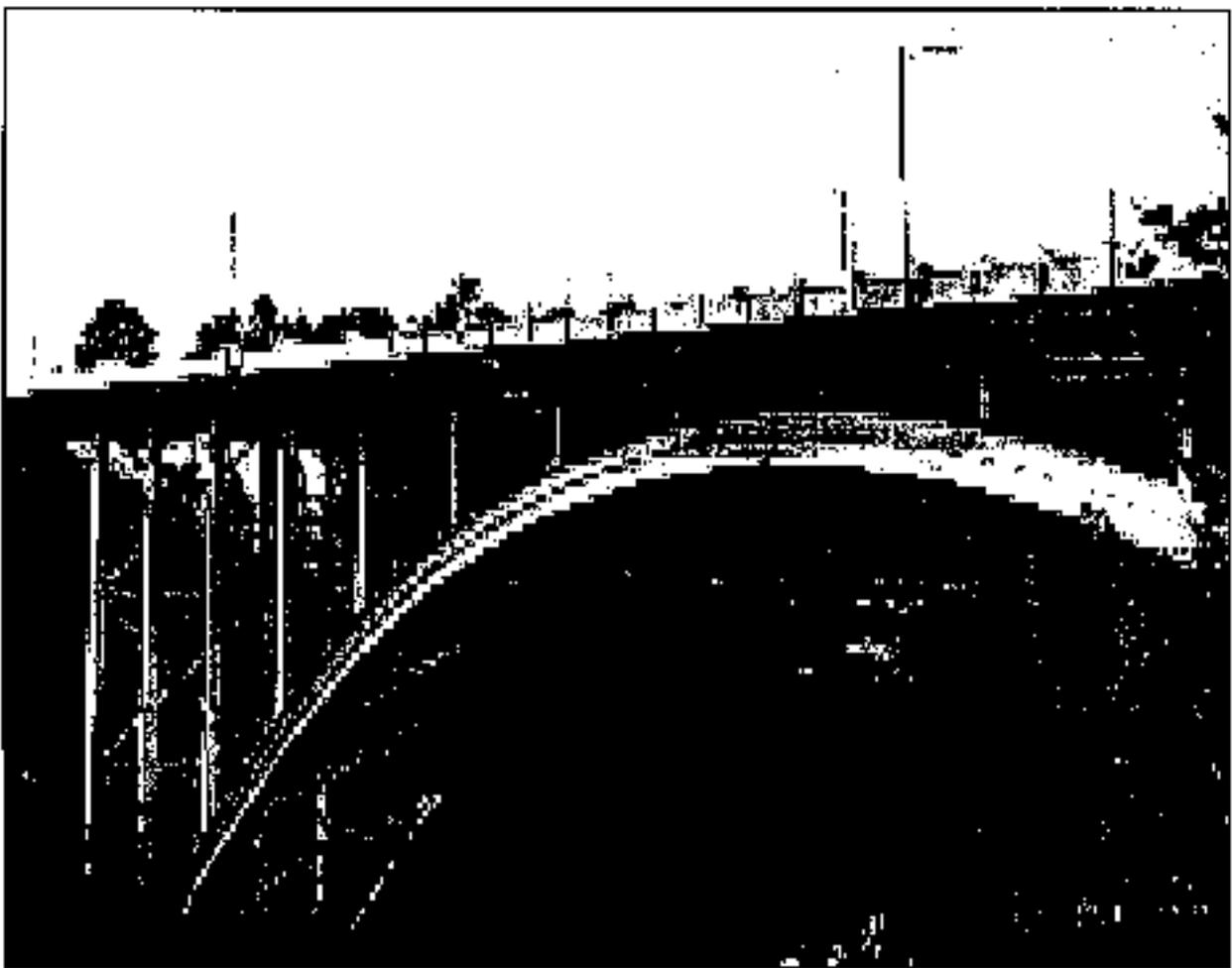


General

**Integrating Project Requirements with
Threatened and Endangered
Species Habitat Requirements,
A Pilot Demonstration**

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Integrating Project Requirements with Threatened and Endangered Species Habitat Requirements, A Pilot Demonstration

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Abstract

The Mission Task of the Threatened and Endangered Species (TES) Habitat Management Plan (HMP) identifies and considers the current Department of Energy (DOE) and University of California mission and tactical goals for Los Alamos National Laboratory as translated into projects and activities. The objective of this task is to create an element within the TES HMP that considers the projects and activities and their relationship to TES and Species of Concern (SOC) and the habitats that these organisms use. In this first phase of this task, we have examined data related to projects, defined a process for evaluation of projects, and developed a pilot demonstration to evaluate a hypothetical project using a geographic information system ArcView application. This application evaluates the interactions between projects and activities and TES, SOC, and their habitats.

