



INTERPRETIVE CONCEPT PLAN

CAPULIN VOLCANO NATIONAL MONUMENT



SEPTEMBER 2003



United States Department of the Interior
NATIONAL PARK SERVICE
Capulin Volcano National Monument
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TIC

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November 24, 2003

TIC
Jeff Heywood
Dear Planning Partner:

A copy of the *Interpretive Concept Plan for Capulin Volcano National Monument* is enclosed. This plan includes conceptual recommendations for visitor center and wayside exhibits at Capulin Volcano National Monument. It is intended to supplement the park's *Comprehensive Interpretive Plan* with specific recommendations for visitor center and wayside media.

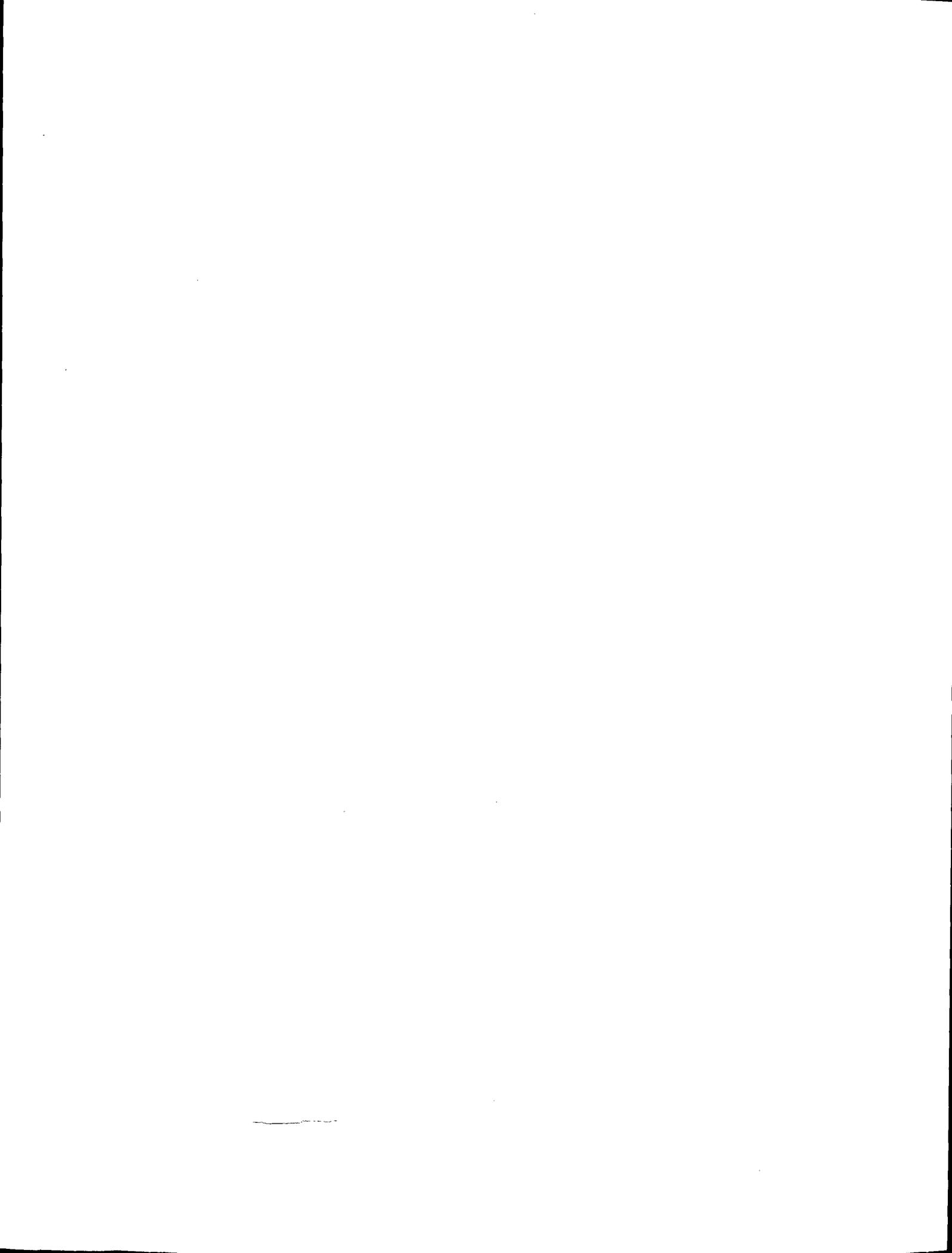
A planning team consisting of park employees, consultants from the New Mexico Museum of Natural History, and interpretive planners from the Harpers Ferry Center held a planning workshop at the park. Their recommendations are based on the park's mission, purpose, and significance. I appreciate the work and involvement of the team members to enhance visitor understanding and experience at Capulin Volcano National Monument.

Sincerely,

Margaret A. Johnston

Margaret A. Johnston
Superintendent

cc: Snyder, IMR
✓ Heywood, IMSO-PE
✓ Technical Information Center



INTERPRETIVE CONCEPT PLAN

CAPULIN VOLCANO NATIONAL MONUMENT

September 2003

prepared by

**Department of the Interior
National Park Service**

Capulin Volcano National Monument

**Harpers Ferry Center
Interpretive Planning**

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INTRODUCTION

Capulin Volcano National Monument consists of 793 acres of land located in Union County in the northeast corner on New Mexico, where the rolling grasslands meet the foothills of the Sangre de Cristo Mountains. The site lies adjacent to New Mexico highway 325, three miles north of the town of Capulin and U.S. 64/87, one of the main routes between Texas and the mountains of southern Colorado.

Originally known as Capulin Mountain, in 1891 the area was "...with-drawn from settlement... until such time as Congress may see fit to take action..." because it was "...a great natural curiosity." In 1916 President Woodrow Wilson set Capulin aside as a National Monument because it "...is a striking example of recent extinct volcanoes and is of great scientific and especially geologic interest." The monument was enlarged in 1962, "...in order to preserve the scenic and scientific integrity..." and "...to provide for the enjoyment thereof by the public...." Then in 1987, the name of the site was changed to Capulin Volcano National Monument.

The primary feature of Capulin Volcano National Monument is the mountain. This well preserved, relatively young (56,000 to 62,000 years old), symmetrical cinder cone rises steeply (more than 1,300 feet) and conspicuously from the surrounding grassland plains to an elevation of 8,182 feet above sea level. Its irregular rim is about a mile in circumference, and its crater is about 415 feet deep. The sighting of this prominent cinder cone by travelers makes it an important landmark today, as it was for early pioneers and settlers.

