

**Final Environmental Assessment for the  
Diamond Fork System  
Proposed Action Modifications**

**June 13, 2000**

**Prepared for**

**Central Utah Water Conservancy District (Lead Agency)  
Utah Reclamation Mitigation and Conservation Commission (Joint-Lead Agency)  
U.S. Department of the Interior (Joint-Lead Agency)**

**Prepared by**

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Boise, Idaho**

**FINDING OF NO SIGNIFICANT IMPACT**

**Diamond Fork System  
Proposed Action Modifications**

United States Department of the Interior  
Central Utah Project Completion Act Office  
Provo, Utah

**CUPCA-FONSI-00-001**  
June 2000

Recommended:

  
\_\_\_\_\_  
Program Coordinator

JUN 15 2000

\_\_\_\_\_  
Date

Approved:

  
\_\_\_\_\_  
Program Director

JUN 15 2000

\_\_\_\_\_  
Date

# **FINDING OF NO SIGNIFICANT IMPACT**

## **Diamond Fork System - Proposed Action Modifications**

### **FINDING**

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, and the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR Part 1500-1508), the Department of the Interior (Department) has determined that implementing the modifications to the Proposed Action Alternative described in the Final Environmental Assessment for the Diamond Fork System Proposed Action Modifications, dated June 16, 2000, (Modifications EA) will not have a significant impact on the quality of the human environment and that an environmental impact statement is not required. The Proposed Action Alternative was described in the July 1999 Diamond Fork System Final Supplement to the Final Environmental Impact Statement (FES 99-25) (FS-FEIS).

### **DECISION**

The Department has decided to implement the Proposed Action Modifications as described in the June 2000 Modifications EA. The following features comprise the Proposed Action Modifications: 1) Sixth Water Connection to Upper Diamond Fork Shaft; 2) Upper Diamond Fork Shaft; 3) Upper Diamond Fork Flow Control Structure; 4) Upper Diamond Fork Tunnel; 5) Monks Hollow Overflow Structure; 6) Diamond Fork Creek Outlet; 7) Diamond Fork Pipeline Extension; 8) Connection to Diamond Fork Pipeline; and 9) Access Road and Road Reconstruction. These water conveyance features will be sized to convey the same flow volumes as described in the Diamond Fork System FS-FEIS.

The Proposed Action Modifications will be operated on an interim basis the same as described in Chapter 1, Section 1.4, Pages 1-35 to 1-45 of the FS-FEIS, including the quantity and timing of minimum streamflows and the flexibility to other operational scenarios, except for the discharge location of the minimum streamflows into Diamond Fork Creek which would be about 5,850 feet upstream of the location described in the FS-FEIS. This change in location would increase the flows in this reach of Diamond Fork Creek over that described in the FS-FEIS.

The potential for generating hydroelectric power would remain the same as described in Chapter 1, Section 1.3.1, Page 1-13 of the FS-FEIS. The modifications would shift the hydroelectric generating potential from a structure along the Diamond Fork Pipeline up to the Upper Diamond Fork Shaft and Flow Control Structure.

### **REASONS FOR THE DECISION**

The FS-FEIS, which was completed in July 1999 addressed potential impacts related to construction and operation of the features proposed for completing the Diamond Fork System. The Proposed Action Alternative included a series of tunnels and pipelines to convey water through the mountainous terrain of Diamond Fork Canyon. The Department's September 29, 1999, Record of Decision (ROD) for the Diamond Fork System recognized that required value engineering studies could provide recommendations with significant environmental benefits and/or reductions in project costs, and indicated that the Joint-Lead Agencies could modify the Proposed Action Alternative accordingly.

The value engineering process was required by Section 4306 of Public Law 104-106, which amended the Federal Procurement Policy Act (41 U.S.C. 401). It states: "Each executive agency shall establish and maintain cost-effective value engineering procedures and processes." In addition to this law, the Office of Management and Budget Circular A-131 requires Federal departments and agencies to include value

engineering on all projects using Federal funds exceeding \$500,000. As a result, a value engineering study on the Proposed Action was completed. This study identified several modifications that could potentially reduce the costs, reduce the environmental impacts, and improve the environmental benefits. Bids were requested and received on both the Proposed Action and the Proposed Action Modifications. The bids received on the Proposed Action Modifications were lower than the Proposed Action, therefore, because of the tremendous environmental benefits and lower costs associated with the modifications, the Proposed Action Modifications have been selected. However, the purposes and needs of the Proposed Action Modifications remain the same as those described in the FS-FEIS.

## **PUBLIC INVOLVEMENT**

The Joint-Lead Agencies met on November 18, 1999, and January 12, 2000, to discuss design aspects of the Proposed Action Modifications, the content of the environmental assessment (EA), and preparation procedures. The Joint-Lead Agencies initiated public involvement activities on January 19, 2000, by meeting with the cooperating agencies to discuss and present the proposed modifications, the preparation of the Modifications EA, and to discuss any issues and concerns of the cooperating agencies. A follow-up meeting was held on January 25, 2000, with the Utah Division of Wildlife Resources to discuss concerns over minimum streamflows and emergency releases from the Diamond Fork Creek Outlet. A Notice Of Intent to prepare the Diamond Fork System Proposed Action Modifications EA was published in the January 25, 2000 Federal Register (Volume 65, Number 16, Page 3971-3972). A copy of the Federal Register notice along with a letter explaining the purpose of the Modifications EA and a brief description of the proposed modifications was mailed to everyone who received a copy of the Diamond Fork System FS-FEIS.

A Notice of Availability of the Draft Modifications EA was published in the March 20, 2000, Federal Register (Volume 65, Number 54, Page 14998-14999), and a copy of the Draft Modifications EA was sent to all the agencies, groups, and individuals who received a copy of the FS-FEIS on March 24, 2000. Comments on the Draft Modifications EA were due on April 27, 2000. To facilitate and coordinate input and/or comments from the cooperating agencies, the Joint-Lead Agencies and cooperating agencies met on April 12, 2000. The Draft Modifications EA was sent to 125 organizations and individuals for review which resulted in five (5) letters of comment. The letters of comment and the Joint-Lead Agencies' responses appears in the Final Modifications EA, and all comment letters are available for inspection at the Central Utah Water Conservancy District, the Utah Reclamation Mitigation and Conservation Commission, and the Department.

## **SUMMARY OF ENVIRONMENTAL IMPACTS**

The affected environment (baseline conditions) of resources of the human environment that would be impacted by construction and operation of the Proposed Action Modifications are described in the Final Modifications EA. It also documents the environmental impacts to the quality of the human environment.

The impact analysis in the Modifications EA focuses only on the impacts that would occur from construction and operation of the Proposed Action Modifications. It does not repeat any environmental conditions and impacts that remain unchanged from those described in the FS-FEIS. The impact analysis incorporates the Standard Operating Procedures described in Chapter 1, Section 1.7.8 and Section 1.7.9, and the Noxious Weed Control Plan (Appendix A), of the FS-FEIS. It also incorporates the Environmental Commitments shown in Appendix A of the Modifications EA. The impact analysis is supported by five technical memoranda that provide detailed information on Water Resources, Wetland Resources, Wildlife Resources, Aquatic Resources, and Visual Resources. A summary and comparison of the impacts of the Proposed Action Modifications and the Proposed Action are shown in Table 2-10 of the Modifications EA.

The environmental analyses indicates that the direct, indirect and cumulative impacts associated with

Proposed Action Modifications are less than the Proposed Action and would be temporary, short-term, and insignificant.

### **MITIGATION MEASURES**

Implementation of the Proposed Action Modifications would not require any monitoring in addition to what was described for the Proposed Action in Chapter 3, Section 3.20, Pages 3-207 through 3-218, of the FS-FEIS. However, it should be noted that the monitoring for black bear (see Chapter 3, Section 3.20.4.1.2, Page 3-209 of the FS-FEIS) would not be required for the Proposed Action Modifications.

The environmental commitments included in the Department's September 29, 1999, ROD on the Diamond Fork System FS-FEIS have not changed, except to include the additional environmental commitments that have been added as a result of the Modifications EA for the Proposed Action Modifications (see Appendix A of the Modifications EA). The Joint-Lead Agencies in coordination with the cooperating agencies will identify, document, delete, and/or modify the environmental commitments associated with FS-FEIS Proposed Action features that are no longer being constructed, and therefore, are no longer applicable to the Proposed Action Modifications. After appropriate public involvement, the changes in the environmental commitments will be documented in a memorandum of understanding among the Joint-Lead Agencies with the concurrence of the Fish and Wildlife Service and the Forest Service.

# **Diamond Fork System Proposed Action Modifications**

## **Finding of No Significant Impacts Utah Reclamation Mitigation and Conservation Commission June 2000**

### **Summary**

In this Finding of No Significant Impact (FONSI), the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission) documents the selection of its decision to support implementation of the Diamond Fork System Proposed Action Modifications. The Mitigation Commission and, by separate decision, the Department of the Interior, selected the Proposed Action to be constructed as described in the 1999 Final Supplement to the 1984 Diamond Fork Power System Final Environmental Impact Statement (1999 FS-FEIS) (FEIS 99-25), filed with the Environmental Protection Agency on July 1, 1999. The Proposed Action Modifications were recommended following a Value-Engineering (VE) process conducted on the 1999 Proposed Action. The VE team recommended a design-build approach for completing an all-tunnel conveyance from the Sixth Water Outlet (existing) to the Diamond Fork Pipeline (existing). The following features comprise the Proposed Action Modifications: 1) Sixth Water Connection to Upper Diamond Fork Shaft; 2) Upper Diamond Fork Shaft; 3) Upper Diamond Fork Flow Control Structure; 4) Upper Diamond Fork Tunnel; 5) Monks Hollow Overflow Structure; 6) Diamond Fork Creek Outlet; 7) Diamond Fork Pipeline Extension; 8) Connection to Diamond Fork Pipeline; and 9) Access Road and Road Reconstruction. These water conveyance features will be sized to convey the same flow volumes as described in the Diamond Fork System FS-FEIS. These features would be constructed in place of a series of pipelines, siphons, tunnels, and other facilities described in the 1999 FS-FEIS and will allow the Diamond Fork System to be completed at reduced cost, with reduced environmental impacts, and overall improved operational and environmental benefits. The Diamond Fork Proposed Action Modifications facilities will convey the transmountain diversions of the Central Utah Project (CUP) and Strawberry Valley Project (SVP). These facilities will remove environmentally damaging high flows from natural stream courses. Additionally, minimum instream flows will be provided. Removal of high flows and provision of minimum flows will allow for the restoration of a more natural ecosystem.

Implementation of the Proposed Action Modifications responds to the Mitigation Commission's

and the Department of the Interior's need to mitigate for impacts of the Bonneville Unit of the Central Utah Project (CUP) and other federal reclamation projects. The Mitigation Commission, Department of the Interior and the Central Utah Water Conservancy District served as the Joint-Lead Agencies in the preparation of the 2000 Final Proposed Action Modifications EA (Modifications EA). The Proposed Action Modifications also respond to the need to transport, on average, 147,600 acre-feet of water annually from the Colorado River drainage to the Utah Lake drainage including 86,100 acre-feet of CUP water to facilitate exchanges of water from Utah Lake to Jordanelle Reservoir for municipal and industrial supplies. Under the Proposed Action Modifications, the water will be conveyed through the Diamond Fork System and Strawberry Tunnel (an existing feature). The Program Director, Central Utah Project Completion Act Office, Department of the Interior, will issue a separate FONSI for the Diamond Fork System Final EA. The separate decision is necessitated by the responsibility and authority of the Department of the Interior for other aspects of the project beyond the scope of the Mitigation Commission to mitigate for reclamation projects.

## **Finding**

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, and the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR Part 1500-1508), the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission) has determined that implementing the modifications to the Proposed Action Alternative described in the Final Environmental Assessment for the Diamond Fork System Proposed Action Modifications, dated May 2000, (Modifications EA) will not have a significant impact on the quality of the human environment and that an environmental impact statement is not required. The Proposed Action Alternative was described in the July 1999 Diamond Fork System Final Supplement to the Final Environmental Impact Statement (FES 99-25) (FS-FEIS).

## **Decision**

The Mitigation Commission has decided to implement the Proposed Action Modifications as described in the May 2000 Modifications EA. The following features comprise the Proposed Action Modifications: 1) Sixth Water Connection to Upper Diamond Fork Shaft; 2) Upper Diamond Fork Shaft; 3) Upper Diamond Fork Flow Control Structure; 4) Upper Diamond Fork Tunnel; 5) Monks Hollow Overflow Structure; 6) Diamond Fork Creek Outlet; 7) Diamond Fork Pipeline Extension; 8) Connection to Diamond Fork Pipeline; and 9) Access Road and Road Reconstruction. These water conveyance features will be sized to convey the same flow volumes as described in the Diamond Fork System FS-FEIS.

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location of the minimum streamflows into Diamond Fork Creek which would be about 5,850 feet upstream of the location described in the FS-FEIS. This change in location would increase the flows in this reach of Diamond Fork Creek over that described in the FS-FEIS.

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## **Reasons for the Decision**

The FS-FEIS, which was completed in July 1999, addressed potential impacts related to construction and operation of the features proposed for completing the Diamond Fork System. The Proposed Action Alternative included a series of tunnels and pipelines to convey water through the mountainous terrain of Diamond Fork Canyon. The Mitigation Commission's November 19, 1999, Record of Decision (ROD) for the Diamond Fork System recognized that required value engineering studies<sup>1</sup> could provide recommendations with significant environmental benefits and/or reductions in project costs, and indicated that the Joint-Lead Agencies could modify the Proposed Action Alternative accordingly.

A value engineering study was completed on the Proposed Action. This study identified several modifications that could potentially reduce the costs, reduce the environmental impacts, and improve the environmental benefits. Bids were requested and received on both the Proposed Action and the Proposed Action Modifications. The bids received on the Proposed Action Modifications were lower than the Proposed Action, therefore, because of the environmental benefits and lower costs associated with the modifications, the Proposed Action Modifications have been selected. However, the purposes and needs of the Proposed Action Modifications remain the same as those described in the FS-FEIS.

## **Public Involvement**

The Joint-Lead Agencies met on November 18, 1999, and January 12, 2000, to discuss design aspects of the Proposed Action Modifications, the content of the environmental assessment (EA), and preparation procedures. The Joint-Lead Agencies initiated public involvement activities on January 19, 2000, by meeting with the cooperating agencies to discuss and present the proposed modifications, the preparation of the Modifications EA, and to discuss any issues and concerns of

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## **Summary of Environmental Impacts**

The affected environment (baseline conditions) of resources of the human environment that would be impacted by construction and operation of the Proposed Action Modifications are described in the Final Modifications EA. It also documents the environmental impacts to the quality of the human environment.

The impact analysis in the Modifications EA focuses only on the impacts that would occur from construction and operation of the Proposed Action Modifications. It does not repeat any environmental conditions and impacts that remain unchanged from those described in the FS-FEIS. The impact analysis incorporates the Standard Operating Procedures described in Chapter 1, Section 1.7.8 and Section 1.7.9, and the Noxious Weed Control Plan (Appendix A), of the FS-FEIS. It also incorporates the Environmental Commitments shown in Appendix A of the Modifications EA. The impact analysis is supported by five technical memoranda that provide detailed information on Water Resources, Wetland Resources, Wildlife Resources, Aquatic Resources, and Visual Resources. A summary and comparison of the impacts of the Proposed Action Modifications and the Proposed Action are shown in Table 2-10 of the Modifications EA.

The environmental analyses indicate that the direct, indirect and cumulative impacts associated with Proposed Action Modifications are less than the Proposed Action and would be temporary, short-term, and insignificant.

## **Mitigation Measures**

Implementation of the Proposed Action Modifications would not require any monitoring in addition to what was described for the Proposed Action in Chapter 3, Section 3.20, Pages 3-207 through 3-218, of the FS-FEIS. However, it should be noted that the monitoring for black bear (see Chapter 3, Section 3.20.4.1.2, Page 3-209 of the FS-FEIS) would not be required for the Proposed Action Modifications.

The environmental commitments included in the Mitigation Commission's November 19, 1999, ROD on the Diamond Fork System FS-FEIS have not changed, except to include the additional environmental commitments that have been added as a result of the Modifications EA for the Proposed Action Modifications (see Appendix A of the Modifications EA). The Joint-Lead Agencies in coordination with the cooperating agencies will identify, document, delete, and/or modify the environmental commitments associated with FS-FEIS Proposed Action features that are no longer being constructed, and therefore, are no longer applicable to the Proposed Action Modifications. The changes in the environmental commitments will be documented in a memorandum of understanding among the Joint-Lead Agencies with the concurrence of the Fish and Wildlife Service, the Forest Service, and other agencies as appropriate.

## **Finding of No Significant Impacts**

Based on information contained in the EA and supporting documentation, a Finding of No Significant Impact (FONSI) is made on this action in compliance with the provisions of Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands). This action would also not significantly affect the quality of the human environment, within the meaning of Section 102(2)(C) of the National Environment Policy Act, for the following reasons.

1. The environmental impacts of this action are not considered significant.
2. Public health and safety are minimally affected by this action.
3. No adverse effects would be caused to unique geographic characteristics, park, refuge or recreation lands, wilderness areas, wild and scenic rivers, sole or principal drinking water aquifers, prime farmlands, wetlands, floodplain or ecologically significant or critical areas by this action.
4. None of the identified environmental effects are considered highly controversial.
5. None of the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
6. The action sets no precedent or decision in principle about other actions which could pose significant environmental effects.

7. This action is not directly related to other potential future actions.
8. This action will have no adverse effects on properties listed or eligible for listing in the National Register of Historic Places.
9. This action will not have significant adverse effects on species listed or proposed to be listed on the List of Endangered Species or on Designated Critical Habitat.
10. This action would not threaten any violations of applicable laws or requirements imposed for protection of the environment.

### **Implementation Date**

Implementation of this decision may occur immediately upon signing.

### **Further Information**

Please direct questions on the EA or FONSI to Mark Holden, Projects Manager; Utah Reclamation Mitigation and Conservation Commission; 102 West 500 South, Suite #315; Salt Lake City, Utah 84101 (Phone 801-524-3146).

Approved by:

  
Michael C. Weland, Executive Director

Date:

June 15, 2020

## COVER SHEET

Environmental Assessment for the Diamond Fork System Proposed Action Modifications

( ) Draft ( X ) Final

### Joint Lead Agencies

Central Utah Water Conservancy District (CUWCD)

U.S. Department of the Interior (DOI)

Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission)

### Cooperating Agencies

U.S. Environmental Protection Agency

U.S. Fish and Wildlife Service

U.S. Department of Agriculture, Forest Service

U.S. Corps of Engineers

Utah Division of Wildlife Resources

Utah Division of Water Rights

### Counties that Could Be Affected

Utah County, Utah

### Abstract

This Environmental Assessment (EA) covers the modifications made to the Proposed Action described in Chapter 1 of the FS-FEIS (CUWCD 1999a). The modifications were developed as a result of the Value Engineering (Public Law 104-106) process on the Diamond Fork System Proposed Action design. The modifications would replace or modify the following Proposed Action features:

- Sixth Water Connection to Tanner Ridge Tunnel
- Tanner Ridge Tunnel
- Diamond Fork Siphon
- Red Mountain Tunnel
- Red Hollow Pipeline and Connection to Diamond Fork Pipeline
- Diamond Fork Creek Outlet (modified and location changed)

The Proposed Action Modifications consist of the following features:

- Sixth Water Connection to Upper Diamond Fork Shaft
- Upper Diamond Fork Shaft
- Upper Diamond Fork Flow Control Structure
- Upper Diamond Fork Tunnel
- Monks Hollow Overflow Structure
- Diamond Fork Creek Outlet
- Diamond Fork Pipeline Extension
- Connection to Diamond Fork Pipeline
- Access Road and Road Reconstruction
- Fiber Optic Cable

The EA is tiered to the FS-FEIS (CUWCD 1999a) and only addresses the impacts of the Proposed Action Modifications. It does not repeat material from the FS-FEIS, but references it where appropriate.

### Other Requirements Served

This EA is intended to serve as the Biological Assessment under the provisions of Section 7 consultation requirements of the Endangered Species Act, 16 USC 1531-1544.

**Date Draft EA Made Available to the Public:** March 27, 2000

**Date Final EA Made Available to the Public:** June 13, 2000

# Contents

Page

Cover Sheet  
Table of Contents  
List of Preparers

## Chapter 1 – Purpose and Need for Action and Description of Proposed Action Modifications

1.1 Introduction and Reason for Modifications ..... 1-1  
1.2 Purpose of the Environmental Assessment ..... 1-2  
1.3 Relationship of the EA to the Diamond Fork System FS-FEIS ..... 1-2  
1.4 Purpose and Need ..... 1-2  
1.5 Description of the Proposed Action Modifications..... 1-3  
    1.5.1 Introduction..... 1-3  
    1.5.2 Proposed Action Modifications Features ..... 1-5  
        1.5.2.1 Sixth Water Connection to Upper Diamond Fork Shaft..... 1-5  
        1.5.2.2 Upper Diamond Fork Shaft ..... 1-6  
        1.5.2.3 Upper Diamond Fork Flow Control Structure..... 1-6  
        1.5.2.4 Upper Diamond Fork Tunnel ..... 1-6  
        1.5.2.5 Monks Hollow Overflow Structure ..... 1-7  
        1.5.2.6 Diamond Fork Creek Outlet ..... 1-7  
        1.5.2.7 Diamond Fork Pipeline Extension..... 1-8  
        1.5.2.8 Connection to Diamond Fork Pipeline ..... 1-8  
        1.5.2.9 Access Road and Road Reconstruction ..... 1-8  
        1.5.2.10 Fiber Optic Cable ..... 1-10  
    1.5.3 Land Management Status and Right-of-Way Acquisition ..... 1-10  
    1.5.4 Tunnel and Shaft Construction Procedures..... 1-10  
        1.5.4.1 Construction Sequence ..... 1-10  
        1.5.4.2 Waste Rock Management and Disposal ..... 1-11  
    1.5.5 Pipeline Construction Procedures ..... 1-12  
    1.5.6 Construction Staging Areas ..... 1-13  
1.6 Interim Operation of the Proposed Action Modifications..... 1-13  
1.7 Summary of Other Characteristics ..... 1-19

## Chapter 2 – Affected Environment and Environmental Consequences

2.1 Introduction..... 2-1  
2.2 Resources Not Specifically Covered..... 2-1  
2.3 Water Resources ..... 2-2  
    2.3.1 Introduction..... 2-2  
    2.3.2 Description of Impact Area of Influence ..... 2-2  
    2.3.3 Affected Environment (Baseline Conditions)..... 2-2  
    2.3.4 Impact Analysis ..... 2-2  
        2.3.4.1 Introduction ..... 2-2  
        2.3.4.2 Impacts During Construction..... 2-2  
        2.3.4.3 Impacts During Operation ..... 2-3  
        2.3.4.4 Impact Summary ..... 2-3  
2.4 Water Quality..... 2-3  
    2.4.1 Introduction..... 2-3  
    2.4.2 Description of Impact Area of Influence ..... 2-3  
    2.4.3 Affected Environment (Baseline Conditions)..... 2-3

**Contents  
(continued)**

**Page**

**Chapter 2 – Affected Environment and Environmental Consequences (continued)**

2.4.4	Impact Analysis	
2.4.4.1	Impacts During Construction.....	2-3
2.4.4.2	Impacts During Operation .....	2-4
2.4.4.3	Impact Summary .....	2-4
2.5	Wetlands .....	2-5
2.5.1	Introduction.....	2-5
2.5.2	Description of Impact Area of Influence .....	2-5
2.5.3	Affected Environment (Baseline Conditions).....	2-5
2.5.3.1	Sixth Water Connection to Upper Diamond Fork Shaft, and Upper Diamond Fork Shaft .....	2-5
2.5.3.2	Diamond Fork Creek Outlet .....	2-5
2.5.3.3	Diamond Fork Road Reconstruction .....	2-5
2.5.4	Impact Analysis .....	2-6
2.5.4.1	Methodology.....	2-6
2.5.4.2	Significance Criteria .....	2-6
2.5.4.3	Impacts During Construction.....	2-6
2.5.4.3.1	Upper Diamond Fork Shaft.....	2-6
2.5.4.3.2	Diamond Fork Creek Outlet.....	2-6
2.5.4.3.3	Road Reconstruction .....	2-6
2.5.4.4	Impacts During Operation .....	2-6
2.5.4.5	Impact Summary .....	2-6
2.6	Aquatic Resources .....	2-7
2.6.1	Introduction.....	2-7
2.6.2	Description of Impact Area of Influence .....	2-7
2.6.3	Affected Environment (Baseline Conditions).....	2-7
2.6.4	Impact Analysis .....	2-7
2.6.4.1	Impacts During Construction.....	2-8
2.6.4.2	Impacts During Operation .....	2-8
2.6.4.3	Impact Summary .....	2-10
2.7	Wildlife Resources.....	2-11
2.7.1	Introduction.....	2-11
2.7.2	Description of Impact Area of Influence .....	2-11
2.7.3	Affected Environment (Baseline Conditions).....	2-11
2.7.3.1	Wildlife Habitat .....	2-11
2.7.3.2	General Wildlife .....	2-11
2.7.4	Impact Analysis .....	2-12
2.7.4.1	Methodology.....	2-12
2.7.4.2	Significance Criteria.....	2-12
2.7.4.3	Proposed Action Modifications .....	2-12
2.7.4.3.1	Impacts During Construction .....	2-12
2.7.4.3.1.1	Vegetation/Wildlife Habitats.....	2-12
2.7.4.3.1.2	General Wildlife.....	2-12
2.7.4.3.2	Impacts During Operation.....	2-14
2.7.4.3.3	Impact Summary .....	2-14
2.8	Special-Status Species .....	2-14
2.8.1	Introduction.....	2-14

**Contents**  
**(continued)**

**Page**

**Chapter 2 – Affected Environment and Environmental Consequences (continued)**

2.8.2	Description of Impact Area of Influence .....	2-14
2.8.3	Affected Environment (Baseline Conditions).....	2-14
2.8.4	Impact Analysis .....	2-15
2.8.5	Impact Summary.....	2-16
2.9	Agriculture.....	2-18
2.9.1	Introduction.....	2-18
2.9.2	Description of Impact Area of Influence .....	2-18
2.9.3	Affected Environment (Baseline Conditions).....	2-18
2.9.4	Impact Analysis .....	2-18
2.9.4.1	Introduction .....	2-18
2.9.4.2	Impacts During Construction.....	2-18
2.9.4.3	Impacts During Operation .....	2-18
2.9.4.4	Impact Summary .....	2-18
2.10	Recreation Resources and Special Status Areas .....	2-19
2.10.1	Recreation Resources.....	2-19
2.10.1.1	Introduction .....	2-19
2.10.1.2	Description of Impact Area of Influence.....	2-19
2.10.1.3	Affected Environment (Baseline Conditions) .....	2-19
2.10.1.4	Impact Analysis.....	2-19
2.10.1.4.1	Impacts During Construction.....	2-19
2.10.1.4.2	Impacts During Operation.....	2-20
2.10.1.4.3	Impact Summary.....	2-20
2.10.2	Special Status Areas.....	2-20
2.10.2.1	Introduction .....	2-20
2.10.2.2	Impact Analysis.....	2-21
2.10.2.3	Impact Summary .....	2-21
2.11	Cultural Resources.....	2-21
2.11.1	Introduction.....	2-21
2.11.2	Description of Impact Area of Influence .....	2-22
2.11.3	Affected Environment (Baseline Conditions).....	2-22
2.11.4	Impact Analysis .....	2-22
2.11.5	Impact Summary.....	2-22
2.12	Visual Resources.....	2-22
2.12.1	Introduction.....	2-22
2.12.2	Description of Impact Area of Influence .....	2-22
2.12.3	Affected Environment (Baseline Conditions).....	2-22
2.12.3.1	Sixth Water Connection to Upper Diamond Fork Shaft and Upper Diamond Fork Shaft .....	2-23
2.12.3.2	Diamond Fork Tunnel Outlet Portal and Monks Hollow Overflow Structure .....	2-23
2.12.3.3	Diamond Fork Creek Outlet .....	2-25
2.12.3.4	Access Road and Road Reconstruction .....	2-25
2.12.3.5	Waste Disposal Area and Construction Staging Area 3 .....	2-25
2.12.4	Impact Analysis .....	2-25
2.12.4.1	Methodology.....	2-25
2.12.4.2	Significance Criteria.....	2-26

**Contents**  
**(continued)**

**Page**

**Chapter 2 – Affected Environment and Environmental Consequences (continued)**

2.12.4.3	Impacts During Construction.....	2-26
2.12.4.3.1	Sixth Water Connection to Upper Diamond Fork Shaft and Upper diamond Fork Shaft.....	2-26
2.12.4.3.2	Upper Diamond Fork Tunnel Outlet Portal and Monks Hollow Overflow Structure.....	2-26
2.12.4.3.3	Diamond Fork Pipeline Extension.....	2-26
2.12.4.3.4	Access Road and Road Reconstruction.....	2-26
2.12.4.4	Impacts During Operation.....	2-27
2.12.4.5	Impact Summary.....	2-27
2.13	Transportation.....	2-27
2.13.1	Introduction.....	2-27
2.13.2	Description of Impact Area of Influence.....	2-27
2.13.3	Affected Environment (Baseline Conditions).....	2-27
2.13.4	Impact Analysis.....	2-28
2.13.4.1	Introduction.....	2-28
2.13.4.2	Impacts During Construction.....	2-28
2.13.4.3	Impacts During Operation.....	2-29
2.13.4.4	Impact Summary.....	2-29
2.14	Air Quality.....	2-29
2.14.1	Introduction.....	2-29
2.14.2	Impact Analysis.....	2-30
2.14.2.1	Impacts During Construction.....	2-30
2.14.2.2	Impacts During Operation.....	2-30
2.14.2.3	Impact Summary.....	2-31
2.15	Comparative Analysis of Impacts of the Proposed Action Modifications and Proposed Action.....	2-31
2.15.1	Introduction.....	2-31
2.15.2	Comparison of Impacts.....	2-31
2.15.3	Special-Status Species.....	2-31
2.15.4	Visual Resources.....	2-31
2.15.5	Transportation.....	2-31
2.15.6	Land Use Plans.....	2-32
2.16	Monitoring.....	2-33
2.17	Unavoidable Adverse Impacts.....	2-33
2.18	Cumulative Impacts.....	2-33
2.19	Short-Term Use of Man’s Environment Versus Maintenance of Long-Term Productivity.....	2-33
2.19.1	Introduction.....	2-33
2.19.2	Tradeoffs.....	2-34
2.19.3	Benefits.....	2-34
2.20	Irreversible and Irretrievable Commitment of Resources.....	2-34

**Chapter 3 – Consultation and Coordination**

3.1	Introduction.....	3-1
3.2	Public Involvement.....	3-1
3.3	Consultation.....	3-1
3.4	Coordination.....	3-2

**Contents**  
**(continued)**

**Page**

**Chapter 3 – Consultation and Coordination (continued)**

3.5 Results of Public Review of the Draft EA .....	3-2
3.6 Letter Comments and Responses .....	3-2
Comment Letter No. 1 – U.S. Department of the Interior, Geological Survey .....	3-3
Comment Letter No. 2 – U.S. Department of the Interior, Fish and Wildlife Service .....	3-5
Comment Letter No. 3 – U.S. Department of Agriculture, Forest Service – Uinta National Forest .....	3-6
References Cited .....	R-1
Appendix A – Environmental Commitments .....	A-1
Appendix B – Threatened and Endangered Species List Letter .....	B-1
Appendix C – Letters Received On Draft Environmental Assessment .....	C-1
Appendix D – Update and Addendum to the U.S. Fish and Wildlife Service Fish and Wildlife Coordination Act Report .....	D-1
Appendix E – Addendum to the U.S. Fish and Wildlife Service August 24, 1999 Biological Opinion .....	E-1

## Contents

### Tables

Table Number	Table Title	Page
Table 1-1	Features of Diamond Fork Proposed Action Modifications and Proposed Action Features They Replaced.....	1-5
Table 1-2	Estimated Stream Flows in Diamond Fork Creek Below Three Forks Under the Proposed Action Modifications.....	1-18
Table 1-3	Estimated Streamflows in Diamond Fork Creek Below Diamond Fork Creek Outlet Under the Proposed Action Modifications.....	1-19
Table 1-4	Construction Summary and Schedule for the Proposed Action Modifications.....	1-20
Table 1-5	Estimated Construction Material Requirements for the Proposed Action Modifications.....	1-20
Table 1-6	Land Disturbance Resulting From the Proposed Action Modifications (acres).....	1-21
Table 2-1	Annual Average Water Quality Resulting From Interim Operation of Proposed Action Modifications Below Diamond Fork Creek Outlet.....	2-4
Table 2-2	Description of Adjusted Stream Reaches on Diamond Fork Creek.....	2-7
Table 2-3	Average Monthly Flows Used in the Biomass Analysis for Diamond Fork Creek From Three Forks to Diamond Campground Under the Proposed Action Modifications (cfs).....	2-9
Table 2-4	Estimated Fish Production for Diamond Fork Creek From Three Forks to Diamond Campground Under the Proposed Action Modifications.....	2-10
Table 2-5	Predicted Angler Day Per Year Use of Changed Diamond Fork Creek Segments.....	2-20
Table 2-6	Visual Quality Objective and Visual Absorption Capability Ratings for Affected Uinta National Forest Areas.....	2-23
Table 2-7	Planned Construction Traffic Route by Proposed Action Modifications Feature.....	2-28
Table 2-8	Summary of AADT Increases Resulting From Construction Traffic at Major Intersections Under the Proposed Action Modifications.....	2-29
Table 2-9	Plant-Wide Emission Factors for Concrete Batching.....	2-30
Table 2-10	Summary of Impacts of Proposed Action Modifications and Proposed Action.....	2-32
Table 3-1	Coordination and Consultation Meetings.....	3-1

### Figures

Figure Number	Figure Title	Page
Figure 1-1	Proposed Action Modifications Elevation Profile.....	1-14
Figure 1-2	Proposed Action Elevation Profile.....	1-17

### Maps

Map Number	Map Title	Page
Map 1-1	Features of the Diamond Fork System Proposed Action Modifications.....	1-4
Map 1-2	Features of the Diamond Fork System Proposed Action.....	1-15
Map 2-1	Critical Big Game Habitat.....	2-13
Map 2-2	Lynx Analysis Units and Key Linkage Routes on the Uinta National Forest.....	2-17
Map 2-3	Forest Service Visual Quality Objectives.....	2-24

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***Diamond Fork System***

***Final Environmental Assessment for the  
Proposed Action Modifications***

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***Chapter 1***

***Purpose and Need for Action and  
Description of Proposed Action  
Modifications***

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# **Chapter 1**

## **Purpose and Need for Action and Description of Proposed Action Modifications**

### **1.1 Introduction and Reason for Modifications**

This Final Environmental Assessment (EA) presents and analyzes the impacts of modifications to the Proposed Action, which is described in the Diamond Fork System Final Supplement to the Final Environmental Impact Statement (FS-FEIS). The FS-FEIS, which was completed in July 1999 (CUWCD 1999a), addresses potential impacts related to construction and operation of the features proposed for completing the Diamond Fork System. The Proposed Action included a series of tunnels and pipelines to convey water through the mountainous terrain of Diamond Fork Canyon and various Diamond Fork drainage tributary canyons in the Uinta National Forest. The Record of Decision (ROD) for the Diamond Fork System issued by the Department of the Interior (DOI) on September 29, 1999 recognizes that if recommendations made by value engineering studies provide significant environmental benefits or reduce project costs, the Joint-Lead Agencies would modify the Proposed Action accordingly. The modifications analyzed in this document (a tunnel design-build option described in detail in Section 1.5) were recommended during a value engineering (VE) workshop initiated by the CUWCD following completion of the FS-FEIS.

The VE process was required for the Diamond Fork System Proposed Action design by Section 4306 of Public Law 104-106, which amended the Federal Procurement Policy Act (41 U.S.C. 401) by adding: "Each executive agency shall establish and maintain cost-effective value engineering procedures and processes." In addition to this law, the Office of Management and Budget Circular A-131 requires Federal departments and agencies to include VE on all projects using Federal funds exceeding \$500,000. Since the Federal funding for the Diamond Fork project would exceed this amount, CUWCD initiated the VE process on the Proposed Action design.

The VE process identified a number of ways the project could be modified to reduce costs and environmental impacts, and improve its overall environmental benefits. These proposed modifications were included in the Diamond Fork contractor's bid process as the "Upper Diamond Fork Project, Value Engineering T3/T10 design-build option." Bids were requested and received on both the Proposed Action design and the tunnel design-build option identified during the VE process. Four bids were received on the VE tunnel design-build option that were lower than the engineer's estimate. Since the proposed modifications were not included in the FS-FEIS, they are subject to the environmental compliance process required by the National Environmental Policy Act (NEPA) and described in the Council on Environmental Quality (CEQ) regulations at 40 CFR 1500.