1.0 Introduction

In 1994, the Secretary of the Department of Energy (DOE) sent a memorandum to the various offices directing that DOE and its contractors conduct natural resource planning in accordance with "ecosystems management." Ecosystems management is an interdisciplinary approach that integrates all aspects of natural resource management (e.g., species that are threatened or endangered, wetlands, wildlife, forest management) with the rest of the mission of each facility. This document deals with one aspect of natural resource management, that of threatened and endangered species (TES).

The Endangered Species Act (Public Law 93-205) requires protection and conservation of federally listed TES of plants and animals. To accomplish ecosystems management of TES species at Los Alamos National Laboratory (LANL or Laboratory), it is essential to understand the activities related to

the mission of the Laboratory and the effects of those activities on TES or the habitat that is critical to TES.

This report describes work completed in Fiscal Year 1996 (FY96) for the mission task (Task 5) of the TES Habitat Management Plan (HMP) for LANL (Foxx 1996). This report provides a description of a proposed process used to identify, document, and evaluate the interactions between mission-driven projects and the regulatory requirements of protection and conservation relative to TES and Species of Concern (SOC) within the boundaries of LANL.

During FY96 the goal of this task was to identify what information had been gathered on LANL projects and activities from other sources such as the Site-Wide Environmental Impact Statement (SWEIS), to define a process for evaluating alternatives for completing projects and activities and

quantifying their impacts, and to develop a pilot demonstration using the Geographic Information System (GIS) ArcView. The initial review indicated that there are a large variety of projects and activities at LANL. Many projects will not impact TES or SOC because they are not located near or within TES or SOC habitats. However, some projects may have activities that will, if conducted in a TES or SOC habitat, cause the organism to not fully use that habitat. When an activity has an effect we call it an influence factor. Our challenge was to develop an evaluation procedure to identify the influence factors and develop a process to recommend alternative sites or mitigation actions. Ultimately, we want to quantify cumulative impacts of proposed Laboratory activities over multiyear planning scales.

As an initial test of the evaluation process using the GIS, we developed a hypothetical project. Using this project we demonstrate how the ArcView application can be used for evaluation of activities early in the planning stage of a project. This paper describes the steps to the development of the ArcView application and its use as an evaluation tool in integrating requirements for activities with TES concerns.

2.0 Background

2.1 Need for Planning Tools in TES Evaluations

The need for integration of TES concerns with the project and construction activities at LANL was emphasized by the discovery of TES during the writing of an Environmental Impact Statement (EIS). Because TES issues

had previously only been done on a site-by-site basis, and the TES species was only recently listed, the presence of the species was not identified until the environmental documentation was partially completed. The discovery threatened to slow the approval of the EIS and planned activities.

The EIS and TES example clearly demonstrated the planning liability of conducting the traditional project-by-project biological reviews. In October 1995, the DOE and LANL initiated the site-wide TES HMP as a means of organizing existing information, gathering new information, and implementing a valuable management tool for current and future planning. In addition to other mitigation actions, the need for a TES HMP was further emphasized in the EIS Record of Decision (ROD). Therefore, with the issuance of the ROD in October 1995, a mandate to develop a site-wide HMP was included.

2.2 LANL Projects and Activities

For the purpose of this report we are using the following definitions:

- 1) **Mission:** The long-range direction of LANL.
- 2) **Projects:** Specific projects and programs, both short- and long-term, related to the tactical plan (e.g., construction projects).
- 3) **Activities:** Specific activities related to a project or program (e.g., noise, cutting trees).

