

United States Department of the Interior Bureau of Land Management

Environmental Assessment
DOI-BLM-UT-C030-2013-0010-EA

February 2014

Preliminary Red Cliffs Recreation Area Deferred Maintenance and Capital Improvement Projects

Location: T41S, R14W, Sections 14, 15, and 22



Red Cliffs National Conservation Area
St. George Field Office
345 East Riverside Drive
St. George, Utah 84790
Phone: (435) 688-3200
Fax: (435) 688-3252



TABLE OF CONTENTS

1.0 CHAPTER ONE—PURPOSE and NEED

1.1	Introduction	1
1.2	Project Description	2
1.3	Need for the Proposed Action	3
1.4	Purpose of the Proposed Action	10
1.5	Conformance with BLM Land Use Plan	12
1.6	Relationship to Statutes, Regulations, or other Plans	12
1.7	Identification of Issues	13
1.8	Summary	14

2.0 CHAPTER TWO—DESCRIPTION OF ALTERNATIVES

2.1	Introduction	15
2.2	Alternative A – Proposed Action	16
2.2.1	Bridge – Crossing #1	16
2.3.2	Bridge – Crossing #2	17
2.3.3	Visitor Contact Station	17
2.3.4	Accessible Parking Area	18
2.3.5	Accessible Picnic Site	18
2.3.6	Expanded Parking	19
2.3	Alternative B – No Action	19
2.4	Alternatives Considered, but Eliminated from Further Analysis	19
2.4.1	Accessible Parking Area and Accessible Picnic Site	19
2.4.2	Elevated Low Water Crossings	19
2.4.3	Visitor Contact Station Alternative Locations	19
2.4.4	Temporary Construction Access Alternative Location	20
2.4.5	Three-Span Bridge	20

3.0 CHAPTER THREE—AFFECTED ENVIRONMENT

3.1	Introduction	21
3.2	General Setting	21
3.3	Resources Brought Forward for Analysis	22
3.3.1	Water Resources	22
3.3.2	Cultural Resources	22
3.3.3	Floodplains	24
3.3.4	Wetlands/Riparian Zones	25
3.3.5	Threatened, Endangered, or Candidate Animal Species	26
3.3.6	Vegetation Excluding USWS Designated Species	29
3.3.7	Recreation Resources	32

4.0 CHAPTER FOUR—ENVIRONMENTAL IMPACTS

4.1	Introduction	34
4.2	Direct & Indirect Impacts	34
4.2.1	Alternative A - Proposed Action	34
4.2.1.1	Water Resources	34
4.2.1.2	Cultural Resources	35
4.2.1.3	Floodplains	35

4.2.1.4	Wetlands/Riparian Zones.....	36
4.2.1.5	Threatened, Endangered, or Candidate Animal Species.....	37
4.2.1.6	Vegetation Excluding USWS Designated Species	37
4.2.1.7	Recreation Resources.....	38
4.2.1.8	Mitigation Measures	39
4.2.1.9	Residual Impacts.....	39
4.2.1.10	Monitoring and/or Compliance.....	39
4.2.2	Alternative B - Proposed Action	39
4.2.2.1	Water Resources	39
4.2.2.2	Cultural Resources.....	40
4.2.2.3	Floodplains.....	40
4.2.2.4	Wetlands/Riparian Zones.....	40
4.2.2.5	Threatened, Endangered, or Candidate Animal Species.....	40
4.2.2.6	Vegetation Excluding USWS Designated Species	40
4.2.2.7	Recreation Resources.....	40
4.3	Cumulative Impacts Analysis.....	41
4.3.1	Common to All.....	41
4.3.2	Water Resources.....	41
4.3.3	Cultural Resources	42
4.3.4	Floodplains	42
4.3.5	Wetlands/Riparian Zones	43
4.3.6	Threatened, Endangered, or Candidate Species	43
4.3.7	Vegetation Excluding USWS Designated Species.....	44
4.3.8	Recreation Resources	45

5.0 CHAPTER FIVE—CONSULTATION & COORDINATION

5.1	Introduction	47
5.2	Persons, Groups, & Agencies Consulted.....	47
5.3	EA Preparers.....	47

6.0 REFERENCES

6.1	References Cited.....	48
6.2	Acronyms and Abbreviations	49

APPENDICES

Appendix A:	Interdisciplinary Team Checklist	50
Appendix B:	Preliminary Construction Drawings	57

MAPS

Map 1:	General Project Location	1
Map 2:	Proposed Project Work Locations	2
Map 3:	Location Context	21
Map 4:	Flood Hazard Zones.....	25
Map 5:	Mojave Desert Tortoise Critical Habitat.....	28
Map 6:	Fire History.....	31
Map 7:	Recreation Resources	33

FIGURES

Figure 1: Crossing #1 Issue..... 3
 Figure 2: Crossing #1 Issue..... 3
 Figure 3: Crossing #2 Issue..... 4
 Figure 4: Crossing #2 Issue..... 4
 Figure 5: Traffic Control Gate and Sign at Crossing #1 5
 Figure 6: Wood Plank Bridge at Crossing #1 5
 Figure 7: Parking Issue 6
 Figure 8: Parking Issue 6
 Figure 9: Temporary Visitor Contact Station Issue 6
 Figure 10: Temporary Visitor Contact Station Issue 6
 Figure 11: Accessible Parking Space Issue..... 7
 Figure 12: Accessible Picnic Site Issue 7
 Figure 13: Crossing #2 Attractive Nuisance Issue 8
 Figure 14: Parking Issue 9
 Figure 15: Parking Issue 9
 Figure 16: Damaged Resources Issue 9
 Figure 17: Damaged Resources Issue 9
 Figure 18: Wood Barrier Fence Outside Campground Loop..... 10
 Figure 19: Wood Barrier Fence Inside Campground Loop..... 10
 Figure 20: Orson B. Adams House 23
 Figure 21: Riparian Vegetation at Crossing #1 26
 Figure 22: Riparian Understory Vegetation at Crossing #1 26
 Figure 23: Riparian Vegetation at Crossing #2..... 26
 Figure 24: Mojave Desert Tortoise 26
 Figure 25: Vegetation at Proposed Accessible Parking Area 30
 Figure 26: Vegetation at Proposed Expanded Parking Area..... 31
 Figure 27: Vegetation at Proposed Expanded Parking Area..... 31
 Figure 28: Picnicking in the Day Use Area 32
 Figure 29: Day in the Desert Event..... 32

TABLES

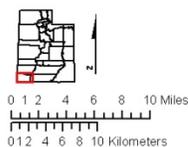
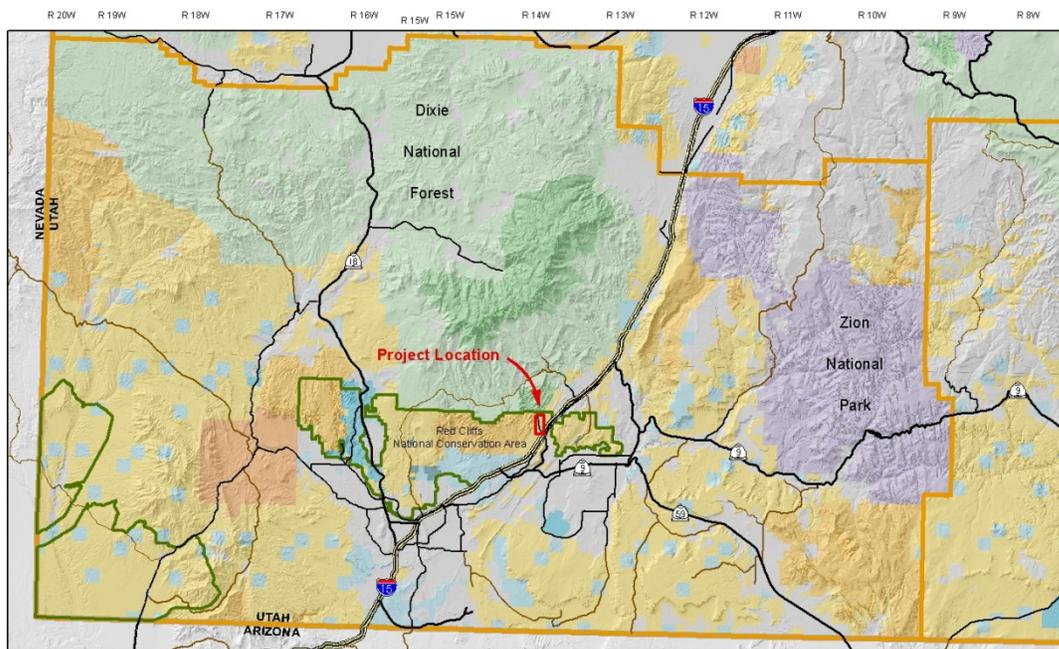
Table 1: Persons, Agencies, and Organizations Consulted..... 47
 Table 2: BLM EA Preparers 47

1.0 CHAPTER ONE—PURPOSE & NEED

1.1 INTRODUCTION

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of new construction projects being proposed, in concert with other maintenance actions, in the Red Cliffs Recreation Area (Recreation Area) within the Red Cliffs National Conservation Area (RCNCA), in Washington County, Utah, as proposed by the St. George Field Office (SGFO) of the Bureau of Land Management (BLM). See Map 1 for the general project location. The EA is a site-specific analysis of potential impacts that could result with the implementation of a proposed action or alternatives to the proposed action. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts could result from the analyzed actions. “Significance” is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of “Finding of No Significant Impact” (FONSI). If the decision maker determines that this project has “significant” impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record may be signed for the EA approving the selected alternative, whether the proposed action or another alternative. A Decision Record (DR), including a FONSI statement, documents the reasons why implementation of the selected alternative would not result in “significant” environmental impacts (effects) beyond those already addressed in St. George Field Office *Record of Decision and Resource Management Plan* (March 1999).

Map 1: General Project Location



Area Boundary

- NCA Boundary
- Field Office Boundary

Land Status

- BLM Wilderness Area
- Bureau of Land Management (BLM)
- Indian Reservation (IR)
- Military Reservations and Corps of Engineers
- National Park Service (NPS)
- Private
- State
- State Parks and Recreation
- State Wildlife Reserve/Management Area
- US Forest Service (USFS)
- USFS Wilderness Area

BLM



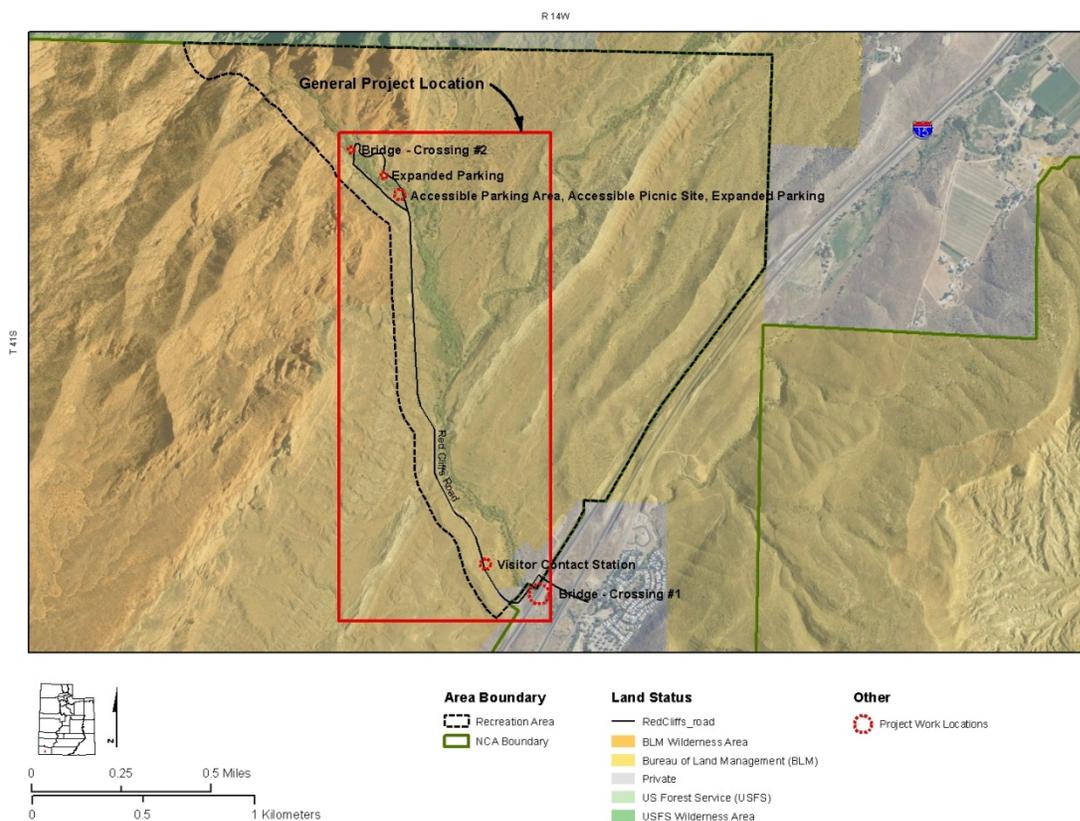
1.2 PROJECT DESCRIPTION

The BLM proposes to complete deferred maintenance on existing facilities and construction of new facilities designed to improve public safety and visitor experiences in the Recreation Area, a developed fee site with a small campground, day use areas, trails, and other visitor amenities. The Recreation Area is located west of Interstate 15 (I-15), approximately 3 miles south of the Town of Leeds and approximately 15 miles north of the City of St. George, Utah.

The in-kind replacement of shade shelters and concrete pads, parking bollards, fire rings, and stairways in the campground are deferred maintenance of existing facilities and are not addressed in this analysis, as they would not result in new surface disturbances or environmental impacts. The proposed action for this EA evaluates the environmental consequences of the construction of new facilities that have been designed to enhance visitor safety, improve the quality of visitor experiences, and protect public land resource values. These include the following

- 1 - 75' x 16' vehicle bridge at crossing #1 over Quail Creek;
- 1 - 25' x 16' vehicle bridge at crossing #2 over Quail Creek;
- a paved parking area with 2 accessible spaces, to accommodate approximately 20 vehicles;
- expanded parking at two existing parking areas, to accommodate approximately 11 vehicles;
- an accessible picnic site and associated accessible route; and
- a small visitor contact station, to be located on the Red Cliffs Road (main access road).

Map 2: Proposed Project Work Locations



BLM

The timeline for the proposed new construction would be during the summer and early fall months of 2014, with work to be completed by one or more contractors. Locations for the proposed project work within the Recreation Area are shown on Map 2.

1.3 NEED FOR THE PROPOSED ACTION

The Recreation Area includes day use and camping facilities that were constructed by BLM in the early 1960's; no major renovation of these facilities has occurred since the initial construction. A number of other factors, including steadily increasing visitor numbers and the flood prone location of the day use areas and two low water crossings on the main access road, necessitate that BLM not only conduct deferred maintenance but also construct new facilities that will help to protect public safety and enhance high quality visitor experiences. BLM is proposing to address these issues as follows:

1. Deterioration of Existing Facilities

Many of the structures in the Recreation Area, including the shade shelters and concrete pads, parking barriers, fire rings, and stairways, have reached the end of their useful life. The in-kind replacement of these existing structures is not addressed in this EA because these deferred maintenance actions would not result in new surface disturbances or environmental impacts.

As relates to this EA, two existing vehicle low water crossings on Quail Creek, hereinafter referred to as crossing #1 and #2, are affected by flooding several times a year and have also reached the end of their useful life. The consequence of this flooding has been damage to the concrete crossing structures. Cracking, uplifting, and undermining of the structures is apparent today. As a result of flood damage, the crossings have deteriorated to the point that they present a public safety hazard; new flooding events accelerate the rate of deterioration. See Figure 1 and Figure 2 for photos of crossing #1 condition taken in 2013.



Figure 1: Crossing #1 showing low water flow over roadway surface, undermining, and cracking



Figure 2: Crossing #1 showing undermining after a flood event

2. Inadequate Facilities

Low Water Crossings

Vehicle access to the day use (picnic) and camping facilities requires all users to cross Quail Creek four times, twice at crossing #1, once at crossing #2, and once at crossing #3 (not a subject of this EA, as no changes will be made to this crossing). Crossing #1 has a year-round flow of water over its structure (see Figure 1). Crossing #2 only has water flowing over its structure in spring, fall, and winter (see Figure 3). Both structures are inadequate to provide a consistently safe crossing. During flash flood events, the crossings are undermined and damaged by high

velocity stream and debris flows, creating the problems described above. Additionally, these flash flood events cover the structures in deep mud and debris, making all crossings temporarily impassable until clean-up efforts can be undertaken (see Figure 4). The crossings are deteriorated and functionally inadequate, as they cannot withstand the volume and velocity of the seasonal flood flows.



Figure 3: Crossing #2 showing low water flow over roadway surface during autumn months.



Figure 4: Crossing #2 and roadway covered in deep sand after flood event

Because visitors must utilize these two crossings to drive in or out of the campground and day use facilities, they are at risk whenever floodwaters overtop these two crossing structures. Their options are wait until the floodwaters subside or attempt to cross the low water crossings, through high velocity, often debris-laden stream flows. In many situations, visitors may not understand the safety risk associated with driving across low water crossings. The degree to which these low water crossings comprise a public safety hazard can be demonstrated by the following incidents. In 2005, the volunteer Campground Host for the Recreation Area lost his life while attempting to drive across Quail Creek at crossing #1 during a flash flood event, rather than wait for floodwaters to subside. In December of 2006, a solid waste collection truck overturned in Quail Creek in the same location due to icy conditions; the driver did not adequately understand the risk of attempting to use the crossing when it was coated with black ice. Because these crossings are inadequate to deal with the numerous flash flood events that occur throughout the year, as well as other weather-associated issues, visitors are routinely subjected to making risk-related decisions.

After the fatality in 2005, BLM's Serious Accident Investigation Team (SAIT) made several recommendations to prevent future accidents at crossing #1. All were implemented by BLM, including signage warning of flash flood danger. The sign warns of flood danger, but again, visitors must use their own judgment about using the crossings. Additionally, BLM installed a gate to control traffic into the Recreation Area to prevent vehicles from using the low crossing during a flood event, but the effectiveness of the gate depends on staff being present to close the area at the appropriate time. The signs and gate are shown in Figure 5.



Figure 5 Traffic control gate and flood warning signs at crossing #1



Figure 6: Non-motorized users wood plank bridge at crossing #1

The low water crossings also pose safety threats and inconveniences for bikers, hikers, and other non-motorized visitors to the Recreation Area. Since crossing #1 has year round flows of water over the structure and crossing #2 experiences water over the structure during three seasons, non-motorized traffic must enter the water. Currently, at crossing #1, non-motorized users have placed an unanchored wood plank upstream of the crossing (see Figure 6), to avoid getting wet. These users replace the structure after every flood event and/or after BLM staff has removed it, since it is, in itself, an unsafe method by which to cross Quail Creek.

Visitor Parking

Since 2008, annual visitation to the Recreation Area has increased by 42 percent, today serving over 37,900 visitors year-round, with most of the visitation concentrated in spring and fall. For day use visitors, there are only 21 effective¹ parking spaces. Each campsite has effective parking for one to two vehicles with 3 campsites providing extended parking for recreational vehicles or trailers.

As there are no limiting mechanisms to control the number of visitors to the Recreation Area, parking is inadequate during the spring and fall; there are not enough parking spaces to accommodate all the day use visitors. As a temporary solution to increase parking, the White Reef Trailhead is being utilized as overflow parking for the recreation area. Parking here requires that visitors walk 1.5 miles, along the heavily used main access road (Red Cliffs Road), to the day use area and other popular day use trails and sites. There are no sidewalks, trails, or defined road shoulders along the Red Cliffs Road, putting pedestrians who attempt the walk at risk. Using the White Reef Trailhead for overflow parking creates additional problems by reducing the amount of parking for trailhead visitors. This severely impacts equestrian users, as trailer parking spaces are usurped by the overflow of passenger vehicles. See Figure 7 and Figure 8 for photos of parking conditions.

¹ An effective parking space is one that meets sizing standards, has safe ingress and egress, and does not impede traffic flow.



Figure 7: Parking issue showing vehicles lining narrow one-way access road within the campground loop



Figure 8: Parking issue showing overflow parking at White Reef Trailhead; note vehicles stacked in equestrian trailer parking spaces

As the current parking situation presents challenges both to visitors and management, the SGFO developed a temporary visitor contact station to: inform visitors of the limited parking, direct traffic, redirect visitors to alternative recreation areas, and ultimately provide a positive recreational experience by moderating any negative influences caused by excessive visitation numbers. See Figure 9 showing the temporary visitor contact station used during the spring and fall beginning in 2013.

While the station itself is adequate, the location is less than ideal and is dictated by the width of operating space to accommodate the station and two-way traffic. However, this creates a vehicle stacking problem; vehicles waiting at the station for assistance backup into the two I-15 freeway underpasses. These underpasses are structures on the only road into the Recreation Area and are size restricted to a one lane width. Vehicle stacking here impedes two-way traffic and potentially emergency vehicle ingress and egress (see Figure 10). While the location of the temporary visitor contact station is currently in the most appropriate location without undertaking major renovations, its location also makes ingress and egress onto the White Reef Trailhead access road more complex, requiring additional temporary traffic control devices. To facilitate this temporary visitor contact station, a temporary traffic control plan was developed and must be implemented each time the station is utilized.



Figure 9: Temporary Visitor Contact Station to managed increased visitation



Figure 10: Vehicle stacking caused by location of Temporary Visitor Contact Station

3. Non-ABA Compliant Facilities

The Recreation Area does not provide similar experiences for disabled persons. Parking, picnic sites, and campsites do not comply with the 2013 Architectural Barriers Act Accessibility Standards (ABAAS), which now includes the final rule of the Architectural Barriers Act Accessibility Guidelines; Outdoor Developed Areas, effective November 25, 2013. The current single designated parking space does not meet slope requirements. In addition, with 21 effective

parking spaces for the Recreation Area, the ABA AS requires at least one space be accessible, but the new requirement for accessible picnic areas is to have at least two accessible parking spaces. The picnic area has one designated accessible picnic site; however, the access route does not meet slope requirements and the access route around the table does not meet sizing requirements; the law also requires that the picnic area have a minimum of two accessible picnic sites. The current designated accessible campsites in the Recreation Area are not ABSAAS compliant as well, but are being addressed separately from this EA. See Figure 11 and 12 for photos of two non-complaint conditions.



Figure 11: Accessible parking space showing steep incline that is not ABA compliant



Figure 12: Accessible picnic site showing steep access route and inadequate clear space around table that is not ABA compliant

4. Unsafe Conditions

As Quail Creek flows over the road at crossing #2, the water creates an attractive nuisance for children (see Figure 13). Quail Creek is a major attraction for visitors to the Recreation Area, particularly in the campground, where crossing #2 is located. Due to the ease of access to the water at crossing #2, children are constantly playing here, sometimes splashing in the water as it crosses the road, sometimes running from one side of the road to the other, all with no regard for vehicle traffic. This road serves as the only access route for both the day use area and campsites within the Recreation Area and carries an endless stream of vehicles during the spring and fall. The mix of children (as well as adults) and vehicle traffic at this crossing creates an attractive nuisance², leading to an unsafe condition.

² An attractive nuisance is a hazardous object or condition on the land that is likely to attract children who are unable to appreciate the risk posed by the object or condition.



Figure 13: Crossing #2 with Quail Creek flowing over roadway creating an attractive nuisance

As there are inadequate parking facilities for visitors (see Inadequate Facilities #2 above), visitors have, in the past, parked wherever space could be found. Often, in their quest to get as close to their destination as possible, visitors would park their vehicles along the roadway. Many were unable to park their vehicles completely off the paved roadway surface. In the campground area, this has been particularly problematic. The roadway through the campground is a narrow one way loop, the width being constrained by the rocky and steep topography of the day use and campground location in the drainage of Quail Creek. Consequently, vehicles parking partially on the paved roadway surface created an obstacle to traffic. Parking on any portion of the paved roadway narrows the width, making it difficult, and at times impossible, for both passenger and larger emergency vehicles to maneuver on Red Cliffs Road. In the spring of 2010, during peak traffic flows, a search and rescue event occurred, but emergency vehicles were unable to access the site to reach an injured hiker, because the roadway was obstructed by parked vehicles. A Life Flight helicopter had to be called in order to remove the injured visitor.

Traffic congestion caused by parking on the roadway shoulders has also increased the potential safety risks for non-motorized users, such as pedestrians and bicyclists, competing to use the remaining narrow roadway. See Figure 14 and 15 for photos of these parking issues creating unsafe conditions. Over the past three years, BLM has taken affirmative actions to better manage vehicle parking, by delineating approved parking spaces and strictly enforcing parking restrictions. Staff has also committed significant time in spring and fall to the management of visitor parking, attempting to ensure that a parking space is available before a vehicle is allowed to enter the campground loop.



Figure 14: Parking issue showing vehicles parked on paved roadway within the campground loop



Figure 15: Parking issue showing narrow roadway conditions created by parked vehicles

5. Resource Damage

The inadequate parking facilities, coupled with BLM’s inability to effectively restrict or manage an overabundance of visitors and vehicles at all times, continue to result in damage to roadside vegetation, soil compaction, impacts to wildlife habitat, and degradation of the aesthetics of the Recreation Area. Current management strategies to prevent parking on the roadway shoulders consist of temporary, flexible barrier poles and temporary “no parking” signage. These strategies have not worked consistently and almost always require Law Enforcement patrols and the issuance of citations for parking infractions. See Figures 16 and 17 for photos illustrating these issues and the current management strategies.



Figure 16: Illegally parked vehicles on vegetated roadway shoulder



Figure 17: Roadway shoulder showing vegetation loss, parking barrier poles, and signage

In December 2013, the BLM installed a low wood fence to act as a barrier to prevent vehicles from illegally parking on the vegetated roadway shoulders. See Figure 18 and Figure 19 for photos of the new barrier fence along roadway shoulders, both inside and outside the campground loop. As this barrier fence will effectively eliminate unauthorized parking along the roadway, the need to develop additional visitor parking is more pressing now than it has been in the past.



Figure 18: Wood barrier fence on roadway shoulder outside campground loop



Figure 19: Wood barrier fence on roadway shoulder inside the campground loop

1.4 PURPOSE OF THE PROPOSED ACTION

To address the underlying needs detailed in Section 1.3 and to ensure quality visitor experiences in the Recreation Area, BLM is proposing to 1) improve deteriorating facilities; 2) correct facility inadequacies; 3) bring facilities into ABAAS compliance; 4) improve unsafe conditions; 5) protect vegetation and habitat resources. These goals are described in detail below, with reference made to the appropriate laws, regulations, agency policies, or other requirements that guide the purpose of the proposed action.

