Programmatic Environmental Assessment

Idaho Conservation Reserve Enhancement Program

Photo Courtesy of EPA.

Farm Service Agency
United States Department of Agriculture

February 2006

Cover Sheet

Mandated Action:	The United States Department of Agriculture, Commodity Credit Corporation (USDA/CCC) and the State of Idaho have agreed to implement the Idaho Conservation Reserve Enhancement Program (CREP), a component of the Conservation Reserve Program (CRP). USDA is provided the statutory authority by the provisions of the Food Security Act of 1985, as amended (16 U.S.C. 3830 et seq.), and the regulations at 7 CFR 1410. In accordance with the 1985 Act, USDA/CCC is authorized to enroll lands through December 31, 2007. The Farm Service Agency (FSA) of USDA proposes to enter into a CREP agreement with the State of Idaho. CREP is a voluntary land conservation program for State agricultural landowners.
Type of Document:	Programmatic Environmental Assessment (PEA)
Lead Agency:	United States Department of Agriculture, Farm Service Agency
Sponsoring Agencies:	Idaho Farm Service Agency
Cooperating Agencies:	United States Departments of Agriculture, Natural Resource Conservation Service (NRCS)
For Further Information:	Thomas E. Dobbin, State Environmental Coordinator FSA Idaho 9173 West Barnes, Suite B Boise, Idaho 83709 208-378-5671 tom.dobbin@id.usda.gov
Comments:	This Programmatic Environmental Assessment was prepared in accordance with USDA FSA National Environmental Policy Act implementation procedures found in 7 CFR 799, as well as the National Environmental Policy Act of 1969, Public Law 91-190, 42 U.S.C. 4321-4347, 1 January 1970, as amended. Once this document is finalized a Notice of Availability will be printed in the Federal Register. Following the Notice of Availability FSA will provide a public comment period prior to any FSA decision. A copy of this Programmatic Environmental Assessment can be found at: http://www.fsa.usda.gov/dafp/cepd/epb/assessments.htm Any written comments regarding this assessment shall be submitted to: Thomas E. Dobbin, State Environmental Coordinator FSA Idaho 9173 West Barnes, Suite B Boise, Idaho 83709 208-378-5671 tom.dobbin@id.usda.gov

THIS PAGE INTENTIONALLY LEFT BLANK.

Executive Summary

Purpose of and Need for the Programmatic Environmental Assessment

The purpose of this Programmatic Environmental Assessment (PEA) is to provide to the general public an analysis of the environmental, social, and economic effects of implementing the Idaho Conservation Reserve Enhancement Program (CREP). This PEA specifically addresses the consequences of implementing two alternatives: a no action alternative and a proposed action alternative.

The Farm Service Agency (FSA) has prepared this PEA in accordance with its National Environmental Policy Act implementation regulations found in 7 CFR 799, as well as the National Environmental Policy Act of 1969, Public Law 91-190, 42 U.S.C. 4321-4347, 1 January 1970, as amended.

Purpose and Need for the Proposed Action

The purpose of the Idaho CREP is to improve water quality and quantity, wildlife, threatened and endangered species habitat, and prevent soil erosion. CREP is designed to reduce demand on the scarce water supplies of southeastern Idaho, thereby preserving the agricultural economy and protecting important surface and groundwater resources in the Snake River Basin, including the Eastern Snake River Plain Aquifer (ESPA).

Description of Alternatives

The alternatives that will be discussed in the PEA include two possible actions: Alternative A (No Action)—Continue Current Agricultural Practices and Alternative B (Proposed Action)—Implement the Idaho CREP. No other alternatives are being developed at this time.

Alternative A (No Action)—Continue Current Agricultural Practices

Under Alternative A current agricultural practices would continue and modes of agricultural production would remain as they have for decades. Water rights calls would be made to junior water rights holders, preventing cultivation of much agricultural land in Southeast Idaho. Additionally, existing Federal and state programs would be relied upon to slow the current rates of water quality degradation, soil erosion, and wildlife habitat loss.

Alternative B (Proposed Action)— Implement the Idaho CREP

Alternative B is the preferred alternative and targets 100,000 acres (0.85 percent of the State's agricultural land and 4.5 percent of the proposed CREP project area) for the installation and maintenance of selected conservation practices (CPs). Land placed under CREP contracts would be retired from crop production and irrigation for 10-15 years. CREP would provide the financial and technical assistance necessary to assist eligible Idaho farmers and ranchers in voluntarily establishing CPs that would conserve soil and water, filter nutrients and pesticides, and enhance and restore wildlife habitat.

A summary comparison of the two alternatives can be found in Tables 2.2 and 2.3 on pages 2-10 and 2-12 respectively.

How to Read this Programmatic Environmental Assessment

The PEA is organized into the following three chapters:

- Chapter 1 (Purpose and Need for Action);
- Chapter 2 (Alternatives Including the Proposed Action); and
- Chapter 3 (Affected Environment and Environmental Consequences)

Chapter 1 is an introductory chapter that outlines the purpose and need for preparing a document of this type as well as the purpose and need for CREP. Chapter 1 also briefly introduces the resource issues and discusses the issues eliminated and the reasons they were eliminated from further analysis.

Chapter 2 describes the actions proposed in the PEA including the two alternatives described above. Alternatives are compared in summary tables in terms of their individual environmental impacts and their achievement of objectives.

Chapter 3 provides a general description of the resource area including a summary of ecological regions, climate, history of irrigation practices, profile of agricultural activities (baseline conditions), soil, and land use and ownership. Following the background information is a more detailed analysis of each of the resources most likely to receive impacts from the alternatives including:

- Groundwater Resources
- Surface Water
- Drinking Water
- Soil Resources
- Wetlands
- Floodplains
- Protected Species
- Human Health and Social Issues
- Economic Issues
- Wilderness
- Cultural/Tribal Resources
- Air Quality
- Cumulative Effects

Each resource is discussed in a separate section which has combined the analyses of the Affected Environment (or Existing Conditions) and Environmental Consequences (Effects of Alternative A and B). Each section, in general, is organized as follows:

- Introduction
- Existing Conditions
- Impacts
- Effects of Alternative A
- Effects of Alternative B

How the PEA was Prepared

This document was prepared with the cooperation of State of Idaho personnel including personnel from the Idaho Department of Fish and Game (IDFG) and the Idaho Department of Agriculture (ISDA). The best available information was used in the development of this document with the majority of information being obtained from State and Federal agency reports. The majority of these reports came from the following agencies:

- Idaho Department of Fish and Game
- Idaho Agricultural Statistics Service
- Idaho Department of Environmental Quality
- Idaho Department of Natural Resources
- U.S. Fish and Wildlife Service
- U.S. Environmental Protection Agency
- USDA, National Agricultural Statistics Services
- USDA, Farm Service Agency
- U.S. Bureau of Reclamation
- U.S. Geologic Survey

Public Comments

A Notice of Availability was published in the *Idaho Statesman,* the *Post Register*, the *Idaho State Journal,* and the *Times News* concurrent with the Draft PEA public comment period. Four comments were received during the comment period for the Draft PEA, these comments are summarized in Appendix H. Comments concerning this PEA should be submitted to:

Thomas E. Dobbin
State Environmental Coordinator
FSA Idaho
9173 West Barnes, Suite B
Boise, Idaho 83709
208-378-5671
tom.dobbin@id.usda.gov

THIS PAGE INTENTIONALLY LEFT BLANK.

Table of Contents

Chapter 1.0 Purpose of and Need for Action 1-1

1.1 Introduction 1-1

1.1.1 Overview of the Farm Service Agency's Implementation of the Idaho Conservation Reserve Enhancement Program (CREP) 1-1
1.1.2 Purpose of Using an Environmental Assessment to Analyze this Action 1-3

1.2 Purpose of the Proposed Action 1-4

1.3 Need for the Proposed Action 1-4

1.3.1 Eastern Snake River Plain Aquifer 1-4
1.3.2 Critical Groundwater Areas and Groundwater Management Areas 1-6

1.4 Objectives of the Idaho CREP 1-7

1.4.1 Objective #1: Reduce the demand of water in the ESPA. 1-8
1.4.2 Objective #2: Ensure a long-term, reliable water supply from the Mountain Home Aquifer. 1-8
1.4.3 Objective #3: Recharge the aquifers of the Oakley Fan Critical Groundwater Areas. 1-8
1.4.4 Objective #4: Provide additional flow of the Snake River in the Thousand Springs Reach. 1-8
1.4.5 Objective #5: Improve wildlife habitat. 1-8

1.5 Area Covered by Idaho CREP 1-9

1.6 Relevant Laws, Regulations, Programs and Other Documents 1-9

1.6.1 Federal Laws, Regulations, and Other Documents 1-9
1.6.2 State Laws, Regulations, and Other Documents 1-10
1.6.3 Programs 1-14

1.7 Decisions that Must be Made 1-14

1.8 Scoping and Resource Issues 1-14

1.8.1 Scoping 1-14
1.8.2 Relevant Resource Issues 1-16
1.8.3 Resources/Issues Eliminated from Detailed Study 1-18

Chapter 2.0 Alternatives Including the Proposed Action 2-1

2.1 Introduction 2-1

2.2 Description of Alternatives 2-1

Alternative A (No Action)—Continue Current Agricultural Practices 2-1
Alternative B (Proposed Action)—Implement the Idaho CREP 2-2

2.3 Comparison of Alternatives 2-9

Summary Comparison of Achievement of Project Objectives of Alternatives A and B 2-11
Summary Comparison of the Effects of Alternatives A and B on the Relevant Resource Issues 2-13

Chapter 3.0 Affected Environment and Environmental Consequences 3-1

3.1 Introduction 3-1

3.2 General Description 3-1

3.2.1 Climate 3-3
3.2.2 Important Geologic Features 3-3

3.3 Profile of Agricultural Activities 3-4

3.4 Leveraged Benefits 3-7

3.5 Groundwater Resources ... 3-8
3.5.1 Introduction ... 3-8
3.5.2 Existing Conditions ... 3-9
3.5.3 Eastern Snake River Plain Aquifer ... 3-9
3.5.4 Agricultural Impacts to Groundwater ... 3-14
3.5.5 Effects of Alternative A (No Action) on Groundwater ... 3-22
3.5.6 Effects of Alternative B (CREP Agreement) on Groundwater ... 3-23
3.6 Surface Water ... 3-23
3.6.1 Introduction ... 3-23
3.6.2 Existing Conditions ... 3-25
3.6.3 Agricultural Impacts to Surface Water ... 3-33
3.6.4 Effects of Alternative A (No Action) on Surface Water ... 3-37
3.6.5 Effects of Alternative B (CREP Agreement) on Surface Water ... 3-37
3.7 Drinking Water ... 3-38
3.7.1 Introduction ... 3-38
3.7.2 Existing Conditions ... 3-38
3.7.3 Agricultural Impacts to Drinking Water ... 3-40
3.7.4 Effects of Alternative A (No Action) on Drinking Water ... 3-43
3.7.5 Effects of Alternative B (CREP Agreement) on Drinking Water ... 3-44
3.8 Soil Resources ... 3-44
3.8.1 Introduction ... 3-44
3.8.2 Existing Conditions ... 3-44
3.8.3 Effects of Alternative A (No Action) on Soil Resources ... 3-48
3.8.4 Effects of Alternative B (CREP Agreement) on Soil Resources ... 3-48
3.9 Wetlands ... 3-49
3.9.1 Introduction ... 3-49
3.9.2 Benefits of Wetlands ... 3-49
3.9.3 Existing Conditions ... 3-50
3.9.4 Agricultural Impacts to Wetlands ... 3-53
3.9.5 Effects of Alternative A (No Action) on Wetlands ... 3-53
3.9.6 Effects of Alternative B (CREP Agreement) on Wetlands ... 3-53
3.10 Floodplains ... 3-54
3.10.1 Introduction ... 3-54
3.10.2 Existing Conditions ... 3-54
3.10.3 Effects of Alternative A (No Action) on Floodplains ... 3-55
3.10.4 Effects of Alternative B (CREP Agreement) on Floodplains ... 3-55
3.11 Protected Species ... 3-56
3.11.1 Introduction ... 3-56
3.11.2 Existing Conditions ... 3-57
3.11.3 Effects of Alternative A (No Action) on Protected Species ... 3-63
3.11.4 Effects of Alternative B (CREP Agreement) on Protected Species ... 3-64
3.12 Human Health and Social Issues ... 3-65
3.12.1 Introduction ... 3-65
3.12.2 Environmental Justice ... 3-66
3.12.3 Existing Conditions ... 3-66
3.12.4 The Effects of Alternative A (No Action) on Human Health and Social Issues ... 3-69
3.12.5 The Effects of Alternative B (CREP Agreement) on Human Health and Social Issues. 3-69
3.13 Economic Issues ... 3-70
3.13.1 Existing Conditions ... 3-70
3.13.2 The Effects of Alternative A (No-Action) on Economic Issues ... 3-71
3.13.3 The Effects of Alternative B (CREP Agreement) on Economic Issues ... 3-73

3.14 Wilderness 3-74
3.14.1 Introduction 3-74
3.14.2 Existing Conditions....3-74
3.14.3 Effects of Alternative A (No Action) on Wilderness....3-74
3.14.4 Effects of Alternative B (CREP Agreement) on Wilderness 3-75
3.15 Cultural / Tribal Resources 3-75
3.15.1 Introduction 3-75
3.15.2 Existing Conditions....3-75
3.15.3 The Effects of Alternative A (No Action) on Cultural / Tribal Resources 3-77
3.15.4 The Effects of Alternative B (CREP Agreement) on Cultural / Tribal Resources 3-77
3.16 Air Quality 3-78
3.16.1 Existing Conditions....3-78
3.16.2 The Effects of Alternative A (No Action) on Air Quality....3-78
3.16.3 The Effects of Alternative B (CREP Agreement) on Air Quality 3-79
3.17 Cumulative Effects....3-79
3.17.1 Introduction 3-79
3.17.2 Past, Present, and Reasonably Foreseeable Actions 3-79
3.17.3 Cumulative Effects Summary Table....3-83
3.18 Unavoidable Adverse Impacts....3-91
3.18.1 Alternative A (No Action)....3-91
3.18.2 Alternative B (CREP Agreement)....3-91
3.19 Relationship of Short-Term Uses and Long-Term Productivity....3-91
3.19.1 Alternative A (No Action)....3-91
3.19.2 Alternative B (CREP Agreement)....3-91
3.20 Irreversible and Irretrievable Commitments of Resources 3-91
3.20.1 Alternative A (No Action)....3-91
3.20.2 Alternative B (CREP Agreement)....3-91

Chapter 4.0 List of Preparers....4-1

Chapter 5.0 List of Agencies and Persons Consulted and/or Provided Copies of this Environmental Assessment....5-1

Chapter 6.0 References....6-1

Appendix A: FSA Handbook CPs.... A-1

Appendix B: Federal Laws and Regulations.... B-1

Appendix C: Public Involvement.... C-1

Appendix D: CREP Enrollment Worksheet.... D-1

Appendix E: Bird Habitat Conservation Areas and Habitat Priority Areas.... E-1

Appendix F: State Plant Species of Concern....F-1

Appendix G: Detailed Analysis of Effects on Water Quantity G-1
Appendix H: Summary of Comments Received on the Draft PEA H-1

List of Figures

Figure 1.1. Map of area in Idaho eligible for CREP designation....1-2

Figure 1.2. The Eastern Snake River Plain Aquifer (ESPA)....1-4

Figure 3.1. Location of Idaho's GWMAs and CGWAs....3-10

Figure 3.2. Recharge and discharge to the ESPA. 3-11
Figure 3.3. Nitrate Priority Areas of Idaho....................3-17
Figure 3.4. Change in groundwater level in the ESPA between 1980 and 1998....................3-21
Figure 3.5. Discharge from the ESPA at Thousand Springs (Kimberly to Bliss reach). 3-22
Figure 3.6. Location of hydrologically connected reaches of the Snake River. 3-29
Figure 3.7. Snake River streamflow during irrigation season and non-irrigation season. 3-34
Figure 3.8. Number of domestic and irrigation wells deepened or replaced each year in counties located in CREP project area. 3-41
Figure 3.9. Statewide program sites with nitrate concentrations greater than five mg/L. 3-43
Figure 3.10. Counties with severe wind erosion (5.1 to 10.1 tons/acre/year)....................3-46
Figure 3.11. Counties with serious water erosion problems (2.8 to 10.2 tons/acre/year). 3-47
Figure 3.12. CREP project area wetlands....................3-52
Figure 3.13. Counties in the CREP project area with agriculture dominant economies. 3-71
Figure 3.14. Important archaeological sites of the ESPA and nearby areas. 3-76
Figure E-1. Habitat Priority Areas and Bird Habitat Conservation Areas in the Idaho CREP project area. G-1
Figure G-1. Model estimated cumulative storage in the ESPA....................G-7
Figure G-2. Location map of springs in the Milner to King Hill Reach of the Snake River. G-8
Figure G-3. Devil’s Washbowl average daily discharge. G-9
Figure G-4. Blue Lake Spring average daily discharge. G-9
Figure G-5. Box Canyon daily average discharge. G-10
Figure G-6. Measured groundwater levels in an unused well located in American Falls GWMA. G-11
Figure G-7. Measured groundwater levels in an active irrigation well near Minidoka, ID....................G-11
Figure G-8. Measured groundwater levels in an unused well located in the MHA. G-12
Figure G-9. Measured groundwater levels in an active irrigation well located in the MHA. G-12
Figure G-10. Measured groundwater levels in a domestic well located in Raft River. G-13
Figure G-11. Measured groundwater levels in an active irrigation well located in Raft River. G-13
Figure G-12. Measured groundwater levels in an unused irrigation well located in Oakley Fan....................G-14
Figure G-13. Measured groundwater levels in an active irrigation well located in Oakley Fan. G-14
Figure G-14. Benefits appearing at river for above-Milner aggregated reaches. G-17
Figure G-15. Benefits appearing at river for below-Milner aggregated reaches....................G-17
Figure G-16. Cumulative benefits of CREP appearing at the Snake River. G-18

List of Tables

Table 1.1. Special management areas in the Idaho CREP area. 1-6
Table 2.1. 2002 Agricultural chemical use summary in Idaho and CREP counties....................2-2
Table 2.2. Comparison of achievement of project objectives of Alternatives A and B. 2-11
Table 2.3. Comparison of the effects of alternatives A and B on the relevant resource issues. 2-13
Table 3.1. Land ownership within the Idaho CREP project area. 3-2

Table 3.2. Agricultural products of the State of Idaho....3-5

Table 3.3. Acreage of farms with irrigation in the CREP project area. 3-6

Table 3.4. Top five Idaho counties in agricultural sales in 2002....3-7

Table 3.6. Critical Groundwater Areas and Groundwater Management Areas. 3-13

Table 3.7. Summary of NPAs in the CREP area. 3-16

Table 3.8. Summary of pesticide and VOCs detections in CREP counties....3-18

Table 3.9. Summary of major dams and reservoirs in CREP project area....3-27

Table 3.10. Impaired rivers and streams of Idaho CREP project area. 3-30

Table 3.11. Impaired lakes of the Idaho CREP project area. 3-31

Table 3.12. Description of the State protected reaches in the CREP project area....3-32

Table 3.12. 2003 MCL violations summary for CREP counties....3-40

Table 3.13. Types of wetlands on Federal and non-Federal lands and water areas in Idaho in 1997...3-51

Table 3.14. Idaho 1997 palustrine wetland estimates of non-Federal land and water areas by land cover/use 3-51

Table 3.15. Land ownership of wetlands within the CREP project area....3-52

Table 3.16. Summary of effects of CPs on floodplain functions. 3-56

Table 3.17. Idaho wildlife species of special concern....3-60

Table 3.18. Federally listed T&E wildlife species....3-61

Table 3.19. Farm operators by race....3-67

Table 3.20. Poverty information for counties in the Idaho CREP area, 2002. 3-68

Table 3.21. Acreages of land enrolled in NRCS and FSA conservation programs in CREP counties. 3-80

Table 3.22. Summary of cumulative effects by resource. 3-84

Table 4.1. List of preparers. 4-1

Table 5.1. Partial list of agencies and offices consulted during the course of the analysis. 5-1

Table C-1. Timetable of Idaho CREP working group (July 2004 to January 2005)....C-1

Table C-2. Organizations involved with the Idaho CREP working group. C-2

Table F-1. State plant species of concern. F-1

Table G-1. Distribution of CREP acres for each model scenario....G-15

Table G-2. Summary of CREP benefits to Snake River. G-16

THIS PAGE INTENTIONALLY LEFT BLANK.

Acronyms and Abbreviations

BHCA	Bird Habitat Conservation Area
BIA	U.S. Bureau of Indian Affairs
BLM	U.S. Bureau of Land Management
BMP	Best Management Practice
BOR	U.S. Bureau of Reclamation
bu.	bushel
CEQ	Council on Environmental Quality
cfs	cubic feet per second
CGWA	Critical Groundwater Area
CP	Conservation Practice
CRA	Common Resource Area
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CSP	Conservation Security Program
CWA	Clean Water Act
cwt.	Hundred Weight
DOE	Department of Energy
EE	Environmental Evaluation
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EQIP	Environmental Quality Incentive Program
ESA	Endangered Species Act
ESPA	Eastern Snake Plain Aquifer
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FOTG	Field Office Technical Guide
FRPP	Farm and Ranch Lands Protection Program
FSA	Farm Service Agency
FWS	U.S. Fish and Wildlife Service
gpm	gallons per minute
GRP	Grassland Reserve Program
GWMA	Groundwater Management Area
HUC	Hydrologic Unit Code
IBAs	Important Bird Areas
IBIS	Idaho Bird Inventory and Survey
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDWR	Idaho Department of Water Resources
INL	Idaho National Laboratory
ISDA	Idaho State Department of Agriculture
IWRB	Idaho Water Resource Board
lbs.	pounds
MCL	Maximum Contaminant Levels
mg/L	milligrams per liter
MHA	Mountain Home Aquifer
MSFW	Migrant and Seasonal Farm Worker
NAWQA	National Water-Quality Assessment Program

NECM	National Environmental Compliance Manager
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NGO	Nongovernmental Organization
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPA	Nitrate Priority Area
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRI	National Resources Inventory
PEA	Programmatic Environmental Assessment
PEIS	Programmatic Environmental Impact Statement
PWS	Public Water System
PWSS	Public Water System Supervision
ROD	Record of Decision
SDWA	Safe Drinking Water Act
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Officer
SSA	Sole-Source Aquifer
SWAP	Source Water Area Protection
T&E	Threatened and Endangered
TCP	Traditional Cultural Property
THPO	Tribal Historic Preservation Office
TMDL	Total Maximum Daily Load
USDA	U.S. Department of Agriculture
USFS	United States Forest Service
USGS	U.S. Geologic Service
VOCs	Volatile Organic Compounds
WHIP	Wildlife Habitat Incentives Program
WHPP	Wellhead Protection ProgramWellhead Protection Program
WRP	Wetlands Reserve Program
WSA	Wilderness Study Area

Chapter 1.0 Purpose of and Need for Action

1.1 Introduction

1.1.1 Overview of the Farm Service Agency's Implementation of the Idaho Conservation Reserve Enhancement Program (CREP)

The U.S. Department of Agriculture (USDA) and the State of Idaho propose to implement the Idaho Conservation Reserve Enhancement Program (CREP), administered by USDA's Farm Service Agency (FSA). Figure 1.1 shows the location of the Idaho CREP. It is anticipated that the initial enrollment period would last for three years following the signing of the agreement in 2005.

CREP is a component of FSA's Conservation Reserve Program (CRP), which targets the specific environmental needs of each State. CRP was established under subtitle D of the Food Security Act of 1985. The purpose of CRP is to cost-effectively assist agricultural owners and operators in conserving and improving soil, water, and wildlife resources on their farms and ranches. Highly erodible and other environmentally sensitive acreage, normally devoted to the production of agricultural commodities, is converted to long-term resource conservation cover. CRP participants enter into contracts for periods of 10 to 15 years in exchange for annual rental payments and cost-share assistance for installing certain conservation practices (CPs).

The initial goal of CRP was to reduce soil erosion on highly erodible cropland. Subsequent amendments of the CRP regulations have made certain cropland and pastureland eligible for CRP based on their benefits to water quality and wildlife habitat. The environmental impact of this program shift was studied in the 1996 Environmental Assessment for Selected Amendments of the Conservation Reserve Program and the 2002 Programmatic Environmental Impact Statement (PEIS), and previous analysis referenced in that document. The Farm Security and Rural Investment Act of 2002 authorized CRP through 2007 and raised the overall enrollment cap to 39.2 million acres.

In 1997, the Secretary of Agriculture initiated CREP as a joint Federal-State partnership that provides agricultural producers with financial incentives to install FSA-approved CPs. CREP is authorized pursuant to the 1996 Federal Agriculture Improvement and Reform Act. CREP agreements are done as partnerships between USDA, State and/or tribal governments, other Federal and State agencies, environmental groups, wildlife groups, and other non-government organizations (NGOs). This voluntary program uses financial incentives to encourage farmers and ranchers to enroll in contracts of 10 to 15 years in duration to remove lands from agricultural production. Through CREP, farmers can receive annual rental payments and cost-share assistance to establish long-term, resource conserving covers on eligible land. The primary objectives of CREP are to:

- Coordinate Federal and non-Federal resources to address specific conservation objectives of a State (or Tribal) government and the nation in a cost-effective manner;
- Improve water quality, erosion control, and wildlife habitat related to agricultural use in specific geographic areas; and
- Potentially increase water availability and quantity to the project area and surrounding areas.

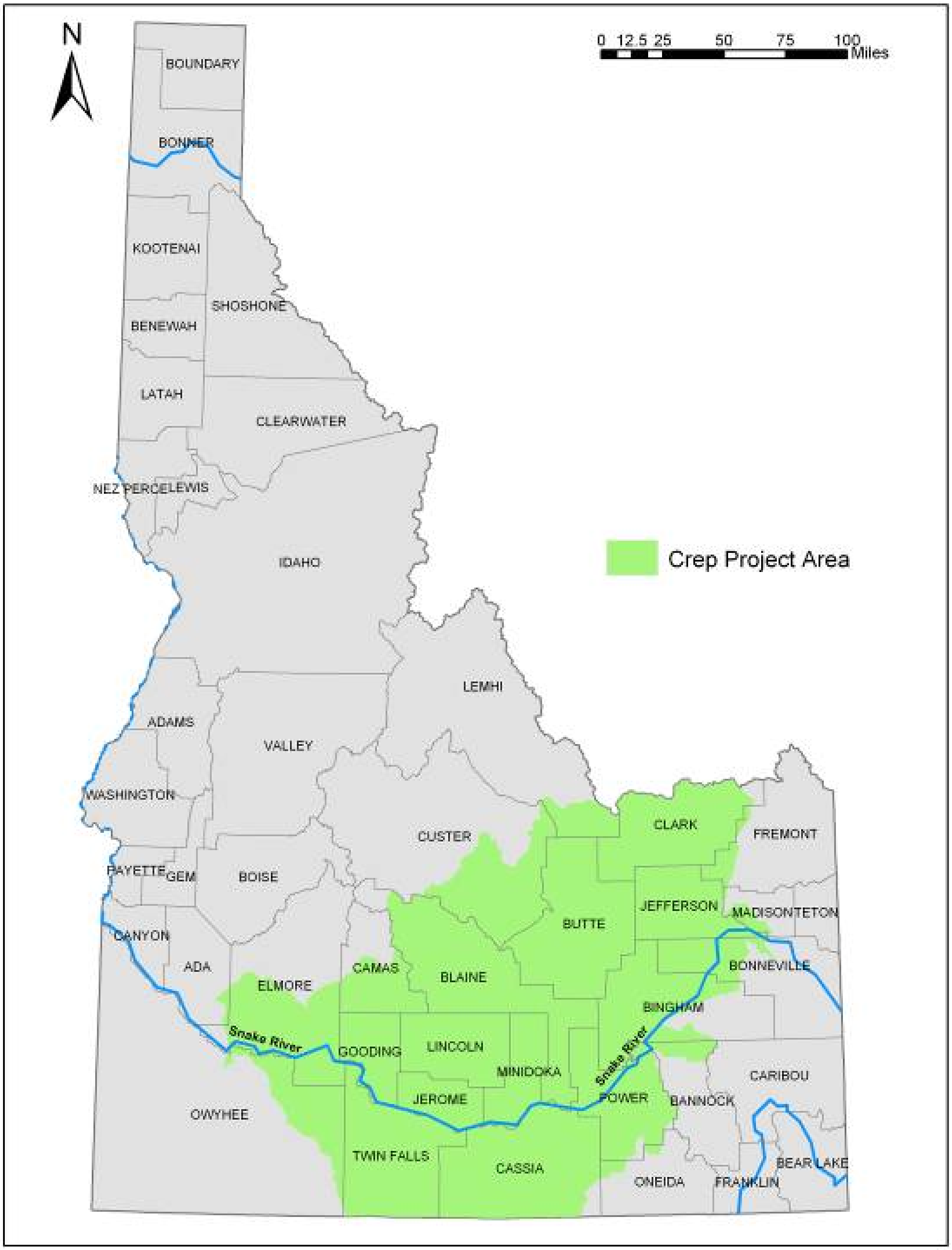


Figure 1.1. Map of area in Idaho eligible for CREP designation.

National Environmental Policy Act (NEPA) compliance for CRP included preparing a Final PEIS. The Notice of Availability for the PEIS was published in the Federal Register on January 17, 2003 and the Record of Decision (ROD) was published on May 8, 2003. The ROD detailed FSA's implementation of the re-authorized CRP according to the provisions of the Farm Security and Rural Investment Act of 2002, Public Law 107-121 (2002 Farm Bill).

This Programmatic Environmental Assessment (PEA) has been conducted in accordance with the NEPA, as amended 42 USC 4321 – 4347, the NEPA implementing regulations of the Department of Agriculture, 7 CFR Part Ib, and the FSA NEPA implementation procedures found in 7 CFR Part 799: Environmental Quality and Related Environmental Concerns—Compliance with the National Environmental Policy Act. The National Historic Preservation Act (NHPA) compliance and other cultural resource considerations also are incorporated into FSA's NEPA process. This PEA is tiered off the CRP PEIS as authorized by Council on Environmental Quality (CEQ) regulations 40 CFR 1502.20 and addresses CREP at the State of Idaho. This PEA does not address individual site-specific impacts which will be evaluated when the conservation plan is completed.

1.1.2 Purpose of Using an Environmental Assessment to Analyze this Action

A PEA allows FSA to reduce paperwork and identify potential impacts at a state level so that the implementation personnel can be aware of them at a site-specific level. Regulations promulgated by the CEQ relevant to this project state include:

Sec. 1500.4 Reducing paperwork.

> (i) Using **program**, policy, or plan environmental impact statements and **tiering** from statements of broad scope to those of narrower scope, to eliminate repetitive discussions of the same issues (Secs. 1502.4 and 1502.20).

Sec. 1502.4 Major Federal actions requiring the preparation of environmental impact statements.

> (b) Environmental impact statements may be prepared, and are sometimes required, for **broad Federal actions** such as the adoption of new agency programs or regulations (Sec. 1508.18). Agencies shall prepare statements on broad actions so that they are relevant to policy and are timed to coincide with meaningful points in agency planning and decision making.
>
> (c) When preparing statements on broad actions (including proposals by more than one agency), agencies may find it useful to evaluate the proposal(s) in one of the following ways:
>
> 1. Geographically, including actions occurring in the same general location, such as body of water, region, or metropolitan area.
>
> 2. Generically, including actions with relevant similarities such as common timing, impacts, alternatives, methods of implementation, media, or subject matter.
>
> 3. By stage of technological development including Federal or Federally assisted research, development or demonstration programs for new technologies which, if applied, could significantly affect the quality of the human environment. Statements shall be prepared on such programs and shall be available before the program has reached a stage of investment or commitment to implementation likely to determine subsequent development or restrict later alternatives.

FSA has a framework in place to ensure NEPA compliance at the field level, where site-specific environmental evaluations (EE) would take place prior to implementing a CREP contract. The review would consist of completing a site-specific EE, which would tier off of this PEA and the 2002 CRP PEIS. In some cases, site-specific EAs may be completed if indicated by the EE. If a site-specific EA is completed, public involvement would occur.

1.2 Purpose of the Proposed Action

The purpose of Idaho CREP is to improve water quality and quantity, wildlife, threatened and endangered (T&E) species habitat, and prevent soil erosion.

The proposed CREP is one component of the "Strawman Proposal," a state-wide water management plan. The CREP role in this proposal is to reduce demand on the scarce water supply of southeastern Idaho, thereby preserving the agricultural economy and protecting the Eastern Snake River Plain Aquifer (ESPA), a sole source aquifer (SSA). The specific goals of CREP are to reduce groundwater use so that aquifer levels, spring flows, and reach gains of the ESPA are stabilized or increased. Other conservation and environmental benefits include reduced energy demand, enhanced water quantity and quality, reduced soil erosion, improved fish and wildlife habitat, and decreased demand on water in nearby aquifers. In addition to the ESPA, the proposed project area has three other major segments:

- Cinder Cone Butte Critical Groundwater Area (CGWA) and Mountain Home Groundwater Management Area (GWMA);
- Raft River and Oakley Fan CGWAs; and
- Surface Drainages Tributary to the ESPA (Proposal 2005).

1.3 Need for the Proposed Action

1.3.1 Eastern Snake River Plain Aquifer

The ESPA, extending from Ashton, Idaho to King Hill, Idaho, is one of the largest aquifers in the United States (Figure 1.2). It covers 10,800 square miles in south central Idaho and comprises approximately 13 percent of the State's total land area (Proposal 2005).

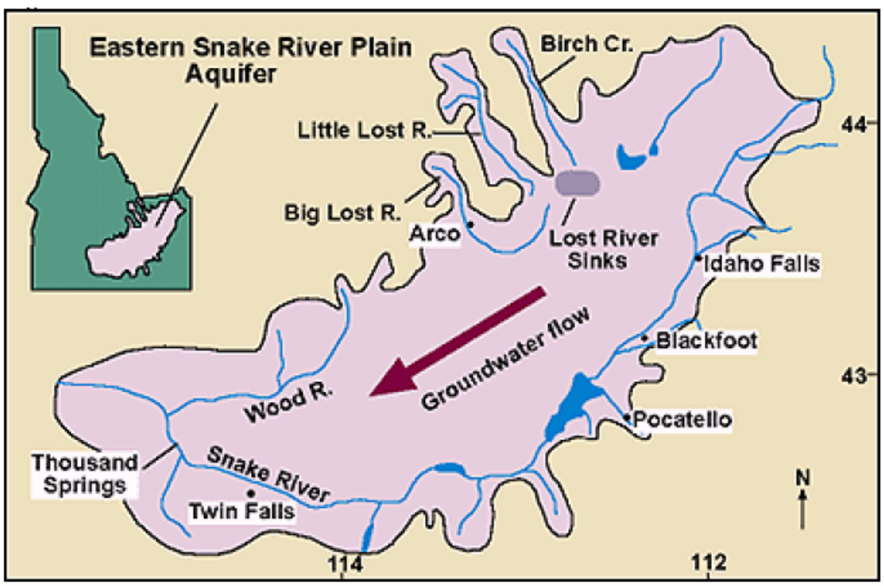


Figure 1.2. The Eastern Snake River Plain Aquifer (ESPA).
Source: Proposal 2005.

As one of the most productive aquifers in the nation, the ESPA is of vital importance to the area. The arid climate of the southeastern Idaho places high demands on surface water in the rivers and groundwater in the aquifers. The Snake River produces over 25 million megawatt hours of electricity in an average year and plays a major role in agricultural production by irrigating over 3 million acres of land in Idaho. Also, the ESPA is a SSA, fulfilling the municipal needs of 2 million people before reaching the Columbia River (Slaughter n.d.).

Agriculture in the arid climate of southern Idaho has long relied on irrigation from groundwater withdrawals. However, due to hydrologic connectivity, groundwater pumping for irrigation has negatively impacted surface flows in the Snake River, leaving an inadequate supply for hydroelectric power plants to meet demands. This conflict of water use led to a heated judicial battle, ultimately resulting in the Swan Falls Agreement. The agreement maintained the full appropriation of instream flow to Idaho Power, while allowing upstream rights to maintain conditional use (Proposal 2005).

The doctrine of Prior Appropriation (see box) is Idaho's guiding policy for water allocation in times of scarcity by Article 15 of the Idaho Constitution (Idaho 2005a). The doctrine administers water rights in a tiered system, advocating priority rights to senior appropriators. Under this system, a senior water user can file a call for all junior water users to shut off water delivery, ensuring adequate water supply entitled to a senior water right holder. Five years of consecutive drought conditions resulted in a curtailment order of 1,300 junior water rights in the Magic Valley in early 2004**,** affecting most groundwater users in the Thousand Springs area. Under this order, the junior appropriators would have been required to idle approximately 113,000 acres of land resulting in an estimated $750 million dollar impact on the local economy (Proposal 2005). However, the curtailment was avoided by the implementation of the Eastern Snake Plan Aquifer Mitigation, Recovery and Restoration Agreement (ESPA Agreement) in March 2004. The agreement postponed all delivery calls by senior water users for one year in exchange for implementation of short-term mitigation measures and the development of long-term solutions to the water supply problem of the ESPA.

The Prior Appropriation Doctrine

In Idaho, all persons, corporations, and municipalities have a constitutional right to use water for beneficial purposes. The allocation of water rests upon the principle that "first in time is first in right."

Thus, the first person to use water (called a SENIOR APPROPRIATOR) acquires a right, or a PRIORITY, to use of that water against later users (called JUNIOR APPROPRIATORS).

IDWR is charged with the general administration of water rights, and WATERMASTERS administer the allocation of water on a particular stream.

In times of shortage, appropriators with the oldest priority dates can make a CALL on the water, which means that junior appropriators are required to CURTAIL their water use so that the water remaining in the stream will reach the senior users. In times of shortage, watermasters, under the direction of IDWR, may shut off water users in inverse order of priority.

Another example of the conflict caused by a limited water supply is the Nez Perce Water Rights Settlement. As part of the Snake River Basin Adjucation process, by which water rights were legally reviewed, the Nez Perce Tribe placed claims to instream flow rights in the Snake River to protect its treaty-based fishery. In this case, upstream withdrawals were negatively impacting fish habitat, and in turn, the economy of the Nez Perce Tribe. After much mediation, the Nez Perce Water Rights Settlement Agreement, approved in May 2004, provided the framework for a long-term public water policy and ensured that trust responsibilities for the Nez Perce Tribe were met (IDWR 2005d).

The increasing demands on limited water supplies require innovative water management and conservation practices in order to reduce conflicts between appropriators and maintain economic viability. The Idaho CREP is one component of the long-term solutions to accomplish these goals (NRIC 2005). The intent is that CREP will act as a water conservation program to reduce demand on the scare water supply, thereby preserving the agricultural economy of southeastern Idaho, as well as protecting the ESPA and providing conservation and environmental benefits such as enhanced water quality, reduced soil erosion, and improved fish and wildlife habitat (Proposal 2005).

1.3.2 Critical Groundwater Areas and Groundwater Management Areas

In addition to the ESPA, several other aquifers within the project area have been identified for their insufficient groundwater supply. There are two designations: critical groundwater areas (CGWAs) and groundwater management areas (GWMAs). A CGWA is a groundwater basin designated by the Idaho Department of Water Resources (IDWR) as not having sufficient groundwater to provide a reasonably safe supply for irrigation (or other uses in the basin) at the then current rates of withdrawal (IDWR 2005a). A GWMA is a groundwater basin designated by IDWR to be approaching the conditions of a critical groundwater area. The following areas are included in the CREP proposal:

- Cinder Cone Butte CGWA
- Oakely Fan CGWAs
- Blue Gultch CGWA
- Mountain Home GWMA
- Big Wood GWMA
- Banbury Hot Springs GWMA
- Twin Falls GWMA

Aquifers in the project area are recharged by precipitation and irrigation water that is withdrawn from surface and groundwater in the area. In addition, there are 60 separate streams or drainages that connect to or deliver water to the Eastern Snake River Plain. The largest include:

- Big Lost River Drainage
- Little Lost River Drainage
- Big Wood River Drainage

In the counties of the CREP area, there are 352 places listed on the National Register of Historic Places (ISHS 2005). Table 1.1 lists other unique natural features and specially designated lands located in the project area.

Table 1.1. Special management areas in the Idaho CREP area.

Areas of Critical Environmental Concern	
Big Beaver/Little Beaver Crucial Elk Range	Bowen Canyon Bald Eagle Sanctuary
Box Canyon/Blueheart Springs	Elk Mountain Crucial Elk Winter Range
Lake Creek	North Menan Butte
Playas	Sand Dunes
Sandpoint Paleontologic	Snake River
Summit Creek Exclosure	Substation Tract Relic Vegetation
Thousand Springs	Vineyard Creek
Department of Energy	
Idaho National Laboratory	
Native American Lands	
Fort Hall Reservation	
National Park Service Areas	
City of Rocks National Reserve	Craters of the Moon Wilderness
Craters of the Moon National Monument	Hagerman Fossil Beds National Monument

Nature Conservancy Preserves	
Big Wood River Area	Hemingway Preserve
Silver Creek Preserve	Stapp-Soldier Creek Preserve
Thousands Springs Ranch Preserve	
National Wildlife Refuges	
Camas	Minidoka
Research Natural Areas	
Basin Gulch	Big Juniper Kipuka
Copper Mountain	Grassland Kipuka Natural Area
Gibson Jack Creek	Goose Creek Mesa
Iron Bog	Jim Sage Canyon
Lake Creek	Meadow Canyon
Reid Canal Island	Sand Kipuka
St. Anthony Sand Dunes	Webber Creek
Research Natural Area/Area of Critical Environmental Concern	
Pecks Canyon	Summit Creek Exclosure
State Parks	
Bruneau Sand Dunes State Park	Malad Gorge State Park
Wildlife Management Areas	
Billingsley Creek	Carey Lake
C. J. Strike	Hagerman
Hill City Marsh	Market Lake
Mud Lake	Niagara Springs
Sterling	
Other Natural Areas	
Sawtooth National Recreation Area	Salmon Falls Creek Outstanding Natural Area
Trail Creek Canyon Limber Pine Special Interest Area	
National Natural Landmarks	
Big Southern Butte	Great Rift System
Hagerman Fauna Sites	Hell's Half Acre Lava Field
Menan Buttes	Niagara Springs
National Forests	
Sawtooth National Forest	Challis National Forest
Caribous-Targhee National Forest	
National Historic Landmarks	
Camas Meadows Battle Sites	Experimental Breeder Reactor No. 1
Fort Hall	Lemhi Pass

1.4 Objectives of the Idaho CREP

In a general sense, the Idaho CREP would provide financial and technical assistance to eligible farmers/ranchers in Idaho who enroll their land and implement FSA CPs. Specifically, the CREP program seeks to achieve, to the extent practicable, the following objectives. Each objective is accompanied by an indicator to help in determining if the objective has been met.

1.4.1 Objective #1: Reduce the demand of water in the ESPA.

Indicators:

- Enrollment of up to 100,000 acres in the Idaho CREP area.
- Reduce demand by 200,000 acre-feet annually.
- Implementation of FSA CPs 2, 4D, 12, 22, and 25.

1.4.2 Objective #2: Ensure a long-term, reliable water supply from the Mountain Home Aquifer.

Indicators:

- Enrollment of up to 100,000 acres in the Idaho CREP area.
- Reduce demand by 30,000 acre-feet annually.
- Implementation of FSA CPs 2, 4D, 12, 22, and 25.

1.4.3 Objective #3: Recharge the aquifers of the Oakley Fan Critical Groundwater Areas.

Indicators:

- Enrollment of up to 100,000 acres in the Idaho CREP area.
- Implementation of FSA CPs 2, 4D, 12, 22, and 25.

1.4.4 Objective #4: Provide additional flow of the Snake River in the Thousand Springs Reach.

Indicators:

- Enrollment of up to 100,000 acres in the Idaho CREP area.
- Conserve up to 200,000 acre-feet of water annually within the ESPA.
- Water quality improvement
- Implementation of FSA CPs 2, 4D, 12, 22, and 25.

1.4.5 Objective #5: Improve wildlife habitat.

Indicators:

- Enrollment of up to 100,000 acres in the Idaho CREP area.
- Implementation of FSA CPs 2, 4D, 12, 22, and 25.

These project objectives can be reached through the implementation of the five CPs proposed for implementation by the State of Idaho. The implementation of these practices throughout the proposed CREP project area is expected to make a significant contribution to achieving the objectives of CREP. Each CP is discussed in detail in Section 2.2.2. Appendix A of this PEA contains the full description and requirements of each practice from the FSA Handbook.

1.5 Area Covered by Idaho CREP

The Idaho CREP area covers approximately 17,488,186 acres of these acres 2,214,541 acres would be eligible for enrollment (or 12.6 percent of the project area). The proposed project area includes all or portions of 21 counties and is covered by 16 Hydrologic Unit Codes (HUCs). Areas of the State were divided into Hydrologic Units and are assigned a HUC represent part or all of a surface drainage basin, a combination of drainage basins, or a distinct hydrologic feature (IDEQ 2003). The majority of the land proposed for inclusion in the project is in 8 USDA-NRCS Common Resource Areas (CRAs). The counties included in the Idaho CREP proposed area are:

Bannock	Clark	Lemhi
Bingham	Custer	Lincoln
Blaine	Elmore	Madison
Bonneville	Fremont	Minidoka
Butte	Gooding	Owyhee
Camas	Jefferson	Power
Cassia	Jerome	Twin Falls

1.6 Relevant Laws, Regulations, Programs and Other Documents

CREP requires compliance with a wide range of laws, regulation, and Executive Orders (EOs). Included in this section is a list of Federal and State laws and regulations, and EOs applicable to CREP. A more detailed description of Federal laws and regulations is included in Appendix B.

It is anticipated that implementation of CREP would complement existing conservation programs, thus a description of existing Federal and State conservation programs is also included.

1.6.1 Federal Laws, Regulations, and Other Documents

Relevant Federal laws and regulations that may be applicable to implementation of CREP include the following:

- National Environmental Policy Act (NEPA) of 1969
- National Historic Preservation Act (NHPA) of 1966
- Clean Water Act (CWA) of 1972
- Endangered Species Act (ESA) of 1973
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) of 1947
- Food Security Act (FSA) of 1985
- Safe Drinking Water Act (SDWA) of 1974
- Sustainable Fisheries Act (SFA) of 1996
- EO 11988: Floodplain Management (g) Floodplains and Wetlands
- EO 11990: Protection of Wetlands
- EO 13186: Responsibilities of Federal Agencies To Protect Migratory Birds
- Comprehensive State Groundwater Protection Program
- CRP Programmatic Environmental Impact Statement
- Idaho State Laws Affecting Agriculture

The Idaho Department of Environmental Quality (IDEQ) administers State and Federal laws pertaining to air and water pollution, drinking water, solid and hazardous waste, and the nonpoint source pollution program (IDEQ 2005a). Water allocation, conservation, and flood plain management are administered by the Idaho Department of Water Resources (IDWR) (IDWR 2005a). Idaho Department of Fish and Game (IDFG) enforces State laws and regulations protecting wildlife and endangered species (IDFG 2005a).

1.6.2 State Laws, Regulations, and Other Documents

Individual CREP projects would need to ensure compliance with the following State laws, where necessary:

Appropriation of Water -- General Provisions (Idaho Code §§42-101 *et seq.*)

The Doctrine of Prior Appropriation was adopted as guiding policy for Idaho's water allocation in times of scarcity by Article 15 of the Idaho Constitution (Idaho 2005a) and upheld by numerous judicial decisions (Kane 2005). This principle is also acknowledged by the Idaho legislature in the Appropriation of Water section of the Idaho Statutes.

The Prior Appropriation doctrine establishes that the first to take water out of the stream and put it to beneficial use has a senior right. Those who follow have junior rights, and in a time of scarcity the senior right has the ability legally to call a curtailment of the junior water right's use to ensure fulfillment of the senior's water right (Hurlbutt 1999). The Idaho Statue also designates that water must be put to "some useful or beneficial purpose" or the water right will be forfeited (Idaho 2005a).

Water Quality (Idaho Code §§ 39-3601 *et seq.*)

The water quality program in Idaho is managed by the Department of Health and Welfare's Division of IDEQ. IDEQ holds the primary responsibility for implementation and adoption of water quality standards within the State. According to the Idaho legislature, the water policy of the State includes the following:

- Protect surface water by monitoring and controlling water pollution;
- Support and aid technical and planning research leading to the control of water pollution;
- Provide financial and technical assistance to municipalities, soil conservation districts, and other agencies in the control of water pollution.

IDEQ designates instream beneficial uses of surface waters by determining the beneficial use which the water body can reasonably be expected to support. Generally, Idaho has an antidegradation policy, meaning all existing instream beneficial uses and water qualities will be protected (NASDA 1996 and Idaho 2005a).

Waste Disposal and Injection Wells *(*Idaho Code §§ 42-3901 *et seq*.)

Idaho law declares that groundwater is a public resource which must be protected against unreasonable contamination or deterioration of quality in order to protect the groundwater for diversion to beneficial uses. Construction of injection wells used for the injection of hazardous wastes or radioactive wastes into or above a drinking water source is prohibited. In addition, an injection through an existing injection well into or above a drinking water source is prohibited (NASDA 1996 and Idaho 2005a).

Groundwater Recharge (Idaho Code §§ 42-4201 *et seq.*)

The Idaho provisions dealing with groundwater recharge are for the purpose of conservation, development, augmentation, and optimum use of the water resources of the State. As a result, water projects and water use that will augment groundwater basin recharge are encouraged by the State, especially those projects which recharge water basins through storage of unappropriated waters in underground aquifers. Prior water rights will be protected, and IDEQ can issue licenses and order reductions in the amount of water that may be diverted for recharge purposes (NASDA 1996 and Idaho 2005a).

Ground Water District Act (Idaho Code §§ 42-5201 *et seq.*)

Idaho allows for the creation of special groundwater management districts for the purpose of financing the repair or abandonment of wells in aquifers which have experienced or are experiencing declines in water level or water pressures because of flow, leakage, and waste from improper construction, maintenance, and operation of wells drilled into the aquifer. Groundwater districts may be established in Idaho when 50 or a majority of the groundwater users in a particular geographic area, whichever is less, desire to organize a groundwater district and they propose the organization of the district and the election of an initial board of directors (NASDA 1996 and Idaho 2005a).

Ground Water Management Districts (Idaho Code §§ 42-5101 *et seq.*)

A Groundwater Management District's objective is to address declining water levels in aquifers. A Groundwater Management District is established by petition to the director of the IDWR. The district elects a board and determines assessments.

Idaho Environmental Protection and Health Act (Idaho Code §§ 39-101 *et seq.*).

In addition to other methods of protecting groundwater, Idaho has implemented the Groundwater Quality Plan to maintain the existing high quality of groundwater and to satisfy existing and projected beneficial uses, including drinking water, agricultural, industrial, and aquacultural water supplies. All groundwater must be protected as a valuable public resource against unreasonable contamination or deterioration. If possible, the quality of degraded groundwater will be restored to support identified beneficial uses. The law is intended to prevent contamination of groundwater from point and nonpoint sources of contamination to the maximum extent practical (NASDA 1996 and Idaho 2005a).

Ground Water Quality Rule (IDAPA 58.01.11)

The Ground Water Quality Rule gives the Board of Environmental Quality the authority to promulgate the Ground Water Quality Rule pursuant to Sections 39-105, 30-107, 39-120, and 39-126, Idaho Code. The authority to formulate and adopt rules as are necessary and feasible to protect the environment and the health of the citizens of the State is vested in the Director and Board pursuant to §30-105 and §39-107, Idaho Code. Under §39-120, Idaho Code, the Board is authorized to adopt, by rule, ambient groundwater quality standards. Under §39-126, Idaho Code, all State agencies shall incorporate the Ground Water Quality Plan, adopted by the legislature, in the administration of their programs and are granted authority to promulgate rules to protect groundwater quality as necessary to administer such programs. Under the Idaho Water Quality Standards and Wastewater Treatment Requirements IDAPA 58.01.02, pursuant to §39-105 and §39-3601 *et seq*., Idaho Code, the Director is authorized to identify beneficial uses, establish standards, and identify a feedback loop process as the control strategy for nonpoint source control (ISCC and IDEQ 2003).

Idaho Fertilizer Act of 2000 (Idaho Code §§ 22-601 *et seq.*)

The Idaho Department of Agriculture (ISDA) regulates the handling, transportation, storage, display, distribution, and disposal of fertilizers and their containers (NASDA 1996 and Idaho 2005a).

Pesticides and Chemigation (Idaho Code §§ 22-3401 *et seq.*)

Generally, any pesticide which is distributed within the State must be registered with ISDA, and registration must be renewed annually. Additionally, a professional pesticide applicator must have a professional applicator's license from ISDA.

Chemigation, which includes any process where chemicals are added to irrigation water applied to land or crop or both through an irrigation system, may not be engaged in without first obtaining a license to do so from the ISDA (NASDA 1996 and Idaho 2005a).

Soil and Plant Amendment Act of 2001 (Idaho Code §§ 22-2201 *et seq.*)

The Soil and Plant Amendment Act, enforced by the Department of Agriculture, regulates the labeling, registration, and sale of soil or plant amendments.

Plant amendments include any natural or synthetic substance applied to plants or seeds which are intended to improve germination, growth, yield, product quality, reproduction, flavor or other desirable characteristics of plants. Plant amendments do not include commercial fertilizers, soil amendments, agricultural liming materials, animal and vegetable manures, pesticides, and other materials which may be exempted by ISDA.

Soil amendments include any aggregant or additive, any organic chemical substance, chemically or physically modified natural substance, naturally occurring substance, manufacturing byproducts, mixed or unmixed, applied to soil and intended to improve seed germination, plant growth, yield, product quality, reproduction, flavor, or other desirable characteristics of plants. The term also includes any material which is represented as having a primary function of: enhancing, changing or modifying soil microorganism reproduction, activity or population; forming or stabilizing soil aggregants in soil to which it is to be applied and thereby improving the resistance of such soil to the slaking action of water; increasing the soil's water and air permeability or infiltration; improving the resistance of the soil surface to crusting; improving ease of soil cultivation; or otherwise favorably modifying the structural or physical properties of soil. Soil amendments do not include commercial fertilizers, plant amendments, agricultural liming materials, gypsum, animal and vegetable manure, pesticides and other material which may be exempted by ISDA (NASDA 1996 and Idaho 2005a).

Fish and Game Commission (Idaho Code §§ 36-101 *et seq.*)

Generally, all wildlife, including wild animals, birds, and fish, within the State of Idaho are considered property of the State and may only be captured or taken under conditions and circumstances prescribed by the State. The Idaho Fish and Game Commission also regulates the sale, purchase, possession, transportation, and storage of wildlife and wildlife parts. In addition, Idaho regulates the waste of wildlife by making it illegal to allow or cause the waste of any game bird, game animal, or game fish, or the portions thereof that are usually eaten by humans. It is also illegal to capture or kill any game animal other than carnivores, except black bear, and detach or remove from the carcass only the head, hide, antlers, horns, or tusks and leave the carcass to waste. However, livestock owners or their employees are exempt when protecting livestock (NASDA 1996 and Idaho 2005a).

Local Land Use Planning Act (Idaho Code §§ 67-6501 *et seq.*)

Agricultural operations frequently are controlled by local planning or zoning board activities. Local governments may take part in farmland preservation through land use planning. Land uses may be planned so as to encourage the protection of prime agricultural, forestry, and mining lands for production of food, fiber, and minerals. Environmental protection may be a component of the land use plan (NASDA 1996 and Idaho 2005a).

Uniform Conservation Easement Act (Idaho Code §§ 55-2101 *et seq.*)

Many states have passed laws allowing preservation or conservation of agricultural land through the use of easements. When easements are used for these purposes, the law frequently has certain requirements relating to the creation, compensation, and enforcement of the easement. In Idaho, the Uniform Conservation Easement Act allows real property to be protected to insure its availability for agricultural, forest, recreational, or open space use, for protecting natural resources, maintaining or enhancing air or water quality, or preserving the historical, architectural, archaeological, or cultural aspects of real property (NASDA 1996 and Idaho 2005a).

Soil Conservation Districts (Idaho Code §§ 22-2714 *et seq.*)

In order to protect the farm, ranch, range and forest lands in Idaho, soil conservation Districts are created to encourage the conservation of soil resources, to control and prevent soil erosion, to prevent floodwater and sediment damages, and to further the conservation, development, utilization, and disposal of water. Promoted methods of soil conservation include:

- Seeding and planting of waste, sloping, abandoned, or eroded lands with water-conserving and erosion-preventing plants, trees, and grasses;
- Forestation and reforestation;
- Soil stabilization with trees, grasses, legumes, and other thick growing soil holding crops;
- Retirement from cultivation of steep, highly erosive areas and areas badly gullied or otherwise eroded (NASDA 1996 and Idaho 2005a).

