>	<u>Conductivity</u>	<u>Turbidity</u>
8-11-77	21	8.5	924	317	4200	clear
10-4-77	8	8.4	2193	449	-	.9 cfs flow
4-6-78	16	9.0	1982	396	2900	.3 cfs flow
5-5-78	10	8.5	740	317	-	.9 cfs flow clear
9-2-81	11	8.5	1585	343	-	-
6-16-81	11.5	8.3	2008	370	-	-
3-15-82	6	7.7	1717	423	-	-

^{1/} Taken from data provided by the Bureau of Land Management, Big Sandy Resource Area.

Diffused Area Watershed Management

The evaluation indicates contribution of salt to the Colorado River system by rangeland above the irrigated cropland is generally low. Since only minimal salinity reduction benefits from improving range areas could be expected, no treatment measures have been proposed for this area.

Climate

The climate of the Eden-Farson area is classified as arid to semiarid. Precipitation ranges from 40 inches or more annually on the Wind River Mountain Range to about 7 inches annually for the irrigated area in Eden Valley. Due to low annual precipitation in the farmland area, irrigation is essential for crop production. Peak precipitation months are April, May, and June. The average monthly precipitation at Farson varies from 0.32 to 0.96 inches.

The common period of snowfall is from October to May, but snowfall may occur as early as September and as late as July. Rock Springs, located 40 miles south of Farson, averages 44.6 inches of snow annually with excesses of 80 inches recorded. Snow generally covers the ground during the winter months.

The high altitude and low relative low humidity cause considerable variance in temperatures. The mean annual temperature is 37°F with a recorded extreme range of -55°F to 95°F. Freezing temperatures have occurred in every month of the year. Assuming 28°F threshold temperature, there is only a 50-50 chance that the growing season will be as long as 85 days.

Geology

The plateaus and mountains in the Colorado River Basin are the product of a series of uplifted land masses deeply eroded by wind and water. However, long before the earth movements which created the uplifted land masses, the region was the scene of alternate encroachment and retreat of great inland seas. The sedimentary rock formations underlying large portions of the basin are the result of material accumulated at the bottom of these seas.

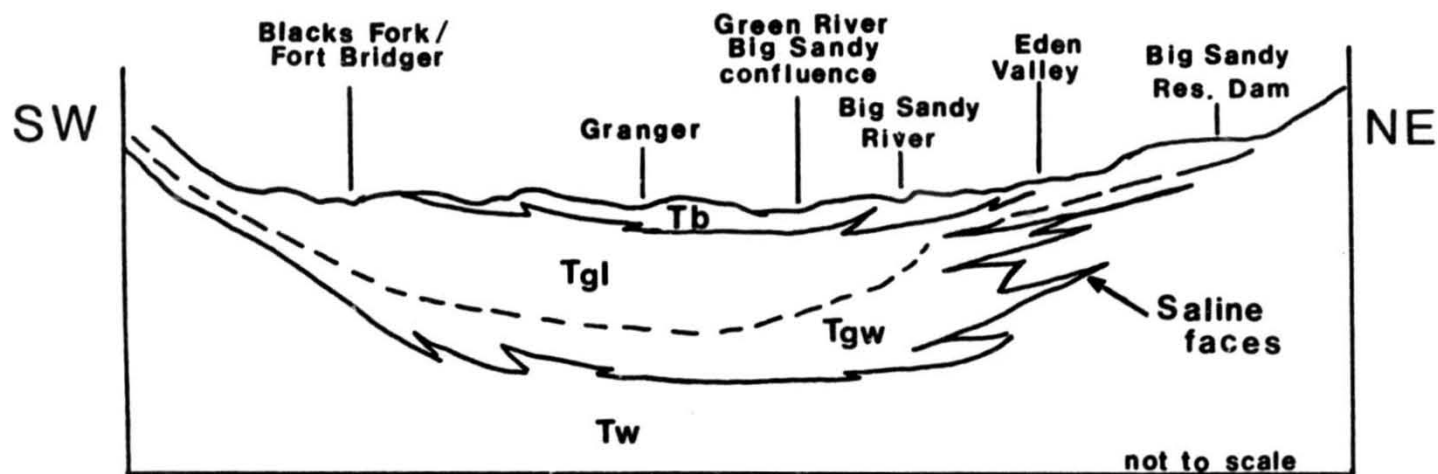
By the early part of the Tertiary Period, southwestern Wyoming had been uplifted, and warping and faulting of the crust was beginning to build mountains. The Green River Basin was formed at that time.

The rocks of the Green River Basin are a succession of fluvial (Wasatch and Bridger Formations) and lacustrine (Green River Formation) sediments. Erosion of the surrounding uplands resulted in thick deposits in the extensive alluvial plain and the lake, known as Lake Gosiute, within this intermontane basin. Fluctuations in the size of the lake resulted in the intertonguing of the Green River Formation with the Wasatch and Bridger Formations (see Figure 4-2).

During deposition of the Green River Formation, the climate fluctuated from humid to arid and back to humid again. During the arid time, the lake was much smaller and did not have an outlet which resulted in saline conditions. The Wilkins Peak Member is a thick sequence of carbonates with numerous occurrences of trona and saline evaporite deposits. As the climate became more humid, fresh water conditions again prevailed. Lake Gosiute reached its maximum size at that time and the thick shale deposits of the Laney Member were deposited.

As sediments filled Lake Gosiute, fluvial deposits of the Bridger Formation covered the Green River Formation. The environment during deposition of the Bridger was such that gypsum and salt were deposited in the contact zone with the Wilkins Peak Member of the Green River Formation.

Excessive irrigation in the project area results in deep percolation into the Bridger and Wilkins Peak contact zone around the margins of the prehistoric lake. This allows ground water recharge to interact with



LEGEND

Tb - BRIDGER FORMATION

Tgl - GREEN RIVER FORMATION - LANEY MEMBER

Tgw - GREEN RIVER FORMATION - WILKINS PEAK MEMBER

Tw - WASATCH FORMATION

Figure 4-2 Schematic section showing stratigraphic relationships between Wasatch, Green River, and Bridger Formations.

the salts in the Bridger Formation and with the saline facies in the Wilkins Peak Member. This interaction can result in high salt loading to the underground aquifer. The saline aquifer discharges into the Big Sandy River via seeps, springs, and uncapped wells between the irrigation project area and Gasson Bridge stream gauging station.

Soils

A detailed soil survey was conducted on the original USBR withdrawal area of the Eden Valley Irrigation Project during the early 1950's. Detailed surveys were again completed on most of the deeded lands in the 1960's, which were revised and the area completely soils mapped during 1982-84. A soil survey publication of lands within the boundaries of the Eden Valley Irrigation and Drainage District is currently being published. A very general soils investigation of the entire Big Sandy watershed was conducted during 1975-76 cooperatively by the BLM and the SCS.

Discussion of soils in this report is limited to the Eden Valley irrigation area. A General Soils Map with brief descriptions can be found in Figure 4-3.

Most of the irrigated soils are alluvial deposits of sandy loams over coarse sands or gravelly sands underlain by shale at depths mostly over 5 feet. Soils with shale at moderate depths occur in some areas. Small areas of wind deposited sand dune soils and heavy clay soils also occur. Also, soils shallow to shale bedrock occur in the surrounding uplands.

The sandy loam soils are suitable for irrigation with some limitations. The coarse texture soils have low waterholding capacity and moderately rapid to rapid permeability, causing low irrigation efficiencies under flood irrigation systems. The topography is nearly level to gently sloping with some microrelief. Land smoothing and leveling of this microrelief for more even distribution of irrigation water increases soil variability, particularly waterholding capacity and productivity.

Low waterholding capacity and moderately rapid to rapid permeability results in much of the water from the canals, ditches, and fields being lost to deep percolation. This waste water is retained or held up as a perched water table by the underlying shale. The water table above the shale has created wet soils conditions generally with accompanying salinity and alkalinity. Drainage ditches have been installed to drain some areas, but other areas would benefit if drainage were improved or deep percolation reduced.

Water erosion on the irrigated lands is generally not a problem as the topography is nearly level to gently sloping, except for gullies developing from waste water runoff and from water breaking out of ditches. Wind erosion is a problem with loamy fine sand, loamy sand, or fine sand when left unprotected during the critical wind erosion periods.

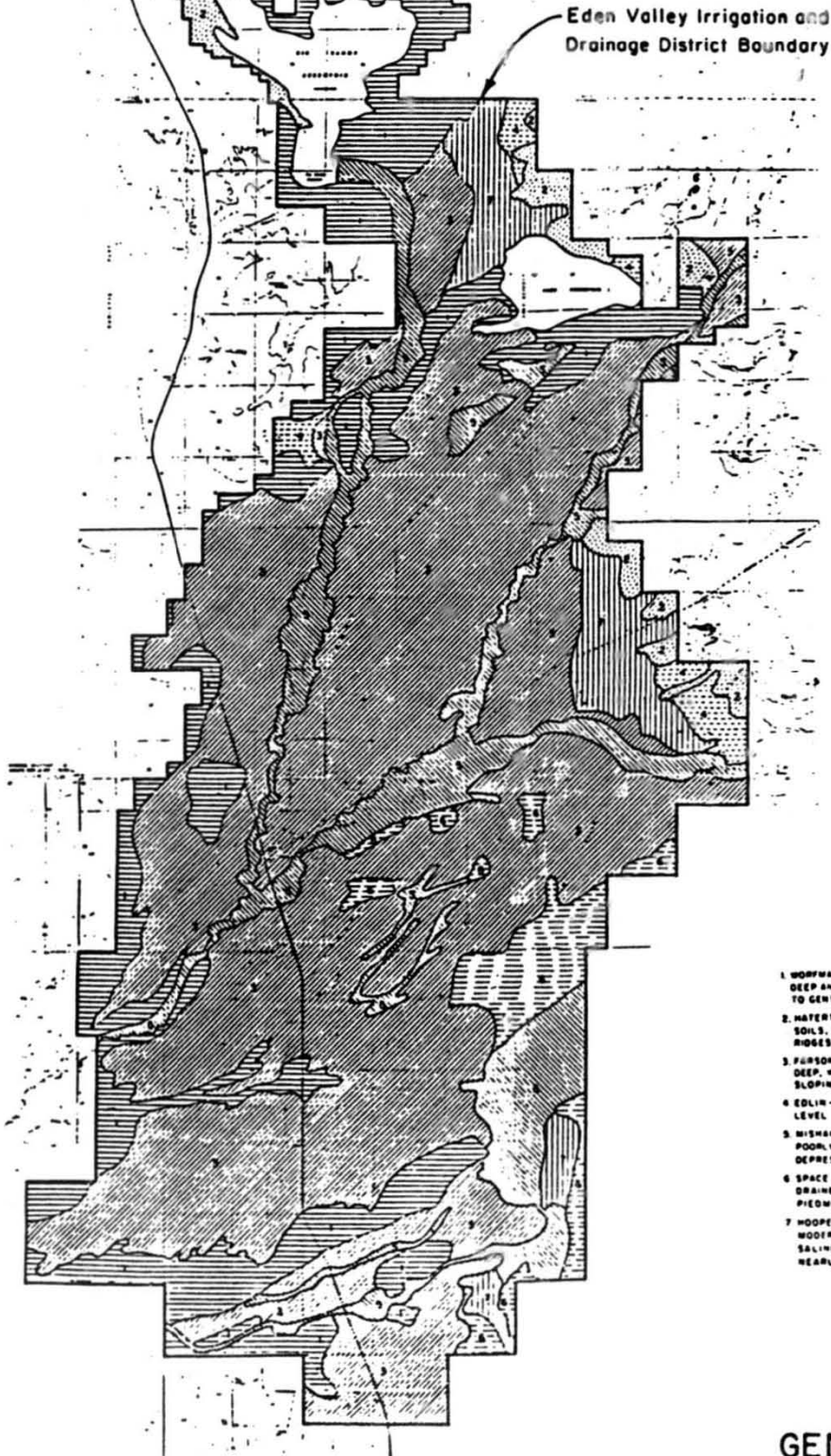


Figure 4-3

**GENERAL SOILS MAP
EDEN PROJECT AREA**

FREMONT, SUBLETTE, SWEET WATER COUNTIES, WYOMING

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Fish and Wildlife Resources

Although limited by seasonal low flows, lack of habitat, and poor water quality, the Big Sandy River from the Big Sandy Reservoir to the confluence of the Green River does support a relatively diverse fishery dominated by nongame species. The river supports substantial spawning and adult habitat for several nongame species including flannelmouth, bluehead, and white sucker; roundtail and Utah chub; redbreast shiner; speckled dace; mottled sculpin; and fathead minnow.

The total number and percent composition of trout species appears to vary on a seasonal basis. However, according to the WGFD, the overall standing crop seems to remain relatively constant, averaging 8.3 lb/acre of trout. On the other hand, the productivity in the section of the river from the Gasson Bridge to its confluence with the Green River appears to be very poor at 0.84 lb/acre. It appears that the primary function of this reach of the river to the trout fishery is as a corridor for immigration and emigration from the Green River, probably to the Big Bend-Bone Draw area.

Streamside vegetation of the Big Sandy River consists primarily of grasses, sedges, and sagebrush. The development of good riparian vegetation such as willow, wild rose, and cottonwoods is limited by overgrazing, saline ground water, and bank instability. The river bottom is composed primarily of sand and silt with some shale and sandstone outcroppings.

The lower Big Sandy River does have some fair to poor brown and rainbow trout habitat, especially along the seeps in the Big Bend-Bone Draw reach. A formal fish stocking or management policy for the lower Big Sandy River does not exist. Some limited spawning migrations of rainbow trout in spring and brown trout in fall occur from the Green River, probably destined for the seep area.

The primary limiting factors for trout production in the river are salinity, summer water temperatures as high as 77°F, lack of adequate cover, unstable banks, poor pool quality, lack of riffles, and excessive stream bottom sedimentation which affects both spawning and food organism production. The heavy accumulations of sediments in the Big Sandy River below Farson come from erosion of the uncontrolled rangeland watersheds that drain into the Big Sandy River, Little Sandy Creek, and Pacific Creek. The existing sport fishery in this section of the Big Sandy River is rated as only fair to poor. Fisherman use is seasonal and relatively low, estimated at only 77 fisherman-days per year.

Bone Draw is a left-side (looking downstream) tributary (0.5-1.5 cfs) that empties into the Big Sandy River approximately 5 miles below the project area. See Figures 4-1, 4-3A, and 4-3B. The water sources to Bone Draw are several irrigation-induced cold water saline seeps that occur in the last one-half mile of the draw. In addition, some intermittent irrigated field tail water runoff and irrigation canal spills from the project area reaches the outlet of Bone Draw during the irrigation season. Flow variations from these sources reach 5 cfs or more and carry large amounts of suspended sediment. The sediment source area is the uncontrolled rangeland drainage to Bone Draw.

Figure 4-3A Bone Draw near its confluence with the Big Sandy River.
The Big Sandy River is in the background. October 1986.

Figure 4-3B Bone Draw at its confluence with the Big Sandy River.
Salt depositions are evident in the foreground. The Big
Sandy River is in the background. May 1977.

The area is used primarily as a nursery area. The majority of the larger fish move out of the area, but there is a limited run of fish that return at spawning time. In 1983, the WGFD recorded the following species in Bone Draw: rainbow trout, brown trout, mottled sculpin, white sucker, flannelmouth sucker, bluehead sucker, speckled dace, redbreast sunfish, and fathead minnow.

The Big Sandy River and Bone Draw are classified as Class 4 streams by the WGFD. Class 4 streams are low production waters--fisheries frequently of local importance, but generally incapable of sustaining substantial fishing pressure. The WGFD has assigned the following ratings to Bone Draw for various parameters.

Ratings (1 lowest, 5 highest) for Bone Draw

Esthetic 1 - A stream with fair esthetic qualities. Water is often turbid, and the surrounding country has only mediocre scenic appeal and is of common occurrence. A lack of streamside cover is apparent. Mud banks are common and stream flows occasionally may become so low as to expose extensive expanses of mud flats and sand bars. Noxious, domestic, and industrial wastes may occur. This type of stream's primary esthetic appeal usually lies in the fact that, although it may not be attractive, it does offer local people an opportunity to get outdoors near some water.

Availability 4 - Vehicular access is relatively good, posting is not extensive, and streambank cover is not restrictive to fisherman utilization. Stream is not floatable.

Productivity 2 - The fishing waters are small and/or cannot withstand much fishing pressure due to lack of cover, short growing season, shallow waters, etc.

These ratings are the basis for the Class 4 designation of Bone Draw.

During the initial study from 1977 through 1979, Bone Draw waterflows were monitored. Under normal water years, Bone Draw could be expected to have flows near 0.5 cfs in the spring of the year to near 1.5 cfs in the fall. Historically, the channel flow widths varied from less than 1 foot in the seep area to less than 5 feet at the outlet into the Big Sandy River. Flow depth at the outlet is less than 6 inches. Log water drops were installed in the channel beginning in 1976. Since that time, channel widths have increased up to 5 feet in localized areas as a result of these structures. In 1977, a water-short year, the flow in Bone Draw decreased to approximately 0.25 cfs. In the severe water-short years of 1960 and 1961, the saline seeps in Bone Draw dried up with no water getting to the outlet at the Big Sandy River. Refer to page 4-10 for more information on water quality of Bone Draw.

In a cooperative effort between the Sweetwater County Wildlife Association, local Izaak Walton League chapter, and BLM, fish and wildlife habitat improvements have been made during the period 1976 to present on the lower section of Bone Draw. Fish pool areas were developed by placing log water drops in the channel and fencing to exclude livestock from the seep area. In addition, trout eggs and

fingerlings are placed annually in Bone Draw. The BLM and WGFD report that trout are returning to spawn in Bone Draw. Damaging flood flows with high sediment loads and irrigation wasteway spills have created substantial maintenance problems and only limited spawning success. According to the participants, the greatest value of this habitat project is as a demonstration and education area showing what benefits can be obtained through intensive wildlife habitat management and development.

Two major reservoirs exist within the USBR project withdrawal area. They are the Eden Reservoir and the Big Sandy Reservoir. Both provide game fisheries habitat. These reservoirs are major irrigation water storage reservoirs for the Eden Valley Irrigation Project. The Eden Reservoir is relatively shallow and may winterkill when it enters the winter with a large drawdown. Fish common to both the Big and Little Sandy Rivers are present in the reservoirs. The Big Sandy Reservoir maintains a population of brown trout and contains a small number of cutthroat trout. Rainbow trout occur occasionally in the reservoir.

The wildlife in the watershed is primarily a composite of native terrestrial animal communities that depend upon specific vegetative types or other animals in the community for food. Some of these animals are closely tied to a particular plant community or vegetative type while others range throughout the study area and adjacent areas. Many animal species may be found in the study area throughout the year, while some migrate into the area certain seasons of the year.

A diversity of nongame species utilizes the areas in and around the irrigated lands. Representative species and vegetative types are shown as follows.

<u>Sagebrush-grass</u>	<u>Saltbush-winterfat</u>	<u>Greasewood</u>	<u>Meadow-riparian</u>
sagebrush vole	mourning dove	Brewers sparrow	raccoon
deer mouse	horned lark	sage thrasher	muskrat
least chipmunk	burrowing owl	meadow lark	longtailed vole
white-tailed prairie dog	white-tailed prairie dog		Wilson's snipe
white-tailed jackrabbit	white-tailed jackrabbit		longbilled marsh wren
sage sparrow			yellow warbler
lark sparrow			garter snake
sagebrush lizard			

Pronghorn antelope, mule deer, elk, and moose are the major big game species found in the watershed. The WGFD currently manages the population of these species on a hunt area-herd unit basis. The entire

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Eden Valley is critical winter range for the Sublette antelope herd, which ranks as one of the largest in total population out of 53 antelope herds in Wyoming. Even though some of the more intensive farmland is classified as "out" areas by the WGFD, these lands receive substantial use by antelope. There is no critical habitat present for any other big game species in this immediate area.

The sage grouse is the predominant and most important game bird in the watershed. Actual numbers of sage grouse are not known. The sagebrush-grass vegetation is characteristically occupied by sage grouse. This type of vegetation covers much of the study area that is not irrigated. There are a number of identified sage grouse leks within the project area which are classified as crucial habitat for sage grouse. None of these leks are located on irrigated land. Sage grouse use the irrigated alfalfa fields extensively for brood rearing during May-June. No other crucial habitat is present for upland species.

Nesting raptors that have been recorded within the project area include: merlin, red-tailed hawk, prairie falcon, ferruginous hawk, American kestrel, northern harrier, great-horned owl, burrowing owl, and golden eagle. Other raptors such as bald eagle, goshawk, and Cooper's hawk utilize the area.

The project area is part of the Pacific Flyway. Important habitat for ducks consists of nesting, brood rearing, and resting areas used during the spring, summer, and fall. These include flowing waters such as Pacific and Jack Morrow Creeks, the Little Sandy and Big Sandy Rivers, stock ponds, reservoirs, and irrigation-induced wetlands in the project area. Figure 4-4 shows the location, types, and size of wetlands in the project area. Also indicated on this map is the estimated area where wetlands receive all or part of their water from irrigation water runoff, drainage ditches, and/or irrigation-induced seeps. Figures 4-5 and 4-6 show examples of typical wetlands in the project area. The pictures show dramatic seasonal water supply fluctuations. These wetlands do not support typical wetland plants because of the water supply fluctuations and high salt concentrations. Tables 4-6 and 4-7 show wetland inventories by type and water source.

The wetland resources in the area have the potential for significant enhancement and development to improve both quality and quantity. According to WGFD and BLM, there are several areas with potential. The following seven paragraphs are taken from a report written by Rick Olson, WGFD, entitled "Eden-Farson Wetland Habitat Improvement/Development Field Tour," July 18, 1985.

A majority of the potential wetland project sites are located on BLM and/or USBR land with a few scattered areas on private lands. Currently, the BLM and USBR are negotiating over lands that the USBR wants to transfer management responsibility to BLM. It appears that this issue must be settled first before any meaningful wetland development/improvement projects will be launched.

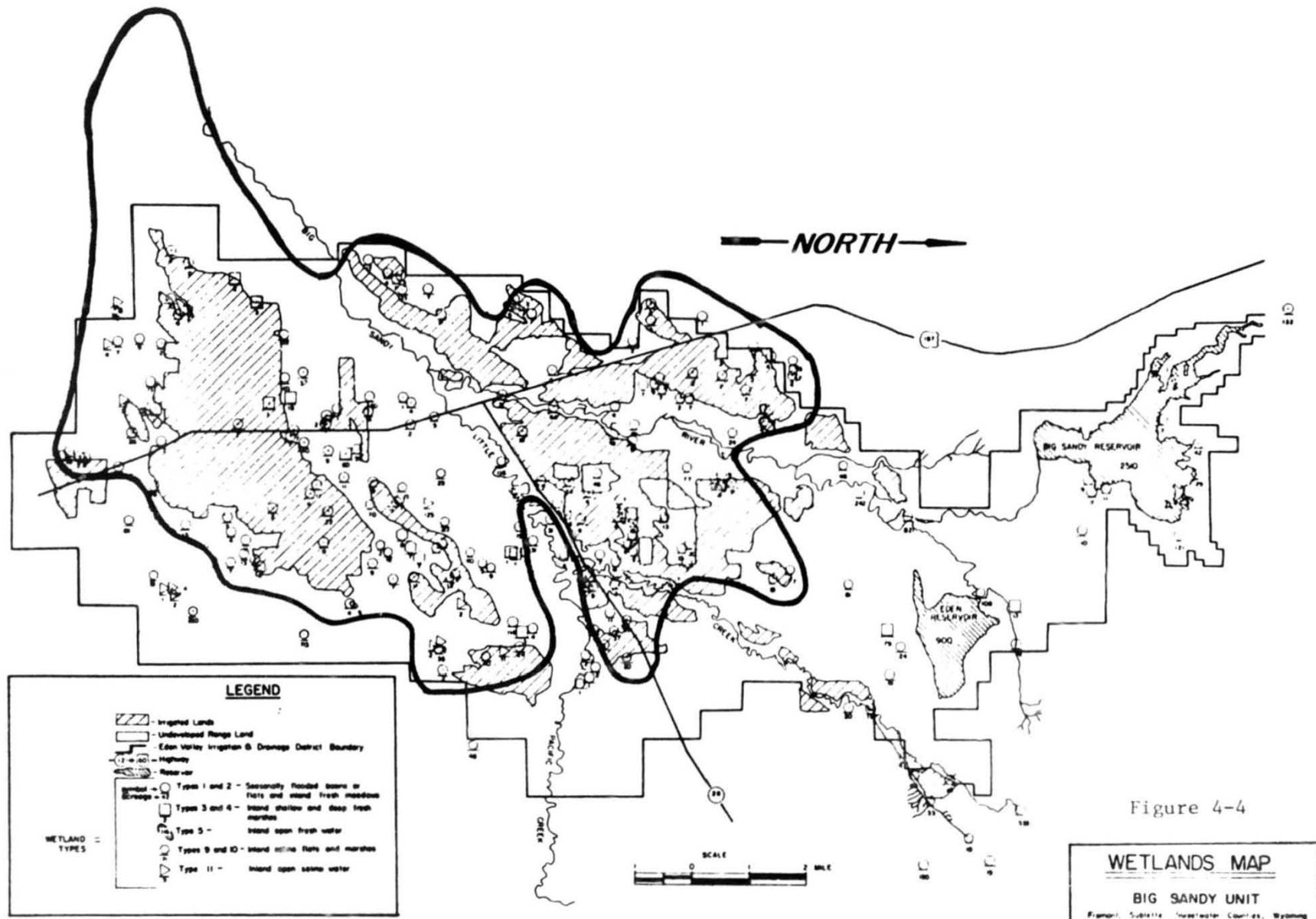


Figure 4-4

Colorado River Basin
Salinity Control Project



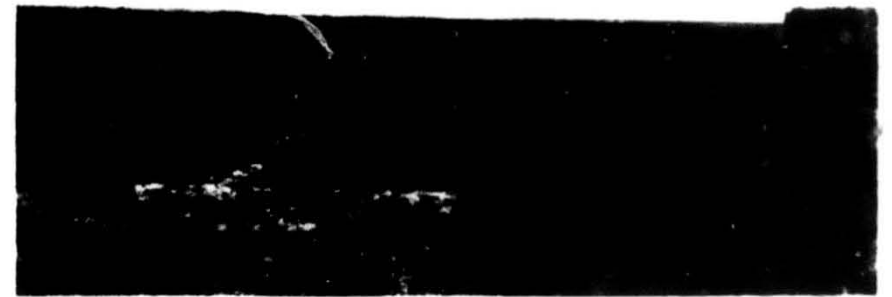
Type 1 Wetland (seasonally flooded basin) in April, 1978.



Same Type 1 Wetland during irrigation season in August, 1978.



Type 2 Wetland (inland fresh meadow) in April, 1978.



Same Type 2 Wetland during irrigation season in August, 1978.



Type 3 Wetland (inland shallow fresh marsh) in April, 1978.



Same Type 3 Wetland during irrigation season in August, 1978.



Type 10 Wetland (inland saline marsh) in April, 1978.



Same Type 10 Wetland during irrigation season in August, 1978.

TABLE 4-6 WETLAND INVENTORY BY TYPE

Colorado River Basin Salinity Control Project
Big Sandy River Unit - Wyoming

	<u>Wetland Type</u>	<u>Acres</u>	<u>Percent Of Total</u>
TYPE I	- Seasonally flooded basins or flats	254	2.5
TYPE II	- Inland fresh meadows	3,771	37.1
TYPE III	- Inland shallow fresh water marshes	29	0.3
TYPE IV	- Inland deep fresh water marshes	152	1.5
TYPE V	- Inland open fresh water	3,410	33.5
TYPE IX	- Inland saline flats seasonally flooded	2,378	23.4
TYPE X	- Inland open saline water	<u>177</u>	<u>1.7</u>
	TOTAL	10,171	100.0

1/ Types as indicated in USFWS Circular #39

TABLE 4-7 BIG SANDY RIVER SALINITY CONTROL PROJECT
INVENTORY OF WETLANDS BY WATER SOURCE

Colorado River Basin Salinity Control Project
Big Sandy River Unit - Wyoming

<u>Wetlands (By Water Source)</u>	<u>No.</u>	<u>Acres</u>	<u>Mean Size (Ac.)</u>	<u>Percent Of Total Wetland Area</u>
Natural	22	2,538	121	25
Reservoir	16	3,857	32 ^{1/}	38
Surface Runoff	49	495	10	5
Subsurface & Drains (Deep Percolation)	50	859	17	8
Canals and Laterals	6	143	24	1
Multiple (Subsurface/ Surface/Natural)	16	1,010	63	10
Dual (Surface/Subsurface)	59	<u>1,269</u>	22	<u>13</u>
TOTAL	218	10,171		100

1/ Big Sandy and Eden Reservoirs (3,410 surface acres) not included in determining the mean size.

The greatest potential for wetland habitat improvement appears to be associated with the northern part of the irrigation district around Big Sandy Reservoir. There are several large wetland basins (primarily without water now) situated around the reservoir which could easily be converted into ponds and marshes with minimal expense and effort. Many of these areas merely need development of water inflow and outflow sources along with a water management plan for regulating water levels seasonally. When looking at the entire irrigation district area, there are several "complexes" of wetland areas scattered around the two reservoirs in strategic geographical locations. If these complexes are developed eventually, the Eden-Farson irrigation project area seems to have the potential of contributing significantly to waterfowl production statewide.

The northern end of the Big Sandy Reservoir appears to receive a considerable silt load from the Big Sandy River, resulting in considerable expanses of mudflats usually covered with only a few inches of water in favorable precipitation years. According to BLM biologists, in dry precipitation years those mudflats dry out enough that heavy equipment could be used to dredge out portions of that mudflat area to create additional yearlong ponds with the fill used to form islands within the reservoir area proper.

In some portions of the Big Sandy River there are already backwater oxbows supporting waterfowl and other wetland wildlife species where the current is not accelerated. In other stretches of the river, there are lowland areas adjacent to the river proper that could be developed into meandering oxbows with minimal effort in diverting water flow from the river proper. This type of project seems to offer good potential for increasing open water wetland areas.

In this same northern portion of the irrigation district, particularly around the two reservoirs, there are springs originally created from seismic exploration holes drilled for oil exploration. There is the possibility that additional wetlands adjacent to the reservoirs could be developed from active springs, especially when those springs are located near natural lowland basin areas.

Other natural drainage areas feeding into the Big Sandy Reservoir currently support large stands of carex and bullrush. These areas, which currently have water flowing through from runoff and waste irrigation water, could be opened up by blasting techniques to create open water areas within these drainages. This type of project would require minimum expense and effort while offering tremendous contribution to waterfowl production.

The southern portion of the irrigation district appears to require the most time and expense in developing additional wetland resources merely due to the limited number of naturally occurring lowland basins and shallow-sloped

drainages. Construction of dams/dikes, islands, alternate water flow routes, oxbows, and peripheral extensions from existing wetlands have been discussed for this area.

An interagency committee, of which SCS is a member, was recently formed to address wetland resources in the Eden-Farson area. In January 1985, agencies interested in the potentials for cooperative wetland habitat improvement and development in the Lower Green River Waterfowl Management Area, met at the BLM Big Sandy Resource Area Office, in Rock Springs, Wyoming. The purpose of this meeting was to discuss possibilities, roles, and relationships for various federal, state, and county participants in coordinating a broad-based approach for wetland habitat improvement in each of their respective management programs and areas of responsibilities.

The committee identified the Eden/Farson Valley wetland enhancement proposal as the top priority for planning and development of all proposals in the Lower Green River Waterfowl Management Area. The Interagency Wetland Habitat Development Committee for the Eden-Farson area remains active today. It consists of the following members: Big Sandy Conservation District, SCS, WGFD, USBR, Seedskaadee National Wildlife Refuge, Max McGraw Wildlife Foundation, Sweetwater County Ag Extension Service, and BLM (Big Sandy Resource Area and Rock Springs District).

According to the WGFD, the approximately 140 square miles within the agricultural area support a long-term average of about 11 duck breeding pairs/square mile, or 1,540 breeding pairs of ducks on about 10,170 acres of wetland and wetland margin. Five hundred to two thousand geese use the area in October and provide an estimated 500 goose hunter recreation days annually. An estimated 5,000-7,500 ducks, migrants included, provide an estimated 1,500 duck hunter recreation days annually in the project area. These data represent 50 to 75 percent of the Sweetwater County waterfowl hunting recreation annually. Commonly observed ducks in the project area include mallard, pintail, shoveler, American widgeon, gadwall, teal, ringnecked duck, and redhead.

Whooping crane from the Grays Lake flock have summered in Wyoming since 1977. Since the initiation of the Grays Lake experiment (sandhill crane foster parenting), about 30 percent of the whooping cranes annually summer in Wyoming. The occurrence of whooping cranes in Wyoming has been divided into three general periods: (1) spring migration, April 1 to May 15, (2) summer residency, May 16 to August 20, and (3) fall pre-migration staging, August 21 to September 25.

Since 1978, 19 different whooping cranes have been observed summering in Wyoming. Of the summering locations from 1978 to 1985, 25 (63 percent) were in the upper Green River drainage. The Farson area has at least one wetland complex on the Big Sandy River flood plain north of Farson which could receive summer use by subadult or nonbreeding whooping cranes. A 4-year-old whooping crane molted with a flock of subadult sandhill cranes in the area in 1986.

At least three of the whooping cranes summering in the upper Green River drainage used wetlands and croplands in the Eden-Farson area during the fall pre-migration staging period. Use occurred in September of 1982, 1983, 1985, and 1986.

Four major wetland roost areas have been used by whooping and sandhill cranes between 1978 and 1986 in the Farson area. These include: (1) the seasonal and permanently flooded wetlands within the Big Sandy River flood plain, (2) the seasonal and permanently flooded wetlands about 3 miles south and east of Farson, (3) the seasonal, temporary, and semi-permanent flooded wetlands about 4 miles northeast of Farson between Pacific Creek and the irrigation wastewater-fed ponds, and (4) the semi-permanent flooded shoreline zone of the pond located about 1 mile south of Old Eden Reservoir.

Based on sandhill crane use of the area since 1982, the WGFDC anticipates annual fall pre-migration staging use by one or more whooping cranes, especially if whooping crane use of the upper Green increases with increasing population size. This assumes small grains continue to be raised and a selection of larger wetland areas with relatively low levels of human disturbance continue to exist.

Since 1975, when less than 100 sandhill cranes were documented staging in the Eden-Farson area, sandhill crane numbers have increased to 1,100. Surveys initiated in 1983 indicate an increase in staging numbers in recent years. Similar increases in Green River drainage Canada geese have also been noted in recent years.

The Eden-Farson irrigation project is the major fall pre-migration staging area for sandhill cranes summering in the upper Green River of Wyoming. Results from marking studies in 1984 and 1985 indicate that the family groups staging in the agricultural area were from the upper Green River, Wyoming. It is not known what proportion of the upper Green River summering sandhill cranes stage here in the fall, but it is believed to be at least 40 percent of the summering population.

Based on weekly counts made in 1985, on August 15 there were an estimated 372 sandhill cranes in the Eden-Farson area. Family groups did not begin to arrive in the area until sometime between September 6 and 12. Peak numbers of sandhill cranes were observed on September 19. The peak period of fall pre-migration numbers was similar to that observed in the two previous years.

Canada geese summering in the upper Green River also stage in the Eden-Farson area in September and October. In the last 3 years, an estimated 2,000 geese have staged here through the month of September.

Annually, six to eight landowners raise small grains, primarily barley. The grain is generally harvested between September 10 and October 1. As the numbers of sandhill cranes and geese staging here in September have increased, so has grain loss to depredation.

Since 1982, Wyoming has conducted a September limited quota hunt for greater sandhill cranes (Grus canadensis tabida) and Canada geese (Branta canadensis moffiti) in the Salt River and Bear River drainages of western Wyoming. Beginning in 1986, a limited quota hunt from these species was initiated in the Farson-Eden area of the Green River drainage.

The hunts in these areas were initiated to help minimize local crop depredations by early fall staging geese and cranes. Although hunting is not expected to cure the problem, it is anticipated to reduce the problem as well as suppress momentum for increase in Green River crane and goose numbers. The Bear River and Salt River seasons have become regarded as quality hunting. The WGFD predicts the season in the Eden-Farson area will also become quality hunting.

Simultaneous to conducting the Eden-Farson season, grain crops (about 40 acres) were made available to cranes and geese at the Seedskaadee NWR about 30 miles southwest of Farson. It is anticipated that grain crops adjacent to the new Seedskaadee NWR wetlands will stage upper Green River sandhills and whooping cranes within a few years. The limited quota hunt at Farson could help in shifting fall crane use to Seedskaadee.

A small reservoir (about 80 acres) south of Eden Reservoir, called Old Eden Reservoir, contains a colony of black-crowned night-herons and white-faced ibises. This reservoir contains one of only three active ibis colonies found in Wyoming in 1986 and one of only four found in this state since 1982. The night-heron colony is one of only 10 to 12 colonies found in Wyoming since 1982. While this colony is small by Great Basin standards, it was large by Wyoming standards, contributing significantly to the total nesting populations of both species in the state. In addition, the WGFD suspects the reservoir probably contains a small number of nesting snowy egrets, which would make it one of only three breeding locations for that species in Wyoming. This particular reservoir is also important breeding and foraging habitat for many other species of waterfowl and nongame birds. This reservoir receives no water from irrigated cropland runoff or deep percolation. Its water supply comes from irrigation canal and Little Sandy Reservoir seepage.

Numerous species of nongame birds, mammals, reptiles, amphibians, and invertebrates occur in the watershed; many of which are yearlong residents. Information regarding abundance, distribution, and status is generally lacking. The greatest variety of species occurs in and near the irrigated lands.

Endangered Species

The USFWS furnished the following list of threatened and endangered species that may occur in the project area:

Listed Species

Bald eagle	<u>Haliaeetus leucocephalus</u>
American peregrine falcon	<u>Falco peregrinus anatum</u>
Whooping crane	<u>Grus Americana</u>
Black-footed ferret	<u>Mustela nigripes</u>
Colorado squawfish	<u>Ptychocheilus lucius</u>
Humpback chub	<u>Gila cypha</u>

Proposed Species

None

Socioeconomic

There are an estimated 28,200 acres of irrigated land in Sweetwater County. Some 18,370 acres are within the Big Sandy River Unit.

During the 12-year period 1962-73, the Big Sandy River Unit Project served an average of 84 farms with a total population of 279 people. The average irrigated acreage during this period was 14,556 or 173 acres per farm. The gross value of agricultural production per farm was estimated to be \$7,508 or \$43.40 per acre. This relatively low gross value is one reason for some 79 of the 84 operators currently being part-time farmers.

Off-farm employment is generally considered by many local farmers as their primary source of income, with hay production for livestock only supplemental. The following from the County and City Data Book, 1977, Bureau of the Census, depicts the type of businesses and economic level in Sweetwater County:

<u>Industry Type</u>	<u>Number</u>	<u>Economic Level</u>
Manufacturing	11	Payroll - \$1.6M
Wholesale	44	Sales - \$22.2M
Retail	270	Sales - \$60.8M
Selected Services	197	Payroll - \$3.0M
Mineral Industries	69	Shipment Value - \$116.7M
Agriculture	106	Products - \$9.1M

The total Sweetwater County farm population in 1970 was 414. The estimated 279 residents in the Big Sandy River Unit constitute over 67 percent of the farm population in the county. Over 55 percent of the irrigated land in the county is within the project area.

The population of Sweetwater County has increased from 18,391 (1970) to 21,200 (1972) to 30,144 (1975) to 38,310 (1976). In 1975, Rock Springs population was 17,773 and Green River was 7,423. The 1970 population of the county was 87.1 percent urban and 12.9 percent rural with a slow rural decreasing trend. Additional industry growth since 1976 has added to this rural decrease.

The Wyoming Agricultural Statistics, 1978, published by the Wyoming Crop and Livestock Reporting Service, Cheyenne, shows that out of the 23 counties in Wyoming, Sweetwater County ranks as follows in production.