1. *Improve Deteriorating Existing Facilities.* The proposed action should meet the following objective:

- Provide sustainable crossings over Quail Creek that accommodate both motorized and non-motorized traffic, reduce maintenance, and decrease structural deterioration due to flooding.

Corrective action is guided by the Deferred Maintenance and Capital Improvement Plan (DMCIP) for Fiscal Year 2013-2017 for Red Cliffs Campground Improvements. This DMCIP was developed by the BLM Color Country District engineers based on needs as identified in the Facility Asset Management System (FAMS)³. In 2011, this DMCIP was submitted for funding at the BLM national level. Nationwide, the DMCIP was ranked a highest priority for funding due to the public safety and facility condition issues.

2. *Correct Facility Inadequacies.* The proposed action should meet the following objectives:

- Design Quail Creek crossing structures that reduce or eliminate maintenance caused by deposition of mud and debris.
- Design Quail Creek crossing structures that allow safe passage of vehicles and pedestrians during all periods of water flow from low to high, particularly during flashfloods; this may or may not relate to the 100-year floodplain.
- Design Quail Creek crossing structures that reduce or eliminate visitors having to make risk assessments during flood events, icy, or other inclement weather conditions.

³FAMS is a national BLM program that maintains an inventory of facility assets, their condition, their expected useful life, and their expected age of replacement.

- Increase parking to accommodate increased day use visitation and associated visitor vehicles. BLM staff determined that a minimum of 40 parking spaces were needed to accommodate: accessible spaces (≈2), one vehicle per picnic table (≈16), space for maintenance or law enforcement staff (1), space for campsite #2 (1), and half devoted to general day users for access to trails, wilderness, and heritage sites (≈20), without negatively affecting the visitor's experience or exceeding the area's carrying capacity.
- Provide a safe place for staff to contact and manage the flow of visitors.
- Eliminate impacts to White Reef Trailhead caused by overflow parking of visitors desiring to be in the campground loop area.
- Eliminate problems caused by the temporary visitor contact station: stacking of vehicles in the freeway underpasses, and traffic circulation at the intersection White Reef Trailhead access road.

Corrective action is suggested in *The BLM's Priorities for Recreation and Visitor Services and A Unified Strategy to Implement BLM's Priorities for Recreation and Visitor Services Workplan (Purple Book)*, specifically under Objectives 5: Ensure public health and safety, and improve the condition and accessibility of recreation sites and facilities, and under Objective 6: Enhance and expand visitor services, including interpretation, information, and education.

Corrective action was also recommended by the Color Country District Safety Specialist in a Safety Assessment completed in March 2011, specifically referring to the roadway crossings, the ineffective parking spaces, and the lack of appropriate parking.

3. *Obtain ABA Compliance.* The proposed action should meet the following objectives:

- Provide a minimum of two accessible picnic sites or 20% of all picnic sites, whichever is larger, and integrate the sites into the picnic area.
- Provide two accessible parking spaces for picnic area.

Because the proposed action and other deferred maintenance actions being addressed separately represent major renovations to the Recreation Area, BLM must comply with Architectural Barriers Act Accessibility Standards in the design of new or renovated facilities. Corrective action is also suggested in *The BLM's Priorities for Recreation and Visitor Services and A Unified Strategy to Implement BLM's Priorities for Recreation and Visitor Services Workplan (Purple Book)*, specifically under Objectives 5: Ensure public health and safety, and improve the condition and accessibility of recreation sites and facilities.

4. *Improve Unsafe Conditions.* The proposed action should meet the following objectives:

- Reduce conflicts between motorized and non-motorized visitors.
- Eliminate all obstacles to traffic flow.
- Eliminate the attractive nuisance aspect of water flowing over the road at crossing #2, thereby eliminating an easily accessible place for children to play in the roadway.

Corrective action is suggested in *The BLM's Priorities for Recreation and Visitor Services and A Unified Strategy to Implement BLM's Priorities for Recreation and Visitor Services Workplan (Purple Book)*, specifically under Objectives 5: Ensure public health and safety, and improve the condition and accessibility of recreation sites and facilities.

Corrective action was also recommended by the Color Country District Safety Specialist in a Safety Assessment completed in March 2011, specifically referring to the roadway crossings, the ineffective parking spaces, and the lack of appropriate parking.

5. *Protect Vegetation, Soils, Wildlife Habitat, and Scenic Resources.* The proposed action should meet the following objectives:

- Protect multiple natural resource values along Red Cliffs Road.

Corrective action is dictated by BLM Manual 6100 National Landscape Conservation System (NLCS) 1.6 Policy A. 7. The BLM recognizes that NLCS units encompass some of the West's most scenic and iconic landscapes and will emphasize the conservation, protection, and restoration of these scenic values; and A. 8. In harmony with, and subject to, applicable designating legislation or proclamations, the BLM will work to maintain and promote ecological connectivity and resilience and to restore, to the extent feasible, the natural system function and species composition of disturbed areas within NLCS units.

1.5 CONFORMANCE WITH BLM LAND USE PLAN

The project would occur on public lands administered within the Red Cliffs NCA. Until such time as a new Resource Management Plan is completed for the NCA, land use decisions for the project area are contained in the *St. George Field Office Record of Decision and Resource Management Plan*, approved in March 1999 (RMP). The proposed action conforms to decision RC-07, on pages 2.39-2.40, which state(s):

Facilities for camping, sanitation, and picnicking at the Baker Dam and Red Cliffs Recreation Areas will be maintained and upgraded as needed to achieve management objectives for safety, resource protection, and quality recreational experiences.

It has been determined that the proposed action would not conflict with other decisions contained in the RMP.

1.6 RELATIONSHIP TO STATUTES, REGULATIONS, OR OTHER PLANS

The proposed action is consistent with all applicable federal laws; state and local laws, regulations, and relevant plans including the following:

- Archaeological Resources Protection Act of 1979, as amended (Public Law 96-95; 16 USC 470aa-mm)
- Architectural Barriers Act of 1968 (36 CFR Park 1191as amended November 25, 2013)
- Clean Water Act
- Eagle Protection Act (16 USC 668–668d, June 8, 1940, as amended 1959, 1962, 1972, and 1978)
- Endangered Species Act of 1973 (16 USC 1531–1544, December 28, 1973, as amended 1976–1982, 1984, and 1988)
- Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds (2001)
- Executive Order 13112: Invasive Species (1999)
- Federal Land Policy and Management Act of 1976 (FLPMA) (43 USC 1701–1782, October 21, 1976, as amended 1978, 1984, 1986, 1988, 1990–1992, 1994, and 1996)
- Migratory Bird Treaty Act (16 USC 703–712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986, and 1989)

- National Environmental Policy Act (NEPA) of 1969 (42 USC 4321–4347, January 1, 1970, as amended 1975 and 1994)
- National Historic Preservation Act (Public Law 89-665; 16 USC 470 as amended through 2000)
- *National Monuments, National Conservation Areas, and Similar Designations* (BLM Manual 6220, July 13, 2012)
- Omnibus Public Land Management Act of 2009 (P.L. 111-11), Section O-Washington County, March 30, 2009.
- *Planning for Recreation and Visitor Services* (BLM Manual 8320, March 29, 2011)

1.7 IDENTIFICATION OF ISSUES

1.7.1 Scoping

1.7.1.1 General Public Notification

Public notification of the proposed action was posted on the Utah BLM Environmental Notification Bulletin Board (ENBB), and the SGFO internet web site. A similar notification was posted in the Public Room of the Public Lands Information Center (SGFO), in St. George, Utah. The public was provided a 30 day scoping period during which to submit comments or concerns about the project.

1.7.1.2 Consultation and Coordination

The following federal and state regulatory agencies were consulted: the Federal Highways Administration, U.S. Fish and Wildlife Service, the Utah Division of Environmental Quality, Utah Department of Transportation, and the Utah State Historic Preservation Officer (SHPO). American Indian Tribes that claim cultural affiliation to southwestern Utah were notified of this project and invited to consult with BLM, if they had concerns about the project or its impacts on resource values. See Chapter 5 Consultation and Coordination for more detailed information on this process and the results of the consultations.

1.7.1.3 Technical Support

The SGFO sought technical support in the development of the proposed action from BLM's National Operations Center (NOC) Architectural and Engineering Branch for civil engineering, architectural, and hydrological services, and BLM' Color Country District Office Support Services for civil engineering services. The SGFO, NOC, and CCDO are herein referred to as the design team.

1.7.2 Issues Not Carried Forward for Detailed Analysis

A BLM Interdisciplinary Team (ID Team) evaluated the proposed action and identified those resources that required detailed analysis in this EA. Resources not carried forward for analysis are either not present in the project area or are present, but would not be measurably or negatively impacted by the proposed action. These resources and the rationale for determination are identified and summarized in Appendix A Interdisciplinary Team Checklist.

1.7.3 Issues Carried Forward for Detailed Analysis

Based upon the determination in the Interdisciplinary Team Checklist found in Appendix A, the following issues are carried forward for analysis in this EA:

1.7.3.1 Water Resources

- Water quality in Quail Creek may be temporarily affected from the introduction of sediments during construction.

1.7.3.2 Cultural Resources

- Sites that are eligible for inclusion to the National Register of Historic Places (NRHP) and an historic agrarian landscape that may be eligible for inclusion to the Historic American Landscape Registry (HALs) are found in the Recreation Area. This EA evaluates any effects that the new construction projects could have on the characteristics of these properties that make them eligible for NRHP and/or HALs listing.

1.7.3.3 Floodplains

- Since a majority of the work in the proposed actions would occur within the 100 year floodplain of Quail Creek, the potential for long-term impacts from grade and vegetation changes exist.

1.7.3.4 Wetlands/Riparian Zones

- The construction of crossing #1 and crossing #2 will have temporary and long-term impacts to two small sections of the Quail Creek riparian zone.

1.7.3.5 Threatened, Endangered, or Candidate Animal Species

- Some project work is proposed within designated critical habitat for the Mojave Desert tortoise (*Gopherus agassizi*), a federally-listed threatened species. This analysis discloses potential impacts on desert tortoises and critical habitat and all measures developed to avoid, minimize, and mitigate those impacts.

1.7.3.6 Vegetation Excluding U.S. Fish and Wildlife (USFWS) Designated Species

- Impacts to native vegetation in the riparian zone will be addressed in Wetlands/Riparian Zones impacts.
- Temporary and long-term impacts to native vegetation outside the riparian zone would occur under the proposed action and are disclosed in this EA.

1.7.3.7 Recreation Resources

- Implementation of the proposed new construction projects will require that the Recreation Area be closed to public use for a number of months. Depending on the timing of the closures, the impacts on visitors would vary, resulting in recreation opportunities that would be foregone or delayed for users.
- New and modified facilities would benefit visitors, improving the safety and quality of their experiences in the Recreation Area.

1.8 SUMMARY

This chapter has presented the purpose and need of the proposed project, as well as the relevant issues, i.e., those elements of the human environment that could be affected by the implementation of the proposed project. In order to meet the purpose and need of the proposed project in a way that resolves the issues, the BLM has considered and/or developed a range of action alternatives. These alternatives are presented in Chapter Two. The potential environmental impacts resulting from the implementation of the each alternative are analyzed in Chapter Four for each of the identified issues.

2.0 CHAPTER TWO—DESCRIPTION OF ALTERNATIVES

2.1 INTRODUCTION

Two alternatives are described in this EA: the Proposed Action and the No Action alternative. The Proposed Action was developed to address the purposes and need for action, while avoiding or eliminating potential resource conflicts. The No Action alternative would not meet the purposes and need for action, as it represents a continuation of current management and no new construction projects. However, this alternative is evaluated, to serve as a baseline against which to compare the impacts and benefits that would result from implementation of the Proposed Action.

From January 2011 to September 2013, the BLM design team discussed a range of alternatives that could potentially meet the needs to protect public safety and resource values, while providing high quality visitor experiences. After careful consideration of the objectives, best management practices, laws, policies, and other influences, the proposed action was identified as being the single most effective alternative. Other alternatives were considered but eliminated from further analysis by the BLM design team. These alternatives are described in 2.4. *Alternatives Considered, But Eliminated From Further Analysis*.

The **period of construction** from June 2014 through September 2014, was specifically targeted to avoid both the busy visitation periods (spring and fall) for the Recreation Area, as well as the spring months when Mojave desert tortoises emerge from hibernation and are most active during the day. In summer, they retreat to summer burrows during daylight hours to avoid the heat.

Contact specifications will follow the Federal Acquisitions Regulation (FAR), 1510 Acquisition Manual, and other BLM Utah acquisition policies that address fire prevention, hazardous materials, safety, preservation of historic and archaeological data, and other pertinent clauses that protect resources; and the *Development Protocols for Projects within the Red Cliffs Desert Reserve and/or Incidental Take Areas*.

Construction design and technical specifications will follow BLM Manual 9100 – Facilities Planning, Design, Construction and Maintenance, BLM Handbook H-9112-1 – Bridge Design, Construction, and Maintenance, BLM Guidelines for a Quality Built Environment, BLM Manual 8400 Visual Resource Management, and ABAAS; and recommendations from the Geotechnical Engineering Report – Final Revision 1, Red Cliff Structures, Red Cliffs Recreation Area, and the Leeds/Quail Creek Flood Event Analysis.

Permits required from other agencies in order to complete the work described in the proposed action include a Stream Alteration Permit from the Utah State Division of Water Rights, and a Temporary Access Permit from Utah Department of Transportation (UDOT).

Environment protection measures and mitigation strategies include the following:

- BLM Biologist would train BLM Project Inspectors (PI) to monitor appropriately for tortoises during construction activity.
- Each project, as defined in 2.2 Alternative A – Proposed Action, would have an erosion control (silt) fence around the construction disturbance zone to prevent tortoises from entering the area. On crossing #1 and #2 the silt fence will encircle the perimeter of the temporary construction disturbance area; all other projects would have silt fence on the bottom edge of the downhill slope of the temporary construction disturbance area.

- Crossing #1 and #2 would have sedimentation controls including the use of straw bales along the stream edge and silt fence as discussed above.
- Re-vegetation of temporary construction disturbance areas would follow the precepts as described in Landowner Handbook: A Road Map for Reconstruction, Management, and Maintenance, Santa Clara River, Washington County, Utah and the Virgin River Master Plan: A Road Map for Reconstruction, Management, and Maintenance, Virgin River, Washington County, Utah.
- Red Cliffs Recreation Area would be closed to the public for the duration of construction activities.
- Road widening to accommodate the visitor contact station has been minimized, so as to only allow passenger-sized vehicles to perform U-turns.
- Monitoring as described in 4.2.1.10 Monitoring and/or Compliance would be performed daily by a qualified BLM PI, throughout the construction phases.

2.2 ALTERNATIVE A – PROPOSED ACTION

The Proposed Action consists of several projects that will provide the appropriate facilities needed to meet the objectives as described in 1.4 Purpose for the Proposed Action. Each project is described separately below. All preliminary construction drawings (Drawings 1-12) can be found in Appendix B.

2.2.1 Bridge – Crossing #1

Crossing #1 would consist of a 75 foot long by 16 foot wide prefabricated steel superstructure bridge with wood timber decking, and steel railings, elevated approximately 24 feet above the proposed bottom of Quail Creek. The associated structures include concrete bridge abutments, embankments at each abutment, and concrete wing walls. The bridge would be manufactured off-site and transported to the construction site. Additional site work would include removal of the existing concrete low water crossing structure, removal of approximately 220 linear feet of asphalt road, removal of brush and trees within the temporary construction area, and approximately 300 linear feet of asphalt paving. See Drawing 1 for the grading plan and Drawing 2 for the plan and elevation of bridge.

Temporary access to both banks of Quail Creek would be required necessitating two access routes for large construction equipment to reach the construction site. Temporary staging of equipment and fill materials would also be required. See Drawing 3 for the location of these temporary areas.

The permanent area of new disturbance, i.e. the 2:1 fill-slope from the top of the road to the bottom of the exiting grade, would be seeded with native forb and grass species, and covered with an erosion control mat. Additional native plant species such as rabbitbrush (*Ericameria nauseosa*), and sand sage (*Artemisia filifolia*) would be planted 10 feet on center (OC). The temporary construction disturbance area would be seeded with native forb and grass species and planted with creosote bush (*Larrea tridentata*), rabbitbrush and sand sage 20 feet OC. No irrigation system would be installed.

A hydrologic study was completed by BLM's National Operations Center to provide the conveyance area requirements for the bridge in order to pass the design flood for a 50 year flood event. Crossing 1 must handle stream flows not only from Quail Creek, but Leeds Creek, which is the major contributor to the total cubic feet per second (cfs) flow.

- Cut: 75 cubic yards
- Fill: 5,570 cubic yards consisting of fill, rip rap, compacted base, and HMA

- Temporary construction disturbance for bridge: 0.79 acres (excluding the existing road footprint)
- Temporary construction disturbance for access roads: 0.18 acres
- Temporary construction disturbance for staging: 0.75 acres
- Permanent area of new disturbance: 0.53 acres (excluding the existing road footprint)
- Re-vegetation area: 0.77 acres (excluding rip rap)

2.2.2 Bridge – Crossing #2

Crossing #2 would consist of a 29 foot long by 16 foot wide prefabricated steel superstructure bridge with wood timber decking, and steel railings, elevated approximately 10 feet above the proposed bottom of Quail Creek. The associated structures would include concrete bridge abutments, embankments at each abutment, and concrete wing walls. The bridge would be manufactured off-site and transported to the construction site. Additional site work would include removal of the existing concrete low water crossing structure, removal of approximately 46 linear feet of asphalt road, removal of brush and trees within the temporary construction area, and approximately 100 linear feet of asphalt paving. See Drawing 4 for the grading plan and Drawing 5 for the plan and elevation of bridge.

Access and staging for construction would utilize the existing road and parking asphalt surfaces.

Both the permanent area of new disturbance, i.e. the 2:1 fill-slope from the top of the road to the bottom of the exiting grade, and the temporary construction disturbance area would be covered by an erosion control mat, and planted with cuttings of coyote willow (*Salix exigua*), and seep willow (*Baccharis salicifolia*) four feet OC. No irrigation system would be installed.

- Cut: 94 cubic yards
- Fill: 515 consisting of fill, rip rap, compacted base, and HMA
- Temporary construction disturbance for bridge: 0.28 acres (excluding the existing road footprint)
- Permanent area of new disturbance: 0.12 acres (excluding the existing road footprint)
- Re-vegetation area: 0.27 acres (excluding rip rap)

2.2.3 Visitor Contact Station

The visitor contact station would consist of an approximately 14 foot long by 8 foot wide (107 square foot) accessible building, approximately 390 square feet of concrete flatwork, and a widened asphalt road surface. See Drawing 6 for the grading plan and Drawing 7 for the cross section details.

The building was designed to have a small footprint to minimize the amount of road widening needed and the amount of cut and fill required. It was also designed to visually harmonize with, but not copy, the historic Orson B. Adams house, located approximately .1 mile (593 feet) to the northwest of the proposed visitor contact station. The building would be constructed of colored split face concrete manufactured unit (CMU) block, with two double hung 6 over 6 windows and 2 sliding glass doors mimicking the 6 over 6 windows. Roofing would be composite shake shingles, with wood fascia. Two solar-powered LED lights would be mounted over each door. No electrical power or water utilities would be installed at this time; however, conduit would be installed for these future utilities, should the need arise. See Drawing 8 for the 3-D views of the visitor contact station building.

The widened road surface would accommodate two-way traffic and vehicle “U-turns” for up to a 30 foot outside radius. In order to minimize the width of the road, larger vehicles and vehicles with

large trailers desiring to exit the Recreation Area would have to continue into the campground and through the campground loop, as the narrow road width will not accommodate these U-turns. Station attendant parking would be accommodated on the east side of widened road. Appropriate pavement markings, speed bumps, and signs would be installed.

The permanent area of new disturbance, i.e. the 2:1 fill-slope from the road to the bottom of the existing grade and the 2:1 up-slope from the road to the top of existing grade, would be seeded with native forb and grass species, and covered with an erosion control mat. Additional native plant species such as creosote bush would be planted 20 feet Off Center Line. No irrigation system would be installed.

- Cut: 575 cubic yards
- Fill: 292 cubic yards consisting of fill, compacted base, and HMA
- Permanent area of new disturbance: 0.16 acres (excluding the existing road footprint)
- Re-vegetation area: 0.9 acres

2.2.4 Accessible Parking Area with Expanded Parking

The accessible parking area and adjacent expanded parking would consist of 11,000 square feet of asphalt surfacing, 170 linear feet of concrete curbing, and associated pavement markings. This asphalt pavement would also incorporate a section of the accessible route needed to reach the accessible picnic area. The accessible parking area would be located at the current campsite #12 and continue south to the current parking pullout southeast of the campsite. It would accommodate a total of 22 angle and non-angled parked vehicles, including two accessible spaces with one being van accessible. The current parking pullout would be incorporated into an expanded parking area increasing parking capacity from two parallel parked vehicles to eight angled parked vehicles. This area will also be expanded to accommodate a storage shed on an aggregate (gravel) pad to be relocated from campsite #11 to make room for more expanded parking (as discussed in 2.2.6 Expanded Parking). See Drawing 9 for the grading plan.

Campsite 12 would be eliminated in order to accommodate the proposed new accessible parking area. Two picnic tables, one fire ring, and one barbeque would be relocated within the campground area. One Fremont's cottonwood tree at the end of the campsite 12 parking pad would be removed. All shrubs in the parking areas and approximately five feet outside would be removed (see 3.3.6 Vegetation Excluding USFW Designated Species for a discussion on vegetation species and tree health).

- Cut: 240 cubic yards
- Fill: 400 cubic yards
- Permanent area of new disturbance: 13,050 square feet (0.30acres)

2.2.5 Accessible Picnic Area

The accessible picnic area would consist of a concrete accessible route from the accessible parking area, three accessible picnic tables, one accessible fire pit, and a concrete pad that would provide an accessible route around the tables and fire pit. See Drawing 10 for the accessible picnic area grading plan. No trees would need to be removed, but some understory vegetation such as shrubs would be eliminated in the area of the route and pad.

- Fill: 25 cubic yards consisting of compacted base, and HMA
- Permanent area of new disturbance: 890 square feet (0.20 acres)

2.2.6 Expanded Parking

To create an additional three non-angled parking spaces within the campground loop, a graveled area currently housing a maintenance shed would be utilized. This would require approximately 730 square feet of asphalt paving. To facilitate egress into the spaces, an additional 420 square feet of asphalt paving is needed directly adjacent. See Drawing 11 for parking layout. Associated pavement markings would be used.

- Fill: 32 cubic yards consisting of compacted base, and HMA
- Permanent area of disturbance: 1,150 square feet (0.26 acres)

2.3 ALTERNATIVE B – NO ACTION

Under the No Action alternative, no new construction projects would occur in the Recreation Area and management practices would remain unchanged. Routine maintenance of existing facilities would continue and in-kind replacement of facilities would occur, as needed. This alternative would not meet a majority of the objectives as described in 1.4 Purpose for Proposed Action and the environmental consequences as described in 4.2 Direct and Indirect Impacts would not occur.

2.4 ALTERNATIVES CONSIDERED, BUT ELIMINATED FROM FURTHER ANALYSIS

The following alternatives were considered during the some phase of the planning process either in early feasibility discussions or construction planning. They were eliminated from further analysis as they do not meet the underlying need for the proposal, resolve conflicts or mitigate impacts. In some instances, these alternatives would have created environmental impacts that were greater than the proposed action. Each of these alternatives is briefly described below and a rationale provided as to why they were not carried forward in this EA for detailed analysis.

2.4.1 Accessible Parking, Accessible Picnic Site, and Expanded Parking

The BLM design team considered at least two other areas within the developed campground and day use areas for additional parking that could meet ABAAS. Both locations would were rejected as the environmental impacts, including impacts on desert tortoise critical habitat, would have been greater than the proposed action alternative.

The BLM design team also considered adding an accessible ramp to access the day use area from existing parking lots to replace the current ramp that does not meet the ABAAS. A ramp adjacent to a location acceptable for accessible parking would have caused greater disturbance to the existing treed landscape than the proposed action alternative and might be more costly working on the steep slope as opposed to the flat area selected.

2.4.2. Elevated Low Water Crossings

The BLM design team considered the possibility of elevating some type of concrete low water crossing structure enough to avoid nuisance water covering the crossing #1 and #2 structures. This option would not have prevented Quail Creek from overtopping the structures during flashfloods or other periods of high water. This alternative was not carried forward for analysis as it would not meet the purpose as discussed in 1.4 Purpose of the Proposed Action.

2.4.3 Visitor Contact Station

The BLM design team considered locating the proposed visitor contact station just past the second 1-15 underpass tunnel. This area is within the UDOT right-of-way corridor for I-15 and would have required substantial earth work and re-configuring of the roads to accommodate vehicle stacking, the approach to the new bridge at crossing #1, the access road to the White Reef trailhead, and associated vehicle movements around the visitor contact station. This was not considered a viable alternative and not carried forward for analysis.

2.4.4 Temporary Construction Access

The design team considered an alternative temporary construction access route for bridge crossing #1 in order to reach the west bank of Quail Creek once the existing low water crossing structure is removed. This alternative would have greater environment impacts than the proposed action alternative, as it required constructing a temporary access route directly downstream of Quail Creek through the riparian habitat. Disturbance to the riparian area would have been greater than that under the Proposed Action (approximately 0.15 acres versus the proposed disturbance of 0.09 acres). This alternative was not carried forward in this EA and UDOT has recommended the temporary construction access route described in 2.1.1 Bridge – Crossing #1 to Federal Highways Administration (FHA) for approval.

2.4.5 Three-Span Bridge

The BLM NOC Engineer explored the use of a three-span bridge at crossing #1. This type of bridge could span a greater width, utilizing three bridge sections, thereby potentially reducing the amount of fill needed to bridge the gap between the creek banks. However, the use of three sections increases the required footings from two to four, with two footings likely being located in the stream channel. Since the two footings located in the stream channel would require significant excavation and fill of structural quality (to support the footing), and require scour protection, such as rip rap, the environmental impacts would likely be equal or greater than the proposed action.