Snake River Compact (Idaho Code §§ 42-3401 *et seq*.)

The Snake River Compact is an agreement between Wyoming and Idaho to provide for the most efficient use of the waters of the Snake River for multiple purposes; to provide for equitable division of such waters; to remove causes of present and future controversies; to promote interstate comity; to recognize that the most efficient utilization of such waters is required for the development of the drainage area of the Snake River and its tributaries in Wyoming and Idaho; and to promote joint action by the states and the United States in the development and use of such waters and the control of floods. Either state using, claiming or in any manner asserting any right to the use of the waters of the Snake River under the authority of either state shall be subject to the terms of this compact (Idaho 2005a).

Idaho Supreme Court Opinion No. 13974, *Idaho Power Company v. The State of Idaho, et al.* and the Swan Falls Agreement

While Idaho farmers depend on Snake River water to supply them with three quarters of their irrigation supply, the Idaho Power Company depends on the same Snake River water for about 57 percent of its electrical generating capacity. These competing needs inevitably lead to conflict, and, in 1982, the Idaho Supreme Court ruled on *Idaho Power Company vs. The State of Idaho, et al.* (Morse et al. 1990).

As is typical of western water-right controversies, the issues of this case were complex. The Court upheld the Idaho Power Company's contention that its water right for 8,400 cubic feet per second (cfs) of Snake River streamflow at the Swan Falls Dam, which is at the western (downstream) end of the Snake River Plain, was not necessarily subordinate to the water rights of upstream irrigators. With the stroke of a pen, water on the Snake River Plain went from partially appropriated to over-appropriated (Morse et al. 1990).

In responding to the decision, the Idaho Power Company did not seek to confiscate any water being put to beneficial use. Instead, it filed suit against nearly 7,500 holders of upstream permits and water-right applications for which beneficial use had not yet been proven. After two unsuccessful attempts by the State Legislature to resolve the conflict, and facing years of litigation costing millions of dollars, the Governor, the Attorney General, and the Idaho Power Company negotiated a settlement. The Swan Falls Agreement, ratified by the Legislature in 1985, required that all water rights in the Snake River drainage be adjudicated. The Idaho Legislature required that IDWR provide the presiding Court with all the technical information necessary for the Court to make a decision about each water right (Morse et al. 1990). As of 2004, 87 percent of claims have been brought before the SRBA court. When all water rights have been fully adjudicated, conjunctive administration of surface and groundwater rights having a common groundwater supply will be comprehensive (Proposal 2005).

Another important aspect of the Swan Falls Agreement is that Idaho Power holds a senior water right, but voluntarily subordinates part of it to upstream rights, on the condition that the Snake River maintains a minimum flow of 3,900 cfs during the irrigation season and 5,600 cfs during the winter (Kane 2005).

Idaho EO 2004-02 - Immediate Ground and Surface Water Actions and Long-Term Conjunctive Management on the Eastern Snake Plain Aquifer

This EO identifies the water of the Snake River and the groundwater as important for the economy of southern Idaho. It recognizes that surface and groundwater in the Eastern Snake River Plain are hydrologically-connected. The governor of Idaho continued the moratorium on additional groundwater development of the ESPA and directed IDWR to develop long-term management strategies for conjunctive management of surface and groundwater sources (Idaho 2005b).

1.6.3 Programs

Counties who will have enrolled acres in the Idaho CREP currently have landowners enrolled in several State and Federal conservation programs, including:

- Conservation Reserve Program (CRP),
- Environmental Quality Incentive Program (EQIP),
- Wetlands Reserve Program (WRP)
- Grassland Reserve Program (GRP),
- Farm and Ranch Lands Protection Program (FRPP),
- Wildlife Habitat Incentive Program (WHIP), and
- Conservation Security Program (CSP) (Proposal 2005).

Descriptions of these programs and how they relate to CREP can be found in the Cumulative Effects Section (Section 3.17).

1.7 Decisions that Must be Made

The Secretary of Agriculture must decide whether to approve CREP for implementation in the State of Idaho.

If the Secretary approves the Idaho CREP, FSA must determine if the selected alternative would, or would not be, a major Federal action significantly affecting the quality of the human environment. If FSA determines that it would not significantly affect the quality of the human environment, then a Finding of No Significant Impact (FONSI) can be prepared and signed and the project can proceed. Concurrent with the Final PEA, a FONSI has been prepared and signed.

1.8 Scoping and Resource Issues

This section presents the record of planning and coordinating that occurred in conjunction with the planning of the Idaho CREP. Resource issues are presented in section 2.3.2, Summary Comparison of the Effects of Alternatives A and B on the Resources, and to related sections of Chapter 3, Affected Environment and Environmental Consequences.

1.8.1 Scoping

Water rights and availability in southeastern Idaho is a controversial topic. Since the mid 1980s when the court determined that surface and groundwater rights of the ESPA were connected, the basin has been over-appropriated. This over-appropriation affects the majority of the people in southeastern Idaho, and the recent drought has exacerbated the water quantity problem. Several committees are working to address the water quantity issues in the project area.

In order to develop the CREP proposal, many partnering agencies and organizations were identified and educated about the program. Interested parties were then invited to join the CREP Working Group (a list of participants is included in Appendix C) and help shape the proposal (Proposal 2005).

Members of the CREP Working Group presented CREP information to the public and key decision makers in a number of formats. To date, CREP Working Group Members have already participated in numerous town hall meetings, public forums, legislative committee hearings and other events as part of the effort to educate the public and secure its support for the proposal (see Appendix C for list of public involvement proceedings) (Proposal 2005).

The Idaho CREP is one component of a statewide, multi-program water initiative referred to as "The Strawman Proposal." In its entirety, The Strawman Proposal is designed to increase the ESPA by 600,000 to 900,000 acre-feet annually through implementation of water supply, water management, and water demand reduction measures. CREP would contribute up to 200,000 acre-feet to this effort (Proposal 2005).

The Strawman Proposal was developed by the Eastern Snake Plain Aquifer Working Group (Working Group), a subcommittee under the Natural Resources Interim Committee of the Idaho state legislature, with involvement of IDWR and the Idaho Office of the Attorney General and with consultation from stakeholders. Since March of 2004, the Working Group has been addressing water management and availability issues in the ESPA. In addition to the Senators and Representatives on the Working Group, there has been involvement of private industries (including aquaculture industries), water management districts, groundwater management districts, water user associations, other concerned legislative representatives, and other concerned individuals and organizations. The meetings of the Working Group are open to the public and the minutes of each meeting posted on the State's website. In addition, several newspaper articles have been written about their meetings and the possible developments and decisions.

While the proposed CREP is slated to be one component of the Strawman Proposal, it is intended that the proposed CREP will be fully funded and implemented independently of the success or failure of other components of the Strawman Proposal. The State of Idaho remains committed to the proposed CREP regardless of the final outcome of the Strawman Proposal and related negotiations (Proposal 2005).

CREP uses authorities of CRP in combination with Idaho State resources to target specific conservation and environmental objectives of Idaho and the nation. Following approval of the proposal the focus of the communication efforts will shift to possible participants. FSA County Offices, local Soil Conservation Districts, and CREP Working Group members will work directly with landowners in the proposed project area to ensure that they understand the requirements and benefits of the program.

FSA County Offices will rely heavily on the monthly newsletter to communicate the details and benefits of CREP to individual landowners. Since FSA newsletters are regularly received by almost all owners and operators in each county, this ensures the widest possible circulation of the material. FSA will also continue their individual outreach efforts through town hall meetings, communication with local press outlets, and other means. Finally, the FSA State Office is developing a partnership guide, which will outline all of the available resources landowners may access as part of the CREP enrollment process.

Public Comments

In compliance with NEPA and FSA policies, a Draft PEA was made available for public comment. Four comments were received. These comments are summarized in Appendix H.

1.8.2 Relevant Resource Issues

The following resources may be affected by the Idaho CREP: groundwater resources, surface water resources, soil resources, wetlands, floodplains, protected species, socio-economic issues, wilderness, cultural/tribal resources, and air quality. Chapter 3 discusses each of the 12 resource issues, along with four mandatory impact considerations, in detail. Affected resources issues are introduced below.

Issue #1: Groundwater susceptibility to agricultural practices

The ESPA is a primary groundwater supply for southern Idaho, delivering water for agricultural and municipal uses. In the Eastern Snake River Basin, about 7.1 million acre-feet was withdrawn from groundwater supplies for agriculture and domestic uses (Clark et al. 1998). Approximately 2.2 million acres of farmland are irrigated across southeastern Idaho, partially from groundwater pumping. Groundwater is a primary source of drinking water for over 95 percent of Idaho State residents. Agricultural practices and other sources introduce pollutants to the watersheds and contaminated water may seep into the aquifers. Groundwater pumping for irrigation decreases aquifer storages and aquifer levels and reduces streamflow in hydrologically connected surface water. Section 3.5 discusses groundwater.

Issue #2: Surface Water susceptibility to agricultural practices

In 1990, 8 million acre-feet of surface water was diverted from the Upper Snake River Basin. Over 90 percent of the water used in the basin was for irrigation and livestock (Clark et al. 1998). Recent drought conditions in the Idaho CREP project area has stressed the availability of water supplies and accentuated the fact that a number of interests important to the State are competing for the same finite resources.

In addition, the surface water quality in Idaho is declining. Many streams and rivers in the CREP project area have been identified by the State as impaired, meaning that the water is not of sufficient quality to meet beneficial uses (IDEQ 2003). Runoff from agricultural areas contributes sediment and nutrients to receiving water bodies. For a full discussion of surface water impacts see Section 3.6.

Issue # 3: Drinking Water susceptibility to agricultural practices

Approximately 95 percent of the State's drinking water comes from groundwater. Surface water supplies the remaining amount from sources such as streams, rivers, reservoirs, and springs (IDEQ 2005g).

In the CREP project area the ESPA has been designated as a sole source aquifer by the Environmental Protection Agency (EPA). A SSA is an aquifer that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. To be designated a SSA, the area must not have an alternative drinking water source, which could supply all who depend on the aquifer for drinking water and where if contamination occurred, using an alternative source would be extremely expensive (EPA 2005a). Because the ESPA is a SSA, groundwater contamination and groundwater quantity are of special concern.

Groundwater contamination from non-point sources such as irrigation return flow, urban stormwater runoff, residential lawn care, septic tank, and golf courses can impact public drinking water supplies in the Idaho CREP project area and high nitrate levels in public water supplies have been problematic in the Eastern Snake River basin (Proposal 2005). Declining aquifer levels from groundwater pumping affects drinking water availability and affected domestic wells are either relocated or deepened (Proposal 2005).

Current issues affecting drinking water resources are discussed in Section 3.7.

Issue #4: Soil Resources susceptibility to agricultural practices

The soil in the project area is susceptible to wind and water erosion resulting from agricultural practices. In some areas in the spring, it is estimated that 10 tons of soil per acre is lost (Proposal 2005). Irrigation practices, tilling, and crop choice all affect the rate of soil loss via water erosion. Tilling practices and crop choice also affect the rate of soil loss via wind erosion. Consequences of soil erosion include removal of fertile topsoil, accelerated eutrophication and sedimentation of surface waters, destruction of fish and wildlife habitat, and decreased recreational and aesthetic value of surface waters (Mahler et al. 2003). Section 3.8 discussion soil resources in greater detail.

Issue #5: Wetlands susceptibility to agricultural practices

It is estimated that since the 1780s, 56 percent of Idaho's wetlands have been lost, and many of the remaining wetlands have been degraded by hydrologic alteration and impacts to vegetation and soils (IDFG 2005b). The main threats to wetlands from agriculture include diminishing water supply from irrigation diversions, agricultural development, increased sediment and nutrient loads from agricultural lands, and grazing. Section 3.9 presents a detailed discussion of wetlands issues.

Issue #6: Floodplains susceptibility to agricultural practices

All Federal actions must meet the requirements of EO 11988, Floodplain Management. Federal agencies are required to review all proposed projects to determine if it will be located within, or will affect, a 100 year or 500 year floodplain. Floodplains are used for agricultural purposes throughout Idaho. Current issues affecting floodplains are discussed in Section 3.10.

Issue #7: Protected Species susceptibility to agricultural practices

There are nine different T&E species in the project area. Habitat degradation, invasive exotic species, streamflow alterations, and water pollution continue to threaten current listed species populations. Current trends and issues affecting critical habitat and T & E species are discussed in Section 3.11. Additional species information can be found in Appendices D and E.

Issue #8: Human Health and Social susceptibility to agricultural practices

All Federal programs, including CREP, must comply with EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations. CREP has the potential to affect minority populations such as migrant farm workers. A discussion of the issues affecting environmental justice is found in Section 3.12.

Issue #9: Economic susceptibility to agricultural practices

Agriculture is the largest industry in Idaho, particularly in the project area. The Idaho CREP Agreement proposes the potential enrollment of up to 100,000 acres across the Eastern Snake River Plain, which represents approximately 4.5 percent of the total acres of cropland that are harvested each year in the proposed CREP area. CREP may impact this economy in a number of ways, affecting farm workers, land owners, food processing industries, service industries, etc. A discussion of socioeconomics can be found in Section 3.13.

Issue #10. Wilderness susceptibility to agricultural practices

One of Idaho’s seven wilderness areas fall within the project area encompassing over 43,000 acres with almost 950,000 acres contained in Wilderness Study Areas (WSAs). Agricultural practices and developments affect the quality of wilderness areas by contaminating water supplies. Additional discussion of wilderness areas can be found in Section 3.14.

Issue #11. Cultural/Tribal Resources susceptibility to agricultural practices

Idaho’s long history of American Indian culture and European settlement has endowed the State with a remarkably diverse collection of historic and cultural resources worthy of preservation. A broad evaluation of potential impacts from project activities is contained in this PEA. Site-specific cultural reviews and tribal consultations will ensure protection of these vital resources. A discussion of cultural resources within the project area is found in Section 3.15.

Issue #12: Air Quality susceptibility to agricultural practices

Because of weather conditions, air quality in southern Idaho is occasionally affected by agricultural practices. During stagnant conditions, smoke from crop residue burning will tend to stay near the ground and will not disperse readily. Additionally, dust results from disturbing land surfaces repeatedly during Idaho's annual dry season. Southern Idaho's high winds occasionally make this problem worse. A discussion of air quality can be found in Section 3.16.

1.8.3 Resources/Issues Eliminated from Detailed Study

Noise

After a careful analysis it was determined that there would be no impacts from noise as a result of CREP. Following the short-term construction noise as the CPs are installed, there would be no continual impacts on the local soundscapes. The long-term nature of the conservation practices would result in decreased agricultural activities on CREP lands, noise level can be expected to decrease slightly. As a result, FSA eliminated noise from further analysis as part of this PEA.

Hazardous and Toxic Materials

While hazardous and toxic materials are found throughout Idaho, like all states, a site specific analysis for the presence of these materials is necessary to determine the potential impacts as a result of the CREP program. The level of analysis necessary is unrealistic to include as part of this PEA. As a result, if Alternative B (CREP) were implemented, evaluation of the enrolled acreage would occur, and contaminated sites would either be avoided or used in a way as to not further distribute or disturb hazardous or toxic items or sites. Impacts could occur if a hazardous or toxic site is undiscovered and then inadvertently disturbed. Actions would then be taken to mitigate any impact at that time. Otherwise, there would be little to no impact on hazardous waste sites. Therefore this subject has been eliminated from further analysis as part of this PEA.

Protected Rivers

There are no federally protected rivers within the Idaho CREP area, and this issue was eliminated from further analysis.

Chapter 2.0 Alternatives Including the Proposed Action

2.1 Introduction

This chapter describes the actions proposed in the PEA, beginning with the No Action Alternative—Continue Current Agricultural Practices, and ending with the Action Alternative—Implement Idaho CREP. Alternatives will be compared in terms of their individual environmental impacts and their ability to achieve objectives listed in Section 1.4.

2.2 Description of Alternatives

Alternative A (No Action)—Continue Current Agricultural Practices

Alternative A would allow current agricultural practices to continue. Existing Federal and State programs would be relied upon to slow the current rates of water quality degradation, soil erosion, and wildlife habitat loss. There would be no incentives to implement FSA approved CPs. Benefits from CPs would not occur under Alternative A.

Within the proposed project area, one of the major agriculture-related environmental impacts is the reduction in groundwater levels and spring flows that are tributaries to the Snake River. Without mitigation, water levels in the streams and reservoirs will continue to drop and downstream water requirements of the Nez Perce agreement and water rights of other senior appropriators may not be met. Declining water levels may lead to poor water quality, negatively impacting fish and wildlife and resulting in habitat degradation.

Agricultural nonpoint source pollutants are the primary cause of stream water quality degradation in Idaho and standard farming practices in the CREP area utilize pesticides and nutrients in the form of fertilizers and manure (EPA 2005c, NASS 2002). A summary of agricultural chemical use in counties located in the CREP project area can be found in Table 2.1.

If conservation measures, such as CREP, are not implemented, water rights calls would be made to junior water rights holders, preventing cultivation of a great deal agricultural land in Southeast Idaho. The economic impacts of curtailment would be devastating given that agriculture is the top industry in Idaho (IASS 2005) and one of the primary sources of income in Southeast Idaho (Proposal 2005). Moreover, curtailment may force water users to abandon the land, increasing the potential for soil erosion and invasive species introduction, thereby negatively impacting water quality and wildlife habitat (Proposal 2005).

Continued reduction in spring flow will would impair visual and ecological resources of the area and potentially reduce flows below established minimum flows. The scenic value of the Thousand Spring Preserve draws large number of tourists to the valley by the sheer number and size of springs. Several State parks are located on or near springs and The Nature Conservancy operates The Thousand Springs Preserve on the Snake River upstream of the Hagerman Valley (Proposal 2005). Declining water levels would reduce the flow and water quality in these springs, negatively impacting the tourism-based economy.

Table 2.1. 2002 Agricultural chemical use summary in Idaho and CREP counties.

	Farmland Acres Treated with Commercial Fertilizers, Lime, and Soil Conditioners	Farmland Acres Treated with Manure	Farmland Acres Treated with Chemicals to Control Insects	Farmland Acres Treated with Chemicals to Control Weeds, Grass, or Brush	Total Acres of Land
Idaho	3,549,336	281,135	989,857	2,539,472	52,958,080
Bannock	68,827	7,279	11,589	73,984	357,104
Bingham	285,492	15,477	100,774	181,708	821,163
Blaine	16,908	1,928	1,347	12,640	225,936
Bonneville	187,112	7,704	64,082	118,977	477,784
Butte	36,926	1,442	6,320	11,411	121,331
Camas	9,211	128	undisclosed	8,855	134,168
Cassia	271,726	19,479	87,414	199,702	744,260
Clark	26,716	198	7,597	16,723	177,822
Custer	17,270	1,494	1,026	3,549	131,571
Elmore	66,161	8,458	39,064	45,265	346,034
Fremont	126,263	3,126	7,995	40,405	287,494
Gooding	94,609	33,628	19,089	58,993	194,827
Jefferson	157,265	9,863	43,110	75,595	305,305
Jerome	119,954	23,048	29,568	87,465	186,319
Lemhi	31,505	4,944	1,070	3,080	173,578
Lincoln	37,498	4,720	18,996	28,829	127,853
Madison	122,188	2,704	48,123	93,588	189,990
Minidoka	189,632	9,587	64,559	147,558	228,459
Owyhee	75,583	14,535	12,347	37,773	571,051
Power	155,470	2,884	43,176	100,965	425,221
Twin Falls	195,126	23,420	64,176	131,181	441,121
CREP County Total Acres/ Percentage of State Total Acres	2,291,442 65%	196,046 70%	671,422 68%	1,478,246 58%	6,668,391

Source: NASS 2002.

Alternative B (Proposed Action)—Implement the Idaho CREP

The Idaho CREP Working Group estimates that 100,000 acres would be enrolled and that the conservation practices would be established during the first three years of the program (Proposal 2005). Land enrolled in CREP would be retired from crop production and irrigation for 10-15 years. CREP would provide the financial and technical assistance necessary to assist eligible Idaho farmers and ranchers in voluntarily establishing conservation practices that would conserve water, reduce soil erosion, filter nutrients and pesticides, and enhance and restore wildlife habitat.

Conservation Practices

Five FSA approved CPs have been selected as the best options for achieving the objectives of the Idaho CREP. CPs must meet the minimum specifications outlined in the NRCS field office technical guide (FOTG) as well as all other applicable Federal, State, and local requirements. Detailed rental and incentive payments, cost-share and maintenance payments, technical requirements, and operating procedures for each practice are outlined in the FSA Handbook 2 CRP and are included in Appendix A of this PEA.

Landowners would be expected to properly implement each practice. It is anticipated that doing so would require some irrigation during the first three years of the contract. Accordingly, as determined by NRCS field staff or TSP personnel, limited irrigations would be allowed during the implementation phase. However, all irrigation would cease beginning in year four of the contract (Proposal 2005).

At the landowners' discretion, and with the concurrence of NRCS, each of the listed practices would be available for all cropland offered for enrollment. Since some of the practices require special circumstances, NRCS field staff and Technical Support Personnel would need to review each offer prior to its enrollment (see Interagency Cooperation section below). All practices shall be implemented in accordance with Agency procedure as outlined in 2-CRP, the FOTG and applicable regulations (Proposal 2005). The following is a brief summary of the selected FSA approved CPs:

USDA FSA National Practice CP2 (Establishment of Permanent Native Grasses): This practice establishes a permanent vegetative cover of native grasses on eligible cropland that would enhance environmental benefits. It is used to reduce soil erosion and sedimentation, improve water quality, and create or enhance wildlife habitat.

USDA FSA National Practice CP4D (Permanent Wildlife Habitat—Non-easement): This practice creates permanent habitat cover enhancing environmental benefits for the wildlife of the designated or surrounding areas. Habitat components may include seeding, including shrubs and trees, establishing permanent water sources for wildlife, providing temporary cover, and mineral additions. This CP also requires the control of noxious weeds and other undesirable plants, insects, and pests.

USDA FSA National Practice CP12 (Wildlife Food Plots): The purpose of this practice is to establish annual or perennial wildlife food plots to enhance wildlife habitat. This practice also provides a buffer between potential contamination sources and water bodies. Permanent grasses and legumes filter runoff water by trapping sediment, nutrients, pesticides and other pollutants.

Practice CP12 would be available for strips between irrigated cropland and non-cropland areas. These small areas would need to be irrigated throughout the length of the CREP contact – but at a much reduced rate. No more than five acres, or ten percent, of the eligible acres included in any single offer may be used for the establishment of a wildlife food plot through practice CP12. These wildlife food plots would provide habitat for sage grouse and also serve as a firebreak area between cropland and non-cropland (Proposal 2005).

USDA FSA National Practice CP22 (Riparian Buffer): Riparian buffers are strips of grass, trees, or shrubs established adjacent to streams, ditches, wetlands, or other water bodies. Riparian buffers reduce pollution and protect surface and subsurface water quality while enhancing the aquatic ecosystem.

Practice CP22 would only be available for land immediately adjacent to an intermittent stream or other surface water source (such as the Snake, Big Wood or Big Lost Rivers or their tributaries) (Proposal 2005).

USDA FSA National Practice CP25 (Rare and Declining Habitat): The purpose of this practice is to restore the functions and values of critically endangered, endangered, and threatened habitats. This practice targets land or aquatic habitats that have been degraded by human activities. It is intended to provide habitat for rare and declining wildlife species by restoring and conserving native plant communities, and in turn, increasing native plant community diversity. Additionally improvements in vegetative cover would serve to reduce soil erosion from lands degraded by human activities.

Practice CP25 would only be available for land located within the Declining Habitat Basin Big Sagebrush in the Snake River Plain. In addition, landowners would be required to plant the species of native grasses and shrubs outlined in the Idaho FOTG specifications (Proposal 2005).

Enrollment in CREP

In order to be eligible for enrollment in the Idaho CREPCREP, project, land must meet the following basic eligibility criteria.

- All CREP applicants must meet the CRP basic eligibility criteria (see FSA Handbook 2 CRP).
- Land offered for CREP enrollment must be physically located within a Conservation Priority Area under CRP and within the specified HUCs.
- The cropland must meet all regular CRP cropping history requirements. Eligible lands must have been planted or considered planted to an agricultural commodity during 4 of the 6 crop years from 1996 through 2001 and physically and legally capable of being planted in a normal manner to an agricultural commodity.
- During the same years in which the land was farmed, the land must have been irrigated to the extent that it would have the reasonable expectation to produce a crop. The landowner would be required to show that (1) an adequate water right associated with the land is in place and (2) the water right is drawn from either a groundwater source or a surface water source other than the Snake River. Determinations concerning the irrigation status and history of offered land would be made by the local FSA County Committee. All water right determinations would be made by IDWR during a review of each offer.
- Land owners would be required to enter into a supplemental water right agreement with IDWR to ensure proper water conservation. Each agreement shall specify the State of Idaho’s requirements concerning water usage and monitoring.
- The land owner would be required to show that all necessary arrangements have been made to ensure proper water conservation in a manner consistent with the project’s goals.

Based upon the determination of the Idaho CREP Working Group, CREP enrollment would be capped at a maximum of one-half of the individual county’s statutory limit on CRP acreage (25 percent of total eligible cropland). CREP offers with land in counties already at or above the CRP acreage limit would not be considered (Proposal 2005).

It is anticipated that more acreage than the estimated 100,000 acres would be offered initially. This situation would require a system to evaluate offers and in the context of “ranking” criteria. The Idaho CREP Working Group, a collaboration of State and Federal agencies, wildlife and conservation groups, water users, and landowners (see Table C-2 in Appendix C), has developed a worksheet to be used in prioritizing offers (Appendix D). The ranking criteria have been developed in a manner to ensure that land with the highest capability of addressing the project’s primary goal of water conservation (and secondary goal of improving wildlife habitat) receives enrollment priority (Proposal 2005).

The following nine criteria would be used to prioritize offers in the event that either offered acreage statewide exceeds the 100,000-acre project cap or offered acreage in an individual county exceeds that county’s CRP and/or CREP cap (Proposal 2005).

Water Source

While the defined project area includes some limited areas outside of the ESPA, priority shall be given to land irrigated with groundwater pumped from the ESPA. While significant conservation benefits exist outside the immediate ESPA area, the project's primary goal remains water conservation within the ESPA (Proposal 2005).

Water Right Priority

Consistent with Idaho's water right prior appropriation doctrine (see "Prior Appropriation" box on page 1-5), priority shall be given to land associated with the oldest water rights (Proposal 2005).

Water Priority Areas

In keeping with the project's objectives (Section 1.4), priority shall be given to land where it is most likely to affect a more immediate conservation benefit. Accordingly, offers would be ranked on their relative proximity to the Snake River and established Critical Ground Water Areas. Models of the ESPA have demonstrated that water conservation in these areas is a priority (Proposal 2005).

Conservation Practices

Priority shall be given to those landowners whose conservation plans provide the most on-the-ground environmental benefit. To accomplish this goal, offers would be ranked according to the CP to be implemented (Proposal 2005).

Bird Habitat Conservation Areas

Priority shall be given to land within a Bird Habitat Conservation Area (BHCA). The BHCAs were designated by the State steering committees of the Intermountain West Joint Venture, a funding program dedicated to the long-term conservation of bird habitat in western ecosystems through partnerships with public and private agencies. The BCHAs represent the best opportunities to implement conservation action for priority bird species and their habitats over the next five to ten years (Proposal 2005).

BHCAs have one (and typically several) of the following characteristics:

- Important breeding populations or migratory concentrations of priority species;
- Exemplary or extensive stands of high priority habitats suitable for protection or enhancement;
- A high diversity of priority species and/or habitats;
- A high degree of restoration potential; and/or
- Extraordinary opportunities for collaboration and partnership.

The BCHAs would serve as the focal areas for the Intermountain West Joint Venture costshare contribution to CREP, as they do for other partnerships supported by the Joint Venture. A map of BHCAs and Habitat Priority Areas can be found in Appendix E (Proposal 2005).

Habitat Priority Areas

Priority shall be given to land within the existing Habitat Priority Areas established by IDFG. These areas are those with either the most sensitive wildlife habitat or where conservation benefits would be maximized due to other factors. IDFG uses these established areas in a wide range of projects, many of which would partner with CREP to further the project's goals (Proposal 2005).

Public Lands

A great deal of conservation measures have already been put into practice on the public land scattered throughout the CREP project area. These areas, many of which are adjacent to operating farmland, provide much needed habitat for a wide range of species and adding CREP acreages nearby would further expand these wildlife havens. Accordingly, priority shall be given to land adjacent to either Federal or State controlled areas (Proposal 2005).

Prioritized Streams

Priority would be given to land, irrigated by either surface water or groundwater, immediately adjacent to a prioritized stream. These water ways have been identified by IDFG as critical habitat areas for water species. It is anticipated that while small in total acreage, this land would be among the most environmentally sensitive areas enrolled in CREP (Proposal 2005).

Funding

The total estimated cost of the Idaho CREP over the 15-year term is $343,279,020. A cash contribution of approximately $259,800,000 is anticipated from USDA with and in-kind service contribution from non-Federal sources contributing approximately $83,479,020 (Proposal 2005).

Monitoring Program

IDWR would be responsible for quantifying mitigation impacts of the proposed CREP (e.g. amount of water conserved). It is believed that water use reductions that occur as a result of the proposed CREP would provide for measurable impacts to spring discharge and groundwater levels. It is important to note, however, that such impacts would not necessarily be manifested as *increases* in spring discharge or rises in groundwater levels. The impacts of water savings may instead be the prevention of further groundwater declines in the aquifer (Proposal 2005). Several monitoring methods may be employed to both ensure lands enrolled in the CREP program are not being irrigated and to account for and quantify water savings, including, but not limited to, the following:

Eastern Snake River Plain Aquifer Model

The amount of water left in the ESPA due to CREP would be determined by IDWR using the enhanced Eastern Snake River Plain Aquifer model (ESPA model), with verification from the State watermaster and groundwater district hydrographer reports. The ESPA model is a spreadsheet, developed by hydrologists, that electronically replicates flows from any one point in the ESPA to any other, based on current knowledge of the ESPA's flow characteristics. This model describes the effects of increased or reduced draws from any point in the aquifer at any other point, in annual steps, for up to 100 years. The ESPA model was developed with funding provided by the State of Idaho, Idaho Power Company, the USGS and the U.S. Bureau of Reclamation (USBR). The ESPA model was designed with the intent of evaluating the effects of land and water use on the exchange of water between the ESPA and the Snake River. The model can be used to determine the impacts of wide-ranging water and land use patterns.

The ESPA model would be used to segregate the effects of CREP on aquifer levels and spring flows from the effects of other ESPA efforts. The effects of the CREP on the Mountain Home Aquifer (MHA) and the Raft River and Oakley Fan CGWAs would be determined by utilizing groundwater district hydrographer reports to monitor groundwater levels in the aquifer. CREP's impacts in the Big Lost River Drainage Basin can be quantified using the model as well as reports of the Big Lost River Water District's watermaster (Proposal 2005).

Sentinel Wells

Sentinel wells and springs would be continuously monitored by IDWR to record changes in aquifer water levels and spring flows due to efforts on the ESPA and MHA, including the proposed CREP. IDWR would utilize the sentinel well and sentinel spring monitoring to verify results calculated by the ESPA model (Proposal 2005).

Water quality monitoring programs

Existing water quality monitoring programs would be incorporated to determine whether water quality improvements are realized due to the CREP (Proposal 2005).

Bird monitoring

IDFG would also monitor upland game bird production in the Magic Valley region. IDFG would conduct brood routes in August of each year for 10 years. Location of routes may vary; some routes located near CREP lands and other routes located outside of CREP land areas. Information collected would provide trend data for upland game bird populations on CREP lands to be compared with non-CREP lands.

IDFG's Nongame Wildlife Program would also provide a monitoring component under the framework of the Idaho Bird Inventory and Survey (IBIS). IBIS is a statewide, coordinated, all-bird monitoring plan. The proposed CREP would provide IDFG with an excellent opportunity to examine how changes in land-use practices influence an important suite of birds that occupy agricultural habitats.

Bird monitoring would consist of breeding surveys conducted during spring and summer months in each year of study (Proposal 2005).

Enforcement of CREP contracts

IDWR would use several methods to collect water use data on lands enrolled in the proposed CREP. Aerial photography and satellite imagery, supplemented by field inspections where necessary, would be used to ensure there is no irrigation occurring on lands enrolled in CREP. The use of aerial photography is already a standard practice that IDWR uses to verify whether land is being irrigated. IDFG would also monitor CREP lands for contract violations such as grazing, haying, tillage, or burning of the CREP lands outside of authorized activities. IDFG biologists and/or conservation officers would conduct monitoring for violations during the course of their normal duties. Monitoring would be conducted twice a year for six years. Violations would be noted and reported to FSA. (IDFG personnel would not contact the landowner or be responsible for any enforcement activities regarding the violations of CREP contracts).

The ranking criteria for CREP applications would also be used to ensure that the program is targeted to those areas that can best be used to reach the water conservation objective (Proposal 2005).

Public Outreach and Support

Once the proposal has been approved, the focus of the communication efforts would shift to possible participants. FSA County Offices, local Soil Conservation Districts, and other CREP Working Group Members would work directly with land owners in the CREP area to ensure that they understand the requirements and benefits of the program (Proposal 2005).

Training of Staff

Each CREP partner would be responsible for training its staff on their particular role in the CREP process. Wherever possible, joint training and cross training of organizations would be encouraged. In addition, the staff of each CREP partner participating in the program would be invited to the FSA training on procedure and administration. Specifically within FSA, the State Environmental Coordinator is primarily responsible for training to instruct employees on CREP eligibility, the enrollment process, outreach and communication efforts, contract administration, enforcement and monitoring, and issuing payments (Proposal 2005).

Communication Plan

The State of Idaho, working together with Idaho FSA and its other CREP partners, has developed a comprehensive plan to educate land owners on the benefits of CREP. The goals are:

- **Educate Partners:** Efforts have been made at every step of the development of the CREP proposal to identify and educate as many possible partnering agencies and organizations as possible. Interested parties were then invited to join the CREP Working Group (a list of participants is included in Table C-2 in Appendix C) and help shape the proposal.
- **Secure Public Support:** Given the large contribution of State funds to the project, it is essential that the communication plan first focuses on securing public support for the CREP proposal. Members of the CREP Working Group would be called upon to present CREP information to the public and key decision makers in a number of formats
- **Educate Land Owners:** Once the proposal has been approved, the focus of the communication efforts would shift to possible participants. FSA County Offices, local Soil Conservation Districts, and other CREP Working Group Members would work directly with land owners in the CREP area to ensure that they understand the requirements and benefits of the program (see communication tools section below).

A number of land owners in the CREP area would be naturally motivated to enroll in the program. Without CREP, these producers face the serious possibility of water curtailment and the loss of their irrigation rights. Facing such a dire alternative, enrolling in CREP would appear to be a favorable alternative. Additional land owners – those not facing immediate curtailment – may also be motivated to enroll acres into the program in order to assist in the resolution of the State’s over-all water supply issues.

The vast majority of barriers most land owners would face in their effort to enroll land in CREP are technical in nature. For example, it would be necessary to research and clearly establish the details associated with the water right connected to each acre offered for enrollment. This task is made more complicated by the State’s complex water law and would require a review by the IDWR. However, the CREP Working Group believes that by including an IDWR check as part of the enrollment process, these types of barriers shall be easily overcome.

FSA County Offices would rely heavily on their monthly newsletter to communicate the details and benefits of CREP to individual land owners. Special inserts would be developed by the FSA State Office for this purpose. Since FSA newsletters are regularly received by almost all owners and operators in each county, this ensures the widest possible circulation of the material. In addition, CREP Working Group Members would be called upon to continue their individual outreach efforts through town hall meetings, interviews with local press outlets and other means.

Finally, the FSA State Office is developing a partnership guide which outlines all of the available resources land owners may have access to as part of the CREP enrollment process. Numerous organizations have made available either technical assistance, seeds and supplies, or other resources to assist land owners in fulfilling their obligations once their land is enrolled in CREP. This partnership guide would identify these sources for the land owner and help them calculate the implementation costs prior to their having offered a bid to participate (Proposal 2005).

2.3 Comparison of Alternatives

Implementing either alternative would have specific environmental implications for the State's watersheds and the ability of this project to meet the project objectives outlined in Section 1.4. The following two tables provide a summary comparison of the alternatives. To provide consistency, the following impact terminology will be used in the comparison table below and throughout the document.

Impact Categories

Environmental effects that may occur as a result of implementing one of the alternatives would be described in the succeeding resource sections in the following manner:

- No Effect—A change to a resource’s condition, use, or value that is not measurable or perceptible.
- Beneficial Effect—An action that would improve the resource’s condition, use, or value compared to its current condition, use, or value.
- Minor Adverse Effect—A measurable or perceptible localized degradation of a resource’s condition, use, or value that is of little consequence.
- Moderate Adverse Effect—A localized degradation of a resource’s condition, use, or value that is measurable and of consequence.
- High Adverse Effect—A measurable degradation of a resource’s condition, use, or value that is large and/or widespread and could have permanent consequences for the resource.
- Short-term Effect—An effect that would result in the change of a resource’s condition, use, or value lasting less than one year.
- Long-term Effect—An effect that would result in the change of a resource’s condition, use, or value lasting more than one year and probably much longer.

Summary Comparison of Achievement of Project Objectives of Alternatives A and B

Table 2.2 provides a key part of the information needed by the Secretary of Agriculture and the public to make an informed, reasoned decision.

Table 2.2. Comparison of achievement of project objectives of Alternatives A and B.

Objectives	Indicators	Alternative A: No Action	Alternative B: Implement CREP
Objective #1: Reduce the demand of water in the ESPA.	Enrollment of up to 100,000 acres in the Idaho CREP area. Reduce demand by 200,000 acre-feet annually. Implementation of FSA CPs 2, 4D, 12, 22, and 25.	Current agricultural practices would continue. Irrigated cropland would not be retired. Over 200,000 acre-feet of water would continue to be used for irrigation within the project area. “Water calls” by senior water rights holders would be made, requiring junior water rights holders to idle productive farmland. Water-use reduction would need to come through other State and Federal programs.	CREP implementation would retire approximately 100,000 acres (4.5%) of eligible/irrigated cropland and 200,000 acre-feet of water would annually be returned to the system.
Objective #2: Ensure a long-term, reliable water supply from the Mountain Home Aquifer.	Enrollment of up to 100,000 acres in the Idaho CREP area. Reduce demand by 30,000 acre-feet annually. Implementation of FSA CPs 2, 4D, 12, 22, and 25.	Current agricultural practices would continue. Irrigated cropland would not be retired. Over 200,000 acre-feet of water would continue to be used for irrigation throughout the entire project area. Water-use reduction would need to come through other State and Federal programs.	CREP implementation would retire approximately 100,000 acres (4.5%) of eligible/irrigated cropland and 200,000 acre-feet of water would annually be returned to the system.
Objective #3: Recharge the aquifers of the Oakley Fan Critical Groundwater Areas.	Enrollment of up to 100,000 acres in the Idaho CREP area. Stabilization of aquifer levels. Implementation of FSA CPs 2, 4D, 12, 22, and 25.	Current agricultural practices would continue. Over 200,000 acre-feet of water would continue to be used for irrigation within the project area. “Water calls” by senior water rights holders would be made, requiring junior water rights holders to idle productive farmland and decreasing the revenue and tax base for the area. Water quantity would continue to decrease, concentrating nutrients, chemicals, pathogens, and sediments in the water supply. Any reductions would need to be realized through other State and Federal programs.	CREP implementation would retire approximately 100,000 acres (4.5%) of eligible/irrigated cropland and 200,000 acre-feet of water would annually be returned to the system. The water returned to the system would be available to recharge aquifers and ensure adequate supply for senior water rights holders.
Objective #4: Provide additional flow	Enrollment of up to 100,000 acres in the Idaho CREP area. Conserve up to 200,000 acre-feet	Current agricultural practices would continue. Irrigated cropland would not be retired. Over 200,000 acre-feet of water would continue to be	CREP implementation would retire approximately 100,000 acres (4.5%) of eligible/irrigated cropland and 200,000 acre-feet of water would annually be

Objectives	Indicators	Alternative A: No Action	Alternative B: Implement CREP
of the Snake River in the Thousand Springs Reach.	of water annually within the ESPA. Water quality improvement Implementation of FSA CPs 2, 4D, 12, 22, and 25.	used for irrigation throughout the entire project area. "Water calls" by senior water rights holders would be made, requiring junior water rights holders to idle productive farmland. Water-use reduction would need to come through other State and Federal programs.	returned to the system.
Objective #5: Improve wildlife habitat.	Enrollment of up to 100,000 acres in the Idaho CREP area. Implementation of FSA CPs 2, 4D, 12, 22, and 25.	Current wildlife habitat would continue to degrade and fragment in response to ongoing environmental stressors. Any improvements to wildlife habitat would need to come through other State and Federal programs.	CREP implementation would improve and create habitat for a variety of species. Protected riparian areas would improve aquatic habitat and provide corridors for terrestrial species. Increased water quantity would improve stream flows for threatened, endangered, and other fish in the project area and downstream. Native grassland habitat would be restored for wildlife in the project area to increase populations of ground nesting birds.

Summary Comparison of the Effects of Alternatives A and B on the Relevant Resource Issues

Table 2.3 provides a key part of the information needed by the Secretary of Agriculture and the public to make an informed, reasoned decision.

Table 2.3. Comparison of the effects of alternatives A and B on the relevant resource issues.

Issues	Alternative A: No Action	Alternative B: Implement CREP
Issue #1: Groundwater susceptibility to agricultural practices	Long-term, moderate adverse effect – Current agricultural practices would continue, and groundwater quality and quantity would continue to decline. Polluted agricultural runoff would continue to degrade groundwater quality, and current irrigation practices would continue to deplete groundwater resources.	Implementation of Alternative B would result in moderate to high beneficial long-term effects to groundwater. Converting cropland to CPs would remove acres from active agriculture, reducing consumptive use of groundwater and potentially increasing aquifer levels. Groundwater recharge would also improve with the establishment of native plants. Native plants require less water for growth, resulting in more percolation of precipitation into the groundwater. The retirement of 100,000 acres of land from active agricultural practices would result in less fertilizers and pesticides being applied in the proposed CREP project area and groundwater recharge from land enrolled in CREP is expected to be of higher quality than recharge from previously cropped land.
Issue #2: Surface Water susceptibility to agricultural practices	Long-term, moderate adverse effect – Surface water quality would continue to decline from pollutant loads in agricultural runoff. Demand for irrigation water would remain at current levels or possibly increase if drought conditions continue, resulting in less surface water in the project area.	Implementation of CREP would provide long term, moderate to high beneficial effects to surface water quality and quantity. Water quality will be improved by reducing erosion and nonpoint pollution adjacent to streams and rivers. Removal of acres from active agricultural would result in fewer applications of fertilizers and pesticides to cropland, reducing pollutant loads in agricultural runoff that discharges into surface waters. Acres enrolled in CREP would be removed from irrigation which would result in less surface water being diverted for irrigation and less groundwater pumping. Streamflow in reaches hydrologically connected to aquifers would increase with the decrease in groundwater pumping.

Issues	Alternative A: No Action	Alternative B: Implement CREP
Issue # 3: Drinking Water susceptibility to agricultural practices	Long-term, minor adverse effect – Drinking water quality would continue to decline. State and Federal laws would continue to prevent major discharges that would significantly degrade drinking water resources, but incremental negative impacts from agricultural and industrial activities would continue.	The implementation of CREP would result in long term, minor to moderate beneficial effects on drinking water. Either indirectly or directly, each of the CPs improves surface water quality and potentially could improve the quality of water that recharges groundwater.
Issue #4: Soil Resources susceptibility to agricultural practices	Long-term, minor to moderate adverse effect –Land currently in crop production will also continue to be plowed, further contributing to the wind and water erosion. Without significant water-saving measures, forced curtailment of junior water rights holders could idle as much as 113,000 acres without the benefit or requirement of a conservation plan to prevent erosion.	Long-term, minor to moderate beneficial effect – Once initial installation of CPs, enrolled land would not be plowed, reducing susceptibility to water and wind erosion. If water curtailment is avoided, as much as 113,000 acres could be maintained in active cultivation.
Issue #5: Wetlands susceptibility to agricultural practices	Long-term, moderate adverse effect – Wetland values would continue to slowly decline as a result of existing and projected agricultural runoff. Total wetland acres will likely be stable or slightly reduced.	Long-term, moderate beneficial effect – Through implementation of CP22, wetland acreage would likely increase and help create new wildlife habitat for traditional species in the combined watersheds. Short-term minor adverse effects may occur during the installation of CPs, but these effects are expected to only last 1-3 years until CPs are permanently established.
Issue #6: Floodplains susceptibility to agricultural practices	No effect – Since floodplains are routinely used for agricultural production, which normally has little adverse effect on flowage areas or floodways, these effects are considered to be negligible.	Minor, long-term improvements would be made to floodplains and stream values. CPs would assist in controlling flood events.

Issues	Alternative A: No Action	Alternative B: Implement CREP
Issue #7: Protected Species susceptibility to agricultural practices	Long-term, minor adverse effect – Wildlife and habitat values would continue to decline from reduced water quality and quantity.	Long-term, moderate beneficial effect – CPs would improve habitat values. Improvements to water quality and quantity alone would have beneficial effects for all wildlife as well as potential increases in critical habitat (up to 100,000 acres).
Issue #8: Human Health and Social susceptibility to agricultural practices	Long-term, minor adverse effect – No FSA actions are required or necessary to address existing or ongoing issues with environmental justice and other health and social concerns. Agricultural workers health may decline due to exposure of pesticides and herbicides.	Long-term, minor beneficial effect -- Little or no pesticides and herbicides would be applied to land enrolled in CPs, resulting in less exposure by agricultural workers
Issue #9: Economic susceptibility to agricultural practices	Short-term and long-term moderate to major impact—Without significant reduction in water use, water calls will be made by senior water rights holders. This would require junior water rights holders to take land out of production, reducing their income and the tax revenue for the area. Poor water quality and quantity could eventually lead to significant financial losses from recreation in this region of the State.	Short-term and long-term moderate to major beneficial effect – Reduced water use will increase total water in the system, providing more water for senior water rights holders. Curtailment would less likely to be made, maintaining economic viability of land resulting from irrigation. By enrolling marginal, less productive agricultural lands, landowners should be able to reduce overall input costs for farming operations and maintain or increase production by being able to concentrate resources on the remaining farmland. Disproportionate effects on minority or underrepresented groups are unlikely. Increased opportunities for hunting and fishing in these areas may lead to localized increases in the sale of hunting and fishing equipment, licenses, and/or other local resource-based recreation industries. Replenished water supplies (200,000 acre feet) would increase opportunities for recreation on both rivers and lakes/reservoirs.

Issues	Alternative A: No Action	Alternative B: Implement CREP
Issue #10. Cultural Resources susceptibility to agricultural practices	Long-term minor impact-- Without a mandated assessment process, minor to moderate adverse impacts would continue to occur on cultural resources. These include disturbance and destruction of prehistoric and historic sites and structures, either through ongoing land conversion for development or agricultural use.	Minimal to no adverse impacts – If cultural resources are discovered on enrolled lands, coordination with the State Historic Preservation Officer (SHPO) and/or Tribal Historic Preservation Office (THPO), including appropriate tribes, would occur to minimize impacts. Some CPs may serve to protect inappropriate access to cultural resources. Installation of CPs may require earth moving activities, which may disturb deeply buried sites or artifacts. Site specific cultural resources surveys would minimize any impacts to cultural resources.
Issue #11: Air Quality susceptibility to agricultural practices	Long-term minor impact—Traditional agricultural practices will continue. Smoke from the burning crops would continue to impact air quality of the area. Land in crop production will continue to be disturbed, increasing soil exposure to dry and windy conditions resulting in dust.	Long-term minor effect – Traditional plowing of cultivated land would not be practiced, preventing exposure of soil to water and wind erosion. Smoke from crop burning would not occur from land enrolled in CPs.

THIS PAGE INTENTIONALLY LEFT BLANK

Chapter 3.0 Affected Environment and Environmental Consequences

3.1 Introduction

The analyses of Affected Environment and Environmental Consequences have been combined in this section to simplify the document. Sections 3.2 through 3.18 explore the environmental resources affected by the No Action Alternative—Continuation of Current Agricultural Practices (Alternative A) and the Proposed Action Alternative—Implementation of the Idaho CREP, and compares the environmental and socioeconomic impacts associated with implementation of each alternative.

The resources most likely to be impacted by the alternatives are:

- Groundwater Resources (3.5)
- Surface Water (3.6)
- Drinking Water (3.7)
- Soil Resources (3.8)
- Wetlands (3.9)
- Floodplains (3.10)
- Protected Species (3.11)
- Human Health and Social Issues (3.12)
- Economic Issues (3.13)
- Wilderness (3.14)
- Cultural/Tribal Resources (3.15)
- Air Quality (3.16)

This chapter also discusses four mandatory impact considerations including:

- Cumulative Effects (3.17)
- Unavoidable Adverse Impacts (3.18)
- Relationship of Short-term Uses and Long-term Productivity (3.19)
- Irreversible and Irretrievable Commitments of Resources (3.20)

The general nature of this PEA limits discussion of the resources to a wide scale. An in-depth, site-specific EE would be completed by FSA for each CREP contract at the completion of the conservation plan. As impacts become clear at each site, the appropriate steps will be taken to ensure compliance with NEPA, NHPA, and FWS requirements. If necessary, an EA with public involvement would be completed for certain projects.

3.2 General Description

The Idaho CREP area encompasses 17,488,186 acres. The largest land holders in the project area are the Bureau of Land Management (BLM) (40 percent), private landowners (35 percent), and the U.S. Forest Service (USFS) (15 percent). Table 3.1 identifies land ownership within the project area.

Table 3.1. Land ownership within the Idaho CREP project area.

Land Owner[1]	Acres	Land Owner	Acres
BLM	6,126,702	BIA	206,439
Private	5,377,608	Military Reservations	86,165
USFS	2,259,930	NPS	72,053
State of Idaho	594,447	FWS	24,095
DOE (INL)	572,755	Other	91,046

[1](Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA), Department of Energy (DOE), U.S. Forest Service (USFS), National Park Service (NPS), and the U.S. Fish and Wildlife Service (FWS).
Source: IDWR 1992.

Within the project area, approximately 2.2 million acres are eligible for CREP enrollment. The eligible acreage was determined based on CRA designations. The 100,000 acres of cropland and marginal pasture land will be from the five CRAs described below.

The Snake River Plains – Treasure Valley CRA (CRA 11.1) comprises 4,215 acres. This unit is characterized by irrigated cropland, pastureland, and rapidly growing cities, suburbs, and industries. Many canals, reservoirs, and diversions are present. The arid soils dominating the area require irrigation to grow commercial crops. Surface water quality has been significantly affected by channel alteration, dams, irrigation return flow, and urban, industrial, and agricultural pollution. Crops include wheat, barley, alfalfa, sugar beets, potatoes, and beans. Crop diversity is greater, temperatures are warmer, and the mean frost free season is longer than in other CRA units. Population density is much greater than nearby rangeland-dominated units.

The Snake River Plains – Upper Snake River Plain CRA (CRA 11.3) comprises 786,259 acres. The nearly-level unit is characterized by cropland, pastureland, cities, suburbs, and industries. Extensive surface-irrigated small grain, sugar beet, potato, and alfalfa farming occurs in this CRA. The frost-free season is shorter and crop variety less diverse than downstream CRA units. Aquatic resources have been degraded by irrigation diversions, channelization, dams, sewage treatment, nonpoint pollution, food processing, and phosphate processing.

The Snake River Plains – Magic Valley CRA (CRA 11.6) comprises 1,089,425 acres. This unit is underlain by alluvium, loess, and basalt lava flows. Its arid soils require irrigation to grow commercial crops. Many canals, reservoirs, and diversions supply water to its pastureland, cropland, and residential, commercial, and industrial developments. Major agricultural products include small grains, alfalfa, sugar beets, potatoes, and beans, and livestock and dairy farms are common. Dams, irrigation diversions, pollution, and channel alteration have affected water quality. Over-irrigation has raised groundwater levels and created artificial wetlands. Natural vegetation is mostly sagebrush and bunchgrass but low terraces have salt tolerant plants. Population density is greater than in adjacent rangeland-dominated units.

The Snake River Plains – Saltbrush-Dominated Valleys CRA (CRA 11.9) comprises 237,997 acres. This arid, gently sloping unit has a distinct vegetative community dominated by shadscale and greasewood. Light-colored saline and alkali soils are common; they are dry for extended periods and may be leached of salt by irrigation water. The primary land use is grazing but irrigated cropland occurs.

The Eastern Idaho Plateaus – Dissected Plateaus and Teton Basin CRA (CRA 13.1) comprises 96,745 acres. This unit is used for rangeland and cropland, in which potatoes are an important cash crop. Sprinkler irrigated land supports potatoes, alfalfa, and pasture. Non-irrigated land supports small grains. Mollisols, developed in thick loess deposits or alluvium, are subject to wind erosion. Potential natural vegetation includes sagebrush steppe and is distinct from the forests of the higher, more rugged mountains. Wet meadows occur in the poorly-drained soils of the Teton Basin (Proposal 2005).

3.2.1 Climate

The Snake River basin is a region of arid to semiarid continental climate controlled principally by the general atmospheric circulation over the northern Pacific Ocean. Migrating storm systems generate summer flows of dry subtropical air across the region, causing extremely dry conditions during the growing season and resulting in total precipitation averages of less than ten inches per year. Some areas receive less than five inches each year.

On the edges and northeastern section of the aquifer, higher altitudes and orographic effects result in as much as 20 inches of precipitation. Incursions of cold arctic air lift unstable oceanic air masses coming in from the Pacific Ocean causing increased levels of precipitation. Almost all of the surface water inflow and groundwater recharge to the aquifer comes from the storage and release of this winter and early spring precipitation in the tributary basins.

Potential evapotranspiration over the Eastern Snake Plain ranges from about 19 to 30 inches per year. Actual evapotranspiration on non-irrigated land is limited by the amount of precipitation. Studies in the Raft River Valley, south of the Snake Plain, found that evapotranspiration depletes eighty nine percent of the annual precipitation. These estimates correspond with estimates of 0.5 to 2.0 inches per year of runoff from the plain surface. Most of the rangeland runoff originates from winter precipitation stored as snow. Some runoff also occurs during high intensity or long-duration rainstorms. Most of the products of evapotranspiration are lost into the overlying very dry atmosphere (Proposal 2005).

3.2.2 Important Geologic Features

The Eastern Snake River plain is underlain by volcanic rock (primarily basalt with lesser amounts of rhyolite) and relatively thin layers, or lenses, of sedimentary material that thin towards the center of the basin. The repetitive sequence of successive basalt flows make up the ESPA, and provide favorable hydrologic conditions for water to easily move through the system. Transmissivity values (a measure of the ability of water to move through a volume of material) associated with the Eastern Snake River Plain aquifer are high – generally one to two orders of magnitude greater than those determined for the aquifers in the Western Snake River Plain.

The origin of the Snake River Plain is attributed to several geologic processes. Migration of the North American continent over a region of high heat flow (plume or hot spot) in the earth's upper mantle results in large volumes of volcanic material being erupted. The age of the volcanic events generally progresses from about 13 million years ago to the youngest episodes currently ongoing. The volcanic complex identified at Yellowstone National Park is interpreted to represent volcanic events that occurred at various locations along the Snake River plain as the volcanic activity progressed eastward to Yellowstone. The most recent major eruption in Yellowstone occurred approximately 600,000 years ago. In between explosive rhyolitic eruptions, basaltic volcanism flooded the Snake River Plain, burying the older volcanic structures.

In the Thousand Springs area, the largest springs issue from saturated pillow basalt that fills ancestral canyons of the Snake River, which were truncated by the present canyon. Pillow basalt formed in stream channels upstream from temporary dams that were created by basalt flows. Water downstream from the temporary dam drained away, and dense basalt formed in the abandoned channel as it filled with lava. Upstream from the dam, the channel became a temporary lake. As lava continued to pour into the lake, the lava exploded violently as a result of rapid cooling and formed fragments of basalt that ranged in size from sand to huge boulders. The result was a permeable mix of basaltic sand, gravel, and boulders that are able to store and transmit large volumes of groundwater.

Craters of the Moon National Monument lies at the north edge of the Eastern Snake River Plain. Whereas the Eastern Snake River Plain is essentially flat, vertical relief is a few hundred feet at Craters of the Moon (Proposal 2005).

3.3 Profile of Agricultural Activities

Agriculture is Idaho's number one industry, (IASS 2005) with 22 percent of the State's land devoted to agriculture. In 2003, there were 25,000 farms which produced and sold over $4.4 billion worth of farm products. Exports of agricultural products earned the State over $847 million in 2003, an increase of ten percent from 2002 (IASS 2004).