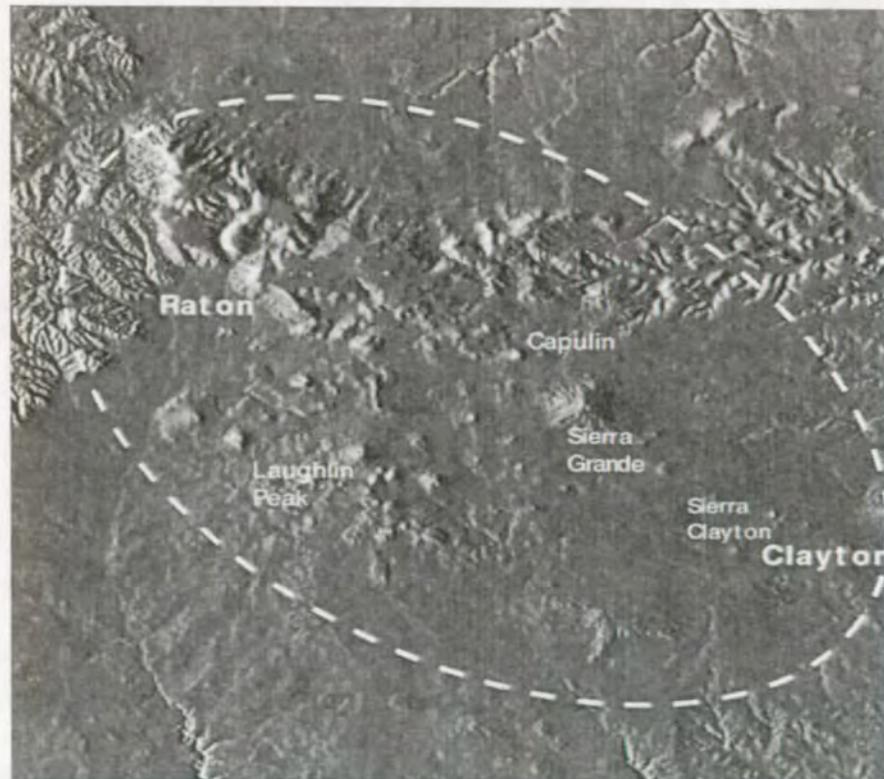
Visitors are able to drive to the rim of the volcano, hike around the rim, and down into the crater. The unobstructed panoramic views of the volcanic field, distant Rocky Mountains, and portions of four states (Colorado, New Mexico, Oklahoma, and Texas), available from the rim are outstanding. The views are a significant aspect of the visitor experience and of particular value in setting the stage for helping visitors to imagine long-ago geological and historical events.

Capulin Volcano's lava field covers nearly 16 square miles. Most of these flows are outside the monument boundary. The greater volcanic area surrounding the monument, known as the Raton-Clayton Volcanic Field, contains at least 100 recognizable volcanoes. The Raton-Clayton volcanic field is the easternmost Cenozoic volcanic field in North America. It extends from Raton Pass to western Oklahoma, encompassing about 8,000 square miles. All landforms that a visitor sees while driving from Clayton to Raton are volcanic. The field contains flood basalts, cinder cones, shield volcanoes, domes, and tuff rings.

BACKGROUND

Capulin Volcano National Monument is planning to upgrade the exhibits in the park visitor center, and to replace a number of wayside exhibits. The current exhibits are dated and worn and some contain inaccurate information. A General Management Plan (GMP) is currently being developed for the park, and the preferred alternative calls for retaining and making media improvements to the current visitor center structure. The GMP also recommends interpretive improvements to wayside exhibits throughout the park and to education programs for all grade levels. Because Capulin Volcano is a popular destination for geology classes, the educational value and content of the visitor center and wayside exhibits should be considered.

This plan will develop specific conceptual recommendations for information/orientation and interpretive/educational programs and media that will be directly associated with the visitor center and wayside exhibits in the park. The recommendations will be based on the park's purpose, significance, mission, primary interpretive themes, visitor experience goals, and recommendations in the GMP.



PURPOSE, SIGNIFICANCE, AND MISSION

Park Purpose

- To preserve the scientific integrity and educational and scenic values of Capulin Volcano and to provide for the enjoyment thereof by the public.
- To protect the cinder cone and volcanic features that resulted from the formation of Capulin Volcano.
- To provide an opportunity for on-site education and scientific investigation of the geologic formations and other natural features and processes.

Park Significance

- Capulin Volcano is a striking example of a recent extinct volcano and is a classic cinder cone.
- Capulin Volcano is part of the last stage of activity in the Raton-Clayton Volcanic Field, which has been active for the last nine million years, and which is the eastern-most Late Cenozoic volcanic field in the United States.
- The monument provides opportunities for education and scientific investigation of volcanic activity, including how the features were formed and how the volcanic landforms helped shape the human history of northeastern New Mexico.
- Capulin Volcano is located in the most chemically and mineralogically diverse volcanic field in the United States. (Stormer, 1987)
- Capulin Volcano is one of the few places in the world where one can walk, in relative safety, into a volcano.

Park Mission

Capulin Volcano National Monument is dedicated to preserving Capulin Volcano, a classic cinder cone, its associated landforms, and its scientific and scenic values. Management will provide for scientific investigation of the natural environment and educational opportunities for individuals and groups of all ages. Park staff will coordinate activities that allow for public use and enjoyment in a manner which is compatible with, and does not impair, the scientific and scenic values of Capulin Volcano.

PRIMARY INTERPRETIVE THEMES

Primary interpretive themes are those ideas/concepts hopefully every visitor will gain an understanding of through their visit to Capulin Volcano National Monument. The themes, which are based on the park's mission, purpose, and resource significance, provide the foundation for all interpretive media and programs in the park. The themes do not include everything that may be interpreted, but they do address those ideas and concepts that are critical to understanding and appreciating the park's importance.

All interpretive efforts (through both personal and non-personal services) should relate to one or more of the themes, and each theme should be addressed by some part of the overall interpretive program. Effective interpretation results when visitors are able to connect the concepts with the resources and derive something meaningful from the experience.

The following theme statements will provide the basis for interpretation at the park:

A. Dramatic and accessible, Capulin Volcano invites people to explore an exceptional cinder cone volcano, and offers opportunities for educational study and inspiration.

Interpretation of this theme will help visitors better understand and appreciate the following key elements:

- The composition of a cinder cone volcano like Capulin.
- The mechanics of a cinder cone volcano.
- Comparisons of cinder cones to other types of volcanoes.
- The existence of volcanoes is explained by the theory of plate tectonics.
- Comparison of Capulin to the more recent Paricutin cinder cone volcano in Mexico.
- The effect of gravity on the volcano's angle of repose.
- The diversity of Capulin Volcano's ejecta (i.e. basalt, cinders, spatter, flows, pressure ridges, bombs, etc.) and the story it tells.
- That Capulin is a relatively young volcano.
- The significance of the road leading to the top of the volcano.

B. The geologically diverse Raton-Clayton Volcanic Field created an evocative and evolving landscape that opens the door to an understanding of how geological forces shape our world.

Interpretation of this theme will help visitors better understand and appreciate the following key elements:

- That Capulin Volcano is one landform of the 8,000 square mile Raton-Clayton Volcanic Field
- The age and eruption phases of the Raton-Clayton Volcanic Field.
- The various types of volcanic landforms of the Raton-Clayton Volcanic Field and their associated rock-types.
- That some of the oldest lava flows lie on the tops of mesas.
- That the oldest lava flows lie on the tops of mesas in a unique phenomenon called inverted stratigraphy.
- That the uplifting of the Rocky Mountains, the Rio Grand Rift, and the Raton-Clayton Volcanic Field are very unusual geologic features whose origins are not completely understood.
- The effects of regional volcanic activity on transportation and settlement patterns.
- The effects of regional volcanic activity on vegetation and wildlife habitat.
- Impacts of human activity on the volcanic landscape (i.e. gravel quarries).

C. At the meeting place between the Short-grass Prairie and the Rocky Mountains, Capulin Volcano National Monument protects a natural and cultural environment that is rich in opportunities to explore and study a dramatic volcanic landscape.

