

Report on OHV Planning and Design for Railroad Buttes and Bessey

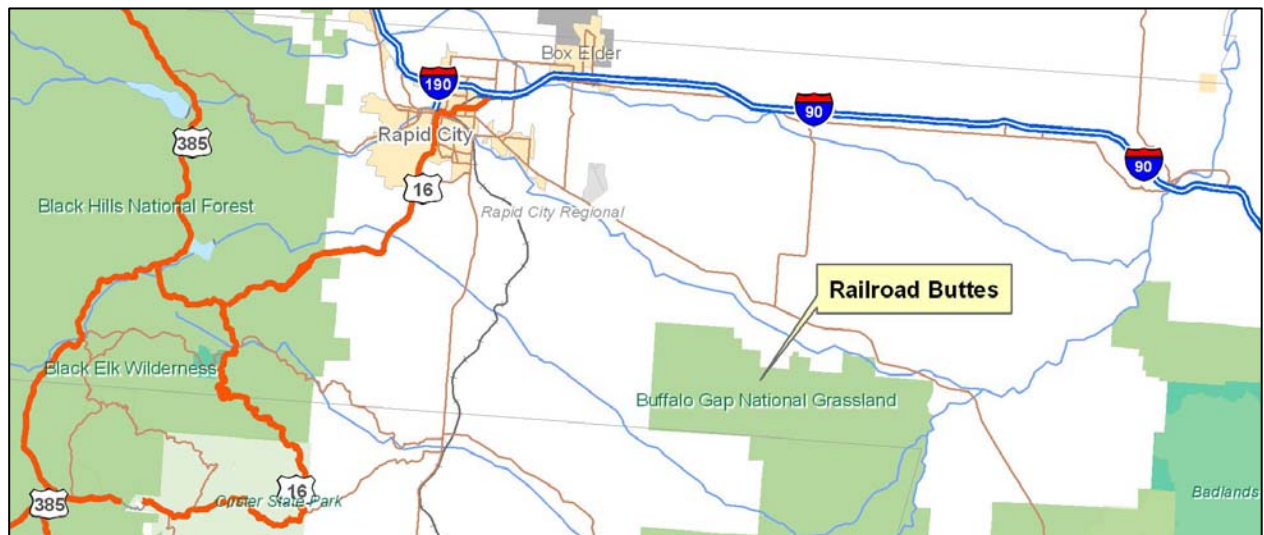
Final 8/21/09

Introduction

Railroad Buttes and Bessey Unit are popular off-highway vehicle (OHV) destinations. Due to the popularity of these areas for OHV recreation, the U.S. Forest Service (USFS) decided to address several aspects of managing these areas for OHV use. To accomplish this task, EDAW-AECOM was contracted under an IDIQ contract with the USFS. The project was performed from November 2008 to May 2009; the process and outcomes for each of these study areas are described separately below.

Railroad Buttes Off-Highway Vehicle Area

The purpose of this project was to provide conceptual designs for two trailhead parking areas, trail connections from the trailheads, and delineate open OHV riding areas for beginner, intermediate, and advanced riding levels. The project complemented the ongoing forest-wide travel management plan and environmental impact statement (EIS). Railroad Buttes is located in Buffalo Gap National Grassland, which is part of Nebraska National Forest. The study area is located 26 miles southeast of Rapid City, South Dakota.



Project Need

- Meet current and future demands for motorized recreation
- Provide limited open play areas for motorized recreation
- Provide a more logical and interconnected trail network

- Reduce user created routes and shortcutting
- Meet USFS standards for trailhead design and safety
- Limit access points and County Road 459 crossings

Project Objectives

- Develop a concept plan for open riding areas
- Provide trail connections to open riding areas
- Reduce impacts associated with motorized recreation
- Design trailheads for OHV use

Public Involvement

A series of three public meetings were held in Rapid City, South Dakota to engage the public in developing and evaluating OHV solutions. The first meeting introduced the purpose of the project, and meeting participants were asked to share issues or opportunities they have related to the purpose of the project. The purpose of the second public meeting was to present preliminary concept designs and plans for the trailheads and open riding areas, and to solicit feedback from the public. At the third



meeting, another draft of the designs and plans were presented, and the public again had the opportunity to comment. All three meetings were well attended and showed that OHV enthusiasts are well organized and interested in continuing OHV use in the Railroad Buttes area. Participants represented individuals and OHV clubs, including the Off-Road Riders Association, Air Force Riding Club, South Dakota OHV Association, and Twisted Customs Rock Crawlers.