The remainder of this chapter includes the following sections:

- Purpose of the Environmental Assessment
- Relationship of the EA to the Diamond Fork System FS-FEIS
- Purpose and Need of the Proposed Action and its Modifications
- Description of the Proposed Action Modifications
- Interim Operation of the Proposed Action Modifications
- Summary of Other Characteristics of the Proposed Action Modifications

## **1.2 Purpose of the Environmental Assessment**

The purpose of this EA is to examine the Proposed Action Modifications and briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a Finding of No Significant Impact (FONSI). The EA and FONSI are intended to satisfy disclosure requirements of NEPA and will serve as the NEPA compliance document for the Proposed Action Modifications. A supplemental environmental impact statement (EIS) would be required if the EA determines that implementing the modifications would result in new significant impacts or an increase in magnitude of significant impacts from those disclosed in the FS-FEIS (CUWCD 1999a). This EA also is intended to serve as the Biological Assessment under the provisions of Section 7 consultation requirements of the Endangered Species Act, 16 USC 1531-1544.

## **1.3 Relationship of the EA to the Diamond Fork System FS-FEIS**

The DOI manual 516 DM 4.5 C. states: "If, after a decision has been made based on a final EIS, a described proposal is further defined or modified and if its changed effects are minor or still within the scope of the earlier EIS, an EA and FONSI may be prepared for subsequent decisions rather than a supplement." This EA is tiered off of the Diamond Fork System FS-FEIS.

The EA only documents and analyzes the impacts of the Proposed Action Modifications. It does not repeat any affected environment or analysis of impacts sections for resources that remain unchanged in the FS-FEIS. Unless otherwise stated, all the documentation and data contained in the FS-FEIS remains in effect and the reader should refer to the FS-FEIS. The Standard Operating Procedures in Chapter 1, Section 1.7.8, Page 1-74 (SOPs), and Authorizing Actions, Permits and Licenses in Chapter 1, Section 1.8, Page 1-81, of the FS-FEIS have not been modified. The environmental commitment (EC) list in Appendix B in the FS-FEIS has not been changed, other than those ECs that have been added as a result of this EA (see Appendix A). However, the completed EA and subsequent decision will identify and deal with the ECs associated with FS-FEIS Proposed Action features that have been deleted and are not applicable to the Proposed Action Modifications.

## **1.4 Purpose and Need**

The purposes and needs of the Proposed Action Modifications have not been changed from the FS-FEIS (CUWCD 1999a), however they are presented here for the reader's convenience.

The Proposed Action would respond to the following needs:

1. To maintain the statutorily mandated minimum flows in Diamond Fork Creek and Sixth Water Creek (Sections 303(c)(1)(A) & (B) of Public Law 102-575).
2. To implement the DOI environmental commitments on the Diamond Fork Pipeline from the 1995 Record of Decision, which includes but is not limited to removing the high flows brought over from Strawberry Reservoir (both Strawberry Valley Project and Central Utah Project water) into the Sixth Water and Diamond Fork creek drainages.
3. To meet the CUWCD's municipal and industrial water contractual commitments to Salt Lake, Utah and Wasatch counties, by conveying Bonneville Unit water to Utah Lake (via new features) for exchange to Jordanelle Reservoir and historical Strawberry Valley Project irrigation water.

4. To provide the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission) the opportunity and flexibility for future restoration of aquatic and riparian habitat in Sixth Water and Diamond Fork creeks to protect water quality and threatened species in Diamond Fork Creek.

The purposes of the Proposed Action are:

1. To provide conveyance of Strawberry Valley Project historical diversions into their existing system
2. To minimize adverse impacts on aquatic, riparian and other environmental resources in the Sixth Water and Diamond Fork creek drainages
3. To minimize adverse impacts on threatened and endangered species, wetlands and floodplains
4. To minimize the cost of project features
5. To achieve full repayment by maximizing municipal and industrial water deliveries to fulfill outstanding commitments
6. To use existing Diamond Fork System facilities to their full hydraulic capacity
7. To evaluate an alternative to Monks Hollow Dam and reservoir

## **1.5 Description of the Proposed Action Modifications**

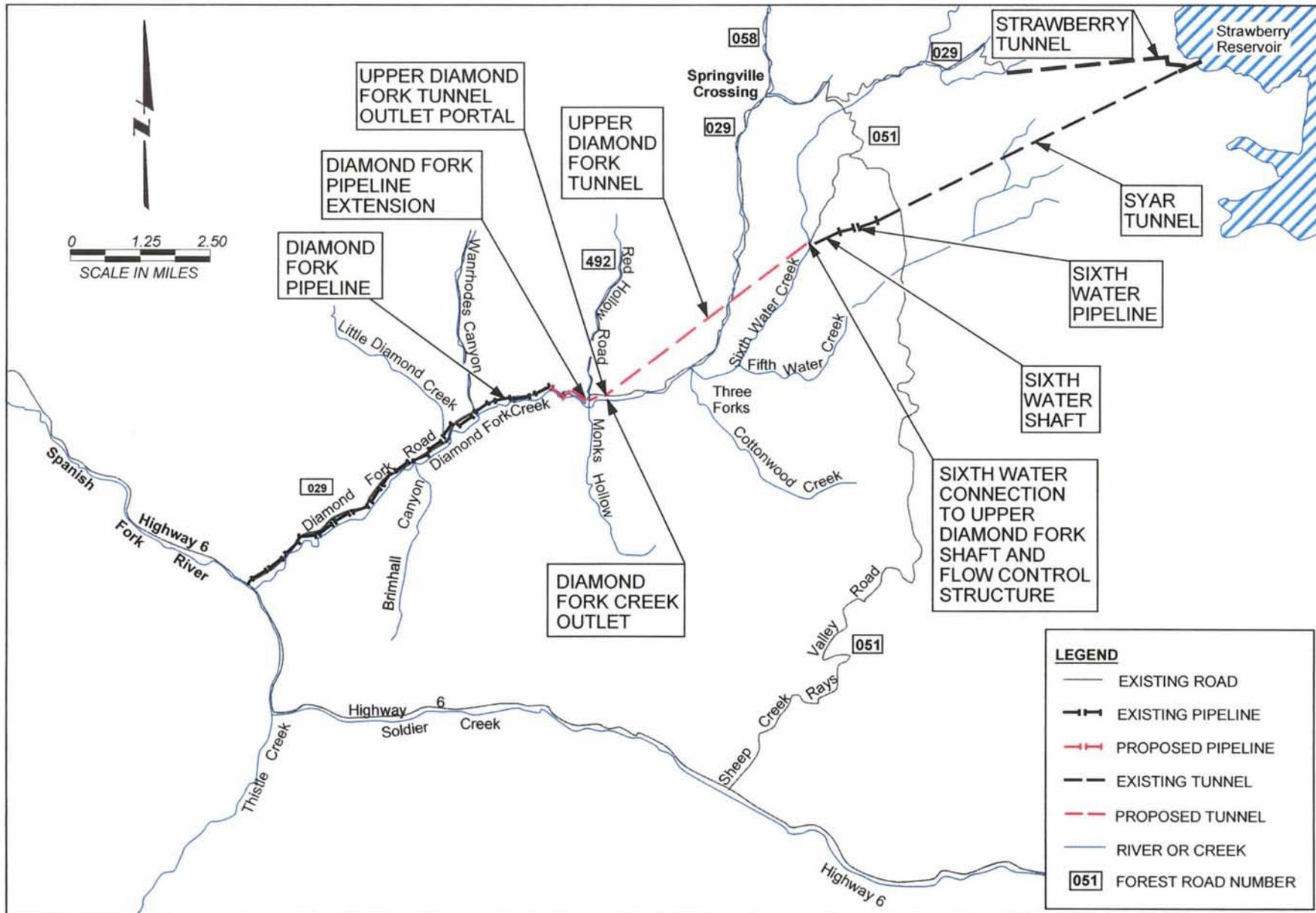
### **1.5.1 Introduction**

This section describes features that would replace or modify the following Proposed Action features described in Chapter 1, Section 1.3, Page 1-13 of the FS-FEIS:

- Sixth Water Connection to Tanner Ridge Tunnel
- Tanner Ridge Tunnel
- Diamond Fork Siphon
- Red Mountain Tunnel
- Red Hollow Pipeline and Connection to Diamond Fork Pipeline
- Diamond Fork Creek Outlet (modified and location changed)

Proposed Action features that would remain the same as described in the FS-FEIS include the Spanish Fork River Outlet from Diamond Fork Pipeline and the Spanish Fork River Diversions. The following features comprise the Proposed Action Modifications (see Map 1-1, and Map A-1 in map pocket at back of document): 1) Sixth Water Connection to Upper Diamond Fork Shaft, 2) Upper Diamond Fork Shaft, 3) Upper Diamond Fork Flow Control Structure, 4) Upper Diamond Fork Tunnel, 5) Monks Hollow Overflow Structure, 6) Diamond Fork Creek Outlet, 7) Diamond Fork Pipeline Extension, 8) Connection to Diamond Fork Pipeline, 9) Access Road and Road Reconstruction, and 10) Fiber Optic Cable. The water conveyance features are sized to convey the same flow volumes as described in the FS-FEIS.

Interim operation (including normal, maintenance and emergency) as described in Chapter 1, Section 1.4, Page 1-35 through 1-46 of the FS-FEIS would remain the same except for the discharge location of minimum



1-4

Map 1-1

Features of the Diamond Fork System Proposed Action Modifications

streamflows to Diamond Fork Creek. The potential for generating hydroelectric power would remain the same as described in Chapter 1, Section 1.3.1, Page 1-13 of the FS-FEIS. The modifications would shift the hydroelectric generating potential from a structure along the Diamond Fork Pipeline up to the Upper Diamond Fork Shaft and Flow Control Structure (see Inset 2, Map A-1).

### 1.5.2 Proposed Action Modifications Features

The primary features of the Proposed Action Modifications are presented in the following subsections (see Table 1-1). Map A-1 shows the location and detailed insets of these features. Table 1-1 shows the feature name, length, diameter, and capacity of Proposed Action Modifications and the Proposed Action features that they replaced.

<b>Table 1-1 Features of Diamond Fork Proposed Action Modifications and Proposed Action Features They Replaced</b>				
<b>Proposed Action Modifications Feature Name/Map A-1 Location</b>	<b>Length (feet)</b>	<b>Diameter (inches)</b>	<b>Capacity (cubic feet/sec.)</b>	<b>Proposed Action Feature Replaced</b>
Sixth Water Connection to Upper Diamond Fork Shaft (Inset 1)	50	78	660	Sixth Water Connection to Tanner Ridge Tunnel
Upper Diamond Fork Shaft (Insets 2 and 3)	700	78	660	Tanner Ridge Tunnel, Diamond Fork Siphon, Red Mountain Tunnel, Red Hollow Pipeline and Connection to Diamond Fork Pipeline
Upper Diamond Fork Flow Control Structure (Insets 2 and 3)	Not applicable	Not applicable	660	Red Hollow Pipeline and Connection to Diamond Fork Pipeline
Upper Diamond Fork Tunnel (Upper Middle and Inset 3)	22,900	120	660	Tanner Ridge Tunnel, Diamond Fork Siphon, Red Mountain Tunnel, Red Hollow Pipeline and Connection to Diamond Fork Pipeline
Monks Hollow Overflow Structure (Insets 3 and 4)	40	96	660	Red Hollow Pipeline and Connection to Diamond Fork Pipeline
Diamond Fork Creek Outlet (Insets 3 and 5)	1,500	96	660	Diamond Fork Creek Outlet (previous location)
Diamond Fork Pipeline Extension (Inset 6)	6,670	96	560	Red Hollow Pipeline and Connection to Diamond Fork Pipeline

#### 1.5.2.1 Sixth Water Connection to Upper Diamond Fork Shaft

Sixth Water Connection would be a short section of steel pipe or other conveyance structure to Upper Diamond Fork Shaft (see Inset 1, Map A-1). This connection would convey water by gravity flow from the existing Sixth Water Aqueduct outlet to the top of Upper Diamond Fork Shaft. The water would flow into a concrete channel and past a radial gate in the control building, to the top of the Upper Diamond Fork Shaft. A 55-foot long overflow weir would be incorporated into the streamside of the concrete channel to allow emergency discharge of water from Sixth Water Aqueduct to Sixth Water Creek.

The Sixth Water Connection structure would be protected by rock riprap only as necessary. The connection would include an outlet channel for emergency releases described in Chapter 1, Section 1.3.2.1, Page 1-17 of the FS-FEIS (CUWCD 1999a). These facilities would provide emergency release of minimum streamflows for

Diamond Fork Creek if the District must shut down Upper Diamond Fork Shaft, Upper Diamond Fork Flow Control Structure, Upper Diamond Fork Tunnel, Diamond Fork Pipeline Extension or Diamond Fork Creek Outlet for maintenance or repair. It would provide flexibility for any future Sixth Water Creek restoration plans.

### ***1.5.2.2 Upper Diamond Fork Shaft***

Upper Diamond Fork Shaft would be a vertical shaft to convey water down to the Upper Diamond Fork Flow Control Structure (see Insets 2 and 3, Map A-1). The shaft would be lined with steel plate to protect the rock walls from erosion by water pressure and velocity. The shaft would be excavated through siltstone and conglomerate.

A vertical service shaft, 650 feet deep and 8 feet in diameter, would be constructed adjacent to the water shaft to house a service elevator, ventilation equipment, fiber optic cables and other electrical cables in conduits. The service elevator would provide operations and maintenance access to the shaft and the Upper Diamond Fork Flow Control Structure. A single-story control building containing the elevator mechanism and electrical controls for the flow control valves would be constructed over the top of the service shaft and Upper Diamond Fork Shaft. This building would be located south of the existing building containing the Sixth Water Flow Control Structure. A 12-inch diameter ventilation pipe would be installed in the service shaft to connect the control building to the Upper Diamond Fork Flow Control Structure.

### ***1.5.2.3 Upper Diamond Fork Flow Control Structure***

Upper Diamond Fork Flow Control Structure would consist of an underground chamber excavated at the bottom of the Upper Diamond Fork Shaft (see Insets 2 and 3, Map A-1) and a set of flow control valves in the upstream end of the chamber. The valves would control up to 660 cfs flow by dissipating the water pressure and energy from the 620-foot elevation change through the Upper Diamond Fork Shaft. The underground chamber would be excavated in rock and lined with concrete. The flow control valves would release the water into the chamber. The valves and chamber would be accessible for inspection, maintenance and replacement via the service elevator and shaft. The flow control facilities would be operated electronically from the control building over the service shaft adjacent to the existing Sixth Water Flow Control Structure.

### ***1.5.2.4 Upper Diamond Fork Tunnel***

Upper Diamond Fork Tunnel would be a gravity tunnel to convey water from the Upper Diamond Fork Flow Control Structure to the Monks Hollow Overflow Structure (see Inset 3, Map A-1). The tunnel would be constructed primarily in siltstone and conglomerate rock at a slope of 0.003 to 0.005 feet per foot. The tunnel would have a 10-foot diameter and would be sized to convey 660 cfs by gravity flow. The tunnel would be lined with concrete and would have fiber optic cables in conduit attached to the ceiling throughout its length.

The tunnel outlet portal would be located upstream of Monks Hollow and Red Hollow on the hillside north of Diamond Fork Creek, with an invert elevation of about 5,550 feet Mean Sea Level (MSL) (see Inset 4, Map A-1). The outlet portal would be constructed at the toe of a southwest-facing hillside, and the existing slope and ground surface would be restored to approximate original contour following construction. The restored slope would be covered with topsoil and revegetated with native plants. The tunnel portal finished yard elevation would be about 5,560 feet MSL.

The ephemeral drainage flowing out of the gulch at the tunnel portal outlet would be conveyed across the portal yard in a lined surface drainage bypass ditch (see Inset 4, Map A-1). Lined drainage bypass ditches would convey runoff water around the east and south perimeters of the portal yard to a rock-lined channel at the toe of the portal yard fill slope. The rock-lined channel would re-connect to the existing intermittent channel downstream of the

portal yard area (see Inset 4, Map A-1). The slopes of the portal yard perimeter ditches would be flatter than the surrounding natural topography and likely would result in some debris deposition. The District would maintain the ditches to convey runoff water around the portal yard area.

### ***1.5.2.5 Monks Hollow Overflow Structure***

Monks Hollow Overflow Structure would be about 90-by-20-foot concrete structure (tinted on top to match existing soil colors) located at the Upper Diamond Fork Tunnel outlet portal (see Inset 4, Map A-1). The concrete structure would contain two chambers mostly buried in the portal yard, with only the top of the structure visible at the portal yard surface. The first 30 feet of the structure would include a roof access hatch for tunnel inspection and maintenance and a floor culvert with a hand-operated slide gate to collect water to make up the amount necessary to meet minimum streamflows in Diamond Fork Creek below the Diamond Fork Creek Outlet. The first chamber would receive flow from the pipeline exiting the tunnel and would connect to the 96-inch diameter Diamond Fork Pipeline Extension, with a capacity of 560 cfs. This chamber would have an internal overflow weir at about 5,555 feet MSL matching the existing design head for the Diamond Fork Pipeline. The overflow weir would discharge into the second chamber connected to the 96-inch-diameter emergency overflow and bypass pipeline to Diamond Fork Creek Outlet. The second chamber would be connected to the floor culvert and slide gate by a concrete channel to receive the bypass flows. The emergency overflow and bypass pipeline would have a capacity of 660 cfs, terminating at the Diamond Fork Creek Outlet. Water that would flow over the weir at 5,555 feet MSL would be released only in the event of an emergency overflow or requirement for bypass of the Diamond Fork Pipeline. The overflow structure and tunnel portal yard would be fenced with a 6-foot-high chain-link fence to prevent public access.

### ***1.5.2.6 Diamond Fork Creek Outlet***

Diamond Fork Creek Outlet would consist of a mortar-lined steel pipeline from the Monks Hollow Overflow Structure to an energy dissipation structure discharging to a 350-foot-long open channel tributary to Diamond Fork Creek (see Inset 5, Map A-1). The pipeline would have an elevation change of about 155 feet and would cross under Diamond Fork Road in the waste disposal area (see Inset 5, Map A-1). It would be constructed in 12-foot long segments to allow routing of the pipe around existing vegetation. The pipeline corridor would be shaped to eliminate linear appearance and to minimize the visual impacts of juniper and other woody vegetation removal. The corridor also would be irrigated following construction until native grasses and shrubs planted in the disturbed areas are established to further minimize the visual impacts of vegetation removal and soil disturbance.

The energy dissipation structure would be a 40-by-10-foot concrete vault with internal baffles to slow the water velocity before it is discharged into the constructed open channel. A rock riprap grade control would be constructed diagonally between the energy dissipation structure and Diamond Fork Creek (see Inset 5, Map A-1). The grade control top elevation would match the existing floodplain elevation and the south end would terminate at the existing streambank. The purpose of the grade control would be to maintain the existing floodplain grade to protect the energy dissipation structure during high runoff flows and prevent the creek from capturing the outlet channel. The outlet channel would be lined with rock riprap to further dissipate flow energy and protect the bed and sides from scour if an emergency overflow needed to be routed through the pipeline and channel. The new channel would enter Diamond Fork Creek as a wye, similar to a side channel or tributary inflow. Cottonwood trees would be planted along the edge of the 350-foot-long channel area to screen the outlet from the Diamond Fork Road and to enhance the riparian corridor. The new cottonwood trees would be irrigated as necessary to promote establishment. Diamond Fork Creek Outlet would convey the minimum streamflows and serve as an emergency overflow and bypass outlet into Diamond Fork Creek, as described in the FS-FEIS (Chapter 1, Section 1.4.3.5, Page 1-42).

### ***1.5.2.7 Diamond Fork Pipeline Extension***

Diamond Fork Pipeline Extension, with a capacity of 560 cfs, would connect Monks Hollow Overflow Structure to the upstream end of the existing Diamond Fork Pipeline (see Inset 6, Map A-1). The mortar-lined steel pipeline would be installed underground following the ground surface, with a minimum 3-foot cover over the pipeline. It would have air release and air vacuum valves, and vaults incorporating manway access at various points along its length, with the same design and surface features as the existing Diamond Fork Pipeline. The location of these appurtenances would be determined as part of the design process. All vent structures would be screened with vegetation, rocks and/or soil mounds and colored using appropriate earth-tone colors.

Most of the pipeline extension would be installed under the existing Diamond Fork Road or within the alignment of the new access road to the Upper Diamond Fork Tunnel portal (see Insets 5 and 6, Map A-1). The Diamond Fork Pipeline Extension would cross the Red Hollow Road once and cross under the creek draining from Red Hollow. A 1,150-foot segment of the pipeline under the road would be constructed in a steep hillside area that contains natural springs (see Inset 6, Map A-1). Special procedures would be used in this segment to convey the spring water under the pipeline and to protect nearby wetlands and riparian resources (see Inset 7, Map A-1 and Section 1.5.2.9 in this EA). The water supply to the wetland would be maintained during construction to avoid changes to the wetland surface area and plant communities. The portions of the pipeline corridor that are not within the alignment of Diamond Fork Road or the access road to the tunnel portal would be planted with indigenous shrubs, native grasses and forbs in a natural pattern to blend with adjacent vegetation. Revegetated areas would be irrigated until the plants are established to further minimize the visual impacts of vegetation removal and soil disturbance.

### ***1.5.2.8 Connection to Diamond Fork Pipeline***

The connection of the Diamond Fork Pipeline Extension to the existing Diamond Fork Pipeline would involve connecting the new 96-inch-diameter pipe to an existing 96-inch pipe (see Insets 3 and 6, Map A-1). A test bulkhead installed in the upstream end of the pipeline would be removed to complete the connection.

### ***1.5.2.9 Access Road and Road Reconstruction***

A new, permanent 16-foot-wide paved access road, with side ditches and shoulders, would be constructed for approximately 950 feet between Diamond Fork Road and Upper Diamond Fork Tunnel outlet portal (see Insets 4, 5, and 6, Map A-1). A locked gate would be installed on the new road where it meets Diamond Fork Road. The road would be aligned to save existing trees and curve around vegetation to provide visual screening and avoid establishing a new corridor. Large junipers and gambel oak would be planted in a free form pattern in strategic locations to screen road cuts and fills.

A temporary construction access road with an average 12 percent grade would follow the same alignment as the permanent access road for 400 linear feet (see Insets 4, 5, and 6 on Map A-1). The temporary road would disturb about 450 linear feet in the lower corridor and about 235 linear feet in the upper corridor, both which would be revegetated with native grasses, shrubs, and trees following construction. The revegetated temporary road corridor would be irrigated until the plants are established to further minimize the visual impacts of vegetation removal and soil disturbance.

The detailed road design would address erosion control in ditches along the permanent and temporary access road. Ditches and drainage swales constructed along the road would be lined with native rock and excelsior erosion control blanket to control erosion. Cut and fill sections of the temporary and permanent access roads would be outsloped at 2 percent to disperse drainage before it can concentrate. Fill sections of the temporary and

permanent access roads would be crowned, with 2 percent slopes to either side to disperse drainage. Additional rock riprap would be incorporated as necessary into the ditches to control erosion.

A 1,150-foot section of the Diamond Fork Road adjacent to a steep hillside and the natural spring area would be reconstructed over the top of the Diamond Fork Pipeline Extension (see Insets 6 and 7, Map A-1). It would incorporate special drainage features, including a reinforced-earth segmental concrete retaining wall constructed of tinted and textured concrete to blend with surrounding landscape. The creek, a riparian vegetation band, and a small wetland are adjacent to the existing road. The road surface would be raised up to 13 feet to keep the pipeline above the springs and the wetland. All applicable conditions of the Nationwide Permit 14 would be followed. A drainage collection system, including a french drain, would be installed under the roadfill to collect and convey the spring water under the pipeline and road to the wetland and riparian areas. The retaining wall would keep the elevated roadfill from encroaching on the wetland and riparian area. Cottonwood trees would be planted in a scattered pattern at the base of the retaining wall to enhance the riparian buffer and screen the retaining wall.

Diamond Fork Road would be relocated and realigned to follow the pipeline alignment for about 800 feet in the area north of where Red Hollow joins Diamond Fork Creek (see Inset 6, Map A-1). The new Diamond Fork Road alignment would replace about 1,400 feet of old road, which would be ripped up, topsoiled and revegetated. The relocated road would be upgraded to 24 feet wide with a paved surface. The crossing area of the pipeline extension with the Red Hollow Road would become the new intersection of the Red Hollow, Monks Hollow and Diamond Fork roads (see Inset 6, Map A-1). A portion of the existing Red Hollow Road south of its intersection the relocated Diamond Fork Road would become the Monks Hollow Road extension. The District would reconstruct a 30-foot long segment of the Monks Hollow Road extension to include a 16-foot wide road with a ramp at no more than 2 percent slope from the intersection to provide for vehicle egress and ingress. The ramp would be constructed at a right angle to the centerline of the relocated Diamond Fork Road and the Monks Hollow Road extension would be paved from the new intersection down to the Monks Hollow Bridge. The Red Hollow Road intersection would be slightly cut, re-graded, and re-aligned at a right angle to the centerline of the relocated Diamond Fork Road across from the Monks Hollow Road intersection. A short pavement apron would extend onto the re-aligned Red Hollow Road.

Upon completion of the waste disposal area, the portion of Diamond Fork Road covered by the waste disposal area would be reconstructed to the same standards as the road that was reconstructed when Diamond Fork Pipeline was completed (i.e., 24 feet wide with a paved surface).

The surface and grade of Diamond Fork Road would be reconstructed from the end of the existing Diamond Fork Pipeline to the east end of the waste disposal area (see Map A-1) and meet the same standards as the road improvements made during construction of the Diamond Fork Pipeline.

Diamond Fork Road would be temporarily closed to the public from the Red Ledges area downstream from Monks Hollow to just downstream of Three Forks during the 3½-year construction period (see Map A-1). The temporary closure would eliminate the public safety risk from heavy, two-way construction traffic along this narrow section of road and would be coordinated by the contractor. The Red Ledges turn-around would be either graveled or hardened to facilitate a safe and all-weather turn-around for the public.

Access to the Sixth Water features would be the same as described in Chapter 1, Section 1.3.6, Page 1-32 of the FS-FEIS (CUWCD 1999a). Access to all the other features would be via the recently improved section of Diamond Fork Road from Highway 6.

### ***1.5.2.10 Fiber Optic Cable***

A fiber optic cable would be installed to provide a communication link for the remote telemetry units and the Sixth Water Control facilities. Starting at Highway 6 the cable would be laid directly alongside of the Diamond Fork Road within the gravel shoulder and the new access road to the tunnel portal and then through the tunnel up to the Sixth Water Connection. A small trenching machine would be used to install the cable approximately 30-inches deep. Upon completion of installation, the gravel would be replaced.

## **1.5.3 Land Management Status and Right-of-Way Acquisition**

National Forest System land would be needed to construct and operate the features of the Proposed Action Modifications. This would require permanent rights-of-way for the features and temporary rights-of-way during construction to provide space for equipment operation and staging areas. The permanent right-of-way for the pipeline extension would be 50 feet wide. The permanent right-of-way at the tunnel outlet portal would be 150 feet wide and extend 100 feet out from the portal. An additional average 100 feet of right-of-way would be required to accommodate activities during construction. No Forest Service Special Use Permit would be needed, since all National Forest System land that would be affected by construction or operation of the Proposed Action Modifications has been withdrawn by the DOI.

## **1.5.4 Tunnel and Shaft Construction Procedures**

### ***1.5.4.1 Construction Sequence***

The construction sequence for the tunnel and shafts would involve the following activities:

- Construct staging areas and access road
- Construct outlet portal area and waste disposal area
- Assemble tunnel equipment plant at outlet portal
- Bore tunnel and remove and dispose of waste rock
- Excavate chamber at end of tunnel for flow control valves
- Assemble shaft equipment plant in flow control chamber
- Construct cofferdams upstream and downstream of Sixth Water Aqueduct
- Bore shafts and remove/dispose waste rock
- Disassemble tunnel and shaft equipment plants
- Install tunnel lining
- Install shaft lining
- Install service elevator in service shaft and flow control valves
- Construct tunnel outlet, access and overflow structures
- Connect tunnel to pipeline
- Connect Sixth Water Flow Control Structure to shaft
- Remove cofferdams on Sixth Water Creek

Tunnel construction would begin at the Upper Diamond Fork Tunnel outlet portal, advancing toward the flow control structure at the bottom of Upper Diamond Fork Shaft. The outlet portal would require a 250-foot-wide base cut and a 200-foot-wide top cut during construction. The tunnel would be excavated with a tunnel-boring machine (see Figure 1-1 in the FS-FEIS, Page 1-24). The excavated rock surface would be lined with reinforced

concrete to prevent cave-ins, control groundwater infiltration and exfiltration, and provide a smooth lining surface. Welded steel pipe or plate may be installed near the outlet portal to help control tunnel leakage.

Shaft construction would begin at the underground chamber excavated for Upper Diamond Fork Flow Control Structure. The shafts would be constructed using the raise-bore or drilled shaft method. The water shaft would be excavated to a 12-foot diameter and then lined with welded steel plate. Earth material for the cofferdams on Sixth Water Creek upstream and downstream of the work area would be obtained offsite from approved areas and hauled to the site. After the cofferdams are removed, the material would be disposed in the existing waste disposal area shown on Map A-1.

Two batch plants would be operated to provide the concrete necessary for tunnel lining and construction of the Sixth Water shafts. Both plants would be operated to meet all Environmental Protection Agency (EPA) regulations and suggested emission controls (Section 11.12-2, EPA 1995). One batch plant would be situated in staging area 3 or the tunnel portal area prior to revegetation. The batch plant would be situated and operated to prevent contamination of Diamond Fork Creek, control spillage and protect water quality. The second plant would be located either at Staging Area 1 or on the Sixth Water Shaft existing waste disposal area far enough from Sixth Water Creek to prevent contamination.

Water required for construction activities would be obtained in the same manner as described in Chapter 1, Section 1.3.4.2, Page 1-25 of the FS-FEIS. Power may be supplied through on-site generators as described in Chapter 1, Section 1.3.4.2, Page 1-25 of the FS-FEIS or through an over-the-ground power cable from the Sixth Water Connection. If power were supplied from on-site generators, each fuel storage tank or bladder would be surrounded by a fuel containment berm and operated under an approved spill containment and countermeasure control plan.

If power were supplied through an over-the-ground power cable, the existing substation in the Sixth Water Connection area would be upgraded. An additional substation would be installed adjacent to the existing structure. From there, a single-line power feeder cable would be laid overland along the tunnel alignment route to the tunnel portal area. A temporary substation would be erected at the tunnel portal to feed the construction equipment. A power cable would also be run from the portal to the contractor and owner offices and plant in Construction Staging Area 3. The power line from the existing substation to the Sixth Water Creek Aqueduct would be upgraded from a two-phase to a three-phase line. Design of new or modification of existing electrical facilities required for the project would be evaluated for compliance with current recommendations to avoid or reduce electrocution hazards to raptors and other migratory bird species. Modifications would be made if determined necessary.

The proposed power cable is designed for surface use. It would be about three inches in diameter and relatively stiff so it would not be possible for wildlife to become tangled in it. It also would be armored to prevent animals or people from cutting or damaging the cable. If the armor were penetrated by a gunshot, the protection systems would immediately cut power to the cable. The cable would be laid by hand or helicopter and removed upon completion of construction.

#### ***1.5.4.2 Waste Rock Management and Disposal***

Construction of Upper Diamond Fork Tunnel, Upper Diamond Fork Shaft, Upper Diamond Fork Flow Control Structure and the outlet portal would generate about 250,000 cubic yards of earth and ground rock (including a 50 percent swell factor). The tunnel would be excavated through geologic formations that would be examined during boring to identify any selenium-bearing rock strata. Waste material excavated from sections of the tunnel that are suspected of containing selenium-bearing rocks would be segregated in the waste disposal area, and appropriate measures (such as encapsulation and sufficient soil cover to prevent water infiltration) would be taken to prevent water from coming into contact with this waste material and entering Diamond Fork Creek. No selenium-bearing

material would be used for any other construction such as roads or other features that could contact groundwater or surface water.

All material generated by construction would be permanently stored in the waste disposal area along Diamond Fork Road, 1,100 feet southwest of the outlet portal (see Inset 5, Map A-1) or placed in roadway fills. The 10.3-acre waste disposal area would be cleared and grubbed, and then the surface soils and alluvium would be excavated and stockpiled for site reclamation. The rock waste would be moved from the tunnel outlet portal to the waste disposal area by conveyor and systematically placed and compacted for permanent storage and disposal. Drainage collection and diversion ditches would be installed along the uphill perimeter of the waste disposal area to keep runoff water away from the disposed rock. Both ditches would be triangle-shaped with a 4-to-1 sideslope nearest Diamond Fork Road and a 3-to-1 sideslope on the opposite side. The west ditch would be approximately 18 feet wide and 2 feet deep. The east ditch would be approximately 19 feet wide and 3 feet deep. Both ditches would drain to culverts crossing under the reconstructed Diamond Fork Road, and collected water would follow rock riprap-lined ditches and flow directly into Diamond Fork Creek. Silt fences and other best management practices would be employed during construction between the disturbed area and Diamond Fork Creek. The District would be responsible for performing long-term maintenance and cleaning sediment and other debris from the ditches during normal maintenance operations.

The Diamond Fork Road invert elevation would be raised up to 11 feet and reconstructed over the top of the rock waste for 1,800 feet. The finished waste disposal area would be up to 30 feet deep, about 400 feet wide and 1,800 feet long, with 2-to-1 sideslopes. The toe of the waste disposal area would be at least 100 feet from Diamond Fork Creek and out of the 100-year floodplain. The waste disposal area would be shaped to match the existing and adjacent topography to the extent possible. Following topsoil and alluvium re-spreading over the waste disposal area, it would be drill-seeded and planted with indigenous shrub plantings and clumps of trees in a freeform pattern to blend with adjacent vegetation. Slight depressions would be provided where trees and shrubs would be planted to collect water and runoff to increase plant survival rates. The plantings would be irrigated as necessary to promote establishment. A temporary fence would be installed around the area to protect the revegetation until it has become established. Upon satisfactory establishment of desired plants, the fence would be removed.

### **1.5.5 Pipeline Construction Procedures**

Pipeline construction procedures for the Diamond Fork Pipeline Extension would be the same as described in the FS-FEIS, Chapter 1, Section 1.3.5, Pages 1-26 through 1-30, except for the following changes:

- Diamond Fork Pipeline Extension would cross under the stream flowing from Red Hollow. Construction of this crossing would involve installing a temporary culvert to divert the flow around the work area. Pipeline excavation would extend approximately 15 to 20 feet below the existing streambed. The stream channel would be reconstructed over the top of the steel pipe and pass through a new adequately sized culvert where the relocated section of Diamond Fork Road would cross over the stream (see Inset 6, Map A-1).
- Trench excavation for the Diamond Fork Pipeline Extension and the emergency bypass and overflow pipeline would produce an estimated 38,000 cubic yards of earth and rock material, some of which would need to be disposed. Some of the material excavated from the Diamond Fork Pipeline Extension would be used to raise the grade of Diamond Fork Road where the pipeline would be constructed in the road right-of-way. Any excess excavated material would be disposed in the waste disposal area.

## 1.5.6 Construction Staging Areas

Construction staging areas 1, 3 and 5 (see Map A-1) would be used as described in the FS-FEIS, Chapter 1, Section 1.3.8, Page 1-34.