Idaho leads the nation in several agricultural commodities. Idaho is the top state in potato production with more than 29 percent of the U.S. crop produced within its borders. Idaho also leads the Nation in specialty products such as Austrian winter peas and several varieties of dry beans and is ranked second in the production of sugarbeets and all dry peas (IASS 2005). Table 3.2 summarizes the products Idaho delivers and the national ranking of the production of the crop.

In addition to traditional production agriculture, much of Idaho's economy centers on processing industries for Idaho top farm products, such as potatoes, sugar beets, and wheat. Nearly 16,000 people in Idaho work in the food-processing industry and over two dozen potato and sugar beet plants are found throughout the State (IMNH 2005). Together, agriculture and food processing represent 23 percent of Idaho's Gross State Product (IDOC 2005).

The Eastern Snake River Plain is dominated by agricultural land irrigated by water from the ESPA and the Snake River. About 2.2 million acres of farmland are irrigated above the ESPA across southeastern Idaho. According to the Idaho Department of Employment, one of the primary sources of income in the Eastern Snake River Plain area is agriculture, including livestock raising (Proposal 2005). Table 3.3 reflects the acreage of farms with irrigation for counties located within the CREP project boundaries (Proposal 2005).

The project area overlies much of Idaho's most productive farmland. Five counties in the project area generated over 40 percent of the total agricultural sales in 2002 (Table 3.4).

Table 3.2. Agricultural products of the State of Idaho.

Crop or Product	Nationwide	Production[3]	Dollar Amount
Potatoes	First	123,180,000 cwt.	$560 million
Austrian Winter Peas	First	112,000 cwt.	NA
Foodsize Trout	First	34,600,000 lbs.	$29.4 million
Wrinkled Seed Peas	Second	163,000 cwt.	NA
Barley	Second	47,520,000 bu.	$152 million
Sugarbeets	Second	6,044,000 tons	$212 million
Lentils	Third	627,000 cwt.	$11 million
Dry Edible Peas	Third	648,000 cwt.	$5.6 million
All Mint	Third	1,414,000 lb.	$16.6 million
Hops	Third	5,266,300 lb.	$8.5 million
Onions (summer	Third	5,880,000 lb.	$69.3 million
Prunes & Plums	Fourth	2,500 tons	$1.3 million
American Cheese	Fourth	481,045,000 lbs.	NA
Alfalfa Hay	Fifth	4,440,000 tons	$ 391 million
Dry Edible Beans	Fifth	1,497,000 cwt.	$28.3 million
Sweet Cherries	Fifth	2,900 tons	$4 million
Other Spring Wheat	Fifth	29,700,000 bu.	$111 million
Milk Production	Fifth	8,774 mil. lb.	$1 billion
Milk Cows	Sixth	404,000 head	NA
Wool	Eighth	2,115,000 lb	$1.8 million
All Sheep and Lambs	Eighth	260,000 head	$20.6 million
All Wheat	Ninth	87,300,000 bu.	$310 million
Winter Wheat	Tenth	57,600,000 bu.	$199 million
Number of farms		25,000 farms	
Land in farms		11.8 million acres	

[1]Excludes California.
[2] Includes only Idaho, Washington, Michigan and Oregon-fresh basis.
[3] cwt. = Hundred Weight; lbs. = pounds; bu. = bushel
Source: IASS 2004.

Table 3.3. Acreage of farms with irrigation in the CREP project area.

	Land in Irrigated Farms[1]			Harvested Cropland[1]		Irrigated Land		Irrigated Harvested Cropland	
County	No. of Farms	Acres	Average Size	No. of Farms	Acres	No. of farms	Acres	No. of Farms	Acres
Bannock	644	172,715	268	310	59,770	644	55,770	296	46,784
Bingham	979	657,802	672	597	303,509	979	322,801	590	297,984
Blaine	192	212,773	1,108	115	32,079	192	40,474	115	28,989
Bonneville	690	285,334	414	452	150,448	690	141,823	446	131,656
Butte	145	112,921	779	130	47,715	145	58,258	130	47,571
Camas	33	93,844	2,844	27	41,033	33	17,484	26	14,236
Cassia	533	537,079	1,008	400	255,260	533	262,249	398	248,081
Clark	32	90,047	2,814	21	30,402	32	31,085	21	28,022
Custer	206	115,229	559	147	27,986	206	54,699	147	27,761
Elmore	227	258,319	1,138	154	83,249	227	90,641	153	78,708
Fremont	336	206,596	615	209	107,114	336	103,065	203	89,406
Gooding	557	189,381	340	378	100,444	557	117,586	372	100,018
Jefferson	669	289,861	433	472	191,277	669	202,620	467	189,285
Jerome	523	177,089	339	353	131,154	523	139,908	353	130,915
Lemhi	270	168,770	625	178	38,728	270	75,153	177	38,370
Lincoln	239	116,309	487	178	48,958	239	66,362	174	48,462
Madison	382	168,334	441	281	124,789	382	115,750	277	110,664
Minidoka	577	222,198	385	421	194,107	577	197,243	418	192,421
Owyhee	470	517,033	1,100	364	107,196	470	123,457	364	105,724
Power	187	252,053	1,348	160	128,437	187	113,698	151	99,899
Twin Falls	1,080	407,826	378	774	217,625	1,080	238,320	774	215,469

[1] Includes irrigated and non-irrigated land.
Source: NASS 2002.

Table 3.4. Top five Idaho counties in agricultural sales in 2002.

Rank	County	Percent of State Total Receipts	Million $
1	Cassia County	9.8	382.5
2	Gooding County	9.0	352.7
3	Elmore County	7.5	292.9
4	Twin Falls County	7.5	291.9
5	Jerome County	7.4	288.8
	State of Idaho Total		3,908.3

Source: ERS 2005.

Aquaculture

Private hatchery facilities in Idaho raise trout, tilapia, sturgeon, catfish, and alligator. Today, two-thirds of the country's trout supply comes from the Thousand Springs area, generating nearly $30 million dollars in 2004 (Proposal 2005). Idaho is ranked ninth in the country for total value of aquaculture products sold (NASS 2005), and first in food size trout produced and sold (IASS 2004).

In 1998, there were 38 freshwater aquaculture farms in Idaho, covering 526 acres. Eight of these farms obtained their water from groundwater, 30 farms received water from on-farm surface water, and three used water from off-farm sources. Most of the aquaculture farms (30 farms) used flow through raceways or tanks while 13 used ponds (NASS 2005). Several farms employed multiple water sources and/or holding facilities, thus numbers of farms are not additive.

A dramatic rise in the ESPA due to flood irrigation in the first half of the 20th century increased the discharge of springs into the Snake River, particularly in the Thousand Springs reach where cumulative discharge increased from about 4,800 cfs in 1915 to about 6,800 cfs in 1955. Elevated spring flow levels, coupled with clear, clean spring flows made the ESPA an ideal location for fish hatcheries and encouraged the development of water rights for aquaculture. However, flow levels of the ESPA have been declining since the late 1950s, resulting in insufficient water supply for the production of trout and other cold-water fish. Today, many hatcheries have dried raceways due the lack of sufficient water (Proposal 2005).

3.4 Leveraged Benefits

An understanding of the potential effect of the 100,000 acres in the Idaho CREP is essential to the discussion of resource impacts. In this case, the anticipated uses of the CREP acreage preclude analysis assuming a one-to-one comparison of acreage impacts. The impacts of one acre of CREP are not equivalent to one acre of the watershed benefiting from nutrient reduction or conversion to a wetland or riparian buffer strip. CPs are expected to positively impact lands adjacent to the enrolled acreage. For example, implementation of riparian and wetland buffers on CREP land would reduce sediment and nutrient loads by intercepting agricultural runoff on CREP land as well as adjacent non-CREP lands.

Specific impacts and the effectiveness of CPs depend on site-specific analysis of each CREP enrollment. While acreage is limited for some of the CPs, overall benefits will impact surrounding acreage, thereby increasing the total affected acreage. Mitigation measures are in place and outlined steps would be followed to ensure compliance with NEPA and other Federal regulations for each implementation area.

3.5 Groundwater Resources

3.5.1 Introduction

Groundwater is found in aquifers throughout Idaho. Aquifers are water-bearing geologic formations that yield sufficient water for human use and store and/or transmit water to wells and springs. Groundwater is an important resource in Idaho, providing water for public and private drinking water systems, irrigation and other agricultural practices, and industrial use. Total groundwater withdrawals in 2000 equaled 4.14 million gallons/day (mgal/day) of which irrigation accounted for 3.72 mgal/day or 90 percent of total groundwater withdrawals (USGS 2005b). The majority of irrigation groundwater use in Idaho occurs in the Upper Snake River Basin (Clark et al. 1998).

Conjunctive Management of Surface Water and Groundwater

Surface water and groundwater are hydrologically connected in many parts of the CREP project area, and as such, the conjunctive management of surface water and groundwater is of special concern in Idaho. Recent legislation regulates the management of areas with connected surface water and groundwater, beginning with the Swan Falls Agreement in 1984. This agreement resulted from a 1982 Idaho Supreme Court decision that determined that hydropower water rights of the Idaho Power Company at Swan Falls Dam were not subordinate to upstream irrigation rights of agricultural land users. The case warned water users that groundwater pumping for irrigation was impacting spring discharge and flow into the Snake River, and therefore affecting water rights holders downstream. Since the Swan Falls Agreement was reached, surface and groundwater have been jointly administered. Currently, IDWR administers water distribution of hydrologically connected surface and groundwater rights through appropriate state statutes and conjunctive management rules. The conjunctive management rules developed by IDWR provide a mechanism to stem conflicts between surface and groundwater users when water supplies are limited (Proposal 2005).

Conjunctive management rules specific to the ESPA include a 1992 moratorium on new irrigation pumping from the ESPA, which is still enforced. IDWR has also formed Water Districts on the Eastern Snake River Plain that require the measurement and reporting of consumptive groundwater pumping (Proposal 2005).

Critical Groundwater Areas and Groundwater Management Areas

Amendments in 1953 and in 1982 to Idaho's Ground Water Act gave authority to the IDWR director to regulate groundwater withdrawals from aquifers subject to insufficient supplies, and to designate groundwater management areas. CGWA and GWMA are designated in areas which appear to have or may be approaching insufficient groundwater supply. A CGWA is a groundwater basin with an insufficient quantity of groundwater to provide a reasonably safe supply for irrigation (or other uses in the basin) at the current rates of withdrawal. A GWMA is a groundwater basin approaching the conditions of a critical groundwater area (IDWR 2005a).

Groundwater Quality

IDEQ monitors and protects groundwater quality in Idaho through partnerships with the ISDA, IDWR, and many other State, local, and private agencies, organizations, businesses, and individuals. The Idaho Ground Water Quality Plan, the Ground Water Quality Rule, and the Idaho Ground Water Protection Interagency Cooperative Agreement outline the roles of IDEQ, ISDA, and IDWR (IDEQ 2005a).

The Statewide Ambient Ground Water Quality Monitoring Program (Statewide Program) has been in existence since 1990. Over 1,500 monitoring sites (existing wells and springs) have been sampled for a wide variety of ground water quality parameters, such as common ions (calcium, magnesium, etc.), trace elements (iron, copper, etc.), bacteria, nutrients, radioactivity, volatile organic compounds (VOCs), and pesticides. Most of the monitoring sites (67 percent) are used for domestic purposes; other uses include irrigation, public supply, stock, commercial, industrial, and several minor uses. Most monitoring sites are currently scheduled for sampling once every five years. Approximately 100 sites, designated Annual Sites, are sampled every year (Neely 2005).

Between 1992 and 1995, the USGS, through the National Water-Quality Assessment (NAWQA) program, conducted basinwide water quality sampling in the ESPA. The USGS reported on the findings of this monitoring in a report titled: *Water Quality in the Upper Snake River Basin Idaho and Wyoming, 1992–95* (Clark et al. 1998).

3.5.2 Existing Conditions

Three of the four major segments of the CREP area are directly related to groundwater. These segments are identified as: the ESPA segment; the Cinder Cone Butte CGWA - Mountain Home GWMA segment; and the Raft River CGWA - Oakley Fan CGWAs segment (defined in Section 1.3.2). Each segment is discussed in more detail below. Figure 3.1 illustrates the location of GWMAs and CGWAs.

3.5.3 Eastern Snake River Plain Aquifer

The ESPA covers an area of approximately 10,800 square miles and stretches across much of south central Idaho. The aquifer discharges nearly 2.6 trillion gallons of water each year to the Snake River. The ESPA is composed of thick sequences of Quaternary age basalt flows. The aggregate thickness of basalts that make up the system is estimated to be more than 5,000 feet deep, however most horizontal movement of groundwater occurs within the upper 300 to 500 feet of the aquifer. The ESPA is a highly productive aquifer with interconnected pore spaces, mainly in the rubbly tops of basalt flows, which transmit very large quantities of groundwater. Well yields above 3,000 gallons per minute (gpm) are not uncommon and 66 percent of irrigation wells in the plain have yields that exceed 1,500 gpm. Total ground-water storage in the upper 500 feet of the aquifer system is estimated to be 200 to 300 million acre-feet (IDWR 1999 and Proposal 2005).

In most areas of the ESPA, a free (unconfined) water table surface marks the top of the regional flow system, although there are some areas on the periphery of the ESPA where basalts are overlain by sedimentary layers, resulting in localized perched aquifer conditions and/or underlying confined flow conditions within the basalts. Downward vertical flow in the regional system is significant in the northeastern portions of the ESPA, where recharge from the land surface is high. Upward vertical flow occurs in the discharge areas along the southwestern portion of the ESPA (IDWR 1999).

Figure 3.2 shows the components of ESPA recharge and discharge for water year 1980. The main component of recharge is incidental recharge from irrigation practices. In areas irrigated with surface water, about 60 percent of total aquifer recharge occurs as a result of irrigation in excess of crop consumptive use. Water also enters the aquifer from precipitation, tributary underflow along the northern and eastern boundaries of the plain, and through losses from the Snake River, Snake River tributaries, and canals (IDWR 1999).

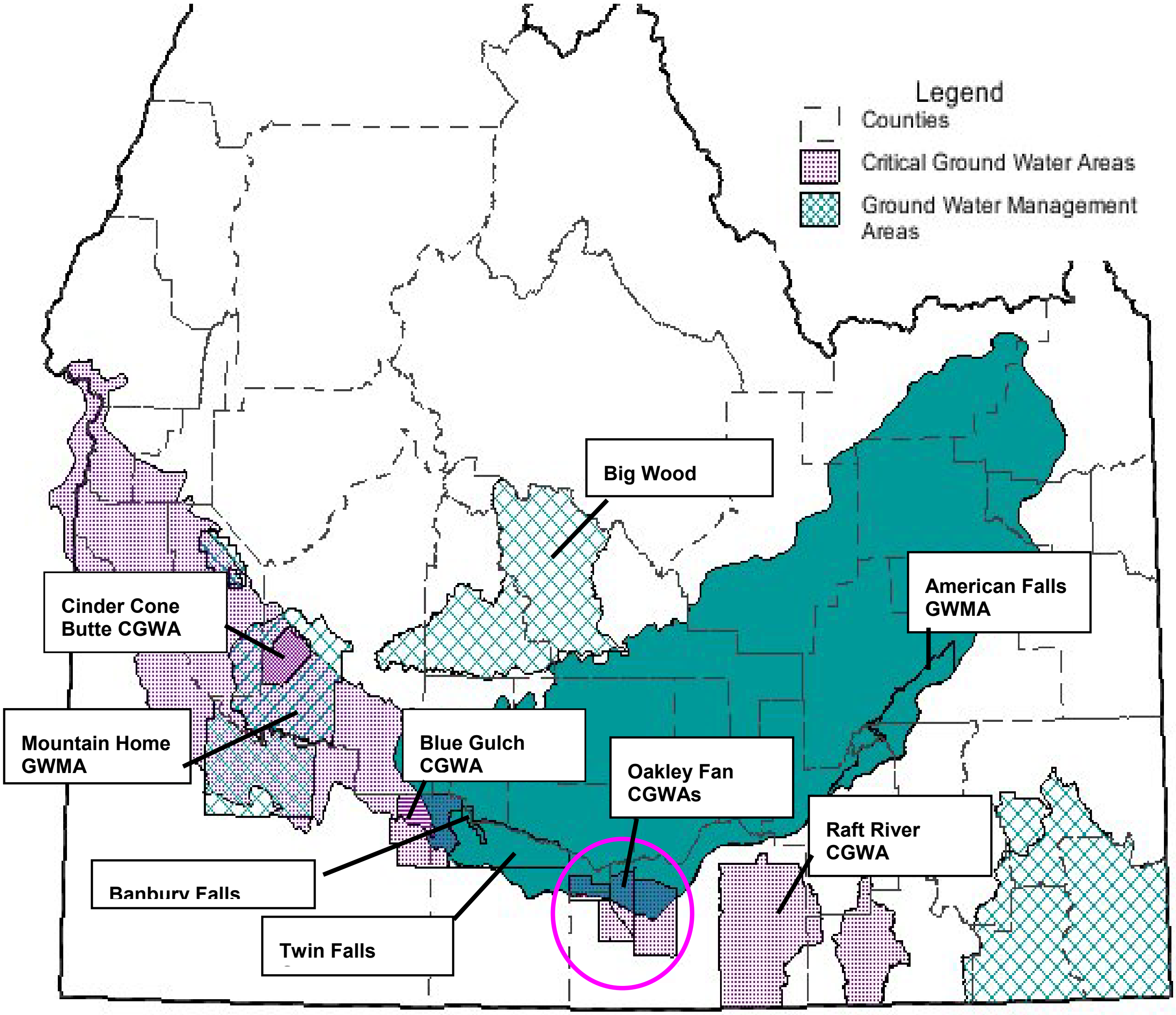


Figure 3.1. Location of Idaho's GWMAs and CGWAs.
Source: IDWR 2005d.

Groundwater that is not pumped from the aquifer is discharged to the Snake River in one of three reaches that are hydrologically connected to the ESPA. These reaches are: Thousand Springs Reach between Kimberly and Bliss; the American Falls reach between Blackfoot and Neeley, which accounts for approximately 1.8 million acre-feet of discharge annually; and the Henry's Fork reach below St. Anthony, which accounts for approximately 80,000 acre-feet of discharge annually (IDWR 1999).

Recharge and Discharge to the Eastern Snake River Plain Aquifer, 1980

	Quantity (million acre-feet)	Percentage of Total
Recharge		
Surface water irrigation	4.84	60
Tributary ground water inflow	1.44	18
Precipitation	0.70	9
Snake River losses	0.69	8
Tributary streams and canal losses	0.39	5
Discharge		
Spring flows, Snake River gains	7.08	86
Net pumping withdrawal	1.14	14

Figure 3.2. Recharge and discharge to the ESPA.
Source: IDWR 1999.

Thousand Springs Reach

Thousand Springs Reach of the Snake River, extending from Kimberly, Idaho to King Hill, Idaho, is known for the numerous springs that discharge from the north side of Snake River canyon. These springs form when the ESPA discharges excess water through interstices in the porous volcanic rock of the canyon walls. The reach is about 40 miles long and 11 of the springs have an average discharge greater than 100 cfs. The area also contains hundreds of smaller springs that can collectively discharge more than 5,000 cfs. As of 1998, over 3.7 million acre-feet flowed from these springs annually and the springs entering this reach have historically provided water for irrigated agriculture, hydropower, and aquaculture (IDWR 1999 and Proposal 2005).

Cinder Cone Butte CGWA and Mountain Home GWMA

The Cinder Cone Butte CGWA, located in Elmore County, and the Mountain Home GWMA, which surrounds the Cinder Cone Butte CGWA, located in Elmore and western Ada counties, were designated due to declining groundwater levels. New groundwater appropriations are not allowed in the Cinder Cone Butte CGWA. The order declaring the Mountain Home area a GWMA states that the area is approaching critical groundwater levels, "although there appear to be subareas where new appropriations could be authorized without injuring existing water rights" (Harrington and Bendixsen 1999). Cinder Cone Butte CGWA and Mountain Home GWMA overlie the MHA. The MHA, unlike the ESPA, is not hydraulically connected to the Snake River, or any other major water source (Proposal 2005). The Mountain Home area contains a regional aquifer system that flows west-southwest.


Top of Cinder Cone Butte. Photo courtesy Utah State University.

Depth to water in the regional system is usually in excess of 300 feet. Two perched aquifer systems are found in the area: one system in and around the City of Mountain Home, and another northwest of Mountain Home in Township 2 South, Range 5 East. Water in the perched aquifers flows south to southwest, and depth of the aquifers ranges from a few feet to several hundred feet (Harrington and Bendixsen 1999).

Downward flow from the perched system, precipitation from the uplands, and underflow from the north are the main sources of recharge to the regional system. Recharge to the perched system in the Mountain Home area is from Rattlesnake and Canyon creeks, local irrigation, and leakage from the Mountain Home Reservoir. Percolation from intermittent streams recharges the perched system northwest of Mountain Home (Harrington and Bendixsen 1999).

Raft River CGWA and Oakley Fan CGWA Unit

Raft River CGWA


Furrow irrigation. Photo courtesy of NRCS.

The Raft River CGWA is located in southern Idaho in Cassia County. The area was originally designated a CGWA on July 23, 1963. Subsequent orders modified the boundaries, eliminating an area on the extreme northern boundary (August 2, 1965), the Albion basin (September 19, 1966), and the area north of the Yale-Cotteral Road (November 3, 1970). Large-scale groundwater pumping in the Raft River valley began in 1950 and increased throughout the decade. USGS documented declining water levels and decreased stream flow in the Raft River from 1956 through 1960. By 1963, concern over the potential effects of new and increased groundwater use dictated the designation as a CGWA (Harrington and Bendixsen 1999).

Aquifers in the Raft River Basin consist of lake and volcanic deposits, alluvial deposits, and basalt. Groundwater occurs in both water table and artesian conditions and interbedded lenses and tongues of silt and clay support localized perched water zones (Harrington and Bendixsen 1999).

Groundwater flows from south to north towards the Snake River, generally following the direction of surface water flow. Recharge occurs principally from precipitation, infiltration from streams, and irrigation water (Harrington and Bendixsen 1999).

Oakley Fan

The Oakley Fan is located in northeastern Twin Falls and western Cassia Counties. Originally declared as the Goose Creek-Rock Creek CGWA on January 16, 1962, the boundaries were modified on September 6, 1967, creating three separate CGWAs: Artesian City, Cottonwood, and Oakley-Kenyon. On January 19, 1982, the West Oakley Fan CGWA was established. The four areas create a contiguous tract and have been managed as a single unit (Harrington and Bendixsen 1999).

The order modifying the boundaries and establishing the initial three areas stated “there does not appear to be available unappropriated ground water within the boundaries of the designated areas. Therefore, new appropriations of water shall not be allowed.” The West Oakley Fan order did not specifically prohibit new diversions; however, the order stated that a study had indicated that the available groundwater was limited. A management plan has not been developed nor has an advisory committee been formed (Harrington and Bendixsen 1999).

There are four main aquifers in the Oakley Fan area: limestone, rhyolite, basalt and alluvium. Table 3.5 summarizes the hydrologic characteristics of these aquifers. Also within the Oakley Fan area are several perched aquifers that are most likely the result of surface runoff, storage facilities, and surface irrigation (Harrington and Bendixsen 1999).

Table 3.5. Summary of hydrologic characteristics of the four main aquifers in the Oakley Fan area.

Aquifer	Aquifer Type	Groundwater Yield
Limestone	Confined	High
Rhyolite	Confined	Moderate to Low
Basalt	Unconfined	High to Low
Alluvium	Unconfined	Moderate to Low

Source: Harrington and Bendixsen 1999.

Groundwater flow direction is north to northwest with probable flow restrictions across two northwest trending faults. The aquifer is hydrologically connected to Murtaugh Lake, Snake River, and the ESPA. River elevations and groundwater levels indicate that flow passes under the Snake River to join the ESPA at some point between Milner Dam and a point north of Murtaugh Lake. Additionally, gains or losses in Murtaugh Lake levels are related to groundwater pumpage in the aquifer (Harrington and Bendixsen 1999).

Recharge to the Oakley Fan comes from runoff from streams flowing from the south, surface irrigation, and the Snake River (Harrington and Bendixsen 1999).

Critical Groundwater Areas and Groundwater Management Areas

Including the CGWAs and GWMAs discussed above, there are four CGWAs and five GWMAs located in the CREP project area. The status of these areas is summarized in Table 3.6.

Table 3.6. Critical Groundwater Areas and Groundwater Management Areas.

	Name	Date Designated	Location	Reason for Designation	Information
Critical Groundwater Areas	Blue Gulch	12/09/1970	eastern Owyhee County, western Twin Falls County	Discharge exceeds recharge.	Designation stopped anticipated new withdrawal applications. Allowed the development of existing permits
	Oakley Fan Unit Artesian City Cottonwood Oakley-Kenyon West Oakley	1/16/1962 1/16/1962 1/16/1962 1/19/1982	northeastern Twin Falls County, western Cassia County	No unappropriated groundwater in area. Prevent further appropriations.	Create a contiguous tract and managed as a single unit. Recharge demonstration project has been ongoing; only limited volumes have been recharged.
	Raft River	7/23/1963	western Cassia County	Declining groundwater levels and decreased streamflow in the Raft River. Concern over the effects of increased groundwater use.	Declining groundwater level since late 1980s.
	Cinder Cone Butte	5/7/1981	Southwestern Elmore County	Declining ground water levels.	No new groundwater appropriations allowed.

	Name	Date Designated	Location	Reason for Designation	Information
Groundwater Management Areas	Mountain Home	11/9/1982	Elmore County, western Ada County	Declining ground water levels.	Approaching critical. In some areas, new appropriations could be authorized without injuring existing water rights.
	Big Wood	6/28/1991	Blaine, Camas, Elmore, Gooding counties	Addressed the connection between ground and surface water.	Junior groundwater diversions depleting senior surface water flows. New diversions allowed if no injury proven or mitigation provided.
	Twin Falls	7/24/1987	Twin Falls County	Concern about thermal system approaching a critical condition.	Moratorium on new geothermal development in 1987 for a limited area.
	Banbury Hot Springs	4/12/1983	Northwestern Twin Falls County	Declining artesian pressures. Concern about approaching over-utilization.	New water appropriations allowed for domestic uses only.
	American Falls	08/03/2001, boundaries modified 08/29/2003	ESPA along Snake River from Shelley to American Falls in Bingham County	Concern about the depletionary effects of ground water withdrawals under junior priority water rights and the availability of water supplies for senior priority water rights from connected surface and groundwater sources during the severe drought conditions experienced across the Snake River Basin.	Diversions under certain junior groundwater rights that cause depletions of surface water that harm senior priority rights are curtailed

Source: Harrington and Bendixsen 1999 and IDWR 2005b.

3.5.4 Agricultural Impacts to Groundwater

Groundwater Quality

Water quality of the ESPA is generally good, but localized contamination from agriculture-related activities does occur. Localized contamination from nitrates associated with the over application of nitrogen fertilizers can be found in the upper portion of the ESPA. Contamination from herbicides and pesticides can also be found on the ESPA, but is limited to isolated areas on the plain. Declining water tables can concentrate contaminants and create further problems associated with human health (Proposal 2005).

The Agricultural Ground Water Quality Protection Program for Idaho identified the following thirteen potential agricultural contaminant sources:

- Agricultural chemical storage and handling,
- Agricultural chemical mixing and loading,
- Agricultural chemical application practices (including pesticides and herbicides),
- Agricultural practices,

- Confined animal feeding operations,
- Agricultural chemical waste disposal,
- Aquaculture waste management practices,
- Injection wells and other underground disposal methods,
- Agricultural chemical spills,
- Urban/nonagricultural chemical uses,
- Land applied waste and wastewater,
- Agricultural waste disposal, and
- Well construction and abandonment (ISCC and IDEQ 2003).

The Statewide Program collected samples from 398 sites during the summer of 2003. These sites include 28 new sites that were sampled for the first time. The most commonly detected contaminants in groundwater of Idaho include nitrates, pesticides and VOCs, arsenic, and fluoride (Hagan 2004). Nitrates, pesticides and VOCs, and arsenic are discussed in more detail below.

Nitrates

Nitrate is one of the most widespread groundwater contaminants in Idaho (IDEQ 2005b). Areas where groundwater is most vulnerable to nitrate contamination are those where urban or irrigated agricultural land uses are predominant, where the depth to water is shallow, and where soils are well drained (Clark et al. 1998).

Nitrate sources can be natural or human, and can have both inorganic and organic origins. Anthropogenic sources include fertilizers, manure, septic systems, decaying organic matter, and waste water. Since elevated nitrate levels do not often occur naturally in groundwater, the presence of nitrate above background levels is almost always the result of land surface activities. IDWR considers groundwater nitrate levels over two milligrams per liter (mg/L) to be an indication of land surface impacts to groundwater quality (Neely 2005).

Nitrate Priority Areas

Nitrate Priority Areas (NPAs) are groundwater areas that are degraded by nitrates and were defined by IDEQ using water quality samples collected by State and Federal agencies (Neely 2005). In 2002, IDEQ ranked the 25 NPAs in the State (Figure 3.3) based on the severity of the degradation; a ranking of one indicates the most severely impacted area in the State (IDEQ 2005d). There are 14 NPAs located in the CREP area, including some of the most severely impacted in the State. Nitrate trend analysis shows that in four of the NPAs nitrate levels are increasing, while in the remaining NPAs there is no change in nitrate levels. Table 3.7 summarizes the characteristics of NPAs located in the CREP area. Figure 3.3 illustrates the NPAs of Idaho.

Table 3.7. Summary of NPAs in the CREP area.

Rank/ Area	Area Name	County	Area in Acres	% ≥10 mg/l	% ≥5 mg/l	% ≥2 mg/l	Min Nitrate mg/l	Max Nitrate mg/l	Average Nitrate mg/l	Land Use	Trend
2	Twin Falls	Twin Falls	244,229	6	44	93	0	30.5	5.3	Irrigate	Incr.
3	Burley/Marsh Creek	Cassia	169,563	17	60	88	0	20	6.36	Irrigate	Incr.
6	Grand View	Owyhee	13,987	29	67	76	0	26	8.9	Irrigate	Incr.
7	Fort Hall	Bingham	32,323	25	60	83	0.1	24	8.3	Irrigate	No Chg.
8	Ashton, Drummond, Teton R	Fremont	146,170	15	74	95	0.1	38.2	7.4	Irrigate/ Dry Agriculture	No Chg.
9	Rupert	Minidoka	116,780	8	44	78	0	100	5.6	Irrigate	No Chg.
13	Hammett	Elmore	14,416	0	38	63	0	8.9	4	Irrigate/ Rangeland	Incr.
14	Bruneau	Owyhee	24,255	40	40	50	0	110	17.49	Irrigate/ Rangeland	No Chg.
16	St. Anthony	Fremont	6,725	29	36	43	0.9	37.9	7.6	Irrigate	No Chg.
17	Pocatello	Bannock	22,576	3	26	87	0.9	14.5	3.8	Urban	No Chg.
19	Mountain Home	Elmore	11,223	13	35	74	1.1	28	5.4	Irrigate/ Rangeland	No Chg.
20	Hibbard	Madison	10,907	6	19	63	0	25.9	3.7	Irrigate	No Chg.
21	Mud Lake	Jefferson	36,417	5	41	68	0	14	3.9	Irrigate	No Chg.
25	Bliss	Gooding	6,806	5	39	67	0	12.2	3.9	Irrigate	No Chg.

Source: IDEQ 2005j.

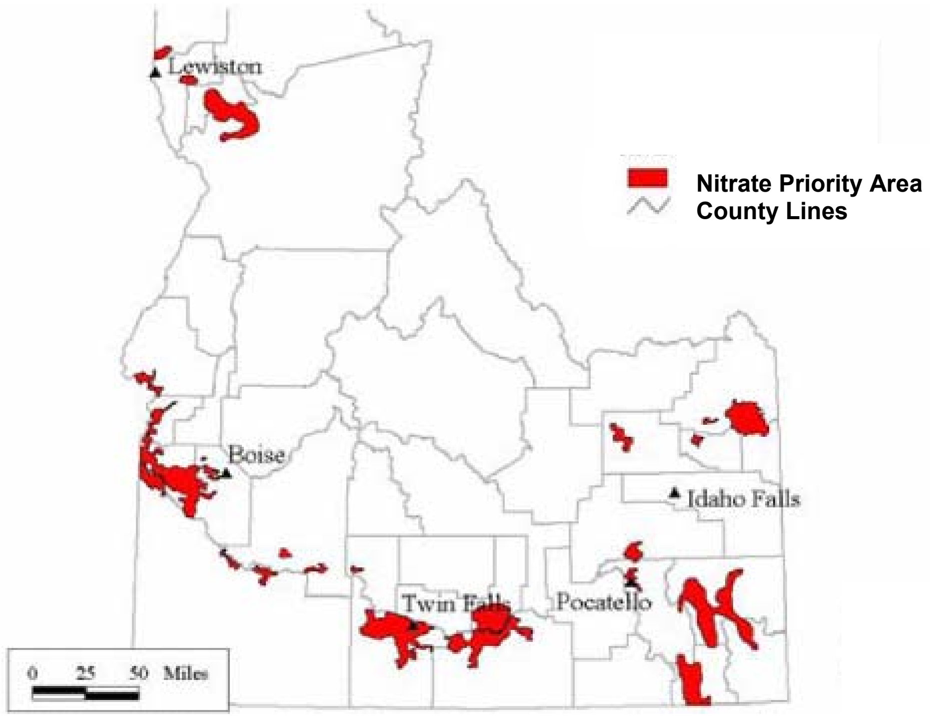


Figure 3.3. Nitrate Priority Areas of Idaho.
Source: Neely 2005.

Pesticides and Volatile Organic Compounds (VOCs)

Sources of pesticides include agricultural application to control insects, weeds and other pests, urban runoff, and golf courses. Pesticide use on farmland is common in the CREP project area and according to the 2002 Census of Agriculture, herbicides were applied to approximately 1.5 million acres of farmland in CREP counties and 671,000 acres of farmland in the CREP counties received insecticides (Table 2.1, Section 2.2.1) (NASS 2002).

Results of the USGS Upper Snake River NAWQA study showed no detectable pesticides in groundwater in some areas; however, in other areas, groundwater contained numerous pesticides. The largest numbers and concentrations of pesticides were in samples from wells that contained large nitrate concentrations located in agricultural areas adjacent to the Snake River. Intensive sampling of 105 domestic and irrigation wells in agricultural areas north of the Snake River between Burley and Hagerman determined that 73 percent of the wells contained at least one pesticide and that 41 percent contained three or more pesticides. The VOC 1,2-dichloropropane was the only organic compound detected in groundwater that exceeded EPA drinking water standards. However, it was detected in water from only one shallow domestic well at a concentration of 6.6 micrograms per liter (Clark et al. 1998).

Water samples from domestic, irrigation, stock, and public supply wells were collected and analyzed for pesticides and VOCs during a basinwide study conducted during the summers of 1994 and 1995. Results showed that at least one pesticide was detected in 39 percent of the 195 wells sampled (Clark et al. 1989). Water from 13 percent of the wells contained three or more pesticides. Fourteen different pesticides and 11 different VOCs were detected in the 195 well samples. The most commonly detected pesticides were atrazine and desethyl-atrazine (a product of atrazine breakdown), which occurred in 27 percent of samples, and metribuzin, simazine, and prometon, which occurred in seven percent of samples. However, none of these pesticides exceeded EPA drinking water standards (Clark et al. 1998).

The Statewide Program has also detected pesticides and VOCs in the 1,500 plus domestic and irrigation wells that it monitors (Hagan 2004). Results of the Statewide Program are summarized in Table 3.8. The most commonly detected pesticides were atrazine (42.0 percent of pesticide and VOC detections), desethyl-ataarazine (10.3 percent), simazine (8.6 percent) and alachlor (8.0 percent). None of the pesticide detections exceeded drinking water standards (Hagan 2004).

Table 3.8. Summary of pesticide and VOCs detections in CREP counties.

County	Detection of Concern	# of Detections	% of Total Pesticide/VOC Detections
Minidoka	2,4-D	3.0	1.7
Elmore	Alachlor	6.0	3.4
Twin Falls	Alachlor	8.0	4.6
Total Alachlor		**14.0**	**8.0**
Bannock	Atrazine	1.0	0.6
Bonneville	Atrazine	3.0	1.7
Butte	Atrazine	3.0	1.7
Cassia	Atrazine	25.0	14.4
Elmore	Atrazine	3.0	1.7
Gooding	Atrazine	4.0	2.3
Minidoka	Atrazine	9.0	5.2
Owyhee	Atrazine	3.0	1.7
Twin Falls	Atrazine	22.0	12.6
Total Atrazine		**73.0**	**42.0**
Bannock	Desethyl-atarazine	2.0	1.1
Cassia	Desethyl-atarazine	5.0	2.9
Minidoka	Desethyl-atarazine	2.0	1.1
Owyhee	Desethyl-atarazine	1.0	0.6
Twin Falls	Desethyl-atarazine	8.0	4.6
Total Desethyl-atarazine		**18.0**	**10.3**
Cassia	Bromacil	1.0	0.6
Minidoka	Carbofuran	1.0	0.6
Twin Falls	Chloroform	1.0	0.6
Minidoka	Chloropyrifos	2.0	1.1
Minidoka	Cyanazine	2.0	1.1
Twin Falls	DDE,4,4'-	1.0	0.6
Twin Falls	Dibromochloromethane	3.0	1.7
Twin Falls	Dichlorodifluoromethane	1.0	0.6
Fremont	Dipropylthiocarbamate,S-Ethyl (EPTC)	1.0	0.6
Bingham	Estradiol	1.0	0.6
Twin Falls	Estradiol	3.0	1.7
Total Estradiol		**4.0**	**2.3**
Twin Falls	Metolachlor	2.0	1.1
Madison	Naphthalene	2.0	1.1
Cassia	p-Cresol	1.0	0.6
Bannock	Phenol	1.0	0.6
Bonneville	Phenol	2.0	1.1
Cassia	Phenol	2.0	1.1
Elmore	Phenol	1.0	0.6
Fremont	Phenol	1.0	0.6

County	Detection of Concern	# of Detections	% of Total Pesticide/VOC Detections
Jefferson	Phenol	1.0	0.6
Madison	Phenol	2.0	1.1
Minidoka	Phenol	1.0	0.6
Twin Falls	Phenol	3.0	1.7
Total Phenol		**14.0**	**8.0**
Bannock	Prometone	1.0	0.6
Twin Falls	Prometone	1.0	0.6
Total Prometone		**2.0**	**1.1**
Bannock	Simazine	1.0	0.6
Cassia	Simazine	3.0	1.7
Minidoka	Simazine	5.0	2.9
Twin Falls	Simazine	6.0	3.4
Total Simazine		**15.0**	**8.6**
Bannock	Tebuthiuron	1.0	0.6
Bannock	Tetrachloroethylene	8.0	4.6
Cassia	Triallate	1.0	0.6
Twin Falls	Trichloroethane,1,1,1-	1.0	0.6
Bannock	Tris(2-butoxyethyl) phosphate	1.0	0.6
Cassia	Tris(2-butoxyethyl) phosphate	1.0	0.6
Total Tris(2-butoxyethyl) phosphate		**2.0**	**1.1**
Total Pesticide and VOCs		**174.0**	**100.0**

Source: Hagan 2004.

Arsenic

Arsenic is also a contaminant of concern in groundwater, however since most arsenic found in groundwater is closely related to the chemical composition of the aquifer and not related to agricultural activities, arsenic is not analyzed further in this section (Hagan 2004). Section 3.7 (Drinking Water) discusses arsenic in greater detail.

Water Quantity

Precipitation in the proposed CREP area is insufficient to meet crop water demands and irrigation is required for crop production. Agriculture in the area depends on irrigation, partially from groundwater pumping. In 2000, agriculture was responsible for 90.0 percent of the groundwater withdrawals in Idaho (USGS 2005b). Depletion of spring flows and declining groundwater levels are a collective effect of drought, changes in surface water irrigation acreage and practices, and groundwater pumping (Proposal 2005). The following is a summary of impacts of agricultural on groundwater quantity. For a more detailed analysis on effects of pumping on groundwater levels see Appendix G.

As indicated by Figure 3.2, irrigation practices have a major impact on groundwater recharge of the ESPA. Raft River aquifer, Oakley Fan aquifer, and the MHA are also recharged by surface irrigation. Due to the influence of irrigation on groundwater levels, a history of irrigation practices and their effects on groundwater levels is included in this section to provide context for the current issues that surround the declining water levels of the aquifers in the CREP area. Since the ESPA is the largest aquifer of the region and the majority of information available concerns the ESPA, most of the analysis is centered on the ESPA. However, trends in irrigations practices and groundwater levels are similar in the other aquifers. These trends are further explored in Appendix G.

Irrigation Effects on Groundwater Levels and Groundwater Storage

Irrigated acreage and volumes of surface water irrigation increased dramatically through World War II. Prior to 1950, annual surface application rates were as high as 14 acre-feet per acre, though average crop consumptive use is only about two feet per year. In response, groundwater levels north of the Snake River between Kimberly and Bliss rose by 60-70 feet on average during the period 1907-1959. During the same period groundwater storage increased by about 400,000 acre-feet per year, a cumulative increase of more than 15 million acre-feet (IDWR 1999).

During the 1950s and 1960s irrigated acreage continued to increase, but most new land was irrigated with groundwater. Water use efficiency also increased through the use of sprinkler irrigation methods and implementation of various conservation programs. The higher efficiency dramatically reduced incidental recharge of the aquifer while irrigation sources were concurrently shifting from surface to groundwater. Subsequently, declines in groundwater levels were observed in the eastern and central parts of the plain during the 1970s and early 1980s. Declines of up to five feet in Madison County were attributed to sprinkler irrigation and conversion of irrigation practices from flood to furrow. In Minidoka County declines of 10 feet or more in were attributed to increased groundwater pumping in that area (IDWR 1999).

Sprinkler Irrigation. Photo courtesy of NRCS.

The shift in irrigation sources from surface water to groundwater since the mid-1960s has resulted in massive impacts to groundwater storage and quantity in the ESPA. Between 1975 and 1995 it was estimated that total groundwater storage declined on average about 350,000 acre-feet per year, a cumulative decrease of seven million acre-feet (IDWR 1999).

From 1980 to 1990, annual groundwater use in the basin increased from 2.6 million acre-feet to 7.1 million acre-feet. In 1980, groundwater accounted for only 22 percent of the total basin water use. In 1990, groundwater accounted for about 47 percent. As a result, groundwater levels in some areas of the basin have declined since 1980. Although intensified groundwater use has been mostly for irrigation, the number of confined-animal feeding operations in the lower parts of the basin that rely on groundwater supplies has also been increasing rapidly (Clark et al. 1998). As of 1992, there were 800,000 acres of groundwater-irrigated land in production. At an average estimated irrigation demand of 1.8 acre-feet per acre, the total aquifer withdrawal reached about 1.5 million acre feet per year (Proposal 2005).

Most of the groundwater declines during the last 20 years have occurred in the central part of the ESPA (roughly 1,300 square miles) including much of Minidoka County and parts of Jerome, Lincoln, and Blaine counties (Figure 3.4). The A & B Irrigation District and the Magic Valley Ground Water District have a total of 754 wells in this area of the ESPA, and together pump about 460,000 acre-feet of water per year. A groundwater decline up to 12 feet has occurred in this area, with an average of approximately eight feet (IDWR 1999).

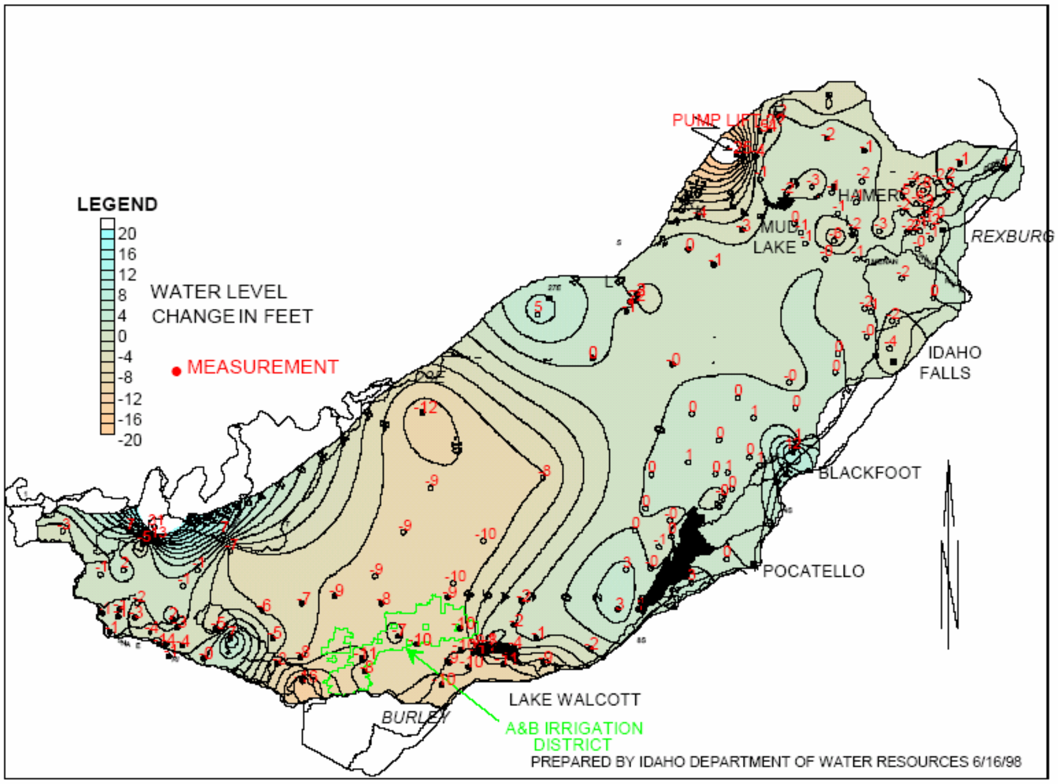


Figure 3.4. Change in groundwater level in the ESPA between 1980 and 1998.
Source: IDWR 1999.

Elsewhere on the ESPA there is less consistent evidence of groundwater level declines. A small area of decline that averages two to three feet appears in Madison County near St. Anthony, and there are isolated points within this area that exhibit groundwater declines as high as eight feet. In other areas of the ESPA (e.g., north of Blackfoot) groundwater levels appear to have remained constant or even increased slightly. As of 1999, median pumping drawdown on the ESPA was about six feet (IDWR 1999).

In the Mountain Home area, there are two areas of significant groundwater declines. Groundwater levels in the MHA, which encompasses the City of Mountain Home and the Mountain Home Air Force Base, have declined as much as 70 feet in the last 35 years (Proposal 2005).

The second aquifer, in the Cinder Cone Butte area, has also declined 70 feet. These groundwater areas are sufficiently separated by horizontal distance and the parallel direction of groundwater flows in a way that withdrawals of groundwater from one aquifer does not significantly impact the other (Proposal 2005).

Agriculture is responsible for an estimated 95 percent of groundwater pumping from both aquifers. Water budgets for the area indicate a 30,900 acre-foot yearly deficit for the area (Proposal 2005).

Effects on Spring Discharge

Spring discharge to the Snake River also increased in response to the increased incidental aquifer recharge during the first half of the century. Prior to 1912, spring discharge between Kimberly and King Hill was estimated to be less than 4,300 cfs. Between 1912 and 1950 spring discharge climbed steadily, reaching 6,800 cfs in the early 1950s. The increase in Thousand Springs discharge has been attributed to increased ground-water recharge in surface water irrigated areas north and east of the springs. After 1950, a period of uneven decline in Thousand Springs discharge began, with the lowest value occurring in 1996, when average annual discharge fell to about 5,200 cfs (Figure 3.5) (IDWR 1999).

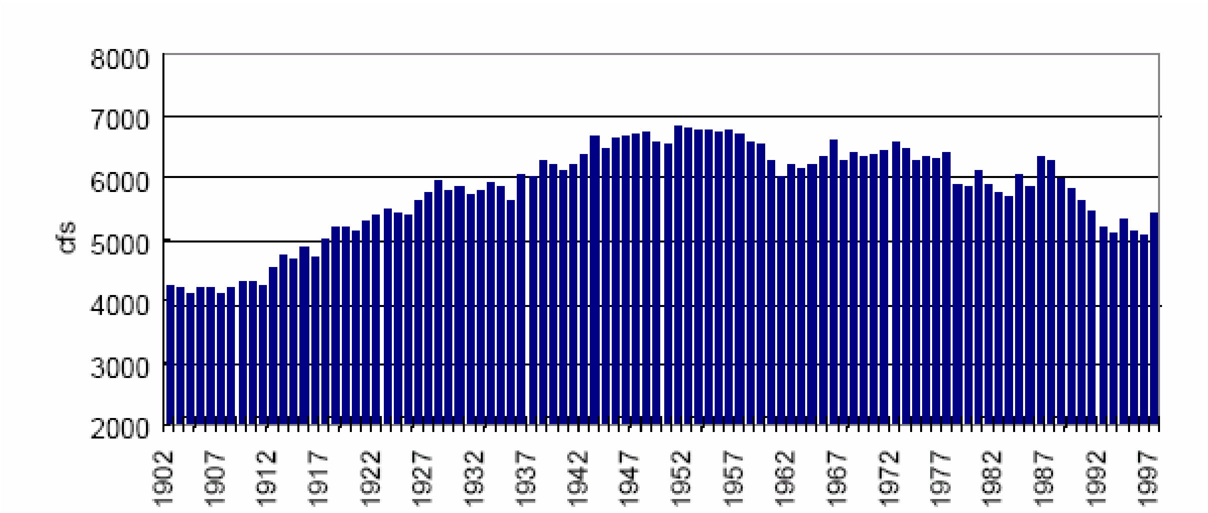


Figure 3.5. Discharge from the ESPA at Thousand Springs (Kimberly to Bliss reach).
Source: IDWR 1999.

A recent study indicates that the collective effects of all groundwater pumping within the boundaries of the eastern Snake River Plain depletes spring discharge and flow of the Snake River by about 900,000 acre-feet per year (1,200 cfs). The same study projects that changes in surface water irrigation practices have depleted the spring discharge by about 500,000 acre-feet per year (700 cfs) (Johnson et al. 1998).

3.5.5 Effects of Alternative A (No Action) on Groundwater

Alternative A would result in long-term, moderate adverse effects to groundwater quality and quantity. Under Alternative A, current agricultural practices would continue and groundwater quality and quantity would continue to decline. Improvements to groundwater would be dependent upon existing programs.

Current agricultural practices introduce pesticides and nutrients into groundwater recharge resulting in the contamination of groundwater quality.

If current rates of groundwater pumping in the CREP area continue, the decreasing trend in groundwater levels and spring discharges would likely continue. Decreasing water levels would continue to negatively impact groundwater uses (e.g., irrigation, stock watering, domestic) in the CREP area.

Selection of Alternative A would not contribute to the achievement of any of the CREP Objectives cited in Section 1.4.

3.5.6 Effects of Alternative B (CREP Agreement) on Groundwater

Implementation of Alternative B would result in moderate to high beneficial long-term effects to groundwater. Enrollment of land in FSA-approved CPs would result in benefits to groundwater quality and quantity.

Converting cropland to CPs would remove land from active agriculture and diminish groundwater pumping needed to irrigate those acres. Groundwater recharge would also improve with the establishment of CP2 (permanent native grasses) and CP22 (riparian buffer). Native grasses require less water for growth, resulting in more percolation of precipitation into the groundwater.

The retirement of 100,000 acres of land from active agricultural practices would result in lower fertilizer and pesticide application in the proposed CREP project area. Groundwater recharge from land enrolled in FSA-approved CPs is expected to be of higher quality than recharge from previously cropped land.

Activities associated with the implementation of CPs could potentially result in short-term, adverse impacts to surface water quality and quantity. These activities and their impacts are summarized below:

- Site preparation— CP establishment could require site preparation activities including building physical structures such as dikes and clearing enrolled land of undesirable plant species using chemicals such as herbicides and/or physical methods such as burning, discing, and plowing. These activities have the potential to add sediments and pesticides to surface water that recharges aquifers.
- Establishment of desirable plants and controlling invasive species or noxious weeds—Until desired plants are established, acres enrolled in CREP may be irrigated, potentially affecting water quantity.
- Maintenance of CPs—Maintaining CPs on enrolled CREP land may include additional shifting soil to repair dikes or buffer strips, applying herbicides and/or pesticides to control invasive species, or irrigating land during critical growing periods of drought years.

A conservation plan for each CP would be prepared and BMPs will be used to mitigate any adverse impacts of implementing specific CPs. These impacts are expected to only last until the CP is permanently established and are minor compared to the overall long-term benefits of the CPs. These temporary impacts could be expected to last anywhere between 1-3 years.

The beneficial impacts of the Idaho CREP discussed above would provide long-term moderate to high beneficial effects, assisting in the achievement of all five CREP Objectives (Section 1.4).

3.6 Surface Water

3.6.1 Introduction

Surface water resources in the CREP area are important for a number of uses including agriculture, recreation, and fish and wildlife. Recent drought conditions in the CREP area have stressed the availability of water supplies and accentuated the fact that a number of interests important to the State are competing for the same finite resources. This section will discuss surface water quality and quantity and how they are affected by current agricultural practices in the proposed CREP area.

Water Quantity

IDWR is responsible for the allocation and use of Idaho’s surface water including water resource management, water rights administration, water planning, and water resource protection (Proposal 2005).

The Idaho Water Resource Board (IWRB), an agency of the IDWR, has the authority to appropriate water for minimum instream flows to protect non-consumptive uses such as fish and wildlife habitat, aquatic life, recreation, aesthetic beauty, transportation, navigation, hydropower, and water quality (IDWR 2005e).

Conjunctive Management of Surface Water and Groundwater Resources

Nearly all groundwater aquifers in the State discharge to or are recharged by a surface body of water. Surface water seeps through stream beds, lake beds, and channel banks to aquifers. Aquifers, in turn, serve as underground reservoirs, and can stabilize stream discharge during dry periods. Irrigation practices, groundwater pumping, and flood flows impact the connection between surface water and groundwater. The goal of conjunctive management is to protect the holders of prior water rights while allowing for the optimum development and use of the State's water resources. The approval of new water-use applications and the administration of existing water rights must recognize this relationship (IDWR 2005c).

For more about conjunctive management see Section 3.5 Groundwater Resources.

State Protected River System

The Idaho Comprehensive Water Planning and Protected Rivers Act of 1988 (Idaho Code, Section 42-1734A et seq.) authorizes the IWRB to protect highly-valued waterways as State protected rivers. The authority to designate "protected rivers" derives from the State's power to regulate the beds of navigable streams and the waters within the State. A State protected river can be designated either natural or recreational: a natural river has minimal human development while a recreational river can have substantial human development. A comprehensive basin plan is developed by the IWRB for each protected river. In the comprehensive plan the IWRB lists activities that are prohibited below the mean high water mark for different reaches of a protected river (IDWR 2005c and IRU 2005).

Water Quality

IDEQ's Water Quality Division is responsible for assuring that the State's surface water resources meet State water quality standards and for administering Federal and State laws pertaining to water quality, including the CWA. The CWA of 1972 requires states to report on water quality of waterbodies located within the State and their attainment of beneficial uses (IDEQ 2005e).

Under Section 303(d) of the CWA, states are required to identify and establish a priority ranking of all waterbodies that are not meeting State water quality standards and to biennially develop a Water Quality Limited Segments List (commonly called a 303(d) List). Section 303(d) requires a TMDL for waters that do not meet State water quality standards. A TMDL is described as a pollution budget for a specific river, lake, or stream, and is an established wasteload allocation for point and non-point sources (IDEQ 2003).

Section 305(b) of the CWA directs states to prepare a report biennially that describes the status and trends of existing water quality, the extent to which designated uses are supported, pollution problems and sources, and the effectiveness of the water pollution control programs (IDEQ 2003).

In 2001, EPA issued guidance for the 2002 waterbody assessments and reporting requirements for Section 303(d) and Section 305(b) of the CWA, which allowed states to combine these reports into one product. The final product is referred to as an “Integrated Report” and EPA’s goal for this report is to provide the general public with a comprehensive summary of State and national water quality. The 2002 Integrated Report was submitted in September 2003 to EPA for approval (IDEQ 2003).

3.6.2 Existing Conditions

Snake River Basin

The Snake River and smaller streams carry an annual average of 10.2 million acre-feet of water into the Snake River Plain. Streams extend to mountainous watersheds on the east, north, and south sides of the Snake River Plain. Of the total stream inflow, approximately 49 percent is from the Snake River above Heise, 23 percent is from the Henrys Fork, 10 percent is from streams on the north side of the plain, and 18 percent is from all tributaries to the Snake River below the Henrys Fork confluence with the Snake (IDWR 1999).

An important reach of the Snake River is from Milner Dam to King Hill. This reach is delineated by the Snake River canyon, with numerous springs which issue through the canyon walls. The majority of the dams on the main stem of the Snake River are located in this reach and water flow is dependent on releases from these dams. Streamflow is also dependant on return flows from the ESPA. For example, spring discharge accounts for nearly 75 percent of the total water volume in the Snake River during periods of low flow below Milner Dam (IWRB 2005 and Proposal 2005).

