CHAPTER V - ENVIRONMENTAL STUDIES

1.0 Overview

Throughout the National Environmental Policy Act (NEPA) process for a project, analyses will need to be completed to address specific impacts. Either Georgia Department of Transportation (GDOT) staff or a project Consultant can complete the analyses and related documentation. Specific reports are described as environmental studies that support the overall NEPA document. The subjects will vary by project, but they will typically include the

- Social environment
  - land use
  - community impacts
  - conceptual stage (displacements/relocations)
  - churches, cemeteries & institutions
  - parks/recreation facilities/wildlife & waterfowl refuges
  - visual impacts
- Cultural Resources
  - historic resources
  - archaeological resources
- Natural Resources
  - jurisdictional waters of the US
  - threatened & endangered species
  - essential fish habitat
  - migratory birds
  - invasive species
  - floodplains/regulatory floodways
  - farmland/forest land
- Physical environment
  - noise
  - air quality
  - underground storage tanks (UST)/hazardous waste sites
- Indirect and Cumulative Impacts (ICI)

The studies need to be completed during the early stages of project development, beginning during concept development and continuing into preliminary design. Many studies occur in two phases: resource identification and evaluation of project impacts. These studies provide key information for use in project development as well as agency coordination. Within the actual NEPA document, the environmental study findings are summarized in text. Copies of the technical reports for each of the studies are referred to in the NEPA document and maintained at GDOT and the Federal Highway Administration (FHWA).

To insure that the project advances, the appropriate information must be available for the environmental study to be conducted. For example, field surveys require a project description and project layouts; air and noise analyses require traffic information.

1.1 Alternatives Analysis

The analysis of alternatives is a vital part of the NEPA document and environmental studies. Once all environmental resources have been identified, the project team must work collaboratively to identify and develop the alternative that both satisfies the project's Purpose and Need (P&N) and also minimizes environmental impacts. Given the number of resource types considered during project development and the environmental studies, impacts must be weighed and balanced, and trade-offs often occur.

Within an Environmental Assessment (EA), a range of reasonable alternatives must be discussed. For an Environmental Impact Statement (EIS), a much more rigorous review and documentation of alternatives often are required. The discussion should provide the reader with an understanding of the alternatives considered through the project development, how the alternatives meet the identified P&N, and the preferred alternative.

The National Environmental Policy Act, as well as many other environmental laws, requires the consideration of alternatives that avoid adverse impacts and minimize harm. All such alternatives should be considered in the context described below.

1.1.1 Analysis

The level of analysis will vary depending on such factors as level of local controversy, complexity of the project, and length. For projects involving multiple sections of new roadway and potential community impacts, a thorough screening may be necessary to document the decisions that ultimately lead to the alternatives evaluated as part of the environmental studies. FHWA guidance recommends alternatives screening in such cases, with a tiered approach where applicable. In the first tier of screening, alternatives are compared with the P&N. Only alternatives that would address the P&N should be further considered. Criteria should be developed to focus on the most important issues and potential impacts. Generally for an EIS, measures of effectiveness are developed to evaluate an alternative's ability to meet the project need (e.g., attract a certain amount of traffic, result in a certain Level of Service [LOS]). The alternatives that remain after this screening would typically be carried into the impact analysis as "reasonable" alternatives and evaluated and compared with regard to environmental impacts.

However, in most GDOT projects, the level of detail is simplified. Often, the concept report and Practical Alternatives Review (PAR) process (see, Section 4.6.5.C, below) will have an adequate level of documentation of alternatives and why they would or would not be reasonable. The concept report typically will culminate in one alignment or only a few variations of an alignment. Accordingly, the GDOT guidance does not specify the exact contents of the alternatives section. Instead, the text should be tailored to the type of project, amount of study completed on early alignments, and level of interest in the affected community. For the projects involving primarily widening or geometric improvements, the text should describe the proposed alignment as the Build Alternative. In addition, the discussion should include the No-Build and other alternatives considered.

1.1.2 Documentation

For most GDOT documents, the alternatives section will be fairly brief, focusing more on descriptions and less on quantifying and comparing the impacts and resulting benefits. The typical subsections are described below, including graphics where required.

- Build Alternative – Where only one alignment is recommended, the project should be clearly described in terms of length, proportion of widening/improvement versus new location, cross streets in the project area, and type of traffic control proposed. The existing and proposed typical sections need to be described, including number and width of lanes, type of median, sidewalks, shoulders, and right-of-way.

In cases where more than one build alternative is being evaluated in the NEPA document, the same level of detail should be included for each alternative.

- No-Build Alternative – Discussion of the No-Build Alternative is required to address Council on Environmental Quality (CEQ) guidelines. Typically, the text will identify the disadvantages of this alternative. Technically, the No-Build Alternative is defined as a "do nothing" alternative, although it can include minor construction activities such as pavement maintenance and safety measures. No modifications to the roadway network would be included (i.e., no new access roads, extensions, or increases in capacity). The discussion should include acknowledgement of impacts and costs that would be avoided by the No-Build Alternative. These advantages are weighed against the disadvantages from failing to meet the project's P&N.
- Other Alternatives Considered – This subsection will include either the early alignments that were eliminated to result in a single Build Alternative, or alternatives other than the Build Alternative that were considered but not found to be feasible. One example, sometimes required by FHWA, is Transportation System Management (TSM) techniques. TSM refers to minor construction, operational, and institutional actions that could improve efficiency of the existing roadway. Examples include turn lanes, signal progression, and travel demand reduction strategies. While these measures rarely are considered reasonable alone, they may be applied to proposed build alternatives to further improve the cost-effectiveness of the proposed project. The TSM discussion is most often found in an EIS; it is not typically required in the EA document for GDOT.
- Graphics Needed:
    - Typical Section Exhibit(s);
    - Build Alternative(s) Exhibit (one for each alternative carried forward into detailed documentation).

1.1.3 Consultant deliverables

Most alternatives analyses will be contained within the individual environmental reports and documents. However, for EIS projects, a stand-alone alternative analysis report will be prepared. Three copies of this report will be submitted for review and approval by the GDOT.

1.1.4 References

- 40 CFR Parts 1501, 1502, 1505, 1507, 1508

- 46 Federal Register 18026 (March 23, 1981), 51 Fed. Reg. 15618 (April 25, 1986) – Forty Most Asked Questions and Answers Concerning EQ's NEPA Regulations (40 Questions), questions 1-5.
- FHWA Technical Advisory T 6640.8A, October 30, 1987, pp. 14-16.
    1. Stream Data Forms
    2. Wetland Data Forms
    3. Expanded JD Forms
    4. Ecology Survey Data Sheet
    5. Agency Correspondence
       Include the record occurrence letter from DNR in addition to all other correspondence with state or federal agencies.