Interpretation of this theme will help visitors better understand and appreciate the following key elements:

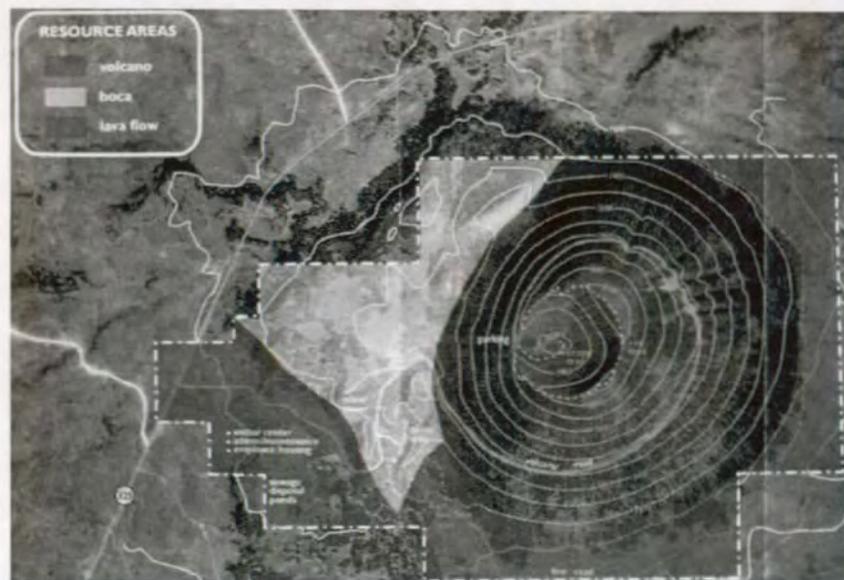
- Changes in the landscape from a perspective of geologic time.
- The diversity of plant and animal species in the area.
- The importance of small protected areas in preserving regional biological and geological diversity.
- The role of fire in maintaining biological diversity in the area.
- The meeting and overlapping of prairie and Rocky Mountain environments.
- The effects of volcanic activity on subsequent vegetation and wildlife habitat patterns.
- Species successional patterns in different volcanic landscapes.

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- That the park preserves good examples of Short-grass prairie environment.
 - The role of human activity in modifying and preserving the landscape.
 - The significance of the volcano to American Indian people in the region.
 - The history of the creation and development of Capulin Volcano National Monument.

D. In parks across the country, the National Park Service administers and protects diverse volcanic resources like Capulin Volcano National Monument so that an understanding and appreciation of a natural heritage is shared by present and future generations of Americans.

Interpretation of this theme will help visitors better understand and appreciate the following key elements:

- The variety and location of NPS and other sites that present a volcanic story.
- The common features and unique characteristics of the various volcanic parks. The importance of protecting these areas in the face of continuing population growth and associated impacts.
- That Capulin Volcano National Monument is a vital part of the American landscape and heritage.



VISITOR EXPERIENCE GOALS

Visitors to Capulin Volcano National Monument will have opportunities to:

- Get accurate and timely information about the park at appropriate locations and through a variety of media before and upon arrival.
- Easily find the park and destination points within the park.
- Learn something about each of the primary interpretive themes through a variety of appropriate media and personal services.
- Interact with park staff.
- Choose from a variety of interpretive, educational, and recreational activities, media, and programs.
- Tailor their visit to suit personal time constraints, abilities, learning styles, and levels of interest.
- Obtain/purchase items to enhance their knowledge of the park.
- Discover where they can go to learn more about park-related themes.
- Make personal connections with the resources and their meanings.
- Walk on and into the volcano.
- Enjoy the views and understand the landscape.
- Experience aspects of the park alone or with others.
- Have fun while learning.
- Have a safe visit.

EXISTING CONDITIONS AND VISITOR USE

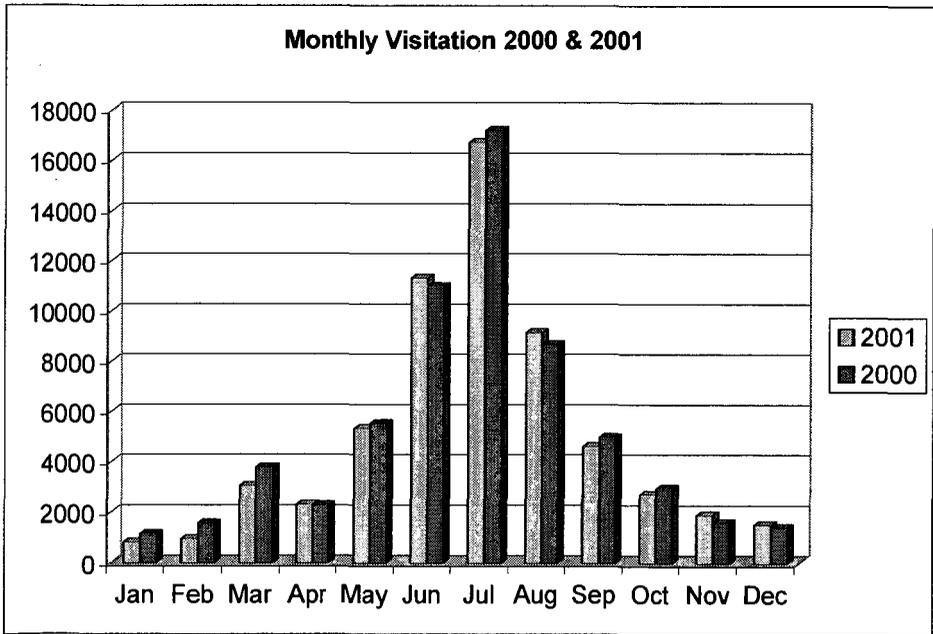
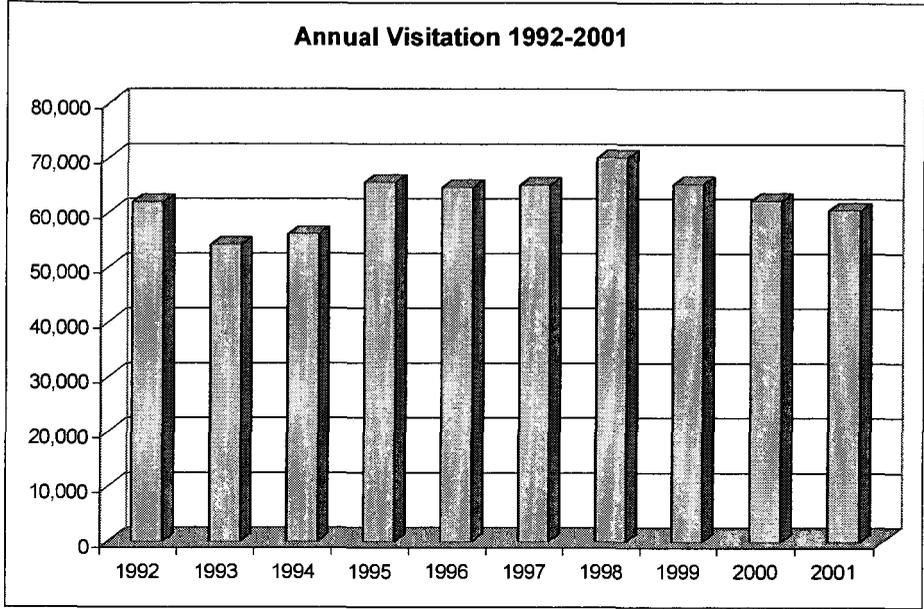
The following is a generalized description of visitor experiences and interpretive media as they existed at the onset of this interpretive planning process. The purpose of this section is to provide a baseline to help justify some of the recommendations. Information regarding visitor use is derived from the draft General Management Plan, data collected by the Socio-Economic Service Division (WASO) in Denver, and discussions with park staff.

As stated in the Background section of this document, Capulin Volcano National Monument is planning to upgrade the exhibits in the park visitor center, and to replace a number of wayside exhibits. A General Management Plan (GMP) is currently being developed for the park, and the preferred alternative calls for retaining and making media improvements to the current visitor center. The GMP also recommends interpretive improvements to wayside exhibits and education programs throughout the park.