	<u>All Cattle</u>	<u>Milk Cows</u>	<u>Stock Sheep</u>	<u>All Hogs</u>	<u>Barley</u>	<u>Oats</u>	<u>All Hay</u>
Rank	17	20	7	19	20	18	22

Yield data including acres planted by years in Sweetwater County by crops and number of livestock by class is as follows:

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1982</u>
Cattle & Calves	19,000	21,000	20,000	18,000	28,082
Stock Sheep	96,500	84,000	76,000	56,000	50,068
Barley (Ac)	200	200	100	150	470
(Bu/Ac)	50	75	45	65	68
Oats (Ac)	600	800	700	600	388
(Bu/Ac)	51	56	51	55	46
All Hay (Ac)	20,200	19,000	17,000	17,000	23,300
(Tons/Ac)	1.54	1.39	1.29	1.19	1.38
Alfalfa Hay (Ac)	10,000	9,000	7,000	7,000	12,900
(Tons/Ac)	2.00	1.70	1.40	1.40	1.48
Other Hay (Ac)	10,200	10,000	10,000	10,000	9,100
(Tons/Ac)	1.08	1.11	1.22	1.08	1.21

CHAPTER 5

CONFLICTS BETWEEN ENVIRONMENTAL OBJECTIVES AND POLICY

Introduction

The concepts of replacing the loss of irrigation-induced wetlands, an irrigation-induced perennial stream, and reducing the salt load carried by the Colorado River present conflicting environmental values. P.L. 93-320 firmly establishes that the purpose of salinity studies is to develop alternative actions to reduce the salt load carried by the Colorado River. Much of the salt load is attributed to seepage and deep percolation from poor irrigation systems and practices throughout the Big Sandy River Unit. These same inefficient irrigation systems and practices are the source of water for most wetlands in the area and Bone Draw. As seepage from the irrigation systems is reduced and irrigation efficiency improved, some of these irrigation-induced wetlands will be unavoidably lost. In contrast, there is a basis for wetland protection and mitigation established in the regulations for compliance with NEPA, Executive Order 11990, and USDA Policy. Therefore, the concept of replacing irrigation-induced wetlands, a perennial stream, and reducing the salt load carried by the Colorado River presents the conflict between the environmental values of improved water quality and wetland preservation.

The reader needs to keep in perspective the fact that the proposed salinity control program implementation presents an inherent conflict between environmental values. Therefore, it may not be possible to resolve which of the environmental values is most important and at what level of wildlife habitat replacement the environmental losses are acceptable.

Executive Order 11990

The SCS was aware of the conflict between the competing environmental values of water quality and irrigation-induced wetlands when it developed its wetland policy (7 CFR 650.26) in compliance with Executive Order 11990. As a result, the SCS wetland policy was written to allow for certain policy exceptions, if necessary, to meet identified irrigation water management (water quality and water conservation) objectives. However, as previously indicated, SCS will make every effort to encourage landusers to include wildlife practices in their salinity control plans. SCS wetland policy, as it relates to installation of the Selected Plan, is discussed in Chapter 3.

404 Permit Process - Clean Water Act

The Army Corps of Engineers (COE) has recognized an exemption determination for irrigation-induced wetlands. In a comment on the EIS for the salinity control program for the Lower Gunnison Basin Unit and Uintah Basin Unit, the COE stated, "Where the proposed work would

involve a discharge of dredged or fill material into upland irrigation systems or wetlands which have been created by past irrigation practices, the work would be exempted from regulation under Section 404 of the Clean Water Act (33 USC 1344)."

More recently, the COE published in the Federal Register on November 13, 1986, their final rule entitled "33 CFR Parts 320 through 330, Regulatory Programs of the Corps of Engineers." As a result of the final rule, the COE has proposed draft guidance to establish a consistent policy within the Omaha District for determining jurisdiction under "Section 404 of the Clean Water Act" in regard to areas influenced by irrigation. This guidance was provided in the draft Omaha District Regulatory Guidance Memo 86-02, Jurisdictional Determination Regarding Areas Influenced by Irrigation Flows. The memo states in part:

The issue in this case is how to deal with areas that are influenced by irrigation, either directly or indirectly, but do not clearly fall within 33 C.F.R., Part 323.4(a)(3).

Jurisdiction should not be taken for an area that, either directly or indirectly, receives water from an on-going irrigation system and the irrigation water is solely responsible for any characteristics of waters of the United States displayed by the site. Such characteristics would include the presence of hydrologic indicators (standing water) and/or wetland vegetation. In the event that irrigation were cut off by diverting flows away from this site, these hydric indicators would no longer sustain themselves. A lack of hydric soils is typical for such sites.

. . . if irrigation flows are the only reason a site shows hydric characteristics, and if flows may be terminated simply by diverting water away from the site through a functioning irrigation facility (pump, diversion structure, flap gate, etc.), then the site should not be regulated under Section 404.

Food Security Act of 1985

The Food Security Act of 1985 (P.L. 99-198) also grants exemption status to irrigation-induced wetlands. "Title XI, Subtitle C, Section 1222 of P.L. 99-198" provides that a producer cannot be ruled ineligible for USDA program benefits because of production of an agricultural commodity on wetland or converted wetland if the land was a wetland created by seepage from an irrigation delivery system or the application of water for irrigation.

Section 303 - Clean Water Act

"Section 303 of the Clean Water Act" requires adoption of water quality standards applicable to interstate waters. The Act's objective is "to restore and maintain the chemical, physical, and biological integrity of

the Nation's waters" (Section 101), and the Administrator of EPA is required, in cooperation with other federal, state, and local agencies, "to develop comprehensive programs for preventing, reducing, or eliminating the pollution of navigable waters and ground waters (Section 102a)." The Selected Plan will meet this objective.

Wyoming Water Quality Rules and Regulations

"Chapter VI (Salinity Standards/Criteria for the Colorado River Basin)" in the Wyoming Water Quality Rules and Regulations provides some basis for dealing with Bone Draw. Chapter VI states in part:

Section 3. Salinity Standards/Criteria. The State of Wyoming shall cooperate with the other states of the Colorado River Basin and the government of the United States to maintain salinity levels in the main stem of the Colorado River at or below the following:

<u>Location</u>	<u>Salinity in mg/l of total dissolved solids</u>
Below Hoover Dam	723
Below Parker Dam	747
Below Imperial Dam	879

The above are flow-weighted average annual values and temporary increases above these values are allowed.

Section 4. Implementation Plan. The State of Wyoming shall cooperate with the other states of the Colorado River Basin and the Federal government in accordance with the implementation plans described in the document titled Proposed 1978 Revision - Water Quality Standards for Salinity Including Numeric Criteria and Plan of Implementation for Salinity Control - Colorado River System, prepared by the Colorado River Basin Salinity Control Forum and dated August, 1978; and the document titled Supplement Including Modifications to Proposed 1978 Revision - Water Quality Standards for Salinity Including Numeric Criteria and Plan of Implementation for Salinity Control - August, 1978 - Colorado River System, prepared by the Colorado River Basin Salinity Control Forum and dated December 18, 1978.

Section 5. Point Source Discharge to Surface Waters. Point source discharges to the surface waters in the Colorado River Basin of Wyoming shall be controlled as described in Appendix A of the documents referenced in Section 4 above. In general, the policy shall be no discharge of salt except where it is not economically or technologically practicable to prevent the discharge.

In reference to Section 5 above, the Selected Plan indicates that it would be economically feasible to eliminate Bone Draw flows and, as a result, eliminate a discharge of salt. In addition, artificially

replacing Bone Draw with flows of similar water quality would appear to violate this section and chapter of the Wyoming Water Quality Rules and Regulations.

Definition of Pollution and Antidegradation

Federal water quality law defines "pollution" very broadly. The Clean Water Act (33 U.S.C. 1362[19]) defines pollution to mean "the manmade or man-induced alteration of the chemical, physical, biological, and radiological integrity of water." The Selected Plan would reduce salt pollution by reducing salt-laden return flows; i.e., Bone Draw. On the other hand, it appears that Bone Draw is protected by EPA's anti-degradation policy (40 C.F.R. 131.12).

The information below was taken from the Anadromous Fish Law Memo, Issue 37, Natural Resources Law Institute, Lewis and Clark Law School, Portland, Oregon.

This antidegradation policy indicates that where water quality exceeds that necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality must be maintained and protected unless the State finds that lower water quality is necessary to accommodate important economic or social development (emphasis added). In no case may water quality be lowered below that necessary to support existing instream uses.

Although the Clean Water Act contains no expressed requirement for an antidegradation policy, EPA justifies that policy on the following rationale.

[T]he policy is consistent with the spirit, intent, and goals of the Act, especially the clause ". . . restore and maintain the chemical, physical and biological integrity of the Nation's waters" (§ 101(a)) and arguably is covered by the provision of 303(a) which made water quality standard requirements under prior law the "starting point" for CWA (Clean Water Act) water quality requirements.

Clean Water Act policies and regulations require that all existing instream beneficial uses shall be maintained and protected (see 40 CFR 131.12(a)(1) and Section 9, Wyoming Department of Environmental Quality Rules and Regulations, Chapter I, "Quality Standards for Wyoming Surface Waters").

Wyoming Department of Environmental Quality (DEQ), Water Quality Division

The DEQ, in letters dated February 13, 1987, and July 22, 1987, to Frank Dickson, SCS State Conservationist, expressed their concern about conflicting environmental objectives as follows:

The Water Quality Division recognizes the importance of wetlands for flood control, water quality improvement, aquifer recharge and wildlife habitat. We do not advocate unnecessary destruction of these waters for any reason. At the same time, the Water Quality Division has, for many years, discouraged the same kind of irrigation practices which have created wetlands in the Eden/Farson irrigation project and a perennial flow of water in Bone Draw. This office has documented surface and groundwater quality problems resulting from flood and furrow irrigation throughout the state. We have continuously encouraged efficient irrigation water management and have funded research and demonstrations (with Clean Water Act funds) to reduce water quality impacts from excessive use of irrigation water. Where economically possible, we encourage the use of sprinklers because the application of water is most efficiently controlled. We have long been cognizant that conversion from flood or furrow irrigation to sprinklers would reduce the acreage of man-made wetlands in Wyoming. We believe this environmental trade-off is usually beneficial to our residents and the environment.

The Wyoming DEQ may have a difference of opinion with the U.S. EPA on this issue (antidegradation policy). It is the policy of this department to protect surface waters from degradation below existing use classifications from Point and Non Point pollutants. IT IS NOT OUR INTENTION (OR WITHIN OUR AUTHORITY) TO REGULATE WATER QUANTITY. The Clean Water Act (CWA) also precludes the EPA from doing so as described in sections 101(g) and 510(2). The language of the Clean Water Act is clear (at least to us) on this issue.

We (DEQ) do not believe it was the intent of Congress to maintain existing uses where those uses were environmentally harmful or were created by inefficient use of scarce resources.

The DEQ also provided the following information as reference.

Federal Water Pollution Control Act, as amended (33 U.S.C. 466), Title I, Section 101, states:

- (b) It is the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources, and to consult with the Administrator in the exercise of his authority under this Act. It is the policy of Congress that the States manage the construction grant program under this Act and implement the permit programs under sections 402 and 404 of this Act.

- (g) It is the policy of Congress that the authority of each State to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this Act. It is the further policy of Congress that nothing in this Act shall be construed to supersede or abrogate rights to quantities of water which have been established by any State, Federal agencies shall co-operate with State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resources.

Environmental Protection Agency (EPA)

The EPA provided the following narrative for inclusion in this chapter of the FEIS.

A statewide antidegradation policy is an important part of state water quality standards. EPA's water quality standards regulation (40 CFR 131.12) requires that, at a minimum, the state policy ensure that existing instream uses and the level of water quality necessary to protect the existing uses will be maintained and protected. This provision applies to all waters of the state. Furthermore, the state policy must establish additional measures for protection of certain high quality waters (waters where ambient quality exceeds that needed to protect the "fishable/swimmable" uses) and waters which may constitute outstanding national or state resource waters. Because of its application to both beneficial uses and the water quality needed to protect those uses, antidegradation requirements are important elements in any discussion of the impacts resulting from the proposed project.

Wyoming's antidegradation policy is included in the state's Quality Standards for Wyoming Surface Waters at Section 9 as:

It is the policy of the Department that those surface waters not designated as Class I, but whose existing water quality is better than these standards, shall be maintained within these standards and existing instream water uses will be maintained. However, the State of Wyoming shall allow any project or development which would constitute a new source of pollution or an increased source of pollution to these waters as long as the quality will not be lowered below these standards. Any degradation of high quality waters will be allowed only within the framework of Wyoming's Continuing Planning Process.

The federal antidegradation rule embodies the intent and goals of the Clean Water Act, especially the clause in Section 101(a) ". . . restore and maintain the chemical, physical, and biological integrity of the Nation's waters." As such, the antidegradation analysis should not be limited to water quality considerations, but should also include potential changes in physical habitat (e.g., changes in flow) and the effect those changes have on existing uses. In this context, any water body whose uses will be affected as a result of changes in the chemical, physical, or biological nature of the water body are considered impacted with respect to the proposed project.

EPA has approved the current state antidegradation standard in the past. However, based on changes embodied in its new water quality standards regulation, EPA has notified Wyoming's DEQ of deficiencies in the current state standard, advising that there is a need for review/revision to ensure compliance with the federal rule. The WDEQ has begun that review of the present standard. A state water quality standards review is a public process with participation from many interested parties, and it is not known what the outcome of that process will be.

For more information concerning the state and federal regulatory processes, see the Federal Water Quality Standards Regulation, 40 CFR Part 131, and preamble at 48 Fed. Reg. 51400 (Nov. 8, 1983); EPA Water Quality Standards Handbook, (Dec. 1983); Questions and Answers on Antidegradation, (EPA, Aug. 1985) Questions and Answers on Water Quality Standards (EPA, Dec. 1983); Wyoming Department of Environmental Quality Rules and Regulations, Chapter I, "Quality Standards for Wyoming Surface Waters."

CHAPTER 6

ENVIRONMENTAL CONSEQUENCES OF THE SELECTED PLAN

Introduction

Impacts caused by implementation of individual onfarm water management and land treatment measures are generally minor. However, when these measures are implemented throughout the entire Big Sandy River Unit, the cumulative impacts become potentially more significant. These impacts will be addressed and quantified in this section. Primary impacts occur on wetlands that have developed since irrigation was introduced in the area and on Bone Draw, which is an irrigation-induced perennial stream.

The degree of impact to wetlands will depend on the amount of acres that are voluntarily placed in the salinity control program and where they are located. In addition, net wetland impacts depend on the willingness of participating landowners to voluntarily replace wildlife habitat and the development of fish and wildlife habitat potentials by local governments and nongovernmental entities. This chapter addresses the impacts of the voluntary installation of 15,700 acres of sprinkler irrigation and the voluntary replacement of fish and wildlife habitat on an unknown number of acres. The Foreword in this EIS acknowledges CEQ's requirement to evaluate the impacts based on unavailable information. Chapter 2 presents what the SCS believes to be the highest potential level of adverse impacts on fish and wildlife habitat for each alternative.

The total amount of fish and wildlife habitat values replaced will ultimately depend on:

- 1) The amount of wildlife habitats (wetland and upland) provided by the installation of four to seven irrigation-regulating reservoirs (150-300 total surface acres), stockwater ponds, pumping station ponds, livestock exclusions, four to six wasteways for water control (15-20 miles of intermittent drainageways providing wetland and terrestrial habitat during the irrigation season), conservation-cropping systems, conservation tillage systems, crop residue use, pasture and hayland management, water and sediment control basins, and streambank and shoreline protection, and other conservation and salinity control practices. The underlined practices are some of the practices eligible for participation under a 70 percent federal and 30 percent local cost-share program.
- 2) The voluntary replacement of wildlife habitat onfarm by individual landowners with a 70 percent federal and 30 percent local cost-share program.

The 30 percent local cost share for installation of salinity control measures and voluntary replacement of fish and wildlife habitat values can be in the form of either a cash or noncash contribution. Noncash contributions can be in the form of a

participant's own equipment, his labor, other labor and equipment sources, or needed materials that meet required specifications.

This opportunity can be used by the participant to reduce or eliminate his actual cash outlay for implementing practices in his contract for salinity reduction and wildlife habitat replacement.

- 3) The voluntary replacement of fish and wildlife habitats off-farm by the Eden Valley Irrigation and Drainage District with a 70 percent federal and 30 percent local cost-share program.
- 4) The operation of the Big Sandy and Eden Reservoirs by the Eden Valley Irrigation and Drainage District (improvement of fish and wildlife habitats).
- 5) The implementation of waterfowl development potentials in the area by the WGFD, BLM, and private wildlife organizations (new and improved wildlife habitat). Cost sharing will be available for nonfederal entities.

The Interagency Wetland Habitat Development Committee for the Eden-Farson area, of which SCS is a member, has identified several private and governmental sources of potential funding and technical assistance to implement wetland developments and enhancements. These are listed below.

Ducks Unlimited

Wyoming Game and Fish Department

USDI - Bureau of Land Management

USDA - Soil Conservation Service

USDA - Agricultural Extension Service

USDI - Fish and Wildlife Service

USDI - Bureau of Reclamation

Max McGraw Wildlife Foundation

Exxon Oil Co. (Mitigation)

Local Industries and Private Businesses

Wyoming Wildlife Federation

Wyoming Water Development Commission - Mitigation Fund

Lander One Shot Club

The U.S. Fish and Wildlife Service Gift Catalogues

The Nature Conservancy

Rocky Mountain Conservation Fund

Wyoming Range Stewardship Program

SCS will continue to be active on this committee and keep them informed about the salinity control activities in the area. SCS will encourage the committee and the potential assistance sources to participate in cost sharing with dollars, labor, equipment, and/or construction materials to meet the goals of the committee and the USDA salinity control program.

The original wetland habitat replacement methodology developed by interagency biologists and described in Chapter 2 concentrated on the voluntary development, preservation, and enhancement of Types 3, 4, 9, and 10. However, during the implementation of the Selected Plan, the voluntary replacement of wetland and upland wildlife values foregone will be determined based on the needs indicated by the USFWS's Habitat Evaluation Procedures (HEP).

HEP is a species-habitat approach to impact assessment and replacement needs. Habitat quality for selected evaluation species is documented with an index, the Habitat Suitability Index (HSI). This value is derived from an evaluation of the ability of key habitat components to supply the life requisites of selected wildlife species. The evaluation involves using the same key habitat components to compare existing habitat conditions and optimum habitat conditions for the species of interest.

The decision to use HEP for wildlife during the installation of the Selected Plan is based on the following:

- 1) HEP will document secondary wildlife values provided by the installation of irrigation water management practices such as irrigation-regulating reservoirs, wasteways for water control, sediment control basins, and conservation-cropping systems.
- 2) HEP will document the wildlife values associated with the potential to reduce water level fluctuations in Eden and Big Sandy Reservoirs.
- 3) HEP will document the wildlife values associated with any wildlife development undertaken in the area by the WGFD, BLM, or private organizations.
- 4) HEP is an excellent tool to determine impacts on actions that affect wildlife habitat which are undertaken voluntarily, incrementally, and in locations known only at the time of an individual's participation in the program.
- 5) HEP represents the state of the art for conducting habitat assessment and replacement analyses.
- 6) HEP is computer assisted and can provide the status of wildlife habitat values replaced at any point in time.
- 7) HEP is recognized and used by many federal and state agencies concerned with wildlife.
- 8) Certified training is available for HEP.

Officials of USFWS, BLM, USBR, EPA, and the WGFD have been contacted concerning establishing the criteria to be used in the HEP analysis. All agencies have indicated verbally their willingness to be involved. These agencies will also be asked to participate within their funding and manpower limitations in field evaluations. The data collected and the evaluations made will be available for public review.

Implementation Procedures for Replacing Wildlife Habitat Values Foregone

During the first year of the program, SCS will activate an interagency HEP team. This team will select an estimated six to eight indicator species. Habitat suitability models for these species will then be reviewed and revised, as necessary, to provide appropriate criteria for the evaluation of wildlife habitat impacts of salinity control plans on farms and other land units that participate in the program. At least two of the selected indicator species will be used to assess the progress in the voluntary replacement of wetland wildlife habitat.

SCS planners will then use the indicator species approved by the interagency HEP team to evaluate pre- and post-installation habitat values on all lands participating in the program. Habitat value data will be used during the landowner's decision making process for developing long-term contracts that provide for salinity control, including practices to maintain or improve wildlife habitat. A similar accounting system will be used for salinity control activities undertaken by the irrigation district and state and local units of government. HEP data will be stored in a computer data bank and will be available to the interagency HEP team. In addition, any agency represented on the team can assist with individual HEP analyses in the field as their budget and time will permit.

Wetland and Upland Wildlife Habitat

If irrigation water management participation occurred on 15,700 acres, about 3,775 acres of irrigation water induced or supplemented wetlands (USFWS Circular 39 Types 1, 2, 3, 4, 9, and 10) will be affected. Of this total, 1,010 acres will experience reduced water supply and an estimated 2,765 acres will be eliminated. The majority of these acres are classified as Types 1 and 2 wetlands. These impacts will occur gradually each year during the 9-year installation period.

The Selected Plan will accelerate the presently increasing game bird damages to crops. An increase in sprinkler irrigated land acreage will probably result in a greater annual acreage of small grains. Fall depredation on small grains may increase by an unknown amount during the grain harvest. Early fall duck numbers (especially mallards) will increase on and near grain fields. Costs for damage prevention by the WGFD may increase and landowner tolerance of waterfowl will decrease. In light of the WGFD's recent efforts to lure fall staging sandhill cranes and geese to Seedskaadee National Wildlife Refuge 30 miles away and the recently (1986) initiated September sandhill crane and goose hunting season, it is impossible to predict the crop depredation impacts from this project.

Based on annual breeding pair surveys, the project area supports an average of one duck breeding pair per 2.4 acres of wetland. Impacting 3,775 acres of wetland will eliminate or reduce the quality of habitat for about 1,570 breeding pairs of ducks.

There are four sandhill crane roosting areas identified by the WGFD. Only the area between Pacific Creek and the irrigated area will be significantly impacted. This area will gradually become drier if the upslope irrigators participate in the project and convert to sprinklers. The large open water area 2 miles north of Eden will temporarily be dewatered for lining of the bottom. The remaining two crane roosting areas north of Farson will not be adversely impacted by the project.

According to the WGFD, the adverse impacts on mule deer, antelope, sage grouse, and raptors will be insignificant. Nongame wildlife associated with impacted wetland will adjust to the new conditions or relocate to other remaining wetlands. Wildlife incapable of adjusting to gradually changing habitat conditions or relocating will be lost.

Water Quality and Salinity Reductions

Reducing the amount of waterflow through the underground aquifer will reduce the total dissolved solids (TDS) to the Big Sandy River by 52,900 tons/year. This translates to a reduced TDS of 27 mg/L in the Green River at Green River, Wyoming, and 5 mg/L in the Colorado River at Imperial Dam, California. The 27 mg/L reduction in the Green River and 5 mg/L in the Colorado constitutes the downstream salinity reduction benefits as a result of implementing the 15,700-acre salinity control project.

Water Quantity and Water Rights

The Selected Plan shows that irrigation diversion requirements will be reduced approximately 20,500 ac. ft. per year. This water will be released directly to the Big Sandy River when the reservoir is anticipated to fill or is full. Note that this is not additional water to the Big Sandy River system.

The 20,500 acre-feet is only an increase of water in the Big Sandy River from the Big Sandy Reservoir to the Big Bend area, which is about 3 miles downstream from Bone Draw. Presently, the 20,500 acre-feet of water is delivered to the river via seeps after it passes through canals, ditches, cropland, and the salt-laden aquifer.

It was not the intent of the salinity study to determine what use, if any, this "saved water" may have. Should this water be allocated by the Wyoming State Engineer to municipal, industrial, irrigation, or wildlife uses, it may require a separate salinity and environmental analysis.

Fisheries and Stream Flow Regimes

The seeps along the banks of the Big Sandy River, which are caused by overirrigation, are expected to dry up as the water table drops. These seeps apparently offer some relief to high summer temperatures in the Big Sandy River that result from the low streamflow, shallow stream channel, and the lack of riparian shade canopy caused by overgrazing of

livestock. Some of these seeps create marginal trout habitat in the Big Sandy River. These irrigation-induced seeps and the corresponding marginal trout habitat will be lost. However, voluntary fish and wildlife habitat replacement measures by landowners, the irrigation district, along with development of potentials by the WGFD and BLM along the Big Sandy River, will provide an unknown amount of streambank vegetative shading and fish cover.

Water not diverted to farmland for irrigation because of improved irrigation efficiencies will remain in the existing reservoirs as carryover storage for irrigation use in short-water years. Excess water in the reservoirs, expected to average 20,500 acre-feet annually, will be released to allow for spring runoff storage and to reduce flooding. Water may be released with concurrence of the Wyoming State Engineer on a schedule that can enhance fish habitat in about 35 miles of the Big Sandy River (Big Sandy Reservoir to Gasson Bridge) and reduce downstream flooding. Summer water temperatures can be significantly reduced. The following schedule, developed by SCS with the assistance of the WGFD, is how an average annual 20,500 acre-feet of water can be released for these purposes during an average water year:

<u>Period</u>	<u>Daily Big Sandy River Flow</u>
May through November 24	25 cfs
November 25 through April 20	15 cfs
April 21 through April 30	186 cfs

The Selected Plan will have an adverse effect on Bone Draw. As irrigation water management practices are installed and less water reaches the underground aquifer, water levels in Bone Draw will diminish. This, in turn, will reduce the saline seep flows. Eventually, flows in Bone Draw will change from perennial to intermittent and eliminate fish spawning areas, in effect destroying a Class 4 stream. Class 4 streams are described in Chapter 4. There are no program authorities available to SCS which will allow replacing Bone Draw flows with water of similar existing quality. However, the flows in Bone Draw can be replaced. The costs appear to be prohibitively high, and it is doubtful any agency will expend these funds for such a small return. More information on Bone Draw replacement alternatives is presented in Chapter 2, "Alternatives and Their Impacts."

Fisheries habitat is expected to improve in the Big Sandy and Eden Reservoirs if water storage and irrigation drawdowns are coordinated to maximize water flow and fisheries habitat in the Big Sandy River. As previously stated, coordination between the Irrigation and Drainage District, WGFD, and the Wyoming State Engineer will be needed.

The release schedule will improve fish habitat from the Big Sandy Reservoir to Gasson Bridge. Big Sandy Reservoir water will be discharged from a bottom outlet resulting in lower water temperatures in the river. In addition, TDS concentrations will be significantly lowered. Some improvement in water quality will also occur from Gasson

Bridge to the mouth of the Big Sandy River, although to a lesser degree than upstream. Projections of specific water quality levels as a result of this action are not available.

Endangered Species

In August 1986, the SCS sent a Biological Assessment for the Selected Plan to the USFWS's Endangered Species office in Helena, Montana, to support the SCS's "no effect" determination.

On November 10, 1986, based on USFWS's determination, the SCS requested Section 7 Formal Consultation. The SCS transmitted additional information provided by the WGFD and BLM for the Biological Assessment. The USFWS responded on January 23, 1987, as follows:

It is the FWS biological opinion that the Big Sandy River Salinity Control Project will not jeopardize the continued existence of the whooping crane, black-footed ferret, Colorado squawfish, or humpback chub. The FWS previously concurred with your determination that the project would not affect the bald eagle (Haliaeetus leucocephalus) or the peregrine falcon (Falco peregrinus).

Our no-jeopardy opinion for whooping crane is based upon SCS's commitment to continue to work with WGFD to maintain and enhance wetland habitats and to design and locate powerlines and fences to minimize potential collision and/or electrocution hazards to cranes.

Our no-jeopardy opinion on ferrets is based upon SCS's commitment to conduct black-footed ferret surveys for direct project actions that disturb prairie dog towns and upon SCS's pursuing a mechanism agreed to by USFWS to assure that black-footed ferrets will not be impacted by future indirect, interdependent actions.

Chapter 3 discusses SCS's commitment in these areas.

Cultural Resources

A Cultural Resources Review was conducted by the State Historic Preservation Officer (SHPO). According to the SHPO review, there are several cultural sites located in or near the irrigated area. Several sites are potentially eligible for national, state, or local level nomination to the National Register by the Secretary of the Interior.

The cultural resources known to occur on the irrigated lands are the Oregon Trail and the Bryan-South Pass City Stage Road. Activities associated with flood irrigation during the past several decades have obliterated the portions of these trails that occur on the irrigated lands. Lands along the river and creek drainages within the irrigated

area are mapped by SHPO as having a high potential for archeological resources. Lands adjacent to the southeast part of the Eden irrigated area are mapped as having medium potential.

The SCS has determined that a cultural resource survey is not feasible during the planning phase of the project. Because the project is voluntary, there is difficulty in determining what kinds of construction activity will occur and where they will be located. Cultural resource reviews and surveys will be conducted according to SCS regulation (7 CFR Part 656) during individual on-farm salinity control planning and when specific project construction sites are identified. In addition, cultural resources discovered during construction will be evaluated and excavated in conformance with these SCS regulations.

Irreversible or Irrecoverable Commitment of Resources

The Selected Plan will use an undetermined amount of fossil fuels during construction and maintenance. An estimated 3,238,000 kWh of electricity will be used annually for operation of the sprinkler systems. The Selected Plan will commit labor for project planning, construction, and maintenance. Although some wetlands and Bone Draw will be lost after project installation, they will not be irreversibly lost. Wetlands and Bone Draw will return if inefficient flood irrigation practices replaced the sprinkler irrigation systems in the future.

Socioeconomic Impacts

Implementation of onfarm measures tend to stabilize the agricultural economy. Annual work years of labor generated by agriculture and installation will create approximately 305 jobs.

Farm income will be improved through increased crop production. There could be some stimulation of the regional economy to supply the increased demand for materials. Irrigation equipment sales will create some additional secondary employment benefits.

New lands are not expected to be brought into production as a result of this project. New irrigated land cannot use adjacent facilities such as pumping stations, pipelines, and sprinklers cost-shared with salinity control funds. In addition, these lands will not be eligible for salinity control cost-share assistance or low-interest state loans for salinity control. Furthermore, it costs an estimated \$149.00 per acre using an automated border system to produce benefits worth only \$90.00 per acre, \$143.00 per acre using low-pressure sprinkler systems to produce benefits worth \$120.00 per acre, and \$67.00 per acre using a manually operated flood system to obtain \$51.00 of benefits.

Potential recreation activities will be lost on 3,775 acres of affected wetlands and Bone Draw. However, potentials for replacing and possibly increasing recreation days exist in the following areas:

- Fishing, hunting, and sightseeing will improve on the Big Sandy River with improved flow regimes.
- Fishing, hunting, and sightseeing will improve on the Big Sandy and Eden Reservoirs. Improved water supply will result in an increase in water surface acres on an average daily basis.
- Hunting and sightseeing will improve on private lands. Replacement wetlands will be designed for wildlife and can be designed for recreational use.

CHAPTER 7

PUBLIC PARTICIPATION

Interdisciplinary Study Team

Coordination of USDA activities was accomplished through an Interdisciplinary Study Team. This team consisted of members from the SCS State Office in Casper, SCS Rock Springs Field Office, and the SCS Western Wyoming RC&D Project Office. Local members were named from the Big Sandy Conservation District and the Eden Valley Irrigation and Drainage District. State and other federal agencies that assisted included the Wyoming State Engineer's Office; Wyoming Department of Agriculture; Wyoming Conservation Commission; University of Wyoming; WGFD; USFWS; USBR; BLM; CES; Economics, Statistics, and Cooperatives Service; and the USFS. Approximately 14 coordination and information meetings were held with state and federal agencies between February 1977 and April 1979. Local and statewide press coverage was extensive.

Local Coordinating Committee

A Local Coordinating Committee, whose representation includes two board members of the Eden Valley Irrigation and Drainage District, the board of supervisors for the Big Sandy Conservation District consisting of five members, a member of the State Engineer's staff appointed by the Governor's office, a representative from the USBR, and SCS personnel took an active part in the development and review of the salinity reduction alternatives. During the course of the study, numerous meetings were held with the Committee to review the progress of the study and provide guidelines and inputs. Various alternatives for salinity reduction were suggested by the Committee, which were analyzed and presented.

Public Meetings and Interagency Coordination

The 1975 Memorandum of Agreement, supplemented in 1976, between SCS and USBR under Title II of P.L. 93-320 started SCS involvement in the Colorado River Water Quality Improvement Program. In addition, a series of agency and public meetings preceded the issuance of the joint May 19, 1977, Final Environmental Statement for the Colorado River Water Quality Improvement Program.

Three public meetings were held between 1977 and 1979 for the purpose of providing information, reviewing alternatives, and soliciting comments or suggestions. The initial public information meeting was held at Farson, Wyoming, on March 24, 1977, to give an overview of the Big Sandy River salinity control study. On March 8, 1979, a public meeting was held at the Farson School at which results of the study were presented outlining 11 alternatives for salinity reduction.

During the period in 1978-79, an interagency team of biologists from the SCS, USFWS, and WGFD toured the Big Sandy River Unit and held several meetings to develop and review mitigation plans for various salinity control alternatives. BLM biologists also attended some of the meetings.

Early in 1984, the Governor of Wyoming asked the SCS to evaluate an additional alternative and update landowner benefits that might be derived from installation of a low-pressure sprinkler irrigation system. This alternative was presented to the State of Wyoming in November 1984 and at a public meeting of the Eden Valley Irrigation and Drainage District on December 17, 1984. Consensus was favorable toward low-pressure sprinklers as the major component to improve irrigation efficiency. Other important meetings and events are listed below.

- February 27, 1986 - A meeting was held with several state agencies to discuss the USDA Selected Plan.
- April 2, 1986 - A public informational meeting was held in Farson to explain the USDA Selected Plan and its impacts.
- June 19, 1986 - A Finding of No Significant Impact (FONSI) was sent to interested agencies, organizations, and individuals. The FONSI was published in the local newspapers.
- June 26, 1986 - The FONSI was published in the Federal Register.
- July 2, 1986 - A public participation period was held in Farson from noon until 4:00 pm to solicit comments on the FONSI and Selected Plan.
- July 28, 1986 - SCS, EPA, USFWS, COE, and several state agencies met in Cheyenne to discuss various concerns concerning the FONSI.
- September 22, 1986 - A joint informational meeting was held with the SCS and the Eden-Farson Irrigation District and Big Sandy Conservation District Boards.
- October 15, 1986 - SCS conducted a field tour of the project area for EPA and USFWS.
- October 29, 1986 - Several comments on the FONSI were discussed at a public hearing of the Colorado River Basin Salinity Control (CRBSC) Advisory Council and the CRBSC Forum in San Diego, California.
- October 30, 1986 - SCS conducted a field tour of the project area for WGFD and BLM.
- November 20, 1986 - A Notice of Intent to Prepare an EIS (NOI) was published in the Federal Register and local newspapers.
- November 25, 1986 - SCS met with the Big Sandy Conservation District Board to discuss the USDA Selected Plan and SCS's intention to prepare an EIS.
- December 8, 1986 - SCS met with the Eden-Farson Irrigation District Board to discuss the USDA Selected Plan and SCS's intention to prepare an EIS.
- February 27, 1987 - A draft EIS was sent to interested agencies, organizations, and individuals.
- March 13, 1987 - The Notice of Availability of the draft EIS appeared in the Federal Register and local newspapers.
- April 2, 1987 - A public information meeting was held in Farson to discuss the draft EIS, implementation schedule, voluntary participation, and wildlife considerations. Over 80 local irrigators were in attendance.
- April 29, 1987 - SCS and cooperating state agencies met with EPA in Denver to discuss EPA's concerns on several environmental issues.
- May 13, 1987 - SCS met with the Eden-Farson Irrigation District Board to explain various aspects of the USDA Selected Plan and its implementation.
- August 13, 1987 - SCS met with the Sweetwater County ASCS County Committee and the Big Sandy Conservation District Board for review and concurrence on the Project Implementation Plan.
- September 10, 1987 - SCS met with EPA to review SCS's responses to EPA's comments on the draft EIS. Also reviewed were SCS's response to several accommodations agreed to at the April 29, 1987, meeting with EPA.

Agency Roles

USDA

The SCS has been given the responsibility for project planning, technical assistance, and monitoring and evaluation.

Working through the Big Sandy Conservation District, the SCS will assist irrigators with the development of individual or group salinity control plans. These plans will identify the type and extent of practices needed for salinity control and for replacing wildlife values foregone.

The SCS will provide technical assistance for designing, constructing, and certifying completion of practices identified in the salinity control plan. Additionally, technical assistance will be available for the proper operation of the improved system to obtain the needed improvements in irrigation water management. Also, the SCS will conduct a monitoring and evaluation program to assess the effect of these salinity control practices.

ASCS has been given the responsibility for administering the contracts and repayment aspects of the project. This responsibility includes interviewing farmers, giving information on the salinity program, processing and approving applications for and administering contracts, determining eligibility of producers' land, processing and approving cost-share payments, and controlling the payment limitation.

CES has been given the responsibility for conducting an education program that enhances local understanding and acceptance of the project. As the project activity develops, an aggressive information and education effort demonstrating new systems, irrigation water management practices, and applying research findings will be stressed.

USDI

The USBR has been given two primary roles. First, the USBR has responsibility for planning, designing, and installing improvements for the off-farm segment of the project. Second, the USBR has overall leadership for the salinity control program throughout the Colorado River Basin, including monitoring the total federal cost of the project and administering the repayment aspects of these federal costs from power revenues.

Conservation District

The Conservation District (CD), as a member of the Local Salinity Control Committee (LSCC), is given the responsibility for setting priorities, identifying the type of practices needed for conservation of the resource base and salinity control, as well as approving individual salinity control plans (SCP's).

State of Wyoming

The State of Wyoming has played a major role in the plan formulation and will continue to have a major role in coordination of efforts to realize the implementation of the selected plan. The State has responsibility for guiding the salinity control activities to assure that the objectives of the State are realized, State laws are followed, needs of

its citizens are met, and the State's rights are protected. Agencies that have been involved in the plan formulation or will become involved in implementation of the project include:

- 1 - Governor's Office - State Planning Coordinator
- 2 - Wyoming State Engineer's Office
- 3 - Wyoming Department of Environmental Quality - Water Quality Division
- 4 - Wyoming Game and Fish Department
- 5 - Wyoming Water Development Commission
- 6 - Wyoming State Farm Loan Board
- 7 - Wyoming Cooperative Extension Service
- 8 - University of Wyoming

Colorado River Basin Salinity Control Forum and Advisory Council

Coordination and review of this project will continue with the CRBSC Forum, its Work Group, and the Advisory Council. The representatives of this seven-state Colorado River drainage multidiscipline organization provides valuable basinwide guidance, coordination, and support for all salinity control activities in the basin. USDA and other cooperating agencies involved in the Big Sandy River salinity control project will continue to keep the Forum apprised of the status of implementation and will look for support from the Forum to secure adequate funding for implementation of this project.

Planned Coordination

With the roles and responsibilities of the several agencies participating in this project, it is necessary that activities be coordinated. In accordance with USDA procedures, a Local Salinity Coordinating Committee (LSCC) will be formed to accomplish necessary coordination as well as to implement the onfarm portion of the salinity control program.

The LSCC will receive policy guidance through the respective USDA state offices involved in the project's implementation. The LSCC is composed of a representative(s) from ASCS, CES, SCS, the ASCS County Committee (COC), and the Conservation District (CD). Other USDA agencies, the Bureau of Reclamation (USBR), Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), U.S. Environmental Protection Agency (EPA), as well as other state and local agencies such as the Eden-Farson Irrigation District will be encouraged to participate.

The LSCC will facilitate overall project implementation and coordination by:

1. Developing a process to ensure actions are taken to carry out approved implementation plans.
2. Assisting in development of criteria for the COC and CD to use in identifying and establishing priorities for servicing of

CRBSC requests from individuals, groups, and organizations for the development of salinity control plans (SCP's) and CRBSC contracts.

3. Assisting in the development and implementation of project monitoring and evaluation plans.
4. Assisting in the development and implementation of an information and education program to promote producer understanding and participation.
5. Assisting in the development and revision of the Project Implementation Plan and annual progress reports.

The LSCC will keep all agencies and groups abreast of what is being accomplished in the salinity control program. It will meet on a regular (as needed) basis. One meeting a year will be devoted to evaluating/ assessing the previous year's accomplishments and setting goals, budgets, and priorities for the future year's onfarm program.

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DRAFT EIS RECIPIENTS

Agencies, Organizations, and Individuals Sent Copies of the Draft EIS ^{1/} ^{2/}

The Notice of Availability of the Draft EIS appeared in the Federal Register on March 13, 1987. The initial 45-day review period was over on April 27, 1987. The following list of persons were sent copies of the Draft EIS.

GOVERNOR

*Honorable Michael J. Sullivan, Governor of Wyoming, Capitol Building, Cheyenne, Wyoming 82002

U.S. LEGISLATORS AND FIELD OFFICES

Honorable Malcolm Wallop, United States Senator, 6327 Dirksen Senate Office Building, Washington, D.C. 20510

Honorable Alan Simpson, United States Senator, 6205 Dirksen Senate Office Building, Washington, D.C. 20510

Honorable Dick Cheney, Member, United States House of Representatives, 225 Cannon House Office Building, Washington, D.C. 20515

Susan Cole, Representative for U.S. Senator Wallop, Federal Building - Room 2201, 100 East B Street, Casper, Wyoming 82601

Warren Carlson, Representative for U.S. Senator Simpson, Federal Building - Room 3201, 100 East B Street, Casper, Wyoming 82601

Paul Hoffman, Field Representative for Congressman Cheney, Federal Building - Room 4003, 100 East B Street, Casper, Wyoming 82601

Anthony Padilla, Area Representative for Congressman Cheney, P.O. Box 1357, Green River, Wyoming 82935

Robin Bailey, Representative for U.S. Senator Alan Simpson, 2632 Foothills Boulevard, Room 104, Rock Springs, Wyoming 82901

Billee Jelouchan, Representative for U.S. Senator Malcolm Wallop, 2632 Foothills Boulevard, Room 104, Rock Springs, Wyoming 82901

1/ A single asterisk indicates that the agency, group, or individual responded to Draft Environmental Impact Statement. Some responses provided by a regional or more local office rather than the head office shown on the list.

