National Park Service
U.S. Department of the Interior

Colorado National Monument,
Fruita CO

# Colorado National Monument
# Final Wayside  Exhibit Design Documents
# Award Number J1378100010

# November 26, 2011

Prepared by:

Michael M. Kelly
Designer

Northern Arizona University

**Introduction**

On November 26, 2011, the exhibit design project team comprising Colorado National Monument's Superintendent Michelle Wheatley, and Chief of Interpretation Karla Tanner and Michael Kelly, Designer and Project Director at Northern Arizona University finished final review of 33 wayside exhibit design drafts for the Monument's Rim Rock Drive. Kelly delivered final design documents in Adobe InDesign CS4 digital format, and supporting graphics to the Monument and to the Monument's printing contractor Aardvark Graphic Solutions, Inc., Denver Colorado. Aardvark delivered a complete set of color-printed, infused polycarbonate "Rhino" panels to the Monument on December 23, 2011. These were examined and approved by the design team, and placement marks were made at each wayside location by the team on December 29, 2011. The project closed on December 31, 2011.

Appendix 1 is the draft exhibit concept plan approved by the design team on February 26, 2011. This document documents the interpretive goals and mock-ups for each exhibit. Appendix 2 contains color reproductions of each final exhibit.

# Appendix 1
# Draft Exhibit Concept Plan

# Colorado National Monument
# Wayside Exhibits

# Draft

## Exhibit Proposal
## February 26, 2011

Prepared by:

_____ _____
Michael M. Kelly, Designer, NAU Date

Approved by:

_____ _____
Chief of Interpretation Date

## Introduction

This Exhibit Proposal is a working document toward the development of content and design of new wayside exhibits for Colorado National Monument. It serves as a collaborative tool for the National Park Service and Northern Arizona University (NAU) to work together to produce a Final Wayside Exhibit Plan, which will ultimately guide the fabrication and installation of the new wayside exhibits.

## Wayside Exhibit Planning Team Members

| Core Team Members | | |
|---|---|---|
| Name | Title/Discipline | Organization |
| **Michelle Wheatley** | Chief of Interpretation | Colorado National Monument |
| **Bill Hood** | Geologist, Volunteer | Colorado National Monument |
| **Michael Kelly** | Designer | Northern Arizona University |

## Foundational Information

*Park Purpose / Mission*

Colorado National Monument is a unique and awe-inspiring place that provides opportunities for solitude and personal connection to the cultural and natural heritage of the Grand Valley of western Colorado. The National Park Service will work in a spirit of partnership and collaboration to promote the understanding, appreciations, and protection of this national treasure. The purpose of Colorado National Monument is to provide for the understanding, preservation, and enjoyment of the extraordinary erosional, geological, and historical landscapes of great scientific interest, the Rim Road, and all other natural and cultural resources for present and future generations.

## Management Expectations

One source of interpretation planned for Colorado National Monument is through wayside exhibits that will focus on the cultural, geological, and ecological resources that are observable at various locations along the Rim Drive. The exhibits should:

- Orient the visitors to parks resources
- Share the park's importance with the community and visitors.
- Illustrate and discuss the unique geological events that have occurred.
- Offer an introduction to many of the ecological features of the Colorado Plateau.
- Provide information regarding the historic use and inhabitants of this area.

**Statements of Significance**
Significance statements describe the importance of the distinct resources of the park, including, natural, cultural, inspirational, scientific, historic, recreational, and other aspects.

1. The unique erosional events in the monument have exposed a billion and a half years of Earth history. At the monument, a dramatic sequence of folded and fractured rock formations has been sculpted to form a spectacular array of canyons, plateaus, and towering spires.

2. The monument's 1.7 billion-year-old Proterozoic basement rock and the 1.5 billion-year Proterozoic-to-Triassic gap in the geologic record at Colorado National Monument illustrate important episodes in the continuing cycle of dynamic Earth processes with continent-wide ramifications.

3. Once a range of the Ancestral Rockies, the ancient highlands that existed here as a result of several uplifts were the source of sediments deposited over much of the Colorado Plateau, creating the spectacular landforms seen in other parks (Arches, Canyon de Chelly, Canyonlands, Grand Canyon, etc.).

4. Colorado National Monument is a powerful example of ongoing dynamic geologic cycles, such as uplift, erosion, and deposition that serves as and provides a "living laboratory" for scientific study, education, and interpretation.

5. Colorado National Monument provides an introduction to many of the physical and biological features of the Colorado Plateau.

6. Spectacular landforms and the interplay of light, shadow, and color create glorious vistas from the vantage points of the Grand Valley and the national monument.

7. In proximity to the urban and rural settings of the Grand Valley, Colorado National Monument provides an opportunity for quiet solitude, recreation, and enjoyment that can evoke strong emotional responses.

8. The monument's landforms acted as a significant barrier to human use and travel between Glade Park and the Grand Valley; the cultural resources of the monument document how people overcame these barriers.

9. Visionary, trail builder, champion of the idea that these red rock canyons should be a national park, the life of the monument's first custodian, John Otto, showed how one person can make significant contributions to society.

10. Colorado National Monument is a critical component in sustaining the array of public lands that offer opportunities for recreation, education, and enjoyment in the Grand Valley of western Colorado.

**Primary Interpretive Themes**

Primary interpretive themes are the primary stories that communicate the most important significances of the monuments resources to the public. They are translations of factual significance statements into overarching messages. Thematic interpretation is used in the National Park Service as a way of organizing ideas and information so that they are communicated to the public as effectively as possible. Thematic interpretation is the structure used to organize ideas and information about the significant aspects of monument resources.

A. Colorado National Monument's dramatic landforms and spectacular vistas are but the latest manifestation of our earth's continuous recycling process of mountain building, erosion, and deposition within a greater geologic story of continent building and the evolution of unique and regional landforms.

B. The evidence of human use within the imposing and dramatic landscapes of Colorado National Monument is a powerful reminder of how geologic features and forces have challenged, and continue to challenge, the human drive to occupy, survive, and thrive in seemingly inhospitable landscapes.

C. The spectacular landforms and sublime natural beauty of Colorado National Monument provide opportunities for solitude, exploration, inspiration, and renewal that can fulfill the human need for self-discovery through connection to the land.

D. Established during the Progressive Era in American history, Colorado National Monument is emblematic of our nation's first conservation movement, during which concerned citizens like John Otto worked with vision and perseverance to have recognized and preserved for future generations those special lands and values that make up our American heritage.

E. The protected lands of Colorado National Monument, adjacent to a large and growing urban population, preserve habitat for biotic communities of the Colorado Plateau- and serve as an outdoor laboratory for scientific research and environmental education.

**Audiences**
Colorado National Monument interpretive services and programs are planned and provided for the following audiences:

1- **General Audiences**, *(Including families, retirees, NPS-informed, affiliated Indian people including the Mountain and Northern Ute people, and local communities, specifically those living in and around Fruita and Grand Junction, CO.*
2- **Organized and Educational Groups**. (*Includes grades K-12 and college*)

**Visitor Experience Considerations**
Stakeholders and staff identified the following desired visitor experience at Colorado National Monument:

Regional, national, and international visitors come to the monument to enjoy the opportunity to see, hear, and interact with the natural environment. During the peak season, there are numerous visitors that camp, hike, and rock climb within the Monument to enjoy the unique geological formations and experience the ecology of the Colorado Plateau.

A major draw for visitors of the Monument is the ability to enjoy the area through the use of Rim Rock Drive. Driving for pleasure in the region allows the visitor to see and experience numerous vistas along the canyon rim from automobile, motor cycles, and bicycles. Since motorized transportation is a primary mode of enjoying the part, the focal points for interpretation is along the waysides rather than the visitor center.

As a natural area close to Grand Junction and Fruita, the Monument serves a opportunity for natural science education for local school students. These visitors utilize the ranger-guided or teacher-guided field trips to learn at this "living classroom".

**Visitation**
Park statistics and staff observations reveal:

Each year approximately 373,000 visitors come to Colorado National Monument. These figures are based on a six-year average taken during calendar years 2005, 2006, 2007, 2008, and 2009 (http://www.nature.nps.gov/stats/). The current trend shows that visitation has increased every year and is expected to reach another record high in the following year.

Approximately half of the motorized annual visitation of the park is for non-recreational visits including transportation of goods from Glade Park and Grand Junction. The non-recreational visits average ½ an hour onsite.

Visitors that come to Colorado National Monument for recreation utilize a variety of activities including camping, backpacking, rock climbing, hiking, and cross country skiing. The majority of visitation however, occurs through motorized tourism and these visitors normally spend an average of 2 to 3 hours onsite.

Peak visitation occurs May through September.

# Wayside Exhibit Planning Considerations

**Existing Conditions**
The Colorado National Monument wayside exhibits are out of date, weathered, missing and sometimes not relative to the vista it is in proximity to. Many lack current scientific knowledge and do not reflect the Monument's primary interpretive themes. There is limited access for disabled individuals to read interpretive material and reach the viewpoints. These reflect a loss of interpretive opportunity and limited education for visitors who might arrive to learn about the resources and uniqueness of the region.

**Tenets for Interpretation**
When planning the new waysides, the team will employ the tenets for interpretation, which include:

**Universal accessibility:**
Exhibits will be designed to be as universally accessible as possible to best meet the varied physical and cognitive needs of intended audiences.
**Hierarchy of sophistication:**
The exhibits will treat subject matter in a range of ways — from simple and basic to complex and advanced — to best meet the varied interests of intended audiences.
**Multiple points of view:**
The exhibits will treat subject matter from a variety of perspectives to aid in accuracy and relevance to varied interpretive audiences.
**Good Scholarship:**
The exhibits will be based on sound scholarship to provide accurate and balanced information.
**Visitor Sovereignty:**
The exhibits will be designed to respect the right of visitors to come to their own conclusions about the values and meaning of park resources.

**Management and Interpretive Media Considerations**
When planning the new exhibits, the team shall consider:

- **Tribal Consultation:** Adequate time and compensation for participation by culturally affiliated tribes to develop and review exhibit content and design.
- **ADA Accessibility:** How to improve facilities and media to accommodate *all* visitors, employees, and multi-lingual audiences.
- **Engage visitors:** Exhibit labels might use questions to provoke thought and imagination. Text should be short and simple, allowing the graphics, artifacts, dioramas, period rooms, and sounds to communicate Colorado National Monument stories.
- **Multiple Perspectives:** The stories of Colorado National Monument are told through the perspectives of Native Americans, European and other immigrants, ranchers, and land managers.

**General Design Criteria:**

a) Exhibits should be designed for universal access to be of equal interpretive benefit to various ages, cultural backgrounds, and physical needs.
b) The exhibits should address a variety of learning styles.
c) The exhibits should invite critical thinking and new insights. Content should present multiple perspectives and dialogs, rather than a finished interpretation of events—allowing visitors to make their own intellectual and emotional connections to the site and conclusions about events that transpired.
d) Exhibits may be in place for 20 or more years. Methods to easily change information within a permanent exhibit should be explored. Simplicity of maintenance is a must.

| Exhibit Number | Panel Size (Inches) | Subject | Location |
|---|---|---|---|
| 001 | 24x24 | Preview - Redlands Fault | Redlands Fault View |
| 002 | 36x24 | Geology - Redlands Fault | Redlands Fault View |
| 003 | 36x24 | Ecology and Pre-European Cultures | Redlands Fault View |
| 004 | 36x24 | Geology- A Temporary Balance | Balanced Rock View |
| 005 | 36x24 | Ecology- Desert Bighorn Sheep | Balanced Rock View |
| 006 | 24x24 | Preview - Historic Trail | Historic Trail View |
| 007 | 36x24 | Culture – Drive for Resources | Historic Trail View |
| 008 | 36x24 | Geology- Across the Grand Valley | Distant View |
| 009 | 36x24 | Culture – The Rim Road | Fruita Canyon View |
| 010 | 36x24 | Geology- Heart of the World | Book Cliffs View |
| 011 | 36x24 | Culture – Sacred Landscape | Book Cliffs View |
| 012 | 36x24 | Geology – Stack of Strata | Behind Visitor Center |
| 013 | 24x24 | Preview - Otto's Trail | Otto's Trailhead |
| 014 | 36x24 | Culture – John Otto | Otto's Trail |
| 015 | 36x24 | Culture – Climbing Independence | Independence Monument |
| 016 | 36x24 | Geology- The Shape of Independence | Independence Monument |
| 017 | 24x24 | Preview - Grand View | Grand View |
| 018 | 36x24 | Geology – Ancient Environments | Grand View |
| 019 | 36x24 | Ecology – Ground to Sky | Grand View |
| 020 | 36x24 | Culture - Tragedies on Rim Rock Drive | Half Tunnel |
| 021 | 36x24 | Geology - The Shapes of Erosion | Coke Ovens |
| 022 | 36x24 | Culture - Putting People to Work | C.C.C. Tunnel |
| 023 | 36x24 | Geology - Palette of Colors | Artists Point |
| 024 | 36x24 | Ecology – Woodlands Relationships | Highland |
| 025 | 24x24 | Preview - Upper Ute Canyon | Upper Ute Canyon |
| 026 | 36x24 | Ecology – Echo, Echo, Echo | Upper Ute Canyon |
| 027 | 36x24 | Ecology – Pothole Life | Upper Ute Canyon |
| 028 | 36x24 | Geology – A Slow Fall | Fallen Rock |
| 029 | 24x24 | Preview - Ute Canyon | Ute Canyon |
| 030 | 36x24 | Culture - The People | Ute Canyon (garden) |
| 031 | 36x24 | Geology- Water Carved Landscape | Ute Canyon View |
| 032 | 36x24 | Culture – Water is Life | Ute Canyon View |
| 033 | 36x24 | Geology – Canyon in a Canyon | Red Canyon Overlook |
| 034 | 36x24 | GeoEcoCulture – The Story of Canyons | Cold Shivers Point |
| 035 | 36x24 | Ecology – Conserving the Wild | Cold Shivers Point |

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

001 / Preview - Redlands Fault / Redlands Fault View (renamed from Redlands View)

**INTERPRETIVE GOALS**

Visitors will get an inviting overview of the landscape views and the geologic, environmental and cultural information to be experienced by walking down to the wayside.


**POSSIBLE GRAPHICS**

Fun inviting graphic of earthquake fault shaking a stick figure or "sleeping fault ahead" or "Warning: ancient earthquake damage". Images of park wildlife and petroglyphs.

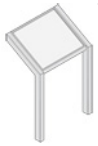
**SITE PREPARATION**

Remove misnamed "Redland View" sign. Provide a level region under the targeted wayside frame location at the height of the adjacent curb. In case of shallow bedrock, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth). ADA: Check slope on curb and parking area for ADA compliance, check parking area for ADA painted zone. If slopes are acceptable, build ADA compliant ramp adjacent to ADA parking onto curb.

**COMMENTS**

The path to the main panels is currently not ADA compliant, but it could be! The wayside invites visitors to walk to the view platform and reminds parents to watch children near drop-offs and edges. Image of parent holding hand of child.

| | | | |
|---|---|---|---|
| **Panel Size**<br>24x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |




**Thumbnail Sketch | 24 x 24 inches | 15% of actual size| Wayside Exhibit 001**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

002 / Geology – Redlands Fault / Redlands Fault View (renamed from Redland View)

**INTERPRETIVE GOALS**

Visitors will be able to identify the fault's trace across the landscape and its disruption of the rock layers, and they will generally understand the sequence of events that have allowed this landscape and different rock layers to be exposed.

**POSSIBLE GRAPHICS**

Digital overlay on a color panoramic photo of fault, labeling the fault and geologic units. Series of color illustrations of fault and flexure forming in layered rocks and subsequent erosional exposure.

**SITE PREPARATION**

Remove existing pedestals and frames. Provide a slightly raised level region that prevents runoff collection under and around the targeted wayside frame locations. In case of shallow bedrock, determine best method for excavation of frame leg holes (12" diameter, 30"-36" variable depth) and prepare holes.

**COMMENTS**

Wheelchair accessibility is desirable at this location since it is one of two introductory waysides in the park. Drainage in this location could be important. The viewing platform is shared with exhibit 003 described below.


profile panel. The panel discussed here has a view towards # 1.

| Panel Size | Category | Base Material | Ancillaries |
|---|---|---|---|
| 36x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Direct Embed | | |


**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 002**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

003 / Ecology and the Pre-European Cultures / Redlands Fault View (renamed from Redlands View)

**INTERPRETIVE GOALS**

Visitors will be introduced to the high desert ecosystem and some of the challenges and opportunities this landscape presents for plants and animals. Visitors will understand that native people have occupied this region for thousands of years.

**POSSIBLE GRAPHICS**

Realistic color illustration of a canyon profile showing the Piñon-Juniper ecosystem with common plants and animals. Photographs of petroglyph panels and artifacts found in park.

**SITE PREPARATION**

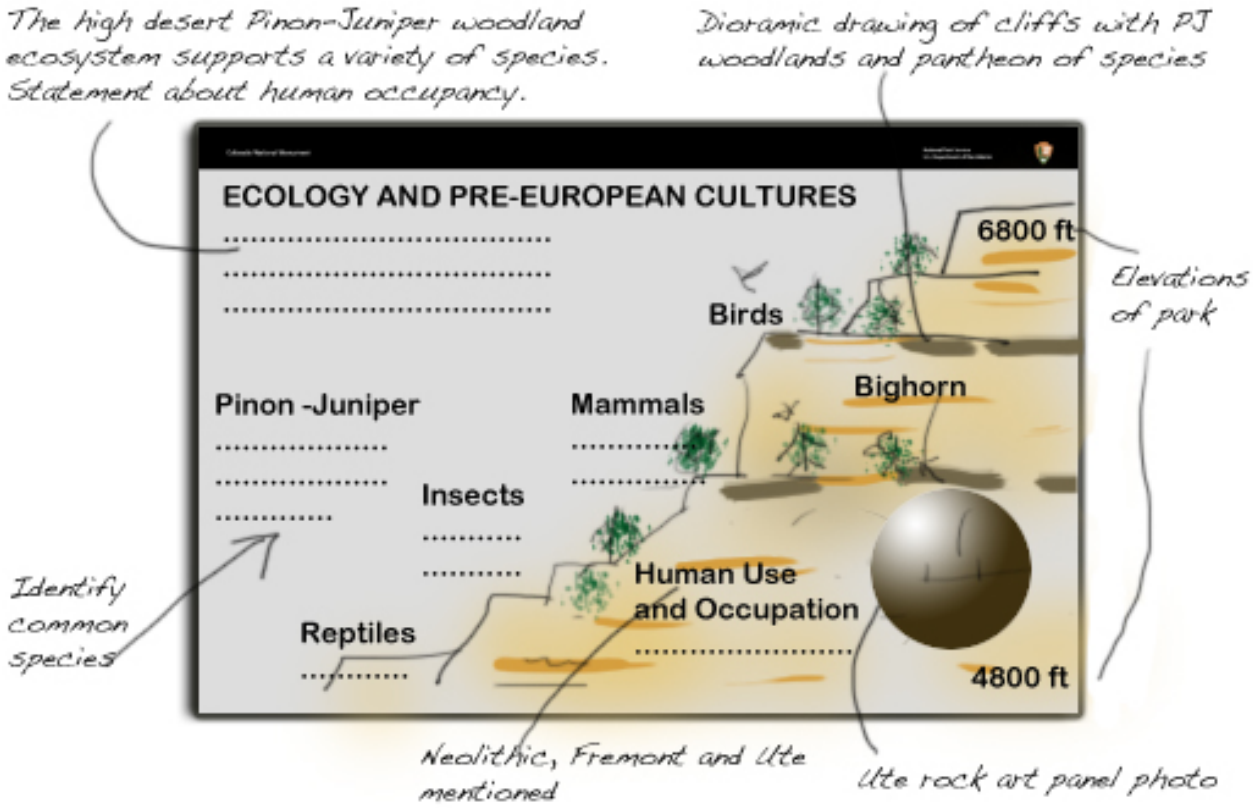
Remove any existing pedestal and frame. Provide a slightly raised level region that prevents runoff collection under and around the targeted wayside frame locations. In case of shallow bedrock, determine best method for excavation of frame leg holes (12" diameter, 30"-36" variable depth) and prepare holes.

**COMMENTS**

The viewing platform is not wheelchair accessible but could be. This viewing platform is shared with exhibit 002 described above.


Panoramic view from Redlands Fault View platform. The center of the photo looks north-northeast. The two green arrows designate the approximate view directions for each 36"x24" low profile panel. The panel discussed here has a view towards # 2.

| **Panel Size** | **Category** | **Base Material** | **Ancillaries** |
|---|---|---|---|
| 36x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Direct Embed | | |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 003**

**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

004 / Geology – A Temporary Balance / Balanced Rock View

**INTERPRETIVE GOALS**

Visitors will understand how over tens of thousands of years, erosion processes can shape the earth's surface, and in the case of Balanced Rock, weaknesses along cracks and bedding surfaces influenced the formation of this unique spire.

**POSSIBLE GRAPHICS**

Color illustration depicting the erosional evolution of Balanced Rock. A tactile stand where visitors can try their hand at stacking rocks. Photo on panel showing children stacking rocks.

**SITE PREPARATION**

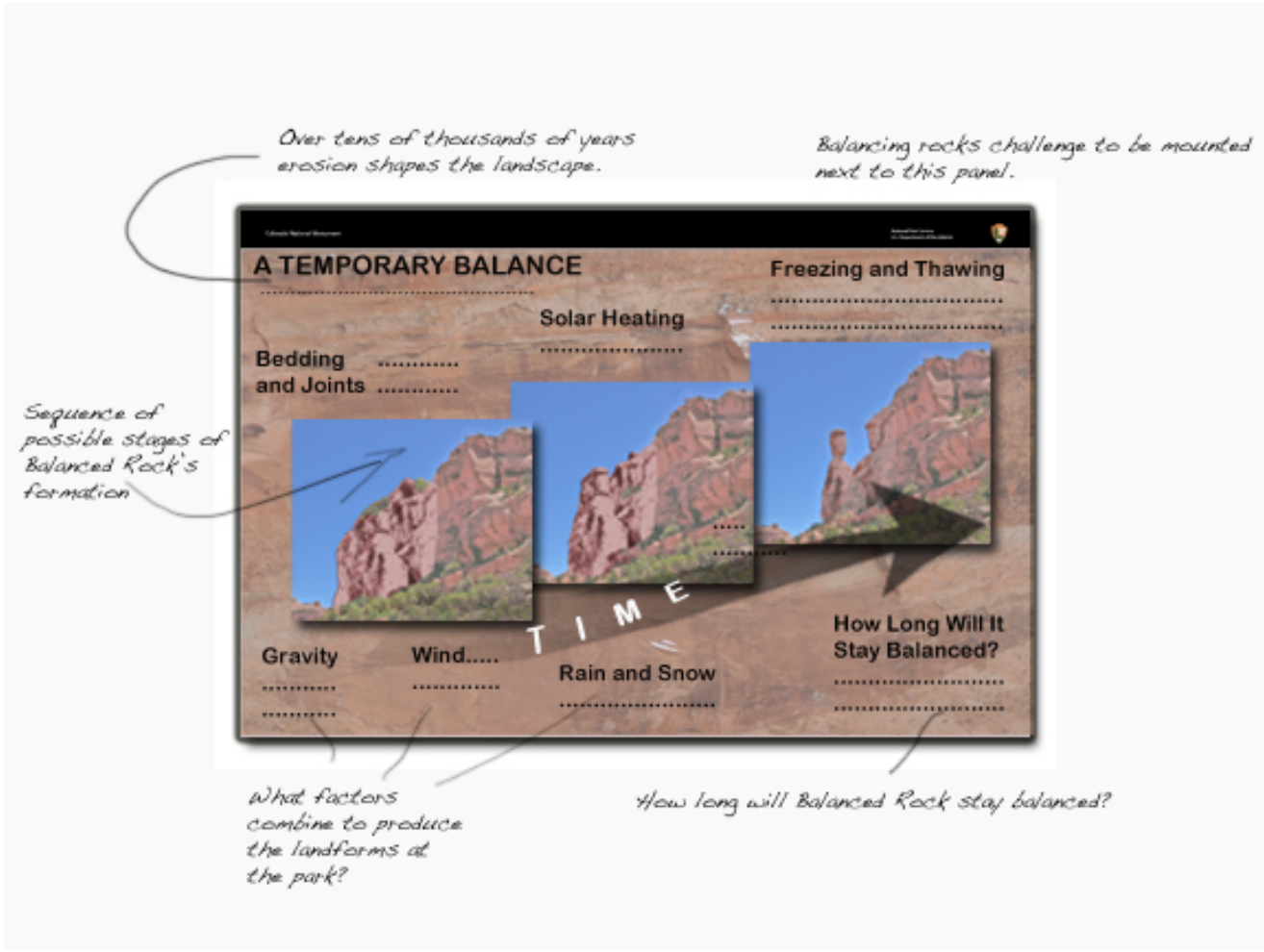
Remove existing pedestals and frames. Provide a slightly raised level region that prevents runoff collection under and around the targeted wayside frame locations and places where visitors stand. In case of shallow bedrock, determine best method for excavation of frame leg holes (12" diameter, 30"-36" variable depth) and prepare holes. The tactile rock-stacking stand will be placed next to this wayside.

