National Park Service
U.S. Department of the Interior

Social Science Program

Programmatic Approval for NPS-Sponsored Public Surveys

Submission Date:1-31-2013

1.	**Project Title:**	Visitor Use Survey for Alternative Sites to the Bear Lake Road Corridor

2. **Abstract:** The proposed visitor use survey will provide the managers at Rocky Mountain National Park with information about visitor perceptions of crowding, trail experience, and alternative transportation strategies within the Bear Lake Corridor. The survey will be conducted on-site at 5 locations: Hidden Valley, Deer Ridge Junction, Alluvial Fan, Lumpy Ridge Trailhead, and Sprague Lake. This collection will occur July 8 thru August 11, 2013 (for a total of 25 sampling days).

(not to exceed 150 words)

3. **Principal Investigator Contact Information**

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Project Information

5.	**Park(s) For Which Research is to be Conducted:**	Rocky Mountain National Park (ROMO)

6.	**Survey Dates:**	07/08/2013	TO	08/11/2013

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.

Management Justification: Rocky Mountain National Park (ROMO) accommodates over 3 million visitors per year. There are five potential alternative locations to relieve the current level of use to the Bear Lake Corridor which is an area that offers easy access to alpine ecosystems. High and concentrated levels of visitor use within the park may negatively affect the quality of the visitor experience through crowding and traffic congestion. Typically, crowding is measured using quantitative methods and is based on normative theory. In the context of crowding, normative theory states that each person has a threshold for the number of people they judge acceptable to see in a given circumstance. If that threshold is exceeded that person will feel some level of crowding (Vaske & Shelby, 2008). Recent studies have used photographs to measure crowding conditions as method to estimate crowding conditions (Manning, 2003; Manning, 2007; Manning et al., 2002).

This survey is part of a broader study aimed to reduce crowding and congestion in the Bear Lake Road Corridor. This information collection will use indicators of quality and standards that are measurable and manageable variables used to understand visitor expectations for their experiences in Rocky Mountain National Park. We will collect information to provide baseline information about visitor use patterns, preferences for social and natural resource conditions and potential management actions five locations within the park: Hidden Valley, Deer Ridge Junction, Alluvial Fan, Lumpy Ridge Trailhead, and Sprague Lake areas.

This information collected will provide data needed to develop micro-simulation models showing where visitor use could be diverted from the heavily congested Bear Lake Road Corridor. Managers will used the models to estimate of the number of visitors that could be shifted to the alternate sites

without causing unacceptable crowding and additional resource impacts. This study has been planned and designed in conjunction with National Parks Services (NPS) managers, Rocky Mountain National Park (ROMO) manager and the United States Department of the Interior (DOI).

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

(a) Respondent Universe:

The respondent universe will be all visitors 18 years of age and older between July 8 and August 11, 2013 at the following locations:
- Hidden Valley
- Deer Ridge Junction
- Alluvial Fan
- Lumpy Ridge Trailhead
- Sprague Lake

(b) Sampling Plan/Procedures:

Sampling days will be stratified by day of the week and will be chosen using a random number generator. Because ROMO is a popular site for conducting surveys, we will work to ensure that only this survey is administered at this site on a sampling day. During each sampling day, two trained surveyors will be stationed at one of the 5 locations (Hidden Valley, Deer Ridge Junction, Alluvial Fan, Lumpy Ridge Trailhead, and Sprague Lake) between 8:00 a.m. and 6:00 p.m.

When the sampling period begins, the first surveyor will ask the first exiting visitor group if any member of their group has participated in the survey previously. If no one has, the surveyor will ask the person over the age of 18 whose birthday is closest to the current date to participate in the survey. When the first surveyor has completed the initial contact with the visitor group they then will direct the visitor to the second surveyor to receive instructions for completing the survey. If the individual chosen or the group refuses to participate in the survey, then the next eligible group to depart from the parking lot will be asked to participate

This process will continue throughout the sampling day with every nth group exiting the site visitors will be asked to complete the questionnaire on-site and in the presence of the second surveyor. The respondent will be asked to return the survey to the on-site survey administrator, once it is completed.

The survey instruments are designed to be site-specific for each of the 5 locations.

(c) Survey Administration:

Park visitors will be approached by the survey staff and asked to participate in the study. The initial contact will be used to explain the study and determine if visitors are interested in participating (. This should take approximately 1 minute. If a group is encountered, the research staff member will ask the individual within the group who has the next birthday to serve as the

respondent for the study. At this point, the potential survey respondent will be asked 3 questions from the survey to collect information that will be used in the non-response bias analysis (see questions below).

Visitors selected for the study will be read the following script:

> *"Hello, my name is _____. I am conducting a survey for the National Park Service to help park managers understand visitors' use and attitudes towards the management of Rocky Mountain National Park. Your participation is voluntary and all responses are anonymous. Would you be willing to answer a short survey regarding your visit here?"*
>
> *If "NO" then, "Thank you, I hope you enjoy your visit."*
>
> *If "YES" then, "Thank you, has any member of your group participated in this survey before?"*
>
> *If "YES" then, "Thank you for participating in this study but you have already provided us with the information we need. Have a great day."*
>
> *If "NO" then, "Thank you for agreeing to participate in this study. The results from this survey will help the National Park Service better understand the relationship between visitor use and management of Rocky Mountain National Park, as well as protect resources and meet the needs of visitors. This survey will take about 10 minutes to complete."*

During the survey administration the respondents will be asked to rate a series of photographs to indicate their acceptable level of crowing based on the number of people shown in the photographs (see photo posters). The survey administrator will show the respondents a series of photographs. The photographs will be shown to the respondent one at a time. The first photo will depict the least number of people. The remaining photos will show incremental increase in the number of people shown.