3.0 CHAPTER THREE—AFFECTED ENVIRONMENT

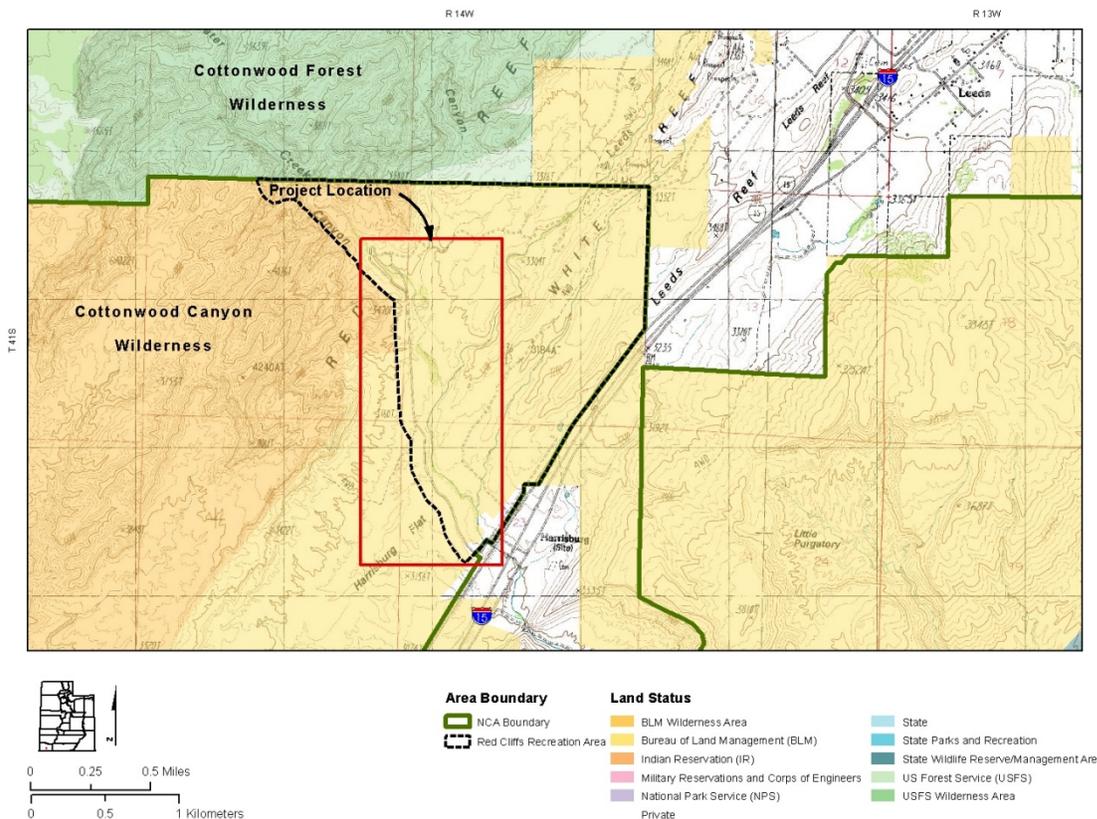
3.1 INTRODUCTION

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the project area that could be affected by the Proposed Action. The project proposals were screened by BLM resource professionals and their findings included on the Interdisciplinary Team Checklist found in Appendix A and presented in Chapter 1 of this assessment. This chapter includes descriptions and data that allow the reader to understand and compare the environmental consequences described by alternative in Chapter 4.

3.2 GENERAL SETTING

The Recreation Area encompasses two smaller areas, known locally as Red Cliffs and White Reef based on their geologic features, and is located just west of I-15 near milepost 20 (see Map 3). It is bounded on the north by the U.S. Forest Service-managed Cottonwood Forest Wilderness and by private lands, within the annexation boundary of the Town of Leeds-Silver Reef. The BLM-managed Cottonwood Canyon Wilderness lies within the northwest quadrant of the Recreation Area. Elevations here range from 3,100 to 3,470 feet above mean sea level. The climate is characterized by extremely low annual precipitation and humidity, abundant sunshine, and extreme temperature variations.

Map 3: Location Context



The Recreation Area is, in part, located on Harrisburg Flat, a topographic feature composed of Quaternary-age stream terraces and alluvial deposits that have been dissected by Quail and Leeds Creeks.

To the northwest, exposures of Dinosaur Canyon, Whitmore Point, and Springdale Sandstone, higher members of the Jurassic-age Moenave Formation, have eroded into hogbacks, locally known as “reefs”. White Reef and Silver Reef are comprised of sediments that contained unique deposits of silver chloride that were mined during the late 19th century and early 20th century.

3.3 RESOURCES/ISSUES BROUGHT FORWARD FOR ANALYSIS

The resources discussed below were determined to be present in the project area and potentially affected by the proposed action.

3.3.1 Water Resources

Leeds Creel and Quail Creek converge within the Recreation Area, approximately 0.65 miles north of crossing #1. Surface flows in Leeds Creek continue year-long through the Recreation Area. Water quality data for Leeds Creek has been collected for 40 years, beginning in January of 1974, at locations upstream of the Recreation Area, by the Utah Division of Water Quality (UDWQ). According to an *Acute Water Quality Standards Exceedance Report* (dated February 4, 2010) issued by UDWQ for Leeds Creek, the levels of phosphorus detected exceeded the acceptable range for the identified beneficial use classes which are Agriculture (4) and Cold water species (3A). Other water quality characteristics for Leeds Creek were within the acceptable water quality parameters. The elevated phosphorus levels are likely due to natural sedimentation. No known total maximum daily load TMDL has been completed on this stream.

Stream flows from Quail Creek are seasonally diverted for irrigation purposes upstream on private lands within the Dixie National Forest, leaving little or surface water in the channel through the Recreation Area during the late spring and summer months. Water quality data has not been collected for Quail Creek on public lands, because of the intermittent nature of stream flows.

3.3.2 Cultural Resources

Cultural History

Evidence of prehistoric period human occupations within and near the Recreation Area has been derived from a number of prior archeological field inventories and data recovery projects conducted by BLM archeologists and others (c.f., Bighorn Archeological Consultants, 2008). Prehistoric habitation sites, rock shelters, rock art, and campsites have been recorded along Quail Creek and Leeds Creek. A majority of these sites contain architectural features and pottery types associated with the Formative Period Ancestral Puebloan farmers (aka Virgin Anasazi) who occupied southern Utah between approximately 300 B.C until about 1200 A.D. These early horticulturalists grew corn and squash along the stream channels of small streams, such as Quail Creek, living in pit houses and above ground structures on the higher terraces and ridges above their fields.

Other previously recorded archaeological sites in the Recreation Area document the occupation of this area by the Southern Paiute from at least 1,000 A.D. to modern times. In this region, the Southern Paiute also grew crops, diverting water from small streams to irrigate their fields of corn, squash, and sunflowers. They, too, made pottery and finely crafted baskets, and constructed brush structures as shelters.

Many written histories of Washington County document the Anglo-European settlement of southern Utah during the mid-19th century, principally by members of the Church of Jesus Christ of Latter Saints (commonly referred to as Mormons). The agricultural settlement of Harrisburg, a portion of which is located within the Recreation Area, was established by Moses Harris and his sons in 1862. They had been “called” by the Church to found an agricultural settlement in southern Utah, as part of its “Cotton Mission”. Harris initially settled on Purgatory Flat, near the Virgin

River, but quickly realized this location would not be suitable for irrigation farming. He relocated his family near the confluence of Quail and Leeds Creek in the spring of 1862. The new settlement was named Harrisburg and other Mormon families were sent by the Church to join this community. Eventually 25 families lived in Harrisburg, including Orson B. Adams and his family, whose home and farmstead were located along Quail Creek. The community boasted a schoolhouse/church house, a cooperative store, a cemetery, and numerous home sites and farmsteads. The Harrisburg settlers grew crops, tended fruit orchards and raised livestock, diverting water from Leeds and Quail Creeks through irrigation ditches to water their fields.

Between 1866 and 1874, prospector John Kemple intermittently boarded with the Adams family and explored the areas around Harrisburg. He discovered and staked mining claims on silver deposits in the White Reef, and the neighboring Silver Reef to the north, and legally registered the Harrisburg Mining District; Orson Adams and other Harrisburg settlers were included on the District registration. A silver mining boom soon followed his discoveries, as miners, merchants, prostitutes, and gamblers from all over the West flocked to the bustling and prosperous new mining camp of Silver Reef. The Mormons of Harrisburg earned much-needed hard currency from the sale of their fruit, grain crops and livestock to the miners and merchants of Silver Reef. Others earned income freighting supplies and materials to the mines, mills, and businesses of Silver Reef. During the late 1870s boom, a new agricultural community was founded upstream of Harrisburg, on Leeds Creek. The new settlement of Leeds diverted water from Leeds Creek, reducing the amount that flowed downstream to Harrisburg. Within a decade, a majority of the Harrisburg settlers had been forced to abandon their properties, as they could no longer irrigate their fields.

The notable exception was Orson B. Adams and his family. His home, orchards, and fields were located along Quail Creek and irrigated only by flows from this formerly perennial stream (see Figure 20). Because he was not impacted by the upstream diversion of Leeds Creek, Adams was able to continue to live in Harrisburg, until his death in 1901. At that time, his home and lands were purchased by William Emett, who lived with his wife and nine children on the farmstead until his death in 1945, growing fruit and garden crops, and raising livestock. They were the only residents of Harrisburg during this time.



Figure 20: Rehabilitated Orson B. Adams house on the farmstead within the Area of Potential Effect

The Harrisburg area has remained a ghost town since that time with the exception of a brief bit of excitement in 1958, when filmmakers used the area to stage the film “They Came to Cordura,” starring Gary Cooper, Rita Hayworth, Tab Hunter, Van Heflin, and Dick York. Prior to filming, they constructed a Mexican hacienda/fort on the northeast bank of Quail Creek, not far from the Orson B. Adams House.

Area of Potential Effect (APE) for the Proposed Construction Projects

As required by National Historic Preservation Act (NHPA), efforts to identify National Register of Historic Properties (NRHP) eligible-or-listed properties within the Area of Potential Effect (APE) for this project included reviews of prior research and archeological site databases maintained by the BLM-SGFO and Utah SHPO. The APE was defined to include the riparian areas at two locations along Quail Creek where the new bridges would be constructed; areas within the developed campground and day use areas where the additional parking areas and an ABA

accessible picnic area would be developed; and areas along the access road where cut and fill related to road widening for the proposed visitor contact station would occur. The APE encompasses all areas where construction would result in new surface disturbances, where equipment and vehicles would travel and be used, and where construction materials would be stored.

The APE was further defined to include those features and components of the historic settlement at Harrisburg that are located on public lands and that have previously been determined by the Utah SHPO to be eligible for listing to the NRHP. The Harrisburg town site (42WS 866) was partially recorded in the 1970s and determined at that time to be eligible for listing to the NRHP, satisfying listing criteria “a”, “c”, and “d” (36CFR 60.4 a-d). In 2001, the 1860’s era Orson B. Adam house and associated farmstead were determined to be eligible for listing to the NRHP, under the same listing criteria. In 2007, intensive archeological field inventories (Bighorn Archeological Consultants, 2008) updated the site record for Harrisburg to include the Orson B. Adams house and farmstead, the ruins of the Willard McMullin house and farmstead (owned by Washington County), as well as other sites and features within the approximately 215 acre agrarian landscape on public lands west of I-15.

The agrarian landscape includes formerly cultivated fields and orchards, rock walls, a shallow well, irrigation ditches, and wagon roads that comprised the westernmost extent of the Harrisburg settlement. The landscape retains considerable integrity of setting, context, association, and feeling and contributes to the overall NRHP eligibility of the Harrisburg settlement and the Orson B. Adams house. A Level 3 Historic American Landscape Survey (HALS) was completed of this landscape (Utah State University Landscape Architecture Design Studio Project 2005), for possible future inclusion in the newly-established HALS Registry.

3.3.3 Floodplains

A large area surrounding crossing #1 lies within the 100 year floodplain as determined by FEMA Flood Insurance Rate Map Zones 2011. The campground and day use area, including crossing #2, and the proposed Visitor Contact Station do not lie within the 100 year floodplain. However these areas are affected by erosion hazards caused by flooding. Map 4 illustrates the extent of Zone A⁴, otherwise known as the 100 year floodplain. It also illustrates the erosion hazard zones at varying risks for erosion during flooding. Low, medium, and high zones are present, but the highest risk zone, very high, is not present in the recreation area. These flood erosion hazard categories are based on the geologic deposits mapped by the Utah Geological Survey.

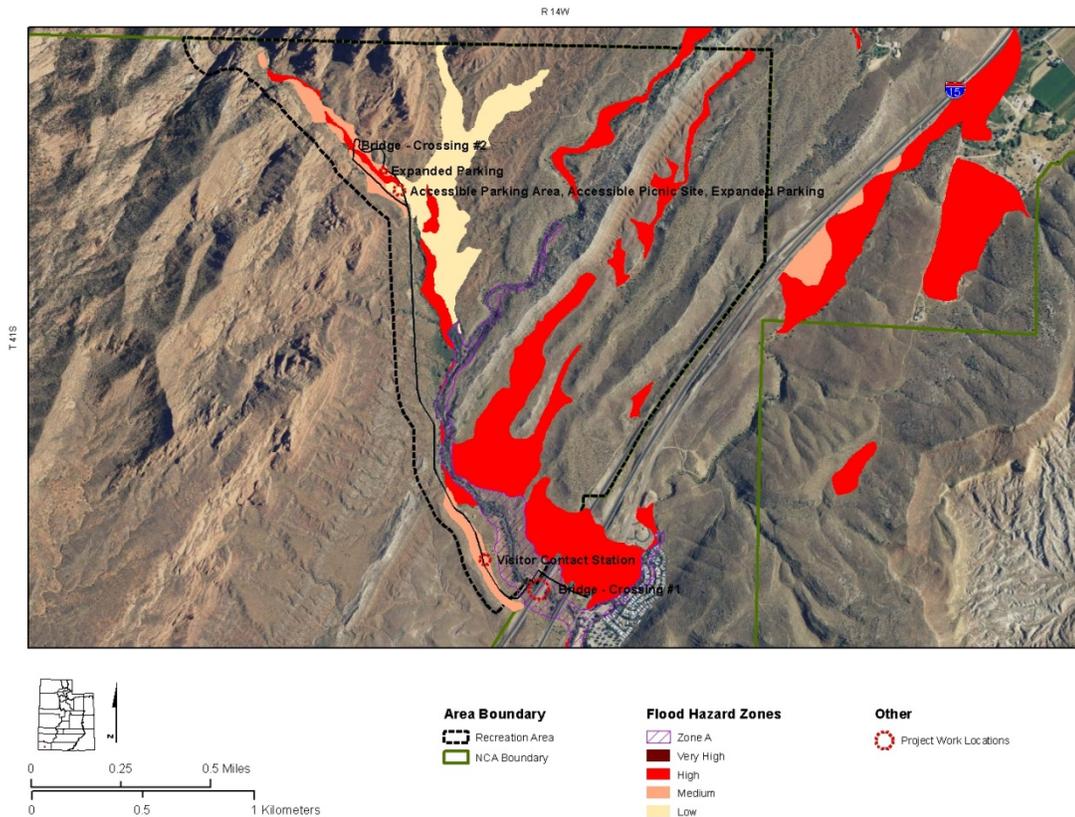
The stream channels at crossing #1 and #2 have not been maintained by BLM for proper functioning. A functional stream channel that will carry water and sediment from the watershed, and dissipate energy, needs to have an operational channel, floodplain, and terrace system. The channel area should only contain herbaceous plants and supple, shrubby species. Only supple woody shrubs should be in the floodplain. Trees in these two areas should be periodically removed. Today, large cottonwood trees occupy both the channel and floodplain at crossing #1 and #2.

In 2013, the NOC undertook a hydrology study to ascertain the stream height during a 100 year flood event. The NOC hydrologist used data available from the U.S. Geological Service (USGS) stream flow gage #09408000 in Leeds Creek near Leeds, Utah. Annual peak flows have been recorded since 1964. These flows are from a low of 8 cfs to a high of 4,420 cfs. The NOC hydrologist conservatively estimated a combined cfs for Quail Creek and Leeds Creeks at Crossing

⁴ Zone A is an area with a 1% annual chance of flooding.

#1 for a 50 year flood event at 6,400 cfs. The NOC hydrologist also found that the box culvert under I-15—less than 100 feet south of crossing #1—is not large enough to carry the estimated 50 year flood. In the event of a 50 year flood, water would back up over crossing #1, forming an unintentional retention basin.

Map 4: Flood Hazard Zones



BLM



3.3.4 Wetlands/Riparian Zones

Crossing #1 and crossing #2 are in the riparian zone of Quail Creek. The dominant plant species in the channel and floodplain zone are native willows (e.g., *Salix exigua*) and cottonwood trees (*Populus fermentii*) (see Figures 21 and 22, and 23). Crossing #1 supports a dense mix of native and non-native grasses and herbaceous plants in the understory such as cattail, datura, and sweet clover. In contrast the channel bed of crossing #2 is highly scoured and compacted from visitor use, showing only scattered stands of native grasses under the tree canopy. The upper terrace zone at crossing #1 consists of the invasive species cheat grass (*Bromus tectorum*) and Russian thistle (*Salsola tragus*), and native plant species of creosote bush, broom snake weed (*Gutierrezia sarothrae*), green rabbitbrush (*Chrysothamnus viscidiflorus*), rubber rabbitbrush, and sand sage. Crossing #2 lacks this diversity in understory on its upper terrace, consisting largely of arrowweed, and sand sage, with scattered fourwing saltbush (*Atriplex canescens*).

The BLM SGFO Landscape Architect and a certified Arborist evaluated the 19 cottonwood trees slated for removal within the temporary construction disturbance areas and found that 10 are hazardous—presenting a high degree of risk to both motorized and non-motorized visitors—and would need to be removed irrespective of the bridge construction work.



Figure 21: Riparian vegetation at crossing #1 viewed from north side of Quail Creek



Figure 22: Riparian understory vegetation at Crossing #1



Figure 23: Riparian vegetation at crossing #2 viewed from the south side of Quail Creek

3.3.5 Threatened, Endangered, or Candidate Animal Species

The Mojave desert tortoise (Figure 24) is a native species that is found within the Recreation Area. A small portion of the Recreation Area is within designated critical habitat for this species.

In 1990, Mojave desert tortoise populations located north and west of the Colorado River were listed as a threatened species, under the Endangered Species Act (ESA). In 1994, the U. S. Fish and Wildlife Service (USFWS) designated 129,100 acres of critical habitat for desert tortoise in Washington County. See Map 5 for the location of this critical habitat in relationship to the Recreation Area. A Recovery Plan was issued by the USFW for the Mojave



Figure 24: Mojave desert tortoise

Desert Tortoise in 1994 and revised in 2011. The 1994 Recovery Plan identified two Recovery Units in Washington County, the Upper Virgin River Recovery Unit and the Northeast Mojave Recovery Unit, and provided management recommendations for lands within each unit designed to assist the recovery and de-listing of tortoise populations. The Recreation Area is within the Upper Virgin River Recovery Unit, the smallest of the recovery units identified for desert tortoises within its range.

When designating critical habitat for the desert tortoise, the USFWS defined six Primary Constituent Elements (PCEs) of tortoise habitat, one related to the size of the recovery unit, and five related to the condition of the habitat within the recovery unit. The PCEs are as follows:

1. Sufficient space to support viable populations within each of the six recovery units and provide for movements, dispersal, and gene flow;
2. Sufficient quantity and quality of forage species and the proper soil conditions to provide for the growth of such species;
3. Suitable substrates for burrowing, nesting, and overwintering;
4. Burrows, caliche caves, and other shelter sites;
5. Sufficient vegetation for shelter from temperature extremes and predators; and
6. Habitat protected from disturbance and human-caused mortality.

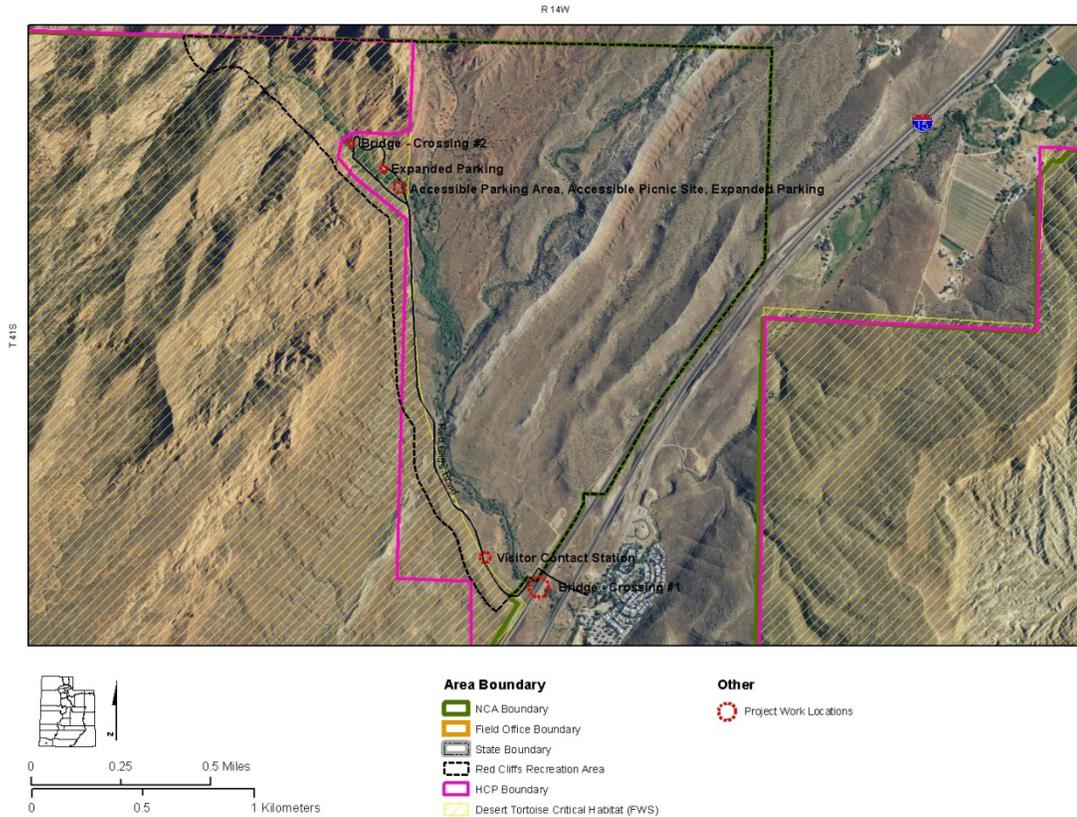
In 1996, the USFWS issued an “incidental take” permit (ICP) to Washington County authorizing the taking of an estimated 1,169 tortoises associated with development of approximately 43,500 acres of desert tortoise habitat on non-federal land in the county. One requirement for issuance of the ICP was the approval by the USFWS of a Habitat Conservation Plan (HCP). The central element, and primary mitigation measure, of Washington County’s HCP, was “the creation of a Mojave Desert habitat reserve in Washington County” “for the protection of the Mojave desert tortoise and other listed, candidate, and sensitive species found in these same habitat areas.” In 1996, Washington County’s HCP was formally approved by the USFWS, allowing orderly growth and development to continue; and eliminating the need for multiple consultations with the USFWS under Section 10 of the ESA and the creation of project-specific HCPs for development on private lands.

The Recreation Area is today within the multi-jurisdictional “Mojave Desert habitat reserve,” (locally known as the Red Cliffs Desert Reserve), that is protectively managed by the respective federal, state, and municipal land managers, in support of Washington County’s HCP. In 1996, when the HCP was approved and the ICP granted, the Recreation Area was not within the boundaries of this reserve. Nor were the then private lands that are adjacent to the proposed location for the visitor contact station; this tract of private property was acquired from willing sellers by BLM in 2001. The acreage of the Recreation Area and the private land were, therefore, not included in the calculations that determined the number of acres of adverse modification of designated critical habitat that were authorized under the county’s ICP.

In 2006, with BLM concurrence, the Washington County Commission approved the addition of 808 acres of public land, located north and east of the Red Cliffs Road, (see Map 5) to its mitigation reserve. A majority of the 808 acres that were added were not designated critical habitat for the desert tortoise, although the developed campground and day use areas were mapped as being within critical habitat by the USFWS in 1994. A majority of the Recreation Area comprises marginal tortoise habitat, based on the PCEs of suitable habitat. Suitable tortoise habitat is usually associated

with well-drained sandy loam soils in plains, alluvial fans, and bajadas, though tortoises may also occur in dunes, edges of basaltic flow, and other rock outcrops, or in well-drained and vegetated alkali flats. These habitat variables are generally not present in the Recreation Area.

Map 5: Mojave Desert Tortoise Critical Habitat



Tortoise Inventories in the Recreation Areas

In 2008, in support of construction activities related to the development of the White Reef trailhead and designation of new trails between the trailhead and Quail Creek, a biological survey was conducted by JBR Environmental Consultants, Inc. on behalf of the BLM. No tortoises or tortoise sign were observed in the Survey Area.

Surveys completed by the BLM NCA Biologist in 2011 in the White Reef Park area of the Recreation Area, in association with rare plant habitat and wildfire emergency stabilization, also failed to locate any tortoise or tortoise sign.

In the summer of 2013, the BLM NCA Biologist conducted surveys within a one kilometer radius of the Adams house, after receiving reports of a tortoise siting along Red Cliffs Road in that vicinity. A single female adult tortoise was located in a shallow den 150 meters south and east of the Red Cliffs Road. The den was too shallow to serve as a winter den and probably mostly functioned as a source of shade for the tortoise, during the heat of the summer afternoons. Tortoise scat was also observed south of the Red Cliffs Road, but none to the east, within the survey area.

The NCA Biologist has revisited the shallow tortoise den south of the access road in the vicinity of the Adams house, but not observed the female tortoise on subsequent monitoring visits.

Surveys were also completed at that time by BLM NCA Biologist in the developed campground and day use area, around the proposed visitor contact station location, and along riparian zone along Quail Creek, where the proposed new bridges would be constructed. No tortoises or tortoise sign were observed in the areas surveyed.

Data obtained from the Utah Natural Heritage Program shows tortoise sightings south and west of the Red Cliffs Road; as the distances south and west increase, so do the number of sightings. No sightings have been documented north and east of the road or in the campground.

