

Evaluation Brief EB9

May 7, 2007

== DRAFT ==

Off-Site Testing of the Prototype Walking Guide

The initial installation of the *Trail of Time* will include relatively little on-the-ground interpretation. Although a range of interpretive signage will eventually be available along the completed *Trail*, for the initial installation in 2007 the only interpretative text will be (a) the 10-meter markers; (b) temporary signage at the major entrances; and (c) a *Walking Guide*, a freely distributed pamphlet designed for *all* visitors to use as they walk along the initial *Trail*. Following is a brief overview of off-site testing of a prototype version of the walking guide.

Methods:

This test was conducted off-site in the Chicago area. Two methods were used: (a) critical review and (b) user testing with purposively selected respondents. A total of 1.5 hours of direct contact hours were spent with six respondents in four interviews from April 28 and May 2, 2007. Respondents varied in (a) age (4th grade through mature adult); (b) previous experience with the Grand Canyon (no experience to several previous visits); and (c) knowledge of geology (complete novice to amateur paleontologist).

The *critical review* consisted of two evaluators independently reviewing the materials for the incorporation of principles of instructional design and informal learning. The *user-testing* included showing respondents the long version of the *Walking Guide* (versions SideAv4 and SideBv3, developed in April, 2007; see thumbnails below) and asking them a series of open-ended questions. About half the respondents were also shown a shorter version of the *Guide* (Version 2, dated December, 1, 2006; see thumbnails below).

Key Findings:

In keeping with the criteria for these Evaluation Briefs (i.e. short, and quick) we are including only key findings below. Because these are the results of testing done off-site and out of context, these findings are not definitive or finally conclusive. They do however summarize important information that will help guide the next iteration of the prototype walking guide that will be tested at the rim.

1. **Perception of guide as either a general appreciation publication or a trail guide** (see EB#2): The *long guide* communicates that it is a “brochure for reading later” rather than a walking guide. Of the two walking guides tested, data indicated that the *short guide* would more likely be picked up and used along the trail. Although some respondents said they were interested in much of the information included in the *long guide*, they explained that they would not read or use it along the *Trail*. As our amateur paleontologist put it, “I would take [the long guide] home to look at, but the other is better for the *Trail*.” The miniature markers seem to be a key factor in this accomplishment.
2. **The covers:** Data indicated that the covers of both prototype walking guides will not be particularly effective at getting visitors to pick up a guide. Respondents described a need for the covers to be “catchier” and more attractive, and with less “washed-out colors.” One respondent commented that a place as majestic as the Grand Canyon deserves “something more spectacular.” On the *short guide* respondents also had trouble recognizing that there was a cover; it did not stand out or attract their attention. In addition to the lack of aesthetic appeal of the cover of the *short guide*, the panel includes too much text that won’t be read. The introductory paragraph is unnecessary, repetitive with what comes further down on the page, and actually not true (i.e. with this guide you don’t really “learn how the Colorado River carved a young canyon into old rock layers...”).
3. **Starting on Side A:** Data indicated that visitors will likely be able to open either guide and arrive at the appropriate introductory information. With both guides, most respondents naturally opened them to Side A. Although respondents tended to also easily find Side B on the *short guide*, with the *long guide* most respondents failed to turn it over and look at Side B on their own.
4. **Understanding information on Side A:** The type of information presented on Side A of the *short guide* will likely be able to be used by many visitors to the rim. Although respondents tended to open both guides to Side A, when using the *long guide* they did not focus on the information that told them what the *Trail* was all about,

and what they could accomplish as they walked along it. The *long guide* left respondents with many questions about the *Trail* that they had trouble answering even after they had looked at the guide for a few minutes. The *short guide* will likely be more readily recognized by visitors to the rim as a source of information about things that are already interesting to them, e.g. when the canyon was carved, when the dinosaurs lived, the oldest rock on the canyon, etc.

