



Expedited Approval for NPS-Sponsored Public Surveys

1. Project Title Submission Date:	Interpretation Study: Great Basin National Park (Lehman Caves)	9/10/2008
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2. Abstract:	This study will use a written questionnaire to understand how aspects of visitor behavior and tour presentations affect the quality of visitors' experiences during 60- and 90-minute guided tours of Lehman Caves in Great Basin National Park. The questionnaire will also assess visitor attitudes regarding tours and management policies and evaluate the effect of cave tours on visitors' understanding of key interpretive themes. Observations during the tours will provide objective information about the type and frequency of disruptive behaviors. Data will be collected during summer 2009 from approximately 300 adult participants on tours selected through a random sample (stratified by tour length). The study is conducted at the request of Great Basin National Park. <small>(not to exceed 150 words)</small>
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3. Principal Investigator Contact Information

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4. Park or Program Liaison Contact Information

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Project Information

5. Park(s) For Which Research is to be Conducted:

Great Basin National Park

6. Survey Dates:

06/01/2009

(mm/dd/yyyy)

to

08/01/2009

(mm/dd/yyyy)

7. Type of Information Collection Instrument (Check ALL that Apply)

Mail-Back Questionnaire

On-Site Questionnaire

Face-to-Face Interview

Telephone Survey

Focus Groups

Other (explain)

8. Survey Justification: (Use as much space as needed; if necessary include additional explanation on a separate page.)

Social science research in support of park planning and management is mandated in the *NPS Management Policies 2006* (Section 8.11.1, "Social Science Studies"). The NPS pursues a policy that facilitates social science studies in support of the NPS mission to protect resources and enhance the enjoyment of present and future generations (National Park Service Act of 1916, 38 Stat 535, 16 USC 1, et seq.). NPS policy mandates that social science research will be used to provide an understanding of park visitors, the non-visiting public, gateway communities and regions, and human interactions with park resources. Such studies are needed to provide a scientific basis for park planning, development, operations, management, education, and interpretive activities.

Lehman Caves in Great Basin National Park offer unique opportunities for national park visitors to appreciate the geologic and cultural history of the Great Basin. Visitors are only permitted to enter the caves on guided tours, which follow paved trails through portions of the caverns. Interpretive guides and park staff have become concerned about depreciative behavior by visitors on cave tours. The path through the cave is quite narrow, and it is easy for visitors to touch and damage formations. With the advent of digital cameras, flash photography has become increasingly common, and in the dim cave environment this can temporarily blind the guide and other visitors. Additionally, children make up a large percentage of the visitors on many tours, and their behavior is believed to be disruptive to some adults' experiences. On large tours, there is a further concern that people may not be able to hear and see the guide because visitors are spread out single file along the trail.

Currently these concerns are based on the impressions of park staff; no previous surveys have been undertaken to assess the magnitude of potential problems. (There have been no previous social science surveys of any type addressing visitors to Lehman Caves.) Therefore, a visitor survey is needed to understand (1) the extent to which people perceive these issues to be problems and (2) the level of visitor support for alternative actions that might be taken to improve tour quality and protect cave resources. The survey will gather data relevant to informing policy for cave tours and making recommendations for changes to interpretive messages and tour conduct. Additionally, the park is in the process of revising its interpretive materials and facilities, and the survey will provide important information about visitor demographics and the sources of information used to select tours.

The self-administered written questionnaire is a standard format for surveying park visitors, and the questions are of the type typically asked in such studies (e.g., in the Visitor Services Project surveys conducted annually in national parks). We use standard Likert-type (agree/disagree) scales, check-box items (e.g., for information sources), and standard question formats (Dillman 2000; Foddy 1993; Geva & Goldman 1991; Ryan & Dewar 1995). For visitor perception of potential problems, we separate the issue of "noticing" a circumstance from

determining whether it adversely impacted their experience (Hall 2001; Vaske et al. 2007). Following contemporary guidance for free-choice learning settings (e.g., Storksdieck et al. 2005), we use both open-ended free recall questions and forced choice self-reports to assess what meanings visitors gained from their cave tour and the extent to which the park's themes are being conveyed.