The PCEs of suitable tortoise habitat are generally not present in the Recreation Area for the following reasons:

- *Forage*: Forage species are lacking, both in the developed campground and day use areas, as these areas are located within the floodplain of Quail Creek and support primarily woody riparian vegetation. Adjacent to the proposed visitor contact station, soil types have potential to grow good forage species for desert tortoise, but are currently vegetated primarily by non-native annual grasses (*Bromus* spp.).
- *Substrate*: The campground and day use areas are located within steep sided cliff faces of Navajo sandstone and underlain by bedrock covered by shallow sandy soils. The on-site geology would preclude the digging of dens by tortoises of sufficient depth to survive the cold winters. The area near the proposed visitor contact station would be marginally suitable for den construction, but appears to lack the caliche or horizontally striated sedimentary rock that provides ideal denning substrate. The riparian areas along Quail Creek are not characterized by substrate that would support dens and are clearly prone to flooding events that would destroy dens on a nearly annual basis. Burrows, caliche caves, or dens: None of these are present in the project areas.
- *Vegetative cover*: The campground and day use areas are heavily vegetated with woody riparian species, but lack the low growing understory that would effectively provide cover or protection for tortoises from predators the tortoise could use to hide from predators (which would be numerous, due to close proximity of an intermittent stream). The vegetation in the vicinity of the proposed visitor contact station is comprised of invasive grasses that provide little or no cover or shade, and very sparse creosote bushes.
- *Protection from disturbance and human caused mortality*: The developed campground, day use area, and access road are heavily traveled by motorized and non-motorized vehicles, particularly during peak visitation periods in spring and fall. There is currently no tortoise protective fencing along either side of the access road, and there clearly could be human-caused tortoise mortalities, if the Recreation Area supported large tortoise populations.

3.3.6 Vegetation Excluding USFW Designated Species

The Recreation Area has been extensively disturbed by an array of past human activities, most notably the mid-19th century settlement of Harrisburg and the silver mining boom at nearby Silver Reef. This project area includes the westernmost extent of the Harrisburg settlement, where some residential housing (e.g. Orson B. Adams house, Willard McMullin house) was constructed and large fields cleared for cultivation and use as livestock pastures. This area was the location of fruit orchards, watered by irrigation ditches that diverted water from Leeds and Quail Creeks. The cleared fields were grazed by domestic cattle, goats, and sheep well into the late 20th century. A network of wagon roads developed, connecting the farmsteads of Harrisburg to the mining camp of

Silver Reef and providing access to small mineral prospects and mines along the White Reef. After the abandonment of Harrisburg in the 1880s, the Orson B. Adams farmstead, which include fields north of Quail Creek, continued to be cultivated by William Emmett until his death in 1945.

In the 1950s, the historic agrarian landscape of the Recreation Area was the setting for a major Hollywood movie. A movie set was constructed and the cleared fields used for mock battle scenes that included dozens of U.S. Cavalry riders charging a Mexican hacienda and the use of explosives. The impacts of these extensive prior land uses were the near total removal of native vegetation, with replacement of these species by invasive weeds, such as cheat grass and Russian thistle. The common native plant species that have re-established are creosote bush, broom snake weed, green rabbitbrush, rubber rabbitbrush, and some sand sage on the Quail Creek upper terraces near crossing #1.

Current human activities within the campground and day use area have primarily impacted the vegetation understory. At campsite 12, which will accommodate a portion of the accessible parking area, has few native shrubs remaining in the area heavily used by campers (see Figure 25). One Fremont's cottonwood tree, shown in the red circle on Figure 25, will be removed to accommodate the proposed new parking area. This tree has been heavily pruned in the past due to its hazardous limbs and is scheduled for a complete removal because of the hazards it poses to campers (note the position of the picnic table and tent in relationship to the hazardous tree). The remaining portion of the proposed accessible parking area will be located directing south of campsite 12. The vegetation consists of a dense stand of sand sage and desert almond (*Prunus fasciculata*) (see right side Figure 26).



Figure 25: Vegetation at current campsite 12 that will be converted to an accessible parking area; only tree in red circle will be removed

One of the expanded parking areas would be located at an existing paved pullout (see left side of Figure 26). The expansion to accommodate 8 vehicle parking spaces would require the removal of sand sage and desert almond shrubs. Another expanded parking area for three additional parking spaces would be located at the current maintenance shed area. Figure 27 shows this area and its gravel surface.



Figure 26: Vegetation at expanded parking area on left and accessible parking area on right

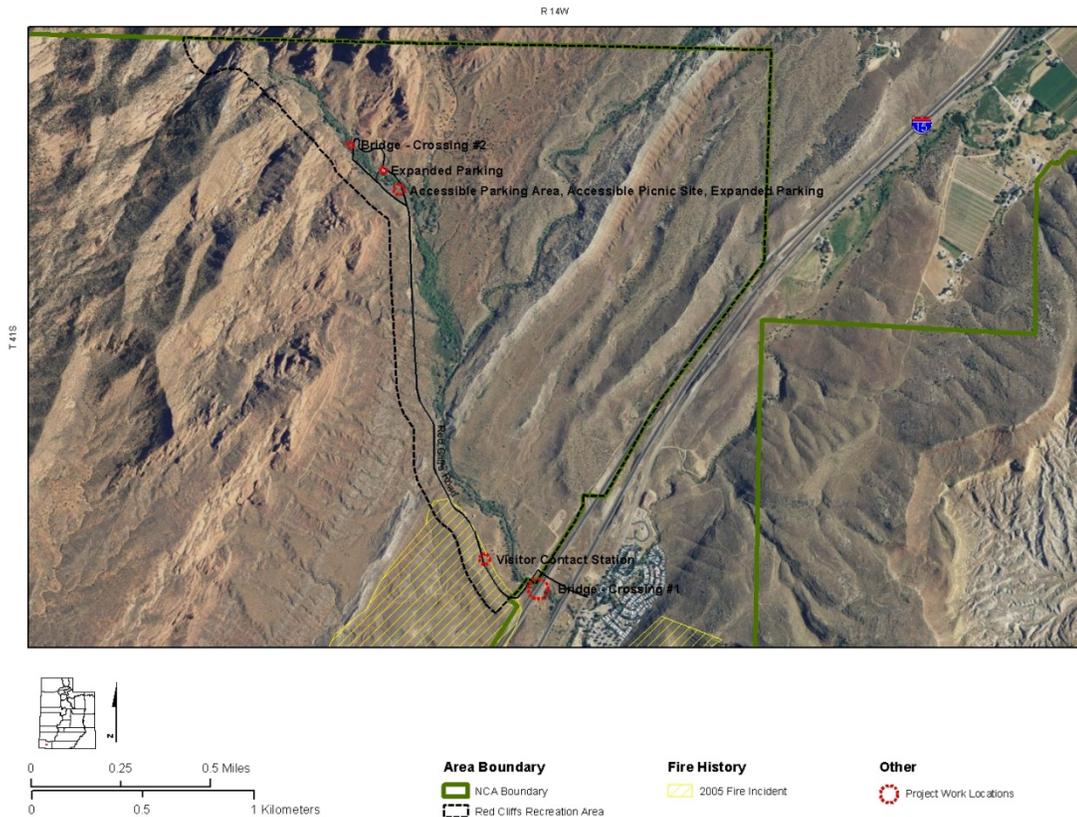


Figure 27: Vegetation at expanded parking area at current location of shed

In 2005, a wildfire swept through 750 acres in the RCNCA, between the Cottonwood Trailhead and the Red Cliffs Road (see Map 6), essentially destroying most the native vegetation. A few widely spaced creosote bushes have regrown, but replacement species are largely cheat grass and Russian thistle.

Riparian vegetation at crossing #1 and crossing #2 is discussed in 3.3. 4 Wetlands/Riparian Zones.

Map 6: Fire History



BLM



3.3.7 Recreation Resources

The Recreation Area is a popular destination, hosting approximately 38,000 visitors annually, concentrated largely in the spring and fall. The majority of visitors—32,900 or 87%— come for non-motorized day use: hiking, mountain biking, equestrian trail riding, and heritage tourism. The remaining 5,000 visitors are overnight campers.

The campground has 12 developed units, each consisting of a parking space, a tent pad, a fire ring, and a picnic table. Some camp sites offer a shade shelter and potable water is offered in several centralized locations. The day use area is developed for picnicking, and provides tables, trash receptacles, centralized fire rings, and potable water (see Figure 28).



Figure 28: Picnicking in the day use area

In addition to picnicking, visitors can use the non-motorized trail system, which includes the White Reef Trailhead; visit heritage sites including the Dinosaur Track Site, Archaeological Site, historic Harrisburg, Cordura Movie Set, and Orson B. Adams house. The recreation area also hosts numerous educational events throughout the year such as the youth orientated Day In the Desert (see Figure 29). These education visitors total approximately 200 annually. See Map 7 for the location of these recreation resources.

Management of recreation is currently guided by the St. George RMP and the implementation- level the Public Use Plan for the Red Cliffs Desert Reserve (PUP⁵) through recreation zones. The PUP established two recreation zones within the reserve: lowland and upland. The Recreation Area is in the lowland zone where non-motorized users must stay on designated trails. Motorized vehicles are limited to the Red Cliffs Road and all visitors must use designated trailheads for parking and trail access.



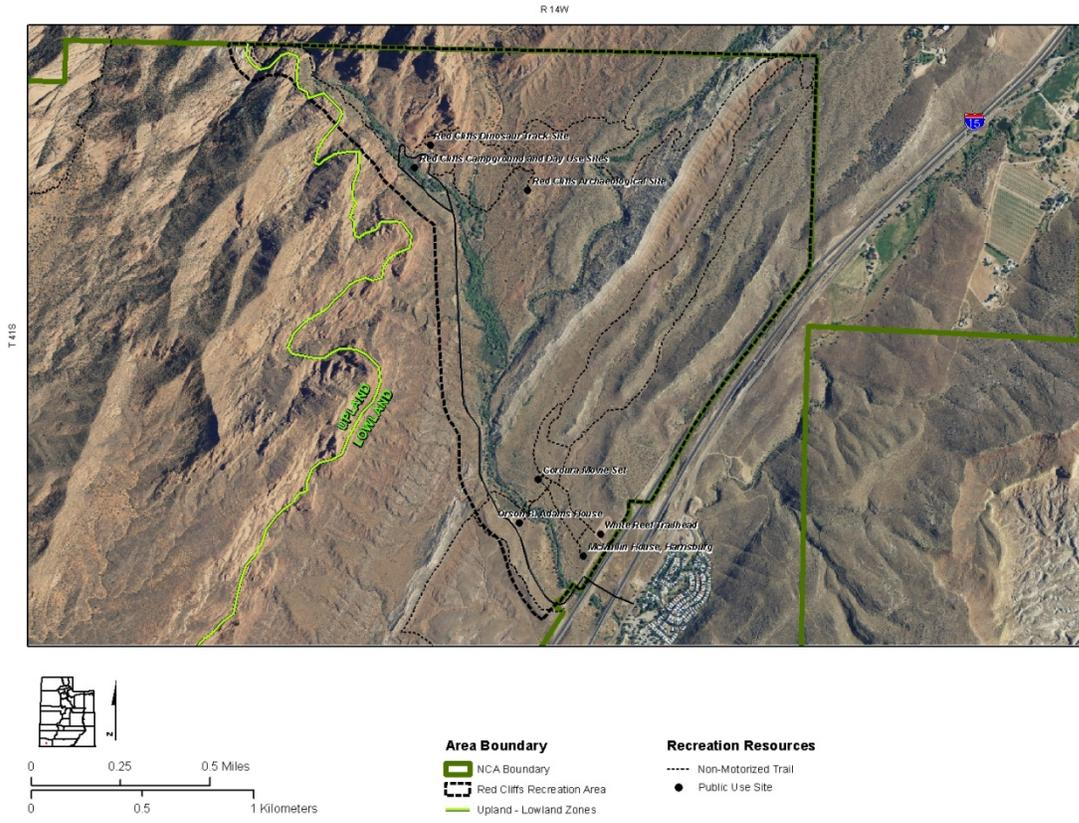
Figure 29: Day In The Desert event activity at the circa 1950s Cordura Movie Set

The Recreation Area operates under the national Recreation Fee Program. This program allows BLM to charge fees for developed recreation areas that meet certain requirements, and in turn use those fees for allowable expenses such as facility maintenance and enhancement. Fees have been charged for both day use and camping within the Recreation Area since the 1970s.

⁵ The PUP was developed by BLM and Washington County to further “refine management prescriptions for recreation and other public uses compatible with habitat preservation within the Reserve.”

Map 7: Recreation Resources

BLM



4.0 CHAPTER FOUR—ENVIRONMENTAL IMPACTS

4.1 INTRODUCTION

This chapter provides analysis of those resources that could be impacted by the Proposed Action and No Action Alternative. The intent is to provide a basis for comparison of the effects of each alternative on the resources described in Chapter Three. All known mitigation measures have been included in the proposed action, thereby reducing or eliminating a majority of potential environmental impacts.

4.2 DIRECT AND INDIRECT IMPACTS

Impacts are direct or indirect and measured in terms of intensity (scale and concentration) and duration (short term or long term). Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Impacts can be positive, seen as benefitting the resource, or negative, seen as a detriment to the resource. Quantifying impacts can be difficult due to the lack of monitoring data for many resources. In the absence of quantitative data, best professional judgment was used. Impacts are sometimes described using ranges of potential impacts, or in qualitative terms, if appropriate. The intensity and duration of impacts are defined as follows:

Negligible – The impact is the lowest level of detection. No noticeable changes to the resource would occur, and any impacts would be at or below the level of detection. If detected, the impacts would be considered slight. For negative impacts, mitigation measures would not be necessary.

Minor – The impact is slight, but detectable. Changes to the resource would be measurable, although the changes would be small, short-term (less than one month), and localized. For negative impacts, mitigation measures would not be necessary.

Moderate – The impact is readily apparent. Changes to the impacted resource would be measurable, may have appreciable consequences, and would be noticeable. For negative impacts, mitigation measures may be necessary.

Major – The impact is a severe or adverse impact or of exceptional benefit. Changes to the impacted resource would be measurable, have substantial consequences, and be readily noticeable. For negative impacts, mitigation measures would be required.

4.2.1 Alternative A – Proposed Action

4.2.1.1 Surface Water Resources

Cause of potential impact: Proposed construction of bridges at crossing #1 and #2.

Nature of potential impact: Construction of the bridges would be in close proximity to, and require direct access to, the stream channel of Quail Creek in two locations.

Context and intensity of potential impact: Approximately 135 linear feet of Quail Creek would be impacted at crossing #1 and approximately 100 linear feet of Quail Creek would be impacted at crossing #2.

Analysis: Construction activities could temporarily affect water quality by the introduction of sediments; however, the use of erosion control materials would reduce this sedimentation on surface water sources. All sloped areas will be seeded with native plant species and covered with coconut matting after final grades have been achieved. Construction impacts would be limited to the duration of the short construction period. Long term impacts would be beneficial as the

elimination of daily vehicle traffic from the stream flow should reduce the amount of sediments entering the creek.

These impacts would be direct, negative in the short-term, positive in the long term, localized, and minor.

4.2.1.2 Cultural Resources

Cause of potential impact: Proposed construction of bridge at crossing #1, bridge at crossing #2, a Visitor Contact Station, an accessible parking area, an accessible picnic area, expanded parking areas, and temporary staging and access roads.

Nature of potential impact: Construction of bridge at crossing #1 and Visitor Contact Station could change the visual setting of historic Orson B. Adams house, farmstead, and adjacent historic agrarian landscape of Harrisburg.

Context and intensity of potential impact: Potential impacts would occur in close proximity to the Orson B. Adams house and farmstead, including construction of a proposed 81 square foot visitor contact station and associated 0.1 acres of cut and fill for widening the existing Red Cliffs Road. Crossing #1 is in close proximity to the historic agrarian landscape of Harrisburg.

Analysis: Reviews of existing literature and Class III level field inventories have not identified NRHP-eligible or listed properties within the APE that would be directly or adversely affected by the proposed construction projects.

There would also be no direct construction-related impacts on the Orson B. Adams house and farmstead or Willard McMullin house and farmstead, as these are outside the APE for all proposed surface disturbances.

The proposed new bridge at crossing #1 would be located in close proximity to the historic agrarian landscape of the Harrisburg settlement, but would not introduce a new element to the setting, context, association, and feeling of that landscape because the dense riparian vegetation of Quail Creek would effectively screen the bridge from long distance views.

The construction of the small visitor contract station within the existing Red Cliffs Road would introduce a new element to the setting, context, association, and feeling of the Adams house and surrounding historic agrarian landscape of the Adams farmstead. However, the effect of this new element has been minimized by the design and location of the proposed visitor contact station. The small building would be constructed within the existing paved roadway, itself a modern visual intrusion. The building style and colored block construction materials would visually harmonize with, but not copy, the historic Orson B. Adams house, located approximately 0.1 of mile (593 feet) to the northwest of the proposed visitor contact station. Therefore, this proposed new construction would not comprise an adverse effect on the setting, context, association, and feeling of the Adams house and surrounding historic agrarian landscape of the Adams farmstead.

4.2.1.3 Floodplains

Cause of potential impact: Proposed construction of bridge at crossing #1.

Nature of potential impact: Construction activities including excavation, fill, bridge abutments, road paving, rip rap, and re-vegetation would occur. Native and non-native herbaceous and woody plants would be removed and/or damaged, while native herbaceous and shrubby plants would be added in re-vegetation.

Context and intensity of potential impact: Approximately 0.79 acres of the 100 year floodplain of Quail Creek at crossing #1 would be impacted during construction, while approximately 0.77 of

those acres would be re-vegetated. Re-grading of the central stream channel and adjacent floodplain would occur impacting .53 acres.

Analysis: While the removal of 12 cottonwood trees from the central stream channel at crossing #1 would have a negative impact to the visual aesthetics of a small localized area, the ability of the channel to carry the required cfs stream flow would be a positive impact, restoring the channel to a more functional floodplain. Seven of the mature cottonwood trees here are considered hazardous and the loss of large limbs is evident. These hazardous trees posed additional concerns for flood debris clogging the box culvert under 1-15. Their removal would decrease some of this risk, at least within the general vicinity of the box culvert.

The removal of herbaceous and woody plants and their subsequent re-vegetation would cause short-term impacts. For re-vegetation, only supple shrubby plants such as coyote willow would be used and not stiff woody trees such as cottonwood. The rip rap would not be re-vegetated, but in the long-term, siltation and natural re-seeding over the rocks would most likely occur.

The original grade within the central stream channel would be minimally altered from its existing state and re-graded to a uniform slope consistent with the original grade. Grades behind the bridge abutments would be re-established at 2:1 slope to reducing the amount of fill in the floodplain.

These impacts would be direct, positive, short term in the temporary construction area, long term in the re-graded area, and moderate overall.

4.2.1.4 Wetlands/Riparian Zones

Cause of potential impact: Proposed construction of bridges at crossing #1 and #2.

Nature of potential impact: Construction activities including excavation, fill, bridge abutments, road paving, rip rap, and re-vegetation would occur. Native and non-native herbaceous and woody plants would be removed and/or damaged, while native herbaceous and shrubby plants would be added in re-vegetation.

Context and intensity of potential impact: Approximately 135 linear feet of Quail Creek would be impacted at crossing #1 and approximately 100 linear feet of Quail Creek would be impacted at crossing #2.

Analysis: The permanent removal of 12 cottonwood trees from the central stream channel at crossing #1 occurs in a small localized area and would have a beneficial impact to the floodplain, restoring it to a more functional state by removal of inappropriate woody plants. Seven of these cottonwood trees are considered hazardous and the loss of large limbs evident. These trees posed a hazard to humans and have the potential to add amounts of debris to the stream flow during a flood event. Other herbaceous plants would be removed or damaged during construction, but are largely annual or ephemeral and strongly suited to re-seeding by adjacent plants. All the areas disturbed by construction except for the small area of rip rap (0.2 acres) will be re-vegetated with floodplain appropriate plants.

A small localized area at crossing #2 would have two cottonwood trees and two clumps of small diameter cottonwood tree clumps permanently removed. Three of these trees are hazardous for risks posed to humans. Other herbaceous plants would be removed or damaged during construction, but are largely annual or ephemeral and strongly suited to re-seeding by adjacent plants. The riparian area here is heavily scoured and few herbaceous plants exist in the central channel. All the areas disturbed by construction except for the small area of rip rap (0.1 acres) will be re-vegetated with floodplain appropriate plants.

The removal of herbaceous and woody plants and their subsequent re-vegetation would cause short-term impacts. For re-vegetation, only supple shrubby plants such as coyote willow would be used and not stiff woody trees such as cottonwood. The rip rap would not be re-vegetated, but in the long-term, siltation and natural re-seeding over the rocks would most likely occur. Re-vegetation of disturbed areas with floodplain appropriate species would be beneficial to restoring crossing #1 and #2 to functionality and will minimize impacts.

These impacts will be direct, negative for loss of mature trees, positive for restoration of the floodplain, short-term, and minor overall.

4.2.1.5 Threatened, Endangered, or Candidate Animal Species

Cause of potential impact: Construction of the bridge at crossing #2, a visitor contact station, an accessible parking area, an accessible picnic area, an expanded parking area, and a temporary access road from I-15 would create new surface disturbances.

Nature of potential impact: Fill, excavation, surface hardening, and re-vegetation will alter the existing landscape.

Context and intensity of potential impact: Surface disturbance within designated desert tortoise critical habitat would total approximately 0.69 acres, with approximately 0.36 of those acres to be re-vegetated with native species following construction activities, resulting in 0.33 of an acre of permanent change to low quality tortoise habitat (0.02 acres of rip rap, 0.31 acres for parking and picnic areas).

Analysis: The Proposed Action would not result in the taking of any desert tortoises, as a result of protective measures, and the presence of on-site monitors during construction. Construction activities would temporarily affect 0.69 acres of critical desert tortoise habitat with 0.33 of those acres in a riparian corridor of Quail Creek. Approximately 0.36 acres of the total temporary disturbance would be re-vegetated with native plant species, resulting in the permanent modification of 0.33 acres of habitat. This would not be an adverse modification of critical habitat because the PCEs of suitable tortoise habitat, particularly quality forage, suitable substrate for burrowing, and vegetative cover (described in detail in Chapter 3 at Section 3.3.5) are generally not present in those areas of the Recreation Area where project work would occur.

The timing of construction, the use of erosion control fencing, and re-vegetation with native species will minimize impacts. Re-vegetation of a portion of the permanently modified acres, particularly those previously damaged by fire, should also be regarded as a benefit. The direct loss of desert tortoise critical habitat would also be offset by the indirect benefit of the visitor contact station. The station will provide the opportunity for staff interactions with the public for tortoise awareness and traffic control.

These impacts will be direct and indirect, negative and positive, short-and long-term, and negligible overall.

4.2.1.6 Vegetation Excluding USFW Designated Species

Cause of potential impact: Construction of a visitor contact station, an accessible parking area, an accessible picnic area, expanded parking areas, and temporary staging and access roads for bridge at crossing #1.

Nature of potential impact: Native and non-native herbaceous and woody plants would be removed and/or damaged, and native herbaceous and shrubby plants would be used in re-vegetation.

Context and intensity of potential impact: Removal and/or damaged vegetation analyzed under this resource would be impacted on upper terraces only; impacts to riparian vegetation are analyzed in 4.2.1.4 Wetlands/Riparian Zones. Approximately 1.43 acres of vegetation would be removed

and/or damaged, including one hazardous cottonwood tree, while 1.02 acres would be re-vegetated with native plant species.

Analysis: The vegetation in the vicinity of the temporary staging areas, temporary access roads, and visitor contact station has been heavily impacted by a long history of past human activity. Vegetation in these areas largely consists of invasive species such as cheat grass and Russian thistle. Common native plant species of creosote bush, broom snake weed, green rabbitbrush, rubber rabbitbrush, and a few sand sage are widely and intermittently spaced. Ninety-four percent of the proposed disturbed area would be re-vegetated with native plant species beneficial to wildlife.

Vegetation in the vicinity of the proposed accessible parking area and picnic area and one expanded parking area (a second expanded parking area is currently gravel surfaced) consists of a dense stand of sand sage and desert almond shrubs. None of these areas would be re-vegetated as paved asphalt surfacing would take its place. As the new parking facilities would fill the visual void, it is unlikely that the loss of vegetation would be noticeable.

Re-vegetation of some areas, such as the burn zone in proximity to the visitor contact station, would benefit wildlife and scenic resources.

These impacts would be direct, negative, long-term, and moderate.

4.2.1.7 Recreation Resources

Cause of potential impact: Construction of a bridge at crossing #1, a bridge at crossing #2, a visitor contact station, an accessible parking area, an accessible picnic area, expanded parking areas, and a temporary closure of the Recreation Area.

Nature of potential impact: The construction of new and expanded visitor facilities would impact the Red Cliffs Road and the campground and day use areas. Visitation would be temporarily impacted.

Context and intensity of potential impact: A temporary closure of the entire Recreation Area would eliminate all public use during the anticipated summer-long construction period. This would create short-term, temporary inconveniences and foregone recreation opportunities for those visitors who planned to camp or use the day use areas of the Recreation Area. As the summer months are the period of time when the fewest visitors come to the Recreation Area, the short term impacts on recreational users has been minimized to the extent possible, based on the timing of the construction projects and the required temporary closure.

The overall impact on public safety, visitor experiences, and recreational activities in the area would be positive and long term. Two new bridges would be constructed at two separate locations over Quail Creek on the Red Cliffs Road. A small (81 square foot) visitor contact station with associated road widening would be constructed on the Red Cliffs Road near the historic Orson B. Adams house. New and expanded parking areas for an additional 33 vehicles, 2 of which would be accessible, would be constructed, while two ineffective parking spaces would be removed. Overall, parking spaces would increase from 21 to 52.

Analysis: Crossing #1 and #2 would change from low water crossings to elevated bridges over Quail Creek that would impact both motorized and non-motorized visitors. This change would reduce the risk to visitors currently crossing a highly active flash flood zone. Non-motorized visitors would specifically benefit by a stream crossing that does not require getting wet.

The elimination of ineffective parking spaces and the addition of effective and accessible parking will increase visitor parking opportunities, especially for visitors with disabilities. Parking spaces will increase from 21 to 52, effectively increasing the carrying capacity of the recreation area. The addition of an accessible picnic area will diversify recreational opportunities for visitors with disabilities. These changes will affect the general quality of the recreation experience for visitors, reducing the amount of time spent looking for parking, and increased safety for both motorized and non-motorized users of the travelway.

An indirect benefit of the visitor contact station is the opportunity for staff to interact with the public, providing recreation information, traffic control, and assisting with dispersal of use throughout the Recreation Area.

These impacts will be direct and indirect, negative in the short-term due to the closure, positive long term, and moderate overall.

4.2.1.8 Mitigation Measures

All proposed mitigation measures have been discussed in the proposed action in Chapter 2.

4.2.1.9 Residual Impacts

All residual impacts—those remaining after the application of mitigation measures—have been discussed in the proposed action in Chapter 2.

4.2.1.10 Monitoring and/or Compliance

Monitoring of construction activities would be performed each day that the contractor(s) is on-site. The timing of monitoring would reflect specific work milestones such as clearing and grubbing, placement of erosion control measures, placement of abutment re-bar, placement of rip-rap, and other crucial periods of work. Monitoring would be performed for the expressed goal of ensuring compliance to construction requirements, but also for desert tortoise presence and safety, and adherence to other construction stipulations from the Stream Alteration Permit and the UDOT Temporary Access Permit. Monitoring will be performed by BLM staff including the NOC Bridge Engineer, District Engineer, District Engineering Technician, Field Office Landscape Architect, and Field Office Biologist.