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- 4) **Influence Factor:** Specific activities in association with an action may influence the ability of a TES to use a habitat. For example, noise is an activity that, when the levels are too high in a TES habitat, may cause a TES bird to abandon the site as a nesting area. If the noise does not impact a TES habitat, it is merely defined as an activity in this report.

All projects and activities of LANL are related to the mission. Our evaluations are being done at the level of projects and activities. It is at the project level that the interaction of TES with LANL mission requirements can be determined. Therefore, although this task was called a mission task, we will be working at the project and activity level.

2.3 Development of Planning Tools

In 1996, we initiated the first year of a three-year program to develop a HMP. The activities in the 1996 Work Plan outlined eight tasks that can each stand alone but collectively are intended to be used to understand the relationship of TES to Laboratory projects.

To date we have developed a land cover map (Koch et al. 1996) that identifies cover types and a preliminary land cover classification that identifies community types throughout the Laboratory. Using this land cover map we can more easily define potential habitat for TES. Additionally, we have surveyed the literature to define the habitat requirements for TES and SOC. Using this information, combined with project and activity data, we can use the GIS as a tool to develop an evaluation process and to integrate habitat requirements with project activities.

The GIS task has taken information from data bases, previously developed map layers such as structures and roads in Engineering data bases, habitat requirements, and land cover types. Using this information, Bennett et al. (1996) have developed an ArcView application for evaluation of projects (Figure 1).

3.0 Methods

There are three steps that must be taken to integrate activities with TES requirements.

- **Identify classes of projects and activities.** These actions may be short term or continuous. Development of a data base to identify these short-term and long-term activities is essential.
- **Identify the influence factors of these actions and activities.** Influence factors can be determined by the habitat requirements and disturbance tolerance of specific species. This can be done through a literature review (Gonzales et al. 1996) and from previous USFWS project reviews.
- **Determine how the activities and the influence factors can be evaluated early in the planning process to allow projects that are needed to meet the tactical goals of the mission of the Laboratory to move forward while maximizing protection and conservation of TES.**