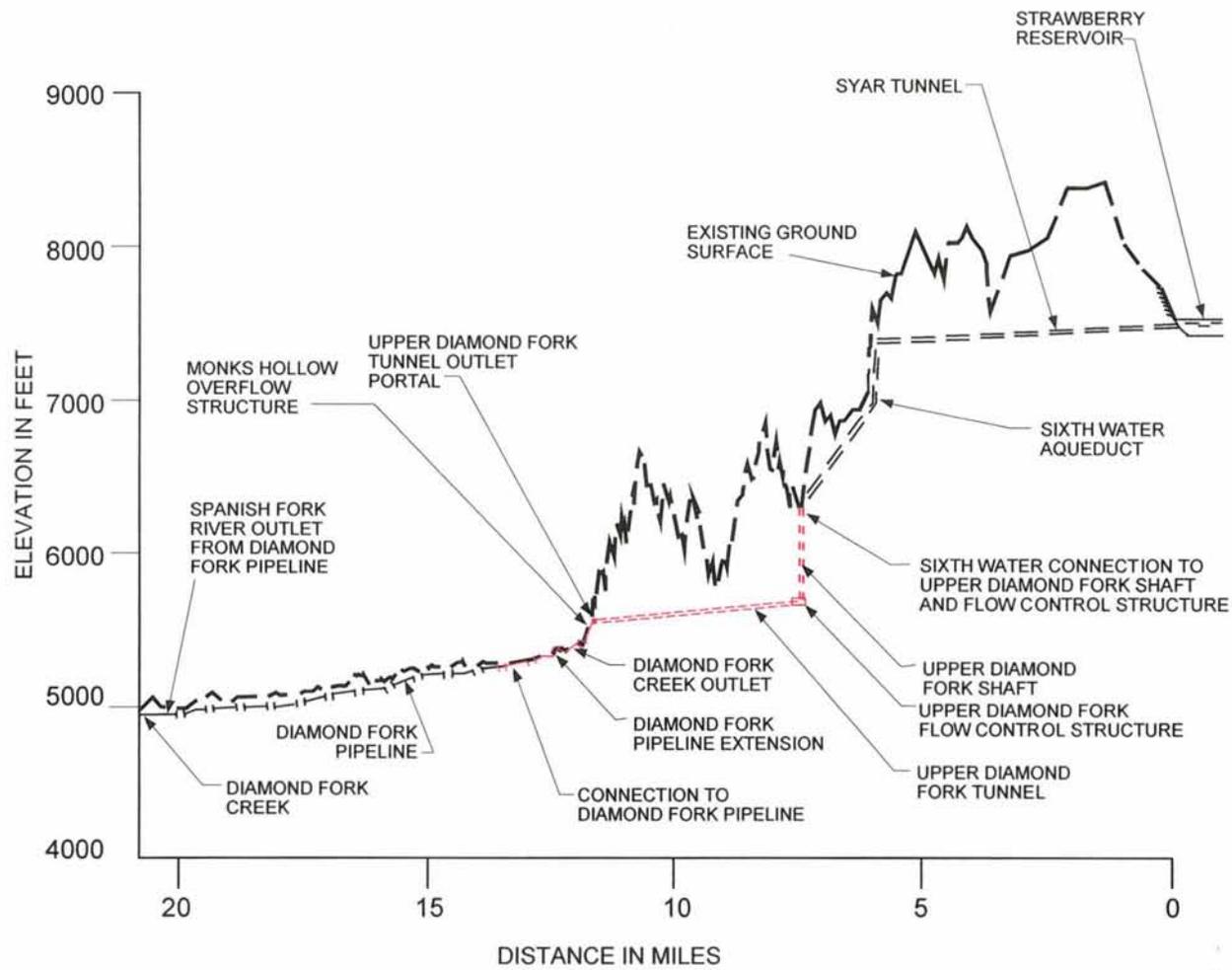
## 1.6 Interim Operation of the Proposed Action Modifications

The Proposed Action Modifications would be operated on an interim basis the same as described in the FS-FEIS, Chapter 1, Section 1.4, Pages 1-35 to 1-45, except for the following changes:

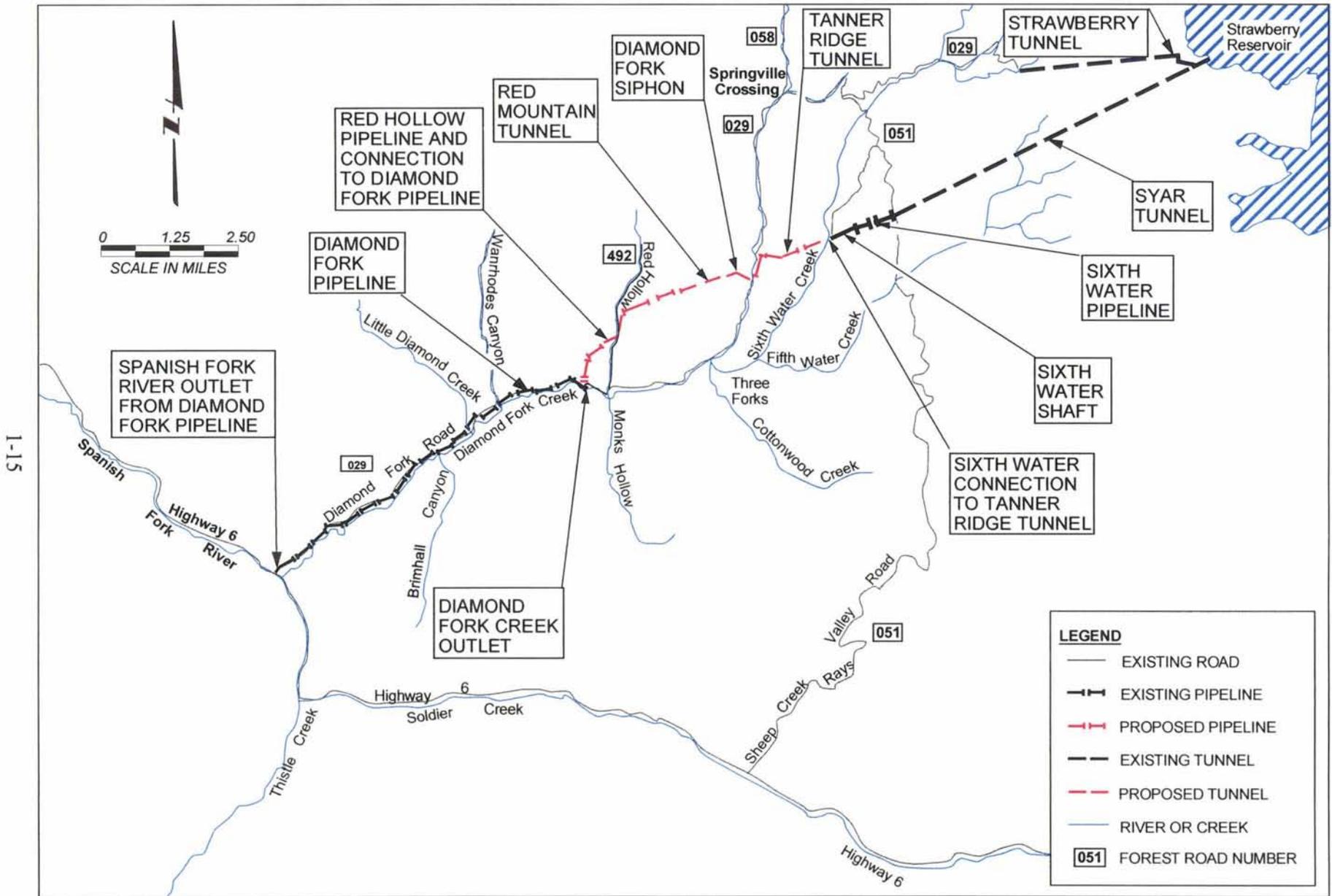
- The elevation profile of the Proposed Action Modifications is shown on Figure 1-1 and Inset 3, Map A-1. The Proposed Action features (Map 1-2) and elevation profile (Figure 1-2) from the FS-FEIS are included only for comparison to the Proposed Action Modifications.
- The quantity and timing of minimum streamflows would remain the same as described in the FS-FEIS, except the location of minimum streamflow release to Diamond Fork Creek, which would be about 5,850 feet upstream of the location described in the FS-FEIS. This change would increase the flows in this reach of Diamond Fork Creek over existing conditions. Although the flows would be the same as shown in the FS-FEIS, the flow information is repeated in the following paragraphs and tables for the reader's convenience.

### **Diamond Fork Creek Between Three Forks and Diamond Fork Creek Outlet**

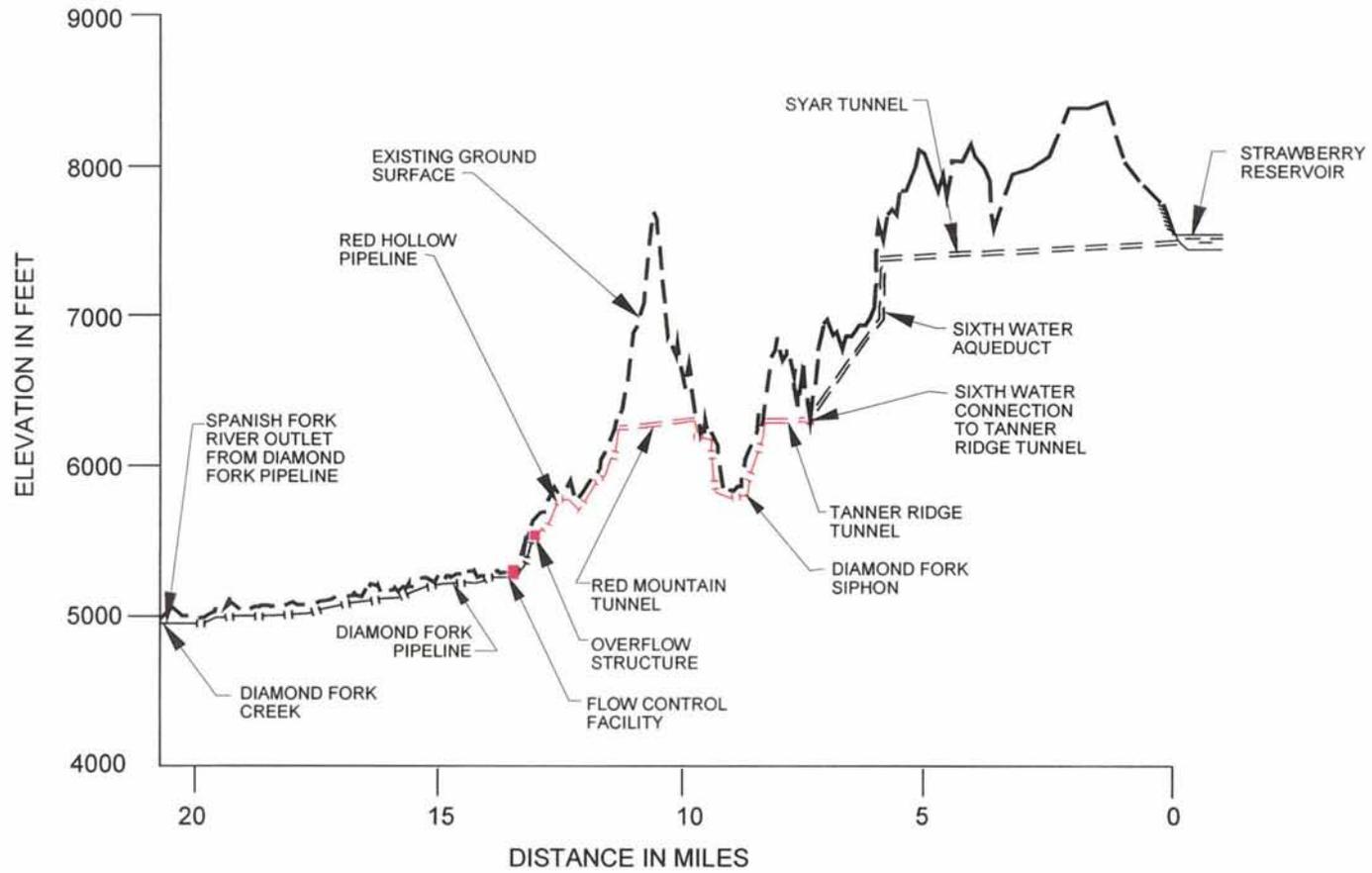
Table 1-2 (which is the same as Table 1-7 Chapter 1, Section 1.4.3.4, Page 1-41 of the FS-FEIS) shows the estimated average monthly flows in Diamond Fork Creek below Three Forks under the Proposed Action Modifications. Total annual average volume of water in Diamond Fork Creek below Three Forks over the 44-year analysis period would be 37,600 acre-feet. This represents an annual average natural gain (from Diamond Fork Creek above Three Forks and Cottonwood Creek) of more than 9,800 acre-feet over the flow of 27,700 acre-feet in Sixth Water Creek below Fifth Water Creek.



**Figure 1-1**  
**Proposed Action Modifications Elevation Profile**



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**Figure 1-2**  
**Proposed Action Elevation Profile**

**Table 1-2**  
**Estimated Streamflows in Diamond Fork Creek Below Three Forks**  
**Under the Proposed Action Modifications**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Average flows and discharges over the entire 44-year period of analysis</b>												
cfs <sup>a</sup>	42	36	33	32	34	38	80	134	64	45	42	42
Acre-feet <sup>b</sup>	2,600	2,100	2,000	2,000	1,900	2,300	4,800	8,200	3,800	2,800	2,600	2,500
<b>Representative dry-year and wet-year monthly average flows (cfs)</b>												
Dry year <sup>c</sup>	41	34	29	33	31	31	37	49	32	33	33	39
Wet year <sup>d</sup>	44	40	36	34	35	37	239	389	162	59	51	47

<sup>a</sup>Rounded to nearest cfs.

<sup>b</sup>Rounded to nearest 100 acre-feet.

<sup>c</sup>The dry-year monthly average flows are based on natural runoff conditions that would have historically occurred in 1961.

<sup>d</sup>The wet-year monthly average flows are based on natural runoff conditions that would have historically occurred in 1952.

#### **Diamond Fork Creek Between Diamond Fork Creek Outlet and Spanish Fork River Outlet**

Releases to Diamond Fork Creek at Diamond Fork Creek Outlet under the Proposed Action Modifications would maintain minimum flows of about 60 cfs from October through April and about 80 cfs from May through September (representative dry-year and wet-year monthly average flows).

The total estimated annual average volume of water in Diamond Fork Creek below Diamond Fork Creek Outlet would be 55,400 acre-feet over the 44-year analysis period. Table 1-3 (which is the same as Table 1-8 in Chapter 1, Section 1.4.3.5, Page 1-42 of the FS-FEIS) shows estimated flows in Diamond Fork Creek at a point about 3,270 feet upstream from Red Hollow under the Proposed Action Modifications (see Inset 6, Map A-1). The flows would consist of releases from Strawberry Tunnel (17,100 acre-feet) to maintain minimum flows in Sixth Water Creek, Strawberry Tunnel seepage and natural flow in Sixth Water and Diamond Fork Creeks (20,500 acre-feet), and releases from the proposed Diamond Fork Creek Outlet (17,800 acre-feet). The streamflows are estimated at the upper end of the reach, and accretion flows occur throughout the stream reach to Spanish Fork River.

**Table 1-3**  
**Estimated Streamflows in Diamond Fork Creek Below Diamond Fork Creek Outlet**  
**Under the Proposed Action Modifications**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Average flows and discharges over the entire 44-year period of analysis</b>												
cfs <sup>a</sup>	61	60	60	60	60	60	85	140	89	82	81	80
Acre-feet <sup>b</sup>	3,700	3,600	3,700	3,700	3,400	3,700	5,000	8,600	5,300	5,100	4,900	4,800
<b>Representative dry-year and wet-year monthly average flows (cfs)</b>												
Dry year <sup>c</sup>	61	60	60	60	60	60	60	81	80	81	81	80
Wet year <sup>d</sup>	61	60	60	60	59	60	239	389	162	82	81	80

<sup>a</sup>Rounded to nearest cfs.

<sup>b</sup>Rounded to nearest 100 acre-feet.

<sup>c</sup>The dry-year monthly average flows are based on natural runoff conditions that would have historically occurred in 1961.

<sup>d</sup>The wet-year monthly average flows are based on natural runoff conditions that would have historically occurred in 1952.

- The Supervisory Control and Data Acquisition system is the same as described in Chapter 1, Section 1.4.5, Page 1-46 of the FS-FEIS, except the remote telemetry units would be at the Monks Hollow Overflow Structure, the relocated Diamond Fork Creek Outlet, and the connection of Diamond Fork Pipeline Extension with the existing Diamond Fork Pipeline.
- Operations and maintenance (O&M) access to primary project features would be along existing roads and the new permanent access road to the Upper Diamond Fork Tunnel outlet portal. The new road would be gated where it meets Diamond Fork Road to prohibit motorized public use, and O&M access to Upper Diamond Fork Tunnel would be through an access portal at the tunnel outlet. O&M access to Upper Diamond Fork Shaft and Upper Diamond Fork Flow Control Structure would be through the service shaft and elevator located at Sixth Water Aqueduct.

### 1.7 Summary of Other Characteristics

The summary of other characteristics of the Proposed Action Modifications are the same as described in the FS-FEIS, Chapter 1, Section 1.7, Pages 1-63 through 1-74, except for the following changes:

- Construction of the Proposed Action Modifications would begin in fall 2000 upon completion of the NEPA compliance. The projections are subject to change as the design is completed and the construction program is refined. Table 1-4 shows a construction summary and schedule.

**Table 1-4  
Construction Summary and Schedule for the Proposed Action Modifications**

Diamond Fork System Proposed Action Modification Feature	Segment Length (feet)	Average Production (feet/day)	Construction Duration (work days)	Construction Schedule	Average Personnel (persons/month)
Sixth Water Connection to Upper Diamond Fork Shaft	50	NA <sup>1</sup>	120	November 2001 to December 2002	10 to 20
Upper Diamond Fork Shaft	650	15	45	November 2001 to December 2002	10 to 20
Upper Diamond Fork Flow Control Structure	NA	NA	200	November 2001 to June 2003	10 to 20
Upper Diamond Fork Tunnel	22,900	50	460	October 2000 to May 2003	40 to 60
Monks Hollow Overflow Structure	NA	NA	160	June 2001 to October 2002	10 to 20
Diamond Fork Creek Outlet	1,500	100	20	June 2001 to October 2002	10 to 20
Diamond Fork Pipeline Extension	6,670	65	100	June 2001 to October 2002	10 to 20
Connection to Diamond Fork Pipeline	NA	NA	10	October 2002	10 to 20
Access Road and Road Reconstruction	6,684	NA	460	October 2000 to May 2003	10 to 20

<sup>1</sup>NA means length and production rate not applicable

- Construction transportation requirements of the Proposed Action Modifications include a maximum of 55 trips per day for 460 workdays, starting in October 2000 and ending in May 2004.
- Table 1-5 lists estimated construction material requirements for the Proposed Action Modifications.

**Table 1-5  
Estimated Construction Material Requirements for the Proposed Action Modifications**

Type of Material	Use of Material	Quantity
Concrete (cubic yards)	Tunnel Lining	35,000
	Pipe Lining, Coating and Bedding	3,000
	Pipeline Structures	1,000
	Flow Control and Overflow Structures	1,000
	<b>Total</b>	<b>30,000</b>
Steel (pounds)	Concrete Reinforcing	6,000,000
	Pipe Cylinder	9,000,000
	Valves	38,000
	<b>Total</b>	<b>15,038,000</b>

- The Proposed Action Modifications would result in a decrease of 94 acres of land area disturbed during construction, and a decrease of 3.7 acres of permanent land disturbance, compared to the temporary and permanent land disturbance that would have resulted from the Proposed Action (see the FS-FEIS, Chapter 1, Section 1.7.6, Table 1-33). Table 1-6 shows land disturbance that would result from construction and operation of the Proposed Action Modifications.

**Table 1-6  
Land Disturbance Resulting From the Proposed Action Modifications (acres)**

Project Feature	Land Area Disturbed During Construction	Land Area to be Revegetated	Vegetated Land Area Permanently Disturbed	Existing Disturbed Areas Returned to Previous Use
Sixth Water Connection to Upper Diamond Fork Shaft, Upper Diamond Fork Shaft and Service Shaft	1.0 <sup>a</sup>	0	0	1.0
Upper Diamond Fork Tunnel, Outlet Portal, Monks Hollow Overflow Structure, Access Road	2.2	1.1	1.1	0
Diamond Fork Creek Outlet	1.0	0.9	0.1 <sup>b</sup>	0
Diamond Fork Pipeline Extension/Road Reconstruction	18.8 <sup>c</sup>	16.3 <sup>d</sup>	0.9 <sup>e</sup>	2.4
Waste Disposal Area and Construction Staging Area 3	17.3	17.3	0	0
Construction Staging Areas 1 and 5	4.0 <sup>f</sup>	4.0	0	0
<b>Total</b>	<b>44.3</b>	<b>39.6</b>	<b>2.1</b>	<b>3.4</b>

**Notes:**

<sup>a</sup>Includes land and streambed previously disturbed in Sixth Water Creek

<sup>b</sup>Includes energy dissipation structure and riprap outlet channel to Diamond Fork Creek

<sup>c</sup>Includes existing Diamond Fork Road and new road alignment that would become upgraded Diamond Fork Road

<sup>d</sup>Includes 0.8 acre of Diamond Fork Road section to be ripped up and revegetated

<sup>e</sup>Includes 800 feet of re-aligned Diamond Fork Road and 1,150 feet along road section to be raised

<sup>f</sup>Includes two previously disturbed staging areas

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***Diamond Fork System***

***Final Environmental Assessment for the  
Proposed Action Modifications***

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***Chapter 2***

***Affected Environment and  
Environmental Consequences***

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## **Chapter 2**

### **Affected Environment and Environmental Consequences**

#### **2.1 Introduction**

This chapter describes the affected environment (baseline conditions) of resources of the human environment that would be impacted by construction and operation of the Proposed Action Modifications as described in Chapter 1. It also documents the environmental consequences (impacts) on the quality of the human environment.

Baseline conditions are the physical conditions of the impacted resources, currently existing in the impact area of influence. The human environment is defined in this study as all of the environmental resources, including the social and economic conditions, occurring in the impact area of influence.

The impact analysis presented in this chapter focuses only on the impacts that would occur from construction and operation of the Proposed Action Modifications. It does not repeat any environmental conditions and impacts that remain unchanged from those described in the Final Supplement to the Final Environmental Impact Statement (FS-FEIS) (CUWCD 1999a). Where appropriate, sections in the FS-FEIS where information has not changed or still applies are referenced. Some sub-sections (such as issues eliminated from further analysis, issues addressed in the impact analysis and potential impacts eliminated from further analysis) that appeared in the FS-FEIS are not used in the Environmental Assessment (EA), as they are not applicable. The reader also will notice that the use of sub-sections throughout the EA is not consistent. The use of sub-sections varies with the level of detail necessary to describe the impacts on each resource.

The impact analysis incorporates the Standard Operating Procedures (SOPs) described in Chapter 1, Section 1.7.8 and Section 1.7.9, and the Noxious Weed Control Plan (Appendix A), of the FS-FEIS (CUWCD 1999a). It also incorporates the Environmental Commitments shown in Appendix A of this EA. The reader of the EA also should refer to the FS-FEIS for the glossary (page G-1), and abbreviations and acronyms (page A&A-1).

Interim operation of the Proposed Action with regard to streamflows, amounts, and timing has not been modified from that described in Chapter 1, Section 1.4, Page 1-35 of the FS-FEIS (CUWCD 1999a). The only change is the location of the Diamond Fork Creek Outlet. The outlet has been moved approximately 5,850 feet upstream from its location under the Proposed Action. This change increases the length of Diamond Fork Creek that would receive the required minimum streamflows at Monks Hollow Dam site as required by Public Law 102-575.

The impact analysis presented in this chapter is supported by six technical memoranda that provide detailed information on Water Resources, Wetland/Riparian Resources, Wildlife Resources, Aquatic Resources, Visual Resources, and Threatened and Endangered Species. These memoranda are contained in one document available from the Central Utah Water Conservancy District (CUWCD).

#### **2.2 Resources Not Specifically Covered**

A number of resources are not specifically covered in this chapter. The Proposed Action Modifications would not change the conditions of these resources or impacts on them from what was described in the FS-FEIS. These resources are:

- Soils
- Public Health and Safety, Noise Impacts

- Socioeconomics
- Mineral and Energy Resources
- Land Use Plans and Conflicts
- Indian Trust Assets and Environmental Justice

## **2.3 Water Resources**

### **2.3.1 Introduction**

This section addresses potential impacts on surface and groundwater quantity that would result from construction and operation of the Proposed Action Modifications.

### **2.3.2 Description of Impact Area of Influence**

The impact area of influence for water resources is the same as was described in Chapter 3, Section 3.2.4, Pages 3-3 and 3-4 of the FS-FEIS (CUWCD 1999a).

### **2.3.3 Affected Environment (Baseline Conditions)**

The baseline conditions are the same as were described in Chapter 3, Section 3.2.5, Pages 3-4 through 3-8 in the FS-FEIS (CUWCD 1999a). For the floodplain, baseline conditions include all existing natural and manmade features located in the floodplain.

### **2.3.4 Impact Analysis**

#### **2.3.4.1 Introduction**

The methodology and significance criteria are the same as were described in Chapter 3, Section 3.2.6, page 3-8 through 3-9 in the FS-FEIS (CUWCD 1999a). In addition, the following significance criterion has been added:

Any permanent change in the floodplain that would raise the 100-year flood flow level would be considered a significant impact.

Cross-sections were prepared of the area along Diamond Fork Creek near Red Hollow, where several Proposed Action Modifications features would be located. Manning's equation was used to estimate the 100-year flow level for each cross-section and to determine if the proposed features encroached on the floodplain within the 100-year flow level. More detail on this methodology is included in the *Diamond Fork System Proposed Action Modifications Environmental Assessment Technical Memoranda* (CUWCD 2000a).

#### **2.3.4.2 Impacts During Construction**

The impacts of the Proposed Action Modifications would be the same as those described for the Proposed Action in Chapter 3, Section 3.2.6.4.1, Page 3-9 of the FS-FEIS (CUWCD 1999a). Construction of the diagonal rock riprap grade control from the Diamond Fork Creek Outlet energy dissipation structure toward Diamond Fork Creek would not change the grade of the floodplain or raise the 100-year flood flow level. The energy dissipation structure would be constructed above the estimated 100-year flood flow level.

### ***2.3.4.3 Impacts During Operation***

The Proposed Action Modifications would not have any different impacts than those described in Chapter 3, Section 3.2.6.4.2, page 3-10 of the FS-FEIS (CUWCD 1999a). A flow analysis for cross-sections along Diamond Fork Creek showed no increase in the 100-year flood flow level from features of the Proposed Action Modifications. Therefore, there would be no significant impact. In addition, the 100-year flood flow would not reach the toe of the waste disposal area located near Red Hollow (see Inset 5, Map A-1). Detailed flow calculations are included in the technical memoranda (CUWCD 2000a).

### ***2.3.4.4 Impact Summary***

The Proposed Action Modifications would not cause any new impacts that were not already disclosed in the FS-FEIS (CUWCD 1999a).

## **2.4 Water Quality**

### **2.4.1 Introduction**

This section addresses the potential impact on surface water and groundwater quality that would result from construction and operation of the Proposed Action Modifications.

### **2.4.2 Description of Impact Area of Influence**

The impact area of influence for water quality is limited to the following reaches: 1) Sixth Water Creek from the Sixth Water Aqueduct to Diamond Fork Creek; and 2) Diamond Fork Creek from the location of the Proposed Action Diamond Fork Creek Outlet to the east end of the Proposed Action Modifications Waste Disposal Area (see Inset 5, Map A-1).

### **2.4.3 Affected Environment (Baseline Conditions)**

The baseline conditions remain the same as described in Chapter 3, Section 3.3.5, Pages 3-16 to 3-23 of the FS-FEIS (CUWCD 1999a).

### **2.4.4 Impact Analysis**

The methodology and significance criteria remain the same as described in Chapter 3, Section 3.3.6.1, Page 3-23 and Section 3.3.6.2, Page 3-24 of the FS-FEIS (CUWCD 1999a) and are not repeated here. The basic water quality significance criterion is whether or not water quality standards are met or exceeded.

#### ***2.4.4.1 Impacts During Construction***

Construction of the Sixth Water features (see Insets 1 and 2, Map A-1) would require short-term diversion of streamflows and produce a short-term increase in turbidity when the diverted flow is returned to the channel. With implementation of the SOPs (Chapter 1, Section 1.7.8.1, 1.7.8.3, 1.7.8.4, and 1.7.8.7, Pages 1-74 to 1-77 in the FS-FEIS (CUWCD 1999a), construction activities would not cause significant impacts on water quality.

Water quality in the intermittent stream channel in the area of the Upper Diamond Fork Tunnel Portal (see Inset 4, Map A-1) would not be impacted. As described in Chapter 1, Section 1.5.2.4 of the EA, the runoff water would

be conveyed in a culvert which would flow into the ditch at the waste disposal area. This would prevent any debris or sediment from being carried into Diamond Fork Creek during run-off periods.

There is a slight potential for some contaminants such as selenium to be found in waste rock removed from the tunnel and shafts. As described in Chapter 1, Section 1.5.4.2 of the EA, the waste material would be periodically tested for the presence of selenium and other contaminants and any contaminated material would be segregated in the waste disposal area. Appropriate measures (such as encapsulation and sufficient soil depth to prevent water infiltration) would be taken to prevent any water from coming into contact with this waste material and entering Diamond Fork Creek. Drainage collection and diversion ditches would be installed along the uphill perimeter of the waste disposal area diverting runoff water away from the disposed rock. These measures would prevent any significant water quality impacts from occurring in Diamond Fork Creek.

**2.4.4.2 Impacts During Operation**

The type and levels of impacts would be the same as described in Chapter 3, Section 3.3.6.4.2.1, Page 3-26 through 3-30 of the FS-FEIS (CUWCD 1999a).

The only change would be in the location of impacts on Diamond Fork Creek. Under the Proposed Action Modifications, the Diamond Fork Creek Outlet would be moved 5,850 feet upstream (see Inset 5, Map A-1) from its location under the Proposed Action. This change would shift the location of the release of minimum streamflows into Diamond Fork Creek and would result in the water quality improvement in an additional creek segment and would not result in any significant impacts. The values of key water quality parameters in this additional segment are shown in Table 2-1.

**Table 2-1  
Annual Average Water Quality Resulting From  
Interim Operation of Proposed Action Modifications  
Below Diamond Fork Creek Outlet**

	TDS (ppm)	pH (ppm)	DO (ppm) <sup>1</sup>		Temp. <sup>1</sup>	Nitrate (ppm)	Ammonia (ppm)	Phosphorus (ppm)		Selenium <sup>3</sup> (ppb)
			Mixed	Deep <sup>2</sup>				Mixed	Deep	
Change	-33	-0.2	1.0	0.4	-6	-0.108	0.053	-0.060	0.002	0.7
Value	202	8.1	10.4	9.8	46	0.220	0.086	0.072	0.118	1.2

**Note:** The values in this table were extracted from Table 3-9, Chapter 3, Page 3-27 in the FS-FEIS (CUWCD 1999a)

<sup>1</sup>This value reflects temperature of water from below the thermocline (>33 ft. depth), since temperature depends on the depth where water is drawn from in the reservoir.

<sup>2</sup>Contributions from Strawberry Reservoir use DO concentrations at deep depths as opposed to mixed conditions

<sup>3</sup>Based on May through October values, and less than detection limit replaced with ½ detection limit

**2.4.4.3 Impact Summary**

The Proposed Action Modifications would not cause any significant impacts on water quality.

## **2.5 Wetlands**

### **2.5.1 Introduction**

This section addresses potential impacts on wetland/riparian resources that would result from construction and operation of the Proposed Action Modifications. More detail on wetland resources is provided in the technical memoranda (CUWCD 2000a).

### **2.5.2 Description of Impact Area of Influence**

The impact area of influence for wetland resources includes areas associated with Sixth Water Aqueduct, Monks Hollow Overflow Structure, Diamond Fork Pipeline Extension, Diamond Fork Creek Outlet, the tunnel portal access road, and Diamond Fork Road reconstruction (See Insets 1,2,4,5, and 6, Map A-1).

### **2.5.3 Affected Environment (Baseline Conditions)**

Wetland plant communities and community types within the impact area of influence are discussed in detail in the FS-FEIS (CUWCD 1999a), Chapter 3, Sections 3.4.5.1 and 3.4.5.2, Pages 3-39 through 3-43. Additional information specific to the Proposed Action Modifications is presented in this section.

#### ***2.5.3.1 Sixth Water Connection to Upper Diamond Fork Shaft, and Upper Diamond Fork Shaft***

Sixth Water Creek has been modified by past construction of the Sixth Water Aqueduct and Flow Control Structure and the placement of riprap along the bank of Sixth Water Creek for erosion protection. There are no wetlands or riparian plants in the affected area.

#### ***2.5.3.2 Diamond Fork Creek Outlet***

The relatively flat site of the Diamond Fork Creek Outlet is adjacent to Diamond Fork Creek (see Inset 5, Map A-1). Riparian vegetation includes a narrow band of cottonwood trees lining the stream edge. There are no wetlands in the affected area.

#### ***2.5.3.3 Diamond Fork Road Reconstruction***

The affected area contains three community types: palustrine emergent marsh, riparian forest and riparian shrub. Riparian vegetation consists of cottonwoods growing along the streamside of Diamond Fork Road and willows and herbaceous vegetation in the Diamond Fork Creek floodplain. Cottonwoods range in height from about 6 feet to over 35 feet. In some reaches of the affected area cattle grazing, cattle trampling and dispersed recreation use have adversely affected riparian vegetation.

There is an existing palustrine emergent marsh wetland between Diamond Fork Creek Road and Diamond Fork Creek. Its water supply is from a cool-water sulfur spring within the area where the road would be reconstructed behind a new retaining wall. Three separate springs seep from a cut-slope immediately adjacent to the road. The water flows about 130 feet along the edge of the road to a culvert that crosses underneath the road and discharges into the marsh, which drains into Diamond Fork Creek at multiple locations. Cattle trampling and vehicle trespass periodically adversely affect the wetland vegetation along the edge of the road where the spring water emerges and flows to the culvert.

The overall marsh wetland area is approximately 270 feet long (parallel to creek) by 80 feet wide. The inundated portion of the wetland is approximately 70 feet long by 50 feet wide with a water depth of about 12 inches at the downstream edge. The marsh vegetation includes algae, watercress, moss, Nebraska sedge and reedtop in the inundated area. The drier margins of the wetland include coyote willow, curly dock, and several rush species. Based on field observations, the principal wetland functions are sediment retention/stabilization, groundwater recharge, and nutrient retention.

## **2.5.4 Impact Analysis**

### ***2.5.4.1 Methodology***

The methodology is the same as described in Chapter 3, Section 3.4.6.1, Page 3-44 of the FS-FEIS (CUWCD 1999a).

### ***2.5.4.2 Significance Criteria***

The significance criteria are the same as described in Chapter 3, Section 3.4.6.2, Page 3-175 of the FS-FEIS (CUWCD 1999a).

### ***2.5.4.3 Impacts During Construction***

**2.5.4.3.1 Upper Diamond Fork Shaft.** No impacts on wetlands or riparian vegetation would result from construction and operation of the Proposed Action Modifications.

**2.5.4.3.2 Diamond Fork Creek Outlet.** No wetland impacts would result from the construction of the Diamond Fork Creek Outlet. Several cottonwood trees along the bank where the outlet would join Diamond Fork Creek could potentially be removed by construction of the outlet channel. Cottonwood trees would be planted along this new channel to enhance the riparian corridor. No significant wetland or riparian impacts would result from construction of these features.

**2.5.4.3.3 Road Reconstruction.** The road reconstruction would occur within the riparian forest and riparian shrub community types. About 5 to 10 percent of the existing cottonwoods adjacent to the Diamond Fork Road would be permanently removed by the road reconstruction. Cottonwood trees would be planted in a scattered pattern at the base of the retaining wall to enhance the riparian buffer.

The existing marsh wetland between Diamond Fork Road and Diamond Fork Creek would not be impacted. The spring water that supports the wetland would be collected and conveyed under Diamond Fork Road and Diamond Fork Pipeline Extension to the wetland (see Inset 7, Map A-1).

### ***2.5.4.4 Impacts During Operation***

No significant adverse wetland or riparian impacts would result from interim operation of the Proposed Action Modifications. The reach of Diamond Fork Creek that would receive minimum streamflows from Diamond Fork Creek Outlet could have a slight increase in subsurface water within floodplain areas and improve growing conditions for riparian vegetation.

### ***2.5.4.5 Impact Summary***

The Proposed Action Modifications would not cause any significant impacts on wetland or riparian resources.

## 2.6 Aquatic Resources

### 2.6.1 Introduction

This section addresses the potential impacts on aquatic resources that would result from construction and operation of the Proposed Action Modifications. More detail on aquatic resources is provided in the technical memoranda (CUWCD 2000a)

### 2.6.2 Description of Impact Area of Influence

The impact area of influence for aquatic resources includes 360 feet of Sixth Water Creek adjacent to the Sixth Water Aqueduct (see Inset 1, Map A-1), 200 feet of Red Hollow Creek near its confluence with Diamond Fork Creek, and Diamond Fork Creek from the location of the Proposed Action Diamond Fork Creek Outlet to the Proposed Action Modifications Diamond Fork Creek Outlet (see Inset 6, Map A-1). Table 2-2 describes the adjusted stream reaches on Diamond Fork Creek (see Table 3-19 in the FS-FEIS).

**Table 2-2  
Description of Adjusted Stream Reaches on Diamond Fork Creek**

Major Stream Designation	Component Reaches	Reach Description	Reach Length (miles)
Diamond Fork Creek	Reach 2 Three Forks* to Diamond Fork Creek Outlet (Above Monks Hollow)	Diamond Fork Creek from Three Forks downstream to Diamond Fork Creek Outlet (Above Monks Hollow)	1.43
	Reach 3, Segment 1	Diamond Fork Creek from Diamond Fork Creek Outlet (Above Monks Hollow) to just above Diamond Campground	2.41

\*Three Forks is the confluence of Diamond Fork Creek, Sixth Water Creek, and Cottonwood Creek.

### 2.6.3 Affected Environment (Baseline Conditions)

The baseline conditions remain the same as described in Chapter 3, Section 3.6.5, Pages 3-71 to 3-78 of the FS-FEIS (CUWCD 1999a).

### 2.6.4 Impact Analysis

The methodology and significance criteria remain the same as described in Chapter 3, Section 3.6.6.1 Page 3-78 and Section 3.6.6.2, Pages 3-78 and 3-79 of the FS-FEIS (CUWCD 1999a) and are not repeated here. The basic aquatic resources significance criteria are a long-term reduction in sport fish biomass, whether or not water quality standards for protection of aquatic life are violated, and changes that would limit aquatic habitats.

