

Evaluation Brief EB11

July 11, 2007

== DRAFT ==

On-Site Testing of the Prototype Markers, Walking Guide, and Temporary Signage

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* (currently scheduled for summer 2009), for the initial installation in summer 2007 the *Trail* will consist of (a) 1-meter and 10-meter markers; (b) temporary signage at the three major entrances to the *Trail*; and (c) a freely distributed *Walking Guide*. During a four-day period from May 22-25, prototypes of the markers, signage, and guide were tested with the visiting public. This report describes the prototypes and the methods used, and summarizes key findings and recommendations.

Description of the Prototypes

Markers: The 10-meter markers (Fig. 1, below) were color-printed on laminated cardstock and glued to the trail with Liquid Nails. The 1-meter markers (Fig. 2) were painted on the trail with water-soluble greenish-yellow paint. Note: Although we lost some markers to determined visitors and drenching rains, we were usually able to work around this during testing.

Signage: Temporary signage will be placed at each of three main entrances, or *portals*, to the *Trail*: (a) near Grandeur Point; (b) at the junction of the trail from Park Headquarters (sometimes misleadingly called the *Shrine of the Ages*) with the rim trail; and (c) near Verkamps. (See Figs. 3-6 for examples of these prototype signs and their locations.) A plastic brochure rack was placed on each sign to hold the *Walking Guides*. Although the interpretive text on each of the signs was basically the same, the *You are here* maps differed appropriately. The Grandeur Point sign included an additional paragraph about the erosion of the Grand Canyon by the Colorado River. In addition to the three *Trail* entrance signs, a fourth sign—pointing visitors in the right direction—was also included half-way between the Yavapai Observation Station and Grandeur Point (Figs. 7 & 8).

Walking Guide: Two primary versions of the *Walking Guide* were tested. Version One (Figs. 9 & 10) was a revised version of the prototype *Short Guide* discussed in evaluation brief 2007-EB9. Version Two (Figs. 10 & 11) included further revisions based on the first two days of prototype testing.

Methods:

This study was conducted on-site at the Grand Canyon along the South Rim trail, between Yavapai Observation Station (a museum of Grand Canyon geology) and Verkamps Curios (a gift shop located at one end of Grand Canyon Village). Two methods were used: (a) critical review and (b) user testing with Park visitors.

The *critical review* consisted of two evaluators independently reviewing the materials for the incorporation of principles of instructional design and informal learning. The on-site *user-testing* included (a) unobtrusive observations of randomly selected visitor groups as they used the temporary signage, markers, and *Walking Guide*; (b) unobtrusive observation and tracking of purposively selected visitor groups as they walked the *Trail*, followed by intercept depth interviews to talk about their experiences; (c) participant observations of purposively selected respondents, whereby the evaluator asked permission to walk the *Trail* as part of a visitor group in order to better hear what they discussed and experienced; and (d) cued depth interviews with visitors, who were asked to closely read and use the *Guide* so that we could better understand the effectiveness of the text and suggested activities.

During this study a total of approximately 41 direct contact hours were spent with 416 respondents in 205 visitor groups from May 22 to May 25, 2007. Of these, 165 groups were observed only, 2 were interviewed only, and 37 were both observed and interviewed. A *group* was defined as an in-tact visiting social group. People visiting by themselves were considered a *group* of one.

The diverse sample of respondents varied along many dimensions including (a) age (4 years old through mature adult); (b) previous experience with the Grand Canyon (first visit to many previous visits); and (c) knowledge of geology (complete novice to long-time interest in Grand Canyon geology).

Five individuals collected data for this study: Eric Gyllenhaal (lead researcher); Deborah Perry; Steve Semken; Marcella Wells; and Alexandra Kirk.

Key Findings with Recommended Changes:

Overall, the data indicated that the markers tended to work fairly well with most respondents, the temporary signs will need some relatively straight forward revisions, and the *Walking Guide* presented significant challenges for visitors. These findings and recommendations are described in detail below.