4.2.2. Alternative B – No Action

Under the No Action alternative, no new construction projects would occur in the Recreation Area and management practices would remain unchanged. Routine maintenance of existing facilities would continue and in-kind replacement of facilities would occur, as needed. This alternative would not meet a majority of the objectives as described in 1.4 Purpose for Proposed Action and the environmental consequences as described in 4.2 Direct and Indirect Impacts would not occur. Public safety issues related to the low water crossings and vehicle travel, as well as unauthorized parking that block emergency vehicle access, would continue and increase in intensity, as regional population growth increases visitation to the Recreation Area. Damage to native vegetation and habitat for desert tortoise and other wildlife could continue, as visitors utilize unauthorized parking spaces in the day use areas and campground during peak seasons. As no major renovations would take place, a lack of adequate accessible facilities would remain.

4.2.1.1 Water Resources

The Proposed construction of bridges at crossing #1 and #2 and the resulting impact to the stream channel of Quail Creek in two locations would not occur. Vehicles would continue to drive through Quail Creek at these crossings. There would be no impacts as a result of implementation of this alternative, as current management practices would continue.

4.2.1.2 Cultural Resources

The proposed construction of bridge at crossing #1, bridge at crossing #2, a visitor contact station, an accessible parking area, an accessible picnic area, expanded parking areas, and temporary staging and access roads would not occur. As a new bridge at crossing #1, which would have been located in close proximity to the historic agrarian landscape of the Harrisburg settlement, would not be constructed, no new modern element would be introduced into the setting, context, association, and feeling of the landscape. The small visitor contact station would not be constructed, so no new element would be introduced to the setting, context, association, and feeling of the Adams house and surrounding historic agrarian landscape of the Adams farmstead. There would be no effect to NRHP-eligible properties under this alternative.

4.2.1.3 Floodplains

Proposed construction of bridge at crossing #1 would not occur in the 100 year floodplain of Quail Creek. Native and non-native herbaceous and woody plants would not be removed and/or damaged, while native herbaceous and shrubby plants would not be needed for re-vegetation. Without the removal of the removal of 12 cottonwood trees from the central stream channel at crossing #1, the ability of the channel to carry the required cfs stream flow would continue to be problematic. There would be no impacts as a result of implementation of this alternative, as current management practices would continue.

4.2.1.4 Wetlands/Riparian Zones

Proposed construction of bridges at crossing #1 and #2 would not occur. Native and non-native herbaceous and woody plants would not be removed and/or damaged, while native herbaceous and shrubby plants would not be needed for re-vegetation. There would be no impacts as a result of implementation of this alternative, as current management practices would continue.

4.2.1.5 Threatened, Endangered, or Candidate Animal Species

Construction of the bridge at crossing #2, a visitor contact station, an accessible parking area, an accessible picnic area, an expanded parking area, and a temporary access road from I-15 would not occur, so that no new surface disturbances within designated tortoise critical habitat would result from this alternative. The No Action alternative would not result in the taking of any desert tortoises. There would be no impacts as a result of implementation of this alternative, as current management practices would continue.

4.2.1.6 Vegetation Excluding USFW Designated Species

Construction of a visitor contact station, an accessible parking area, an accessible picnic area, expanded parking areas, and temporary staging and access roads for bridge at crossing #1 would not occur. Native and non-native herbaceous and woody plants would not be removed and/or damaged, and native herbaceous and shrubby plants would not be needed for re-vegetation. Damage to native vegetation could continue along the Red Cliffs Road, as visitors continue to create new unauthorized parking spaces. Impacts could be direct, negative, and negligible.

4.2.1.7 Recreation Resources

The proposed construction of a bridge at crossing #1, a bridge at crossing #2, a visitor contact station, an accessible parking area, an accessible picnic area, expanded parking areas, and a temporary closure of the Recreation Area would not occur. The construction of new and expanded visitor facilities that would have impacted the Red Cliffs Road and the campground and day use areas would not occur. Visitation would not be impacted by a temporary closure of the entire Recreation Area.

However, as construction of new facilities would not occur, the quality of visitor experiences would continue to be negatively affected. Inadequate facilities would still exist that put motorized and non-motorized uses in a high energy flash flood zone. Lack of parking would continue to cause

obstacles to traffic flow and conflicts between motorized and non-motorized users. Equestrian and other visitors to the White Reef trailhead would continue to be displaced by overflow parking for the campground and day use areas. Parking and picnic facilities would not accommodate people with disabilities. Water flowing across the road at crossing #2 would continue to attract visitors, particularly children aware of traffic conflicts. These impacts are expected to be long term, direct, negative, and major.

4.3 CUMULATIVE IMPACTS ANALYSIS

Cumulative impacts are those impacts resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions.

4.3.1 Common to all Resources

4.3.1.1 Cumulative Impact Area (CIA)

The geographic boundary of the CIA for all the resources analyzed is the Recreation Area, except Threatened, Endangered, or Candidate Species for which the CIA is defined as the Upper Virgin River Recovery Unit for desert tortoise.

4.3.1.2 Past and Present Actions

Past actions within the CIA include historic settlement, mining, and other developments, as described in 3.3.2 Cultural Resources. More contemporary past actions include unauthorized motorized Off Highway Vehicles (OHV) cross-country travel. Ongoing actions within the CIA support a variety of recreational activities as described in 3.3.7 Recreation Resources.

4.3.1.3 Reasonably Foreseeable Action Scenario (RFAS)

The St. George metropolitan area in Washington County will continue to grow in population with a corresponding growth of residential developments within the local community boundaries. Estimates of that growth vary, but all studies agree that some growth will occur. With increased local growth, it is anticipated that visitation to the Recreation Area would also continue to increase. Recently increased fees for use of the Recreation Area and more intensive management may have a slight negative effect on visitor use numbers, but this effect is not expected to be sustained over the long-term. Future facility development would be likely to occur as a response to increased visitation within the limits of the area's carrying capacity.

4.3.2 Water Resources

4.3.2.1 Past and Present Actions

In 2010, approximately 1.3 miles of protective fencing and gates along the northern and eastern boundaries of the Recreation Area were installed. This fencing eliminated all OHV use in the Recreation Area, providing a higher level of protection for surface water quality in Leeds Creek, and riparian vegetation along Quail Creek in the CIA. This action was disclosed in the Boundary Fence for the White Reef Area of the Red Cliffs National Conservation Area, DOI-BLM-UT-100-2011-0008-EA.

4.3.2.2 Reasonably Foreseeable Action Scenario

The following RFAS identifies reasonably foreseeable future actions that would cumulatively affect the same resources in the CIA as the proposed action and alternatives.

- As trail development continues in the Recreation Area, a small non-motorized foot bridge would be installed on the Tipple Trail to facilitate crossing Leeds Creek. This action was disclosed in the Non-Motorized Trail System Designation, White Reef Area, Red Cliffs National Conservation Area, DOI-BLM-UT-100-2008-0012-EA.

4.3.2.3 Cumulative Impact Analysis

It has been determined that cumulative impacts would be negligible as a result of the proposed action because other past, present, or reasonably foreseeable actions are localized, small scale, and have water protected resources.

Because the No Action Alternative would not result in any direct or indirect impacts, it will not result in an accumulation of impacts.

4.3.3 Cultural Resources

4.3.3.1 Past and Present Actions

In 2010, approximately 1.3 miles of protective fencing and gates along the northern and eastern boundaries of the Recreation Area were installed. This fencing eliminated all OHV use in the Recreation Area, providing a higher level of protection for cultural resources in the CIA. This action was disclosed in the Boundary Fence for the White Reef Area of the Red Cliffs National Conservation Area, DOI-BLM-UT-100-2011-0008-EA.

In 2010, the White Reef trailhead was constructed to accommodate passenger vehicle and equestrian trailer parking with associated facilities including a vault toilet restroom. The project resulted in no adverse effect to historic properties. This action was disclosed in the Non-Motorized Trail System Designation, White Reef Area, Red Cliffs National Conservation Area, DOI-BLM-UT-100-2008-0012-EA.

4.3.3.2 Reasonably Foreseeable Action Scenario

The following RFAS identifies reasonably foreseeable future actions that would cumulatively affect the same resources in the CIA as the proposed action and alternatives.

- Protective fencing with or without tortoise mesh may be installed along both sides of Red Cliffs Road from the 1-15 underpass to the campground and day use area.

4.3.3.3 Cumulative Impact Analysis

It has been determined that cumulative impacts would be negligible as a result of the proposed action because other past, present, or reasonably foreseeable actions have or would be small scale, and have or would be sensitive to the setting, context, association, and feeling of the historic landscape.

Because the No Action Alternative would not result in any direct or indirect impacts, it will not result in an accumulation of impacts.

4.3.4 Floodplains

4.3.4.1 Past and Present Actions

No known past or present actions have impacted the floodplain in the CIA.

4.3.4.2 Reasonably Foreseeable Action Scenario

The following RFAS identifies reasonably foreseeable future actions that would cumulatively affect the same resources in the CIA as the proposed action and alternatives.

- As trail development continues in the Recreation Area, a narrow, natural surfaced, non-motorized trail along Quail Creek roughly between the Orson B. Adams house and the campground area would be constructed in a section of the 100 year floodplain. This action was disclosed in the Non-Motorized Trail System Designation, White Reef Area, Red Cliffs National Conservation Area, DOI-BLM-UT-100-2008-0012-EA.

4.3.4.3 Cumulative Impact Analysis

It has been determined that cumulative impacts would be negligible as a result of the proposed action because the reasonably foreseeable actions would not create measurable changes to the floodplain and would not inhibit the it's functionality.

Because the No Action Alternative would not result in any direct or indirect impacts, it will not result in an accumulation of impacts.

4.3.5 Wetlands/Riparian Zones

4.3.5.1 Past and Present Actions

In 2010, approximately 1.3 miles of protective fencing and gates along the northern and eastern boundaries of the Recreation Area were installed; no vegetation was removed during installation and impacts were negligible. This fencing eliminated all OHV use in the Recreation Area, providing a higher level of protection for riparian vegetation along Quail Creek. This action was disclosed in the Boundary Fence for the White Reef Area of the Red Cliffs National Conservation Area, DOI-BLM-UT-100-2011-0008-EA.

4.3.5.2 Reasonably Foreseeable Action Scenario

No actions in the RFAS are known.

4.3.5.3 Cumulative Impact Analysis

It has been determined that cumulative impacts would be negligible as a result of the proposed action because other past and present actions are localized, small scale, and have protected resources.

Because the No Action Alternative would not result in any direct or indirect impacts, it will not result in an accumulation of impacts.

4.3.6 Threatened, Endangered, or Candidate Species

4.3.6.1 Past and Present Actions

No known past or present actions, including steadily increasing public use of the Recreation Area over the past 50 years, have resulted in the "taking" of any desert tortoises in the Recreation Area. Modification of potential tortoise habitat began in the 1806s with the settlement of Harrisburg, and the cultivation and livestock grazing of the lands surrounding the community. Additional modifications resulted from prospecting and mining associated with the Harrisburg/Silver Reef District. These mid-19th century activities disturbed soils and replaced native vegetation with cultivated crops in what would have been potential tortoise habitat. During the 20th century, these lands, in private ownership and those managed by BLM continued to be grazed by domestic livestock. In 1966, public lands were disturbed and altered by the construction of the Red Cliffs Recreation campground and day use facilities and improvements to the Red Cliffs Road.

Since 1999, the public lands within and south of the Recreation Areas have been protectively managed under the St. George RMP and PUP, in furtherance of Washington County's HCP. The approximately 62,000 acres multi-jurisdictional land base of the county's HCP mitigation reserve encompasses the largest contiguous block of occupied and potential tortoise habitat available within the Upper Virgin River Recovery Unit. Washington County's HCP envisioned the "in perpetuity" protective management of the reserve land base by the respective federal, state, and municipal land managers, as mitigation for the incidental take of tortoises and adverse modification of habitat on non-federal lands within the county. Over the past 15 years, actions within the mitigation reserve and Recreation Area have been consistent with the overarching goals of the HCP to assist recovery and delisting of tortoises and other at-risk species, through closures and restrictions on land uses

and human activities. “Take” of tortoises within the boundaries of the mitigation reserve is not authorized, nor is unmitigated adverse modification of critical habitat.

4.3.6.2 Reasonably Foreseeable Action Scenario

The following RFAS identifies reasonably foreseeable future actions that would cumulatively affect the same resources in the CIA as the proposed action and alternatives.

- Protective fencing with tortoise mesh may be installed along both sides of Red Cliffs Road from the 1-15 underpass to the campground and day use area, to protect tortoises from motorized vehicle injuries and mortalities. Installation of this fencing could result in minor modifications to critical habitat. Impacts would likely be negligible, as a result of protective measures, and the presence of on-site monitors during construction, particularly when compared to the protective benefits to individual tortoises from this type of fencing.

4.3.6.3 Cumulative Impact Analysis

It has been determined that cumulative impacts would be negligible, as none would not result in the “taking” of desert tortoises or cause the adverse modification of critical desert habitat.

Because the No Action Alternative would not result in any direct or indirect impacts, it would not result in an accumulation of impacts.

4.3.7 Vegetation, Excluding USFW Designated Species

4.3.7.1 Past and Present Actions

In 2006, the Shivwits milkvetch (*Astragalus ampullarioides*) populations were surrounded by a protective fence to eliminate both motorized and non-motorized use; no vegetation was removed during installation; impacts were negligible. This action was disclosed in the Shivwits Milkvetch Protective Fences, DOI-BLM-UT-100-2006-0003-EA.

In 2010, approximately 1.3 miles of protective fencing and gates along the northern and eastern boundaries of the Recreation Area were installed; no vegetation was removed during installation and impacts were negligible. This fencing eliminated all OHV use, particularly indiscriminate cross-country travel, in the Recreation Area, providing a higher level of protection for native vegetation. This action was disclosed in the Boundary Fence for the White Reef Area of the Red Cliffs National Conservation Area, DOI-BLM-UT-100-2011-0008-EA.

In 2010, the White Reef trailhead was constructed to accommodate passenger vehicle and equestrian trailer parking with associated facilities including a vault toilet restroom. Vegetation removed consisted of snakeweed and invasive cheat grass and Russian thistle resulting in negligible impacts. This action was disclosed in the Non-Motorized Trail System Designation, White Reef Area, Red Cliffs National Conservation Area, DOI-BLM-UT-100-2008-0012-EA.

In 2013, a low, wood barrier fence, as shown in Figures 18 and 19, was installed. No vegetation was removed during installation; impacts were negligible. This barrier fence eliminated parking on road shoulder vegetation, protecting vegetation resources.

4.3.7.2 Reasonably Foreseeable Action Scenario

The following RFAS identifies reasonably foreseeable future actions that would cumulatively affect the same resources in the CIA as the proposed action and alternatives.

- Shade shelters and their associated concrete pads at eight campsites will be replaced in 2014; three garbage dumpsters may be enclosed on three sides by walls of split faced

concrete masonry blocks; stairs within the day use area may be replaced. No vegetation would be removed or damaged as a result of these actions.

- Protective fencing with or without tortoise mesh may be installed along both sides of Red Cliffs Road from the 1-15 underpass to the campground and day use area, this may have potential effects to vegetation resources. Vegetation would not be removed, but could be damaged during installation.
- As trail development continues in the Recreation Area, new natural surfaced, non-motorized trails would be constructed. Vegetation would be removed during construction. This action was disclosed in the Non-Motorized Trail System Designation, White Reef Area, Red Cliffs National Conservation Area, DOI-BLM-UT-100-2008-0012-EA.

4.3.7.3 Cumulative Impact Analysis

It has been determined that cumulative impacts would be negligible as a result of the proposed action because other past, present, or reasonably foreseeable actions are small scale, or have or would protect resources.

As the no action alternative is a continuation of the existing situation, cumulative impacts could occur, but they would be small scale, localized, and negligible, most likely occurring to roadside vegetation on the Red Cliffs Road.

4.3.8 Recreation

4.3.8.1 Past and Present Actions

In spring 2009, the Recreation Area was closed for six weeks for re-construction of the Red Cliffs Road.

In 2010, the White Reef trailhead was constructed to accommodate passenger vehicle and equestrian trailer parking with associated facilities including a vault toilet restroom. Included in this project was the designation of existing trails. These actions were analyzed in the Non-Motorized Trail System Designation, White Reef Area, Red Cliffs National Conservation Area, DOI-BLM-UT-100-2008-0012-EA.

In 2013, a low, wood barrier fence, as shown in Figures 18 and 19, was installed. This barrier fence eliminated parking on the road shoulder, preventing narrowing of the road width and associated safety issues.

In 2013, the Red Cliffs Road was closed for several weeks due to flood damage at crossing #1 and #2, preventing access to the day use area and campground. Previous years have seen shorter closures of up to a week for removal of flood debris from the crossings.

4.3.8.2 Reasonably Foreseeable Action Scenario

The following RFAS identifies reasonably foreseeable future actions that would cumulatively affect the same resources in the CIA as the proposed action and alternatives.

- Shade shelters and their associated concrete pads at eight campsites will be replaced in 2014; three garbage dumpsters may be enclosed on three sides by walls of split faced concrete masonry blocks; stairs within the day use area may be replaced.

4.3.8.3 Cumulative Impact Analysis

It has been determined that cumulative impacts will be negligible as a result of the proposed action because other past, present, or reasonably foreseeable actions have or would have short-term impacts with long-term benefits to the quality of the visitor experience, particularly on safety.

As the no action alternative is a continuation of the existing situation, cumulative impacts could occur. These would be additional closures for flood damage or other hazardous conditions on the Red Cliffs Road., and increased parking conflicts and associated safety issues as a result of visitor growth.

5.0 CHAPTER FIVE—CONSULTATION AND COORDINATION

5.1 INTRODUCTION

The issue identification section of Chapter 1 identifies those issues analyzed in detail in Chapter 4. The ID Team Checklist provides the rationale for issues that were considered but not analyzed further. The issues were identified through the public and agency involvement process described in sections 5.2 and 5.3 below.

5.2 PERSONS, GROUPS, AND AGENCIES CONSULTED

Table 1: Persons, Agencies, and Organizations Consulted

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
US Fish and Wildlife Service	Consultation, under Section 7 of the Endangered Species Act (16 USC 1531)	As discussed in Section 4.2.1.5, the proposed action “may affect, but not likely to adversely affect” one federally-listed species. Consultation with USFWS will be conducted to obtain concurrence on this determination.
Utah State Historic Preservation Officer	Consultation for undertakings, as required by the National Historic Preservation Act (NHPA) (16 USC 470)	As discussed in Section 4.2.1.2, the proposed action would have “No Adverse Effect” to historic properties. Consultation with the Utah SHPO will be conducted, pursuant to Section 106 of the NHPA, to obtain concurrence with this determination.

5.3 EA PREPARERS

Table 2: BLM EA Preparers

Name	Title	Responsible for Preparation or Review of the Following Section(s) of this EA
Lynne Scott	Landscape Architect	Recreation; Floodplains; Wetlands/Riparian Zones; Vegetation Excluding USFW Designated Species; Water Quality
Dawna Ferris-Rowley	Red Cliffs NCA and Beaver Dam Wash NCA Manager	Technical Review, Cultural Resources, NEPA Adequacy
Tim Croissant	Biologist	Threatened, Endangered or Candidate Animal Species

6.0 REFERENCES

6.1 REFERENCES CITED

- Architectural and Transportation Barriers Compliance Board, United States Access Board. (2013) .
Architectural Barriers Act Accessibility Guidelines; Outdoor Developed Areas. Washington, DC:
U. S. Government Printing Office
- Bighorn Archeological Consultants, LLC. (2008) Cultural Resource Inventory of the Proposed White
Reef Park Trails and Amenities, Washington County, UT. Unpublished Technical Report on file SGFO-
BLM.
- Bureau of Land Management National Operations Center. (2013). *Leeds/Quail Creek Flood Event
Analysis*. Denver, CO: Author.
- Bureau of Land Management Recreation Management Oversight. (2003, May). *The BLM's Priorities for
Recreation and Visitor Services* Washington, D.C.: Author.
- Bureau of Land Management Recreation and Visitors Services. (2007, January). *A Unified Strategy to
Implement "BLM's Priorities for Recreation and Visitor Services Workplan (Purple Book)*.
Washington, D.C.
- Bureau of Land Management. (2013, August 23). *Geotechnical Engineering Report – Final Revision 1,
Red Cliff Structures, Red Cliffs Recreation Area* Bluffdale, Utah: Terracon Consultants, Inc.
- Bureau of Land Management Serious Accident Investigation Team (SAIT). (2005, January). Serious
Accident Investigation Factual Report. Santa Fe, NM: Bureau of Land Management New Mexico
State Office.
- Bureau of Land Management Serious Accident Investigation Team (SAIT). (2005, January). *Serious
Accident Investigation Management Evaluation Report*. Santa Fe, NM, Bureau of Land
Management, New Mexico State Office.
- Bureau of Land Management Utah State Office. (2005, April). *Response to Red Cliffs Recreation Site
Fatality Report*. Salt Lake City, Utah. Unpublished Report on file SGFO-BLM.
- Bureau of Land Management St. George Field Office. (1999). *St. George Field Office Record of Decision
and Resource Management Plan*.
- Natural Channel Design, Inc. (2005 November). *Landowner Handbook: A Road Map for Reconstruction,
Management, and Maintenance, Santa Clara River, Washington County, Utah*. Washington
County, Utah: Washington County Water Conservancy District.
- Natural Channel Design, Inc. (2007 October). *Virgin River Master Plan: A Road Map for Reconstruction,
Management, and Maintenance, Virgin River, Washington County, Utah*. Washington County,
Utah: Washington County Water Conservancy District.
- Peterson, Randy (2011). Red Cliff Campground Safety Assessment. Cedar City, Utah: Bureau of Land
Management Color Country District, Unpublished Report on file SGFO-BLM.

Washington County Habitat Conservation Plan Administration. (2006). *Development Protocols for Projects within the Red Cliffs Desert Reserve and/or Incidental Take Areas*. Washington County, Utah

Washington County Habitat Conservation Plan Administration. (2000). *Red Cliffs Desert Reserve Public Use Plan*. Washington County, Utah

Washington County, Utah. (1995). *Washington County, Utah, Desert Tortoise Incidental Take Permit Application/Documents, Part II, Habitat Conservation Plan*. Washington County, Utah.

6.2 ACRONYMS AND ABBREVIATIONS

ABA	Architectural Barriers Act
ABAAS	Architectural Barriers Act Accessible Standards
APE	Area of Potential Effect
BLM	Bureau of Land Management
CFP	Cubic Feet per Second
CIA	Cumulative Impact Area
CIP	Capital Improvement Projects
DMCIP	Deferred Maintenance and Capital Improvement Plan
DR	Decision Record
EA	Environmental Assessment
ENBB	Electronic Notification Bulletin Board
ESA	Endangered Species Act
FAMS	Facility Asset Management System
FAR	Federal Acquisition Regulation
FHA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of No Significant Impact
HCAC	Habitat Conservation Advisory Committee
HCP	Habitat Conservation Plan
ICP	Incidental Take Permit
IDT	IDT Members
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Properties
NOA	Notice of Availability
OHV	Off Highway Vehicle
PCE	Primary Constituent Elements
PI	Project Inspector
PUP	Public Use Plan
RCDR	Red Cliffs Desert Reserve
RCNCA	Red Cliffs National Conservation Area
RFAS	Reasonably Foreseeable Action Scenario
RMP	Resource Management Plan
SAIT	Serious Accident Investigation Team
SGFO	St. George Field Office
SHPO	State Historic Preservation Office
UDOT	Utah Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Service

APPENDICES

APPENDIX A INTERDISCIPLINARY TEAM CHECKLIST

Maps and preliminary construction drawings referenced in the checklist are not included here. More detailed maps are included in this EA and updated preliminary construction drawings are included in Appendix B.

INTERDISCIPLINARY TEAM CHECKLIST

Project Title: Red Cliffs Recreation Area Deferred Maintenance and Capital Improvement Projects

NEPA Log Number: DOI-BLM-UT-C030-2013-0010-EA

File/Serial Number:

Project Leader: Lynne Scott

Project Description: An Environmental Assessment is being prepared to evaluate the impacts of proposed deferred maintenance and capital improvement projects (CIP) in the Red Cliffs Recreation Area within the Red Cliffs National Conservation Area, Washington County, Utah. The proposed projects include those listed below with locations shown on Map #1.

The proposed timeline for the construction i.e. CIP projects would be during the summer-early fall months of 2014 (June – September), with work to be completed by one or more qualified contractors. The two bridges would be girder style, made of self-rusting steel, with wood decking. The bridge components would be fabricated by the manufacturer off site and hauled to job site for assembly and installation over Quail Creek. Fill materials for the bridges would be provided by the contractor, from off-site material sources, and trucked to the job site. Staging for contractor equipment and materials would be in the White Reef trailhead parking area and at a location adjacent to the Recreation Area paved roadway, as shown on Map 1.

A Section 404 permit will be obtained for this project, as will a UDOT permit for temporary construction vehicle access from I-15.

- Construction of a steel bridge at crossing #1 (see Preliminary Construction Drawing Crossing #1)
 - Bridge size: 75 foot length x 16 feet wide
 - Limits of construction: 0.95 acres
 - Cut volume: 35 CY
 - Fill volume: 4,560 CY
 - Deck height: approximately 22 feet above current low point of crossing
- Construction of a steel bridge at crossing #2 (see Preliminary Construction Drawing Crossing #2)
 - Bridge size: 25 foot length x 16 feet wide
 - Limits of construction: 0.33 acres
 - Cut volume: 129 CY
 - Fill volume: 385 CY
 - Deck height: approximately 7.5 feet above current low point of crossing
- Construction of new paved parking including an accessible space (see Map #2)
 - Limits of construction: 13,000 SF
 - Cut volume: 60 CY
 - Fill volume: 270 CY
 - Parking spaces: 30 including 1 van accessible
- Construction of expanded paved parking at existing pullout near campsite 12 (see Map #2)
 - Limits of construction: 2,400 SF
 - Parking spaces: 7-8
- Construction of expanded paved parking at existing area between campsites 10-11
 - Limits of construction: 1,400 SF
 - Parking spaces: 3
- Construction of an accessible picnic site and accessible route to site (see Map #2)
 - Surface disturbance: 1,100 SF
 - Accessible route: 73 feet long x 6 feet wide, concrete
 - Picnic site: 3 concrete accessible tables on concrete pads
- Construction of visitor contact station (see Map #3)

- Limits of construction: 13,000 SF
- Cut volume: 150 CY
- Fill volume: 140 CY
- Building: split face block with trim to match Adams House
- Configuration: Building in center of road with one traffic lane on either side with adequate space for small to medium vehicle U turn
- Construction of temporary construction vehicle access (see Map #4)
 - Access #2 surface disturbance: 4,000 SF, *or*
 - Access #2a surface disturbance: 6,540 SF
- Surface disturbance for temporary storage and temporary vehicle access (see Map #4)
 - Storage Area 1 surface disturbance: 18,000 SF
 - Storage Area 2 surface disturbance: 0 SF (area currently used for trailhead parking)
 - Access #1 surface disturbance: 0 SF (area currently used for access from I-15)

DETERMINATION OF STAFF: (Choose one of the following abbreviated options for the left column)

NP = not present in the area and not impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with potential for relevant impacts that need to be analyzed in detail in the EA

NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale column may include NI and NP discussions.