The following summarized list of comments was made by the public at one or more of the meetings.

Public Comments on Open Riding Areas and Connecting Routes

- Use more cattle grates and fewer gates
- Consider a second parking area east of County Road
- Need varied trails, easy to hard
- Plan confines off-road riding area
- Extend the west side open riding area down to mixed-use road
- Need enough area to keep busy riding for a full day

- Need open riding areas with steep terrain
- Give me a reason to stay in the open riding areas. Create or enhance features that will create an entertaining ride, for example:
 - Jumps
 - Loops
 - Flat track
 - Winding trails
- Consider 50" or greater mixed-use route to advanced open riding area
- Make sure to keep in mind trails for full-size vehicles
- I think you should leave it like it is and close down trails and areas that are overused. It would be a lot cheaper to manage and a lot less chance for accidents. If you reduce everyone into riding in the small open riding areas, you are going to have a lot more accidents
- Add trails that go to the east and make loops
- Expand open areas to avoid concentrated use, and single track looping trails for motorcycles only east of the riding area

Public Comments on Trailhead Designs

- Locate shelters closer to parking
- Provide at least one loading ramp for pickups
- Post the speed limit in and around the trailhead
- Move overflow parking closer to the main road
- Leave the routes and access to users
- Where is the camping area for RVs?
- Provide more trailer parking
- Area for open riding next to the trailhead should be expanded to prevent expected congestion and visibility for riders

Project Outcomes

Open Riding Areas and Trail Connections

The travel management plan for the Forest is expected to designate routes for motorized recreation and eliminate most open cross-country riding. The Railroad Buttes area provides some limited areas for "open riding." Open riding areas provide a unique opportunity for visitors to challenge themselves and enjoy a



“creative” riding experience, which is difficult to provide on designated trails. The objective is to provide a diversity of open riding experiences that provide enough area and challenges. The open areas need to be located to avoid impacts to natural and cultural resources, other land uses, administrative uses, and other recreational activities. It’s also important to delineate the open riding areas to prevent expansion by riders. Adequate trail connections need to be provided to prevent shortcutting and the creation of social trails by riders outside designated open areas. Figure 1 illustrates the proposed open riding areas, trails, and trailhead locations.

The following table summarizes the proposed open riding areas for Railroad Buttes:

Type of Open Riding Area	Use Allowed	Acres
Beginner	50-inch wide or less vehicles	1.2
Beginner Practice Track	50-inch wide or less vehicles	1.5
Hill Climb	50-inch wide or less vehicles	9.0
Intermediate	50-inch wide or less vehicles	20.7
Large Intermediate	50-inch wide or less vehicles	901.5
Advanced	Open to all vehicles	736.8
Total Acres of Open Riding		1671.0

Trailhead Parking Areas

Railroad Buttes Main Trailhead

A series of draft designs were prepared to improve the existing parking area located at the north end of the Railroad Buttes area on the west side of County Road 459. The trailhead location can be seen on Figure 1. The current parking area has a native dirt surface, which has erosion issues and is not usable when it rains or snows. The parking area is not delineated or organized, which has lead to an increasingly large impacted area. The existing level of public use of the parking area requires that the USFS provide (at a minimum) basic facilities, such as a delineated area, toilets, and information. Access to and from the current parking area also creates a dangerous situation adjacent to the county road, with little control over how the public accesses the parking area. Lindsey Draw is an intermittent stream located between the parking area and a popular hill climb just west. Access to and from the hill climb, and across Lindsey Draw, has lead to soil erosion, vegetation damage, and other impacts to the stream corridor. As the USFS implements new travel management rules, it will



be important to provide designated trails from the improved parking area to other trails, roads, and open riding areas.

The schematic design plan for the trailhead addresses the need for this primary trailhead to fulfill USFS facility standards and meet users' needs. Parking quantities are maximized to fit into the existing parking area while minimizing impacts to natural resources. A graphic of the design can be reviewed on Figure 2. An aggregate base course surface parking lot for oversize vehicles with trailers (12'x60') and regular vehicles (12'x30') is provided.