1. 10-meter marker text appeared to work well. One of the problems that surfaced during the 2004 on-site testing of prototype trail markers was that visitors frequently became frustrated when they were not able to quickly identify what the markers represented (Gyllenhaal & Perry, 2004). During this more recent round of testing we found that although respondents could not develop a full understanding of the *Trail* from just the markers, they also did not become frustrated or angry as they did in 2004. There were strong indications that, as long as the final markers look virtually identical to these prototypes, visitors will likely be able to quickly and effectively understand that they are walking along a timeline that covers Grand Canyon geology.

2. 10-meter marker size and shape was adequate. The size of the prototype 10-meter marker appeared to be sufficient to allow most adults to read the numbers and text while standing. Although the combined shape, size, and color initially confused some respondents because of the similarity to USGS benchmarks, in most cases this did not seem to seriously derail their understanding of the markers and the *Trail of Time*. As long as the bronze versions of the markers are as readable as the printed versions, the current size and shape should be sufficient for the final *Trail*. To ensure that readability will not decrease significantly with wear, we recommend that a sample marker be artificially aged with a grinder. If readability decreases rapidly with wear, then the size of the markers should be increased.

3. The *Walking Guide* served an important function. There were strong indications that visitors to the rim will find a walking guide an important complement to their visit. Although respondents usually did not use the Guide as we intended, it seemed to fill a variety of needs for them, including information and orientation. However, as detailed below, the existing prototype *Walking Guide* will need to be redeveloped so that it better fulfills visitors' need to understand the markers they find as they walk along the South Rim, and the roles those markers play in the *Trail of Time*.

4. The directional sign was useful and effective. In limited testing, this signage was at least moderately successful at informing respondents that they were approaching something called the *Trail of Time*. Because the text was relatively short and fairly simple, respondents were usually able to read it while walking. We recommend keeping a version of the directional sign at this juncture, one that is consistent with the final design of the three entrance signs but that retains short and simple text focused on *providing direction* rather than *conveying content*.

5. The temporary signs are necessary but were not particularly effective. There were many indications that while the temporary signs will be an essential component of the interpretive strategy, as prototyped they did not help respondents develop a good understanding of what the *Trail of Time* was and what purpose it was meant to serve. For instance, although respondents sometimes picked up relevant pieces of information—like *one step equals one million years* or that the *Trail* was under construction—they did not walk away understanding that the current *Trail* is a timeline of Grand Canyon geology focused mainly on the ages of the rock layers. In addition, rather than understanding the content-related text as intended, many respondents misinterpreted it as evidence that the timeline was about the formation of the Canyon, which some interpreted as 1.8 billion years old. In other words, the text inadvertently reinforced an existing expectation of many visitors that they would learn about how the Canyon

formed—which was the primary question in their minds. We also found that, for a variety of reasons, the signs were not effective at getting respondents to notice and pay attention to the markers and the *Guide*.

We recommend focusing the purpose of the temporary sign to help visitors understand *what the Trail of Time is right now* (i.e. a walking trail to help visitors get a feeling for how old the rocks in the Grand Canyon are, and that it is currently under construction) rather than *conveying geology content*. The signage should include just enough content to help visitors recognize *what the Trail of Time timeline is about*, without confusing them, for example, into thinking that the timeline is all about the carving of the Canyon.

Furthermore, we recommend the following changes to the design of the signs:

- a. replace the existing background image of Grand Canyon with a large photograph of the winding trail that shows the 10-meter markers, the 1-meter markers, and someone looking down and/or taking a really big step alongside the trail—in other words, use the graphic image to direct attention to the trail itself, and to model appropriate physical and/or social interactions.
- b. tell people that the trail is still being developed.
- c. include a *you are here* map with clearer information about distances between the two ends of the current *Trail*. Drop the blue section of trail (which confused visitors).
- d. replace the *Shrine of Ages* label on the *you are here* map with *Park Headquarters*, as this is where the trail actually originates.
- e. encourage visitors to take a *Guide* and use it as they walk the *Trail*.
- f. eliminate all other content-related text.
- g. test a next version of the temporary sign at the rim.