### ***2.6.4.1 Impacts During Construction***

Construction of the Sixth Water features (see Insets 1 and 2, Map A-1) would require short-term diversion of streamflows and would temporarily remove 0.36 acre of aquatic resource habitat. Temporary removal of this habitat would be less than 1 percent of the total aquatic resource habitat on Sixth Water Creek and this impact would not be significant. There would be a short-term increase in turbidity when the diverted flow is returned to the stream channel at the end of construction. With implementation of the SOPs (Chapter 1, Sections 1.7.8.1, 1.7.8.3, 1.7.8.4, and 1.7.8.7, Pages 1-74 to 1-78 in the FS-FEIS (CUWCD 1999a)), construction of the Sixth Water features would not cause significant impacts on aquatic resources.

Construction of the Diamond Fork Pipeline Extension and Road Reconstruction (see Inset 6, Map A-1) would involve crossing Red Hollow Creek about 300 feet upstream of its confluence with Diamond Fork Creek. Diversion of the stream and construction of a box culvert to carry the reconstructed Diamond Fork Road would temporarily remove 0.05 acre of aquatic resource habitat from the creek, primarily affecting aquatic macroinvertebrate habitat. Temporary removal of this habitat would be less than 1 percent of the total aquatic resource habitat on Red Hollow Creek and with implementation of the SOPs (Chapter 1, Sections 1.7.8.1, 1.7.8.3, 1.7.8.4, and 1.7.8.7, Pages 1-74 to 1-78 in the FS-FEIS (CUWCD 1999a)), construction of the Diamond Fork Pipeline Extension and Road Reconstruction would not have significant impacts on aquatic resource habitat.

### ***2.6.4.2 Impacts During Operation***

The type and levels of impacts would be the same as described in Chapter 3, Sections 3.6.6.4.2.1, 3.6.6.4.2.2, 3.6.6.4.2.4, 3.6.6.4.2.5, and 3.6.6.4.2.6, Pages 3-79 through 3-88 of the FS-FEIS (CUWCD 1999a).

The only change would be in the reach of Diamond Fork Creek from Three Forks to the previous location of Diamond Fork Creek Outlet under the Proposed Action. Under the Proposed Action Modifications, Diamond Fork Creek Outlet would be moved 5,850 feet upstream (see Inset 6, Map A-1) of its location under the Proposed Action adjacent to the end of the existing Diamond Fork Pipeline. This change would shift the location of the release of minimum streamflows into Diamond Fork Creek upstream and provide more weighted usable area for trout and other aquatic resources. Table 2-3 shows the flows predicted to occur in an average year, which were used in the biomass analysis.

**Table 2-3  
Average Monthly Flows Used in the Biomass Analysis for  
Diamond Fork Creek From Three Forks to Diamond Campground  
Under the Proposed Action Modifications (cfs)**

Stream Reach	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Diamond Fork Creek (From Three Forks to Diamond Fork Creek Outlet)</b>												
Baseline	39	16	14	12	14	18	67	180	260	295	230	128
Proposed Action Modifications	42	36	33	32	34	38	80	134	64	45	42	42
<b>Diamond Fork Creek (From Diamond Fork Creek Outlet to Diamond Campground)</b>												
Baseline	39	16	14	12	14	18	67	180	260	295	230	128
Proposed Action Modifications	61	60	60	60	60	60	85	140	89	82	81	80

The Instream Flow Incremental Methodology (IFIM) results indicate that the Proposed Action Modifications would increase adult brown trout habitat 235 percent over baseline conditions, and juvenile brown trout habitat would increase 123 percent over baseline conditions (Addley and Hardy 1998). Adult cutthroat trout habitat would increase 199 percent over baseline conditions, and juvenile cutthroat trout habitat would increase 164 percent over baseline conditions (Addley and Hardy 1998). The additional length of stream channel receiving minimum streamflows from Diamond Fork Creek Outlet would increase trout standing crop from 73 pounds per acre to 247 pounds per acre under the Proposed Action Modifications (see Table 2-4). The Proposed Action Modifications would increase trout production by 292 pounds over the Proposed Action. The increase in trout standing crop would not result in any significant impacts.

**Table 2-4  
Estimated Fish Production for Diamond Fork Creek  
From Three Forks to Diamond Campground  
Under the Proposed Action Modifications**

Stream/Reach	Average Width (ft) <sup>a</sup>	lb/Acre	lb/Reach	Change from Baseline (lb/reach)
<b>Diamond Fork Creek Below Three Forks (From Three Forks to Diamond Fork Creek Outlet)</b>				
Baseline	23 <sup>b</sup>	72	287	
Proposed Action Modifications	26 <sup>b</sup>	192	866	+579
<b>Diamond Fork Creek From Diamond Fork Creek Outlet to Diamond Campground</b>				
Baseline	24	73	499	
Proposed Action Modifications	29	247	2,092	+1,593

<sup>a</sup> Average stream widths are estimated for brown trout production, which is favored over cutthroat trout production by the flows shown in Table 2-3, according to the results of IFIM studies prepared by Addley and Hardy (1998) and Utah Division of Wildlife Resources (1998).

<sup>b</sup> Average stream width estimated from IFIM study prepared by Addley and Hardy (1998).

Flows in Diamond Fork Creek below Diamond Fork Creek Outlet under the Proposed Action Modifications would favor adult brown trout production over adult cutthroat trout. This reach would contain minimal brown trout spawning and fry habitat under the Proposed Action Modifications flows.

Average stream temperatures would be the same as described in Chapter 3, Section 3.6.6.4.2.3, Page 3-83 of the FS-FEIS (CUWCD 1999a), and the Proposed Action Modifications would cause no significant temperature impacts in the affected reach of Diamond Fork Creek.

The impacts of maintenance operations and emergency operations on aquatic resources and their habitat would be the same as described in Chapter 3, Section 3.6.6.4.2.3, Pages 3-83 and 3-84 of the FS-FEIS (CUWCD 1999a). These impacts would not be significant on predicted long-term trout standing crop since maintenance operations and emergency operations would be short-term and within the range of natural flows that can occur in this reach of Diamond Fork Creek.

### **2.6.4.3 Impact Summary**

The Proposed Action Modifications would not have any significant impacts on aquatic resources.

## 2.7 Wildlife Resources

### 2.7.1 Introduction

This section addresses potential impacts on wildlife species and their habitats that would result from construction and operation of the Proposed Action Modifications. Additional information on wildlife resources may be found in the technical memoranda (CUWCD 2000a).

### 2.7.2 Description of Impact Area of Influence

The wildlife impact area of influence consists of terrestrial and aquatic habitats in the Sixth Water Aqueduct area of Sixth Water Creek (see Inset 1, Map A-1) and the Monks Hollow overflow structure, Diamond Fork Pipeline Extension and Road Reconstruction, and Diamond Fork Creek Outlet construction areas in Diamond Fork Creek canyon (see Insets 4, 5, and 6, Map A-1).

### 2.7.3 Affected Environment (Baseline Conditions)

This section describes representative wildlife species and habitats that could be affected by construction and operation of the Proposed Action Modifications.

#### 2.7.3.1 *Wildlife Habitat*

Five primary plant communities that provide wildlife habitat were identified during field studies within the impact area of influence:

- Sagebrush/Grass
- Pinyon/Juniper
- Mountain Brush
- Wetlands
- Previously Disturbed Areas

Detailed descriptions of these plant communities are contained in Chapter 3, Section 3.5.5.1, Page 3-58 of the FS-FEIS (CUWCD 1999a) and are not repeated in this section.

#### 2.7.3.2 *General Wildlife*

Threatened, endangered, candidate and special-concern species in the impact area of influence are described in Section 2.8, Special-Status Species. The plant communities identified in Section 2.7.3.1 provide habitat for a diverse assemblage of wildlife species. The following major wildlife groups may inhabit these vegetation communities: amphibians, reptiles, raptors, upland game birds, passerine (perching) birds and related species, small mammals, mammalian predators, big game and wetland-associated wildlife. These wildlife groups are described in more detail in Chapter 3, Section 3.5.5.2, Pages 3-58 through 3-60 in the FS-FEIS (CUWCD 1999a) and are not repeated here.

The primary species group that could be affected is big game. The foothills in the Diamond Fork Creek drainage serve as important winter range for large numbers of mule deer and elk and a small population of moose that summer in the Wasatch Mountains. Only the mule deer and elk habitat would be affected by the Proposed Action

Modifications. The big-game winter range habitat in the impact area of influence is largely comprised of mountain brush and sagebrush/grass. Map 2-1 shows the locations of designated critical big-game winter range habitat in the impact area of influence.

## **2.7.4 Impact Analysis**

### **2.7.4.1 Methodology**

The methodology is the same that was used in Chapter 3, Section 3.5.6.1, Page 3-60 of the FS-FEIS (CUWCD 1999a).

### **2.7.4.2 Significance Criteria**

The significance criteria remain the same as described in Chapter 3, Section 3.5.6.2, Page 3-62 of the FS-FEIS (CUWCD 1999a). Only the second criterion would apply to potential impacts of the Proposed Action Modifications, which is repeated here.

- Activities cause the loss (temporary or permanent) or unavailability of “critical” big-game winter range habitat (as officially designated by the Utah Division of Wildlife Resources) from December 1 to April 15.

### **2.7.4.3 Proposed Action Modifications**

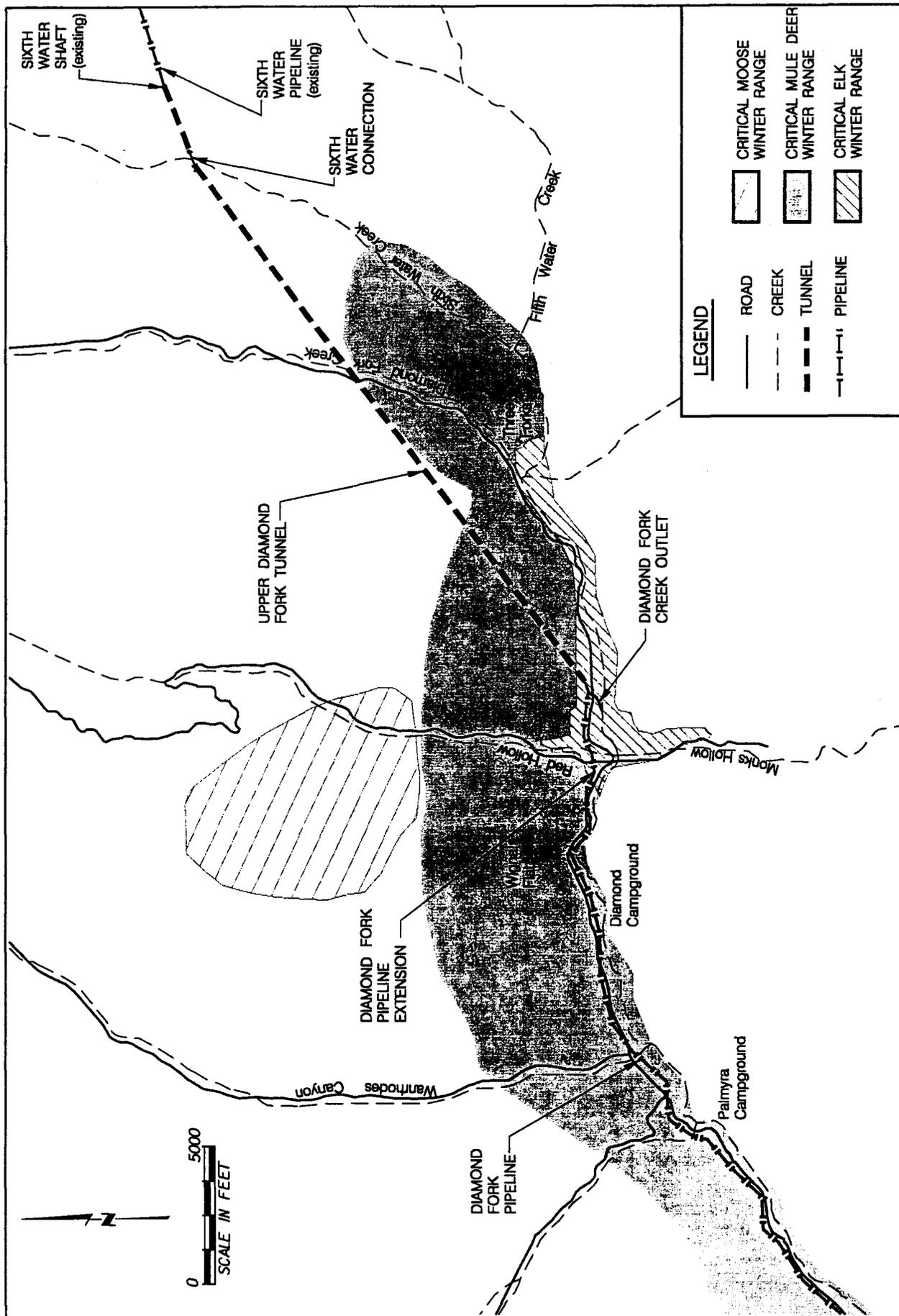
#### **2.7.4.3.1 Impacts During Construction**

**2.7.4.3.1.1 Vegetation/Wildlife Habitats.** The Proposed Action Modifications would disturb a total of 44.3 acres during construction, including vegetated areas and previously disturbed areas (see Chapter 1, Section 1.7, Table 1-6). Of this area, 2.1 acres would be permanently disturbed and the remainder would be revegetated in accordance with the SOPs described in Chapter 1, Section 1.7.8, Page 1-74 of the FS-FEIS (CUWCD 1999a). Temporary disturbance of this wildlife habitat would not be considered a significant impact because: 1) the disturbance would occur in small increments over a 3½-year period; 2) the majority of habitat would be restored to pre-construction conditions; and 3) the affected habitats are abundant in the impact area of influence.

The permanent loss of 2.1 acres of wildlife habitat would not be a substantial acreage loss compared to available habitat in the impact area of influence. About half of the permanent habitat loss would be immediately adjacent to Diamond Fork Road and currently provides low-value habitat. The Proposed Action Modifications would disturb 3.7 acres less wildlife habitat than the disturbance that would occur under the Proposed Action (see Chapter 1, Section 1.7.6, Table 1-33 of the FS-FEIS [CUWCD 1999a]).

**2.7.4.3.1.2 General Wildlife.** The impacts on mammalian predators and reptiles, raptors, upland game birds, passerine birds and related species would be the same as described in Chapter 3, Section 3.5.6.4.1.2, Pages 3-62 to 3-63 of the FS-FEIS (CUWCD 1999a), but less extensive because of the reduction in disturbed acreage. The impacts would be insignificant.

Construction of the Proposed Action Modifications would result in impacts on critical winter range habitat for mule deer and elk in the Diamond Fork drainage. Of the 44.3 acres disturbed during construction, 6.9 acres of critical mule deer winter range and 29.7 acres of critical elk winter range would be disturbed.



Map 2-1  
Critical Big Game Habitat

The Proposed Action Modifications would result in the return of 3.4 acres of existing disturbed areas to previous use, including 2.4 acres of critical habitat. All but 2.1 acres (0.47 acre of mule deer critical winter range and 2.33 acres of elk critical winter range) would be revegetated. Disturbance would occur over a 3½-year period.

Tunnel boring, pipeline excavation, waste material disposal and construction traffic would increase noise levels in critical big-game winter range. The expected temporary and permanent loss of critical winter range habitat would not be considered a significant impact because the habitat loss has already been offset by previously acquired wildlife habitat and by current management of wildlife habitat areas that were obtained under the Diamond Fork System Plan. Under this plan, the federal government purchased land to mitigate habitat losses that were projected in the Final Supplement to the Final Environmental Impact Statement (1990 FS-FEIS) (USBR 1990) but never occurred. A total of 3,782 acres (3,303 Habitat Evaluation Procedure units) were acquired to offset anticipated impacts documented in the 1990 FS-FEIS. The majority of the projected impacts involved construction of Monks Hollow dam, reservoir and associated facilities (359 acres).

**2.7.4.3.2 Impacts During Operation.** These impacts would be the same as described in Chapter 3, Section 3.5.6.4.2, Page 3-65 of the FS-FEIS (CUWCD 1999a) and would not be significant. The only exception is that the Red Hollow Resource Management Area would not be affected by operation of the Proposed Action Modifications.

**2.7.4.3.3 Impact Summary.** The Proposed Action Modifications would not cause any significant impacts on wildlife habitat or species.

## **2.8 Special-Status Species**

### **2.8.1 Introduction**

This section addresses the potential effects of the Proposed Action Modifications on special-status species, including threatened and endangered plants and animals and special-status species in the impact area of influence.

With only four exceptions, the documentation presented in Chapter 3, Section 3.7, Pages 3-99 through 3-125 of the FS-FEIS (CUWCD 1999a) remains applicable for the Proposed Action Modifications. The four exceptions involve one colony of Ute ladies'-tresses (*Spiranthes diluvialis*) near the Diamond Fork Creek Gaging Station, leatherside chub (*Gila copei*), peregrine falcon (*Falco peregrinus*), and Canada lynx (*Lynx canadensis*).

### **2.8.2 Description of Impact Area of Influence**

The impact area of influence for special-status species includes any area that would be directly or indirectly disturbed by construction activities or operation of the Proposed Action Modifications as described in Chapter 1 of this EA and in Chapter 1 of the FS-FEIS (CUWCD 1999a).

### **2.8.3 Affected Environment (Baseline Conditions)**

The baseline conditions for Ute ladies'-tresses remains the same as described in Chapter 3, Section 3.7.5.1.1, Pages 3-102 through 3-105 of the FS-FEIS (CUWCD 1999a). The only colony to be affected by the Proposed Action Modifications would be near the Gaging Station (see Chapter 3, Table 3-37, Page 3-103 in the FS-FEIS).

Baseline conditions for leatherside chub remain the same as described in Chapter 3, Section 3.7.5.2.1, Pages 3-106 and 3-107 of the FS-FEIS (CUWCD 1999a).

The American peregrine falcon, which was covered in the FS-FEIS (CUWCD 1999a), has been removed from the Federal List of Endangered and Threatened Wildlife (Federal Register, August 25, 1999 Volume 64, Number 164, pages 46541-46558). Protection of peregrine falcon is still provided under authority of the Migratory Bird Treaty Act (16 U.S.C. 703-712).

Since preparation of the FS-FEIS, the Canada lynx (*Lynx canadensis*) has been listed as a threatened species (see Appendix B). In the western U.S., lynx habitat occurs in spruce/fir forests at higher elevations. Downed logs and windfalls provide cover for denning sites, escape, and protection from severe weather. The lynx range in the contiguous United States includes 16 states—Oregon, Idaho, Washington, Montana, Wyoming, Utah, Colorado, Maine, New Hampshire, Vermont, New York, Michigan, Wisconsin, and Minnesota. Lynx infrequently dispersed into Nevada, North Dakota, South Dakota, Iowa, Indiana, Ohio, and Virginia (USFWS March 2000). Lynx are believed to currently remain in small populations in only three states—Montana, Washington, and Maine (ENN 1999).

Mid-successional forest stages provide habitat for the lynx's primary prey, the snowshoe hare. Snowshoe hare are known to be sedentary animals, living in a limited home range. The area where they live depends on the availability of food. This limited range, normally less than 25 acres, allow hare to become well acquainted with the habitat characteristics. They prefer a habitat of mid-successional forest (20-40 years old) dispersed among dense brushy cover. Snowshoe hare remain in thickets during the day; at night, they forage around the thickets and forest edges. During summer months, snowshoe hare consume mostly green succulent vegetation such as grasses, ferns, clovers and forbs; dozens of different herbs; and tender twigs. During winter, snowshoe hare usually eat bark, twigs, buds and evergreen leaves of woody plants (Kolbe, Watson). Palatable deciduous species include maple, birch, rose, hazel and willow, whereas jackpine, white pine, larch, and cedar are favored conifers (Canadian Wildlife Service). These plant community types do not occur in the project impact area of influence.

The U.S. Fish and Wildlife Service (USFWS) has inadequate information to determine whether resident lynx populations occurred historically or currently within New York, Vermont, Michigan, Wisconsin, Idaho, Utah, and Oregon (USFWS March 2000). It has been 68 years since a lynx was last officially spotted in Utah (ENN 1999). The official State status of the lynx in Utah is Sensitive; information is inadequate to determine whether a resident population existed historically or currently (USFWS March 2000). There are records of lynx occurrence in the Uinta Range. A few records also exist from the Wasatch Range and the Manti La Sal. The last verified records of lynx from Utah were in 1977 for physical remains and 1982 for tracks. The lynx has been protected from harvest in Utah since 1974 (Forest Service et. al. January 2000).

## 2.8.4 Impact Analysis

The methodology is the same that was used in Chapter 3, Section 3.7.6.1 of the FS-FEIS (CUWCD 1999a).

Project construction would not affect the Ute ladies'-tresses Gaging Station colony because the colony is not located in or near any area to be disturbed.

With the relocation of the Diamond Fork Creek Outlet upstream from its location under the Proposed Action, the Gaging Station colony would receive the benefit from the minimum streamflows in Diamond Fork Creek. The potential effects would fall within the range described in Chapter 3, Section 3.7.6.4.2 for Diamond Fork Creek (Diamond Fork Creek Outlet to Spanish Fork River), Page 3-119, of the FS-FEIS (CUWCD 1999a).

Relocation of Diamond Fork Creek Outlet upstream from its location under the Proposed Action would result in a slight reduction (two percent) in leatherside chub adult habitat (Addley and Hardy 1998). The Instream Flow Incremental Methodology (IFIM) study estimated that the habitat in this reach under the Proposed Action Modifications flows would be two percent less than the habitat under baseline condition flows. The IFIM study was conducted on the main channel and does not take into account side channel habitat, which is commonly used

by leatherside chub in Diamond Fork Creek. However, there is minimal side channel habitat in the affected reach. Therefore, the Proposed Action Modifications would have minimal effect on leatherside chub habitat.

Brown trout production within the affected reach would increase from 73 to 247 pounds per acre under the Proposed Action Modifications. This increase could lead to increased predation on leatherside chub, but most of the leatherside chub sampled in Diamond Fork Creek during 1996 were found downstream of Brimhall Canyon (Walser et al. 1997). Therefore, the increased trout production in the affected reach below the Diamond Fork Creek Outlet likely would not have any measurable effect on leatherside chub.

The Proposed Action Modifications would not have any measurable impact on peregrine falcon or their habitat.

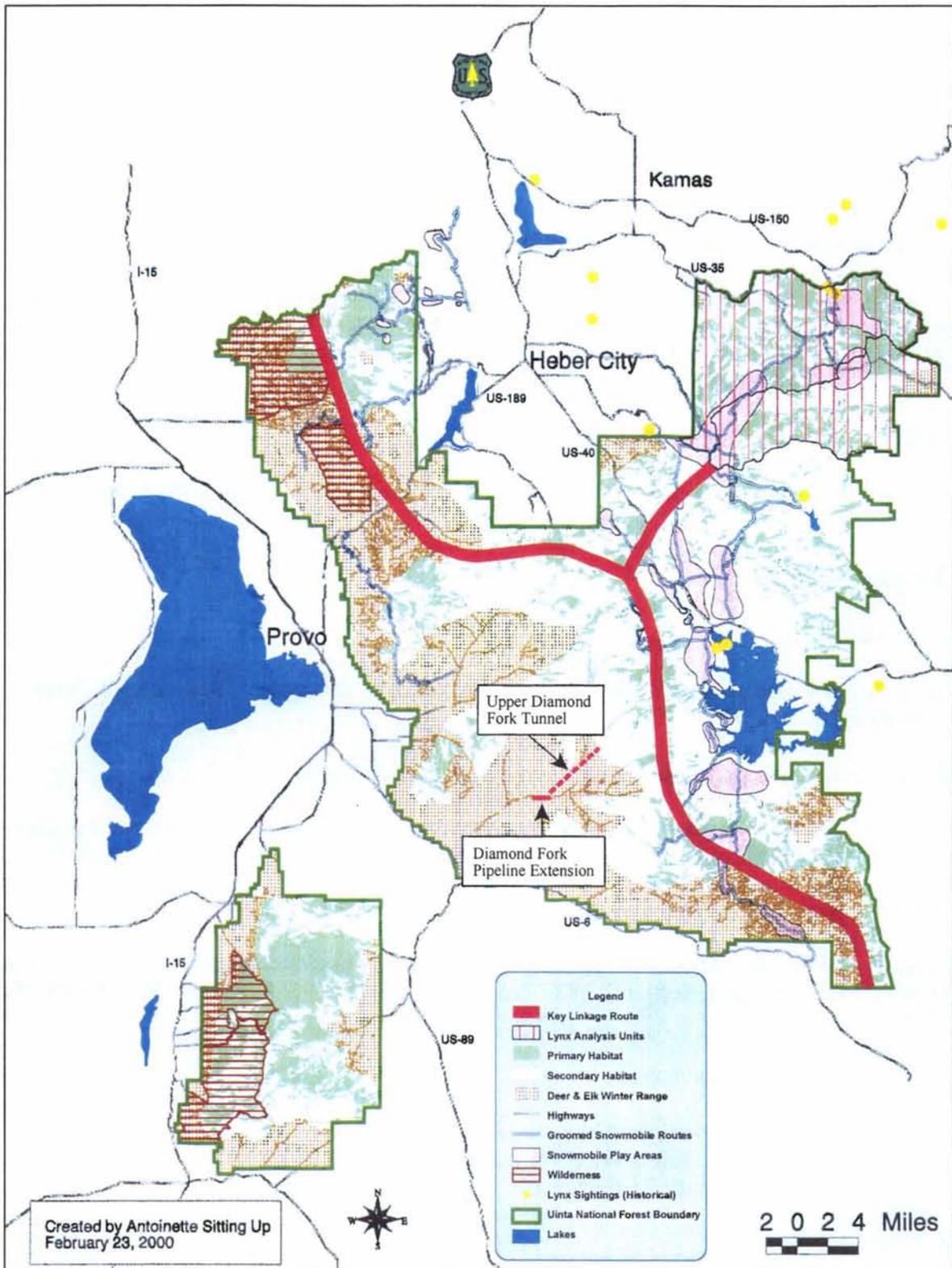
The Proposed Action Modifications would be constructed and operated in an area that ranges from 3 to 8 miles west of the Canada lynx key linkage route. Map 2-2 shows the proximity of Upper Diamond Fork Tunnel and Diamond Fork Pipeline Extension to the lynx key linkage route and historical sightings of lynx on the Unita National Forest. The Sixth Water Connection to Upper Diamond Fork Shaft would be constructed in a 1-acre area that previously was disturbed by construction of the Sixth Water Aqueduct. The construction would occur at an elevation more than 1,200 feet lower than the closest historical lynx sightings and 3 miles west of the key linkage route. The tunnel would not be a surface feature, therefore the actual tunnel construction and operation would not affect the key linkage route. The tunnel outlet portal, Monks Hollow Overflow Structure, access road, pipeline, and Diamond Fork Creek Outlet construction and associated Diamond Fork Road reconstruction would disturb 22 acres. The disturbed area would consist of an existing paved road, roadside vegetation, and juniper/sagebrush/grass vegetation type, of which 18.3 acres would be revegetated with native plant species. Permanent disturbance of existing vegetation would occur on 2.1 acres. The pipeline and road construction area are about 8 miles south and 10 miles west of the key linkage route and at an elevation 2,000 feet lower and 15 miles southwest of the closest historical sightings of lynx (see Map 2-2).

The impact area of influence contains no primary or secondary snowshoe hare habitat. The plant community types preferred by snowshoe hare for cover, reproduction, and food do not occur in the vegetation types that would be disturbed by the project construction. The project elevations are lower than those described for snowshoe hare and lynx habitat in Utah. The project construction and operation would not affect snowshoe hare habitat.

The forested area where Hobble Creek Road passes over Hobble Creek Summit may contain some scattered habitat which meets the criteria for lynx. The forested areas and aspen communities along this road segment occur at elevations of about 7,250 feet MSL and are about 5 miles south and west of the key linkage route shown on Map 2-2. The Proposed Action Modifications do not include any road upgrades in this area and the Diamond Fork FS-FEIS predicts less than 10 percent increase in traffic over this road during project construction. There should be no measurable effect on lynx or lynx habitat from this minor increase in traffic since there is no documented historical use of the area by lynx and there are no known lynx populations or individuals in Utah.

### **2.8.5 Impact Summary**

The Proposed Action Modifications would not have any significant impacts or effects on special-status species.



**Map 2-2**  
**Lynx Analysis Units and**  
**Key Linkage Routes on the Uinta National Forest**

## **2.9 Agriculture**

### **2.9.1 Introduction**

This section addresses potential impacts on agriculture that would result from construction and operation of the Proposed Action Modifications.

### **2.9.2 Description of Impact Area of Influence**

The impact area of influence for the Proposed Action Modifications includes only the areas where land disturbance would occur: the Sixth Water Creek area of the Sixth Water Aqueduct (see Insets 1 and 2, Map A-1), Monks Hollow overflow structure, Diamond Fork Pipeline Extension, Diamond Fork Creek Outlet, and access road and road reconstruction areas (see Insets 4, 5, and 6, Map A-1).

### **2.9.3 Affected Environment (Baseline Conditions)**

The baseline conditions are the same as described in Chapter 3, Section 3.9.5, Page 3-131 in the FS-FEIS (CUWCD 1999a).

### **2.9.4 Impact Analysis**

#### ***2.9.4.1 Introduction***

The methodology and significance criteria are the same as described in Chapter 3, Section 3.9.6, Pages 3-131 and 3-132 in the FS-FEIS (CUWCD 1999a).

#### ***2.9.4.2 Impacts During Construction***

Construction impacts of the Proposed Action Modifications would be the same type as described in Chapter 3, Section 3.9.6.4.1, Page 3-132 of the FS-FEIS (CUWCD 1999a), except less extensive. The Proposed Action Modifications would disturb only 44.3 acres during construction and 2.1 acres permanently. This impact would not be significant because it would be less than 1 percent of the total area used for livestock grazing.

As stated in the FS-FEIS, the impact on livestock grazing operations would be insignificant through application of the SOPs described in Chapter 1, Section 1.7.8.6, Page 1-77, and Section 1.7.9.1, Page 1-80 of the FS-FEIS (CUWCD 1999a).

#### ***2.9.4.3 Impacts During Operation***

The Proposed Action Modifications would have the same impacts described in Chapter 3, Section 3.9.6.4.2, Page 3-132 of the FS-FEIS (CUWCD 1999a). The mitigation measures described in Chapter 3, Section 3.20.7.1.1, Page 3-216 in the FS-FEIS would remain the same.

#### ***2.9.4.4 Impact Summary***

The Proposed Action Modifications would not have any significant impacts on agriculture resources.

## **2.10 Recreation Resources and Special Status Areas**

This two-part section addresses potential impacts on recreation resources and special-status areas (roadless areas) that would result from construction and operation of the Proposed Action Modifications.

### **2.10.1 Recreation Resources**

#### ***2.10.1.1 Introduction***

This subsection addresses potential temporary and permanent disruptions to recreational resources that would result from construction and operation of the Proposed Action Modifications.

#### ***2.10.1.2 Description of Impact Area of Influence***

The impact area of influence includes the area bounded on the east by the Sheep Creek-Rays Valley Road, on the north by the Right Fork of Hobble Creek Road and Halls Fork, on the west by Red Hollow, and on the south by Highway 6.

#### ***2.10.1.3 Affected Environment (Baseline Conditions)***

The baseline conditions remain the same as described in Chapter 3, Section 3.10.1.5, Pages 3-135 to 3-137 of the FS-FEIS (CUWCD 1999a).

#### ***2.10.1.4 Impact Analysis***

The methodology and significance criteria are the same as described in Chapter 3, Sections 3.10.1.6.1 and 3.10.1.6.2, Pages 3-137 and 3-138 of the FS-FEIS (CUWCD 1999a). Two key significance criteria are repeated here for the benefit of the reader:

- A reduction of 5 percent or more in recreational use of existing facilities and/or resources during construction or extending beyond the construction period
- Elimination of any recreation facilities or resources

**2.10.1.4.1 Impacts During Construction.** Significant impacts resulting from temporary closure of the Diamond Fork Road during the 3½-year construction period are disclosed in Chapter 3, Section 3.10.1.6.4.1, Pages 3-138 and 3-139 of the FS-FEIS (CUWCD 1999a). Construction of the Proposed Action Modifications would not cause any additional or new significant impacts. However, the Proposed Action Modifications would result in reducing the magnitude of significant impacts.

The Proposed Action Modifications would result in closing 2.8 miles of the Diamond Fork Road, which is 19 percent of the total road length from State Highway 6 to Springville Crossing. The Three Forks trailhead would continue to be accessible from the Right Fork of Hobble Creek Road, Springville Crossing-Rays Valley Road, and Sheep Creek-Rays Valley Road.

Use of about 50 dispersed camping sites (40 percent of the total) would be temporarily eliminated during the construction period because of the road closure and construction of the waste disposal area. Upon completion of construction, Diamond Fork Road would be reopened and the waste disposal area would be revegetated and restored to its current use as a dispersed camping area. (see Chapter 1, Section 1.5.4.2 of this EA). Construction

of the waste disposal area could increase the area suitable for dispersed camping. Only a small portion (the sideslopes) would not be suitable for dispersed camping.

**2.10.1.4.2 Impacts During Operation.** Fishing would be the only recreational use or resource that would be impacted by operation of the Proposed Action Modifications. With only one exception, the impact would be the same as described in Chapter 3, Section 3.10.1.6.4.2, Pages 3-139 and 3-140. The changed location of Diamond Fork Creek Outlet would provide minimum streamflows to an additional 5,850 feet of Diamond Fork Creek, which would result in increased fish production and fishing use. This change would affect two stream segments, Three Forks to Diamond Fork Creek Outlet and Diamond Fork Creek Outlet to Diamond Campground, as shown on Table 3-43, Page 3-140 in the FS-FEIS (CUWCD 1999a). Table 2-5 shows the revised angler day per year use for these two segments.

Stream Segment	Baseline Angler Day Per Year Use	Predicted Angler Day Per Year Use	Impact (Increase in Angler Days Per Year Use Over Baseline)
Three Forks to Diamond Fork Creek Outlet	132	1,819	+1,687
Diamond Fork Creek Outlet to Diamond Campground	230	4,393	+4,163
<b>Totals</b>	<b>362</b>	<b>6,212</b>	<b>+5,850</b>

The change for these two segments would result in an overall increase of 33,899 angler days per year over baseline for the Diamond Fork project.

**2.10.1.4.3 Impact Summary.** The Proposed Action Modifications would not cause any new significant impacts that were not already disclosed in the FS-FEIS (CUWCD 1999a) or increase any significant impacts. In fact, they would eliminate a major impact – temporary loss of Three Forks Trailhead – and reduce the impact on dispersed camping sites.

## **2.10.2 Special Status Areas**

### **2.10.2.1 Introduction**

Two areas within the impact area of influence have been designated as “roadless areas” (Forest Service 1984). These areas are the same as described in Chapter 3, Section 3.10.2, Page 3-143 of the FS-FEIS (CUWCD 1999a). The roadless area characteristics are the same as described in Table 3-45, Page 3-144 of the FS-FEIS. The impact area of influence consists of the two designated roadless areas that are shown on Map 3-2, Chapter 3, Page 3-146 of the FS-FEIS (CUWCD 1999a). The baseline conditions remain the same as described in Chapter 3, Section 3.10.2.5, Pages 3-145 to 3-148 of the FS-FEIS (CUWCD 1999a).

### ***2.10.2.2 Impact Analysis***

The methodology and significance criteria remain the same as described in Chapter 3, Section 3.10.2.6.1 and 3.10.2.6.2, Page 3-148 of the FS-FEIS (CUWCD 1999a). The FS-FEIS determined that the Proposed Action would not cause any significant impacts on the roadless areas because it would not exceed the significance criteria of a decrease in size of 10 percent or more.

The Proposed Action Modifications would reduce the amount of acreage affected in each roadless area.

The following features would be constructed in the Red Mountain roadless area:

- Upper Diamond Fork Tunnel outlet portal
- Monks Hollow overflow structure
- Access Road to Upper Diamond Fork Tunnel outlet portal

The following features would be constructed in the Diamond Fork roadless area:

- Sixth Water Connection to Upper Diamond Fork Shaft
- Upper Diamond Fork Shaft and Service Shaft

The impact on the Red Mountain Roadless area characteristics would be the same type as described in Table 3-46, Page 3-149 of the FS-FEIS (CUWCD 1999a) but to a lesser degree and magnitude. Only 1.1 acres would remain disturbed at the completion of construction. This area may be removed from the roadless area classification.

There would be no impact on the Diamond Fork roadless area since construction would take place in an area already disturbed and containing a road and buildings.

### ***2.10.2.3 Impact Summary***

The Proposed Action Modifications would not have any significant impacts on roadless areas.

## **2.11 Cultural Resources**

### **2.11.1 Introduction**

There have been no changes in the data presented in Chapter 3, Section 3.13, Pages 3-169 through 3-170 in the FS-FEIS (CUWCD 1999a).

This section presents the results of the Class III (intensive ground) survey conducted on the area that would be affected by the Proposed Action and Proposed Action Modifications.

### **2.11.2 Description of Impact Area of Influence**

The impact area of influence for cultural resources includes any area that would be directly or indirectly disturbed by the construction activities described in Chapter 1 of this EA and in Chapter 1 of the FS-FEIS (CUWCD 1999a).