5. **Understanding information on Side B:** There were strong indications that most visitors to the rim will have difficulty understanding the wealth of information on Side B of the *long guide*. Almost all aspects of Side B were confusing to most of the geology novices. And, while a few respondents with some knowledge and experience of geology understood and appreciated most of the information on Side B, they were still confused by many aspects of the use of color. Even respondents who had had university level geology classes and were very interested in finding out more about geology, became easily frustrated when they tried to make sense of Side B on the *long guide*, and they repeatedly indicated that they wanted something that would be easier to use along the *Trail*. Side B of the *short guide* appeared to be much less frustrating to respondents and will likely be meaningful and less frustrating for visitors to the rim.
6. **Starting on Side B:** Although there were indications that most visitors to the rim will open both guides to Side A (see finding #3 above), there were also indications that when visitors instead start on Side B rather than Side A, they will have a much more difficult time with the *long guide* than with the *short guide*. In fact, for the *short guide* it did not seem to matter very much which side respondents looked at first. They could immediately begin to make sense of each side, finding information that helped them understand either the *Trail* (Side A), or the rocks in the Canyon (Side B).
7. **Making the connection between the horizontal trail and the vertical rock layers:** Data indicated that the *long guide* will be much less effective at helping visitors make the connection between the horizontal and the vertical than will the *short guide*. We found that the miniature markers on the *short guide* helped respondents make that link effectively. As one respondent said, “To me [the *short guide*] matches several things. It matches the markers to where you are, it matches the markers with what was happening, and then it matches the markers with what you are seeing in real life, and also it puts it on a timeline that isn’t too much for people like me to understand.”
8. **Size/color of text:** There were many indications that the size and color of the text on both versions will be too small for visitors to read while on the *Trail*. Many respondents had trouble reading the text because it was too small, especially on Side B of the *long guide* and repeatedly commented on their difficulty reading it. “Some of us are a little visually challenged...I mean I can read that, but I sure have to concentrate to read it. And it’s probably really sunny [at the rim of the Grand Canyon].” And another respondent: “The print is still very small. And sometimes if I’m with somebody we read it to each other, so maybe somebody else [I’m with] would have better eyes.” With the *short guide* we found that it was easier for respondents to read, presumably because of the higher contrast (black on white) of most of the text.
9. **Amount and type of information:** There were many indications that the *long guide* includes too much information for most casual visitors to the rim. All of our respondents expressed frustration with not being able to directly relate what was in the guide with what they would see while walking the *Trail of Time*. Most respondents indicated that they could not figure out how the *long guide* could help them make sense of what they saw as they walked along the *Trail*. There was also concern about not being able to sift through the wealth of information on the *long guide* and know what to pay attention to. “Wow, this is really busy. Where do I focus my attention?” The amount and type of information on the *short guide* appears to be more appropriate as it ties in directly with what visitors will see and what they are already curious about. The small paragraphs of text on Side A of the *short guide* contain just about the perfect amount of text.
10. **Map of the Trail:** Data indicated that it will likely be important to have a map of the trail included in the guide. Respondents overwhelmingly appreciated the map on Side A of both guides because it showed them where in the Park the *Trail* was. However, there were indications that a simpler map, e.g. similar to the one in the *short guide*, will be easier to use than one like the more complex version in the *long guide*. In this case, a map with less information about the park per se and more information about the *Trail* itself (e.g. bathrooms, Grandeur Point, Shrine of the Ages, important markers, etc.) will likely be more informative for visitors.
11. **Use of the word portal:** This word created confusion among some respondents, indicating to them that these “must be different points that they’ve selected out as viewing points.”

Recommendations:

