

Memorandum

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Subject: **INFORMATION:** Geographic Information
Systems (GIS) Study

Date: April 30, 2001

Original Signed By:

From: Frederick Skaer, Director
Office of NEPA Facilitation

Reply to: HEPE

To: Sandra L. Otto
Division Administrator
Little Rock, Arkansas

The Arkansas Division Office has requested guidance from Headquarters on the consistency of the GIS based approach with the FHWA NEPA process for examining potential alternatives for major projects considered in large study areas. Over the past several years, this approach has been employed in the development of major projects in Alabama, as well as in Louisiana and Texas. Because this approach involves the use of GIS data sources rather than on-the-ground surveys, questions have been raised as to the legal and technical adequacy of this approach. The Planning and Environment Office of NEPA Facilitation and FHWA Chief Counsel have reviewed the GIS approach as it was used in the Southeast Arkansas I-69 Connector Corridor Study and conclude that the approach is relevant technically and meets legal requirements.

This corridor study consists of an environmental impact statement (EIS) for a 50 mile corridor that links Pine Bluff, Arkansas, to I-69 in the vicinity of Monticello, Arkansas, a fairly rural section of southeastern Arkansas. The GIS approach was used to assist in the development of several alternative corridors, approximately 2 miles in width within the project area. Five broad transportation concepts or alternatives were evaluated to determine if they address the project purpose and need, and avoid and minimize impacts. As part of the study, Federal and State resource agencies held meetings to identify key issues to be considered during the corridor and alignment development. Early identification of environmental concerns is essential to maximizing the ability to avoid and minimize impacts during alternative development. The GIS approach does not substitute for the public involvement, scoping, alternative development and analysis, and other aspects of the NEPA process. However, it may be a complement to them.

Neither laws nor regulations governing FHWA responsibilities under NEPA and related laws speak to the use of GIS as a means of gathering and evaluating information. Instead, they address the duty to take a "hard look" at alternatives for meeting the purpose and need for a project, and examining the environmental consequences of the alternatives. It is well established as a matter of law that

every conceivable alternative cannot be evaluated in excruciating detail; a mechanism must be employed for screening alternatives so that the best alternatives are given the most detailed evaluation. The CEQ's Questions and Answers about NEPA, places emphasis on reasonable alternatives. "Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense." (Q.2a) In this case, GIS was employed to consolidate environmental and engineering data, consider key environmental and social issues before alternatives were developed, and logically refine the study area to where more detailed efforts can be conducted. We find this to be a reasonable and acceptable approach.

The GIS based approach for consideration of potential alternatives is certainly a useful tool for streamlining the FHWA NEPA process and assisting in the avoidance and minimization of impact to environmental resources. This may be especially true within a large study area. As with most approaches of alternatives analysis, the approach is only as good as the data on which it is based and which is presented in the study. The FHWA needs to demonstrate that the alternatives discarded from further study were done so because they did not satisfactorily address the purpose and need, or because the environmental or social consequences were too great. The better the data supporting these decisions, the easier it is to do this. The critical aspect is the facts, not the approach used. The use of this approach must be premised on the idea that if the subsequent Alignment Study and project development reveal the environmental impacts are sufficiently severe, further consideration of alternatives outside the corridor may be warranted.

Additionally, the Purpose and Need of the project should be clearly stated and referred to in the Corridor Study. At this stage, the purpose and need may be one of a national or regional nature, rather than a more specific local one. However, the purpose and need needs to be clearly integrated into the GIS corridor analysis.

Given the facts presented in the subject corridor study/EIS, we find that the use of the GIS based approach for refining alternatives is consistent with the FHWA NEPA process, is legally defensible, and is an acceptable approach.

cc: Bob Black
Eugene Cleckley