The current visitor center exhibits are dated and worn, and some contain inaccurate information. The exhibits also do not adequately present key elements of the new primary interpretive themes and/or fully prepare visitors for touring the monument. The film shown in the auditorium is considered adequate, although many visitors do not view the program. Ventilation in the auditorium is poor, and the room can become quite warm in the summer. The current on-screen-captioning system also is obtrusive.

At present, Capulin Volcano National Monument has two types of wayside exhibits: about 10 low-profile exhibits with graphics that interpret major features, and about 25 small trailside markers with no graphics. The exhibits with graphics are very old and are in poor physical shape, and at least one contains outdated information. They should be replaced as soon as possible. The trailside exhibits are of varying quality, but generally do a good job of feature identification. There are two styles. Along the Crater Rim Trail, they are a gold color and appear to be routed aluminum. Along the accessible trail at the visitor center, they are brown, and appear to be anodized aluminum. The park also has one routed wood sign at the Crater Rim parking area, which orients visitors to the two trails.

The following graphs show total annual recreational visits over the past ten years and monthly recreational visits for the past two years.



The graphs illustrate that annual visitation has not fluctuated very much over the past ten years, and that most visitors come during the summer months. July accounts for about one-third of the annual visitation.

Most visitors arrive first at the visitor center. Here they pay their entrance fee, view the exhibits, see the audiovisual program, and shop in the bookstore. Most visitors currently stay at the visitor center about ten minutes, or twenty minutes if they watch the audiovisual program. It is estimated that somewhere between 40-80 percent of visitors watch the AV program.

On peak days, around 1,000 people can enter the visitor center. This often translates to having 50-70 visitors in the building at one time.

Capulin Volcano National Monument is not a destination park. Most visitors are on their way to other destinations and stop at the park en-route. In winter some travelers headed to Colorado to ski visit the park. More senior citizens visit in the fall. Many Boy Scouts stop on their way to or from the nearby Philmont Scout Ranch.

Virtually all visitors make the drive to the top of the volcano. About sixty percent of visitors walk the trail into the crater and about twenty percent hike the entire Rim Trail. Many other visitors walk a portion of the Rim Trail, and some take both trails. Almost all who walk the Rim Trail also take the trail into the crater.

Questions commonly asked by visitors at the crater rim parking area include:

- How far can I see?
- How many states can I see?
- How far is it to ... (some feature in the landscape)?
- What is that ... (particular feature in the viewshed)?
- What are the hills I see, and are they volcanoes also?
- What is the elevation and/or what is the elevation change from the parking lot?
- How old is the volcano?
- Will the volcano erupt again?
- What does Capulin mean and how do you say it?
- What is the name of that plant?
- What do people do around here?

RECOMMENDATIONS

The following recommendations address interpretive media for the Capulin Volcano National Monument visitor center and wayside exhibits throughout the park. Each recommendation is designed to further define, support, and communicate the monument's purpose, resource significance, interpretive themes, and visitor experience goals. Implementation of these recommendations will help ensure that visitors are well prepared and informed, and that meaningful connections will be formed with the tangible and intangible resources.

The discussion of media proposals identifies the purpose, special considerations, and sometimes suggests ideas about their presentation. It is important to remember that these are only suggestions, and should not limit the creativity that is essential during the media or program planning and design processes. On the other hand, the proposals are specific enough to provide guidance and define the parameters in which these creative energies can flow. In addition to the following recommendations, the park staff and the media and program developers need to continually ensure that the primary interpretive themes and visitor experience goals are being addressed.

The continuation of existing partnerships and the establishment of new ones will be a key to the success of this long-range interpretive plan. There are many opportunities for sharing skills, resources, media, and programs. Partnerships, both formal and informal, offer ways to ensure that the overall visitor experience goals and all aspects of the primary interpretive themes are presented.

Visitor Center Exhibits

Recommendations for the visitor center exhibits follow two scenarios: one would simply involve a rehab of the existing exhibits; the second would plan for new exhibits in the building. The latter option is highly recommended.

Option 1: Exhibit Rehabilitation

Rehabilitation will improve the overall look of the current exhibits, place the primary thematic displays in more prominent locations, and correct the content errors. However, rehabilitation will not address all of the newly articulated primary themes; they will continue to reflect dated exhibit technology; and, they will likely attract and hold significantly less visitor interest than new exhibits. On the other hand, rehabilitation is a less expensive option, and will be an improvement over the existing conditions.

Specific exhibit items identified for rehabilitation include:

- Upgrade the main Capulin Mountain exhibit. The text, photos, and graphics in this backlit exhibit that illustrate and describe the plumbing and action of the volcano would be replaced. The name, Capulin Mountain, will be changed to Capulin Volcano. The erroneous references to plate tectonics and the Rio Grande Rift concept would be removed. New graphics would be added to better illustrate the broader geologic and geographic contexts of Capulin, including the Raton-Clayton Volcanic Field. The exhibit also might include reference (perhaps a map) to other volcanic parks.

To better attract visitor attention and identify the volcano as the primary resource, consideration also will be given to relocating this exhibit to a more prominent location near the entrance.

- Consideration would be given to relocating the "Rock born of fire" exhibit to a more prominent location and placing it adjacent to the main volcano display. Better ways to tie the rocks to the volcano's activities would be explored.
- The faded graphics in the "Capulin influences man" exhibit would be replaced. The erupting volcano in the background of the bison-kill drawing would be removed.
- The faded photos and aged stuffed animals in the "Capulin residents" exhibit would be replaced. Since this exhibit, along with the "Life begins anew" display, sits in the most prominent location in the building, consideration will be given to relocating them to allow for better placement of the main volcano and rock displays.
- Faded and worn photos in the "Life begins anew" exhibit would be replaced.

Option 2: New Exhibits

New exhibits will give the visitor center an entirely new look, and focus more directly on the primary interpretive themes. New exhibits also will reflect modern exhibit research and technologies to attract and hold visitor interest and address multiple audiences.

The main objectives of new exhibits will be to:

- offer visitors more complete orientation to the monument,
- provide a better introduction to the primary interpretive themes,
- make significant connections with the park's developing education program, and

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- focus on theme elements that are not easily seen in the resource.

The following exhibit concepts are proposed [Please note that each item in this list does not necessarily denote a separate exhibit. Some concepts could be combined or even repeated in different contexts.]:

1. What a cinder cone volcano is and how it works.

Visitors will be able to see the formation of the volcanic landscape and particularly the development and eruption of Capulin Volcano. This could include the use of computer animation to show movements in a geologic time context, and/or film clips of recent cinder cone volcanoes such as Paricutin in Mexico.

The concepts of volcanic bombs and splatter would be introduced, helping visitors to identify these elements as they explore the monument. Rather than a static display of volcanic rocks, key specimens would be exhibited in relation to specific activities in the overall exhibit.

The exhibit also would show the current monument boundary in context with the lava flows. Visitors will clearly see that the volcanic flows and ejecta extend well beyond the boundary.

2. Other major types of volcanoes.

This exhibit would illustrate other types of volcanoes and show where good examples can be found. Part of this exhibit also would identify other national, state, regional, and local sites where visitors can go to learn more about theme-related topics.

3. Real-time volcanic activity.

This exhibit would show actual real-time volcanic activity on a global scale. Various technologies exist to illustrate these activities. Perhaps an interactive computer could be used where visitors could access specific web sites that display this information. This exhibit concept would require regular staff maintenance to ensure that current information was being provided.