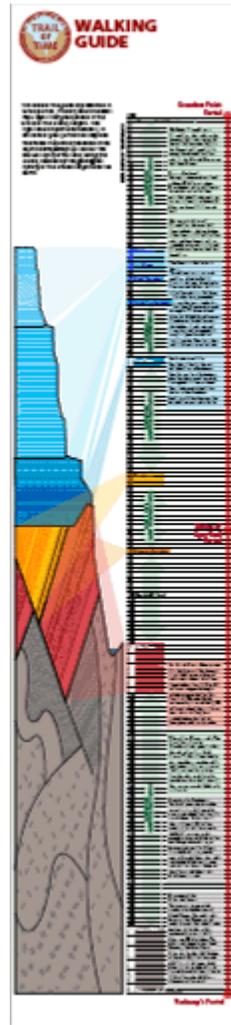
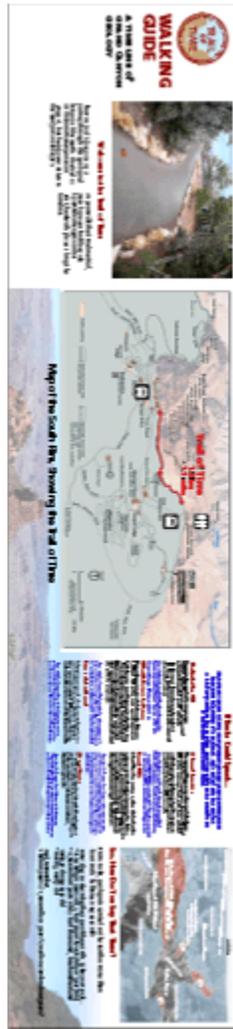
1. Set aside the long version of the *Guide* for now so that selected features from this version can be revised and adapted for use in the *Interpretive Brochure*.
2. Revise the existing *short guide* (Version 2, dated December, 1, 2006), and then test the revised version at the Rim in May. We want to emphasize: It is important to not start over from scratch with a new design. Our findings indicate that the short version, with some revisions, can become an effective *Walking Guide* for the *Trail of Time*.
3. Recommended revisions to the *short guide* include:
 - a) Print it at 8½ x 14-inch size. This will help ensure that the text is larger than that text on the 8½ x 11 version that was tested.
 - b) Simplify the cover page and make it more attractive: (1) have the title *Trail of Time Walking Guide* be large, bold, bright; (2) add a spectacular photograph; and (3) remove all other text except for the words: *one BIG step = one MILLION years!*
 - c) Slightly revise all ten text paragraphs on Side A to make them easier to read, and to tie in more directly with what visitors actually will see along the *Trail* or in the Canyon. However, do not add any additional text to these paragraphs! The *amount* included for each paragraph is just about perfect; we just need to make the content a bit easier to understand and more clearly linked to what visitors can see. (See the end of this brief for suggested rewrites.)
 - d) Add phonetic pronunciations for unfamiliar words. Include pronunciations for: Kaibab, Toroweap; Coconino, Supai, Muav, Tapeats, and unconformity. Test these words at the rim to see which come easily to visitors, and if there are any additional words/terms that need pronunciation guides.
 - e) To focus more on what visitors can actually seen in the Canyon, add an additional text segment at 290 million years ago. (See the end of this brief for suggested wording.)
 - f) Keep the map on Side A about as it is. If possible, substitute a shaded-relief map for the topographic map, but do not add any additional features except for the following: Shrine of the Ages; Grandeur Point; symbol for Bus near Shrine of Ages; symbols for restrooms at Yavapai and Verkamps. Also, spell out *Canyon View Information Plaza*. Leave off the word *portal*. If necessary, replace it with the word *entrance*.
 - g) Fold the next prototype version of the guide so that the cover panel opens to show the map with markers (Side A), not the rock column side (Side B). [Note: We have previously referred to this *short guide* as a tri-fold, but the version we tested is actually a four-fold.]
 - h) On Side B: keep the current 3-D cross-section view and markers basically the way they are.
 - i) On Side B shorten and revise the *Missing Time* paragraph to make it easier to read/understand, for example, something like: *Major gaps in the rock record are called unconformities. There are actually more gaps in the record than record itself.* Be sure to test this wording with visitors during the on-site testing to see if/how they understand it. Leave the timeline (showing unconformities) basically as is.
 - j) Add a sentence along the bottom of both sides that says something like: *The Trail of Time is currently under construction. Enjoy it today, and then come back when it's finished in summer 2009.*
 - k) On Side B: Because we know from earlier evaluation that many visitors to the rim won't understand that (for example) Kaibab Formation is the name of a rock layer, change the title of the rock column to *Grand Canyon's Rock Layers: Their Names and Their Ages*.
 - l) Whenever possible, when thousands-of-millions is included, add the comparable billions-of-years in parentheses. However, this is not necessary on the Side A map itself.
 - m) On Side A, and if appropriate on Side B, include *1,000 million years = 1 billion years*.
 - n) Because of the layout of the *Trail* with time zero located at the far right, and 1,840 million years ago at the left, it makes sense to start with the *6 million years ago* marker in the top right, and end with the 4,560 million years ago marker in the bottom left. However, it is unclear if this order will prove confusing to visitors. During the on-site testing, it will be important to test this with visitors. In the meantime, we suggest leaving the order as it currently is.

Thumbnails of the prototype Walking Guides

Long Guide

Side A

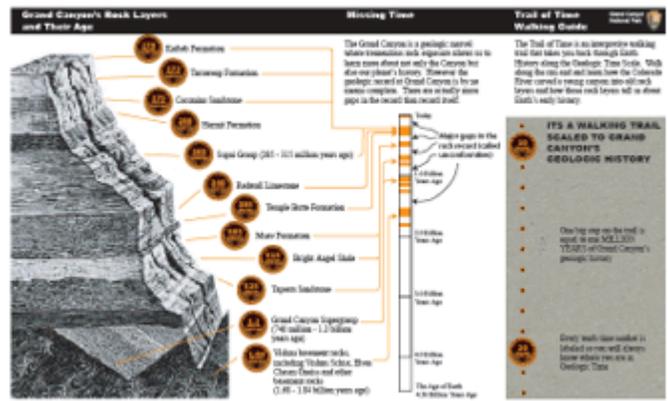
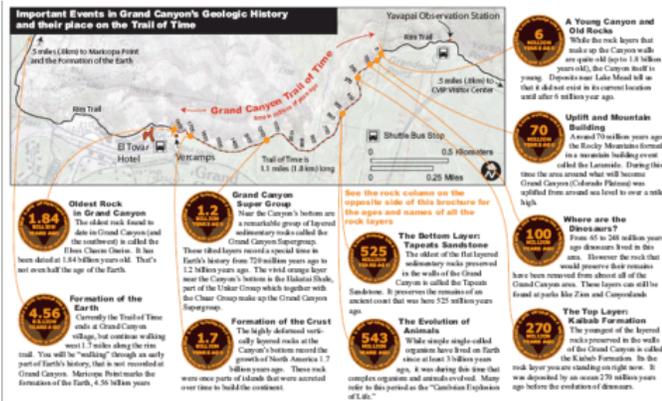
Side B