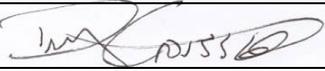
Determi- nation	Resource	Rationale for Determination	Signature	Date
RESOURCES AND ISSUES CONSIDERED (INCLUDES SUPPLEMENTAL AUTHORITIES APPENDIX 1 H-1790-1)				
NI	Air Quality	Dust emission levels could slightly increase during construction, however the impact is expected to minimal and only short term.	Dave Corry	9/3/13
NI	Greenhouse Gas Emissions	No Issue	Dave Corry	9/3/13
NI	Wastes (hazardous or solid)	No known issues.	Lynne Scott	1/2/14
PI	Water Resources/Quality (drinking/surface/ground)	During construction of the two water crossings, sediment will likely enter the drainage impacting the quality of the water. This impact is expected to be limited to the construction time only. Long term impacts are expected to be beneficial. Reducing the amount of vehicle traffic in and out of the drainage should help to reduce the amount of sediment that enters the water.	Dave Corry	9/3/13
NP	Areas of Critical Environmental Concern	The area is not within, adjacent to, or near any Areas of Critical Environmental Concern.	T. Croissant	9/23/13
PI	Cultural Resources	Historic period rock walls constructed in the mid-19 th century on Orson B. Adams farmstead are located along the Recreation Area access road, in close proximity to the proposed visitor contact station roadway expansion work. Class III inventory must be completed of this area to identify whether cultural resources are present within the Area of Potential Effect (APE) for the proposed cut and fill needed to expand the road width around the proposed visitor contact station. The other projects are proposed within and adjacent to the stream channel/riparian zone of Quail Creek and within the developed campground and day use area. No National Register of Historic Places eligible or listed	D. Ferris-Rowley	9/3/13

Determination	Resource	Rationale for Determination	Signature	Date
		properties or other cultural resources occur within the APE for these projects, based on prior Class III level field inventories.		
NI	Native American Religious Concerns	Consultations will be initiated with the Paiute Indian Tribe of Utah, the Shivwits Band, the Hopi Tribe, and other American Indian Tribes that claim cultural affiliation to southwestern Utah concerning the project proposals. To date, no Native American religious concerns have been identified for this area, based on prior consultations related to the development of the Recreation Area facilities and the White Reef trailhead.	D. Ferris-Rowley	9/3/13
NI	Paleontology	A number of scientifically important dinosaur trackways are exposed in the Navajo sandstone within and near campground of the Recreation Area. None of the proposed deferred maintenance projects would impact these resources, as the tracksites are not in close proximity to the construction or maintenance activities.	D. Ferris-Rowley	9/3/13
NP	Geology / Mineral Resources/Energy Production	No mining operations or resources present.	K. Voyles	12/4/13
NP	Environmental Justice	According to the EPA Region VIII, State of Utah, Environmental Justice Map, the region has been categorized as a minority population area of 10-20% and a poverty population area of 10-20%. 5-10% of the population speaks English "Less than Well". This data shows that low income and high minority populations are generally located in the St. George/Santa Clara/Washington areas in locations not adjacent to BLM managed lands. (see http://epamap14.epa.gov/ejmap/entry.html , 11/29/12). No minority or economically disadvantaged communities or populations are present which could be affected by the proposed action or alternatives.	T. Croissant	9/23/13
NI	Socio-Economics		K. Voyles	12/4/13
NP	Farmlands (Prime or Unique)		D. Corry	9/3/13
NI	Soils	During construction a small amount of soil at the construction sites would be impacted, however the actual amount of soil disturbance would be quite small and should not rise to a level that would require addressing in this EA.	D. Corry	9/3/13
PI	Floodplains	Some of the proposed work is located within the 100 year floodplain of Quail Creek.	L. Scott	1/2/13
PI	Wetlands/Riparian Zones	During construction of the two water crossings it is likely some riparian vegetation will be impacted. This impact is expected to be limited to the construction time only. Long term impacts are expected to be beneficial. Reducing the amount of vehicle traffic in and out of the drainage should help to reduce impacts to the riparian vegetation.	D. Corry	9/3/13
NI	Fish and Wildlife Excluding USFW Designated Species	The following Utah BLM Sensitive Species may occur in the project area: Arizona toad (permanent resident, fairly common), Great Plains toad (permanent resident,	T. Croissant	1/3/14

Determination	Resource	Rationale for Determination	Signature	Date
		<p>fairly common), bald eagle (winter resident, uncommon), ferruginous hawk (transient, fairly common), Big free-tailed bat (summer resident, rare) Fringed myotis (permanent resident, uncommon), Spotted bat (permanent resident, rare), and Townsend's Big-eared bat (permanent resident, fairly common). Within the creek, desert sucker may be present as well.</p> <p>The project area supports a variety of small mammals, birds, and reptiles. Wildlife that typically would be found in this area include: badgers, antelope ground squirrels, kangaroo rats, deer mice, desert wood rats, mourning doves, common ravens, wrens, house finches, side-blotched lizards, whiptails and sagebrush lizards. Infrequently, larger animals such as raptors, coyotes, gray fox, and mule deer may pass through the area. During construction, some small mammals, birds, and reptiles (including BLM Sensitive Species) could be disturbed or killed and some dens or nests destroyed. Larger animals would be temporarily disturbed and displaced to adjacent habitats.</p> <p>Once construction is completed, larger animals would return to the area. Any disturbance to small mammals, birds, and reptiles would be short-term lasting several years. Overall impacts to populations of BLM Sensitive Species, and general wildlife within the project area, would not be measurable.</p>		
NI	Migratory Birds	<p>The project area is popular with birdwatchers, with 99 species documented. Western bluebird, bushtit, lesser night-hawk, ash-throated flycatcher, house sparrow and bufflehead are some of the more common species seen. Some short term disturbances could cause these species to abandon nests or otherwise disperse. However, this would be of no real impacts due to the fact that these are relatively common species, the project is highly localized, and is of short duration. The season following the work the habitat will be essentially unchanged and the species will resume nesting as previously.</p>	T. Croissant	1/3/14
NI	Threatened, Endangered or Candidate Plant Species	<p>There are no Dwarf bear-poppy (<i>Arctomecon humilis</i>), Gierisch globemallow (<i>Sphaeralcea gierishcii</i>), Hermit/Shivwits milkvetch (<i>Astragalus ampullaroides</i>), Holmgren milkvetch (<i>A. holmgreniorum</i>) or Siler Pincushion cactus (<i>Pediocactus sileri</i>) in or within 1 km of the project area.</p> <p>There is a small patch of gypsiferous soil about 500 meters north of the Adam's house, about 150 meters west of the road. The patch has not been shown to support any individuals of Holmgren milkvetch. This project would have no impact on any Threatened or Endangered plants.</p>	T. Croissant	9/23/13
PI	Threatened, Endangered or Candidate Animal Species	<p>The visitor contact station, Crossing #1, Staging Area #1 and Access point #2 are within or near areas where Mojave/ Agassiz's desert tortoise (<i>Gopherus agassizii</i>) have been seen. A portion of the cut-slope at the visitor contact station is critical habitat for the tortoise as well. Work crews will need tortoise awareness training and a</p>	T. Croissant	9/23/13

Determination	Resource	Rationale for Determination	Signature	Date
		tortoise monitor will need to be present at least part of the time, possibly more if any of the work occurs during the active season.		
PI	Vegetation Excluding USFW Designated Species	Vegetation would be damaged, destroyed, or removed due to the development of the proposed deferred maintenance projects.	Jackie Roaque	9/5/13
NP	Woodland / Forestry	Forest resources are not present in the project area; woody riparian vegetation, including mature Fremont's cottonwood trees and willows are present in the riparian area and would be impacted. Impacts identified under Riparian Resources.	D. Corry	9/3/13
NI	Fuels/Fire Management	Previous construction at the White Reef trailhead ignited a wildfire. Workers on this project need to be aware of the risk of wildfire and be equipped with fire extinguishers and/or other fire suppression equipment. Work that creates heat or sparks needs to be done in places where there are no fuel to ignite, or use spotters or other methods to prevent ignition. This issue can be partially addressed through the tortoise awareness training, which includes a segment on the risks of wildfire. If this topic is adequately addressed in terms and conditions, it probably does not need to be analyzed in Ch. 3 and 4 of the EA.	T. Croissant	9/23/13
NI	Invasive Species/Noxious Weeds (EO 13112)	There are some scattered small infestations of scotch thistle known to occur in the project area. Any equipment used in developing projects should be properly cleaned before moved to project site in order to prevent introduction of any other weed species.	Jackie Roaque	9/5/13
NI	Lands/Access	There is a buried phone line authorized by right-of-way grant UTU-68595 issued to Quest Corp that is located along the subject road. There is a r/w issued to the BLM for a buried waterline UTU-63291 located along the subject road. Consultation with the grant holders is recommended to locate buried lines and avoid damage during construction.	Teresa Burke	8/27/13
NP	Livestock Grazing	Livestock grazing is not permitted at the location of the proposed deferred maintenance projects.	Jackie Roaque	9/5/13
NI	Rangeland Health Standards	The proposed projects should have little to no effect on the meeting of rangeland health standards	Jackie Roaque	9/5/13
PI	Recreation	There will be significant impacts to recreation during construction, with both recreational and commercial users being affected. The campground and day use area typically receive 34,000 visitors annually with \$55,000 in revenues. Commercial recreation visits total between 300 and 400. Visitation is largely seasonal, with Spring and Fall receiving the bulk of visitors. Construction is slated to begin in June and end in September avoiding the busy visitation periods.	D. Kiel/ L. Scott	12/4/13
NI	Visual Resources	The entire project site as well as the surrounding area, has a Visual Resource Management Class III rating. The management objectives for VRM Class III are: 1) The level of change to the landscape can be moderate.	D. Kiel	12/4/13

Determination	Resource	Rationale for Determination	Signature	Date
		<p>2) Management activities may attract attention, but <u>should not dominate</u> the view of the casual observer.</p> <p>3) Any changes should repeat the basic elements found in the natural landscape – form, line, color, & texture. Based on the project description, the footprint of this project may dominate the view of the casual observer, but only during the construction phase. Once the project is complete, it will meet VRM Class III objectives.</p>		
NLCS				
NI	National Conservation Areas	This project will contribute to the management of the NCA over the longer term.	T. Croissant	9/23/13
NP	National Historic Trails (Old Spanish Trail)	No Congressionally-designated historic trails occur within the project area.	D. Ferris-Rowley	12/4/13
NP	National Recreational Trails (Gooseberry)	The Gooseberry Mesa National Recreation Trail is not in the vicinity of the project area	D. Kiel	12/4/13
NP	Wild and Scenic Rivers	There are no designated, suitable, or eligible Wild and Scenic River segments within the project area	D. Kiel	12/4/13
NI	Wilderness/WSA	There are no designated wilderness areas or WSA's within the project area. The Cottonwood Canyon Wilderness Area is 0.78 miles away, but will not be impacted	D. Kiel	12/4/13
NI	Areas with Wilderness Characteristics	The current inventory shows that there are wilderness characteristics within 0.34 miles of the project area. Outstanding opportunities for solitude may be temporarily impacted during construction activities, the impacts would be so slight that they would not require analysis in the EA.	K. Voyles	12/4/13

FINAL REVIEW:			
Reviewer Title	Signature	Date	Comments
Environmental Coordinator		2/26/14	
Authorized Officer		2/26/14	

APPENDIX B PRELIMINARY CONSTRUCTION DRAWINGS

The following preliminary construction drawings are not in their final form and are only a selection from the entire construction document package meant to best illustrate the proposed action.

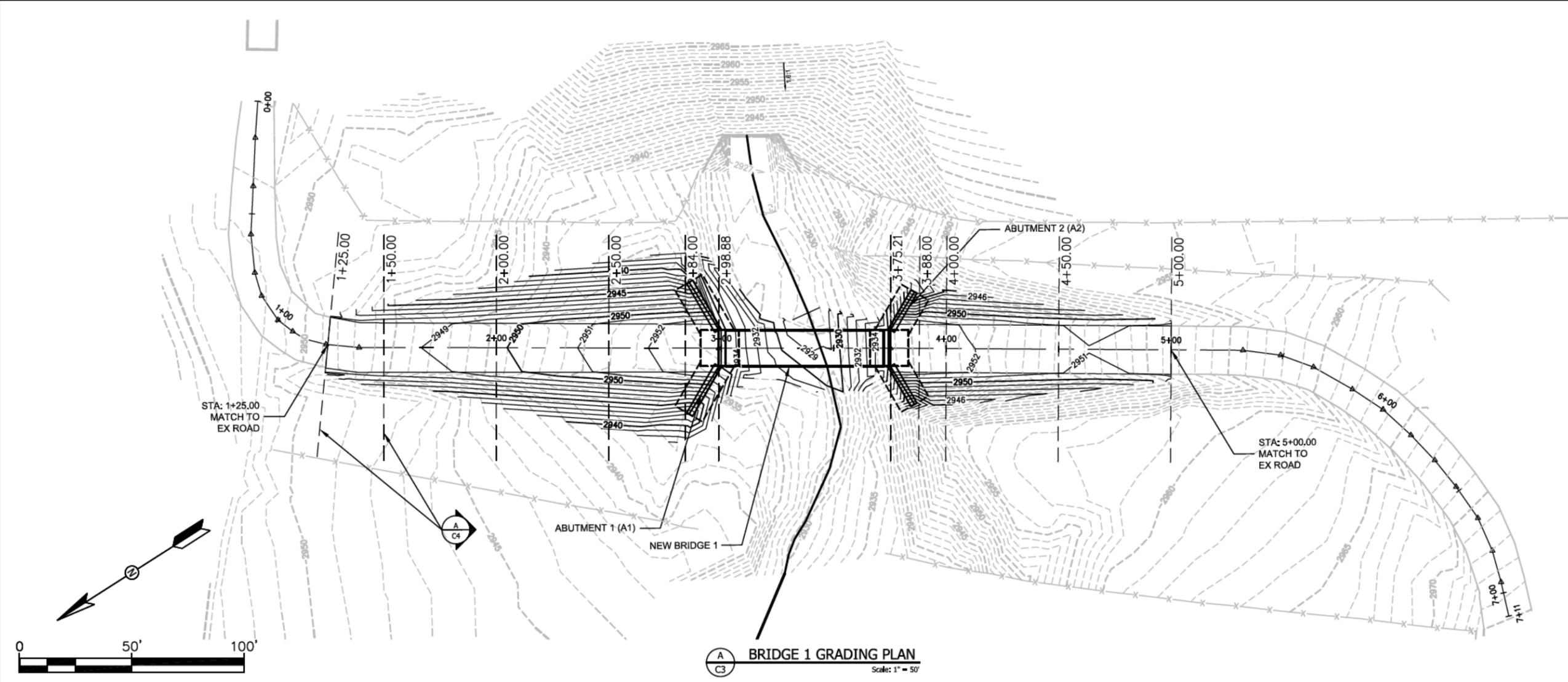


UTAH

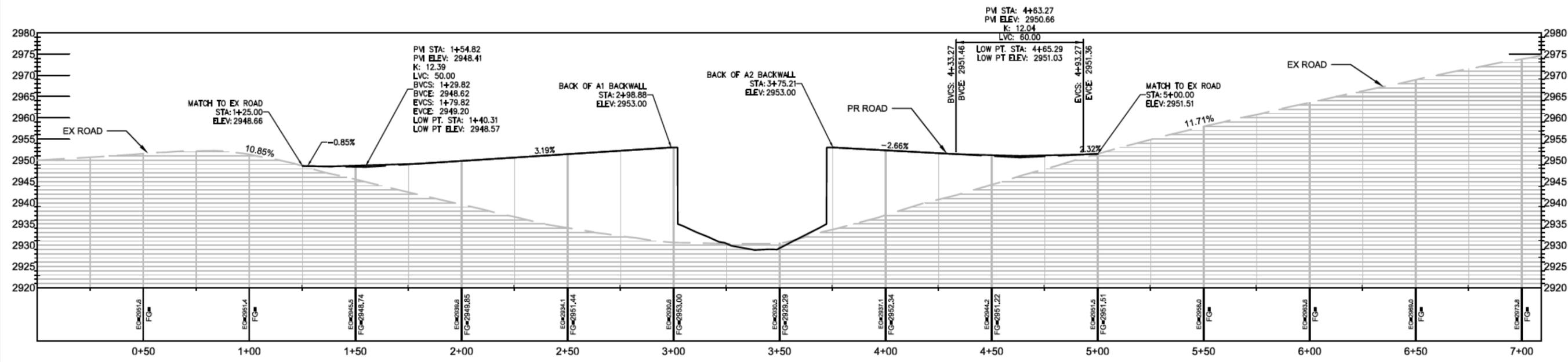
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BRIDGE 1 GRADING PLAN
RED CLIFFS BRIDGE CONSTRUCTION

COLOR COUNTY DISTRICT

PROJECT NO:	DESIGN OFFICE:	DESIGNED BY:	DRAWN BY:	CHK'D BY:	APPROVED BY:	DATE:	MARK:	DESCRIPTION:	DATE:	APPROVED:
	NOC	DFS	DFS			12/2013				



BRIDGE 1 GRADING PLAN
Scale: 1" = 50'



BRIDGE 1 ROAD PROFILE
Scale: 1" = 50'



UTAH

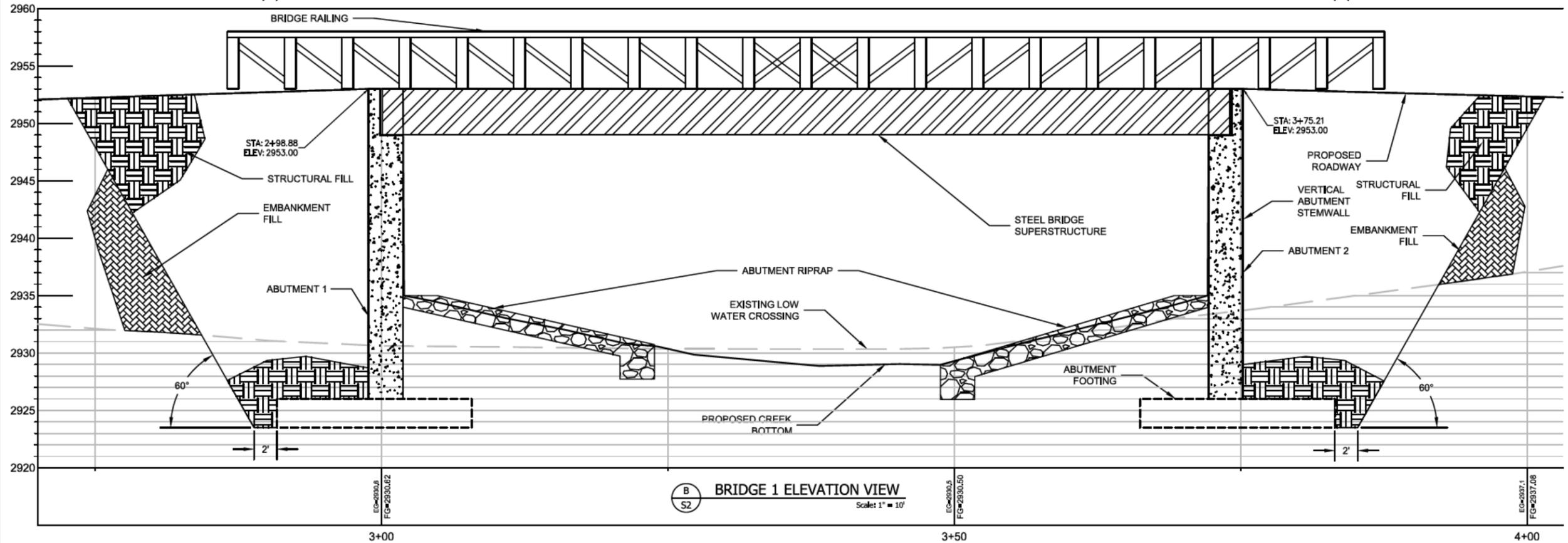
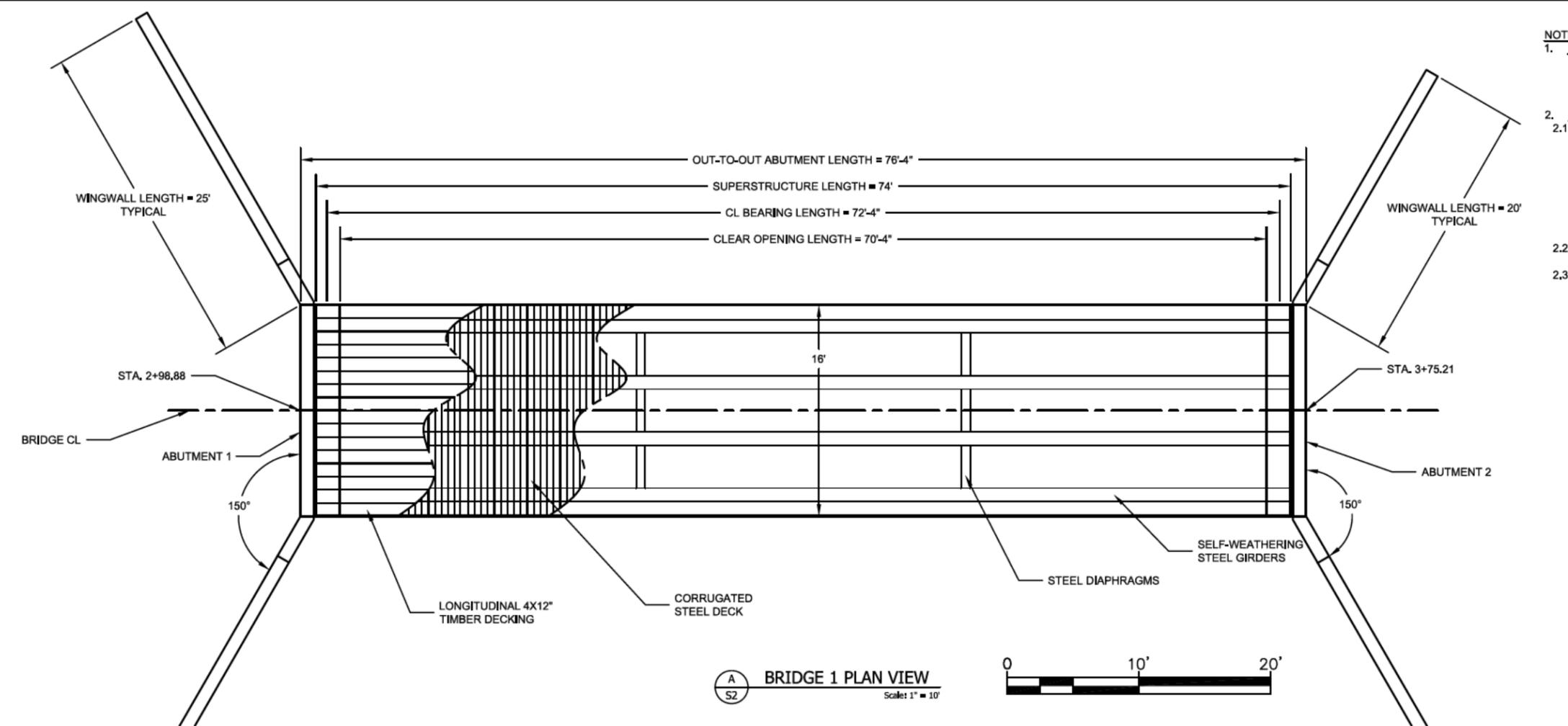
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

BRIDGE 1 PLAN & ELEVATION

RED CLIFFS BRIDGE CONSTRUCTION

COLOR COUNTRY

- NOTES:**
- BRIDGE SUPERSTRUCTURE:** THE CONTRACTOR SHALL FURNISH AND INSTALL TWO PREFABRICATED STRUCTURAL STEEL SUPERSTRUCTURES. SEE BLM SUPPLEMENTAL SPECIFICATIONS.
 - BRIDGE SUBSTRUCTURE:**
 - BRIDGE 1 ABUTMENT FOUNDATIONS** SHALL BEAR ENTIRELY ON COMPETENT BEDROCK. BOTTOM ELEVATION OF FOUNDATIONS SHALL BE ELEVATION 2924 FT. IF COMPETENT BEDROCK IS NOT FOUND AT ELEVATION 2924 FT., THEN EXCAVATION SHALL CONTINUE UNTIL COMPETENT BEDROCK IS FOUND BELOW ELEVATION 2924 FT.
 - CLEAR BEDROCK SUBGRADE OF ALL LOOSE FRAGMENTS.
 - BEDROCK SURFACE SHALL BE HORIZONTAL AND SHOULD CONSIST OF CLEAN, DURABLE ROCK.



