

Action Plan
for the
Analysis of the 1983 Landslides

Introduction

During the spring and summer of 1983, the Manti-LaSal National Forest received severe damage from landslides, mudflows, and abnormally high flood waters. The damage was widespread throughout the San Pitch and Manti Divisions. Additional damage occurred on the Moab Ranger District.

During the damage assessment, 131 significant landslide areas were identified. More than 2,700 acres were mapped as having moved through some type of landslide.

This disaster presents opportunities to improve the quality of management decisions through an improved data base about mass instability and to improve basic knowledge of landslides. *and flooding events.*

Objectives

1. Using 1:40,000 scale black and white photography for 1976 and 1983, map and describe each mass movement.
2. Using hydrologic and meteorologic techniques, describe the frequency of recurrence of the snowpack, melt rates, and stream flows, and the combination effect of two successive ^{wet} years at all available stream gages and snow courses within and adjacent to the Manti-LaSal National Forest.
3. Stratify the landslides into about six classes that incorporate at least topographic, geomorphic, geologic, vegetative, and man-induced factors.
4. Relate landslide occurrences to other resource descriptions in LSI, AMP, FMP, ^{National Forest Watersheds} ~~NFS~~, and geologic hazards. Include in the descriptions of the landslides National Forest watershed, subwatershed, Analysis Unit from FMP, and land type association from ^{land} land systems inventory ^{and} range allotments.

5. Answer the following questions, if possible:
- a. To what extent were the landslides exacerbated by management and/or construction decisions on the landscape?
 - b. Under what conditions will these landslide areas become stable? 7
 - c. Under what conditions will these unstable areas reactivate? (How often will this occur?) X
 - d. To what extent ~~by~~ subwatershed can the landslides be stabilized? X 7
 - e. What vegetative conditions would produce marginal instability? 7
 - f. What type of monitoring should be maintained?
6. Establish a computer data base for landslides and maps.

Objective 1 -

- Plot effective areas on even numbered photos.
- Identify information needs.
- Determine ground truth needs.
- Determine computer data file requirements.
- Determine statistical procedures.
- Prepare report outline
- Determine map needs.
- Map landslides.
- Record the information.
- Outline stratification needs.
- Run stratification models.
- Run statistical models.
- Prepare reports.

Objective 2 -

Obtain USGS Records.

Obtain irrigation company records.

Obtain precipitation records.

obtain snowcourse records.

Run log Pearson III Flood Frequency Analysis on: Streamflow and on monthly snowpack data, normal snowpack data, monthly precipitation data, annual precipitation data, and running two year sum of precipitation snowpack and streamflow.

Analysis snowmelt conditions -

Heating degree hours vs. snowpack

Over several years.

Objective 3

Outline stratification needs

Run stratification models

Run statistical models

Prepare reports.

Objective 4 -

Determine resource reports to be checked.

Assemble reports.

Determine information to be extracted.

Extract information.

Run stratification models.

Run statistical models.

Prepare reports.

Objective 5 -

Sharpen the questions to answerable form.
Analyses data assembled from objectives 1-4.
Prepare report.

Objective 6 -

Determine future needs for data.
Determine data base format that would best serve these needs.
Prepare data.
Enter data into data base.