2/ Two asterisks indicate that an agency, group, or individual requested and was granted a 15-day extension.

Big Sandy Draft EIS Distribution List Continued

STATE LEGISLATORS

State Senator Frank Prevedel, 433 Fremont, Rock Springs, Wyoming 82901

State Senator Robert Reese, 160 East Flaming Gorge Way, Green River, Wyoming 82935

State Senator John Schmidt, 1406 Collins, Rock Springs, Wyoming 82901

State Senator John F. Turner, Triangle X Ranch, Moose, Wyoming 83012

State Representative Dan Budd, P.O. Box 650, Big Piney, Wyoming 83113

State Representative Sam Blackwell, 610 Donalynn Dr., Rock Springs, Wyoming 82901

State Representative Carl Maldonado, P.O. Box 99, Green River, Wyoming 82935

State Representative Louise Ryckman, 265 Hackberry, Green River, Wyoming 82935

State Representative Richard Honaker, 1208 Hilltop Drive, Rock Springs, Wyoming 82901

State Representative Christopher Plant, 2839 Santa Cruz Drive, Rock Springs, Wyoming 82901

STATE OF WYOMING (See also Governor)

Warren White, State Planning Coordinator, State Planning Coordinator's Office, 2320 Capitol Avenue, Cheyenne, Wyoming 82002

Bill Budd, Executive Director, Economic Development and Stabilization Board, Herschler Building, Cheyenne, Wyoming 82002

Bill Gentle, Acting State Executive, State Conservation Commission, 2219 Carey Avenue, Cheyenne, Wyoming 82002

*Acting State Engineer, State Engineer's Office, Herschler Building, Cheyenne, Wyoming 82002

*John Orton, Commissioner, Wyoming Department of Agriculture, 2219 Carey Avenue, Cheyenne, Wyoming 82002

*Randolph Wood, Director, Department of Environmental Quality, Herschler Building, Cheyenne, Wyoming 82002

*Michael Purcell, Administrator, Wyoming Water Development Commission, Herschler Building, Cheyenne, Wyoming 82002

Big Sandy Draft EIS Distribution List Continued

*Dr. Robert Bush, State Historic Preservation Officer, Historic Preservation Office, Archives, Museum and Historic Department, 2301 Central Avenue, Barrett Building, Cheyenne, Wyoming 82002

*Bill Morris, Director, Wyoming Game and Fish Department, 5400 Bishop, Cheyenne, Wyoming 82002

Phillip Riddle, District Supervisor, Wyoming Game and Fish Department, 351 Astle, Green River, Wyoming 82935

David Dufek, Area Fish Supervisor, Wyoming Game and Fish Department, 351 Astle, Green River, Wyoming 82935

Elaine Raper, Wildlife Biologist, Wyoming Game and Fish Department, 351 Astle, Green River, Wyoming 82935

Jim Straley, Wildlife Management Coordinator, Wyoming Game and Fish Department, Box 562, Pinedale, Wyoming 82941

Dave Lockman, Biologist, Wyoming Game and Fish Department, Box 96, Smoot, Wyoming 83126

Bob Oakleaf, Biologist, Wyoming Game and Fish Department, 260 Buena Vista, Lander, Wyoming 82520

COOPERATIVE EXTENSION SERVICE - UW (See also Sweetwater County)

Dr. Fee Busby, Director, Cooperative Extension Service, Agriculture Building, Room 102, University of Wyoming, Laramie, Wyoming 82071

Donald J. Brosz, Associate Professor, Cooperative Extension Service, University of Wyoming, University Station, P.O. Box 3354, Laramie, Wyoming 82071

WATER QUALITY, SALINITY

Al Jonez, Chief, Colorado River Water Quality Office, USDI-Bureau of Reclamation D1000, P.O. Box 25007, Denver, Colorado 80225-0007

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

Ernest Weber, Chairman, Colorado River Basin Salinity Work Group, Colorado River Board of California, 107 South Broadway, Los Angeles, California 90012

W. R. Evans, c/o Bureau of Reclamation, E & R Center - D-1000, P.O. Box 25007, Denver, Colorado 80225-0007

Big Sandy Draft EIS Distribution List Continued

USDA

Francis Lum, Assistant Chief-West, Soil Conservation Service,
P.O. Box 2890, Washington, D.C. 20013

Edgar H. Nelson, Director, Basin and Area Planning, Soil Conservation
Service, P.O. Box 2890, Washington, D.C. 20013

George Stem, Land Treatment Program Division, Soil Conservation Service,
P.O. Box 2890, Washington, D.C. 20013

George Bluhm, Director, West National Technical Center, Soil
Conservation Service, Room 547, 511 Northwest Broadway, Portland, Oregon
97209-3489

Douglas A. Gasseling, Acting Project Coordinator, Soil Conservation
Service, 79 Winston Drive, Rock Springs, Wyoming 82901

Garen Sailors, Area Conservationist, Soil Conservation Service, Federal
Building - Room 3124, 100 East B Street, Casper, Wyoming 82601

Don Kessler, District Conservationist, Soil Conservation Service,
79 Winston Drive, Rock Springs, Wyoming 82901

Verne Bathurst, State Conservationist, Soil Conservation Service,
201 East Indianola, Suite 200, Phoenix, Arizona 85012

E. E. Andreucetti, State Conservationist, Soil Conservation Service,
2121-C Second Street, Suite 102, Davis, California 95616-5475

Sheldon Boone, State Conservationist, Diamond Hill, Building A,
Third Floor, 2490 West 26th Avenue, Denver, Colorado 80211

Francis T. Holt, State Conservationist, P.O. Box 11350, Salt Lake City,
Utah 84147-0350

Michael Ormsby, State Director, Farmer's Home Administration,
P.O. Box 820, Casper, Wyoming 82602

Harold Hellbaum, State Executive Director, Agricultural Stabilization
and Conservation Service, P.O. Box 920, Casper, Wyoming 82602

Gordon Nebecker, District Director, Agricultural Stabilization and
Conservation Service, Route 63, Marrienne Drive #1, Lander, Wyoming 82520

(See also Sweetwater County ASCS Committee)

Gary Cargill, Regional Forester, U.S. Forest Service, P.O. Box 25127,
Lakewood, Colorado 80225

Director, Office of Equal Opportunity, Room 102-W, U.S. Department of
Agriculture, Washington, D.C. 20250

Big Sandy Draft EIS Distribution List Continued

USDI

Secretary of the Interior, U.S. Department of the Interior, Washington,
D.C. 20240

*Office of Environmental Project Review, U.S. Department of the Interior,
Room 4241, Washington, D.C. 20240

Lloyd Porter, Wyoming U.S. Bureau of Reclamation Representative,
P.O. Box 167, Cheyenne, Wyoming 82001

Hillary Oden, Wyoming State Director, Bureau of Land Management,
P.O. Box 1828, Cheyenne, Wyoming 82002

Donald Sweep, District Manager, Bureau of Land Management, Box 1869,
Rock Springs, Wyoming 82902-1869

USDI-Fish and Wildlife Service, Federal Building - Room 7010,
2120 Capitol Avenue, Cheyenne, Wyoming 82001

Area Manager, U.S. Fish and Wildlife Service, Federal Building -
Room 3035, 316 North 26th Street, Billings, Montana 59101

U.S. Fish and Wildlife Service, Federal Building, 301 South Park,
P.O. Box 10023, Helena, Montana 59626

Mr. Robert McCue, Field Supervisor, U.S. Fish and Wildlife Service,
2060 Administration Building, 1745 West 1700 South, Salt Lake City,
Utah 84104-5110

Richard Gilbert, Refuge Manager, Seedskafee National Wildlife Refuge,
U.S. Fish and Wildlife Service, Box 67, Green River, Wyoming 82935

Mike Lockhart, Ecological Services, U.S. Fish and Wildlife Service,
529 25 $\frac{1}{2}$ Road, Suite B-113, Independence Plaza, Grand Junction,
Colorado 81505

EPA

Office of Federal Activities - A104, Environmental Protection Agency,
401 M Street, S.W., Washington, D.C. 20460

**Regional Administrator, Environmental Protection Agency - Region VIII,
1860 Lincoln Street, Denver, Colorado 80295

DEPARTMENT OF COMMERCE

Ecology and Conservation Division, National Oceanic and Atmospheric
Administration, Washington, D.C. 20230

Big Sandy Draft EIS Distribution List Continued

CORPS OF ENGINEERS

District Engineer, U.S. Army Engineer District - Omaha, 6012 U.S. Post Office and Courthouse, 215 North 17th Street, Omaha, Nebraska 68102

Chief of Engineers, Corps of Engineers, ATTN: DAEN-CWZ-P, U.S. Department of the Army, Washington, D.C. 20314

DEPARTMENT OF ENERGY

Department of Energy, Washington, D.C. 20585

DOT

Coordinator, Water Resources, U.S. Coast Guard G-WS/11, U.S. Department of Transportation, 2100 Second Street, S.W., Washington, D.C. 20590

HISTORIC PRESERVATION (See also State of Wyoming)

Advisory Council on Historic Preservation, 730 Simms Street, Room 450, Golden, Colorado 80401

SWEETWATER COUNTY AGRICULTURAL EXTENSION AGENT

Bill Coffee, 3320 B Yellowstone Road, Rock Springs, Wyoming 82901

SWEETWATER COUNTY ASCS COMMITTEE

Morgan Renner, County Executive Director, Star Route, Box 27, Lyman, Wyoming 82937

EDEN VALLEY IRRIGATION AND DRAINAGE DISTRICT

Tom Taliaferro, President, Box 99, Farson, Wyoming 82932

*Ten District members responded.

BIG SANDY CONSERVATION DISTRICT

James Hodder, Chairman, Box 46, Farson, Wyoming 82932

SWEETWATER COUNTY COMMISSIONERS

John Yerkovich, Chairman, 213 Aspen Way, Rock Springs, Wyoming 82901

Big Sandy Draft EIS Distribution List Continued

WESTERN WYOMING RC&D AREA

Reed Gardner, Chairman, Route 1, Afton, Wyoming 83110

ORGANIZATIONS

**Larry J. Bourret, Executive Vice President, Wyoming Farm Bureau,
P.O. Box 1348, Laramie, Wyoming 82070

Robbie Garret, Trout Unlimited, Upper Green River Chapter, Box 909,
Pinedale, Wyoming 82941

Sierra Club, 330 Pennsylvania Avenue, S.E., Washington, D.C. 20003

Larry Mehlhaff, Northern Plains Regional Representative, Sierra Club,
Columbus Building - Room 25, 23 North Scott, Sheridan, Wyoming 82801

National Wildlife Federation, ATTN: Legislative Representative,
1412 16th Street, N.W., Washington, D.C. 20036

*Wyoming Wildlife Federation, P.O. Box 333, Cheyenne, Wyoming 82003

Bruce Johnson, President, Wildlife Society - Wyoming Chapter,
P.O. Box 555, Big Piney, Wyoming 83113

Wyoming Outdoor Council, Inc., P.O. Box 1449, Lander, Wyoming 82520-1449

Sweetwater County Wildlife Association, P.O. Box 1233, Rock Springs,
Wyoming 82901

Natural Resources Defense Council, Inc., 1350 New York Avenue, N.W.,
Suite 300, Washington, D.C. 20005

LIBRARIES

Western Wyoming College Library, ATTN: Robert Kalabus, Technical
Services, P.O. Box 428, Rock Springs, Wyoming 82902-0428

Rock Springs Public Library, 400 C Street, Rock Springs, Wyoming 82901

Sweetwater County Public Library, 300 North 1 East, Green River,
Wyoming 82935

Eden Valley School, ATTN: Librarian, Farson, Wyoming 82932

Fred C. Schmidt, Head, Documents Department, The Libraries, Colorado
State University, Fort Collins, Colorado 80523

COMMENTS AND RESPONSES



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII

999 18th STREET—SUITE 500
DENVER, COLORADO 80202-2405

MAY 12 1987

Ref: 8PM-EPB

Frank S. Dickson
State Conservationist
Soil Conservation Service
Room 3124 Federal Building
100 East "B" Street
Casper, WY 82601

RE: Colorado River Salinity Control
Program Draft Environmental Impact
Statement for Big Sandy River Unit,
Sublette and Sweetwater Counties,
Wyoming

Dear Mr. Dickson:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the Region VIII Office of the Environmental Protection Agency has completed its review of Big Sandy River Unit Draft Environmental Impact Statement (EIS).

1 Our review of the Big Sandy project has been long and complex. We have included an expanded discussion of past coordination and review in the attached detailed comments. The EPA strongly supports the efforts of SCS to reduce salinity concentrations in the Colorado River Basin. We recognize the difficulty in developing cost effective salinity control programs, and believe that onfarm irrigation improvements can be among the most cost-effective measures. The Big Sandy Unit is a feasible salinity control project which we believe has the potential to meet the goals of the Colorado River Basin Salinity Control Act (SCA) concurrently with the goals and requirements of the NEPA and the Clean Water Act (CWA).

2 While we support the overall objective of the Big Sandy Project, we have several concerns which we have communicated to SCS through prior correspondence and discussion. Our major concern with the Big Sandy Project implementation as proposed in the DEIS is the elimination of the existing Bone Draw fishery. Another concern with the DEIS is the lack of detailed discussion of wetland mitigation. In our April 29, 1987 meeting with you and your staff we discussed these two major concerns. We feel the meeting was productive and have concluded the issues can be resolved prior to completion of the Final EIS. As you stated in your May 4, 1987 letter the SCS will include options, detailed methods and implementation procedures for the preservation of Bone Draw's existing uses in the Final EIS. The SCS will also include additional details on how the lost wetland values would be mitigated.

Based on the procedures EPA uses to evaluate the adequacy and impacts of a draft environmental impact statement, EPA concludes that the Big Sandy River Unit Draft Environmental Impact Statement will be listed in the Federal Register in category E0-2. The primary reason for this rating is the potential for the elimination of the existing fishery use of Bone Draw. The SCS needs to explore all practicable options to accommodate the requirements of the Clean Water Act and the Salinity Control Act. It appears, based on our April 29th meeting and your subsequent letter of May 4th, we are making progress toward this goal.

- 4 EPA has also concluded there are additional informational needs required in the revised EIS. These include wetland mitigation plans, discussion of the impacts resulting from future uses of saved water, and discussion of impacts resulting from the proposed temporal patterns of reservoir releases. Detailed analysis of these additional items should result in an alternative which provides the greatest salinity benefits at the least environmental cost. Based on our April 29th meeting and your subsequent letter, we understand these informational needs will be addressed prior to the Final EIS. We encourage a meeting of all affected parties to discuss the draft revisions and ensure the language is adequate to meet the NEPA requirements prior to publication of the Final EIS. We again express our willingness to work with SCS, the State of Wyoming, and others to achieve resolution of these issues. We are available, at your convenience, to assist where possible in this process. Please contact Dave Ruiter of my staff at (303)293-1830 (FTS 564 1830) if you require further explanation of our concerns or assistance in the future NEPA process. If I can be of any assistance in implementing this process, please, feel free to give me a call (303/293-1609 or FTS 564-1609).

Sincerely,

Kerrigan G. Clough

Kerrigan G. Clough
Assistant Regional Administrator
for Policy and Management

Frank

Again, thank you for hosting
our very productive meeting on April 29
and your letter of May 4.

K.C.

EPA DETAILED COMMENTS ON THE
BIG SANDY SALINITY CONTROL PROJECT

HISTORY OF PAST COORDINATION

- 5 In 1981 we reviewed an informational copy of the 1980 SCS Big Sandy River Colorado River Basin Salinity Control Study. While we did not provide formal comments at that time (the study was informational in nature, not a NEPA document, and the SCS did not recommend implementation of any of the alternative plans), internal review notes indicate we felt a reasonable range of alternatives was being considered. Between 1980 and 1986, the SCS and the State of Wyoming developed the low-pressure sprinkler irrigation alternative (Selected Plan) to reduce salinity loads to the Big Sandy River. In June 1986, the SCS provided EPA copies of the Selected Plan and associated Environmental Assessment and Finding of No Significant Impact. EPA informed (phone call) the SCS of our concerns with the Selected Plan and a meeting to discuss these concerns was arranged. At the July 28, 1986 meeting EPA expressed its concerns about eliminating the existing fishery uses of Bone Draw, the voluntary nature of the mitigation plan, and the future use of the saved water. An EPA request for extension of the comment time period was approved.
- 6 EPA, in an August 19, 1986 letter, formally notified the SCS of our determination that the EA and FONSI for the Selected Plan were inadequate to insure significant environmental impacts would not result from the Selected Plan implementation. We again indicated our concerns on Bone Draw and the voluntary mitigation plan. We requested a revision of the Selected Plan and offered our assistance in developing the revised plan. In October 1986, EPA, U.S. Fish and Wildlife Service, SCS and State of Wyoming personnel visited the Big Sandy Project area, with special emphasis placed on visiting Bone Draw and examples of the project area wetland types. This visit initiated discussion of methods to preserve Bone Draw's existing uses. In November 1986 the SCS published a "Notice of Intent to Prepare an EIS for the Big Sandy Salinity Control Project" and in December 1986, SCS requested cooperating agency review of the DEIS from several State and Federal agencies. In January, 1987, EPA verbally requested cooperating agency status and the SCS provided EPA a cooperating review draft of the DEIS. In mid-February 1987, EPA provided SCS the proposed cooperating agency agreement and detailed comments on the cooperating agency review draft. In late February 1987, the SCS acknowledged receipt and appreciation of the review comments and indicated the language proposed by EPA in the cooperating agreement was inconsistent with the Colorado Salinity Control Act.
- 7 Additionally, the SCS was unable to agree with EPA's determination that a mitigation plan is a necessary element of NEPA documents prepared for U.S.D.A. Colorado River Salinity Control Act projects. The SCS felt there was insufficient time to resolve these issues prior to the public review period on the DEIS.

- 8 On April 29, 1987, EPA and SCS personnel met to discuss EPA's concerns and develop methods to resolve the NEPA and CWA issues. As a result of this meeting SCS committed to better define the project implementation process in the FEIS, with special emphasis to be placed on methods to protect the existing uses of Bone Draw, and additional discussion on the wetland mitigation implementation process. On May 4, 1987 SCS sent a letter to EPA confirming the agreements reached at the April 29th meeting.

NATIONAL ENVIRONMENTAL POLICY ACT, CLEAN WATER ACT AND THE SALINITY CONTROL ACT

- 9 The National Environmental Policy Act of 1969 (NEPA) 42 U.S.C. Section 4321 et seq. was enacted to establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality, and for other purposes. NEPA, Section 102, contains the Congressional direction to all agencies of the Federal Government for implementation of the national policy. The Council on Environmental Quality, created under Title II of the NEPA, published the Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act in 1978 (40 C.F.R. Parts 1500-1508 as amended).
- 10 These regulations are the implementation regulations for Section 102(2) of the NEPA, and describe what federal agencies must do to comply with the procedures and achieve the goals of the NEPA.
- 11 The Clean Water Act (33 U.S.C. Section 1251 et seq.) was enacted to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The EPA, as directed at Section 102 of the CWA, has developed, and amended, numerous implementation programs since passage of the CWA. The revised Water Quality Standards Regulation (40 CFR Part 131) and the EPA Water Quality Standards Handbook (December 1983) which is the guidance provided to assist the States in implementing the revised regulations, contain the majority of the regulations and guidance pertinent to the Big Sandy Project. The State of Wyoming implements the CWA Regulation through its Wyoming Water Quality Rules and Regulations.
- 12 The Colorado River Basin Salinity Control Act (SCA)(43 U.S.C. Section 1571 et seq.) authorized 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. Public Law 98-569 made several amendments to the 1974 Salinity Control Act. One of the amendments implemented the voluntary on-farm salinity control program through the Department of Agriculture. The Big Sandy project is the first salinity control project to seek authorization under the 1984 voluntary on-farm program amendments.

- 13 Our review of the SCA indicates the SCA was not intended to alter the requirements of NEPA or the CWA. We point out the language contained in Section 207 of the Salinity Control Act (43 U.S.C. Section 1597): "nothing in this sub-chapter shall be construed to alter, amend, repeal, modify, interpret, or be in conflict with the provisions of the . . . National Environmental Policy Act of 1969 (42 U.S.C. Section 4321 et seq.), and the Federal Water Pollution Control Act, as amended (33 U.S.C. Section 1251 et seq.)." The direction contained in this section is quite clear. EPA's legal conclusion is that a salinity control project proposed under the SCA, and the associated NEPA documentation, must meet all NEPA and CWA requirements. The following comments are based on this conclusion.

DEIS ADEQUACY

- 14 The following items must be included in the EIS to meet the NEPA adequacy requirements:

Detailed mitigation plans (even if appropriate measures are not within the jurisdiction of SCS); for avoidance of loss of existing uses in Bone Draw; replacement of appropriate, lost wetland functions; and the probability that such plans will be implemented.

We have used the word "mitigation" throughout these comments in the context of NEPA "mitigation", this is, avoid, minimize, rectify, and compensate (40 CFR 1508.20). We recognize the SCA Part II does not contain the word "mitigation" and addresses the NEPA usage of mitigation as "replacement of incidental fish and wildlife values foregone". However, based on our conclusion the SCA does not alter the requirements of NEPA, we use the NEPA definition, and stress the importance of avoiding impacts.

- 15 NEPA requires the inclusion of detailed mitigation plans in the DEIS which address all project effects (40 CFR 1502.14, 1502.16(e), (f), (g), and (h)). This includes development of mitigation plans which may not be implementable by the lead agency (46 Fed. Reg. 18026, March 16, 1981 Q. 19). We understand the constraints of the SCA which allows the SCS to mitigate only on a voluntary basis. However, we believe there is sufficient flexibility in SCS' authority to work either independantly or with Federal or State Agencies, for creative solutions to the issue of replacing fish and wildlife values foregone.
- 16 The CWA provides the basis for the restoration and maintenance of the chemical, physical and biological integrity of the nation's waters. The CWA does not recognize degradation from existing uses within its goals. This antidegradation stance is further supported by EPA's Antidegradation Policy (40 CFR 131.12) and Wyoming's Policy (Wyoming Water Quality Rules and Regulations, Section 9). We recognize the goals of the SCA are to improve water quality. However, we do not believe these improvements can be at the expense of a reduction or elimination of existing uses. We again reference the language contained in Section 207 of the SCA in support of this conclusion.

- 17 We agree it may be necessary to affect some wetlands to achieve the SCA goals. However, the NEPA analysis must include detailed wetland mitigation plans, whether implementable by the SCS or not (see above references), which address methods to best mitigate all lost wetland values. Based on the direction provided by Executive Order 11990 (Protection of Wetlands), the NEPA document must address all values, not just habitat values.

PAGE BY PAGE DETAILED COMMENTS

- 18 Page F-4 - The first sentence indicates the data necessary to determine the amount of fish and wildlife habitat replacements which will be accomplished as a result of project implementation are unavailable.
- 19 The CEQ has regulations for addressing Incomplete or Unavailable Information in an EIS (40 CFR 1502.22). These regulations became effective May 27, 1986 and must be followed during preparation of all EIS' initiated after that date. The SCS has followed only the first step in following the CEQ regulation, that is, pointing out the information is unavailable. While the SCS indicated, and we agree, the unavailable information is relevant to assessing the level of impacts, the SCS did not include discussion of why the unavailable information is relevant.
- 20 The SCS indicates because of the "improved funding authority" granted by the 1984 SCA amendments which provides a 70% federal cost share, the potential for voluntary replacement of fish and wildlife values is greater than other ongoing salinity control projects. The SCS also indicates because these are new regulations "there is not even data available to make a credible assumption on the level of voluntary program participation." We believe there are available data on this issue and point out the experience gained in the Hancock Cove Watershed Project, Duchesne County, Utah. That draft environmental assessment was published in September 1985 and the final environmental assessment was published in August 1986. In the Hancock Cove project the SCS presumed a cost share rate of 75% federal, 25% local. The SCS then interviewed owners of 88% of the program lands. This interview process resulted in a voluntary participation rate of 25% which would result in mitigation of 30% of the projected losses. The SCS concluded that a reduction in the landowners share to 10%-15% or less would probably increase the participation rate.
- 21 The ultimate result of this process was a net loss of 512 wetland acres. The preproject wetland acreage was 785. This past experience, at a 75/25 cost share, leads EPA to conclude there are data available to make a credible assumption on the future participation rate based on a 70-30 cost share. This past experience also indicates the voluntary participation rate in the mitigation program will not be high.

- 22 We recommend the SCS make a brief survey of the 80 irrigators to determine their willingness to cost share the mitigation efforts. We recognize the SCS is unable to provide the irrigator with an exact dollar value of the mitigation measures at this time. We suggest the SCS use the dollar values presented on page 2-22 of the DEIS ($\$375,000/\text{year} \times .30$ (landowners share)/80 (landowners) - $\$1,400/\text{landowner}/\text{year}$). The ultimate replacement costs may not equal this figure, however, this is a reasonable approach which will provide a credible estimate of volunteer rate. If the SCS has developed information since publishing the DEIS which better defines the average cost per landowner for wetland replacement, the new information should be used in the survey and thoroughly documented in the EIS.
- 23 The SCS indicates here, and elsewhere (page F6), it believes the potential for voluntary replacement of fish and wildlife values in the project area is greater than in other ongoing salinity control projects. We request a table be included which documents the mitigation success rates for ongoing projects in the upper basin. Based on the Hancock Cove experience we request further explanation of why the Big Sandy project will have better than a 25% rate of voluntary participation in the mitigation.
- 24 Page 2-3 - What is the basis for the assumption that fenced, enhanced, and managed Types 3,4, and 10 wetlands are four times more valuable than grazed, unmanaged Types 1,2, and 9? What is the basis for the assumption that developing, preserving, and enhancing Types 3, 4, 9, and 10 wetlands compensates for losses and/or alterations caused by each of the various alternatives? (see 40 CFR 1502.24) Knowledge of wetland values has increased since the 1970's and this analysis should be revised to reflect current understanding.
- 25 Page 2-6 through 2-12 - Under Alternative 2, onfarm irrigation efficiencies would increase to 41%, causing reduced water supply on 3775 acres of wetlands. This would be mitigated via enhancement of 180 acres of existing wetlands and managing 90 acres of adjacent terrestrial habitat for waterfowl. Alternative 3 would increase irrigation efficiencies to 60%, cause reduced water supply on 1010 acres and eliminate 2765 acres of wetlands. These would be mitigated via enhancement of 860 acres of wetlands and managing 430 acres of terrestrial lands for waterfowl. Alternative 4 would increase irrigation efficiencies to 62%, cause reduced water supply on 3445 acres and eliminate 130 wetland acres. 180 acres of wetland enhancement and 90 acres managed for waterfowl are presented as mitigation. These figures appear to be inconsistent, both in terms of impacts identified (e.g., between Alternatives 3 and 4, both of which will have approximately similar post-project irrigation efficiencies), and in terms of mitigation proposed (e.g., between Alternatives 2 and 4, which have the same mitigation proposed for entirely different impacts). The same criteria should be used for all alternatives in evaluating impacts and proposing mitigation.

- 26 Page 2-12 - Irrigation Retirement Alternative: Please indicate who would/could implement this alternative.
- 27 Page 2-15 - Sublette Flats Alternative: Please indicate who would/could implement this alternative.
- 28 Page 2-25 - Because an alternative may be beyond the authority of the lead agency to implement is not in itself a sufficient reason for eliminating it from further study. NEPA requires that all reasonable alternatives be included, whether or not they are within the jurisdiction of the lead agency. (40 CFR 1502.14(c))
- 29 Page 3-1 First paragraph - It is unclear how the figure of 85% participation was arrived at. The Selected Plan indicates 15,700 acres would be included in the installation program. On page 4-3 it is indicated 15,700 acres are presently irrigated. The first footnote to Table 3-4 (page 3-9) indicates the 85% volunteer rate was derived by dividing the irrigable acreage by the presently irrigated acreage. Why would the SCS request a landowner to join an irrigation improvement program for lands which are not irrigated? On page 6-11 the document indicates no new lands would be brought into production. This statement indicates a 100% volunteer rate. On page 3-10 it is indicated several landowners already have installed low-pressure sprinkler systems. How are these systems accounted for? We request the SCS survey all 80 landowners to determine a reasonable volunteer rate. This could be accomplished at the same time as the previously noted mitigation survey. These participation surveys are essential to the adequate presentation of alternatives in the NEPA process.
- 30 Page 3-6 - First paragraph - The DEIS did not include what use the saved water would have, partly because this "was not within the authority of SCS". CEQ has provided guidance on this point: "The EIS must identify all the indirect effects that are known, and make a good faith effort to explain the effects that are not known, but are 'reasonably foreseeable'." SCS must address any uncertain, but probable, effects of its decisions (46 Fed. Reg. 18026 March 16, 1981, Q.18). The EIS indicates the water would be stored in the project reservoirs and released either when the reservoirs become full, or, on a schedule to be approved by the Wyoming SEO, for enhancement of downstream fisheries. Either of these release schedules would result in temporal changes in downstream flow regimes. When the WGFD developed the proposed fishery release schedule it recognized the potential erosion problems associated with the release schedule and planned accordingly. The EIS should contain analysis of these potential water quality effects for all proposed release schedules and how the potential negative effects would be avoided. Any positive impacts of the altered releases should also be documented.

- 31 Additionally, the EIS must include analysis of potential future beneficial uses of the saved water. NEPA requires that "to the fullest extent possible the policies, regulations and public laws of the United States shall be administered in accordance with the policies (of NEPA)" 42 U.S.C. 4332. NEPA requires examination of all reasonable project effects; both direct and indirect (40 CFR 1502.16). The proposed project results in a net increase in Big Sandy River discharge of about 20,000 AF per year. This "additional water" has the potential to be used in an environmentally damaging or beneficial manner. The resulting effects of this future water use should be examined in the EIS, even if not under the control or responsibility of SCS, to allow the public and decisionmakers a review of total project impacts.
- 32 We recognize the decisions on future water use will be made by the State. We also recognize the State is a major proponent of the project. The SCS should request this information from the State as part of the cooperating agreement between the SCS and the State. If the State cannot better define the future water use, the SCS should follow the CEQ regulations for Incomplete or Unavailable Information and develop a reasonable future use assessment (51 Fed. Reg. 15618-15626 April 25, 1986). We believe this information is important to a reasoned choice among the alternatives.
- 33 It is also necessary to include a decision from the State on the proposed reservoir release pattern. The reader must be provided with a reasonable view of project impacts and benefits. The SCS should again request a decision from the State, or if the State cannot provide the decision, the SCS must follow the CEQ regulations for Incomplete and Unavailable Information discussed above.
- 34 Page 3-7 - First paragraph - Do the voluntary replacement costs include only the 860 acres proposed to be preserved and enhanced (see p. 2-21), or does this include additional voluntary replacement that individual producers or other groups (such as irrigation districts) may implement? Also, how was the 860 acre figure derived? Are the 860 acres on- or off-farm? Who will be responsible for this replacement?
- 35 Page 3-13 - Last paragraph - The last line indicates the "SCS would provide assistance only if one of the alternatives was selected for installation or adequate replacement had been or would be accomplished in the salinity control area." Previously, this paragraph indicates the alternatives would avoid or replace the lost wetlands. These are the types of commitments NEPA requires and the SCS is to be commended. However, we are unsure about the several other statements in this paragraph which include the qualifier "insofar as practicable". Who defines "practicable"? How does the SCS determine what is "practicable"? What other programs will the SCS use to encourage the preservation of wetlands?

- 36 Page 3-15 - Second paragraph - Does this paragraph indicate that high-value wetlands cannot be exempted? What method is used to determine the level of value? We interpret this paragraph to indicate that wetlands which are not inclusions within cropland, hay land or pasture land (such as the Bone Draw wetlands) cannot be exempted. If this is an incorrect interpretation, please explain in detail.
- 37 Page 3-15 - Last paragraph - This paragraph indicates WGFD's commitment to assist in developing mitigation methods, however, the first paragraph on page 3-17 indicates this assistance is limited by budget and program constraints. We request the SCS determine the feasibility of funding the WGFD's efforts to ensure mitigation efforts are completed.
- 38 Page 3-18 - First paragraph - We request the SCS provide assistance in monitoring the actual pre and post project salinity concentrations of the Big Sandy River. This would provide a direct correlation between irrigation efficiencies and riverine salinity improvements and is the ultimate measure of project success.
- 39 Page 3-18 - Last paragraph - Please provide the EPA Region VIII office two copies of each future annual report should the SCS implement one of the Big Sandy Project alternatives.
- 40 Table 4-6 - We request this table be modified to include a column (both by type and water source) for the wetland acres which are actually within the 15,700 acres of irrigated lands. We would also like to see a determination of the number of acres which would be included in the SCS definition of low-value as discussed on page 3-15.
- 41 Page 4-28 - Second paragraph - We note that the highest diversity of non-game species occurs in and near the irrigated lands. We request that, at a minimum, one non-game species, which is highly dependent on the wetland types to be affected, be included in the future wetland analysis.
- 42 What is the net value of agricultural production per farm, both under existing conditions, and with the increased production projected for some of the alternatives?
- 43 Chapter 5 - All alternatives must be given substantially equal treatment under NEPA (Section 1502.14(b)). This chapter only makes the determination of whether or not the Selected Alternative complies with the referenced rules and regulations. We request that relevant portions of the rules and regulations be discussed. For example, the discussion of antidegradation is incomplete. Clean Water Act policies and regulations require that all existing instream beneficial uses shall be maintained and protected (see 40 CFR 131.12(a)(1) and Section 9, Wyoming Department of Environmental Quality Rules and Regulations Chapter I, "Quality Standards for Wyoming Surface Waters"). Additionally, Bone Draw is a surface water of the State, not a point source discharge. Elimination of Bone Draw is not the same as elimination of a point source discharge to surface waters.

- 44 Page 5-2 - 404 Permit process. We request the SCS and the COE revisit the issue of 404 permit requirements for the Big Sandy Project. We specifically request a redetermination be based upon the fact that at least 3500 acres (Natural and multiple water sources Table 4-6) of potentially affected wetlands are not "solely" dependent on irrigation waters for their wetland characteristics. At a minimum, these natural wetlands, although irrigation "supplemented", fall within the 404 protection regulations. We are concerned the project activities (such as construction of irrigation reservoirs and wasteway system) could result in discharges into waters of the United States.
- 45 Page 5-3 - Third paragraph - According to the DEIS, to replace wildlife habitat values foregone on approximately 3775 acres of wetlands (primarily Types 1, 2, and 9), about 860 acres of Types 3,4, and 10 wetlands will be preserved and enhanced. Consistent with our position in the past on other projects, acre-for-acre replacement with ecological equivalency would be required to adequately compensate for the loss. SCS should provide documentation detailing how 860 acres of Types 3,4, and 10 will provide ecological equivalency with the 3775 acres impacted. In addition, EPA generally does not consider preservation of existing wetlands as part of a mitigation plan.
- 46 Page 5-5 - Last paragraph - would it be against Wyoming Water Quality Rules and Regulations to discharge non-saline waters to Bone Draw? Please request a determination from the State of what "no discharge of salt" means and include in this discussion. Does "no salt" mean zero mg/l TDS, 50 mg/l TDS, 1000 mg/l TDS?
- 47 Page 5-6 - Last paragraph - The Water Quality Act of 1987 (amending the CWA) now specifically provides direct statutory recognition of EPA's antidegradation policy (Water Quality Act of 1987 Section 404(b), new CWA Section 303(d)(4)(B), 33 U.S.C. Section 1313(d)(4)(B)).
- 48 Chapter 6 - This chapter documents the environmental consequences of the Selected Plan. However, NEPA requires substantially equal treatment be given to all alternatives. The Alternatives section (Chapter 2) does describe and compare the alternatives, and provide a concise descriptive summary of the impacts, as required by NEPA. The Environmental Consequences section should be devoted largely to a scientific analysis of the direct and indirect environmental effects of the proposed action and of each of the alternatives. This detailed discussion should be the basis for the summary in the Alternatives section (46 Fed. Reg. 18026 March 16, 1981, Q. 7).

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Page 6-3-HEP evaluation procedures - We commend the SCS for recommending the use of HEP procedures to document the wetland values potentially affected by the Big Sandy Project, and recognize this as an effort to determine impacts through the use of the best methods available. Normally this process is conducted prior to preparation of the DEIS to provide the reader with documentation of expected project impacts. We request the HEP evaluation team utilize the cover type classification system as the basis for the HEP evaluation. We believe this methodology, when properly applied and verified, inherently provides an adequate basis for documenting habitat values. We feel appropriate wetland mitigation can be developed and documented based upon this method alone, without the necessity of selecting, developing, modifying or verifying subsequent wildlife habitat suitability models. Additionally, a properly developed mitigation plan based on vegetation can ensure habitat value losses are mitigated as well as the non-habitat values recognized in E.O. 11990.

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Page 6-11 - Third paragraph - This is the only mention of low interest State loans for salinity control we noted in the DEIS. In previous discussions and documents, State loans have received greater coverage and it has been indicated that State funding assistance is essential to project success. What is the current status of low interest State loans? Will it be possible to use these, or other, State loans for mitigation?

Responses to Comments From EPA

1. SCS appreciates EPA's efforts in evaluation throughout the process of planning for the Big Sandy River Unit, as well as their efforts in review and comment on various draft documents. SCS agrees with EPA's statement that the Big Sandy River Unit is a feasible salinity control unit. SCS has been concerned that the goals of the SCA (Salinity Control Act) have some apparent conflicts with NEPA, Executive Order 11990, and the CWA (Clean Water Act) that required resolution or accommodation. SCS believes that all of these relevant laws are addressed insofar as possible in this document.
2. A discussion of creditable alternatives for potential Bone Draw streamflow replacement; constraints on implementation; the probability of occurrence; and agencies and/or organizations which could possibly undertake such action is provided in the FEIS.

Information concerning the water quality of Bone Draw and the relationship of that water quality to Bone Draw's existing use is included in the FEIS.

USDA is well aware of EPA's concern about how much habitat mitigation will take place. Changes have been made in the document to clarify the mitigation discussion. Responses to EPA Comments 7, 14, 35, and 36 and USDI Comments 3 and 5 also clarify the mitigation issue.

SCS has only indications so far as to how much voluntary mitigation might take place as a result of our accelerated technical assistance. However, SCS sees considerable wildlife interest in the Big Sandy River Unit. For example, at several meetings wildlife values have been discussed with landowners. Most of the landowners have indicated a cognizance of the need of wildlife habitat replacement, but they are not willing to firmly commit themselves until they are assured that salinity implementation funds are available and their costs are better defined.

SCS is aware that all land is not equally valuable for habitat and admit that it would be very desirable to apply 100 percent mitigation cost in carefully selected blocks of land rather than on individual farms. However, this option is not presently available to us.

Implementation will occur over a period of 1 to 9 years on a farm-by-farm basis. An overall monitoring strategy has been developed with broad-based input from state and federal agencies. This will include an annual report of effectiveness of practices, economic evaluation, farmer acceptance, effectiveness of salinity control, wildlife losses, and wildlife habitat replacement. A copy of this report will be provided to EPA.

3. SCS acknowledges the rating and has made a significant effort to revise the document to reflect our accommodation agreements. However, USDA is unable to resolve state water rights issues over which it has no control or to reallocate USBR water allocations established under federal law. See also response to EPA Comment 16 and a letter from the Wyoming State Engineer which follows these responses.
4. The issues of mitigation plans, saved water, and reservoir releases are discussed later in EPA Responses 7, 14, 30, 31, 32, 33, 35, and 36; USDI Comments 3 and 5; and a letter from the Wyoming State Engineer which follows these responses.

SCS appreciates the cooperation of EPA in trying to work out an accommodation and resolution of issues. SCS thinks that the document and associated revisions adequately meet the NEPA requirements.

In balancing SCS's need to maintain a reasonable implementation schedule versus the need for additional meetings for further accommodations, it does not appear that an additional formal meeting would significantly enhance the quality of the document. Again, SCS thanks the EPA staff for its effort and assistance. (Note: On September 10, 1987, an informal meeting was held between SCS and EPA representatives in Cheyenne, Wyoming. The purpose of this meeting was to present SCS's responses to accommodations agreed to in an SCS letter to EPA on May 4, 1987. A copy of that letter follows these responses to EPA comments. Several minor changes were made in the FEIS for clarity.)

5. Noted and clarified.

Early in 1984, the Governor of Wyoming asked the SCS to evaluate an additional alternative and update the landowner benefits that might be derived from installation of a low-pressure sprinkler irrigation system. The economic evaluation and development of a low-pressure sprinkler irrigation plan was completed in 1984. This alternative was presented to the State of Wyoming in November 1984 and reviewed at a public meeting with the Eden Valley Irrigation and Drainage District in December 1984. Consensus was favorable to the low-pressure sprinkler alternative. The State of Wyoming and the Eden Valley Irrigation and Drainage District asked the SCS to prepare an Onfarm Low-Pressure Sprinkler Alternative (Alternative 7, Selected Plan).