(d) Expected Response Rate/Confidence Levels:

Based on previous experience in conducting similar surveys of national park visitors, an 80% response rate is expected. This response rate is based on similar user surveys, as well as studies done at ROMO (Bacon et al. 2004; Lawson et al., 2007; Vaske, Donnely, Lehto, 2002). A 2002 visitor study at ROMO in the Bear Lake area reported a 95% response rate; however, we will err on the side of caution and assume an 80% response. A total of 250 visitors will be contacted at each site, or a total of 1250 ROMO visitors. It is expected that approximately 200 visitors will respond at each site, for a total of 1000 study respondents. Based on this sample size, we estimate there will be 95% confidence that study findings will be accurate to within 3 percentage points for the study. In addition, an 80 percent power level for a one-way ANOVA test with 4 levels, at the .05 alpha assuming a within group standard deviation of 1.5 to detect a .5 difference among groups (study sites) would require an "n"

of 200 in each cell for crowding estimators within survey instrument (Lawson et al., 2007; Lenth, 2006). Thus, the proposed sample size will be adequate for comparisons among study sites and more sophisticated multivariate analysis if deemed necessary.

Location	Number of Initial Contacts	Expected Response Rate	Expected Number of Responses	Margin of Error +/- %
Hidden Valley	250	80%	200	3%
Deer Ridge Junction	250	80%	200	3%
Alluvial Fan	250	80%	200	3%
Lumpy Ridge Trailhead	250	80%	200	3%
Sprague Lake	250	80%	200	3%

(e) Strategies for dealing with potential non-response bias:
Non-response bias will be examined by comparing selected characteristics of the sample population with characteristics observed and recorded in every group contacted (e.g., group size, gender and presence of children or pets). Additionally, all visitors approached will be asked to answer three key questions from the survey:

  1. *Have you visited the Bear Lake area before?*
  2. *Did you use the shuttle bus today?*

These results and observational data will be recorded and compared to results from respondents completing and returning the questionnaire to see if non-response bias is present. Results of the non-response analyses will be reported. Further, any implications of non-response bias for park planning and management will be reported to the park managers and discussed and the final reports.

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

The questions included in this survey have been designed and reviewed by the principal investigator, research staff, and national park planning and management, and National Park Service staff. The techniques used for this visitor survey are based on results from surveys that were conducted in Rocky Mountain (OMB # 1024-0224 NPS # 08-021), Haleakala (OMB # 1024-0224 NPS # 07-013), and Yosemite National Parks (OMB #1024-0224 NPS# 07-036).

10	**Burden Estimates:**	We plan to approach at least 1,250 individuals during the sampling period. Based on our experiences, we expect that everyone receiving a survey (n=1,000) will complete and return the survey in the presence of the surveyor.

We expect that the initial contact time will be 1 minute per person (1,250 x 1 minute = 20 hours). We expect that 250 (20%) visitors will refuse to

participate during the initial on-site contact, for those individuals we will record their reason for refusal and ask them to answer the four questions that will be used for the non-response check. This is estimated to take 1 minute (250 x 1 minute = 4 hours) to complete each session.

With an anticipated response rate of 80%, we expect that an additional 10 minutes will be required to complete the follow through (1,000 response x 10 minutes = 167 hours). The burden for this collection is estimated to be 192 hours.

Estimated Number of Contacts		Estimation of Time (minutes)		Estimation of Respondent Burden (hours)	
Total Number of Initial Contacts (250 each at site)	1,250	To Complete Initial Contact	1	Estimated Burden To Complete Initial Contact	21
Estimated number of on-site refusals (50 each at site)	250	On-site Refusal/ nonresponse	1	Estimated Burden for On-site Refusal/	4
Total Number of Responses (200 each at site)	1000	To complete and return surveys	10	Estimated Burden to complete and return surveys	167
				Total Burden	192

11.   **Reporting Plan:**   The following statistics will be calculated:

- Descriptive statistics such as means and standard deviations for all questions about individual and trip characteristics, and site specific crowding evaluation;
- One way Analysis of Variance (ANOVA) test to compare crowding conditions between study locations;
- Independent samples t-test to compare visitor perceptions of travel in ROMO in personal vehicle versus ROMO shuttle bus.

A technical study report will summarize results and management recommendations. Journal manuscripts and academic papers will also be prepared. Copies of all reports and papers will be archived with the National Park Service Social Science Program for inclusion in the Social Science Studies Collection. The results from all surveys will be included in one final report to the NPS.

References

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Lawson, S., Kiser, B., Hockett, K., Reigner, N., Howard, J., and Dymond, S. (2007). Social Science Research to Support Visitor Experience and Resource Protection (VERP) Planning in Haleakala National Park: Final Report. Blacksburg, VA: Virginia Polytechnic Institute and State University.

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