

US EPA ARCHIVE DOCUMENT

# EMAP - West Communications

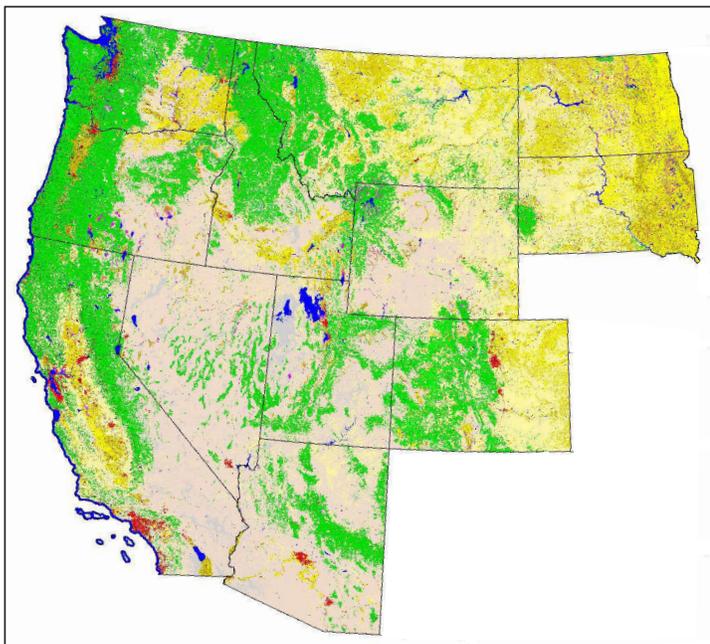
## Landscape Data – Its Use in Understanding Ecological Condition

### Introduction

Landcover and land use data are fundamental ingredients of ecological studies that deal with the impacts of human activities over large regions. While these data are useful for many purposes, the major focus of the Landscapes Team in EMAP-West will be to evaluate the association of multiple landscape metrics with aquatic condition that is being measured by the Surface Waters and Coastal groups. Since the condition of estuaries and rivers and streams is clearly influenced by large-scale processes, quantitative evaluation of that influence is needed. It is the goal of the Landscapes Team to assess spatial variability in landscape pattern and the degree to which that pattern is associated with the condition of estuaries and inland surface waters. If conditions in aquatic resources are closely linked to watershed-scale landscape patterns, it may be possible to assess potential conditions of aquatic resources from landscape data at many scales across the western United States. This could allow more informed targeting of waterbodies for protection and/or restoration activities.

### More than Maps

Because landscapes data are primarily derived from satellite imagery, complete coverage of the 12 contiguous states of EMAP-West is available (see the figure below showing the National Land Cover Data for the West).

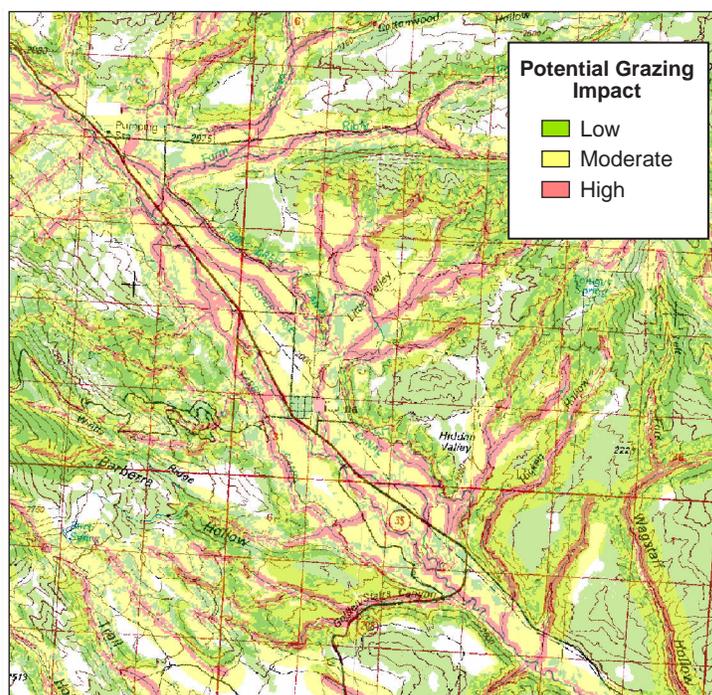


Advances in computer technology and geographic information systems (GIS) have made it possible to calculate complex landscape metrics that have uses far beyond the production of attractive maps. While the information used to construct the map above is a formidable data set in itself, it can be combined with other data to evaluate

complex interactions. For example, the impact of roads on aquatic resources requires multiple data sets that must be overlaid and then related to multiple water quality variables.

### Progress

To date, emphasis has been placed on bringing a series of geographically based data sets together in a format that allows for the calculation of various metrics. An example of an indicator that is being developed, potential grazing impact, is shown in the figure below.



A core set of metrics is being developed for each state and recorded to CD's for easy distribution. The State of Oregon and the Southern Rockies region have CD's prepared which are under review. States should find these CD's as a useful source readily available landscapes data.

As the Program develops, the landscape indicators will be tested and, if the expected relationships are found, predictive models of aquatic condition will be developed. These models may ultimately provide the states and tribes of the West with an important new tool for tackling their monitoring and assessment challenges.

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