6. Visitors will pocket the *Guide* rather than use it along the trail. There were strong indications that most visitors who take a *Guide* will not use it in conjunction with the markers, instead pocketing it with the intention of reading it later. Most respondents in this study tended to perceive the *Guide* as (a) something to scan briefly while standing at a vista or walking on the *Trail*; or (b) something to read later, which they could put in their pocket for now. In other words, most respondents used the *Guide* as a quick introduction to the basic idea of the *Trail*, but not as an activity to complete when walking the *Trail*. The prototype *Guide* was not an effective source of basic information about the *Trail*, because few respondents found the most relevant text for this purpose in their initial reading. Also, quite a few visitors looked *only* at the *Guide*—i.e. they took one without looking at the signage for more than a second or two. That means that, despite having a *Guide*, they still had trouble figuring out what the *Trail* was about.

We recommend narrowing the purpose of the *Guide* to help visitors understand what the *Trail of Time* is right now (i.e., a walking trail to help visitors get a feeling for how old the rocks in the Grand Canyon are) rather than trying to deliver content that eventually will be on the waysides. Consider the *Guide* and signage as two ways to get the same basic information, because that's how visitors seem to be using them. Direct visitors' attention to the existing NPS geology brochure for additional information.

7. The *Guide* was not effective at stimulating desired social interactions. Although some groups with children and a few all-adult groups recognized that the *Guide* included a fun activity for the whole group to enjoy and learn from together, most respondents did not recognize this aspect of the *Guide*. Instead, as described above, they tended to use the *Guide* to try to get some information and then put it aside. During this study, we also found that most visitors to the *Trail* will want to link the 10-meter markers with something concrete, i.e. something that they can see at that spot that is XX million years old.

We recommend significantly redesigning the *Guide* to look/feel entirely different, for example, a brief, two-sided, card-stock version with a very specific (and narrow) focus and only 4-6 stops. Make it obvious that the *Guide* is something to *do*, not just something to read. And in the short term, make the *Guide* stops about something that visitors can actually see, such as a Canyon view, or easily identified rock layer. Note: In the long term, it will be important to include lots of *Trail* stops where it's clear that visitors can touch a rock that was formed at that point in

time, or see a rock layer or landform or read about another event that took place at time. We suspect that the small and large waysides will go a long way towards alleviating this problem, although this needs to be an important focus for the next round of on-site prototyping.

In directing visitors to see something, remember that visitors will get very frustrated when they are unable to quickly and clearly identify what they are supposed to be seeing. We encourage the team to be vigilant about (a) making sure that any guide stop (or wayside for that matter) that tells visitors to see something is located where that thing is clearly visible, and is unlikely to be obscured by future growth of vegetation, and (b) making it clear where visitors should be standing to see the particular view and/or rock layer.

Finally, we also found that in some instances, social interactions were confounded because of pronunciations. While many of the pronunciations helped respondents, we found that some respondents were misinterpreting the pronunciation guides and stumbling over rock layer names. Even some seemingly commonplace words, like *chasm* were also being mispronounced. We recommend that additional testing of the pronunciation of difficult and potentially difficult words be conducted off-site.

8. The text in the *Guide* was not effective at helping most visitors understand Grand Canyon geology.

There was strong evidence that many visitors to the rim, and adult novices in particular, will find the prototype text difficult to understand, especially given the context of an outdoor walking trail in a spectacularly beautiful setting. Furthermore, when these same adults attempt to interpret the geology content for their younger visiting companions, they will likely either give up, focusing their attention on “the pretty views,” and/or they will give inaccurate explanations. We found that the text for each stop was too sophisticated for most children (and for many adult) respondents to understand, and for many adults to interpret quickly, accurately, or effectively for their children.