4. The angle of repose.

As an important concept related to understanding cinder cone volcanoes, this display (perhaps interactive) would illustrate the concept and why cinder cones are so fragile and subject to the forces of erosion. The interactive potential of this exhibit could be a valuable element of the park's education program.

5. Habitats and environments.

This exhibit concept will give visitors a general idea of the variety of habitats and environments in this volcanic landscape, and how they are affected by changes in elevation and other factors.

Visitors also will see how the area reflects a blending of the Rocky Mountain and prairie ecosystems. This is not a major interpretive concept that would call for expensive dioramas or large exhibit cases.

6. Issues affecting the monument.

A small changeable exhibit will allow the park staff to highlight specific issues affecting the monument, such as erosion, air quality, and fire management. The exhibit also could be used to promote special events, recent discoveries, or special theme-related topics. The basic exhibit structure should be flexible, professionally designed, and contain materials and instructions to enable park staff to produce high quality labels, text blocks, and graphics.

7. Site bulletin display.

The park's various site bulletins and other free literature could be displayed under glass at the information desk, or in a changeable wall-mounted frame. Text would indicate that copies of any items are available on request. This will help advertise what is available, but deter the tendency of some people to gather literature indiscriminately just because it is there.

8. Theater entrance.

In addition to the above exhibit concept proposals, design solutions should be developed for drawing more visitors into the theater. One idea would be to give people the feeling that they were about to walk into the volcano or enter a lava tube.

If the option of designing new exhibits is pursued, consideration should be given to redesigning the entire public use space in the visitor center. This would include an evaluation of the information desk, cooperating association sales area, lobby, and vestibule. While it may prove impractical to enlarge the space, other design options may improve visitor (and school group) circulation, theater access, and focus on the key exhibits.

Wayside Exhibits

The park has submitted several PMIS funding requests that focus on replacing existing waysides, but this plan recommends starting from scratch and fully evaluating the wayside exhibit needs. It might be best

not to replace some of the existing waysides, and new waysides at additional sites might be appropriate.

The park should begin wayside exhibit development by preparing a parkwide Wayside Exhibit Proposal, which is a document that identifies all desired wayside exhibits within a park area. It is used to bring a unified, coherent approach to wayside exhibit development, thereby avoiding a haphazard approach that results in a conglomeration of multigenerational waysides that have no common look or quality. The proposal is also used as a tool to identify needed funds.

During this interpretive planning process there was not sufficient time to thoroughly evaluate all possible wayside exhibit sites. During the development of a Wayside Exhibit Proposal, every potential wayside site should be carefully evaluated. This will require a separate wayside exhibit planning trip dedicated to the development of a parkwide proposal.

A Two-tier Wayside System

There are two levels of wayside exhibit interpretation at Capulin Volcano National Monument. The higher level is interpretation of features tied to the major park themes and significance, which are primarily geologic, related to the volcano. A second, lower level of information involves the identification of trailside features, primarily plants. The park would continue with the two styles of exhibits; one would deal with the major interpretive messages, the second would identify trailside features.

Visitor Center Area

At present there are no major wayside exhibits outside the visitor center. There is a very nice accessible nature trail at the visitor center, with trailside signs that identify features. The markers are generally good. They can be retained as they are, or, during the development of a parkwide proposal, it might be recommended that the existing markers be replaced with standard, "message project" trailside panels.

It would be good, also, to provide one wayside exhibit outside the visitor center that offers a significant interpretation of the volcano. Presently, it is easy to be looking at the volcano and not even realize it. And, for various reasons some visitors will be unable to drive up the volcano and be exposed to the interpretation provided at the top.

Road to the Top of the Volcano

At present there is one wayside at a road pullout about halfway up the volcano. This site provides a great view of the composition of the vol-

cano, but the pullout is precarious, and visitors must cross the road to examine the features. There are safety concerns here that should be evaluated before recommending that a wayside be located at this site. It might be better from a safety standpoint to remove the pullout.

Parking Area at Top of Volcano

At present there are five wayside exhibits mounted on low walls at the parking area. The site does offer good views of both distant and nearby features. New wayside exhibits should be planned for these walls.

Trails at Top of Volcano

The Rim Trail should be thoroughly evaluated for wayside exhibits. Rather than all of the exhibits grouped at one site as they are now, probably a series of waysides spaced out along the length of the trail would be more appropriate. These could be supplemented with trailside feature identification markers. The existing cluster of four waysides is badly deteriorated and should be replaced as soon as possible.

The vent trail presently has just one wayside exhibit. One or two more might be appropriate, associated with benches that would provide rest stops for people climbing back up the trail.

Self-guiding brochures are probably ill advised for these trails. Aside from the usual difficulties of printing and maintaining stocks of brochures, the weather conditions at the top of the crater (wind) would likely cause many brochures to end up on the slopes of the volcano.

Trail Orientation Sign

During wayside exhibit development, the wooden trail orientation sign should probably be replaced with an exhibit that orients visitors to the two trails and is designed to be consistent in appearance with the rest of the wayside exhibits in the area.

Rest Shelter

There is a CCC-era shelter at the crater rim parking area. This shelter might provide an opportunity for one or two interpretive panels. Some visitors undoubtedly wait at the shelter while others in their party walk the trails, and this would offer them some information and interpretation while they wait. The message for these exhibits would be determined during the development of the wayside exhibit proposal.

The Boca

The "Boca" is an area where lava flowed from the base of the volcano. It covers a fairly large area and contains a good variety of geologic and biotic features. At present there is no visitor access to this area, but the

park is considering putting in a trail and interpreting the Boca. The Boca may provide an excellent area to conduct education programs. It also might be a good area for wayside exhibit interpretation, but that is uncertain at this time. If the park opts for a formal trail open to all visitors, wayside exhibits might be very appropriate. If the trail is less developed and is earmarked primarily for education programs, other forms of interpretation might be more appropriate. In any case, if a trail is developed, it might be advisable to begin with a trail brochure keyed to numbered stops, as a test. If this works out well, and visitation to the area warrants it, wayside exhibits might be appropriate in the future. They are not immediately recommended at this time, pending decisions about the area.

Miscellaneous Sites

Section One of the draft Comprehensive Interpretive Plan indicates possible wayside exhibits at miscellaneous sites, such as at I-25 and at Routes 64/87. These and other potential sites will be considered during the development of a parkwide proposal.

Panel Material

Capulin Volcano is a well-controlled park, closed at night, and vandalism is not a major problem. This park might lend itself well to porcelain enamel panels, though this decision should be explored further.

Wayside Exhibit Bases

The park's present major wayside exhibits have masonry bases. New exhibits should probably have standard NPS aluminum bases. Waysides at the crater rim parking area could use standard frames mounted onto the existing masonry wall. Standard bases would blend well with the dark, rocky landscape, and would be much easier to acquire, install, and maintain. A determination regarding bases would be made during the development of a Wayside Exhibit Proposal.

Photographs

Since many of the wayside exhibits on the crater rim will interpret features seen from the rim, good photographs will be essential for pointing out features. The park should contract with a photographer to shoot photos from the rim, possibly with a panoramic camera. Harpers Ferry Center can help with this process. The photos should be shot from potential exhibit sites.

Possible Wayside Exhibits

The following are some possible wayside exhibits that should be considered during in-depth wayside exhibit planning. Several of these sites already have wayside exhibits. This is by no means a definitive list. It is probable that an in-depth look at wayside exhibit needs will result in a list of about 15-20 substantial exhibits, plus trailside markers.

1. One at the Visitor Center.
2. Possibly 1 at the road pullout along the drive to the crater rim.
3. 3-5 at the rim parking area, replacing the existing waysides.
4. 6-8 along the crater rim trail.
5. 2-3 along the vent trail.
6. 2-3 at miscellaneous sites, such as at interstate highway rest areas.
7. Trailside plant identification markers along the crater rim trail and the vent trail.
8. Trailside markers along the visitor center nature trail.