Lindsey Draw is proposed to be re-aligned in the trailhead area to avoid impacts to vegetation, water quality, soil, and the aesthetic quality of the creek. The creek currently flows along the base of the adjacent hill climb, which puts it directly in the path of OHV use. The relocated creek will allow additional riparian vegetation to be planted within the stream corridor while minimizing OHV impacts. Three new bridge structures are proposed for access across the realigned Lindsey Draw. These bridges are necessary to avoid resource damage and provide connections to the trail network. The USFS will need to complete a Corps of Engineers 404 permit process in order to realign Lindsey Draw. It will also be important to coordinate with County and USFS engineers. More detailed studies are needed to define a plan for realignment of the creek and could include studies related to engineering, hydrology, drainage, and a site survey.

New developed picnic areas allow large or small groups to gather, rest, and enjoy shade while watching youth and other riders. The main group picnic area is located close to parking and is pedestrian accessed only to keep this area safe. The picnic area is situated to provide good views of the hill climb riding area. Two additional smaller picnic shelters are adjacent to the practice track and beginner riding area to allow parents to observe/ supervise children. A vault toilet is conveniently located near the picnic areas, as well as an information and trail map kiosk.

Trailhead design elements include:

- Safe and efficient vehicle circulation
- Safe access to the adjacent hill climb
- Safe access to the trail network and across County Road 459
- Realigned and improved Lindsey Draw
- Primary entrance and secondary entrance to overflow parking/ camping area
- Practice and play areas (2) for beginners
- Practice and play area for intermediate riders
- Hill climb play area for advanced riders
- Regulatory, safety, and wayfinding signs

- Information kiosks (2)
- Fee tubes (2)
- Picnic shelters (5) with 1 picnic table per shelter
- CXT vault 2-room toilet
- Trash dumpster and enclosure
- Gravel parking surface
- Overflow parking area (space for many more vehicles) and informal camping area
- 28 (12'x30') vehicle parking spaces (3 ADA)
- 35 (12'x60') large vehicle with trailer parking (1 ADA)

RR Buttes South Trailhead

The advanced open riding area is expected to generate public use specifically in this area. For this reason, it was determined that a trailhead is needed. The site for the new trailhead is located half a mile east of County Road 459 off an existing Forest Service road (see Figure 1). The site provides easy access to the advanced riding area and other trails/ roads. The trailhead will provide a good vantage point to observe OHV use in the advanced open riding area. This trailhead will be much smaller than the main trailhead, but could be expanded if demand exceeds capacity. A graphic of the design can be reviewed on Figure 3.

Trailhead design elements include:

- Safe and efficient vehicle circulation
- Primary entrance
- Overflow parking area that allows informal camping
- Advanced play area
- Regulatory, safety, and wayfinding signs
- Information kiosk
- Fee tubes
- Picnic shelter (1) with table
- CXT vault 1-room toilet
- Gravel parking surface
- 10 (12'x30') vehicle parking spaces (3 ADA)
- 4 (12'x60') large vehicle with trailer parking spaces (1 ADA)



General Recommendations

The following general recommendations will allow the USFS to better manage the Railroad Buttes area for motorized recreation.

- New trails and trailheads will be developed and constructed as funding and/or partnership support is available
- Management of trails and use should adapt to trail/ road conditions
- OHV groups and users are key to help implement this plan
- Identify existing roads or trail sections that need repair or rerouting
- Use grates or jump-ups to control cattle (instead of gates)
- Use width restrictors for trails with limited OHV use types
- Develop best management practices/ guidelines for trail design, construction, and maintenance (review/ develop with OHV clubs)
- Create a plan for user education and signs (Stay the Trail)
- Provide recreation staff officer for Railroad Buttes to manage OHV recreation