We recommend rewriting the *Walking Guide* so it is shorter, easier to read out loud, and conceptually less dense. Any rewriting will need to be tested with visitors on-site.

9. The handicapped-accessible branch along the trail will present an interpretive challenge.

Currently there is a brief section of trail between Grandeur Point and the Park Headquarters Trail where the *Trail of Time* branches into two distinct trails before rejoining. The current plan is to have the *Trail of Time* be only along the handicapped-accessible trail. However, the non-accessible trail is a more inviting path (i.e. it proceeds straight ahead while the handicapped-accessible trail veers off to the left; furthermore, it affords better views of the Canyon.) There were strong indications that most visitors will tend to follow the non-accessible trail, leading to confusion as visitors lose track of the markers.

We recommend that in the short term, the *Trail of Time* should be kept on the paved trails closest to the rim. For later stages of *Trail* development, we recommend negotiating reasonable accommodations for the accessible trail with the Park in consultation with people knowledgeable about applications of the *Americans with Disabilities Act* (ADA) in outdoor settings. These may include installing additional signage on the accessible trail that includes labeled photographs of the views not visible from that point, and perhaps developing other equivalent accommodations for those who are unable to access the rim trail at that point.

10. Competition was high.

Not surprisingly, we found that the components of the *Trail* (i.e. the *Guide* and signs in particular) did not fare particularly well when pitted against grand views and competing signage. However, we also found that by simply moving a temporary sign away from other signage and to a place along the trail where visitors didn’t have a clear view of the Canyon, visitors were more likely to read the sign and take a *Guide*. Since both ends of the *Trail* will be shifted away from competing views and signage, this problem may have already been resolved.

References

Gyllenhaal, E. D., & Perry, D. L. (2004). *Phase one of formative evaluation for the Trail of Time at Grand Canyon National Park*. Unpublished manuscript, University of New Mexico, Albuquerque, NM.
<http://www.selindaresearch.com/TrailOfTimeFormativeFINAL.pdf>

Prototypes Tested During this Study



Fig.1. 10-meter marker: Example of prototype



Fig. 2. 1-meter markers: Examples of painted prototype.



Fig. 3. Grandeur Point entrance: Prototype sign with plastic dispenser for *Walking Guide*, and *You are here* map.



Fig. 4. Grandeur Point entrance: Position of sign. Notice 1-meter and 10-meter markers along right side of trail.



Fig. 5. Park Headquarters entrance: Position of sign. The Headquarters trail comes in from the left; the Grand Canyon rim is just beyond the picture's edge on the right.



Fig. 6. Verkamps entrance: Position of sign, approaching from Grand Canyon Village. The rim of the Grand Canyon is off to the left. Notice the *Trail of Time* markers along the left.



Fig. 7. Grandeur Point entrance: Position of the prototype directional sign, approaching from Yavapai Observation Station. The trail coming in from the left leads from/to the parking lot and restrooms. There are no *Trail of Time* markers because the *Trail* hasn't begun yet.



Fig. 8. Grandeur Point entrance: Prototype directional sign with *You are here* map, but no *Walking Guide* dispenser.