6. Noted.

7. There is misunderstanding of the SCS position concerning mitigation. SCS thinks that the draft EIS for the Big Sandy River Salinity Unit adequately discussed appropriate mitigation measures (40 CFR 1502.14(f)) and means to mitigate (40 CFR 1502.16(h)), in the Selected Plan. These measures are also displayed in Table 3-1. In addition, the potential costs for fish and wildlife development measures are included.

The Selected Plan also reflects wetland area mitigation by avoidance. As shown in Table S-1, there are 10,171 acres of wetlands in the Big Sandy River Unit and only 3,775 or 37 percent are impacted by the Selected Plan. In other words, 6,225 acres are not impacted by project implementation.

SCS has added additional information in the Selected Plan concerning: (1) incidental fish and wildlife values associated with irrigation regulation reservoirs and (2) potential ways for Bone Draw streamflow replacement, even though these potential measures would take place outside SCS authority and jurisdiction to implement and are in conflict with federal and state law.

A very important discussion of the means to mitigate is included in Chapter 6, "Implementation Procedures for Replacing Wildlife Habitat Values Foregone."

The document is very specific on the procedure for replacing wildlife habitat values foregone concerning which agencies will comprise the team to develop appropriate habitat suitability models that will be used to assess progress in the voluntary replacement of wetland and other wildlife habitat.

Therefore, it is SCS's contention that the EIS is in full compliance with the NEPA requirements for mitigation, even though the voluntary mitigation plan differs from EPA's concept of mitigation. The nature of a voluntary program precludes the development of a site specific, detailed mitigation plan as envisioned by EPA.

SCS acknowledges EPA concerns and has made changes to accommodate EPA and to clarify and resolve the issues. However, USDA is unable to resolve water rights issues over which it has no control. In addition, USDA has no specific authority for nonproject mitigation, other than to encourage voluntary participation, so the document may not resolve EPA's concern about the lack of sufficient incentive for the voluntary mitigation of wetland habitat. However, SCS hopes that EPA keeps in perspective that the proposed salinity control program implementation presents an inherent conflict between environmental values (i.e., improved water quality and water conservation versus wetland loss). Therefore, it may not be possible to resolve which of the environmental values is most important and at what level of mitigation the environmental value losses are acceptable.

8. A copy of the letter referred to in this comment has been included immediately following SCS's responses to EPA's comments. See also EPA Comment 4.
- 9, 10, 11, 12. Noted.
13. SCS notes that your reference to Section 207 of SCA omits the first sentence of Section 207 that states, "Except as provided in Section 205(b), 205(d) of this title" Both of the

referenced exception sections deal with the cost of construction, operation, and maintenance of measures to replace incidental fish and wildlife values foregone. SCS chose not to pursue the relevance of these exceptions because it thinks it has planned the Big Sandy River Unit fully in a NEPA context and therefore in accordance with all NEPA and CWA requirements.

14. The USDA has no specific authority other than to encourage voluntary participation to implement mitigation measures. USDA advocates retention of the important wetlands and seeks to ensure that such lands are not irreversibly converted to other uses unless other national interests override the importance of preservation or otherwise outweigh the environmental benefits derived from their protection (SCS rules for Compliance with NEPA, 7 CFR Part 650, paragraph 650.3(b)(9); Federal Register Vol. 44, No. 169, August 29, 1979, page 50580). For nonproject activities, the state conservationist may grant exceptions on a farm-by-farm basis if irrigation water management (water quality and water conservation) objectives conflict with wetland protection. SCS will evaluate economic, environmental, and other pertinent factors in such proposed actions (7 CFR Part 650.26(c)(3)(ii), Federal Register Vol. 47, No. 152, August 8, 1982, pp. 34114-34115. The evaluation of wetland losses shown in Table S-1 is the worst that would occur if no mitigation was achieved. However, SCS thinks that there will be voluntary participation in the creation and replacement of valuable wildlife habitat. The habitat voluntarily created through participation is expected to be of better quality than that which may be lost, and therefore wildlife will be better served. In addition, money spent on wildlife practices is not a complete measure of the amount of habitat improved, created, or replaced. In many cases, the management techniques employed create habitat with no additional expenditure of funds. In other cases, a small section of fence or some seeding for food and cover can be extremely beneficial to wildlife. Probably the greatest benefit to wildlife will accrue incidentally as sprinkler systems are installed. Many fields in the basin are odd-shaped and sprinkler irrigation systems are not easily fitted to these odd areas. As a result, many odd areas will be left out of the irrigation system and therefore out of cultivation. These are the type of areas that can be seeded and fenced for wildlife value.

SCS thinks that a significant economic incentive is needed to achieve very much replacement of fish and wildlife habitat values. We agree that the level of participation is a debatable issue. However, wildlife will be much better served if farmers are willing to seek assistance from SCS and ASCS, through the implementation of salinity control measures planned for the Big Sandy River Unit, than will occur in the long term if the area reverted back to rangeland because of salinity buildup in the soils. See also the responses to EPA Comments 7 and 13.

15. SCS thinks that these issues are adequately covered in the responses to EPA Comments 7 and 14 and later in USDI Comments 3 and 5.

16. The goals of SCA and CWA are in conflict concerning Bone Draw. As discussed in our April 29, 1987, accommodation meeting, Section 101.G of the CWA basically says that the CWA should not be construed to impair states' authority to allocate water and water rights. All of the scenarios to mitigate flows to Bone Draw would be in conflict with state law and present water rights.

Two related issues are the Supremacy Clause and the significance of the importance of the fishery in Bone Draw. The Supremacy Clause states that if there is a fundamental conflict between state and federal law, federal law is to prevail. Our accommodation meeting stressed the need to avoid this type of confrontation. The fishery issue needs to be viewed in the perspective that Bone Draw is a Class 4 stream (low production water fishery of local importance, but generally incapable of sustaining substantive fishing pressure). As indicated in the document, in 1977 the flows in Bone Draw decreased to 0.25 cfs; and in severe water-short years such as 1960 and 1961, the saline seeps in Bone Draw dried up with no water getting to the outlet of the draw. Therefore, the question is: Are the small improvements made by the Sweetwater County Wildlife Association and BLM to Bone Draw fishery significant enough to apply the anti-degradation provisions of the Clean Water Act? SCS doubts that the anti-degradation provisions of CWA were written to apply to a saline seep artificially created by inadequate irrigation water management. Granted, a fishery use exists in the last one-half mile of Bone Draw, but it is of intermittent use and dependent on poor irrigation water management.

A related issue discussed in our accommodation meeting was that Bone Draw is on BLM land so they will be one of the responsible agencies to pursue an alternative such as the diversion of Big Sandy water or pumping from ground water to Bone Draw. SCA is specific that one agency's salinity control funds cannot be cost shared with another federal agency. Therefore, USDA cannot provide funds to BLM for this type of activity. Also, as discussed at the meeting, it is doubtful that Wyoming Game and Fish Department will want to land trade with BLM and take over the management of the Bone Draw problem, which was created by another federal agency. SCS agrees that anything may be possible, but the alternative of WGFD's acquiring Bone Draw to manage the limited trout fishery seems unlikely as it is not at present a priority to WGFD.

17. SCS thinks that these issues are adequately covered in the response to EPA Comments 7 and 14 and later in USDI Comments 3 and 5.
18. Agreed.
19. SCS has clarified the text on this issue. The unavailable data is relevant and could be used to specifically identify and evaluate the impacts that habitat replacement and potential habitat development would have in the project area.
20. The procedure used in developing the FEIS on the Hancock Cove Watershed was discussed with Paul Obert, SCS wildlife biologist,

Vernal, Utah, who conducted the interviews. Thirty landowners were interviewed, of which 25 percent were willing to make an upfront commitment to voluntarily mitigate wildlife losses. He also indicated that several other landowners indicated a willingness to do so, but were unwilling to make a firm commitment. As a result, this could be viewed as a worst-case analysis. Mr. Obert stated he felt confident that the level of participation will be significantly higher if the project is ever funded. The current status of this project is that the SCS in Utah has not requested funding authority.

The environmental evaluation (EE) on the Hancock Cove Watershed Project utilized a modified HEP procedure agreed to by USFWS, USBR, and SCS. Values used for this HEP analysis were based on what was developed for another project. The Hancock Cove Watershed Project is similar to the Big Sandy Project in that a large amount of the wetlands projected to be impacted were Types I and II that occur in irrigated pasture and hayland having low wildlife values. Additionally, the analysis conducted on Hancock Cove was not intended to assess or place any value on secondary wildlife benefits that would be realized during project implementation. Therefore, the analysis, if (improperly) projected over all acres, significantly overstates the total adverse impacts on wildlife resources.

21. The issue of whether SCS can predict the amount of voluntary wildlife habitat replacement does not rest solely on the better cost-share rate. The 1984 amendments to the CRBSC Act provide additional incentives SCS thinks will dramatically improve replacement of wildlife habitat values. They are as follows:
 - a) Technical and cost-sharing assistance through contracts and agreements with local governments and nongovernmental entities (i.e., state game and fish agencies, environmental organizations, and irrigation districts).
 - b) Cost sharing for fish and wildlife habitat replacements using salinity control funds.
 - c) Cost sharing at a rate of 70 percent federal - 30 percent local for fish and wildlife habitat replacements and an increase to \$100,000 for the total federal cost share per individual.

In contrast, the pre-1984 Amendment authority provided the following:

- a) Salinity control funds were not authorized for fish and wildlife habitat replacements. Replacements were funded through the ASCS's existing Agricultural Conservation Program at a cost-share rate of 75 percent federal and 25 percent local.
- b) The maximum federal cost share per individual for all practices was \$10,000.

- c) Local governments and nongovernmental entities were not eligible for cost-share assistance.

Other SCS projects that EPA and other commentors have made reference to considered only acres as the unit of measure for wildlife habitat. The CRBSC Act specifically relates wildlife habitat to a "value." For this reason, the SCS is committed to using the HEP analysis which will document primary and secondary wildlife habitat values, not acres, foregone and replaced. This analysis will document and credit the landowner for providing secondary wildlife habitat values, values which have been ignored and omitted in previous salinity control and other studies.

22. This comment is addressed in SCS's response to Department of Interior Comment 5.
23. The SCS position on this issue is found in the Foreword and in our Response 21.
24. This was a judgemental analysis made by three professional biologists from the SCS, WGFD, and USFWS. The use of a HEP analysis, as outlined in Chapter 6, will provide state-of-the-art information during conservation planning activities on each participating farm.
25. The wetland replacement plans were developed by the interagency team of biologists as detailed in Chapter 2. The acres of wetlands impacted in Alternatives 2 and 4 are identical. The degree of impact is slightly higher for Alternative 4. The biologists agreed that one replacement plan would meet the needs of either alternative. Irrigation efficiencies of each alternative were not considered relevant to developing the wetland replacement plans.
26. The State of Wyoming and USDA do not support this alternative. However, that does not preclude individual farmers from relinquishing their water rights for various reasons or incentives from presently unknown sources.
27. Potential implementing sources would be State of Wyoming, BLM, USBR, and USFWS. These agencies in partnership would be the most likely implementing source. However, this alternative is in conflict with State water law and is therefore not acceptable to the State of Wyoming.
28. The text has been clarified concerning the inclusion of reasonable alternatives. All reasonable alternatives were included in the analysis and those eliminated from further study in the scoping process came about as a result of a combination of reasons of which the jurisdiction of the SCS was only one rationale.
29. SCS disagrees that a participation survey is essential to the adequate presentation of alternatives. The text in Chapter 4, "Location and Land Ownership," has been clarified. As indicated in Table 3-4, there are 18,370 acres of water-righted lands existing

in the project area that are irrigated at least once in 5 years. The implementation plan for this project estimated that 15,700 acres or 85 percent will, during the implementation period, have salinity control measures installed. The level of participation is based on acres rather than number of landowners.

There is no statement in Chapter 3, "Onfarm Irrigation Water Management," indicating that several landowners have actually installed low-pressure sprinkler systems. In truth, three individuals have installed such systems on approximately 400 acres. This acreage is included as part of the 15,700 acres as the full benefits of these installations are yet to be realized.

30. The issue of incomplete and unavailable information is discussed in the Foreword of this document. The effects of the incomplete and unavailable information are not known because:
- a) The use and allocation of the water is controlled by the state.
 - b) The amounts of water beyond storage capacity will vary annually as a result of weather and degree of participation in the salinity project.
 - c) reservoir water will be released from a bottom outlet and/or the emergency spillway, depending on the hydrologic circumstances.

The release schedules developed by the SCS and WGFD and presented in the discussion of alternatives will improve fish habitat from the Big Sandy Reservoir to Gasson Bridge. Big Sandy Reservoir water will be discharged from a bottom outlet resulting in lower temperatures in the river. In addition, TDS concentrations will be significantly lower. Some improvements in water quality will also occur from Gasson Bridge to the mouth of the Big Sandy River, although to a lesser degree than upstream. Specific data on water quality are unavailable for the reasons stated above. See also a letter from the Wyoming State Engineer which follows these responses.

- 31, 32, 33. The fate of the "saved" water will be resolved in conformance with Wyoming water law, which is the prerogative of the state. USDA has no authority or jurisdiction to modify the water rights situation, but will make every effort to assist the private landowners with conservation measures to effectively apply water and associated fish and wildlife habitat measures so that salinity benefits are realized. See Chapter 5, "Wyoming DEQ," for additional information.

The EPA statement, "The proposed project results in a net increase in Big Sandy River discharge of about 20,000 AF per year," is incorrect. The 20,000 AF is only an increase of water in the Big Sandy River from the Big Sandy Reservoir to the Big Bend area, which is about 3 miles downstream from Bone Draw. Presently, the 20,000 AF of water in question is delivered to the river via seeps after it passes through canals, ditches, cropland, and the salt-laden aquifer.

To institute fishery reservoir releases, it will require a cooperative agreement between the Irrigation District, WGFD, State Engineer, and USBR. At this time, an agreement is not possible because future reservoir storages and irrigation needs are not known. SCS believes the probability and impacts of reservoir releases meet the NEPA criteria of incomplete and unavailable information. The Foreword has been revised for clarity.

See also a letter from the Wyoming State Engineer which follows these responses.

34. The costs were developed for replacing and enhancing 860 acres of Types 3, 4, and 10 wetlands and for providing 430 acres of adjacent high quality food and cover areas. These costs were developed without regard for who will install the measures.

Chapter 2 describes the methodology that was used to get the 860 acres. If Types 3, 4, and 10 are four times more valuable than others, the actual replacement value of the 860 acres will equal 3,440 acres. Additional credit was given to the 430 acres of terrestrial habitat, which is 50 percent of the wetland acres. The 1,290 acres will be located within the 90,000-acre Eden Valley Project area.

The replacement of these acres will be voluntary. However, when the farmer or nonfederal entity agree to participate in cost sharing for wildlife habitat replacement, they are under contractual obligation with the federal government.

35. A decision to provide SCS assistance for new construction in wetlands must be based on a documented environmental evaluation indicating that there is no practical alternative to the proposed construction and that the proposed action includes all practical measures to minimize harm to wetlands which may result from such actions. A practical alternative is one that can be carried out under all present constraints.

The test of what is practical (FR 650.26(d)(2), August 8, 1982) varies in each situation, but includes consideration of the following factors:

- a) Environmental - Fish and wetland wildlife habitat, soil erosion, water quantity and quality, flooding, ground water recharges, and recreation.
- b) Economics - Cost effectiveness, including changes in farm operating cost attributed to labor, equipment, timeliness, and convenience of farm operation.
- c) Resource suitability - Ability of soil, water, and related resources to support the intended use.
- d) Technology - Availability of technology to reasonably accomplish the objectives.
- e) Other pertinent factors.

Other ongoing SCS programs will be carried out in compliance with SCS policy that advocates the protection of valuable wetlands (FR 650.3 (12), August 29, 1979.

36. No. High-value lands can be exempted. However, this requires a process of determining what the effects are, whether or not they are adverse effects, determining if the effects are minor and the habitat values gained are equal to those lost, or are indirect and mitigation ensures the habitat areas gained are equal to those lost. After the process is completed, an exception can be granted for the exception reasons stated in the document--even if mitigation is not achieved.
37. The WGF D lands and other State lands are eligible for cost sharing under the salinity control program. See also response to EPA Comment 16 regarding potential for a land trade.
38. Text has been revised.
39. SCS has already agreed to provide this report as requested by EPA in our meeting of April 29, 1987.
40. The hashmark boundaries shown on Figure 4-4 include a variety of uses, including some wetlands. A very few acres of wetlands occur on actual irrigated lands under crop production. Most of the wetlands occur on adjacent small tracts of dryland pasture and rangeland. SCS chose not to modify the table since the vast majority of wetlands are not on irrigated land. The low-value wetlands referred to on p. 3-15 of the DEIS apply to the wetland exceptions. Until SCS knows site specific implementation locations, it cannot determine if any of these evaluations will reveal low-value wetlands. Therefore, SCS cannot provide this acreage.
41. Refer to implementation procedures for replacing wildlife habitat values foregone section in Chapter 6. The interagency HEP team will select wildlife species to evaluate habitat impacts. There will likely be one or more nongame species evaluated.
42. SCS has not established a net value of agricultural production per farm because the size of operating units ranges from less than 50 acres to over 800 acres of irrigated land. Providing an average value of agricultural production per farm has no relevance.

Additionally, there are several methods of production that would make determining this value extremely difficult without doing it on an individual farm-by-farm basis. This kind of activity will be done with individuals on irrigated land during the planning process.
43. The discussion in Chapter 5 concerning conflicts between environmental objectives and policy applies to all alternatives. Therefore, SCS disagrees that Chapter 5 only makes the

determination of whether or not the Selected Plan complies with the referenced rules and regulations. See EPA Response No. 16 for further discussion of the relevance of the antidegradation provision of the Clean Water Act. SCS has added the EPA statement concerning Clean Water Act policy to the document in Chapter 5. SCS agrees that Bone Draw is not a point source discharge. However, it is fed by nonpoint source discharges (saline seeps, etc.) that will be reduced and/or eliminated through implementation measures. The Wyoming DEQ has provided more information concerning this issue. Their information has been added to Chapter 5.

44. SCS realizes that there may be natural wetlands in the areas of wildlife habitat replacement potentials that may require a 404 permit. However, SCS sees no need to reevaluate what level of commitment will be needed by the COE in order to complete this document. SCS has determined that the COE is satisfied with the adequacy of the EIS since it did not submit any formal comments to the DEIS.
45. SCS disagrees with your position that acre-for-acre replacement with ecological equivalency is required to adequately compensate for habitat loss. SCS will use HEP analysis to obtain ecological equivalence by selected species, which will not be on an acre-for-acre basis. SCS also disagrees concerning the preservation of existing wetlands not being considered as part of mitigation. Through the SCS process of selecting alternatives which avoided areas of wetlands that could have been impacted, SCS utilized the avoidance provision of the NEPA regulation (40 CFR 1508.20(a)) as an item of mitigation.
46. The Wyoming Department of Environmental Quality (DEQ), a cooperating agency in this FEIS, has responded to this comment as follows:

It would not be contrary to Wyoming Water Quality Rules and Regulations to discharge nonsaline waters to Bone Draw. Any discharge would have to be in compliance with the Colorado Salinity Control Forum's "Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program." Of course, if the waters being discharged into Bone Draw were not regulated by NPDES, then such discharges would still be subject to Wyoming Water Law.

47. Noted and added to text.
48. The general discussion in the environmental consequences section (such as "Wetland and Upland Wildlife Habitat") applies to all alternatives. SCS thinks that the specific relevant environmental consequences issues, such as the impacts to fish and wildlife habitat values foregone and associated voluntary replacement, are adequately covered in the discussion in the alternatives section for each alternative.

The Wyoming DEQ responded to a portion of this comment as follows:

The flow in Bone Draw results from deep percolation of irrigation water from the Eden/Farson project. There would be no perennial flow in Bone Draw without percolation from the irrigation project. We concur that Bone Draw is not a point source discharge. It is a NON POINT pollutant discharge. As such, we will continue to advocate a speedy remedy to this water quality problem.

49. SCS does not believe that the cover type classification system should be the sole extent of a HEP analysis. Evaluation of habitat for specific wildlife species form the basis of a HEP analysis. The interagency HEP team will select the number and specific wildlife species to evaluate.
50. Comment noted. Additional information has been added to the text in Chapter 3, "Funding and Cost-Share Policy."

Poor 3124 - Federal Bldg.
100 East B Street
Casper, Wyoming 82601

May 4, 1987

Mr. Kerrigan G. Clough
Assistant Regional Administrator
Environmental Protection Agency, Region VIII
999 18th Street, Suite 500
Denver, Colorado 80202-2403

Dear Mr. Clough:

SUBJECT: Big Sandy River Salinity Control Project DEIS;
SCS-Cooperating State Agencies-EPA Meeting

The following accommodation was agreed upon by the Environmental Protection Agency and the Soil Conservation Service during our April 29, 1987, meeting in Denver, Colorado.

- EPA concern regarding the voluntary replacement of wildlife values foregone.
- The discussion of wetland inventory methodology will be expanded in the Final Environmental Impact Statement (FEIS).
- Interagency HEP team participation will be requested before the FEIS is issued. The extent and commitment of agency participation will be included in the FEIS.
- The discussion in the FEIS concerning wetland replacement potentials will be expanded. The agencies and organizations consulted by SCS concerning their willingness to become potential implementors will be included in the FEIS.
- The FEIS will include an explanation concerning how a 70/30 cost-share rate could result in voluntary wetland habitat replacement without a landowner's incurring significant cash outlay.
- The FEIS will include a range of estimates of the number and acres of irrigation regulating reservoirs and/or pumping pits that may be anticipated if the level of program participation were to reach 85 percent.
- The discussion in the FEIS concerning the annual salinity control reports will be expanded to include the impacts on wetland and terrestrial wildlife habitat and the progress of voluntary replacement efforts. This discussion will also indicate that EPA and other interested agencies will be provided a copy each year.

Mr. Kerrigan Clough



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- EPA concern regarding Bone Draw.

- A discussion of creditable alternatives for potential streamflow replacement; constraints on implementation; the probability of occurrence; and agencies and/or organizations which could possibly undertake such action will be provided in the FEIS.
- Information concerning the water quality of Bone Draw and the relationship of that water quality to Bone Draw's existing use will be included in the FEIS.

Thank you again for participating in a very candid, productive, and professional meeting. If you have any questions, please contact Thomas Jewett, Assistant State Conservationist (Programs), at FTS 328-5210.


Sincerely,


 FRANK S. DICKSON
State Conservationist

cc:

Thomas E. Jewett, Assistant State Conservationist (P), SCS, Casper, Wyoming
Frank Reckendorf, Sediment Geologist/Environmental Specialist, West
National Technical Center, SCS, Portland, Oregon
Gary Margheim, Director, Land Treatment Program Division, SCS, Washington, D.C.
Bill Evans, SCS Basin Coordinator for CRPSCP, c/o BOR, Denver, Colorado
Galen Bridge, Deputy Chief, Programs, SCS, Washington, D.C.
Francis Lum, Assistant Chief - West, SCS, Washington, D.C.
Max Dodson, Director, Water Management Division, EPA, Denver, Colorado
Robert R. DeSpain, Chief, Environmental Assessment Branch, EPA, Denver,
Colorado
Gordon W. "Jeff" Fassett, State Engineer, State Engineer's Office,
Cheyenne, Wyoming
Michael Carnevale, Planning Supervisor, Department of Environmental
Quality, Cheyenne, Wyoming
Francis E. "Pete" Peters, Assistant Director, Wyoming Game and Fish
Department, Cheyenne, Wyoming
Warren White, State Planning Coordinator, Cheyenne, Wyoming
Fee Busby, Director, Cooperative Extension Service, College of Agriculture,
University of Wyoming, Laramie, Wyoming
Harold Hellbaum, State Executive Director, Agricultural Stabilization and
Conservation Service, Casper, Wyoming

bcc:

 Duane D. Klamm, State Conservation Engineer, SCS, Casper, Wyoming
Richard C. Rintamak, State Biologist, SCS, Casper, Wyoming
L. C. Young, State Resource Conservationist, SCS, Casper, Wyoming
Garen Sailors, Area Conservationist, SCS, Casper, Wyoming
Don Kessler, District Conservationist, SCS, Casper, Wyoming
George Bluhm, Director, West National Technical Center, SCS, Portland, Oregon

RCR:FSD:jb:WP/BS4 - DEIS - Letters/EPA Mtg.

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NOTE-this letter provides additional responses to EPA's comments 3,4,30,31,32,33; Wyoming Farm Bureau's comments 7,15,28,44, 47; and USDI's comment 47.

THE STATE



OF WYOMING

MIKE SULLIVAN
GOVERNOR

GORDON W. FASSETT
STATE ENGINEER

State Engineer's Office

HERSCHLER BUILDING August 4, 1987 CHEYENNE, WYOMING 82002

Duane Klamm
State Conservation Engineer
U.S.D.A. Soil Conservation Service
Federal Building, Room 3124
100 East B Street
Casper, Wyoming 82601

Dear Duane:

This letter will serve to respond to your letter of July 16, 1987, in which you seek my assistance in answering certain comments made by the Environmental Protection Agency and the Department of Interior on the Big Sandy River Unit Draft Environmental Impact Statement (DEIS). A copy of your letter was also provided to Mike Carnevale of the Water Quality Division, Department of Environmental Quality by this office. DEQ has offered information to assist your response to those comments within their letter to you dated July 22, 1987.

Due to the interrelated nature of all of the comments directed to this office, I have chosen to address all of them together with the following, rather than to individually answer each of them.

The so-called "saved water," to which most of the comments are directed to, is more properly characterized as an estimate of the anticipated water savings which foreseeably will come about due to a change from flood to sprinkler irrigation practices on the Eden/Farson Project, attributable to the proposed on-farm salinity control project. The anticipated water savings are and will continue to be a part of the variable natural flow of the Big Sandy River system. These waters will be subject to appropriation by present water right holders both within the Eden/Farson Project (firming up their water supply) and in areas downstream along the Big Sandy River, as well as future water appropriators. The anticipated water savings, estimated to amount to about 20,500 acre-feet, will continue to be a part of Wyoming's entitlement under the Colorado River Compacts and subject to appropriation for all recognized beneficial uses in accordance with Wyoming State law. A prime objective of the Multi-State/Federal salinity program is to control salinity so that continued development of the States' compact-apportioned waters can continue as deemed appropriate by those States.

Concerning this point, I direct your attention to my letter of April 27, 1987, providing comments on the DEIS, wherein I stated that the use of the average of 20,500 acre-feet per year of Big Sandy River system water not needed under the existing water rights for the irrigation project will be available for appropriation, as on any stream system in the State, which can only be allocated by the State Engineer under the normal processes and provisions of Wyoming State water law.

The actual implementation of the Big Sandy on-farm salinity control project, contemplating the conversion from flood irrigation application to sprinkler irrigation practices on most all of the lands within the Eden Valley Irrigation and Drainage District's boundaries, will not, in any manner whatsoever, cause any change in the water rights held by the District and its individual members. It is necessary to add that this statement assumes that the specific lands now being flood irrigated will be the same specific lands that will be irrigated by sprinkler systems in the future. There would be, of course, water right considerations if new lands were to be put into production, but this is not a part of the proposed project. With this one clarification made, let me reiterate that no changes in the District's water rights for the Eden/Farson Project would occur simply by virtue of changing the physical manner of applying irrigation water to the land. The efficiency of water application will change quite markedly, however, (this is the underlying principle of the whole project) and it is from estimating the associated efficiency improvement that a calculation of the estimated water savings has been made. A change in irrigation application efficiency is not a basis for changing or taking vested water rights held by anyone in the State of Wyoming. The individuals will still continue to enjoy the same rights to apply the waters of the Big Sandy River system to beneficial use that they now have. In fact, the project acts in a significant manner to firm up the reliability of their water supply and water rights during periods of short supply.

As stated above, the anticipated water savings will become a part of the natural flow of the Big Sandy River. The total volume of the natural flow of the river system will be neither increased or decreased due to the Big Sandy Project. There will be changes in the natural timing associated with the streamflows due to the project, as the total amount of water diverted through the Project's canals is expected to be reduced with the numerous sprinkler systems in place. As the DEIS correctly states, we feel it should be noted that this is not additional water to the Big Sandy River system. The change is that instead of the water's flowing from the irrigated area and then back into the river with a large salt load, it would be released from or naturally flow over and past the reservoirs when the storage facilities are anticipated to fill or are full.

Stated another way, the total flow of the Big Sandy River passing the Gasson Bridge gaging station will generally be the same whether the Big Sandy Salinity Control Project proceeds or not. There will be no substantial change in the total flow past the gage. The point in time at which the water goes past the gaging station is expected to change depending upon project completion and climatic and hydrologic conditions. Although EPA's comments have characterized the anticipated water savings as permanent "additional waters" in the river, this is not the case. As the DEIS points out at several locations, including page 6-7, the estimated 20,500 acre-feet of anticipated water savings "is not additional water to the Big Sandy River system." We concur with and support this conclusion.

Relating to the commentors' statements regarding the proposed reservoir release pattern, I wish to respond that certainly there are opportunities within the framework of Wyoming water for the effectuation of either year-to-year voluntary reservoir releases or for similar operational arrangements to accomplish mutually desirable results, but in our view these have nothing to do with nor should they be a constraint to the development of the Big Sandy River Unit of the Colorado River Salinity Control Program. Through mutual cooperation and agreement with the State Engineer, reservoir release decisions are made throughout the State on a voluntary basis depending on the demand for water, water rights and hydrologic conditions associated with a given year, on an annual basis.

Permanent arrangements for reservoir releases can be made by some entity purchasing storage in a reservoir and obtaining the approval of the Board of Control, through the petition process, or may be supported through proper application of Wyoming's instream flow law. Whatever the manner taken to provide for reservoir releases, it is predicated upon a free-will decision by the holders of the water rights to pursue such a course of action. The State Engineer does not mandate or make such decisions, so the comments directed to "including a decision from the State on the proposed reservoir release pattern" and "a firm plan developed in cooperation with the districts (sic) and BR should be presented..." are not in accordance with Wyoming water law and should not be considered further. The notion of tied-down, demandable reservoir releases from the Eden/Farson Project's reservoirs by virtue of the Big Sandy Unit, we feel, does not have a place in the EIS document. The control and use of Wyoming water is a Wyoming prerogative, dictated by the laws of our State, which, in turn, are carried out by officials of this State.

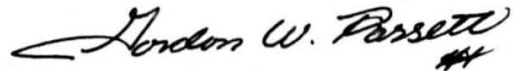
Finally, and along these same lines, we point out that the water rights of the Eden/Farson Project, like all other water rights in the State, are explicitly tied to the lands

Duane Klamm
Page 4
August 4, 1987

upon which the water is used and are owned by the individual landowners. They may exercise or seek to make changes to those rights in accordance with Wyoming water law. No changes to those rights will occur strictly by virtue of the Big Sandy River Unit's voluntary implementation by the District's members. In our view, it is neither appropriate or realistic for the EIS to attempt to make "reasonable future use assessments" or "potential future beneficial uses of the saved water" or to analyze same, particularly when no new waters are being derived. The choices as to how Wyoming puts to use her compact-apportioned water entitlements are matters of State policy and decision. Those choices are not a part of the total project impacts of the Big Sandy River Unit, nor are they properly construed to be such.

Please let me know if I may assist you further, or amplify any of the points contained herein.

With best regards,



GORDON W. FASSETT
State Engineer

GWF/ht

cc: William L. Garland
Administrator
DEQ - Water Quality Division



STATE OF WYOMING
OFFICE OF THE GOVERNOR
CHEYENNE 82002

MIKE SULLIVAN
GOVERNOR

April 28, 1987

Frank S. Dickson
State Conservationist
Soil Conservation Service
Room 3124, Federal Building
100 East B Street
Casper, WY 82601

Dear Mr. Dickson:

Several state agencies have reviewed the Draft Environmental Impact Statement for the Big Sandy River Unit. Their comments are enclosed for your information and consideration.

- 1 After review of the agency comments, Alternative 7, the Selected Plan, would appear to provide the most benefit to the State of Wyoming. Improved agricultural benefits coupled with the reduced levels of salinity should prove beneficial to all.
- 2 It is unfortunate that some of the artificially created wetlands will be lost. However, if steps are not taken to improve the on-farm productivity levels, the irrigated farming activity that currently supports the wetlands may not remain economical and be retired and the wetlands would disappear without any offsetting economic benefit to Wyoming. It would seem appropriate that the voluntary wildlife mitigation approach will help reduce the level of wildlife impacts on the artificially created wetlands. Nevertheless, the primary purpose of the selected plan will result in reduced salinity levels in the Colorado River System as required by the Colorado River Basin Salinity Control Act and the 1944 United States - Mexican Treaty. Further, reduced salinity levels should reduce the problems of developing Wyoming's remaining share of water allocated by the Colorado River Compact of 1922 and the Upper Colorado River Basin Compact of 1948.
- 3 In closing, the Selected Plan should be actively pursued and to the extent practicable, the voluntary wildlife mitigation efforts should be coordinated with the respective state agencies.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Mike Sullivan".

Mike Sullivan

MS:wvl
Enclosures

Responses to Comments From the Governor of Wyoming

1. Noted.
2. Noted.
3. Noted.

APR 20 1987

MIKE SULLIVAN
GOVERNOR

Game and Fish Department

April 17, 1987

BILL MORRIS
DIRECTOR

EIS 484/L15
USDA/SCS-Colorado River
Salinity Control Program
Big Sandy River Unit-DEIS
Sublette & Sweetwater
Counties

Mr. Warren White
State Planning Coordinator
Herschler Bldg.
Cheyenne, WY 82002

Dear Mr. White:

In response to your notification 86-269, we have reviewed this DEIS and offer the following comments and information.

- 1 This DEIS contains only minor editing and paragraph organization changes from the preliminary draft dated 1/30/87 which the WCFD reviewed in February, 1987. The content is unchanged and does not address Department comments submitted in February, 1987. All input provided by the Department in July and October, 1986 and February 1987, is still applicable.
- 2 We recommend the EIS address the number of wetlands used by sandhill cranes as roosting sites, and delineate affects of the project on those areas. It should also acknowledge that the Eden-Farson area is one of four major fall pre-migration staging areas for cranes in Wyoming. Since 1982, annual peak numbers of greater sandhill cranes in this area average 900. Cranes staging in this area summer primarily in the upper Green River to the north of Farson. The upper Green is one of the Rocky Mountain population's major production areas.
- 3 The SCS has not assessed the impacts of increased grain crops and anticipated increases in grain crop depredation by waterfowl. We recommend this be done, as this agency could be severely impacted.

Copies of our previous correspondence are attached for your information and forwarding with this letter to the appropriate Federal, State and local officials. Please contact us if we may be of further help.

Sincerely,



FRANCIS PETERA
ASSISTANT DIRECTOR
OPERATIONS

FP:HBM:ssc
attachments (Letters of 2/24/87, 11/4/86, 9/10/86, 7/31/86).
cc: Game Div.
Fish Div.
HATS Div.

AA/GD/000/541
AA/FE/

February 24, 1987

EIS 484/L14
USDA/SCS-Colorado River
Salinity Control Program
Big Sandy River Unit
Preliminary DEIS

Mr. Frank S. Dickson
State Conservationist
SCS-Federal Bldg. Rm. 312
100 East B Street
Casper, WY 82601

Dear Mr. Dickson:

The following comments on the Colorado River Salinity Control Program were prepared for your use in completing the DEIS.

Information from the Wildlife Land Use Planning System:

Big Game

- 4 The entire Eden Valley is critical winter range for the Sublette Antelope Herd which ranks as one of the largest in total population, out of 53 antelope herds in Wyoming. However, some of the more intensive farmland is classified as "out" areas. There is no critical habitat present for any other big game species in this immediate area. The proposed Sublette Flats Reservoir would eliminate some Antelope Critical Winter Range.

Threatened and Endangered

- 5 An area on the east side of the valley is crucial habitat for the Whooping Crane.

Upland Game

- 6 There are a number of identified sage grouse leks within the project area which are classified as crucial habitat for sage grouse. No other crucial habitat is present for upland species. The preliminary project should not significantly effect any of the critical habitat.

Raptors

- 7 Nesting raptors that have been recorded within the project area include: merlin, red tailed hawk, prairie falcon, ferruginous hawk, burrowing owls, and golden eagles. Impacts on raptors should not be significant.

Waterfowl

- 8 The Eden Valley is home for a large number of waterfowl, and the duck program could suffer from loss of nesting habitat.

Other Programs

- 9 The loss of established wetlands will significantly create an adverse affect to nongame and nonconsumptive programs. Any unmitigated loss of wetland habitat will have an overall negative impact.
- 10 The Seedskadee Hay Farm is near but not directly adjacent to the program area.
- 11 The major unresolved issue in this project is mitigation for lost wetlands. Unless specifically designed into the project, it is our opinion that voluntary mitigation is not likely to replace losses of wetlands associated with this project.
- 12 During our field tour with State SCS representatives on October 30, 1986, we discussed SCS requesting funds for off-site mitigation if adequate voluntary mitigation was not achieved. If adequate mitigation does not occur on private lands (as determined from case-by-case NEP), will it be possible for mitigation to occur on adjacent public lands? We are also concerned with how many acres of wetlands will be lost from public lands. We would prefer adequate mitigation for wetland habitat losses within the drainage.
- 13 We are a little reluctant to participate in a case-by-case NEP analysis, which will be very costly and time-consuming, when there is no assurance of wetland mitigation.
- 14 This project is undoubtedly going to increase game bird damage to crops. An increase in sprinkler irrigated land acreage will probably result in a greater annual acreage of small grains. With the reservoirs used as resting areas and decreased acreage of wetlands for use by resting waterfowl, we anticipate the following:
- 15 Fall depredation on small grains will increase during the grain harvest prior to the early October waterfowl hunting season. Fall numbers of staging geese and cranes will increase or remain the same. Early fall duck numbers (especially mallards) will increase. Costs for damage prevention will increase and landowner tolerance of waterfowl will decrease.

- 16 Within the framework of the Pacific Flyway hunting season, we feel it would be best to continue to open the general waterfowl hunting season in early October (the earliest opening within the flyway framework). To hold geese in the area, it will be necessary to retain the Old Eden Reservoir hunting closure. Objectives for goose hunting are likely to be met; however, duck hunting objectives will not be met, as many ducks will leave the area early if there are no wetlands for them to disperse into.
- 17 It is highly probable that the net result of this salinity control program for wildlife will be loss of wetlands that produce waterfowl, loss of wetlands that disperse fall staging waterfowl, loss of wetlands used by waterfowl hunters, increased crop depredation by waterfowl in early fall, and negative landowner attitudes toward waterfowl. The DEIS should address this problem. Mitigation should also include measures to minimize waterfowl depredation on small grain crops, and mitigate loss of waterfowl hunting. The possible effects on other wildlife have been addressed previously.
- 18 We anticipate that if ponds created as mitigation were lined and designed to be productive for waterfowl, including a soft substrate over the pond liner, the costs would be prohibitively high.
- 19 We suggest that the predicted total dissolved solid concentration in the 8,000 acre Sublette Flat reservoir be ascertained. If the TDS exceeds 5,000-8,000 ppm, productivity of waterfowl would be relatively low. We would also like to know the TDS of the water to be pumped into Sublette Reservoir. An inflow TDS and evapo-transpiration equilibrium can be achieved at a rate of 1 cfs/24 hours through the ice-free period on about 80 surface acres based on hydrological formulas for this precipitation zone, described for waterfowl wetlands in Northern Utah by Christiansen and Low. We are concerned that the Sublette Flats area might turn out to be nothing more than a saline sink, too high in TDS to produce aquatic macrophytes and macroinvertebrates for waterfowl production.
- 20 Table 2-2 shows improved bird watching opportunity as one of the social well-being benefits for the selected alternative. We cannot agree that the possible loss of 3,000 acres of wetlands and reduced flows in another 1,000 acres are going to improve bird watching. If these purported benefits hinge on voluntary wetland mitigation, we suggest there should be another column showing reduced benefits if there is little or no voluntary mitigation.
- 21 We support the selected alternative with reservations about realistically accomplishing wetland mitigation. We recommend additional mitigation be added to minimize cropland depredations by waterfowl. We suggest that mitigation could best be accomplished by acquisition of the Grande property into public ownership, for all but Alternative o. Alternative 6 will flood crucial antelope winter range and block a major migration route for the

Sublette antelope herd. The draft EIS should evaluate the trade-off of antelope habitat for salinity reduction and reduced wetland loss. All ramifications of all alternatives should be evaluated in detail.

