I. INTRODUCTION

Minerals are one of the abundant resources of the Manti-LaSal National Forest. The extraction of these minerals is endorsed by the Forest Land Management Plans, except where this action is incompatible with planned surface uses. The Forest, by regulation and law, is committed to multiple use management of all National Forest resources, and must assure that adverse impacts to surface and subsurface resources are minimized whenever any resource is utilized--including minerals and mineral resources.

Data describing the effects of coal mining and mining-related activities is scarce. Current resource protection, mitigation, and reclamation measures are based on this limited data. A resource monitoring program is needed to assess impacts to resources, to evaluate the effectiveness of protection, mitigation, and reclamation measures, and to provide a basis for making--as needed--new protection, mitigation, and reclamation stipulations for mineral leases, and mining and reclamation plans.

Since 1973, the Manti-LaSal National Forest has recommended that a program be established to quantify impacts to surface resources due to underground mining. Certain stipulations have appeared in all Environmental Assessment Reports and Impact Statements dealing with coal programs which are prepared by or had concurrence of the Forest Service.

Two stipulations have been developed that relate to the mining activity. Stipulation number one requires that baseline data be obtained prior to any disturbance, and stipulation number two requires that a monitoring program be initiated during mining operations. They are as follows:

Stipulation 1 - Prior to mining, the lessee shall perform a study to secure adequate baseline data to quantify the existing surface resources on and adjacent to the lease area. The study will be established in consultation with and concurrence by the surface managing agency, and shall be

adequate to locate ~~and~~ quantify and demonstrate the interrelationships of the geology, topography, all surface hydrology, vegetation, and wildlife. The baseline data will be established so that future programs of observations can be incorporated ~~made~~ at regular intervals for comparison.

Stipulation 2 - The lessee shall establish a monitoring system to locate, measure and quantify the progressive and final affects of underground mining activities on the land surface, the underground and surface hydrology, and on the vegetation. The monitoring system shall utilize techniques which will provide a continuing record of change over time. The monitoring shall be an extension of baseline data at representative locations and will be conducted in a manner approved by the surface managing agency in consultation with the State and Federal regulatory agencies.

In managing wildlands, information is needed to address all Forest Service resource systems, forest and rangeland, water, wildlife and fish, outdoor recreation and wilderness, etc. To make an assessment of the potential effects of alternative land uses such as underground mining on surface resource systems, requires basic information on their resources and their relationship to each other. Local management and planning decisions require mapped and pinpointed information, whereas State, regional and national level decisions may be based on statistical information obtained from much broader samples. This plan requires a high degree of resolution, consequently large scale (low altitude) aerial photographs and large scale maps will be required to facilitate the process.