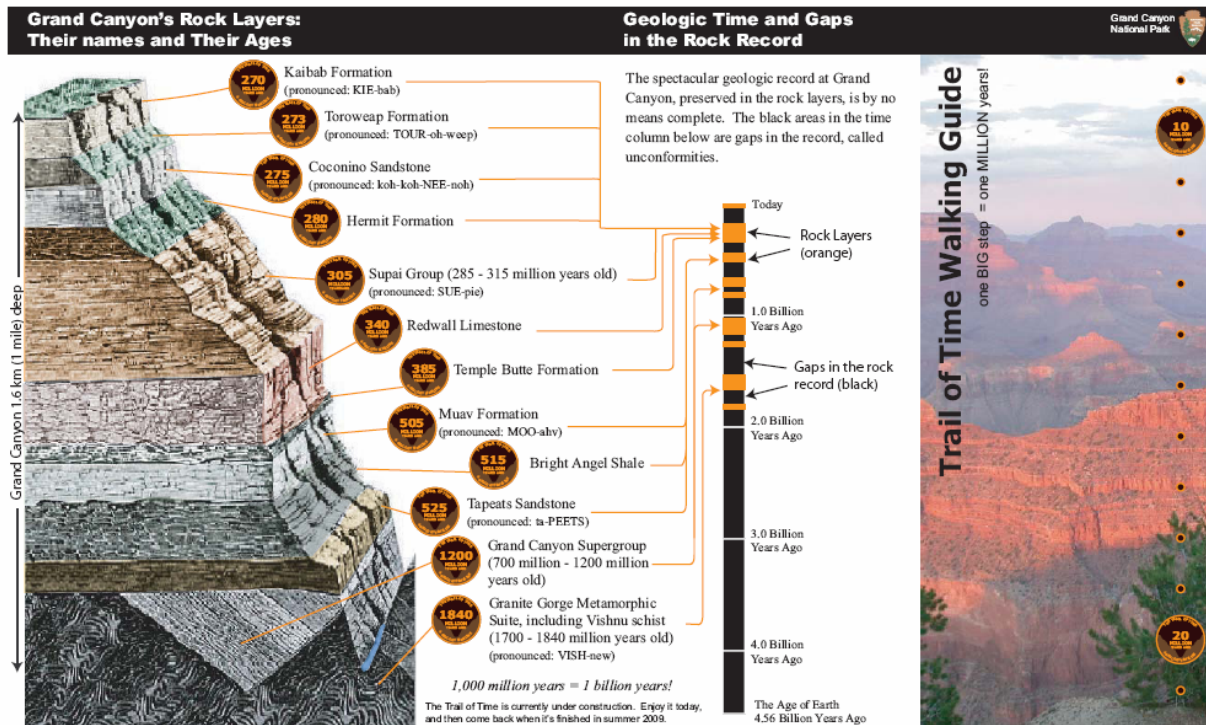


Fig. 9. Walking Guide Version One, side A: front cover and back panel. This was 8½ x 11, accordion-folded into four equal-sized panels.