**COMMENTS**

The parking area and viewing platform are not wheelchair accessible. This viewing platform is shared with exhibit 005 described below.


Panoramic view from Balanced Rock View platform. The center of the photo looks north. The two green arrows designate the approximate view directions for each 36"x24" low profile panel. The panel discussed here has a view towards # 1.

| **Panel Size** | **Category** | **Base Material** | **Ancillaries** |
|---|---|---|---|
| 36x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Direct Embed | | |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 004**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

005 / Ecology- Desert Bighorn Sheep/ Balanced Rock View

**INTERPRETIVE GOALS**

Visitors will be able to recognize a desert bighorn sheep, distinguish ewes from rams and understand this animal's place in the park's ecology.

**POSSIBLE GRAPHICS**

Color photos of rams and ewes with distinguishing characteristics labeled. Close up photo of hooves to explain adaptation for climbing. Panoramic photo identifying the layers of the Chinle and Wingate Formations that are prime habitat for sheep. Tactile tracks or horns.

**SITE PREPARATION**

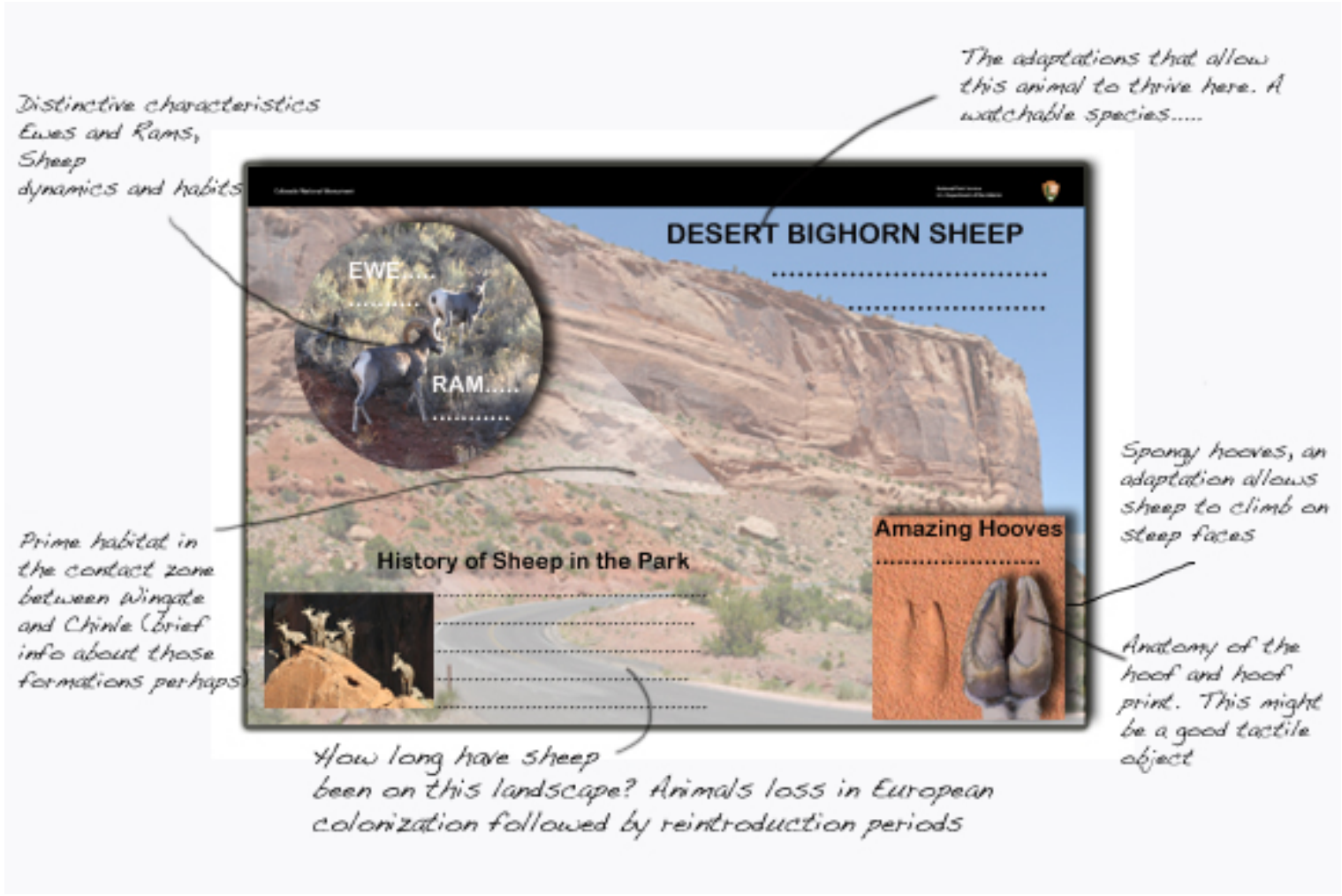
Remove existing pedestals and frames. Provide a slightly raised level region that prevents runoff collection under and around the targeted wayside frame locations and places where visitors stand. In case of shallow bedrock, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes.

**COMMENTS**

The parking area and viewing platform are currently not wheelchair accessible. This viewing platform is shared with exhibit 004 described above.


180 degree panoramic view from Balanced Rock View platform. The center of the photo looks north. The two green arrows designate the approximate view directions for each 36"x24" low profile panel. The panel discussed here has a view towards # 2.

| **Panel Size** | **Category** | **Base Material** | **Ancillaries** |
|---|---|---|---|
| 36x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Direct Embed | | |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 005**

**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

006 / Preview Historic Trail / Historic Trail View (renamed from Historic Trails View)

**INTERPRETIVE GOALS**

Visitors will be able to get an inviting and quick sense of the landscape view and the cultural information at the viewing platform.

**POSSIBLE GRAPHICS**

Fun color illustration of cows and cowboys looking over cliff. Map of trails from the Valley to Glade Park.

**SITE PREPARATION**

Remove existing pedestal and frame. Provide a level region under the targeted wayside frame location at the height of the adjacent curb. In case of shallow bedrock, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes. ADA: Check slope on curb and parking area for ADA compliance, check parking area for ADA painted zone. If slopes are acceptable, build ADA compliant ramp adjacent to ADA parking onto curb. Ensure that there is a clear pathway indicated down to overlook platform.

**COMMENTS**

The wayside invites visitors to walk to the view platform, gives directions and distance and reminds parents to watch children near drop-offs and edges. Image of parent holding hand of child.

**Panel Size**
24x24 inches

**Category**
Low Profile

**Base Material**
Weathering Steel

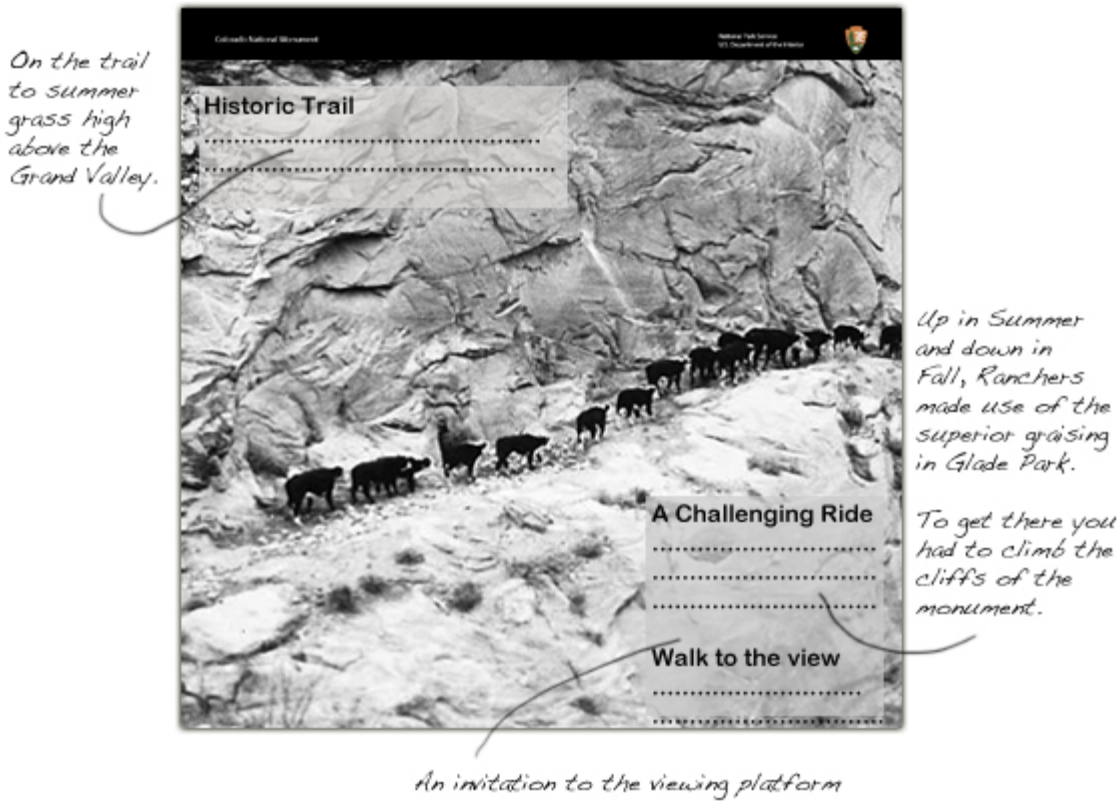
**Ancillaries**

**Panel Material**
Rhino

**Mount**
Direct Embed

**Color**

**Hardware Notes**




**Thumbnail Sketch | 24 x 24 inches | 15% of actual size| Wayside Exhibit 006**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

007/ Culture – Drive for Resources / Historic Trail View (renamed from Historic Trails View)

**INTERPRETIVE GOALS**

Visitors will understand that the 19th century ranching on Glade Park (above the Monument) required moving cattle over obstacles like the cliffs of the Park to get to important higher elevation seasonal pastures.

**POSSIBLE GRAPHICS**

Historic photo of cattle drive. Similarly posed photo showing the modern landscape illustrating changes/similarity in vegetation. Historic photos of Glade Park. Oblique map showing distances required for trip.

**SITE PREPARATION**

Safety audit and engineering check on existing rail system to determine best way to mount panel. Provide clear and hardened pathway from curb area to panels.

**COMMENTS**

The "trail" to the viewing platform could be much more defined and widened. The trail and the viewing platform are not wheelchair accessible.


Panoramic view from Historic Trail View platform. The center of the photo looks north. The green arrow designates the approximate view directions for the 36"x24" low profile panel.

| **Panel Size** | **Category** | **Base Material** | **Ancillaries** |
|---|---|---|---|
| 36x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Direct Embed | | |


**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 007**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

008 / Geology- Across the Grand Valley / Distant View

**INTERPRETIVE GOALS**

Visitors will be able to identify distinguishing geographic features (Book Cliffs, Grand Mesa, Grand Valley, Colorado River) and the general geology of those features. Visitors will recognize that the Colorado River continues to carve the valley.

**POSSIBLE GRAPHICS**

Labeled color panoramic photo of Grand Valley with inset explanations of features. Color illustration showing which layers have been eroded and more on the importance of the Redlands Fault to the geography of the Grand Valley.

**SITE PREPARATION**

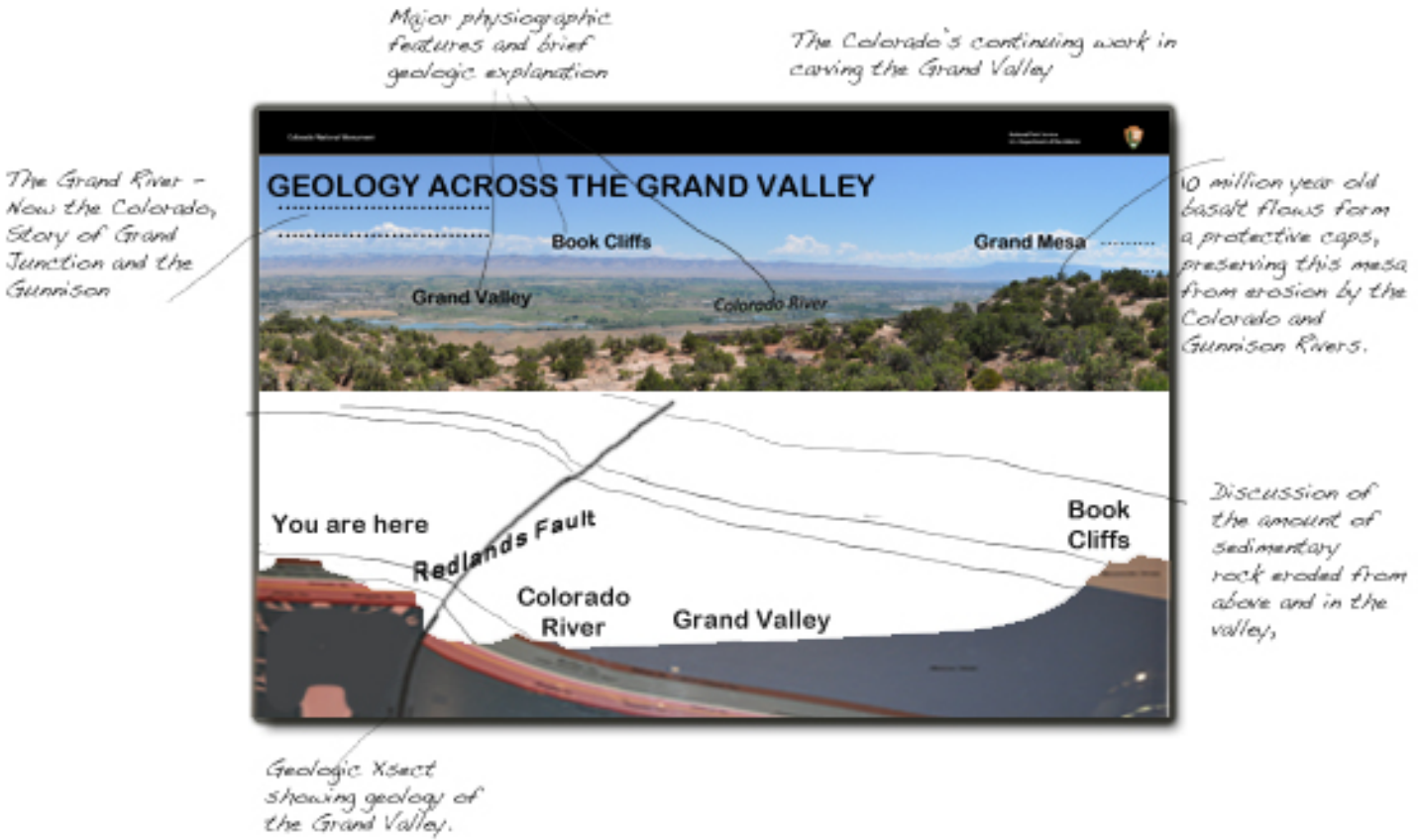
Remove existing pedestal and frame. Provide a level region under the targeted wayside frame location at the height of the adjacent curb. In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes. ADA: Check slope on curb and parking area for ADA compliance, check parking area for ADA painted zone. If slopes are acceptable, build ADA compliant ramp adjacent to ADA parking onto curb.

**COMMENT**

Depending on the slopes of the parking area and curb, this seems like it would be a likely candidate for wheelchair accessibility.


Panoramic view from Distant View platform. The center of the photo looks north. The green arrow designates the approximate view directions for the 36"x24" low profile panel. Note placement of existing stone pedestal wayside to be removed.

| **Panel Size** | **Category** | **Base Material** | **Ancillaries** |
|---|---|---|---|
| 36x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Direct Embed | | |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 008**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

009 / Culture – The Rim Rock Drive / Fruita Canyon View

**INTERPRETIVE GOALS**

Visitors will understand the history surrounding Rim Rock Road and gain perspective of road construction work during the depression era.

**POSSIBLE GRAPHICS**

Historic photos of the Rim Rock Road project: group photos of young men, work without machinery, blasting required to create tunnels, CCC camp life, and a model-T driving the road. A graphic timeline of the landmark periods of the construction process.

**SITE PREPARATION**

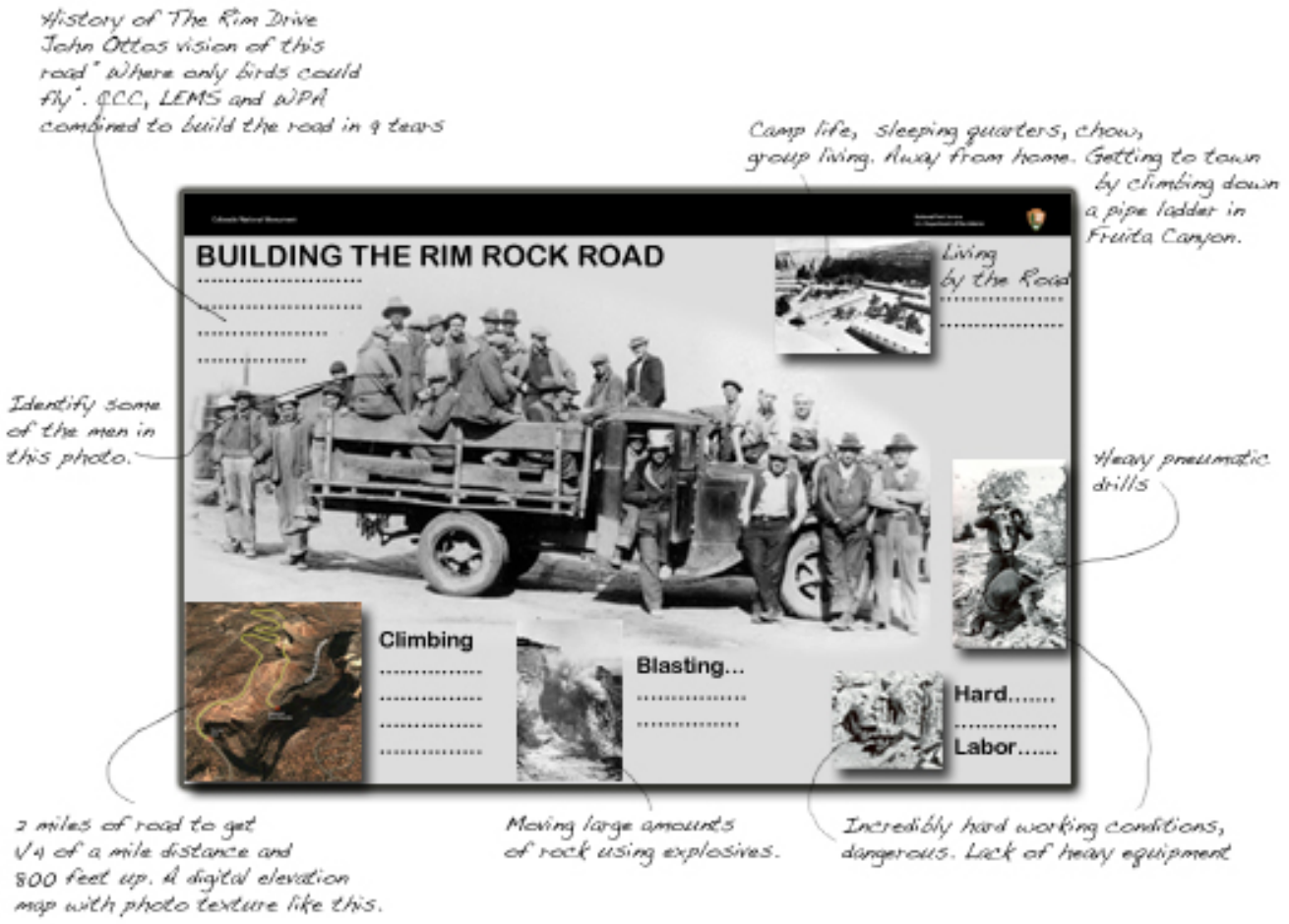
In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes. Incorporate frame into planned or existing railing system.

**COMMENTS**

The parking and trail are not currently wheelchair accessible due to ADA non-compliant slopes after recent paving project. There will be a bench installed at the wayside.


Panoramic view from Distant View platform. The center of the photo looks north. The green arrow designates the approximate view directions for the 36"x24" low profile panel.

| **Panel Size** | **Category** | **Base Material** | **Ancillaries** |
|---|---|---|---|
| 36x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Attach to planned railing | | |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 009**

**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

010 / Culture- The Heart of the World / Book Cliffs View

**INTERPRETIVE GOALS**

Visitors will understand broadly the naming of spires and the beauty of this view across the seasons.

**POSSIBLE GRAPHICS**

Panoramic photo labeling various spires and other geographic features. Photos of view in different seasons

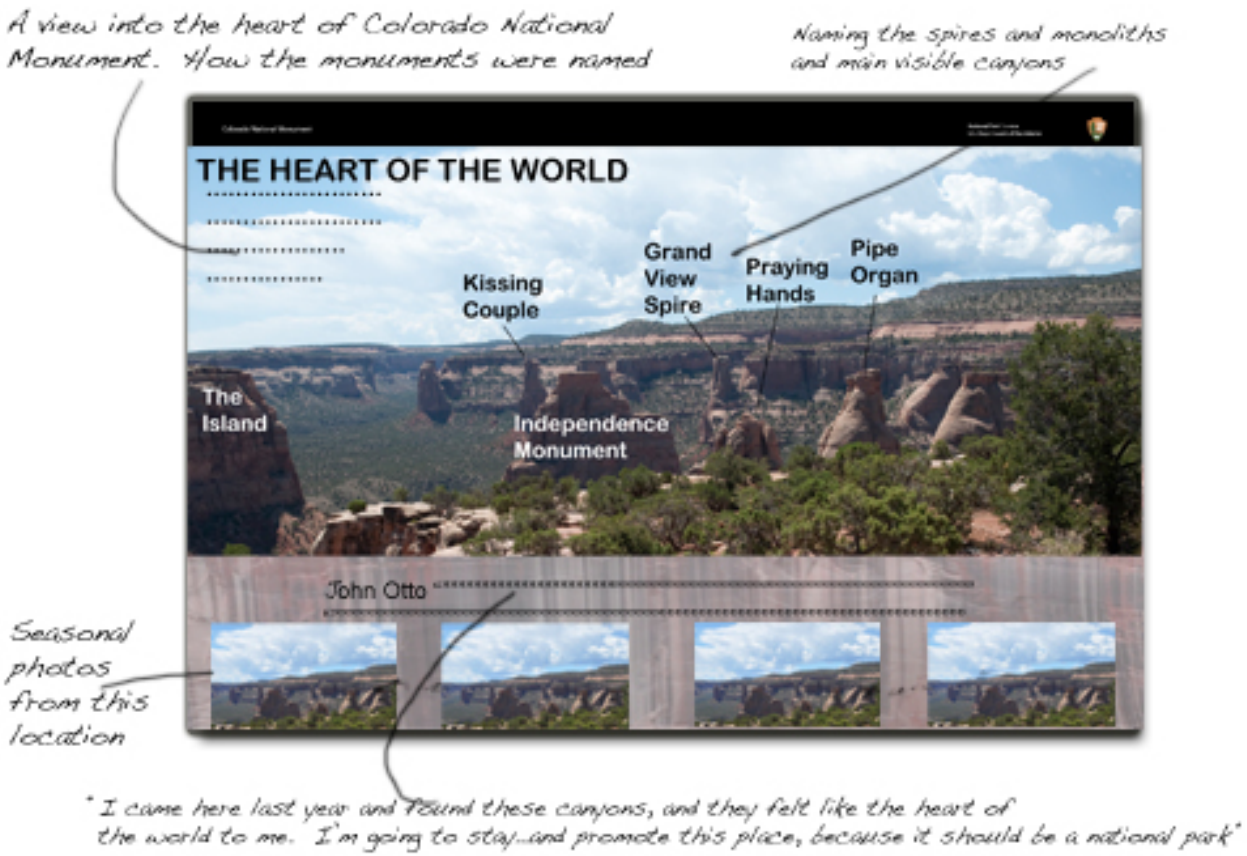
**SITE PREPARATION**

Cut access holes in concrete pavement in front of the sandstone wall for frame posts. In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12" diameter, 30"-36" variable depth) and prepare holes. Alternatively, modify the frames to be bolted to the existing concrete. ADA: Check slope on curb and parking area for ADA compliance, check parking area for ADA painted zone. If slopes are acceptable, and if not already level, build ADA compliant ramp adjacent to ADA parking onto curb.