### **2.11.3 Affected Environment (Baseline Conditions)**

A Cultural Class III (intensive ground) survey of 231 acres was conducted by Sagebrush Consultants of Ogden, Utah on October 19, 20, 22, and November 2 and 3, 1999. The results were documented in Archaeological Report No. 1130-01, *A Cultural Resources Inventory of Portions of the Diamond Fork Water Project, Utah County, Utah* (CUWCD 1999b).

No cultural resources sites were found during the inventory of the project areas.

### **2.11.4 Impact Analysis**

Since no sites were found, the Proposed Action and the Proposed Action Modifications would not have any impact on cultural resources.

A copy of the report and its conclusions was transmitted to the Compliance Archeologist of the Utah State Historic Preservation Office (CUWCD 2000b) for review and approval under 36 CFR 800, Section 106 clearance procedures. The Compliance Archaeologist of the Utah State Historic Preservation Office concurred with the report finding of no effect, which was received on January 10, 2000 (Utah Department of Community and Economic Development 2000).

### **2.11.5 Impact Summary**

The Proposed Action Modifications would not have any significant impacts on cultural resources.

## **2.12 Visual Resources**

### **2.12.1 Introduction**

This section addresses potential impacts on visual resources that would result from construction and operation of the Proposed Action Modifications. Additional data on visual resources may be found in the technical memoranda (CUWCD 2000a).

### **2.12.2 Description of Impact Area of Influence**

The impact area of influence for visual resources includes existing landscapes in the Sixth Water Aqueduct, Monks Hollow overflow structure, Diamond Fork Pipeline Extension, Diamond Fork Creek Outlet, tunnel portal access road, and Diamond Fork Road reconstruction areas (see Insets 1, 2, 4, 5, and 6, Map A-1).

### **2.12.3 Affected Environment (Baseline Conditions)**

Proposed Action Modification features would be constructed in areas with two Forest Service Visual Quality Objective (VQO) ratings, partial retention and retention. Table 2-6 shows the VQO and Visual Absorption

Capability (VAC) ratings of the affected areas within the Uinta National Forest (see Map 2-3). VQO and VAC ratings are described in detail in Chapter 3, Section 3.14.5, Pages 3-171 and 3-172 of the FS-FEIS (CUWCD 1999a).

**Table 2-6  
Visual Quality Objective and Visual Absorption Capability Ratings  
For Affected Uinta National Forest Areas**

<b>Corridor Area</b>	<b>Retention Rating</b>	<b>Proposed Action Modifications Features</b>	<b>Visual Absorption Capability Ranking of Affected Area</b>
Sixth Water Creek	Partial Retention	Sixth Water Connection to Upper Diamond Fork Shaft, Upper Diamond Fork Shaft and Flow-Control Structure	Seldom Seen
Diamond Fork Creek/Road	Retention	Upper Diamond Fork Tunnel portal, Monks Hollow Overflow Structure, Diamond Fork Creek Outlet, Diamond Fork Pipeline Extension, Access Road and Road Reconstruction, Construction Staging Area #3, and Waste Disposal Area	Moderate to High
Red Hollow (lower portion)	Retention	Diamond Fork Road Realignment; Obliteration and Reclamation of Existing Road	Moderate to High

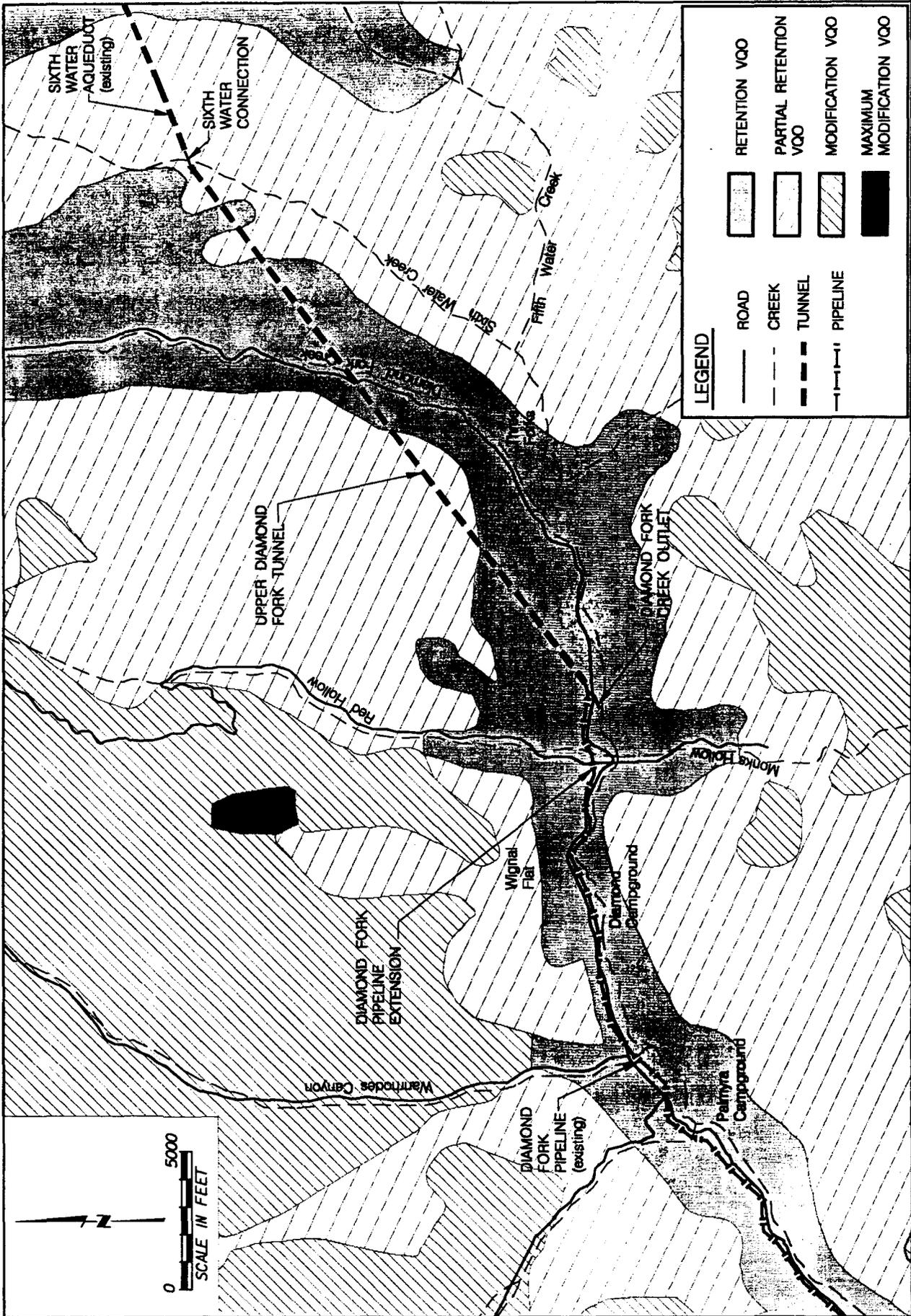
The general viewsheds were described in the FS-FEIS (CUWCD 1999a), Chapter 3, Section 3.14.5.1, Page 3-174. Only additional information specific to the Proposed Action Modifications is presented in this section.

***2.12.3.1 Sixth Water Connection to Upper Diamond Fork Shaft and Upper Diamond Fork Shaft***

The Sixth Water Connection to Upper Diamond Fork Shaft and associated features would be constructed just downstream of the existing Sixth Water Aqueduct flow-control structure adjacent to Sixth Water Creek, as described in Chapter 1, Section 1.5.2.2 of this EA. The affected landscape character has been modified by past construction of the Sixth Water Aqueduct flow-control building and placement of riprap along the bank of Sixth Water Creek for erosion protection. The existing control structure contrasts with the surrounding landscape in form, line, texture and color, but is seldom seen because there is no public vehicle access to this location.

***2.12.3.2 Diamond Fork Tunnel Outlet Portal and Monks Hollow Overflow Structure***

The Diamond Fork Tunnel outlet portal and Monks Hollow overflow structure would be constructed at the toe of a steep, southwest-facing slope. The affected area is observed at the middle ground to background distance zone from Diamond Fork Road, with a relatively short view-distance driving upstream. Traveling downstream, the site is not in direct view. The soils in the affected area are light tan to light gray, and the surrounding soils are reddish with tan to light gray rock outcroppings. Juniper, oak, sparse shrubs and grass dominate existing vegetation.



Map 2-3  
 Forest Service Visual Quality Objectives

### ***2.12.3.3 Diamond Fork Creek Outlet***

Diamond Fork Creek Outlet would be on a relatively flat site adjacent to Diamond Fork Creek (see Inset 5, Map A-1). Vegetation consists of sparse shrubs and grasses, with cottonwood trees lining the stream edge. Soils are light gray. Recreationists view the affected area at the foreground distance zone. The visual quality in this area is somewhat degraded from intense use by recreationists, vehicle traffic, and livestock grazing and trailing.

### ***2.12.3.4 Access Road and Road Reconstruction***

The affected area for the road realignment at Red Hollow is visible at the foreground distance zone when traveling both upstream and downstream on Diamond Fork Road. The overall topography is relatively flat except for a steeper slope at the downstream end, and soils range from tan to light gray. Vegetation cover in the affected area includes several plant communities:

- Riparian cottonwood and willow
- Oak and sumac
- Sagebrush /Grass
- Previously Disturbed Area

The most severe sections of the Diamond Fork Road that would be affected by reconstruction include a narrow, confined corridor bordered on one side by steep slopes with rock outcrops and on the other side by Diamond Fork Creek and its riparian corridor. Soils are light tan to light gray. Sparse shrubs and grasses occur on the cut-banks, while cottonwood and willow dominate the riparian zone.

The new access road alignment described in Chapter 1, Section 1.5.2.9 of this EA traverses a northeast-facing slope after taking off from Diamond Fork Road (see Insets 4 and 5, Map A-1). The affected area is viewed at the foreground and middle-ground distance zones when traveling downstream on Diamond Fork Road, and the side-hill is not in direct view when traveling upstream. Vegetation on the side-hill is dominated by juniper with small areas of sumac, sagebrush, rabbitbrush and grass. Soils are light tan to light gray.

### ***2.12.3.5 Waste Disposal Area and Construction Staging Area 3***

The Waste Disposal Area and Construction Staging Area 3 would be located along Diamond Fork Road near Monks Hollow as described in Chapter 1, Section 1.5.4.2 of this EA (see Inset 5, Map A-1). The site gently slopes toward Diamond Fork Creek from the road and is observed at the foreground distance zone from the road. The site has been heavily used by the public for dispersed recreation and has unimproved roads meandering through the site. Vegetation consists of sagebrush, rabbitbrush and low grasses. The scenic quality is degraded in some portions of the site because of the heavy recreation use. Soils are light tan to light gray.

## **2.12.4 Impact Analysis**

### ***2.12.4.1 Methodology***

The methodology is the same as described in Chapter 3, Section 3.14.6.1, Page 3-175 of the FS-FEIS (CUWCD 1999a).

### **2.12.4.2 Significance Criteria**

The significance criteria remain the same as described in Chapter 3, Section 3.14.6.2, Page 3-175 of the FS-FEIS (CUWCD 1999a).

### **2.12.4.3 Impacts During Construction**

Impacts are documented in the following sub-sections by viewshed, proceeding from upstream to downstream.

#### **2.12.4.3.1 Sixth Water Connection to Upper Diamond Fork Shaft and Upper Diamond Fork Shaft.**

Construction activities and the permanent structures built over the top of the two shafts adjacent to Sixth Water Creek would be visible to very few people because the site is accessible only to hikers, horseback riders and off-road vehicles. The area disturbed by construction of the shafts and power substation would be restored under the SOPs described in Chapter 1, Section 1.7.8.9, Pages 1-78 and 1-79 of the FS-FEIS (CUWCD 1999a). The features would not dominate or change the overall character of the existing landscape. No significant adverse visual impacts would result from construction of these features.

**2.12.4.3.2 Upper Diamond Fork Tunnel Outlet Portal and Monks Hollow Overflow Structure.** The traveling public would not observe construction activities because Diamond Fork Road would be closed from the Red Ledges to Three Forks during the 3½-year construction period (see Map A-1). The outlet portal would not visually dominate the landscape because exposed cutslopes would be restored to approximate original contour and revegetated with native plants. The overflow structure would not be visually dominant because only the top cover would be visible at the ground surface and the concrete would be tinted to blend with surrounding soil colors. The chain-link fencing around the tunnel outlet portal yard and overflow control structure would likely blend with the whitish color of the existing soils, and there would not be a significant contrast in colors at the middle-ground distance zone. Vegetation planted in strategic locations would further screen the tunnel outlet portal area from direct view when traveling upstream on Diamond Fork Road. No long-term significant visual impacts would result from construction of these features.

**2.12.4.3.3 Diamond Fork Pipeline Extension.** Short-term visual impacts would result from construction of Diamond Fork Pipeline Extension from the tunnel outlet portal downslope to Diamond Fork Road (see Insets 4, 5, and 6, Map A-1) in the form of temporary changes in soil colors and textures. The construction corridor would be restored under the SOPs listed in Chapter 1, Section 1.7.8.9, Pages 1-79 and 1-79 of the FS-FEIS (CUWCD 1999a). No long-term significant visual impacts would result from construction of the pipeline extension through this area.

**2.12.4.3.4 Access Road and Road Reconstruction.** The new access road to the outlet portal and overflow structure would be permanent. It is expected the exposed soil colors of cuts, fills and the roadbed would be similar to the surrounding soils. Color and texture contrasts would be minimal as the soils weather and perimeter vegetation re-establishes. Existing vegetation near the intersection with Diamond Fork Road would be retained to screen this reach of the new road from direct view (see Inset 5, Map A-1). Large junipers planted in strategic locations would provide additional screening of the new road alignment, reducing potential contrasts in the landscape. The road would be detectable when traveling Diamond Fork Road, similar to other existing access roads along the corridor, but it would not dominate the landscape or result in significant visual impacts.

Short-term impacts would occur from construction of the new road and restoration of the old roadbed at Red Hollow, but these impacts would not be visible because Diamond Fork Road would be closed during construction, as previously described. There would be minimal cut and fill for the new road because the topography is relatively flat and the alignment generally follows the contours (see Inset 6, Map A-1). Exposed soils are expected to blend with adjacent soils. Restoration of the old roadbed would allow long-term development of a

wider, more natural, meandering riparian zone and vegetative buffer along Diamond Fork Creek, potentially resulting in overall improvement of visual quality in this area.

The retaining wall along the south side of Diamond Fork Road adjacent to Diamond Fork Creek would be constructed of colored concrete to blend with surrounding soils and rock outcrops. The retaining wall would not normally be visible from the road, but would be visible at the foreground distance zone to a small number of people hiking along the Diamond Fork Creek corridor. Cottonwood trees that would be planted at the base of the retaining wall would partially screen the wall from the creek. Construction of the retaining wall would not result in a significant visual impact.

Construction of the pipeline extension within the Diamond Fork roadway would be noticeable in the short-term until vegetation re-establishes on the cut-and-fill slopes, but this minor modification of vegetation and soils would not dominate the landscape or result in significant adverse visual impact.

#### ***2.12.4.4 Impacts During Operation***

No significant visual impacts would result from interim operation of the Proposed Action Modifications. Project features that would be visible to the traveling public would be constructed of colored and textured concrete to blend with surrounding soil colors, and vegetation would be planted to screen the features from direct view. These features would not dominate the landscape because the areas where they would be constructed have a moderate to high VAC (see Table 2-6). Benefits from increased flows in Diamond Fork Creek would be the same as described in Chapter 3, Section 3.14.6.4.2, of the FS-FEIS (CUWCD 1999a).

#### ***2.12.4.5 Impact Summary***

The Proposed Action Modifications would not have any significant impacts on visual resources.

## **2.13 Transportation**

### **2.13.1 Introduction**

This section addresses potential impacts on transportation systems that would result from construction, operation and maintenance of the Proposed Action Modifications.

### **2.13.2 Description of Impact Area of Influence**

The impact area of influence for transportation systems consists of roads that would be used during construction, operation and maintenance of the Proposed Action Modifications.

### **2.13.3 Affected Environment (Baseline Conditions)**

The baseline conditions are the same as described in Chapter 3, Section 3.15.5, Page 3-179 in the FS-FEIS (CUWCD 1999a).

## 2.13.4 Impact Analysis

### 2.13.4.1 Introduction

The methodology and significance criteria are the same as described in Chapter 3, Section 3.15.6, Pages 3-180 through 3-182 in the FS-FEIS (CUWCD 1999a).

### 2.13.4.2 Impacts During Construction

Construction-related traffic would be associated with worker commuter traffic and delivery of equipment, pipe and other construction materials to the job site. Table 2-7 shows the planned construction traffic route for each feature of the Proposed Action Modifications.

Sixth Water Connection to Upper Diamond Fork Shaft, Upper Diamond Fork Shaft, and Upper Diamond Fork Flow-Control Structure	I-15 to Highway 6; Highway 6 to Sheep Creek-Rays Valley Road; Sheep Creek-Rays Valley Road to Sixth Water Aqueduct maintenance road
Upper Diamond Fork Tunnel and Monks Hollow Overflow Structure	I-15 to Highway 6; Highway 6 to Diamond Fork Road; Diamond Fork Road to Access Road at Monks Hollow Overflow Structure and tunnel portal
Diamond Fork Creek Outlet and Diamond Fork Pipeline Extension	I-15 to Highway 6; Highway 6 to Diamond Fork Road; Diamond Fork Road to pipeline extension and Diamond Fork Creek Outlet

Table 2-8 summarizes construction traffic by percentage increase at major intersections. Construction is expected to occur between 2000 and 2004. The year 2000 was used as the peak construction year because it offers the most conservative estimate of percentage increase in traffic.

As indicated in Table 2-8, increases in Average Annual Daily Traffic (AADT) resulting from construction trips on I-15 and Highway 6 would be less than 10 percent, which is not a significant impact. Traffic counts are not available for Diamond Fork Road, but 55 construction trips would most likely increase AADTs more than 10 percent on this road. This would be a significant impact based on the significance criteria. However, this impact was previously disclosed in Chapter 3, Section 3.15.6.4.1, Pages 3-184 and 3-185 of the FS-FEIS and would be a reduction in magnitude from construction of the Proposed Action (CUWCD 1999a).

The Diamond Fork Road reconstruction, planned near Red Hollow, would improve safety on Diamond Fork Road by removing sharp curves.

Diamond Fork Road would be closed to the public during construction from the Red Ledges area to just downstream of Three Forks. The impact of pipeline construction on Diamond Fork Road, road closure and re-routing of traffic, and emergency vehicle access would be the same as described in Chapter 3, Section 3.15.6.4.1, Page 3-184 of the FS-FEIS (CUWCD 1999a).

**Table 2-8  
Summary of AADT<sup>1</sup> Increases Resulting From Construction Traffic  
at Major Intersections Under the Proposed Action Modifications**

Location	Base Year (1996) AADT	Peak Construction Year (2000) AADT	Maximum Number of Construction- Related Trips	Percent Increase
I-15 at Spanish Fork	42,625	55,704	55	0.1
Highway 6 at east Spanish Fork	13,005	17,721	55	0.3
Highway 6 at State Route 198	6,000	8,167	55	0.7
Highway 6 at Moark Junction	8,285	11,288	55	0.5
Highway 6 and State Route 89 at Thistle	5,765	7,854	55	0.7

<sup>1</sup>AADT = Average Annual Daily Traffic

Closure of Diamond Fork Road could cause increased AADTs of 10 percent or more on Sheep Creek-Rays Valley Road, which would be significant based on the significance criteria. However, this impact was previously disclosed in Chapter 3, Section 3.15.6.4.1, Page 3-185 of the FS-FEIS and would be of equal or smaller magnitude as analyzed for the Proposed Action.

Installation of the fiber optic cable along the Diamond Fork Road would cause minor traffic delays. These would be of short duration and not a significant impact.

### **2.13.4.3 Impacts During Operation**

The Proposed Action Modifications would have the same impacts as described in Chapter 3, Section 3.15.6.4.2, Page 3-185 of the FS-FEIS (CUWCD 1999a).

### **2.13.4.4 Impact Summary**

The Proposed Action Modifications would not have any new significant impacts that were not already disclosed in the FS-FEIS (CUWCD 1999a) or increase any significant impacts.

## **2.14 Air Quality**

### **2.14.1 Introduction**

This section addresses the potential impact on air quality from construction and operation of the Proposed Action Modifications. The impact area of influence, affected environment (baseline conditions), impact analysis methodology and significance criteria are the same as described in Chapter 3, Section 3.16, Pages 3-187 through 3-192 of the FS-FEIS (CUWCD 1999a).

## 2.14.2 Impact Analysis

### 2.14.2.1 Impacts During Construction

The Proposed Action Modifications would reduce the level of construction emissions from the Proposed Action and would add two concrete batch plants. One plant would be located at staging area 3 and the other near the Sixth Water Connection to Upper Diamond Fork Shaft. These plants would provide the mixed concrete for the tunnel lining and the Upper Diamond Fork Shaft and service shaft. The batch plants would use EPA-approved techniques to minimize emissions. Table 2-9 shows the particulate matter (PM) and particulate matter smaller than 10 microns in diameter (PM<sub>10</sub>) emission factors for concrete batching.

**Table 2-9  
Plant-Wide Emission Factors for Concrete Batching<sup>1</sup>**

Source	Controlled	
	Total PM	Total PM <sub>10</sub>
Total process emissions (central mix) <sup>2</sup>	0.52	0.11

Source: EPA 1995

<sup>1</sup>All emission factors in pounds of pollutant per cubic yard of concrete.

<sup>2</sup>The total process emission factors (TPEFs) incorporate the emission factors presented in Table 11.12-2 and the average composition of concrete based on process data from EPA References 8 and 9. The TPEFs also incorporate the controlled emission factors for both cement and cement supplement unloading to elevated storage silos. In addition, the TPEFs incorporate the vehicle traffic emission factors for paved roads rather than for unpaved roads. Emissions released from the wind erosion of sand and aggregate storage piles are not included in the TPEFs. The average composition of concrete per cubic yard of concrete from EPA References 8 and 9 is as follows: 498 pounds of cement, 117 pounds of cement supplement, 1,334 pounds of sand and 2,277 pounds of course aggregate.

An estimated average of 290 cubic yards per day would be required for construction (see Chapter 1, Section 1.7, Table 1-5 of this EA). This would result in estimated emissions of 32 pounds of PM<sub>10</sub> per day from the two plants located approximately 4.5 miles apart. These emissions would be in addition to the 241 pounds per day emitted from other construction activities (see Chapter 3, Section 3.16, Table 3-68, Page 3-193 of the FS-FEIS [CUWCD 1999a]). It is unlikely that this amount would be emitted each day or on any one day because of the scheduling of construction activities. With the widespread nature of the construction activities, this quantity would not be emitted in one place, but would be spread over a wide area. Therefore, the impact of construction emissions on areas where the PM<sub>10</sub> standard is currently exceeded in Utah County (heavily populated areas) would not be significant.

### 2.14.2.2 Impacts During Operation

None.

### **2.14.2.3 Impact Summary**

Construction of the Proposed Action Modifications would not result in any significant air quality impacts.

## **2.15 Comparative Analysis of Impacts of the Proposed Action Modifications and Proposed Action**

### **2.15.1 Introduction**

This section summarizes a comparison of impacts of the Proposed Action Modifications and Proposed Action. The Proposed Action impacts were extracted from Table 2-1, Page 2-1 and from various sections of Chapter 3 in the FS-FEIS (CUWCD 1999a).

### **2.15.2 Comparison of Impacts**

Table 2-10 compares the quantified impacts of the Proposed Action Modifications and the Proposed Action on selected resources. It does not show any resource topics (for example water resources) or items where there would not be any change in impacts from the Proposed Action. Where possible, the table shows the difference in impacts between the Proposed Action Modifications and the Proposed Action. Sections 2.15.1 through 2.15.4 compare nonquantifiable impacts of the Proposed Action Modifications and Proposed Action on applicable resources.

### **2.15.3 Special-Status Species**

The primary difference between the Proposed Action Modifications and the Proposed Action is that the Gaging Station colony of Ute ladies' -tresses would receive the benefit of minimum streamflows. With the exception of leatherside chub (see Table 2-10) and Canada lynx, all other effects on special-status species would be the same as for the Proposed Action. Potential effects on lynx were not considered for the Proposed Action in the FS-FEIS because it was listed as a threatened species after the FS-FEIS was filed. The Proposed Action Modifications would be constructed in lynx winter range, which is marginal where surface construction activities would occur. Lynx winter range consists of snowshoe hare habitat, and the plant community types preferred by snowshoe hare are not present in the portion of Diamond Fork Canyon that would be disturbed during construction. The Proposed Action Modifications are not expected to have an effect on lynx or its habitat.

### **2.15.4 Visual Resources**

The Proposed Action Modifications would not cause any significant impacts on visual resources, while the Proposed Action would cause significant impacts from construction of the Red Mountain Tunnel Outlet and permanent access road, the Red Hollow Pipeline, and the Diamond Fork Siphon. These features would not be constructed under the Proposed Action Modifications. Special design features have been incorporated into the Proposed Action Modifications to protect the scenic and visual quality of the affected areas.

### **2.15.5 Transportation**

The primary difference between the Proposed Action Modifications and the Proposed Action is one of magnitude of impacts. The same roads would be impacted, but the impact would be less under the Proposed Action Modifications because of reduced use by construction vehicles and workers.

**Table 2-10  
Summary of Impacts of Proposed Action Modifications and Proposed Action**

<b>Resource Topic</b>	<b>Proposed Action Modifications</b>	<b>Proposed Action</b>
<p align="center"><b>Wildlife Resources</b></p> <ul style="list-style-type: none"> <li>• Temporary disturbance of golden eagles nest areas</li> <li>• Temporary disturbance of critical big-game winter range habitat</li> </ul>	<p align="center">0 nest areas (-3) 35.7 acres (-17.6)</p>	<p align="center">3 nest areas 53.3 acres</p>
<p align="center"><b>Aquatic Resources</b></p> <ul style="list-style-type: none"> <li>• Increase in trout biomass for Sixth Water and Diamond Fork creeks and Spanish Fork River</li> </ul>	<p align="center">16,241 pounds (+292)</p>	<p align="center">15,949 pounds</p>
<p align="center"><b>Special-Status Species</b></p> <ul style="list-style-type: none"> <li>• Change in main channel leatherside chub habitat in affected reach of Diamond Fork Creek</li> </ul>	<p align="center">-2% (-52%)</p>	<p align="center">+50%</p>
<p align="center"><b>Soils</b></p> <ul style="list-style-type: none"> <li>• Permanent loss of vegetated land</li> </ul>	<p align="center">2.1 acres (-3.9)</p>	<p align="center">6.0 acres</p>
<p align="center"><b>Recreation and Special Status Areas</b></p> <ul style="list-style-type: none"> <li>• Temporary loss of dispersed camping sites</li> <li>• Increase in angler days per year (an increase could result in significant increases in fishing and camping use) in Sixth Water and Diamond Fork creeks</li> <li>• Possible loss in acreage classified as Red Mountain roadless area</li> <li>• Possible loss in acreage classified as Diamond Fork roadless area</li> </ul>	<p align="center">50 sites (-26) 33,899 angler days (+613)</p> <p align="center">1.1 acres (-3.0)</p> <p align="center">0 acres (-1.3)</p>	<p align="center">76 sites 33,286 angler days</p> <p align="center">4.1 acres</p> <p align="center">1.3 acres</p>
<p align="center"><b>Public Health and Safety</b></p> <ul style="list-style-type: none"> <li>• Change in emergency vehicle response time during construction</li> </ul>	<p align="center">No change from Proposed Action</p>	<p align="center">+ &gt; 15 minutes</p>
<p align="center"><b>Transportation</b></p> <ul style="list-style-type: none"> <li>• Change in AADT<sup>1</sup> on Diamond Fork Road during construction</li> <li>• Change in AADT on Sheep Creek-Rays Valley Road during construction</li> </ul>	<p align="center">No change from Proposed Action</p> <p align="center">No change from Proposed Action</p>	<p align="center">+ &gt; 10%</p> <p align="center">+ &gt; 10%</p>
<p><sup>1</sup>AADT = Average Annual Daily Traffic</p>		

### 2.15.6 Land Use Plans

The major difference between the Proposed Action Modifications and the Proposed Action is that the Proposed Action Modifications would not impact any of the management plans, while the Proposed Action would require construction of a permanent road in Red Hollow, which in turn would require revision of the Red Hollow Resource Management Plan.

## **2.16 Monitoring**

Implementation of the Proposed Action Modifications would not require any monitoring in addition to what was described for the Proposed Action in Chapter 3, Section 3.20, Pages 3-207 through 3-218, of the FS-FEIS (CUWCD 1999a). However, it should be noted that the monitoring for black bear (see Chapter 3, Section 3.20.4.1.2, Page 3-209 of the FS-FEIS) would not be required for the Proposed Action Modifications. The modifications eliminate any construction activities in previously identified black bear denning areas.

## **2.17 Unavoidable Adverse Impacts**

The following would be considered unavoidable adverse impacts associated with the Proposed Action Modifications. These impacts are the same type as identified for the Proposed Action in Chapter 3, Section 3.21, Pages 3-219 through 3-221 of the FS-FEIS (CUWCD 1999a). Only those where the magnitude of the impact has changed are shown.

- Lack of revegetation on 2.1 acres
- Short-term loss of dispersed camping, fishing, hiking, horseback riding, hunting and picnicking opportunities along a 2.8-mile stretch of Diamond Fork Road closed during construction
- Short term loss of 50 (40 percent) dispersed camping sites during road closure
- The solitude of the Red Mountain roadless area would be affected during construction
- Possible removal of 1.1 acre from the Red Mountain roadless area classification
- Change in visual characteristics from construction of the Upper Diamond Fork Tunnel Portal, Monks Hollow overflow structure and access road, and Diamond Fork Creek Outlet

## **2.18 Cumulative Impacts**

The projects considered in the cumulative impacts are the same as described in Chapter 1, Section 1.9.3, Pages 1-83 through 1-87 of the FS-FEIS (CUWCD 1999a). The Proposed Action Modifications would not result in any different cumulative impacts than those described for the Proposed Action in Chapter 3, Section 3.22, Pages 3-223 through 3-226 of the FS-FEIS. In some cases, the magnitude of cumulative impact may be less, but the differences are not quantifiable.

## **2.19 Short-Term Use of Man's Environment Versus Maintenance of Long-Term Productivity**

### **2.19.1 Introduction**

The purpose of this section is to provide a broad overview of the effect that construction and implementation of a proposed action would have on the long-term productivity of man's environment. Since this EA is dealing only with modifications to the Proposed Action, it is not possible to present a total picture. For a complete overview, see Chapter 3, Section 3.23, Page 3-227 in the FS-FEIS (CUWCD 1999a). Only those items with a change in magnitude are presented here.

## **2.19.2 Tradeoffs**

- Temporary disturbance of 35.7 acres of critical winter range for deer and elk
- Loss of production on 2.1 acres of soil permanently removed by facilities
- Temporary loss of use of 50 dispersed camping sites
- Temporary impact on the solitude characteristic of the Red Mountain roadless area

## **2.19.3 Benefits**

- Increase of 292 pounds of trout production
- Increase of 613 angler days per year on Sixth Water and Diamond Fork creeks

## **2.20 Irreversible and Irrecoverable Commitment of Resources**

This section identifies resources that would be irreversibly (cannot be reversed, repealed or annulled) or irretrievably (cannot be retrieved, recovered, restored or recalled) committed to the Proposed Action Modifications.

Use of the following resources would be irreversible and irretrievable:

- Materials used during construction (see Table 1-5, in Section 1.7 of Chapter 1)
- An unknown amount of fuel that would be consumed during construction and operation
- Funds used for project construction and operation (approximate construction cost of the Proposed Action Modifications is \$53 million)

The following resources lost during the 3½-year construction period or the life of the project would be irretrievable:

- Loss of 2.1 acres of grazing land for the life of the project
- Loss of fishing, dispersed camping (on 50 sites) and picnicking opportunities during construction
- Loss of 1.1 acres of roadless area for the life of the project

Any loss of life because of traffic accidents resulting from road closures and increased traffic during construction would be irreversible and irretrievable.

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***Diamond Fork System***

***Final Environmental Assessment for the  
Proposed Action Modifications***

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***Chapter 3***

***Consultation and Coordination***

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## Chapter 3 Consultation and Coordination

### 3.1 Introduction

This chapter describes the consultation and coordination for the Diamond Fork Proposed Action Modifications Environmental Assessment (EA). As described in Chapter 1, Section 1.3, this EA tiers off of the Diamond Fork System FS-FEIS (CUWCD 1999a).

### 3.2 Public Involvement

A Notice Of Intent to prepare the Diamond Fork System Proposed Action Modifications Environmental Assessment was published in the January 25, 2000 Federal Register (Volume 65, Number 16, Page 3971-3972). A copy of the Federal Register notice along with a letter explaining the purpose of the environmental assessment and a brief description of the proposed modifications was mailed to everyone who received a copy of the FS-FEIS (CUWCD 1999a). A copy of this mailing list is available upon request from:

Nancy Hardman  
Central Utah Water Conservancy District  
355 West University Parkway  
Orem, Utah 84058  
Telephone: (801) 226-7187  
Fax: (801) 226-7150  
E-mail: Nancy@cuwcd.com

### 3.3 Consultation

Table 3-1 lists the coordination and consultation meetings that were held in the process of preparing the EA.

<b>Table 3-1 Coordination and Consultation Meetings</b>		
<b>Date</b>	<b>Agencies in Attendance</b>	<b>Topics</b>
November 18, 1999	Central Utah Water Conservancy District (CUWCD), Department of the Interior (DOI), Bureau of Reclamation (BR)	Meeting to discuss design aspects of the Proposed Action Modifications and approach to preparing the EA
January 12, 2000	CUWCD, DOI, Utah Reclamation Mitigation and Conservation Commission (MC)	Meeting to discuss the content of the EA and preparation procedures
January 19, 2000	CUWCD, DOI, U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), Utah Division of Wildlife Resources, Utah Division of Water Resources	Meeting to present the Proposed Action Modifications, how the EA would be prepared, and discuss any issues and concerns of the agencies
January 25, 2000	CUWCD, Utah Division of Wildlife Resources	Meeting to discuss concerns over minimum streamflows and emergency releases from the Diamond Fork Creek Outlet

### **3.4 Coordination**

This section describes the coordination that was achieved in reviewing the Draft PAM EA. A notice of availability of the Draft PAM EA was published in the March 20, 2000 Federal Register (Volume 65, Number 54, Page 14998-14999). A copy of the Draft PAM EA was sent to all the agencies, groups, and individuals that received a copy of the FS-FEIS. A copy of this list may be obtained from Nancy Hardman at the address listed in Section 3.2. Comments on the draft PAM EA were due on April 27, 2000.

The Fish and Wildlife Coordination Act Report for the Diamond Fork System was updated in a June 1, 2000 letter addendum from the U.S. Fish and Wildlife Service (USFWS) to the CUWCD. A copy of the letter update and addendum is provided in Appendix D. A letter of concurrence from the Utah Division of Wildlife Resources on the update and addendum also is included in Appendix D.

The August 24, 1999 biological opinion for the Diamond Fork System was updated in a June 6, 2000 letter addendum from the USFWS to the CUWCD. In the addendum, the USFWS concurs with the "no effect" determination for Canada lynx (*Lynx canadensis*) made in Sections 2.8.4 and 2.8.5, Chapter 2 of the Final EA. The USFWS also concurs with the conclusion that the Proposed Action Modifications would have no additional effects on Ute ladies'-tresses orchid (*Spiranthes diluvialis*) than those addressed in the August 24, 1999 biological opinion. A copy of the letter addendum is provided in Appendix E.

### **3.5 Results of Public Review of the Draft EA**

The Draft PAM EA was sent to 125 organizations and individuals for review, which resulted in four (4) letters of comment and one (1) phone call of no comment. To facilitate and coordinate input and/or comments from the cooperating agencies, the Joint-Lead Agencies and cooperating agencies met on April 12, 2000.

Letters were received from the following agencies: U.S. Geological Survey, U.S. Fish and Wildlife Service, U.S. Forest Service, and State of Utah, Department of Natural Resources, Division of Wildlife Resources. A phone call was received from Dave Ruiter of EPA Region 8 stating that they would not have any comments on the Draft PAM EA. These letters and a copy of the telephone confirmation of the EPA call have been reprinted in Appendix C.

Of the four letters received only three contained comments on the Draft PAM EA. Each comment in a letter was identified with a number and retyped in the following section along with a response.

### **3.6 Letter Comments and Responses**

The response to each comment either explains that the Final EA incorporated the change recommended by the comment or explains why the change was not incorporated. When changes were incorporated, the response provides as much specific information as possible (Final EA chapter number and section) for the reader to locate the appropriate text.

## COMMENT LETTER NO. 1 - U.S. Department of the Interior, Geological Survey

### COMMENT 1.1:

The predicted water quality and other water-related impacts of the proposed action modifications are discussed in isolation of the potential impacts of the proposed activities previously identified in the Final Supplement to the Final Environmental Impact Statement (FS-FEIS). Thus, the EA does not analyze any potential cumulative impacts that might result from the proposed activities contained in both this Action Modification and the FS-FEIS.