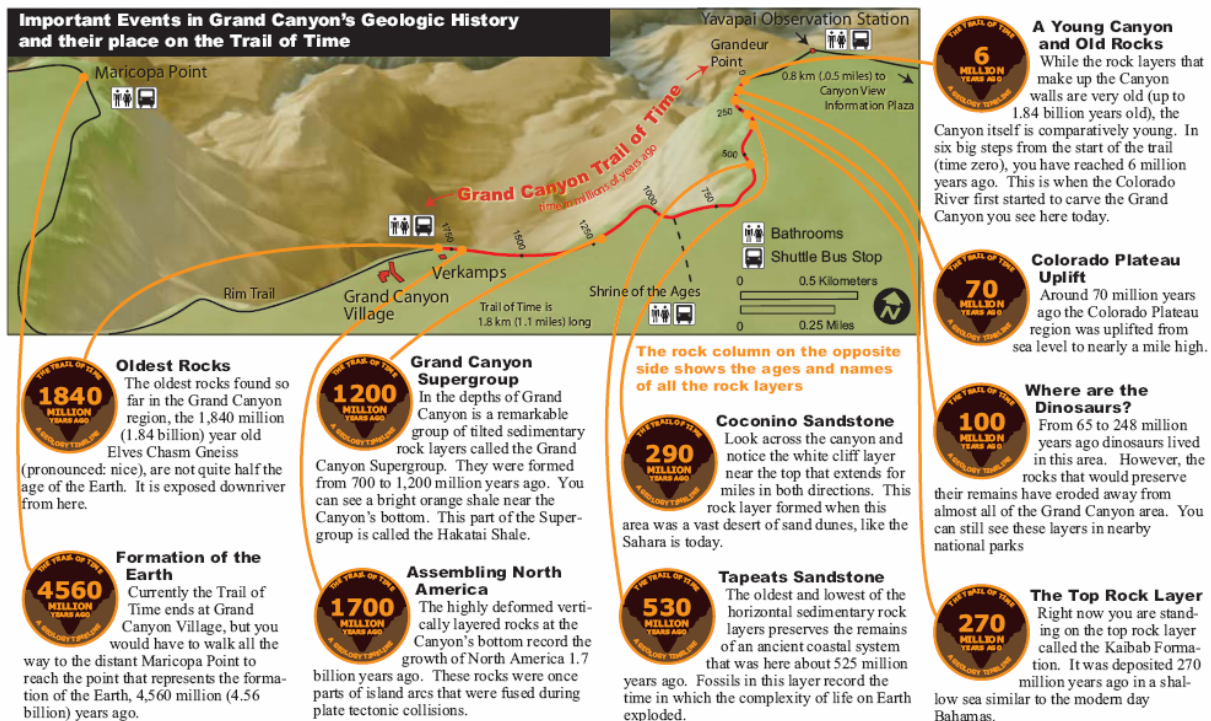


Fig. 10. Walking Guide Version One, side B: When the visitor opens up this prototype guide, this is what they see.