Snake River Basin Tributaries

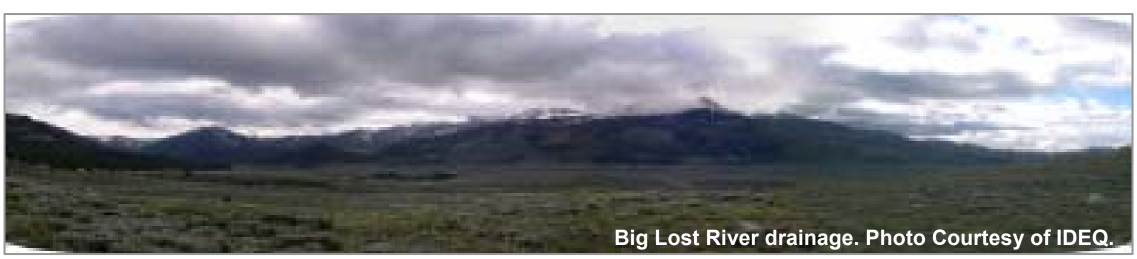
There are approximately 60 separate streams or drainages that connect to or deliver water to the Eastern Snake River Plain. The largest include the Big Lost River Drainage, the Little Lost River Drainage, and the Big Wood River Drainage (Proposal 2005).

Big Lost River Drainage

The Big Lost River watershed lies on the northern edge of the Snake River Plain and drains an area of 1,867 square miles. It is bounded by the Pioneer Mountains to the west and south, the Boulder Mountains in the northwest, and the Salmon River Mountains to the north. The White Knob Range in the central and south- central watershed and the Lost River Range to the East complete the mountainous enclosure (IDEQ 2005k).

The Big Lost River begins at the confluence of the East Fork and North Fork Big Lost Rivers, about 11 miles southwest of Chilly Buttes. Major tributaries to the East Fork of the Big Lost River include Star Hope Creek and Wild Horse Creek. Summit Creek is the major tributary to North Fork Big Lost River. Big Lost River flows decline dramatically just past Chilly Buttes due to irrigation diversions and infiltration into the substrate (IDEQ 2005k).

The Big Lost River gets its name because it naturally sinks into the western edge of the Snake River Plain before it has a confluence with any other river. During average hydrologic years it disappears north of Arco, Idaho, before it reaches the Snake River Plain. During high precipitation years it flows past Arco, Idaho onto the Idaho National Laboratory (INL) where it sinks into what are locally known as The Playas, east of Arco (IDEQ 2005k).


Big Lost River drainage. Photo Courtesy of IDEQ.

Little Lost River Drainage

The Little Lost River flows southeastward between the Lost River and Lemhi Ranges. The headwaters of the river are located in the far northern corner of the subbasin in Sawmill Canyon. Several tributaries join the river in the canyon before it meets Summit Creek in the valley. Major tributaries include (IDEQ 2005l):

- Sawmill Creek
- Summit Creek
- Dry Creek
- Wet Creek
- Williams Creek
- Badger Creek
- Deer Creek

Little Lost River drainage. Photo courtesy of IDEQ.

The remaining mountain tributaries are short and flow steeply off the flanking mountains producing large alluvial fans. Except during times of high runoff, most of the creeks entering the valley from side canyons disappear into their alluvium before reaching the river. Consequently, a majority of the runoff to the Little Lost River below Badger Creek is through subsurface flow and spring-fed valley streams (IDEQ 2005l).

Total discharge has been reported to be greater below Badger Creek due to the inflow of spring fed creeks upstream and a large ridge extending from the Lemhi Range that forces the water table to the surface at Fallert Springs Creeks (IDEQ 2005l).

The significant spring-dominated flow regime in the lower valley has made this valley more resistant to drought than the Big Lost valley to the west. The river disappears into an ephemeral playa, the Little Lost River Sink, just south of Howe on the western margin of the Snake River Plain (IDEQ 2005l).

Land use adjacent to the Little Lost River has historically been used for grazing. Currently it is primarily irrigated agriculture with mixed rangeland and some recreational use at designated access sites. Land ownership is largely private with some BLM land (IDEQ 2005l).

Big Wood River Drainage

The Big Wood River is predominantly a perennial stream that is fed during periods of high runoff by numerous ephemeral, intermittent, and perennial streams. Certain reaches are or are potentially intermittent due to irrigation diversion. These reaches include approximately 10 percent or more of the Big Wood River from the Glendale Diversion to Magic Reservoir; and from the Richfield Diversion below the Magic Reservoir to just north of Ruiz Lake. The remaining reaches, headwaters to Glendale Diversion and Magic Reservoir to Snake River, are perennial (IDEQ 2005m).

The Big Wood River subbasin has many manmade reservoirs that are a part of a more complex network of natural and manmade waterbodies of the Big Wood River system. The Magic Reservoir is the largest and is used for irrigation and power generation. Approximately 60 percent of the storage in Magic Reservoir is used within the Middle Little Wood River area, with the remainder being used on cropland in the Big Wood River subbasin (IDEQ 2005m).

The Big Wood River Company operates the manmade canal system of the Big Wood River Subbasin. The Wood River system includes the Big Wood River and the Little Wood River, and irrigates approximately 98,000 acres. Other management units that service the subbasin are the North Side Canal Company (160,000 acres) and the Milner-Gooding Canal (62,400 acres), as well as a number of smaller, privately owned and operated canal companies above the Magic Reservoir (IDEQ 2005m).

Dams and Reservoirs

Numerous reservoirs regulate streamflow in the basin, primarily for agricultural use, flood control, and hydroelectric power production. Table 3.9 summarizes the major dams and reservoirs in the CREP project area, listed in downstream order. Palisades and Island Park dams, although outside of the project area, are included because they influence flows in the Snake River (see Section 3.6.3). Although the CREP Proposal (2005) indicates that King Hill is the downstream boundary of the project area, C.J. Strike Reservoir is included in 1 of the 16 HUCs that cover the project area and information about C.J. Strike Dam is also included in this table.

Table 3.9. Summary of major dams and reservoirs in CREP project area.

Dam	Reservoir Name	Waterbody	Operating Agency	Main Uses
Palisades	Palisades	South Fork Snake	USBR	Power, Irrigation
Island Park	Island Park	Henrys Fork	USBR	Irrigation
Ririe	Ririe	Willow Creek	USBR	Irrigation
American Falls	American Falls	Snake	USBR, Idaho Power	Power, Irrigation
Minidoka	Lake Walcott	Snake	USBR	Irrigation diversion and storage, and power
Milner Dam	Milner	Snake	Twin Falls & Northside Canal Company	Irrigation, power
Shoshone Falls	none	Snake	Idaho Power	Power. Run-of-river facility, run-of-river means the same amount of water flows in and through the dam, the water isn't stored behind the dam in a reservoir.
Salmon Falls Creek	Salmon Falls Creek	Salmon Falls Creek	Salmon River Canal Company	Irrigation
Upper Salmon A and B	Upper Salmon Falls	Snake	Idaho Power	Power, irrigation
Lower Salmon Falls	Lower Salmon Falls	Snake	Idaho Power	Power, irrigation
Little Wood	Little Wood	Little Wood	USBR	Irrigation
Magic Dam	Magic Reservoir	Big Wood	Big Wood River Company	Irrigation, power
Bliss	Bliss	Snake	Idaho Power	Power
C.J. Strike	C.J. Strike	Snake	Idaho Power	Power

Sources: USBR 2005, Idaho Power 2005, USACE 2005, TFCC 2005, IDEQ 2005m.

Water Quantity/Water Use

Surface water uses in the Snake River basin include irrigation, aquaculture, industrial uses, and drinking water. Surface water withdrawals for the Idaho in 2000 totaled 15,300 mgal/day. Surface water withdrawals by water use category are as follows (USGS 2005b):

- Public supply, 25.3 mgal/day
- Irrigation, 13,300 mgal/day
- Livestock ,7.20 mgal/day
- Aquaculture, 1,920 mgal/day
- Industrial, 19.7 mgal/day

The Snake River often is referred to as a working river because of its highly regulated streamflow. Five reservoirs on the main stem of the Snake River have a combined storage capacity of more than four million acre-feet, and eight reservoirs on Snake River tributaries have storage capacities of more than 50,000 acre-feet each (Clark et al. 1998).

In the upper Snake River Basin approximately half of the total surface water diversions are from five canals at Lake Walcott and Milner Dam, which supply irrigation for 575,000 acres of agricultural land. Some of the water applied to fields for irrigation infiltrates the groundwater or returns to streams by way of canals, transporting sediment, fertilizers, and pesticides along with it. Because of diversions, streamflow in the Snake River may be reduced substantially during many months of the year. Low streamflow, combined with instream reservoirs, have transformed some reaches of the Snake River from a high-gradient, coldwater river to a slow-moving, warmwater river supporting primarily non-game species of fish (Clark et al. 1998).

Because precipitation is the sole source of recharge in tributary basins, drought can severely impact these areas. The current drought has had a dramatic effect on the Big Lost River Drainage by reducing its streamflow exponentially. The drought has also severely decreased surface flows in the main stem Little Lost River. The tributaries within the proposed project area are significant not only for the water they provide for irrigated agriculture, but also because they contribute water to the ESPA and the Snake River. The tributaries are especially valuable, however, because they provide habitat for several fish and wildlife species (Proposal 2005).

The natural flow of the Snake River and numerous springs supply water to the American Falls Reservoir. Differentiating spring flow and river inflow into the reservoir can be problematic because most springs discharge directly into the reservoir. Consequently, quantifying the decline in spring discharge is difficult. However, modeling data show that groundwater pumping in the area above the reservoir has reduced total inflow to the reservoir by 675 cfs. Reduced spring flow into the reservoir has impacted the amount of downstream water and has affected crop production in the Magic Valley (Proposal 2005).

USBR-managed reservoirs in the Snake River Basin have also been affected by the drought. Levels in the following reservoirs were below average in 2004 and continue to be below average in 2005 (USBR 2005):

- Henrys Lake
- Island Park
- Ririe Lake
- Palisades
- American Falls

Lake Walcott was below average during the winter and spring months in 2004 and 2005, but returned to normal levels in April (USBR 2005).

Conjunctive Management

One of the major concerns of conjunctive management is the identification of river reaches or surface water bodies that are hydraulically interconnected with an aquifer. In some cases it is difficult to determine the degree of interconnection due to uncertainties in river bottom conditions and water table depth and because conditions vary with time. A river reach that at one time is hydraulically connected to the aquifer may be perched at another time when aquifer water levels are lower. The State's computer model of the Snake River Plain aquifer treats four major reaches (bounded by gaging stations) of the Snake River as interconnected with the aquifer Figure 3.6 (UIIF 2005).

Water Quality

The *Draft Integrated (303(d)/305(b)) Report* categorizes waters into five sections; two of these sections apply to waterbodies with impaired water quality. All of the HUCs in the project area have impaired streams and seven HUCs have impaired lakes; most do not have a TMDL established. Lake and stream segments in Section 4a are impaired or threatened and the TMDL is complete. Lakes and stream segments in Section 5 are impaired by a pollutant where a TMDL is needed or in the process of being developed. Section 5 is a streamlined 303(d) list that does not contain waterbodies impaired by non-pollutants (e.g., flow alteration or habitat modification). Tables 3.10 and 3.11 summarize the waterbodies within CREP project boundaries that have been identified as impaired.

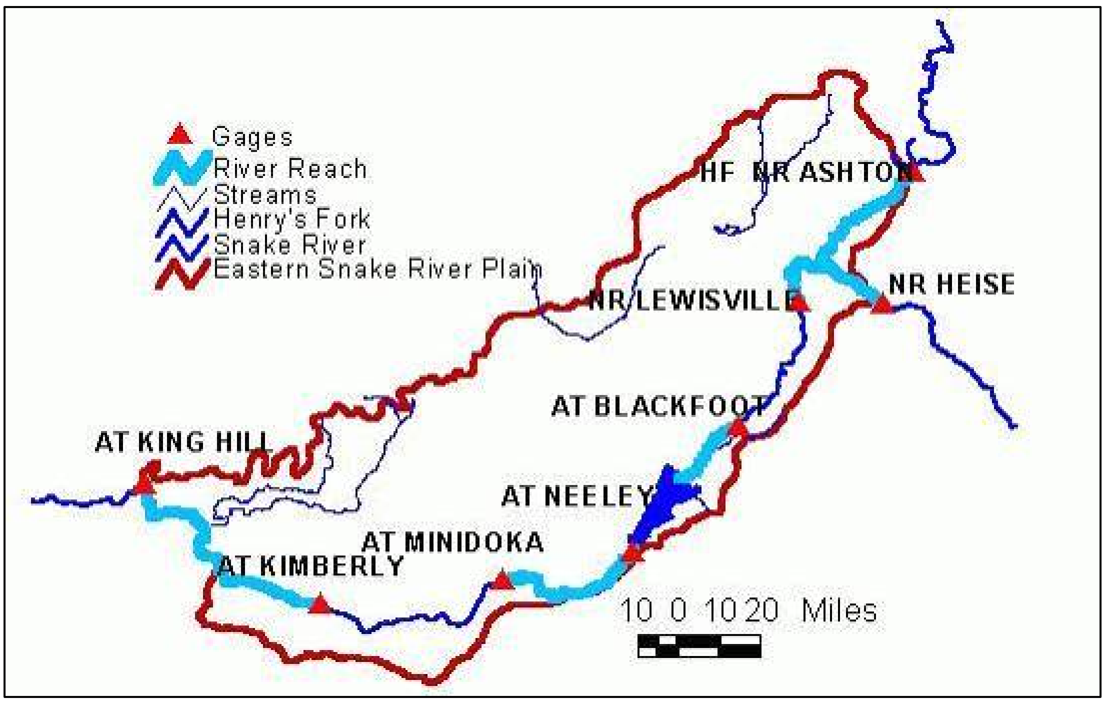


Figure 3.6. Location of hydrologically connected reaches of the Snake River.
Source: UIIF 2005.

Table 3.10. Impaired rivers and streams of Idaho CREP project area.

HUC Basin Name	Section 4a Total Miles	Pollutants	Section 5 Total Miles	Pollutants
17040201 Idaho Falls			95.49	Sediment, Pathogens
17040206 American Falls			493.20	Sediment, Nutrients, Bacteria
17040209 Lake Walcott	173.66	Siltation, Nutrients, Oil and Grease, Organic Enrichment/Low Dissolved Oxygen, Flow Alteration	391.49	Sediment, Pesticides, Organic Enrichment/Low Dissolved Oxygen
17040210 Raft			406.38	Sediment, Bacteria, Organic Enrichment/ Low Dissolved Oxygen, Nutrients, Ammonia, Pathogens, Salinity, Total Dissolved Gas, Temperature
17040211 Goose			339.70	Sediment, Bacteria, Organic Enrichment/ Low Dissolved Oxygen, Pathogens, Nutrients, Phosphorus, Temperature, Total Suspended Solids
17040212 Upper Snake - Rock	2,668.30	Unionized Ammonia, Siltation, Organic Enrichment/Low Dissolved Oxygen, Flow Alteration, Bacteria, Thermal Modifications, Pathogens, Siltation, Pesticides, Oil and Grease, Nutrients	120.45	Sediments, Pathogens, Temperature, Nutrients, Lead
17040213 Salmon Falls			193.20	Sediments, Nutrients, Temperature, Organic Enrichment/ Low Dissolved Oxygen, Bacteria
17040214 Beaver - Camas			440.03	Sediments, Nutrients, Temperature, Pathogens
17040215 Medicine Lodge			375.18	Sediments, Nutrients, Pathogens, Total Dissolved Gas
17040216 Birch			24.70	Sediments, Nutrients
17040217 Little Lost	217.84	Siltation, Thermal Modifications, Flow Alteration, Pathogens	104.63	
17040218 Big Lost			671.25	Sediments, Temperature, Nutrients, Organic Enrichment/Low Dissolved Oxygen, Inorganics, Pathogens

HUC Basin Name	Section 4a Total Miles	Pollutants	Section 5 Total Miles	Pollutants
17040219 Big Wood	692.29	Flow Alteration, Nutrients, Siltation, Phosphorus, Thermal Modifications, Other Habitat Alternations, Bacteria	178.58	Nutrients, Total Suspended Solids, Temperature
17040220 Camas			364.99	Sediments, Bacteria, Nutrients, Organic Enrichment/Low Dissolved Oxygen
17040221 Little Wood			377.54	Sediments, Nutrients, Bacteria, Organic Enrichment/Low Dissolved Oxygen
17050101 King Hill to C.J. Strike Reservoir			755.29	Sediments, Pesticides, Nutrients, Lead

Source: IDEQ 2003.

Table 3.11. Impaired lakes of the Idaho CREP project area.

HUC Basin	Section 4a Total Acres	Pollutants	Section 5 Total Acres	Pollutants
17040209 Lake Walcott			8,389.10	Nutrients, Oil/Grease, Organic Enrichment/Low Dissolved Oxygen, Sediments
17040210 Raft			79.07	Nutrients, Organic Enrichment/Low Dissolved Oxygen, Sediments
17040211 Goose			1,005.71	Nutrients, Organic Enrichment/Low Dissolved Oxygen, Sediments
17040212 Upper Snake - Rock	1,697.63	Organic Enrichment/Low Dissolved Oxygen, Siltation, Nutrients, Thermal Modifications, Bacteria, Flow Alteration	836.45	Bacteria, Sediments, Temperature
17040213 Salmon Falls (Upper and Lower Reservoirs)			972.05	Nutrients, Bacteria, Organic Enrichment/Low Dissolved Oxygen, Sediments, Temperature
17040219 Big Wood			3,565.72	Sediments, Temperature, Bacteria
17040220 Camas			1,583.94	Sediments, Nutrients, Organic Enrichment/Low Dissolved Oxygen

Source: IDEQ 2003.

Based on the *Idaho's Draft Integrated (303(d)/305(b)) Report*, the major pollutants or sources of pollution in the CREP project area include sediments, nutrients, thermal modifications, bacteria, habitat alterations, and oxygen-depleting substances.

The Snake River from Milner Dam to King Hill is listed as water-quality limited under the CWA due to excessive aquatic vegetation, low dissolved oxygen, and high water temperatures; all symptoms of a eutrophic system. The deteriorating water quality in the river results from a combination of excessive nutrient and sediment inputs and reduced stream flows (Clark et al. 1998).

State Protected River System

There is only one river basin in the CREP area with a comprehensive plan in place: Mid-Snake River from Milner Dam to King Hill. The plan for this basin, completed in 1993, designated seven different reaches totaling 71.5 miles, 9.5 miles of which are appointed as a natural reach (IWRB 2005). Table 3.12 summarizes each of the seven reaches.

The following activities are prohibited in all of the recreationally-designated reaches (IWRB 2005):

- Construction or expansion of dams or impoundments
- Construction of hydropower projects
- Mineral or sand and gravel extractions
- Alterations in stream channel except those necessary:
    - to maintain and improve existing utilities, roadways, diversion works, fishery enhancement structures and stream access facilities
    - for the maintenance of private property
    - for new diversion works
    - for construction of new public accesses facilities and fishery enhancement structures

Table 3.12. Description of the State protected reaches in the CREP project area.

Reach	Reach Description	Designation	Length (miles)
1	From downstream project boundary of the Milner Hydroelectric Project to a point 100 feet downstream of the Murtaugh Bridge	Recreational	7
2	From 100 feet downstream of the Murtaugh Bridge to a point 100 feet upstream of the Hansen Bridge	Natural	9.5
3	From 100 feet upstream of Hansen Bridge to the upstream project boundary of Twin Falls Hydroelectric Project	Recreational	2
4	From the downstream project boundary of the Twin Falls Hydroelectric project to the confluence of the western most spring flow from the Devil's Corral Spring Area	Recreational	1
5	From River Mile 614.4 (approximately 800 feet downstream of the Shoshone Falls powerhouse) to the Highway 30 Bridge	Recreational	32
6	From the downstream project boundary of the Lower Salmon Falls Hydroelectric Project to the upstream project boundary of the Bliss Hydroelectric Project	Recreational	8
7	From the downstream project boundary of the Bliss Hydroelectric Project to the confluence of the Clover Creek	Recreational	12

Source: IWRB 2005.

Within reaches designated as recreational, construction of private river access facilities may be allowed with IWRB's and other regulatory agencies' approval. New diversion works are limited to pump installations which do not create an obstruction in the river; are to supply water for domestic, commercial, or municipal uses; are visually blended with the surroundings so as to be less noticeable from the river; and are constructed to minimize harm to fish and wildlife. Special provisions to the prohibitions outlined above include (IWRB 2005):

- In Reach 4, State protections shall in no way impede re-licensing for the Shoshone Falls Hydroelectric Project, or an expansion of the Shoshone Falls Hydroelectric Project boundary that would not result in any change in the size of the impoundment or in reservoir elevation.

- In Reach 5, the licensed Auger Falls Hydroelectric Project is exempt from the prohibitions of the designation.

Prohibited activities for the reach designated as natural are (IWRB 2005):

- Construction or expansion of dams or impoundments
- Construction of hydropower projects
- Construction of water diversion works
- Dredge or placer mining
- Alterations to the stream bed
- Mineral or sand and gravel extraction within the stream bed

3.6.3 Agricultural Impacts to Surface Water

Agricultural practices in the CREP area affect surface water quantity and quality. Numerous dams and diversions, primarily for irrigation and hydroelectric power generation, have resulted in smaller streamflows and streamflow velocities, alterations in biological communities, and growth of nuisance aquatic plants (Clark et al. 1998).

The application of agricultural chemicals and agricultural runoff are major sources of nonpoint pollution in the Snake River Basin. In CREP counties there are 6.6 million acres of agricultural land; 2.3 million acres of farmland receive fertilizers or other soil treatments, 1.5 million acres receive herbicides, and 671,000 acres receive insecticides (Table 2.1) (NASS 2002 and Proposal 2005).

Water Quantity

Irrigated agriculture is the primary consumptive use of water in the basin. In 1990, about eight million acre-feet, or 53 percent, of the water used for irrigation in the basin was diverted from surface water supplies. About half of these diversions are from five canals at Lake Walcott and Milner Dam. During the irrigation season, diversions and irrigation returns reduce streamflow and degrade stream water quality (Clark et al. 1998).

Figure 3.7 illustrates the seasonal differences in streamflow along the Snake River. In January, during the non-irrigation season, streamflow is typical of an unregulated stream—that is, it increases with downstream distance. In August, during the irrigation season, streamflow in the Snake River fluctuates substantially over its length in response to diversions, irrigation return flows, and groundwater discharge (Clark et al. 1998).

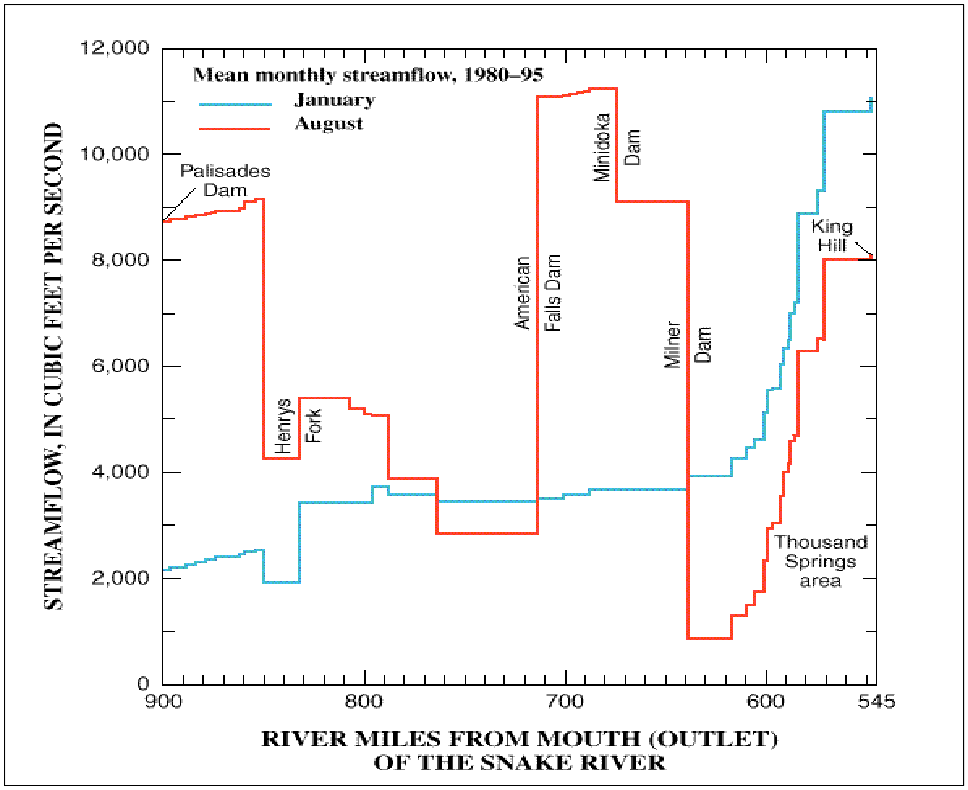


Figure 3.7. Snake River streamflow during irrigation season and non-irrigation season.
Source: Clark et al. 1998.

In addition to surface diversions, irrigation also affects surface water through groundwater pumping. Groundwater pumping from the aquifer initially causes a localized decline in the water table. That decline, or cone of depression, propagates progressively outward until it encounters hydrologically connected surface waterbodies. The surface water bodies are subsequently depleted as a result of the pumping (Proposal 2005). For example, in the Raft River valley groundwater pumping for irrigation began in 1950 and increased through the 1950s. USGS documented declining water levels and decreased streamflow in the Raft River from 1956 through 1960 (Proposal 2005).

Declining spring flows from groundwater pumping (as discussed in Section 3.5 Groundwater Resources), also affect reaches and tributaries of the Snake River dependent on spring flows. In the Milner Dam to King Hill reach, groundwater pumping is responsible for decreasing the flow of the Snake River by about 900,000 acre-feet per year (1,200 cfs) (Johnson et al. 1998).

Surface Water Quality

Water quality in the upper Snake River Basin is degraded by a variety of nonpoint and point sources of pollutants. Primary nonpoint sources of pollutants in the basin are agricultural activities, confined-animal feeding operations, rangeland grazing, recreational activities, logging, and atmospheric deposition. Dams, irrigation diversions, and channel alterations have also affected surface water quality in the Snake River Basin. Unused surface water diverted for irrigation returns to streams by way of canals transports sediment, fertilizers, and pesticides. Increased concentrations of sediment, bacteria, nutrients, and pesticides as well as organic enrichment and increased water temperatures have been observed in selected reaches of the Snake River (Clark et al. 1998).

Pesticides in surface water are generally found in the spring and early summer following early season applications. Some pesticides, including atrazine and desethylatrazine are found in surface water at small concentrations throughout the year. However, since pesticides in surface water generally do not exceed established water quality criteria and are not a major pollutant in 303d streams, they are relieved from detailed discussion (Clark et al. 1998).

The primary pollutants of concern are sediments, temperature, and nutrients. These pollutants are discussed in more detail below.

Sediments

Sediment is the biggest water quality problem in Idaho streams. Sediment was identified as a pollutant of concern in over 90 percent of the streams on the State's 1998 303(d) list. Between 1992 and 2003, 76 percent of the approved TMDLs in the State addressed sediments. Sediment can have direct effects on beneficial uses for salmonid spawning, cold and warm water aquatic life, and domestic, agricultural, and industrial water supplies (Rowe et al. 2003).

Many of the TMDLs for Snake River tributaries, including those for the Big Lost and Little Lost rivers, have identified streambank erosion as the primary source of sediment. Livestock grazing is the main cause of streambank erosion as overgrazing may result in loss of riparian vegetation, unstable stream banks, and increased stream sediment (Mahler and Van Steeter 2002). Eroding streambanks deliver sediment directly to the stream channel, where it creates depositional features such as point bars. Depositional features often further accelerate erosion by redirecting flow into formerly stable banks. Eventually streambank stability is greatly reduced. Other potential sources of sediment pollution include roads built too close to streams or improperly maintained roads, return of water from ditches laden with sediment to natural waters, erosion from cultivated fields, mass wasting or landslides related to improper engineering techniques, and urban runoff (IDEQ 2005k and IDEQ 2005l).

In the Snake River, irrigation return flow, tributaries, and streambank erosion have been identified as sources of sediment. In the reach between the confluence with Henrys Fork to Milner Dam, sediment from bank erosion and irrigation return flows has blanketed stream bottoms and destroyed suitable spawning habitat. In 1995, approximately 120,000 tons of sediment entered the reach Between Milner Dam and King Hill. The agriculturally affected tributaries—Rock Creek, Cedar Draw, Mud Creek, Deep Creek, Salmon Falls Creek, and the Malad River—contributed about 58 percent of the sediment input to the reach, and upstream sources and irrigation return flows contributed 24 and 14 percent, respectively (Clark et al. 1998).

Temperature

Temperature was the second most frequently listed pollutant on the 1998 303(d) list, at about half the frequency of sediment. Temperature is important in maintaining healthy coldwater fisheries. Where streams have been degraded by land and water use activities, the fish community is composed of non-game species tolerant of high temperatures. Because trout species generally require cold temperatures and ample dissolved oxygen for survival, trout have been nearly eliminated in several degraded streams of the basin, including the Snake River between Shoshone Falls and King Hill (Clark et al. 1998 and Rowe et al. 2003).

Elevated stream temperatures are closely related to streambank stability. As stream banks erode, the width of the stream increases. Widening streams decrease riparian vegetation and thermal buffering (shading) provided by the vegetation decreases, which, in turn, increases the thermal load to the stream (IDEQ 2005k).

Streamflow diversions can also result in warm water temperatures. The Malad River, a tributary of the Snake River near Gooding, Idaho affected by diversions, often exceeds temperature criterion for cold-water fisheries during the entire month of August (Clark et al. 1998).

Nutrients

Nutrients are listed as a pollutant for many of the waterbodies that are listed as impaired in Idaho's *Draft Integrated (303(d)/305(b)) Report* (Tables 3-10 and 3-11) (IDEQ 2003). Overall, nonpoint sources account for about 98 percent of total nitrogen and 99 percent of total phosphorus introduced annually in the Snake River Basin. The major sources of nitrate in the upper Snake River Basin are synthetic fertilizers, cattle manure, and nitrogen-fixing legume crops such as alfalfa and beans. These sources account for 93 percent of the nitrate input to the basin. In general, nitrate concentrations were highest in streams draining agricultural areas and in streams receiving large amounts of groundwater discharge. Fish farms, irrigation return flow, groundwater discharges, and municipal wastewater treatment plants are all sources of phosphorus in the Snake River (Clark et al. 1998).

Idaho Dairy Pond. Photo Courtesy of ISDA.

Water sampled on the Snake River at main-stem and tributary sites between Milner Dam and King Hill contained the largest concentrations of nitrate. Median concentrations of nitrate in the Snake River and at the mouths of major Snake River tributaries upstream from Milner Dam were all less than 1.0 mg/l. Downstream from the dam, however, median nitrate concentrations increased substantially in response to large inflows of nitrate-enriched groundwater, effluent from industrial and wastewater-treatment facilities, and irrigation return flows. Discharge of groundwater to the Snake River from numerous springs between Milner Dam and King Hill is a constant source of nitrate to the river during most years, accounting for about 70 to 80 percent of the nitrate leaving the upper Snake River Basin at King Hill (Clark et al. 1998). Nitrate concentrations are also affected by streamflow and concentrations of nitrate at King Hill were lower when streamflows were larger than normal and higher when streamflows were smaller than normal (Clark et al. 1998).

Nutrient loads to the Milner Dam to King Hill reach estimated in 1995 indicate that groundwater discharging as springs supplied about 60 percent of the 14,000 tons of total nitrogen that entered the reach. Tributary streams and fish farms contributed 18 and 12 percent of the total nitrogen, respectively. Fish farms, tributary streams, and the Twin Falls wastewater-treatment facility also contributed 34, 16, and 13 percent, respectively, of the 840 tons of total phosphorus entering the reach in 1995. Sources upstream from Milner Dam contributed 21 percent of the total phosphorus to the Snake River Basin (Clark et al. 1998).

Excessive nutrients (e.g., nitrates and phosphorus) can result in eutrophic conditions in water bodies. A water body that has become eutrophic has wide fluctuations in dissolved oxygen concentrations and does not support a healthy biological community. When aquatic plants die, they settle to the stream bottom and decompose, causing further dissolved oxygen depletion, odor problems, and a source of nutrients for more aquatic plant growth. Eutrophication is particularly problematic in the downstream reaches of the Snake River (Clark et al. 1998).

Eutrophication degrades water quality conditions in the Snake River from Milner Dam to King Hill. Historically, large streamflows during spring snowmelt have scoured bed sediment and transported it downstream. Drought conditions in recent years, coupled with upstream diversions and impoundments have substantially reduced streamflow and streamflow velocities in the Snake River downstream from Milner Dam. During most years, the main sources of water in this reach are numerous springs that discharge groundwater into the river. However, because the amount of water supplied by the springs is not sufficient to scour bed sediment and decaying plants, these materials accumulate on the river bottom, where they supply substrate for aquatic plants and act as a storage reservoir for nutrients (Clark et al. 1998).

3.6.4 Effects of Alternative A (No Action) on Surface Water

Implementation of Alternative A would result in long-term, moderate adverse effects to surface water resources. Surface water quality would continue to decline under Alternative A. Agricultural runoff introduces contaminants into surface water and any improvements in water quality would be dependent upon existing and proposed programs.

Under Alternative A, demand for irrigation water would remain at their current levels or possibly increase if current drought conditions continue, and stream flow and reservoir levels would most likely continue to decline.

Selection of Alternative A would not contribute to achieving any of the CREP Objectives listed in Section 1.4.

3.6.5 Effects of Alternative B (CREP Agreement) on Surface Water

Implementation of the Idaho CREP would provide long-term, moderate to high beneficial effects to surface water quality and quantity. Alternative B would result in significant localized improvements to water quality and would help waterbodies achieve and continue to meet State water quality standards. Water quality would also be improved by reducing erosion and nonpoint pollution adjacent to the streams and rivers. Additionally, acres enrolled in CREP would be removed from irrigation, resulting in increased water quantity. Increased spring flows will improve water quality in the Snake River and provide additional flows to benefit the Snake River salmon runs downstream from the proposed project area, as well as commercial fish hatcheries within the proposed project area (Proposal 2005).

All of the FSA-approved CPs would result in improvements to water quality. For example, CP22 (riparian buffers) is effective in removing nutrients and water-borne pesticides, thereby reducing the amount of the contaminants in agricultural runoff. Riparian buffers also create shade to lower water temperature, improve habitat for aquatic organisms, provide a source of detritus and large woody debris for aquatic organisms, stabilize and restore damaged stream banks, and reduce erosion of stream banks. CP2 (permanent native grasses) and CP25 (rare and declining habitat) restore native plant communities, thereby reducing soil erosion and sediment loads to receiving waters. Additionally, land enrolled in FSA-approved CPs would not receive pesticide and fertilizer applications, which would reduce the amount of agricultural chemicals in runoff from previously cropped land.

Alternative B would also result in improvements to water quantity. Retiring irrigated cropland would reduce the consumptive use of surface water resulting in less surface water being diverted and a decrease groundwater pumping. A change from irrigated cropland to CP2 could be expected to have several beneficial effects on hydrology. In general grass uses less water on an annual basis than other crops, and CP2 would result in net water savings. Benefits are likely to include decreased overall runoff, decreased evapotranspiration, and increased overall streamflow. A detailed analysis of the effects of CREP on surface water quantity and streamflow of the Snake River can be found in Appendix G.

Activities associated with the implementation of CPs could potentially result in short-term, adverse impacts to surface water quality and quantity. These activities and their impacts are summarized below:

- Site preparation— CP establishment could require site preparation activities including building physical structures such as dikes and clearing enrolled land of undesirable plant species using chemicals such as herbicides and/or physical methods such as burning, discing, and plowing. These activities could add sediments and chemicals to surface waters.
- Establishment of desirable plants and controlling invasive species or noxious weeds—Until desired plants are established, acres enrolled in CREP may be irrigated, potentially affecting water quantity.
- Maintenance of CPs—Maintaining CPs on enrolled CREP land may include additional shifting soil to repair dikes or buffer strips, applying herbicides and/or pesticides to control invasive species, or irrigating land during critical growing periods of drought years.

A conservation plan for each CP would be prepared and BMPs will be used to mitigate any adverse impacts of implementing specific CPs. These impacts are expected to only last until the CP is permanently established and are minor compared to the overall long-term benefits of the CPs. These temporary impacts could be expected to last anywhere between 1-3 years.

The beneficial impacts of the CPs discussed above would provide long-term moderate to high beneficial effects, assisting in the achievement of all six CREP Objectives (Section 1.4).

3.7 Drinking Water

3.7.1 Introduction

In Idaho, there are 2,052 regulated public drinking water systems serving 1,116,675 people. Approximately 95 percent of the State's drinking water comes from groundwater. Surface water from sources such as streams, rivers, reservoirs, and springs supplies the remaining five percent (IDEQ 2005g).

The SDWA was originally passed in 1974 to regulate public drinking water supplies. The SDWA established standards for various contaminants to ensure that water is safe for human consumption. Additional amendments to the SDWA require states to develop programs to assess and protect public water sources. A summary of those programs is included in the following sections. EPA is the Federal agency responsible for administering the SDWA.

3.7.2 Existing Conditions

Wellhead Protection Plan

The 1986 Federal Safe Drinking Water Act Amendments direct all States to develop a Well Head Protection Program (WHPP) Plan to protect water supply wells. Each State was asked to develop, with public participation, a Wellhead Protection Program Plan that was to be reviewed and approved by EPA. States are required to submit to EPA a Biennial Wellhead Protection Report, summarizing their accomplishments. Some of the goals of WHPP Plans include:

- Preventing contamination of ground-water resources
- Cleaning up groundwater contamination
- Delineating a wellhead protection area based on ground water flow and other hydrogeologic information
- Inventorying pollution sources

- Developing and implementing best management practices to protect ground water
- Promoting proper land-use planning
- Educating the public to promote awareness of each person's role in protecting ground-water resources

The Idaho Wellhead Protection Plan was recognized and approved by both the Idaho Legislature and the EPA in 1997, and laid the groundwork and provided guidance for developing individual public water system wellhead protection plans. Many communities throughout Idaho have subsequently pursued voluntary wellhead protection efforts under the guidance set forth within the State's plan. Idaho's Source Water Assessment Plan (SWAP) has replaced the Wellhead Protection Plan as the guidance document used in the process of delineating source areas and conducting susceptibility analyses for public water sources (IDEQ 2005h). See below for more information about SWAP.

Source Water Assessment Program

The 1996 reauthorization of the SDWA included an amendment requiring states to develop programs to assess sources of drinking water and encouraged the establishment of source water protection programs. With input from a diverse group of stakeholders and Idaho's Source Water Assessment Advisory Committee, DEQ completed the Idaho SWAP in October 1999, and it was approved by the EPA in November 1999 (IDEQ 2005i).

A source water assessment provides information on the potential contaminant threats to public drinking water sources. In Idaho, most of those sources (>95 percent) are groundwater. Each source water assessment:

- Defines the zone of contribution, which is that portion of the watershed or subsurface area contributing water to the well or surface water intake
- Identifies the significant potential sources of drinking water contamination in those areas
- Determines the likelihood that the water supply will become contaminated

Each assessment is summarized in a report that describes the above information and provides maps of the location of the public water system, the source area delineation, and the locations of potential contaminant sources. Idaho began developing source water assessments in 1999, and in May 2003 met its obligation under the amendments of the SDWA by completing delineations for the 2,100 plus public water systems that were active in Idaho as of August 1999. Source water assessments for new public drinking water systems are being developed as those systems come online (IDEQ 2005i).

Sole Source Aquifers

The SDWA also requires EPA to designate and protect SSAs, which are defined as aquifers that supply at least 50 percent of the drinking water consumed in the area overlying the aquifer. To be designated an SSA, the area must not have an alternative drinking water source, which could supply all who depend on the aquifer for drinking water and where if contamination occurred, using an alternative source would be extremely expensive (EPA 2005a).

The ESPA was designated a sole source aquifer in 1991. It provides the sole source of drinking water for nearly 200,000 people in southeast and south central Idaho. The aquifer stretches across much of south central Idaho and is Idaho's largest basalt aquifer, covering an area of approximately 10,800 square miles (IDEQ 2005c).

Public Water Supply System Violations

Source water assessments are conducted by IDEQ for public water systems (PWSs). To be classified as a PWS, the system must supply water for at least 60 days each year to at least 25 people or must have at least 15 service connections. If the system does not meet these requirements, it is considered a private system (IDEQ 2005i).

In compliance with 1996 amendments to the SDWA, PWSs are required to monitor regularly for a variety of contaminants that are harmful to human health. They are required to report any detection that exceeds the maximum contaminant level (MCL), a national limit set by EPA on contaminant levels in drinking water that ensure that water is safe for human consumption. Reports on MCL violations and other violations (e.g., monitoring) must be made available to the public. The latest publicly available statewide report is the 2003 Idaho Public Water System Annual Compliance Report. This report defines the quality and safety of drinking water in Idaho in 2003. In CREP counties there were a total of 70 MCL violations and the majority of MCL violations were issued for total coliform and nitrates (Table 3.12) (IDEQ 2005g).

Table 3.12. 2003 MCL violations summary for CREP counties.

County	MCL Violation Type			Total Number of MCL Violations
	Total Coliform	E.Coli	Nitrates	
Bannock	2	—	—	2
Bingham	4	—	—	4
Blaine	4	—	—	4
Bonneville	9	—	—	9
Butte	2	—	—	2
Camas	1	—	—	1
Cassia	2	—	2	4
Clark	1	—	—	1
Custer	5	—	—	5
Elmore	3	—	1	4
Fremont	3	—	—	3
Gooding	1	—	—	1
Jefferson	5	1	—	6
Jerome	3	—	—	3
Lemhi	6	1	—	7
Lincoln	2	—	—	2
Madison	3	—	—	3
Minidoka	1	—	—	1
Owyhee	—	—	2	2
Power	1	—	—	1
Twin Falls	4	—	1	5
Total Violations	**62**	**2**	**6**	**70**

Source: IDEQ 2005g.

3.7.3 Agricultural Impacts to Drinking Water

Water Quantity

Agricultural practices in the project area affect both the amount of water available for drinking water and the quality of drinking water. Declining aquifer levels impact domestic wells and can concentrate agricultural contaminants, posing a public health risk (Proposal 2005).

Groundwater withdrawals in several areas in the proposed CREP project area have resulted in decreased availability of groundwater for domestic use (e.g., drinking water). Declining aquifer levels of the ESPA continue to impact domestic wells on the Eastern Snake River plain. Figure 3.8 shows data for permits issued to deepen or replace domestic and irrigation wells for a four-county area on the Eastern Snake River plain from 1997 through 2003. In Gooding, Jerome, Lincoln, and Minidoka, there has been a dramatic rise in the number of permits issued to either deepen or replace a domestic well from 2000 to 2003. Irrigation wells, which are generally deeper, have not shown the same trend as domestic wells (Proposal 2005).

Water Quality

Overall, Idaho's drinking water is quite safe, however, local contamination is being observed in some of the State's groundwater sources. Most Idaho chemical contamination occurrences are low enough in concentration and short enough in duration that the problem is corrected before a violation actually occurs. The exception to this situation occurs when nitrate or nitrite exceeds the established standards (IDEQ 2005g).

Agricultural contaminants such as nitrates and pesticides have been detected in wells throughout the CREP project area. Since the ESPA is an EPA-designated SSA, the impacts from groundwater contamination to public and private drinking water systems is of concern.

Private wells bring groundwater to the surface for use in homes and businesses that are not connected to public water supplies. About one-third of Idaho's citizens get their water from private wells. Private water systems do not have to adhere to the SDWA drinking water standards or monitoring regulations and contaminants present in groundwater may be present in well water (IDEQ 2005b).

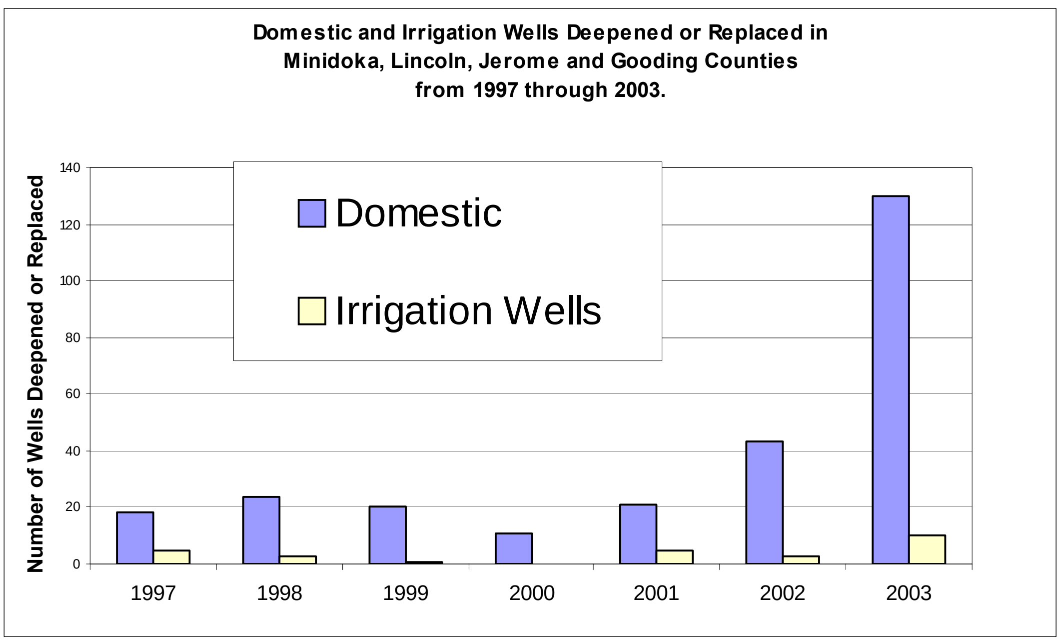


Figure 3.8. Number of domestic and irrigation wells deepened or replaced each year in counties located in CREP project area.
Source: Proposal 2005.

The Statewide Program collected samples from 398 sites during the summer of 2003, including 28 new sites. Detections of concern were found in samples from 106 sites. One or more constituents above an MCL (excluding radioactivity) were detected at 67 sites. Arsenic (49 sites), nitrate (11 sites), fecal coliform (8 sites), and fluoride (4 sites) were the constituents measured above their respective MCL (IDWR 2005c). Nitrates, bacteria, and arsenic are constituents which are potentially linked to agricultural practices, and are discussed in more detail below.

Although pesticide detections did not exceed MCL, pesticides were detected in groundwater in the ESPA. The largest number and concentrations of pesticides were in samples from wells that also contained large nitrate concentrations and were located in agricultural areas adjacent to the Snake River. Because the toxicological effects of drinking water that contains multiple pesticides or other organic compounds are not well understood, health risks associated with drinking groundwater in some areas of the basin cannot be determined. More research is necessary to establish the health risks associated with drinking water containing small concentrations of more than one pesticide or other organic compound (Clark et al. 1998).

Nitrates

Nitrate sources can be natural or anthropogenic, and can have both inorganic and organic origins. Anthropogenic sources include fertilizers, manure, septic systems, decaying organic matter, and wastewater. Since elevated nitrate levels do not often occur naturally in groundwater, the presence of nitrate in groundwater above background levels is almost always the result of land surface activities. IDWR considers nitrate levels over 2.0 mg/L to be an indication of land surface impacts to groundwater quality (Neely 2005).

A total of 5,150 individual nitrate results are available for 1,868 statewide sites sampled for the Statewide Program between 1991 through 2003. Nitrate concentrations ranged from less than the laboratory minimum reporting level of 0.05 mg/L to 110 mg/L. The MCL for nitrate is 10 mg/L. The MCL for nitrate was exceeded at 96 sites (5 percent), and another 202 sites (11 percent) had at least one nitrate result in the 5.01 to 10 mg/L range. In general, results of the Statewide Program indicate that nitrate is present in many aquifers throughout Idaho and higher concentrations are more common in the southern part of the state. Figure 3.9 shows that clustering of sites with maximum nitrate results over five mg/L occurred in several regions of the State such as the southwest (Treasure Valley Shallow, Payette, and Weiser Subareas), south central (Twin Falls and Cassia/Power Subareas), and in the eastern part of the State (Neely 2005).

Areas where nitrate concentrations exceeded the MCL in groundwater samples in the CREP project area include: INL, the Fort Hall area north of Pocatello, and the agricultural areas surrounding Burley (USGS 2005a). Jerome, Gooding, and Twin Falls counties also have unusually high nitrate concentrations in groundwater because of seasonal fluctuations in spring discharge and local sources of groundwater recharge (USGS 2005a). In CREP counties there were a total of six nitrate violations in three counties (Elmore, Cassia, and Twin Falls). Each county has a NPA with an increasing trend in nitrate levels, suggesting that nitrate contamination of groundwater in these areas is an ongoing problem.

Additional information about nitrates and NPAs can be found in Section 3.1.2.

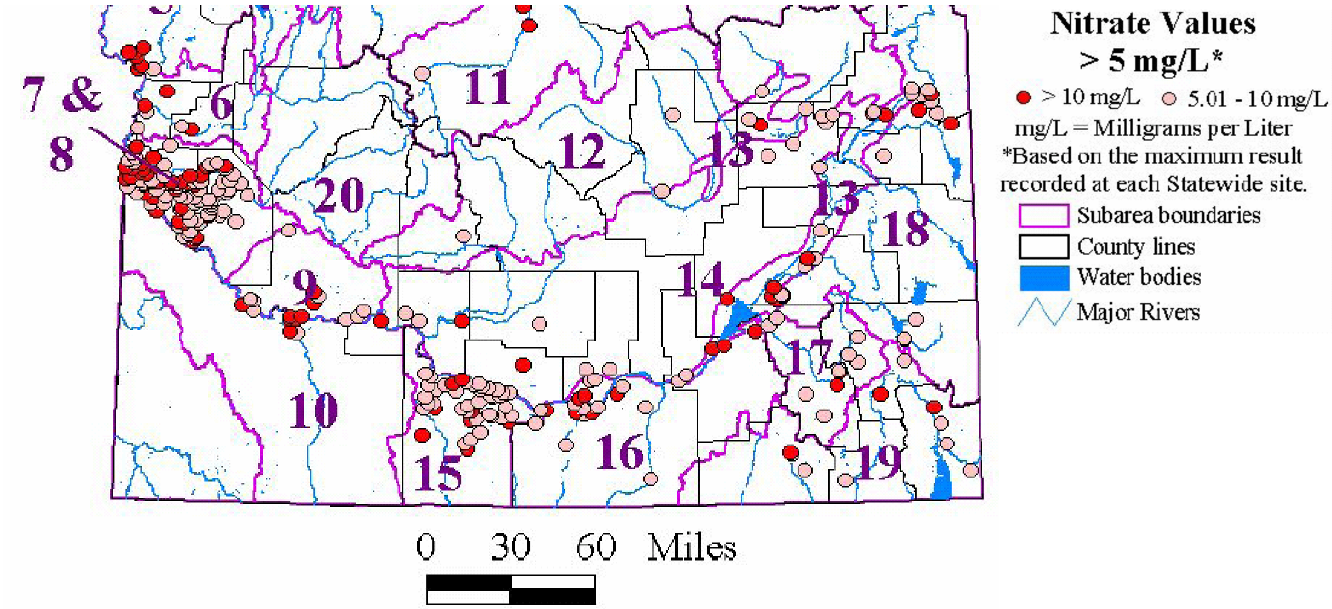


Figure 3.9. Statewide program sites with nitrate concentrations greater than five mg/L.
Source: Neely 2005.

Bacteria

Fecal coliform and *E.coli* originate from the waste products of humans and warm-blooded animals. The presence of one or more fecal coliform bacteria colonies in groundwater indicates that the MCL has been exceeded and that the groundwater quality has been impacted by surface or near-surface activities (Neely 2001). Bacteria can be introduced into groundwater and surface water when stormwater runoff from urban or agricultural areas is contaminated with human and/or animal waste. Agricultural practices that could potentially introduce bacteria into surface water include: dairy operations, animal feeding operations, livestock grazing, and the use of manure on cropland.

Total coliform violations were the most common type of MCL violation and all of the counties in CREP, except Owyhee, had at least one violation (Table 3.12). While not a health threat in itself, total coliform is often indicates whether other potentially harmful bacteria may be present (EPA 2005b). *E.coli* was also detected in drinking water in Jefferson and Lemhi County. The presence of *E.coli* in water is a strong indication of recent sewage or animal waste contamination (EPA 2005b).

Arsenic

Arsenic has also been detected in groundwater wells in the CREP area at concentrations above the MCL of 10.0 µg/l (IDWR 2004). However, in Idaho, there is no evidence that the high arsenic levels in groundwater are related to agricultural practices (Neely 2002). Further studies indicate that the arsenic levels detected in groundwater wells closely correspond to the chemical composition of the aquifer. All arsenate-dominant samples containing more than 10 µg/L of arsenic were from wells completed in confined aquifers overlain by blue or gray clays. More than 90 percent of arsenate-dominant samples with an arsenic concentration above 10 µg/L were from wells completed in basalt or brown or tan sediments (Hagan 2004).

3.7.4 Effects of Alternative A (No Action) on Drinking Water

Declining drinking water quality would continue to be a longterm, minor adverse effect under the No Action alternative. Current State and Federal laws prevent any major discharges that would significantly degrade a drinking water source. Still, the cumulative impacts of agricultural activities and other industrial activities in the CREP area would have an ongoing adverse effect on drinking water.

If current trends in groundwater pumping rates continue, adverse effects to domestic wells would be ongoing and could affect drinking water availability. Additionally, declining groundwater levels could potentially result in higher concentrations of contaminants and could lead to higher drinking water treatment costs.

Selection of Alternative A would not contribute to the achievement of any of the CREP Objectives cited in Section 1.4.

3.7.5 Effects of Alternative B (CREP Agreement) on Drinking Water

The implementation of Alternative B would result in long term, minor to moderate beneficial effects on drinking water. Either indirectly or directly, each of the CPs improves surface water quality and potentially could improve the quality of water that recharges groundwater.

Since CREP CPs have had beneficial effect on surface water quality, it is likely that groundwater quality would also improve. Acres removed from active agricultural production would have the potential to result in less agricultural pollutants in groundwater. Restoration of wetlands would have the expected benefit of increasing the volume and quality of groundwater recharge.

For individual CREP contracts, FSA would ensure through an EE that the practice(s) employed would not contaminate or contribute to the contamination of SSAs, wellhead protection areas, and to drinking water source areas to the extent that a significant hazard to public health is created.

The water purifying capabilities of the CPs would contribute to the achievement of all CREP objectives listed in Section 1.4.

3.8 Soil Resources

3.8.1 Introduction

Soils overlaying the ESPA are largely wind deposited (loess) sediments. Products of erosion in the mountains are transported into the tributary valleys by gravity and moving water. These are picked up by periodic flood flows and deposited as floodplain alluvium. Wind action has rearranged these materials and carried them throughout the plain where they have formed the present day soils. These loessial particles have a wide variety of composition. Most of the silt-loam soils are light in color and of medium texture. Depths range from less than four inches to more than 40 inches. Basalt outcrops are frequent, and the loessial soils, being very fine-grained, are prone to water and wind erosion.

The loess soils are generally good agricultural soils because they are typically well-drained and tend to be relatively free of salt accumulations. However, the lack of precipitation during the growing season in the area has severely limited the amount of natural vegetation produced, and therefore limits the organic residue accumulation that becomes humus. This same aridity on recent soils has also limited the leaching of soluble minerals from the soil. Heavy fertilizer applications have become necessary in some areas to receive maximum crop yields from these very workable soils. Wetter alluvial soils along the streams have developed an organic accumulation conducive to good crop growth (Proposal 2005).

3.8.2 Existing Conditions

Soil erosion, both wind and sheet-and rill (rainfall and runoff) erosion, is a problem throughout parts of the ESPA. Compliance plans have addressed soil erosion problems but erosion persists during certain stages of crop rotation. In the upper portion of the Snake River Basin, soil erosion can be serious after the harvest of potatoes and the ground is prepared for spring grains. Little residue is left on the surface, leaving soils susceptible to blowing and sheet and rill erosion during periods of runoff. During this point in the crop rotation, soil erosion rates can be in excess of 10 tons per acre. Low residue crops and tillage operations have also reduced soil organic matter and soil quality in portions of the project area (Proposal 2005).

In 1997, NRCS estimated the majority of the soil lost in Idaho was from cultivated cropland (92 percent), followed by CRP land (5 percent), pastureland (2 percent), and non-cultivated cropland (1 percent) (NRCS 2005b).

Consequences of soil erosion include removal of fertile topsoil, accelerated eutrophication and sedimentation of surface waters, degradation of fish and wildlife habitat, and decreased recreational and aesthetic value of surface waters (Mahler et al. 2003).