**COMMENTS**

This site is likely already wheelchair accessible but it is important to measure slopes and other determining factors like accessibility to parking. Also it could be very difficult to dig holes below the concrete walkway if the fill is uncooperative! If so you may be able to modify the frames by welding a plate to the shortened feet and bolting them into the concrete. This platform is shared with exhibit 011 described below.

| | | | |
|---|---|---|---|
| **Panel Size**<br>36x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 010**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

011/ Culture - Sacred Landscape/ Book Cliffs View

**INTERPRETIVE GOALS**

Visitors will recognize that the people who lived here before had a culture and lifestyle that was sustainable with the resources available to them. This landscape was used by Fremont people and then later by Utes. The landscape provided resources and had sacred and spiritual value.

**POSSIBLE GRAPHICS**

Photos of artifacts, rock-art photos. Historic photos of Utes in the Grand Valley. Quotes from Ute interviews.

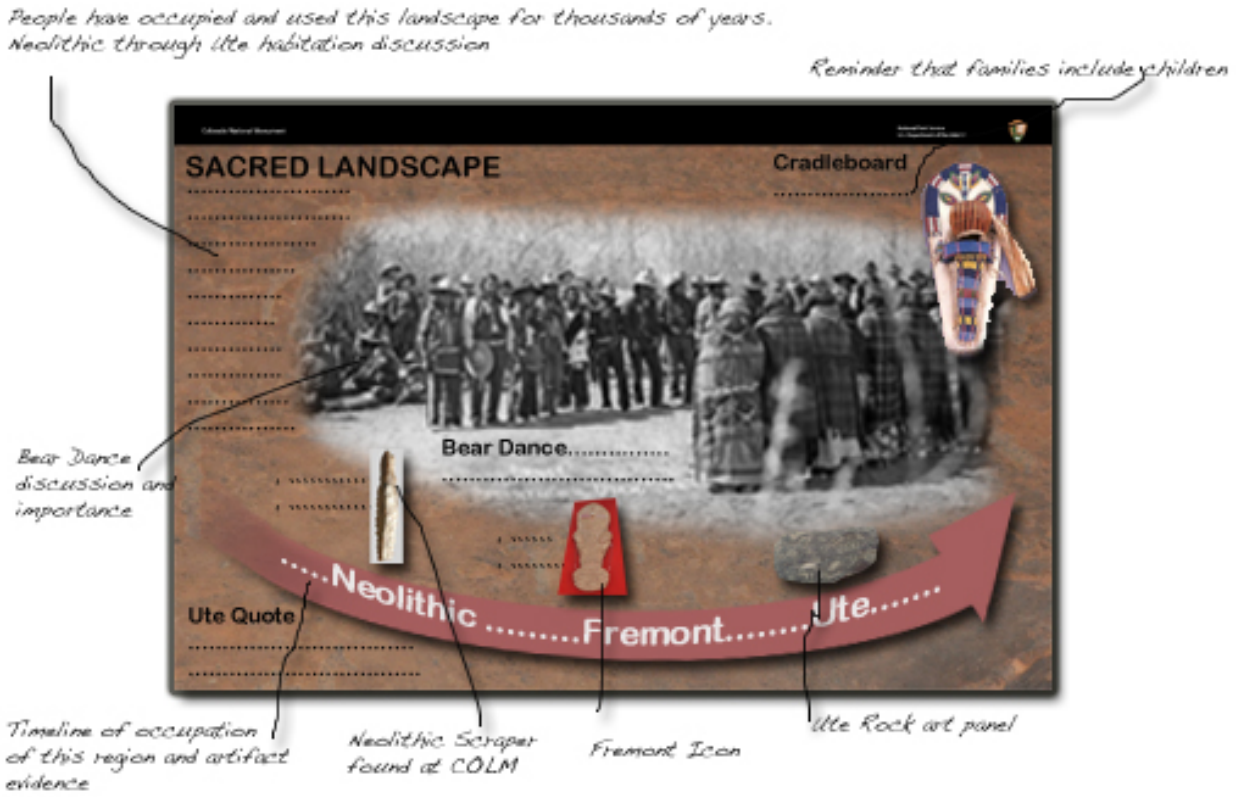
**SITE PREPARATION**

Follow same for exhibit 010 described above. The rock wall height is a potential problem for ADA frame locations as it gets higher than 32 inches off the ground level as one moves from the end towards the pathway down to the amphitheater.

**COMMENTS**

see comments for exhibit 010 described above.

| | | | |
|---|---|---|---|
| **Panel Size**<br>36x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 011**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

012 / Geology - Stacks of Strata / Behind Visitor Center

**INTERPRETIVE GOALS**

Visitors will be able to identify the main strata and rocks of the park.

**POSSIBLE GRAPHICS**

Panoramic photo from viewpoint with strata and ages labeled on the photo.

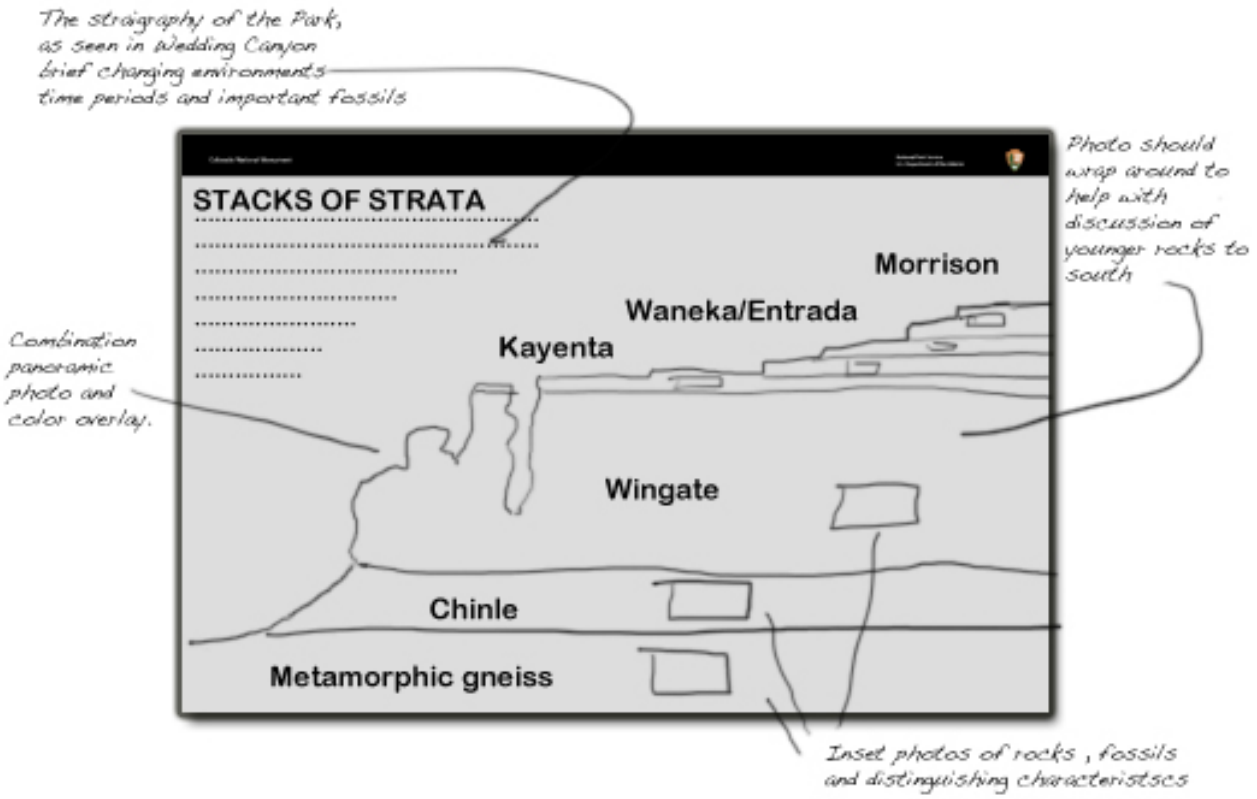
**SITE PREPARATION**

Cut concrete for frame legs holes. In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes. Alternatively, modify frame and mount on existing rails after performing an engineering audit of existing rail system for safety, or modify frames for attachment to existing concrete.

**COMMENTS**

The viewing platform is not wheelchair accessible due to stairs along the access path.

| **Panel Size** | **Category** | **Base Material** | **Ancillaries** |
|---|---|---|---|
| 36x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Attach to railing or concrete | | |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 012**

**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

013 / Preview - Otto's Trail / Otto's Trail View

**INTERPRETIVE GOALS**

Visitors will feel invited to enjoy the fantastic views and solitude afforded by this trail and the cultural information to be experienced at the wayside.


**POSSIBLE GRAPHICS**

Historic photo of Otto riding his mule in the monument. Photos of wildlife suggesting a relaxing quiet experience.

**SITE PREPARATION**

Provide a level region under the targeted wayside frame location at the height of the adjacent curb. In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes.

**COMMENTS**

Parking area may need better definition. The trail is not ADA compliant.

| | | | |
|---|---|---|---|
| **Panel Size**<br>24x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |


**Thumbnail Sketch | 24 x 24 inches | 15% of actual size| Wayside Exhibit 013**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

014 / Culture – John Otto / Otto's Trail

**INTERPRETIVE GOALS**

Visitors will know who John Otto was and his influence on the Monument, and how extraordinary and different John Otto was from the "norm" of society.

**POSSIBLE GRAPHICS**

Photos of various letters he wrote, Historic hiking and wedding photo, historic photo of steps cut into Independence, modern photo of climbers

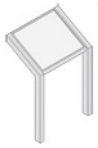
**SITE PREPARATION**

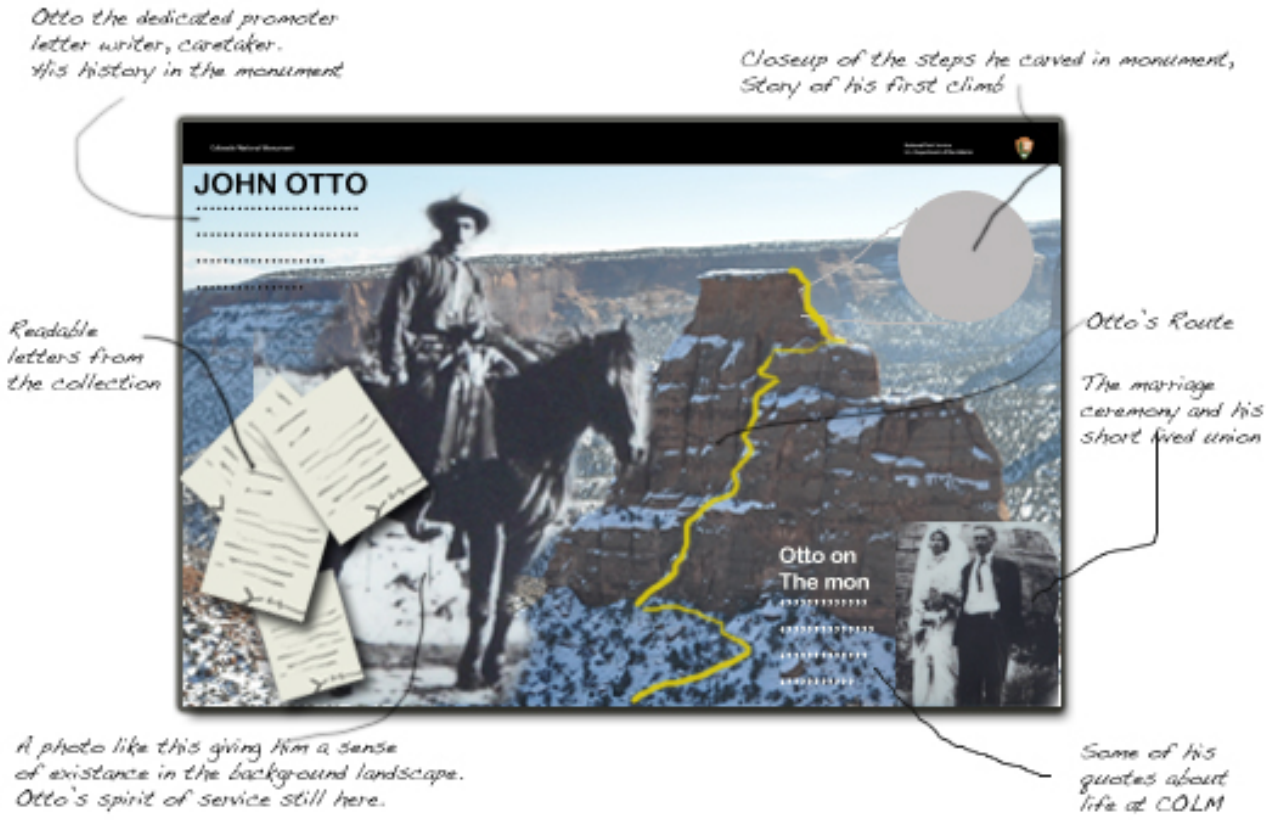
Remove existing pedestal and frame. Provide a slightly raised level region that prevents runoff collection under and around the targeted wayside frame and visitor standing location. In case of shallow bedrock or coarse fill determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes.

**COMMENTS**

The viewing platform and trail are not wheelchair accessible. Reminders about steep drop-off dangers and small children appropriate here.


| | | | |
|---|---|---|---|
| **Panel Size**<br>36x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |






**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 014**

**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

015 / Culture - Climbing Independence / Independence Monument

**INTERPRETIVE GOALS**

Visitors will understand that John Otto climbed Independence in 1911 to fly the American flag for July 4th, a tradition that continues today.

**POSSIBLE GRAPHICS**

Historic photo of Otto climbing the monument, recent Search and Rescue July 4th photo. Photo of monument with carved steps labeled.

**SITE PREPARATION**

Remove existing pedestal and frame and repair concrete to match color and texture. New frame location will be near the existing railing. Cut concrete for frame legs holes. In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes. Alternatively, modify frame and mount on existing rails after performing an engineering audit of existing rail system for safety or modify frames to bolt into the concrete.

**COMMENTS**

The viewing platform is ADA compliant according to the park. Check ADA parking area designation and parking slopes for compliance.

| | | | |
|---|---|---|---|
| **Panel Size**<br>36x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |

John Otto's contribution to the monument, his service as caretaker and his historic trail making efforts

Otto's Route is considered one of the classic climbs in the west and is followed by XX number of climbers. Note the differences in equipment


John Otto climbing the crux of Independence Monument. Otto cut steps in the stone and put a pipe ladder in difficult places. All pipes removed by NPS.

Climbers on the monument raising the flag on the 4th of July. Climbing does not require a permit but regs are in place to protect the rock.

**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 015**

**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

016 / Geology- The Shape Of Independence / Independence Monument

**INTERPRETIVE GOALS**

Visitors will understand how the monument was formed over time and the true nature of its shape.

**POSSIBLE GRAPHICS**

Historic photo of Otto climbing the monument, recent Search and Rescue July 4th photo. Photo of monument with carved steps labeled.

**SITE PREPARATION**

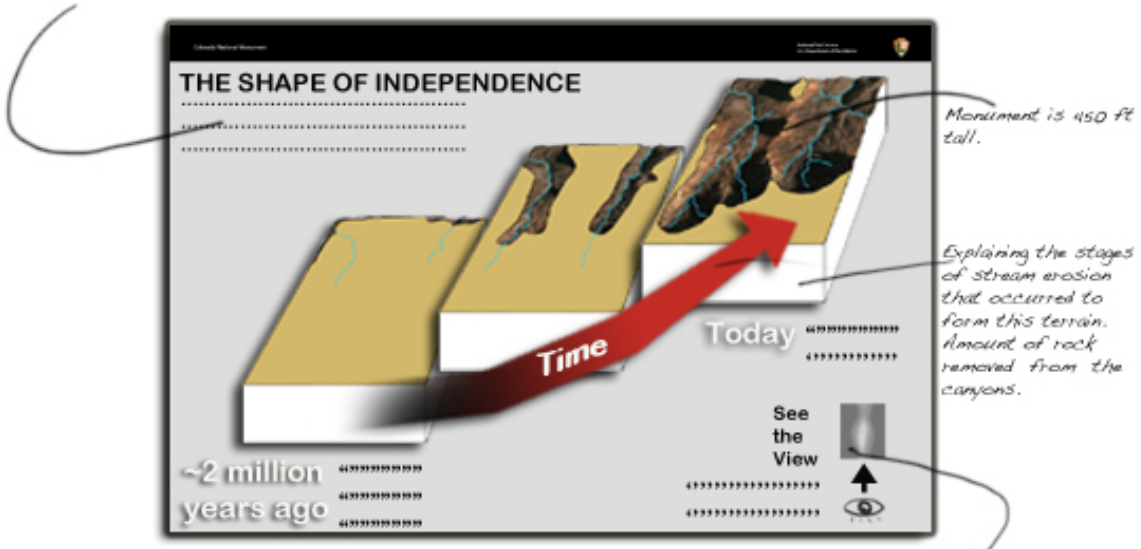
Remove existing pedestal and frame and repair concrete to match color and texture. New frame location will be near the existing railing. Cut concrete for frame legs holes. In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes. Alternatively, modify frame and mount on existing rails after performing an engineering audit of existing rail system for safety or modify frames to bolt into the concrete.

**COMMENTS**

The viewing platform is ADA compliant according to the park. Check ADA parking area designation and parking slopes for compliance.

| | | | |
|---|---|---|---|
| **Panel Size**<br>36x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |

How did Independence Monument form and is it a spire or some other form? The shape of the monument depends on your perspective. The monument is really part of a wall that formed between Monument and Wedding Creeks. as they eroded the landscape.




Tactile topographic model, visitors encouraged to bend down or look up (children) and sight along model to duplicate the view from the wayside. Encourage visitor to stop at Grand View for the another perspective.

**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 016**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

017 / Grand Preview / Grand View

**INTERPRETIVE GOALS**

Visitors will be able to get a quick sense of the landscape view and the geology and ecology information to be experienced at the wayside, and the location and distance to and small child safety measures for the viewing platform.

**POSSIBLE GRAPHICS**

Panoramic photo from the viewpoint with visitors in the foreground exclaiming their excitement! Photos of birds and a magnifying glass holding visitor looking at a metamorphic rock. Tactile samples of metamorphic rock.

**SITE PREPARATION**

Remove existing pedestal and frame. Provide a level region under the targeted wayside frame location at the height of the adjacent curb In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes.

**COMMENTS**

The path to the viewing platform is not wheelchair accessible, and since this is a preview without the same clear view as the viewing platform we suggest that the park not focus in ADA compliance here.

| | | | |
|---|---|---|---|
| **Panel Size**<br>24x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |


**Thumbnail Sketch | 24 x 24 inches | 15% of actual size| Wayside Exhibit 017**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

018 / Geology – Ancient Environments / Grand View

**INTERPRETIVE GOALS**

Visitors will be able to identify Precambrian metamorphic and Igneous Rocks and the Chinle, Wingate and Kayenta layers rocks and understand the important differences in age, composition and environments.

**POSSIBLE GRAPHICS**

Cartoonish timeline of geologic events representing the rocks at the park. Photographs of modern environments of formation for similar rocks. Overlay of a panoramic photograph of this view, distinguishing rock types, touchable samples of rocks,

**SITE PREPARATION**

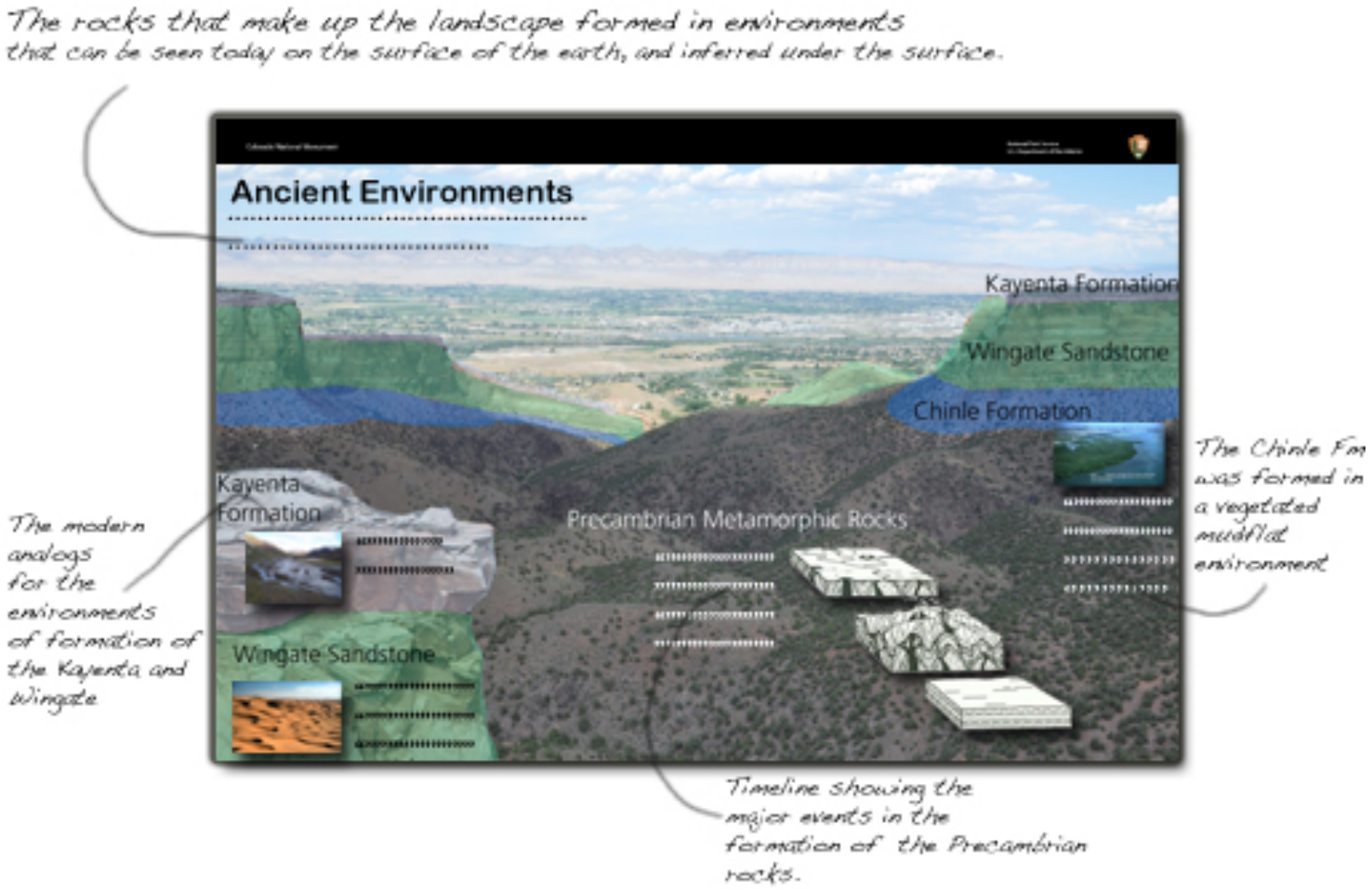
Modify a low profile frame and mount on existing railing after performing an engineering audit of existing railing system for safety. This exhibit shares the platform with exhibit 018 described below.

**COMMENTS**

The viewing platform is not wheelchair accessible, and is an uneven rock surface in the Kayenta Formation. The railing system appear to be old but stable. How does the park address replacement or maintenance of the railing system?


Panoramic photo of Grand View. The panel described here looks in the direction of the green arrow labeled #2

| **Panel Size** | **Category** | **Base Material** | **Ancillaries** |
|---|---|---|---|
| 36x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Direct Embed | | |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 018**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

019 / Ecology – Ground to Sky / Grand View

**INTERPRETIVE GOALS**

Visitors will understand why this habitat is suitable for many birds both large and small.