SPECIAL POPULATIONS

Provisions will be made to accommodate the needs of special populations who visit Capulin Volcano National Monument. Special populations are identified as those with sight, hearing, learning, and mobility impairments; visitors who do not speak English; and, the elderly and young children.

Public Law 90-480, the Architectural Barriers Act, and the Americans with Disabilities Act of 1990 establish standards for physical access. All newly constructed facilities, as a matter of course, will be designed for accessibility for physically disabled visitors and employees.

Other regulations, laws, and standards include Section 504 of the Rehabilitation Act of 1973, Director's Orders No. 42, and Accessibility for Visitors with Disabilities in National Park Service Programs, Facilities, and Services.

All new interpretive media will conform to National Park Service, June 1999 Programmatic Accessibility Guidelines for Interpretive Media (see Appendix).



PLANNING TEAM

Capulin Volcano National Monument

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APPENDIX

Special Populations: Programmatic Accessibility Guidelines for Interpretive Media

National Park Service
Harpers Ferry Center

June 1999

Prepared by
Harpers Ferry Center
Accessibility Task Force

Contents
Statement of Purpose
Audiovisual Programs
Exhibits
Historic Furnishings
Publications
Wayside Exhibits

Statement of Purpose

This document is a guide for promoting full access to interpretive media to ensure that people with physical and mental disabilities have access to the same information necessary for safe and meaningful visits to National Parks. Just as the needs and abilities of individuals cannot be reduced to simple statements, it is impossible to construct guidelines for interpretive media that can apply to every situation in the National Park System.

These guidelines define a high level of programmatic access which can be met in most situations. They articulate key areas of concern and note generally accepted solutions. Due to the diversity of park resources and the variety of interpretive situations, flexibility and versatility are important.

Each interpretive medium contributes to the total park program. All media have inherent strengths and weaknesses, and it is our intent to capitalize on their strengths and provide alternatives where they are deficient. It should also be understood that any interpretive medium is just one component of the overall park experience. In some instances, especially with regard to learning disabilities, personal services, that is one-on-one interaction, may be the most appropriate and versatile interpretive approach.

In the final analysis, interpretive design is subjective, and dependent on aesthetic considerations as well as the particular characteristics and resources available for a specific program. Success or failure should be evaluated by examining all interpretive offerings of a park. Due to the unique characteristics of each situation, parks should be evaluated on a case by case basis. Nonetheless, the goal is to fully comply with NPS policy:

"...To provide the highest level of accessibility possible and feasible for persons with visual, hearing, mobility, and mental impairments, consistent with the obligation to conserve park resources and preserve the quality of the park experience for everyone."

NPS Special Directive 83-3, Accessibility for Disabled Persons

Audiovisual Programs

Audiovisual programs include video programs, and audio and interactive programs. As a matter of policy, all audiovisual programs produced by the Harpers Ferry Center will include some method of captioning. The Approach used will vary according to the conditions of the installation area and the media format used, and will be selected in consultation with the parks and regions.

The captioning method will be identified as early as possible in the planning process and will be presented in an integrated setting where possible. To the extent possible, visitors will be offered a choice in viewing captioned or uncaptioned versions, but in situations where a choice is not possible or feasible, a captioned version of all programs will be made available. Park management will decide on the most appropriate operational approach for the particular site.

Guidelines Affecting Visitors with Mobility Impairments

1. The theater, auditorium, or viewing area should be accessible and free of architectural barriers, or alternative accommodations will be provided. UFAS 4.1.
2. Wheelchair locations will be provided according to ratios outlined in UFAS 4.1.2(18a).
3. Viewing heights and angles will be favorable for those in designated wheelchair locations.
4. In designing video or interactive components, control mechanisms will be placed in accessible location, usually between 9" and 48" from the ground and no more than 24" deep.

Guidelines Affecting Visitors with Visual Impairments

Simultaneous audio description will be considered for installations where the equipment can be properly installed and maintained.

Guidelines Affecting Visitors with Hearing Impairments

1. All audiovisual programs will be produced with appropriate captions.
2. Copies of scripts will be provided to the parks as a standard procedure.
3. Audio amplification and listening systems will be provided in accordance with UFAS 4.1.2(18b).

Guidelines Affecting Visitors with Learning Impairments

1. Unnecessarily complex and confusing concepts will be avoided.
2. Graphic elements will be chosen to communicate without reliance on the verbal component.
3. Narration will be concise and free of unnecessary jargon and technical information.

Exhibits

Numerous factors affect the design of exhibits, reflecting the unique circumstances of the specific space and the nature of the materials to be interpreted. It is clear that thoughtful, sensitive design can go a long way in producing exhibits that can be enjoyed by a broad range of people. Yet, due to the diversity of situations encountered, it is impossible to articulate guidelines that can be applied universally.

In some situations, the exhibit designer has little or no control over the space. Often exhibits are placed in areas ill suited for that purpose, they may incorporate large or unyielding specimens, may incorporate sensitive artifacts which require special environmental controls, and room decor or architectural features may dictate certain solutions. All in all, exhibit design is an art which defies simple description. However, one central concern is to communicate the message to the largest audience possible. Every reasonable effort will be made to eliminate any factors limiting communication through physical modification or by providing an alternate means of communication.

Guidelines Affecting Visitors with Mobility Impairments

Note: The Americans with Disabilities Act Accessibility Guidelines (ADAAG) is the standard followed by the National Park Service and is therefore the basis for the accessibility standards for exhibits, where applicable.

1. Height/position of labels: Body copy on vertical exhibit walls should be placed at between 36" and 60" from the floor.
2. Artifact Cases:
 - a. Maximum height of floor of artifact case display area shall be no higher than 30" from the floor of the room. This includes vitrines that are recessed into an exhibit wall.
 - b. Artifact labels should be placed so as to be visible to a person within a 43" to 51" eye level. This includes mounting labels within the case at an angle to maximize its visibility to all viewers.

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3. Touchable Exhibits: Touchable exhibits positioned horizontally should be placed no higher than 30" from the floor. Also, if the exhibit is approachable only on one side, it should be no deeper than 31".
 4. Railings/barriers: Railings around any horizontal model or exhibit element shall have a maximum height of 36" from the floor.
 5. Information desks: Information desks and sales counters shall include a section made to accommodate both a visitor in a wheelchair and an employee in a wheelchair working on the other side. A section of the desk/counter shall have the following dimensions:
 - a. Height from the floor to the top: 28 to 34 inches. (ADAAG 4.32.4)
 - b. Minimum knee clearance space: 27" high, 30" wide and 19" deep of clearance underneath the desk is the minimum space required under ADAAG 4.32.3, but a space 30" high, 36" wide and 24" deep is recommended.
 - c. Width of top surface of section: at least 36 inches. Additional space must be provided for any equipment such as a cash register.
 - d. Area underneath desk: Since both sides of the desk may have to accommodate a wheelchair, this area should be open all the way through to the other side. In addition, there should be no sharp or abrasive surfaces underneath the desk. The floor space behind the counter shall be free of obstructions.
 6. Circulation Space:
 - a. Passageways through exhibits shall be at least 36" wide.
 - b. If an exhibit passageway reaches a dead-end, an area 60" by 78" should be provided at the end for turning around.
 - c. Objects projecting from walls with their leading edges between 27" and 80" above the floor shall protrude no more than 4" in passage ways or aisles. Objects projecting from walls with their leading edges at or below 27" above the floor can protrude any amount.
 - d. Freestanding objects mounted on posts or pylons may overhang a maximum of 12" from 27" to 80" above the floor. (ADAAG 4.4.1)
 - e. Protruding objects shall not reduce the clear width of an accessible route to less than the minimum required amount. (ADAAG 4.4.1)

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- f. Passageways or other circulation spaces shall have a minimum clear head room of 80". For example, signage hanging from the ceiling must have at least 80" from the floor to the bottom edge of the sign. (ADAAG 4.4.2)

7. Floors:

- a. Floors and ramps shall be stable, level, firm and slip-resistant.
- b. Changes in level between 1/4" and 1/2" shall be beveled with a slope no greater than 1:2. Changes in level greater than 1/2" shall be accomplished by means of a ramp that complies with ADAAG 4.7 or 4.8. (ADAAG 4.5.2)
- c. Carpet in exhibit areas shall comply with ADAAG 4.5.3 for pile height, texture, pad thickness, and trim.