Specific comments relating to fisheries resources in order of pagination of the (PDEIS) are as follows:

22. Page AE-20 mentions the Big Sandy River fishery in general terms. The Wyoming Game and Fish Department has additional fisheries information available if it is desired by SCS. Since mandatory mitigation for any impacts will not occur, including this information in the EIS may not be essential.
23. On page AE-21 it should be noted that rainbow trout are annually stocked into Bone Draw. The area is used primarily as a nursery area. The majority of the larger fish move out of the area, but there is a limited run of fish that return at spawning time.
24. Page EC of SP-6 describes an interagency HEP team to assist with evaluation of wildlife habitat impacts. With respect to fisheries, we expect to provide very little, if any, involvement of our fisheries biologists, except as outlined below.
25. In the Fisheries discussion on pages EC of SP-7 and 8 it appears there is a possibility that "excess" water could be used to increase the fishery potential of Eden Reservoir. Also, by coordinating water releases down the Big Sandy River, enhancement of the fishery may be possible. We look forward to working with all parties involved toward the enhancement of fisheries resources in the area.
26. Previous comments addressing big game, waterfowl, wetlands, cranes, and priority I nongame birds still apply. We agree with and support comments on threatened and endangered species made by the U.S. Fish and Wildlife Service in their January 23, 1987 biological opinion.

Please contact us for additional information and assistance and forward copies of the draft DEIS for review and comment.

Sincerely,

FRANCIS PETERA
ASSISTANT DIRECTOR
OPERATIONS

FP:HBM:ssc

cc: Game Div.
Fish Div.
WATS Div.

Mr. Wayne Brewster-Field Supv.-Endangered Species-USFWS-Helena, MT 59626
Mr. John G. (Gary) Wood-Field Supv.-Eco. Serv.-USF&WS-Billings, MT 59101
Mr. Jeff Fassett, WY St. Eng. Office-Herschler Bldg.-Cheyenne, WY 82002

NG/GD/
~~FF/FF~~/LPI/541

November 4, 1986

EIS 484/L12
USDA/SCS-Big Sandy River
Colorado River Salinity
Control Project-Selected
Plan-T&E Species Information
Request-Sweetwater County

Mr. Frank Dickson
State Conservationist
SCS-Federal Bldg. Rm. 3124
100 East B Street
Casper, WY 82601

Dear Mr. Dickson:

In response to your notification and request, the following information is provided relative to Endangered Species which may be affected by the Selected Plan for Big Sandy River/Colorado River Salinity Control Project.

27 Based on the SCS Biological Assessment for Endangered Species, the black-footed ferret and whooping crane are endangered species of principal concern as they have been found historically and presently within the proposed project area. According to the SCS assessment and our knowledge of the area, no confirmed sightings of black-footed ferrets have been recorded within the project boundaries since 1957. One probably sighting is on file in the WGFDR records for 1985 (Sec. 34, T25N, R106W). The project will not affect existing prairie dog towns. To the best of our knowledge, no other endangered mammal species are known to occur within the project boundaries.

28 For a number of years the Wyoming Game and Fish Department has held the opinion the Colorado squawfish and humpback chub are no longer residents of the Green River above Flaming Gorge Reservoir. The closing of Fontenelle Reservoir has created habitat conditions that are not conducive to the survival of these species.

29 To verify the opinion held by the Department, a search for these species was conducted in the late summer-early fall of this year. The search was conducted in the Green River Drainage by the Fisheries Management Crew from the Green River area office. No Colorado squawfish or humpback chubs were found during this rather extensive search effort, therefore we consider this long held opinion verified.

30 Whooping cranes from the Grays Lake flock have summered in Wyoming since 1977. Since the initiation of the Grays Lake experiment, about 30% of the whoopers annually summer in Wyoming. The occurrence of whooping cranes in Wyoming has been divided into three general periods: 1) spring migration (April 1 - May 15), 2) summer residency (May 16 - August 20), 3) fall pre-migration staging (August 21 - September 25).

31 Since 1978, 19 different whoopers have been observed summering in Wyoming. Of the summering locations from 1978-85, 25 (63%) were in the upper Green River drainage. The Farson area has at least one wetland complex on the Big Sandy River floodplain north of Farson which could

receive summer use by subadult or nonbreeding whoopers. A four year old whooper molted with a flock of subadult sandhill cranes in the area in 1986.

32 At least three of the whooping cranes summering in the upper Green River drainage used wetlands and croplands in the Eden-Farson area during the fall pre-migration staging period. Use occurred in September of 1982, 1983, 1985, and 1986.

33 Four major wetland roost areas have been used by cranes between 1978-86 in the Farson area. These include: 1) the riverine and associated palustrine (seasonal and permanently flooded) wetlands within the Big Sandy river floodplain (Map Area 1), 2) the palustrine (seasonal and permanently flooded) wetlands about 3 miles south and east of Farson (Map Area 2), 3) the palustrine (seasonal, temporary and semi-permanent flooded) wetlands about 4 miles northeast of Farson between Pacific Creek and the irrigation wastewater-fed ponds, and 4) the palustrine (semi-permanent flooded) shoreline zone of the pond located about one mile south of Old Eden reservoir.

34 Habitats used by cranes in fall pre-migration staging areas were described by Lockman, et. al., 1986 (Appendix A).

35 Powerlines and fences associated with the project could cause mortality and may require some modifications in location, design, and configuration to minimize risk in potential problem areas.

36 Based on crane use of the area since 1982, we anticipate annual fall pre-migration staging use by one or more whooping cranes, especially if whooping crane use of the upper Green increases with increasing population size. This assumes small grains continue to be raised and a selection of larger wetland areas with relatively low levels of human disturbance continue to exist.

37 We anticipate providing further input in the consultation process. The mapped information herein is for use by SCS personnel in planning. We would appreciate it if these sites are not published due to security reasons necessary to protect the birds.

Please contact this office or our District Field personnel if we may be of further help.

Sincerely,

FRANCIS PETERA
ASSISTANT DIRECTOR
OPERATIONS

FP:HEM:sac
attachment
cc: Game Div.
Fish Div.
Mr. Wayne Brewster, Supervisor-USF&WS-Helena, MT 59601

GA/GA/000/541

September 10, 1986

EIS 484/L11
USDA/SCS-Big Sandy River
Salinity Control Project
Selected Plan-Sweetwater Co.

Mr. Warren White
State Planning Coordinator
Herschler Bldg.
Cheyenne, WY 82002

Dear Mr. White:

The following comments and information are provided in addition to those furnished in our letter of July 31, 1986, relative to this project.

38 A small reservoir (about 80 acres) south of Eden Reservoir, called Old Eden Reservoir, contains a colony of black-crowned night-herons and white-faced ibises. This reservoir contains one of only three active ibis colonies found in Wyoming in 1986 and one of only four found in this state since 1982. The night-heron colony is one of only 10-12 colonies found in Wyoming since 1982. While this colony is small by Great Basin standards, it was large by Wyoming standards, contributing significantly to the total nesting populations of both species in the state. In addition, we suspect the reservoir probably contains a small number of nesting snowy egrets, which would make it one of only three breeding locations for that species in Wyoming. This particular reservoir is also important breeding and foraging habitat for many other species of waterfowl and nongame birds.

39 Other wetlands in the area of concern contribute important foraging habitat for the ibises, night-herons, egrets, and other species nesting in the area. Draining of this reservoir or other wetlands would cause the loss of significant breeding habitat for three species classed as high priority.

40 We question whether it would be possible to mitigate the loss of these wetlands by creating new ones or enhancing existing ones. The reservoir and associated wetlands mentioned above obviously have special conditions that have made them attractive to these sensitive birds. We doubt whether these conditions, not yet fully understood, can be duplicated, especially under the proposed voluntary program which would leave such creation/enhancement up to the financially-strapped farmer.

41 Therefore, we recommend that Old Eden Reservoir be protected from drainage due to this project. Furthermore, other wetlands in the area should be inventoried and evaluated for their value to the foregoing three high priority species, as well as other nongame and waterfowl species, before any of these wetlands are modified.

Please forward these comments to the appropriate Federal and State agencies and contact us if we may be of further help.

Sincerely,

FRANCIS PETERA
ASSISTANT DIRECTOR
OPERATIONS

FP:HEM:ssc
cc: Game Div.
Fish Div.

Mr. Ed Moriarity-G&F Commissioner-P.O. Box 548-Jackson, WY 83001

AP/62/000/541

July 31, 1986

EIS 484/L10
USDA/SCS-Big Sandy River
Salinity Control Project
Selected Plan-Sweetwater
County

Mr. Warren White
State Planning Coordinator
Herschler Bldg.
Cheyenne, WY 82002

Dear Mr. White:

The following comments and information on this project are provided in response to your memo of June 26, 1986.

This plan was reviewed by field personnel Dave Lockman and Elaine Raper. In addition, Reg. Rothwell attended a meeting on July 23, 1986 with the SCS, USFWS, EPA, USACE, Governor's Office, and State Engineer on this project.

42 In the cover document entitled "Findings of no significant impact", we noted numerous inaccuracies relative to waterfowl. Of greatest concern were those statements relative to the whooping crane. It appears there was no coordination with our waterfowl section, the USFWS Threatened and Endangered Section, or Greys Lake Whooping Crane Project Leader in their assessment process.

43 This proposed project could result in the loss of up to 2,765 acres (approximately 75%) of the wetlands in this location. The wetlands and reservoirs, in conjunction with grain croplands in this project, provide a significant portion of the duck and goose hunter recreation in Sweetwater County (Lower Green River Waterfowl Management Area). The greatest effect of wetland loss will be decreased duck production and fall waterfowl hunter recreation.

44 The approximately 140 square miles within the agricultural area support a long-term average of about 11 duck breeding pairs/square mile, or 1,540 breeding pairs of ducks on about 3,700 acres of wetland and wetland margin. Five hundred to two thousand geese use the area in October and provide an estimated 500 goose hunter recreation days annually. An estimated 5,000 - 7,500 ducks, migrants included, provide an estimated 1,500 duck hunter recreation days annually in the project. These data represent 50-75% of the Sweetwater County waterfowl hunting recreation annually. Mitigation for wetland losses should also consider these recreation losses.

45 Habitats which currently benefit the whooping crane which have been used by that species during the fall three of four years since 1982, could be lost. Wetlands created by seeps and springs from ground water flowage into the Big Sandy River and Pacific Creek are important crane roost areas in the summer and fall. We would have preferred the SCS contacting this Department and USFWS to determine the need for formal consultation, and completed this assessment before selecting a plan. The USFWS has been involved with this project since the beginning. We sincerely hope they have been consulted, in order to avoid any unnecessary delays.

46 The seepage of water into Bone Draw has provided an additional water source for wildlife, including summering sage grouse and pronghorn outside the agricultural area. Antelope use of Hunt Area 96, which encompasses this area, is already very low because of the lack of water. Pronghorn are concentrated around the few water sources by late summer. Elimination of this source of water will in turn reduce or eliminate the use of Bone Draw by antelope and other wildlife. Since this proposed salinity control project will eliminate this water, we recommend replacement sources - guzzlers, water tanks or small reservoirs - be considered for installation. An alternative suggested at the July 28, 1986 meeting is to pipe water from the Big Sandy River into Bone Draw at a point 1/2 mile upstream from its confluence with the river, to maintain flows in the draw. The potential for increased water flow and reduced salt load should enhance current riparian qualities for the Big Sandy River. At present, there are stretches of the river where return-flow irrigation waters with high salt loads result in reduced and/or poor quality vegetation. The proposal is to enhance fisheries potential through increased water releases. This should also be coordinated to maximize riparian development. This will improve habitat quality for both fisheries and terrestrial wildlife. The water conserved by the proposed project could be used to create acceptable year-round flows in the river. However, rights to this surplus water may be acquired to develop more cropland, thereby adversely affecting additional wildlife habitat.

47 We are encouraged that opportunities may exist to enhance fisheries with releases of excess water as expressed on page ii of the FONSI and EA.

Replacement or mitigation of lost wildlife habitat is described as a voluntary measure on page 12 and others of the FONSI and EA.

48

It is stated in this document that lost wildlife habitat will be replaced through a \$1.3 million voluntary cost-share effort for development and enhancement. We do not feel this will insure mitigation of habitat loss, unless the program is mandatory. It is our further belief the Fish and Wildlife Coordination Act will apply in this proposal, and mitigation of wetland loss will be mandatory. The SCS, at the July 28, 1986 meeting, stated that this portion of the project is voluntary as are many of their programs. However, the stipulation requiring creation of wetlands will be in the contract between that agency and the cooperators. If the cooperators sign the contract, they will then be required to comply with it. The SCS has no specific plans on how and where this aspect of the agreement will be met and at what rate the permanent wetlands will be created on each individual landowner's tract. We request a firm commitment from the Soil Conservation Service to adequately mitigate any adverse aquatic impacts that may occur as a result of this project.

49

SCS stated that the benefits of increasing wetland types should outweigh the loss of seasonally flooded meadows within the Project area. We seriously question whether a 5:1 loss of seasonal meadows for each acre of marsh (2,700 lost, 500 gained) is a reasonable exchange. The SCS believes that wetlands which may be created to compensate for the acreages lost will be more beneficial because the created wetlands will be permanent, whereas most of that acreage being lost is temporarily flooded fields. Although these permanent wetlands would be beneficial to wildlife, we do not feel they can compensate for the loss of the temporary wetlands. These temporary wetlands provide larger acreages during the breeding, nesting, young-rearing, and hunting seasons when this habitat is most valuable.

50

The report indicates that most of these farms have only marginal financial ability to participate in the proposed program. Unless very low-interest loans or grants are available, we fear this voluntary mitigation program will be unsuccessful. We suggest there should be stronger incentives and additional federal funding on BLM lands within the project area, if the private efforts do not ensure that mitigation work will be done. We believe a Habitat Evaluation Process (HEP) analysis of this area's wetlands would be beneficial to determine losses and benefits. Therefore, we recommend the USFWS, the Game and Fish Department, the SCS, and the BLM do a HEP analysis, including consumptive/nonconsumptive recreation losses. We recommend the SCS request Section 7 consultation by the USFWS Ecological Services Branch, and a mitigation plan be developed.

Mr. Warren White
July 31, 1986
Page 4 - EIS 484/L10.

51 The HEP analysis and mitigation package should include mallard and other dabbling ducks, whooping crane and sandhill crane, and Canada geese as key species for this area. Mitigation monies should be spent on projects identified by this team. There is currently an organized team working on wetland project plans for this area.

52 The SCS cannot assure us that the concerns expressed by our field personnel and participants of the July 28, 1986 meeting will be addressed. We appreciate the SCS intent to minimize impacts to wildlife. However, without specific commitments, we are concerned that the probability of these things being done is very low.

Please forward these comments to the appropriate Federal and State officials and contact us if we may be of further help.

Sincerely,

FRANCIS PETERA
ASSISTANT DIRECTOR
OPERATIONS

FP:HBM:sec

cc: Game Div.

Fish Div.

Mr. Ed Moriarity-G&F Commissioner-P.O. Box 548-Jackson, WY 83001

Responses to Comments From the Wyoming Game and Fish Department

1. SCS received permission from the WGFD to release the formal DEIS prior to receiving their comments on a cooperating agency DEIS with the understanding that WGFD comments would be addressed in the FEIS. SCS has addressed all WGFD comments.
2. Noted. Chapters 4 and 6 have been revised to include this information.
3. Noted. Chapter 6 has been revised to include this information.
4. Noted. Chapters 2 and 4 have been revised to include this information.
5. Noted. Chapter 4 has been revised to include this information.
- 6, 7, 8. Noted. Chapters 4 and 6 have been revised to include this information.
9. The SCS believes wetland habitat values foregone will be replaced by landowners and other participants. However, the discussion in Chapter 2, "Alternatives," and Chapter 6, "Environmental Consequences of the Selected Plan," presents what the SCS believes to be the highest potential level of adverse impacts on fish and wildlife habitat.
10. Noted. Chapter 6 has been revised to include this information.
11. Noted.
12. Noted. See also EPA Comment 16.
13. Noted. Chapter 6 has been revised to include this information.
- 14, 15. Chapter 6 has been revised to include this information.
16. Noted.
17. Noted. Chapter 6 has been revised to include this information. There are no provisions in the CRBSC Act to replace losses of waterfowl hunting (recreation). However, SCS believes the quality of hunting will improve on private lands as voluntary replacement and enhancement of wetland habitat takes place.
18. SCS agrees. Wet areas with natural high water tables offer the most cost-effective wetland development and enhancement areas. During planning activities with farmers, SCS will identify these lower cost potentials for wetland developments and enhancements.
19. The Subiettes Flat Reservoir (Alternative 6) does not comply with State water laws and was not the selected plan. If, in the future, this alternative is reconsidered, these concerns should be addressed.

20. Tables S-2 and 2-2 have been revised and do not show this benefit.
21. The SCS has discussed the wildlife habitat development potentials of the Grande property with the WGFD in great detail. These potentials are being pursued on a continuing basis. A major constraint for exercising this potential is the lack of funds for acquisition. CRBSC funds cannot be used for land rights, but can be used to cost share wildlife habitat replacements. Also, refer to Comment 19.
22. Noted with appreciation.
23. Noted. Chapter 4 has been revised to include this information.
24. Noted.
25. Noted.
26. Noted.
- 27-37. The information provided by these WGFD comments was also provided to the USFWS for SCS's endangered species consultation. This information has also been incorporated into the FEIS.
- 38-41. These comments were answered by a separate letter dated September 29, 1986. A copy of this letter immediately follows SCS's responses to WGFD comments.
- 42-52. These comments were in a letter of response to a Findings of No Significant Impact (FONSI) for this project that was distributed by SCS in June 1986. The comments, recommendations, and information provided in this letter have been incorporated into the DEIS and FEIS where appropriate. The majority of information appears in the Foreword and Chapters 4 and 6.

Room 3124 - Federal Bldg.
100 East B Street
Casper, Wyoming 82601

September 29, 1986

Mr. Bill Morris, Director
Wyoming Game and Fish Department
5400 Bishop Boulevard
Cheyenne, Wyoming 82002

Dear Bill:

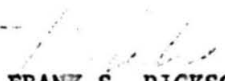
The Soil Conservation Service has received some additional comments dated September 10, 1986, from the Wyoming Game and Fish Department on the USDA/SCS - Big Sandy River Salinity Control Project Selected Plan. Of concern is the small reservoir south of Eden Reservoir called the Old Eden Reservoir. WGFD biologists have identified this 80-acre wetland as valuable habitat for several rare shorebirds.

The salinity control project will not impact this reservoir. A wetland map is enclosed that delineates the approximate impact zone to irrigation-induced wetlands. SCS will respond to your first set of comments at a later date. However, at this time, SCS thought it important to convey to you information concerning the old Eden Reservoir.

Pete Petera, WGFD assistant director; Tom Jewett, SCS assistant state conservationist; Duane Klamm, SCS state conservation engineer; and biologists from WGFD, SCS, and BLM will be touring the project area on October 30. Hopefully, many concerns will be clarified and resolved.

Please contact Tom Jewett at 261-5210 if you have any questions.

Sincerely,


FRANK S. DICKSON
State Conservationist

Enclosure

cc: w/encl.

~~cc:~~ Thomas E. Jewett, Assistant State Conservationist, SCS, Casper, Wyoming
RCR Richard C. Rintamaki, State Biologist, SCS, Casper, Wyoming
Duane Klamm, State Conservation Engineer, SCS, Casper, Wyoming
Francis Petera, Assistant Director - Operations, WGFD, Cheyenne, Wyoming
Don Kessler, District Conservationist, SCS, Rock Springs, Wyoming
Warren White, State Planning Coordinator, Cheyenne, Wyoming

bcc: w/encl.

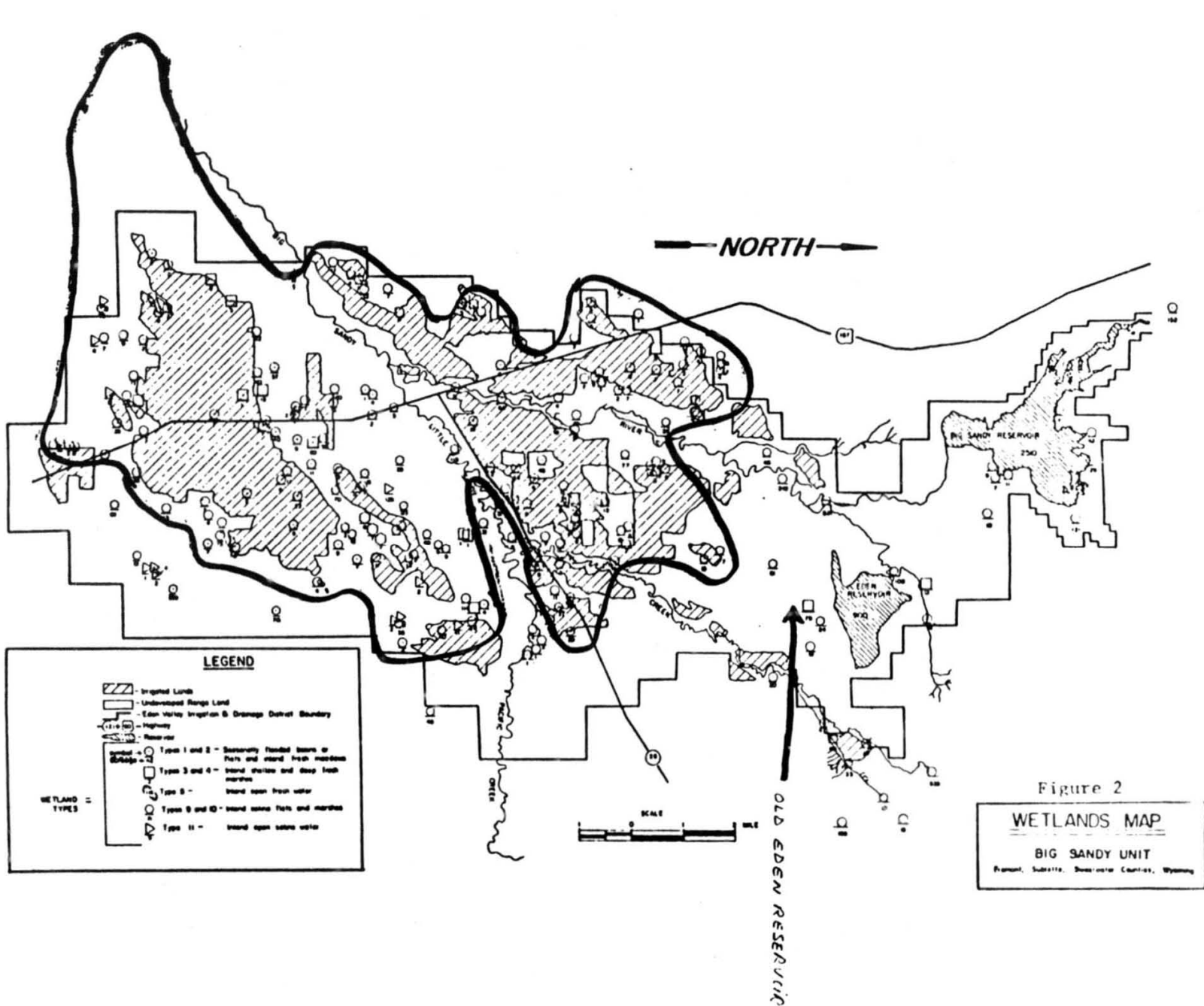
L. C. Young, State Resource Conservationist, SCS, Casper, Wyoming
Garen Sailors, Area Conservationist - West, SCS, Casper, Wyoming
Carl Tomich, Project Coordinator, SCS, Rock Springs, Wyoming

RCR:jb:WP/BS2:Letter - WG&F



APP. ROX. IMPACT ZONE

9





Wyoming Department of Agriculture

TELEPHONE: (307) 777-7321

CHEYENNE, WYOMING 82002-0100

DON ROLSTON, COMMISSIONER

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M E M O R A N D U M

DATE: April 22, 1987

TO: Paul Cleary
 State Planning Coordinator's Office

FROM: Collin Fallat *Collin Fallat*
 Resource Analysis Manager

SUBJECT: Draft Environmental Impact Statement for Big Sandy Unit

- 1 I have reviewed the above referenced environmental impact statement. The Wyoming Department of Agriculture concurs with the selected plan (Alternative No. 7). In our opinion this alternative best meets the needs of the agricultural producers in the Eden-Farson area. This area produces a significant amount of the agricultural cash crop output in the Sweetwater County, Wyoming. In our opinion the agricultural producers and the Federal government have invested considerable amount of money in this project and maintaining a long-term agriculture opportunity is vital. We believe that this alternative provides adequate mitigation for wildlife and fish values. As the environmental impact statement points out conflicts between improved irrigation management and the loss of wetlands will be reviewed and addressed on a case by case basis as the project is phased in over a nine year period.
- 2 In summary, we believe alternative 7 will be the best alternative for both the agriculture community and other interested parties.

Thank you for the opportunity to respond on this environmental impact statement.

CF/lms

Responses to Comments From The
Wyoming Department of Agriculture

1. Noted.
2. Noted.



Water Development Commission

HERSCHLER BUILDING

TELEPHONE: 307-777-7626

CHEYENNE, WYOMING 82002

Michael K Purcell
Administrator

April 13, 1987

James Noble
Chairman
J W Myers
Vice-Chairman
William Glanz
Secretary
Beryl Z Churchill
Myron Goodson
Walter J Pilch
Merl Rissler
Kathleen Sun
Neilson E. Wren, Jr.

Mr. Paul Cleary
State Planning Coordinator's Office
Wyoming State Clearinghouse
Herschler Building, 2nd Floor East
Cheyenne, Wyoming 82002

State Identifier Number 86-269, DEIS for Big Sandy River Unit dated February, 1987

Dear Paul:

I agree with the referenced document that Alternative 7 -- Low-Pressure Sprinkler, Individual Pumping is probably the best alternative. The success of this alternative, however, will be dependent on the perpetual operation, maintenance, and replacement of on-farm improvements in Wyoming. OM&R expenses are typically paid by individual irrigators without public assistance. Several questions need to be answered:

- 1) Are the Wyoming irrigators able and willing to pay the OM&R costs listed in Table 3-5 of the DEIS?
- 2) Are the Wyoming irrigators able and willing to pay OM&R costs in addition to debt retirement on 30% of the installation costs?
- 3) Does the operation cost listed in Table 3-5 include escalation of power costs?
- 4) Are downstream beneficiaries willing to help pay for OM&R costs on on-farm improvements that are essential to the success of Alternative 7?

Please contact me if you need any clarification on these questions.

Sincerely,

Rebecca L. Mathisen

Rebecca L. Mathisen
Project Manager
Water Division IV

RLM/vsb
cc: Mike Purcell
John W. Jackson

Responses to Comments From the Wyoming Water Development Commission

- 1 and 2. Many irrigators are ready and willing. Low interest loans are available for their portion of the costs. In addition, a portion of their costs can be reduced by using their equipment and labor for installation. Refer to letter from irrigators dated May 6, 1987, concerning the willingness of some irrigators to proceed with implementation immediately.
3. No. SCS used 4.9 cents per kWh as provided to us by the Bridger Valley Power Company.
4. No, they are not.



THE STATE OF WYOMING

MIKE SULLIVAN
GOVERNOR



Department of Environmental Quality

Administration (307) 777-7937	Air Quality Division (307) 777-7391	Land Quality Division (307) 777-7756	Solid Waste Management Program (307) 777-7752	Water Quality Division (307) 777-7781
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MEMORANDUM

TO: Frank S. Dickson, State Conservationist
Soil Conservation Service

FROM: Randolph Wood, Director
Department of Environmental Quality

DATE: March 31, 1987

SUBJECT: Review and comments on Colorado River Salinity Control Program Draft
Environmental Impact Statement for Big Sandy River Unit.

Michael Carnevale reviewed the above referenced document and provided the following comments:

- 1 The Wyoming Department of Environmental Quality cooperated with the SCS in the preparation of this document. Consequently, we have had input during the development of the DEIS and have submitted comments on an earlier, preliminary draft. We are pleased that our comments were considered and incorporated into the DEIS.
- 2 This office strongly supports the preferred alternative and feel that the other alternatives may contain unacceptable social, economic, legal and environmental short comings that could not be resolved in a timely manner. We would like to see the preferred alternative implemented as soon as possible.
- 3 The wetland map presented on page 4-24 (figure 4-4) should be presented on a larger scale map(s). The existing map is difficult to interpret due to the small scale that was used.
- 4 Credit should be taken for wetlands that will be created by the development of regulating reservoirs, pump pits, sediment basins and wasteways. These facilities should be designed and operated to maximize (to the greatest extent feasible) wetland development.

- 5 Wetland values are a topic of some debate. Therefore, we recommend that references to high value wetlands (types 3, 4, and 10) and other (1, 2 and 9) wetlands be eliminated. All wetlands should be discussed equally without reference to value. Wetland values other than wildlife benefits may be important.
- 6 Briefly, we have the following observations regarding water quality effects of the seven alternatives:
- Alternative 1 - Existing water quality would be maintained. Because opportunities exist to improve water quality, we feel this alternative is unacceptable and should not be implemented.
- Alternative 2 - Again, water quality would be virtually unchanged. Because opportunities exist to improve water quality, we believe this alternative is unacceptable.
- Alternative 3 - From a strictly water quality oriented perspective, this alternative would be acceptable to this agency. However, we are aware that other factors must be considered.
- Alternative 4 - See #3.
- Alternative 5 - Although economically attractive, other factors (social, wildlife) reduce the viability of this option. The greatest amount of salt reduction for the least amount of money would be achieved.
- Alternative 6 - We are concerned that this option could result in long term water quality problems involving evaporative concentration of toxic salts.
- Alternative 7 - We feel this alternative has the greatest potential for success, if all factors (social, economic, environmental, legal, etc.) are considered.

nc

Responses to Comments From The
Wyoming Department of Environmental Quality

1. Noted.
2. Noted.
3. SCS is unable to produce a larger scale map in the timeframe available to complete the Final EIS.
4. SCS agrees and have modified the text to reflect the regulation reservoirs, pump pits, and sedimentation basins and wasteways. Numerical credit for these areas will be documented by the habitat evaluation procedures that will be used during planning and installation of salinity control and wildlife habitat replacement measures.
5. The references to high-value and low-value wetlands have been removed from the text with the exception of the reference to low-value wetlands in the discussion of SCS policy for wetland exceptions and the section entitled, "Development of Values and Replacement Methodology for Replacement of Fish and Wildlife Values Foregone."
6. Noted.

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APR 27 1987

MIKE SULLIVAN
GOVERNORGORDON W. FASSETT
STATE ENGINEER

State Engineer's Office

HERSCHLER BUILDING April 27, 1987 CHEYENNE, WYOMING 82002

Paul Cleary
Natural Resources Analyst
State Planning Coordinator's Office
Herschler Building
Cheyenne, Wyoming 82002

Re: Colorado River Salinity Control
Program Draft EIS for Big Sandy
River Unit (State Identifier
No. 86-269)

Dear Paul:

These are the comments of our agency on the referenced DEIS of the Big Sandy River Salinity Control Unit, we appreciate your extension of time for our review and submittal.

1 In Chapter 2, pages 2-19 through 2-22, the Selected Plan is described. Voluntary implementation by the Eden Project irrigators, assisted technically and financially by USDA-ASCS (SCS and CES), of low pressure sprinkler irrigation systems on 15,700 acres of irrigated land would increase on-farm irrigation efficiencies from 39 percent to 68 percent. As a result, an estimated 52,900 tons of salt would not enter the Big Sandy River in the Colorado River system annually, decreasing the salinity of the Green River at the Town of Green River by 26.67 mg/l and decreasing the salinity of the Colorado River at Imperial Dam by 5.00 mg/l. The annual benefits of this program will outweigh the annual costs by over 2.1 to 1. These benefits accrue to both the local agricultural economy and to downstream salinity reduction.

2 The DEIS identifies the reduction of artificial habitat that has been created by the irrigation on the Eden Project as an environmental consequence of implementing the salinity control project. Clearly, in our view, the benefits outweigh the unavoidable loss of this man-induced wetland wildlife habitat. The Big Sandy Unit is one of the most cost-effective salinity control options in the Colorado River Basin. In addition, the project will further enable the State of Wyoming to use a portion of its water supply allocated to Wyoming under the Colorado River Compact and Upper Colorado River Basin Compact. The DEIS also overstates the loss of wetland wildlife habitat because of the voluntary installation by the irrigators of replacement habitat. Since there is no data on these replacement habitats, the impact or loss of wetlands is overstated (see page F-4).

3 The subject of reduced irrigation diversion requirements, or water savings, resulting from the implementation of the Big Sandy Unit Project is discussed on page 3-6 and on pages 6-6 through 6-8. It should be

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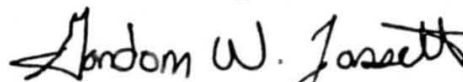
Paul Cleary
Natural Resources Analyst
State Planning Coordinator's Office
April 27, 1987 - Page 2

pointed out that the use of the average of 20,500 acre-feet per year of Big Sandy River system water not needed under the existing water rights for the irrigation project will be available for appropriation, as on any stream, which must be allocated by the Wyoming State Engineer under the normal processes and provisions of Wyoming State water law.

4 The seven Colorado River Basin states, meeting as the Colorado River Basin Salinity Control Forum, unanimously resolved their support for the Big Sandy Salinity Control Project, as presented in the selected plan. The Forum has further stated its desire for the early implementation of this project and for funding by Congress of the Federal share of project costs.

Thank you for the opportunity to review and comment on this DEIS. If we can provide additional comments or other input, please call upon us.

With best regards,



GORDON W. FASSETT
State Engineer

GWF/FJT/eb
Encls. (Referral Memo)

Responses to Comments From The
Wyoming State Engineer's Office

1. Noted.
2. Noted.
3. Noted. Text amended for clarification.
4. Noted.

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1987

March 30, 1987

Mr. Warren White
State Planning
Coordinator's Office
Herschler Building
2 East, 122 West 25th
Cheyenne, Wyoming 82002

RE: BIG SANDY RIVER UNIT DEIS (SCS)

Dear Mr. White:

Fred Chapman of our staff has received information concerning the aforementioned project. Thank you for giving us the opportunity to comment.

Management of cultural resources on SCS projects is conducted in accordance with a memorandum of understanding between the Department of Agriculture and the SHPO. The MOU calls for survey, evaluation and protection of significant historic and archeological sites prior to any disturbance. Provided the Department of Agriculture follows the procedures established by the MOU, we have no objections to the project. Specific comments on the project's effect on cultural resource sites will be provided to the Department of Agriculture when we review the cultural resource report.

If you have any questions please contact Fred Chapman at 777-6530.

Sincerely,

Fred Chapman
Review and Compliance

FC:tv

Response to Comments from The
Wyoming State Historic Preservation Office

1. Noted.

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April 15, 1987

Frank Dickson
S. C. S.
Room 3124, Federal Building
100 East B Street
Casper, WY 82601

Dear Frank:

We have worked on your draft EIS on the Big Sandy with several of our members and we, and they, have the following questions, which we feel should be answered before we can logically comment on the Draft EIS.

QUESTIONS:

As numbered

1. Who owns the sprinklers?
2. What do the current farm budgets reveal as relates to costs and returns per acre? (Please send a copy)
3. What do selected alternative budgets reveal as relates to costs and benefits per acre? (Please send a copy)
4. What will pumping costs be per acre? Please provide a breakdown of farm pumping costs versus all other pumping costs.
5. What do you consider the sprinkler life to be?
6. What costs have you used for sprinkler initial cost, operating costs and depreciation?
7. Who will own the 20,500 acre feet of unused water?
8. Can we lease it or sell it?
9. Are federal funds only from salinity funds or are other funds involved?
10. Please provide a breakdown on operation, maintenance, and replacement costs under current operation and under the proposed alternative.
11. What interest rate did you use for agricultural producers on
 - a. repayment of current obligation,
 - b. repayment of costs of proposed alternative,
 - c. operating costs, and
 - d. return on investment?
12. What does the 8 5/8 percent interest rate referenced at the bottom of page 3-12 mean?

13. Can a producer refuse to sign an agreement or contract on voluntary replacement of fish and wildlife values? Will he be penalized if he doesn't sign such? Please submit these questions to the ASCS if you are not the proper party to address the questions.
14. What is meant by "livestock exclusion" specifically (see page S-3).
15. What credit (financial consideration) does the Eden Valley Irrigation receive for "reduced annual reservoir drawdowns" (see page S-4)?
16. Will the federal government expect public access to private lands designated as "wetlands?"
17. Is the "flood plain along the Big Sandy River" (page 2-5) private land? What just compensation is to be paid for this use?
18. What would the practices on the bottom of page 3-2 cost per year?
19. Are the costs per ton of salt reduced \$113.75 per ton or \$383.94 per acre to be paid by the producers (see page 3-9)?
20. Please send budget information on the net benefits referred to in the second paragraph, page 3-11.
21. Are the exceptions listed in the second paragraph of page 3-15 nebulous considering this is a voluntary program?
22. What mitigation will the federal government and state government pay to the producers to enhance wildlife habitat?
23. Will the producer have to pay for added costs to avoid prairie dog colonies?
24. Will the producers be paid to maintain exclosure fences?
25. Is the salt reduction based on a reduced load or upon a reduced load and a dilution factor?
26. Who owns the water proposed to be used to maintain flows in Bone Draw? And to enhance wetlands?
27. Is the wildlife (and fish) habitat issue voluntary in view of the comments on pages 6-2 and 6-3?
28. What financial consideration will be paid to the Eden Valley Irrigation District for the water releases referred to on page 6-8?
29. Please provide a breakdown of the 420 jobs referred to on page 6-11.
30. Please provide data on the costs and benefits referred to on page 6-11.
31. Provide specific detail as to what is meant by the statement on the last paragraph of page 6-11 and page 6-12.

32. Who were the local members named from the Big Sandy Conservation District and the Eden Valley Irrigation and Drainage District? When were meetings held and who was in attendance?
33. Please provide data to support the statement "consensus was favorable to the low-pressure sprinkler alternative" on page 7-3.
34. What methodology was used to determine wildlife values currently being provided by the producers? Please provide all data for current benefits and proposed alternatives. Since the agency is dealing in "foregone" values this data is very necessary to make educated decisions.
35. Has the agency determined the costs and benefits on placing some lands in the Conservation Reserve Program (CRP)?
36. Has the agency placed a monetary value on an acre of wetland?
37. What would be the monetary value of placing the Eden Valley Irrigation District strictly in wetlands?
38. If the entire district was placed into wetlands could salinity control funds be made available to the District?
39. What is whooping crane habitat valued at in your methodology?

You will be receiving a request for an extension on the EIS comment period. We support that request and hope you will extend the comment period.

This issue is complex and carries too much financial risk for the producers to be quickly reviewed and commented upon.

Please send a copy of your answers to Lee Harns, Box 69, Farson, WY 82932 also.

Sincerely,



Larry B. Bourret
Executive Vice President

LJB/je

cc: Bruce Gose
Dave Reynolds
Garie Henry
Jim Whaley
Lee Harns
Bill Thoman
David Flitner
Senator Wallop
Senator Simpson
Representative Cheney



May 11, 1987

Frank S. Dickson
State Conservationist
Room 3124 - Federal Building
100 East B Street
Casper, WY 82601

Dear Frank:

First I want to thank you for extending the comment period on the Big Sandy Draft Environmental Impact Statement. We did not receive the economic data we requested until Friday, May 8 so were hard pressed to review that information and prepare these comments before the deadline. We are mailing these comments on Monday, May 11 and trust that they will be considered regardless of when they arrive.

40 We are concerned that the irrigators will bear an economic burden that will cause them problems. We prepared the following from the data your agency provided:

- 1. Installation of on farm irrigation systems* \$3,303,200
Wasteway and regulating reservoir* 248,200
Power line installation* 2,298,700
Voluntary fish and wildlife habitat replace.* 177,700
Irrigator cost \$6,027,800
*-from page 3-8 of DEIS

\$6,027,800
15,700 A. equals \$383.94 per acre investment cost to irrigator

\$383.94 amortized at 15 years at 12 percent interest equals \$56.37 annual payment per acre for 15 years. (from answer #30.)

- 2. Annual operation, maintenance and replacement cost:
Operation* \$196,000
Maintenance* 104,900
Replacement* 375,000
Total \$675,900
*-from page 3-12 DEIS

\$675,900
15,700 A. equals \$43.05 per acre per year

The above costs per acre equal \$99.42 for the first 15 years and the costs per acre after 15 years would be \$43.05 as compared to the current \$7.75 per acre per year. Thus irrigators would be assuming additional debt and risk not identified in the DEIS.

170

41 You, in your April 21, 1987 letter indicated that some of our concerns dealt with ASCS contracted obligations and to financial decisions each irrigator must make. In reviewing the DEIS we found that \$3.3 million in annual benefits downstream were identified but we felt that much of the data necessary for a decision on whether or not irrigators could economically survive was lacking. The irrigator who is asked to invest \$383 per acre as well as incurring additional annual costs should certainly ascertain if he will be economically better off as a result of this proposal. We know the downstream water users would benefit, but we must ask if the upstream irrigators will likewise benefit--or be disbenefited.