### RESPONSE 1.1:

*The EA tiers off of the FS-FEIS. As explained in Chapter 1, Section 1.3, Page 1-2, the EA only documents and analyzes the impacts of the Proposed Action Modifications. It does not repeat any affected environment or analysis of impacts for resources that remain unchanged from what was analyzed and documented in the FS-FEIS. Please refer to Chapter 2, Section 2.18, Page 2-31 of the Draft EA for the cumulative impact analysis.*

### COMMENT 1.2:

Flowing springs are identified in some proposed construction areas. Accordingly, the EA should also discuss the potential impacts of the action modifications on any relevant groundwater systems to be traversed.

### RESPONSE 1.2:

*There would be no impact on groundwater resources as stated in Chapter 3, Section 3.2.3, Page 3-3 of the FS-FEIS.*

### COMMENT 1.3:

Although not specifically stated in the EA, it appears that completion of the proposed water conveyance system will result in a larger quantity of water being transported from Strawberry Reservoir. Thus, any potential impacts that may affect the long-term viability of Strawberry Reservoir upon completion of the proposed system also should be discussed.

### RESPONSE 1.3:

*Please refer to Chapter 1, Section 1.5.1, Second Paragraph, last sentence, Page 1-3 of the Draft EA. The Proposed Action Modifications would not result in any change in the amount of water transported from Strawberry Reservoir from that described and analyzed in the FS-FEIS. The issue of impacts on Strawberry Reservoir was covered in Chapter 3, Section 3.2.2, Page 3-3 of the FS-FEIS.*

### COMMENT 1.4:

Page 1-12, Section 1.6 Interim Operation of the Proposed Action Modification and page 2-1, section 2.1 Introduction:

The proposed modifications will move the location of the Diamond Fork Creek Outlet approximately one mile upstream from its location under the Proposed Action. Any significant impacts of this changed outlet location on the hydrology and habitat conditions of the affected stream reach should be discussed.

### RESPONSE 1.4:

*Please refer to Chapter 2, Section 2.4.4.2, Page 2-4 of the Draft EA which covers the impact of the move of the Diamond Fork Creek Outlet on water quality, and Chapter 2, Section 2.6.4.2 Page 2-8 of the Draft EA which covers the impact of the move on aquatic resources.*

**COMMENT 1.5:**

**Page 1-12, Section 1.6 Interim Operation of the Proposed Action Modification:**

The proposed action modifications will result in an annual average natural gain from Diamond Ford Creek above Three Forks and Cottonwood Creek of about 9,800 acre-feet over the previous flow in Sixth Water Creek below Fifth Water Creek. Any significant water quality and habitat impacts of this changed hydrologic regime should be discussed.

**RESPONSE 1.5:**

*Please refer to Chapter 1, Section 1.6, Page 1-12 of the Draft EA, second bullet, last sentence. The flows are not changed from those discussed and analyzed in the FS-FEIS.*

**COMMENT 1.6:**

**Page 2-4, Table 2-1 Annual Average Water Quality Resulting From Interim Operation of Proposed Action Modifications Below Diamond Fork Creek Outlet:**

The annual average temperature resulting from initial operation of the proposed action modifications below the Diamond Fork Creek outlet assumes water is withdrawn below the thermocline of Strawberry Reservoir. If water will be withdrawn from a different reservoir water layer at different times of the year, any significant water quality or habitat impacts that might result from this different water withdrawal layer should be discussed.

**RESPONSE 1.6:**

*As discussed in Chapter 3, Section 3.3.6.4.2.1, Page 3-26 of the FS-FEIS, there would be no significant differences in impacts.*

**COMMENT 1.7:**

**Page 2-10, Section 2.6.4.2 Impacts During Operation:**

The modified flows in Diamond Fork Creek below Diamond Fork Creek Outlet under the proposed action modifications will favor brown trout over cutthroat trout. Any significant ecosystem or food chain disruption that might result from this altered fish habitat should be discussed.

**RESPONSE 1.7:**

*Please refer to Chapter 2, Section 2.8.4, Page 2-15 of the Draft EA for discussion of the impact of the change in brown trout habitat on leatherside chub habitat.*

## COMMENT LETTER NO. 2 - U.S. Department of the Interior, Fish and Wildlife Service

### COMMENT 2.1:

As discussed at the April 12, 2000 meeting, the EA reaffirms all previous Environmental Commitments included in the FS-FEIS for the Proposed Action. In addition, new Environmental Commitments are affirmed pertinent to impacts from the Proposed Action Modifications. Discussion about details of the Proposed Action Modifications resulted in a recommendation, accepted by the Central Utah Water Conservancy District (District), that the following environmental commitment be added to the list of new commitments:

Design of new or modification of existing electrical facilities required for the project will be evaluated for compliance with current recommendations to avoid or reduce electrocution hazards to raptors and other migratory bird species. Modifications will be made if determined necessary.

### RESPONSE 2.1:

*Thank you for your comment. This commitment has been added to Chapter 1, Section 1.5.4.1, and to Appendix A, Part 1 of the Final EA.*

### COMMENT 2.2:

The EA is intended to also serve as the Biological Assessment under the provisions of Section 7 consultation requirements of the Endangered Species Act. At the request of the District, we provided an updated list of Federally listed endangered and threatened species by letter dated April 18, 2000. Since preparation of the FEIS and the ROD, Canada lynx has been listed as a threatened species. The EA does not address potential impacts to this species. The District has indicated that in order that the EA may serve as a Biological Assessment, the EA will be modified to include an evaluation of potential impacts to Canada lynx from the Proposed Action Modifications. Upon receipt of this evaluation, we will provide a response as a supplement to our previously issued biological opinion on this project.

### RESPONSE 2.2

*Thank you for your comment. The updated endangered and threatened species list has been added as Appendix B in the Final EA. An analysis of the potential effects on the Canada lynx has been added to Section 2.8 of the Final EA and to the Final Technical Memoranda.*

## **COMMENT LETTER NO. 3 – U.S. Department of Agriculture, Forest Service – Uinta National Forest**

### **COMMENT 3.1:**

As we noted in November of 1999, visual impacts in this reach would largely be mitigated by placement of the pipeline under the road. However, the visual impacts of the pipeline would be reduced even further by screening the vent structures with vegetation, rocks and/or soil mounds and coloring them using appropriate earth tone colors. The EA does not call for such mitigation. This visual mitigation should be applied to the entire length of the proposed pipeline.

### **RESPONSE 3.1:**

*Thank you for your comment. This visual resource protection requirement has been added to Chapter 1, Section 1.5.2.7 and Appendix A, Part 1 of the Final EA.*

### **COMMENT 3.2:**

The EA notes that revegetation along this section will be done using indigineous shrubs. This should be expanded to include appropriate grasses and forbs. Since the Spanish Fork Supplemental FEIS was approved, the Uinta Land and Resource Management Plan was amended. One new provision in this amendment is the requirement to use native plant species on the Forest.

### **RESPONSE 3.2:**

*The description in Chapter 1, Section 1.5.2.7 of the Final EA has been expanded to include native grasses and forbs. The District has and will continue to use native plants in all revegetation efforts.*

### **COMMENT 3.3:**

The EA calls for an 8 inch collection pipe and french drain at the sulfur spring. We agree in concept with this design as it provides redundancy which should protect the integrity of the road and allow the spring to drain. We do have a concern that the footing for the retaining wall, and associated dip in the french drain (as shown on Insert 7, Map A-1), will cause water flowing from the spring through the french drain to exit further downgrade toward Diamond Fork Creek than it presently does. If the spring drainage pipe was to become ineffective, existing wetland above the elevation of the bottom of the footing may dry up. The drainage system and footing should be revisited during final design to eliminate this possibility. We would like to be involved in the review of the final design for this structure.

### **RESPONSE 3.3:**

*The french drain design would consist of a compacted trench filled with gravel below the pipe. The trench dimensions would be determined during final design and sized to convey the flow of the spring plus any surface runoff infiltration from the immediate area. The retaining wall and footing have been redesigned and would not change the hydraulic grade line of water flowing toward and through the wetland (see revised Inset 7, Map A-1). Any water flowing through the french drain would flow under the re-designed base pad and back up to hydraulic grade line, through the path of least resistance, before discharging to the existing wetland. The water surface elevation in the wetland would establish the hydraulic grade line of the french drain and is controlled by the berm elevation at the top of the streambank, which would not be changed by the project construction or operation. Therefore, the spring water would continue flowing to the wetland, regardless of whether it flows through the pipe or through the french drain, and the wetland would not be affected. This spring water conveyance system with redundancy would replace the existing culvert, which has no redundant conveyance system. The District would welcome the Forest Service review of the final design for the pipeline and french drain structure associated with collection and conveyance of the sulfur spring.*

**COMMENT 3.4:**

**Red Hollow and Monks Hollow Access** - At the mouth of Red Hollow the EA calls for relocating the Diamond Fork Road upslope from its current location and closer to the mouth of Red Hollow. The EA further states that the existing roadway will be ripped up, top-soiled, and revegetated, and notes that access to the Red Hollow and Monks Hollow will be provided off the realigned road. We concur with this; however, we do have some concerns regarding access into Red Hollow and Monks Hollow that are not clearly addressed in the EA. Although Map A-1 is referenced, specific details about the ingress or egress at these road junctions are lacking. Depending upon the elevation of the Diamond Fork roadway, some minor ramp construction will be needed. The Red Hollow Road and Monks Hollow Road should be essentially level (<2%) for about 40-50 feet from the intersection (to accommodate a vehicle with a trailer), and in no case should the ramps exceed 8% in grade.

**RESPONSE 3.4:**

*A portion of the existing Red Hollow Road south of its intersection with the relocated Diamond Fork Road would become the Monks Hollow Road extension. The District would reconstruct a 30-foot long segment of the Monks Hollow Road extension at its intersection with the relocated Diamond Fork Road. The 16-foot wide reconstructed road segment would include a ramp with no more than a 2 percent slope from the intersection to provide for vehicle egress and ingress. The Red Hollow Road intersection would be cut and slightly regraded to match the elevation of the relocated Diamond Fork Road. See Chapter 1, Section 1.5.2.9 in the Final EA for a revised description of these intersections.*

**COMMENT 3.5:**

With realignment of the Diamond Fork Road, access to Monks Hollow Road will be cut off. A short segment of road will need to be constructed to connect the Monks Hollow bridge with the Diamond Fork Road. This new access point should intersect the relocated Diamond Fork Road at a right angle directly across from the Red Hollow Road intersection (form a 4-way intersection). We recommend paving all reconstructed road surfaces associated with this project, including the new access to the Monks Hollow bridge.

**RESPONSE 3.5:**

*Access to Monks Hollow Road would not be cut off because the portion of the existing Red Hollow Road south of the relocated Diamond Fork Road would remain intact and become the Monks Hollow Road extension. Reconstruction of the first 30 feet of the Monks Hollow Road extension would include building the ramp at a right angle to the centerline of the relocated Diamond Fork Road and across from the Red Hollow Road intersection. The Monks Hollow Road extension would be paved from the relocated Diamond Fork Road to the Monks Hollow Bridge. The Red Hollow Road intersection with the relocated Diamond Fork Road would include a short pavement apron. See Chapter 1, Section 1.5.2.9 in the Final EA for a revised description of these roads.*

**COMMENT 3.6:**

**Muck Disposal in Upper Monks Hollow** - The EA shows the location for disposal of the tunnel waste. From Map A-1 it appears the area delineated would avoid encroachment into Diamond Fork Creek's 100-year floodplain. We feel this is essential, and concur with the muck disposal site.

**RESPONSE 3.6:**

*Thank you for your comment.*

**COMMENT 3.7:**

Other than providing information on side slopes, depressions, and overall location, the EA is not specific as to how muck disposal area will be shaped. We feel it is important to mitigate long-term visual and other impacts to this area. This can be done within the design in the EA by shaping the area to retain its existing character. The disposal area should have a series of minor hills, ridges, depressions and swells similar to the existing topography. Revegetation of the disposal area is critical. The EA, including the Environmental Commitments section, provides for revegetating this area. It does not; however, provide for protection of the area from recreation use and grazing until the area is successfully revegetated. This project should provide measures needed (e.g. temporary fencing) to accomplish this. Once the area is successfully revegetated, then the Forest Service should be responsible for protection of the vegetation.

**RESPONSE 3.7:**

*Shaping of the waste disposal area will be done to blend in with the surrounding area and to pre-existing conditions to the extent possible. The Forest Service has a member on the design review team, which is responsible for review of all designs. Temporary fencing of the area has been added as a commitment to Chapter 1, Section 1.5.4.2 and Appendix A, Part 1 of the Final EA. The Forest Service would be responsible for maintaining the fence until they are satisfied that the area revegetation has been accomplished.*

**COMMENT 3.8:**

As portrayed on Map A-1, the ephemeral and intermittent drainages extending across the muck disposal area would be diverted into a drainage structure on the uphill side of the disposal area. The change in grade associated with the diversion is likely to result in significant sediment deposition in the diversion structure. As a result, there will probably be a recurring maintenance need to clean out the deposited sediment. The Environmental Commitments section of the EA or associated decision document should specify that the Conservation District is responsible for this long-term maintenance need created by the road and topography modifications created through the proposed action.

**RESPONSE 3.8:**

*The District would be responsible for maintaining the drainage collection and diversion ditches on the uphill side of the waste disposal area described in Chapter 1, Section 1.5.4.2 in the Final EA. This section has been revised to incorporate the long-term maintenance associated with sediment collection in the ditches, and a corresponding environmental commitment has been added to Appendix A.*

**COMMENT 3.9:**

The EA (pg. 2-17) states that the dispersed recreation sites covered by the muck disposal area will be restored following completion of the project and revegetation of the area. We feel restoration of the dispersed recreation sites and use here is unlikely. The revegetated area will be elevated and more distant from Diamond Fork Creek than is the area currently used. Our experience with dispersed recreation use is that sites such as this reclaimed site will only be used during peak periods when sites nearer the stream are full. We recognize an unimpacted area will be left along the stream. However, any use in this area will be confined to a narrow corridor by the sharply rising muck on one side, and the stream on the other. Consequently, the concentrated use would likely result in unacceptable impacts to the floodplain and riparian community, and therefore, we may need to close this area to such use. The net result is that an indirect consequence of the proposed action is that some dispersed recreation sites may be lost and historical use here displaced.

**RESPONSE 3.9:**

*The area along the creek currently receives the most use, as people prefer to camp near the creek. As pointed out in the comment, once this area becomes full the users move up on the slope closer to the road. The area along the creek is already currently overused. In our opinion, the use of the area upon completion and establishment of vegetation would continue much as it has in the past. The area along the creek would continue to receive the most use as it has in the past with the use spilling onto the reclaimed area. Sufficient access to the creek from the waste disposal area would continue to be available at the ends of the disposal area and along the bottom except at its very center where it would be at its highest. The waste disposal area would occupy only a small portion of the area currently used for dispersed camping. For these reasons, the Joint-Lead Agencies do not agree that any dispersed camping opportunities available under baseline conditions would be lost.*

**COMMENT 3.10:**

**Diamond Fork Creek Outlet** - The proposed action calls for construction of an energy dissipation structure and riprapped channel at Diamond Fork Creek. Insert 5 on Map A-1 also shows a riprap grade control structure to protect these features. The grade control structure could potentially create a partial dam impeding upon the Diamond Fork Creek floodplain. This may result in a very undesirable constraint to or blockage of high flows in Diamond Fork Creek and is a serious concern to us and any such constraints on Diamond Fork Creek's flows must be avoided.

**RESPONSE 3.10:**

*The District apologizes for any confusion caused by an accidental shift of one color layer on Map A-1. The rock riprap grade control structure would not extend into Diamond Fork Creek as shown on Inset 5, Map A-1. As described in Chapter 1, Section 1.5.2.6 in the Draft EA, the grade control structure would be constructed diagonally between the energy dissipation structure and Diamond Fork Creek. The grade control would be constructed with its top elevation matching the existing floodplain elevation, and it would not change any flow characteristics of the floodplain other than preventing floodplain scour and re-channelization immediately downstream of the grade control during a flood event exceeding the 100-year flood. The south end of the grade control would terminate at the existing streambank. The purpose of the grade control would be to maintain the existing floodplain grade, which would protect the energy dissipation structure and outlet channel. The grade control would not create a partial dam, blockage or other constraint on Diamond Fork Creek flows. A revised description of the grade control is included in Chapter 1, Section 1.5.2.6 in the Final EA, and Map A-1 has been reprinted with all color layers registered to the same points.*

**COMMENT 3.11:**

**Monks Hollow Tunnel Portal Access Road** - Insert 5 on Map A-1 indicates multiple corridors would be cut through the existing juniper vegetation between the Diamond Fork Road and the portal site. The Environmental Commitments section of the EA describes mitigation for visuals including planting trees and shrubs. Even with the mitigation identified here, the area will never meet the established visual quality objective. Nevertheless, this is part of a sensitive viewshed and therefore, it is important we do everything reasonable to mitigate these impacts. One measure would be to locate the two pipeline corridors and access road on the same alignment to the maximum extent feasible. The width of the corridor could be further reduced by locating the road over the pipelines and end-filling the ditch (i.e. thereby eliminating a need for additional clearing for stockpiling trench fill material). In addition, it may be possible to construct a partial bench road (this may require some retaining walls) instead of a full bench road in this critical section. The road could also be narrowed from two 12 foot lanes (with a 2 foot shoulder) to two 10 foot lanes with no shoulders. The road modifications we are suggesting are similar to what was described for the Red Hollow Road in the Final Supplement to the FEIS. We realize the pipelines will diverge at the Diamond Fork Road. If grades on the portal access road would be excessively steep, the road could diverge from the pipeline on the lower hillside where it would be

screened from the Diamond Fork Road. Employing these mitigation measures would reduce the width and height of the disturbance area, and therefore reduce the permanent visual impacts of the disturbance needed to construct a road and lay 2 pipelines on these steep slopes. Edges of the corridor should be shaped to eliminate the strong linear appearance a corridor would possess. We understand these measures are not the most efficient construction practices and add to the expense; however, the length involved is relatively short (about 300 feet) and this section is highly visible in an area where visual quality is important. Therefore, all possible measures should be employed to minimize the disturbance width in this section.

**RESPONSE 3.11:**

*Insets 4, 5, and 6 on Map A-1 have been revised to show the permanent access road constructed on top of the Diamond Fork Pipeline Extension. The re-aligned permanent access road and pipeline would help minimize the visual impacts of vegetation removal and soil disturbance. A temporary construction access road with an average 12 percent grade would follow the same alignment as the permanent access road for 400 linear feet as shown on revised Map A-1, Insets 4, 5, and 6. Existing juniper trees and other vegetation would screen the lower corridor from Diamond Fork Road. The temporary construction access road would disturb about 450 linear feet in the lower corridor and about 235 linear feet in the upper corridor, both which would be revegetated with grasses, shrubs and trees following construction. The permanent access road would have a 16-foot wide paved surface, with side ditches and shoulders, to reduce the road width from 24 feet wide with two-foot shoulders. Revegetation of the road corridors would include irrigation until the plants are established, which would help minimize the long-term visual impacts from vegetation removal and soil disturbance. The emergency overflow and bypass pipeline would be constructed in a separate alignment from the Diamond Fork Pipeline Extension to limit the extent of cut and fill slopes for the permanent access road and Diamond Fork Pipeline Extension. Insets 4, 5, and 6 on Map A-1 show the revised alignment of the emergency overflow and bypass pipeline. Edges of both pipeline corridors would be shaped to eliminate linear appearances and to minimize the visual impacts of juniper and other woody vegetation removal. The emergency overflow and bypass pipeline corridor and slopes along the permanent access road corridor would be irrigated until grasses and shrubs are established to further minimize the visual impacts of vegetation removal and soil disturbance. All possible measures would be employed to minimize the disturbance width of the access roads (permanent and temporary) and pipeline corridors. Sections 1.5.2.6, 1.5.2.7, and 1.5.2.9 in Chapter 1 of the Final EA have been revised to include these visual resource protection measures.*

**COMMENT 3.12:**

Erosion from the road is also a concern given the unavoidably steep gradient. We understand the road surface would be paved; however, the ditches would not be and serious erosion could result given the steep gradient and inherent erosive nature of the soils present. This should be addressed in the detailed road design.

**RESPONSE 3.12:**

*The detailed road design would address erosion control in ditches along the road. Ditches and drainage swales constructed along the road would be lined with native rock and excelsior erosion control blanket to control erosion. Cut and fill sections of the temporary and permanent access roads would be outsloped at 2 percent to disperse drainage before it can concentrate. Fill sections of the temporary and permanent access roads would be crowned, with 2 percent slopes to either side to disperse drainage. Additional rock riprap would be incorporated as necessary into the ditches to control erosion. Chapter 1, Section 1.5.2.9 in the Final EA has been revised to include a description of ditch erosion control measures.*

**COMMENT 3.13:**

A major concern is how the intermittent stream channel covered by the portal pad and accessing roadway and pipelines will be addressed. Our experience in the general area indicates that these types of drainages experience flows of 50-150 cfs/square mile of drainage area during extreme runoff events. These flows contain large quantities of debris (soil, rocks, vegetation, etc.) and consequently, culverts sometimes become plugged and fail. Flattening the slope of the stream channel (or drainage structure) through the pad and road/pipeline prism may result in significant debris deposition there. The EA depicts a drainage structure through the site but it is not clear as to how this structure will address the concern described above. This should be addressed in the detailed design.

**RESPONSE 3.13:**

*The configuration of the Upper Diamond Fork Tunnel outlet portal yard and Monks Hollow Overflow Structure has been revised, including the drainage structure and runoff conveyance through the portal yard area. The revised drainage and runoff conveyance plan is shown on Inset 4, Map A-1. Lined drainage bypass ditches would convey runoff water around the east and south perimeters of the portal yard to a rock-lined channel at the toe of the portal yard fill slope. The rock-lined channel would re-connect to the existing intermittent channel below the portal yard area. The ditches and constructed channel would have a total length of 560 feet. The slopes of the portal yard perimeter ditches would be flatter than the surrounding natural topography and likely would result in some debris deposition. The District would maintain the ditches to convey runoff water around the portal yard area. See Chapter 1, Section 1.5.2.4 in the Final EA for a revised description.*

**COMMENT 3.14:**

**Road Closure at Red Ledges** – The EA indicates the Diamond Fork Road would be closed during construction at Red Ledges. To facilitate a safe and all weather turn-around for Forest visitors, the turn-around may need to be graveled or hardened.

**RESPONSE 3.14:**

*Thank you for your comment. This requirement has been added to Chapter 1, Section 1.5.2.9 and Appendix A, Part 1 of the Final EA.*

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***Diamond Fork System  
Proposed Action Modifications  
Final Environmental Assessment***

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***Appendix A  
Environmental Commitments***

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## **Appendix A Environmental Commitments**

This appendix consists of two major parts. The first part lists the new environmental commitments associated with the Proposed Action Modifications. The second part lists the commitments that were included in the Record of Decision on the Diamond Fork System Final Supplement to the Final Environmental Impact Statement.

### **Part 1 New Environmental Commitments**

#### **Water Quality**

Waste material excavated from sections of the tunnel that are suspected of containing rocks bearing selenium will be segregated in the waste area and appropriate measures will be taken to prevent water from coming into contact with this waste material and entering Diamond Fork Creek. (District)

No waste material suspected of containing selenium-bearing rocks will be used for any other construction such as roads or other features that could be in contact with groundwater or surface water. (District)

Drainage collection and diversion ditches will be installed along the uphill perimeter of the waste disposal area to keep runoff water away from the disposed rock. (District)

The District will maintain drainage bypass ditches constructed in the tunnel outlet portal yard area to convey runoff water around the portal yard. (District)

Ditches and drainage swales constructed along access roads will be lined with native rock and excelsior erosion control blanket to control erosion. Additional rock riprap will be incorporated as necessary into the ditches to control erosion. (District)

Earth material for the cofferdams on Sixth Water Creek upstream and downstream of the work area will be obtained offsite from approved areas and hauled to the site. (District)

Both batch plants will be sited and operated so as to avoid any contamination of Sixth Water and Diamond Fork creeks. (District)

All fuel storage tanks or bladders will be surrounded by a fuel containment berm. (District)

#### **Wetlands**

The water supply to the wetland along the Diamond Fork Road reconstruction area will be maintained during construction so that the wetland surface area is not diminished and the plant communities are not affected. (District)

A special drainage collection system will be constructed under the Diamond Fork Road and retaining wall to collect and convey the spring water to the wetland and riparian areas. (District)

Cottonwood trees will be planted along the edge of the 200-foot long channel area to enhance the riparian corridor. The new cottonwood trees would be irrigated as necessary to promote establishment. (District)

All conditions of the Nationwide Permit 14 will be followed. (See Part 3 for a list of the conditions.)

### **Visual Resources**

The Upper Diamond Fork Tunnel portal headwall area will be restored to approximate original contour, covered with topsoil, and revegetated with native plants. (District)

The concrete top of the Monks Hollow Overflow Structure will be tinted to match existing soils. (District)

Cottonwood trees will be planted along the edge of the 380-foot long Diamond Fork Creek Outlet channel area to screen the outlet from Diamond Fork Road. (District)

The portions of the Diamond Fork Pipeline Extension alignment that are not located within the Diamond Fork Road or tunnel portal access road will be planted with indigenous shrubs, native grasses and forbs in a natural pattern to blend with adjacent vegetation. (District)

Pipeline corridors and road cuts and fills in areas that will be restored to native vegetation will be irrigated following construction until native grasses and shrubs planted in the disturbed areas are established to further minimize the visual impacts of vegetation removal and soil disturbance. (District)

The Upper Diamond Fork Tunnel Outlet Portal access road will be aligned to save existing trees and curved around existing vegetation to provide visual screening. (District)

Large junipers and gambel oak will be planted in a free-from pattern in strategic locations to screen all road cuts and fills. (District)

The retaining wall along Diamond Fork Road reconstruction will be constructed of tinted concrete to blend with the surrounding landscape. (District)

Scattered cottonwood trees will be planted at the base of the retaining wall for screening purposes. (District)

The portion of the Diamond Fork Road to be replaced by a new alignment will be ripped up, topsoiled and revegetated. (District)

To the extent possible the waste disposal area will be shaped to match the existing and adjacent topography. Stockpiled alluvium and surface soils will be spread over the finished waste disposal area. The area will be planted with indigenous shrub clumpings and clumps of trees in a freeform pattern to blend with adjacent vegetation. Slight depressions will be provided where trees and shrubs are planted to collect water and runoff to increase plant survival rates. The area will be drill-seeded and the plantings will be irrigated as necessary to promote establishment. A temporary fence would be placed around the area to protect the revegetation until it has become established. Upon satisfactory establishment of vegetation, the fence would be removed. (District responsible for construction, Forest Service responsible for maintenance)

The cut slopes surrounding the tunnel portal pad will be top-dressed with soil if they don't match the surrounding soil areas. (District)

All vent structures will be screened with vegetation, rocks and or soil mounds and colored using appropriate earth tone colors. (District)

## **Air Quality**

The concrete batch plants will be operated to meet all EPA regulations and suggested emission controls. (District)

## **Miscellaneous**

Design of new or modification of existing electrical facilities required for the project will be evaluated for compliance with current recommendations to avoid or reduce electrocution hazards to raptors and other migratory bird species. Modifications will be made if determined necessary. (District)

The turn-around at the Red Ledges closure of the Diamond Fork Road will be graveled or hardened as necessary. (District)

The ditches around the waste disposal area will be cleaned out as necessary and debris disposed of during normal maintenance operations. (District)

The District will reconstruct a 30-foot long segment of the Monks Hollow Road extension to include a 16-foot wide road with a ramp at no more than 2 percent slope from the intersection. The ramp will be constructed at a right angle to the centerline of the relocated Diamond Fork Road. The Monks Hollow Road extension will be paved from the new intersection down to the Monks Hollow Bridge. The Red Hollow Road intersection will be slightly cut, re-graded, and re-aligned at a right angle to the centerline of the relocated Diamond Fork Road across from the Monks Hollow Road intersection. A short pavement apron will extend onto the re-aligned Red Hollow Road. (District)

## **Part 2**

### **Environmental Commitments Contained in the Record of Decision**

#### **A-1 Mitigation**

##### **General**

The mitigation and monitoring commitments, plus the restoration goals for Sixth Water and Diamond Fork Creeks and Spanish Fork River, could be best accomplished in consultation with an interagency "Restoration" or "Adaptive Management" team. The team will be comprised of representatives from the Joint-Lead Agencies, USFWS, Forest Service and the Utah Division of Wildlife Resources, at a minimum. Although the other agencies will be consulted, the responsibility for these environmental commitments will remain with the agency(s) indicated in parentheses after each commitment.

##### **Agricultural**

Owners, tenants, lessees and managers of public lands will be informed of the construction schedule; grazing permittees will be consulted and informed of fence openings, disturbances to range improvements and other range-related activities; and utilities will be contacted if their facilities will be crossed by features of the Proposed Action. (District)

Fences along the right-of-way will be braced before they are opened. Access and livestock will be controlled with temporary fencing and gates during construction to reduce impacts on other land uses. If damaged, barriers (such as cattle guards) for livestock control will be replaced by measures that are equally effective. Construction will not inhibit existing livestock access to water and adjacent grazing areas unless agreed to by the owner and/or lessee in advance. Fences, gates and cattle guards will be restored to their original condition or replaced when construction is completed. (District)

The District will provide funds to the Forest Service to construct interior pasture fences and a temporary corral to control cattle between the Diamond Fork and Hollows Unit pastures where reduced water flows eliminate a natural barrier between the two units. (District)

The construction contractor will work with the owner, Forest Service representative, and livestock permittees to minimize conflicts with the annual entry and removal of livestock on public lands. (District)

Significant impacts on agricultural resources resulting from modifications made to structures at the Spanish Fork River diversions will be mitigated. (District)

##### **Air Quality**

The District contractors will follow, to the extent feasible, the EPA's recommendations for aggregate storage pile emissions (AP-42, Section 11.2.3) to minimize dust generation (i.e., periodic watering of equipment staging areas and dirt roads). (District)

Construction machinery and operation and maintenance vehicles will be routinely maintained to ensure that engines remain tuned and emission-control equipment is properly functioning as required by law. (District)

The contractors will comply with the Utah State air quality regulations. (District)

## **Aquatic Resources**

Heavy equipment use will be minimized in streambeds and riparian areas during construction at stream crossings. (District)

Significant impacts on aquatic resources from modifications made at the Spanish Fork River diversions will be mitigated. If the diversion structures are modified fish passage will be built into each structure. (District)

Prior to completing final design, the District will consult with and obtain the Forest Service's approval on the location and design of the Diamond Fork Creek Outlet. (District)

As determined by monitoring, flow manipulation could be used to create/maintain backwater, cutoff pools, and other habitat for leatherside chub. (District)

An interagency team consisting of representatives from the Joint-Lead Agencies, Forest Service, USFWS, and Utah Division of Wildlife Resources will be organized to determine flow needs within Sixth Water and Diamond Fork Creeks and Spanish Fork River to benefit aquatic, terrestrial and riparian resources. (Mitigation Commission)

If low dissolved oxygen levels are found downstream from tunnel outlets, baffles or oxygen aerators should be installed to bring dissolved oxygen concentrations up to levels that are not detrimental to fish and other aquatic resources. (District)

## **Cultural Resources**

The District will conduct a Class III cultural resources survey of the affected area to identify historic properties in a manner consistent with the *Secretary of the Interior's Standards and Guidelines for Identification* (48 CFR 44720-23) and taking into account NPS publication, *The Archeological Survey: Methods and Uses* (1978 GPO stock #04-016-00091) and guided by *National Register Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties*. (District)

The District, in consultation with the Utah SHPO, will evaluate properties identified in the survey in accordance with 36 CFR 800.4. If properties included in or eligible for the National Register of Historic Places or meeting the National Register Criteria (36 CFR 60.4) are identified, the District will comply with 36 CFR 800.5. (District)

Treatment Plans will be developed for the largest possible area affected by the project that is acceptable to the District and the Utah SHPO. (District)

## **Energy Conservation**

Standard energy conservation measures will be used during construction, operation and maintenance (e.g., avoiding unnecessary idling and keeping vehicles and equipment tuned and maintained). (District)

The shortest possible transportation routes that are environmentally acceptable and safe will be used during construction to conserve fuel. (District)

## **Erosion Control and Restoration**

Erosion control and restoration procedures will be implemented in all areas disturbed during construction of project components, including temporary access roads and access roads that are upgraded to construction traffic standards. (District)

The contractor will be required to restore disturbed surfaces to preconstruction conditions and avoid and minimize erosion. (District)

Temporary slope breakers will be used to reduce runoff velocity and divert waste from the construction right-of-way. They will be constructed with materials such as soil, silt fence, weed free staked hay or straw bales, or sandbags, using the written recommendations of local land managing agency and soil conservation authorities. (District)

Sediment barriers will be installed to keep wetlands and water bodies free of possible sedimentation resulting from construction. The barriers will be constructed of materials such as silt fence, weed free staked hay or straw bales, or sandbags. They will be installed as necessary at the base of slopes adjacent to road crossings and at construction locations near water bodies or wetlands where siltation could occur. (District)

In areas subject to erosion, an erosion control blanket or matting will be placed on slopes for stabilization to prevent wind and water erosion and help establish vegetation. A site analysis will be conducted to determine the appropriate type of mulch and other erosion control material for each area. (District)

Existing topsoil will be carefully removed and stored during trenching operations and replaced after trenches are backfilled. Where drainage occurs, gaps will be left between topsoil piles to prevent increased water saturation. Topsoil stripping activities will cease during excessively wet weather, and topsoil will not be stockpiled for longer than 2 years. Additional topsoil will be added, if needed, to allow vegetation growth. (District)

Waste material (tunnel muck) from tunneling operations will be disposed in areas near tunnel portals and graded and shaped to match the natural topography to the extent feasible. Spoil will be revegetated. (District)

Final cleanup of an area (including replacement of topsoil, final grading, and installation of permanent erosion-control structures) will be completed within 10 days after backfilling. If unavoidable delays occur, final cleanup will be completed as soon as possible and always before the end of the next recommended seeding season. (District)

After construction, soil will be replaced and worked with a disc, chisel plow, or other appropriate implement as practical to reduce compaction and leave soil in proper revegetation condition. Topsoil will be replaced with a minimum of handling. (District)

Permanent trench breakers will be built to stop the flow of subsurface water along trenches. When necessary, an engineer or similarly qualified professional will determine the need for and spacing of trench breakers. Topsoil will not be used in trench breakers. (District)

Seedbeds will be prepared in disturbed areas to a depth of 3 to 4 inches using appropriate equipment. If hydroseeding is used, the seedbed will be scarified to facilitate lodging and germination of seed. Seeding will be done in consultation with the Forest Service. (District)

To maximize the success of revegetation, planting will occur during appropriate climatic periods in properly prepared soil. Planting and fertilizer application techniques will be chosen for specific conditions at each site and the needs of selected plant species. Temporary erosion control measures will be used at any site where seeding has been delayed. (District)

Where possible, natural seed mixes of local origin will be used along with mulching and no, or low, amounts of fertilizer. The criteria for selecting species to plant in disturbed areas will include hardiness, compatibility with wildlife, capacity to self-perpetuate, and rooting characteristics that help stabilize soil. (District)

All spoil piles resulting from construction of tunnels will be sloped to control erosion, Topsoil will be placed on the piles as necessary to provide suitable conditions for revegetation. (District)

Temporary traffic barriers will be placed as necessary to keep vehicles from traveling over areas that have been revegetated. Traffic barriers may include temporary fencing, concrete jersey barriers, berms and boulders. (District)

### **Health and Safety**

The Utah Occupational Safety and Health Act and the conditions of the federal Occupational Safety and Health Standards will be followed during construction, operation and maintenance. Copies of these publications and the health and safety Environmental Commitments will be provided to project workers at construction sites. (District)

Warning signs and temporary barriers will be provided in areas used by permittees and other public land users where construction activities are underway. (District)

Onsite and offsite construction activities will fully conform with standards in the Reclamation safety and health standards manual. (District)

Supervisory Control and Data Acquisition System (SCADA) monitoring systems will be installed during construction to allow monitoring of conveyance flows during operation. This system will allow operators to reduce flows or releases in stream channels during periods of potential flooding. (District)

To mitigate hazards associated with emergency flows, warning signs will be posted at Diamond and Palmyra campgrounds, and at the Sixth Water Creek crossing of the Springville Crossing-Rays Valley Road. Emergency flows will be gradually increased from the Strawberry Tunnel. Whenever possible, these flows will be increased during the daytime. (District/Forest Service)

### **Noise**

Mufflers on construction equipment will be checked regularly to minimize noise. (District)

The District's contractor will follow noise exposure and hearing conservation standards and practices contained in the Reclamation safety and health standards manual to protect workers and the public from potential harmful noise. (District)

### **Noxious Weed Control**

Revegetated areas will be monitored for invasion of noxious weeds and other weed species, as required by Section 4.17.3 of the Utah Noxious Weed Act, and appropriate weed control measures implemented. The noxious weed control will include the following measures:

- Establishing a cover of desirable and preferably indigenous plant species as quickly as possible after construction (District)
- Interim seeding and weed control of topsoil stockpiles if they will remain barren for extended periods of time (District)
- Conducting weed surveys during the fall and spring after initial seedings (District)