8. Seating - Interactive Stations/Work Areas: The minimum knee space underneath a work desk is 27" high, 30" wide and 19" deep, with a clear floor space of at least 30" by 30" in front. The top of the desk or work surface shall be between 28" and 34" from the floor. (ADAAG 4.32, Fig.45)

Guidelines Affecting Visitors with Visual Impairments

- 1. Tactile models and other touchable exhibit items should be used whenever possible. Examples of touchable exhibit elements include relief maps, scale models, raised images of simple graphics, reproduction objects, and replaceable objects (such as natural history or geological specimens, cultural history items, etc.).
- 2. Typography - Readability of exhibit labels by visitors with various degrees of visual impairment shall be maximized by using the following guidelines:
 - a. Type size - No type in the exhibit shall be smaller than 24 point.
 - b. Typeface - The most readable typefaces should be used when ever possible, particularly for body copy. They are: Times Roman, Palatino, Century, Helvetica and Universe.
 - c. Styles, Spacing - Text set in both caps and lower case is easier to read than all caps. Choose letter spacing and word spacing for maximum readability. Avoid too much italic type.
 - d. Line Length - Limit the line length for body copy to no more than 45 to 50 characters per line.
 - e. Amount of Text - Each unit of body copy should have a maximum of 45-60 words.

f. Margins - Flush left, ragged right margins are easiest to read.

3. Color:

a. Type/Background Contrast - Percentage of contrast between the type and the background should be a minimum of 70% .

b. Red/Green - Do not use red on green or green on red as the type/background color combination.

c. Do not place body copy on top of graphic images that impair readability.

4. Samples: During the design process, it is recommended that samples be made for review of all size, typeface and color combinations for labels in that exhibit.

5. Exhibit Lighting:

a. All labels shall receive sufficient, even light for good readability. Exhibit text in areas where light levels have been reduced for conservation purposes should have a minimum of 10 footcandles of illumination.

b. Harsh reflections and glare should be avoided.

c. The lighting system shall be flexible enough to allow adjustments on-site.

d. Transitions between the floor and walls, columns or other structures should be made clearly visible. Finishes for vertical surfaces should contrast clearly with the floor finish. Floor circulation routes should have a minimum of 10 footcandles of illumination.

6. Signage: When permanent building signage is required as a part of an exhibit project, the ADAAG guidelines shall be consulted. Signs, which designate permanent rooms and spaces, shall comply with ADAAG 4.30.1, 4.30.4, 4.30.5, and 4.30.6. Other signs, which provide direction to or information about functional spaces of the building, shall comply with ADAAG 4.30.1, 4.30.2, 4.30.3, and 4.30.5. Note: When the International Symbol of Accessibility (wheelchair symbol) is used, the word "Handicapped" shall not be used beneath the symbol. Instead, use the word "Accessible".

Guidelines Affecting Visitors with Hearing Impairments

1. Information presented via audio formats will be duplicated in a visual medium, such as in the exhibit label copy or by captioning. All video

programs incorporated into the exhibit, which contain audio, shall be open captioned.

2. Amplification systems and volume controls should be incorporated with audio equipment used individually by the visitor, such as audio handsets.
3. Information desks shall allow for Telecommunication Devices for the Deaf (TDD) equipment.

Guidelines Affecting Visitors with Learning Impairments

1. The exhibits will present the main interpretive themes on a variety of levels of complexity, so people with varying abilities and interests can understand them.
2. The exhibits should avoid unnecessarily complex and confusing topics, technical terms, and unfamiliar expressions. Pronunciation aids should be provided where appropriate.
3. Graphic elements shall be used to communicate non-verbally.
4. The exhibits shall be a multi-sensory experience. Techniques to maximize the number of senses used in the exhibits should be encouraged.
5. Exhibit design shall use color and other creative approaches to facilitate comprehension of maps by visitors with directional impairments.

Historic Furnishings

Historically refurnished rooms offer the public a unique interpretive experience by placing visitors within historic spaces. Surrounded by historic artifacts visitors can feel the spaces "come alive" and relate more directly to the historic events or personalities commemorated by the park.

Accessibility is problematical in many NPS furnished sites because of the very nature of historic architecture. Buildings were erected with a functional point of view that is many times at odds with our modern views of accessibility.

The approach used to convey the experience of historically furnished spaces will vary from site to site. The goals, however, will remain the same, to give the public as rich an interpretive experience as possible given the nature of the structure.

Guidelines Affecting Visitors with Mobility Impairments

1. The exhibit space should be free of architectural barriers or a method of alternate accommodation should be provided, such as slide programs, videotaped tours, visual aids, dioramas, etc.
2. All pathways, aisles, and clearances shall (when possible) meet standards set forth in UFAS 4.3 to provide adequate clearance for wheelchair routes.
3. Ramps shall be as gradual as possible and not exceed a 1" rise in 12" run, and conform to UFAS 4.8.
4. Railings and room barriers will be constructed in such a way as to provide unobstructed viewing by persons in wheelchairs.
5. In the planning and design process, furnishing inaccessible areas, such as upper floors of historic buildings, will be discouraged unless essential for interpretation.
6. Lighting will be designed to reduce glare or reflections when viewed from a wheelchair.
7. Alternative methods of interpretation, such as audiovisual programs, audio description, photo albums, and personal services will be used in areas which present difficulty for visitors with physical impairments.

Guidelines Affecting Visitors with Visual Impairments

1. Exhibit typefaces will be selected for readability and legibility, and conform to good industry practice.
2. Audio description will be used to describe furnished rooms, where appropriate.
3. Windows will be treated with film to provide balanced light levels and minimize glare.
4. Where appropriate, visitor-controlled rheostat-type lighting will be provided to augment general room lighting.
5. Where appropriate and when proper clearance has been approved, surplus artifacts or reproductions will be utilized as "hands-on" tactile interpretive devices.

Guidelines Affecting Visitors with Hearing Impairments

1. Information about room interiors will be presented in a visual medium such as exhibit copy, text, pamphlets, etc.
2. Captions will be provided for all AV programs relating to historic furnishings.

Guidelines Affecting the Visitors with Learning Impairments

1. Where appropriate, hands-on participatory elements geared to the level of visitor capabilities will be used.
2. Living history activities and demonstrations, which utilize the physical space as a method of providing multi-sensory experiences, will be encouraged.

Publications

A variety of publications are offered to visitors, ranging from park folders, which provide an overview and orientation to a park, to more comprehensive handbooks. Each park folder should give a brief description of services available to visitors with disabilities, list significant barriers, and note the existence of TDD phone numbers, if available.