There are two other components of the research that are not subject to PRA requirements: observations of tours and interviews with park staff (conducted as part of their duties and during work time). The researcher will inconspicuously attend the randomly sampled tours to document tour size, the composition of the tour group (gender, children), and the occurrence of potentially problematic behaviors (i.e., the number of flash photographs taken and behavior of children). During the first week of data collection, a second observer will also independently make the same observations for the purposes of establishing reliability. In addition, tour guides will be debriefed after the tours during work hours, to assess their perceptions of tour quality and problems that might have occurred. The observations and guide assessments will be correlated with visitor evaluations of tour quality and reporting of problem magnitude.

Dillman, D. A. (2000). *Mail and internet Surveys: The tailored design method*. New York: John Wiley and Sons.

Foddy, W. (1993). *Constructing questions for interviews and questionnaires: Theory and practice in social research*. Cambridge: Cambridge University Press.

Geva, A., & Goldman, A. (1991). Satisfaction measurement in guided tours. *Annals of Tourism Research, 18*, 177-185.

Hall, T. E. (2001). Opinion Filters in Recreation Research: The Effect of Including "No Opinion" and "Not Notice" Response Categories in Questionnaires. *Tourism Analysis, 6*, 1-15.

Ryan, C., & Dewar, K. (1995). Evaluating the communication process between interpreter and visitor. *Tourism Management, 16*, 295-303.

Storksdieck, M., Ellenbogen, K., & Heimlich, J. E. (2005). Changing minds? Reassessing outcomes in free-choice environmental education. *Environmental Education Research, 11*(3), 353-369.

Vaske, J. J., Needham, M., & Cline, R. C., Jr. (2007). Clarifying Interpersonal and Social Values Conflict among Recreationists. *Journal of Leisure Research, 39*(1), 182-195.

9. **Survey Methodology:**
(Use as much space as needed; if necessary include additional explanation on a separate page.)

(a) Respondent universe:

All adult visitors (18 years and older) on guided cave tours from June 1 through August 1, 2009.

(b) Sampling plan/procedures:

Two tour lengths are offered: 60-minute (6 per day in the summer) and 90-minute (5 per day in the summer). The 60-minute tours are open to people of all ages and often include many families and small children. The 90-minute tours do not allow children under the age of 5, but frequently include older children, as well as groups of adults who are passing through the park. In the summer months, most tours – particularly between 10:00 am and 2:00 pm – are filled to their capacity of 20.

We will conduct a stratified random sample of tours, with half being 60-minute tours and half being 90-minute tours. Our target is to obtain 150 completed surveys from each tour type. Given our assumption of a 70% response rate (see below), this will require contacting approximately 215 adults on each tour type. Within each tour, we propose to sample every third adult (systematic sample with a random start). If we make the conservative assumption that there will be an average of 10 adults per tour, we will therefore approach approximately 3 adults

in each tour. To make 215 contacts hence requires sampling 72 tours of each type. In the eight weeks of the study period, there will be approximately 366 60-minute tours and 280 90-minute tours. Sampling 72 tours amounts to 20% of the 60-minute tours and 25% of the 90-minute tours, an intensity that is feasible given the staffing for the project (one field researcher).