42 We were interested in just what sort of economic picture the irrigators would be looking at and prepared the following as a result of that interest:

SURFACE				
	Cost per acre			
	Irrigated alfalfa hay	Irrigated oats for hay (alfalfa establishment)	Irrigated barley for grain	Irrigated oats for grain
O&M*	\$7.75	\$7.75	\$7.75	\$7.75
Partial Budget				
Costs**	\$44.79	\$127.56	\$99.70	\$95.84
Total	\$52.54	\$135.31	\$107.45	\$103.59
Returns**	\$118.40	\$118.40	\$115.00	\$100.60
Net	\$65.86	(\$16.91)	\$7.55	(\$2.99)

SPRINKLER				
	Cost per acre first 15 years			
	Irrigated alfalfa hay	Irrigated oats for hay (alfalfa establishment)	Irrigated barley for grain	Irrigated oats for grain
O, M&R***	\$99.42	\$99.42	\$99.42	\$99.42
Partial Budget				
Costs**	\$82.46	\$112.38	\$91.15	\$82.00
Total	\$181.88	\$211.80	\$190.57	\$181.42
Returns**	\$266.40	\$118.40	\$115.00	\$112.86
Net	\$ 84.52	(\$93.40)	(\$75.57)	(\$68.56)

*-from personal conversation

**-From May 6, 1987 letter

***-from item 2. (above)

The above calculations reveal that the irrigator might be economically well advised to continue to irrigate as he has done in the past. This is especially true if one considers that no fertilizer costs are involved in the proposed project. I suspect the irrigator would have an extremely difficult time producing four tons of alfalfa hay per acre per year with no additional fertilizer. Fertilizer costs alone would seem to negate any difference in alfalfa production net income between the current system and that being proposed. Additionally the losses suffered by raising oats or barley for grain must be considered under the proposed change. Seeding year costs, with the resulting loss for that particular year, would have to be paid out of net income for the remaining six years and would further reduce the difference between (on alfalfa hay) the current system and that being proposed.

43

When one considers the \$3.3 million per year downstream benefits versus the above information several questions come to mind. One of those questions is why an upstream irrigator would assume the additional investment cost and risk associated with such a questionable economic future to provide that magnitude of benefits downstream. He is assuming additional investment costs of \$383 per acre which translates to an investment cost to him of \$113.95 per ton of salt removed downstream. If he were to be assured of additional economic benefits from such risk it might be understandable why he would voluntarily agree to such an investment. However, the data we have previously presented in this letter reveals that he might be disbenefited economically.

44

The second question which comes to mind is whether irrigators should consider such a proposal when the water they would conserve would possibly be abandoned by another party unless they could find a use for it within five years. I am of the opinion that this is a serious question which might need to be resolved by amendments to state law. Recognizing that your agency is only concerned about the project is not enough. The future of the owners of that water is at stake and they should not be expected to take such a huge economic risk, for such questionable returns, merely to benefit downstream users who apparently face no risk whatsoever. Then when one considers the potential for these irrigators losing the water they conserve for someone else's benefit the picture becomes even more foggy.

45

Looking at the economic benefit for the downstream benefactor the returns appear to be tremendous. Taking a look at the investment of \$12.1 million in salinity control funds as a one-time cost compared to annual downstream benefits of \$3.3 million reveals a no-lose situation for those users. If the one-time cost of \$12.1 million was allocated per acre for the 15,700 acres involved in this proposal the per acre amount is \$769.12. At 8.625 percent interest that results in an annual per acre return of \$66.34 per acre. The irrigator is not going to net that amount under this proposal.

46

Looking at the downstream benefits of \$3,323,100 from salinity reduction is interesting when considering the long term ramifications. If those users paid only one-half of the benefits annually the returns would be \$1,661,500 per year, or \$105.83 per acre per year for the 15,700 acres proposed to be involved in this proposal.

47

Additionally your response to our questions reveals that the salinity reduction downstream is not affected by the dilution of an additional 20,500 acre feet of water being released downstream. Therefore until such time as a use were found for the conserved water those downstream users would be additionally benefitted. It is very disturbing to find that the irrigators might not be able to survive economically under this proposal, yet we find that the downstream users will benefit at no risk, and at an extremely low cost--to them. The irrigator is expected to pay part of the cost for their benefits.

48

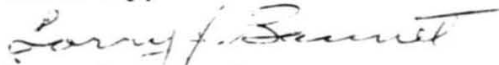
Unfortunately so much time and effort has been directed toward Bone Draw that people have forgotten what the original mission was. I assume the mission was to reduce salinity in the Colorado River. That can only be accomplished if the irrigators can economically carry out this proposal, voluntarily. The full costs of this proposal are not included in the DEIS, because we find irrigator costs are not complete and we also find that ASCS costs are not included. We recognize that an EIS is mainly written to assess environmental concerns, but surely the environmental concerns of irrigators going bankrupt should also be

addressed. We enclose information which indicates the Eden Valley Reservoir produces 680 fishing days per year and that Big Sandy Reservoir 11,542 fishing days per year. This is WGFD information and we believe the irrigators who pay for the operation and maintenance costs of those facilities are being put upon considerably by those who now would allege that the irrigators would destroy fishing via this proposal. So much effort has gone into wringing of hands about wetlands and Bone Draw that the basic issue has been overlooked. We question the \$84 per acre net benefit found on page 3-11. We ask if the contracts referred to on page 3-13 are voluntary. We ask if "mitigation" referred to which relates to the use of private property is voluntary. Referring to Answer # 13, can the LSCC require involuntary participation? Answer #14 indicates livestock "must" be excluded---. Is that going to be a condition of voluntary participation?

49 Has the agency considered a "retirement" option? The benefits downstream are evident and are definitely positive. We feel that the irrigators could be economically disbenefited by this proposal. The conserved water is going to be an additional benefit downstream, but will not be a benefit to the current owners unless we can amend the water laws to allow a lengthy time period for finding new uses for that water. Imposition of "mitigation" requirements upon irrigators, in the form of additional costs and management problems, is not well identified--and we are not certain that it is really voluntary. We do not find the agency and other agencies capable of having flexibility to consider the considerable benefits provided to fish and wildlife and the environment from current practices. Instead we find hand wringing occurring because of loss of man induced wetlands and a stream which should have never been considered by government to be a fishery. Until the economic considerations are clearly spelled out for the irrigators we believe other alternatives such as retirement should be considered. It is quite evident that downstream users are obtaining a riskless bargain if this proposal is adopted--at the expense of upstream irrigators. A more careful analysis of the relative benefits and costs of the irrigators and downstream users needs to be conducted to determine why the risks are so great upstream and the benefits are so great downstream. High returns are generally related to high risk, and vice versa. In this case just the opposite is true. Considering the cost and returns upstream perhaps other alternatives are necessary.

Thank you.

Sincerely,



Larry J. Bourret
Executive Vice President

Encl

cc: Lee Harns
NER Committee
Board of Directors
Gordon Fassett
Michael Carnevale

STREAM, LAKE & RESERVOIR SURVEY - CREW # 40
 REVISED AS OF 04/13/83

1- ALPINE LAKES

140076-18	BIG SANDY CR LK #2	R104M T32N S23-	BIG SANDY CREEK	1.7	BLM-	USFS-1X	NP-	Fb-	S&L-
TOTAL ACRES=	7.7	MIN ACRES=	OPERATIONAL HABITAT=	1.7				MGT CONCEPTS=E	
GCF=	BR-	PRIV-	PRESSURE=	3.0	FACTOR=02.7	PGT FCR SPECIES=3		STOCKING=-7	
SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP MANIPULATION=		HAB IMPROVEMENT=			
FISHERY=	03								
140069-18	BIG SANDY LAKE	R104M T32N S13-14	BIG SANDY CREEK	24.8	BLM-	USFS=	NP-	Fb-	S&L-
TOTAL ACRES=	56.8	MIN ACRES=	OPERATIONAL HABITAT=	24.8				MGT CONCEPTS=E	
GCF=	BR-	PRIV-	PRESSURE=	6.0	FACTOR=01.7	PGT FCR SPECIES=3		STOCKING=-7	
SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP MANIPULATION=		HAB IMPROVEMENT=			
FISHERY=	03 04								
140304-18	BIG SANDY RESERVOIR	R106M T27N S34-	BIG SANDY	1000.0	BLM-	USFS=	NP-	Fb-	S&L-
TOTAL ACRES=	2041.0	MIN ACRES=	OPERATIONAL HABITAT=	1000.0				MGT CONCEPTS=B	
GCF=	BR-1X	PRIV-	PRESSURE=	4.2	FACTOR=03.0	PGT FCR SPECIES=4		STOCKING=2-3	
SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP MANIPULATION=		HAB IMPROVEMENT=			
FISHERY=	02 04 11 03 54 55 52 77 01								
140370-19	BIG SANDY RESERVOIR	R106M T26N S 3-	BIG SANDY	450.0	BLM-1X	USFS=	NP-	Fb-	S&L-
TOTAL ACRES=	687.0	MIN ACRES=	OPERATIONAL HABITAT=	450.0				MGT CONCEPTS=B	
GCF=	BR-1X	PRIV-	PRESSURE=	4.2	FACTOR=01.4	PGT FCR SPECIES=4		STOCKING=2-3	
SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP MANIPULATION=		HAB IMPROVEMENT=			
FISHERY=	02 04 11 03 54 55 52 77 01								
140874-18	BIG SHEEP MT LAKE	R109M T30N S11-	GYPSON CREEK	3.5	BLM-	USFS-1X	NP-	Fb-	S&L-
TOTAL ACRES=	5.5	MIN ACRES=	OPERATIONAL HABITAT=	3.5				MGT CONCEPTS=0	
GCF=	BR-	PRIV-	PRESSURE=	2.1	FACTOR=05.0	PGT FCR SPECIES=2		STOCKING=2-7	
SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP MANIPULATION=		HAB IMPROVEMENT=			
FISHERY=	27								
140424-18	BIG TOURIST LAKE	R107M T30N S28-33	TOURIST CREEK	22.4	BLM-	USFS-1X	NP-	Fb-	S&L-
TOTAL ACRES=	22.4	MIN ACRES=	OPERATIONAL HABITAT=	22.4				MGT CONCEPTS=F	
GCF=	BR-	PRIV-	PRESSURE=	0.0	FACTOR=00.0	PGT FCR SPECIES=		STOCKING=-9	
SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP MANIPULATION=		HAB IMPROVEMENT=			
FISHERY=									
140109-18	BILLY'S LAKE	R104M T33N S39-NE	WASHAKIE CREEK	32.0	BLM-	USFS-1X	NP-	Fb-	S&L-
TOTAL ACRES=	35.0	MIN ACRES=	OPERATIONAL HABITAT=	32.0				MGT CONCEPTS=E	
GCF=	BR-	PRIV-	PRESSURE=	2.1	FACTOR=05.0	PGT FCR SPECIES=3		STOCKING=-7	
SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP MANIPULATION=		HAB IMPROVEMENT=			
FISHERY=	02								
140554-18	BINNINGS POND	R109M T35N S25-S6	WILLOW CREEK	5.0	BLM-	USFS=	NP-	Fb-	S&L-
TOTAL ACRES=	8.0	MIN ACRES=	OPERATIONAL HABITAT=	5.0				MGT CONCEPTS=B	
GCF=	BR-	PRIV-1X	PRESSURE=	0.5	FACTOR=09.9	PGT FCR SPECIES=		STOCKING=-7	
SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP MANIPULATION=		HAB IMPROVEMENT=			
FISHERY=									
141504-18	BLACK BUTTE PC #1	R111M T37N S33-NE	GREEN RIVER		BLM-	USFS=	NP-	Fb-	S&L-
TOTAL ACRES=	1.5	MIN ACRES=	OPERATIONAL HABITAT=					MGT CONCEPTS=F	
GCF=	BR-	PRIV-X0	PRESSURE=	0.0	FACTOR=00.0	PGT FCR SPECIES=		STOCKING=4-5	
SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP MANIPULATION=		HAB IMPROVEMENT=			
FISHERY=	04								

STREAM, LAKE & RESERVOIR SURVEY - CREB # 40
 REVISED AS OF 02/13/83

1- ALPINE LAKES

141490-18	EAST SNEEY LAKE	R108W T35N S24-	SNEEY CREEK	26.6	BLM=	USFS-1X	NP=	FW=	SEL=
	TOTAL ACRES=	MIN ACRES=	OPERATIONAL HABITAT=						
	G&F=	BR=	PRIV=	PRESSURE=	0.0	FACTCR=00.0	PGI	PCR	SPECIES=
	SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP	MANIPULATION=			HAB IMPROVEMENT=
	FISHERY=								
									MGT CONCEPTS=F
									STOCKING= -6
140306-18	ECKLUND LAKE	R107W T35N S 7-	FRENONT CREEK	8.8	BLM=	LSFS-1X	NP=	FW=	SEL=
	TOTAL ACRES=	MIN ACRES=	OPERATIONAL HABITAT=						
	G&F=	BR=	PRIV=	PRESSURE=	4.2	FACTCR=02.5	PGI	PCR	SPECIES=
	SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP	MANIPULATION=			HAB IMPROVEMENT=
	FISHERY=	01							
									MGT CONCEPTS=E
									STOCKING= -6
140340-19	EDEN VALLEY RESERVOIR	R109W T26N S17-	BIG & LITTLE SANDY CR	1361.0	BLM=	USFS=	NP=	FW=	SEL=
	TOTAL ACRES=	MIN ACRES=	OPERATIONAL HABITAT=						
	G&F=	BR=	PRIV=	PRESSURE=	0.5	FACTCR=10.0	PGI	PCR	SPECIES=
	SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP	MANIPULATION=			HAB IMPROVEMENT=
	FISHERY=	03 01 02 04 56 33 52 77							
									MGT CONCEPTS=B
									STOCKING= 3-3 1-1
140387-18	EDMOND LAKE	R106W T34N S 7- 8	MAC'S CREEK	6.6	BLM=	USFS-1X	NP=	FW=	SEL=
	TOTAL ACRES=	MIN ACRES=	OPERATIONAL HABITAT=						
	G&F=	BR=	PRIV=	PRESSURE=	0.0	FACTCR=00.0	PGI	PCR	SPECIES=
	SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP	MANIPULATION=			HAB IMPROVEMENT=
	FISHERY=								
									MGT CONCEPTS=F
									STOCKING= -6
140438-18	EDS LAKE	R106W T34N S25-	N FR BELLOEP CREEK	3.9	BLM=	LSFS-1X	NP=	FW=	SEL=
	TOTAL ACRES=	MIN ACRES=	OPERATIONAL HABITAT=						
	G&F=	BR=	PRIV=	PRESSURE=	2.5	FACTCR=02.0	PGI	PCR	SPECIES=
	SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP	MANIPULATION=			HAB IMPROVEMENT=
	FISHERY=	02							
									MGT CONCEPTS=D
									STOCKING= -7
140406-18	ELBOW CR (07(SLR 1))	R107W T37N S32-N5	ELBOW CREEK	12.0	BLM=	USFS-1X	NP=	FW=	SEL=
	TOTAL ACRES=	MIN ACRES=	OPERATIONAL HABITAT=						
	G&F=	BR=	PRIV=	PRESSURE=	4.2	FACTCR=02.5	PGI	PCR	SPECIES=
	SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP	MANIPULATION=			HAB IMPROVEMENT=
	FISHERY=								
									MGT CONCEPTS=C
									STOCKING= -7
140605-18	ELBOW CR (21(SHANNON))	R107W T37N S32-N5	ELBOW CREEK	10.0	BLM=	USFS-1X	NP=	FW=	SEL=
	TOTAL ACRES=	MIN ACRES=	OPERATIONAL HABITAT=						
	G&F=	BR=	PRIV=	PRESSURE=	4.0	FACTCR=03.0	PGI	PCR	SPECIES=
	SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP	MANIPULATION=			HAB IMPROVEMENT=
	FISHERY=								
									MGT CONCEPTS=C
									STOCKING= -7
140683-18	ELBOW CREEK LAKE #1	R108W T36N S 2-NW	ELBOW CREEK	4.3	BLM=	LSFS-1X	NP=	FW=	SEL=
	TOTAL ACRES=	MIN ACRES=	OPERATIONAL HABITAT=						
	G&F=	BR=	PRIV=	PRESSURE=	0.0	FACTCR=00.0	PGI	PCR	SPECIES=
	SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP	MANIPULATION=			HAB IMPROVEMENT=
	FISHERY=								
									MGT CONCEPTS=F
									STOCKING= -6
140822-18	ELBOW CREEK LAKE #1	R107W T38N S19-	ELBOW CR (GREEN R)	3.4	BLM=	USFS-1X	NP=	FW=	SEL=
	TOTAL ACRES=	MIN ACRES=	OPERATIONAL HABITAT=						
	G&F=	BR=	PRIV=	PRESSURE=	0.0	FACTCR=00.0	PGI	PCR	SPECIES=
	SPECIAL REGS=	LIBERAL	ACCESS=	OK	POP	MANIPULATION=			HAB IMPROVEMENT=
	FISHERY=								
									MGT CONCEPTS=F
									STOCKING= -6

Responses to Comments From the Wyoming Farm Bureau

These comments have been previously answered in separate correspondence from Frank Dickson, the SCS State Conservationist. These letters dated April 24, May 6, and May 12, 1987, immediately follow this response page. The May 6, 1987, letter should have included a number 20 after the response entitled #2, #3.

Responses to a second Farm Bureau letter Comments 40 through 49 are presented below.

40. The text in Chapter 3, "Economic Benefits," has been revised to clarify the irrigators' voluntary commitment to additional debt and risk.
41. The crop budget interviews with landowners who have low-pressure sprinkler systems in Eden Valley indicate that irrigators will be benefitted. Again, each landowner will make the determination using their own farm information to see if they can justify the 30 percent cost for the salinity control irrigation system. Only when they feel that there is economic benefits to the farm will a salinity reduction contract be voluntarily entered into.
42. The comment indicates that the landowner might be well advised to continue to irrigate as he has done in the past and that fertilizer costs were not considered. Again, we would point out that present landowner experience of low-pressure sprinklers shows that a longer growing season is being derived. The longer growing season has allowed the landowner to change crops from grass-alfalfa hay to an alfalfa hay. This is the reason for the crop yield increase from 1.6 tons/year to 3.7 tons/year. The 3.7 tons/year can be further increased by the effective use of fertilizer. Further analysis would be required to determine the net benefits of adding fertilizer on a farm-by-farm basis.
43. Text in Chapter 3, "Economic Benefits," has been revised to include a discussion of the need for irrigators to evaluate their own economic circumstances.
44. Allocations for irrigation water are made on either direct flow existing or projected stored water in the reservoirs. According to the Wyoming State Engineer, implementation of the planned project will have no effect on an individual's full water right necessary to raise a crop as it relates to available storage in the reservoirs.

Additional benefits that will be realized by the irrigators after installing more efficient irrigation systems is that, in most drought years, the reservoirs will have adequate storage to meet irrigation water demands. Also, more efficient irrigation will result in alleviating many of the wet areas that currently exist which cause depressed yields, harvesting difficulties, and crop failures.

Federal Building, Room 3124
100 East F Street
Casper, Wyoming 82601

April 24, 1987

Mr. Larry Bourret
Executive Vice President
Wyoming Farm Bureau
P. O. Box 1348
Laramie, Wyoming 82070

Dear Mr. Bourret:

Enclosed are our responses to your preliminary comments on the DEIS for the Big Sandy River Unit of the Colorado River Basin Salinity Control Program. Our responses are numbered identical to your comments.

We have previously granted you a 15-day extension of the formal comment period. If you desire, please submit additional comments on this DEIS by May 12, 1987. You may contact Tom Jewett, Soil Conservation Service, Assistant State Conservationist, Programs, at 261-5202, if you have any questions.

Sincerely,



FRANK S. DICKSON
State Conservationist

Enclosure

cc: Lee Harns, Box 69, Farson, Wyoming
Tom Taliaferro, President, Eden Valley Irrigation and Drainage District,
Farson, Wyoming
James Hodder, Chairman, Big Sandy Conservation District, Farson, Wyoming
Anthony Padilla, Area Rep. for Congressman Cheney, Green River, Wyoming
Robin Bailey, Rep. for U.S. Senator Alan Simpson, Rock Springs, Wyoming
Billee Jelouchan, Rep. for U.S. Senator Malcolm Wallop, Rock Springs, Wyoming
Gordon W. "Jeff" Fassett, State Engineer, State Engineer's Office, Cheyenne,
Wyoming
Michael Carnevale, Planning Supervisor, Department of Environmental Quality,
Cheyenne, Wyoming
Francis E. "Pete" Petera, Assistant Director, Wyoming Game and Fish Department
Cheyenne, Wyoming
Harold Hellbaum, State Executive Director, Agricultural Stabilization and
Conservation Service, Casper, Wyoming
Don K. Rolston, Commissioner, Wyoming Department of Agriculture, Cheyenne,
Wyoming

Attachment to letter to Larry Bourret.

COMMENTS/RESPONSES DEIS:

Responses to comments #2, 3, 6, 10, and 11 are presently being assembled and will be sent as soon as possible. These comments generally relate to the information needed by an individual landowner in order to evaluate whether or not a farmer voluntarily participates in the program after project funding is approved. Our responses to the comments will provide general and average information. The publication, Cost of Producing Crops in the Eden-Farson Area of Wyoming, was used extensively during the planning of this project.

One must realize that each landowner has their own set of financial circumstances and must consider them prior to committing to a salinity control contract. The SCS and the Cooperative Extension Service will provide economic and informational technical assistance to individual landowners needing help regarding their participation in the program. It should be reemphasized that the landowner is under no obligation to participate in the salinity project.

1. Landowners.

4. Yearly on-farm pumping costs range from \$12/acre to \$15/acre per year. This includes a demand charge of \$10/HP/yr.

5. Sprinkler 12 years, distribution pipeline 50 years, pumps 25 years.

7. The Irrigation District owns the storage in the reservoir. Flow in the Big Sandy River below Big Sandy Reservoir is owned by those who have an appropriated flow right. Non-appropriated flow is under the control of the State Engineer. The discussion on Page 6 and 8 of the DEIS simply illustrates how releases of potential surplus water could be released to benefit wildlife.

8. It is between the Irrigation District and State Engineer how storage water is distributed.

9. The 70 percent cost-share portion is all federal salinity control funds. The non-salinity control programs of the ASCS would continue in the area.

12. This rate is established annually by the Water Resources Council. All federal projects must be evaluated using this rate.

13. Yes, a producer can refuse to sign a contract containing cost-share measures for voluntary replacement of

fish and wildlife values. The Local Salinity Coordinating Committee (LSCC) must consider the positive or negative affects to wildlife when developing the priority guide. The LSCC is composed of a representative(s) from ASCS, SCS, Extension Service, the ASCS County Committee (COC), and the Conservation District (CD), other USDA agencies in the area, the BR, U.S. Fish and Wildlife Service (FWS), and the EPA, as well as other state and local agencies are encouraged to participate.

14. "Livestock exclusion" means that livestock must be excluded from the area permanently, or for designated periods of time according to purpose. However, some brief periods of grazing may be allowed for specifically planned purposes; such as, weed control, keeping excess litter from accumulating, eliminating understory from certain forest lands, or to open certain wildlife feeding areas to make the food accessible.

15. None - they do receive credit in that there will be more carryover storage, which will help irrigators in water short years.

16. No.

17. Land ownership is both public and private. Private and state landowners could receive 70 percent cost-share by the federal government for the voluntary installation of fish and wildlife habitat measures; such as, livestock exclusion, streambank protection, tree planting, ponds (level ditching), and fish stream improvement.

18. With the exception of wells and pasture and hayland seeding, the practices you refer to are generally management in nature. They require minimal cash outflow. Costs are variable and relate generally to the hours expended in the field and time spent on record keeping. Pasture and hayland planting would cost about \$60 per acre every seven years.

19. The producer's cost is 30 percent of cost-shared practices in his contract designed to reduce salinity and voluntarily replace wildlife habitat. This cost could be related to tons of salt reduced based on the reduction of irrigation water applied to the land.

21. No, the SCS must still follow National Environmental Policy Act (NEPA) requirements and document necessary exemptions for wetlands as they relate to salinity control (water quality and irrigation water management improvements).

22. The federal government will pay 70 percent of the installation costs for the wildlife practices listed on page 3-2. This DEIS does acknowledge the potential for state,

local units of government, and environmental organizations to contribute funds to the local cost-share portion.

23. No.

24. No.

25. Dilution has no effect on the reduced salt load of 52,900 tons annually.

26. There is no flow maintenance proposed for Bone Draw. Most wetland replacement values will occur as secondary benefits from water used for other purposes; such as, regulating reservoirs, irrigation pits, stock ponds, irrigation wasteways, and increased utilization of existing water storage capacity in Big Sandy and Eden Reservoirs.

27. Specific fish and wildlife practices are voluntary as stated in the law. Many other non-wildlife practices do include features benefiting fish and wildlife. SCS refers to these as secondary wildlife benefits.

28. None, unless an agency would be willing to purchase a storage right, which would be guaranteed a water release schedule using that water. The water referred to in the release schedule on page 6-8 is water in, or anticipated to be in, excess of reservoir storage capacity. The schedule could be referred to as controlled spills.

29. This number has been revised to read 306 here and in Figures 5-2 and 2-2. Total employment costs (skilled and semi-skilled) are estimated, to be 30 percent of the total construction cost. Wyoming's share is 65 percent of the total; 84 percent of employment is semi-skilled (\$10,000 annually), and 16 percent of employment is skilled (\$20,000 annually).

30. Costs/benefits were developed from the following: no cost-share available, used 12% commercial loans, (15 yr. payback), estimated hay production profit @\$30/ton; present flood system production (1.7 ton/Ac), automated borders production (3.0 ton/Ac), low pressure sprinkler production (4.0 ton/yr), costs per acre (\$67 manual border, \$149 automated border, \$143 low pressure sprinkler) include one or more of the following: clearing, land leveling, seed, seed bed preparation, irrigation delivery systems, (lined ditches, sprinklers), and annual operations, maintenance, and replacement costs.

31. We believe this narrative is adequate. There is the potential to improve quality and the management of the natural resources on the area's private and public lands, which would increase recreation-use days by an unknown amount.

32. We are presently searching our files and assembling this information. The older meeting information will be sent to you at a later date. A September 22, 1986 meeting at the Eden Valley Community Hall was attended by the following: Eden Valley Irrigation and Drainage District Members Ralph DeLambert, Ed Tomich, Larry Metz, Jack McMurry, Lee Grandy; Big Sandy Conservation District Supervisors James Hodder, Charles Jamieson, Bob McMurry, Don Mines, Kathy Eversole, Clerk; SCS Personnel Duane Klamm, Mark Opitz, Dick Rintamaki, Don Kessler, Carl Tomich.

33. The State of Wyoming was in favor and the majority in attendance at a meeting on December 17, 1984 favored a salinity project to increase irrigation efficiency. Subsequent meetings, as listed in the DEIS, did not indicate a change in this position.

34. Page 2-3 of the DEIS describes the methodology for determining wetland and wildlife values only. The HEP system, as described on pages 6-3 and 6-4 will be used during the installation period, to evaluate all terrestrial and wetland habitat in the project area in the 'before' and 'after' conditions.

35. No, the DEIS only evaluates a salinity control project for this area.

36. No.

37. This analysis has not been done.

38. No.

39. No monetary value has been placed on whooping crane habitat.

Unnumbered. (Refers to financial risk) - The DEIS is not an obligating document for the farmers. Each landowner will determine if they want to enter or not enter into salinity control contracts.

Room 3124, Federal Building
100 East P Street
Casper, Wyoming 82601

May 6, 1987

Mr. Larry Bourret
Executive Vice President
Wyoming Farm Bureau
P.O. Box 1348
Laramie, Wyoming 82070

Dear Mr. Bourret:

Enclosed are SCS's remaining responses to your preliminary comments dated April 24, 1987, on the Draft Environmental Impact Statement for the Big Sandy River Unit of the Colorado River Basin Salinity Control Program. Our responses are numbered identical to your comments.

Please contact Tom Jewett, Soil Conservation Service, Assistant State Conservationist (Programs), at 261-5202 if you have any questions.

Sincerely,

FRANK S. DICYSON
State Conservationist

Enclosure

cc:

Lee Harns, Farson, Wyoming
Tom Taliaferro, President, Eden Valley Irrigation and Drainage District,
Farson, Wyoming
James Hodder, Chairman, Big Sandy Conservation District, Farson, Wyoming
Anthony Padilla, Area Rep. for Congressman Cheney, Green River, Wyoming
Robin Bailey, Rep. for U.S. Senator Alan Simpson, Rock Springs, Wyoming
Pillee Jelouchan, Rep. for U.S. Senator Malcolm Wallon, Rock Springs, Wyoming
Gordon W. "Jeff" Fassett, State Engineer, Cheyenne, Wyoming
Michael Carnevale, Planning Supervisor, Department of Environmental
Quality, Cheyenne, Wyoming
Francis E. "Pete" Petera, Assistant Director, Wyoming Game and Fish
Department, Cheyenne, Wyoming
Harold Hellbaum, State Executive Director, Agricultural Stabilization and
Conservation Service, Casper, Wyoming
Don K. Rolston, Commissioner, Wyoming Department of Agriculture, Cheyenne,
Wyoming
Fee Busby, Director, Cooperative Extension Service, College of Agriculture,
University of Wyoming, Laramie, Wyoming
Thomas F. Jewett, Assistant State Conservationist, SCS, Casper, Wyoming
Garen Sailors, Area Conservationist - West, SCS, Casper, Wyoming
Don Keasler, District Conservationist, SCS, Casper, Wyoming

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Attachment to letter to Larry Bourret, May 6, 1987

Additional Comments/Responses to Big Sandy DEIS:

#2, #3 (similar comments) Response - The enclosed partial crop budgets were prepared for federal project analysis and justification using 1985 current normalized prices and the Water Resources Council's interest rate. This analysis is for the entire project and does not reflect individual landowners' budgets or financial conditions.

The individual landowner must determine if he/she wants to participate in this voluntary program. SCS, ASCS, and the Extension Service will be available to help the individual landowner prepare individual budgets. However, the decision to enter into a salinity control contract rests entirely with the individual.

#6, #10 (similar comments) Response -

TOTAL INSTALLATION COST

	<u>Total Cost</u>	<u>Total Cost/Ac.</u>
Distribution Pipelines	\$4,235,800	269.30
Motor and Pumps	527,100	33.57
Sprinklers	6,248,000	<u>397.96</u>
Total		701.33/ac.

Approximately \$8,000/wheel move. Each sprinkler covers approximately 20 acres.

TOTAL ANNUAL COST FOR OPERATION, MAINTENANCE, AND REPLACEMENT

Operation Cost with Project (Sprinkler Pumping)	$\frac{\$196,000}{15,700 \text{ acres}}$	= \$12.50/ac. Average per year
Maintenance Cost of Project	$\frac{\$104,900}{15,700 \text{ acres}}$	= \$ 6.70/ac. Average per year
Replacement Cost of Project Components	$\frac{\$375,000}{15,700 \text{ acres}}$	= \$23.90/ac. Average per year

Total Annual OM&R Costs = \$43.10/ac. Average per year

Total Annual Installation Cost Per Acre (0.08765 x \$701.33)	= \$61.47
Total Annual Local Installation Cost Per Acre (30% x \$61.47)	= \$18.44
Total Annual OM&R Cost (Local Cost) Per Acre	= \$43.10
Total Annual All <u>Local Cost</u> Per Acre (\$18.44 + \$43.10)	= \$61.54

#11 Response - The project was evaluated at 5/8 percent interest. No analyses were made for individuals.

COST PER ACRE OF IRRIGATED ALFALFA HAY
FOR THE BIG SANDY IRRIGATION PROJECT *PARTIAL BUDGET SURFACE*

OPERATION	CUSTOM RATE	TOTAL \$ /ACRE
PREPLANT		
PLANT		
GRON		
1/ LABOR 1 HR / AC @ \$5.00 / HR	5.00	5.00
SUBTOTAL		5.00
HARVEST		
SNATH \$10 / ac	10.00	10.00
BALE \$10 / t @ 1.6 t / ac	16.00	16.00
HAUL AND STACK \$6 / t @ 1.6 t / ac	9.60	9.60
SUBTOTAL		35.60
SUBTOTAL PREPLANT THROUGH HARVEST		40.60
INTEREST ON CASH COST @ 5/8% for 6 mos.	1.75	1.75
MANAGEMENT (6% OF variable production)	2.44	2.44
TOTAL COST PER ACRE	44.79	44.79
1.6 t/ac @ 74.00 1985 CNP	118.40	118.40
NET		73.61
1/ ASCA co. average labor cost		

COST PER ACRE OF IRRIGATED OATS FOR HAY
FOR THE BIG SANDY IRRIGATION PROJECT *PARTIAL BUDGET SURFACE*

OPERATION	CUSTOM RATE	TOTAL \$ /ACRE
PREPLANT		
PLANT		
GRON		
1/ LABOR 1 HR / AC @ \$5.00 / HR	5.00	5.00
SUBTOTAL		5.00
HARVEST		
SNATH \$10/ ac	10.00	10.00
BAIL \$10/ t @ 1.6 t/ ac	16.00	16.00
HAUL AND STACK \$6/ t/ @ 1.6 t/ ac	9.60	9.60
SUBTOTAL		35.60
SUBTOTAL PREPLANT THROUGH HARVEST		115.63
INTEREST ON CASH COST @ 5/8% for 6 mos.	4.99	4.99
MANAGEMENT (6% OF variable production)	6.94	6.94
TOTAL COST PER ACRE	127.56	127.56
1.6 t/ac @ 74.00 /t 1985 CNP	118.40	118.40
NET		-9.16
ASCS co. labor cost		

COST PER ACRE OF IRRIGATED ESTABLISHED ALFALFA HAY
FOR THE BIG SANDY IRRIGATION PROJECT *PARTIAL BUDGET SPRINKLER*

OPERATION	CUSTOM RATE	TOTAL \$ /ACRE
PREPLANT		
PLANT		
GRON		
1/ LABOR .15 HR / AC @ \$5.00 / HR	0.75	0.75
SUBTOTAL		0.75
HARVEST		
SNATH \$10 / ac	10.00	10.00
BALE \$10 / t @ 4 t / ac	40.00	40.00
HAUL AND STACK \$6 / t @ 4 t / ac	24.00	24.00
SUBTOTAL		74.00
SUBTOTAL PREPLANT THROUGH HARVEST		74.75
INTEREST ON CASH COST @ 5/8% for 6 mos.	3.22	3.22
MANAGEMENT (6% OF VARIABLE PRODUCTION)	4.49	4.49
TOTAL COST PER ACRE	82.46	82.46
3.6 T/AC @ 74.00 /t 1985 CNP	266.40	266.40
NET		183.94
1/ ASCS co. labor costs		
2/ OMR is a project cost and not reflected in budgets		

COST PER ACRE OF IRRIGATED OATS FOR HAY
FOR THE BIG SANDY IRRIGATION PROJECT *PARTIAL BUDGET SPRINKLER*

OPERATION	CUSTOM RATE	TOTAL \$ /ACRE
PREPLANT		
PLANT		
GRON		
1/ LABOR .15 HR / AC @ \$5.00 / HR	0.75	0.75
SUBTOTAL		0.75
HARVEST		
SNATH \$10/ ac	10.00	10.00
BAIL \$10/ t @ 1.6 t/ ac	16.00	16.00
HAUL AND STACK \$6/ t/ @ 1.6 t/ ac	9.60	9.60
SUBTOTAL		35.60
SUBTOTAL PREPLANT THROUGH HARVEST		101.28
INTEREST ON CASH COST @ 5/8% for 6 mos.	4.39	4.39
MANAGEMENT (6% OF variable production)	6.11	6.11
TOTAL COST PER ACRE	112.38	112.38
1.6 t/ac @ 74.00/t 1985 CNP	118.40	118.40
NET		6.02
1/ ASCS co. Average labor cost		
2/ OMR is a project cost and not reflected in budgets		

COST PER ACRE OF IRRIGATED BARLEY FOR GRAIN

FOR THE BIG SANDY IRRIGATION PROJECT *PARTIAL BUDGET*
SPRINKLER

OPERATION	CUSTOM RATE TOTAL \$ / ACRE
PREPLANT	
FLOW	13.00
DISK	8.00
HARROW	2.00
SUBTOTAL	30.00
PLANT	
SEED 100# @ \$20	20.00
HAULING SEED	1.88
DRILLING	2.00
SUBTOTAL	30.88
GRON	
1/ LABOR .15 HR / AC @ \$5.00 / HR	0.75
SUBTOTAL	0.75
HARVEST	
COMBINING \$13.00 FIRST 20 BU	13.00
\$0.10 PER ADDITIONAL BU 30 BU	3.00
HAULING \$0.10 PER BU	2.00
SUBTOTAL	21.00
SUBTOTAL PREPLANT THROUGH HARVEST	82.63
INTEREST ON CASH COST @ 5/8% for 6 mos.	3.56
MANAGEMENT (% OF variable production)	4.96
TOTAL COST PER ACRE	91.15
50 bu. @ 2.30 (1985 CNP)	115.00
NET	23.85

1/ ASCS co. average labor cost
2/ OMSR is a project cost and not reflected in budgets

COST PER ACRE OF IRRIGATED OATS FOR GRAIN

FOR THE BIG SANDY IRRIGATION PROJECT *PARTIAL BUDGET*
SPRINKLER

OPERATION	CUSTOM RATE TOTAL \$ / ACRE
PREPLANT	
FLOW	13.00
DISK	8.00
HARROW	2.00
SUBTOTAL	30.00
PLANT	
SEED	8.50
HAULING SEED	1.88
DRILLING	2.00
SUBTOTAL	19.38
GRON	
1/ LABOR .15 HR / AC @ \$5.00 / HR	0.75
SUBTOTAL	0.75
HARVEST	
COMBINING \$13.00 FIRST 20 BU	13.00
\$0.10 PER ADDITIONAL BU 46 BU	4.60
HAULING \$0.10 PER BU	6.60
SUBTOTAL	24.20
SUBTOTAL PREPLANT THROUGH HARVEST	74.33
INTEREST ON CASH COST @ 5/8% for 6 mos.	3.21
MANAGEMENT (% OF variable production)	4.46
TOTAL COST PER ACRE	82.00
66 bu. /ac @ 1.71 / bu. 1985 CNP	112.86
NET	30.86

1/ ASCS co. average labor cost
2/ OMSR is a project cost and not reflected in budgets

COST PER ACRE OF IRRIGATED BARLEY FOR GRAIN

FOR THE BIG SANDY IRRIGATION PROJECT *PARTIAL BUDGET*
SURFACE

OPERATION	CUSTOM RATE TOTAL \$ / ACRE
PREPLANT	
FLOW	13.00
DISK	8.00
HARROW	9.00
LEVEL	2.50
SUBTOTAL	39.50
PLANT	
SEED 100# @ \$20	20.00
HAULING SEED	1.88
DRILLING	2.00
SUBTOTAL	30.88
GRON	
1/ LABOR 1 HR / AC @ \$5.00 / HR	5.00
SUBTOTAL	5.00
HARVEST	
COMBINING \$13.00 FIRST 20 BU	13.00
\$0.10 PER ADDITIONAL BU 30 BU	3.00
HAULING \$0.10 PER BU	2.00
SUBTOTAL	18.00
SUBTOTAL PREPLANT THROUGH HARVEST	93.38
INTEREST ON CASH COST @ 5/8% for 6 mos.	4.03
MANAGEMENT (% OF variable production)	5.60
TOTAL COST PER ACRE	99.70
50 bu. @ 2.30 / bu. 1985 CNP	115.00
NET	11.99

1/ ASCS co. average labor cost

COST PER ACRE OF IRRIGATED OATS FOR GRAIN

FOR THE BIG SANDY IRRIGATION PROJECT *PARTIAL BUDGET*
SURFACE

OPERATION	CUSTOM RATE TOTAL \$ / ACRE
PREPLANT	
FLOW	13.00
DISK	8.00
HARROW	9.00
LEVEL	2.50
SUBTOTAL	39.50
PLANT	
SEED	8.50
HAULING SEED	1.88
DRILLING	2.00
SUBTOTAL	19.38
GRON	
1/ LABOR 1 HR / AC @ \$5.00 / HR	5.00
SUBTOTAL	5.00
HARVEST	
COMBINING \$13.00 FIRST 20 BU	13.00
\$0.10 PER ADDITIONAL BU 40 BU	4.00
HAULING \$0.10 PER BU	6.00
SUBTOTAL	23.00
SUBTOTAL PREPLANT THROUGH HARVEST	86.88
INTEREST ON CASH COST @ 5/8% for 6 mos.	3.75
MANAGEMENT (% OF variable production)	5.21
TOTAL COST PER ACRE	95.84
60 bu. /ac @ 1.71 / bu. 1985 CNP	102.60
NET	6.76

1/ ASCS co. average labor cost

Room 3124, Federal Building
100 East F Street
Casper, Wyoming 82601

May 12, 1987

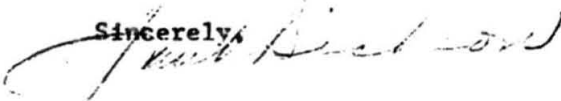
Mr. Larry Bourret
Executive Vice President
Wyoming Farm Bureau
P.O. Box 1348
Laramie, Wyoming 82070

Dear Mr. Bourret:

In a letter to you dated May 6, 1987, we responded to your preliminary comments #2, 3, 6, 10, and 11 for the Big Sandy River Unit of the Colorado River Basin Salinity Control Program. Our response to your comments #6 and #10 inadvertently omitted the amortization of the construction costs. The revised response is attached. Please discard the response to #6 and #10 dated May 6, 1987.

