

**Cooper Lake Hydro Project, FERC # 2170**  
**NPS RTCA Comments on 2/2004 Draft Visual Impact Analysis Study Report**

The goal of this study was to determine the ongoing and potential future effects of the project on visual resources in the vicinity of the powerhouse and transmission facilities. The visual impact analysis was part of a larger Recreation and Visual Resources User Survey. Study methodology relied on several target audiences, including summertime visitors to the Cooper Landing area; local residents, businesses, and user groups; and a random mix of AK residents and visitors who filled out visual preferences forms on a Saturday in downtown Anchorage. A visual inventory conducted by experts was also included in the study.

NPS RTCA has the following comments on the study methodology, analysis, and conclusions:

Recreation Survey

This survey included three photos of “representative views” along the project transmission line that survey respondents were asked to rank in order of preference. Because the representative photos included differing visual elements (e.g. presence/absence of roads and other human infrastructure) in addition to project-related elements, however, it is impossible to draw any conclusions about influence of project facilities from the relative rankings. In terms of survey design, there were too many uncontrolled variables.

This could have been avoided had the survey included two sets of “representative view” photographs: one with actual visual conditions along the project transmission lines, and one with the transmission lines, and only the transmission lines, edited out of the photograph. Any real difference in ranking between the actual v. doctored photo pairs could then be analyzed and conclusions drawn about the project’s effects on aesthetics.

Visual Preferences Survey

The data reported from this survey of 35 individuals include the means and standard deviations for viewers’ preferences regarding a variety of elements in each photo, and also for the overall photo rating. However, apparently these parameters were not compared using analysis of variance (ANOVA), the statistical tool that tells us whether there are real differences between the photo ratings based on the gender, place of residence, etc. of the individuals taking the survey. Also, in terms of reporting, we are given merely the variance observed in the answers to each question. Good statistical reporting requires the use of confidence intervals or error bars, showing the relative spread of responses from photo to photo and visual element to visual element, not merely raw variance values.

In addition, since paired photos (see above) were not used, and individual photos differed from each other in more than one aspect (presence/absence of mountains, water, open meadows, roads, other infrastructure), it would be dangerous to expect any meaningful inferences to be drawn from what amounted to a statistically unsupported comparison of apples and oranges.

The survey “analysis” draws a number of conclusions that are not supported by the methods used to administer the survey, or the limited statistical analysis that was done of the data.

- § without ANOVA, we cannot say whether there were any real differences in response based on the sex or residence of the survey subject. Pages 17 and 18 of the study report should either be rewritten to eliminate any speculation about these unsupported conclusions, or the data should be analyzed using parametric (or nonparametric if the data are, as they appear to be, heteroscedastic, i.e. having widely varying variances) ANOVA and the results reported.
- § the report should note that since paired photos were not used, nothing meaningful can be said about the relative influence of powerline views on each photos’ overall preference rankings
- § qualifying statements such as “the standard deviation is not significantly high” (first paragraph of p. 17) and “a relatively high mean rating was provided for the . . . support structures in Kenai Lake” should be deleted. No objective standards for “significantly” or “relatively” have been set. These are highly subjective statements that do not belong in a scientific report in the absence of ANOVA results.
- § a chart or graph of photo ratings, powerline ratings, and confidence intervals as opposed to raw variance values should be provided in lieu of the tables on pp. 17 and 18.

In summary, the conclusions drawn in the “Analysis” section of this report are largely unsupported by either the survey methodology, data analysis, or both. The hypothesis that presence of project related “intrusions” on the landscape resulted in no reduction in scenic quality was never tested and thus cannot be accepted or rejected at any confidence interval.

Finally, despite the fact the region under study experiences winter conditions for a good 5-6 months each year, and is used for a variety of recreational purposes during this period, the Visual Impact Analysis included no preference surveys of winter scenes. Project infrastructure is likely to have at least as much visual impact on the environment during the 6+ month leafless period each year as during summer. The final study report should note this omission.