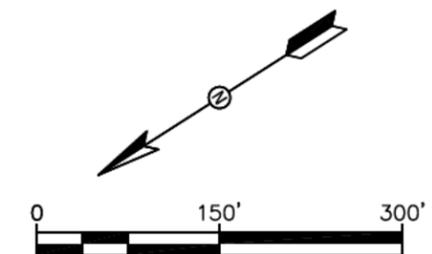
PROJECT NO:	DESIGN OFFICE:	DESIGNED BY:	DRAWN BY:	CHK'D BY:	APPROVED BY:	DATE:	MARK:	DESCRIPTION:	DATE:	APPROVED:
		DFS	DFS			12/2013				



NOTES:

1. **PROJECT LOCATION:**
 - 1.1. BRIDGE 1 - SE¼ NW¼ SECTION 23 T41S R59E SALT LAKE MERIDIAN
 - 1.2. BRIDGE 2 - SE¼ NE¼ SECTION 15 T41S R59E SALT LAKE MERIDIAN
2. **SPECIFICATIONS:** THE BLM DESIGN DRAWINGS, SPECIFICATIONS AND REFERENCES WITHIN SHALL GOVERN THE CONSTRUCTION OF THIS PROJECT. THEY INCLUDE: "AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH ED. 2012 WITH 2013 INTERIM REVISIONS", "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS FP-03", AND BLM SUPPLEMENTAL SPECIFICATIONS.
3. **SITE ACCESS:** THE ROAD TO THE SITE PASSES UNDER BOTH DIRECTIONS OF INTERSTATE 15 THROUGH TWO SEPARATE CONCRETE BOX CULVERT STRUCTURES. THE POSTED VERTICAL CLEARANCE IS 11'-9". TEMPORARY ACCESS OFF OF THE INTERSTATE HAS BEEN OBTAINED FOR PREVIOUS PROJECTS AT RED CLIFFS FROM UDOT AND FHWA TO ALLOW LARGER VEHICLES TO ACCESS THE SITE. TWO POSSIBLE OFF-HIGHWAY ACCESS POINTS ARE SHOWN TO ACCESS EITHER SIDE OF THE BRIDGE. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING OFF-HIGHWAY ACCESS FROM UDOT AND FHWA.
4. **STAGING AREA:**
 - 4.1. STAGING AREA #1 - LOCATED IN THE EXISTING PARKING AREA FOR THE WHITE REEF TRAIL TO THE NORTH OF BRIDGE 1. THE EXISTING FENCING AROUND THE PARKING AREA SHALL NOT BE DISTURBED. STAGING AREA #1 ALSO INCLUDES AN UNFENCED AREA TO THE EAST, CLOSER TO THE INTERSTATE. SILT FENCE SHALL BE INSTALLED AROUND THE UNFENCED PORTION OF THE STAGING AREA.
 - 4.2. STAGING AREA #2 - LOCATED ON THE WEST SIDE OF THE HILL TO THE SOUTH OF BRIDGE 1. THE CONTRACTOR SHALL INSTALL SILT FENCE AROUND STAGING AREA #2. THE EXISTING BARB WIRE FENCE THAT RUNS THROUGH STAGING AREA #2 MAY BE REMOVED DURING CONSTRUCTION, BUT SHALL BE REINSTALLED UPON PROJECT COMPLETION.

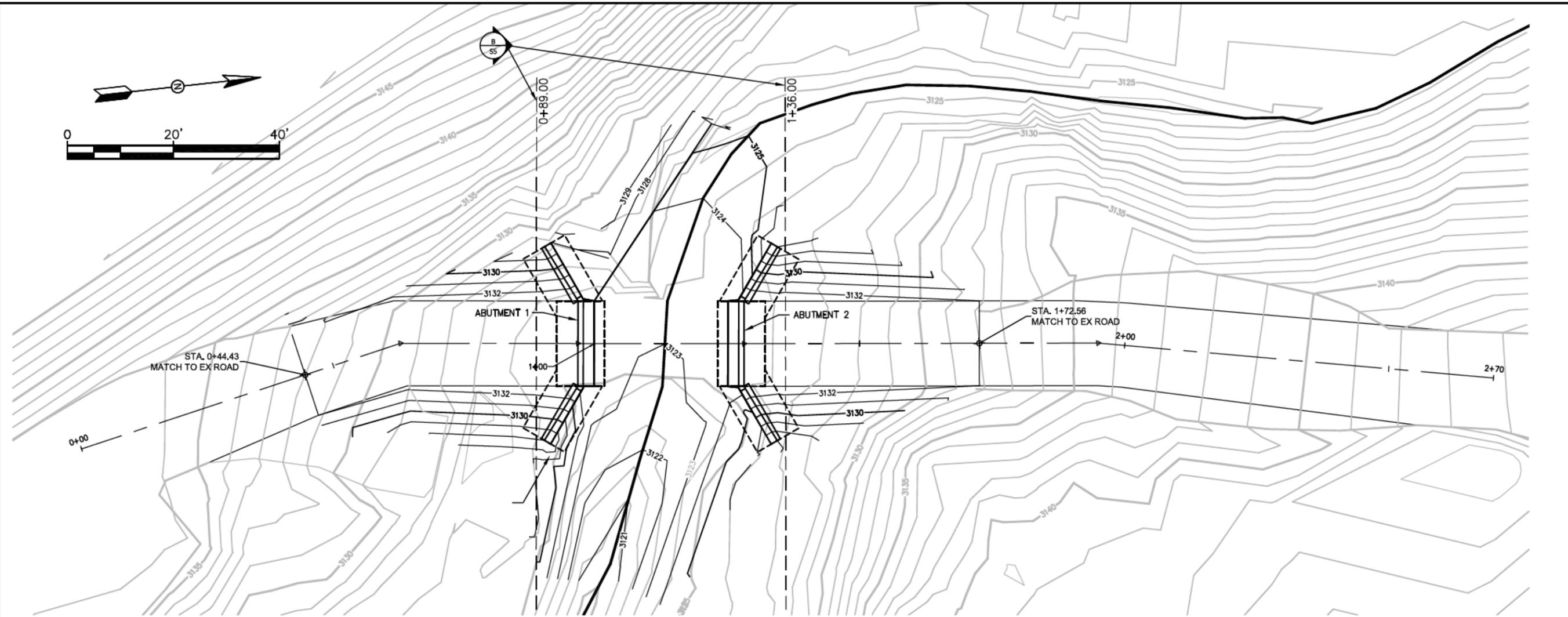
BRIDGE 1 STAGING PLAN
Scale: 1" = 150'



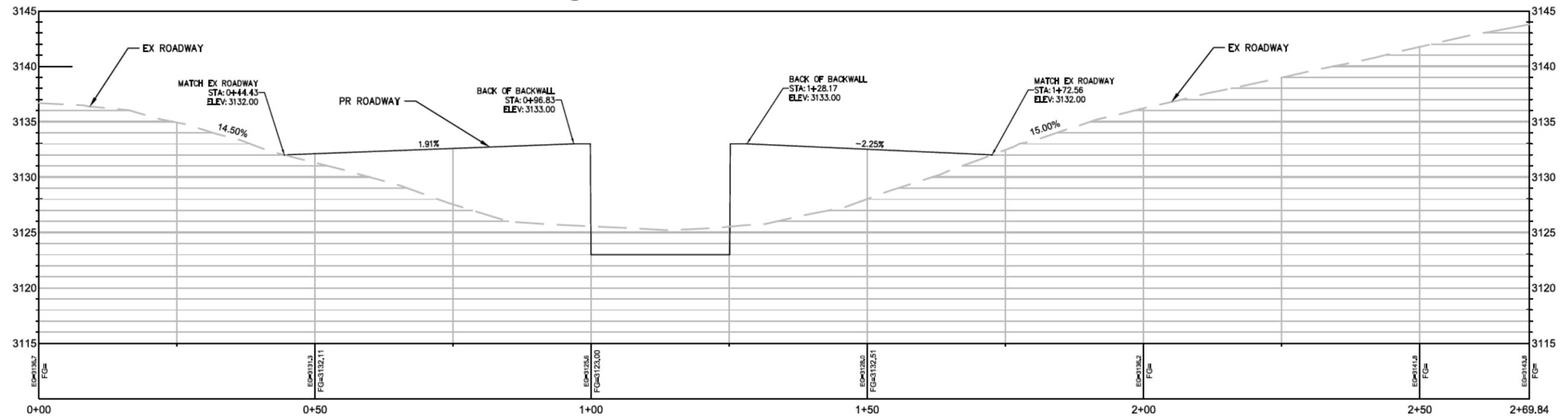
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BRIDGE 1 STAGING AREA
RED CLIFFS BRIDGE CONSTRUCTION

COLOR COUNTY DISTRICT
UTAH

PROJECT NO:	DESIGN OFFICE:	DESIGNED BY:	DRAWN BY:	CHK'D BY:	APPROVED BY:	DATE:	MARK:	DESCRIPTION:	DATE:	APPROVED:
	NOC	DFS	DFS			12/2013				



A
C6
BRIDGE 2 GRADING PLAN
Scale: 1" = 20'



B
C6
BRIDGE 2 ROAD PROFILE
1" = 20'



UTAH

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BRIDGE 2 GRADING PLAN
RED CLIFFS BRIDGE CONSTRUCTION

COLOR COUNTRY

PROJECT NO:	DESIGN OFFICE:	DESIGNED BY:	DRAWN BY:	CHK'D BY:	APPROVED BY:	DATE:	MARK:	DESCRIPTION:	DATE APPROVED:
	NOC	DFS	DFS			12/2013			



UTAH

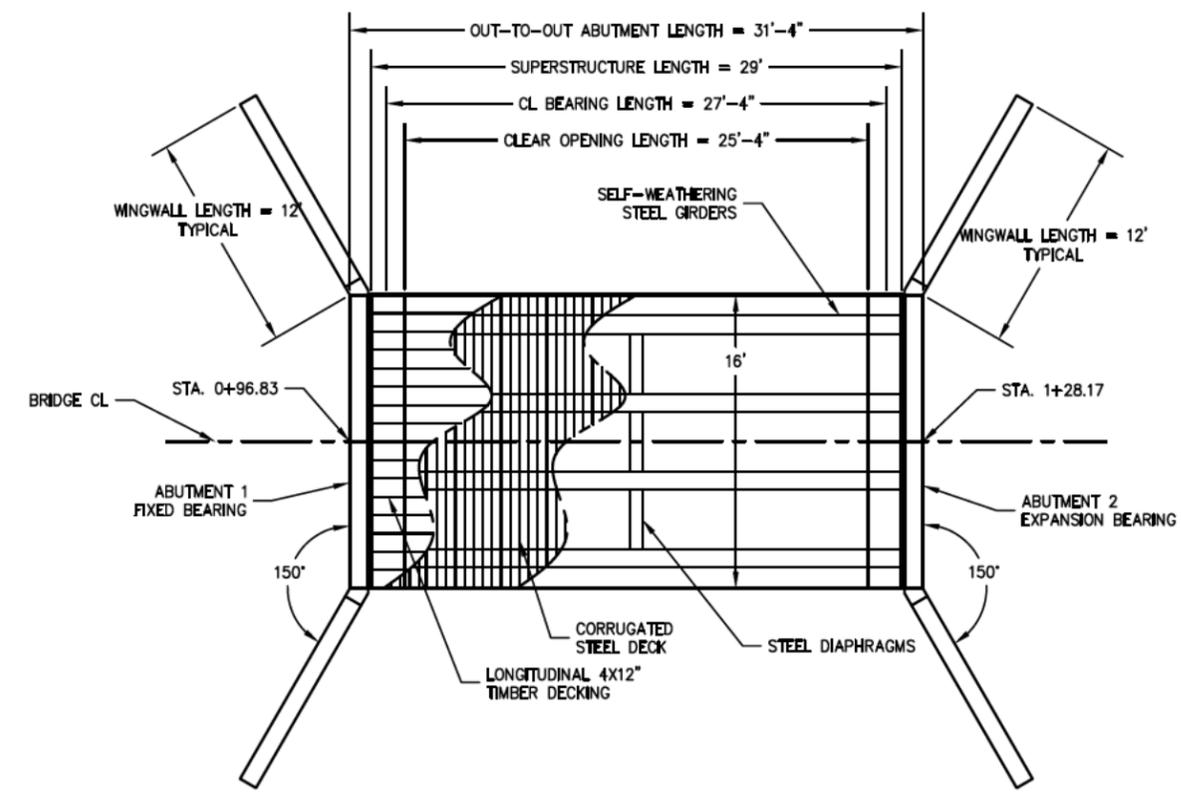
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BRIDGE 2 PLAN & ELEVATION
RED CLIFFS BRIDGE CONSTRUCTION

COLOR COUNTRY

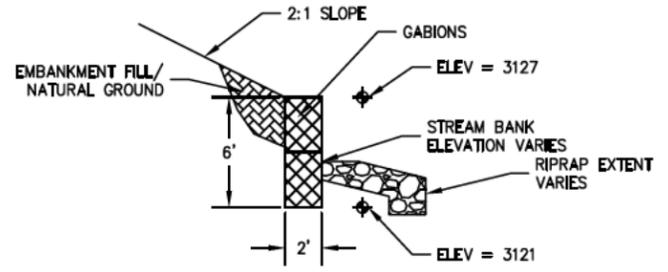
PROJECT NO:	DESIGN OFFICE:	DESIGNED BY:	DRAWN BY:	CHK'D BY:	APPROVED BY:	DATE:	DESCRIPTION:	MARK:	DATE:	APPROVED:
	NOC	DFS	DFS			12/2013				

BRIDGE 2 SUBSTRUCTURE NOTES:

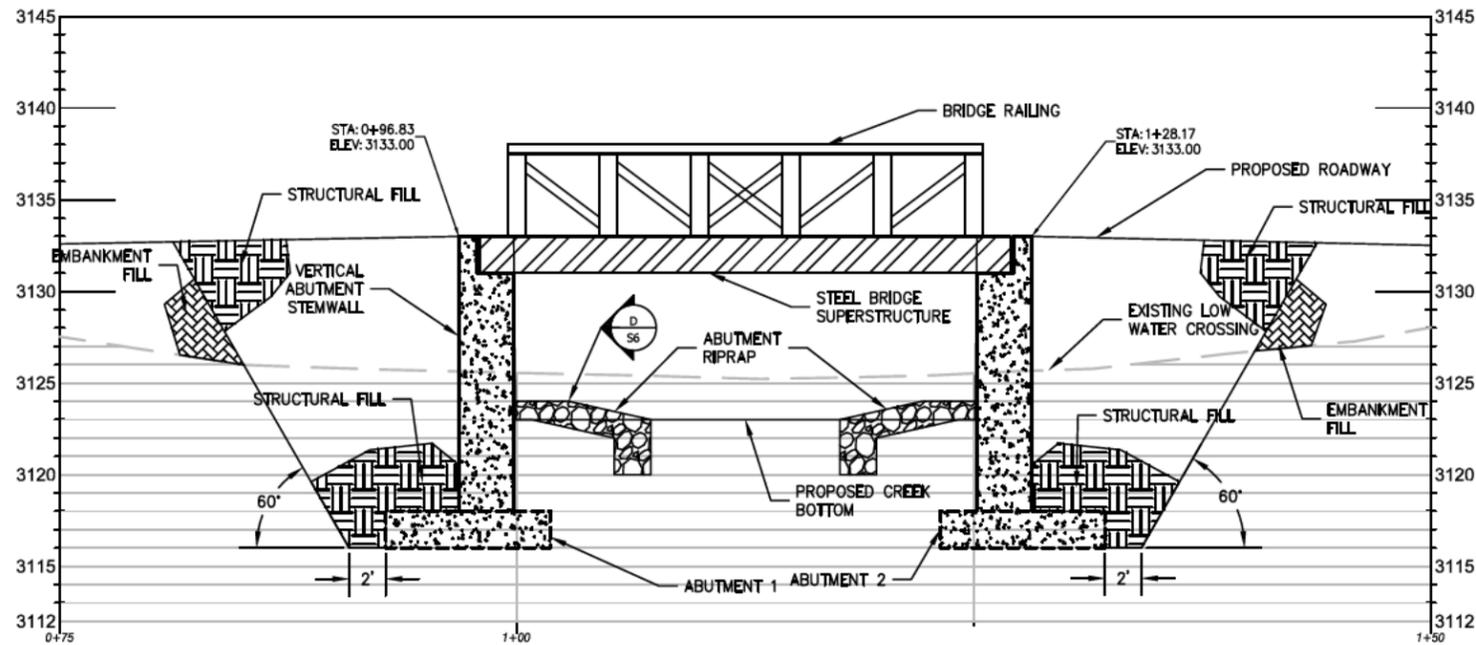
1. BRIDGE 2 ABUTMENT AND WINGWALL FOUNDATIONS SHALL BEAR ENTIRELY ON PROPERLY PREPARED DENSE TO VERY DENSE NATIVE GRANULAR SOIL.
2. THE BOTTOM FOOTING ELEVATION FOR ABUTMENTS 1 AND 2 SHALL BE 3116.00 FT. IF UNSUITABLE SOIL IS ENCOUNTERED AT THE BOTTOM FOOTING ELEVATION, THEN:
 - 2.A. THE EXCAVATION SHALL BE EXTENDED DEEPER TO SUITABLE SOIL AND THE FOOTINGS BEAR ON THE SUITABLE MATERIAL OR;
 - 2.B. STRUCTURAL FILL SHALL BE PROPERLY PLACED AND COMPACTED BELOW THE FOOTING ELEVATION. PLACEMENT OF FILL BELOW FOOTINGS SHALL EXTEND Laterally BEYOND ALL EDGES OF THE FOOTINGS AT LEAST 8 INCHES PER FOOT OF OVEREXCAVATION DEPTH BELOW FOOTING BASE.
3. UNIFORM SUBGRADE CONDITIONS SHALL BE EXPOSED BELOW THE ENTIRE FOOTING. FOUNDATIONS SHALL NOT BE SUPPORTED ON A COMBINATION OF BEDROCK AND STRUCTURAL FILL OR NATIVE SOIL.
4. IF BEDROCK IS ENCOUNTERED BELOW A PORTION OF THE FOOTING, THEN THE EXCAVATION SHALL BE EXTENDED DEEPER TO ALLOW FOR A MINIMUM 18 INCHES OF STRUCTURAL FILL BELOW THE ENTIRE FOOTING AND EXTENDING Laterally BEYOND THE EDGES OF THE BOX AT LEAST ONE FOOT.
5. COBBLES AND BOULDERS EXPOSED AT FOOTING ELEVATION SHALL BE REMOVED AND REPLACED WITH STRUCTURAL FILL TO AVOID POINT LOADING ON FOUNDATIONS.



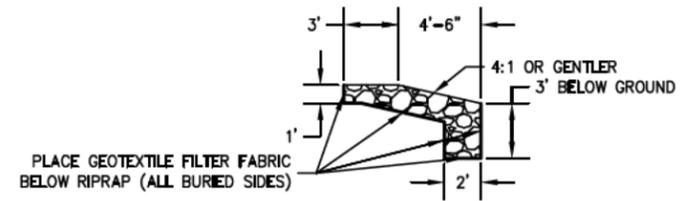
A BRIDGE 2 PLAN VIEW
Scale: 1" = 10'



C BRIDGE 2 GABION SECTION
Scale: 1" = 10'

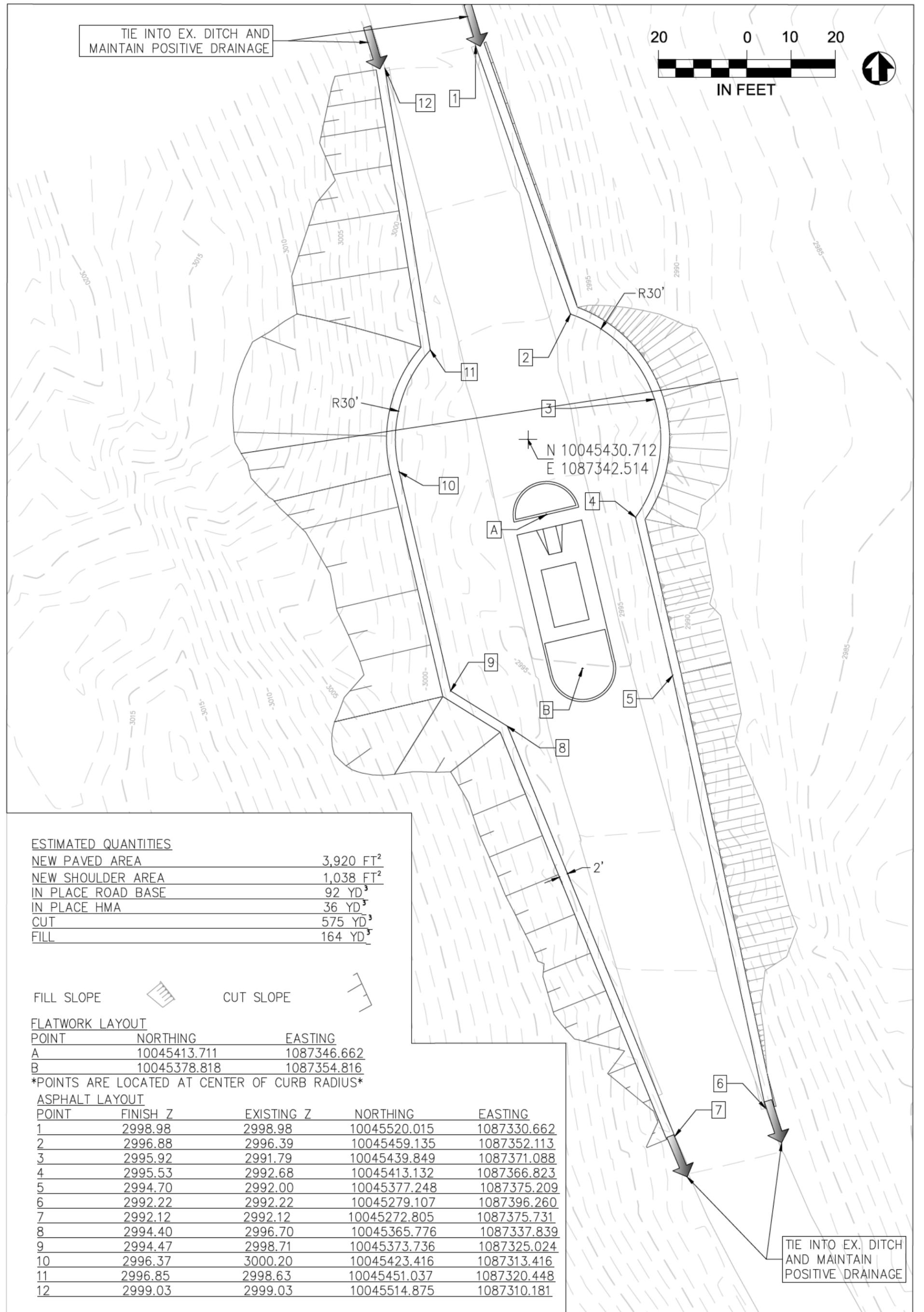
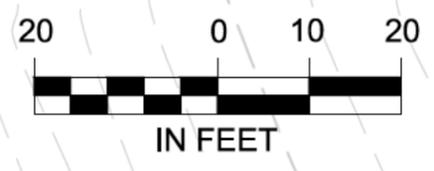


B BRIDGE 2 ELEVATION VIEW
Scale: 1" = 10'



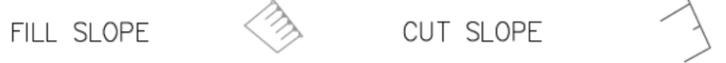
D BRIDGE 2 RIPRAP DETAILS
Scale: 1" = 10'

TIE INTO EX. DITCH AND MAINTAIN POSITIVE DRAINAGE



ESTIMATED QUANTITIES

NEW PAVED AREA	3,920 FT ²
NEW SHOULDER AREA	1,038 FT ²
IN PLACE ROAD BASE	92 YD ³
IN PLACE HMA	36 YD ³
CUT	575 YD ³
FILL	164 YD ³



FLATWORK LAYOUT

POINT	NORTHING	EASTING
A	10045413.711	1087346.662
B	10045378.818	1087354.816

POINTS ARE LOCATED AT CENTER OF CURB RADIUS

ASPHALT LAYOUT

POINT	FINISH Z	EXISTING Z	NORTHING	EASTING
1	2998.98	2998.98	10045520.015	1087330.662
2	2996.88	2996.39	10045459.135	1087352.113
3	2995.92	2991.79	10045439.849	1087371.088
4	2995.53	2992.68	10045413.132	1087366.823
5	2994.70	2992.00	10045377.248	1087375.209
6	2992.22	2992.22	10045279.107	1087396.260
7	2992.12	2992.12	10045272.805	1087375.731
8	2994.40	2996.70	10045365.776	1087337.839
9	2994.47	2998.71	10045373.736	1087325.024
10	2996.37	3000.20	10045423.416	1087313.416
11	2996.85	2998.63	10045451.037	1087320.448
12	2999.03	2999.03	10045514.875	1087310.181

TIE INTO EX. DITCH AND MAINTAIN POSITIVE DRAINAGE

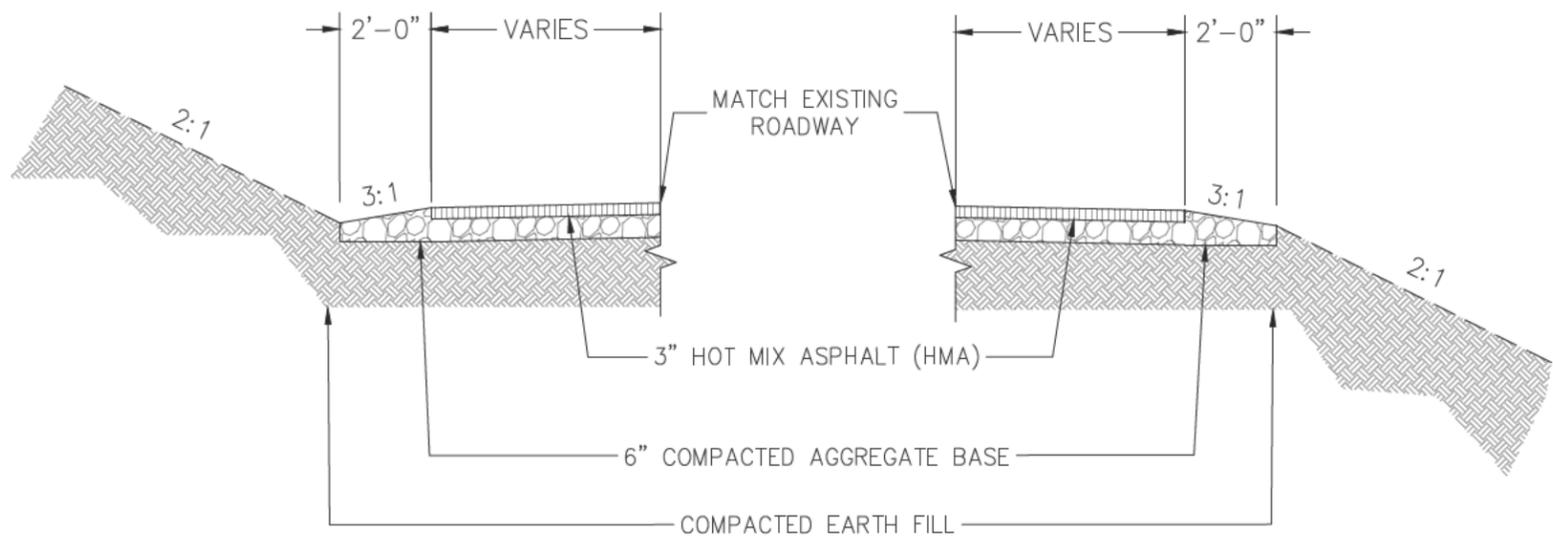
SHEET 10 OF 20

PROJECT NO:	
DESIGN OFFICE: COLOR COUNTRY	
DESIGNED BY: BLK	
DRAWN BY: BLK	
CHK'D BY:	
APPROVED BY:	
DATE: 6/2014	

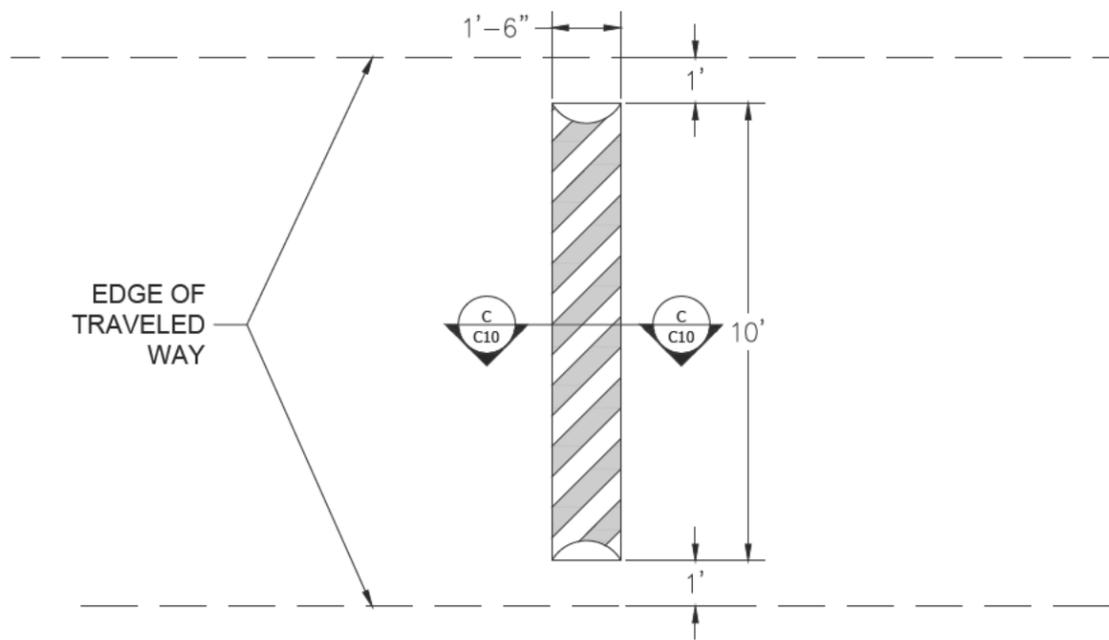
MARK	DESCRIPTION	DATE	APPROVED

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
ENTRANCE STATION GRADING
RED CLIFFS BRIDGE CONSTRUCTION

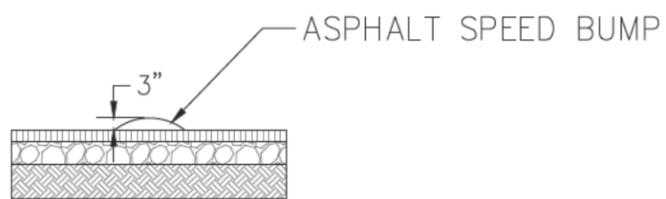




A
C10 **ENTRANCE STATION CROSS SECTION**
Scale: 1":2'



B
C10 **SPEED BUMP**
Scale: 1":2'



C
C10 **SPEED BUMP CROSS SECTION**
Scale: 1":2'

NOTE:

- STRIPING SHALL CONSIST OF 8" YELLOW PAINT ALTERNATING WITH 8" GAP FOR THE FULL WIDTH OF THE SPEED BUMP.
- CLEAN SURFACE AND APPLY TACK COAT PRIOR TO INSTALLING SPEED BUMP.