In addition, informal site bulletins are often produced to provide more specialized information about a specific site or topic. It is recommended that each park produce an easily updatable "Accessibility Site Bulletin" which could include detailed information about the specific programs, services, and opportunities available for visitors with disabilities and to describe barriers which are present in the park. A template for this site bulletin will be on the Division of Publications website for parks to create with ease, a consistent look throughout the park service. These bulletins should be in large type, 16 points minimum and follow the large-print criteria below.

Guidelines Affecting Visitors with Mobility Impairments

1. Park folders, site bulletins, and sales literature will be distributed from accessible locations and heights.
2. Park folders and Accessibility Site Bulletins should endeavor to carry information on the accessibility of buildings, trails, and programs by visitors with disabilities.

Guidelines Affecting Visitors with Visual Impairments

1. Publications for the general public:
 - a. Text
 - (1) Size: the largest type size appropriate for the format.
(preferred main body of text should be 10pt)
 - (2) Leading should be at least 20% greater than the font size used.
 - (3) Proportional letterspacing

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- (4) Main body of text set in caps and lower case.
 - (5) Margins are flush left and ragged right
 - (6) Little or no hyphenation is used at ends of lines.
 - (7) Ink coverage is dense
 - (8) Underlining does not connect with the letters being underlined.
 - (9) Contrast of typeface and illustrations to background is high (70% contrast is recommended)
 - (10) Photographs have a wide range of gray scale variation.
 - (11) Line drawings or floor plans are clear and bold, with limited detail and minimum 8 pt type.
 - (12) No extreme extended or compressed typefaces are used for main text.
 - (13) Reversal type should be minimum of 11 point medium or bold sans serif type.

b. The paper:

- (1) Surface preferred is a matte finish. Dull-coated stock is acceptable.
- (2) Has sufficient weight to avoid "show-through" on pages printed on both sides.

2. Large-print version publications:

a. Text

- (1) Size: minimum 16 point type.
- (2) Leading is 16 on 20pt.
- (3) Proportional letterspacing
- (4) Main body of text set in caps and lower case.
- (5) Margins are flush left and ragged right.
- (6) Little or no hyphenation is used at ends of lines.
- (7) Ink coverage is dense.
- (8) Underlining does not connect with the letters being underlined.
- (9) Contrast of typeface and illustrations to background is high (70% contrast is recommended)

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- (10) Photographs have a wide range of gray scale variation.
 - (11) Line drawings or floor plans are clear and bold, with limited detail and minimum 14 pt type.
 - (12) No extreme extended or compressed typefaces are used for main text.
 - (13) Sans-serif or simple-serif typeface
 - (14) No oblique or italic typefaces
 - (15) Maximum of 50 characters (average) per line.
 - (16) No type is printed over other designs.
 - (17) Document has a flexible binding, preferably one that allows the publication to lie flat.
 - (18) Gutter margins are a minimum of 22mm; outside margin smaller but not less than 13mm.

b. Paper:

- (1) Surface is off-white or natural with matte finish.
- (2) Has sufficient weight to avoid "show-through" on pages printed on both sides.

3. Maps:

- a. The less clutter the map, the more visitors that can use it.
- b. The ultimate is one map that is large-print and tactile.
- c. Raised line/tactile maps are something that could be developed in future, using our present digital files and a thermaform machine. Lines are distinguished by lineweight, color and height. Areas are distinguished by color, height, and texture.
- d. The digital maps are on an accessible web site.
- e. Same paper guides as above.
- f. Contrast of typeface background is high. (70% contrast is recommended)
- g. Proportional letterspacing
- h. Labels set in caps and lower case
- i. Map notes are flush left and ragged right.
- j. Little or no hyphenation is used as ends of lines.

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- k. No extreme extended or compressed typefaces are used for main text.
 - l. Sans-serif or simple-serif typeface.
4. The text contained in the park folder should also be available on audiocassette, CD and accessible web site. Handbooks, accessibility guides, and other publications should be similarly recorded where possible.
 5. The official park publication is available in a word processing format. This could be translated into Braille as needed.

Guidelines Affecting Visitors with Hearing Impairments

Park site bulletins will note the availability of such special services as sign language interpretation and captioned programs.

Guidelines Affecting Visitors with Learning Impairments

1. The park site bulletin should list any special services available to these visitors.
2. Publications:
 - a. Use language that appropriately describes persons with disabilities.
 - b. Topics will be specific and of general interest. Unnecessary complexity will be avoided.
 - c. Whenever possible, easy to understand graphics will be used to convey ideas, rather than text alone.
 - d. Unfamiliar expressions, technical terms, and jargon will be avoided. Pronunciation aids and definitions will be provided where needed.
 - e. Text will be concise and free of long paragraphs and wordy language.

Wayside Exhibits

Wayside exhibits, which include outdoor interpretive exhibits and signs, orientation shelter exhibits, trailhead exhibits, and bulletin boards, offer special advantages to visitors with disabilities. The liberal use of photographs, artwork, diagrams, and maps, combined with highly readable type, make wayside exhibits an excellent medium for visitors with hearing and learning impairments. For visitors with sight impairments, waysides offer large type and high legibility.

Although a limited number of NPS wayside exhibits will always be inaccessible to visitors with mobility impairments, the great majority are placed at accessible pullouts, viewpoints, parking areas, and trailheads.

The NPS accessibility guidelines for wayside exhibits help insure a standard of quality that will be appreciated by all visitors. Nearly everyone benefits from high quality graphics, readable type, comfortable base designs, accessible locations, hard-surfaced exhibit pads, and well-landscaped exhibit sites.

While waysides are valuable on-site "interpreters," it should be remembered that the park resources themselves are the primary things visitors come to experience. Good waysides focus attention on the features they interpret, and not on themselves. A wayside exhibit is only one of the many interpretive tools which visitors can use to enhance their appreciation of a park.

Guidelines Affecting Visitors with Mobility Impairments

1. Wayside exhibits will be installed at accessible locations whenever possible.
2. Wayside exhibits will be installed at heights and angles favorable for viewing by most visitors including those in wheelchairs. For standard NPS low-profile units the recommended height is 30 inches from the bottom edge of the exhibit panel to the finished grade; for vertical exhibits the height of 6-28 inches.
3. Trailhead exhibits will include information on trail conditions which affect accessibility.
4. Wayside exhibit sites will have level, hard surfaced exhibit pads.
5. Exhibit sites will offer clear, unrestricted views of park features described in exhibits.

Guidelines Affecting Visitors with Visual Impairments

1. Exhibit type will be as legible and readable as possible.
2. Panel colors will be selected to reduce eyestrain and glare, and to provide excellent readability under field conditions. White should not be used as a background color.
3. Selected wayside exhibits may incorporate audio stations or tactile elements such as models, texture blocks, and relief maps.
4. For all major features interpreted by wayside exhibits, the park should offer non-visual interpretation covering the same subject matter. Examples include cassette tape tours, radio messages, and ranger talks.

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5. Appropriate tactile cues should be provided to help visually impaired visitors locate exhibits.

Guidelines Affecting Visitors with Hearing Impairments

1. Wayside exhibits will communicate visually, and will rely heavily on graphics to interpret park resources.
2. Essential information included in audio station messages will be duplicated in written form, either as part of the exhibit text or with printed material.

Guidelines Affecting Visitors with Learning Impairments

1. Topics for wayside exhibits will be specific and of general interest. Unnecessary complexity will be avoided.
2. Whenever possible, easy to understand graphics will be used to convey ideas, rather than text alone.
3. Unfamiliar expressions, technical terms, and jargon will be avoided. Pronunciation aids and definitions will be provided where needed.
4. Text will be concise and free of long paragraphs and wordy language.