- Applying herbicides, removing the weeds by hand or using mechanical or biological control methods before they develop seeds or spread roots (District)
- Herbicides will be applied in accordance with federal and state application, permit and record keeping requirements. Key considerations will include compatibility with wildlife management plans, protecting indigenous plant communities and avoiding environmental contamination. (District)
- Noxious weed removal in the vicinity of Ute ladies'-tresses will be done in a manner that avoids or minimizes impacts on these species or their habitats. (District)
- Weeds removed by mechanical or hand control methods will be burned or otherwise properly disposed of to prevent their spread to other areas. (District)
- Monitoring for revegetation success will be conducted for three years following completion of initial revegetation. Monitoring will be conducted for a longer period if anticipated results are not achieved and the project is contributing to the spread of noxious weeds. (District)
- The District will implement a program to make contractors and others in field positions aware of undesirable vegetation. (District)

### **Recreation Resources**

The public will be notified of the Diamond Fork Road closure and available alternate routes through public notices and information boards erected on the Diamond Fork Road, Right Fork Hubble Creek Road, Springville-Rays Valley Road, and Sheep Creek-Rays Valley Road. (District/Forest Service)

The Fifth Water trailhead parking area which provides access to the hot springs area, will be improved and signed. (District/Forest Service)

### **Special-Status Species**

Those involved with project construction and its oversight will be informed through an educational program that the golden eagle is protected by the Eagle Protection Act and the Migratory Bird Treaty Act. (District)

In the event dead, injured or sick golden eagles are encountered the USFWS Division of Law Enforcement (801-975-3632) and the Utah Division of Wildlife Resources (801-489-5678) will be promptly notified for guidance on their care, preservation and transport. (District)

Notification of dead, injured or sick golden eagles also will be given to the Utah State Field supervisor, of the USFWS Ecological Services office (801-524-5001) within three days of discovery. (District)

Proper permits will be obtained for the "take" of nesting golden eagles (those nesting within ¼ mile of construction activities). (District)

Pre-construction surveys for flammulated owls, short-eared owls, and Three toed woodpecker will be conducted to determine the absence or presence of the species. If found construction procedures and locations will be modified to the extent possible to avoid impacts to nesting areas. (District)

Raptor nest surveys will be conducted prior to commencing construction activities. (District)

Preconstruction surveys for Swainson's hawk nests will be performed to ensure compliance with the Migratory Bird Treaty Act. (District)

To the extent possible construction schedules will be modified to start before the golden eagle nesting period or after fledging time. (District)

The Joint-Lead Agencies will identify, acquire, and permanently provide a block of water for flows in lower Provo River through critical habitat, in perpetuity, for June sucker. (District, Interior, Mitigation Commission)

The District, in cooperation with the other Provo River water users, the USFWS, and other members of the Provo River Flows Workgroup, will agree on operational scenarios that mimic dry, moderate and wet years. The District, with the support of the Joint-Lead Agencies and Provo River water users, will apply operational scenarios to the annual Provo River operation to benefit June sucker. (District)

The Joint-Lead Agencies, in cooperation with the State of Utah and USFWS, will work toward establishment of a refugium in Red Butte Reservoir for June sucker. (District, Interior, Mitigation Commission)

The Joint-Lead Agencies will participate in the development of a Recovery Implementation Program for June sucker. (District, Interior, Mitigation Commission)

Any future development of the Bonneville Unit of CUP will be contingent on the RIP making "sufficient progress" towards recovery of June sucker. (District, Interior, Mitigation Commission)

### **Transportation**

Staging areas for construction material and equipment will be sited to minimize or avoid traffic impacts in public access areas. (District)

Traffic control and other safety measures will be followed in construction and maintenance areas to minimize the risk of vehicle and pedestrian accidents. (District)

Roads damaged by project construction activities will be restored to at least preconstruction levels. (District)

The shortest possible transportation routes, where approved, will be used to dispose of spoil and waste. (District)

Construction and traffic control procedures will be designed to minimize the length of delays and or detours. (District)

Trained project personnel will provide control traffic in affected areas. (District)

Salt will not be used in snow removal efforts. (District)

Snow, ice and debris will be removed from currently functioning culverts to keep the drainage system functioning efficiently. Ditches will be kept functional. (District)

All debris, except snow and ice, that is removed from the road surface and ditches shall be deposited away from stream channels. (District)

During snow removal operations, banks shall not be undercut nor shall gravel or other selected surfacing material be bladed off the roadway surface. (District)

Snow berms shall not be left on the road surface. Berms left on the shoulder of the road shall be removed and/or drainage holes shall be opened and maintained. Drainage holes shall be spaced as required to obtain satisfactory surface drainage without discharge on erodible fills. (District)

Any damage resulting from snow removal will be repaired to at least the pre-construction condition. (District)

The District will consult with the Forest Service prior to finalizing the design of all access roads. (District)

### **Visual Resources**

Disturbed areas will be landscaped to match existing and characteristic land forms. When feasible, they will be re-contoured and slopes rounded along maintenance roads, pipeline alignments and stream banks to blend with surrounding natural contours. (District)

New plantings will be blended with natural vegetation at the edges, and configured to match existing vegetation patterns and provide horizontal and vertical diversity. (District)

Existing vegetation that screens pipeline alignments, flow-control facilities, parking lots and other features from key viewing areas will be retained to the extent feasible. Indigenous trees will be planted to screen disturbed areas at gaps in existing vegetation where pipeline corridors, flow control facilities, parking lots and other features may be visible from key viewing areas. (District)

Disturbed soils will be restored to match soil colors and textures of adjoining areas as closely as possible to reduce contrast in the landscape. Boulders may be placed in some areas to replicate the landscape character. (District)

### **Water Quality**

Construction activities for the Proposed Action will be performed according to the Final Draft Nonpoint Source Water Pollution Control Plan of Hydrologic Modifications in Utah (Robinson 1994). The measures identified in this plan specify construction practices where there is potential for disturbing stream channels, riparian areas and floodplains. These practices are designated as the State of Utah's Best Management Practices for nonpoint source water pollution control. (District)

The possibility of accidental releases of materials into surface waters will be managed according to spill prevention, containment and countermeasure requirements of the District's construction specifications. Such specifications include worker education, incident reporting and remediation provisions in the event of a spill. (District)

Construction workers will be careful to avoid the escapement of wet concrete into waterways and other sensitive fish and wildlife habitat. (District)

Concrete trucks and equipment will be washed only in areas approved by the Contracting Officer, that will not impact streams or sensitive fish and wildlife habitat. (District)

Appropriate State of Utah water quality permits will be obtained prior to construction in or near water resources. (District)

Some flooding mitigation may be necessary under the Proposed Action because of the potential for freezing conditions above the Spanish Fork Diversion Dam. Although the potential for freezing is not different compared to baseline, the higher volumes of flow during frozen conditions could lead to greater flooding. The necessary

mitigation will depend on climate and duration of freezing conditions. Strawberry Reservoir releases will be adjusted to minimize impacts of freezing conditions by minimizing or ceasing flows when freezing conditions persist and increasing releases during free-flowing conditions to adjust for potential reductions. (District)

### **Wetland and Riparian Resources**

Direct and indirect impacts on wetlands will be avoided, unless there are no other practical alternatives (as defined in 40 CFR 230.3). Procedures to avoid impacts will include protecting wetlands with silt fencing during construction and avoiding quantity and quality impacts on surface water and groundwater resources that serve as a source of water for wetlands. (District)

The contractor will be required to prepare a road modification plan for approval by the District before starting any modifications on the Diamond Fork Road. The plan will document methods to protect wetlands adjacent to the road from construction and operational impacts. (District)

Where impacts on wetlands cannot be avoided, they will be minimized to the extent possible. All mitigation approaches will be reviewed with the U.S. Army Corps of Engineers and the State of Utah Division of Water Quality. Heavy equipment in wetland areas will be operated on temporary earth fills placed on geotextile mats (or other appropriate measures) to minimize soil disturbance. Construction barriers will be installed to prevent unnecessary damage to adjacent wetlands. (District)

Materials excavated from the pipeline trench will be placed on the adjacent roadway or in other upland areas. No excavated material will be placed in any wetlands. Wetland soils will be removed, segregated and stockpiled in upland areas. Wetland topsoil will be replaced in the top 6 to 12 inches of the pipeline trench, and the disturbed area will be graded to match previous contour elevations and revegetated with a mixture of desirable wetland plant species. (District)

Pipelines will be installed using construction measures such as cutoff walls if a bedding material is used that could otherwise cause wetlands to be drained. (District)

The Mitigation Commission will continue to consult with the Interior, District, USFWS, Forest Service, Utah Division of Wildlife Resources, and others to plan and implement the restoration of Sixth Water and Diamond Fork Creeks, and to the extent possible, Spanish Fork River. (Mitigation Commission)

The Joint-Lead Agencies will mitigate any losses or detrimental impacts on wetland and riparian habitats that cannot be restored. (District, Interior, Mitigation Commission)

### **Wildlife Resources**

To the extent feasible, project facilities will be located and constructed to avoid or minimize the removal of large trees and sensitive wildlife habitat. (District)

Materials excavated during construction will be stored within the construction right-of-way boundary but not in sensitive wildlife habitats. (District)

Contractor personnel will not be allowed to have firearms in possession while on construction sites. (District)

Trenches will be covered or backfilled at the end of each day and no more than 600 feet of trench will be open at any one time. (District)

Raptor nest surveys will be conducted prior to commencing construction activities. (District)

To minimize disturbances during the raptor nesting and brooding season, construction activities within spatial buffers of raptor nests, including golden eagles, will begin prior to the courtship period or be postponed until after the courtship, egg incubation, brooding and fledging periods. Beginning construction activities prior to the breeding season will allow a pair of raptors to “choose” whether the nest site is still acceptable considering the disturbance. (District)

### **Water Resources**

If the diversion dams in the lower Spanish Fork River are modified for project flows to be bypassed, the dams will also be modified to provide fish passage. (District, Mitigation Commission)

The Diamond Fork System should be operated so that all sections of Spanish Fork River receive the flows that are documented in the 1999 FS-FEIS that will benefit aquatic and terrestrial resources. (District)

### **Miscellaneous**

The contractor will follow the requirements of any required permits or agreements such as a stream channel alteration permit. (District)

The contractor will be required to submit a plan for the location and management of all construction staging areas to the District for approval prior to start of any construction activities. (District)

Maintenance of mobile equipment used during construction or maintenance will be performed in staging areas or areas approved by the contracting officer that have little or no value to fish and wildlife. (District)

A Spill Prevention and Countermeasure Control Plan (SPCCP) will be developed to contain inadvertent spills of petroleum or other toxic substances. (District)

In the event of inadvertent spills of toxic substances the following agencies will be promptly notified: National Response Center (800-424-8802) and the Utah Environmental Response and Remedial Division (801-536-4100). (District)

Hazardous materials such as explosives, solvents, gasoline, diesel and lubricants will be stored in safe areas away from sensitive plant communities and fish and wildlife habitats. (District)

Signs warning of possible emergency flow increases will be posted at the Diamond and Palmyra campgrounds, and at the Sixth Water Creek crossing of the Springville Crossing-Rays Valley Road. (District)

## **A-2 Monitoring**

### **Aquatic Resources**

The Mitigation Commission will conduct annual monitoring of Diamond Fork Creek channel and trout spawning gravels to determine if additional May flows are periodically needed to maintain the channel and clean the gravels of deposited fines. (Mitigation Commission)

The Mitigation Commission will conduct monitoring in compliance with the Diamond Fork 1990 FS-FEIS. (Mitigation Commission)

Water quality monitoring will continue downstream of Strawberry Tunnel, Sixth Water Aqueduct and Diamond Fork Creek Outlet to determine potential dissolved oxygen concentration impacts and how far downstream low dissolved oxygen levels are found. (District, Mitigation Commission)

If low dissolved oxygen levels are found downstream from tunnel outlets, baffles or oxygen aerators should be installed to bring dissolved oxygen concentrations up to levels that are not detrimental to fish and other aquatic resources. (District)

### **Special Status Species**

Monitoring during the construction period prior to project operation will continue to establish a credible baseline. (District)

Data collection following project implementation will include measurements of actual stream elevations relative to Ute ladies'-tresses colony locations. If there are significant discrepancies, the model should be modified and a new impact assessment completed. Additionally, the Joint-Lead Agencies should perform aerial mapping at a resolution sufficient to record stream channel geomorphology, vegetation community and orchid colony locations in several-year intervals to help better understand changes and evaluate their significance in relation to restoration and conservation goals. (District, Mitigation Commission)

Changes in vegetative communities in occupied or potentially suitable orchid habitat will be measured along Diamond Fork Creek and Spanish Fork Canyon. (District, Mitigation Commission)

The natural variation in Ute ladies'-tresses demography, population vigor, and habitat will be characterized under baseline conditions and under actual operations. (District, Mitigation Commission)

The Three Forks colony will be monitored to better understand the process of loss of viability and eventual extirpation of colonies. Monitoring should focus on the rate of loss, identifying which parameters are best to measure to determine if loss is occurring, etc. (Mitigation Commission)

Conservation measures in addition to altering flows and rescue/transplant should be considered, such as vegetation manipulation, providing supplemental water to colonies, and mechanical reconfiguration of portions of the stream channel or floodplain surfaces, if monitoring data show streamflow hydrology is adversely affecting the Ute ladies'-tresses population. (Mitigation Commission)

If pollination is determined to be a limiting factor to long-term orchid viability and successful colonization of new habitats, then the Joint-Lead Agencies will consider actions to enhance pollinator habitat or numbers as appropriate. (Mitigation Commission)

A methodology should be developed that will monitor changes in Ute ladies'-tresses habitat quality, and the methodology should be used to establish habitat quality parameters of the population. (Mitigation Commission)

Population viability parameters and "red-flag" conditions should be established for the habitat quality parameters. (Mitigation Commission)

Timing for performing the most accurate canyon-wide Ute ladies'-tresses counts should be evaluated. (Mitigation Commission)

The relationship between river hydrology, depth to soil water, soil moisture, soil characteristics and Ute ladies'-tresses colonies should be correlated. (Mitigation Commission)

The ultimate effect on leatherside chub of backwater and cutoff pool habitat loss from lowered streamflows and riparian encroachment, plus increased predation by brown trout, can only be determined through annual monitoring of these habitat types and the leatherside chub population. The Mitigation Commission in coordination with the USFWS and Utah Division of Wildlife Resources will conduct annual monitoring of leatherside chub habitat and population. Should a reduction of leatherside chub habitat be significant, Diamond Fork Creek flows and channel configuration could be managed to maintain necessary habitat. In alternate years, water releases could allow peak flows in May to flood backwater and cutoff pool habitats in Diamond Fork Creek. Side channels that feed these habitats could be cleared and kept open manually should encroachment of riparian vegetation occur. (Mitigation Commission)

In order to reduce the potential for construction impacts on the golden eagle nesting in Diamond Fork Canyon, the District will ensure that qualified biologists are on site during the construction period to monitor eagle activities. The biologist will have the authority to require temporarily shutdown of construction activities that were adversely impacting the nesting eagles. The District will also monitor the nesting activities of golden eagles for five years after completion of the Proposed Action or what will be required as a result of permits issued by the Utah Division of Wildlife Resources and USFWS. (District, Mitigation Commission)

### **Water Quality**

The water quality monitoring program committed to in the 1990 final supplement and Interior's 1995 Diamond Fork Pipeline ROD will be continued. The District has been collecting water quality and temperature data since July 1996. The Mitigation Commission will be responsible for continuing this monitoring program after completion of the Proposed Action. (District, Mitigation Commission)

### **Wildlife Resources**

The District will conduct a survey to determine if black bear exist in the impact area of influence. Any black bear found will be radio-tagged and monitored to determine what effect if any, project construction is having on their habits. (District)

The Joint-Lead Agencies will closely coordinate with the Utah Division of Wildlife Resources regarding pre-construction surveys for black bear and dens within the project area. In addition, the Utah Division of Wildlife Resources will be closely involved with monitoring of any black bear during project construction. If black bear are found during pre-construction surveys or during construction, monitoring will continue for a minimum of five years following construction completion to determine potential long-term effects of construction or operation disturbances on black bear. Any black bear sightings will be reported to the Utah Division of Wildlife Resources. (District, Mitigation Commission)

Pre-construction surveys will be conducted to determine the presence of migratory bird nests along construction corridors. To the extent feasible, project-related activities that may disturb identified nest sites will be scheduled to avoid the active nesting and brooding periods. (District)

### **Wetland and Riparian Resources**

The Forest Service and Mitigation Commission have monitored wetland and riparian resources using numerous indicator variables for Sixth Water Creek above Sixth Water Aqueduct and Diamond Fork Creek from Red Hollow to Spanish Fork River since 1998. This initial recovery and evaluation system (IRES) monitoring resulted from recommendations in studies on these reaches conducted by Trihey & Associates (1997a and 1997b). The IRES monitoring being conducted by the Forest Service includes variables such as stream temperature, streamflow, channel morphology, sediment transport capacity, streambank erosion and responses of riparian

vegetation to various levels of flows, in anticipation of interim operation of the Diamond Fork System. The IRES monitoring will be continued through 2003. (Mitigation Commission, Forest Service)

The District will monitor construction impacts on wetland and riparian areas throughout the construction period. These impacts will be documented in annual construction monitoring reports and made available for public review at the District office in Orem. (District)

Following completion of construction activities, the Mitigation Commission will assume the responsibility for monitoring changes in wetland and riparian areas resulting from interim operation of the Proposed Action. (Mitigation Commission)

The Joint-Lead Agencies will plan for a long-term riparian vegetation monitoring program to determine the effects on species composition, riparian corridor width, and vegetation density from flow modifications within the impact area of influence. (District, Interior, Mitigation Commission)

The Joint-Lead Agencies will continue to coordinate with the USFWS regarding results of the monitoring program and recommendations to mitigate any documented impacts. (District, Interior, Mitigation Commission)

## **Part 3**

### **Nationwide Permit 14 Conditions**

The following general conditions must be followed in order for any authorization by an NWP to be valid:

1. **Navigation.** No activity may cause more than a minimal adverse effect on navigation.
2. **Proper Maintenance.** Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.
3. **Soil Erosion and Sediment Controls.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date.
4. **Aquatic Life Movements.** No activity may substantially disrupt the movement of those species of aquatic life indigenous to the waterbody, including those species which normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.
5. **Equipment.** Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.
6. **Regional and Case-By-Case Conditions.** The activity must comply with any regional conditions which may have been added by the division engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the State or tribe in its Section 401 water quality certification and Coastal Zone Management Act consistency determination.
7. **Wild and Scenic Rivers.** No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status; unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).
8. **Tribal Rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.
9. **Water Quality.** (a) In certain States and tribal lands an individual 401 water quality certification must be obtained or waived (See 33 CFR 330.4(c)).  
(b) For NWP's 12, 14, 17, 18, 32, 39, 40, 42, 43, and 44, where the State or tribal 401 certification (either generically or individually) does not require or approve a water quality management plan, the permittee must include design criteria and techniques that will ensure that the authorized work does not result in more than minimal degradation of water quality. An important component of a water quality management plan includes stormwater management that minimizes degradation of the downstream aquatic system, including water quality. Refer to General Condition 21 for stormwater management requirements. Another important component of a water quality management plan is the establishment and maintenance of vegetated buffers next to open waters, including streams. Refer to General Condition 19 for vegetated buffer requirements for the NWP's.
10. **Coastal Zone Management.** In certain states, an individual state coastal zone management consistency concurrence must be obtained or waived (see Section 330.4(d)).
11. **Endangered Species.** (a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act, or which will destroy or adversely modify the critical habitat of such species. Non-federal permittees shall notify the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or is located in the designated critical habitat and shall not begin work on the activity until notified by the District Engineer that the requirements of the Endangered Species

Act have been satisfied and that the activity is authorized. For activities that may affect Federally-listed endangered or threatened species or designated critical habitat, the notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. As a result of formal or informal consultation with the FWS or NMFS, the District Engineer may add species-specific regional endangered species conditions to the NWP.

(b) Authorization of an activity by a nationwide permit does not authorize the "take" of a threatened or endangered species as defined under the Federal Endangered Species Act. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, both lethal and non-lethal "takes" of protected species are in violation of the Endangered Species Act. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. Fish and Wildlife Service and National Marine Fisheries Service or their world wide web pages at

<http://www.fws.gov/r9endspp/endspp.html> and [http://www.nfms.gov/prot\\_\\_res/esahome.html](http://www.nfms.gov/prot__res/esahome.html), respectively.

12. Historic Properties. No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the DE has complied with the provisions of 33 CFR part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)). For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the notification must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

13. Notification. (a) Timing: Where required by the terms of the NWP, the prospective permittee must notify the District Engineer with a preconstruction notification (PCN) as early as possible. The District Engineer must determine if the PCN is complete within 30 days of the date of receipt and can request the additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the District Engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the District Engineer. The prospective permittee shall not begin the activity:

(1) Until notified in writing by the District Engineer that the activity may proceed under the NWP with any special conditions imposed by the District or Division Engineer; or

(2) If notified in writing by the District or Division Engineer that an individual permit is required; or

(3) Unless 45 days have passed from the District Engineer's receipt of the complete notification and the prospective permittee has not received written notice from the District or Division Engineer. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Notification: The notification must be in writing and include the following information:

(1) Name, address, and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) Brief description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity; and

(4) For NWPs 7, 12, 14, 18, 21, 34, 38, 39, 40, 41, 42, and 43, the PCN must also include a delineation of affected special aquatic sites, including wetlands, vegetated shallows (e.g., submerged aquatic vegetation, seagrass beds), and riffle and pool complexes (see paragraph 13(f));

(5) For NWP 7, Outfall Structures and Maintenance, the PCN must include information regarding the original design capacities and configurations of those areas of the facility where maintenance dredging or excavation is proposed.

(6) For NWP 14, Linear Transportation Crossings, the PCN must include a compensatory mitigation proposal to offset permanent losses of waters of the United States and a statement describing how temporary losses of waters of the United States will be minimized to the maximum extent practicable.

(7) For NWP 21, Surface Coal Mining Activities, the PCN must include an Office of Surface Mining (OSM) or state-approved mitigation plan.

(8) For NWP 27, Stream and Wetland Restoration, the PCN must include documentation of the prior condition of the site that will be reverted by the permittee.

(9) For NWP 29, Single-Family Housing, the PCN must also include:

(i) Any past use of this NWP by the individual permittee and/or the permittee's spouse;

(ii) A statement that the single-family housing activity is for a personal residence of the permittee;

(iii) A description of the entire parcel, including its size, and a delineation of wetlands. For the purpose of this NWP, parcels of land measuring 1/4 acre or less will not require a formal on-site delineation. However, the applicant shall provide an indication of where the wetlands are and the amount of wetlands that exists on the property. For parcels greater than 1/4 acre in size, a formal wetland delineation must be prepared in accordance with the current method required by the Corps. (See paragraph 13(f));

(iv) A written description of all land (including, if available, legal descriptions) owned by the prospective permittee and/or the prospective permittee's spouse, within a one mile radius of the parcel, in any form of ownership (including any land owned as a partner, corporation, joint tenant, co-tenant, or as a tenant-by-the-entirety) and any land on which a purchase and sale agreement or other contract for sale or purchase has been executed;

(10) For NWP 31, Maintenance of Existing Flood Control Projects, the prospective permittee must either notify the District Engineer with a PCN prior to each maintenance activity or submit a five year (or less) maintenance plan. In addition, the PCN must include all of the following:

(i) Sufficient baseline information so as to identify the approved channel depths and configurations and existing facilities. Minor deviations are authorized, provided the approved flood control protection or drainage is not increased;

(ii) A delineation of any affected special aquatic sites, including wetlands; and,

(iii) Location of the dredged material disposal site.

(11) For NWP 33, Temporary Construction, Access, and Dewatering, the PCN must also include a restoration plan of reasonable measures to avoid and minimize adverse effects to aquatic resources.

(12) For NWPs 39, 43, and 44, the PCN must also include a written statement to the District Engineer explaining how avoidance and minimization of losses of waters of the United States were achieved on the project site.

(13) For NWP 39, Residential, Commercial, and Institutional Developments, and NWP 42, Recreational Facilities, the PCN must include a compensatory mitigation proposal that offsets unavoidable losses of waters of the United States or justification explaining why compensatory mitigation should not be required.

(14) For NWP 40, Agricultural Activities, the PCN must include a compensatory mitigation proposal to offset losses of waters of the United States.

(15) For NWP 43, Stormwater Management Facilities, the PCN must include, for the construction of new stormwater management facilities, a maintenance plan (in accordance with State and local requirements, if applicable) and a compensatory mitigation proposal to offset losses of waters of the United States.

(16) For NWP 44, Mining Activities, the PCN must include a description of all waters of the United States adversely affected by the project, a description of measures taken to minimize adverse effects to waters of the United States, a description of measures taken to comply with the criteria of the NWP, and a reclamation plan (for aggregate mining activities in isolated waters and non-tidal wetlands adjacent to headwaters and any hard rock/mineral mining activities).

(17) For activities that may adversely affect Federally-listed endangered or threatened species, the PCN must include the name(s) of those endangered or threatened species that may be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work.

(18) For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

(19) For NWP 12, 14, 29, 39, 40, 42, 43, and 44, where the proposed work involves discharges of dredged or fill material into waters of the United States resulting in permanent, above-grade fills within 100-year floodplains (as identified on FEMA's Flood Insurance Rate Maps or FEMA-approved local floodplain maps), the notification must include documentation demonstrating that the proposed work complies with the appropriate FEMA or FEMA-approved local floodplain construction requirements.

(c) Form of Notification: The standard individual permit application form (Form ENG 4345) may be used as the notification but must clearly indicate that it is a PCN and must include all of the information required in (b) (1)-(19) of General Condition 13. A letter containing the requisite information may also be used.

(d) District Engineer's Decision: In reviewing the PCN for the proposed activity, the District Engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. The prospective permittee may, optionally, submit a proposed mitigation plan with the PCN to expedite the process and the District Engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. If the District Engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, the District Engineer will notify the permittee and include any conditions the District Engineer deems necessary.

Any compensatory mitigation proposal must be approved by the District Engineer prior to commencing work. If the prospective permittee is required to submit a compensatory mitigation proposal with the PCN, the proposal may be either conceptual or detailed. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the District Engineer will expeditiously review the proposed compensatory mitigation plan. The District Engineer must review the plan within 45 days of receiving a complete PCN and determine whether the conceptual or specific proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the District Engineer to be minimal, the District Engineer will provide a timely written response to the applicant stating that the project can proceed under the terms and conditions of the nationwide permit.

If the District Engineer determines that the adverse effects of the proposed work are more than minimal, then he will notify the applicant either: (1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level; or (3) that the project is authorized under the NWP with specific modifications or conditions. Where the District Engineer determines that mitigation is required in order to ensure no more than minimal adverse effects on the aquatic environment, the activity will be authorized within the 45-day PCN period, including the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level. When conceptual mitigation is included, or a mitigation plan is required under item (2) above, no work in waters of the United States will occur until the District Engineer has approved a specific mitigation plan.

(e) Agency Coordination: The District Engineer will consider any comments from Federal and State agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse effects on the aquatic environment to a minimal level.

For activities requiring notification to the District Engineer that result in the loss of greater than 1/2 acre of waters of the United States, the District Engineer will, upon receipt of a notification, provide immediately (e.g., via facsimile transmission, overnight mail, or other expeditious manner), a copy to the appropriate offices of the Fish and Wildlife Service, State natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO), and, if appropriate, the National Marine Fisheries Service. With the exception of NWP 37, these

agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the District Engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the District Engineer will wait an additional 15 calendar days before making a decision on the notification. The District Engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The District Engineer will indicate in the administrative record associated with each notification that the resource agencies' concerns were considered. As required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act, the District Engineer will provide a response to National Marine Fisheries Service within 30 days of receipt of any Essential Fish Habitat conservation recommendations. Applicants are encouraged to provide the Corps multiple copies of notifications to expedite agency notification.

(f) Wetlands Delineations: Wetland delineations must be prepared in accordance with the current method required by the Corps. For NWP 29 see paragraph (b)(9)(iii) for parcels less than 1/4 acre in size. The permittee may ask the Corps to delineate the special aquatic site. There may be some delay if the Corps does the delineation. Furthermore, the 45-day period will not start until the wetland delineation has been completed and submitted to the Corps, where appropriate.

14. Compliance Certification. Every permittee who has received a Nationwide permit verification from the Corps will submit a signed certification regarding the completed work and any required mitigation. The certification will be forwarded by the Corps with the authorization letter. The certification will include: (a) A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions; (b) A statement that any required mitigation was completed in accordance with the permit conditions; and (c) The signature of the permittee certifying the completion of the work and mitigation.

15. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3 acre.

16. Water Supply Intakes. No activity, including structures and work in navigable waters of the United States or discharges of dredged or fill material, may occur in the proximity of a public water supply intake except where the activity is for repair of the public water supply intake structures or adjacent bank stabilization.

17. Shellfish Beds. No activity, including structures and work in navigable waters of the United States or discharges of dredged or fill material, may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4.

18. Suitable Material. No activity, including structures and work in navigable waters of the United States or discharges of dredged or fill material, may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

19. Mitigation. The project must be designed and constructed to avoid and minimize adverse effects to waters of the United States to the maximum extent practicable at the project site (i.e., on site). Mitigation will be required when necessary to ensure that the adverse effects to the aquatic environment are minimal. The District Engineer will consider the factors discussed below when determining the acceptability of appropriate and practicable mitigation necessary to offset adverse effects on the aquatic environment that are more than minimal.

(a) Compensatory mitigation at a minimum 1:1 ratio will be required for all wetland impacts requiring a PCN. Consistent with National policy, the District Engineer will establish a preference for restoration of wetlands to meet the minimum compensatory mitigation ratio, with preservation used only in exceptional circumstances.

(b) To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferably in the same watershed;

(c) The District Engineer will require restoration, creation, enhancement, or preservation of other aquatic resources in order to offset the authorized impacts to the extent necessary to ensure that the adverse effects on the aquatic environment are minimal. An important element of any compensatory mitigation plan for projects in or near streams or other open waters is the establishment and maintenance, to the maximum extent practicable, of vegetated buffers next to open waters on the project site. The vegetated buffer should consist of native species. The District Engineer will determine the appropriate width of the vegetated buffer and in which cases it will be required. Normally, the vegetated buffer will be 25 to 50 feet wide on each side of the stream, but the District Engineer may require wider vegetated buffers to address documented water quality concerns. If there are open waters on the project site and the District Engineer requires compensatory mitigation for wetland impacts to ensure that the net adverse effects on the aquatic environment are minimal, any vegetated buffer will comprise no more than 1/3 of the remaining compensatory mitigation acreage after the permanently filled wetlands have been replaced on a one-to-one acreage basis. In addition, compensatory mitigation must address adverse effects on wetland functions and values and cannot be used to offset the acreage of wetland losses that would occur in order to meet the acreage limits of some of the NWP's (e.g., for NWP 39, 1/4 acre of wetlands cannot be created to change a 1/2 acre loss of wetlands to a 1/4 acre loss; however, 1/2 acre of created wetlands can be used to reduce the impacts of a 1/3 acre loss of wetlands). If the prospective permittee is required to submit a compensatory mitigation proposal with the PCN, the proposal may be either conceptual or detailed.

(d) To the extent appropriate, permittees should consider mitigation banking and other appropriate forms of compensatory mitigation. If the District Engineer determines that compensatory mitigation is necessary to offset losses of waters of the United States and ensure that the net adverse effects of the authorized work on the aquatic environment are minimal, consolidated mitigation approaches, such as mitigation banks, will be the preferred method of providing compensatory mitigation, unless the District Engineer determines that activity-specific compensatory mitigation is more appropriate, based on which is best for the aquatic environment. These types of mitigation are preferred because they involve larger blocks of protected aquatic environment, are more likely to meet the mitigation goals, and are more easily checked for compliance. If a mitigation bank or other consolidated mitigation approach is not available in the watershed, the District Engineer will consider other appropriate forms of compensatory mitigation to offset the losses of waters of the United States to ensure that the net adverse effects of the authorized work on the aquatic environment are minimal.

20. Spawning Areas. Activities, including structures and work in navigable waters of the United States or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., excavate, fill, or smother downstream by substantial turbidity) of an important spawning area are not authorized.

21. Management of Water Flows. To the maximum extent practicable, the activity must be designed to maintain preconstruction downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore, the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters) and the structure or discharge of dredged or fill material must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and must not increase water flows from the project site, relocate water, or redirect water flow beyond preconstruction conditions. In addition, the activity must, to the maximum extent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site, unless the activity is part of a larger system designed to manage water flows.

22. Adverse Effects From Impoundments. If the activity, including structures and work in navigable waters of the United States or discharge of dredged or fill material, creates an impoundment of water, adverse effects on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow shall be minimized to the maximum extent practicable.

23. Waterfowl Breeding Areas. Activities, including structures and work in navigable waters of the United States or discharges of dredged or fill material, into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

24. Removal of Temporary Fills. Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

25. Designated Critical Resource Waters. Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, National Wild and Scenic Rivers, critical habitat for Federally listed threatened and endangered species, coral reefs, State natural heritage sites, and outstanding national resource waters or other waters officially designated by a State as having particular environmental or ecological significance and identified by the District Engineer after notice and opportunity for public comment. The District Engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Except as noted below, discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, and 44 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. Discharges of dredged or fill materials into waters of the United States may be authorized by the above NWPs in National Wild and Scenic Rivers if the activity complies with General Condition 7. Further, such discharges may be authorized in designated critical habitat for Federally listed threatened or endangered species if the activity complies with General Condition 11 and the U.S. Fish and Wildlife Service or the National Marine Fisheries Service has concurred in a determination of compliance with this condition.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with General Condition 13, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The District Engineer may authorize activities under these NWPs only after he determines that the impacts to the critical resource waters will be no more than minimal.

26. Fills Within 100-Year Floodplains. For purposes of this general condition, 100-year floodplains will be identified through the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps or FEMA-approved local floodplain maps.

(a) Discharges Below Headwaters. Discharges of dredged or fill material into waters of the United States resulting in permanent, above-grade fills within the 100-year floodplain at or below the point on a stream where the average annual flow is five cubic feet per second (i.e., below headwaters) are not authorized by NWPs 29, 39, 40, 42, 43, and 44. For NWPs 12 and 14, the prospective permittee must notify the District Engineer in accordance with General Condition 13 and the notification must include documentation that any permanent, above-grade fills in waters of the United States within the 100-year floodplain below headwaters comply with FEMA or FEMA-approved local floodplain construction requirements.

(b) Discharges in Headwaters (i.e., above the point on a stream where the average annual flow is five cubic feet per second).

(1) Flood Fringe. Discharges of dredged or fill material into waters of the United States resulting in permanent, above-grade fills within the flood fringe of the 100-year floodplain of headwaters are not authorized by NWPs 12, 14, 29, 39, 40, 42, 43, and 44, unless the prospective permittee notifies the District Engineer in accordance with General Condition 13. The notification must include documentation that such discharges comply with FEMA or FEMA-approved local floodplain construction requirements.

(2) Floodway. Discharges of dredged or fill material into waters of the United States resulting in permanent, above-grade fills within the floodway of the 100-year floodplain of headwaters are not authorized by NWPs 29, 39, 40, 42, 43, and 44. For NWPs 12 and 14, the permittee must notify the District Engineer in accordance with General Condition 13 and the notification must include documentation that any permanent, above grade fills proposed in the floodway comply with FEMA or FEMA-approved local floodplain construction requirements.

Environmental Technical Services Co., 834 Castle Ridge Rd., Austin, TX  
78746-5152

Revised March 14, 2000 URL= <http://www.wetlands.com/coe/nwp3cond.htm>

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***Diamond Fork System  
Proposed Action Modifications  
Final Environmental Assessment***

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***Appendix B  
Threatened and Endangered Species List  
Letter***

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United States Department of the Interior  
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE  
LINCOLN PLAZA  
145 EAST 1300 SOUTH, SUITE 404  
SALT LAKE CITY, UTAH 84115

In Reply Refer To  
(CO/KS/NE/UT)

April 18, 2000

Harold Sersland  
Central Utah Water Conservancy District  
District Office  
355 W University Parkway  
Orem Ut 84058

RE: The Proposed Action Modifications of the Diamond Fork System, Bonneville Unit,  
Central Utah Project

Dear Mr. Sersland:

We have received your request for a list of endangered and threatened species that may occur in the area of influence of your proposed action. Below is a list of threatened, endangered, and candidate species that may occur within the area of influence of your proposed action.

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status*</u>
Bald Eagle <sup>3</sup>	<i>Haliaeetus leucocephalus</i>	T
Canada Lynx	<i>Lynx canadensis</i>	T
Clay Phacelia	<i>Phacelia argillacea</i>	E
Deseret Milkvetch	<i>Astragalus desereticus</i>	T
June Sucker <sup>4</sup>	<i>Chasmistes liorus</i>	E
Utah Valvata Snail <sup>6</sup>	<i>Valvata utahensis</i>	E
Ute Ladies'-tresses	<i>Spiranthes diluvialis</i>	T

T = threatened  
E = endangered

Candidate species have no legal protection under the Endangered Species Act. However, these species are under active consideration by the Service for addition to the Federal List of Endangered and Threatened Species and may be proposed or listed during the development of the proposed project. We, therefore, ask that you try to avoid them or otherwise provide for their conservation if they are found in the project area.