ArcView Application

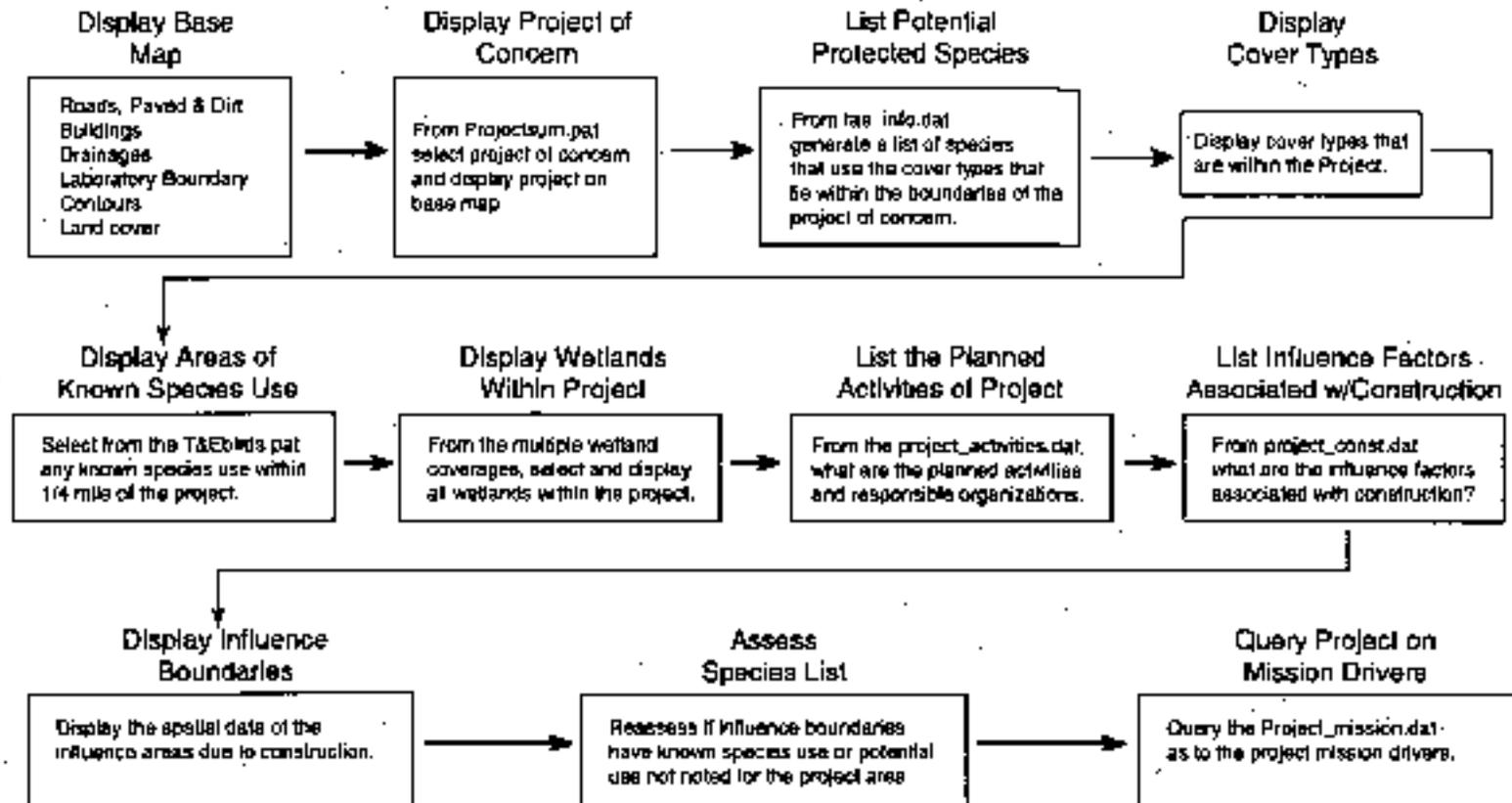


Figure 1. An ArcView application for evaluation of projects.

4.0 Results

4.1 Demonstration of the Evaluation of a Hypothetical Project

For our hypothetical project, we selected the building of an access road. The road project had two alternative routes, one on the northeast side of a canyon (road 1) and the other on the southwest side of the canyon (road 2), and the TES habitat existing in the canyon. In the early stages of the project, the planner wants to determine the most appropriate route when considering TES issues. Using these two possible alignments, an evaluation of each road is done using the ArcView Application.

4.1.1 Determination of Activities, Habitat Requirements, and Influence Factors

Four steps were taken in the evaluation process.

- Evaluate the project for activities.
- Identify the TES habitat in the project area.
- Identify the habitat requirements for the TES, and
- Run the ArcView application to identify the best alternative routing.

4.1.2 Project Evaluation

We defined activities related only to the construction phase of our hypothetical road. Those activities are

- noise from equipment,
- cutting trees,
- reduction of ground cover, and
- potential impact to a canyon bottom.