**POSSIBLE GRAPHICS**

Photos of Golden Eagles, Peregrine Falcon, Turkey Vultures, violet green swallows and white-throated swifts. Diagram of how thermal air currents work. Photo of whitewash on cliff.

**SITE PREPARATION**

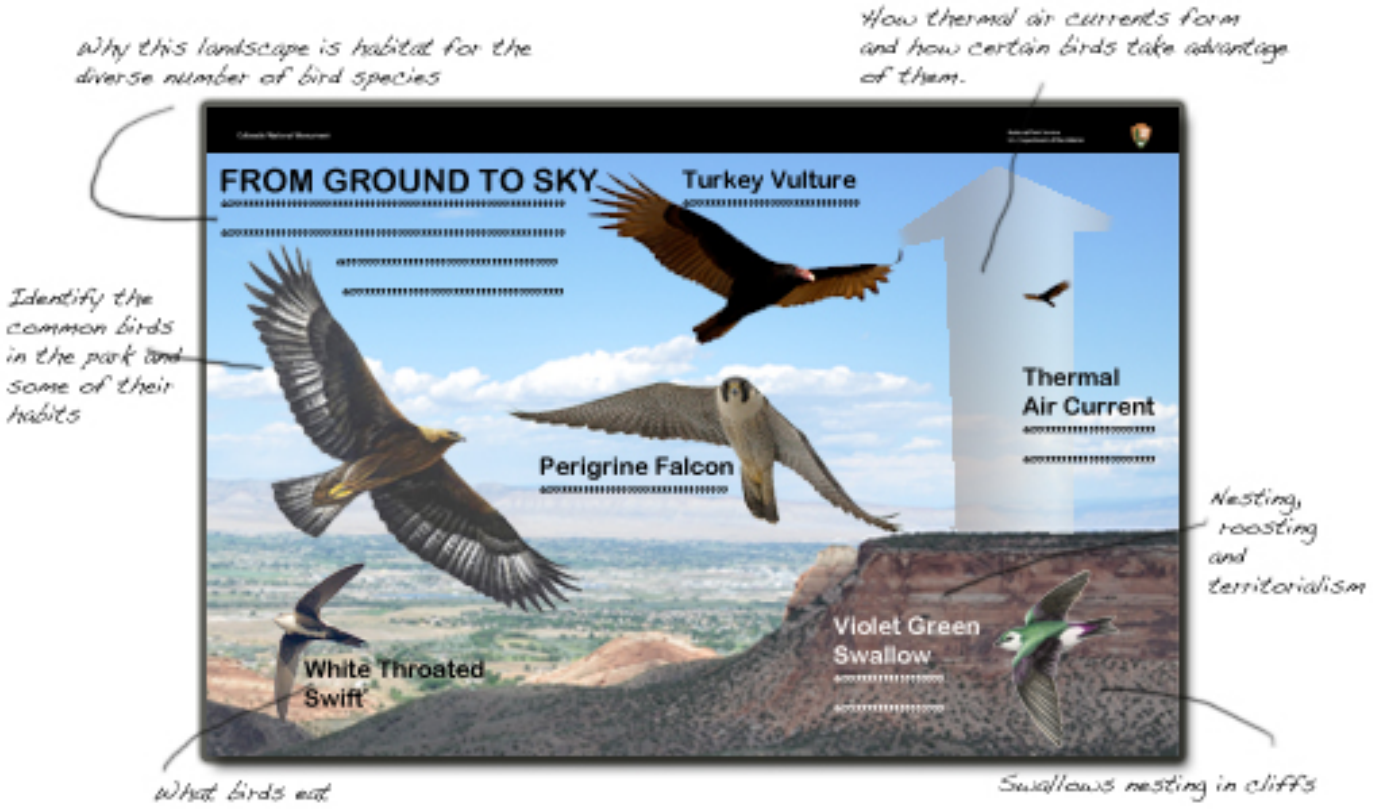
Modify a low profile frame and mount on existing railing after performing an engineering audit of existing railing system for safety. This exhibit shares the platform with exhibit 017 described above.

**COMMENTS**

The viewing platform is not wheelchair accessible, and is an uneven rock surface. The railing system appear to be one of the oldest at the park but it appears stable. How does the park address replacement or maintenance of the railing system?


Panoramic photo of Grand View. The panel described here looks in the direction of the green arrow labeled #2

| **Panel Size** | **Category** | **Base Material** | **Ancillaries** |
|---|---|---|---|
| 36x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Direct Embed | | |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 019**

**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

020/ Culture – Tragedies on Rim Rock Drive / Half Tunnel

**INTERPRETIVE GOALS**

Visitors will be invited to join the park in honoring all the men who died during the construction of the Rim Drive and their descendants, many of who still live in the area.


**POSSIBLE GRAPHICS**

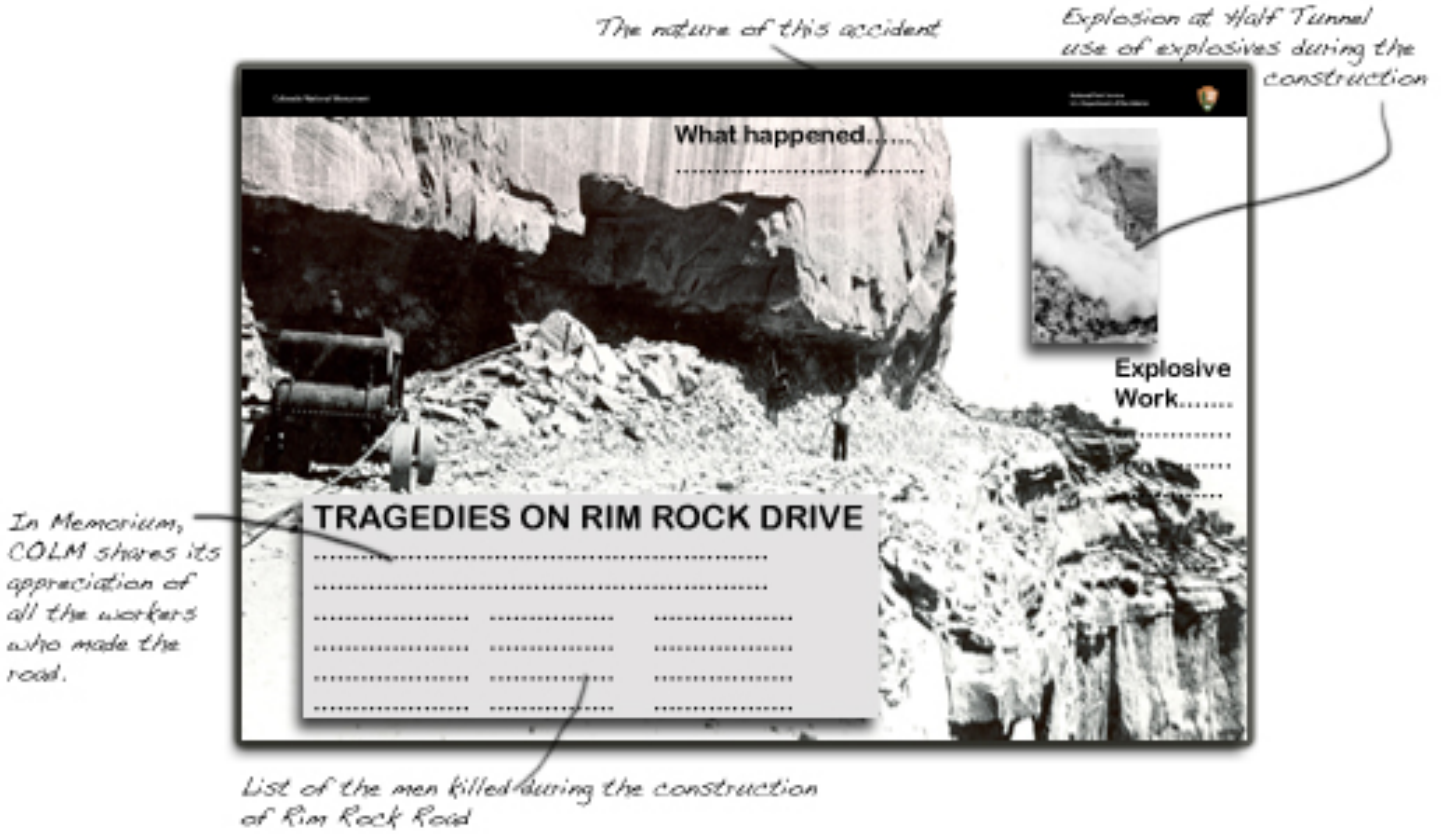
Historic photos showing the overhang before the accident and some of the road crew at work. Historic blasting photos. List of all the men who died during construction.

**SITE PREPARATION**

Remove existing pedestal and frame. Provide a slightly raised level region that prevents runoff from collecting under and around the targeted wayside frame locations. In case of shallow bedrock, determine best method for excavation of frame leg holes (12" diameter, 30"-36" variable depth) and prepare holes.

**COMMENTS**
The path to the viewing platform is not wheelchair accessible. This wayside shares the Grand View parking area. Some indication that the wayside is accessed from this parking area is needed.

| | | | |
|---|---|---|---|
| **Panel Size**<br>36x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 020**

**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

021 / Geology - The Shapes of Erosion/ Coke Ovens

**INTERPRETIVE GOALS**

Visitors will understand that the Coke Ovens are another example of erosion and weathering in part controlled by the composition and structure of the Wingate Sandstone

**POSSIBLE GRAPHICS**

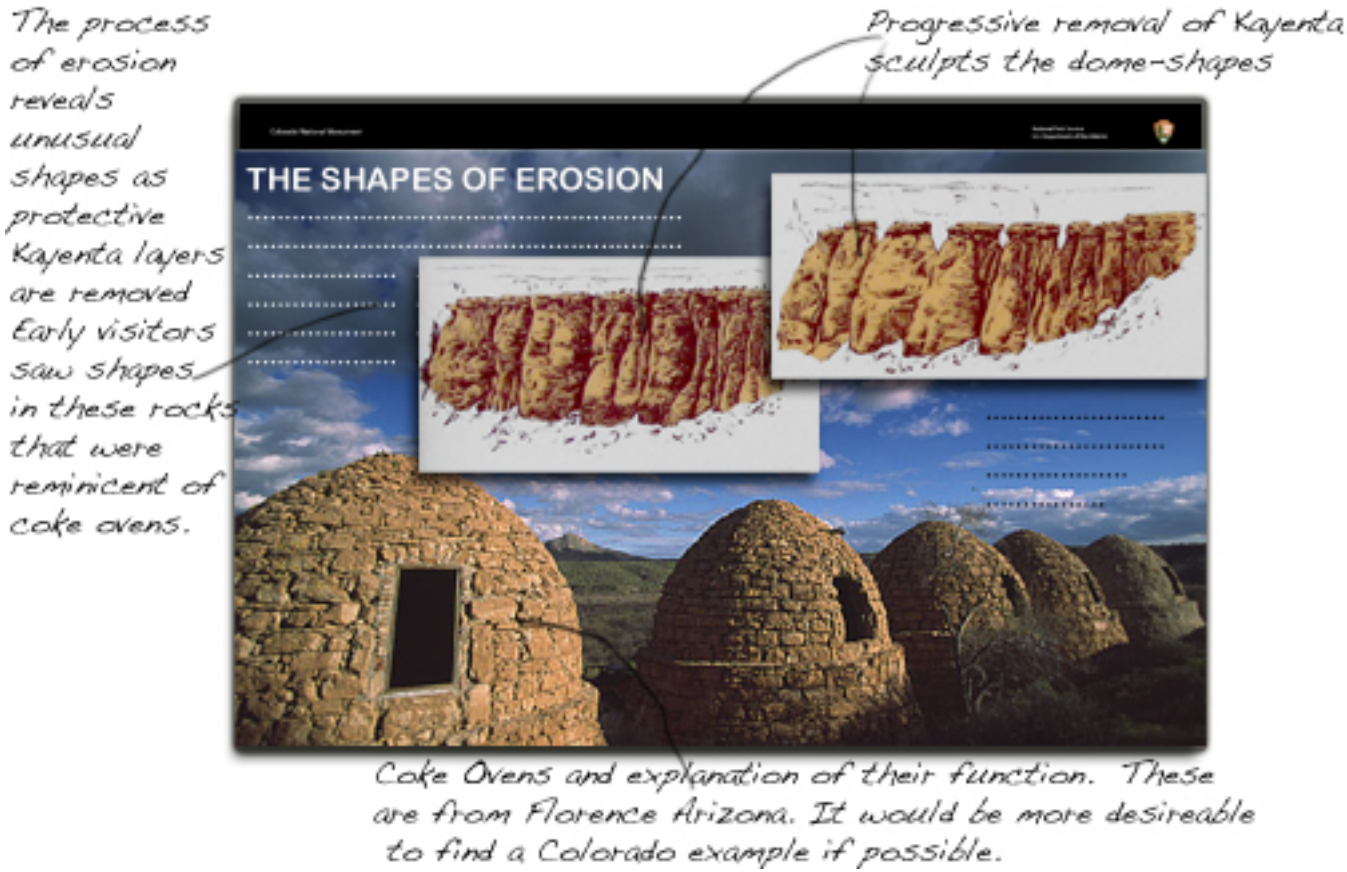
A sequence of illustrations showing how the coke ovens evolved over time. Photo and explanation of what a coke oven is.

**SITE PREPARATION**

Remove existing pedestal and frame. Provide a level region under the targeted wayside frame location at the height of the adjacent curb In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes. ADA: Check slope on curb and parking area for ADA compliance, check parking area for ADA painted zone. Ensure that there is a clear pathway indicated down to lower overlook platform.

**COMMENTS**
There is an extensive viewing platform below the parking lot.

| | | | |
|---|---|---|---|
| **Panel Size**<br>36x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 021**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

022/ Culture – Putting People to Work / C.C.C. Tunnel

**INTERPRETIVE GOALS**

Visitors will understand that this is not a natural cave, but rather a constructed tunnel built by the CCC during the road construction.

**GRAPHIC CATEGORIES**

Panoramic Photograph, Digital Illustration Overlay and Direct Labeling, Waypoint

**POSSIBLE GRAPHICS**

Historic photos of CCC era workers (CCC, LEMs, WPA) building these drainage conduits. Historic photo of CCC camp at this location. Simple road map showing all 200 of the drainages crossed by the road.

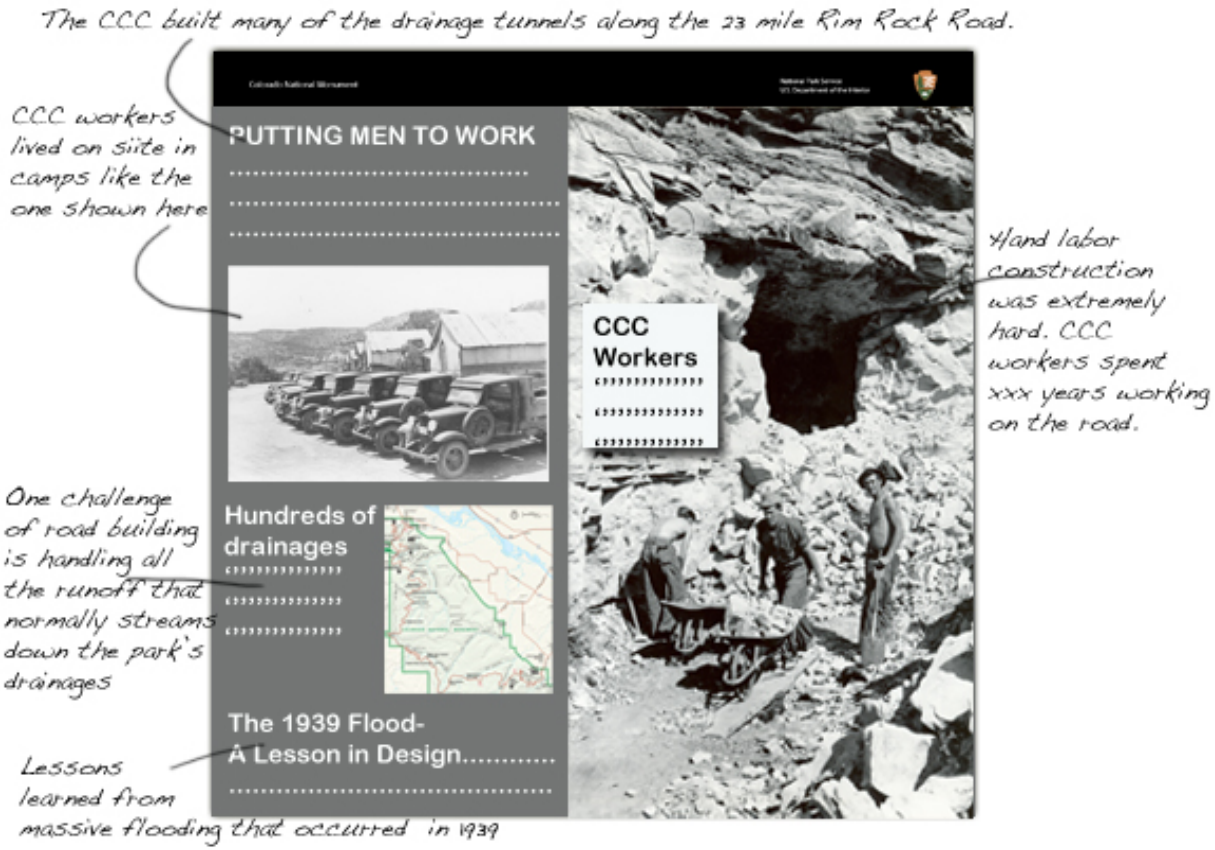
**SITE PREPARATION**

Provide a level region under the targeted wayside frame location. In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes.

**COMMENTS**

The trail and the viewing platform are not wheelchair accessible.

| **Panel Size** | **Category** | **Base Material** | **Ancillaries** |
|---|---|---|---|
| 24x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Direct Embed | | |




**Thumbnail Sketch | 24 x 24 inches | 15% of actual size| Wayside Exhibit 022**

**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

023 / Geology – Palette of Colors / Artists Point

**INTERPRETIVE GOALS**

Visitors will understand the color of the rocks depends on its composition, and also the composition of the material on its surface.

**GRAPHIC CATEGORIES**

Panoramic Photograph, Digital Illustration Overlay and Direct Labeling, Waypoint mobile device identity


**POSSIBLE GRAPHICS**

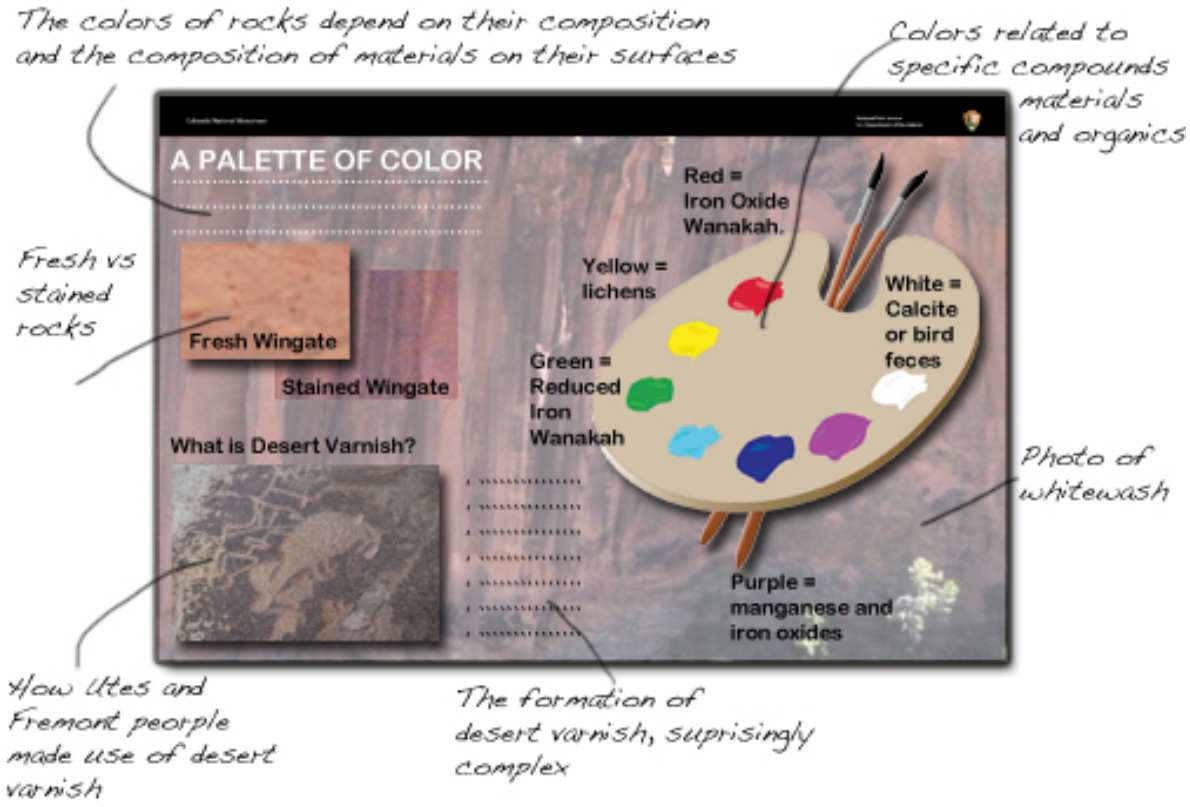
Photomicrograph of the Kayenta, rock photos -fresh and weathered surface, diagram showing concept of desert varnish and rock staining and the many ways it forms. Artist palette cartoon containing photo examples of the colors of the park and their chemical explanation

**SITE PREPARATION**

Provide a level region under the targeted wayside frame location at the height of the adjacent pavement. In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes. ADA: Check slope on parking area for ADA compliance, check parking area for ADA painted zone. Ensure that there is a clear pathway indicated down to overlook platform.

**COMMENTS**
Need to find the optimum location for the parking lot side location of this wayside.

| | | | |
|---|---|---|---|
| **Panel Size**<br>36x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 023**

**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

024 / Ecology – Woodlands Relationships / Highland

**INTERPRETIVE GOALS**

Visitors will be able to identify Pinyon and Juniper trees, and other life unique to the region and gain an appreciation for the incredible relationships between species in the miniature woodlands of the high desert.


**POSSIBLE GRAPHICS**

Diorama of environment showing Pinon, jay and mouse dependent relationships. Reveal panels that show wildlife/plant species and their names to allow for interactive learning. Include photos to help ID pinyon and juniper trees, needles, cones/berries and seeds. Labels at actual trees near the wayside.

**SITE PREPARATION**

Remove existing pedestal and frame and repair wall. In the new location remove wall stones in targeted location. Provide a level region under the targeted wayside frame location at the height of the adjacent curb In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12" diameter, 30"-36" variable depth) and prepare holes. ADA: Check slope on curb and parking area for ADA compliance, check parking area for ADA painted zone. If slopes are acceptable, build ADA compliant ramp adjacent to ADA parking onto curb.

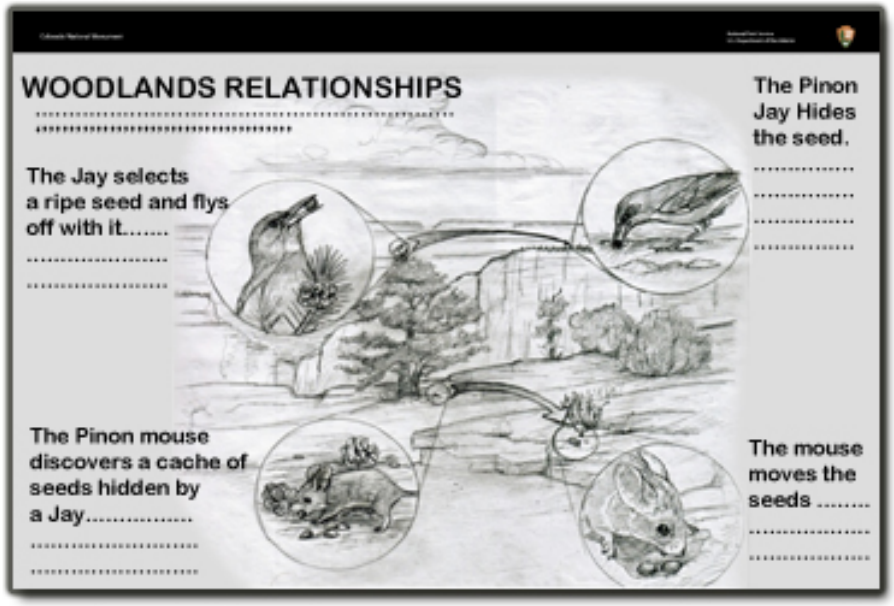
**COMMENTS**

The curb is made of sandstone and this uneven surface may be too rough to meet ADA wheelchair requirements. However this seems like an very good location for this functionality.

| | | | |
|---|---|---|---|
| **Panel Size**<br>36x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |

When are pinon trees most mobile? When they are seeds! The range of pinon extends by the action of birds like the pinon jay and rodents like the pinon mouse.