Wind Erosion

The wind as an erosive agent detaches and transports soil particles, sorts the fine particles from the coarse, and deposits them unevenly. Loss of the fertile topsoil in eroded areas reduces the rooting depth and, in many places, reduces crop yield. Abrasion by airborne soil particles damages plants and man-made structures. Drifting soil causes extensive damage and sand and dust in the air can negatively impact animals, humans, and equipment (NRCS 2005b). Some wind erosion has always occurred as a natural land forming process, but recent human activities, such as improper use and management of the land, have accelerated erosion rates (NRCS 2005b).

Idaho's weather, with its wet and dry seasons, contributes to soil erosion from wind. Long, hot summers allow the soil to dry out thoroughly and, if the surface is disturbed repeatedly, by tilling for example, the soil may have months to disperse before rainfall can again saturate the ground and stabilize the soil. Southern Idaho’s high winds occasionally exacerbate the problem (Proposal 2005).

The potential for wind erosion in the Mountain Home area is high, particularly when crop rotations include low residue crops such as sugar beets. Erosion rates can be as high as 10 tons per acre with the critical erosion period occurring between February 1 and May 1. Blowing soil and dust has created some problems in the urbanized areas around the City of Mountain Home (Proposal 2005).

All eleven counties that have severe wind erosion problems (losing from 5.1 to 10.1 tons/acre/year) are within the Idaho CREP area (Figure 3.10).

There has been a reduction of soil lost to wind erosion on agricultural lands statewide. From 1982 to 1997, the National Resources Inventory (NRI) estimates indicate a 15 percent reduction of total tons of soil lost per year from wind erosion on cropland, pastureland, and CRP land in Idaho. An estimated 3.3 million tons of soil on Idaho’s agricultural lands is saved every year due to low residue crop reduction, adoption of conservation cropping systems, and conversion of environmentally sensitive cropland to permanent vegetation cover through enrollment in the voluntary CRP (NRCS 2005b).

Windbreak established in Bonneville County. Photo Coutesy of NRCS.

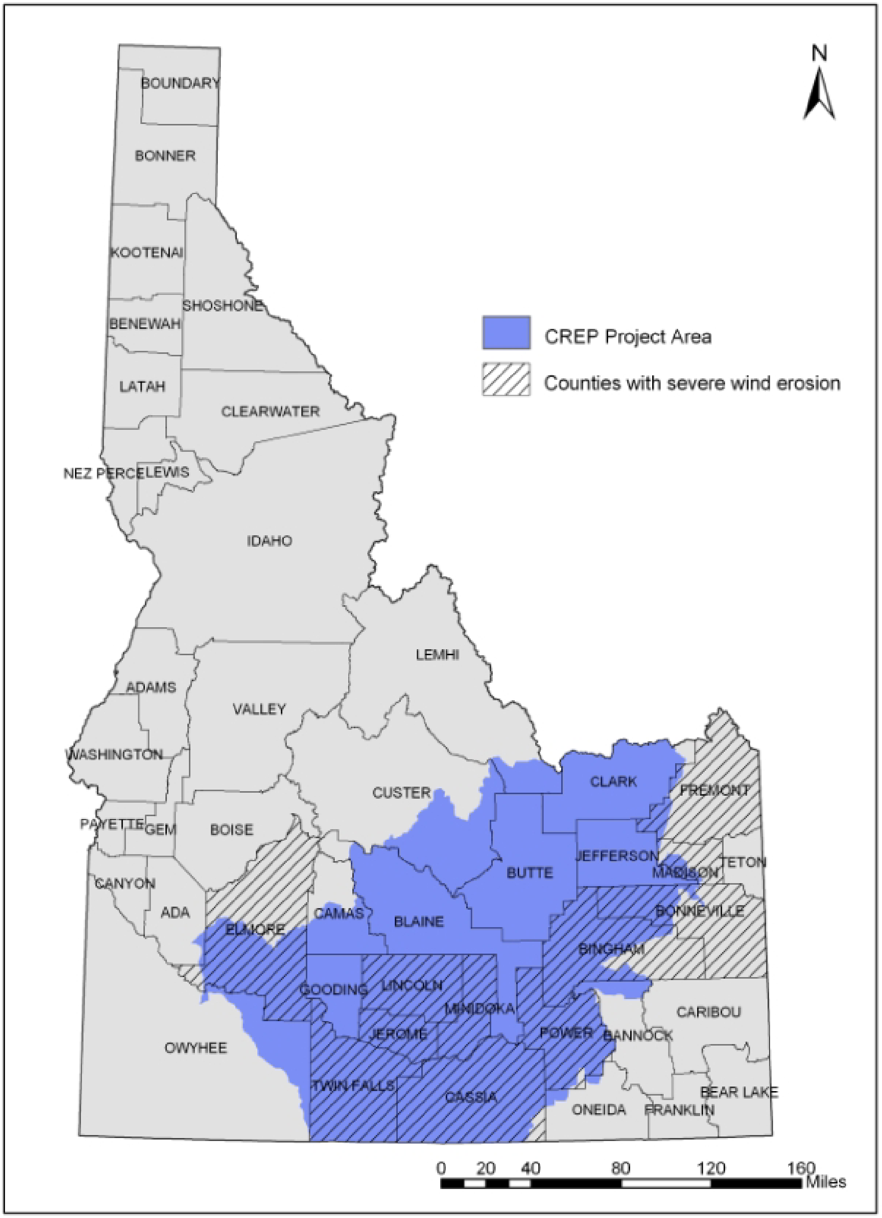


Figure 3.10. Counties with severe wind erosion (5.1 to 10.1 tons/acre/year).
Source: NRCS 2001.

Water Erosion

Runoff containing sediment and associated pollutants generally occurs when a large amount of water (either from winter and spring snow melt or heavy rainfall periods when the soil profile is often nearly saturated or frozen) combines with cropland soil surfaces susceptible to erosion due to a lack of crop residue and plant growth. Erosion and/or subsequent sediment delivery to receiving waters can also be problematic during early summer rain events that possess enough intensity to erode newly spring seeded fields if soil surfaces are unprotected by the lack of crop residues and/or plant growth (ISCC and IDEQ 2003).

Cropland irrigation also induces soil erosion. The sedimentation that results from irrigation induced erosion contributes sediment, nutrients and pesticides to receiving surface waters (ISCC and IDEQ 2003). In 1997, about 88 percent of the sheet and rill erosion occurred on cultivated cropland, followed by CRP land (six percent), pastureland (four percent), and non-cultivated cropland (two percent) (NRCS 2005c). The majority of the irrigation induced erosion occurs during the first three irrigations to cropland; approximately 78 percent of the soil lost to irrigation occurs in May and June (ISCC 2005).

Fifteen counties in Idaho have serious water erosion problems, loosing from 2.8 to 10.2 tons/acre/year. Six of these counties are in the Idaho CREP area (Figure 3.11).

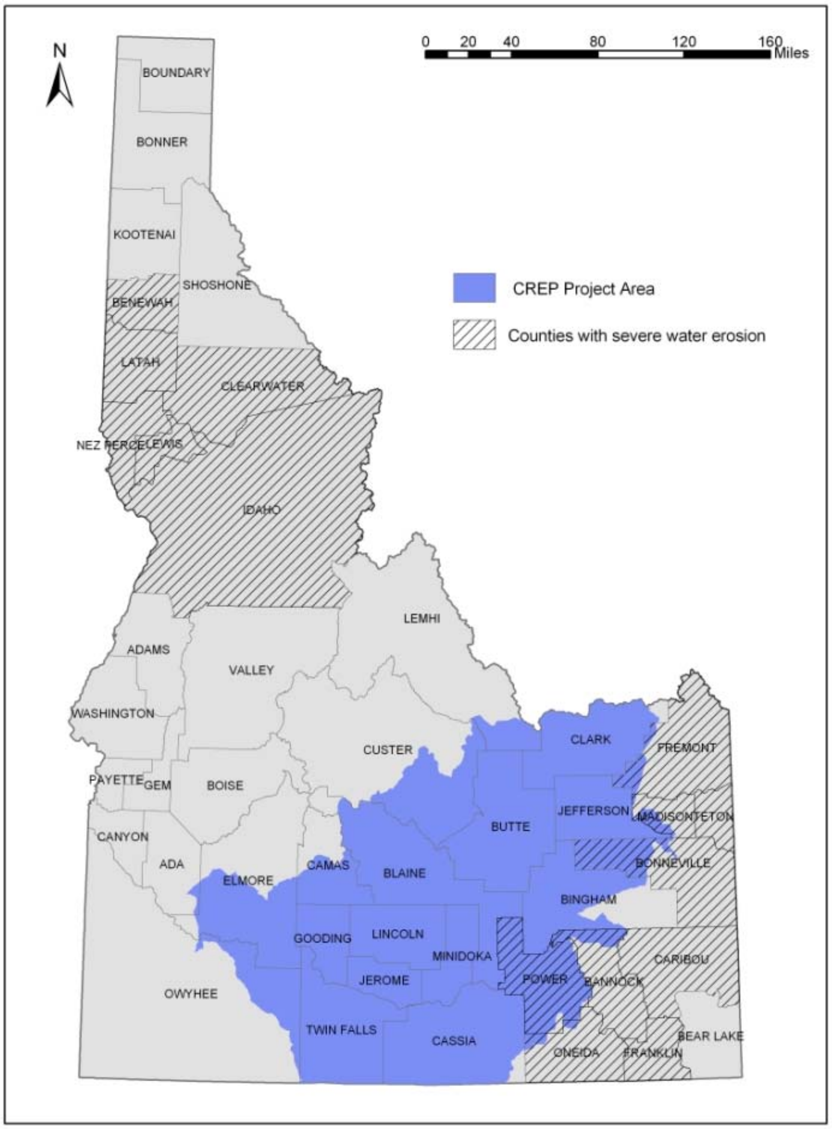


Figure 3.11. Counties with serious water erosion problems (2.8 to 10.2 tons/acre/year).
Source: NRCS 2001.

Conservation efforts have reduced water erosion on agricultural lands. The average sheet and rill erosion rates on all cultivated cropland in Idaho have declined from 5.0 tons/acre/year in 1982 to 3.3 tons/acre/year in 1997. This reduction is attributed to the adoption of conservation cropping systems that left more residues on the surface, cross slope farming, and the installation of physical erosion treatment measures such as terraces (NRCS 2005c).

In addition, environmentally sensitive cropland converted to permanent vegetative cover through enrollment in the voluntary CRP resulted in an 84 percent decrease in the erosion rate. Statewide results for all agricultural lands indicate that these CRP lands accounted for 48 percent of the total tons of erosion reduction from 1982 to 1997 (NRCS 2005c).

3.8.3 Effects of Alternative A (No Action) on Soil Resources

Implementation of the No Action Alternative would have long term, moderate adverse effects on the soil erosion of the State. Any improvement would depend on existing conservation programs. The amount of cropland currently in production may persist in its present condition, contributing to irrigation induced erosion. Land currently in crop production will also continue to be plowed, exacerbating wind erosion in the area.

Furthermore, without the water saving measures of CREP, there will not be enough water to meet the current demand. If the current water situation continues, the forced curtailment of junior water rights holders could idle as much as 113,000 acres on the Eastern Snake River Plain without the benefit or requirement of a conservation plan to prevent erosion. Limited-resource farmers may not have the financial assets to plant permanent cover and additional soil erosion from wind and water will likely result from this unprotected land (Proposal 2005).

Selection of Alternative A will not contribute to achieving CREP Objectives in Section 1.4.

3.8.4 Effects of Alternative B (CREP Agreement) on Soil Resources

Implementation of the Idaho CREP would provide long term, moderate to high beneficial effects on the soil resources of the area. The CPs will encourage year-round soil retention and minimize wind erosion by taking enrolled land out of the plow-plant agricultural cycles of the area. Permanent cover would eliminate erosion, enhance soil organic matter, and prevent degradation of soil and water resources (Proposal 2005).

The CPs selected in the Idaho CREP are designed to effectively control runoff and soil erosion by planting native and other appropriate vegetation (Mahler et al. 2003). Appropriately applied CPs can reduce soil erosion by as much as 50 percent. They contribute to sediment reduction and runoff, increase water infiltration, and promote better water quality (Maxwell 2005). CPs 2 and 25 restore native plant communities, in turn reducing soil erosion and sediment loads to receiving waters. Riparian buffers (CP22) help stabilize and restore damaged stream banks, and reduce erosion of stream banks.

Land enrolled in CREP will not be in active cultivation, thereby eliminating soil tilling and subsequent wind erosion. Acres enrolled in CREP would be removed from irrigation, eliminating sheet and rill erosion on these areas.

Additionally, with CREP and other water saving programs, there may be an adequate water supply to meet the demands for irrigating cropland not enrolled in CREP. More agricultural land will remain in production, preventing wind erosion from on idle farmland.

The beneficial impacts of the CPs discussed above would provide long-term moderate to high beneficial effects, assisting in the achievement of all CREP Objectives (Section 1.4).

3.9 Wetlands

3.9.1 Introduction

Section (a) (16) of the Food Security Act, Public Law 99-198, December 23, 1985 defines a wetland as:

> The term "wetland," except when such term is part of the term "converted wetland," means land that has a predominance of hydric soils and that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions.


A wetland in Idaho.
Photo Courtesy of NRCS.

Numerous laws exist that govern FSA program actions in relation to wetlands, including EO 11990, Protection of Wetlands; the CWA; and the Food Security Act.

3.9.2 Benefits of Wetlands

Wetlands are some of the most productive and dynamic habitats in the world. The physical, chemical, and biological interactions within wetlands are often referred to as wetland functions. These functions include surface and subsurface water storage, nutrient cycling, particulate removal, maintenance of plant and animal communities, water filtration or purification, and groundwater recharge. Similarly, the characteristics of wetlands that are beneficial to society are called wetland values. Some examples of wetland values include reduced damage from flooding, water quality improvement, and fish and wildlife habitat enhancement.

It is important to maintain and restore wetland functions and values because wetlands contribute to the overall health of the environment. Some basic wetland functions and wetlands associated values are listed below (EPA 2005d):

- **Surface water storage:** This function helps reduce flooding by temporarily storing water, allowing it to soak into the ground or evaporate. This temporary storage can help reduce peak flows after a storm.
- **Subsurface water storage:** Wetlands are reservoirs for rainwater and runoff. As this water is released into the ground, it recharges water tables and aquifers, and extends the period of stream flows in many parts of the United States.
- **Nutrient cycling:** Wetlands enhance the decomposition of organic matter, incorporating nutrients back into the food chain.
- **Sediment control:** By filtering out sediments and particles suspended in runoff water, wetlands help prevent lakes, reservoirs, and other water resources from being affected by downstream sediment loading.
- **Maintenance of plant and animal communities:** Both coastal and inland wetlands provide breeding, nesting, and feeding habitat for millions of waterfowl, birds, fish, and other wildlife.
- **Values to society:** Wetlands often provide sites for hunting, fishing, trapping, photography, outdoor classrooms or environmental education, and the enjoyment of open spaces.

3.9.3 Existing Conditions

Wetlands are transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water (NRCS 2005a).

State Wetlands

Idaho's wetlands are highly productive and an essential component of the landscape. They serve a wide array of functions, from improving water quality to providing critical wildlife habitat including habitat and water for the T&E species within the project area. Freshwater wetlands play an essential role in the availability of water in Idaho. By slowing floodwaters or capturing snowmelt each season, inland wetlands retain the water, which then can seep into the ground to recharge aquifers and other sources of groundwater. At the same time, the wetlands vegetation and sediment filter out many pollutants from the water (IDFG 2005b).

The types of wetlands in Idaho are freshwater marshes or lake edges, riverside wetlands, and ephemeral habitats, such as the ponds of forests, prairies, and glaciated valleys. Saline wetlands are located in un-drained depressions and areas receiving irrigation runoff. Two common types of inland wetland habitats in this region are riverine and palustrine (IDFG 2005c). The following is a description of the three wetland types that exist in Idaho (NRCS 2005a).


Constructed wetland system in Gooding County. Photo Courtesy of NRCS.

Lacustrine – Wetlands and deepwater habitats with open water exceeding 20 acres or more than 6.6 feet deep.

Palustrine – All non-tidal wetlands dominated by trees, shrubs, and other persistent wetland plants. This system also includes water bodies less than 20 acres, which are less than 6.6 feet in depth at low water.

Riverine - All open water wetland and deepwater habitats contained in a channel.

Of Idaho's nearly 53 million acres of land area, just over 1.2 million acres (2.3 percent) contain wetlands (NRI 1997). In 1997, the NRI indicated that palustrine wetlands were the most common type on Idaho's Federal and non-Federal water areas and non-Federal lands, totaling nearly 666,800 acres (Table 3.13).

Idaho's wetlands occur on both Federal and privately owned lands. In the Jarbridge BLM Ranger District, within the project area, open water comprises 58 percent of the land area occupied by wetland and deepwater habitat. Of the remaining wetland acres, 33 percent of the land is in private ownership. The USBR and the BIA each own just over six percent of the State's wetlands (Jankovsky-Jones, 2001).

The 1997 NRI results indicate that more than half of Idaho's palustrine wetlands on non-Federal lands occur on cropland, pastureland, and enrolled CRP land (Table 3.14). These wetland types are often the focus of wetland conservation activities (NRCS 2005a).

Table 3.13. Types of wetlands on Federal and non-Federal lands and water areas in Idaho in 1997.

Wetland	Acres	Percent
Palustrine	666,800	55.3
Lacustrine	396,300	32.9
Riverine	142,600	11.8
Total Acres	**1,205,700**	**100.0**

Source: NRCS 2005a.

Table 3.14. Idaho 1997 palustrine wetland estimates of non-Federal land and water areas by land cover/use

Land Cover/Use	Acres	Percent
Cropland, Pastureland, and CRP Land	388,700	58.3
Rangeland	174,200	26.1
Forestland	55,800	8.4
Water Areas	25,500	3.8
Other Rural Land[1]	21,600	3.2
Developed Land	1,000	0.2
Total Acres	**666,800**	**100.0**

[1] A land cover/use category that includes farmsteads and other farm structures, field windbreaks, barren land, and marshland.
Source: NRCS 2005a.

CREP Project Area

In 1999, it was estimated that 264,518 acres of wetlands existed within the project area (Figure 3.12) (UI 2005). Of these wetlands, the largest percentage (37 percent) is located on private lands (Table 3.15).

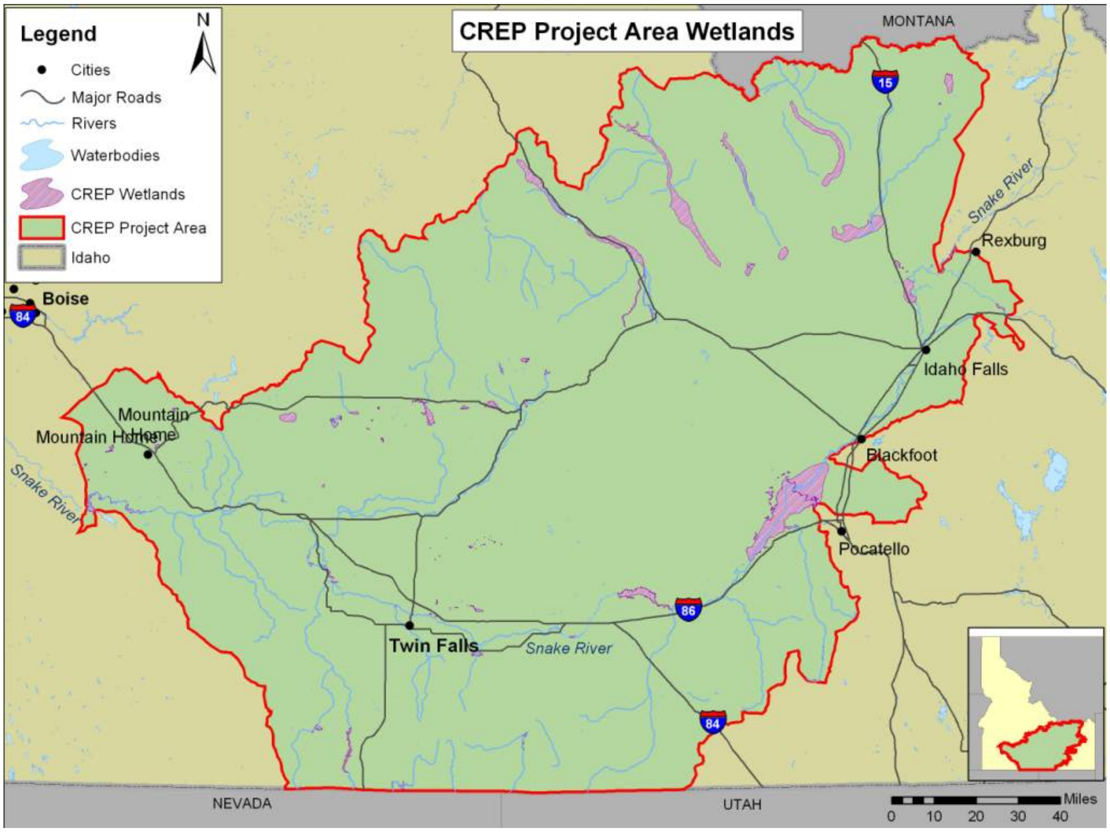


Figure 3.12. CREP project area wetlands.
Source: UI 2005.

Table 3.15. Land ownership of wetlands within the CREP project area.

Land Ownership	Wetland Acres	Percent of Project Area
Bureau of Land Management	38,116	14
Bureau of Indian Affairs	17,931	7
Department of Energy	4,217	2
US Fish and Wildlife Service	7,108	2
US Forest Service	287	<1
National Park Service	1	<.01
State of Idaho	8,312	3
Open Water	91,444	35
Private	97,102	37
TOTAL	**264,518**	

Source: UI 2005.

3.9.4 Agricultural Impacts to Wetlands

It is estimated that since the 1780s, 56 percent of Idaho's wetlands have been lost. Of the remaining wetlands, many have been degraded by hydrologic alteration and impacts to vegetation and soils (IDFG 2005b). Agriculture is Idaho's leading industry, and the majority of wetlands occur on private lands.

The primary agricultural threats to wetlands include diminishing water supply from irrigation diversions, agricultural development, increased sediment and nutrient loads from agricultural lands, and grazing. Other impacts to wetlands include a decrease in water supply from drinking water well withdrawals, urban development, and channelization of rivers and streams. Well over withdrawal can dry up wetlands and ponds that are hydrologically connected to the supplying aquifer. Upland development and upstream channel modifications erode wetlands, upset sediment and nutrient balances, and kill existing vegetation.

3.9.5 Effects of Alternative A (No Action) on Wetlands

With the selection of the No Action Alternative, wetland values (e.g., vegetation, water quality, and habitat) would continue to dwindle. Farms converted from wetlands would remain in operation. However, given ongoing Federal involvement, total wetland acres would likely be stable or slightly reduced under No Action because Section 404 of CWA and other Federal laws strongly restrict draining or conversion of existing wetlands for other uses. EO 11990, Protection of Wetlands, applies to private lands and would also promote the stability of wetland acreage.

As agricultural production is Idaho's main industry and most wetlands occur on private lands, wetlands are at great risk to agricultural development and pollutant runoff. Alternative A would result in long-term, moderate to major adverse effects to State wetlands and would not achieve any of the CREP Objectives listed in Section 1.4.

3.9.6 Effects of Alternative B (CREP Agreement) on Wetlands

Because most of the wetlands in the CREP project area are located on private land, implementation of Alternative B would have a long term, beneficial effect for Idaho's wetlands.

Implementation of CP22 (riparian buffers) would directly benefit wetlands by establishing vegetative strips adjacent to waterbodies. Riparian buffers reduce pollution and protect surface and subsurface water quality while enhancing the aquatic ecosystem. Indirectly, three of the remaining CPs: establishment of permanent native grasses, permanent wildlife habitat (non-easement), and wildlife food plots, are intended to reduce soil erosion and improve surface water quality. Riparian buffers would also reduce flood volume, which has the potential of reducing wetland erosion.

Marginal pastureland restoration project.
Photo Courtesy of NRCS.

CP installation of wetlands may result in short-term adverse impacts to adjacent land. Until wetland vegetation is permanently established and the hydrology of restored wetlands is stabilized, flooding of wetlands may also result in flooding of adjacent land. In addition wetland restoration might require earth moving activities and soil disturbance. These activities have the potential to introduce sediments into nearby waterbodies. Effects of wetland installation are expected to only last until the CP is permanently established (1-3 years) and they are minor compared to the overall long-term benefits of the CP.

All five of the objectives in Section 1.4 would be met. Converting agricultural land to wetland habitat would reduce the need for irrigation in the short-term and eliminate water needs in the long-term, thereby reducing water use. Higher functioning wetlands filter pollutants from surface water reducing the amount of sediment and improving water quality of surface and groundwater. Restoration of wetlands would provide important habitat for protected species and restore native plant communities.

3.10 Floodplains

3.10.1 Introduction

Floodplains are defined as lowlands or relatively flat areas adjoining inland or coastal waters, including areas subject to a one percent or greater chance of flooding in any given year. Floodplains serve a variety of functions and values including:

- dissipate the energy of floods, reducing flood damage downstream
- floodwater storage which slowly releases water into adjacent streams, maintaining base flows

Development and activities in floodplains may affect these functions, potentially increasing the impact of floods on human health and safety. All Federal actions must meet the standards of EO 11988, Floodplain Management. The purpose of the EO is to avoid incompatible development in floodplain areas. It states, in part, that:

> "Each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities."

In accordance with the EO and prior to any action, Federal Emergency Management Agency (FEMA) floodplain maps will be reviewed to determine if the proposed action is located in or will affect a 100- or 500-year floodplain. Soil survey maps, aerial photography, and topographical maps should be used where no FEMA maps are available. FSA should complete surveys in areas where no flood hazard or flood elevation data are available, the amount of Federal investment in the proposed action is significant, and/or if the action could create a significant adverse effect on a floodplain.

Applicable development permits must be obtained from local authorities prior to construction activities within a floodplain. In Idaho, the IDWR floodplain manager helps communities in planning for floods, conducts training of floodplain protection and reviews work done within floodplains to ensure that it will not cause an increase in flood levels if flooding occurs (IDWR 2005g).

3.10.2 Existing Conditions

Flood maps in most Idaho communities have not been updated in the last 20 years and IDWR is currently undertaking a project to redraw maps of flood-prone areas to make them more accurate. As these maps are completed, they will be digitized and made available on the Internet. Eventually, all 44 counties in Idaho will have updated floodplain maps (IDWR 2005h).

3.10.3 Effects of Alternative A (No Action) on Floodplains

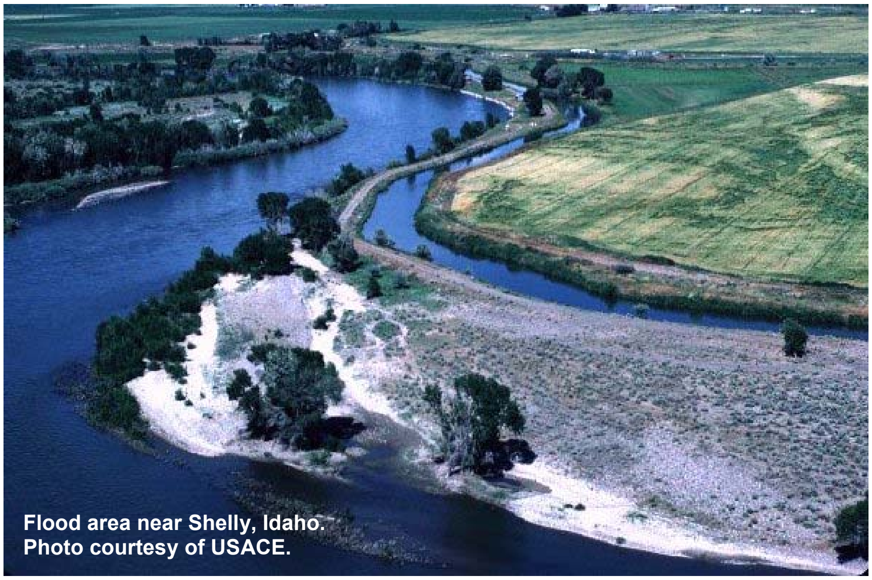
Under the No Action Alternative, CREP funds would not be available to implement CPs that may have beneficial effects on floodplain conditions, especially the ability of floodplains to store floodwaters. Some construction may occur that would alter floodplain flowage, capacity, or other functions.

Alternative A would not contribute to the achievement any of the objectives listed in Section 1.4 and would result in little change to the State's floodplains.

3.10.4 Effects of Alternative B (CREP Agreement) on Floodplains

Implementation of Alternative B would result in minor, long-term benefits to Idaho's floodplains. Minor improvements in floodplain areas and stream profiles would occur. CREP funds would be used to stabilize floodplains and improve habitat through installation of riparian buffers and restoration of rare habitat.

Most of the CPs allowed under CREP would have little to no effect on the functions and values of floodplains. CPs involving construction activities, substantial earth movement, diking, or other means of altering the flows would need to be reviewed and appropriate public notice provided. See Table 3.16 for a summary of CPs and their effects on floodplain functions and values.


Flood area near Shelly, Idaho.
Photo courtesy of USACE.

Alternatives would be carefully considered by FSA at the time that site specific EEs are developed for each CREP contract. The direct impacts of all CPs would be generally beneficial, and would contribute to achieving the CREP Objectives discussed in Section 1.4.

Table 3.16. Summary of effects of CPs on floodplain functions.

Conservation Practice	Effect on Floodplain Functions		Description of Effect
	Short Term[a]	Long Term[b]	
2, Establishment of Permanent Native Grasses	No effect to minor positive effect	No effect to minor positive effect	No structures or earthmoving activities authorized for this CP. Native grasses may increase soil infiltration slowing down runoff.
4D, Permanent Wildlife Habitat Non-easement	No effect to minor positive effect	No effect to minor positive effect	No structures or earthmoving activities authorized for this CP. Established vegetation may increase soil infiltration slowing down runoff.
12, Wildlife Food Plots	No effect to minor positive effect	No effect to minor positive effect	No structures or earthmoving activities authorized for this CP. Established vegetation may increase soil infiltration slowing down runoff.
22, Riparian Buffer	No effect to minor adverse effect	No effect to minor positive effect	Earthmoving activities such as grading, leveling, filling may be used during site preparations and could temporarily alter the hydrology of floodplains and result in minor short term adverse effects to floodplain functions. Beneficial long term effects may occur since buffers reduce scour erosion in floodplains and slow down runoff through increased infiltration and surface detention.
25, Rare and Declining Habitat	No effect to minor adverse effect	No effect to minor positive effect	Implementation of this CP may involve building structures (e.g., pipes, gates, and outlets) and earthmoving activities to construct dam, levees, and other structures that may be necessary to restore hydrology. These structures and earthmoving activities may temporarily alter flowage in floodplains and result in adverse short term effects on floodplain functions. Long term benefits may occur as the hydrology of the habitat is restored and established vegetation would increase soil infiltration slowing down runoff.

[a].Short term is defined as the implementation period of the conservation practice. Usually one to two years.
[b] Long term is defined as the CREP contract period, which is between 10-15 years.

3.11 Protected Species

3.11.1 Introduction

Idaho has a rich and diverse wildlife population, yet habitat degradation from population growth, invasive exotic species, and pollution threaten current species populations. CREP would enhance wildlife habitats throughout the State and maintain populations of T & E species. This PEA discusses the potential impacts to wildlife, particularly potential impacts to T & E species and wildlife habitat.

The Endangered Species Act (ESA) was enacted to protect T & E species and to provide a means to conserve their habitats. All Federal agencies are required to implement ESA by ensuring that Federal actions do not jeopardize the continued existence of listed species or their habitat.

ESA defines an endangered species as one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is likely to become endangered within the foreseeable future. T&E designations may be applied to all species of plants and animals, except pest insects. A species may be threatened at the State level, but that same designation does not automatically apply nationwide, as species numbers may be greater in other states.

FWS and the National Marine Fisheries Service (NMFS) are mandated the responsibility of ensuring that other agencies plan or modify Federal projects so that they will have minimal impact on listed species and their habitats. Section 7 of ESA requires that project areas must be checked against FWS and State listings of critical habitat and T&E species. FSA ensures that all CREP contracts meet this requirement by including T&E species in its EE.

ESA also requires the delineation of the "critical habitat" of listed species. Critical habitat is defined by ESA as areas that are "essential" to the conservation of listed species. Private, city, and State lands are generally not affected by critical habitat until the property owner needs a Federal permit or requests Federal funding. Because the Idaho CREP is partially funded by Federal dollars, consultation with FWS would be required when critical habitat is encountered. Critical habitat designations are published in the Federal Register and can be located at the FWS website http://endangered.fws.gov/.

FWS has recently proposed rules that would help remove deterrents from private landowners that wish to manage their property for the benefit of listed species (64 FR 32706-32716). This would entail the development of Safe Harbor Agreements and Candidate Conservation Agreements with Assurances. These agreements would ensure agricultural landowners that traditional agricultural uses could continue alongside habitat improvements. They would also address the issue of "incidental take" with regard to activities such as habitat restoration.

3.11.2 Existing Conditions

Vegetation

The area's climate and mostly alkaline soils support plant communities and animal populations able to cope with both dryness and temperature extremes. The natural vegetation typically consists of a shrub overstory with an understory of perennial grasses and forbs. The ESPA region is dominated by sagebrush (*Artemisia spp*.), typically associated with various wheatgrasses (*Agropyron spp*.), Idaho fescue (*Festuca idahoensis*), or other perennial bunchgrasses.

The most common shrub over much of the area is Wyoming Big Sagebrush (*Artemisia tridentata* subspecies *wyomingensis*). Basin Big Sagebrush (*Artemisia tridentata* subspecies *tridentata*) may be dominant or co-dominant with Wyoming Big Sagebrush. Other common shrubs include Green Rabbitbrush (*Chrysothamnus viscidiflorus*), Gray Rabbitbrush (*Encameria nauseosus* var. *nauseosus*), and Winterfat (*Krascheninnikovia lanata*). Utah Juniper (*Juniperus osteosperma*), Threetip Sagebrush (*Artemisia tripartita*), and/or Black Sagebrush (*Artemisia nova*) dominate communities on slopes of the buttes, alluvial fans, and hills.

The most common native grasses include Thick-Spiked Wheatgrass (*Elymus lanceolatus*), Bottlebrush Squirreltail (*Elymus elymoides*), Indian Ricegrass (*Oryzopsis hymenoides*), Needle-and-Thread Grass (*Stipa comata*), and Nevada Bluegrass (*Poa secunda*). Patches of Creeping Wildrye (*Leymus triticoides*) and western wheatgrass (*Pascopyrum smithii*) are abundant. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is rare but is often the dominant grass on alluvial fans and slopes of buttes and hills.

Common native forbs include Tapertip Hawksbeard (*Crepis acuminata*), Hood's Phlox (*Phlox hoodii*), Hoary False Yarrow (*Chaenactis douglasii*), paintbrushes (*Castilleja spp*.), Globe-mallow (*Sphaeralcea munroana*), buckwheats (*Erigonum spp*.), Evening Primrose (*Oenothera caespitosa*), lupines (*Lupinus argenteus*), Bastard Toadflax (*Comandra umbellata*), milkvetches (*Astragalus spp*.), and mustards (*Thelepodium laciniatum*, *Stanleya viridiflora*, *Arabis spp*.) (Proposal 2005).

Agricultural fields dominate the once shrub-steppe near the Snake River. The crop fields are adjacent to, and abut against, the sagebrush desert on the Eastern Snake River Plain. The forested land typically transitions from low elevations having juniper and/or scattered aspen, to higher elevations dominated by lodgepole pine (Proposal 2005).

Threatened or Endangered Species

The project area has one listed plant species. The Ute ladies'-tresses (*Spiranthes diluvialis*) is a terrestrial orchid, generally blooming from late July through August. Ute ladies'-tresses is found in moist soils near springs, lakes, or perennial streams at elevations of 1,800-7,000 feet. It may also occur in meadows or near riparian woodlands. The habitat of the Ute ladies'-tresses is dependent on natural stream processes affecting the orchid's floodplain habitat. These natural processes have been dramatically modified since settlement of the west. Water demands by agriculture and municipal uses resulted in dams, reservoirs, and water diversions, which have all altered the orchid's habitat (FWS 2005). Recent invasions of weedy species are one of the largest threats to Ute ladies'-tresses (CNE 2005). Aggressive exotic species such as purple loosestrife and reed canary grass can force Ute ladies'-tresses out of certain areas. Yet, the application of herbicides to rid the area of invasives also threatens the orchid's growth and reproduction (NRCS 2005d).


Ute Ladies'-tresses. Photo c ourtesy of WSDOT.

The only know population of Christ's paintbrush (*Castilleja christii*) grows in Cassia County. This species is susceptible to livestock grazing and trampling by recreational users, particularly hang gliders, and off road vehicles. It is designated as a candidate species by the FWS.

Fish and Wildlife

Most of the species found in the CREP area are found on the area's outer edges. There are approximately 170 wildlife species in the project area that are designated by IDFG as protected nongame species-- those species for which it is illegal to collect, harm, or otherwise remove from their natural habitats. There are 38 game species in the project area managed through the sale of hunting tags (Proposal 2005). A map of high-priority wildlife areas is found in Appendix E.

The CREP area encompasses several diverse wildlife habitats, extending from the Snake River canyon (home to river otters, canyon wrens, badgers, bats, birds of prey, and elk) across the shrub-steppe desert (where sage grouse, mule deer, lizards, rabbits, owls, hawks, and eagles are found), and including mountain ranges of varying elevations in eastern and central Idaho (habitat for mountain goats, mule deer, coyotes, black bear, beaver, elk, and golden eagles).

A narrow band of riparian habitat and wetlands occurs along the Snake River and in scattered locations where spring water emerges from the ground, providing habitat and/or migratory passages for waterfowl, sandhill cranes, bald eagles, Bliss Rapids snails, and pelicans. Outside the narrow band of riparian habitat and wetlands along the Snake River, some potentially eligible project area lands are adjacent to rivers or streams with resident salmonid habitat, such as that for Yellowstone cutthroat trout, inland Columbia Basin redband trout, rainbow trout, bull trout, and mountain whitefish. Surface flows in these areas provide habitat and migratory passage corridors for these fish.

The project area includes locations currently targeted by various conservation organizations and agencies designated as beneficial habitat for wildlife.

- Important Bird Areas (IBAs): While not a Federally-recognized habitat designation, IBAs are sites that Idaho Partners in Flight and the Idaho Audubon Council have determined to provide essential habitats for one or more species of bird. There are 21 IBAs in the project area, five IBAs ranked as “globally significant” and two ranked as “nationally significant.” Areas designated as IBAs may receive priority designation for larger bird conservation initiatives.
- Mule deer initiative areas targeted by IDFG to improve converting annual crop fields to permanent vegetation, providing cover and forage.
- Nesting, brood-rearing, and winter habitat for sharp-tail grouse identified by IDFG to reintroduce, reestablish, and develop new populations (Proposal 2005).

The biological community in the Snake River between Milner Dam and King Hill has become severely stressed because of the existing eutrophic conditions in this reach (see Section 3.8, Surface Water). Large dissolved oxygen and temperature fluctuations have resulted in water quality conditions that are intolerable for many aquatic organisms. In addition, many of the deep pools and gravel beds once common in the reach have been filled with sediment and decaying plant material and no longer provide suitable habitat for many native species. Few trout or other native fish species currently survive in the reach, which is now dominated by species adapted to polluted, warm water conditions. Downstream dams on the Snake and Columbia Rivers have blocked access to the Snake River between Shoshone Falls and King Hill for other species such as chinook salmon, steelhead, Pacific lamprey, and white sturgeon. Of these species, only the white sturgeon survives in the reach. Seven species of snails and two other species of fish currently inhabiting areas in the reach either have been Federally listed or are being considered for listing as endangered or threatened (see Table 3.18) (Clark et al. 1998).

<u>State-listed Species</u>

Idaho offers protection for State species of concern, listed due to low population size or distribution, or significant losses of habitat. Table 3.17 lists State wildlife species of concern within the project area. Appendix F lists all the State plant species of concern.

<u>Threatened or Endangered Species</u>

FWS recognizes 12 threatened or endangered wildlife species (14 species, including candidate listings) that have been found in counties of the project area (FWS 2005). These species are summarized in Table 3.18.

Table 3.17. Idaho wildlife species of special concern.

	Common Name	Scientific Name
Amphibians & Reptiles	Western Toad	*Bufo boreas*
	Northern Leopard Frog	*Rana pipiens*
Birds	American White Pelican	*Pelecanus erythrorhynchos*
	Great Egret	*Ardea alba*
	Trumpeter Swan	*Cygnus buccinator*
	Sharp-tailed Grouse	*Tympanuchus phasianellus*
	Black Tern	*Chlidonias niger*
	Yellow-billed Cuckoo	*Coccyzus americanus*
	Three-toed Woodpecker	*Picoides tridactylus*
	Black-backed Woodpecker	*Picoides arcticus*
	Pygmy Nuthatch	*Sitta pygmaea*
	Loggerhead Shrike	*Lanius ludovicianus*
Aquatic Vertebrate Species	Shoshone Sculpin	*Cottus greenei*
	Wood River Sculpin	*Cottus leiopomus*
	White River Sturgeon	*Acipenser transmontanus*
	Yellowstone Cutthroat Trout	*Oncorhynchus clarki bouvieri*
	Westslope Cutthroat Trout	*Oncorhynchus clarki lewisi*
	Inland Columbia Basin Redbank	*Oncorhynchus mykiss gairdneri*
	Leatherside Chub	*Gila copei*
Mammals	Western Pipistrelle	*Pipistrellus Hesperus*
	Northern Flying Squirrel	*Glaucomys sabrinus*
	Little Pocket Mouse	*Perognathus longimembris*

Source: IDFG 2005d.

Table 3.18. Federally listed T&E wildlife species.

	Common Name	Scientific Name	Federal Status[1]
Aquatic Vertebrate Species	Bull Trout	*Salvelinus confluentus*	T
	Steelhead	*Onchorynchus mykiss*	T
	Columbia Spotted Frogs	*Rana luteiventris*	C
Aquatic Invertebrate Species	Bliss Rapids Snail	*Taylorconcha serpenticola*	T
	Banbury Springs Limpet	*Lanx sp.*	E
	Utah Valvata Snail	*Valvata utahensis*	E
	Idaho Springsnail	*Fontelicella idahoensis*	E
	Bruneau Hot Springsnail	*Pyrgulopsis bruneauensis*	E
	Snake River Physa snail	*Physa natricina*	E
Birds	Bald Eagle	*Haliaeetus leucocephalus*	T
	Yellow-billed Cuckoo	*Coccyzus americanus*	C
Mammals	Grizzly Bear	*Ursus arctos*	T
	Gray Wolf	*Canis lupus*	XN
	Canada Lynx	*Lynx canadensis*	T

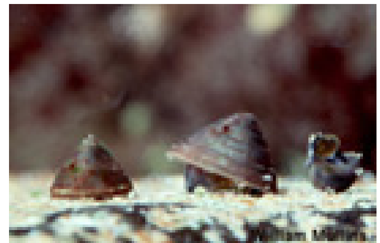
[1] T=Threatened E=Endangered C=Candidate XN=Experimental/Non-essential population.
Source: FWS 2005.

Aquatic Invertebrate Species

With the advent of exploration and development, the Snake River ecosystem has undergone a significant transformation from a primarily free-flowing, cold-water system to a slower moving, warmer system. The human-induced environmental stressors to the Snake River include numerous point and nonpoint pollution sources, diversion of water for irrigation or hydropower, and construction of several mainstem dams (FWS 1995).

The quality of water has a direct effect on the survival of five native aquatic invertebrate species now listed as Federally endangered. Water temperature, velocity, dissolved oxygen concentrations and substrate type are all critical components of water quality that affect survival. These species require cold, clean, well oxygenated, and rapidly flowing waters. They are intolerant of pollution and factors that cause oxygen depletion, siltation, or warming of their environment (FWS 1995).

Factors that further degrade water quality include reduction in flow rate, warming due to impoundment, and increases in the concentration of nutrients, sediment and other pollutants reaching the river. The Snake River is affected by runoff from feedlots and dairies, hatchery and municipal sewage effluent, and other point and nonpoint discharges. During the irrigation season, 13 perennial streams and more than 50 agricultural surface drains contribute irrigation tailwater to the Snake River. Recovery of the listed species will require restoration of their habitat, and will require improvement in water quality of the middle Snake River to a level that supports a diverse and sustainable aquatic ecosystem. In particular, reduction of nutrient and sediment loading to the river and restoration of riverine conditions are needed to recover the listed species (FWS 1995).



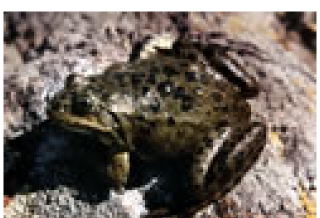
Banbury springs lanx.
Photo courtesy of FWS.

Another threat to the listed aquatic invertebrate species is the presence of the exotic New Zealand mudsnail (*Potamopyrgus antipodarum*) in the middle Snake River. The widely distributed and highly adaptable mudsnail is experiencing explosive growth in the Snake River and displays a wide range of tolerance for water fluctuations, velocity, temperature and turbidity. The species seems to prefer warmer polluted waters over pristine cold spring environments. Based on recent surveys, the mudsnail is not abundant in habitats preferred by Banbury Springs lanx, Bliss Rapids snail, or the Utah valvata. However, the species does compete directly for habitats of the Snake River physa and Idaho springsnail in the mainstem Snake River (FWS 1995).

Aquatic Vertebrate Species

The current drought has severely decreased surface flows in the mainstem Little Lost River. The diminished flows in recent years are thought to restrict movement of bull trout throughout the system. The low discharge in mid to late summer hinders or completely precludes migration of bull trout. The inability of bull trout to migrate to and from the lower portion of the mainstem greatly restricts the amount of habitat available to the population, and may jeopardize an important life-history component (Proposal 2005).

At one time, Steelhead occurred in the Snake River and all its tributaries downstream from Twin Falls. Dam construction on the Snake and Columbia Rivers has affected steelhead populations, creating obstacles to safe passage for the anadromous species during their migration to and from the sea. Habitat loss and degradation due to human activities such as land development, logging, mining, and agriculture have also threatened this species. Efforts are underway to conserve and enhance natural steelhead populations by improving seaward migration survival, restoring habitat, reducing harvest, and modifying hatchery operations to reduce negative effects on wild fish (Proposal 2005).



Columbia spotted frog.
Photo courtesy of FWS.

Columbia spotted frogs live in spring seeps, meadows, marshes, ponds and streams, usually where there is abundant vegetation. They often migrate along riparian corridors between habitats used for spring breeding, summer foraging, and winter hibernation. Threats to the Great Basin population in the middle Snake River region include grazing, spring development, road and trail construction, water diversion, fire in riparian corridors, pesticides, disease, and the introduction of non-native fish. Increasing habitat fragmentation due to activities that reduce riparian connectivity leaves local populations vulnerable to extirpation (FWS 2005).

Bird Species

Although not the most significant factor for the decline of the bald eagle, habitat loss continues to be a threat to its recovery. Nesting areas (both existing and potential), as well as wintering habitat and food sources, must continue to be protected for complete recovery to occur (FWS 2005).

The yellow-billed cuckoo breeds and lives in the riparian areas of Snake River Valley. Potential threats to these birds include conversion of their habitat to agriculture, dams and riverflow management, bank protection, livestock overgrazing, agricultural water use, pesticide use, and competition from exotic plants (FWS 2005).

Mammal Species

The Canada lynx is a reclusive, highly mobile animal that inhabits large territories in remote areas. It is a medium-sized member of the cat family and its survival rates often depend on the abundance of snowshoe hares or other local food sources. Older forests with downed trees provide cover for denning and protection from severe weather, but sometimes lynx will move into rangeland areas near forests to hunt. The primary threat to lynx may be loss of habitat through a variety of human activities such as logging, road construction, recreational activities, fire suppression, and urban development. In the 1980s, high fur prices and trapping for fur pelts caused steep declines in lynx numbers. Winter recreation that results in packed snow, such as snowmobiling or skiing, may negatively impact lynx survival by allowing bobcats, cougars and coyotes access to traditional deep snow habitats that were once the lynx's domain (FWS 2005).


Grizzly Bears. Photo Coutesey of FWS.

Grizzly Bears were almost extirpated from America's wildlands after more than a century of unregulated killing and now occupy only two percent of their original range in the lower 48 states. Grizzlies are found in remote wilderness areas, including areas in the Idaho CREP area. Habitat loss and low reproductive rates continue to affect grizzly bear numbers in Idaho (FWS 2005).

The gray wolf was once the most abundant large predator in North America, playing an important role in ecosystem health by hunting large mammals and keeping ungulate herds strong by eliminating the sick or weak. Nearly all of Idaho is believed to have supported gray wolves, but by the early 20th century, man had almost exterminated the wolf from the lower 48 states. Gray wolves were reintroduced to Central Idaho and Yellowstone National Park in 1995 and 1996. At the end of 2001, 82 wolf pups were produced and the estimated population numbered about 261 wolves in 17 known packs. The wolf population in the Idaho CREP area (and all wolves found south of Interstate 90 in Idaho and Montana) are listed as an experimental, nonessential population (FWS 2005).

3.11.3 Effects of Alternative A (No Action) on Protected Species

Under the No Action Alternative, new T&E listings would continue as more vulnerable species are identified. These new listings and the declining habitat conditions of the currently listed species suggest that overall impacts on T&E species reflect a rising trend as human actions conflict with and adversely affect both species and their habitat. Under Alternative A, areas that would have been enrolled in CREP would not benefit from the installation of FSA CPs. Many of the benefits that would have resulted from the implementation of CREP would not occur. The following adverse impacts might be expected from not implementing CREP:

- Restoration of rare and declining habitats would only occur under other limited State and Federal programs
- Wetlands that provide important habitat and improve water quality would not be restored
- No reduction in pollutant loads from agricultural runoff
- Native grasses would not be planted to enhance native habitats
- Invasive plant species would continue to out-compete native plants
- Permanent wildlife habitat would not be established, continuing the fragmentation of terrestrial habitat.
- Increased competition for limited water supply.

Under the No Action Alternative, long-term, minor adverse effects would continue. Terrestrial and aquatic habitat values in Idaho would not benefit from the habitat restoration and watershed improvement CPs and these values may continue to decline. Continued water use and diversion for agricultural uses would continue to limit the water available to protected species.

3.11.4 Effects of Alternative B (CREP Agreement) on Protected Species

Implementation of Alternative B would benefit protected species in southeastern Idaho. Advantages originating from the CPs and associated activities would restore native habitats, enhance existing native habitats, improve water quality, and control nonnative species. Some minimal and localized negative impacts may occur to habitat during installation of the CPs through temporary displacement; however, since Alternative B would only temporarily affect previously cropped land and the resulting CPs would provide better habitat, these impacts would be minimal.

Increased surface water would benefit all aquatic species, helping to restore important habitat for survival and reproduction. Increased surface water flow would also benefit the Ute ladies'-tresses, as its habitat is partly dependent on higher water flows (NRCS 2005d). Reduction of water use and installation of conservation practices on irrigated cropland will increase plant wildlife habitat, stream flows, and stream connectivity to the benefit of native plant and wildlife species (Proposal 2005).

Survival of the endangered snail species is in part dependent upon adequate spring discharge to maintain high quality habitat and water quality. The increased spring discharge resulting from decreased water use in the project area has the potential to improve habitat by maintaining spring flows, particularly during periods of drought (Proposal 2005).

Threatened and endangered salmon and steelhead spawn, rear, and migrate in and through the Snake River below the CREP area. Flow augmentation from, and water quality improvement in, reaches of the Snake River within the project area will improve migrating conditions in the lower Snake River reaches. These improvements will benefit even species outside of the CREP area through hydrologic connectivity (Proposal 2005).

Specifically, the practices to be established on the approved contracts will provide large blocks of land with undisturbed vegetation, creating vital space where wild populations can breed and expand. CREP encourages diverse assemblages of native grasses, forbs, and shrubs specifically aimed to shelter and feed as large a variety of wildlife as possible. The native grasses and shrubs will help to restore and maintain populations of grassland-nesting birds such as sage grouse and sharp-tailed grouse, provide habitat for big game animals, and provide increased habitat for pheasants. Fish species will benefit from increased streamflows, especially in the tributaries, where enhanced flows will improve habitat connectivity. Water quality will also be improved by reducing soil erosion and nonpoint pollution adjacent to the streams and rivers (Proposal 2005).

In addition to increased availability of surface and groundwater, protected species would benefit directly by implementing any of the CPs and concurrent activities. Specifically:

- CP2— Establishment of native grasses would create and enhance habitat for protected species. This practice is also expected to reduce soil erosion and improve water quality.
- CP4D Permanent Wildlife Habitat (non-easement) creates persistent habitat and movement corridors, both critical in an increasingly fragmented landscape.
- CP12 – Wildlife Food Plots establishes annual or perennial food sources to enhance wildlife habitat.
- CP22—Riparian buffers create shade to lower water temperature, therby improving habitat for aquatic organisms. They also provide a source of detritus and large woody debris for aquatic organisms. Buffers provide important terrestrial habitat for wildlife and it is anticipated that broad buffers could provide wildlife corridors connecting native plant and animal populations. Riparian buffers improve water quality by filtering sediment and other pollutants to reduce flow of polluted runoff into rivers and streams. Habitat in receiving water bodies is expected to improve with the removal of these pollutants. Additional rare, native, and T&E species could be included in the community assemblage in an effort to recover these species.
- CP25—The purpose of this practice is to restore the functions of critically endangered, endangered, and threatened habitats through the restoration/conservation of native plant communities that provide habitat for rare and declining wildlife species. This CP would likely provide the greatest benefit to protected species. Listed and rare plant species would be planted through CP-25, thus contributing to the conservation of each species involved.

As part of the CREP enrollment process, a contract involving appropriate CPs would be developed for each individual site. Each contract would have a site specific EE completed by FSA to determine if any threatened or endangered species or habitat are present and would be potentially affected by the proposed action. If so, consultation with FWS/NMFS would be initiated. In addition, any CREP activity that may result in the disturbance of non-cropped areas adjacent to a proposed project site would be coordinated with FWS/NMFS.

Selection of Alternative B would result in long-term moderate to high benefits to protected species. Implementation would provide additional habitat and enhance existing native terrestrial and aquatic habitat by improving water quality and restoring native plant communities. Conservation easements would also provide for the permanent protection of important habitat of protected species. All four the objectives in Section 1.4 would be met.

3.12 Human Health and Social Issues

3.12.1 Introduction

NEPA and its implementing regulations and guidelines require consideration of the health and social impacts of Federal actions in preparation of environmental documents. Section 1508.8 of the CEQ's “Regulations for Implementing NEPA” states that:

> Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

> Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect would be beneficial.


Conservation practices on a farm assures the continued productivity of cropland and protects water quality. Photo courtesy of NRCS.

This section of the PEA will present regional and local information on the human health and social conditions in Idaho relevant to CREP implementation, including environmental justice concerns, and the potential impacts of the proposed project on these conditions.

3.12.2 Environmental Justice

All Federal programs, including CREP, must comply with EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. The EO, issued February 11, 1994, requires each Federal agency to make environmental justice a part of its mission. Agencies are required to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. The EO details that all people, regardless of race, color, national origin, or income, receive the following:

- Fair treatment and meaningful involvement with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies
- The opportunity to express comments or concerns before decisions are rendered on the Federal programs, policies, procedures, or activities affecting them
- Share in the benefits of, are not excluded from, and are not adversely or disproportionately affected by Federal programs, procedures, policies, or activities

Approval of an application for CREP would require the completion of an EE by FSA. Environmental justice issues would be addressed during this evaluation process. If the proposed action is found to cause any adverse human health or environmental effects to minority or low-income communities, a discussion of the negative impacts must be attached.

3.12.3 Existing Conditions

Minority Populations

Historically, Idaho has been a predominately white, non-Hispanic, state. In 2000, the population of Idaho was approximately 1.3 million, over 92 percent of which is white, non-Hispanic. Following the trend of the general population, the majority of farm operators in Idaho are white, non-Hispanic. Table 3.19 summarizes farm operator characteristics in Idaho.

Table 3.19. Farm operators by race.

All Operators by Race	Number of Farm Operators
White	37,372
Spanish / Hispanic or Latino Origin	1,266
American Indian / Alaska Native	264
Asian	74
Native Hawaiian / Pacific Islander	11
Black / African American	9
More than one race	74

Source: IASS 2005.

Migrant and Seasonal Farm Workers

Being an agricultural state, Idaho has a sizable migrant and seasonal farm workers (MSFW) population. A migrant farm worker is defined as a person who moves from outside or within the State to perform agricultural labor. A seasonal farm worker is defined as a person who has permanent housing in the State and lives and works there throughout the year (NCFH 2004). The Idaho Migrant Council indicates that there are more seasonal farm workers than migrant farm workers in the State. The migrant population is 9,190 in the summer and 1,290 in the winter. The seasonal farm workers total 13,138 in the summer and 12,609 in the winter (IMC 2005).