Please contact Tom Jewett, Soil Conservation Service, Assistant State Conservationist (Programs), at 261-5202 if you have any questions.

Sincerely,


FRANK S. DICKSON
State Conservationist

Enclosure

cc:

Lee Harns, Farson, Wyoming
Tom Taliaferro, President, Eden Valley Irrigation and Drainage District,
Farson, Wyoming
James Hodder, Chairman, Big Sandy Conservation District, Farson, Wyoming
Anthony Padilla, Area Rep. for Congressman Cheney, Green River, Wyoming
Robin Bailey, Rep. for U.S. Senator Alan Simpson, Rock Springs, Wyoming
Billee Jelouchan, Rep. for U.S. Senator Malcolm Wallop, Rock Springs, Wyoming
Gordon W. "Jeff" Fassett, State Engineer, Cheyenne, Wyoming
Michael Carnevale, Planning Supervisor, Department of Environmental
Quality, Cheyenne, Wyoming
Francis E. "Pete" Petera, Assistant Director, Wyoming Game and Fish
Department, Cheyenne, Wyoming
Harold Hellbaum, State Executive Director, Agricultural Stabilization and
Conservation Service, Casper, Wyoming
Don K. Rolston, Commissioner, Wyo. Dept. of Agriculture, Cheyenne, Wyoming
Fee Busby, Director, Cooperative Extension Service, College of Agriculture,
University of Wyoming, Laramie, Wyoming
Thomas E. Jewett, Assistant State Conservationist, SCS, Casper, Wyoming
Garen Sailors, Area Conservationist - West, SCS, Casper, Wyoming
Don Kessler, District Conservationist, SCS, Casper, Wyoming

#6, #10 (similar comments) Response -

TOTAL INSTALLATION COST

	<u>Total Cost</u>	<u>Total Cost/Ac.</u>
Distribution Pipelines	\$4,235,800	269.30
Motor and Pumps	527,100	33.57
Sprinklers	6,248,000	<u>397.96</u>
Total		701.33/ac.

Approximately \$8,000/wheel move. Each sprinkler covers approximately 20 acres.

TOTAL ANNUAL COST FOR OPERATION, MAINTENANCE, AND REPLACEMENT

Operation Cost with Project (Sprinkler Pumping)	$\frac{\$196,000}{15,700 \text{ acres}}$	= \$12.50/ac. Average per year
Maintenance Cost of Project	$\frac{\$104,900}{15,700 \text{ acres}}$	= \$ 6.70/ac. Average per year
Replacement Cost of Project Components	$\frac{\$375,000}{15,700 \text{ acres}}$	= \$23.90/ac. Average per year

Total Annual OM&R Costs = \$43.10/ac. Average per year

Total Annual Installation Cost Per Acre (0.08765 x \$701.33)	= \$61.47
Total Annual Local Installation Cost Per Acre (30% x \$61.47)	= \$18.44
Total Annual OM&R Cost (Local Cost) Per Acre	= \$43.10
Total Annual All <u>Local Cost</u> Per Acre (\$18.44 + \$43.10)	= \$61.54

#11 Response - The project was evaluated at 5/8 percent interest. No analyses were made for individuals.

See also a letter from the Wyoming State Engineer which follows SCS's responses to EPA's comments.

45. SCS disagrees that the downstream users of water have a no-lose situation as related to this salinity project. The funds for the federal share of this project is derived from the Lower Basin States Power revenue. Using these funds in this salinity project negates their use somewhere else. You also pointed out that the downstream benefactors would have a return of \$66.34 annually per onfarm acre. This, in fact, is a cost to the downstream benefactor--not a return. It should be further noted that the benefits received by the downstream water users are derived from the fact that their present salinity damages will not increase as the Upper Basin States begin to fully use their share of Compact water.
46. Interesting way of looking at the project, but we do not see that it has any comparison value.
47. Refer to EPA Comment #31.
48. You are correct in that the mission of this project is to reduce salinity in the Colorado River through voluntary participation by individual irrigators. One must realize that each landowner has his own set of financial circumstances and must consider them prior to committing to a salinity control contract. The SCS and the Cooperative Extension Service will provide economic and informational technical assistance to individual landowners needing help regarding their participation in the program. It should be reemphasized that the landowner is under no obligation to participate in the salinity project. ASCS administrative costs, as instructed by the USDA, were not included in completing this EIS.

Your discussion on fishing days is noted.

The \$84 per acre net benefit is based on "onfarm" interviews with present low-pressure sprinkler irrigators in the project area. More recent project-wide analysis indicates that this figure may be even higher as shown in the crop budgets provided to the Wyoming Farm Bureau in the letter from the SCS dated May 6, 1987.

The salinity control contract, once the participant voluntarily signs it, becomes a legally binding document. Also refer to Chapter 3, "Installation," for an explanation of the process.

In accordance with the provisions of the Act and the USDA Rules and Regulations, the Local Salinity Coordinating Committee (LSCC) has no authority to require involuntary participation.

If a producer selects a salinity control or wildlife habitat measure as part of the contract and livestock exclusion is necessary to achieve the desired results, then livestock exclusion will be required.

49. Alternative No. 5 was a retirement option that was considered. Since it would not comply with State water law and would have a severe detrimental effect on the wetland, fish, and wildlife, it was not selected. In addition, this alternative was not supported by the State of Wyoming or USDA.



Wyoming Wildlife Federation
P.O. Box 106, Cheyenne, WY 82003
307-637-5433

April 20, 1987

Mr. Thomas Jewett
SCS
Federal Building, #3124
Casper, Wyoming 82601

Dear Sir,

Thank you for the opportunity to comment on the DEIS for the Big Sandy River Unit of the Colorado River Salinity Program.

- 1 WWF appreciates your commitment to the Environmental Impact Statement process. We do, however, feel the DEIS falls short on resolving integral wildlife issues in the Big Sandy Unit.
- 2 WWF asserts that maintaining water quality and wetlands habitat on this unit are achievable goals. That end is a goal that best suits the public interest.
- 3 The SCS, by executive order under the Agency Coordination Act, must address the concerns of USFWS and the State of Wyoming Game and Fish.
- 4 The DEIS does not acknowledge the nature of the "No Jeopardy" opinion. What conditions must be met to maintain that opinion?
- 5 Volunteer mitigations absolutely do not account for wetlands loss. The Rand Salinity Project in Colorado is proof of that. Only 78 acres of needed 1,200 acres were voluntarily mitigated.
- 6 We believe SCS can find cost efficient mitigation measures on the public lands that would allow the SCS to justify that approach under the Salinity Control Act. If that is not possible, SCS is obligated to show why that alternative is not workable.
- 7 These mitigation measure costs can be covered by the USDA and cost share ratios by the state or private landowners can be adjusted accordingly.
- 8 Without meaningful, non-voluntary mitigation to improve marginal wetlands or enhance remaining wetlands this DEIS falls way short of its NEPA obligations. WWF hopes this shortfall is made up in the final EIS. We are open to further discussion on this matter. Thank you.

Sincerely,

Matt Reid
Conservation/Education Coordinator

WORKING TODAY FOR WILDLIFE'S TOMORROW!

Wyoming Affiliate of the National Wildlife Federation

191

Responses to Comments From the Wyoming Wildlife Federation

- 1, 2. SCS agrees that water quality and wetland habitat are achievable goals in this voluntary program.
3. SCS has addressed the concerns of USFWS and WGF. The Fish and Wildlife Coordination Act and NEPA, however, do not require complete resolution of concerns. This DEIS provides full disclosure of the issues and impacts.
4. This has been added to the FEIS.
5. The Foreword in the FEIS discusses the relationship between this project and others. The Foreword and Chapter 2 discuss what SCS believes to be the highest potential level of adverse impacts for each alternative as required by NEPA regulations.
6. Salinity control funds cannot be used for cost sharing on federal land. However, SCS can provide technical assistance to other federal agencies that want to voluntarily replace and enhance wetland habitat values. State and local government lands are eligible for both financial and technical assistance. All state and local units of government who own or control land have been advised of their eligibility in the salinity control program, which includes voluntary replacement of wetland habitat values.
7. The maximum federal cost share for fish and wildlife practices is 70 percent.
8. The salinity control law does not provide for mandatory mitigation. SCS believes that voluntary wildlife habitat replacement and enhancement will substantially replace values foregone. Voluntary wildlife habitat replacement and enhancement includes secondary habitats provided by other salinity control practices. These are discussed in the "Foreword" in Chapter 3 and in Chapter 6.

May 6, 1987

Mr. Frank Dickson
Soil Conservation Service
Casper, Wyoming

Dear Frank;

- 1 We the undersigned irrigators are interested in going ahead with a salinity project. We understand it is a voluntary project. There are many questions that must be answered for many of us before we could sign a contract for work done on our individual places. We understand these will be addressed as soon as the Environmental Impact is addressed.
- 2 With the agricultural economy in the shape it is many operators will not be able to committ themselves to a change in their operation until better times but we feel there are people ready to do some work now .
- 3 We would like those that are ready to have an opportunity to go ahead now.
- 4 We understand the Soil Conservation Service only suggests uses for the water saved and that what is done with extra water will be decided by our water district and the State Engineer.
- 5 It is our understanding that the intent of wildlife habitat practices will be to maintain habitat not increase it as we are now having problems with damages from deer, cranes ect.
- 6 The success of this project hinges on ~~firm~~ power costs, getting power lines built competitively and long term low interest for the practices.

Sincerely;

Bob Mines
James Hodder
Don Mines
Robert McManis
J. E. Pfl.
Steve Lester

Tom Tahjens

Responses to Comments From
Eight Local Irrigators

1, 2, 3, 4, 5, 6. Noted.

P. O. Box 69
Farson, WY 81900
May 10, 1987

Frank S. Dickson
State Conservationist
Federal Building, Room 3124
100 East B Street
Casper, WY 82601

Dear Sir:

1 Thank you for answering the set of questions sent in by Larry Bourret of the Wyoming Farm Bureau concerning the Draft Environmental Impact Statement on the Big Sandy Salinity Control Program. I realize that this is an environmental impact statement and does not necessarily deal with the economic status of the individual farmer. However, the environmental status of the irrigation district is a direct result of irrigation by the individual farmers. When it is stated in the D.E.I.S. that we should or would voluntarily cost share to replenish or replace wet lands it becomes an economic issue. We are being asked to not only continue to feed and provide habitat for waterfowl, game and cranes but to cost share in mitigation of the wet lands, and to exclude our livestock from these areas.

2 In your costs per acre figures on various crops with surface irrigation and sprinklers, I note that under the sprinkler figures there is no mention of the \$43.10 cost per acre for operation, maintenance, and replacement of sprinkler system. Also, the initial cost of sprinkler extended over a 15 year period would be approximately \$55.00 per acre. I feel these costs must be met. Also, if power costs raise substantially to prohibit continuation of sprinkler operation the initial debt must still be met. If the total of the two above figures is subtracted from your \$187.94 net per acre it is reduced dramatically and comes within \$12.33 of the surface irrigated net.

(2)

3 The cost of the power line is also not spelled out as to if only those pumping water for sprinklers would pay the cost, or if all users in the area would be paying for it. It seems a gross inequity for all users to cost share on a line for the sprinklers.

4 It appears that the only true beneficiaries of this program are the down stream users. We would be paying the bill for their benefit. As one of the irrigators at the April 2nd meeting stated, "This project was built by the Bureau of Reclamation and the Farming units bought under good faith that it was a viable, feasible project." The irrigation systems were planned and put in (on the newer units) by the B.C.S. Now the irrigators are at fault and must pay for Government mistakes.

I am not able to mail this to you until May 11th due to the fact I did not receive your last letter until May 8th. I hope my comments will be considered if it does not arrive in your office on the 12th. Also, as of this time we have not received an answer from the State Engineer's Office so I am unable to address any of those concerns.

Yours truly,

William Lee Hanna
Ralph E. B. Lambert

cc:

Tom Taliaferro, Eden Valley Irr. & Drainage District, Farson, WY
James Hodder, Big Sandy Conservation District, Farson, WY
Anthony Padilla, Area Rep. for Congressman Cheney, Green River, WY
Robin Bailey, Rep. for Senator Alan Simpson, Rock Springs, WY
Billee Jelouchan, Rep. for Senator Malcolm Malloy, Rock Springs, WY
Gordon W. "Jeff" Fassett, State Engineer, Cheyenne, WY
Michael Carnevale, Planning Super., Dept. of Env. Quality, Cheyenne
Francis Petera, Ass. Dir., Wyoming Game and Fish Dept., Cheyenne, WY
Harold Hellbaum, State Executive Dir., Agricultural Stabilization & Conservation Service, Casper, WY
Don K. Rolston, Commissioner, WY Dept. of Agriculture, Cheyenne, WY
Fee Busby, Dir., Cooperative Extension Service, College of Agriculture University of WY, Laramie, WY
Thomas E. Jewett, Ass. State Conservationist, SCS, Casper, WY
Garen Sailors, Area Conservationist - West, SCS, Casper, WY
Tom Kessler, Dist. Conservationist, SCS, Casper, WY
The Honorable Richard Cheney, Congressman, State of W., Washington, D.C.
The Honorable Alan M. Simpson, Senator, State of W., Washington, D.C.
The Honorable Malcolm Malloy, Senator, State of W., Washington, D.C.

(2)

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Yours truly,

William Lee Hanna
Ralph E. B. Lambert

cc:

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Thomas E. Jewett, Ass. State Conservationist, SCS, Casper, WY
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Tom Kessler, Dist. Conservationist, SCS, Casper, WY
The Honorable Richard Cheney, Congressman, State of W., Washington, D.C.
The Honorable Alan M. Simpson, Senator, State of W., Washington, D.C.
The Honorable Malcolm Malloy, Senator, State of W., Washington, D.C.

Responses to Comments From Two Local Irrigators

1. As stated throughout the DEIS, replacement of wildlife (wetland) habitat values is voluntary. The salinity control contract, once the participant voluntarily signs it, becomes a legally binding document. Also refer to Chapter 3, "Installation," for an explanation of the process.
2. Please refer to a copy of SCS's letter to the Wyoming Farm Bureau dated May 12, 1987, which is included as part of SCS's response to their comments. You were also mailed a copy of that letter. Using data from that letter and other responses to the Wyoming Farm Bureau, a net benefit per acre of \$122.40 is derived as follows:

Total Annual Installation Cost Per Acre (0.08765 x \$701.33)	= \$ 61.47
<hr/>	
Total Annual Local Installation Cost Per Acre (30% x \$61.47)	= \$ 18.44
Total Annual OM&R Cost (Local Cost) Per Acre	= \$ 43.10
Total Annual All Production Costs for Alfalfa Hay (From Crop Budgets)	= \$ 82.46
<hr/>	
Total Annual All Local Cost Per Acre (\$18.44 = \$43.10 + \$82.46)	= \$144.00
Total Benefit Per Acre for Alfalfa Hay (3.6 tons/acre @ \$74.00/ton)	= \$266.40
Net Benefit Per Acre for Alfalfa Hay (\$266.40 - \$144.00)	= \$122.40

The \$18.44 is the local cost of sprinkler installation amortized over a 50-year period. This figure includes costs for sprinkler, pipelines, pumps, and motors.

3. The cost of bringing three-phase power into the valley was used only for evaluation purposes of the project. As the project is implemented, the power company which presently owns the power lines will have to determine if they want to make the investment so that they can be competitive with other power sources (natural gas, diesel fuel, solar energy, etc.). Once the power is in the valley, the power company, as one means of recapturing their initial investment, will charge a hookup fee to the user. Using this method, only those using electric power will pay for the powerline cost. If the power company can obtain governmental (state or federal) assistance for a portion of the initial cost, they may be more inclined to provide the projected power demand to the valley. It is not the intent of the project to have the irrigation district become a power company and require all water users to be assessed a powerline construction cost.
4. Refer to the SCS response to Wyoming Farm Bureau Comment 43.

LETTERS OF COMMENT RECEIVED AFTER

DEADLINE DATE*

*Comment period on DEIS established as per CEQ Regulations, 40 CFR,
Part 1506.10.z(c), dated November 29, 1978.



United States Department of the Interior

OFFICE OF ENVIRONMENTAL PROJECT REVIEW
WASHINGTON, D.C. 20240



ER 87/266

MAY 14 1987

Frank S. Dickson, State Conservationist
Soil Conservation Service
U.S. Department of Agriculture
Room 3124 - Federal Building
100 East B Street
Casper, Wyoming 82601

Dear Mr. Dickson:

The Department of the Interior has reviewed the draft environmental statement for the Big Sandy River Unit, Sublette and Sweetwater Counties, Wyoming. We have the following comments and recommendations.

General

Both our Fish and Wildlife Service (FWS) and our Bureau of Reclamation (BR) provided comments on the environmental assessment and finding of no significant impact released last year. As noted below certain issues raised then are still not fully satisfied in this draft document.

- 1 This draft does not adequately describe (1) fish and wildlife and their habitats in the project area, (2) project impacts on fish and wildlife resources, and (3) the expected level of mitigation/compensation for project-induced losses to those resources.
- 2 This draft should explain that the FWS "no jeopardy" opinion on four endangered species was contingent upon actions to be accomplished as part of the project. The final should describe those actions and explain how they are to be implemented.
- 3 Significant issues were raised on the extent of wetland impacts, mitigation plan deficiencies, interagency coordination, and disputes over statutes, regulations, and policies regarding protection of wetlands. Most of those concerns remain, especially the replacement of lost wetlands and the loss of the fishery in Bone Draw. Although the report states that affected wetlands are "lower value types," there is no analysis presented to support the "habitat values foregone." Instead, the report proposes to improve about 860 acres of existing higher value wetlands. Without an analysis of what values are foregone, and what quality improvements would occur, there is no way to determine the extent of the impacts. SCS has proposed instead that an HEP analysis would be performed before and after plan implementation in order to determine the necessary replacement values. There is no discussion of what values would be considered, whether there are needs that would be met "in-kind," or what tradeoffs would be acceptable to the involved Federal and State wildlife agencies. We are still of the opinion that this information is necessary to make a reasoned choice among alternatives.

- 4 At a minimum, the final should discuss the probable extent of participation in the voluntary mitigation program, consistent with the provisions of the Colorado River Salinity Control Act (CRSCA), as amended. Without that information, an informed decision would be difficult.
- 5 We are aware that, under the CRSCA, there are no guarantees that voluntary mitigation will occur. Therefore, the final should include a plan to monitor replacement of fish and wildlife habitat to determine if replacement is occurring concurrently and proportionately with project implementation. The final should also include a contingency plan for implementation if voluntary cost sharing for fish and wildlife habitat replacement is unsuccessful. That contingency plan should include the modification of cost sharing or other actions to be taken. We are concerned that excess water could be reallocated to open new areas to irrigation. Such use could negate SCS's project purpose and result in additional fish and wildlife impacts. Any use of excess water for other than fish and wildlife could compound adverse effects on those resources and should be disclosed in the final.
- 6 The report states that sage grouse use the irrigated land extensively for brood rearing. Under the proposed plan, crop patterns are expected to change from native or tame hay to pure stands of alfalfa and other higher value crops. For the alfalfa, cutting will increase from one to two times a year and the initial cutting will be earlier. The effect of these changes on sage grouse and other wildlife is not discussed.
- 7 In addition, the cold water bank seeps below Farson will be reduced by the selected plan. Even if the same amount of water is released from the reservoirs, it is likely to be warmer than the groundwater seeps. Nothing is said about temperature effects in this part of the river.
- 8 Bone Draw has been developed for fishery management purposes since 1980. The proposed plan would dry up this area. The effect on the fishery resources of the area are not discussed. Bone Draw has become an important recreational facility because of the fisheries and wildlife habitat developed there. Our Bureau of Land Management (BLM) currently has invested \$97,000 and the Wyoming Game and Fish Department has invested \$12,800 in the project. The draft does not fully address the importance of this site nor does it address possible mitigation, or the full potential for developing replacement wetland areas on public lands.
- 9 While the statement recognizes the occurrence of the Oregon Trail on the irrigated lands of the project and states that decades of farming have obliterated the Trail, it should also indicate if there will be any impacts on the Trail from project development upon any nonirrigated lands. Opportunities to mitigate any damage or to mark and interpret the historic trail should be discussed.
- 10 Mineral resources are not discussed in the document; however, deposits of trona, gypsum, and oil shale occur within the project area. We suggest that the final identify the local mineral resources and describe potential impacts the project would have on future mineral production. If no impacts are anticipated, a statement to that effect should be provided.

- 11 We note that 68 percent of the watershed is land administered by the BLM and that BLM ought to be a cooperating agency. In the summary below we have provided a contact point with BLM for this purpose. In many locations the terms "public domain" and "national resource lands" have been used. Since the Federal Land Policy and Management Act of 1976, "public lands" has become the accepted term and should replace the other terms used in this draft.
- 12 There is no information on how the monitoring is to be accomplished. How will the monitoring determine the change from the irrigation practices on the salinity levels of the Big Sandy River when natural salt loading occurs from the other areas within the river basin? It seems that a monitoring period of only 4 years after the final installation may not be sufficient to detect the total change due to irrigation practices.

Summary

- 13 We recognize the importance of this salinity control project and support the objectives of the salinity control program as a whole. An aggressive effort should be made to ensure adequate replacement of fish and wildlife losses, consistent with the 1984 amendments to the CRSCA.
- 14 We conclude that the draft fails to adequately describe resources being impacted or the full nature of those impacts. It also fails to recognize major cumulative impacts or to examine innovative ways to prevent or replace the possible extensive loss of wetlands.

For technical assistance regarding these comments please contact:

Fish and Wildlife Service, Field Supervisor
2060 Administration Building
1745 West 1700 South
Salt Lake City, Utah 84104
(FTS) 583-5637

Bureau of Reclamation
Upper Colorado Region, Regional Environmental Officer
125 South State Street
Salt Lake City, Utah 84147
(FTS) 588-5580

Bureau of Land Management, State Director
Wyoming State Office
P.O. Box 1828
Cheyenne, Wyoming 82003
(FTS) 328-2326

Attached are specific comments on the document and a suggested outline for several missing or incomplete impact areas.

Sincerely,


Bruce Blanchard, Director
Environmental Project Review

Enclosure

200

Specific Comments

- 15 Page F-6, last sentence. Although this sentence is likely true, it does not reveal the percentage of fish and wildlife habitat losses to be mitigated through increased cost share contracts. It should be noted that "voluntary" mitigation efforts generally have not worked. Similar practices established for the Grand Valley Salinity Control Program in Colorado resulted in only 78 acres of in-kind habitat mitigation out of 1,200 acres required for the project.
- 16 Page F-7, Paragraph 2, Sentence 1. Change "92" to "Approximately 100."
- 17 Page F-8, Paragraph 1, Sentence 3. Change to "The Bureau of Reclamation has concluded its studies, and at the present time does not anticipate recommending construction of off-farm salinity control features. If the need for additional salinity control develops in the future, installation of off-farm features in the Big Sandy Unit may be considered further if the more cost-effective units in the Colorado River Basin have already been developed."
- 18 Summary Revise the calculated salinity decreases of 26.67 and 5.00 milligrams per liter to more approximate numbers of 27 and 5 mg/L respectively. Due to the approximations and adjustments in the conversion factor converting tons to mg/L impacts, all concentration estimates should be displayed as the nearest whole number and not imply any accuracy to two (2) decimal places. (See pages S-1, Table S-1, S-3, 2-6, 2-8, 2-10, 2-13, Table 2-1, 2-20, 3-9, and 6-6.)
- 19 Page S-1. We believe the power transmission line and distribution system should be included in the listing of structures for the selected plan.
- 20 Page 1-1. The 879 mg/L salinity concentration at Imperial Dam refers to the numeric criteria set by the basin states for U.S. water users. These criteria are not related to any treaty with Mexico. Minute 242 of our agreement with Mexico states that water delivered to Mexico will be no more than 115+30 mg/L above the water arriving at Imperial Dam.
- 21 Page 2-3. Please refer the reader to Table 4-6 for different classification of wetlands, by type and water source.
- 22 Pages 2-7, 2-9, 2-11, 2-14, and 2-21. The discussions pertaining to the amount of wetlands needed to replace those that would be lost or have degraded quality are inconsistent. For example, on page 2-21 the draft says that 860 acres of wetlands will compensate for the losses due to protect implementation. On page 6-5 however, it says that a HEP analysis will not be conducted until after the project is implemented to determine losses. We suggest that an HEP analysis be conducted on the existing wetland habitats prior to plan implementation in order that impacts can be more accurately assessed.
- 23 Also, in order to more accurately analyze the net impacts of this project on wildlife habitats we suggest that the SCS should determine by letters of intent, the amount of participation that can be expected in the voluntary habitat replacement program. A viable plan for reducing wildlife benefits foregone may in the long-run facilitate completion of salinity control measures.

- 24 Page 2-14. Please describe who (in general) might replace habitat values foregone for 860 acres of existing wetlands and 430 acres of terrestrial lands. (Show general ownership responsibilities.)
- 25 Table 2-1. This table shows 2,775 acres of wetlands being lost under the Selected Alternative; however, the text on page 2-21 states that 2,765 acres of wetlands would be lost.
- 26 Page 2-24. Table 2-2 contains a column listing six fish and wildlife enhancement features. The adverse impacts to fish and wildlife should be included.
- 27 Page 3-9, Table 3-4, footnote 2. The present report assumes that the present annual conveyance channel seepage loss of 10,200 acre-feet will continue under project conditions. This is contrary to the BR expectation that water tables will fall and canal and lateral seepage rates might increase (review comments on "Canal and Lateral Lining Alternatives, Eden Valley Irrigation Project, Big Sandy River Unit, Wyoming CRWQIP").
- 28 Page 3-9. The salinity reduction of 52,900 tons/year is reported to equal a decrease of 5.00 mg/L at Imperial Dam. The current conversion factor is 0.91 times tons/year to yield 4.81 mg/L at Imperial Dam. Since this factor is subject to frequent adjustments, it is suggested that the 4.81 mg/L impact be rounded to an approximate figure of 5 mg/L.
- 29 Pages 3-10 and 3-11. In accordance with our 1986 economic damage estimates, please use \$56/ton to figure downstream salinity benefits in the lower basin. We recommend that you do not use damage estimates in terms of \$/mg/L per year.
- 30 Page 3-13. When talking about wetland replacement, the last sentence states that "SCS would provide assistance only if one of the alternatives was selected for installation or adequate replacement had been or would be accomplished in the salinity control area." Does this mean that the landowners who do not provide voluntary wildlife habitat would not be allowed to participate in the salinity control program?
- 31 Page 3-17. The draft states: "Wyoming Game and Fish Department would assist in the design and installation of fish and wildlife practices as their budget and program activities would allow." We suggest that the document indicate if sufficient resources are available to complete the project, should participation in the voluntary enhancement program actually occur.
- 32 Page 4-5. The draft states that consumptive use is 1.17 acre-feet/acre/year. We have previously commented that this value seems low for a crop distribution of predominantly alfalfa hay. We suggest this value might be the irrigation requirement and not consumptive use. This report states: "Pumping costs were based on placing approximately 2-acre-feet of water per year to meet the water requirements of the most common crops grown in the valley" (page 3-4, item 4). It also states the selected plan would increase on-farm irrigation efficiencies from an average of 39 percent to 38 percent (page 2-20). Multiplying 2 acre-feet/year by .68 yields a water use of 1.36 acre-feet per year. It is not clear what these two figures represent, or whether effective precipitation has been factored in.
- 33 Page 4-10. There appears to be a technical inconsistency regarding salt load in the draft. Specifically, the draft statement indicates that complete elimination of irrigation in the project area and lowering the water table would result in an increase in the contribution of salt from runoff, erosion, and ground-water seep flow from 15,320 tons to 32,720 tons. This conclusion needs further explanation, because it does not seem to

agree with results of alternative 5 as indicated on table S-1 and on pages 2-12, 2-13, and 5-1, where it is predicted that complete retirement of irrigation would reduce salt discharge greatly (some 124,900 tons per year).

- 34 Page 4-12, Paragraph 2, sentences 1 and 2. We suggest classifying the Eden-Farson area as either arid or arid to semiarid.
- 35 Pages 4-19 through 4-22. The description of fishery resources and project impacts on such resources is superficial. Information on the kinds, distribution and numbers of fishes, as well as probable project impacts on aquatic communities should be addressed in the final.
- 36 Page 4-20. Please clarify the meaning of "Bone Draw is a left-side tributary...." Reference to a map would be helpful.
- 37 Page 4-21. The "channel flow width" of Bone Draw is described as being up to 1.5 feet. This figure appears to be low. Does this represent the channel before stream improvements were installed?
- 38 Pages 4-22 and 4-23. The description of wildlife provides little information on species composition, distribution, or size of terrestrial communities. Major animal groups such as furbearers, small mammals, songbirds, and raptors are largely ignored. The final should include a description of these resources and project impacts on such resources.
- 39 Page 4-22. If the sage grouse is the most important game bird in the area, some information must be available on populations. A rough estimate would be helpful.
- 40 Page 5-1. While chapter 5 presents some interesting information and references to potential conflicts in policy and regulations, it detracts from the main thrust of the statement to discuss environmental impacts. We suggest this material be placed in the appendix.
- 41 Page 5-4, first paragraph. Because this project does not involve the Food Security Act, the discussion is irrelevant and should be omitted.
- 42 Page 5-4. One possible mitigation alternative is described - "Excessive water in reservoirs resulting from improved efficiencies would be released on a schedule that would replace and enhance fish habitat and reduce downstream flood damages." This water may not be available for downstream releases. Only 15,700 acres of a total of 18,370 eligible acres on the project are presently irrigated due to water supply shortages. The irrigators may elect to use excess water on this additional acreage or to reduce shortages on presently irrigated land.
- 43 Table 5-1. Clarification of Big Sandy River flow changes for "reach 1" (Big Sandy Reservoir to Bone Draw) and for "reach 2" (Bone Draw to Green River confluence) is needed. For example, does the 20,470 acre-foot increase in reach 1 under the selected plan indicate that none of the irrigation returns presently enter the river along this reach? Seep inflows have been identified along the reach between the confluence of the Big and Little Sandy Rivers and Bone Draw. Also, water budget studies by BR indicate that most irrigation return flows generated by irrigation of lands in the Farson area appear to turn to the river above the confluence of the Big and Little Sandy Rivers.
- 44 It is also not clear how reach 1 and 2 flows would increase 57,620 and 26,190 acre-feet respectively under the irrigation retirement alternative.

- 45 Table 5-2. The methodology for determining salt load reduction summarized in Table 5-2 is not contained in the text. Is the water saved by increased efficiency assumed to have been contributing totally to deep percolation? How were the salt load reductions associated with deep percolation reduction calculated? The methodology does not have to be detailed in the report but the technical supporting reports should be referenced.
- 46 Page 6-5. What will be done to mitigate wetland losses if monitoring indicates that mitigation is not keeping concurrent with wetland losses? The final statement should address this question.
- 47 Page 6-8. It is true that water retained in reservoirs because of increased irrigation efficiency could be used for downstream environmental purposes. However, it could also be used for additional irrigation. A firm plan developed in cooperation with the irrigation districts and BR should be presented in the final statement.
- 48 Page 6-10. Readers are not familiar with SCS cultural resource regulations. The type of surveys to be conducted should be pointed out - literature, partial ground coverage, or 100 percent ground coverage.
- 49 Page 6-10. The lands mapped by the State Historic Preservation Officer which have high potential for archaeological resources should be illustrated to show general relationships to irrigated and adjacent areas.
- 50 Page 6-11, last paragraph. The magnitude of impacts on fish and wildlife and the loss of fish production in Bone Draw should be addressed.
- 51 Page 6-12, last paragraph. It is unlikely that hunting and sightseeing on private lands could increase when about three-fourths of the wetlands supporting such use would be eliminated.
- 52 Page 6-12. Hunting on private land is mentioned and is an important factor in encouraging voluntary replacement of habitat designated for wildlife. Some data should be presented on current or expected hunting levels in the area.
- 53 Page 7-8, paragraph 1, sentence 3. This sentence refers to the necessity of forming a committee off-farm and on-farm operations of "this project." While BR feels there will be a need to coordinate the operation of the Eden Project facilities, we do not see a need to form a committee to coordinate the dormant off-farm salinity program.
- 54 Suggested Outline for Analyzing Missing or Incomplete Impacts

Discussion of Major Impacts (Assume that (1) no one volunteered to replace wildlife values forgone or (2) a certain percentage will volunteer).

A. Wetlands

1. For 1,010 acres, under a reduced water supply - what are the impacts on birds, aquatic life, using available data on wildlife?
2. For 2,765 acres of land eliminated as wetlands - what are impacts on birds, fur bearers, aquatic life, if these acres are totally unavailable?

B. Bone Draw

1. Fishery impacts if the stream becomes totally dry.
2. Riparian habitat impacts in this area on game/non-game birds.

C. Irrigated Lands - Changes due to earlier crops and two crops per year

1. Impacts on sage grouse that nest in alfalfa, impacts to changing crop patterns.
2. Impacts to other non-game birds in affected fields.

D. Cultural Resources - What would be in the impacts to known resources if no one volunteered to provide any assistance?**E. Big Sandy River - if the State engineer decides not to regulate flows in the river:**

1. Fishery impacts if flows are unregulated.
2. Instream impacts due to temperature, turbidity, aquatic life, etc.
3. Recreational changes, impacts on fishing, contrast with existing data.

Responses to Comments From the Department of Interior

1. Chapters 2, 4, and 6 have been expanded to better describe these issues. See also responses to EPA Comments 7, 13, 14, 16, 35, and WGFD Comment 21.
2. Information has been added to Chapters 3 and 6.
3. The implementation will occur on one farm at a time. Once those willing to participate are identified, the HEP analysis will be used to inventory the wildlife values on individual farms. The inventory will be the basis for determining wildlife values foregone and/or replaced as a result of the individual's salinity control plan. The HEP results will also allow for quantitative analyses of habitat improvement alternatives. A listing of potential improvements are presented in Table 3-1. In addition, secondary benefits will be realized from the improved conditions of the vegetative community in crop fields, around irrigation regulation reservoirs, pumping pits, stockwater ponds, and along existing irrigation canals and drainage ditches, as well as on adjacent pasture and rangelands.

SCS thinks that there will be voluntary participation in the creation of valuable wildlife habitat. The habitat created through voluntary participation is expected to be of better quality than that which may be lost, and therefore wildlife will be better served. We agree that the level of participation is a debatable issue. However, wildlife will be better served if farmers are willing to seek assistance from SCS and ASCS through the implementation of the Big Sandy River Unit than will occur if the area in the long term is reverted back to a dryland agriculture because of salinity buildup in the soils.

It is not possible to predict in advance which wildlife species will be considered for habitat analysis by the interagency team. As stated in Chapter 6, "Implementation Procedures for Replacing Wildlife Habitat Values Foregone," it is estimated that the team would select six or eight indicator species. It is anticipated that there will be sufficient evaluation of a variety of nongame and game species so that reasonable estimates can be made of overall wildlife habitat quality. Therefore, it is expected that reasonable tradeoffs would be developed that are acceptable to the involved federal and state wildlife agencies. If the same analysis had been made by the agencies during planning, as has been suggested, we would still not know the site specific habitat areas where wildlife habitat would be impacted. Therefore, tradeoffs would still be unknown.

4. It is not possible to predict the level of the voluntary mitigation program. For this reason, the SCS openly discloses the fact that information is incomplete or unavailable as required by NEPA Amendment (40 CFR Part 1502). This issue is discussed in the Foreword and in the "Introduction" in Chapter 6.

5. This section entitled, "Monitoring and Evaluation," in Chapter 3 has been expanded for clarification of voluntary mitigation. SCS does not have any authority to force the implementation of mitigation. The 70-30 cost share is a reasonable incentive for trying to achieve voluntary replacement of incidental fish and wildlife values foregone. Any advance speculation of potential changes in cost-sharing rates would be self defeating to a voluntary program. SCS does not think it would get an accurate appraisal of the ultimate commitment to voluntary replacement of fish and wildlife values by interviews or letters of intent. We think the best approach will be to reason together with the farmers and other interested parties concerning the values for habitat that can be achieved through the expected implementation of their salinity control plans. For example, a farmer may have an irrigation pumping pit or wasteway on his properties where he would be willing to enhance wildlife values if the wildlife habitat options are presented to him in a good context. The same may be true for some old drainage ditches that could remain open and operational. SCS has over 50 years of experience in selling conservation programs which include wildlife habitat practices. SCS has a very credible record of getting practices applied using a voluntary approach. SCS also thinks the farmers and ranchers have a good appreciation of fish and wildlife resource values. Once farmers and ranchers are convinced that they are not being forced to do fish and wildlife habitat replacement and enhance the downstream user's salinity benefits, they will probably be more willing to participate.

SCS will monitor wildlife habitat values foregone from the time the first contract is signed. This can be easily accomplished as installation will be occurring one farm at a time. SCS will continually track current status, what has been accomplished, and what may have been lost. The HEP analysis will be used to track all primary and secondary effects of habitat enhancement in an accounting type procedure that will readily show the progress being made.

SCS thinks that making wildlife habitat values available during the landowner's decision making process demonstrates a very high level of SCS commitment to obtaining voluntary participation in recovering wildlife habitat values foregone. In addition, the landowner, during the decision making time, will be made well aware that the 30 percent farmer portion of the cost share may be substantially achieved with his/her labor. For example, associated with water bodies (such as regulating ponds and pump pits) to be installed, one can have islands, fencing, food plots, and nesting cover. These types of practices include installation activities that could readily be credited toward the 30 percent cost share through the farmer's labor. The vegetative community in other odd areas will also be improved with fencing, food plots, and nesting cover--accomplished primarily with the farmer's labor.

SCS thinks it is inappropriate to establish an arbitrary level of wildlife losses when some other options not presently available may

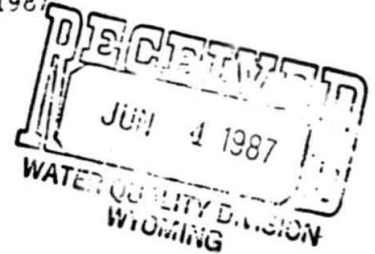
need to be initiated to obtain mitigation. It is USDA's high commitment to obtain wildlife values foregone that will keep current with wetland habitat value losses that may occur.

6. SCS agrees with the WGFD that adverse impacts on mule deer, antelope, sage grouse, and raptors will be insignificant.
7. The water available for release to the river from the Big Sandy Reservoir will be water not delivered to the river via the route of cropland application, deep percolation into the salt laden aquifer, and saline seeps. The actual temperature of the river may decline because of bottom outlet releases from Big Sandy Reservoir. See also response to EPA Comment 30.
8. It is difficult to imagine that Bone Draw, with the dimensions of 1/2 mile long and 1 1/2 to 5 feet wide with flows that often recede below 1 cfs can be an important recreation facility. The expenditure of large amounts of money does not necessarily dictate importance. The value of the resources has also been questioned by others, such as shown in the following letter from the Wyoming Farm Bureau provided to SCS from one of its cooperating agencies. Copies of subsequent letters that relate to the Farm Bureau letter are also provided. Please refer to page 2 of the letter to U.S. Representative Richard Cheney from Hillary Oden, State Director, BLM. See also Wyoming Wildlife Federation Comment 6 regarding cost sharing on federal land.
9. Management of cultural resources on SCS projects is conducted in accordance with the memorandum of understanding between the USDA and the SHPO. Also refer to comment letter from Wyoming SHPO dated March 30, 1987.
10. The implementation area is essentially irrigated land that has been farmed for many years. SCS has no information concerning local mineral resources within the potential implementation area so found it unnecessary to do a detailed inventory of the mineral resources of the area. No impacts on mineral resources are anticipated.
11. Project activities will primarily occur on nonfederal land. The only basis for having BLM as a cooperating agency would be in the disposition of the Bone Draw impacts as previously discussed in response to EPA Comment 16 and irrigation-induced wetlands on federal land. Direct cost sharing with BLM is not an option and it's unlikely that there would be any land trade with WGFD. Therefore, SCS presently sees little benefit to having BLM as a cooperating agency. Although BLM has not been asked to be a cooperating agency, they have been kept apprised of the status of the planning activities.
12. SCS disagrees that there is no information on how monitoring is to be accomplished. The subject is covered in "Monitoring and Evaluation" in Chapter 3 and additional discussion has been added. In addition, monitoring and evaluation is also covered in Chapter 6, particularly in the section, "Implementation Procedures for



NOTE-this document is part of the response to comment #8.

May 29, 1987



The Honorable Malcolm Wallop
Senator, State of Wyoming
210 Russell Senate Office Building
Washington, DC 20510

Dear Malcolm.

Recently we did an analysis on a DEIS for the Big Sandy River Unit and worked with some of the landowners in the Farson area. Those hardworking people told me that Bone (Bowin or Bowen) Draw is a man-made stream (irrigation-induced) about one mile in length.