Some seeds are forgotten or stolen (see below). "Lost" seed may become trees!




The background is a color illustration reflecting the view at the wayside.

The mouse discovers Jay caches, and rehides them elsewhere., sometimes forgetting where. These seeds can become trees.

**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 024**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

025 / Upper Ute Canyon Preview / Upper Ute Canyon

**INTERPRETIVE GOALS**

Visitors will be able to get a quick sense of the landscape views and feel invited to share in the geology and ecology information designed for young learners.


**POSSIBLE GRAPHICS**

Photo or illustration of mummy and vase/urn whimsical rock formations. Photos of children on hands and knees looking at potholes.

**SITE PREPARATION**

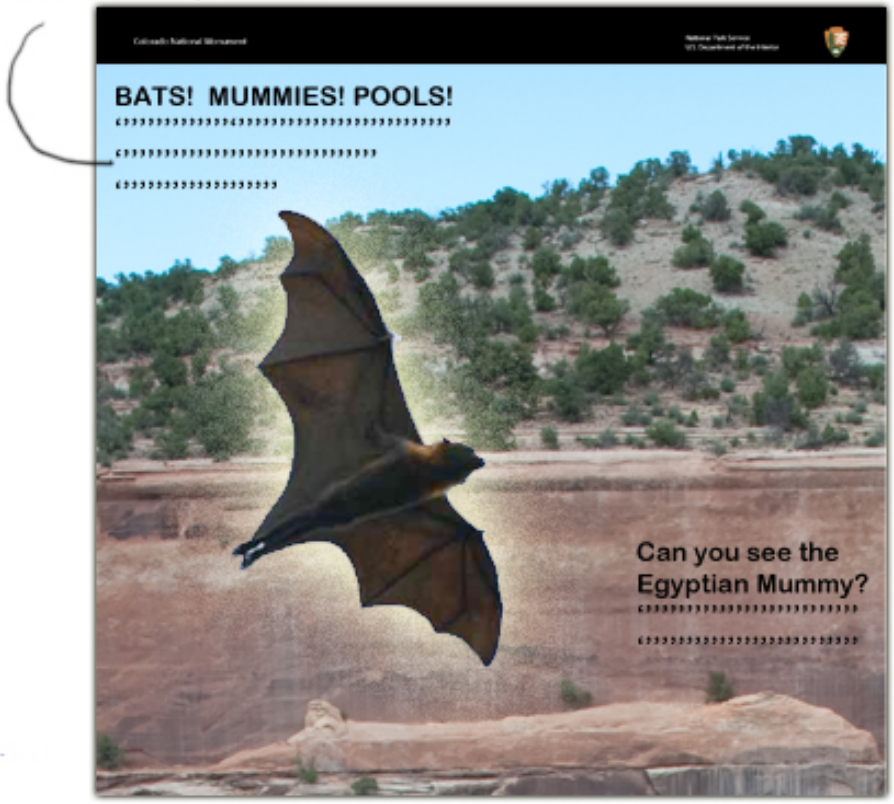
Provide a level region under the targeted wayside frame location at the height of the adjacent curb. In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes. Ensure that there is a clear safe pathway to the overlook platform.

**COMMENTS**

The trail and viewing platform are not wheelchair accessible.

| **Panel Size** | **Category** | **Base Material** | **Ancillaries** |
|---|---|---|---|
| 24x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Direct Embed | | |

How do bats navigate? Can you use sound to estimate distance?
Some say there is a mummy in this canyon. Take a walk down the short trail to investigate these fun science experiments.




**Thumbnail Sketch | 24 x 24 inches | 15% of actual size| Wayside Exhibit 025**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

026 / Ecology - Echo, Echo, Echo / Upper Ute Canyon

**INTERPRETIVE GOALS**

Be able to roughly calculate the distance across the canyon using a loud shout and a watch and connect this experiment with how resident bats navigate these canyons.


**POSSIBLE GRAPHICS**

A diagram showing how sound bounces off hard surfaces. Photo and illustration of a bat with diagram showing similarity between echos and echolocation.

**SITE PREPARATION**

Modify a low profile frame and mount on existing railing after performing an engineering audit of existing railing system for safety. This exhibit shares the platform with exhibit 026 described below.

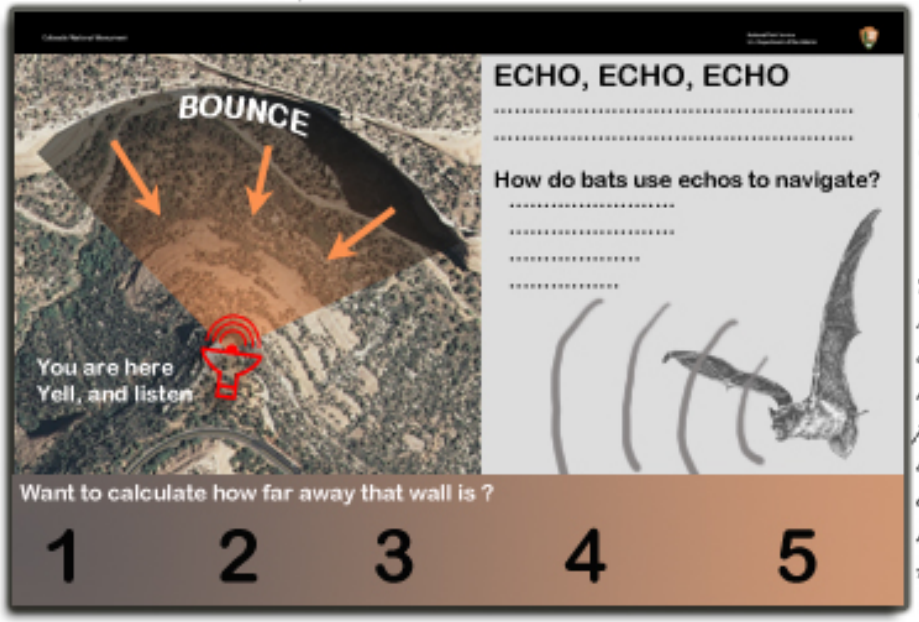
**COMMENTS**

The path to the viewing platform is not wheelchair accessible. The platform is an uneven rock surface. The railing system appear to be among the oldest at the park but stable.

| | | | |
|---|---|---|---|
| **Panel Size**<br>36x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |

*Illustrate the unique geometry of this canyon. The view platform is in an almost perfect position for sound waves to reflect off the concave far wall and focus back at the view platform*

*Encourage shouting!*




*What is an echo and why does it occur?*

*How the many species of bats native to the park make use of echos to navigate and find food.*

*Five steps to calculate how far away the wall is using the speed of sound and the echo.*

**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 026**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

027 / Ecology – Pothole Life / Upper Ute Canyon

**INTERPRETIVE GOALS**

Visitors will recognize the importance of potholes to wildlife.

**POSSIBLE GRAPHICS**

A labeled colored diorama illustration of pothole life. Diagram of erosional process of how these potholes form and enlarge. Photo of these potholes filled with water.

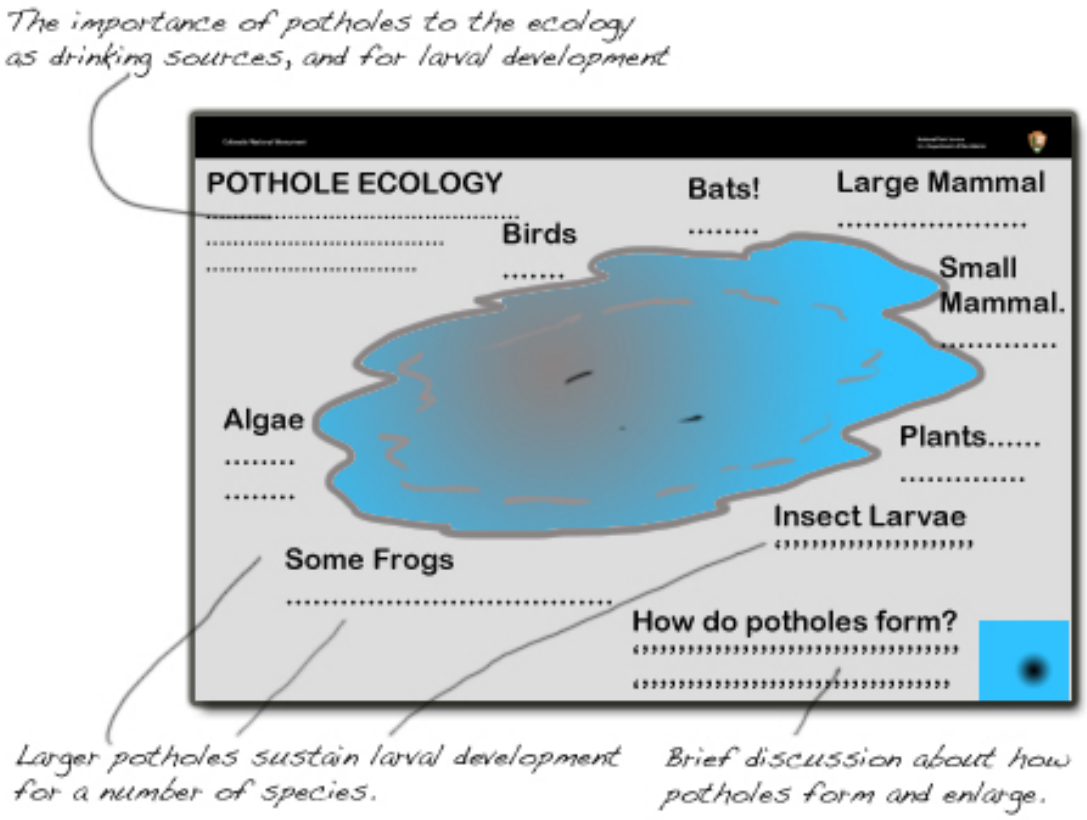
**SITE PREPARATION**

Modify a low profile frame and mount on existing railing after performing an engineering audit of existing railing system for safety.

**COMMENTS**

The path to the viewing platform is not wheelchair accessible. The platform is an uneven rock surface. This exhibit shares the platform with exhibit 025 described below.

| | | | |
|---|---|---|---|
| **Panel Size**<br>36x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 027**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

028 / Geology – A Slow Fall / Fallen Rock

**INTERPRETIVE GOALS**

Visitors will understand that a slab with the mass of Fallen Rock would not remain coherent if it had really fallen as far as it appears it has in one event and that it likely was lowered over time as the soft rocks beneath it were removed.


**POSSIBLE GRAPHICS**

A color diagram showing the evolution of the slab detachment.

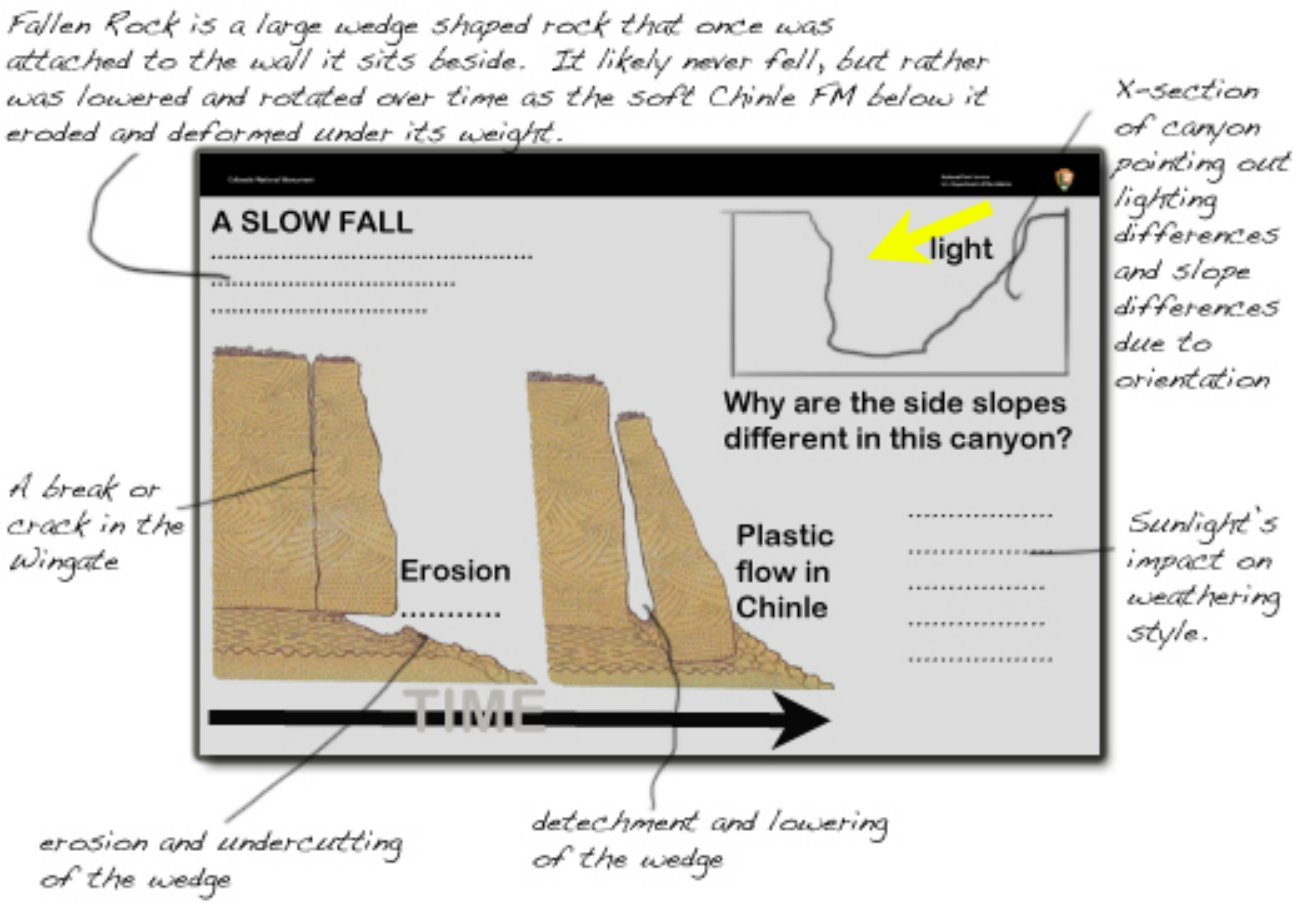
**SITE PREPARATION**

Remove existing pedestal and frame. Modify a low profile frame and mount on existing railing after performing an engineering audit of existing railing system for safety.

**COMMENTS**

The path to the viewing platform is not wheelchair accessible. The platform is an uneven rock surface. The railing system appear to be old but stable. Another wayside about slope direction was suggested for this location but there really doesn't appear to be room for two.

| **Panel Size** | **Category** | **Base Material** | **Ancillaries** |
|---|---|---|---|
| 36x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Direct Embed | | |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 028**

**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

029 / Ute Canyon Preview / Ute Canyon

**INTERPRETIVE GOALS**

Visitors will be able to get a quick sense of the landscape views and be invited to explore the cultural and geologic information at the wayside.


**POSSIBLE GRAPHICS**

Diagram of the botanical garden. Photo of a flash flood.

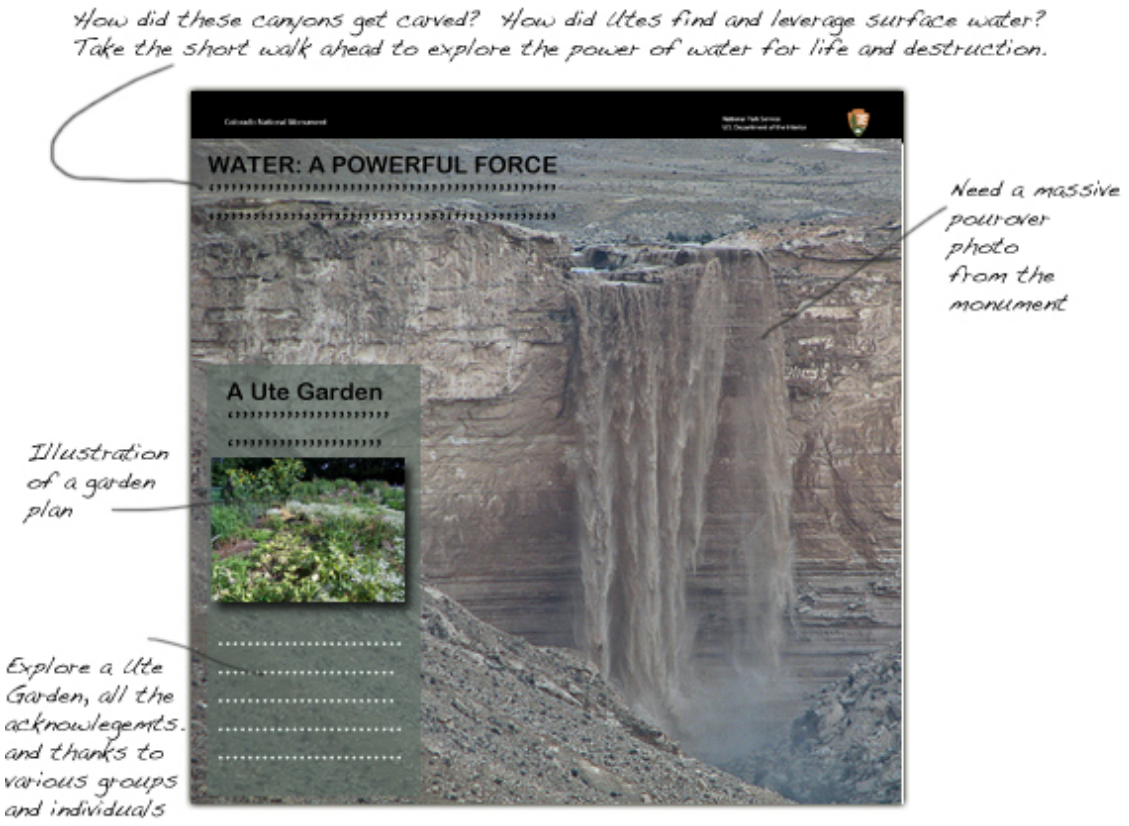
**SITE PREPARATION**

Provide a level region under the targeted wayside frame location at the height of the adjacent curb. In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes.

**COMMENTS**

The trail and viewing platform are not wheelchair accessible. However it seems like the planned botanical garden area could be made wheelchair accessible at a minimum.

| | | | |
|---|---|---|---|
| **Panel Size**<br>24x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |




**Thumbnail Sketch | 24 x 24 inches | 15% of actual size| Wayside Exhibit 029**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

031 / Geology - Water Carved Landscape/ Ute Canyon View

**INTERPRETIVE GOALS**

Visitors will understand that how and where of drainages begin influence how they look later in their lifespan and will realize the power of water in shaping drainages.

**POSSIBLE GRAPHICS**

A tactile drainage progression diagram showing how early patterns established along existing weaknesses can control morphology as a drainage evolves. Flash flood, thunderstorm photos.

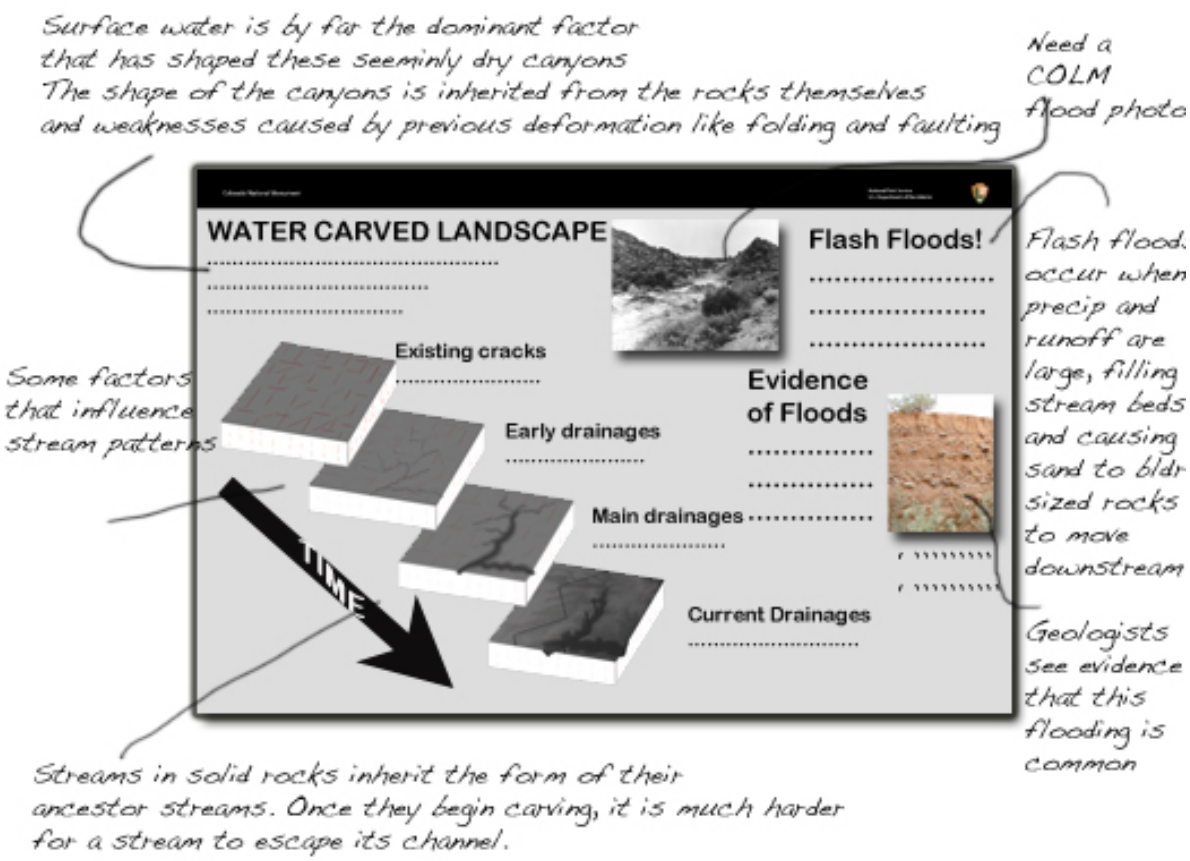
**SITE PREPARATION**

Modify a low profile frame and mount on existing railing after performing an engineering audit of existing railing system for safety.

**COMMENTS**

The trail and the viewing platform are not wheelchair accessible. The platform is on rock. This exhibit shares a platform with exhibit 030 described below.


| | | | |
|---|---|---|---|
| **Panel Size**<br>36x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 031**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

032 / Culture - Water is Life / Ute Canyon View

**INTERPRETIVE GOALS**

Visitors will be asked to imagine gathering resources from this landscape and to identify vegetation that might indicate surface water as a way of invoking critical thinking about living on this landscape as the Utes did.

**POSSIBLE GRAPHICS**

Photos of species like cottonwoods or others that suggest nearby water, photos of ephemeral pools or water flow in these canyons. Photos of animals utilized by Ute or Fremont people as suggested by stories and rock art.