SHEET 11 OF 20 C10	PROJECT NO:				
	DESIGN OFFICE: COLOR COUNTRY				
	DESIGNED BY: BLK				
	DRAWN BY: BLK				
	CHK'D BY:				
	APPROVED BY:				
	DATE: 1/2014	MARK	DESCRIPTION	DATE	APPROVED

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

ENTRANCE STATION DETAILS

RED CLIFFS BRIDGE CONSTRUCTION

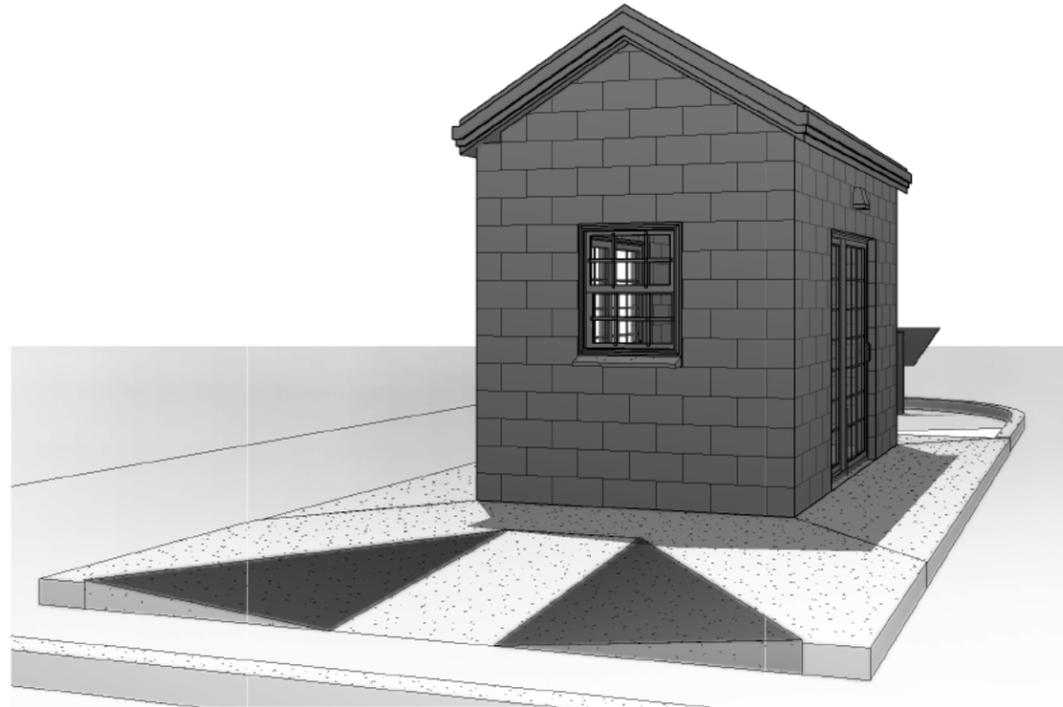
COLOR COUNTRY DISTRICT

UTAH

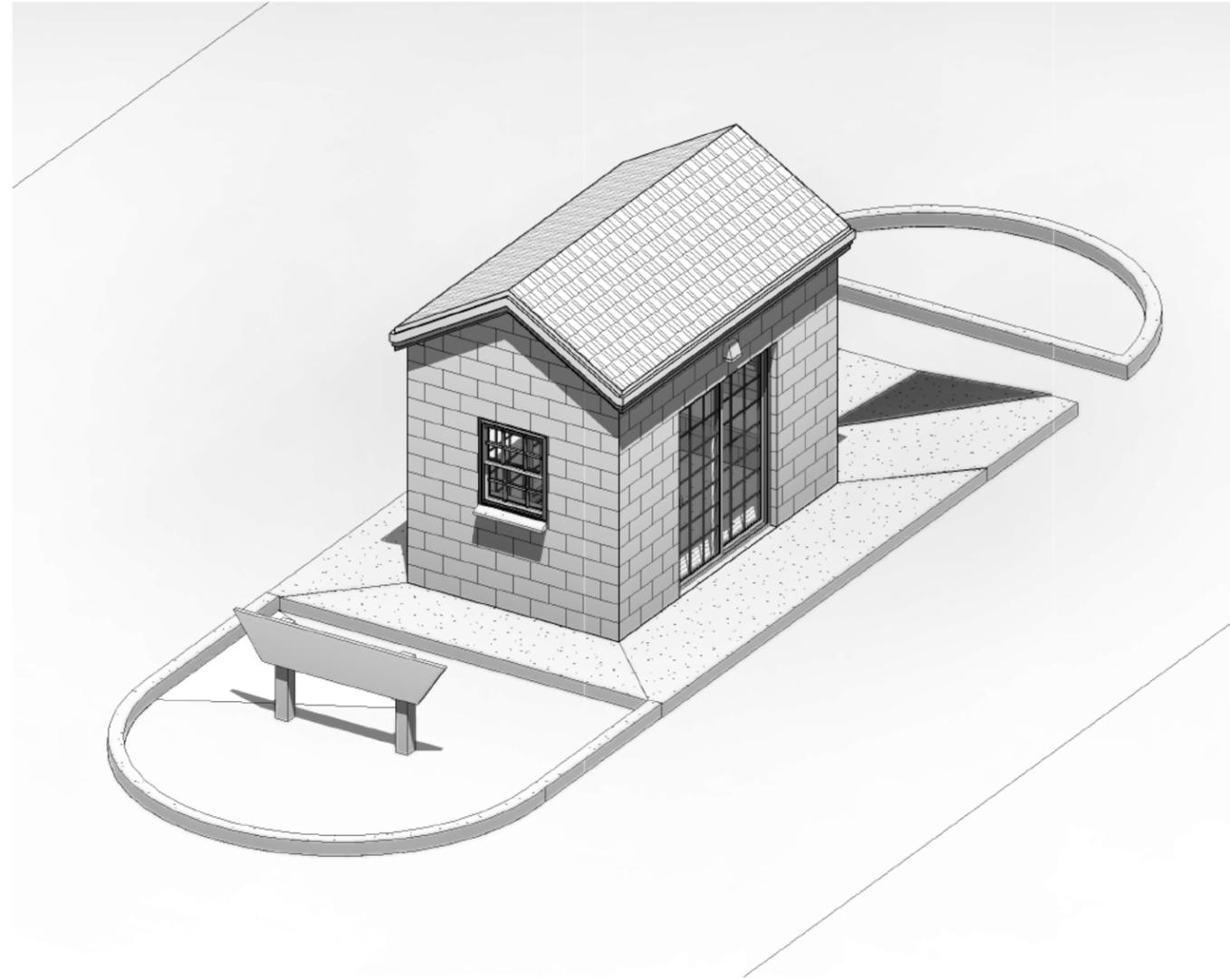




① 3D View 1



② 3D View 2



③ 3D View 3

Note: All views shown are for informational purposes only.



Red Cliffs Visitor Contact Station
 Color Country District
 United States Department of the Interior - Bureau of Land Management
 St. George, Utah

Sheet Title:
3D Views

Drawn by: Stephen Cole
 Checked by: Checker
 Approved by: Approver

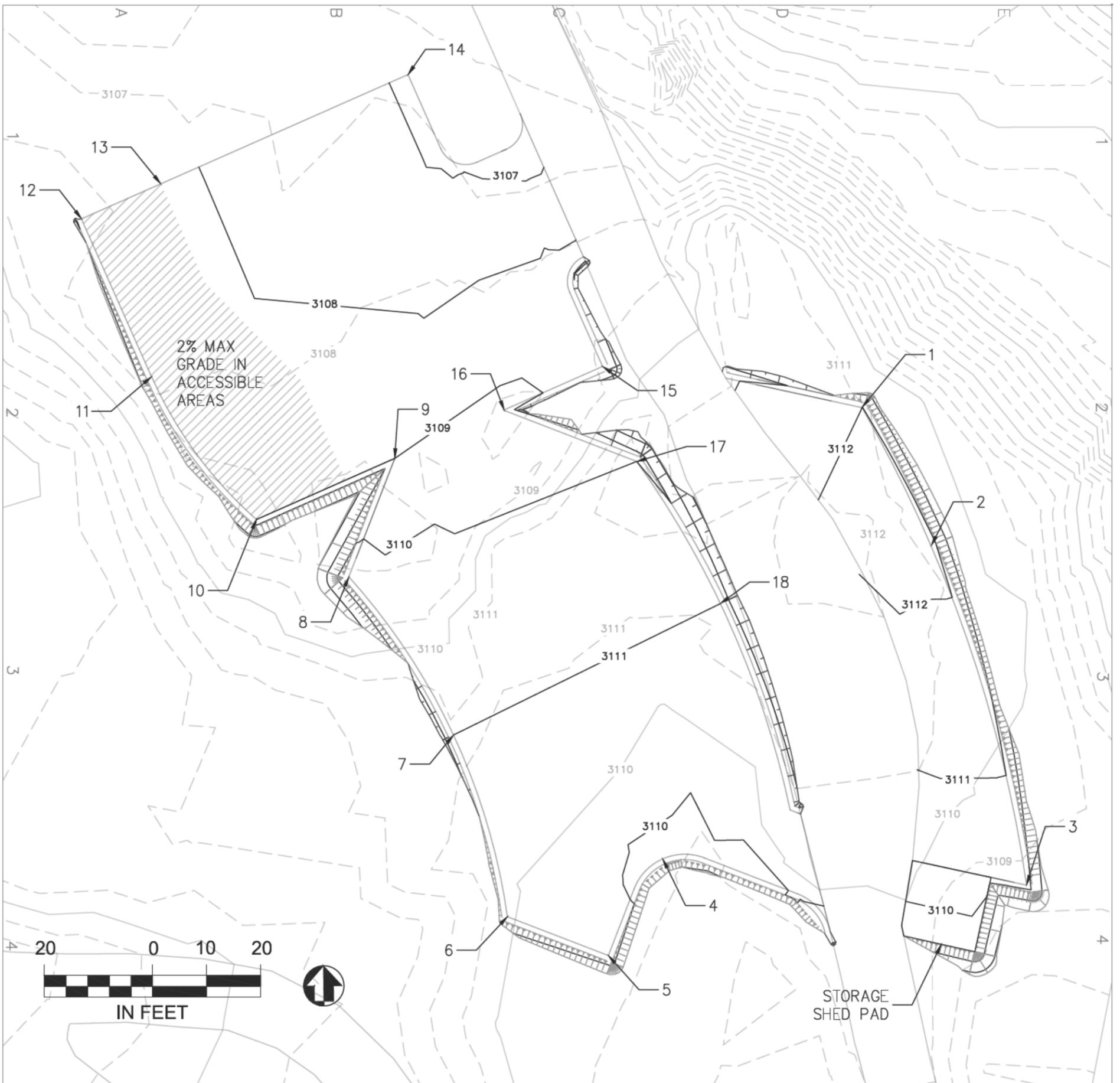
Revisions:	Date	Description

Professional Stamp

BLM Project #
 Issue Date: 12/12/2013

A-901

Sheet of 12
 Red Cliffs Visitor
 Contact Station



ESTIMATED QUANTITIES

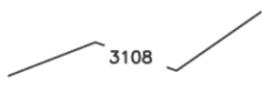
NEW ASPHALT SURFACE AREA	12,143 FT ²
IN PLACE COMPACTED BASE	238 YD ³
IN PLACE HMA	112 YD ³
CUT	240 YD ³
FILL	50 YD ³
GEOTEXTILE FABRIC	8,000 FT ²

POINT	FINISH GRADE	EXISTING GRADE
1	3112.0	3111.1
2	3112.3	3110.8
3	3110.4	3108.5
4	3109.8	3109.2
5	3110.3	3109.3
6	3110.8	3110.3
7	3111.0	3111.2
8	3110.5	3108.1
9	3109.0	3108.1
10	3109.0	3107.8
11	3108.6	3108.0
12	3108.3	3108.2
13	3108.2	3107.5
14	3106.9	3106.9
15	3109.1	3108.6
16	3109.2	3109.0
17	3110.0	3112.2
18	3111.0	3111.2

NOTES:

- PAVING IN THIS AREA SHALL CONSIST OF 3" OF HMA OVER 6" OF COMPACTED AGGREGATE.
- EXCESS MATERIAL SHALL BE WASTED ON SITE AS APPROVED BY COR.
- GEOTEXTILE FABRIC SHALL BE USED WHEN SANDY CONDITIONS PERSIST AND AGGREGATE MUST BE PLACED ON SAND. CONDITIONS AND QUANTITIES SHALL BE VERIFIED BY COR PRIOR TO PLACING.
- STORAGE SHED PAD SHALL CONSIST OF 6" OF COMPACTED AGGREGATE.

FINISH GRADE



FILL SLOPE



EXISTING GRADE



CUT SLOPE



PROJECT NO:		MARK	DESCRIPTION	DATE	APPROVED
	DESIGN OFFICE: COLOR COUNTRY DO				
	DESIGNED BY: BLK				
	DRAWN BY: BLK				
	CHK'D BY:				
	APPROVED BY:				
	DATE: 1/23/2014				

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

ACCESSIBLE SOUTH PARKING GRADING
RED CLIFFS CAMPGROUND IMPROVEMENTS



ST GEORGE FIELD OFFICE

UTAH

SHEET 12 OF 19

NOTES:

- SIDEWALK SHALL BE 4" COLORED CONCRETE WITH FIBER MESH.
- PICNIC AREA SHALL BE 5" COLORED CONCRETE WITH FIBER MESH AND 4x4-W1.4x1.4 WWF.

ESTIMATED QUANTITIES

SIDEWALK	438 FT ²
PICNIC AREA FLATWORK	472 FT ²
THICKENED EDGE	107 LF



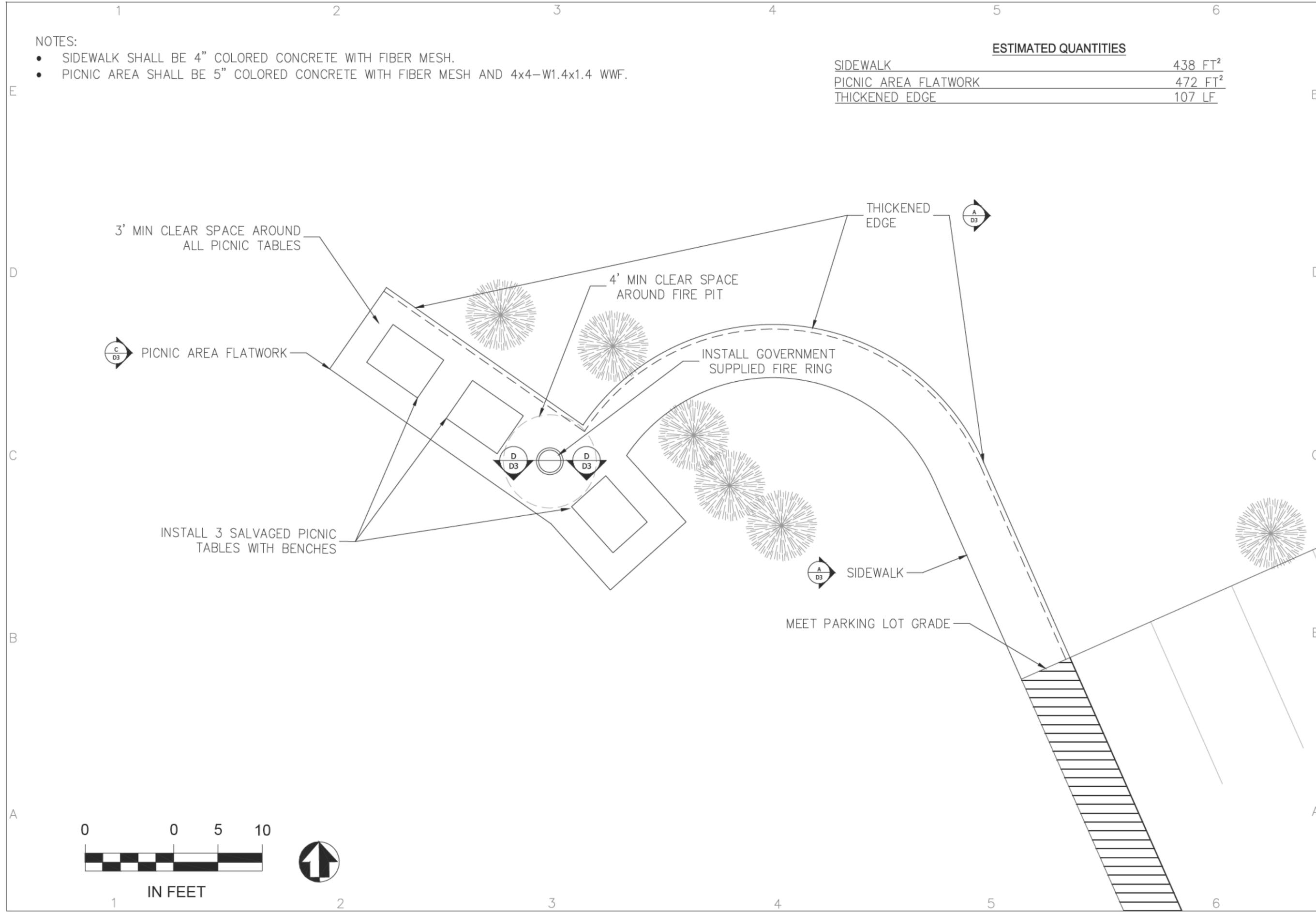
UTAH

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
ACCESSIBLE PICNIC AREA LAYOUT
RED CLIFFS CAMPGROUND IMPROVEMENTS

ST. GEORGE FIELD OFFICE

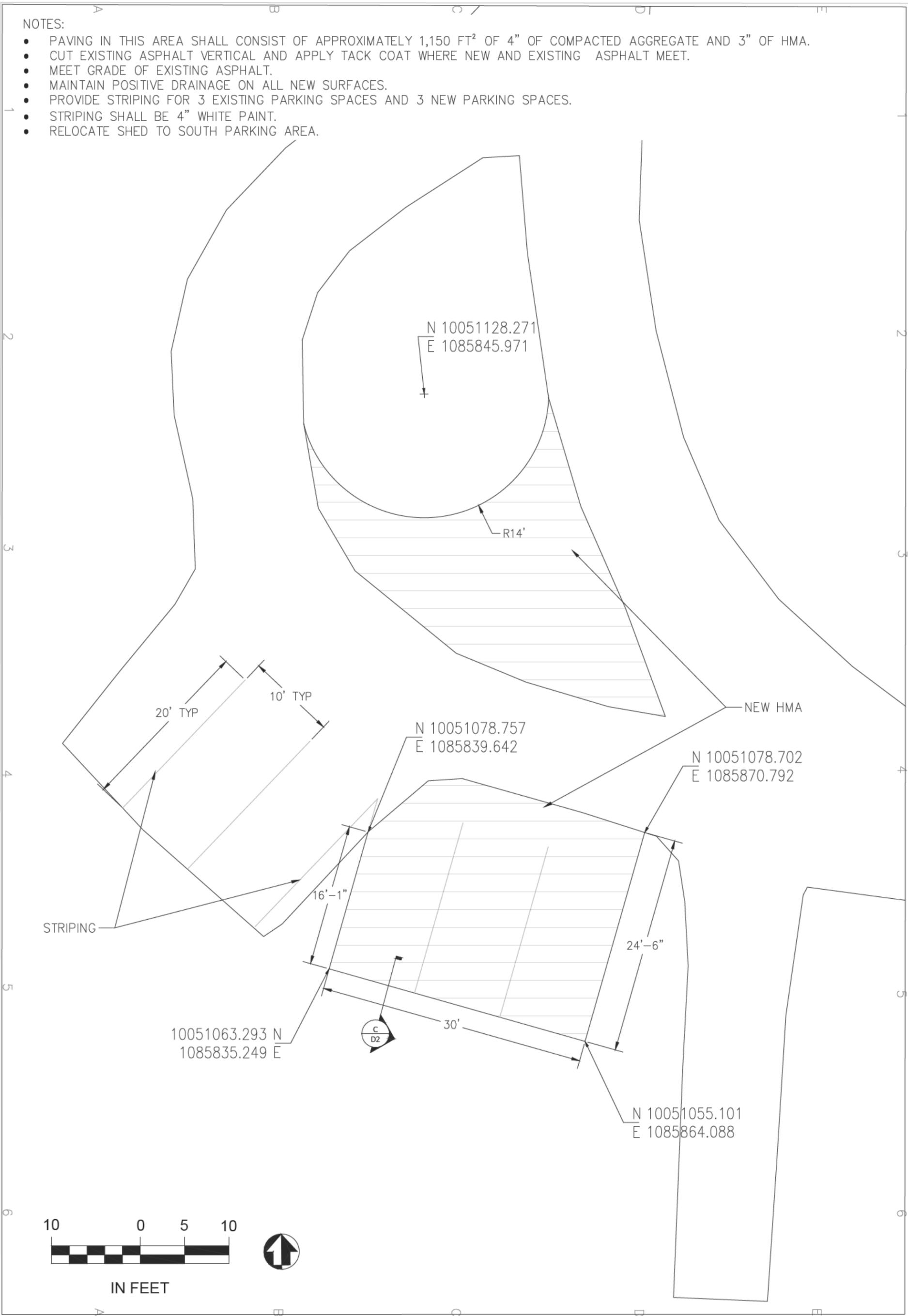
MARK	DESCRIPTION	DATE	APPROVED

PROJECT NO:
DESIGN OFFICE: COLORADO DO
DESIGNED BY: BLK
DRAWN BY: BLK
CHK'D BY:
APPROVED BY:
DATE: 12/13/2013



NOTES:

- PAVING IN THIS AREA SHALL CONSIST OF APPROXIMATELY 1,150 FT² OF 4" OF COMPACTED AGGREGATE AND 3" OF HMA.
- CUT EXISTING ASPHALT VERTICAL AND APPLY TACK COAT WHERE NEW AND EXISTING ASPHALT MEET.
- MEET GRADE OF EXISTING ASPHALT.
- MAINTAIN POSITIVE DRAINAGE ON ALL NEW SURFACES.
- PROVIDE STRIPING FOR 3 EXISTING PARKING SPACES AND 3 NEW PARKING SPACES.
- STRIPING SHALL BE 4" WHITE PAINT.
- RELOCATE SHED TO SOUTH PARKING AREA.



PROJECT NO:	
DESIGN OFFICE: COLOR COUNTRY DO	
DESIGNED BY: BLK	
DRAWN BY: BLK	
CHK'D BY:	
APPROVED BY:	
DATE: 1/23/2014	

UNITED STATES DEPARTMENT OF THE INTERIOR
 BUREAU OF LAND MANAGEMENT

NORTH PARKING LAYOUT

RED CLIFFS CAMPGROUND IMPROVEMENTS

ST GEORGE FIELD OFFICE



SHEET 8 OF 19