Additional information on migrant workers was collected for the 2002 Census of Agriculture. Farm operators were asked whether any hired or contract workers were migrant workers, defined as, "a farm worker whose employment required travel that prevented the migrant worker from returning to his/her permanent place of residence the same day." In 2002, 1,123 farms reported employing migrant farm labor and 71 farms reported employing migrant farm labor on a contract basis. The 2002 Census of Agriculture did not report the number of workers on those farms (IASS 2004).

The major needs of Idaho's MSFW include housing, childcare, healthcare, education, and financial aid (IMC 2005).

Farm Worker Health

Migrant farm-working jobs are physically and emotionally demanding, subjecting workers to hazardous working conditions including chemical exposure and a high risk for injury from accidents. Skin, eye, and respiratory problems are common occurrences. Additional occupational health hazards of farm work include tuberculosis, diabetes, and cancer (NCFH 2005). All these conditions that require frequent medical treatment are difficult to treat due to the mobility of the population. Yet many migrant workers are fearful of the farmer causing them to lose their jobs, and therefore do not ask for the needed medical attention (Kossek et al. 2005).

EPA estimates that 300,000 farm workers in the U.S. suffer acute pesticide poisoning each year. Many of these workers do not seek treatment, or are misdiagnosed because symptoms can mimic a viral infection (NCFH 2005). Pesticide exposure can occur from a number of sources such as contaminated soil, dust, work clothing, water, and food, or through pesticide drift--the deposition of a pesticide off its target. Because of the nature of agriculture and the proximity of homes to the fields, family members could be exposed to hazardous chemicals through pesticide drift. In addition, agricultural workers can inadvertently expose family members to hazardous materials by carrying materials home from work on their clothes, skin, hair, and tools, and in their vehicles (McCauley et al. 2000).

Many migrants' lack of education and economic desperation can also contribute to health concerns. For example, a Washington State study of 460 hired farm workers found that 89 percent did not know the name of a single pesticide to which they had been exposed, and 76 percent had not received any information on appropriate protective measures (NCFH 2005).

In addition to physical health issues, migrant farm working families have psychological and social concerns. The challenges present in their daily lives pose serious structural constraints to cultural assimilation and the family's ability to manage stress and improve long term overall social and economic well-being (Kossek et al. 2005).

Because of the hardships of farm work, farm workers need access to health care. Yet, only five percent of farm workers nationally report receiving health insurance from their employer. Moreover, since few farm workers have sick leave, they face the loss of badly needed wages, or even the loss of their jobs, if they take time off to seek health care. Finally, most farm workers in Idaho are Hispanic facing linguistic and cultural barriers when attempting to acquire health care. These factors mean that farm workers often cannot access the health care they need (Strege-Flora 2000).

Poverty

Despite the health concerns, the biggest constraint facing MSFWs is extreme poverty, with household incomes often far below U.S. Federal poverty guidelines. National data shows that one half of all farm working families earn less than $10,000 per year. This income is well below the 2002 U.S. poverty guideline of $18,100 per year for a family of four (Kossek et al. 2005).

In 2002, the poverty rate in the State of Idaho was 11.7, very similar to the national three year average of 11.8 for 2000-2003. Within the counties in the project area, the average poverty rate was 12.8. Owyhee County, at over 18 percent, had highest poverty rate in the State (ERS 2005). Table 3.20 outlines the poverty rate and the total number of individuals below the poverty line in 2002.

Pay Rates

Pay rates vary whether the worker is paid an hourly wage or piece rate. Federal laws require that workers earn a minimum wage of $5.15 per hour. Workers by piece rate can earn more money based upon their individual productivity. Farm operators paid their hired workers an average wage of $9.30 per hour during the October 2004 reference week, up 25 cents from 2003. Field workers received an average of $8.60 per hour, up 18 cents from last October, while livestock workers earned $8.91 per hour compared with $8.64 a year earlier. The field and livestock worker combined wage rate, at $8.67 per hour, was up 20 cents from 2003. The number of hours worked averaged 40.5 hours for hired workers during the survey week, up slightly from a year ago (IASS 2004).

Table 3.20. Poverty information for counties in the Idaho CREP area, 2002.

Name	Poverty rate total (2002) est. rate	Number in poverty total (2002) est. rate
Bannock County	13.5	9,967
Bingham County	12.6	5,382
Blaine County	6.6	1,360
Bonneville County	10.9	9,412
Butte County	13.5	387
Camas County	6.1	64
Cassia County	14.8	3,170
Clark County	15.8	143
Custer County	12.3	504
Elmore County	12.3	3,075

Name	Poverty rate total (2002) est. rate	Number in poverty total (2002) est. rate
Fremont County	13.6	1,614
Gooding County	12.2	1,733
Jefferson County	11.0	2,216
Jerome County	12.9	2,430
Lemhi County	15.1	1,166
Lincoln County	10.9	469
Madison County	16.9	4,863
Minidoka County	13.3	2,561
Owyhee County	**18.2**	2,032
Power County	13.8	1,007
Twin Falls County	12.6	8,332
Average of Area	**12.8**	
Total of Area		**61,887**
Idaho State Total	**11.7**	**156,519**

Source: ERS 2005.

3.12.4 The Effects of Alternative A (No Action) on Human Health and Social Issues

Under the No Action alternative environmental justice would be an ongoing compliance problem because American Indian tribes, migrant workers, and low income or ethnically distinct populations will continue to experience more environmental impacts than the general population. No FSA actions are required or necessary under the No Action alternative to address existing or ongoing issues with environmental justice. In addition, the following human health and social concerns could occur:

- Exposure to pesticides and other harmful chemicals by farm workers and their families would continue to occur at current levels.
- Alternative A would not offer mechanisms to improve the water quantity and quality of Idaho. MSFW and other low-income populations could be exposed to contaminants in their drinking water from private wells or other water sources.

The No Action Alternative would not meet any of the CREP Objectives outlined in Section 1.4.

3.12.5 The Effects of Alternative B (CREP Agreement) on Human Health and Social Issues

Disproportionate effects on minority or underrepresented groups are unlikely, because most CREP agreements are likely to be widely separated by intervening non-CREP land holdings.

The following effects could occur with the implementation of Alternative B:

- CREP funds would be available to all agricultural producers, including minorities. Efforts would be made to offer the program to every eligible producer. CREP sign-up would be monitored annually and barriers to enrollment would be identified through a non-user survey.
- With CREP-enrolled land taken out of current agricultural production, less pesticide and other chemicals could be used. The reduced exposure could lead to decreased health problems for MSFW and their families.

- The improved water quality resulting from Alternative B could decrease the exposure of MSFW and other low-income populations to pesticide and other chemicals in their drinking water.

Alternative B would assist the State in their efforts to meet the CREP Objectives outlined in Section 1.4.

3.13 Economic Issues

3.13.1 Existing Conditions

Agriculture

Agriculture is Idaho's number one industry (IASS 2005). Together, agriculture and food processing represent 23 percent of Idaho's Gross State Product (IDOC 2005). Almost 53 million acres, over 22 percent of the State, is devoted to agriculture. In 2003, there were 25,000 farms that produced and sold over $4.4 billion worth of farm products. Exports of agricultural products earned the State over $847 million in 2003, an increase of ten percent from 2002. The net farm income for 2003 was over $1.2 billion (IASS 2004).

In addition to traditional production agriculture, much of Idaho's economy centers on processing industries for Idaho top farm products, such as potatoes, sugar beets, and wheat. Nearly 16,000 people in Idaho work in the food-processing industry and over two dozen potato and sugar beet plants are found throughout the State (IMNH 2005).

In southern Idaho, rainfall is insufficient to support commercial levels of agriculture without substantial surface and groundwater irrigation diversions (Proposal 2005). Because agriculture and agriculture-related industries are crucial to the area's economy, these water needs must be met despite the environmental and social impacts associated with a limited water supply. Of the 24 counties in the State that rely primarily on agriculture and food processing industries, 14 counties are in the project area (see Figure 3.13) (IDOC 2005).

Recreation

In addition to agriculture, recreation and tourism contribute revenue to the local economy and could be impacted by CREP implementation. The three national parks in the area had 265,000 visitors in 2003 (NPS 2005a). While precise revenue numbers are not available for southeastern Idaho, revenue from recreational activities is thought to be considerable. For example, a 2001 Survey revealed that statewide, 868,000 Idaho residents and nonresidents 16 years old and older fished, hunted, or wildlife watched in Idaho. This same study revealed that $982 million was spent on wildlife recreation in Idaho. Of that total, trip-related expenditures were $296 million and equipment purchases totaled $552 million. The remaining $134 million was spent on licenses, contributions, land ownership and leasing, and other items and services (FWS et al. 2001). Other popular activities of the area include rafting, kayaking, canoeing, camping, hiking, horseback riding, mountain biking, rock climbing, swimming, bird watching, photography, and sightseeing (Proposal 2005).

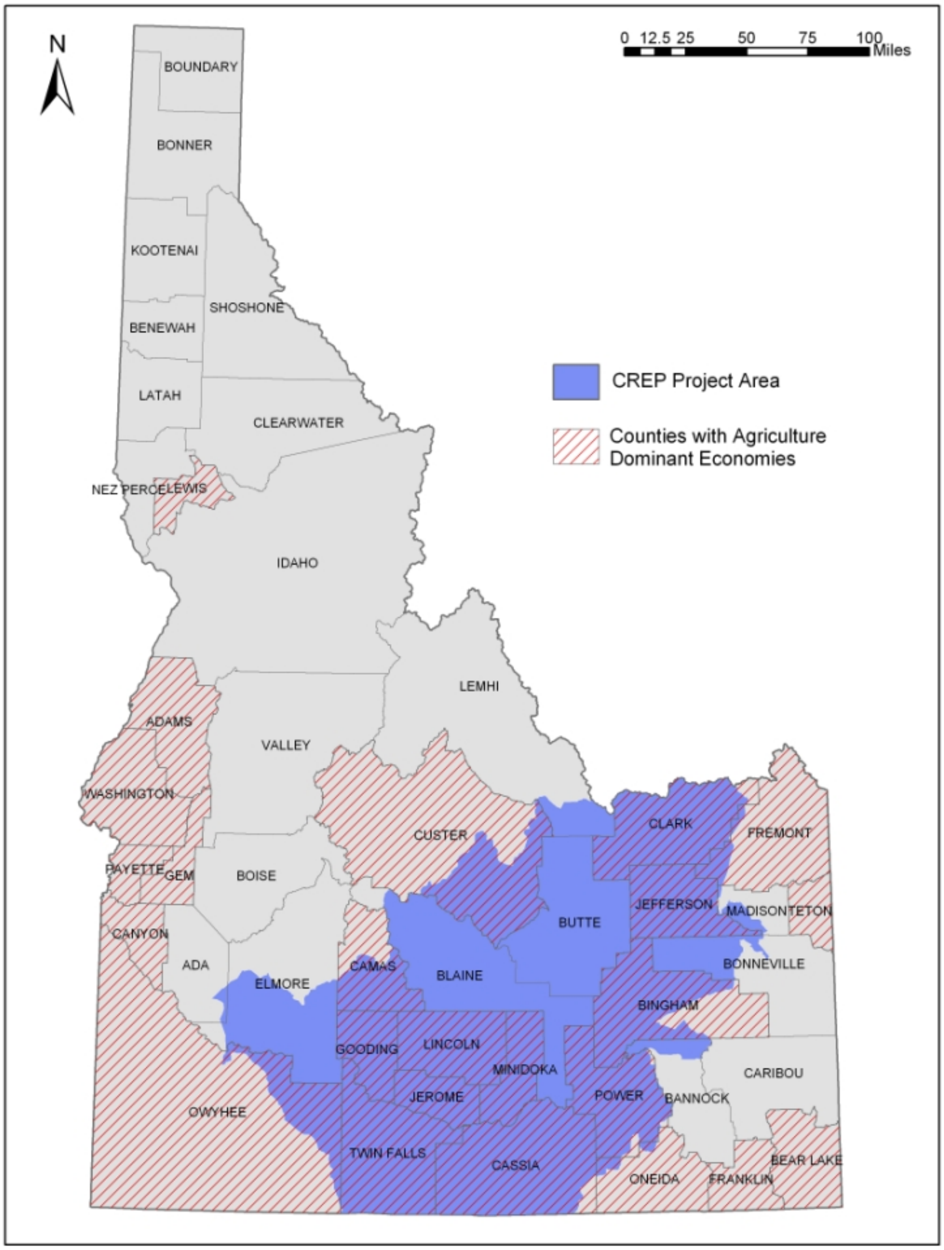


Figure 3.13. Counties in the CREP project area with agriculture dominant economies.
Source: IDOC 2005.

3.13.2 The Effects of Alternative A (No-Action) on Economic Issues

With the ongoing competition for the limited water resources, agricultural producers face an uncertain economic future. Without water conservation actions such as CREP, more water calls could be made. Curtailment of junior water rights does not provide for the continued viability of agriculture in the Eastern Snake River Plain. The sudden failure of the agricultural industry in Eastern Snake River Plain would largely devastate the region's economy. For example, the curtailment order in early 2004 would have affected 1,300 junior water rights in the Magic Valley, idling approximately 113,000 acres of land. The potential economic impact of this curtailment to the local economy was estimated at $750 million (Proposal 2005).

Other specific effects of implementing Alternative A include:

- The dairy industry in Gooding, Jerome and southern Lincoln counties would be particularly affected by the potential curtailment. The impact to the dairy industry is of particular concern because, unlike farm land that could lay idle for a few years, you can not idle a dairy cow's production and restart it at a later time.
- The dramatic change in water allocation would result in lost crop and dairy production, negatively impacting the local economy due to the loss agricultural products, food processing, and jobs. The general economy will also be affected as a result of the weakened agricultural economy due to loss of exports, indirect jobs, reduced property values and reduced tax base.
- Property values and taxes in the project area will decrease if water curtailment occurs. Since most of the agricultural land's water source is irrigation from groundwater pumping or diversions, water curtailment will change the productivity of the lands, leaving them suitable only for dry grazing. Dry land value is only a fraction of what it is as irrigated farmland; irrigated farmland that sells in excess of $2000 per acre could be worth as little as $100-$150 per acre. The decline in the property values of would have a negative effect on an individual's and family's economic outlook, as well as the regional and State economy. In addition, with land out of production, many people will not have the ability to make the payments on the land or to pay the property taxes.
- The value of farm buildings and other land improvements could also be affected, impacting both the landowner asset values and the assessed value for tax purposes. For example, dairy barns, corrals, feed processing facilities, and feed storages have little value if they can not be used to produce milk. When these types of facilities cannot be used for their intended purpose, the financial investment is compromised.
- Investments in irrigation equipment and farming equipment are only partially recoverable and investments in wells and pumps will be lost. Equipment values could be less than one-half of the original cost and irrigation equipment may be one third of original value, assuming a market for the used equipment could be found. The economy will also be affected as new equipment purchases will decline.
- Tax revenue for the area would potentially decrease. County estimates for the tax on dry land is around $1.00 per acre, while the tax revenue on irrigated land is six to eight times that amount. Taxable value for buildings that are no longer used for their intended purposes could remain the same, but if they are abandoned, the owners can ask for special tax reductions, many of which have been granted in the past. Conversely, there may be some increased tax revenues as the senior water rights holders expand to utilize their full water resource capabilities.
- If property values and tax revenues decrease, local school districts and local governments would lose income, decreasing their ability to supply needed services.
- The value of neighboring land could also decline as the market reacts to dramatic events and uncertainty about the future. It could become more difficult for other local businesses to grow and expand.
- The continued degradation of agricultural land has the potential to negatively impact the State's protected/unique lands which may translate into negative impacts to the State's recreation and tourism economy.

3.13.3 The Effects of Alternative B (CREP Agreement) on Economic Issues

CREP will allow farmers to uphold Idaho's strong agricultural tradition while reducing demand on the ESPA's limited water supply (Proposal 2005). If CREP is implemented and other State water-saving measures are adopted, there will be no curtailment of junior water rights and the area's agricultural economy will be preserved. Fewer food processing and agricultural jobs would be lost and agricultural producers will be able to continue to export their products.

Property values will remain at the irrigated farm level, and land owners will be able to continue producing agricultural products on the land, maintaining their earning potential and enabling them to make payments and pay property taxes. Neighboring land values will not decline because of inactive land and the uncertain economic future. The property tax rates will remain at current levels for irrigated land. Investments on buildings, equipment and other land improvements will be maintained. Another potential effect is the financial incentive for producers to maintain open space, which may help enhance the value and desirability of surrounding residential and commercial land.

Increased hatchery production will likely result from the delivery of fully permitted water flows to the aquaculture industry. The estimated flow increase would allow for a 20 percent increase in production of aquaculture goods, valued at $20 million dollars. A large percentage of the aquaculture product is exported, bringing in outside dollars to benefit the local economy.

Increased flow in the ESPA and Snake River has the potential to maintain a thriving recreational industry by improving recreational value in the project area. A number of outdoor recreational activities in the Eastern Snake River plain area rely on the health and long-term viability of the ESPA including rafting, kayaking, canoeing, fishing, hunting, camping, hiking, horseback riding, mountain biking, rock climbing, swimming, bird watching, photography, and sightseeing (Proposal 2005). The addition of filter strips, riparian buffers, native grasses, and wetlands would improve and expand wildlife habitat, potentially augmenting hunting and fishing opportunities as well as enhancing scenic values. An increase in recreational activities may, in turn, maximize sales in recreation-associated trips, licenses, and equipment in the local area.

Another notable economic aspect of increased flows into the Snake River is the ability to meet downstream demands, most notably those for power generation, in accordance with the Swan Falls Agreement (Proposal 2005).

CREP enrolled lands would provide residual income to enrollees, supporting the overall local economy although possibly at a slightly reduced rate. However, this slight reduction, spread across the CREP area, would have an inconsequential effect on the total economy. Idaho's economy would continue to be affected by market forces. Any trends or cycles evident in the labor market would continue and provide the same number of jobs, with fluctuations due to market conditions. CREP enrollments would be spread across the western and southwestern part of the State and have only little to no effects to agricultural labor markets. Agricultural production would continue to respond to market forces and the economy of the State and not be significantly impacted by Alternative B.

Implementation of Alternative B has the potential to slightly reduce total agricultural acreage across the State because the CREP-enrolled land is removed from production. However, even at full enrollment, CREP would only affect a small percentage of the State's harvested cropland. Additionally, the lands (partial fields, strips, or buffers) enrolled in CREP would most likely be less productive areas of a given farm. By enrolling these areas, the landowner may be able to reduce the overall input costs of farming operations, and in some cases, actually maintain or increase production by being able to concentrate resources on the remaining farmland.

Because of the small percentage of total farmland enrolled in CREP, little or no displacement of MSFWs or other minority populations would take place.

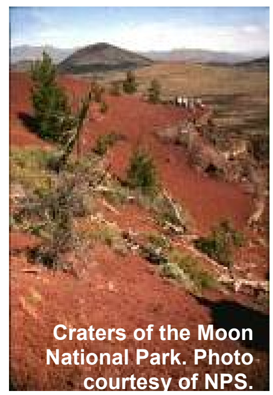
There is a possibility for a slight beneficial effect to farm incomes from the steady and guaranteed receipt of CREP funds by enrolled producers. As discussed above, producers are more likely to enroll marginally productive lands and the residual income from CREP may result in slightly more or at least consistent income than the acreage was capable of producing as farmland. These values, if they occur, would not have a significant impact across the State.

Alternative B offers an additional land preservation program to the State's producers, the benefits of which can be added to those provided by the current programs. This may slow the future rate of large scale land use changes in the State (i.e., agricultural land conversion) and the economic impacts associated with these changes.

3.14 Wilderness

3.14.1 Introduction

The Wilderness Act established the National Wilderness Preservation System and requires Federal agencies to consider the impact of their actions on any federally designated wilderness areas or wilderness study areas (WSAs). Projects must be reviewed to determine if they are located adjacent to or near a designated wilderness area or wilderness study area or would affect a wilderness area by being visible or audible from the wilderness area. NPS, USFS, BLM, and FWS administer federally designated wilderness areas or WSAs.


Craters of the Moon National Park. Photo courtesy of NPS.

3.14.2 Existing Conditions

Idaho contains six wilderness areas, the smallest of which falls within the project area: the Craters of the Moon National Wilderness Area (43,071 acres). This wilderness area is within the Craters of the Moon National Monument and Preserve (south-central Idaho south of US 20/26/93) and is managed cooperatively by NPS and BLM (USDI 2004). The area contains lava fields studded with numerous cinder cones and spatter cones, hidden ice caves, and lava tubes. There is one maintained foot trail and several primitive trails. Primitive camping is allowed, although difficult because no water is present and the lava terrain is not flat (Wilderness.net 2005).

In addition to the designated wilderness area, there are 948,283 acres identified as WSAs in the project area. WSAs are managed as not to impair their suitability for wilderness designation (USDI 2004).

3.14.3 Effects of Alternative A (No Action) on Wilderness

Under the No Action Alternative, the status of wilderness areas would likely continue to be degraded due to water quality issues. The overall acres in wilderness (some four million) constitute only 3.76 percent of Idaho's total area. The limited acres in many wilderness areas (most are less than 250,000 acres) are representative of the fragmented and degraded condition of current ecosystems. Overall, some minor acreage might be added to the existing wilderness areas, but few if any changes to wilderness acres are reasonably expected.

Under the No Action Alternative, it is likely that agricultural runoff would continue to introduce nutrients and pesticides into these areas that may or may not be reduced or filtered by other conservation programs.

3.14.4 Effects of Alternative B (CREP Agreement) on Wilderness

The implementation of the CREP agreement is not designed to add acreage to designated wilderness areas that fall within the CREP-eligible watersheds. However, improvements to water quality and the restoration of wildlife habitat and wetlands can positively impact wilderness areas.

Direct benefits to wilderness would occur from all of the conservation practices. CP2 (permanent native grasses), CP4D (permanent wildlife habitat—non-easement), CP12 (wildlife food plots), CP22 (riparian buffer), and CP25 (rare and declining habitat) all provide for improved wildlife habitat, cover, and feeding areas. For CREP-enrolled areas near and upstream of wilderness areas, the installation of the CPs provides an additional preservation and conservation buffer while expanding areas that can support wildlife and other wilderness values.

CP22 (riparian buffers) provides for removal of nutrients and sediment, and contributes to overall health of waterbodies and habitat for species. Filtering provided by all the CPs would contribute to cleaner water flowing downstream into habitat areas.

These practices would assist in reaching the CREP Objectives discussed in Section 1.4.

3.15 Cultural / Tribal Resources

3.15.1 Introduction

Cultural resources are evidence of past human activity. These may include pioneer homes, buildings or old roads; structures with unique architecture; prehistoric village sites; historic or prehistoric artifacts or objects; rock inscription; human burial sites; earthworks, such as battlefield entrenchments, prehistoric canals, or mounds. These nonrenewable resources often yield unique information about past societies and environments, and provide answers for modern day social and conservation problems. Although many have been discovered and protected, there are numerous forgotten, undiscovered, or unprotected cultural resources in rural America (NRCS 2005e).

NHPA requires consideration of historic properties and their values in cooperation with other nations and with State and local governments. Amendments designated the State Historic Preservation Office (SHPO) or the Tribal Historic Preservation Office (THPO) as the party responsible for administering programs in the states or reservations (ACHP 2002).

3.15.2 Existing Conditions

Historical Properties

The Idaho SHPO administers the Section 106 consultation for National Register programs for the State. This includes nominating properties for listing, processing nominations, and assisting owners in preparing the nominations. As of 2001, Idaho had over 900 listings in the National Register encompassing over 7,000 resources. Over 75 percent of the listed properties include architectural significance as a reason for their historic importance. The other areas of significance for those Idaho properties already listed are Culture and Society, Commerce, Politics/Government, and Exploration/Settlement (Watts 2002). Additionally, portions of the Historic Oregon Trail, a designated National Historic Trail (NPS 2005b) following the Snake River to Boise are preserved in State and National Parks.

To date, the only systematic archaeological survey work on or near the Snake River Plain was done by INL (Lohse 1993). Their studies have determined that the first humans to live on the Snake River Plain arrived 11,000 years ago and have occupied the Snake River Plain and its edges more or less continuously ever since. Over 850 archaeological sites at the INL indicate a widespread use of the area (principal sites mapped in Figure 3.14) (ESER 2005b).

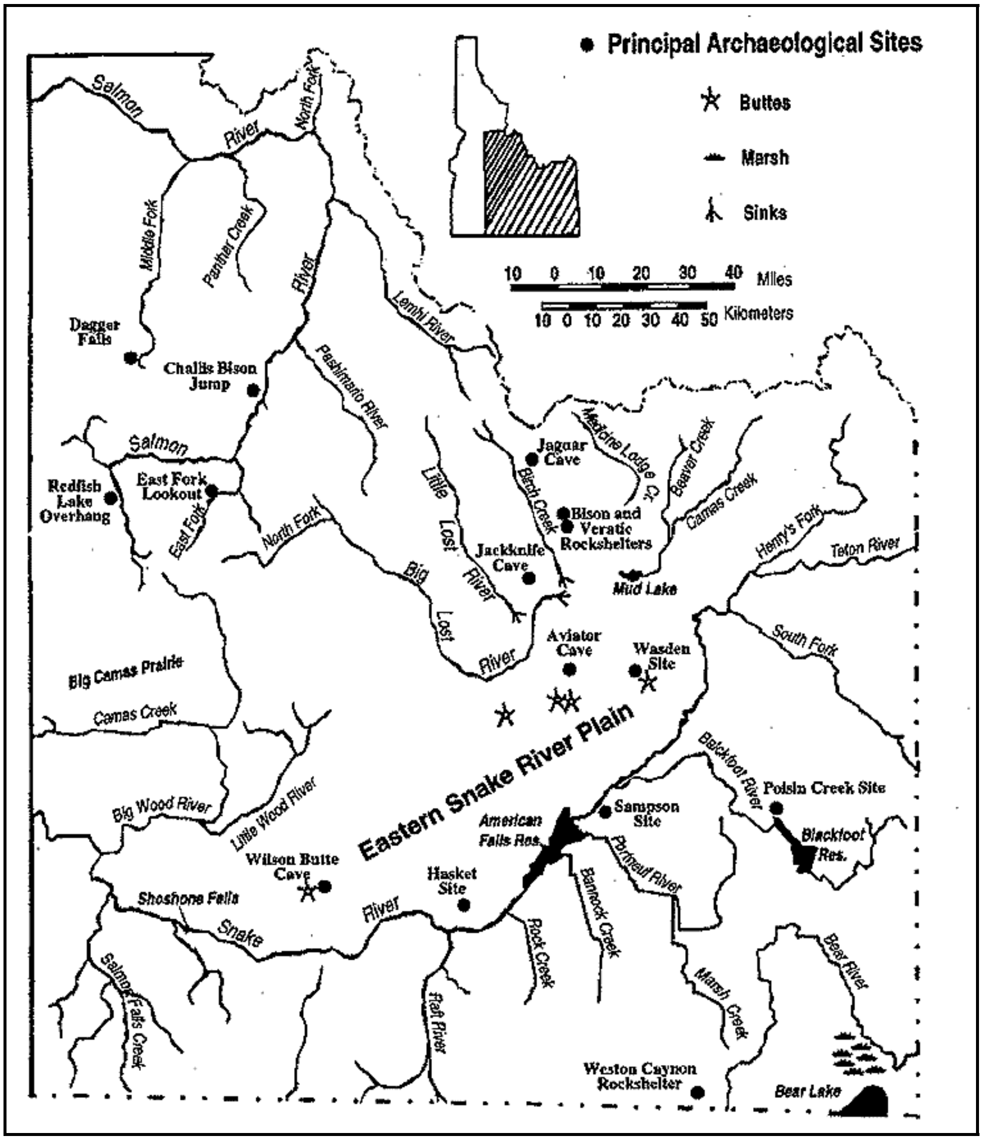


Figure 3.14. Important archaeological sites of the ESPA and nearby areas.
Source: ESER 2005b.

Fort Hall Indian Reservation

The project area encompasses the Fort Hall Indian Reservation, a 544,000 acre parcel home to the Shoshone and Bannock Indian Tribes. The Tribes on the Fort Hall Reservation are organized as a sovereign government providing many services to Tribal members and non-Indians with revenues from agriculture, business enterprises, tourism, and other operations (SBTE 2005).

Some members of the present day Reservation population gather seasonally available resources on and off the reservation (e.g., pinyon nuts, bitterroot, and lodgepole pine), none of which grows on or near the Fort Hall Reservation (ESER 2005a).

Duck Valley Indian Reservation

The Duck Valley Reservation is located on the Idaho-Nevada border. The Shoshone-Paiute Tribes have retained all of the 289,820 acre land area as Tribal Trust land governed by the Tribal Council (RC&D 2005). Approximately half of the reservation's area lies within Idaho's Owyhee County (ITCN 1996).

Agriculture is the economic mainstay of the reservation. Short growing seasons affect production ability on the approximately 87,000 acres that are suitable for farming and irrigation. The majority of the land serves as grazing land for the cattle and horses raised by members of the Tribes. Recreation and tourism industries are being developed to help diverisify the economy (RC&D 2005).

Although the reservation does not lie within the boundaries of the CREP project area, the governing council would be contacted as a cultural resource contact in some parts of the CREP project area.

3.15.3 The Effects of Alternative A (No Action) on Cultural / Tribal Resources

With the implementation of the No Action Alternative, minor to moderate adverse impacts on historical properties would continue to occur. These include disturbance and destruction of prehistoric and historic sites and structures, either through ongoing land conversion for development or agricultural use. Sites and structures, if discovered on private land, may often not be reported and in some instances, destruction of a site or structure may occur before a professional is able to assess its significance. On Federal land or for actions requiring a Federal permit, historical properties reviews must be completed before the Federal agency can implement, fund, or permit a proposed action. In addition, if landowners are prevented from irrigating their agricultural land, private land may have to be sold for development and historical buildings may be lost (Proposal 2005).

Areas eligible for CREP will not likely be evaluated for cultural resources without CREP's implementation.

3.15.4 The Effects of Alternative B (CREP Agreement) on Cultural / Tribal Resources

There would be minimal to no adverse effects on historical properties, with the implementation of CREP. In fact, CREP implementation would likely complement many tribal resource management and stewardship goals. FSA will assess potential impacts to cultural resources as the result of any CREP contract and take appropriate actions to ensure that any adverse impacts are properly mitigated. As part of this process, a historical properties survey of the property may be required. The review must take into account that deeply buried sites may be present and that CREP CPs may affect them. In addition, tribal consultation may be required if TCPs by agency are indicated.

Tribal lands are eligible for CREP enrollment and CP implementation may improve sustainability of farms on the reservation. Additionally, the "Bottoms" area of the Fort Hall Indian Reservation is an important fish and wildlife habitat on the Snake River and includes grazing habitat for a protected herd of tribal buffalo. CREP implementation will improve water and habitat quality in this area, increasing recreational value and generating revenue from the sale of permits through the Tribal Fish and Game Department.

If CREP is implemented and the water-saving measures are successful, curtailment of junior water rights will cease and historic buildings may be preserved as land owners will not face the hardships associated with idle farmland.

Site specific historical properties review will be completed when the EE is completed for each contract.

3.16 Air Quality

The air quality in Idaho is generally good. Occasionally, however, it is affected by agricultural practices.

3.16.1 Existing Conditions

Burning

Agricultural burning includes a variety of activities such as the open burning of post-harvest crop residue, weed control along fence lines and ditches, and orchard trimmings. Agricultural burning is conducted to:

- Improve crop yields,
- Dispose of crop residues,
- Control weeds, pests, and disease,
- Reduce the need for herbicide and pesticide treatments,
- Reduce fire hazards, and
- Clear irrigation ditches and canals (IDEQ 2005f).

Responsibility for regulating open burning of crop residue where crops grow is held by the ISDA. It is up to ISDA to determine whether meteorological and air quality conditions are conducive to crop residue burning without endangering ambient air quality. ISDA is also responsible for training agricultural burners to use proper crop disposal techniques aimed at reducing smoke impacts. Local ordinances may further restrict or prohibit open burning (Proposal 2005).

Weather conditions, especially wind speed and direction, can impact the behavior of smoke from agricultural burning and wild land fires. During stagnant conditions, smoke will tend to stay near the ground and will not disperse readily (Proposal 2005).

Dust

Dust is particulate matter consisting of very small liquid and solid particles. Fugitive dust is particulate matter suspended in the air by the wind and human activities. It originates primarily from the soil.

Idaho's weather, with its wet and dry seasons, contributes to the fugitive dust problem. Long, hot summers allow the soil to dry out thoroughly and, if the surface is disturbed repeatedly (by tilling, for example) the soil may have months to disperse before normal rainfall can again saturate and hold it in place. Southern Idaho’s high winds occasionally make this problem worse.

IDEQ regulates fugitive dust emissions in Idaho under the Rules for the Control of Air Pollution. Dense vegetative groundcover and windbreaks reduce fugitive dust emissions, as reduced wind velocity allows larger particles to settle (Proposal 2005).

3.16.2 The Effects of Alternative A (No Action) on Air Quality

If CREP is not implemented, agricultural practices will, at the very least, continue unchanged. Agricultural burning will continue, potentially degrading the air quality with smoke. Land currently in crop production will also continue to be plowed, further contributing to the dust problem in southeast Idaho.

Without CREP, it is feared that many acres of cropland could be idled without appropriate measures taken to prevent soil erosion. If the current water call is met, a forced curtailment of junior appropriators could idle as much as 113,000 acres on the Eastern Snake River Plain without the benefit or requirement of a conservation plan to prevent erosion. Limited-resource farmers may not have the financial assets to plant permanent cover crops or control noxious weeds. The resulting wind erosion would have negative effects on the air quality of the Eastern Snake River Plain (Proposal 2005).

3.16.3 The Effects of Alternative B (CREP Agreement) on Air Quality

With the CPs for the Idaho CREP, marginal cropland will be planted in native grasses and other cover crops, creating vegetative groundcover and windbreaks that reduce fugitive dust emissions. Also, land enrolled in CREP will not be in active cultivation, eliminating crop burning and soil tilling and reducing dust and smoke pollution.

Prescribed burning may be used to manage and maintain certain CPs (CP2, CP4D, and CP12) with an approved burn plan (FSA 2003). Smoke emitted from these prescribed fires may equal or exceed current crop burning emissions, affecting the area's air quality.

Additionally, with CREP and other water saving programs, junior water rights holders will not lose their water. More agricultural land will remain in production, preventing wind erosion from on idle farmland.

3.17 Cumulative Effects

Introduction

CEQ regulations require that the cumulative effects of a program be considered when evaluating potential environmental impacts for an EA or EIS. CEQ defines cumulative effects as:

> the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR § 1508.7).

Cumulative effects most likely arise when a relationship exists between a proposed action and other actions expected to occur in a similar location during a similar time period. The geographic boundaries considered in the cumulative effects analysis will be limited to the counties where lands are eligible for enrollment in CREP as well as water resources that are located downstream of eligible CREP land. The time frame to be considered in the cumulative effects analysis will be 15 years which is the maximum term of a CREP contract.

Past, Present, and Reasonably Foreseeable Actions

Actions overlapping with, or in proximity, to the proposed action are most likely to have the potential to result in cumulative effects. In addition, programs similar to CREP are also likely to have a cumulative effect. For these reasons and for consideration at the programmatic level, only conservation programs that provide financial or technical assistance to private landowners and are designed to mitigate impacts to natural resources are analyzed for cumulative effects. These programs include NRCS conservation programs, FWS programs, and other landowner assistance programs. The cumulative impacts of ongoing agricultural practices will also be analyzed for each resource issue.

NRCS Programs

CRP, EQIP, and WRP have in the past, do currently, and will in the future offer cost-share assistance to producers in the proposed project area the opportunity to install conservation practices to conserve water, improve water quality, and provide environmental and wildlife habitat benefits (Propsoal 2005). Each of these programs is described in more detail below.

Table 3.21 summarizes acreage within counties in the proposed project area currently enrolled in the CRP (and FSA program), EQIP, WRP, GRP, FRPP, and WHIP. While this table represents data from all 19 counties within the project area, three of those counties – Bannock, Bonneville, and Power – will be ineligible to immediately offer CREP enrollment because 25 percent or more of their cropland acreages are currently enrolled in CRP. The enrolled CRP acreage contracts will begin expiring in 2007 (Proposal 2005).

Table 3.21. Acreages of land enrolled in NRCS and FSA conservation programs in CREP counties.

County	Current CRP Acres	EQIP Acres[1] (approved 1997-2004)	Current WRP Acres	Current GRP Acres	Current FRPP Acres	Current WHIP Acres
Bannock	85,131.0	66,314.0				10.0
Bingham	15,129.4	37,634.4				32.0
Blaine	723.2	2,726.1				105.6
Bonneville	89,358.1	50,929.1			829.0	173.5
Butte	1,068.3	7,613.4				0.0
Camas	6,768.6	7,370.8				6.2
Cassia	49,174.4	53,292.7				0
Clark	8,146.9	43,829.9	489.3			39.0
Custer	649.1	195,873.0				0.0
Elmore	1,153.9	47,432.2				288.0
Fremont	31,008.6	16,918.0	598.7	382.0 (pending)	678.0 610.0 (pending)	454.0
Gooding	2.7	8,125.0	19.2			47.4
Jefferson	4,186.1	11,157.8				28.3
Jerome	0.0	7,414.5				130.4
Lemhi	0.0	129,856.6				555.3
Lincoln	975.6	7,770.5				1387.0
Madison	20,299.4	22,943.7	599.4			126.2
Minidoka	165.4	14,861.7				0.0
Owyhee	119.4	7,065.1				0.0
Power	136,375.1	24,081.8				150.0
Twin Falls	8,559.4	2,168.9				2.3
Totals	**458,994.6**	**765,379.2**	**1,706.6**	**382.0**	**2,117.0**	**13234.4**

[1] EQIP acres include regular EQIP and EQIP for Ground and Surface Water.
Source: Proposal 2005.

Environmental Quality Incentive Program: EQIP is a voluntary conservation program that supports production agriculture and environmental quality as compatible goals. It provides financial and technical assistance to farmers and ranchers who install conservation practices that address natural resource concerns on agricultural lands (NRCS 2005f).

For the years between 1997 and 2004, 765,379.2 acres were enrolled in EQIP (Proposal 2005). In fiscal year 2005, Idaho received an allowance of $13,496,080 for this program, with $1 million set aside for species of concern (NRCS 2005f).

Wetlands Reserve Program: This program is used toward wetland restoration, enhancement, or creation on private land. Currently, there are 1,706.6 acres enrolled in WRP in the counties of the project area (Proposal 2005). In 2004, there were five WRP contracts in the State and $600,000 was obligated for the program. The 2005 allocation was $640,468 (NRCS 2005f).

Grassland Reserve Program: This program helps landowners and operators restore and protect grassland, including rangeland and pastureland and certain other lands, while maintaining grazing uses of the area. In the counties involved in the Idaho CREP, there are currently 382 acres enrolled in GRP. In 2004, $692,000 was used on rental payments and restoration in the State of Idaho. In fiscal year 2005, Idaho received an allowance of $1,286,660 for this program (NRCS 2005f; Proposal 2005).

Farm and Ranchland Protection Program: This program is used to help state, tribal, or local government entities to purchase the development rights to keep productive farm and ranch land in agricultural use. FRPP protects land that is at high risk of conversion from agriculture to development. These lands if developed for residential uses could result in much greater nutrient runoff into near-shore waters. In fiscal year 2005, Idaho received an allowance of $1,154,266 for this program (NRCS 2005f).

Wildlife Habitat Incentives Program: This program is used to develop or improve fish and wildlife habitat on private land. In the counties involved in the Idaho CREP, there are currently 13234.4 acres enrolled in WHIP. In 2004, $811,789 was allocated to the State of Idaho (NRCS 2005f).

Conservation Security Program: The CSP is a voluntary program that provides financial and technical assistance to promote the conservation and improvement of soil, water, air, energy, plant and animal life, and other conservation purposes on Tribal and private working lands. Working lands include cropland, grassland, prairie land, improved pasture, and range land, as well as forested land that is an incidental part of an agriculture operation. Two watersheds in the project area were eligible for enrollment in 2005. The program will rotate through all of Idaho’s watersheds over the next eight years, including all areas of the State, thereby including all watersheds in the project area (NRCS 2004; NRCS 2005f).

Other Federal and State Programs

The Conservation Reserve Program: The CRP provides technical and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. The program provides assistance to farmers and ranchers in complying with Federal, State, and tribal environmental laws, and encourages environmental enhancement (NRCS 2005f).

The CRP reduces soil erosion, protects the Nation's ability to produce food and fiber, reduces sedimentation in streams and lakes, improves water quality, establishes wildlife habitat, and enhances forest and wetland resources. It encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as tame or native grasses, wildlife plantings, trees, filterstrips, or riparian buffers. Farmers receive an annual rental payment for the term of the multi-year contract. Cost sharing is provided to establish the vegetative cover practices (NRCS 2005f).

The Stewardship Incentive Program: This program provides technical and financial assistance to encourage non-industrial private forest landowners to keep their lands and natural resources productive and healthy. Qualifying land includes rural lands with existing tree cover or land suitable for growing trees and which is owned by a private individual, group, association, corporation, Indian tribe, or other legal private entity. Eligible landowners must have an approved Forest Stewardship Plan and own 1,000 or fewer acres of qualifying land. Authorizations may be obtained for exceptions of up to 5,000 acres (NRCS 2005f). In 2001, Idaho's total Forest Stewardship funding was $289,700 (IDL and USFS 2002).

The Landowner Incentive Program (LIP): The LIP is a FWS program that provides funding and technical support to enhance, restore, or preserve natural habitats for at-risk and T&E species. In 2004, $180,000 was provided to Idaho landowners (Male 2005).

Forest Legacy Program: Idaho's Forest Legacy Program is established to ascertain and protect environmentally important forest areas that are threatened by conversion to non-forest uses and to promote forestland protection and other conservation opportunities. The program provides funding to Idaho to purchase conservation easements on private lands that might otherwise be developed and lost as forests (IDL 2005).

Ongoing Agricultural Activities

Ongoing agricultural practices are discussed in detail in Chapter 2 and impacts to resources from ongoing agricultural practices are discussed in more detail in Chapter 3. These impacts are summarized briefly for each resource below.

Groundwater Resources: Agricultural practices and other sources introduce pollutants to the watersheds and contaminated water may seep into the aquifers. Groundwater pumping for irrigation decreases aquifer storages and aquifer levels and reduces streamflow in hydrologically connected surface water.

Surface Water Resources: Recent drought conditions in the Idaho CREP project area has stressed the availability of water supplies and accentuated the fact that a number of interests important to the State are competing for the same finite resources. In addition, many streams and rivers in the CREP project area have been identified by the State as impaired, meaning that the water is not of sufficient quality to meet beneficial uses (IDEQ 2003). Runoff from agricultural areas contributes sediment and nutrients to receiving water bodies.

Drinking Water: Because the ESPA is a SSA, groundwater contamination and groundwater quantity are of special concern. Groundwater contamination from non-point sources, including irrigation return flow can impact public drinking water supplies in the Idaho CREP project area. High nitrate levels in public water supplies have been problematic in the Eastern Snake River basin. Declining aquifer levels from groundwater pumping affects drinking water availability and affected domestic wells are either relocated or deepened (Proposal 2005).

Soil Resources: The soil in the project area is susceptible to wind and water erosion resulting from agricultural practices. Irrigation practices, tilling, and crop choice all affect the rate of soil loss via water erosion. Tilling practices and crop choice also affect the rate of soil loss via wind erosion. Consequences of soil erosion include removal of fertile topsoil, accelerated eutrophication and sedimentation of surface waters, destruction of fish and wildlife habitat, and decreased recreational and aesthetic value of surface waters (Mahler et al. 2003).

Wetlands: Approximately 37 percent of the wetlands in the project area occur on private land. The main threats to wetlands from agriculture include diminishing water supply from irrigation diversions, agricultural development, increased sediment and nutrient loads from agricultural lands, and grazing.

Floodplains: Floodplains are used for agricultural purposes throughout Idaho. Agriculture activity in floodplains can diminish floodplain functions, resulting in higher flood volumes and more damage from flooding downstream.

Protected Species: Habitat degradation, invasive exotic species, streamflow alterations, and water pollution continue to threaten current listed species populations.

Human Health and Social: CREP has the potential to affect minority populations such as migrant farm workers. Exposure of farm workers to agricultural chemicals can result in human health issues.

Economic Issues: Agriculture is the largest industry in Idaho, particularly in the project area, contributing to the State economy by providing jobs and through the sale of agricultural products. CREP may impact this economy in a number of ways, affecting farm workers, land owners, food processing industries, service industries, etc.

Wilderness Issues: Agricultural practices and developments affect the quality of wilderness areas by contaminating water supplies.

Cultural Resources: Agriculture affects the two American Indian Reservations in or near the CREP project area as agriculture is practiced on both reservations and is a principle source of income for many individuals. Historical cultural resources may be affected as ongoing land conversion for development or agricultural use can disturb and/or destroy the sites historic and prehistoric sites.

Air Quality: During stagnant conditions, smoke from crop residue burning will tend to stay near the ground and will not disperse readily. Additionally, dust results from disturbing land surfaces repeatedly during Idaho’s annual dry season.

Cumulative Effects Summary Table

Existing State and Federal conservation programs would continue to strive to collectively improve water quality and wildlife habitat. However, without CREP, a powerful tool in improving water quantity and quality and wildlife habitat, the current iterations of these programs would continue to be only as effective as they have in the past. Implementation of Alternative A would result in the continuation of current observable trends groundwater and surface water use and continued economic problems would continue or increase because of the over-allocation of water rights in the area.

Working in conjunction with existing State and Federal programs, CREP implementation would contribute to the cumulative improvement of the State’s water quality. Likewise, the enhancement of wildlife habitat across CREP watersheds would add to the State’s resources and provide additional protection for listed State and Federal species. Wetlands, groundwater, wildlife, and cultural resources would all benefit from the cumulative effects of protection and enhancement that CREP would provide. CREP is designed to augment and enhance conservation of resources and to promote water quality improvement and decrease the demand for irrigation water. It would work in conjunction with other conservation efforts being implemented at both the State and Federal level and result in statewide cumulative improvements to Idaho’s natural conditions. Cumulative effects for each resource are summarized in Table 3.22.

Table 3.22. Summary of cumulative effects by resource.

Resource Issue	NRCS Programs	Other Federal and State Programs	Ongoing Agricultural Practices	Cumulative Effects of Alternative A: No CREP	Cumulative Effects of Alternative B: CREP
Groundwater Resources	By removing the land from active agriculture, NRCS conservation programs decrease the demand of groundwater for irrigation and other agricultural uses. In addition, by reducing the amount of agricultural chemicals used in the area, groundwater quality would improve.	These programs are not specifically designed to improve groundwater quality, however indirect benefits to water quality would result in improving groundwater recharge and reducing groundwater contamination. In addition, the decreased demand for irrigation would increase the groundwater quantity of Southeastern Idaho.	Agricultural practices can contaminate water that recharges aquifers and deplete the amount of groundwater available through groundwater pumping for irrigation.	State and Federal programs would continue to address groundwater contamination issues and work towards reducing contamination of surface water recharging aquifers. The existing and future agricultural land retirement would reduce the demand for groundwater pumping for irrigation.	CREP, combined with other NRCS, Federal, and State conservation programs, would cumulatively have a greater impact on groundwater quantity and quality. If implemented in the same watershed, these programs could complement each other and potentially improve the effectiveness of each program.
Surface Water Resources	By removing the land from active agriculture, NRCS conservation programs decrease the demand of surface water for irrigation and other agricultural uses and reduce soil erosion and nutrient and chemical applications. Land enrolled in CPs associated with these programs improves water quality by filtering sediments and nutrients from agricultural runoff.	While these conservation programs are not specifically designed to improve water quality, the preservation of natural habitats would have indirect benefits on water quality including reducing soil erosion and decreasing sediments in surface water.	In the arid climate of Southeastern Idaho, irrigation is necessary for productive agriculture. This irrigation reduces the amount of water available for other uses. In addition, ongoing agricultural practices add nutrients, sediment, and chemicals to surface water runoff, degrading water quality of receiving waterbodies and resulting in non-attainment of beneficial use designations.	State and Federal conservation programs would collectively strive to mitigate the adverse impacts of land use practices on water quantity and quality.	CREP is designed to complement existing Federal and State conservation programs. Combined with these programs, CREP would result in cumulative benefits to water quantity and quality. Over the 10-15 years of CREP, sediment and nutrient loads would be expected to decrease as more land is enrolled in CREP and other conservation programs. In addition, more water would be available to meet water quantity concerns.

Resource Issue	NRCS Programs	Other Federal and State Programs	Ongoing Agricultural Practices	Cumulative Effects of Alternative A: No CREP	Cumulative Effects of Alternative B: CREP
Drinking Water	NRCS conservation programs would improve surface water quality, improving the quality of water recharging groundwater and reducing groundwater contamination.	These programs are not specifically designed to improve water quality; however indirect benefits to water quality would result in improving surface water quality and groundwater recharge and reducing groundwater contamination.	Agricultural practices that use agricultural chemicals such as fertilizers and pesticides can contaminate surface water and groundwater sources of drinking water. In addition, water used for agricultural uses is not available for other uses, including drinking water.	NRCS and other State and Federal conservation programs improve the quality of water used for drinking water sources. These programs are limited and ongoing agricultural activities continue to have negative impact on groundwater quality and quantity.	CREP combined with other NRCS, Federal, and State conservation programs would cumulatively have a greater impact on water quality. If implemented in the same watershed, these programs could complement each other and potentially improve the effectiveness of each program.
Soil Resources	NRCS programs protect native habitats and restores native vegetation. Land enrolled in these programs will not experience traditional agricultural practices that promote soil erosion. Maintaining year-round cover would reduce wind and water erosion.	Other Federal and State programs encourage native and other desirable vegetation cover. Land enrolled in these programs will not experience traditional agricultural practices that promote soil erosion. Maintaining year-round cover would reduce wind and water erosion.	Practices such as tilling and planting leave bare ground for part of the year, increasing the potential for runoff and wind erosion.	Despite the ongoing conservation programs that are intended to ameliorate soil erosion, soil loss and sedimentation continue to be persistent problems in Southeastern Idaho.	CREP would complement ongoing soil conservation efforts. Additional acres would be enrolled in some type of conservation program, increasing all programs' overall effectiveness.

Resource Issue	NRCS Programs	Other Federal and State Programs	Ongoing Agricultural Practices	Cumulative Effects of Alternative A: No CREP	Cumulative Effects of Alternative B: CREP
Wetlands	Specifically, WRP restores, enhances, and protects wetlands. Additional CPs implemented through the different NRCS programs may include restoration of wetlands. NRCS programs also include improvement of wildlife habitat including wetlands.	Ongoing State and Federal conservation programs maintain and preserve natural areas and native habitat including wetlands.	Conversion of wetlands to agricultural land leads to loss of wetlands; soil erosion on agricultural land adds sediment to runoff and can lead to sedimentation of downstream wetlands and reduce wetland functions.	Conversion of wetlands to agricultural land and other land uses continues to threaten Idaho's wetlands. Ongoing State and Federal programs collectively strive to protect, enhance, and restore wetlands.	Wetlands restored and enhanced through CREP would increase the overall acreage of wetlands in Idaho watersheds protected by State and Federal programs.
Floodplains	NRCS programs restore native vegetation, install riparian buffers, and protect natural habitats, all of which serve to maintain or enhance floodplain functions.	Maintain and preserve native habitat and vegetation, reducing impacts that occur from degradation of natural resources.	Grazing in floodplains can compact soil and negatively impact floodplain functions. Agriculture in floodplains may alter floodplain functions.	Ongoing conservation programs protect and enhance natural habitats in floodplains, helping to preserve a functioning floodplain. However, these benefits are offset by land uses that occur in floodplains. Agricultural and urban land use in floodplains compact soil and channelize streams, resulting in higher flood volumes and more flood damage downstream.	CREP would complement ongoing conservation efforts in floodplains. Together, these programs would lessen impacts to floodplains. CREP would add additional acres to land already protected or enhanced by conservation programs.

Resource Issue	NRCS Programs	Other Federal and State Programs	Ongoing Agricultural Practices	Cumulative Effects of Alternative A: No CREP	Cumulative Effects of Alternative B: CREP
Protected Species	Protection and restoration of natural habitats through NRCS programs provides benefits to Idaho's protected species. Specifically, WHIP is designed to improve wildlife habitat on private land.	Existing State and Federal conservation programs protect and enhance natural habitats that are important for T&E species and other at-risk species. LIP, a FWS program, specifically targets habitat of T&E species on private land for protection and restoration.	Conversion of land for agricultural purposes has resulted in a decrease in the amount of quality habitat available to T&E species. Sediment and nutrient loads in agricultural runoff impact aquatic species. Land disturbance or fallow agricultural land encourages the establishment of invasive species that out-compete native species and degrade native habitats.	Existing Federal and State programs strive to preserve and restore native habitat and control invasive species.	CREP would complement other conservation programs that are designed to preserve and protect habitat of T&E species. Through CREP, additional acres would be added to those already protected by existing State and Federal programs, increasing the amount of quality habitat available to T&E species. Some of the CPs also are specifically designed to restore and/or enhance wildlife habitat.
Human Health and Social Issues	Removal of land from active agriculture to implement NRCS conservation programs would minimally reduce farm worker exposure to agricultural chemicals.	Conservation program benefits may come from recreational use (e.g., hunting, bird watching, hiking) of restored or conserved natural habitats.	Application of agricultural chemicals may adversely impact farm worker health.	Removal of agricultural land from active production may lessen farm worker exposure to agricultural chemicals.	Marginal farmland typically requires greater application of fertilizers and pesticides, enrolling this land into CREP and other conservation programs would reduce application of these chemicals, decreasing farm worker exposure.

Resource Issue	NRCS Programs	Other Federal and State Programs	Ongoing Agricultural Practices	Cumulative Effects of Alternative A: No CREP	Cumulative Effects of Alternative B: CREP
Economic Issues	Rental rates from NRCS programs offset the cost of implementation of CPs and the removal of land from active agricultural production.	Existing State and Federal programs offer private landowners some monetary compensation for implementing conservation programs.	Agriculture provides jobs and adds to the overall economy through the sale and processing of agricultural product. With the existing over-allocation of water rights, water calls may be made, straining individuals who relay on agriculture, directly or indirectly, for income.	Existing State and Federal conservation programs may increase local income derived from recreational use of land that has been preserved or restored. Monetary compensation would available to private landowners for conservation efforts.	Through CREP, additional funds would be available to landowners to implement CPs. Rental rates would be available to producers for marginal farmland that has limited agricultural productivity. Additional acres placed into conservation programs could enhance recreational value of the land and could increase local income derived from recreation use. In addition, if CREP and other water-saving programs are implemented, water calls would not be necessary, allowing all water rights holders to continue agricultural production.

Resource Issue	NRCS Programs	Other Federal and State Programs	Ongoing Agricultural Practices	Cumulative Effects of Alternative A: No CREP	Cumulative Effects of Alternative B: CREP
Wilderness Issues	Depending on the location of the land implemented, NRCS conservation programs have the potential to positively affect wilderness areas by improving water quality and quantity and enhancing existing wilderness values.	Depending on the location of the land implemented, conservation programs have the potential to positively affect wilderness areas by improving water quality and quantity and enhancing existing wilderness values.	Ongoing agricultural practices can affect wilderness areas by increasing soil erosion, diminishing water quality, and decreasing the water availability.	Under the No Action Alternative, the status of wilderness areas would likely continue to be degraded due to water quality issues. It is likely that agricultural runoff would continue to introduce nutrients and pesticides into these areas that may or may not be reduced or filtered by other conservation programs.	Improvements to water quality and the restoration of wildlife habitat and wetlands can positively impact wilderness areas. For CREP-enrolled areas near and upstream of wilderness areas, the installation of the CPs provides an additional preservation and conservation buffer while expanding areas that can support wildlife and other wilderness values.
Cultural Resources	Consultation with SHPO concerning NRCS programs ensures the protection of cultural resources and historic properties on private land enrolled in these programs.	Programs receiving Federal funds need to comply with Section 106 of the NHPA. Compliance with NHPA protects cultural resources located on private land that participates in these programs, protecting cultural resources that might not otherwise be protected.	Earth moving activities associated with agricultural activities has the potential to disturb historic and prehistoric cultural properties. Discovery and/or disturbance of cultural resources may go unreported by private landowners.	Participation in NRCS and other State and Federal programs provides protection and preservation of cultural properties. Private landowners not participating in these programs may not conduct site surveys or otherwise protect cultural properties.	Under CREP, private land enrolled in contracts would be surveyed for cultural properties increasing the number of historic and cultural properties protected or preserved on private land.