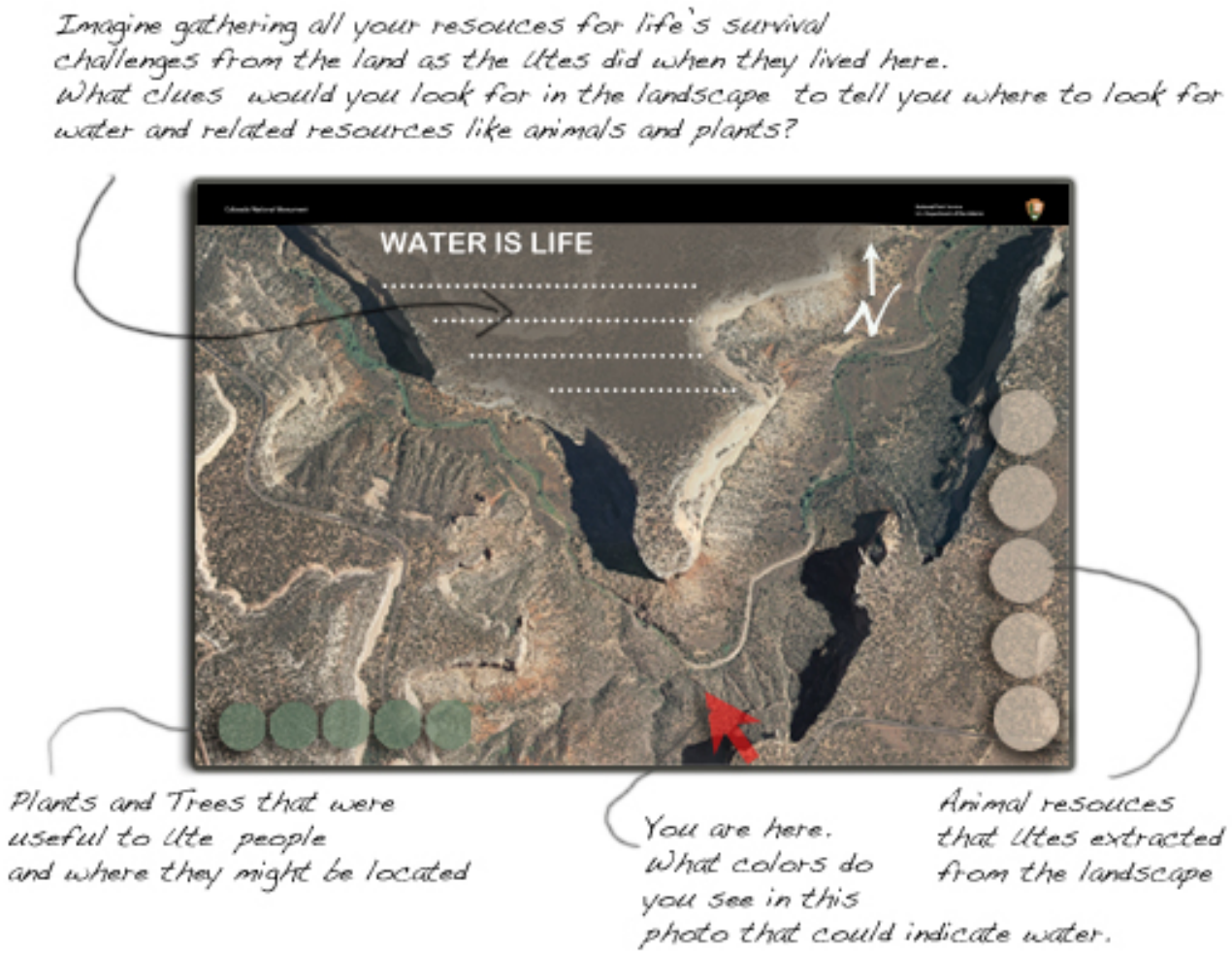
**SITE PREPARATION**

Modify a low profile frame and mount on existing railing after performing an engineering audit of existing railing system for safety.

**COMMENTS**

The trail and the viewing platform are not wheelchair accessible. The platform is on rock. This exhibit shares a platform with exhibit 029 described above.


| Panel Size | Category | Base Material | Ancillaries |
|---|---|---|---|
| 36x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Direct Embed | | |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 032**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

033 / Geology - Canyon in a Canyon / Red Canyon Overlook

**INTERPRETIVE GOALS**

Visitors will contemplate the differences in environments of formation of the Wingate and the Precambrian metamorphic and igneous rocks, and realize that this "flat bottomed canyon" is a result of different rock types. They will understand that water flows faster as it drops over the hanging valley at the termination of Red Canyon, which increases its capacity to erode even the crystalline rock. .


**POSSIBLE GRAPHICS**

Color analog photos showing the environments of formation. Microphotographs for Xline rocks to show nature of grains and cementation. Reuse the existing wayside "Canyon in a Canyon" illustration idea.

**SITE PREPARATION**

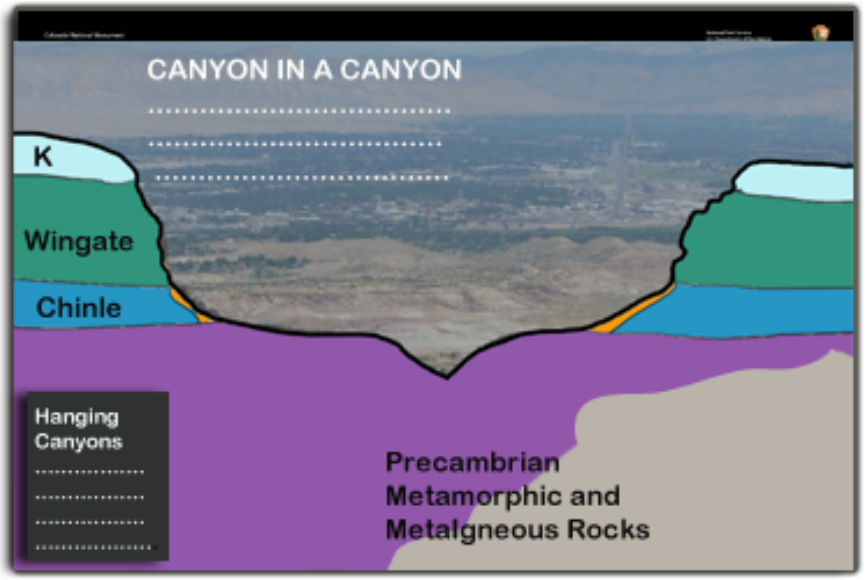
Remove existing pedestal and frame and repair wall. In case of shallow bedrock or coarse fill, determine best method for excavation of frame leg holes (12'' diameter, 30"-36" variable depth) and prepare holes. ADA: Check slope on curb and parking area for ADA compliance, check parking area for ADA painted zone.

**COMMENTS**

Check that the parking is large enough to accommodate ADA parking.

| | | | |
|---|---|---|---|
| **Panel Size**<br>36x24 inches | **Category**<br>Low Profile | **Base Material**<br>Weathering Steel | **Ancillaries** |
| **Panel Material**<br>Rhino | **Mount**<br>Direct Embed | **Color** | **Hardware Notes** |

*Different rocks respond in different ways to erosion. While this might look like a glacially derived U-Shaped canyon, it is not. The sedimentary rocks are much softer than the metamorphic and metaigneous rocks beneath them. The broad canyon bottom reflects this: flowing water couldn't wear away the harder rocks as quickly until it reached the far end of the canyon where it gained velocity and erosional energy- cutting the prominant notch.*




*The hanging canyon concept*

**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 033**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

034/ Multiple Themes- The Story of Canyons/ Cold Shivers Point

**INTERPRETIVE GOALS**

Visitors will understand that the landscape of the monument has been uplifted and then carved by erosional processes over millions of years.

**POSSIBLE GRAPHICS**

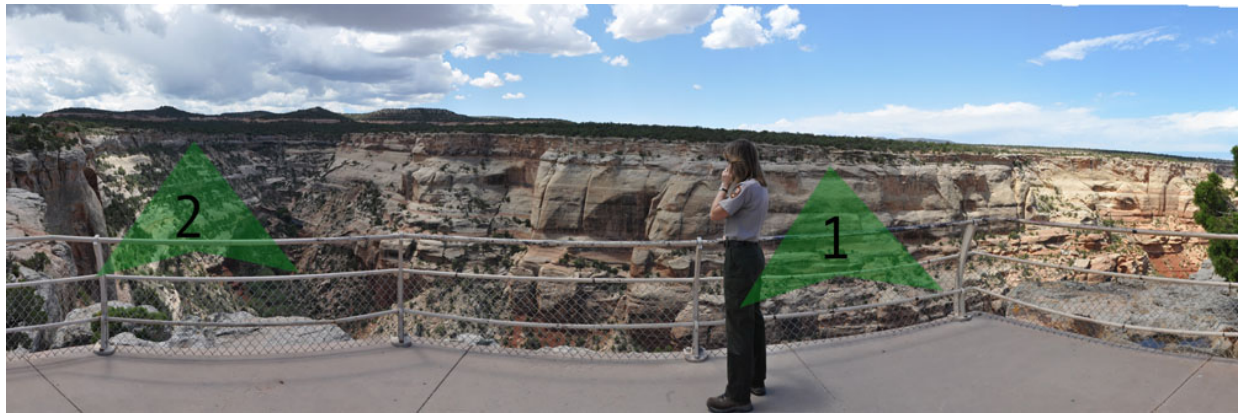
Staged overlapping illustration series of fault and flexure forming in layered rocks and subsequent erosional exposure, linked to landscape in view.

**SITE PREPARATION**

Modify a low profile frame and mount on existing railing after performing an engineering audit of existing railing system for safety. Alternatively modify the frame to bolt to existing concrete.

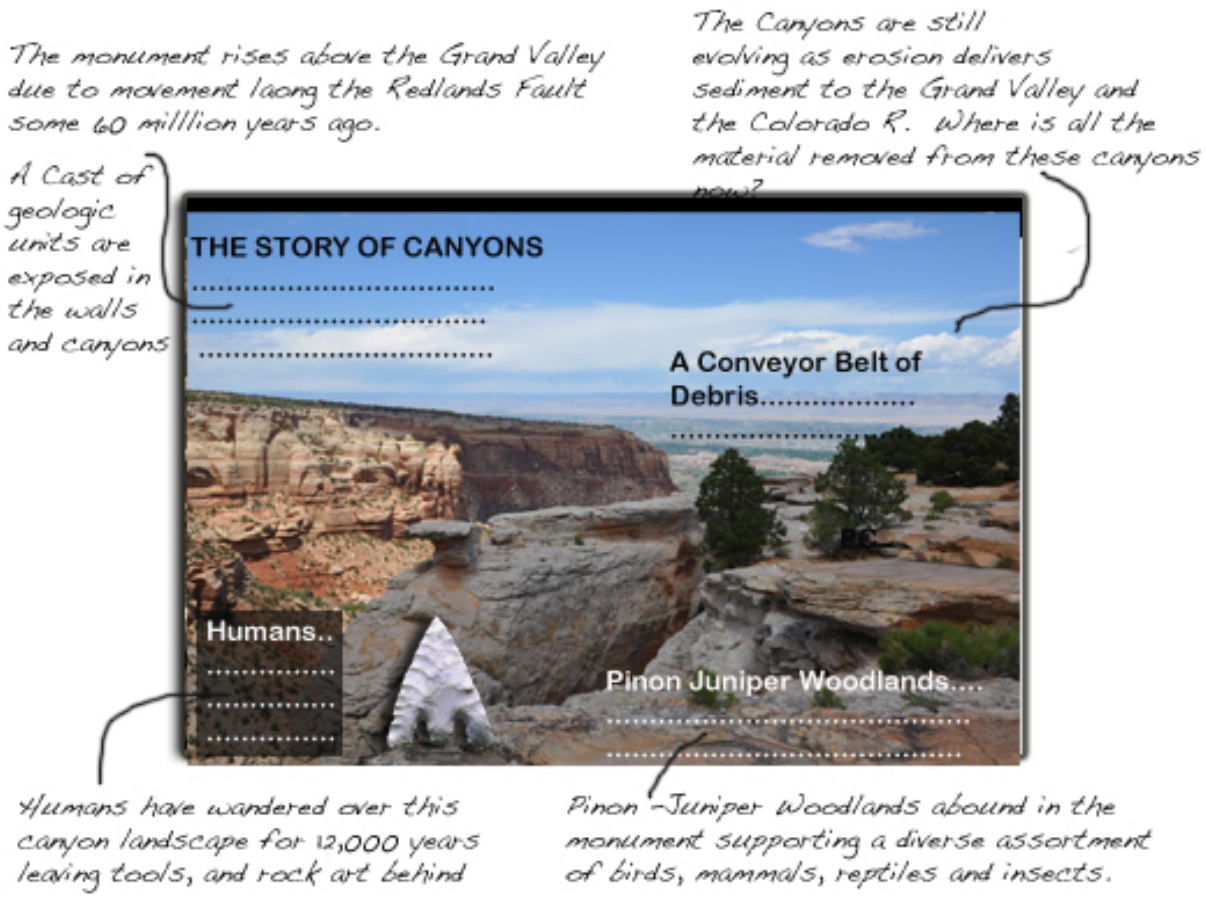
**COMMENTS**

The trail and the viewing platform are reportedly wheelchair accessible. This exhibit shares a platform with exhibit 033 described below.




Panoramic photo of wayside. Green arrow labeled “1” points in the approximate direction of this panel.

| **Panel Size** | **Category** | **Base Material** | **Ancillaries** |
|---|---|---|---|
| 36x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Direct Embed | | |




**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 034**

# Draft Wayside Exhibit Proposal

Colorado National Monument, February 26, 2011

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**EXHIBIT NUM/SUBJECT/WAYSIDE NAME**

035/ Ecology – Conserving the Wild / Cold Shivers Point

**INTERPRETIVE GOALS**

Visitors will understand the park is a protected ecosystem bordered by a urban environment, and that only through conservation can the natural and cultural resources be protected.

**POSSIBLE GRAPHICS**

Photographs of Search and Rescue hauling up large trash thrown over the canyon walls, Biological soil crust along trails, vandalized rock art, historic bucket and/or fence (John Otto relics)

**SITE PREPARATION**

Modify a low profile frame and mount on existing railing after performing an engineering audit of existing railing system for safety.

**COMMENTS**

The trail and the viewing platform are reportedly wheelchair accessible. This exhibit shares a platform with exhibit 032 described above.

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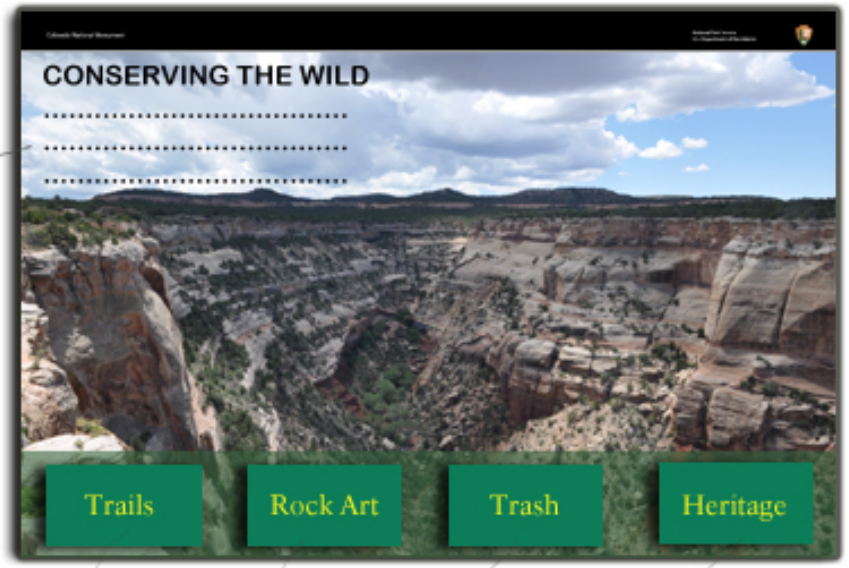
Panoramic photo of wayside. Green arrow labeled "1" points in the approximate direction of this panel.

| **Panel Size** | **Category** | **Base Material** | **Ancillaries** |
|---|---|---|---|
| 36x24 inches | Low Profile | Weathering Steel | |
| **Panel Material** | **Mount** | **Color** | **Hardware Notes** |
| Rhino | Direct Embed | | |

The park is a protected ecosystem under pressure from the nearby urban and developed rural environments. Only through conservation will these wild places survive.




Series of "We need your help with" photos for protection of the landscape. If reveal panels are acceptable then photo and message under reveal else thes can go below each heading..

**Thumbnail Sketch | 36 x 24 inches | 10% of actual size| Wayside Exhibit 035**

# Appendix 2
# Final Designs

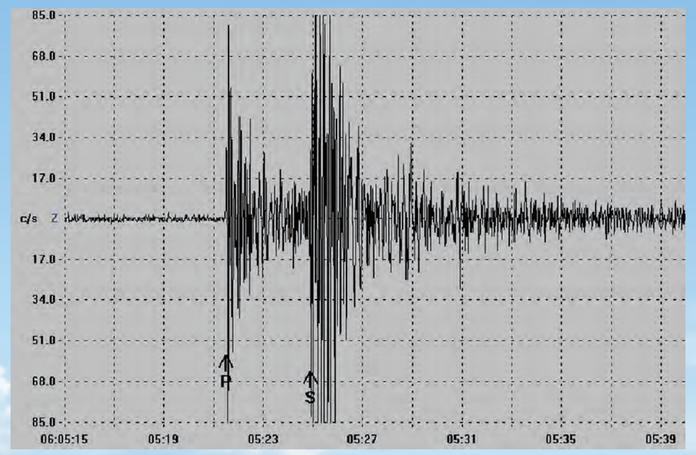
National Park Service
U.S. Department of the Interior

# Earthquakes?

Welcome to your Colorado National Monument! This park is brought to you in part by movement on the Redlands Fault.

## This place was shaking millions of years ago.

Walk down to the overlook and you can put your hand on the Redlands Fault zone, a major break in the earth's crust. When this fault moved between 70 and 40 million years ago, the region experienced moderately strong earthquakes. Recently recorded earthquakes near the Monument are minor in comparison. Very small earthquakes like the one (right) recorded by scientists are common. This shallow earthquake occurred a few miles outside the Monument.



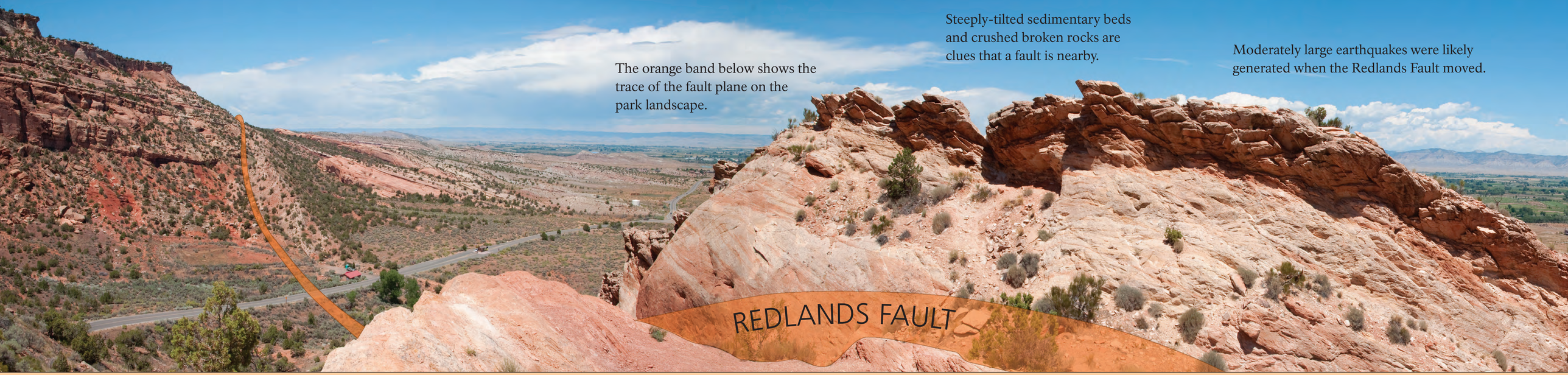

## An ecological refuge

Now that the major earthquakes have subsided, it's easy to enjoy the magnificent ecology of the Monument. You will find an overview of the plants, animals and human history described at the overlook.

National Park Service
U.S. Department of the Interior

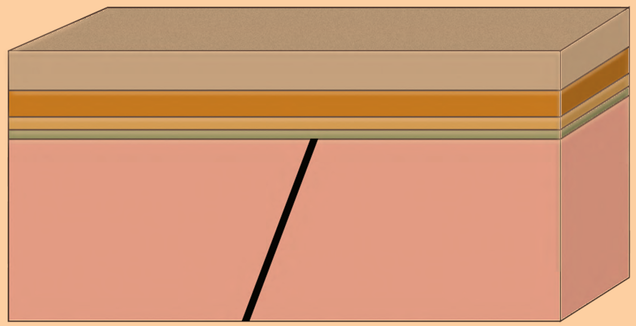
# Standing On the Redlands Fault

The rocks here on the northeast side of the park were displaced and deformed by the Redlands Fault between 70 and 40 million years ago.  Subsequent erosion caused mostly by flowing water, has removed thousands of feet of rock that once rose above the Grand Valley and the Colorado National Monument.



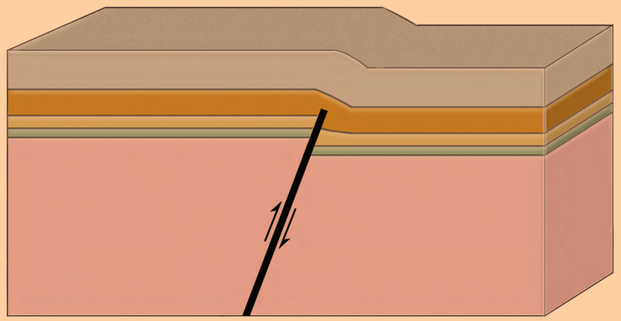

## 80 million years ago...

These sedimentary rocks were flat, sitting above a complex metamorphic and igneous rock basement.  A major plate tectonic change that would form basins and uplifts in the Rocky Mountains was just starting to compress the continent of North America.



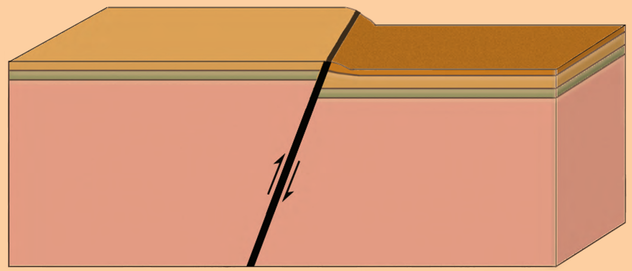
## 70 to 40 million years ago...

In response to the immense forces of tectonic compression, huge blocks of the Earth's crust moved vertically along surfaces like the Redlands Fault.  In places where these faults didn't penetrate and break the overlying beds, sedimentary rocks were folded as they draped over the moving crustal blocks.



## The last 10 million years...

The Redlands Fault was exposed as the folded rocks above it were transported away, fragment by fragment. Take a moment to look around you and imagine the forces required to bend and crush these rocks.



National Park Service
U.S. Department of the Interior

# Wildlands

White-Throated Swift

Peregrine Falcon

Mountain Lion

Desert Bighorn Sheep

Rock Squirrel

Collared Lizard

Desert Bighorn Sheep

Desert Cottontail

The high desert woodland of pinyon pine and Utah juniper covers most of the mesa tops within the Monument, extending over the cliffs and flowing down into the canyons. This “pinyon-juniper woodland” is an ecosystem which supports a wide variety of species. Humans, too, have occupied this landscape for thousands of years.

Hopi Chipmunk

Midget-Faded Rattlesnake

illustration by Paul Gray

National Park Service
U.S. Department of the Interior

# A Temporary Balance

Over tens of thousands of years, erosion has shaped this landscape. From moment to moment the forces of nature work to weaken, then wear away seemingly solid rock. Balanced Rock is a snapshot in time that we are privileged to witness, but one that won't last forever. The drawings below are possible snapshots of this spire through time.

## *What Are the Forces and Conditions At Work Here?*

Gravity is the force that will someday cause Balanced Rock to fall. The "balance" in Balanced Rock is the equilibrium between gravity and the strength of the rocks that make up this spire.

Water, in the form of rain and melted snow, soaks these rocks on a regular basis, seeping into cracks and actually dissolving minute fractions of minerals. Over time this process turns sandstone back into sand.

*Changes through time*

Freezing and thawing is a cycle that occurs in winter. As temperatures drop with nightfall, liquid water in cracks freezes to ice and expands. Rocks crack and move apart. Warmer daytime temperatures melt the ice and the cycle begins again.

Horizontal sedimentary bedding and vertical cracks called "joints" are natural planes of weakness in these rocks. They influence the erosional shapes seen at the Monument. Can you spot the bedding surface under Balanced Rock's sporty cap? Now look for the joint that separates Balanced Rock from the main cliff.

How will Balanced Rock eventually topple? Can you think of ways this might happen?

National Park Service
U.S. Department of the Interior

# Desert Bighorn Sheep

Once in danger of becoming extinct, desert bighorn sheep have made a comeback in Western Colorado and now number several hundred animals. Protecting wildlands is the key to their survival.