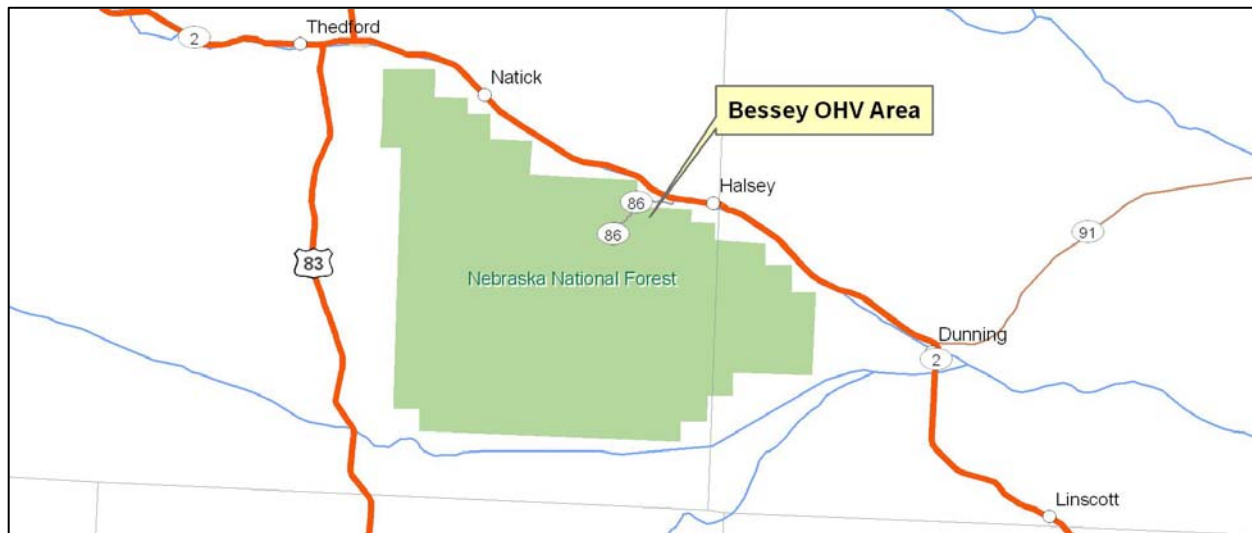
The following indicators and monitoring methods could be employed to better manage OHV use of the area.

- Define limits of acceptable change for:
 - Trail widening
 - Use of closed areas or trails
 - User created routes
 - Soil damage to routes during mud periods
 - Impacts to soils and vegetation in riparian areas or sensitive species locations
 - Open areas
 - Density of routes or loss of vegetation
 - User conflicts or accidents
 - User create routes/ riding area outside designated open areas
 - User created landforms or foreign materials
 - Routes on extreme slopes
 - Use by unauthorized vehicles (i.e., full-size OHVs in intermediate open riding area)
 - Soil damage during mud periods
 - Trailheads
 - Rain runoff/ erosion
 - Congestion

- Soil/ surface damage from OHVs or other vehicles
 - Effectiveness of access barriers
 - Condition of facilities
 - Trash, littering, dumping, etc.
 - Frequency of primitive camping
 - Frequency of overflow parking area use
 - Inappropriate use of trailhead areas for various uses
 - Impacts to soils and vegetation in Lindsey Draw
- Monitoring methods could include:
 - Establish photo points/ periods
 - Evaluate restoration and/or unauthorized use of closed areas and trails
 - Informal user research to judge satisfaction with decisions, crowding, behavior, etc.

Bessey Unit of Nebraska National Forest

The purpose of this project was to improve the recreational experience and management of the Bessey Unit for OHV recreational use. The project analyzed the existing road and trail network to identify improvements for the use and management of the area. The project complemented the ongoing forest-wide travel management plan and environmental impact statement (EIS). This study focused on defining alternative solutions for how to improve the OHV trail network while reducing maintenance costs and environmental impacts. A major contributing factor that led to the need for this project is the proliferation of ATV use of system roads which narrows the roads to the point of restricting full-size vehicle use. The establishment of an ATV trail system would enable the District to "re-establish a road system." This study also identified potential locations for new or improved OHV trailheads. The Bessey OHV area is located in Nebraska National Forest, southwest of Halsey, Nebraska. A subsequent environmental assessment (EA) will need to be prepared to refine and evaluate the OHV trails plan.



Project Need

- Meet current and future demand for motorized recreation
- Provide a more logical and interconnected trail network
- Separate OHV trail use from licensed vehicle roads to improve safety and maintain road quality
- Provide space for non-motorized recreation
- Reduce user created routes and shortcutting



Project Objectives

- Develop a conceptual OHV trails plan
- Choose locations for new trailheads
- Reduce impacts associated with motorized recreation
- Provide an improve recreational experience through a more diverse trail network
- Provide routes for trails to be designed for a high quality motorized recreational experience

Public Involvement

A series of three public meetings were held in Thedford, Nebraska to engage the public in developing and evaluating concepts developed during the process. The first meeting introduced the purpose of the project and asked meeting participants to contribute related issues or opportunities. The purpose of the second public meeting was to present preliminary solutions for the trail network, trailhead locations, and open riding areas, and to solicit feedback from the public. At the third meeting, another



draft of the plan was presented and the public again had the opportunity to comment. All three meetings were well attended and indicated that OHV enthusiasts are well organized and interested in continuing OHV use of the Bessey Unit. Meeting participants included individuals, lease holders and OHV clubs, including Nebraska Off-Highway Vehicle Association (NOHVA) and Halsey Trails Club.