Only a Federal agency can enter into formal Endangered Species Act section 7 consultation with the Service. A Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment by giving written notice to the Service of such a

designation. The ultimate responsibility for compliance with ESA section 7, however, remains with the Federal agency.

The proposed action should be reviewed and a determination made if the action would affect any listed species or their critical habitat. A determination should also be made as whether or not the action is likely to jeopardize the continued existence of proposed species or result in the destruction or an adverse modification of any critical habitat proposed for such species. If the determination is "may affect" for listed species, you must request in writing formal consultation from the Field Supervisor, at the address given above. In addition, if you determine that the proposed action is likely to jeopardize the continued existence of proposed species or result in the destruction or adverse modification of proposed critical habitat, you must confer with this office. At that time, you should provide this office a copy of the biological assessment and any other relevant information that assisted you in reaching your conclusion.

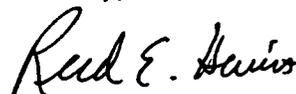
Your attention is also directed to Section 7(d) of the Endangered Species Act, as amended, which underscores the requirement that the Federal agency or the applicant shall not make any irreversible or irretrievable commitment of resources during the consultation period which, in effect, would deny the formulation or implementation of reasonable and prudent alternatives regarding their actions on any endangered or threatened species.

Please note that the peregrine falcon which occurs in all counties of Utah was removed from the federal list of endangered and threatened species per Final Rule of August 25, 1999 (64 FR 46542). Protection is still provided for this species under authority of the Migratory Bird Treaty Act (16 U.S.C. 703-712) which makes it unlawful to take, kill, or possess migratory birds, their parts, nests, or eggs. When taking of migratory birds is determined by the applicant to be the only alternative, application for federal and state permits must be made through the appropriate authorities. For take of raptors, their nests, or eggs, Migratory Bird Permits must be obtained through the Service's Migratory Bird Permit Office in Denver at (303) 236-8171.

We recommend use of the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* which were developed in part to provide consistent application of raptor protection measures statewide and provide full compliance with environmental laws regarding raptor protection. Raptor surveys and mitigation measures are provided in the Raptor Guidelines as recommendations to ensure that proposed projects will avoid adverse impacts to raptors, including the peregrine falcon.

If we can be of further assistance or if you have any questions, please feel free to contact Lucy Jordan of our office at (801)524-5001 extension 143.

Sincerely,



Reed E. Harris  
Utah Field Supervisor

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***Diamond Fork System***

***Final Environmental Assessment for the  
Proposed Action Modifications***

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***Appendix C***

***Letters Received On Draft Environmental  
Assessment***

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## United States Department of the Interior

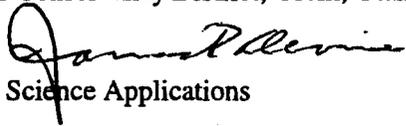
U.S. GEOLOGICAL SURVEY  
Reston, Virginia 22092

In Reply Refer To:  
Mail Stop 423

APR 21 2000

### MEMORANDUM

To: Harold Sersland, Environmental Projects Manager  
Central Utah Water Conservancy District, Orem, Utah

From: James F. Devine   
Senior Advisor for Science Applications

Subject: Review of the Environmental Assessment for the Diamond Fork System Proposed  
Action Modification

The U.S. Geological Survey has reviewed the subject Environmental Assessment (EA) and offers the following observations and comments.

#### GENERAL COMMENTS:

1. The predicted water quality and other water-related impacts of the proposed action modifications are discussed in isolation of the potential impacts of the proposed activities previously identified in the Final Supplement to the Final Environmental Impact Statement (FS-FEIS). Thus, the EA does not analyze any potential cumulative impacts that might result from the proposed activities contained in both this Action Modification and the FS-FEIS.
2. Flowing springs are identified in some proposed construction areas. Accordingly, the EA should also discuss the potential impacts of the action modifications on any relevant groundwater systems to be traversed.
3. Although not specifically stated in the EA, it appears that completion of the proposed water conveyance system will result in a larger quantity of water being transported from Strawberry Reservoir. Thus, any potential impacts that may affect the long-term viability of Strawberry Reservoir upon completion of the proposed system also should be discussed.

**SPECIFIC COMMENTS:****Page 1-12, Section 1.6 Interim Operation of the Proposed Action Modification and page 2-1, section 2.1 Introduction:**

The proposed modifications will move the location of the Diamond Fork Creek Outlet approximately one mile upstream from its location under the Proposed Action. Any significant impacts of this changed outlet location on the hydrology and habitat conditions of the affected stream reach should be discussed.

**Page 1-12, Section 1.6 Interim Operation of the Proposed Action Modification:**

The proposed action modifications will result in an annual average natural gain from Diamond Ford Creek above Three Forks and Cottonwood Creek of about 9,800 acre-feet over the previous flow in Sixth Water Creek below Fifth Water Creek. Any significant water quality and habitat impacts of this changed hydrologic regime should be discussed.

**Page 2-4, Table 2-1 Annual Average Water Quality Resulting From Interim Operation of Proposed Action Modifications Below Diamond Fork Creek Outlet:**

The annual average temperature resulting from initial operation of the proposed action modifications below the Diamond Fork Creek outlet assumes water is withdrawn below the thermocline of Strawberry Reservoir. If water will be withdrawn from a different reservoir water layer at different times of the year, any significant water quality or habitat impacts that might result from this different water withdrawal layer should be discussed.

**Page 2-10, Section 2.6.4.2 Impacts During Operation:**

The modified flows in Diamond Fork Creek below Diamond Fork Creek Outlet under the proposed action modifications will favor brown trout over cutthroat trout. Any significant ecosystem or food chain disruption that might result from this altered fish habitat should be discussed.

Thank you for the opportunity to review and comment on this EA.

Copy to: Office of Environmental Policy and Compliance



United States Department of the Interior  
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE  
LINCOLN PLAZA  
145 EAST 1300 SOUTH, SUITE 404  
SALT LAKE CITY, UTAH 84115

In Reply Refer To

(CO/KS/NE/UT)

April 27, 2000

Harold Sersland  
Environmental Programs Manager  
Central Utah Water Conservancy District  
355 West University Parkway  
Orem, Utah 84058-7303

Dear Mr. Sersland:

The U.S. Fish and Wildlife Service (FWS) has reviewed the Environmental Assessment for the Diamond Fork System Proposed Action Modifications (EA) dated March 27, 2000. Additionally, we participated in an interagency meeting on April 12, 2000 to discuss the EA. The EA covers modifications made to the Proposed Action described in Chapter 1 of the Final Supplement-Final Environmental Impact Statement (FS-FEIS) for the Diamond Fork System issued July, 1999, for which a Record of Decision (ROD) was issued by the Department of Interior in August, 1999, and by the Utah Reclamation Mitigation and Conservation Commission November, 1999. The modifications were developed as a result of the Value Engineering process that evaluated the Proposed Action design.

From an environmental perspective, the modifications consist primarily of replacing a mixture of tunnels and pipelines with a tunnel-only design, hence moving many features and attendant construction underground. Additionally, the connection of the tunnel to the recently completed lower Diamond Fork pipeline has been moved upstream approximately 6,670 feet from the previously planned connection. This will enable the project to provide the Diamond Fork minimum flows mandated in the Central Utah Project Completion Act (CUPCA) to this reach of Diamond Fork Creek. To accomplish the construction, the existing pipeline will need to be extended and the road realigned and improved to the new connection point. A complete description of the Proposed Action Modifications is in the EA.

We are providing the following comments for your consideration.

Overall, we believe that the Proposed Action Modifications significantly reduce detrimental impacts to and provide opportunities for enhancement of fish and wildlife resources in the Diamond Fork project area of influence. Surface disturbance for construction of pipelines and access roads is reduced by 101.9 acres during construction and by 3.9 acres of permanent land

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disturbance and fewer stream crossings are required. By choosing a direct and underground route, disturbance to black bear dens in Red Hollow and golden eagle nests in the Monks Hollow area, as well as temporary and permanent removal or alteration of habitat throughout the alignment, are avoided. The new alignment provides the opportunity for stream and riparian restoration and aquatic habitat enhancement in an additional mile (5,850 feet) of Diamond Fork Creek, including providing improved hydrologic support, as compared to the Proposed Action, for a colony of Ute ladies'-tresses orchid, a Federally listed threatened plant species. However, because habitat in this reach will improve for brown trout, there may be minor additional indirect detrimental impacts to leatherside chub, a fish species of conservation concern. The Proposed Action Modifications will not affect commitments made in the FS-FEIS that interim project operation will provide instream flow regimes compatible with stream restoration to the extent possible while meeting other project delivery purposes.

As discussed at the April 12, 2000 meeting, the EA reaffirms all previous Environmental Commitments included in the FS-FEIS for the Proposed Action. In addition, new Environmental Commitments are affirmed pertinent to impacts from the Proposed Action Modifications. Discussion about details of the Proposed Action Modifications resulted in a recommendation, accepted by the Central Utah Water Conservancy District (District), that the following environmental commitment be added to the list of new commitments:

Design of new or modification of existing electrical facilities required for the project will be evaluated for compliance with current recommendations to avoid or reduce electrocution hazards to raptors and other migratory bird species. Modifications will be made if determined necessary.

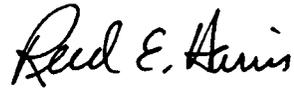
The EA is intended to also serve as the Biological Assessment under the provisions of Section 7 consultation requirements of the Endangered Species Act. At the request of the District, we provided an updated list of Federally listed endangered and threatened species by letter dated April 18, 2000. Since preparation of the FEIS and the ROD, Canada lynx has been listed as a threatened species. The EA does not address potential impacts to this species. The District has indicated that in order that the EA may serve as a Biological Assessment, the EA will be modified to include an evaluation of potential impacts to Canada lynx from the Proposed Action Modifications. Upon receipt of this evaluation, we will provide a response as a supplement to our previously issued biological opinion on this project.

In summary, we commend the District for efforts to complete the Diamond Fork System with a design that avoids and minimizes detrimental impacts to fish and wildlife resources both from construction and ongoing periodic maintenance activities and provides opportunities for flexible operation that could enhance and restore aquatic and riparian resources in Sixth Water and Diamond Fork creeks.

Comment Letter No. 2

If we can be of further assistance, please contact Dr. Lucy Jordan at the letterhead address or telephone (801) 524-5001.

Sincerely,



Reed E. Harris  
Field Supervisor

cc: DOI - CUPCA Office (Attn: Ron Johnston, Program Director) Provo, UT  
URMCC (Attn: Mike Weland, Executive Director) Salt Lake City, UT  
UDWR (Attn: Rick Larson, CUP Coordinator) Salt Lake City, UT  
USFWS (Attn: Grady Towns, Federal Activities) Denver, CO



United States  
Department of  
Agriculture

Forest  
Service

Uinta National Forest

88 West 100 North  
P.O. Box 1428  
Provo, UT 84603-1428

File Code: 1500

Date: April 28, 2000

Lee Wimmer  
Central Utah Water Conservancy District  
335 West University Parkway  
Orem, UT 84058-7303

Dear Lee;

Following are our comments and suggestions regarding the Diamond Fork System Proposed Action Modifications Environmental Assessment (EA). In reviewing the EA, we were pleased to note that most of the suggestions we provided last November relative to this proposal had been incorporated into the proposed action.

Before discussing our concerns and suggestions, it is important I make it clear that I support the proposed action and hope it can be implemented instead of the alternative described in the Final Supplement to the FEIS. Although our Interdisciplinary Team and I believe the proposed action has less of an impact on the environment, we also believe the potential impacts could be reduced even more with appropriate mitigation and careful implementation. Our suggestions and comments are outlined below:

- 1. Pipeline and road alignment from the end of the existing pipeline to the mouth of Red Hollow** – Our primary concerns with the proposal on this reach are impacts on visual quality, wetlands, protection of the spring, long-term stability of the road at the spring.

As we noted in November of 1999, visual impacts in this reach would largely be mitigated by placement of the pipeline under the road. However, the visual impacts of the pipeline would be reduced even further by screening the vent structures with vegetation, rocks and/or soil mounds and coloring them using appropriate earth tone colors. The EA does not call for such mitigation. This visual mitigation should be applied to the entire length of the proposed pipeline.

The EA notes that revegetation along this section will be done using indigineous shrubs. This should be expanded to include appropriate grasses and forbes. Since the Spanish Fork Supplemental FEIS was approved, the Uinta Land and Resource Management Plan was amended. One new provision in this amendment is the requirement to use native plant species on the Forest.

The EA calls for an 8 inch collection pipe and french drain at the sulfur spring. We agree in concept with this design as it provides redundancy which should protect the integrity of the road and allow the spring to drain. We do have a concern that the footing for the retaining wall, and associated dip in the french drain (as shown on Insert 7, Map A-1), will cause water flowing from the spring through the french drain to exit further downgrade toward Diamond Fork Creek than it presently does. If the spring drainage pipe was to become ineffective,



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existing wetland above the elevation of the bottom of the footing may dry up. The drainage system and footing should be revisited during final design to eliminate this possibility. We would like to be involved in the review of the final design for this structure.

2. **Red Hollow and Monks Hollow Access** – At the mouth of Red Hollow the EA calls for relocating the Diamond Fork Road upslope from its current location and closer to the mouth of Red Hollow. The EA further states that the existing roadway will be ripped up, top-soiled, and revegetated, and notes that access to the Red Hollow and Monks Hollow will be provided off the realigned road. We concur with this; however, we do have some concerns regarding access into Red Hollow and Monks Hollow that are not clearly addressed in the EA.

Although Map A-1 is referenced, specific details about the ingress or egress at these road junctions are lacking. Depending upon the elevation of the Diamond Fork roadway, some minor ramp construction will be needed. The Red Hollow Road and Monks Hollow Road should be essentially level (< 2%) for about 40-50 feet from the intersection (to accommodate a vehicle with a trailer), and in no case should the ramps exceed 8% in grade.

With realignment of the Diamond Fork Road, access to Monks Hollow Road will be cut off. A short segment of road will need to be constructed to connect the Monks Hollow bridge with the Diamond Fork Road. This new access point should intersect the relocated Diamond Fork Road at a right angle directly across from the Red Hollow Road intersection (form a 4-way intersection. We recommend paving all reconstructed road surfaces associated with this project, including the new access to the Monks Hollow bridge.

3. **Muck Disposal in Upper Monks Hollow** – The EA shows the location for disposal of the tunnel waste. From Map A-1 it appears the area delineated would avoid encroachment into Diamond Fork Creek's 100-year floodplain. We feel this is essential, and concur with the muck disposal site.

Other than providing information on side slopes, depressions, and overall location, the EA is not specific as to how muck disposal area will be shaped. We feel it is important to mitigate long-term visual and other impacts to this area. This can be done within the design in the EA by shaping the area to retain its existing character. The disposal area should have a series of minor hills, ridges, depressions and swells similar to the existing topography. Revegetation of the disposal area is critical. The EA, including the Environmental Commitments section, provides for revegetating this area. It does not; however, provide for protection of the area from recreation use and grazing, until the area is successfully revegetated. This project should provide measures needed (e.g temporary fencing) to accomplish this. Once the area is successfully revegetated, then the Forest Service should be responsible for protection of the vegetation.

As portrayed on Map A-1, the ephemeral and intermittent drainages extending across the muck disposal area would be diverted into a drainage structure on the uphill side of the disposal area. The change in grade associated with the diversion is likely to result in significant sediment deposition in the diversion structure. As a result, there will probably be a recurring maintenance need to clean out the deposited sediment. The Environmental Commitments section of the EA or associated decision document should specify that the

Conservation District is responsible for this long-term maintenance need created by the road and topography modifications created through the proposed action.

The EA (pg. 2-17) states that the dispersed recreation sites covered by the muck disposal area will be restored following completion of the project and revegetation of the area. We feel restoration of the dispersed recreation sites and use here is unlikely. The revegetated area will be elevated and more distant from Diamond Fork Creek than is the area currently used. Our experience with dispersed recreation use is that sites such as this reclaimed site will only be used during peak periods when sites nearer the stream are full. We recognize an unimpacted area will be left along the stream. However, any use in this area will be confined to a narrow corridor by the sharply rising muck on one side, and the stream on the other. Consequently, the concentrated use would likely result in unacceptable impacts to the floodplain and riparian community, and therefore, we may need to close this area to such use. The net result is that an indirect consequence of the proposed action is that some dispersed recreation sites may be lost and historical use here displaced.

4. **Diamond Fork Creek Outlet** – The proposed action calls for construction of an energy dissipation structure and riprapped channel at Diamond Fork Creek. Insert 5 on Map A-1 also shows a riprap grade control structure to protect these features. The grade control structure could potentially create a partial dam impeding upon the Diamond Fork Creek floodplain. This may result in a very undesirable constraint to or blockage of high flows in Diamond Fork Creek and is a serious concern to us and any such constraints on Diamond Fork Creek's flows must be avoided.
5. **Monks Hollow Tunnel Portal Access Road** – Insert 5 on Map A-1 indicates multiple corridors would be cut through the existing juniper vegetation between the Diamond Fork Road and the portal site. The Environmental Commitments section of the EA describes mitigation for visuals including planting trees and shrubs. Even with the mitigation identified here, the area will never meet the established visual quality objective. Nevertheless, this is part of a sensitive viewshed and therefore, it is important we do everything reasonable to mitigate these impacts. One measure would be to locate the two pipeline corridors and access road on the same alignment to the maximum extent feasible. The width of the corridor could be further reduced by locating the road over the pipelines and end-filling the ditch (i.e. thereby eliminating a need for additional clearing for stockpiling trench fill material). In addition, it may be possible to construct a partial bench road (this may require some retaining walls) instead of a full bench road in this critical section. The road could also be narrowed from two 12 foot lanes (with a 2 foot shoulder) to two 10 foot lanes with no shoulders. The road modifications we are suggesting are similar to what was described for the Red Hollow Road in the Final Supplement to the FEIS. We realize the pipelines will diverge at the Diamond Fork Road. If grades on the portal access road would be excessively steep, the road could diverge from the pipeline on the lower hillside where it would be screened from the Diamond Fork Road. Employing these mitigation measures would reduce the width and height of the disturbance area, and therefore reduce the permanent visual impacts of the disturbance needed to construct a road and lay 2 pipelines on these steep slopes. Edges of the corridor should be shaped to eliminate the strong linear appearance a corridor would possess. We understand these measures are not the most efficient construction practices and add to the expense; however, the length involved is relatively short (about 300 feet) and this section is

highly visible in an area where visual quality is important. Therefore, all possible measures should be employed to minimize the disturbance width in this section.

Erosion from the road is also a concern given the unavoidably steep gradient. We understand the road surface would be paved; however, the ditches would not be and serious erosion could result given the steep gradient and inherent erosive nature of the soils present. This should be addressed in the detailed road design.

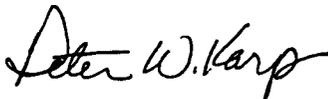
A major concern is how the intermittent stream channel covered by the portal pad and accessing roadway and pipelines will be addressed. Our experience in this general area indicates that these types of drainages experience flows of 50-150 cfs/square mile of drainage area during extreme runoff events. These flows contain large quantities of debris (soil, rocks, vegetation, etc.) and consequently, culverts sometimes become plugged and fail. Flattening the slope of the stream channel (or drainage structure) through the pad and road/pipeline prism may result in significant debris deposition there. The EA depicts a drainage structure through the site but is not clear as to how this structure will address the concern described above. This should be addressed in the detailed design.

- 6. Road Closure at Red Ledges** – The EA indicates the Diamond Fork Road would be closed during construction at Red Ledges. To facilitate a safe and all weather turn-around for Forest visitors, the turn-around may need to be graveled or hardened.

In closing, I want to reiterate that we feel the proposed action is preferable over the preferred alternative described in the Final Supplement to the FEIS. We hope this alternative is implemented. Although this alternative is environmentally preferable, we believe it can be made even better by applying appropriate mitigation measures such as identified in this letter.

I would like to express my appreciation to you and the CUWCD staff for keeping us informed and especially for providing us an opportunity to make proactive comments and suggestions on this option. I look forward to continuing this positive relationship and working with you to complete this portion of the Central Utah Project while protecting the Uinta National Forest. If you have any questions regarding these suggestions, please contact Reese Pope at (801) 342-5104.

Sincerely,



PETER W. KARP  
Forest Supervisor

Cc: Ron Johnson, DOI  
Rick Scott, BOR  
Bill Ott  
Mark Sensibaugh  
Karen Hartman  
Carol Hotchkiss, R4  
Bob Gecy  
Dea Nelson  
Scott Chamberlain  
Kim Martin  
Dave Fogle



Michael O. Leavitt  
Governor  
Brad T. Barber  
State Planning Coordinator  
James L. Dykmann  
Committee Chairman  
John A. Harja  
Executive Director

# State of Utah

GOVERNOR'S OFFICE OF PLANNING AND BUDGET  
Resource Development Coordinating Committee

116 State Capitol Building  
Salt Lake City, Utah 84114  
(801) 538-1027  
Fax: (801) 538-1547



May 11, 2000

Harold Sersland  
Environmental Program Manager  
Central Utah Water Conservancy District  
355 West University Parkway  
Orem, Utah 84058-7303

**SUBJECT:** Notice of Availability of the Draft EA for the Diamond Fork System Proposed Action Modifications  
State Identification Number: UT000328-060

Dear Mr. Sersland:

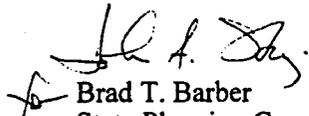
The Resource Development Coordinating Committee (RDCC), representing the State of Utah, has reviewed this proposal. The Division of Wildlife Resources comments:

It is our understanding that the modified proposed action, as outlined in this draft and described in several recent meetings attended by DWR, provides not only significant monetary savings to the District, but also substantially reduces adverse impacts as compared to the original proposed action. The DWR will welcome the opportunity to continue our involvement in this project as it evolves.

If you have any questions, please call Doug Sakaguchi, Habitat Manager at our Central Region Office in Springville (801) 489-5678.

The Committee appreciates the opportunity to review this proposal. Please direct any other written questions regarding this correspondence to the Utah State Clearinghouse at the above address or call Carolyn Wright at (801) 538-1535 or John Harja at (801) 538-1559.

Sincerely,

  
Brad T. Barber  
State Planning Coordinator

BTB/ar



**CUP COMPLETION  
MEMORANDUM**



**To:** File  
**From:** Harold Sersland *HS*  
**Date:** April 25, 2000  
**Subject:** EPA Response to Environmental Assessment for the Diamond Fork System Proposed Action Modifications

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On April 25, 2000, Mr. Dave Ruitter EPA, Denver, CO., called to let me know they did not have any comments on the Diamond Fork EA, and that they would not be sending an official response. The District should consider this phone call EPA's official response.

I:\1B\1B01\1B01002\2000\A042500M.wpd

File Code: 1.B.01.002. E1.101

Central Utah Water Conservancy District, 355 West University Parkway, Orem, UT 84058-7303, phone: 801.226.7123

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***Diamond Fork System***

***Final Environmental Assessment for the  
Proposed Action Modifications***

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***Appendix D***

***Update and Addendum to the  
U.S. Fish and Wildlife Service  
Fish and Wildlife Coordination Act Report***

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United States Department of the Interior  
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE  
LINCOLN PLAZA  
145 EAST 1300 SOUTH, SUITE 404  
SALT LAKE CITY, UTAH 84115

In Reply Refer To

(CO/KS/NE/UT)

June 1, 2000

Harold Sersland  
Environmental Programs Manager  
Central Utah Water Conservancy District  
355 West University Parkway  
Orem, UT 84058-7303

Dear Mr. Sersland:

This letter serves as an update and addendum to the U.S. Fish and Wildlife Service's (Service) Fish and Wildlife Coordination Act Report for the Diamond Fork System. This addendum addresses environmental impacts described in the Environmental Assessment for the Diamond Fork System Proposed Action Modifications (EA) issued by the Central Utah Water Conservancy District (District) in June 2000. The EA covers modifications made to the Proposed Action described in Chapter 1 of the Final Supplement-Final Environmental Impact Statement (FS-FEIS) for the Diamond Fork System issued July, 1999, for which a Record of Decision (ROD) was issued by the Department of Interior in August, 1999, and by the Utah Reclamation Mitigation and Conservation Commission November, 1999. The Service provided a Fish and Wildlife Coordination Act (FWCA) Report on the Diamond Fork System in June 1999. A value engineering analysis indicated that modifications could be made to the EA that would either significantly reduce impacts to the environment or reduce costs. Thus modifications to the FS-FEIS resulting in the Diamond Fork System Proposed Action Modifications EA were made. The Service has since reviewed the modified EA dated March 27, 2000. Additionally, we participated in an interagency meeting on April 12, 2000 to discuss the EA. This addendum is based upon and includes by references information from these documents, and is issued under authority of the Fish and Wildlife Coordination Act (48 Stat. 401; as amended, 16 U.S. C. 661 et seq.).

### **Project Description**

The Proposed Action Modifications consist of replacing the originally proposed system of tunnels and pipelines with a tunnel-only design. This action consequently moves much of the construction activity and project structures underground. The connection of the tunnel to the recently completed Diamond Fork pipeline has been moved approximately 6,670 feet upstream from the previously planned connection. This will enable the project to provide the Diamond

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Fork minimum flows mandated in the Central Utah Project Completion Act (CUPCA) to this reach of Diamond Fork Creek. To accomplish the construction, the existing pipeline will need to be extended and the road realigned and improved to the new connection point. Two concrete batch plants will be operated during construction. Spoils from the tunnel will be stockpiled in a depression, graded, and planted with native vegetation. Operation of the Diamond Fork System will not differ from that presented in the FS-FEIS. A complete description of the Proposed Action Modifications is available in the EA.

### **Impact Assessment**

Overall, the Proposed Action Modifications significantly reduce detrimental impacts to and provide opportunities for enhancement of fish and wildlife resources in the Diamond Fork project area of influence. Specifically:

- Surface disturbance for construction of pipelines and access roads is reduced by 101.9 acres during construction and by 3.9 acres of permanent land disturbance and fewer stream crossings are required.
- By choosing a direct and underground route, disturbance to black bear dens in Red Hollow and golden eagle nests in the Monks Hollow area, as well as temporary and permanent removal or alteration of habitat throughout the alignment, are avoided.
- The new alignment provides the opportunity for stream and riparian restoration and aquatic habitat enhancement in an additional mile (5,850 feet) of Diamond Fork Creek, including providing improved hydrologic support, as compared to the Proposed Action, for a colony of Ute ladies'-tresses orchid, a Federally listed threatened plant species.
- The project will improve habitat for brown trout in an additional mile of Diamond Fork Creek.
- The Proposed Action Modifications will not affect commitments made in the FS-FEIS that interim project operation will provide instream flow regimes compatible with stream restoration to the extent possible while meeting other project delivery purposes.
- All previous Environmental Commitments included in the FS-FEIS for the Proposed Action are retained.

Potential detrimental impacts from the Proposed Action Modifications are considered either insignificant or are addressed in additional environmental commitments. For example:

Improved habitat for brown trout may contribute to minor adverse impacts to leatherside chub, a fish species of conservation concern. Because the improved habitat occurs in a reach not occupied by leatherside chub, these impacts are considered to be insignificant.

The following environmental commitments address environmental concerns specific to the Proposed Action Modifications:

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### *Water Quality*

Waste material excavated from sections of the tunnel that are suspected of containing rocks bearing selenium will be segregated in the waste area and appropriate measures will be taken to prevent water from coming into contact with this waste material from entering Diamond Fork Creek.

No waste material suspected of containing selenium-bearing rocks will be used for any other construction such as roads or other features that could be in contact with groundwater or surface water.

Drainage collection and diversion ditches will be installed along the uphill perimeter of the waste disposal area to keep runoff water away from the disposed rock.

The District will maintain drainage bypass ditches constructed in the tunnel outlet portal yard area to convey runoff water around the portal yard.

Ditches and drainage swales constructed along access roads will be lined with native rock and excelsior erosion control blanket to control erosion. Additional rock riprap will be incorporated as necessary into ditches to control erosion.

Earth material for the cofferdams on Sixth Water Creek upstream and downstream of the work area will be obtained offsite from approved areas and hauled to the site.

Both batch plants will be sited and operated so as to avoid any contamination of Sixth Water and Diamond Fork creeks.

### *Wetlands*

The water supply to the wetland along Diamond Fork Road reconstruction area will be maintained during construction so that the wetland surface area is not diminished and the plant communities are not effected.

A special drainage collection system will be constructed under the Diamond Fork Road and retaining wall to collect and convey spring water to the wetland and riparian areas.

Cottonwood trees will be planted along the edge of the 200 foot long channel area to enhance the riparian corridor. The new cottonwood trees would be irrigated as necessary to promote establishment.

All conditions of the Nationwide Permit 14 will be followed.

### *Visual Resources*

The Upper Diamond Fork Tunnel portal headwall area will be restored to approximate original contour, covered with topsoil, and revegetated with native plants.

The concrete top of the Monks Hollow Overflow Structure will be tinted to match existing soils.

Cottonwood trees will be planted along the edge of the 380-foot long Diamond Fork Creek Outlet channel area to screen the outlet from Diamond Fork Road.

The portions of the Diamond Fork Pipeline Extension alignment that are not located within the Diamond Fork Road or tunnel portal access road will be planted with indigenous shrubs, native grasses and forbs in a natural pattern to blend with adjacent vegetation.

Pipeline corridors, road cuts and fills in areas that will be restored to native vegetation will be irrigated following construction until native grasses and shrubs planted in the disturbed areas are established to further minimize the visual impacts of vegetation removal and soil disturbance.

The Upper Diamond Fork Tunnel Outlet Portal access road will be aligned to save existing trees and curved around existing vegetation to provide visual screening.

Large junipers and Gambel oak will be planted in a free-form pattern in strategic locations to screen all road cuts and fills.

The retaining wall along Diamond Fork road reconstruction will be constructed of tinted concrete to blend with the surrounding landscape.

Scattered cottonwood trees will be planted at the base of the retaining wall for screening purposes.

The portion of the Diamond Fork Road to be replaced by a new alignment will be ripped up, topsoiled and revegetated.

To the extent possible, the waste disposal area will be shaped to match the existing and adjacent topography. Stockpiled alluvium and surface soils will be spread over the finished waste disposal area. The area will be planted with indigenous shrub clumpings and clumps of trees in a freeform pattern to blend with adjacent vegetation. Slight depressions will be provided where trees and shrubs are planted to collect water and runoff to increase plant survival rates. The area will be drill-seeded and the plantings will be irrigated as necessary to promote establishment. A temporary fence would be placed around the area to protect the revegetation until it has become established. Upon satisfactory establishment of vegetation, the fence would be removed.

The cut slopes surrounding the tunnel portal pad will be top-dressed with soil if they do not match the surrounding soil areas.

All vent structures will be screened with vegetation, rocks and or soil mounds and colored using appropriate earth tone colors.

### *Air Quality*

The concrete batch plants will be operated to meet all EPA regulations and suggested emission controls.

### *Miscellaneous*

Design of new or modification of existing electrical facilities required for the project will be evaluated for compliance with current recommendations to avoid or reduce electrocution hazards to raptors and other migratory bird species. Modifications will be made if determined necessary.

The turn-around at the Red Ledges closure of the Diamond Fork Road will be graveled or hardened as necessary.

The ditches around the waste disposal area will be cleaned out as necessary and debris disposed of during normal maintenance operations.

The District will reconstruct a 30-foot long segment of the Monks Hollow Road extension to include a 16-foot wide road with a ramp at no more than 2 percent slope from the intersection. The ramp will be constructed at a right angle to the centerline of the relocated Diamond Fork Road. The Monks Hollow Road extension will be paved from the new intersection down to the Monks Hollow Bridge. The Red Hollow Road intersection will be slightly cut, re-graded, and re-aligned at a right angle to the centerline of the relocated Diamond Fork Road across from the Monks Hollow Road intersection. A short pavement apron will extend onto the re-aligned Red Hollow Road.

### Threatened and Endangered Species

Effects on Federally listed threatened and endangered species are addressed in separate correspondence which updates and completes ESA Section 7 responsibilities.

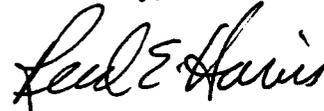
### **Recommendations and Conclusions**

The Service concurs that these additional environmental commitments are sufficient and appropriate to avoid, minimize, and fully compensate for impacts from the Proposed Action Modifications to fish and wildlife resources within the Diamond Fork System. We commend the District for efforts to complete the Diamond Fork System with a design that avoids and minimizes detrimental impacts to fish and wildlife resources both from construction and ongoing periodic maintenance activities and provides opportunities for flexible operation that could enhance and restore aquatic and riparian resources in Sixth Water and Diamond Fork creeks.

The Utah Division of Wildlife Resources has reviewed this addendum to the Fish and Wildlife Coordination Report for the Diamond Fork System and concurred with these conclusions in a letter dated May 26, 2000, copy attached.

If we can be of further assistance, please contact Scott Gamo, Fish and Wildlife Biologist, of this office at (801) 524-5001 ext 134.

Sincerely,



Reed E. Harris  
Field Supervisor

Enclosure

cc: DOI - CUPCA Office (Attn: Ron Johnston, Program Director)  
Utah Division of Wildlife Resources (Attn: Rick Larson, CUP Coordinator)  
Utah Reclamation Mitigation & Conservation Commission (Attn: Mike Weland,  
Executive Director), 102 West 500 South, #315 Salt Lake City, UT 84101-2328  
U.S. Forest Service, Uinta National Forest (Attn: Reese Pope, CUP Coordinator), 88  
West 100 North P.O. Box 1428 Provo, UT 84603

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***Diamond Fork System  
Final Environmental Assessment for the  
Proposed Action Modifications***

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***Appendix E  
Addendum to the  
U.S. Fish and Wildlife Service  
August 24, 1999 Biological Opinion***

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United States Department of the Interior  
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE  
LINCOLN PLAZA  
145 EAST 1300 SOUTH, SUITE 404  
SALT LAKE CITY, UTAH 84115

In Reply Refer To  
(CO/KS/NE/UT)

June 6, 2000

6-UT-99-F-007

Harold Sersland  
Environmental Programs Manager  
Central Utah Water Conservancy District  
355 West University Parkway  
Orem, Utah 84058-7303

RE: Biological Opinion for the Proposed Action Modification, Diamond Fork Tunnel,  
Bonneville Unit, Central Utah Project

Dear Mr. Sersland:

The U.S. Fish and Wildlife Service (FWS) has reviewed the assessment of affects on Federally listed threatened and endangered species presented in your letter of May 30, 2000, which serves as an update of your biological assessment for the Diamond Fork System of the Bonneville Unit, Central Utah Project. The FWS provided a biological opinion for the Diamond Fork System on August 24, 1999. Since that time, the proposed action has been modified and an Environmental Assessment prepared for the Diamond Fork System Proposed Action Modifications (EA). Additionally, the FWS provided an updated species list for the project. This letter constitutes our response under Section 7 of the Endangered Species Act and serves as an addendum to our previously issued biological opinion.

We concur with your "no effect" determination for Canada lynx (*Lynx canadensis*). We also concur with your conclusion that the Proposed Action Modifications will have no additional affects on Ute ladies'-tresses orchid (*Spiranthes diluvialis*) than those addressed in our biological opinion of August 24, 1999. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

Only a Federal agency can enter into formal Endangered Species Act section 7 consultation with the Service. A Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment by giving written notice to the FWS of such a designation. The ultimate responsibility for compliance with ESA section 7, however, remains with the Federal agency.

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We appreciate your interest in conserving endangered species. If further assistance is needed or you have any questions, please contact Dr. Lucy A. Jordan at (801) 524-5001 extension 143.

Sincerely,

A handwritten signature in black ink that reads "Reed E. Harris". The signature is written in a cursive style with a large, prominent "R" and "H".

Reed E. Harris  
Utah Field Supervisor



State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF WILDLIFE RESOURCES

Michael O. Leavitt  
Governor

Kathleen Clarke  
Executive Director

John Kimball  
Division Director

1594 West North Temple, Suite 2110

PO Box 146301

Salt Lake City, Utah 84114-6301

801-538-4700

801-538-4709 (Fax)

801-538-7458 (TTY)

May 26, 2000

Mr. Reed Harris  
U.S. Fish and Wildlife Service  
145 East 1300 South, Suite 404  
Salt Lake City, UT  
84115

Subject: Draft Addendum to the Fish and Wildlife Coordination Act Report, Diamond Fork System

Attn: Mr. Scott Gamo

Dear Reed:

The Utah Division of Wildlife Resources has reviewed the subject addendum and concurs with its findings.

Thank you for the opportunity to review the draft. Should you have any questions pertaining to these comments, please feel free to contact Rick Larson (801-538-4822) or Doug Sakaguchi (801-226-7173).

Sincerely,

A handwritten signature in cursive script that reads "John Kimball".

John Kimball  
Director

cc: Admin  
Wildlife  
Aquatic  
Habitat