## Rams and Ewes

Unlike rams, whose coiled horns can weigh up to 10% of their body weight, ewes have small spike-like horns. Rams and ewes spend most of the year apart, coming together only during fall mating season. Look for them along cliff bases and atop rocky outcrops.

## Group Sightings

During most of the year, ewes travel together in small groups, which may include lambs and immature males. Wary of human contact and colored to blend into the terrain, desert bighorn sheep sightings are special events!

Photo credit: Terri Bridgman

## Remarkable Hooves

Desert bighorn sheep have amazing hooves! The rim is made of a hard material that makes firm contact with rocks, while the spongy inner pad absorbs impact and prevents the hoof from bouncing. As more weight is applied the hoof spreads apart at the tip, adding stability. This hoof was recovered by a wildlife biologist from the remains of a sheep killed by a mountain lion.

# Historic Trail

Up the trail in summer and down in fall - can you imagine yourself as a rancher, herding cattle from valley to mesa top and back, using the driveway alongside the opposite canyon wall?

Walk down the path to the scenic overlook, about 130 feet from here, to learn more about this historic trail. Keep children close by holding hands and staying on the marked trail to avoid cliff edges.

# Drive for Resources

Built by local ranchers in the 1880s, the cattle trail alongside the opposite canyon wall gave cowboys a route to move herds between winter and summer ranges. Covering the many miles of trail with a herd of cattle sometimes took several long days and nights.

## Through the Years...

Times change and by 1907 the old cattle trail needed to serve another purpose. The route was improved and soon became known as the Fruita Dugway. It was used to haul pipe during construction of a waterline connecting reservoirs in Glade Park to the valley floor.

## Now.....

No longer used as a cattle driveway or for hauling pipe, the route is now a popular hiking trail.


## Changing Environments

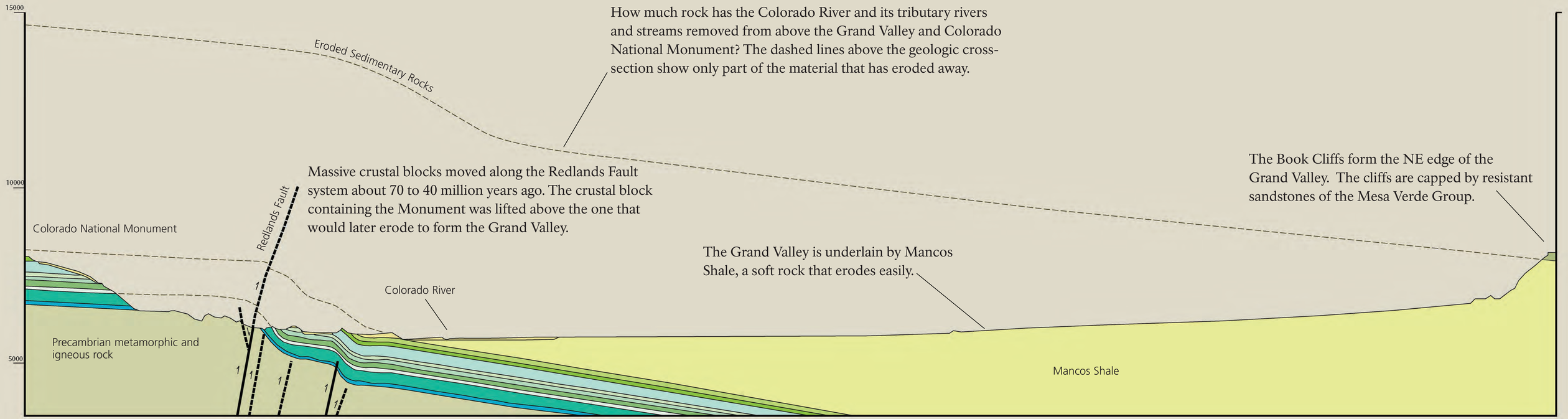
As use of the original trail has changed over time, so too has the landscape. Compare these two photographs taken a century apart. What differences in vegetation and erosion can you see on the cliff face and in the valley beyond? What might a future photograph taken in 2110 show?

Photo credit: Bill Hood

# Geology Across the Grand Valley

The view across the valley toward the Book Cliffs and Grand Mesa tells a long geologic story whose most recent chapter would be titled “Erosion!”

Ten million years ago basalt flows erupted onto the landscape at Grand Mesa, hardening into a protective cap. As the Colorado River eroded softer, exposed rocks to form the Grand Valley, the harder cap rock on the Grand Mesa preserved its underlying sediments. Today the mesa top stands more than 5000 feet higher than the valley floor.

National Park Service
U.S. Department of the Interior

# Building Rim Rock Drive

Early resident John Otto's vision of a road that would give visitors a sense of being in a place "where only birds could fly" was made real by ordinary men placed in extraordinary jobs.

Begun in 1931 when National Park Service engineers designed a scenic drive to showcase features of the park, most of the actual road building was done by Civilian Conservation Corps (CCC) crews between 1933 and 1942. Construction was suspended by World War II and finally completed in 1950. In recognition of its cultural significance, the entire road has been designated a historic district on the National Register of Historic Places.

Eight hundred feet below you and less than a quarter of a mile away, you can spot the pullout for Balanced Rock. Seemingly so close, it took construction of two miles of road and the excavation of two major tunnels to drive to where you are now.

Pneumatic drills and hammers made for dangerous work conditions as experienced by the man guiding the drill bit.

Making significant use of native building materials, construction crews built Rim Rock Drive without benefit of heavy equipment like bulldozers or backhoes. After blasting rock apart, they removed refuse by hand or guided horses pulling small dump carts on rails.

National Park Service
U.S. Department of the Interior

# The Heart of the World

Look into the “heart” of Colorado National Monument and you will see its canyons and spires. Their descriptive names come from our modern culture. Perhaps in the past the people who lived on this landscape also had their own descriptive names for these features, names that reflected their own lives.

*“I came here last year and found these canyons, and they felt like the heart of the world to me. I’m going to stay and promote this place because it should be a National Park” - John Otto, 1907*

The Island

Kissing Couple

Independence Monument

Praying Hands

Pipe Organ

# Sacred Landscape

From present-day Utes to the mammoth hunters of long ago, people have left their marks on this landscape - and it on them.

*"The legend of the Bear Dance begins with the Bear. The Bear is a sacred animal to the Utes and signifies the Utes as a Tribe." ~ Uintah and Ouray Tribal Elder Clifford Duncan*

The spring Bear Dance has long been a special occasion to celebrate, reunite friends after a long winter apart, and, of course, dance. "We find a lot of our young people are interested in our old ways today…" The Ute people continue as bands and strong family units practicing their cultural heritage while developing new traditions. As a People, they continue to hold these lands sacred.

Photo used by permission, Uintah County Library Regional History

This Ute girl's cradleboard and doll suggests the connection between Ute children and their parents. (Photo credit: Wroth)

The oldest evidence of people being here is a broken Neolithic scraper (below) found in No Thoroughfare Canyon. The scraper dates to about 5600 years ago. Could hunters have used it after they tracked and killed the ice-age mammoths whose remains have also been found within the park?

Like the Utes, earlier people of the Fremont Culture (which archeologists believe peaked in this region about 1150 years ago) hunted and gathered food from the canyons and cliffs. They left behind distinctive rock art and iconic images such as this figure from southern Utah.

Utes were living in the Great Valley when Europeans arrived in the new world and certainly used the canyons and highlands of the Monument.  Ute ceremonial structures were found on the ridges south of the park. Much of the rock art found in the Monument like the panel above has been identified by Ute elders as originating from their ancestors.

National Park Service
U.S. Department of the Interior

# Otto's Trail

Walk in the footsteps of John Otto as you follow the route he used for his first ascent of Independence Monument. Watch for flowering plants, lizards and small mammals along this ¼ mile trail and enjoy the spectacular views.

Grand Valley

Window Rock

Sentinel Spire

Wedding Canyon

Visitor Center

The Island

Pipe Organ

Praying Hands

Otto's Trail

You are here

Independence Monument

Monument Canyon

6000

Rim Rock Drive

Kissing Couple

Claret cup catcus

Desert cottontail

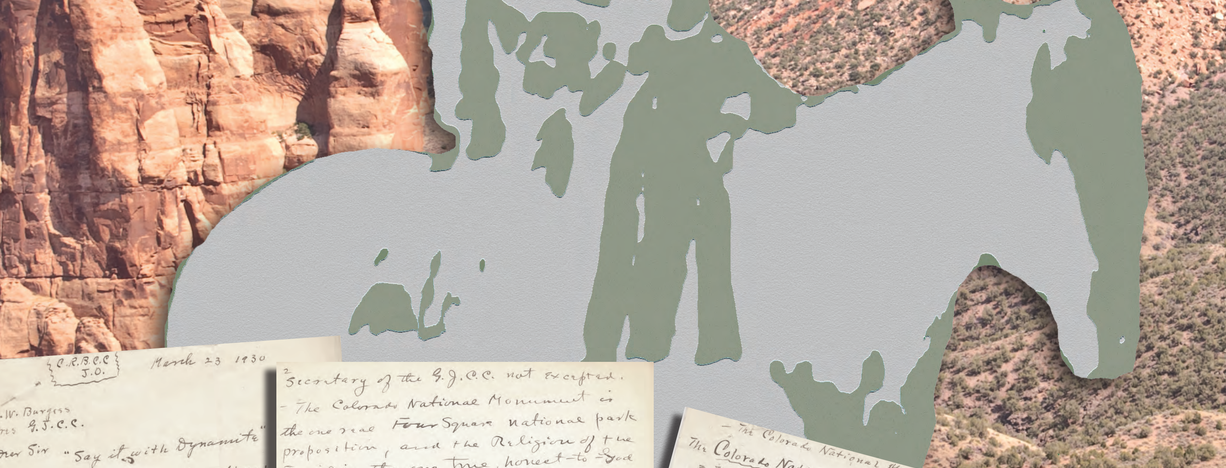
Collared lizard

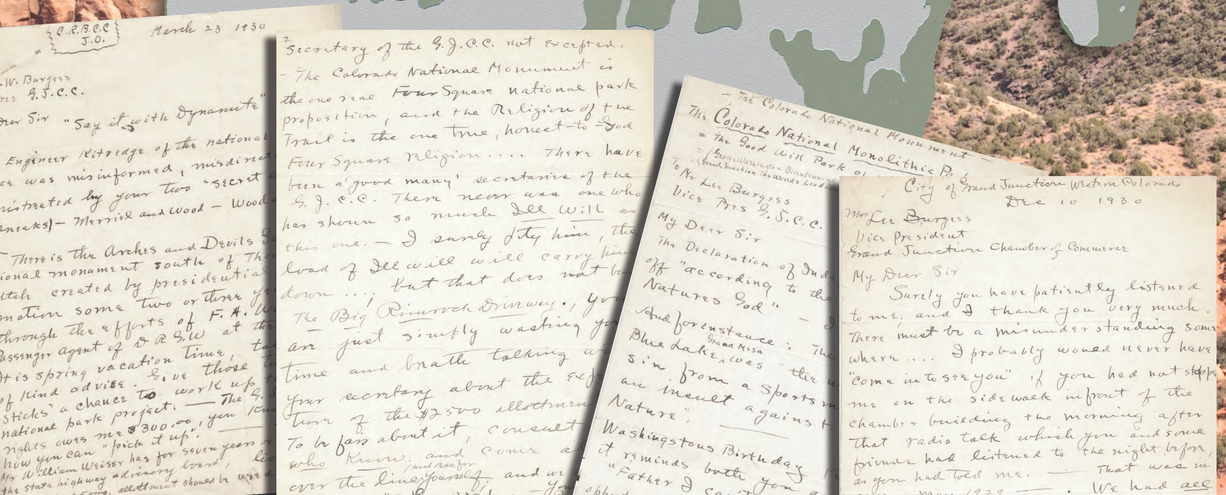
# John Otto

Dedicated promoter, letter writer, trail builder and caretaker of the landscape, John Otto relentlessly pursued protection for this area as a national park. He rallied local residents and state politicians to help fulfill his dream. Otto became the park's first custodian with a salary of $1 per month.

John Otto and Beatrice Farmham were married near the base of Independence Monument in 1911. Otto's insistence on living in a tent close to his animals was reportedly one of the reasons why Beatrice didn't last more than a few weeks as his wife.

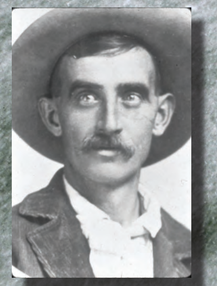
Otto started a tradition which continues to this day by climbing 450-foot Independence Monument to fly the American flag on July 4, 1911. His route, shown in red, followed natural cracks and chimneys. In some locations he drilled holes and inserted pipes to aid in the ascent. "Otto's Route" is still used today by some climbers, although the pipes have been removed for safety.





# Climbing Independence

With his climbing partner Rae Kennedy, and photographer Whipple Chester, John Otto became the first person to summit Independence Monument.



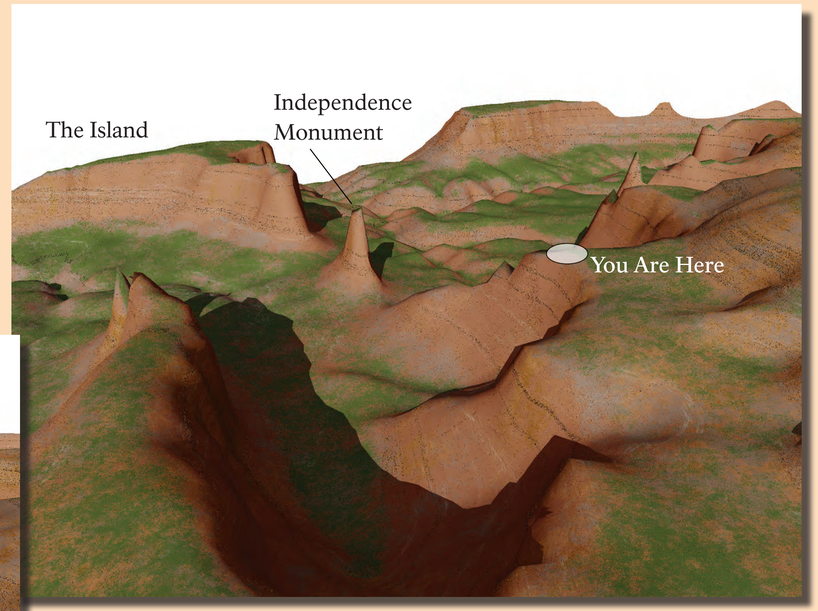
Otto had been in the area five years by then. When he arrived in the Grand Valley he had immediately fallen in love with the canyon landscape and had been working tirelessly to rally support for protecting the area as a national park.  A month earlier, on May 24, 1911, Otto's goal was fulfilled when U.S. President William H. Taft established Colorado National Monument. What better way to celebrate than to climb Independence Monument?

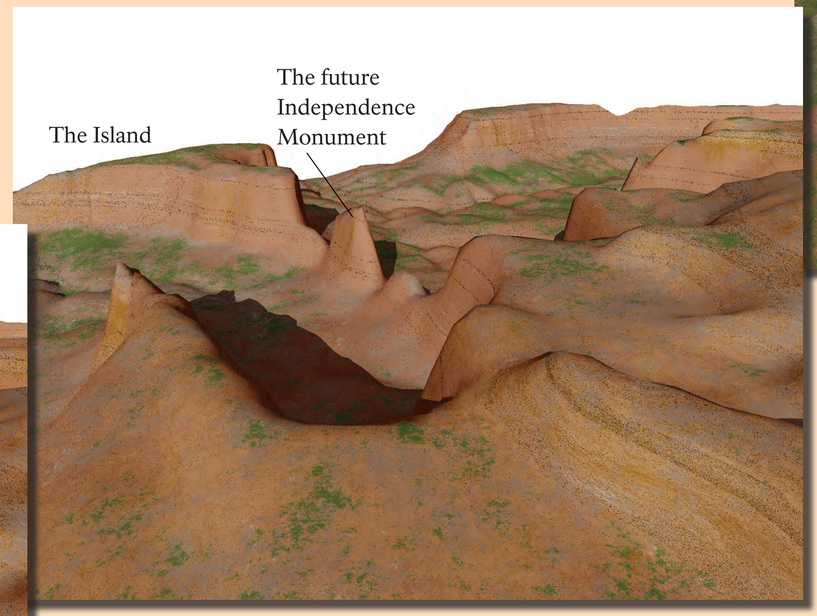
photo credit:
Stewart Green

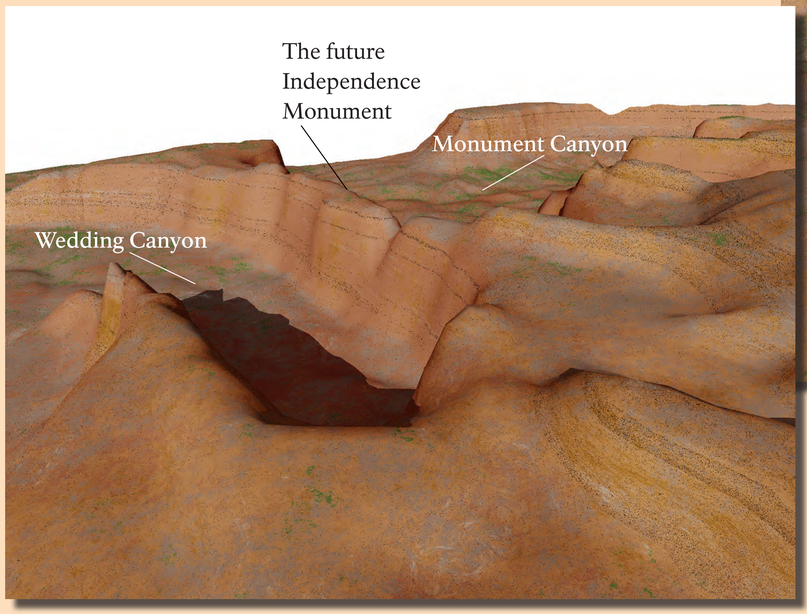
"Otto's Route" is considered a classic tower climb and is still followed every year by hundreds of recreational climbers. After ascending most of the route on Wingate Sandstone, the final push to the top includes a precarious backward-leaning climb out from under the caprock of Kayenta Formation to the top of the monolith. Initiated by John Otto, the tradition of raising the American Flag atop Independence Monument on July 4th continues today.

# The Shape of Independence

Does the shape of Independence Monument help tell the park's erosional story? It depends on your viewpoint. From here the monolith appears to be shaped like a tower, but the sideview shows that it is the remaining piece of a rock wall between Monument Canyon and Wedding Canyon.




## About 2 million years ago....

Floods and streams in Wedding Canyon and Monument Canyon carved into the highlands of Colorado National Monument, but these two separate drainages were divided by a high wall of rock. If you were here back then you likely could have walked across the top of this wall from here to the far promontory which would later become known as "The Island".

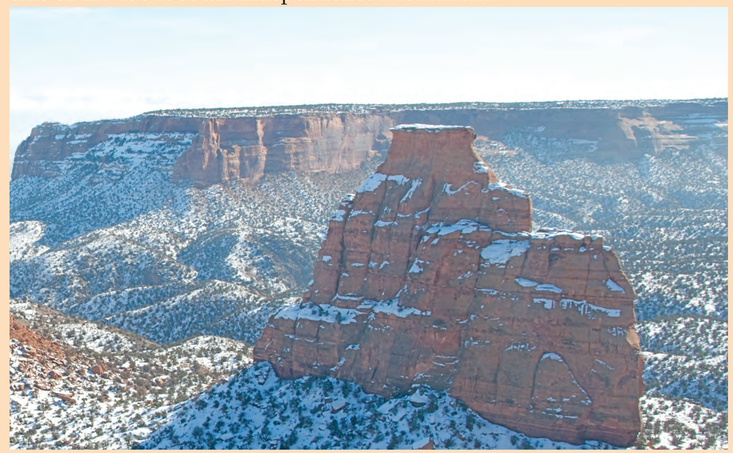
The flowing streams and floodwaters in the two canyons carved back and forth between the canyons walls. Freezing and melting, landslides and floods wore down parts of the wall between the canyons, shaping what would become Independence Monument.

## Today....

Independence Monument is largely protected from flooding waters that occur in drainages carved into hard Precambrian metamorphic rocks in the canyon floors. However the sedimentary rocks that make up Independence Monument continue to be slowly eroded by seasonal freezing and melting and by rain, snow and wind.

## Other views...

The view south from the end of Otto's Trail allows a look at the side of the 450 foot tall Independence Monument.



# The Grand View

Take the short stroll to a spectacular and unique viewpoint to discover more about the Monument's geology and high flying birds.

## Bird Habitat

The airspace above the protected canyons is the domain for a diverse variety of birds. (photo credit: Mike Baird)

## Cliff Forming Rocks

At the viewpoint you can almost reach out and touch this 200 foot tall sandstone spire. The cliffs and monoliths of the Monument are made primarily of sandstones over 200 million years old.

## The Oldest Rocks

Found  in the canyon bottoms, the oldest geologic units are dark metamorphic rocks like the sample below.

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# Ancient Environments

The rocks that make up this landscape formed in environments that are very similar to ones we can observe on the earth's surface today as well as ones that occur beneath the surface where tectonic plates collide to form mountain ranges.

Kayenta Formation

Wingate Formation

Chinle Formation

Kayenta Formation

Wingate Sandstone

Chinle Formation

The Chinle Formation is primarily a reddish-brown mudstone that likely was deposited in densely-vegetated floodplains or mudflats with small ponds and streams. This environment is similar to the coastal environments in South America and Africa.

## Kayenta Formation

The Kayenta Formation is a sandstone that is more resistant to erosion than many of the other sedimentary rocks in the park. The Kayenta Formation was deposited by a high-energy braided river system similar to the Rio Grande River in New Mexico.

## Wingate Formation

The Wingate Formation is a tan sandstone whose sweeping tilted layers tell us that this rock was deposited in a desert environment where wind-swept sands accumulated and were buried. An environment like this can be found in the modern Sahara Desert of North Africa.

## Precambrian Metamorphic Rocks

Dark schists and light pegmatites are the extremely erosion-resistant basement rocks found in the bottom of the Monument's canyons. These rocks began as sediments that were later deformed in mountain building processes. They were deposited, buried, heated,squeezed, uplifted and planed off by erosion - all before the sedimentary rocks of the Monument were deposited. Today, rocks like these are being formed and then deformed where tectonic plates converge. An example is along the western margin of South America.

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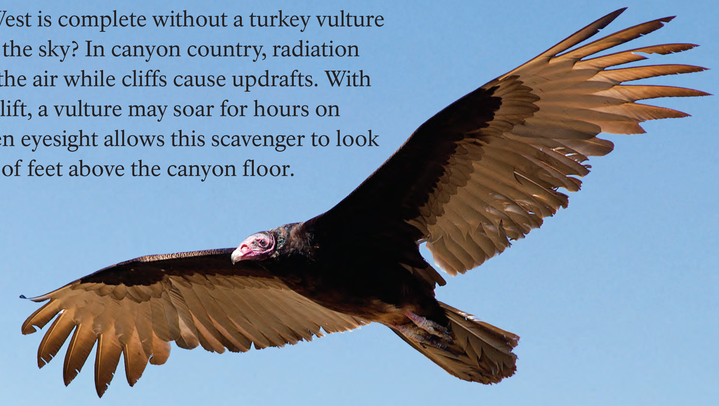
# From Ground to Sky

In the three-dimensional, highly varied habitat of the Monument, over 160 species of birds have found a place to live. Some are here seasonally, others throughout the year. What do you see today?