The following summarized list of comments was made by the public at one or more of the meetings.

- NOHVA mentioned that Nebraska Game and Parks Department will likely provide funds through NOHVA, which can be contributed for planning and design of Bessey
- Locate trails in the forested areas
- Provide a hill climb/ challenge area
- Keep trail alignments safe with good visibility to prevent collisions
- Provide turnouts along trails for users to pass
- Provide more trails
- There are limited resources to maintain trails, so don't plan for too many
- Make the trails fun and challenging

- Make the trails easy to ride and scenic
- Provide diverse riding experiences
- Provide both difficult and easy types of trails
- Don't impact individual grazing permit holders too much by planning too many trails in one area
- Keep trails bidirectional
- Limit side-by-side OHVs (UTVs) to roads or their own trails; they make the ATV trails too wide
- Provide a beginner riding area/ trail
- Provide trails that go to destinations
- Provide connections to key trails
- Provide a trail connection to the 4H camp
- Provide camping sites/ areas for OHV users and separate from other campers
- Provide long distance trails to the southwest and northwest areas of Bessey
- Provide a trail connection to Halsey and Thedford

Project Outcomes

OHV Trail Network

The Bessey Unit of Nebraska National Forest provides outstanding opportunities for both motorized and non-motorized recreation. The sand dunes provide a unique landscape for trail riding that creates interest, mystery, and challenge. The historic planted forest also adds to the unique riding experience. While Bessey provides a great motorized recreational opportunity, there are also important constraints that need to be considered. The sand that forms the dunes and unique landscape are also extremely erodible. Sandy soils are prevalent in all parts of the Bessey Unit, so trails need to be designed to reduce impacts on soil erosion rather than attempting to avoid these impacts. This is best accomplished by having trails stay on contour and by avoiding steep slopes and drainage areas. There are also higher value wildlife habitats to avoid along the Middle Loop and Dismal Rivers. Other more specific sites that are sensitive to trail development include “blow out” areas, which support endemic Blowout Penstemon plants and prairie chicken booming grounds.





Most of the unit is divided into grazing allotments with fences, windmills, and water tanks. The infrastructure associated with grazing needs to be avoided with trail alignments as much as possible. There are a few areas of the Forest designated as closed to motorized recreation, including Signal Hill Research Natural Area, Scott Lookout Tower, Bessey Tree Nursery, research plot, and a large seasonal closure area.

Bessey Unit has a large number of both improved and unimproved roads. The highly erodible soils and complex topography require a high density of roads to provide access for grazing and forest management. The majority of roads are unimproved two-track roads with a grass strip down the center. This grass strip provides an important stabilizing function that greatly reduces soil erosion and road blow-out in drainage areas. The volume of vehicle use also has an important effect on the condition of roads and vegetation. The current travel management situation allows for “open” travel across the unit for all recreation. Historically, forest visitors have been considerate to stay on existing roads to prevent resource impacts; however, the growth in OHV recreation has lead to more user created routes and extensive use of two-track roads. This increase in the number of users and use of ATVs has caused many of the two-track roads to degrade at a fast rate. Roads should be designated for use by full-size vehicles for general public access and administrative purposes only.

The current travel management plan, which is being developed, is expected to change the rules and will require OHVs to only use trails, roads, and limited open riding areas designated for motorized recreational use. For all the reasons stated here, it is recommended that trails specifically designed for OHV use be developed. An improved OHV trail network would provide diverse experiences for different types of OHV riders. Requiring that OHVs use only trails designed for their use will greatly reduce impacts to the unit’s road network. There will also be a greatly improved experience of riding on trails designed for OHV use.

Approximate Use Area Size in Bessey Unit Proposed in this Plan	
Use Area	Acres
Motorized Recreation	35,206
Non-Motorized Recreation	55,199
Total Acres	90,405

This plan provides a general concept for an OHV trails network. More detailed plans, designs, and NEPA compliance will be needed to implement this plan. The following actions are incorporated into the trail network concept that is depicted on Figure 4.