Short Guide

Side A

Side B



Appendix A. Suggested Text for Side A of the *Walking Guide*

1,840 million years ago: Oldest Rock in Grand Canyon – The oldest rock found in Grand Canyon (so far) is called the Elves Chasm Gneiss (pronunciation?). It's 1,840 million (1.84 billion) years old. That's not even half the age of the Earth. Unfortunately you can't see it from this trail.

4,560 million years ago: Formation of the Earth – Currently the Trail of Time ends at Grand Canyon village, but continue walking west 1.7 miles along the rim trail. You will be “walking” through an early part of Earth's history that is not recorded at the Grand Canyon. Maricopa Point is the equivalent of the formation of the Earth, 4.56 billion years ago.

1,200 million years ago: Grand Canyon Super Group – Near the Canyon's bottom are a remarkable group of layered sedimentary rocks called the Grand Canyon Supergroup. These tilted layers were formed from 720 – 1,200 million years ago (720 million – 1.2 billion). From most of the trail you can't see the Grand Canyon Supergroup because it's buried deep in the canyon walls, but if you stand at trail marker XX you can see some bright orange shale near the Canyon's bottom. This shale is part of the Supergroup. [Note: if you can stand at trail marker XX and see bright orange shale, then there needs to be a marker paragraph added.]

1,700 million years ago: Formation of the Crust – The highly deformed vertically layered rocks at the Canyon's bottom record the growth of North America 1.7 billion years ago. These rocks were once parts of islands that came together over time to build the continent. [Is there anything here I can see that is an example of the “highly deformed vertically layered rocks”? This would be cool if there is something I can see.]

543 million years ago: The Evolution of Animals – While simple single-celled organisms have lived on Earth since at least 3,000 million (3 billion) years ago, complex organisms and animals didn't evolve until 543 million years ago. Many refer to this period as the *Cambrian Explosion of Life*. All the rock from this time has been worn away from almost all the Grand Canyon area, although you can find it in other parks.

525 million years ago: The Bottom Layer: Tapeats Sandstone – The oldest of the flat layered (sedimentary) rocks preserved in the walls of the Grand Canyon is called the Tapeats (ta-PEETS) Sandstone. It preserves the remains of an ancient coast that was here 525 million years ago. Look for Tapeats sandstone laying on top of the deep layer of black Vishnu Basement Rocks at the bottom of the canyon.

290 million years ago: The Bathtub Ring – Look out across the canyon, right near the top, and notice the white layer that extends for miles in both directions, like a bathtub ring. Called the Coconino (koh-koh-NEE-noh) Sandstone, this rock layer formed when this area was a desert covered in sand dunes. Look for the Coconino Sandstone from other places along the *Trail of Time*.

270 million years ago: The Top Layer: What You're Standing On – The youngest of the layered rocks preserved in the walls of the Grand Canyon is called the Kaibab (KI-bab) Formation. It's the rock layer you are standing on right now, and is 270 million years old! It was deposited by an ocean long before the evolution of dinosaurs.

100 million years ago: Where are the Dinosaurs? – From 65 to 248 million years ago dinosaurs lived in this area. However, the rock that would preserve their remains has eroded away from almost all of the Grand Canyon area. You can still see these layers in other national parks like Zion and Canyonlands.

70 million years ago: Uplift and Mountain Building – Around 70 million years ago the Rocky Mountains formed. During this time, the area around what would become the Grand Canyon (the Colorado Plateau) was uplifted from around sea level to over a mile high, as it is today.

6 million years ago: Young Canyon and Old Rocks – While the rock layers that make up the walls of the Grand Canyon are very very old (up to 1.84 billion years old!), the Canyon itself is comparatively young. But humans are even younger. Three big steps along this timeline (3 million years) covers all of human history!