What image of the American West is complete without a turkey vulture soaring and circling upward in the sky? In canyon country, radiation from sun-heated rocks warms the air while cliffs cause updrafts. With its large, wide wings providing lift, a vulture may soar for hours on rising thermal air currents. Keen eyesight allows this scavenger to look for food even when thousands of feet above the canyon floor. Photo credit: Tom Munson



Swallows, watch out! Peregrine falcons feed primarily on small birds. Flying high above their intended prey, they will dive and strike in mid-air, swooping down at speeds reaching 200 mph. These graceful, acrobatic birds of prey were once endangered nationwide and are still a species of concern in Colorado. The canyons of the Monument provide them with prime habitat. Several pairs are known to nest here. Photo credit: Tom Munson

As a powerful airborne hunter, nothing surpasses the golden eagle. Rabbits and ground squirrels beware! And, although small rodents are its primary source of food, golden eagles will also consume other birds, snakes, deer, and carrion. Wildlands and open skies are its domain. The wilderness of the Monument provides a place for golden eagles to live and hunt year round. Photo credit: Pat Gaines

Fast and agile on long, slender wings, the white-throated swift is a true master of the wing - only nesting requires that it land. Its exceptionally long claws are thought to be an adaptation for clinging to vertical surfaces, such as cliffs readily available throughout the Monument, where high ledges and crevices are favorite nest-building locations. Photo credit: Robert Lewis

Small, sleek and highly acrobatic, violet-green swallows share air space along cliff faces with white-throated swifts. Their acrobatics can be seen from many overlooks by looking just below the canyon rim where wind hits the cliff. The wind has to go somewhere so it goes up, carrying insects with it. Like swifts, swallows dive and swoop with mouths open, scooping up mosquitoes, gnats and flies in mid-air. Photo credit: Tom Munson

The use of explosives was commonplace during the construction of Rim Rock Drive. The Half-Tunnel accident occurred on December 13, 1933. In this active construction and blasting zone, workers returned to clear debris 20 minutes after a blast had been detonated. The overhanging rock roof suddenly collapsed, crushing men beneath the rubble. The photograph to the right shows a typical blasting event at the site. The photograph below was taken after the accident.

You are here

# Tragedies on Rim Rock Drive

Twenty-three mile Rim Rock Drive was built almost entirely by using picks, shovels and sheer muscle to remove massive rock and debris. The engineering skill of the workers can be seen today in the tunnels and stonework. With construction came a high cost in human life, however. Nine men were killed in a single accident at Half-Tunnel when tons of rock suddenly fell from a cliff into their work area. Two other men died in separate accidents. With great appreciation, Colorado National Monument remembers these men and their families.

## IN MEMORIUM

Frank Winters
Harley Beeson
Virgil Minor
William Liddle

Leo Adams
Ed Carmichael
Robert Fuller
John D. Rupe

Clyde Van Loan
W.L. Wilson
Robert Newton “Buster” Moorland, Jr.

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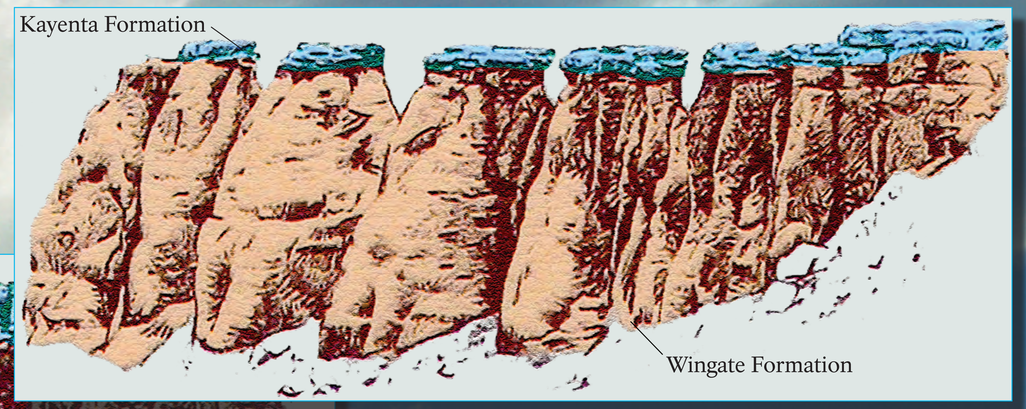
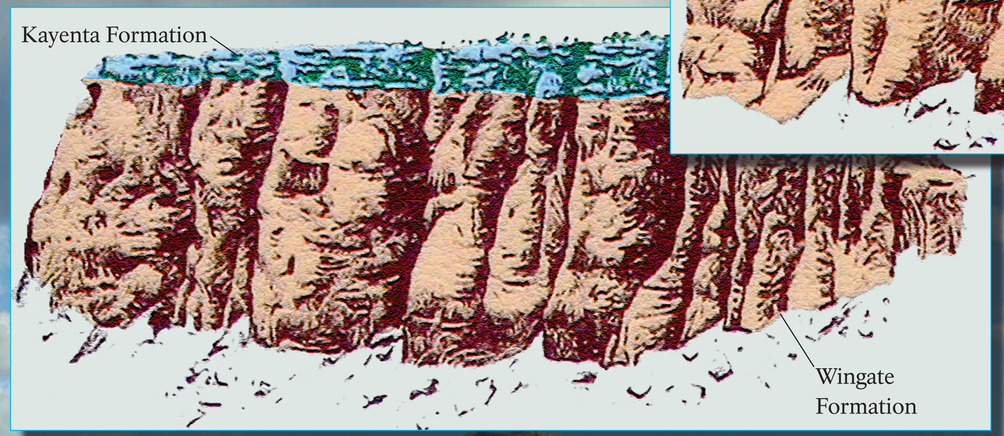
# The Shapes of Erosion

Erosion produces unusual shapes on the landscape. As the protective Kayenta Formation layers erode from the ridge before you, the softer Wingate Formation beneath it is exposed and responds in a unique way. Early visitors thought these shapes looked like man-made structures called coke ovens.




The Kayenta Formation is resistant to erosion and in the past shielded the underlying Wingate Formation (left). Over time the Kayenta eroded exposing the Wingate to the forces of erosion (above). As the Wingate eroded it formed these dome shapes.

Coke ovens were used to transform coal into coke, a fuel that produces little or no gas when burned.
Photo credit: Mark D. Stephens

# Putting Men To Work

In the decade when unemployment in the U.S. rose to 25%, President Franklin D. Roosevelt established the Civilian Conservation Corps (1933-1942) to employ young, unmarried men who had trouble finding a job. In nine years, 2.5 million young men participated, including those who built Rim Rock Drive mostly by sledgehammer, pick, shovel, and sweat.

CCC Workers

## CCC Workers

Up at 6:30 a.m., lights out at 10:30 p.m.; CCC enrolees lived in on-site tent camps run by military officers. From an enrollee's pay of $30 a month, $25 went to his parents, but other benefits included good physical conditioning, heightened morale, increased employability and occasional weekend privileges in town. At its height, the Rim Rock Drive construction project employed more than 800 men. Thanks to their hard work, we now have one of the grandest scenic drives in the American West.

## Hundreds of Drainages

One challenge of building the road was managing all the runoff that normally streams down the canyons. Drop inlets and drainage tunnels were built to prevent large volumes of water from washing out portions of the road. Some of these were carved through stone, extend downward as much as 20 feet to drain under the roadway, and have openings large enough to stand in! Many are visible today from along the road although access has been blocked.

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# A Palette of Color

The spectrum of color that paints the Monument's landscape is in part due to the color of the minerals in the rocks as well as the kinds of lichens and chemical compounds that coat their weathered surfaces.

## Primary Rock Colors

Clay minerals are responsible for a variety of the rock colors including some browns, yellows, blues and greens found in mudstones. Clear quartz grains appear rust-red in the sandstones at the Monument due to a thin coating of iron oxide on each grain. In some areas, percolating water has dissolved the iron oxide coating, leaving formerly red sandstones pale and bleached.

## Surface Coatings

## Lichens

## Colorful Lichens

Surprisingly colorful lichens (left) are composite organisms made up of a fungi and cyanobacteria or green-algae living symbiotically. The fungi partner spreads across the rock providing a stable, moist environment for the cyanobacteria or algae partner, which in turn, produces nutrients through photosynthesis.

## Desert Varnish

Dark brown desert varnish (left) is a thin coating of concentrated iron and manganese compounds and clays that forms on rock surfaces over thousands of years. Water seeping over rocks transports and deposits these dissolved metals and explains some of the long black streaks decorating the sandstone walls across from Artists Point. Microbes and fungi, interacting with the metals and clays are important factors in bonding desert varnish to rock surfaces.

## Calcite Coating

Groundwater can deposit minerals like this white calcite coating on Wingate Formation (left).

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# Woodland Relationships

When are trees most mobile? When they are seeds! Although small light seeds can be carried far and wide on any strong gust of wind, larger and heavier seeds cannot. Pinyon pine and Utah juniper trees rely on birds such as the pinyon jay, and rodents such as the pinyon mouse, to disperse their heavy seeds.

When pinyon jays harvest and fly off with seeds from the pinyon pine, they bury the seeds in many large, shared caches. Although the jays can reliably find them again when food is needed, they cache much more than they need. Seeds not retrieved may germinate and grow where they were cached, sometimes beyond the boundary of the existing woodland.

The pinyon mouse is well-suited to living in pinyon-juniper woodlands. It nests in juniper trees and is especially fond of juniper seeds. Pinyon mice harvest and cache seeds of both the juniper and pinyon pine trees and have been known to raid seed caches of pinyon jays, moving the jays' seeds to their own secret caches. Forgotten seeds can become trees.

illustration by Paul Gray

# Bats! Mummies! Pools!

How do bats navigate? Can you use your voice to estimate distance? What lives in the shallow pools of the Monument? Take the short walk to the overlook to investigate.

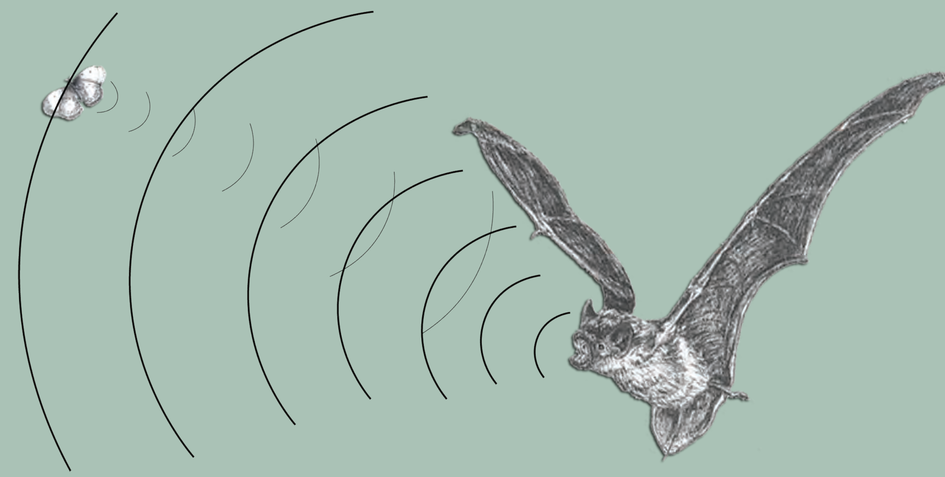
Photo credit: Angell Williams

## Do you see the “Egyptian Mummy”?

Some say there is the outline of a mummy on the far wall of the canyon. Walk down to the overlook and see if you can spot this odd rock formation.

# Echo, Echo, Echo

Shout out a quick “Hello!” across the canyon and you will hear your own voice repeated moments later. The opposite wall of the canyon is curved so that the sound waves made by your voice bounce off the wall and focus back to this location in a strong echo.




## How do bats use echoes to navigate and find prey?

Several species of bats live here at the Monument. These small mammals spend most of the day hidden from view in dark rock overhangs. At dusk they fly the darkening skies in search of food - mostly flying insects.

Bats emit high pitched calls that are reflected off the landscape. Human ears aren’t sensitive enough to hear a bat’s call. Bats have very specialized brains that instantly process the echoes from their calls to tell the bat how close they are to obstacles or prey are while in flight. Imagine running as fast as you can in a dark room using only your voice and ears to guide you!

## *Shout Experiment: Measure the distance to the far wall!*

### *STEP #1*

Using a watch or phone that shows seconds, get ready to measure the return of the echo from your shout.

### *STEP #2*

Shout and start counting seconds at the same time. Count the number of seconds until you hear the first echo.

### *STEP #3*

Sound travels at about 1100 feet per second. Your shout travels to the wall and back, twice the distance we want to measure.

What did you measure?

0.5 seconds = 275 feet
1.0 seconds = 550 feet
1.5 seconds = 825 feet
2.0 seconds = 1100 feet

The measured distance is
average : 760 feet

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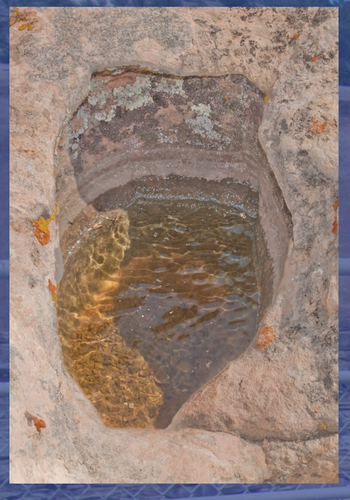
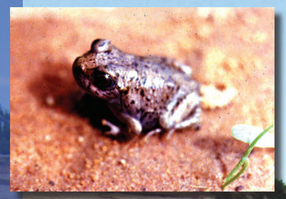
# Pothole Life

Careful! There are micro-communities at your feet! Shallow pools of rainwater called “potholes” are common where bare sandstone is exposed to rainfall. These extreme aquatic environments may only be wet for a few days but amazing transformations can happen overnight.

## How Big Is Your Swimming Pool?

How long do pothole species have to live? For some it depends on how long the water lasts. The pothole shown below left is about 18 inches deep and may hold water for weeks after filling. The pools around your feet may only stay wet for a few days or hours. Different species have different survival strategies to deal with evaporating water. Species that can leave the pool like the spadefoot toad (right) move to a new water source.





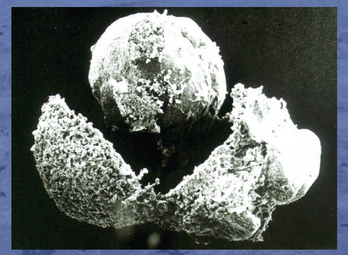
For crustaceans who can’t leave as the water evaporates like the fairy shrimp (right), the strategy is to lay eggs that survive being dry. Shrimp substitute sugars for water in the eggs they produce, which acts like a kind of antifreeze. The eggs can survive for decades and be revitalized by a rainstorm. Bacteria and algae living in potholes also use this strategy.

Finally some species take a “tupperware” strategy, sealing themselves up with some water until it rains again. Some species of water snail use this approach as well as pothole mites.

Pothole species photo credit: Tim Graham, USGS

## Growing Up Fast

“Give me a few hours to grow up ok?” Tadpole shrimp grow rapidly after being awakened by the presence of water. Below, a shrimp egg has just hatched after becoming wet.



After 7 hours the shrimp larva (above) is looking ready for life. After weeks, a full grown tadpole shrimp (right) may be ready to lay eggs.

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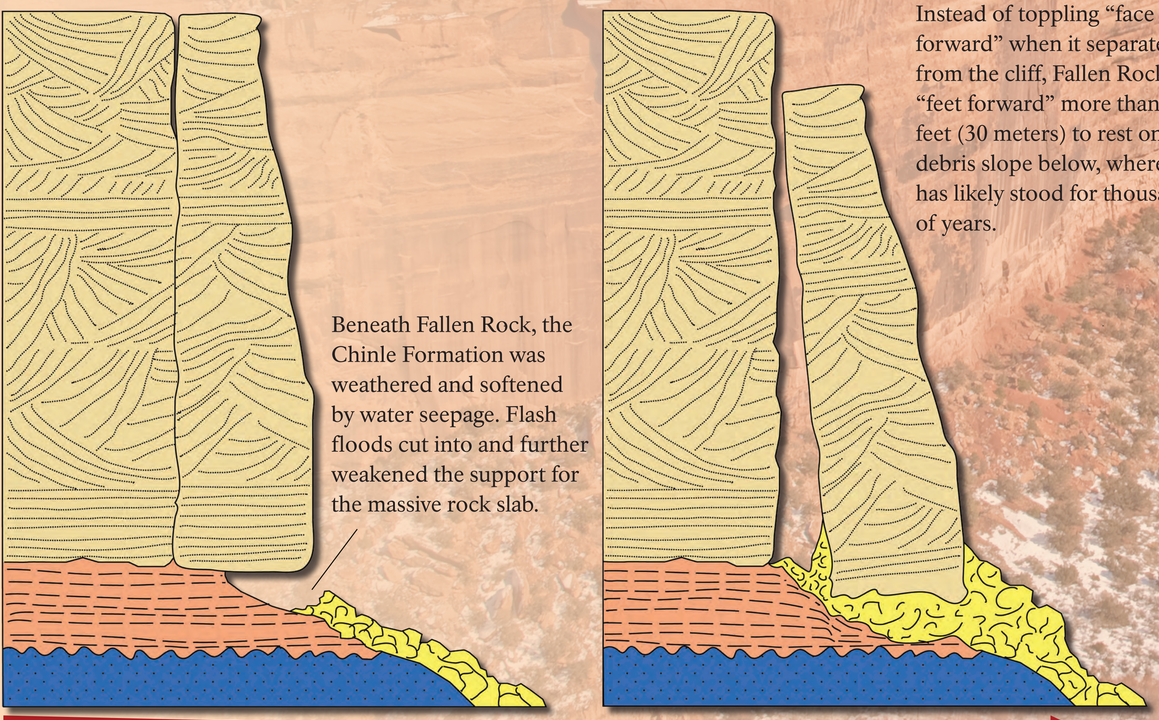
# A Slow Fall

Geologic processes are relentless! They combined to separate Fallen Rock from the cliff face and they continue to erode the canyon today.  Fallen Rock's slow fall occurred over many centuries instead of seconds.

As temperatures drop below freezing during cold nights, liquid water freezes to ice and expands. Rocks crack and are pushed apart. Warmer daytime temperatures melt the ice and the cycle begins again. Water physically and chemically breaks down rock into particles small enough to be blown away by the wind. Century after century these same geologic processes continue, sometimes with spectacular results!



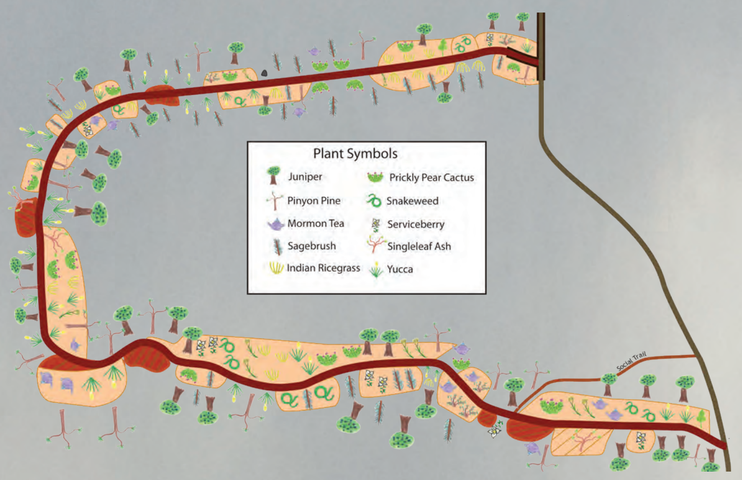

Instead of toppling "face forward" when it separated from the cliff, Fallen Rock slid "feet forward" more than 100 feet (30 meters) to rest on the debris slope below, where it has likely stood for thousands of years.

# Water

How did flooding shape these canyons? Take a short walk to the overlook to explore the power of water.

## Ute Garden

How did the Ute people utilize the seasonal flowing water? Walk the “Ute Garden Trail” ahead to enjoy a path that highlights traditional Ute plants and herbs.



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# Water Carved Landscape

Although flowing water is the force that carved these canyons, the shape and direction of the canyons were influenced by the rocks themselves.

## Long Linear Drainages

Notice how these canyons have long, straight sections? Folding and faulting formed planes of weakness and cracking in several consistent directions. Flowing water subsequently eroded the rocks along these consistent lines of weakness, leaving long, straight canyons.

You are here

Photo Credit: Bill Davis

## Floods

Summer rainstorms can cause massive flooding, such as the flash flood (left) which occurred in No Throughfare Canyon in 2010. As floodwaters move boulders and cobbles downstream, the tumbling rocks wear away underlying bedrock, helping to carve the canyons. Thunderstorms are violent, but usually short-lived. On most days this wash is dry.

## Deposits

As floodwaters subside, lessening flows can no longer carry heavy boulders and cobbles, leaving them behind on the canyon floor. Further along, as water velocity continues to slow, pebbles, sand and silt also settle out. Flood deposits show this grading, as large to fine-sized particles settle out sequentially. Geologists recognize these deposits in all the canyons of the Monument (right).

## Where to Look?

Water is the key to survival here. See if you can match places that look wet on this photograph with actual locations in the landscape. Like you, the Ute people may have looked for places that appeared wet (or green) in the canyon bottoms as a sign the land was ready to give up some of its bounty so they might live.

Rim Rock Drive

# Water Is Life

Imagine getting all the resources needed to meet life's survival challenges from the land as the Ute people did when they lived here. What clues does the landscape offer to finding water, gathering plants for food and medicine, hunting animals, and locating materials for tool-making?

You are here.

## What to Look For?

As you scan Ute Canyon, imagine where you might find the following traditional-use plants and how the Ute people may have utilized them.

Utah Juniper

Willow

Prickly Pear

Mormon Tea

Cottonwood

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# Canyon In A Canyon

While this might look like a glacial U-shaped valley, it is not. It is a canyon formed by flowing water. The story is one of different rocks responding to erosion in different ways.

## Hanging Canyon

Notice how the profile of this canyon “frames” the City of Grand Junction. The unobstructed view reflects a dramatic drop in elevation between where you now stand and the city below. While the Colorado River “quickly” eroded the Mancos Shale in the valley, tributary streams in the canyons eroded harder rock more slowly. The difference in elevation between the Grand Valley and the Monument’s canyons grew, leaving “hanging canyons” such as this one.

Kayenta Formation

Wingate Formation

Rockfall, sand and gravel deposits

Precambrian metamorphic and igneous rocks

Chinle Formation

Rockfall, sand and gravel deposits

Chinle Formation

## A Shapely Story

Once the canyon’s stream carved through the softer sedimentary layers of the Kayenta, Wingate, and Chinle Formations, it reached the hard basement rock of the canyon floor. Downward erosion almost stopped while horizontal erosion continued. At the far end of the canyon, where the valley floor dips downward and the stream flows faster, a prominent notch was eventually carved. Rockfall from adjacent cliffs and sand and gravel from upstream currently cover much of the valley floor.

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# The Story of Canyons

Around 70-40 million years ago, the Redlands Fault lifted the layered sedimentary and metamorphic rocks of the Monument above the Grand Valley. Since then, erosion has carved magnificent steep-walled, flat-bottomed canyons that literally hang above the Colorado River.

## A Conveyor Belt of Debris

The Monument's canyons are still evolving as erosional processes deliver sediment to the Grand Valley. Where is all the material that was removed from these canyons now? At least for the last 5 million years, sand and silt and mud washed from the Monument has headed southwest toward the Gulf of California via the Colorado River.

## Human Presence

Humans have occupied this canyon landscape for 12,000 years leaving tools, shelters and rock art behind.

## Pinyon-Juniper Woodlands

The dominant tree species in the Monument are pinyon pine and Utah juniper which form a supporting and interdependent framework for a diverse assortment of birds, mammals, reptiles and insects.

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# Conserving the Wild

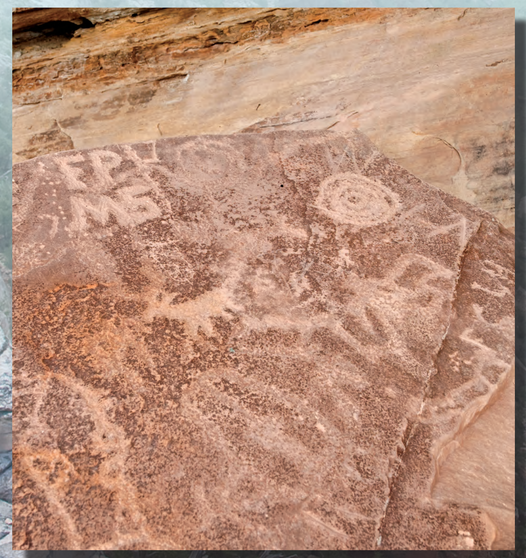
While the Monument is a protected ecosystem, it is under pressure from nearby urban and developed rural environments.  Only through conservation will these wild places survive.

## *Stay on trails. Don't bust the crust.*

Biological soil crusts are living collections of soil organisms that are destroyed by careless footsteps.

## *Protect our cultural heritage.*

Rock art is an important record of Ute people and earlier cultures. It's not graffiti, please don't add yours.



## *Don't trash the Monument.*

Trash impacts the beauty and ecology of our park. Don't leave it here!

## *Leave historical objects in place.*

Old items like buckets and fences are part of the history of this place.  Look but don't take!