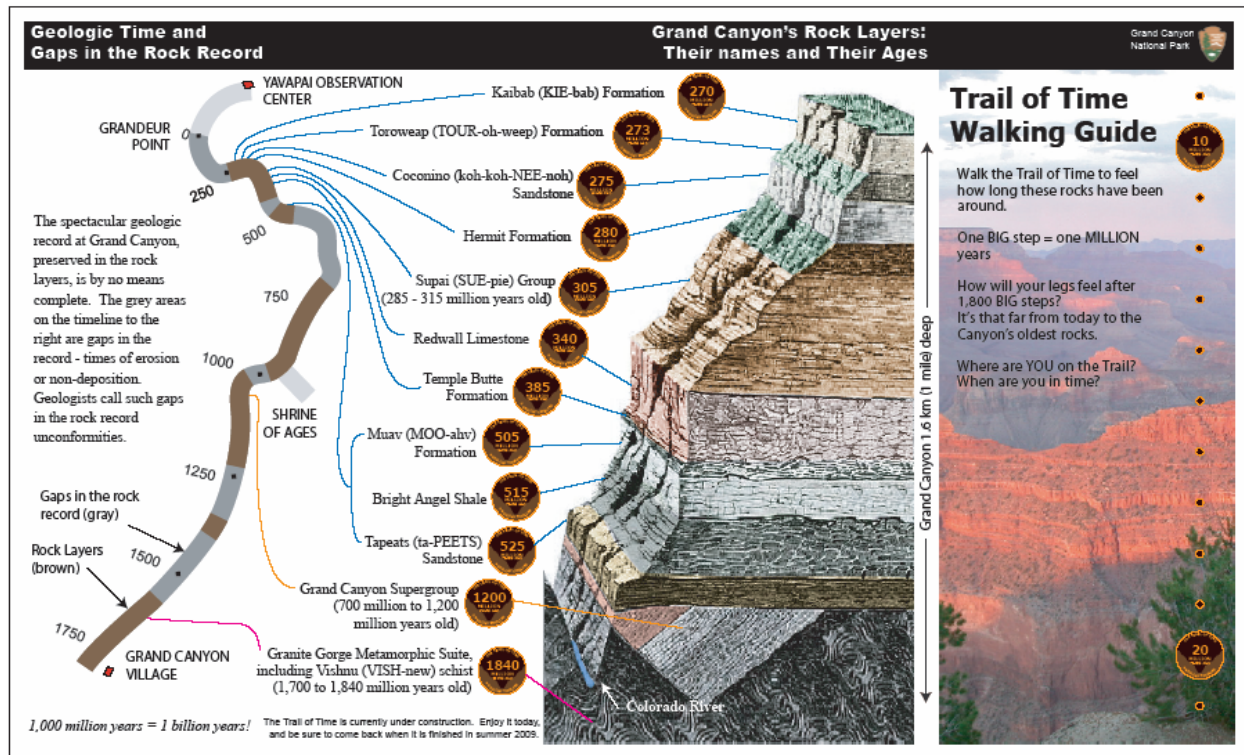


Fig. 11. Walking Guide Version Two, side A

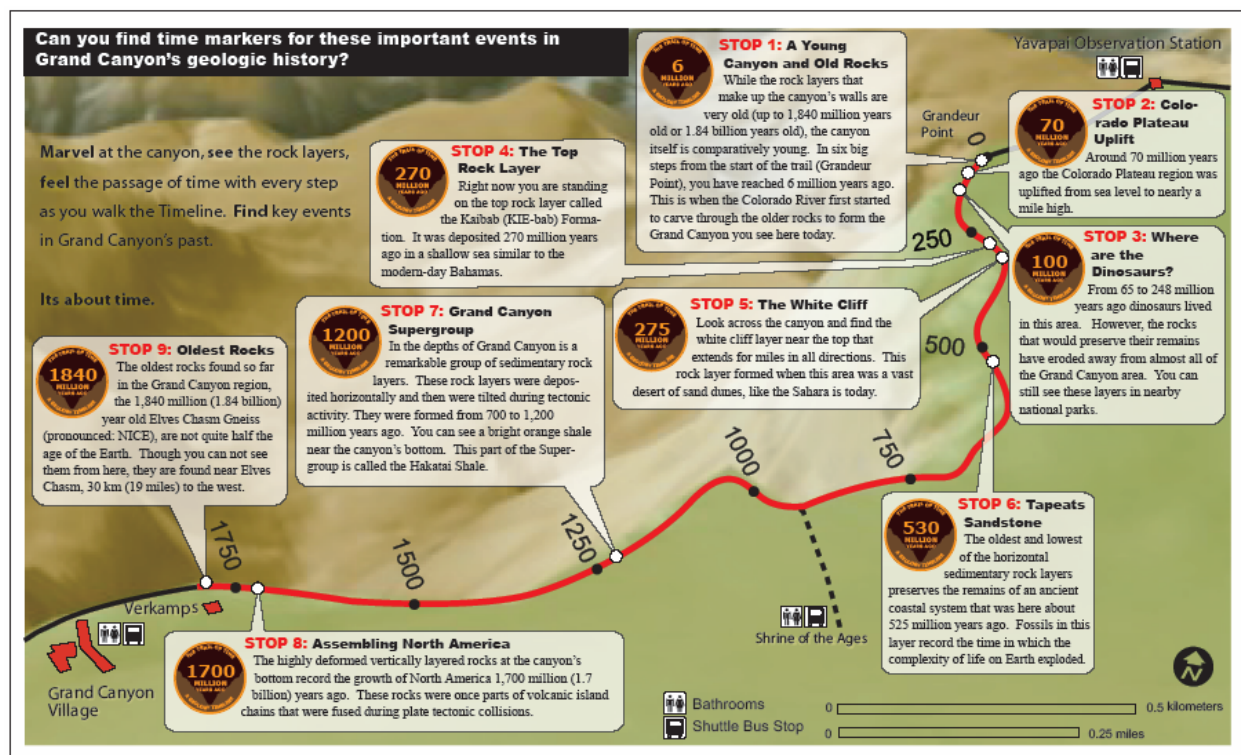


Fig. 11. Walking Guide Version Two, side B