Resource Issue	NRCS Programs	Other Federal and State Programs	Ongoing Agricultural Practices	Cumulative Effects of Alternative A: No CREP	Cumulative Effects of Alternative B: CREP
Air Quality	Although NRCS conservation programs are not designed to improve air quality, the retiring of agricultural land would eliminate agricultural burning, plowing, and other activities that contribute to air quality.	Although not specifically designed to improve air quality, other Federal and State programs encourage native and other desirable permanent plant species, eliminating agricultural burning, plowing, and other activities that contribute to air quality.	Agricultural practices such as burning and plowing contribute to the smoke and dust problems during certain weather conditions.	Current conservation programs provide incentives to either convert agricultural land to native plants or temporarily retire agricultural land, eliminating agricultural burning, plowing, and other activities that contribute to air quality.	The conversion of CREP-enrolled land to CPs would add to the existing and future land enrolled in other conservation programs. By eliminating agricultural practices on more land, air quality in the area would likely improve.

3.18 Unavoidable Adverse Impacts

The following sections describe those effects which are adverse and cannot be avoided without mitigation.

3.18.1 Alternative A (No Action)

Under Alternative A, nonpoint source pollution attributed to agriculture can be expected to continue at roughly the current rates. Continued agricultural practices would likely contribute to long-term water quality degradation in watersheds across the State. There is the probability of increased erosion accompanied by increased sedimentation in receiving water bodies following storms and flash flood events. Nutrient loading and waterborne pathogens would continue to impact downstream ecosystems and human populations.

3.18.2 Alternative B (CREP Agreement)

Alternative B would reduce the likelihood of all of the unavoidable adverse impacts listed under Alternative A above. Implementation of the CREP CPs would reduce nonpoint source pollution produced by agriculture, contribute to long-term water quality improvement in watersheds across the State, decrease the adverse impacts associated with erosion and sedimentation, and reduce nutrient loading and waterborne pathogens and their impacts on downstream ecosystems and human populations

3.19 Relationship of Short-Term Uses and Long-Term Productivity

3.19.1 Alternative A (No Action)

This alternative would maximize the short-term uses of the environment, but would not enhance the long-term productivity of eligible lands and the cleanliness of Idaho's natural environment. Marginal croplands and pasturelands that might otherwise be enrolled in CREP would stay in production and efforts to increase the short-term productivity of these lands (by applying additional fertilizer and pesticides) may cause further degradation to water quality and other resources.

3.19.2 Alternative B (CREP Agreement)

Under Alternative B, the short-term uses of the human environment would be maximized and long-term productivity would be simultaneously enhanced. Marginal croplands would be enrolled in CREP and would provide leveraged benefits to other lands and waterbodies in affected watersheds. Resources used to sustain the marginal lands would be diverted to help maximize the productivity of prime croplands. Potential overuse of fertilizers to increase productivity on marginal lands would be reduced.

3.20 Irreversible and Irretrievable Commitments of Resources

3.20.1 Alternative A (No Action)

Irreversible and irretrievable commitments of resources include fuel and time spent conducting agricultural practices. Under Alternative A, inefficient production on marginal land would continue to waste resources that could have been better used on different farmland. The irreversible loss of soil resources from the State's agricultural lands would continue at the current rates, or may accelerate, due to splash, rill, and stream bank erosion.

3.20.2 Alternative B (CREP Agreement)

As with Alternative A, the irreversible and irretrievable commitments of resources including fuel and time spent conducting agricultural practices would continue, though perhaps at a decreased rate as inefficient production on marginal land decreases. Agricultural soil loss would likely continue, but at a much reduced rate as appropriate CPs are implemented.

Chapter 4.0 List of Preparers

Table 4.1 identifies by name, area of expertise, education, and years experience those who contributed as part of the interdisciplinary team

Table 4.1. List of preparers.

Name	Area of Expertise	Education	Experience
Kim Richardson Barker The Shipley Group	Technical Writer	M.S. Range Science; B.S. Environmental Studies	3 years
Suzy Hill The Shipley Group	Technical Writer	M.A. Science Education; B.S. Watershed Science	3 years
Danielle Healey The Shipley Group	Technical Writer	M.S. Biology; B.A. Biology	2 years
Claudia Gallegos The Shipley Group	Technical Writer	B.S., Environmental Studies	2 years
Kelson Forsgren The Shipley Group	Project Manager Writer/Editor	M.S., Technical Communication	11 years
James Fortner FSA	National Environmental Compliance Manager	B.S., Agriculture and Extension Education	20 years
Kathleen Schamel FSA	Federal Preservation Officer	B.A.; M.A., Anthropology	19 years
Tom Dobbin FSA	Idaho State Environmental Coordinator	B.S. Agriculture Economics	28 years

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 5.0 List of Agencies and Persons Consulted and/or Provided Copies of this Environmental Assessment

Many agencies and individuals have been involved in planning the Idaho CREP. Table 5.1 provides a list of agencies and offices consulted during the research for this PEA. Agencies and offices involved in the Idaho CREP working group are listed in Table C-2 in Appendix C.

Table 5.1. Partial list of agencies and offices consulted during the course of the analysis.

Organization
Bureau of Land Management (USDI)
Bureau of Reclamation (USDI)
Idaho Farm Service Agency (USDA)
Idaho Natural Resources Conservation Service (USDA)
U.S. Fish and Wildlife Service (USDI)
State Historic Preservation Office
Office of US Senator Larry Craig
Office of US Senator Mike Crapo
Office of Congressman Butch Otter
Office of Congressman Mike Simpson
The Nature Conservancy
Idaho State Office of Species Conservation
Idaho Soil Conservation Commission
Idaho Department of Agriculture
Idaho Department of Environmental Quality
Idaho Department of Fish and Game
Idaho Department of Lands
Idaho Department of Water Resources
Office of Idaho Attorney General
Office of Idaho Governor Dirk Kempthorne
Various Idaho State House of Representatives and Senators
Shoshone-Bannock Tribes

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 6.0 References

(ACHP 2002) Advisory Council on Historic Preservation. 2002. The National Historic Preservation Program: Overview. *http://www.achp.gov/overview.html.*

(Clark et. al 1998) Clark, G.M., T.R. Maret, , M.G. Rupert, , M.A. Maupin, , W.H. Low, , and D.S Ott. 1998. Water Quality in the Upper Snake River Basin, Idaho and Wyoming, 1992-95: U.S. Geological Survey Circular 1160. *http://water.usgs.gov/pubs/circ/circ1160/*

(CNE 2005) Center for Native Ecosystems. 2005. Ute Ladies' Tresses Orchid *Spiranthes diluvialis. http://www.nativeecosystems.org/uteladiestresses/*

(EPA 2005a) Environmental Protection Agency. 2005a. Sole Source Aquifier [*sic*] Protection Program Overview. *http://www.epa.gov/safewater/swp/ssa.html*

(EPA 2005b) Environmental Protection Agency. 2005b. Drinking Water Contaminants. *http://www.epa.gov/ogwdw/hfacts.html*

(EPA 2005c) Environmental Protection Agency. 2005c. Nonpoint Source Pollution: The Nation's Largest Water Quality Problem. *http://www.epa.gov/OWOW/NPS/facts/point1.htm*

(EPA 2005d) Environmental Protection Agency. 2005d. Wetlands Fact Sheets. http://www.epa.gov/owow/wetlands/facts/contents.html

(ERS 2005) Economic Research Service. 2005. State Facts Sheet: Idaho. *http://www.ers.usda.gov/StateFacts/ID.htm.*

(ESER 2005a) INEEL Environmental Surveillance, Education and Research. 2005a. Ethnoecology of the Plain. *http://www.stoller-eser.com/Flora/plain_ethnoecology.htm.*

(ESER 2005b) INEEL Environmental Surveillance, Education and Research. 2005b. Prehistoric Human Occupation. *http://www.stoller-eser.com/Flora/prehistoric.htm.*

(FSA 2003) Farm Service Agency. 2003. Conservation Reserve Program. Final Programmatic Environmental Impact Statement. Appendix B CRP Associated Conservation Practices. *http://www.fsa.usda.gov/dafp/cepd/epb/pdf/Final_PEIS_03/CRP%20Final%20PEIS%20Jan%202003/Appendix_B.pdf.*

(FWS 1995) U.S. Fish and Wildlife Service. 1995. Snake River Aquatic Species Recovery Plan. Snake River Basin Office, Ecological Services, Boise, Idaho.

(FWS 2005) U.S. Fish and Wildlife Service. 2005 Snake River Fish and Wildlife Service. *http://idahoes.fws.gov/*

(FWS et al. 2001) Fish and Wildlife Service, U.S. Department of Commerce, and U.S. Census Bureau 2001. 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. *www.census.gov/prod/2003pubs/01fhw/fhw01-ne.pdf*

(Hagan 2004) Hagan, Edward F. 2004. Ground Water Quality Technical Brief Statewide Ambient Ground Water Quality Monitoring Program Arsenic Speciation Results (2002 & 2003). Idaho Department of Water Resources. Boise, Idaho.

(Harrington and Bendixsen 1999) Harrington, H. and S. Bendixsen. 1999. Open-File Report: Ground Water Management Areas In Idaho: Overview As Of 1998. Idaho Department Of Water Resources. Boise, Idaho.

(Hurlbutt 1999) Hurlbutt, D. 1999. “The Bureau that Changed the West.” Idaho Public Television Station. *http://idahoptv.org/outdoors/shows/bofr/judge.html*

(IASS 2004) Idaho Agricultural Statistical Service. 2004. 2004 Agricultural Statistics. *http://www.nass.usda.gov/id/publications/annual%20bulletin/annbulltoc.htm*

(IASS 2005) Idaho Agricultural Statistical Service. 2005. Idaho’s Agriculture. *http://www.nass.usda.gov/id/about%20us/about%20us.htm*

(Idaho 2005a) Idaho Statutes. *http://www3.state.id.us/.*

(Idaho 2005b) Executive Order No. 2004-02. Immediate ground and surface water actions and long-term conjunctive management on the Eastern Snake Plain Aquifer. *http://gov.idaho.gov/mediacenter/execorders/eo04/eo_2004-02.htm*

(Idaho Power 2005) Idaho Power. 2005. Fun Country brochure. http://www.idahopower.com/riversrec/relicensing/brochures/funCountry.pdf

(IDEQ 2003) . Idaho Department of Environmental Quality. 2003. Principles and Policies for the 2002/2003 Draft Integrated (303(d)/305(b)) Report. Boise, Idaho.

(IDEQ 2005a) Idaho Department of Environmental Quality. 2005a. About Us: What Does DEQ Do? *http://www.deq.state.id.us/about/deq_purpose.cfm*

(IDEQ 2005b) Idaho Department of Environmental Quality. 2005b. Ground Water in Idaho: Overview. *http://www.deq.state.id.us/water/prog_issues/ground_water/overview.cfm.*

(IDEQ 2005c) Idaho Department of Environmental Quality. 2005c. Ground Water in Idaho: Idaho's Sole Source Aquifers. *http://www.deq.state.id.us/water/prog_issues/ground_water/aquifers_sole_source.cfm#eastern.*

(IDEQ 2005d) Idaho Department of Environmental Quality. 2005d. Priority One Nitrate Area Ranking Process. *http://www.deq.state.id.us/water/data_reports/ground_water/nitrate/priority_one_nitrate_area_ranking.pdf*

(IDEQ 2005e) Idaho Department of Environmental Quality. 2005e. Surface Water: Water Quality Improvement Plans (TMDLs). *http://www.deq.state.id.us/water/data_reports/surface_water/tmdls/overview.cfm#Pollutants*

(IDEQ 2005f) Idaho Department of Environmental Quality. 2005f. Air Quality in Idaho: Open "Outdoor" Burning Guidelines. *http://www.deq.state.id.us/air/prog_issues/burning/open_burning_overview.cfm*

(IDEQ 2005g) Idaho Department of Environmental Quality. 2005g. 2003 Idaho Public Water System Annual Compliance Report. *http://www.deq.state.id.us/water/data_reports/drinking_water/acr_03.pdf*

(IDEQ 2005h) Idaho Department of Environmental Quality. 2005h. Water Quality: Drinking Water Protection. *http://www.deq.state.id.us/water/prog_issues/source_water/protection.cfm*

(IDEQ 2005i) Idaho Department of Environmental Quality. 2005i. Water Quality: Source Water Assessments of Public Drinking Water Systems. *http://www.deq.state.id.us/water/prog_issues/source_water/assessment.cfm*

(IDEQ 2005j) Idaho Department of Environmental Quality. 2005j. DEQ's Final Nitrate Priority Area Ranking. *http://www.deq.state.id.us/water/data_reports/ground_water/nitrate/final_nitrate_priority_area_ranking.pdf*

(IDEQ 2005k) Idaho Department of Environmental Quality. 2005k. Surface Water: Big Lost River Watershed Subbasin Assessment and Total Maximum Daily Loads. *http://www.deq.state.id.us/water/data_reports/surface_water/tmdls/big_lost_river/big_lost_river.cfm*

(IDEQ 2005l) Idaho Department of Environmental Quality. 2005l. Surface Water: Little Lost River Subbasin Assessment and Total Maximum Daily Loads. *http://www.deq.state.id.us/water/data_reports/surface_water/tmdls/little_lost_river/little_lost_river.cfm.*

(IDEQ 2005m) Idaho Department of Environmental Quality. 2005m. Surface Water: Big Wood River Watershed Management Plan. *http://www.deq.state.id.us/water/data_reports/surface_water/tmdls/big_wood_river/big_wood_river.cfm*

(IDFG 2005a) Idaho Fish and Game. 2005a. Mission Statement. *http://fishandgame.idaho.gov/about/history_funding/mission.cfm*

(IDFG 2005b) Idaho Fish and Game. 2005b. Idaho's Wetlands. *http://fishandgame.idaho.gov/tech/CDC/ecology/wetlands.cfm*

(IDFG 2005c) Idaho Fish and Game. 2005c. Wetlands in Idaho. *http://fishandgame.idaho.gov/wildlife/wetlands/idaho.cfm*

(IDFG 2005d) Idaho Fish and Game. 2005d. Idaho Species of Special Concern. *http://fishandgame.idaho.gov/cms/wildlife/nongame/specialspecies.cfm#bird*

(IDL 2005) Idaho Department of Lands. 2005. Idaho Forest Legacy Program. *http://www2.state.id.us/lands/forest_legacy/legacy-1.htm.*

(IDL and USFS 2002) Idaho Department of Lands and U.S. Forest Service. 2002. Program Fact Sheet. Forest Stewardship Program. *http://www.fs.fed.us/r1-r4/spf/idaho/factsheet/02stewardship.htm.*

(IDOC 2005) Idaho Department of Commerce, Division of Economic Development. 2005. Profile of Rural Idaho. Boise, Idaho. IDC 99-33120-4M. *http://www.idoc.state.id.us/business/pdfs/ruralprofile.pdf*

(IDWR 1992) Idaho Department of Water Resources. 1995 (updated as needed) Idaho GIS Data. *http://www.idwr.state.id.us/gisdata/gis_data-new.htm.*

(IDWR 1999) Idaho Department of Water Resources. 1999. Feasibility Of Large-Scale Managed Recharge Of The Eastern Snake Plain Aquifer System. Boise, Idaho. Found at: *http://www.idwr.idaho.gov/hydrologic/info/pubs/*

(IDWR 2004) Idaho Department of Water Resources. 2004. Preliminary Evaluations of Arsenic Detections in Ground Water: A County-Level Arsenic Review. Boise, Idaho. Ground Water Technical Report 23. *http://www.deq.state.id.us/water/data_reports/ground_water/arsenic_county_level.pdf.*

(IDWR 2005a) Idaho Department of Water Resources. 2005a. About Us. *http://www.idwr.state.id.us/about/*

(IDWR 2005b) Idaho Department of Water Resources. 2005b. Critical Ground Water & Ground Water Management Areas. *http://www.idwr.state.id.us/hydrologic/projects/gwma/*

(IDWR 2005c) Idaho Department of Water Resources. 2005c. Summary of year 2003 detections of concern: Statewide Ambient Ground Water Quality Monitoring Program. *http://www.idwr.idaho.gov/hydrologic/info/pubs/gwq/MCLsummary2003.pdf*

(IDWR 2005d) Idaho Department of Water Resources. 2005d. American Falls Ground Water Management Area. *http://www.idwr.idaho.gov/hydrologic/projects/gwma/af_gwma.htm*

(IDWR 2005e) Idaho Department of Water Resources. 2005e. State Water Plan *http://www.idwr.idaho.gov/waterboard/planning/State%20Water%20Plan/state_plan.pdf*

(IDWR 2005g) Idaho Department of Water Resources. 2005g. Flood Plain Management. *http://www.idwr.idaho.gov/water/flood/*

(IDWR 2005h) Idaho Department of Water Resources. 2005h. News Release: Floodplains maps to be modernized throughout Idaho. *http://www.idwr.idaho.gov/about/rels2005/2005-7.pdf*

(IMC 2005) Idaho Migrant Council, Inc. 2005. Association of Farm Worker Opportunity Programs. *http://www.afop.org/members/membersinfo.cfm?ID=12*

(IMNH 2005) Idaho Museum of Natural History. 2005b. Agriculture and Irrigation. *http://imnh.isu.edu/digitalatlas/geog/agirrig/agirrig.htm*

(INPS 2004) Idaho Native Plant Society. 2004. Rare Plant List. Results of the Twentieth Annual Idaho Rare Plant Conference, 10-11 February. *http://www.idahonativeplants.org/rpc/pdf/RPC_2004_results.pdf*

(IRU 2005) Idaho Rivers United. 2005. Protect Idaho Rivers: State Protection: Protected Rivers. *http://www.idahorivers.org/stateprotection.html*

(ISCC 2005) Idaho Soil Conservation Service. 2005. Best Management Practice (BMP) list for the lower Boise River Pollution Trading Program. *http://www.scc.state.id.us/PDF/Trading/LBR%20BEST%20MANAGEMENT%20PRACTICE%20LIST-final.pdf*

(ISCC and IDEQ 2003) Idaho Soil Conservation Commission and Idaho Department of Environmental Quality. 2003. Idaho Agricultural Pollution Abatement Plan *http://www.scc.state.id.us/PDF/AgPlan.pdf*

(ISHS 2005) Idaho State Historical Society. 2005. The National Register of Historic Places in Idaho. *http://www.idahohistory.net/NatRegister.pdf.*

(ITCN 1996) Inter-Tribal Council of Nevada. 1996. Shoshone-Paiute Tribes of the Duck Valley Reservation - Nevada & Idaho. *http://itcn.org/tribes/dkvly.html.*

(ITIS 2005) Integrated Taxonomic Information System. 2005. *http://www.itis.usda.gov/index.html*

(IWRB 2005) Idaho Water Resources Board. 2005. Snake River Basin Plan- Milner Dam to King Hill. *http://www.idwr.idaho.gov/waterboard/planning/Snake_Milner_King/snake_milner_to_king.htm*

(Jankovsky-Jones, M.) 2001. Wetland Conservation Strategy for the Upper Snake River, Portneuf Drainage, and Adjacent Valleys. Idaho Conservation Data Center, Idaho Department of Fish and Game, Natural Resource Policy Bureau, Boise, Idaho. *http://fishandgame.idaho.gov*

(Johnson et al. 1998) Johnson, G., D. Cosgrove, and M. Lovell. 1998. Snake River Basin Surface Water-Ground Water Interaction. Idaho Water Resource Research Institute, University of Idaho. *http://imnh.isu.edu/digitalatlas/hydr/snakervr/rcsm.htm.*

(Kane 2005) Kane, E. 2005. Email to Tom Dobbin concerning Idaho natural resources laws. 9 Feb.

(Kossek et al. 2005) Kossek, E., D.R. Meece, P. Barratt, and E. Prince, In press 2005. U.S. Latino migrant farm workers: Managing Acculturative Stress and Conserving Work Family Resources. To appear in Steve Poelmans (Ed.) International and Cross-Cultural Perspectives on Work and Family. Erlbaum Press. *http://www.polisci.msu.edu/kossek/migrantfarmworkers.pdf*

(Lohse 1993) Lohse E.S. 1993. Southeastern Idaho Native American Prehistory and History. Idaho Museum of Natural History. Miscellaneous Paper No. 92-1 (revised). Reprinted on *http://imnh.isu.edu/digitalatlas/arch/Prehist/Pre_Summ/SE_Snake/SEPreh.htm*

(Mahler and Van Steeter 2002) Mahler, R.L. and M. M. Van Steeter. 2002. Idaho's Water Resource. Quality Water for Idaho Current Information Series No. 887. University of Idaho Extension. *http://www.uidaho.edu/wq/wqpubs/cis887.html*

(Mahler et al. 2003) Mahler, R.L., F.G. Bailey, and K.A. Mahler. BMPs for Phosphorus Management. WQ-15. University of Idaho. *http://www.uidaho.edu/wq/wqbr/wqbr15.html*

(Male 2005) Male, T. 2005. The Landowner Incentive Program: Strategies for Long-term Effectiveness. A white paper published by the Environmental Defense Center for Conservation Incentives. *http://www.environmentaldefense.org/documents/4483_LIPStrategies_June2005.pdf*

(Maxwell 2005) Maxwell, A.O. 2005. Soil Erosion: What You Can't See Can Hurt You. *http://www.sc.nrcs.usda.gov/curdev/cd_soil_erosion.html.*

(McCauley et al. 2000) McCauley L.A, M.R. Lasarev, G. Higgins, J. Rothlein, J.Muniz, C. Ebbert, and J. Phillips. 2000. Work Characteristics and Pesticide Exposures among Migrant Agricultural Families: A Community-Based Research Approach. Under support of National Institute of Environmental Health Sciences (R21ES08707). *http://ehp.niehs.nih.gov/members/2001/109p533-538mcccauley/mcccauley-full.html*

(Morse et al. 1990) Morse, A., T.J. Zarriello, and W.J. Kramber.1990. Using Remote Sensing and GIS Technology to Help Adjudicate Idaho Water Rights. Photogrammetric Engineering and Remote Sensing. 56:3. Reproduced by IDWR on *http://www.idwr.state.id.us/gisdata/tech_note/adjudica.htm*.

(NASDA 1996) National Association of State Departments of Agriculture, 1996. Environmental Laws Affecting Idaho Agriculture. *http://www.nasdahq.org/nasda/nasda/Foundation/foundation_main.htm*

(NASS 2002) National Agricultural Statistics Service. 2002. 2002 Census of Agriculture, Idaho County Level Data. *http://www.nass.usda.gov/census/census02/volume1/id/index2.htm*

(NASS 2005) National Agricultural Statistical Services. 2005. 1998 Census of Aquaculture. *http://www.nass.usda.gov/census/census97/aquaculture/aquaculture.htm*

(NCFH 2005) National Center for Farmworker Health, Inc. 2004. Migrant and Seasonal Farmworker Demographics Fact Sheet. *http://www.ncfh.org/docs/fs-Migrant%20Demographics.pdf*

(Neely 2001) Neely, K. 2001. Ground Water Quality In The Twin Falls Hydrogeologic Subarea,1991-2000. Water Information Bulletin No. 50, Part 4. Idaho Department of Water Resources. Boise, Idaho. June 29, 2001. *Draft.*

(Neely 2002) Neely, K. 2002. Technical Summary: Arsenic Results From The Statewide Program,1991-2001. Idaho Department of Water Resources. Boise, Idaho

(Neely 2005) Neely, K. 2005. Nitrate Overview for the Statewide Ambient Ground Water Quality Monitoring Program, 1990 – 2003. *http://www.idwr.idaho.gov/hydrologic/info/pubs/gwq/nitrate_1991-2003.pdf*

(NPS 2005a) National Park Service. 2005. Parks and Recreation. *http://www.nps.gov/parks.html*

(NPS 2005b) National Park Service. 2005. Oregon National Historic Trail. *http://www.nps.gov/oreg/*

(NRCS 2001) Natural Resource Conservation Service. 2001. Idaho Natural Resource Trends. Idaho Highlights, National Resources Inventory. *ftp://ftp-fc.sc.egov.usda.gov/ID/technical/nri_971.pdf.*

(NRCS 2004) Natural Resource Conservation Service. 2004. Fact Sheet: 2005 Conservation Security Program, Idaho. *ftp://ftp-fc.sc.egov.usda.gov/ID/programs/cspfactsheet2005a.pdf*

(NRCS 2005a) Natural Resource Conservation Service. 2005a. Wetlands and Deepwater Habitats. *http://www.id.nrcs.usda.gov/technical/nri/wet_deep.html*

(NRCS 2005b) Natural Resource Conservation Service. 2005b. Wind Erosion Estimates. *http://www.id.nrcs.usda.gov/technical/nri/wind.html*

(NRCS 2005c) Natural Resource Conservation Service. 2005c. Sheet and Rill (Water) Erosion Estimates. *http://www.id.nrcs.usda.gov/technical/nri/table10.html*

(NRCS 2005d) Natural Resource Conservation Service. 2005d. Threatened and Endangered Species: Ute Ladies Tresses *Spiranthes diluvialis* Factsheet. *http://www.mt.nrcs.usda.gov/news/factsheets/tresses.html*

(NRCS 2005e) Natural Resource Conservation Service. 2005e. Cultural Resources Fact Sheet. *http://www.nrcs.usda.gov/technical/ECS/culture/mission.html.*

(NRCS 2005f) Natural Resource Conservation Service. 2005f. Programs. *http://www.id.nrcs.usda.gov/programs/.*

(NRI 1997) Natural Resources Inventory. 1997. Wetlands and Deepwater Habitats-Idaho and National Results. *http://www.id.nrcs.usda.gov/technical/nri/wet_deep.html*

(NRIC 2005) Natural Resources Interim Committee. 2005. Eastern Snake Plain Aquifer Working Group. *http://www.idwr.state.id.us/Committee/ESPA-Snake%20River/ESPA-Snake%20River%20Working%20Group.pdf*

(Proposal 2005) Proposal by State of Idaho, Water Conservation Partnership. 2005. Concerning the implementation of the Idaho Conservation Reserve Enhancement Program (CREP). *Final.*

(RC&D 2005) Idaho Resource Conservation and Development. 2005. Duck Valley Indian Reservation. Shoshone-Paiute Tribes. *http://www.idahorcd.org/duckval.htm.*

(Rowe et al. 2003) Rowe, M., D. Essig, , and B. Jessup. 2003. Guide to Selection of Sediment Targets for Use in Idaho TMDLs. Idaho Department of Environmental Quality and Tetra Tech, Inc. *http://www.deq.state.id.us/water/data_reports/surface_water/monitoring/sediment_targets_guide.pdf.*

(SBTE 2005) Shoshone-Bannock Tribal Enterprises. 2005. Historic Fort Hall. *http://www.sho-ban.com/history.htm.*

(Slaughter n.d.) Slaughter, R.A. n.d. Institutional History of the Snake River 1850-2004. Climate Impacts Group University of Washington Boise, Idaho. Funded by the Joint Institute for the Study of the Atmosphere and Ocean (JISAO) under NOAA Cooperative Agreement No. NA17RJ11232, Contribution #1062. *http://www.cses.washington.edu/db/pdf/Slaughter_InstitutionalHistorySnake241.pdf*

(Strege-Flora, C. 2000) Strege-Flora, C. 2000. Empty Promises: Farm workers face poverty wages and fraud in Idaho while legislative committee offers false hope. Idaho Community Action Network Northwest Federation of Community Organizations. *http://www.nwfco.org/01-01-00_ICAN_Empty_Promises.pdf*

(TFCC 2005) Twin Falls Canal Company. 2005. Twin Falls Canal Company. *www.tfcanal.com*

(UI 2005) University of Idaho. 2005. Idaho Cooperative Fish and Wildlife Research Unit. *www.cnr.uidaho.edu/coop/.*

(UIIF 2005) University of Idaho at Idaho Falls. 2005. Eastern Snake River Plain Surface and Ground Water Interaction. http://www.if.uidaho.edu/~johnson/ifiwrri/sr3/esna.html

(USACE 2005) United States Army Corp of Engineers. 2005. Snake Basin Project Overview and Other Info. *http://www.nwd-wc.usace.army.mil/report/snake.htm*

(USBR 2005) United States Bureau of Reclamation. Idaho Dams. *http://www.usbr.gov/dataweb/html/iddams.html*

(USDI 2004) United States Department of the Interior. 2004. Craters of the Moon, National Monument and Preserve, Draft Management Plan/Environmental Impact Statement.

(USGS 2005a) United States Geological Survey. 2005a. National Water-Quality Assessment (NAWQA) Program, Upper Snake River Basin Study Unit: Ground Water. *http://id.water.usgs.gov/nawqa/findings/ground.html.*

(USGS 2005b) United States Geological Survey. 2005b. Water Use in the United States. *http://water.usgs.gov/watuse/*

(Watts 2002) Watts, D.W. 2002. A View to the Future, A Comprehensive Historic Preservation Plan for Idaho. State Historic Preservation Office. Idaho State Historical Society. *http://www.idahohistory.net/IDAHO_HP_PLAN.pdf.*

(Wilderness.net 2005) Wilderness.net. 2005. Craters of the Moon National Wilderness Area. *http://www.wilderness.net/index.cfm?fuse=NWPS&sec=wildView&wname=Craters%20of%20the%20Moon*

THIS PAGE INTENTIONALLY LEFT BLANK.

Appendix A: FSA Handbook CPs

(see hard copy insert)

Appendix B: Federal Laws and Regulations

Clean Water Act of 1972

The Clean Water Act (CWA) was passed in 1972, with a goal to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." The Act contains a number of provisions that affect agriculture:

Clean Lakes Program is authorized by Section 314 of the CWA. It authorizes EPA grants to states for lake classification surveys, diagnostic/feasibility studies, and for projects to restore and protect lakes.

Nonpoint Source Pollution Program is established by Section 319 of the CWA. It requires states and U.S. territories to identify navigable waters that cannot attain water quality standards without reducing nonpoint source pollution, and then develop management plans to reduce such nonpoint source pollution.

National Estuary Program is established by Section 320 of the CWA. It provides for the identification of nationally significant estuaries that are threatened by pollution for the preparation of conservation and management plans and calls for federal grants to states, interstate, and regional water pollution control agencies to implement such plans.

National Pollutant Discharge Elimination System Permit Program is established by Section 402 of the CWA. This program controls point source discharge from treatment plants and industrial facilities (including large animal and poultry confinement operations).

Dredge and Fill Permit Program was established by Section 404 of the CWA. Administered by the U.S. Army Corps of Engineers, it regulates dredging, filling, and other alterations of waters and wetlands jointly with EPA, including wetlands owned by farmers. Under administrative agreement, Natural Resources Conservation Service (NRCS) has authority to make wetland determinations pertaining to agricultural land.

Endangered Species Act of 1973

The Endangered Species Act (ESA) was enacted to conserve threatened or endangered species and the critical habitats in which they exist. When a species is designated as threatened with extinction, a recovery plan that includes restrictions on cropping practices, water use, and pesticide use is developed to protect the species from further population declines. All federal agencies are required to implement ESA by ensuring that federal actions do not jeopardize the continued existence of listed species.

The ESA defines an endangered species as one that is in danger of extinction throughout all or a significant portion of its range. Threatened means a species is likely to become endangered within the foreseeable future. T&E designations may be applied to all species of plants and animals, except pest insects. A species may be threatened at the state level, but that same designation does not automatically apply nationwide, as species numbers may be greater in other states.

The US Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) are mandated the responsibility of ensuring that other agencies plan or modify federal projects so that they will have minimal impact on listed species and their habitats. Section 7 of the ESA requires that project areas must be checked against FWS and state listings of critical habitat and T&E species. FSA ensures that all CREP contract meet this requirement by including T&E species in its EE.

The ESA also requires the delineation of the "critical habitat" of sensitive species. Critical habitat is defined by the ESA as areas that are "essential" to the conservation of listed species. Private, city, and state lands are generally not affected by critical habitat until the property owner needs a federal permit or requests federal funding. Because the Idaho CREP is partially funded by federal dollars, consultation with FWS would be required when critical habitat is encountered. Critical habitat designations are published in the Federal Register and can be located at the FWS website—http://endangered.fws.gov/.

Farmland Protection Policy Act (FPPA) of 1981

The aim of the FPPA is to minimize federal programs (including technical or financial assistance) contribution to the conversion of important farmland to non-agricultural uses. The act seeks to encourage alternative, if possible, that would lessen the adverse effects to important farmlands. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

NRCS uses a land evaluation and site assessment (LESA) system to establish a farmland conversion impact rating score on proposed sites of federally funded and assisted projects. This score is used as an indicator for the project sponsor to consider alternative sites if the potential adverse impacts on the farmland exceed the recommended allowable level. The assessment is completed on form AD-1006, Farmland Conversion Impact Rating.

Federal Insecticide, Fungicide, and Rodenticide Act of 1947

The Federal Insecticide, Fungicide, and Rodenticide Act provides the legal basis under which pesticides are regulated. A pesticide can be restricted or banned if it poses unacceptable risks to human health or the environment. The re-registration process, mandated in 1988 for all active ingredients then on the market, has resulted in manufacturers dropping many less profitable products rather than paying the registration fees.

Food Security Act of 1985

FSA is authorized under this Act, as amended, and 7 CFR 1410 to institute the actions contemplated in this PEA (i.e. the proposed implementation of CREP). The FSA is authorized to enroll land into CREP through December 2007. Sections 1230, 1234, 1242 of the Act and 7 CFR 1410.50 authorize FSA to enter into agreements with states to use the CRP in a cost-effective manner to further specific conservation and environmental objectives of a given state and the nation. The following provisions are especially applicable to the implementation of CREP:

> <u>Highly Erodible Land Conservation Compliance Provisions</u> require that producers of agriculture commodities must protect all cropland classified as being highly erodible land (HEL) from excessive erosion. The provisions were amended in the 1990, 1996, and 2002 Farm Bills. The purpose of these provisions is to remove the incentive to produce annually tilled agricultural commodity crops on HEL unless it is protected from excessive soil erosion.
>
> <u>Wetland Conservation Provisions (Swampbuster)</u> help preserve the environmental functions and values of wetlands, including flood control, sediment control, groundwater recharge, water quality, wildlife habitat, recreation, and aesthetics. The 1996 Farm Bill modified Swampbuster to give USDA participants greater flexibility to comply with wetland conservation requirements and to make wetlands more valuable and functional. The 2002 Farm Bill changed the other

Swampbuster provisions, including those associated with wetland determinations, mitigation (offsetting losses), "Minimal Effect" determinations, abandonment, and program eligibility.

National Environmental Policy Act of 1969 and Regulations

NEPA is intended to help federal officials make decisions that are based on consideration of the environmental consequences of their actions, and to take actions that protect, restore, and enhance the environment. NEPA mandates that the FSA consider and document the impacts that major projects and programs would have on the environment.

CEQ Implementation Regulations

The NEPA implementation regulations found at 40 CFR 1500.

National Historic Preservation Act of 1966 and Regulations

This National Historic Preservation Act (NHPA) as amended (16 USC 470, P.L. 95-515), establishes as federal policy the protection of historic properties and their values in cooperation with other nations and with state and local governments. Amendments designated the State Historic Preservation Office (SHPO) or the Tribal Historic Preservation Office (THPO) as the party responsible for administering programs in the states or reservations.

The Act also creates the Advisory Council on Historic Preservation (ACHP). Federal agencies are required to consider the effects of their undertakings on historic resources, and to give the SHPO/THPO and, if necessary, the ACHP a reasonable opportunity to comment on those undertakings.

NHPA Implementation Regulations

The NHPA implementation regulations found at 36 CFR 800, Protection of Historic Properties. This regulation, governing compliance with Section 106 of NHPA must be followed in planning any agency activity and in the ongoing management of agency resources.

Safe Drinking Water Act of 1974

The Safe Drinking Water Act (SDWA) requires EPA to set standards for drinking water quality and requirements for water treatment of public water systems while also requiring states to establish a wellhead protection program to protect public water system wells from contamination by chemicals, including pesticides, nutrients, and other agricultural contaminants.

Sustainable Fisheries Act of 1996

The Sustainable Fisheries Act amended the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to establish new requirements for “essential fish habitat” (EFH) descriptions in federal fishery management plans, it also requires federal agencies to consult with National Marine Fisheries Service (NMFS) on activities that may adversely affect EFH. Under the Magnuson-Stevens Act, NMFS must be consulted by any federal agency undertaking, permitting, or funding activities that may adversely affect EFH, regardless of its location.

Wild and Scenic Rivers Act of 1968

The purpose of the Wild and Scenic Rivers Act (WSRA) is to preserve the free-flowing state of rivers that are listed in the National Wild and Scenic Rivers System or under study for inclusion in the System because of their outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. Rivers in the System are classified as wild river areas, scenic river areas, or recreational river areas. The WSRA establishes requirements applicable to water resource projects and protects both the river, or river segments, and the land immediately surrounding them. Section 7 of the WSRA specifically prohibits federal agencies from providing assistance for the construction of any water resources projects that would adversely affect Wild and Scenic Rivers.

Section 5 (d) of WSRA requires the National Park Service to compile and maintain a Nationwide Rivers Inventory (NRI), a register of river segments that potentially qualify as national wild, scenic or recreational river areas. A river segment may be listed on the NRI if it is free-flowing and has one or more "outstandingly remarkable values." All agencies are required to consult with the National Park Service prior to taking actions which could effectively foreclose wild, scenic or recreational status for rivers on the NRI.

Executive Order 11514: Protection and Enhancement of Environmental Quality

This EO directed the federal government to provide leadership in protecting and enhancing the quality of the nation's environment to sustain and enrich human life. Federal agencies were directed to initiate measures needed to direct their policies, plans, and programs so as to meet national environmental goals. In order to achieve these goals agencies were directed to:

- Monitor, evaluate, and control on a continuing basis their activities so as to protect and enhance the quality of the environment;
- Encourage timely public information processes to foster understanding of federal plans and programs with environmental impact;
- Insure that information regarding existing or potential environmental issues be shared and coordinated with other; and
- Comply with the regulations issued by the CEQ.

Executive Order 11988: Floodplain Management—Floodplains and Wetlands

Executive Order 11988 requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities" for the following actions:

Acquiring, managing, and disposing of federal lands and facilities;

Providing federally-undertaken, financed, or assisted construction and improvements;

Conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities

Each federal agency is responsible for preparing implementing procedures for carrying out the provisions of the Order. Federal Agencies consult with FEMA concerning implementation of this EO.

Executive Order 11990: Protection of Wetlands

In order to protect wetlands, EO 11990 was signed. EO 11990 sought to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands" and minimize “to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.” To meet these objectives, the EO requires federal agencies, in planning their actions, to:

Avoid and minimize direct or indirect loss of wetlands whenever there is a practicable alternative

Achieve a no net loss of wetland quantity and quality through wetland replacement

Preserve and enhance the natural and beneficial values of wetlands

Executive Order 12898, Environmental Justice for Minority and Low Income Populations

EO 12898 directs federal agencies "to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.” Each federal agency must make achieving environmental justice one of their goals particularly when such analysis is required by NEPA. The EO and guidance emphasize the importance of NEPA's public participation process, directing each federal agency to provide opportunities for community input in the NEPA process by providing access to public documents and providing notices and hearings

Executive Order 13061, Federal Support of Community Efforts along American Heritage Rivers

EO 13061 established the American Heritage Rivers Initiative. The Initiative has three objectives: natural resource and environmental protection, economic revitalization, and historic and cultural preservation. Executive agencies, to the extent permitted by law and consistent with their missions and resources, shall coordinate federal plans, functions, programs, and resources to preserve, protect, and restore rivers and their associated resources important to our history, culture, and natural heritage. Agencies are encouraged, to the extent permitted by law, to develop partnerships with state, local, and tribal governments, community and non-governmental organizations.

Comprehensive State Groundwater Protection Program

The program was initiated by EPA in 1991. It coordinates the operation of all federal, state, tribal, and local programs that address groundwater quality. States have the primary role in designing and implementing the program based on distinctive local needs and conditions.

CRP Programmatic Environmental Impact Statement

The Federal Register dated April 24, 2002 announced the Notice of Intent of FSA to prepare a PEIS for the CRP and its counterpart the CREP. The Final PEIS was published in January 2003 and provides FSA decision makers with programmatic level analyses that provides context for state-specific EAs. The ROD was published in the Federal Register on May 8, 2003 (68 FR 24847-24854).

USDA Departmental Regulation 9500-3

Section 1540 (c) of the Farmland Protection Policy Act and DR 9500-3 established four general categories of farmlands meriting federal protection. They are cumulatively referred to as “important farmland.” Important farmland categories are:

- Prime
- Unique
- Farmland of statewide importance
- Farmland of local importance

DR 9500-3 also made it USDA policy to promote land use objectives responsive to current and long-term economic, social, and environmental needs.

Appendix C: Public Involvement

Table C-1. Timetable of Idaho CREP working group (July 2004 to January 2005).

Date	Event
July 15, 2004	Meeting with Idaho Ground Water Appropriators, Inc.
August 13, 2004	Meeting with Idaho Ground Water Appropriators, Inc.
August 18, 2004	Public Town Hall Meeting, Buhl, Idaho
August 25, 2004	Briefing at Idaho Legislature Natural Resources Interim Committee Meeting
August 27, 2004	Meeting with Thousand Springs Water Users Association
August 31, 2004	Briefing at Idaho NRCS State Technical Committee Meeting
September 14, 2004	CREP Working Group organizational meeting
September 15, 2004	Release of State of Idaho Water Settlement Plan (including CREP)
September 21, 2004	Article in *Idaho Statesman*
September 23, 2004	Editorial in *Idaho Statesman*
September 27, 2004	Public Town Hall Meeting, Arco, Idaho
September 28, 2004	Meeting with Potato Growers of Idaho
September 28, 2004	Meeting with Shoshone-Bannock Tribes
September 28, 2004	Article in *Post Register*
September 29, 2004	CREP Working Group Executive Committee Meeting
September 29, 2004	CREP Working Group Wildlife Subcommittee Meeting
September 29, 2004	Article in *USA Today*
September 29, 2004	Article in *Ag AM*
October 6, 2004 – December 2004	CREP Working Group Executive Committee Meeting (weekly)
October 13, 2004	Briefing at Idaho Legislature Natural Resources Interim Committee Meeting
October 14, 2004	Briefing at Idaho Legislature Natural Resources Interim Committee Meeting
November 9, 2004	CREP Working Group Meeting
November 18, 2004	Presentation of CREP proposal to Idaho Legislature Natural Resources Interim
January 6, 2005	CREP Working Group Meeting

Source: Idaho FSA.

Table C-2. Organizations involved with the Idaho CREP working group.

Organization Type	Organization	Number of Representatives
Agricultural Associations	Idaho Cattle Association	1
	Idaho Grain Producers Association	1
	Pacific Northwest Direct Seed Association	1
	Packer Victory Family Heritage	1
	Potato Growers of Idaho	2
	Idaho Aquaculture Association	1
	Idaho Farm Bureau	1
Companies	Idaho Agricultural Credit Association	1
	Amalgamated Sugar Company	1
	Idaho Power Company	1
	Intermountain Aquatics	1
	Rangen, Inc.	1
Federal Agencies	Bureau of Land Management (USDI)	1
	Bureau of Reclamation (USDI)	1
	Idaho Farm Service Agency (USDA)	4
	Idaho Natural Resources Conservation Service (USDA)	4
	U.S. Fish and Wildlife Service (USDI)	3
Federal Elected Officials	Office of US Senator Larry Craig	1
	Office of US Senator Mike Crapo	1
	Office of Congressman Butch Otter	1
	Office of Congressman Mike Simpson	1
Irrigation Company	Bell Rapids Mutual Irrigation Company	1
	Salmon River Canal Company	1
Individuals		3
Local Districts	Idaho Association of Soil Conservation Districts	1
	American Falls/Aberdeen Ground Water District	1
	Bingham Ground Water District	1
	Magic Valley Ground Water District	2
	North Snake Ground Water District	1
	Southwest Irrigation District	1

Organization Type	Organization	Number of Representatives
Preservation	Idaho Rivers United	1
	Northwest Coalition for Alternatives to Pesticides	1
	Teton Regional Land Trust	1
	The Nature Conservancy	1
State Agencies / Offices	Idaho State Office of Species Conservation	1
	Idaho Soil Conservation Commission	1
	Idaho Department of Agriculture	2
	Idaho Department of Commerce/Labor	1
	Idaho Department of Environmental Quality	1
	Idaho Department of Fish and Game	1
	Idaho Department of Lands	1
	Idaho Department of Water Resources	2
State Elected Officials	Office of Idaho Attorney General	2
	Office of Idaho Governor Dirk Kempthorne	1
	Idaho State House of Representatives, including Agricultural Affairs Committee Chair, Environment, Energy, and Technology Committee Chair, Resources and Conservation Committee Chair and Vice Chair, and Speaker.	8
	Idaho State Senate, including Agricultural Affairs Committee Chair, Resources and Environment Committee Chair and Vice Chair, and Minority Leader.	9
Tribes	Nez Perce Tribal Executive Committee	1
	Shoshone-Bannock Tribes	1
Water User Groups	Idaho Ground Water Appropriators	2
	Idaho Water Users Association	2
	Thousand Springs Water Users Association	1
Wildlife	Ducks Unlimited	1
	Idaho Wildlife Federation	1
	Pheasants Forever	2
	Sportsmen for Fish and Wildlife Idaho	1
	Trout Unlimited	1

Source: Proposal 2005.

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix D: CREP Enrollment Worksheet

Idaho Farm Service Agency

CREP Ranking Sheet

Program Participant Name: ____________________________ Offer Number: ____________

Water right number(s) and priority date(s): ____

____

County: ____________________________ Ranking Prepared By: ______________________

	Enter Points In This Column
1. Basic Eligibility *Answer each question yes or no. A single no answer makes the land ineligible for further consideration under CREP and should not be ranked.* Offered land is located in an eligible HUC __________ Offered land meets all cropping & irrigation requirements __________ Offered land is <u>not</u> irrigated from Snake River diversion __________	
2. Water Source *(maximum 20 points)* Land under consideration is irrigated from which of the following sources • Well pumped from Eastern Snake River Plain Aquifer – 20 points • Well pumped from other than Eastern Snake River Plain Aquifer – 10 pts • Surface Water (diversion other than Snake River) – 0 points	
3. Groundwater Right Priority *(maximum 30 points)* The groundwater right associated with land under consideration dates from • 1949 or earlier – 30 points • 1962-1950 – 20 points • 1963-1973 – 10 points • 1974 or later – 0 points	
4. Water Priority Areas *(maximum 50 points)* Land under consideration is located near the Snake River • Band 1 (0-5 miles from Snake River) – 40 points • Band 2 (5-10 miles from Snake River) – 30 points • Band 3 (10-20 miles from Snake River) – 20 points • Band 4 (20-30 miles from Snake River) – 10 points • Other (more than 30 miles from Snake River) – 0 points Land under consideration is located in a recognized Critical Groundwater Area • Yes – 20 additional points • No – 0 points	

Continued, next page.

<table>
<tr><td>
5. Conservation Practices (maximum 40 points)

Land under consideration will be planted to which practice
• CP25 (Rare & Declining Habitat) – 20 points
• CP4D (Permanent wildlife habitat) – 10 points
• CP2 (Native grasses and legumes) – 5 points

Land under consideration also includes which additional practices
• CP22 (Riparian Buffers) – 10 additional points
• CP12 (Wildlife Food Plot) – 10 additional points
</td><td></td></tr>
<tr><td>
6. Wildlife Priority Areas (maximum 40 points)

Land under consideration is located within the Bird Habitat Conservation Area (see map)
• Yes – 10 points
• No – 0 points

Land under consideration is located within the Idaho Department of Fish and Game Habitat Priority Area (see map)
• Yes – 10 points
• No – 0 points

Land under consideration is adjacent to (i.e., within one mile of) public lands (state or federal)
• Yes – 10 points
• No – 0 points

Land under consideration is immediately adjacent to prioritized stream
• Yes – 10 points
• No – 0 points
</td><td></td></tr>
<tr><td>TOTAL (maximum 180 points)</td><td></td></tr>
</table>

Appendix E: Bird Habitat Conservation Areas and Habitat Priority Areas

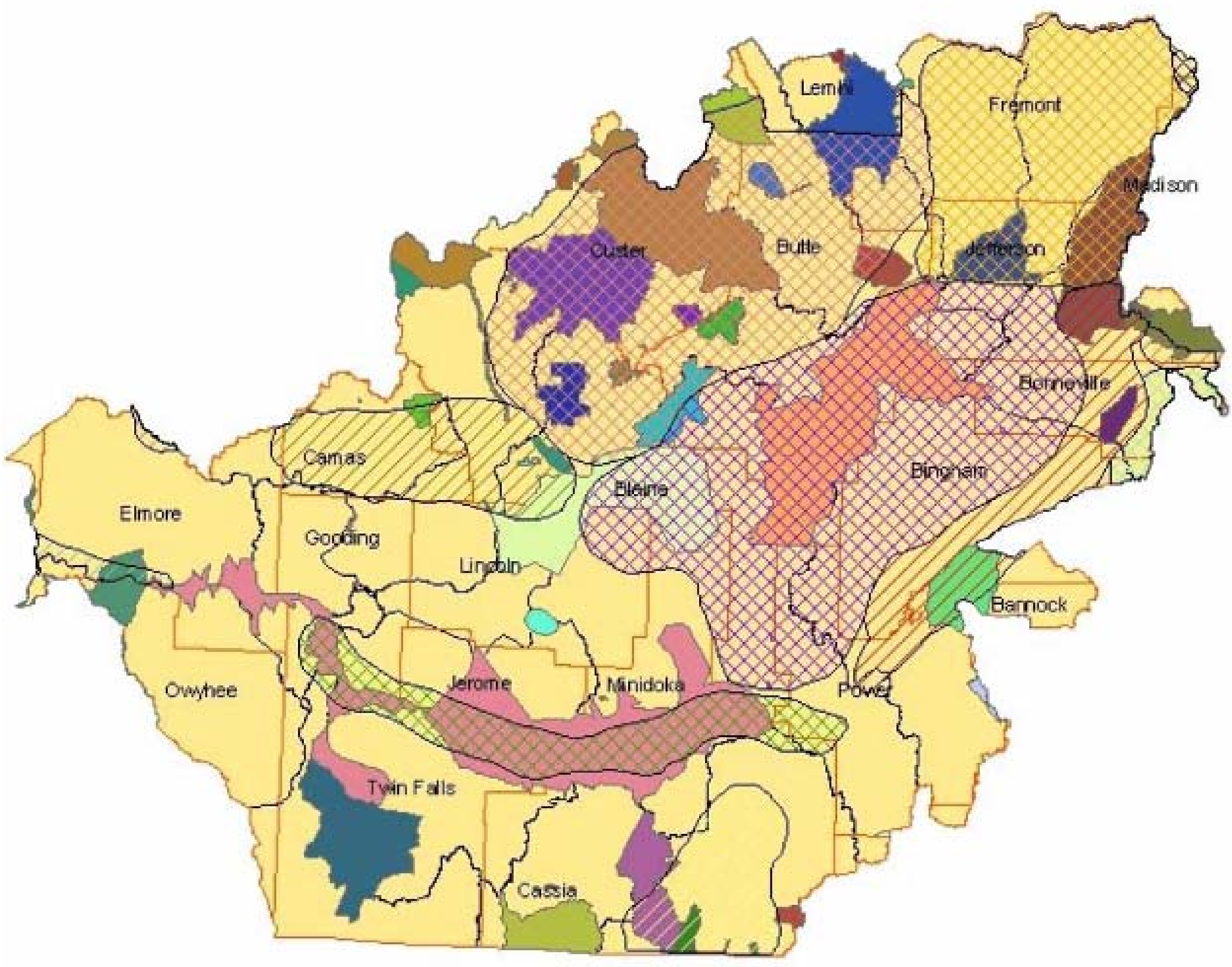


Figure E-1. Habitat Priority Areas and Bird Habitat Conservation Areas in the Idaho CREP project area.

Note: The underlying yellow area is the proposed CREP area. The solid areas are the Habitat Priority Areas. The patterned areas are the Bird Habitat Conservation Areas.

Source: Proposal 2005.

THIS PAGE INTENTIONALLY LEFT BLANK.

Appendix F: State Plant Species of Concern

Table F-1. State plant species of concern.