4.1.3 Identification of the TES Habitat and Habitat Requirements

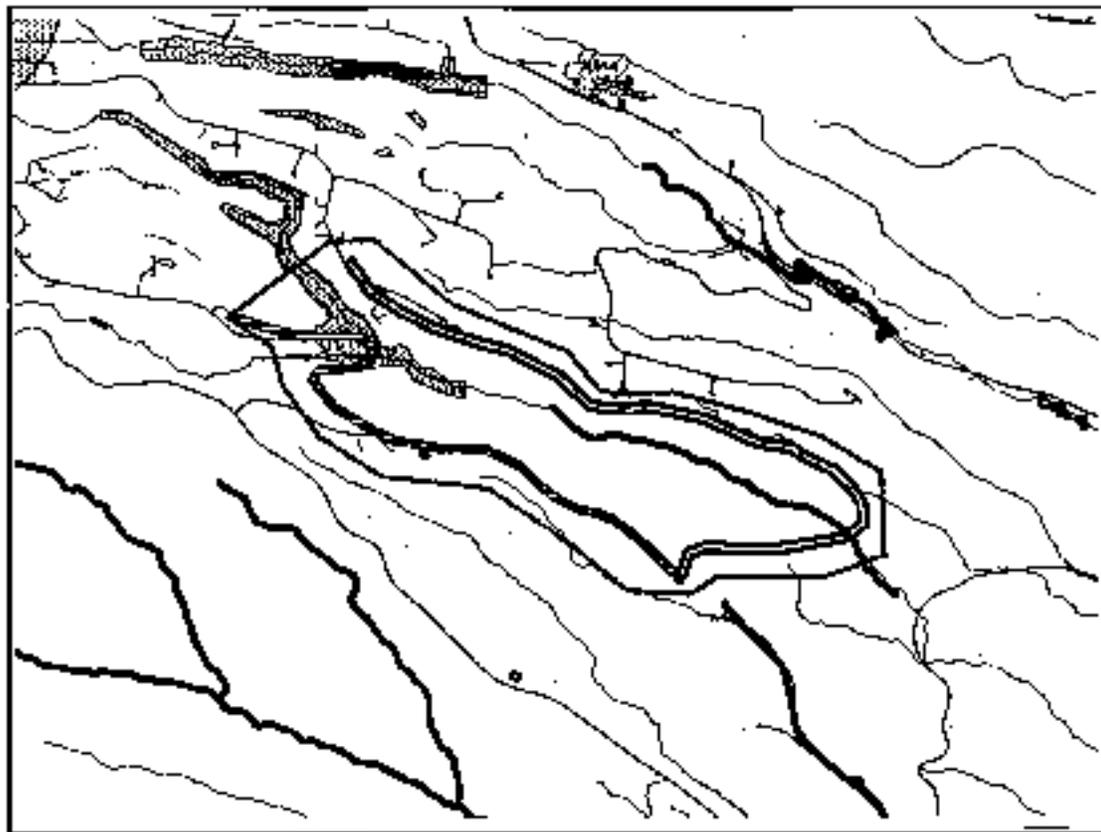
Using maps developed for the HMP by Koch et al. (1996) and survey information (Keller 1996, Trippe and Haarmann 1996, Bogan et al. 1996, Johnson 1996) we have identified potential habitat for various TES (Figure 2). These maps and the information from the literature review (Gonzales et al. 1996) provided information about the habitat requirements for the TES species within the designated TES habitats.

The habitat requirements included

- breeding or nesting sites with varying types and density of vegetation,
- roosting sites,
- foraging areas,
- watering areas, and
- protective cover with varying types and density of vegetation.

4.1.4 Conducting the Evaluation

We ran the ArcView Application using the two alternative sites for a road for two influence factors—noise and cutting trees. In one alternative, the road went directly into a TES habitat (southwest of the canyon), in the other, the road was outside the TES habitat (northeast of the canyon) (Figure 2). In Figure 2, we provide an example of how tree cutting, an activity of the road building project, becomes an influence factor for the alternative on the southwest side of the canyon. However, if the road is sited to the northeast side of the canyon and does not enter into the TES habitat, the cutting of trees will not be a hindrance to the TES. In the first case where



0.5 0 0.5 1 1.5 Miles

Direct Impact/Tree Loss (96-087)

- Road 1
- Road 2

- ▨ Sensitive Habitats
- Wetlands
- ~ Wetlands
- ~ Drainages
- ~ Roads, Paved

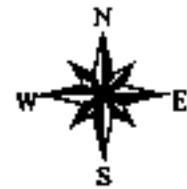


Figure 2. Map shows influence factor of tree loss associated with road site alternatives for a hypothetical project.

the road enters into the TES habitat, if the road siting cannot be moved, then mitigation measures and consultation with USFWS would be necessary. By directing the road away from the TES habitat, activities do not become influence factors and mitigation actions need not be taken in relation to cutting trees.

Using the ArcView Application, we can assess each influence factor or multiple factors for the activities of a project.

This application provides a base on which to build a better assessment tool. It will be further developed as we get more information about species, habitats, habitat requirements, and LANL activities in FY97.

5.0 Conclusion

Using and integrating the information from a hypothetical project with information developed in other tasks for the FY96 HMP effort, we have developed a preliminary evaluation tool. This tool used in early planning can incorporate the TES issues and avoid delays because of siting. This tool must be further refined, additional influence factors identified, and habitat requirements evaluated. In FY97, actual projects and activities will be evaluated for their relationship with TES, SOC, and the habitats they use within LANL.

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