- Provide a trail network that has:
 - Diverse trail experiences
 - Many more trail loops
 - Ties the entire Forest together
 - Connects to the 4-H Camp
 - Connects to Halsey and Thedford
- Provide significantly more trails designed for ATV use (50 inches wide or less) due to sandy soils and recreation demand
- Provide some roads/ trails for larger OHVs (UTVs, jeeps, etc., 50 inches wide or more)
- Set aside a large portion of the Forest for non-motorized recreation
- Many roads and previously created user trails will naturally restore to prairie
- Provide a new advanced ATV riding course in a suitable area as a more challenging riding area
- Provide two open riding play areas (hill climb and area near the Dismal River)
- Provide one major and 4 minor trailheads
- Provide primitive RV/ tent campsites at the major OHV trailhead
- Require visitors in campgrounds to trailer their OHVs to and from their campsites to prevent use of the campgrounds as OHV play areas, or provide a designated OHV parking area adjacent to the campground

Proposed Roads and Trails for Bessey Unit in this Plan	
Motorized Trail	Miles
Existing	19.2
New	67.9
Total	87.1
Open Use Road	
Existing	30.5
New	4.8
Total	35.3
Non-Motorized Trail	2.7
Licenses Vehicle Roads	94.5
Other Existing Roads	209.6
Total of All Routes	429.2

General Recommendations

The following general recommendations will allow the USFS to better manage the Bessey Unit of Nebraska National Forest for motorized recreation.

- New trails and trailheads will be developed and constructed as funding and/or partnership support is available
- Management of trails and use should adapt to changing trail/ road conditions



- OHV groups and users are key to help implement this plan
- Identify existing trail segments that need repair or rerouting
- Use grates or jump-ups to control cattle (instead of gates)
- Use width restrictors for 50-inch wide or less trails
- Develop best management practices/ guidelines for trail design, construction, and maintenance (review/ develop with OHV clubs)
- Create a plan for user education and signs (Stay the Trail)
- Provide recreation staff officer for Bessey Unit to manage OHV recreation
- ATVs are recommended to stay on motorized trails and off roads
- Refine the conceptual trails network by designing new trail alignments in the field
- Complete NEPA compliance on final designed routes
- Restoration plan for damaged roads and trails (center grass strip, low spots, eroded areas)
- Provide a small beginner/ training area near the main trailhead
- Provide ATV corrals in or near campgrounds
- Provide solutions for non-motorized uses/ trails
- Design OHV trailheads
- Develop concept design for an advanced riding course, including:
 - Tight trail course in dense cedar grove (maze)
 - Technical challenges
 - Diverse turns
 - Avoid steep slopes/ severe soil erosion
 - Potential small hill climb
 - Obstacles
 - Youth obstacle course

The following indicators and monitoring methods could be employed to better manage OHV use of the area:

- Define limits of acceptable change for:
 - Trails
 - Trail widening
 - Loss of vegetation in center of roads
 - Use of closed areas or trails
 - User created routes
 - Soil damage to routes during mud periods
 - Impacts to soils and vegetation in riparian areas or sensitive species locations



- Open areas
 - Density of routes or loss of vegetation
 - User conflicts or accidents
 - User created routes/ riding areas outside designated open areas
 - Use by unauthorized vehicles (i.e., UTVs)
 - Soil damage during mud periods

- Trailheads
 - Rain runoff/ erosion
 - Congestion
 - Soil/ surface damage from OHVs or other vehicles
 - Effectiveness of access barriers
 - Condition of facilities
 - Trash, littering, dumping, etc.
 - Frequency of camping
 - Frequency of overflow parking area use
 - Inappropriate use of trailhead areas for various uses
 - Impacts to soils and vegetation

- Monitoring methods could include:
 - Establish photo points/ periods
 - Evaluate restoration and/or unauthorized use of closed areas and trails
 - Informal user research to judge satisfaction with decisions, crowding, behavior, etc.

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Attachments:

- Project CD with digital files including: final report, project photos, GIS data, design files, maps, other project documents
- Railroad Buttes Report Graphics:
 - Overall map of conceptual route alignments and trailhead locations
 - Preferred schematic design for the primary OHV trailhead (north)
 - Preferred schematic design for the secondary OHV trailhead (south)
- Bessey Unit Report Graphics:
 - Overall map of conceptual route alignments and trailhead locations