Common Name	Scientific Name
Global Priority 1[1]	
Packard's milkvetch	*Astragalus cusickii var. packardiae*
narrowleaf grapefern	*Botrychium lineare*
Indian Valley sedge	*Carex aboriginum*
Christ's Indian paintbrush	*Castilleja christii*
Parry's rabbitbrush	*Chrysothamnus parryi ssp. montanus*
none	*Cladonia andereggii*
thinsepal monkeyflower	*Mimulus hymenophyllus*
none	*Mimulus ampliatus*
hidden phacelia	*Phacelia inconspicua*
Clearwater phlox	*Phlox idahonis*
Idaho twinpod	*Physaria didymocarpa var. lyrata*
none	*Sphaerocarpos hians*
Global Priority 2[2]	
box pussytoes	*Antennaria arcuata*
Jessica's aster	*Aster jessicae*
Goose Creek milkvetch	**Astragalus anserinus*
locoweed	*Astragalus diversifolius*
Mulford's milkvetch	*Astragalus mulfordiae*
White Clouds milkvetch	*Astragalus vexilliflexus var. nubilus*
peculiar moonwort	*Botrychium paradoxum*
Nez Perce mariposa lily	*Calochortus macrocarpus var. maculosus*
none	*Carex parryana spp. idahoa*
none	*Cladonia luteoalba*
alpine collomia	*Collomia debilis var. camporum*
Idaho hawksbeard	*Crepis bakeri ssp. idahoensis*
Greeley springparsley	*Cymopterus acaulis var. greeleyorum*
none	*Dermatocarpon lorenzianum*
Idaho dwarf-primrose	*Douglasia idahoensis*
Stanley Creek draba	*Draba trichocarpa*
Welsh's buckwheat	*Eriogonum capistratum var. welshii*
bridle buckwheat	*Eriogonum meledonum*
Packard's buckwheat	*Eriogonum shockleyi var. packardiae*
Britton's dry rock moss	*Grimmia brittoniae*

Common Name	Scientific Name
none	*Haplopappus liatriformis*
Water howellia	*Howellia aquatilis*
Idaho pepperweed	*Lepidium papilliferum*
Owyhee pricklygilia	*Leptodactylon glabrum*
Common pricklygilia	*Leptodactylon pungens ssp. hazeliae*
Packard's desertparsley	*Lomatium packardiae*
smooth blazingstar	*Mentzelia mollis*
MacFarlane's four o'clock	*Mirabilis macfarlanei*
narrowleaf wildparsley	*Musineon lineare*
Holzinger's orthotrichum moss	*Orthotrichum holzingeri*
compact penstemon	*Penstemon compactus*
Idaho beardtongue	*Penstemon idahoensis*
none	*Poa abreviata spp. marshii*
bluedome primrose	*Primula alcalina*
Barton's raspberry	*Rubus bartonianus*
Tobias' saxifrage	*Saxifraga bryophora var. tobiasiae*
Spalding's silene	*Silene spaldingii*
Ute lady's tresses	*Spiranthes diluvialis*
Oregon princesplume	*Stanleya confertiflora*
none	*Texosporium sancti-jacobi*
none	*Trifolium plumosum var. amplifolium*
none	*Xanthoparmelia idahoensis*
State Priority 1[3]	
bog rosemary	*Andromeda polifolia*
King's angelica	*Angelica kingii*
Pursh's wormwood	*Artemisia campestris ssp. borealis var.purshii*
forked spleenwort	*Asplenium septentrionale*
maidenhair spleenwort	*Asplenium trichomanes*
brightgreen spleenwort	*Asplenium trichomanes-ramosum(=Asplenium viride)*
Bourgov's milkvetch	*Astragalus bourgovii*
plains milkvetch	*Astragalus gilviflorus*
dwarf milkvetch	*Astragalus microcystis*
fourwing milkvetch	*Astragalus tetrapterus*
bentflower milkvetch	*Astragalus vexilliflexus var. vexilliflexus*
King's desertgrass	*Blepharidachne kingii*
blue grama	*Bouteloua gracilis*
buxbaumia moss	*Buxbaumia aphylla*

Common Name	Scientific Name
creeping sedge	*Carex chordorrhiza*
longhair sedge	*Carex comosa*
hairy sedge	*Carex lacustris*
western sedge	*Carex occidentalis*
squawcarpet	*Ceanothus prostratus*
alderleaf mountain mahogany	*Cercocarpus montanus*
none	*Cetraria sepincola*
goldencarpet	*Chrysosplenium tetrandrum*
None	*Cladonia bellidiflora*
none	*Cladonia uncialis*
none	*Claytonia multiscapa (=C. lanceolata var.flava)*
alkali stinkweed	*Cleomella plocasperma*
Pacific dogwood	*Cornus nuttallii*
silky cryptantha	*Cryptantha sericea*
desert dodder	*Cuscuta denticulata*
none	*Cypripedium parviflorum var. pubescens*
harlequin calicoflower	*Downingia insignis*
spoonleaf sundew	*Drosera intermedia*
tassel cotton-grass	*Eriophorum viridicarinatum*
spotted joe-pye-weed	*Eupatorium maculatum*
sweetgrass	*Hierochloe odorata*
Kellogg's lewisia	*Lewisia kelloggii*
marsh felwort	*Lomatogonium rotatum*
manyfruit primrose-willow	*Ludwigia polycarpa*
false lily of the valley	*Maianthemum dilatatum*
meesia moss	*Meesia longiseta*
wingstem monkeyflower	*Mimulus alsinoides*
Hall's orthotrichum moss	*Orthotrichum hallii*
threeleaf woodsorrel	*Oxalis trilliifolia*
arctic sweet coltsfoot	*Petasites frigidus var. palmatus*
Antelope Valley beardtongue	*Penstemon janishiae*
none	*Pilophorus clavatus*
licorice fern	*Polypodium glycyrrhiza*
hoary primrose	*Primula Incana*
annual psathyrotes	*Psathyrotes annua*
white beaksedge	*Rhynchospora alba*
redflower currant	*Ribes sanguineum*

Common Name	Scientific Name
salmonberry	*Rubus spectabilis*
forest scurfpea	*Rupertia physodes (=Psoralea physodes)*
apetalous catchfly	*Silene uralensis ssp. Montana*
creamy ladies'-tresses	*Spiranthes porrifolia*
composite dropseed	*Sporobolus compositus var. compositus(=Sporobolus asper)*
American germander	*Teucrium canadense var. occidentale*
purple meadow-rue	*Thalictrum dasycarpum*
none	*Thamnolia subuliformis*
Sierra marsh fern	*Thelypteris nevadensis*
none	*Triantha occidentalis ssp. brevistyla (=Tofieldia glutinosa*
alpine bulrush	*Trichophorum alpinum (=Scirpushudsonianus)*
largespore ulota moss	*Ulota megalospora*
State Priority 2[4]	
iodinebush	*Allenrolfea occidentalis*
Kellogg's onion	*Allium anceps*
little grapefern	*Botrychium simplex*
coastal sand sedge	*Carex incurviformis*
boreal bog sedge	*Carex magellanica ssp. irrigua (=carex paupercula)*
none	*Cladonia transcendens*
Uinta basin cryptantha	*Cryptantha breviflora*
clustered lady's slipper	*Cypripedium fasciculatum*
doublet	*Dimeresia howellii*
Austrian draba	*Draba fladnizensis*
beavertip draba	*Draba globosa (=draba apiculata)*
elliptic spikerush	*Eleocharis elliptica (=eleocharis tenuis)*
giant hellebore	*Epipactis gigantea*
Shockley buckwheat	*Eriogonum shockleyi var. shockleyi*
creeping snowberry	*Gaultheria hispidula*
Dane's dwarf gentian	*Gentianella tenella*
hookeria moss	*Hookeria lucens*
Canadian St. John's-wort	*Hypericum majus*
none	*Hypogymnia inactiva*
sprawling skyrocket	*Ipomopsis polycladon (=gilia polycladon)*
simple bog sedge	*Kobresia simpliciuscula*
none	*Lobaria linita*
inundated clubmoss	*Lycopodiella Inundata*
green needlegrass	*Nassella viridula (=Stipa viridula)*

Common Name	Scientific Name
goldback fern	*Pentagramma triangularis ssp. triangularis*
Squaw apple	*Peraphyllum ramosissimum*
long beechfern	*Phegopteris connectilis (=thelypterisphegopteris)*
western white spruce	*Picea glauca*
none	*Pilophorus acicularis*
little-seed mountain-rice grass	*Piptatherum micranthum (=oryzopsismicrantha)*
none	*Platismatia herrei*
Braun's hollyfern	*Polystichum braunii*
none	*Ramalina pollinaria*
naked rhizomnium moss	*Rhizomnium nudum*
Farr willow	*Salix farriae*
grayleaf willow	*Salix glauca*
bog willow	*Salix pedicellaris*
false mountain willow	*Salix pseudomonticola*
rannoch-rush	*Scheuchzeria palustris*
fivefinger chickensage	*Sphaeromeria potentilloides*
Mendocino sphagnum	*Sphagnum mendocinum*
tufted Townsend daisy	*Townsendia scapigera*
small cranberry	*Vaccinium oxycoccos*

[1] Critically imperiled because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction (typically 5 or fewer occurrences).
[2] Imperiled because of rarity or because of other factors demonstrably making it very vulnerable to extinction (typically 6 to 20 occurrences).
[3] Taxa in danger of becoming extinct or extirpated from Idaho in the foreseeable future if identifiable factors contributing to their decline continue to operate. These are taxa whose populations are present only at critically low levels or whose habitats have been degraded or depleted to a significant degree.
[4] Taxa likely to be classified as Priority 1 within the foreseeable future in Idaho, if factors contributing to their population decline or habitat degradation or loss continue.
Source: INPS 2004and ITIS 2005.

THIS PAGE INTENTIONALLY LEFT BLANK.

Appendix G: Detailed Analysis of the Effects of the Idaho Conservation Reserve Enhancement Program on Surface Water and Groundwater Quantity in the Eastern Snake River Plain

THIS PAGE INTENTIONALLY LEFT BLANK

Detailed Analysis of the Effects of the Idaho Conservation Reserve Enhancement Program on Surface Water and Groundwater Quantity in the Eastern Snake River Plain

Prepared in conjunction with the Programmatic Environmental Assessment of the Idaho Conservation Reserve Enhancement Program

Farm Service Agency
United States Department of Agriculture

November 2005

Table of Contents

Introduction **G-5**
Eastern Snake River Plain Aquifer Models G-5
Current Conditions of the ESPA **G-6**
Aquifer Storage G-6
Aquifer Discharge/Surface Water Impacts G-7
Groundwater Levels G-11
Modeled Effects of CREP on Surface Water Quantity **G-14**
References **G-19**

List of Figures and Tables

Figure 1. Model estimated cumulative storage in the ESPA. G-7
Figure 2. Location map of springs in the Milner to King Hill Reach of the Snake River. G-8
Figure 3. Devil's Washbowl average daily discharge. G-9
Figure 4. Blue Lake Spring average daily discharge. G-9
Figure 5. Box Canyon daily average discharge. G-10
Figure 6. Measured groundwater levels in an unused well located in American Falls GWMA. G-11
Figure 7. Measured groundwater levels in an active irrigation well near Minidoka, ID. G-11
Figure 8. Measured groundwater levels in an unused well located in the MHA. G-12
Figure 9. Measured groundwater levels in an active irrigation well located in the MHA. G-12
Figure 10. Measured groundwater levels in a domestic well located in Raft River. G-13
Figure 11. Measured groundwater levels in an active irrigation well located in Raft River. G-13
Figure 12. Measured groundwater levels in an unused irrigation well located in Oakley Fan. G-14
Figure 13. Measured groundwater levels in an active irrigation well located in Oakley Fan. G-14
Figure 14. Benefits appearing at river for above-Milner aggregated reaches. G-17
Figure 15. Benefits appearing at river for below-Milner aggregated reaches. G-17
Figure 16. Cumulative benefits of CREP appearing at the Snake River. G-18

Table 1. Distribution of CREP acres for each model scenario. G-15
Table 2. Summary of CREP benefits to Snake River. G-16

Introduction

The intent of this report is to provide a more detailed discussion of agricultural impacts to water quantity and to support the effects analysis of the Programmatic Environmental Assessment (PEA) prepared for Idaho Conservation Reserve Enhancement Program (CREP). One of the objectives of CREP is to increase recharge of the Eastern Snake Plain Aquifer (ESPA) and to bring the aquifer into equilibrium, by removing 100,000 acres from active agriculture and decreasing groundwater pumping necessary to irrigate those acres (Proposal 2005). It is the purpose of this report to outline and quantify the effects that current irrigation practices have on aquifer levels and to quantify the effects decreased groundwater pumping will have on water quantity.

When discussing the effects of CREP on surface water and groundwater in the project area, there are some important concepts to be considered concerning the connection between surface water and groundwater. Groundwater pumping from the aquifer initially causes a localized decline in the water table. That decline, or cone of depression, propagates progressively outward until it encounters hydrologically connected surface waterbodies. The surface waterbodies are subsequently depleted as a result of the pumping. The following concepts regarding the effects of pumping on surface water in the ESPA are important to this discussion:

- *Pumping effects propagate in all directions through the aquifer, not just down-gradient.* This means it is possible for a downstream groundwater user to affect stream flow in the upper reaches of the ESPA. In the ESPA, if water is pumped or recharged in the center of the plain, losses and gains of the Snake River may be affected at many locations, not just along the flow lines.
- *The total volume of water pumped and consumptively used from the ESPA will ultimately be depleted from surface water sources and cause a reduction in groundwater storage.* Water pumped and consumptively used is water that would otherwise have been used somewhere else. In the ESPA, the entire volume of water pumped and consumptively used will either be depleted from spring discharge, cause a corresponding increase in river losses, or cause a corresponding decrease in river gains. Water can neither be created nor destroyed in the process of pumping.
- *Pumping and aquifer recharge effects on surface water are often greatly attenuated.* Even though the entire volume of water consumptively pumped throughout the ESPA will ultimately be drawn from surface water sources and groundwater storage, that depletion may be distributed over time periods ranging from days to decades. The attenuation of the effects is related (1) to the proximity of the pumping location and surface waterbody and (2) the hydraulic properties of the aquifer and stream.
- *FSA's ability to estimate groundwater pumping impacts on surface water resources is assisted by modeling.* The agency can quantitatively relate consumptive groundwater pumping or recharge to surface water depletion as the result of analytical and numerical models.

These same concepts, in reverse, apply to aquifer recharge (Proposal 2005).

Eastern Snake River Plain Aquifer Models

Several models of all or portions the ESPA have been constructed. The two most complete models were constructed by the University of Idaho for the Idaho Department Water Resources (IDWR) and United States Geological Survey (USGS). These two models have similar boundaries and employ the same computer code. However, they differ in their purpose for construction and, consequently, their design. The USGS model was constructed largely as an investigative tool to explore concepts of the regional groundwater flow and improve our scientific understanding of the system. The IDWR model was designed primarily as an aquifer planning and management tool. The IDWR model presents a more simplified concept of the aquifer using a single model layer. Nevertheless, extremely sophisticated concepts can be simulated with each model. Development of models is limited by the data available and the extent of the understanding of the real system (Johnson et al. 1998).

The model developed for the IDWR is the tool that has been, and probably will continue to be, used for evaluating groundwater and surface water relationships. The model was used to perform the Upper Snake River Basin Study and was used to develop response functions for the river and aquifer (Johnson et al. 1998).

The IDWR model was also used to describe equilibrium, or steady-state conditions, of the ESPA. Equilibrium is a situation that is achieved when aquifer recharge and discharge are maintained at a constant level for long periods of time. The result of equilibrium is stable aquifer water levels and river gains and losses. Although seasonal and year-to-year variations still occur at equilibrium, the variations do not result in long-term trends in recharge or discharge. It is important to remember that equilibrium conditions are a result of the balancing of aquifer inflows and outflows and do not necessarily imply that the balance has occurred at a desirable level (Cosgrove et al. 2004).

The IDWR model also illustrated that changes in net recharge initially has a greater relative impact on aquifer storage, either adding or removing water from the aquifer directly. As equilibrium is approached, changes in storage become smaller while the total change in aquifer discharge to streams and springs becomes greater (IDWR 1997).

The two models of the Snake River Plain aquifer have been used for many years and presently are accepted to represent the effects that consumptive groundwater pumping and managed recharge have on groundwater storage and on interactions between the Snake River and the aquifer. However, it is important to recognize that these models are not precise (Johnson et al. 1998). Information from the two models will be used to describe existing conditions of the ESPA; however the majority of information used to describe the ESPA is from the IDWR model. The effects that CREP implementation would have on the ESPA were quantified using the IDWR model (Contor 2005).

Current Conditions of the ESPA

At the onset of surface water irrigation, incidental recharge from the gravity irrigation caused increases in aquifer water levels. The aquifer water levels and aquifer discharge reached a peak in the 1950s, when subsequent water-use practices began to change. In the 1950s, rural electrification and improved pump and drilling technology increased the use of groundwater for irrigation and included supplemental groundwater rights on land already irrigated from surface water. At the same time (and perhaps partly as a result), total diversions of surface water decreased across the plain. This decline is also partly attributed to practices such as the lining of canals and migration from flood irrigation to sprinkler irrigation. Many irrigators enlarged their irrigated areas to make use of the increased water availability resulting from the increased sprinkler efficiency. Each of these phenomena impacted the aquifer by either increasing groundwater withdrawal or decreased recharge incidental to irrigation, ultimately resulting in declining aquifer storage, spring discharge, and groundwater levels (IDWR 1997).

As of May 2002, the ESPA was approximately close to equilibrium and, except for drought conditions continuing since 2002, aquifer recharge and discharge are reasonably well balanced. In addition, the full effect of changes in water use practices (e.g. pumping, conversion to sprinklers, etc.) has been realized at the hydrologically connected river reaches. This implies that if there is no further change in irrigation practices (e.g. increased pumping in response to drought conditions), river gains and losses will remain, on average, near present levels (Cosgrove et al. 2004).

Aquifer Storage

In response to irrigation practices, the volume of water stored in the ESPA increased by about 15 million acre-feet between 1915 and 1955. On the average, 340,000 acre-feet of water was added to aquifer storage annually during this period. Since the 1950s, about 800,000 acres of groundwater irrigated land has been brought into production and, at an average estimated irrigation demand of 1.8 acre-feet/acre, the total aquifer withdrawal to irrigate these acres is estimated at 1.5 million acre-feet/year. The average rate of decline in groundwater storage between 1975 and 1995 was about 350,000 acre-feet/year (Johnson et al. 1998).

The IDWR ESPA model was used to estimate change in aquifer storage from 1980-2002 (Figure 1). During the first few years, a general increase in storage results from a wet weather pattern and healthy irrigation water supply. The downward slope from 1987 to 1994 is a result of dryer conditions. Wetter conditions occurred from 1994 through 2000. The decline in aquifer storage after 2000 is in response to drought conditions that continue to present. In addition to the response to weather patterns, this graph also shows seasonal patterns in aquifer storage (Cosgrove et al. 2004).

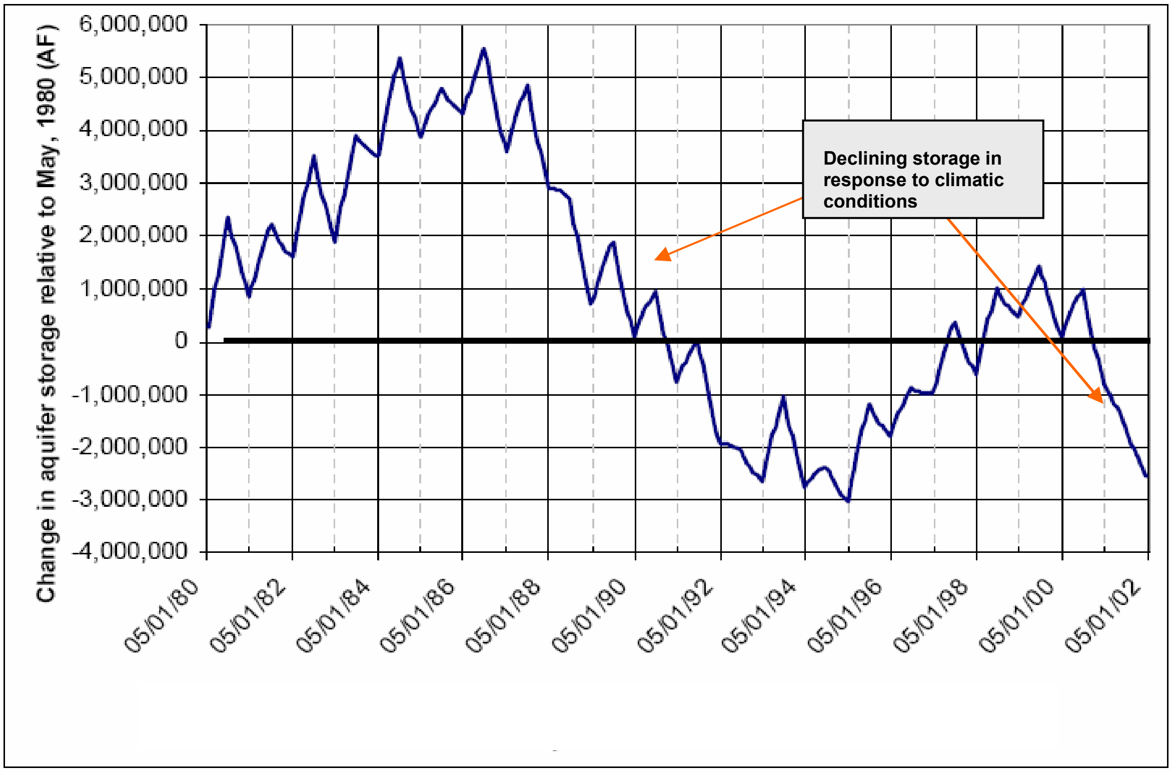


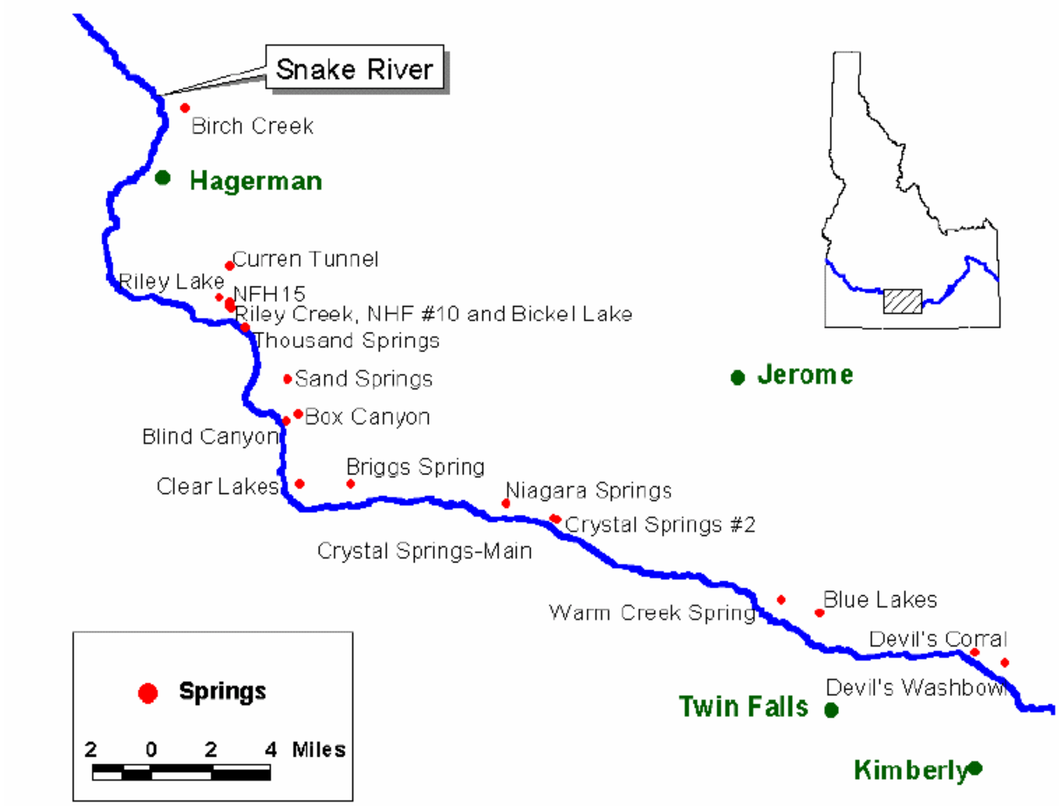
Figure G-1. Model estimated cumulative storage in the ESPA.
Source: Cosgrove et al. 2004

From 1980 to 2002, substantial imbalances in recharge and discharge existed during individual years, but the average discharge over the 22-year period exceeded recharge by about 180,000 acre-feet/year (250 cfs) (Figure 2). This average imbalance in aquifer storage is important to understand future spring discharges and river losses. If conditions of the 1980 to 2002 period persist into the future, decreased Snake River gains (spring discharge) and increased losses are expected to total about 180,000 acre-feet/year (250 cfs) over the long term (Cosgrove et al. 2004).

Aquifer Discharge/Surface Water Impacts

Since the 1950s, aquifer discharge has been declining at several springs that are hydrologically connected to the ESPA. Figure 2 is a map showing the location of the springs. The spring discharge declines are partly a result of changes in irrigation practices across the eastern Snake River Plain. Figures 3-5 show the change in spring discharge at several locations in the ESPA. Each of these figures show average discharge for the period 1950-1960, when aquifer levels were at their peak from incidental recharge, and the average discharge for 1990-2000, representing the ESPA's response to groundwater pumping.

Figure G-2. Location map of springs in the Milner to King Hill Reach of the Snake River.
Source: Johnson et al. 2002.



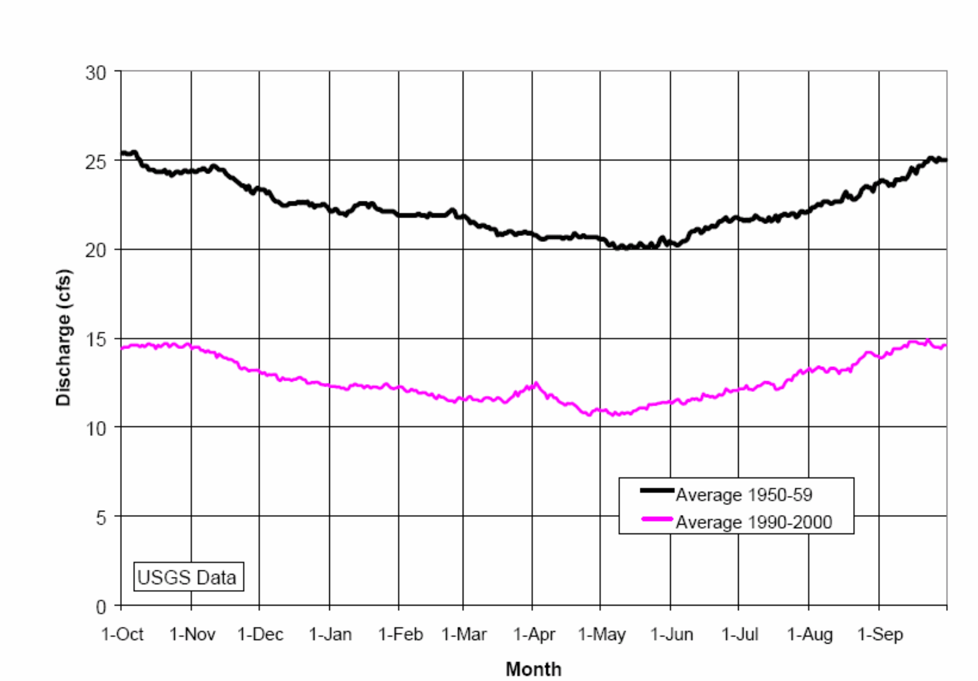


Figure G-3. Devil's Washbowl average daily discharge.
Source: Johnson et al. 2002.

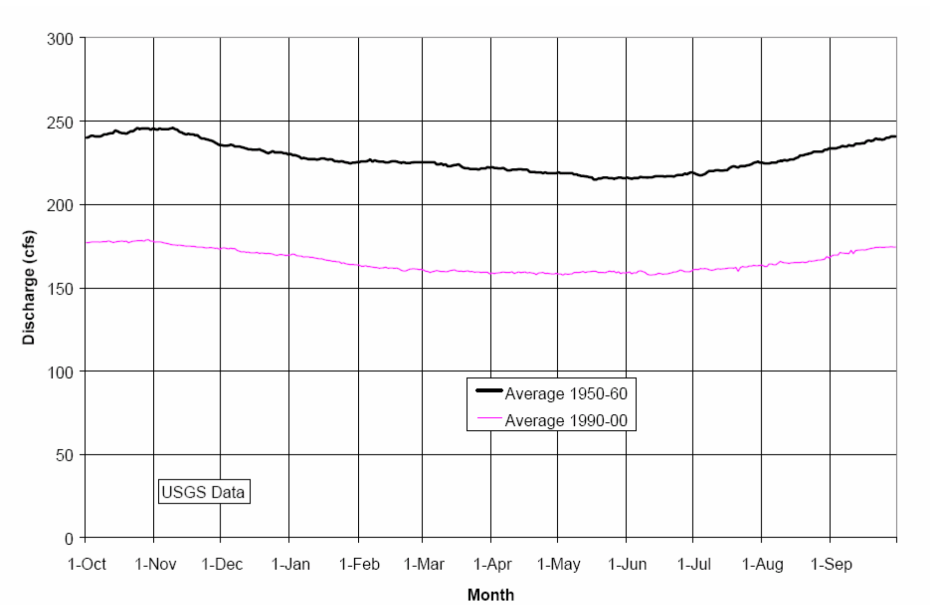


Figure G-4. Blue Lake Spring average daily discharge.
Source: Johnson et al. 2002.

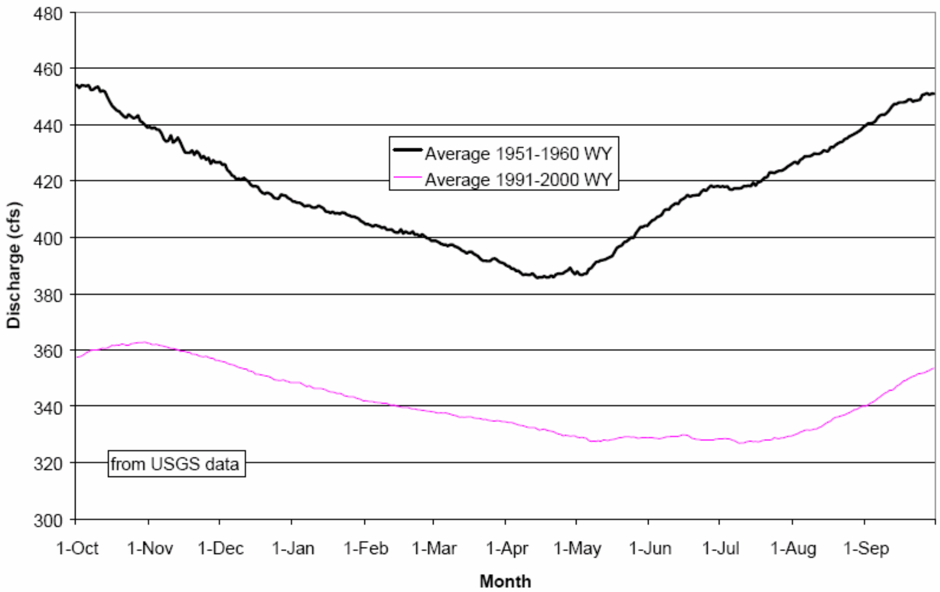


Figure G-5. Box Canyon daily average discharge.
Source: Johnson et al. 2002.

Using the IDWR model of the ESPA, the cumulative impacts of current groundwater irrigation use on surface water and aquifer discharge has been quantified. To describe and quantify these effects, base conditions were first established in an IDWR model run. For this run, irrigated acreage was held constant at 1992 levels (611,000 acres from surface water sources and 818,000 acres from groundwater sources) and the model was run until the aquifer's equilibrium was reached. At equilibrium, the base study simulation produced an annual average aquifer discharge of 2,665 cfs at the Shelley to Neeley reach and 5,526 cfs at the Kimberly to King Hill reach (IDWR 1997).

To evaluate the cumulative effects of groundwater pumping on discharge and water levels, the IDWR model was run with all groundwater use removed (except in the vicinity of the Fort Hall Indian Reservation) and results were compared to base conditions. At equilibrium, discharge in the Shelley to Neeley reach had increased by 848 cfs over the base conditions and the Kimberly to King Hill reach had increased by 620 cfs. In other words, at equilibrium, groundwater pumping decreases aquifer discharge by 848 cfs in the Shelley to Neeley reach and by 620 cfs in the Kimberly to King Hill reach. Adding Henrys Fork gains to the Shelley to Neeley reach, the total negative change in natural flow from groundwater pumping is about 895 cfs (IDWR 1997). As of 1997, 80 percent of this decrease had already occurred at both reaches (675 cfs of the 848 cfs at the Shelley to Neeley reach and 500 cfs of the 620 cfs at the Kimberly to King Hill reach) (IDWR 1997).

The model was also used to estimate the impacts of groundwater use on system reservoir storage. For this run, an average year (1993) and a dry year (1992) were used to estimate the impact of groundwater pumping under different conditions. Removing groundwater withdrawals for irrigation in the 1993 run resulted in an increase in system reservoir storage of 213,000 acre-feet. In the 1992 run, the total amount of storage increase was larger, totaling almost 300,000 acre-feet. In other words, groundwater pumping during drought conditions resulted in a greater decrease in reservoir storage than during normal conditions (IDWR 1997).

Overall, model results indicate that groundwater pumping has greater impacts on Snake River natural flows than surface water diversions and the impacts from groundwater pumping may be twice as great as the effects from surface water diversions (IDWR 1997).

Groundwater Levels

Declining groundwater levels are evident throughout the CREP area. Steadily declining levels have been observed in wells located in the aquifers identified as major segments of CREP – the ESPA, MHA, Raft River, and Oakley Fan. At some locations, decreasing groundwater levels have been observed for more than 20 years and, at wells with sufficient historical data, declines in groundwater levels have been observed since the 1950s when groundwater use for irrigation became more prevalent throughout the Snake River Plain (IDWR 2005). Well levels in the ESPA, MHA, Raft River aquifer, and Oakley Fan aquifer are shown in Figures 6-13.

Eastern Snake River Plain Aquifer

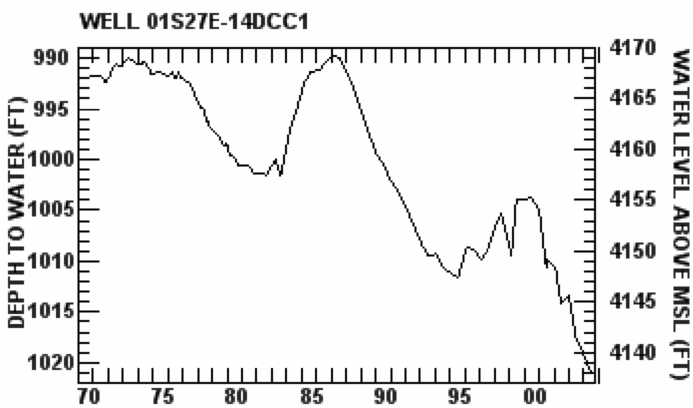


Figure G-6. Measured groundwater levels in an unused well located in American Falls GWMA.
Note: Year of measurement is shown on the horizontal axis and groundwater level is shown on vertical axis.
Source: IDWR 2005.

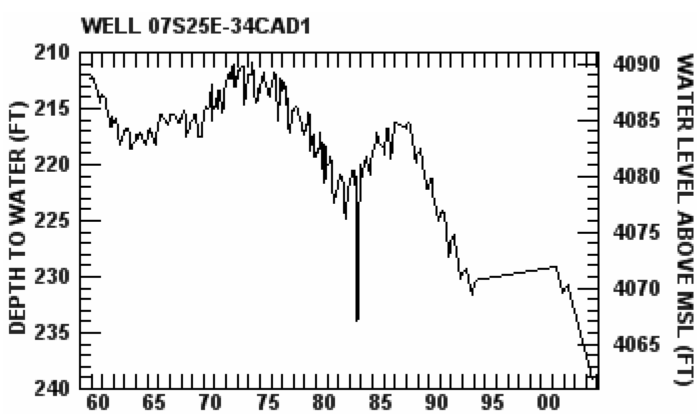


Figure G-7. Measured groundwater levels in an active irrigation well near Minidoka, ID.
Note: Year of measurement is shown on the horizontal axis and groundwater level is shown on vertical axis.
Source: IDWR 2005.

Mountain Home Aquifer

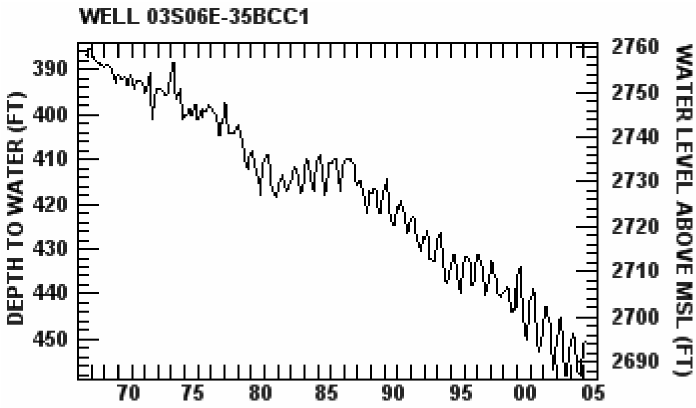


Figure G-8. Measured groundwater levels in an unused well located in the MHA.
Note: Year of measurement is shown on the horizontal axis and groundwater level is shown on vertical axis.
Source: IDWR 2005.

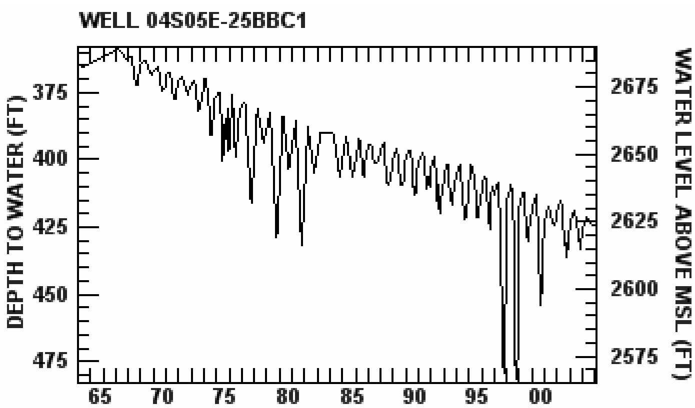


Figure G-9. Measured groundwater levels in an active irrigation well located in the MHA.
Note: Year of measurement is shown on the horizontal axis and groundwater level is shown on vertical axis.
Source: IDWR 2005.

Raft River

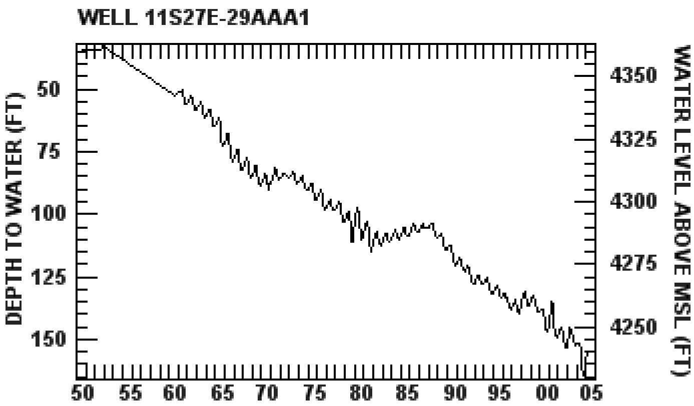


Figure G-10. Measured groundwater levels in a domestic well located in Raft River.

Note: Year of measurement is shown on the horizontal axis and groundwater level is shown on vertical axis.
Source: IDWR 2005.

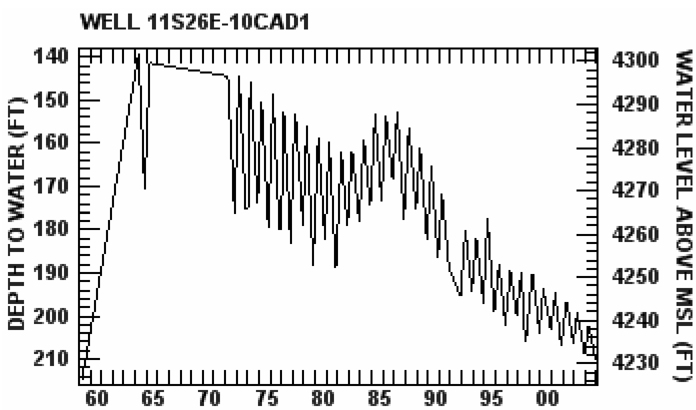


Figure G-11. Measured groundwater levels in an active irrigation well located in Raft River.

Note: Year of measurement is shown on the horizontal axis and groundwater level is shown on vertical axis.
Source: IDWR 2005.

Oakley Fan

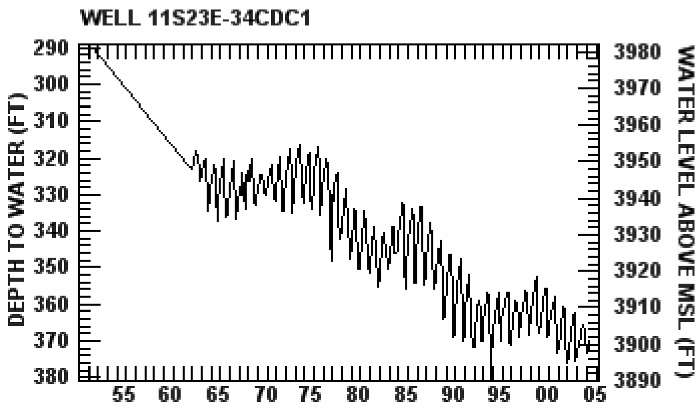


Figure G-12. Measured groundwater levels in an unused irrigation well located in Oakley Fan.
Year of measurement is shown on the horizontal axis and groundwater level is shown on vertical axis.
Source: IDWR 2005.

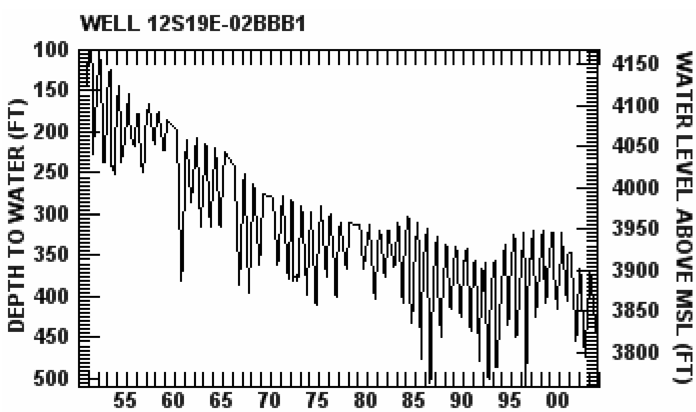


Figure G-13. Measured groundwater levels in an active irrigation well located in Oakley Fan.
Year of measurement is shown on the horizontal axis and groundwater level is shown on vertical axis.
Source: IDWR 2005.

Modeled Effects of CREP on Surface Water Quantity

CREP implementation would decrease the amount of water used for irrigation, increasing the water available to area streams, lakes, reservoirs, and aquifers. The impacts of CREP implementation on water quantity has been quantified using the IDWR model.

The CREP model run evaluated two different scenarios (Contor 2005):

- Distributed Scenario: This scenario distributed the acres enrolled in CREP throughout the CREP project area.
- Near-River Scenario: In this scenario, acres enrolled in CREP were concentrated near the Snake River.

Table 1 shows the distribution of CREP acres for each scenario.

Table G-1. Distribution of CREP acres for each model scenario.

County	Distributed Scenario Acres	Near-river Scenario Acres
Bannock	0	0
Bingham	15,000	27,500
Blaine	5,000	5,000
Bonneville	0	0
Butte	5,000	0
Cassia	17,000	27,500
Clark	4,000	0
Fremont	11,000	0
Gooding	5,000	9,000
Jefferson	11,000	0
Jerome	7,000	12,000
Lincoln	4,000	3,000
Madison	7,000	0
Minidoka	9,000	16,000
Power	0	0
Total	**100,000**	**100,000**

Source: Contor 2005.

Table 2 summarizes the results of both model runs. Depending on the location of the enrolled CREP acres, the increase of surface water flow in the Snake River would be between 192,390 acre-feet to 206,935 acre-feet. In general, more benefits would be achieved under the near-river scenario. However, the benefits of distribution differed between the reaches above and below Milner Dam. In the above-Milner reach, more benefits were realized in the distributed scenario, while the near-river scenario offered more benefits in the below-Milner reach (Figures 14 and 15). For the benefits presented in Table 2, it is assumed that, once enrolled in CREP, land would never be returned to irrigation (the “forever” scenario). After 15 years of CREP, the model estimated that about 50 percent of these benefits would realized (Figure 16) (Contor 2005).

Table G-2. Summary of CREP benefits to Snake River.

Reach		Distributed Scenario Benefit, Acre ft/year	Distributed Scenario Benefit, % of Total	Near River Scenario Benefit, Acre ft/year	Near River Scenario Benefit, % of Total
Above-Milner Aggregated Reaches	Ashton to Rexburg	35,576	2.6%	5,480	18.5%
	Heise to Shelley	11,831	1.8%	3,796	6.1%
	Shelley to Near Blackfoot	18,950	10.3%	21,227	9.9%
	Near Blackfoot to Neeley	62,191	37.7%	78,004	32.3%
	Neeley to Minidoka	9,872	6.8%	14,049	5.1%
	Subtotal	**138,419**	**72.0%**	**122,555**	**59.2%**
Below-Milner Aggregated Reaches	Devil's Washbowl to Buhl	27,857	14.5%	42,853	20.7%
	Buhl to Thousand Springs	11,593	6.0%	18,476	8.9%
	Thousand Springs	6,827	3.5%	10,895	5.3%
	Thousand Springs to Malad	670	0.3%	1,075	0.5%
	Malad	6,745	3.5%	10,621	5.1%
	Malad to Bancroft	269	0.1%	459	0.2%
	Subtotal	**53,961**	**28.0%**	**84,380**	**40.8%**
Total		**192,380**	**100.0%**	**206,935**	**100.0%**

Source: Contor 2005.

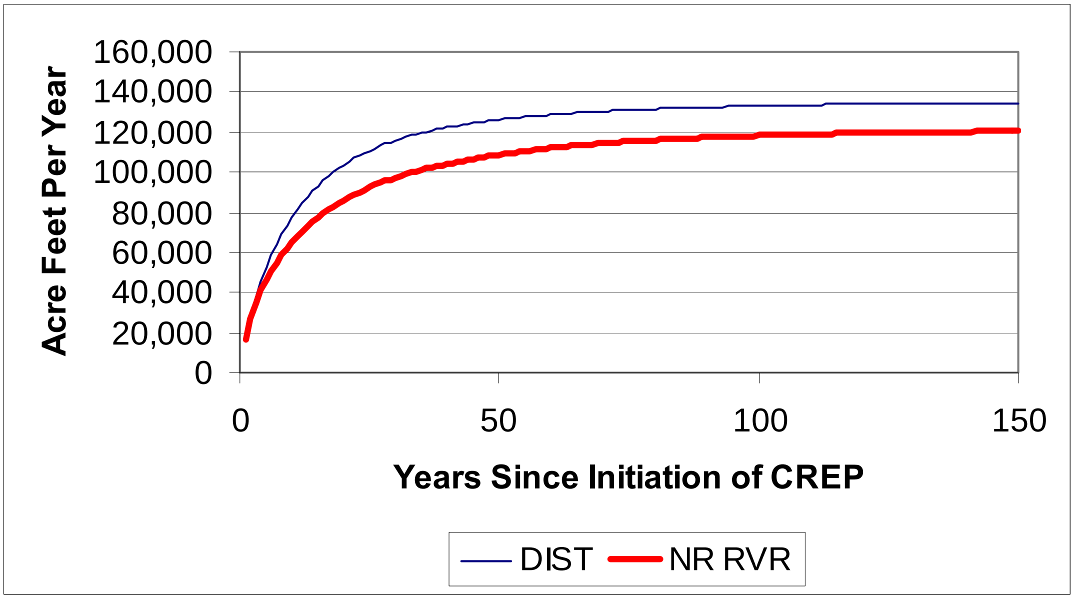


Figure G-14. Benefits appearing at river for above-Milner aggregated reaches.
Source: Contor 2005.

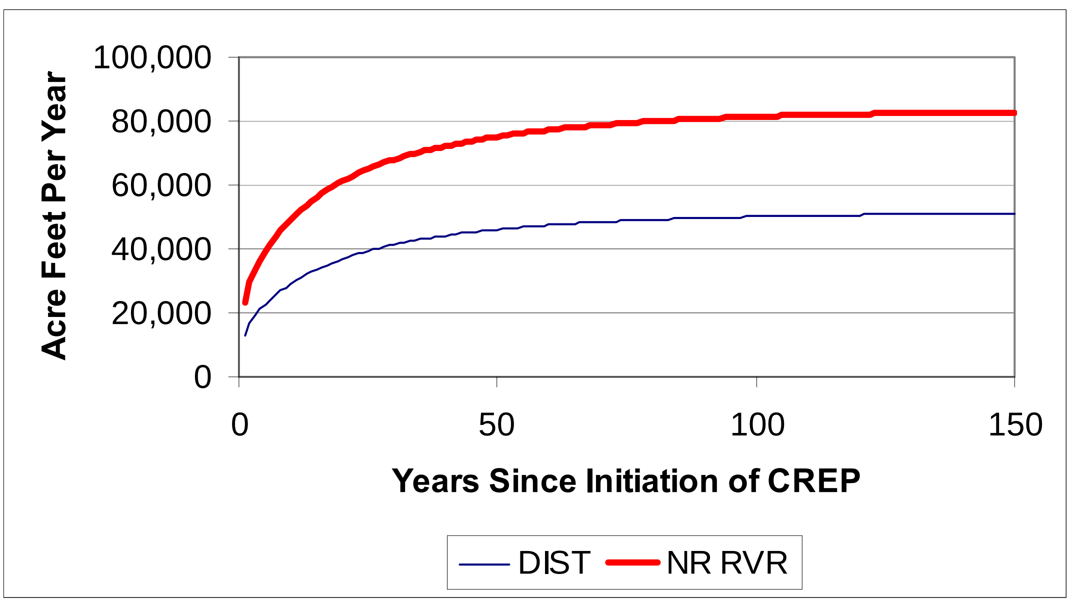


Figure G-15. Benefits appearing at river for below-Milner aggregated reaches.
Source: Contor 2005.

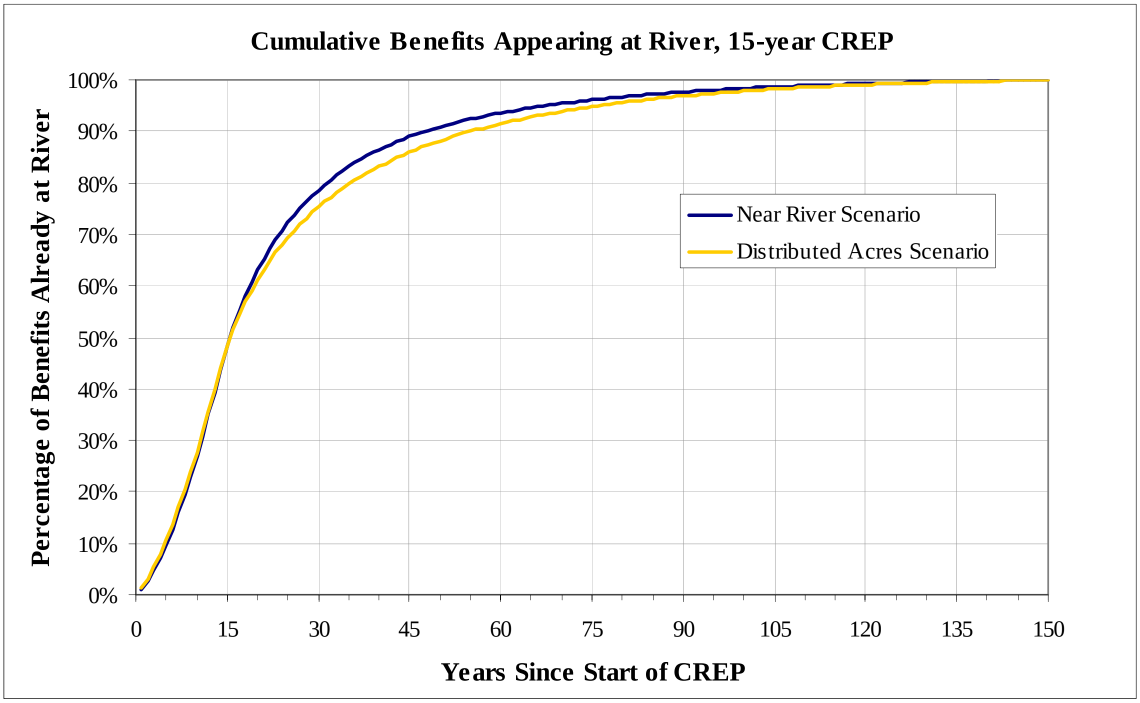


Figure G-16. Cumulative benefits of CREP appearing at the Snake River.
Source: Contor 2005.

References

Contor, B.A. 2005. Email to K.Forsgren concerning CREP benefits. 9 Feb.

Cosgrove, D., B.A. Contor, , A. Wylie, , N. Rinehart, and G. Johnson. 2004. Snake River Plain Aquifer Model Scenario: Hydrologic Effects Of Continued 1980-2002 Water Supply And Use Conditions, "Base Case Scenario". Idaho Water Resources Research Institute, University of Idaho for the Idaho Department of Water Resources.

Idaho Department of Water Resources. 1997. Upper Snake River Basin Study Summary. *http://www.idwr.idaho.gov/about/issues/upsnake.txt*

Idaho Department of Water Resources. 2005. Online Ground Water Level Database. *http://www.idwr.idaho.gov/hydrologic/info/obswell/*

Johnson, G., D. Cosgrove, and M. Lovell. 1998. Snake River Basin Surface Water-Ground Water Interaction. Idaho Water Resource Research Institute, University of Idaho. *http://imnh.isu.edu/digitalatlas/hydr/snakervr/rcsm.htm.*

Johnson G.S., A. Wylie, D. Cosgrove, R. Jensen, L. Janczak, and D. Eldredge. 2002. Spring Discharge along the Milner to King Hill Reach of the Snake River. Idaho Water Resources Research Institute University of Idaho. Idaho Falls.

Proposal by State of Idaho, Water Conservation Partnership. 2005. Concerning the implementation of the Idaho Conservation Reserve Enhancement Program (CREP). *Final.*

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix H: Summary of Comments Received on the Draft PEA

There were four comments received concerning the Draft PEA. Three of the comments received were in support of Alternative B, one of the comments expressed concerns about the geographical boundaries of CREP. The agency response to this concern is included below the comment. These comments are included below.

1. Email from Mr. H. Norman Wright, American Falls City Councilman, in support of Alternative B.

```
-----Original Message-----
From: Wright, Norm - American Falls, ID
Sent: Thursday, January 12, 2006 8:10 AM
To: Dobbin, Tom - Boise, ID
Subject: Idaho CREP

Tom: I am sending this under a different hat, that is as an American
Falls City Councilman.

The City of American Falls has been extremely interested and assisted
in the development of the CREP. We are gravely concerned about the
continued deterioration of the aquifer on the Snake River Basin and the
negative impacts that could affect our city residents and businesses.
We believe that the CREP could greatly assist not only, the
conservation of water but also, conservation of our wildlife and assist
in controlling erosion. Therefore it would be the stand of the City of
American Falls to support the alternative B in the environmental
assessment proposal.

Thank You

H. Norman Wright, American Falls City Councilman
```

2. Email from Senator Clint Stennett, Senate Minority Leader, with concerns about Idaho CREP's enrollment eligibility rules.

```
-----Original Message-----
From: Clint Stennett [mailto:clintstennett@earthlink.net]
Sent: Thursday, January 12, 2006 4:29 PM
To: Dobbin, Tom - Boise, ID
Subject: CREP rules

Dear Tom,

It has come to my attention that the rules for CREP have been written
as

to bias the eligibility for the program based on making highly erosion
able soils a priority.
```

I have invested considerable time and effort to include the Lost River Valley as a part of the CREP program. The primary source and long term viability of the ESPA is depended on reconnecting the Lost River and allowing it to natural sink and thus recharge the aquifer.

There is a great deal of interest in the program in the Lost River Valley. Writing the rules in such a way to summarily eliminate the farmers and ranchers on Lost River is a travesty.

I urge you to reconsider the high erosion soils criteria to qualify for the program.

Thank you,
Senator Clint Stennett
Minority Leader

Agency Response

The Conservation Reserve Enhancement Program (CREP) is part of the Conservation Reserve Program (CRP) and is administrated under CRP rules. CREP is unique in that each project proposal and agreement is tailored to address recognized conservation concerns of the State and the Nation. USDA encourages proposal development beginning at the local level to address areas and conservation issues. Upon the submitting a written proposal to the Secretary, USDA through the Farm Service Agency (FAST), negotiates with the State to reach a consensus on a number of issues such as the geographic area to be offered as part of the CREEP. States may later submit an amendment proposing changes to a signed agreement to better achieve program goals that could include additional geographic areas provided sufficient justification is provided supporting proposed changes.

3. Letter sent by Ms. Lynn Tominaga, Executive Director for Idaho Ground Water Appropriators, Inc., in support of Alternative B

IDAHO GROUND WATER APPROPRIATORS, INC.
P.O. Box 2624, Boise, ID 83701
Phone: 208.381.0294
Fax: 208.344.8585

Officers:
Tim Deeg, President
2957 Deeg Road
America Falls, ID 83211

Richard Smith, Vice President
P.O. Box 3
Rexburg, ID 83440

Randall C. Budge, Secretary
P.O. Box 1391
Pocatello, ID 83204-1391
Phone: 208.232-6101

Lynn Tominaga
Executive Director,
P.O. Box 2624
Boise, Idaho 83701-2624
Phone: 208.381-0294

GWD Members:
Aberdeen American Falls GWD
Bingham GWD
Bonneville-Jefferson GWD
Madison GWD
Magic Valley GWD
North Snake GWD
South West ID
City Members:
City of American Falls
City of Blackfoot
City of Chubbuck
City of Heyburn
City of Jerome
City of Paul
City of Post Falls
City of Rupert
Business Members:
Busch Agricultural
Jerome Cheese
United Water of Idaho

January 11, 2006

Mr. Thomas E. Dobbin
State Environmental Coordinator
FSA IDAHO
9173 West Barnes, Suite B
Boise, Idaho 83709
tom.dobbin@id.usda.gov

RE: Comments on the Idaho CREP Environmental Assessment

Dear Mr. Dobbin:

My name is Lynn Tominaga, Executive Director for the Idaho Ground Water Appropriators, Inc. ("IGWA") represents agricultural, industrial and municipal ground water users throughout Idaho. Our members represent thousands of ground water users who irrigate over 750,000 acres of agricultural land in southern Idaho, serve municipal customers and meet industrial needs. The association's goals include raising awareness of ground water usage and its critical importance to our economy and the needs of our citizens. IGWA is supportive of opportunities that preserve and protect the agricultural economy while maintaining or enhancing ground water quality.

My comments will address the Idaho CREP Environmental Assessment and its alternatives. IGWA is in favor of Alternative B (Proposed Action) which is implementing the CREP on the Eastern Snake Plain Aquifer. Groundwater users have been supportive of the Idaho CREP and were instrumental in helping develop the program with state and federal agencies. The objectives outlined in Alternative B provide the greatest opportunity to conserve water and improve habitat conditions without having detrimental effects to Idaho's largest industry, agriculture.

Idaho 's groundwater users believe the issues outlined in chapter two provide many opportunities to improve environmental conditions on the Eastern Snake Plain Aquifer and Mountain Home Aquifer in the long term. The CREP cover grasses and shrubs outlined in CP 2, CP 4D, CP22, CP 12, and CP 25 will help reduce wind and water erosion but also add needed cover to protect upland birds and wildlife from predators.

Please be assured that Idaho ground water users are in full support of Idaho CREP program and wish to have it implemented as soon as possible. Thank you for this opportunity to provide input into this worthwhile program.

If you have any questions about our support or this letter please feel free to contact me at 208-381-0294 or e-mail: lynn_tominaga@hotmail.com.

Sincerely yours,

Lynn Tominaga

Executive Director

4. Letter sent by Angelina M. Leavitt on behalf of the North Snake Groundwater District expressing support for Alternative B.

North Snake Groundwater District

152 East Main Street

Jerome, Idaho 83338

Phone: 208-324-8995

Fax: 208-324-8033

Officers:

Mike Faulkner, Chairman

Lynn Carlquist, Vice-Chairman

Rodney Bolich, Director

Gary Bowman, Director

Rex Minchey, Director

Arie Roeloffs, Director

Don Aardema, Director

January 12, 2006

Mr. Thomas E. Dobbin
State Environmental Coordinator
FSA IDAHO
9173 West Barnes, Suite B
Boise, Idaho 83709
Tom.dobbin@id.usda,gov

RE: Comments on the Idaho CREP Environmental Assessment

Dear Mr. Dobbin:

The North Snake Groundwater District is in favor of Alternative B (Proposed Action) which is implementing CREP on the Eastern Snake Plain Aquifer.

Sincerely yours,

Angelina M. Leavitt
Secretary/Clerk
For The Board of Directors