See enclosed page S-4 of the DEIS which says "Implementation of the salinity control project would change flows in Bone Draw from perennial to intermittent. Bone Draw, located about 5 miles below the project, is a small tributary that flows 0.5 to 1.5 cfs of water from saline seeps maintained by irrigation return flows. During drought years, Bone Draw has ceased to flow. Aware of these flow regimes and the potential for a salinity control project, the BLM and a local sportsman's group fenced and continued to develop Bone Draw for a trout fry nursery." I read the DEIS and noticed that paragraph thus my question about Bone Draw to the landowners.

During my review of the DEIS I noticed the words "mitigation" and "wetlands" frequently. Since that initial reading I've talked to a number of people and read several pieces of correspondence on the subject of the DEIS. The hand-wringing that is being done by certain groups over "mitigation" is consuming a lot of government time, money and paper.

Our analysis of the DEIS says the forgotten people in this issue are the farmers and ranchers on the project. The government has leveled so much fire power on Bone Draw and wetlands mitigation they've forgotten what the mission was. My general attitude about this issue was that until Tuesday when I read the enclosed letter from USDI's Office of Environmental Project Review. That letter on page two reads as follows:

"Bone Draw has been developed for fishery management purposes since 1980. The proposed plan would dry up this area. The effect on the fishery resources of the area are not discussed. Bone Draw has become an important recreational facility because of the fisheries and wildlife habitat developed there. Our Bureau of Land Management (BLM) currently has invested \$97,000 and the Wyoming Game and Fish Department has invested \$12,800 in the project. The draft does not fully address the importance of this site nor does it address possible mitigation, or the full potential for developing replacement wetlands areas on public lands."

Who approved the expenditure of \$97,000 in BLM funds for an imaginary fishery in man-made Bone Draw? Whose idea was this? What was the projected cost:benefit ratio? Was any thought given to the prospects of the "stream" drying up? Or was this done so BLM could, if the Big Sandy irrigation regime was ever changed, blackmail "mitigation" out of someone? This thing stinks!

Page two--Big Sandy

The federal deficit is huge; the trade imbalance grows; people are unemployed; farmers, ranchers, storeowners, oilmen, carpenters, etc. are bankrupt yet; BLM has \$97,000 to pour into an ill-conceived project such as this! The cost per fishing day must be huge! We hear that grazing fees should be increased because they aren't paying the full cost of administering those lands. What sort of revenues does BLM generate from the Bone Draw Fisheries Resource Project? I find it most difficult to comprehend why anyone would conceive of such an idea--to say nothing of the mentality it took to approve such a plan.

This issue needs to be investigated. Was it stupidity or blackmail? Is someone planning on parlaying \$97,000 into, say \$500,000 or \$1,000,000 of "mitigation funds"? Is this the way our government is functioning? Do we hold projects hostage so that "mitigation" ransom is paid? Salinity control funds, I am told, do not have to be approved by Congress. Perhaps government agencies have discovered ways to bolster their budgets. If a private person attempted to extort monies in this manner, the FBI would act in a fairly harsh and rapid manner. How widespread are these tactics? How many other Bone Draws do we have across the United States? It is hard to believe this is happening while the economy is staggering so badly. I know a lot of farmers and ranchers who would build a fish pond for \$97,000, or less.

Sincerely,


Larry J. Bourret
Executive Vice President

Encl.

cc: Board of Directors
NER Committee
Mike Carnavale
Don Rolston
Mike Purcell
Jeff Fassett
WSGA
WWGA

DICK CHENEY
WYOMING

Congress of the United States
House of Representatives
WASHINGTON, D.C. 20515

JUL 13 1987

July 6, 1987

ROUTING	INITIAL/DATE	MR
SD		LR
SASD		OPNS
SASO		ADMIN
EEO		CF
OPA		LEAD RESP

Mr. Hillary Oden
State Director
Bureau of Land Management
Post Office Box 1828
Cheyenne, Wyoming 82001

Dear Hillary:


I have received the enclosed letter from the Wyoming Farm Bureau regarding the development of Bone Draw stream for fishery management purposes.

I would appreciate your addressing the concerns of possible mitigation of the Bone Draw project under the Big Sandy River Unit of the Colorado River Salinity Control Program.

Information concerning the expenditure and justification of the Bone Draw project would also be helpful in addressing the Wyoming Farm Bureau concerns.

Thank you for your assistance. I look forward to hearing from you in the near future.

Best regards,


Dick Cheney
Member of Congress

enclosure

cc: Frank Dickson, SCS

NOTE-this document is part of the response to comment #8.

REFER TO:



United States Department of the Interior

1795 (912)

7 JUL 27 11 09 AM '87
Bureau of Land Management
Wyoming State Office
P.O. Box 1828
Cheyenne, Wyoming 82003

	Blm	Dist	Rez
ITO		✓	
OTIC		✓	
ASTC			7/30
SAO	JUL 24 1987		
SRC			
SES			
SCS		✓	
IRM			
WSP			
AC I			
AC II			

Honorable Dick Cheney
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Cheney:

Regarding your inquiry on the Bone Draw Fishery Management Area resulting from the letter you received from the Wyoming Farm Bureau, I have looked into the situation and find it has a long history.

In 1976 Bone Draw was identified as one of 26 areas in southwestern Wyoming having aquatic, wetland, and riparian improvement potential. The management objectives for Bone Draw were part of the Big Sandy Grazing Environmental Impact Statement (EIS) and the Big Sandy Management Framework Plan (MFP). The Grazing EIS was reviewed by the public during 1976 and the final was approved in 1978. The final MFP was approved in 1981 again following public review. A formal agreement for cooperative management of Bone Draw between BLM and the Wyoming Game and Fish Department was finalized in 1985. The Flaming Gorge/Lower Green River Chapter of Trout Unlimited has performed maintenance at Bone Draw and has requested to assume full responsibility for maintenance in the future. A cooperative management agreement with Trout Unlimited is scheduled to be made in the near future.

Today, Bone Draw serves as a fish nursery stream for Flaming Gorge Reservoir and produces Rainbow and German Brown trout.

To relate to the Wyoming Farm Bureau's specific concerns, the project was approved by BLM through its planning system using public input. The expenditure of \$97,000 was an estimate provided by the Resource Area Manager to the District Manager in a memo dated in November 1986. The estimate included salaries, materials, contract work, studies, and monitoring over a 9-year period. Cost benefit ratios were not included in resource management projects at the time Bone Draw was contemplated. The BLM does not derive any revenues from the project, but the project does provide indirect revenues to the Game and Fish Department through licenses.

No thought was given to Bone Draw drying up 10 years ago, probably as no thought was given to the Big Sandy River Unit having a future salinity control problem.

The Wyoming Farm Bureau accurately records our comments in reviewing the Draft Environmental Impact Statement, Salinity Control Program, Big Sandy Unit. Our intent was to point out that mitigation measures are provided for by the National Environmental Protection Act (NEPA). Although the Bone Draw Project is man-made and dependent upon runoff from the Big Sandy Unit, the Big Sandy Unit itself is man-made. Through the NEPA law, we would like to protect the fish nursery resource for Flaming Gorge, but not at the expense of correcting the salinity problem on the Big Sandy Unit. We were, however, suggesting that the EIS explore ways the loss of the Bone Draw project could be mitigated.

Sincerely,

/s/ HILLARY A. ODEM

State Director

cc:

Your Cheyenne Field Office

✓ Mr. Frank Dixon, Soil Conservation Service, P.O. Box 2440, Casper, Wyoming 82601
Director (240), Room 903, Premier Building
DM, Rock Springs

Replacing the Wildlife Habitat Values Foregone." SCS will use the changes in the water and salinity budgets to document changes in salt delivery resulting from the improved irrigation practices. SCS has modified the text in Chapter 3 to reflect that the monitoring period will occur for several years after installation. The monitoring and evaluation will occur through the ongoing conservation operations program after the salinity program funds are terminated.

13. Noted.
14. SCS thinks the draft adequately describes the impacts. However, it has added a considerable amount of information to the FEIS to accommodate comments provided by reviewers.
15. The 78 acres are only those acres specifically dedicated to wildlife habitat. Nearly all conservation practices implemented by the SCS provide secondary benefits to wildlife. These benefits have not been accounted for in the referenced project. Primary and secondary wildlife habitat values will be accounted for in the Big Sandy River Unit project. Additional information relating to this comment is found in the "Foreword," Chapters 3 and 6, EPA Responses 20-23, and Department of Interior Response 5.
16. Noted. Changes made.
17. Noted. Changes made.
18. Noted. Changes made.
19. SCS has listed only those measures that will be cost shared. The power transmission line is only one energy source. Landowners may opt for other energy sources at their cost.
20. Text has been amended.
21. Text has been amended.
22. It is not cost and labor efficient to conduct a detailed habitat analysis for a project that is entirely voluntary. When the project is authorized and funded, the HEP process will begin. A complete HEP analysis will be made on each participating farm unit prior to signing a salinity control contract, which also means prior to any construction, installation, or implementation of salinity control and wildlife habitat replacement measures. See also response to Comment 3.
23. SCS has no intention of requesting letters of intent from potential program participants to voluntarily replace wildlife values foregone. Such an action is counter productive to voluntary participation. See also Response 5 and EPA 22.
24. This is described in general in the "Wetland and Upland Wildlife Habitat" section of Chapter 6.

25. Tables have been corrected.
26. See Table 2-1.
27. Although the 10,200 acre-feet may change slightly, SCS does not have information indicating that a large change may take place after installation of the project. The USBR has run seepage tests in the spring when water tables are low and has not determined enough seepage to justify lining of the main canals and laterals.
28. It should be noted that the .91 factor was used on 5.49 mg/L to come up with 5 mg/L reduction prior to the Draft EIS preparation.
29. Changing to \$56/ton of salt removed would increase the downstream Lower Colorado River Basin benefit from \$2,834,100/year to \$2,962,400. The reader should so note that there is \$128,300 more benefits than shown in the Table 3-5.
30. No. See EPA Comment Responses 35 and 36.
31. SCS thinks help will be available.
32. Change in text to read irrigation water requirement. The reviewer should note that the crop grown during the evaluation was not alfalfa hay, but a grass hay which has a lower irrigation water requirement. Further, it is noted that the 1.36 acre feet/acre future condition as related to 1.17 acre feet/acre past condition was used because of the estimated change in crops from grass hay to alfalfa hay and to reflect yield increase which will take additional water.
33. This is not a technical inconsistency. At the present time the Big Sandy River and Little Sandy Creek are lower in elevation than the surrounding water tables which allow water to flow into the river or be at least somewhat in equilibrium. When the water tables are lowered in the project area, the river and creek will be able to deliver water to the ground water which will increase the contribution from the river/creek source. This is SCS's best estimate of the change in the total salinity contribution from the Big Sandy River.
34. Text changed.
35. Additional information has been added to Chapters 4 and 6.
36. Text amended.
37. Text revised.
38. Additional information added to Chapters 4 and 6.
39. Some additional information provided by the WGFD has been added to Chapter 4. However, providing details on population densities serve no purpose because the impacts to sage grouse habitat have been scoped as insignificant by the WGFD.

40. SCS disagrees. Text will remain as is.
41. SCS disagrees. This farm land is subject to the swampbuster, sodbuster, and compliance provisions of the Food Security Act.
42. It is correct to say that water made available as a result of improved application on existing irrigated acres can be used to irrigate the remaining eligible acres. This amount of consumptively used water will not prevent the reservoir from filling and spilling during most years. This is based on a participation rate in the project of 85 percent or 15,700 acres.
43. There is no Table 5-1. SCS will comment on Table S-1 and Table 2-1 to which the reviewer is probably referring. SCS thinks that Tables S-1 and 2-1 adequately defines the expected changes of flow in the reaches listed for each alternative. The flow at Big Sandy Reservoir will nearly equal the amount listed in the table and then diminish as you go downstream to Bone Draw. This in fact indicates that a large portion of the water is coming from irrigation returns.

SCS's evaluation of the project indicates that most surface flows from the irrigated area return to the river above the confluence of the Big and Little Sandy Rivers. The SCS is unaware of a USBR water budget that shows most irrigation return flows occur above the said confluence. The SCS does have a letter and report prepared by USBR in April 1983 which states "SCS budget be considered as providing the best evidence that observed seep flows are due to irrigation return flows." SCS has identified and studied the seep flows returning between the irrigated area and Big Bend, which is 3 to 4 miles below Bone Draw.

If the project is retired, the 57,620 acre-feet of water will not be diverted into the canals and will have to flow down the river. The 26,190 acre-feet, which is included in the 57,620 acre-feet, will be additional water in reach 2 (Big Bend to Green River) as a result of no consumptive use by crops and phreatophytes in the project area.

44. See Response 43.
45. SCS assumes the table referred to is Table 4-2 rather than 5-2. The methodology used and detailed computations and backup data on salt load reduction are on file in the SCS State Conservation Engineer's Office, Casper, Wyoming. The water saved by increased efficiency is assumed to have been contributing totally to deep percolation. See Table 4-5 for salt load analysis.
46. The Salinity Control Act does not provide for mandatory mitigation of wetland losses. See responses to USDI Comment 5.
47. SCS agrees it is true that this water could be used for environmental purposes, but only as appropriate under Wyoming water law. SCS disagrees that a firm plan can be developed at this time.

The ultimate decision of how this water will be utilized will be determined by other parties outside USDA control. See also a letter from the Wyoming State Engineer which follows SCS's responses to EPA's comments.

48. SCS cultural resource regulations are approved prior to enactment by the Advisory Council on Historic Preservation. Also, see March 30, 1987, comment letter from Fred Chapman, State Historic Preservation Office.
49. These maps are very general and would serve no purpose. SCS working relationships with SHPO will ensure that cultural resources are considered during the term of this project.
50. These impacts are discussed in the section entitled, "Fisheries and Stream Flow Regime," in Chapter 6.
51. SCS disagrees. The 3,775 acres of wetlands represent 37 percent of the 10,171 acres of wetland in the Eden Valley Irrigation Project area. The remaining 6,400 acres of wetlands will be available for potential enhancement. In addition, landowners are becoming increasingly aware of the recreational and financial potentials of wetlands on their farms.
52. Additional data has been provided in Chapter 4 concerning hunting activities. Expected hunting levels as a result of habitat replacement are unavailable since the habitat replacements are voluntary.
53. SCS concurs with your comment that there is no need to form a committee to coordinate the dormant off-farm salinity program. The text in Chapter 7, "Coordination," has been changed to reflect this comment.
54. It is not possible to predict the level of the voluntary mitigation program. For this reason, the SCS openly discloses the fact that information is incomplete or unavailable as required by NEPA Amendment (40 CFR Part 1502). This issue is discussed in the "Foreword" and in the "Introduction" in Chapter 6.

GLOSSARY

Terms in this report are used as defined in "Resource Conservation Glossary" by the Soil Conservation Society of America, 1970, and in the "Wildland Planning Glossary," General Technical Report PSW-13/1976, Pacific Southwest Forest and Range Experiment Station, USDA Forest Service, 1976; and from definitions especially prepared for this study and report.

Acre-foot - The volume of water that will cover 1 acre to a depth of 1 foot.

Agricultural Land - Land in farms regularly used for agricultural production. The term includes all land developed for crop or livestock enterprises.

Aquifer - A geologic formation or structure that transmits water. The term water-bearing is sometimes used synonymously with aquifer when a stratum furnishes water.

Artesian Water - Water confined under enough pressure to cause it to rise above the level where it is encountered in drilling.

ASCS - Agricultural Stabilization and Conservation Service

Benefits - An assessment of the value of the expected outputs of the desirable effects of a plan or action.

Border Irrigation - A surface method of irrigation by flooding between border dikes.

Canal - A constructed open channel for transporting water from the source of supply to the point of distribution.

CD - Soil Conservation District.

CEQ - Council on Environmental Quality.

CES - Cooperative Extension Service.

COC - ASCS County Committee.

COE - Army Corps of Engineers.

Compact Apportioned Water - The share of water flowing in the Colorado River legally allocated to each state in the Colorado River drainage.

Conservation Practice - Action taken or practices applied on the ground to protect the soil, to conserve water, or to benefit wildlife.

Cost Effective - One way of considering, comparing, and ranking salinity control actions based on unit cost for potential reduction in salt loading.

CRBSC - Colorado River Basin Salinity Control.

Crop Budget - An estimate of the unit cost and unit return for producing a crop. A budget consists of a systematic listing and evaluation of the cost and the value of operations performed, physical resources used, and products produced.

Cropping Pattern - Amount and type of each crop within a designated area.

Cubic Foot Per Second - Rate of fluid flow at which 1 cubic foot of fluid passes a measuring point in 1 second (abbr. cfs.).

CWA - Clean Water Act.

Deep Percolation - Water that percolates below the root zone and cannot be used by plants.

Deficit - Quantity of water not available to satisfy the consumptive use requirements of the crops at the irrigation efficiency specified.

Drainage - The removal of excess surface water or ground water from land by means of surface or subsurface drains.

Environmental Quality Account - One of the required accounts for categorizing, displaying, or accounting the beneficial and adverse effects of each alternative plan for water and related land resources planning specified in the Water Resources Council's "Principles and Standards" and the USDA's "Procedures" for adhering to them.

Environmental Quality (EQ) - Enhancing environmental quality by the management, conservation, preservation, creation, restoration, or improvement of the quality of certain national and cultural resources and ecological systems is one of the two main objectives for programs involving water and related land resources administered by Federal agencies whose activities involve planning and development of water resources as contained in the Water Resources Council's "Principles and Standards."

Ephemeral Stream - A stream or portion of a stream that flows only in direct response to precipitation.

Evapotranspiration - The combined loss of water from a given area and during a specific period of time by evaporation from the soil surface and by transpiration from plants (syn. consumptive use).

Excess Water - Water diverted to the farm in excess of that needed to fill the soil profile and supply consumptive use and leaching requirements at the irrigation efficiency specified.

Externalities - Indirect effects occurring throughout the internal operations of the economy due to the introduction of a project that produces direct effects. Direct effects are those that accrue directly to the project measures. Externalities can have a positive or negative effect.

Farm Head Ditches - A constructed open channel for transportation of water from a canal or lateral to a point of distribution into the field.

Field Sprinkler System - A system of enclosed conduits carrying irrigation water under pressure to orifices designed to distribute the water over a given area; designed for either an individual unit or movement from field to field.

FONSI - Findings of No Significant Impact.

FSA - Food Security Act of 1985.

Gaging Station - A selected section of a stream channel equipped with a gage, recorder, or other facilities for determining stream discharge.

Growing Season - The period and/or number of days between the last freeze in the spring and the first frost in the fall for the freeze threshold temperature of the crop being grown.

HEP - Habitat Evaluation Procedures developed by the USFWS. HEP is a species-habitat approach to impact assessment and replacement needs. Habitat quality for selected evaluation species is documented in an index, the Habitat Suitability Index (HSI). This value is derived from an evaluation of the ability of key habitat components to supply the life requisites of selected species of fish and wildlife. Evaluation involves using the same key habitat components to compare existing habitat conditions and optimum habitat conditions for the species of interest.

Hydrophyte - A plant that grows in water or in saturated soil and that consumes a large quantity of water.

Intermittent Stream - A stream or portion of a stream that flows only in direct response to precipitation. It is dry for a large part of the year, ordinarily more than 3 months.

Irrigation District - A cooperative self-governing, public corporation set up as a subdivision of the State, with definite geographic boundaries, organized to obtain and distribute water for irrigation of lands within the district; created under authority of the State legislature with the consent of a designated fraction of the landowners or citizens and has taxing power.

Irrigation Water Management - The use and management of irrigation water where the quantity of water used for each irrigation is determined by the waterholding capacity of the soil and the need of the crop, and where the water is applied at a rate and in such a manner that the crop can use it efficiently and significant erosion does not occur.

Irrigation Source Control Unit - A salt contributing area identified in P.L. 93-320, the Colorado River Basin Salinity Control Act, where farm irrigation is a significant activity and source of salt loading.

LSCC - Local Salinity Coordinating Committee.

Mitigation - As defined by NEPA, 40 CFR Part 1508, includes:

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
5. Compensating for the impact by replacing or providing substitute resources or environments.

Multi-Objective Planning - Combining the natural and social sciences and the environmental design arts to evaluate and consider economic, physical, and environmental effects in the planning and decision making process.

National Economic Development Account - One of the required accounts for categorizing, displaying, or accounting the beneficial and adverse effects of each alternative plan formulation for water and related land resources planning specified in the Water Resources Council's "Principles and Standards" and the USDA's "Procedures" for adhering to them.

NEPA - National Environmental Policy Act.

Net Irrigation Requirements - Quantity of water needed to meet consumptive use needs of the crop after accounting for effective precipitation and use from the water table.

Net Return - The residual value of production after costs of production are subtracted from the gross returns.

NOI - Notice of Intent to Prepare an Environmental Impact Statement.

Nonproject Actions - Nonproject actions consist of technical and/or financial assistance provided to an individual, group, or local conservation district, such as land treatment recommended in the Conservation Operations, Great Plains Conservation, Rural Abandoned Mine, and Rural Clean Water Programs. These actions may include consultations, advice, engineering, and other technical assistance that land users usually cannot accomplish by themselves. Nonproject treatment and/or financial assistance may result in the land user's installing field terraces, waterways, field leveling, onfarm drainage systems, farm ponds, pasture management, conservation tillage, critical area stabilization, and other conservation practices.

NPDES - National Pollutant Discharge Elimination System

Onfarm Irrigation Efficiency - Ratio of water consumed by crops on irrigated land to the amount of water delivered at the farm headgates supplying that land.

Part Per Million (PPM) - One part by weight of dissolved chemical, or suspended sediment, in one million parts by weight of water.

Percolation - The downward movement of water through soil, especially the downward flow of water in saturated or nearly saturated soil.

Perennial Stream - A stream that flows continuously throughout the year.

Permeability - The quality of a soil horizon that enables water to move through it.

Phreatophyte - A plant deriving its water from subsurface sources; commonly used to describe nonbeneficial water-loving vegetation. As defined in this report it includes plants such as saltbush, greasewood, cottonwood trees, sagebrush, and native nonirrigated grasses along canals, laterals, wasteways, drainage ditches, and next to the river systems.

Project Costs - A term commonly used in connection with water resource development projects. It includes the value of goods and services (land, labor, and material) used for the establishment, maintenance, and operation of a project together with the value of any net-induced adverse effects, whether or not compensated for.

Project Irrigation Efficiency - Ratio of water consumed by crops on irrigated land to the amount of water diverted from reservoirs or stream diversions that supply that land.

Principles and Standards - Guidelines for water and related land resources planning established by the U.S. Water Resources Council for Federal agencies whose activities involve planning and development of water resources. The Principles provide the broad framework for planning activities and include the conceptual basis for planning. The Standards provide for uniformity and consistency in comparing, measuring, and judging beneficial and adverse effects of alternative plans.

Return Flow - That portion of the water diverted from a stream which finds its way back to the stream channel either as surface or underground flow.

Salmonids - Of or belonging to the family Salmonidae which includes trout, salmon, and whitefishes.

Salinity - Usually considered to be the sum of all the dissolved salts in water, which is analytically defined as total dissolved solids (TDS). Common salts include sodium, calcium, sulfates, carbonates, and magnesium.

Salinity Control Plan - That portion of the conservation plan that addresses the required practices for physical control, management, and use of related water and land resources to accomplish salinity reduction.

Salt Loading - The pickup of salt from a natural material by water.

SCA - Represents Salinity Control Act and Amendments.

SCC - Salinity Coordinating Committee.

SCP - Salinity Control Plans.

SCS - Soil Conservation Service.

Sodbuster Provisions - Part of the FSA of 1985 aimed at discouraging the conversion of highly erodible land for agricultural production.

Sprinkler Irrigation - Irrigation system in which water is applied by means of perforated pipes or nozzles operated under pressure so as to form a spray pattern.

Structural Improvements - Engineering works, exclusive of land treatment and management measures, designed to improve irrigation water application and efficiency.

Swampbuster Provisions - Part of the FSA of 1985 aimed at discouraging the conversion of wetland for agricultural purposes.

Terrestrial Habitat - Wildlife habitat pertaining to land as distinct from water or water influenced land.

Total Dissolved Solids (TDS) - The total dissolved mineral constituents of water. Generally expressed in milligrams per liter (mg/l).

USBR - United States Bureau of Reclamation

USFWS - United States Fish and Wildlife Service

Voluntary Replacement of Incidental Fish and Wildlife Values Foregone -

An action authorized under the 1984 Amendments of Public Law 93-320 (Colorado River Basin Salinity Control) which allows the installation of measures to replace fish and wildlife habitat at a cost-share rate of 70 percent federal, 30 percent local sponsors.

Wetlands (as defined by USFWS Circular 39) -

Type 1 - Seasonally flooded basins or flats.

The soil is covered with water, or is waterlogged, during variable seasonal periods but usually is well drained during much of the growing season. This type is found both in upland depressions and in overflow bottom lands. Along river courses, flooding occurs in late fall, winter, or spring. In the uplands, basins or flats may be filled with water during periods of heavy rain or melting snow.

Type 2 - Inland fresh meadows

The soil usually is without standing water during most of the growing season but is waterlogged within at least a few inches of its surface.

Type 3 - Inland shallow fresh marshes

The soil is usually waterlogged during the growing season; often it is covered with as much as 6 inches or more of water.

Type 4 - Inland deep fresh marshes

The soil is covered with 6 inches to 3 feet or more of water during the growing season.

Type 5 - Inland open fresh water

Shallow ponds and reservoirs are included in this type. Water is usually less than 10 feet deep and is fringed by a border of emergent vegetation.

Type 9 - Inland saline flats

The soil is without standing water except after periods of heavy precipitation, but it is waterlogged to within at least a few inches of the surface during the growing season.

Type 10 - Inland saline marshes

The soil is usually waterlogged during the growing season and is often covered with as much as 2 or 3 feet of water. This type occurs mostly in shallow lake basins.

WGFD - Wyoming Game and Fish Department

Wildlife Habitat Values Foregone - Wildlife habitats that existed as a result of flood irrigation structures, operations, and water management. These habitats are, but not limited to, the following: water-loving herbaceous and woody vegetation, open-water wetlands, streams, springs, seeps, onfarm ditches, drainage ditches, border dikes, and temporarily flooded pasture and hayland.

PREPARERS

A. List of Preparers

Name Richard C. Rintamaki
Job Title State Biologist
Assignment Preparer
Education B.S. Biology (Fish and Wildlife) 1972
Experience Biologist, Water Resources Planning Staffs, 2 years, Michigan; Soil Conservationist, SCS field office, 1 year, Michigan; Resource Conservationist (Environmental Specialist), Water Resources Planning Staff, 3 years, Wyoming; State Biologist, 7 years, Wyoming

Name Thomas E. Jewett
Job Title Assistant State Conservationist (Programs)
Assignment Preparer
Education B.S. Mechanized Agriculture
Experience District Conservationist, Bagley and Warren, Minnesota, 1967-72; District Conservationist, West Warwick, Rhode Island, 1972-75; Area Conservationist, Flint, Michigan, 1975-79; Area Conservationist, Mitchell, South Dakota, 1979-84; Assistant State Conservationist (P), Casper, Wyoming, 1984-present

Name Duane D. Klamm
Job Title State Conservation Engineer
Assignment Big Sandy Salinity Team Leader, 1976-80; Preparer, 1986
Education A.S. Engineering, 1959
B.S. Civil Engineer, 1962
Experience State Conservation Engineer, SCS, 1 year; Assistant State Conservation Engineer, SCS, 6 years; Planning Engineer, Wyoming, Illinois, SCS, 4 years; Hydrologist, Utah, Illinois, SCS, 6 years; Project Engineer, Utah, SCS, 2 years; Resident Engineer for Daniel F. Lawrence and Sons Consulting Engineers, 3 years; Resident Engineer for Utah Water and Power Board, 2 years; Construction Inspector, SCS, 1 year

B. Technical Assistance and Review

Name Carl C. Tomich
Job Title RC&D Coordinator - District Conservationist
Assignment Local Study Coordinator
Technical Assistance
Education B.S. Agriculture Education, 1954
M.S. Agronomy (Soils), 1961
Experience Teacher, Vocational Agriculture, LaGrange and Huntley,
Wyoming, 1 year; Soil Conservationist, SCS, Laramie,
Wyoming, 3 years; Graduate Soils Lab Assistant,
University of Wyoming, 1 year; Soil Scientist, SCS,
Wheatland, Wyoming, 1 year; District Conservationist,
SCS, Farson, Wyoming, 10 years; District Conservationist,
SCS, Rock Springs, Wyoming, 2 years; RC&D Coordinator,
SCS, Rock Springs, Wyoming, 5 years; District
Conservationist/RC&D Coordinator, SCS, Rock Springs,
Wyoming, 5 years

Name Donald K. Kessler
Job Title District Conservationist
Assignment Technical Assistance
Education B.A. History, 1973
B.S. General Agriculture, 1983
Experience District Conservationist, Big Sandy Conservation
District, Rock Springs, Wyoming, 1 year; Soil
Conservationist, Powell-Clarks Fork Conservation
District, Powell, Wyoming, 2 years; Construction
Inspector, Toltec Watershed Dam, 2 construction seasons
(9 months), Soil Conservation Technician, Casper-Alcova
Conservation District, Casper, Wyoming, 6 years; Civil
Engineering Technician, Central Utah Project, Duchesne
Field Office, Bureau of Reclamation, Duchesne, Utah,
1½ years; Soil Conservation Aid, North Platte Valley,
South Goshen, and Lingle-Fort Laramie Conservation
Districts, Torrington, Wyoming, 2 seasons (15 months)

Name Ronnie L. Clark
Job Title Deputy State Conservationist
Assignment Program Manager
Education B.S. Agricultural Economics, 1962
Experience Agricultural Economist, SCS, Oklahoma, 5 years, and
Arizona, 6 years; River Basin-Watershed Staff Leader,
Arizona, 4 years; Assistant State Conservationist
(Programs), Wyoming, 8 years; Deputy State
Conservationist, Wyoming, 2 years

Technical Assistance and Review continued

Name L. C. Young
Job Title State Resource Conservationist
Assignment Technical Assistance
Education B.S. Agriculture - Agronomy, 1965
Experience Soil Scientist, Illinois, 6 years; Soil Conservationist, Illinois, 2 years; District Conservationist, Illinois, 4 years; Resource Conservationist, Illinois, 2 years; Conservation Agronomist, Wyoming, 3 years; State Resource Conservationist, Wyoming, 7 years

Name Clifford H. Byrd
Job Title Resource Conservation Planning Specialist
Assignment Reviewer
Education B.S. Agronomy, 1967
Experience Resource Conservation Planning Specialist, Wyoming, 2 years; District Conservationist, Wyoming, 6 years; District Conservationist, Washington, 8 years; Soil Conservationist, Washington, 3 years

Name Fred A. Riffle
Job Title State Economist
Assignment Technical Assistance
Education B.S. Economics 1975
Experience Economist, Water Resources Planning Staff, West Virginia, 9 years; State Economist, Wyoming, 3 years

Name Charles E. Borel
Job Title State Agricultural Economist
Assignment Economist on Big Sandy Study Team
Education B.S. Agriculture (Agronomy), 1958
Graduate Work Agricultural Economics, 1965
Experience Soil Conservationist, SCS, Louisiana, 9 years; Agricultural Economist, River Basin and Watershed Planning, SCS, Louisiana, 12 years; State Agricultural Economist, SCS, Wyoming, 6 years

Name John T. Doyle
Job Title Area Engineer
Assignment Reviewer
Education B.S. Civil Engineering, 1955
Experience Area Engineer, SCS, Pinedale, Wyoming, 10 months; State Design Engineer, SCS, Casper, Wyoming, 13 years; Design Staff, SCS, Casper, Wyoming, 1 year; Area Engineer, SCS, Wyoming, 15 years; Field Engineer, SCS, Farson, Wyoming, 2 years

Technical Assistance and Review continued

Name	David O. Taylor
Job Title	Civil Engineer
Assignment	Planning Engineer
Education	B.S. Agriculture Engineer, 1970
Experience	Engineer, River Basin/Watershed Planning Staff, SCS, Wyoming, 8 years; Area Engineer, southwestern Wyoming, 2 years; Soil Conservation Technician, SCS, Wyoming, 3 years
Name	John S. Moore
Job Title	Engineering Geologist
Assignment	Certified Professional Geological Scientist, American Institute of Professional Geologists, 1982
Education	Reviewer B.A., Geology, 1969 M.S., Geology, 1974
Experience	Engineering Geologist, Northeast National Technical Center, Chester, Pennsylvania, 1.5 years; State Geologist, SCS, Casper, Wyoming, 6 years; Planning Geologist, River Basin/Watershed Planning Staff, SCS, Champaign, Illinois, 2 years; Planning Geologist, Watershed Planning Staff, SCS, Paoli, Indiana, 2 years; Seismologist, Seismograph Service Corp., Oklahoma, Utah, Colorado, Wyoming, 1 year
Name	P. Stan Mitchem
Job Title	State Geologist
Assignment	Certified Professional Geologist, Virginia, 1983
Education	Technical Assistance B.S. Geology, 1971 Post-Baccalaureate Hydrogeology, 1985
Experience	State Geologist, SCS, Wyoming, 1 year; Geologist, Water Resources Planning Staff, SCS, Iowa, 12 years
Name	Theodore L. Gilbert
Job Title	Hydraulic Engineer
Assignment	Acting Water Supply Specialist
Education	Technical Assistance and Review B.S. Agricultural Mechanics, 1957 B.S. General Engineering, 1959
Experience	Snow Survey Water Supply Specialist, SCS, Casper, Wyoming, 1 year; Hydraulic Engineer, SCS, Casper, Wyoming, 15 years; Agricultural Engineer, SCS, Sundance, Wyoming, 9 years; Agricultural Engineer, SCS, Gillette, Wyoming, 2 years

Technical Assistance and Review continued

Name John R. Long
Job Title State Conservation Engineer
Assignment Supervisor/Reviewer
Education B.S. Agricultural Engineering, 1950
Experience State Conservation Engineer, SCS, Wyoming, 14 years;
Assistant State Conservation Engineer, SCS, Wyoming,
4 years; State Design Engineer, SCS, Wyoming, 10 years;
Area/Irrigation Engineer, SCS, Wyoming, 5 years

Name Reuben L. Kammerer
Job Title Water Resources Planning Staff Leader
Assignment Supervisor of Study Team
Education B.S. Agricultural Engineering, 1951
Experience Water Resources Planning Staff Leader, SCS, Casper,
Wyoming, 8 years; Civil Engineer, River Basin Planning,
SCS, Lincoln, Nebraska, 9 years; Area Engineer, SCS,
Des Moines, Iowa, 6 years; Field Engineer, SCS,
Greenfield, Iowa, 5 years, and Fairfield, Iowa, 1 year

Name Joseph Van Mullem
Job Title Hydraulic Engineer
Assignment Planning Team Leader
Education B.S. Civil Engineering, 1965
Experience Hydraulic Engineer: Multistate Watershed Planning Staff,
SCS, Bozeman, Montana, 6 years; River Basin and Watershed
Planning Staff, SCS, Wyoming, 6 years, and Nevada, 3 years
Civil Engineer: Montana, SCS, 6 years

Name Jean M. Fox
Job Title Economist
Assignment Economist on Big Sandy Study Team
Education B.A. Economics, 1974
Master of Business Administration, 1983
Experience Planning and Budget Officer, USFS, 3 years; Economist,
Water Resources Planning Staff, SCS, Casper, Wyoming,
3 years; and Watershed Planning, SCS, Syracuse, New York,
2 years

Name Halvor B. Ravenholt
Job Title Soil Scientist, Party Leader
Certified Professional Soil Scientist #136 American
Registry of Certified Professionals in Agronomy, Crops,
and Soils
Assignment Reviewer
Education B.S. Technical Agriculture with major in soils, 1951
Experience Soil survey, mapping and classification: 12 years in
Minnesota and 24 years in Wyoming; 3-month details in
Missouri, Georgia, and Saudi Arabia.

Technical Assistance and Review continued

Name Frank F. Reckendorf
Job Title Environmental Resource Specialist
Registered Professional Engineering Geologist, Oregon,
1978
Assignment Review Team Leader
Education B.S. Geology, 1961
M.S. Geology, 1963
Ph.D. Soil Science, 1973
Experience Environmental Resource Specialist and Sedimentation
Geologist, West National Technical Center, SCS, 2 years;
Environmental Resource Specialist, WNTC, 10 years;
SCS State Environmental Specialist for Oregon, 2 years;
Engineering Geologist, SCS, 6 years; Research Soil
Scientist, SCS, 4 years;

Name William A. Daley
Job Title Agricultural Economist
Assignment Reviewer
Education B.S. Animal Science, 1968
M.S. Agricultural Economics, 1970
Ph.D. Inprogress Natural Resources Planning and
Management
Experience Agricultural Economist, SCS, Casper, Wyoming, 7 years;
Agricultural Economist, SCS, West National Technical
Center, Portland, Oregon, 8 years

Name J. David Hoodenpyle
Job Title Ag Economist
Assignment Reviewer
Education B.S. Agricultural Economics
Experience Agricultural Economist, West National Technical Center,
SCS, Portland, Oregon, 13 years; Ag. Economist, River
Basin and Watershed Planning, SCS, Honolulu, Hawaii,
3 years; Ag Economist, RC&D and Watershed Planning, SCS,
Columbia, Missouri, 5 years; Soil Conservationist, SCS,
Fulton, Missouri, 2 years

Name David E. Chalk
Job Title Wildlife Biologist
Assignment Reviewer
Education B.S. Wildlife Science, 1968
M.S. Wildlife Science, 1970
Experience Biologist, West National Technical Center, SCS, 2 years;
SCS National Office Staff Biologist, assigned to Forest
Service Wildlife Research Team, 5 years; SCS National
Office Staff Biologist assigned to U.S. Fish and Wildlife
Service Habitat Evaluation Procedures Group, WELUT,
Fort Collins, Colorado, 2 years; SCS State Biologist,
Utah, 3 years; Area Biologist, SCS, New Mexico, 4 years;
Soil Conservationist, SCS, New Mexico, 2 years

Technical Assistance and Review continued

Name Paul K. Koluvek
Job Title Water Management Engineer (Irrigation)
Assignment Reviewer
Education B.S. Agricultural Engineering
Experience Water Management Engineer (Irrigation), West National Technical Center, SCS, Portland, Oregon, 6 years; Irrigation Water Management Specialist, WNTC, SCS, 4 years; Irrigation Engineer, U.S. AID-SCS, Karachi, Pakistan, 2 years; Area Engineer, Riverside, California, SCS, 1 year; Engineering Specialist (Irrigation and Drainage), El Centro area, SCS, California, 12 years

Name Lowell Dean Marriage
Job Title Biologist
Assignment Reviewer
Education B.S. Fisheries
Experience Biologist, West National Technical Center, SCS, 16 years; Regional Fisheries Biologist, WNTC, 3 years; Biologist, Water Resources Analyst and Assistant State Fisheries Director, Fish Commission of Oregon, 14 years

Name James G. Barrett
Job Title Environmental Resource Specialist
Certified Professional in Erosion and Sediment Control
Assignment Reviewer
Education B.S. Agriculture
Experience Environmental Resource Specialist, West National Technical Center, SCS, Portland, Oregon, currently; Resource Inventory Specialist, WNTC, 4 years; Nonpoint Source Water Quality Specialist, SCS detailed to EPA Region 10, Seattle, Washington, 3 years; Resource Conservation Planner, River Basin Planning Staff, SCS, Davis, California, 1 year; Erosion Control and Water Quality Planner, SCS assigned to the Association of Monterey Bay Area Governments, Monterey, California, 2 years; District Conservationist, SCS, Santa Maria, California, 1 year; Coastal Land Use and Environmental Planner, SCS assigned to the California Coastal Zone Conservation Commission, Long Beach, California, 1 year; District Conservationist, SCS, Lakeport, California, 6 years; Soil Conservationist, River Basin Planning Staff, SCS, Berkeley, California, 2 years; Soil Conservationist, SCS, Redding, California, 2 years, and Fresno, California, 1 year; Manager and Purchasing Agent, Topper Feeds (mill and 6 farm-supply stores), Fresno, California, 4 years; Farmer, self-employed (field crops, vineyards, poultry), Fresno and Sanger, California, 10 years

Technical Assistance and Review continued

Name	John D. Hedlund
Job Title	Water Resources Specialist - Present Registered Professional Soil Erosion & Sediment Control Specialist
Assignment	Reviewer
Education	B.S. Agricultural Engineer, 1958 M.S. Agricultural Engineer, 1960
Experience	Water Resource Specialist, West National Technical Center, SCS, Portland, Oregon, 4 years; Water Management Engineer (Irrigation), WNTC, SCS, Portland, Oregon, 2 years; Salinity Specialist, WNTC, SCS, Portland, Oregon, 5 years; Soil Conservationist, SCS, Special Studies, Washington, D.C., 5 years; Hydraulic Engineer, River Basin Planning, SCS, Colorado, 5 years; Hydraulic Engineer, River Basin and Watershed Planning, SCS, Nevada, 5 years

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