(c) Instrument administration:

The researcher will administer the survey to adults after the completion of their tour. Prior to the start of the tour; when visitors line up to enter the cave, the guide will hand each visitor a postcard featuring Lehman Cave. Every third postcard will have the same colored dot, which will identify the participants for the study. All visitors will receive a postcard, so that participants remain unaware of the study. The postcard may increase feelings of reciprocity, and therefore may act as an incentive, potentially encouraging a sense of obligation to complete a survey (Dillman, 2000). At the end of the tour, in the exit tunnel before visitors exit the cave, the researcher will introduce herself to the group, mention the postcards that visitors received, and ask that all adult visitors with the colored dot meet her in the courtyard after they have exited the cave as a group. The exit tunnel is approximately 100 yards long, and visitors must wait for the guide to close the gate to the caves, move through the group to the front, and then unlock the outside door. Therefore, visitors stand for several minutes in the tunnel, which will provide ample time for enlisting participants. When all the participants have gathered in the courtyard, the researcher will again identify herself as a University of Idaho student conducting research about cave tours, and ask for their cooperation (see accompanying approach script). She will adhere to Federal standards for informed consent by stating the purpose of the research, assuring people that participation is voluntary and anonymous, and offering to answer any questions about the research.

The approach script ends with a request for participation. People who agree to participate will be given a clipboard, pencil, and survey, and asked to return the survey to the researcher once they have finished. People who decline to participate will be thanked and excused. (The researcher will record information about gender, group size, and the presence of children for these individuals as well as those who complete the survey, to assess non-response bias; see below.)

(d) Expected response rate/confidence levels:

The short nature of the survey and the fact that it will be done at the end of a guided cave tour lead us to expect a relatively high response rate, estimated at 70%. We have generally obtained this level of response with similar surveys. For example, in a study of cave interpretation at Carlsbad Caverns, Novey and Hall obtained a 66% response rate. Wiles and Hall obtained 80-85% response rates in an evaluation of guided walks at Mesa Verde National Park.

We expect to approach 430 individuals, and the time required for the recruitment request will be 2 minutes per person (14 hours). For those who agree to participate (300 people), 15 minutes will be required to complete the questionnaire (75 hours). In total, the burden hours sum to 89 hours.

This sample size will permit the survey to provide estimates of proportions with precision of 5.6 percentage points or better with 95 percent confidence.

Dillman, D. A. (2000). *Mail and internet surveys: The tailored design method*. New York: John Wiley and Sons.

Novey, L. T. & Hall, T. E. 2007. The effect of audio tours on learning and social interaction at Carlsbad Caverns National Park. *Science Education* 91: 260-277.

Wiles, R. & Hall, T. E. 2006. Can interpretive messages change park visitors' views on wildland fire? *Journal of Interpretation Research* 10(2): 18-35).

(e) Strategies for dealing with potential non-response bias:

The researcher will document observable characteristics of respondents and non-respondents, including gender, personal group size, and the presence of children (see accompanying survey log form). Respondents and non-respondents will be statistically compared on these traits, and the implications of non-response bias, if any, will be discussed in the final report.

(f) Description of any pre-testing and peer review of the methods and/or instrument (recommended):

Initial development of the methods and instrument occurred during a visit by the principal investigators to Lehman Caves in March, 2008. We attended two guided tours of the caves and had an extended meeting with park staff to understand issues of concern and logistical challenges. We reviewed the long-range interpretive plan for the park to develop questions targeting plan goals and objectives (including primary interpretive themes).

The instrument has been reviewed by faculty at the University of Idaho, Department of Conservation Social Sciences. The questions are quite standard, being similar in structure and content to those asked in many previous studies. We have included a few questions from the NPS Visitor Services Project questionnaires, which have been well tested.

10.	Total Number of Initial Contacts Expected Respondents:	430	300	11.	Estimated Time to Complete Initial Contact Instrument (mins.):	2	15	12.	Total Burden Hours:	89
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13.	Reporting Plan:	A report will be issued to Great Basin National Park and the NPS Social Science Program containing (1) overall descriptive results of the questionnaire; (2) data from observations of tours and interviews with park staff, and (3) analysis of how visitors' perceptions of problems vary by tour group size and tour length. Analyses of the survey will include descriptive statistics and correlational analyses (e.g., correlation between tour size and perception of problems). A copy of the final report will be given to Great Basin National Park and archived within the NPS Social Science Studies Collection.
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