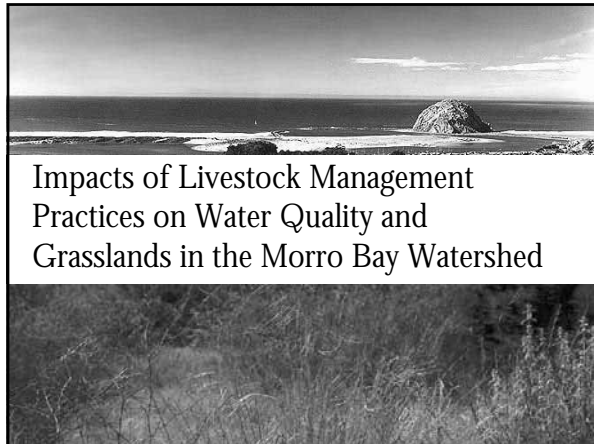


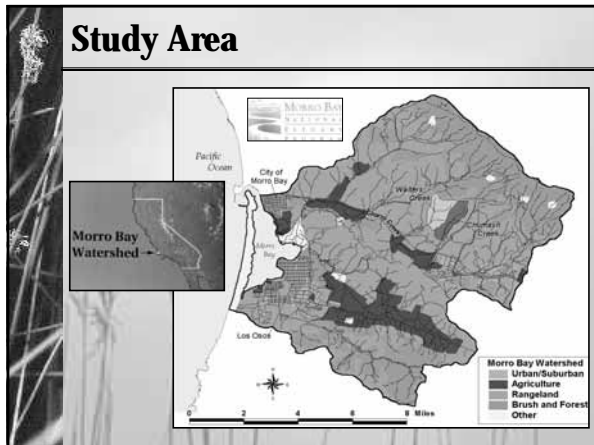
# Management and Restoration of California's Coastal Prairie



Impacts of Livestock Management Practices on Water Quality and Grasslands in the Morro Bay Watershed

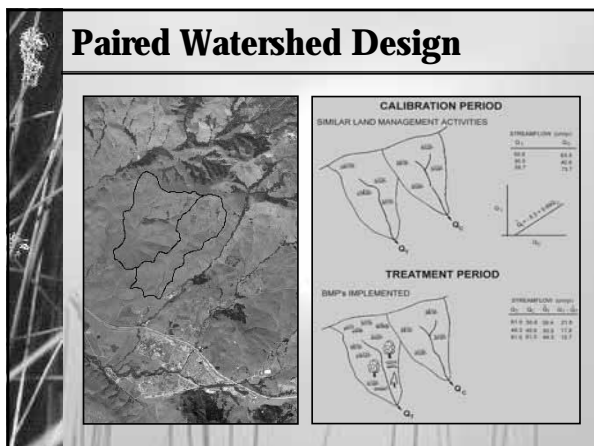
## Project Objectives

- To Study the Effects of Rangeland Management Practices on Water Quality and Grassland Diversity, Health, and Productivity.



## Chumash & Walters Creeks 1993

- Similar Attributes**
  - Size
  - Slope
  - Elevation
  - Soils
  - Climate
  - Vegetation
- Adjacent Similar Land Management Activities**
  - Rangeland Used for Cattle Grazing




## Rangeland Practices Installation

Incrementally Installed (Fall 1995-Fall 1997)

- Cross Fencing
- Riparian Fencing
- Rest-rotation Grazing
- Road Improvements
- Bank & Channel Improvements
- Alternative Water Supplies

### Monitoring

- Stream Response
  - Event-based & Even-Interval Water Quality Samples
  - Streamflow
- Grassland Response
  - Transects
  - Residual Dry Matter
  - Photo Documentation
- Calibration Period
- Treatment Period



### Project Findings

Findings Introduction

Findings were developed as a guide to interpret statistical results and trends in the data. These findings address both water quality and vegetation:


- Stream Flow
- Sediment and Turbidity
- Vegetation Species Composition
- Surface Cover
- Vegetation Type
- Vegetation Life Cycle/Duration
- Specific Species
- Residual Dry Matter

### Findings – Water Quality

Stream Flow

**Chumash Peak Storm Flow Lagged Behind Walters**

Especially in Fall/Early Winter

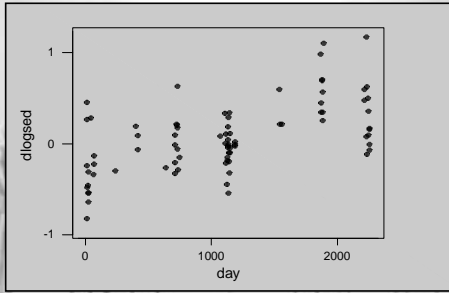


Due to Increase in Vegetation

### Findings – Water Quality

Turbidity & Sediment

**Turbidity and Suspended Sediment Were Reduced as a Result of BMP Implementation in Chumash**



*dlogsed=differences between log sediment means for Chumash and Walters*

### Findings Water Quality

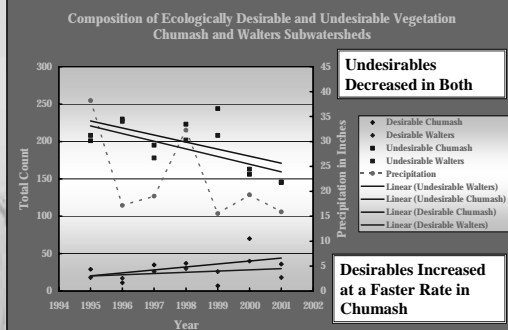
Overall Findings

- Chumash was more resilient to high rainfall, producing a later response to significant events.
- Temperature was decreased in Chumash.
- Rangeland practices decreased sediment load and turbidity.

### Findings – Vegetation

Species Composition

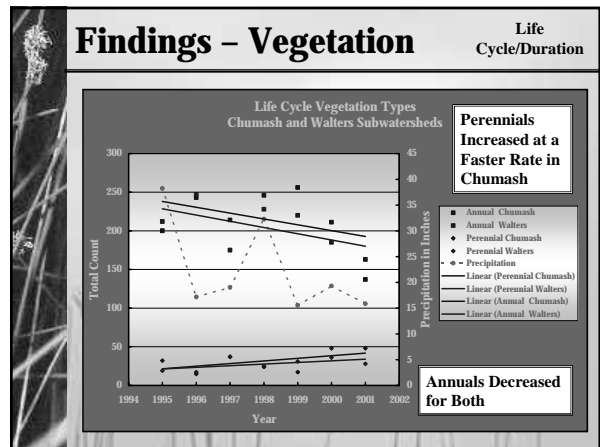
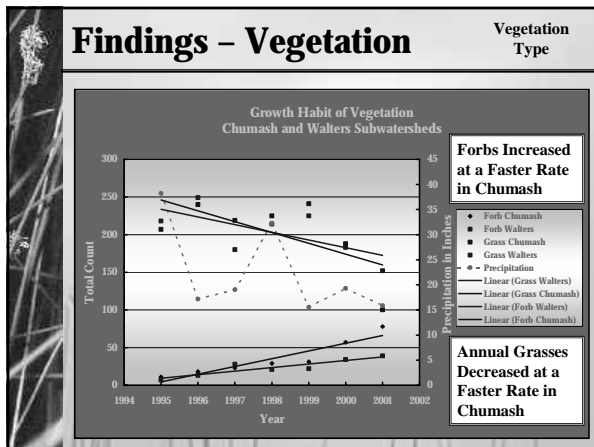
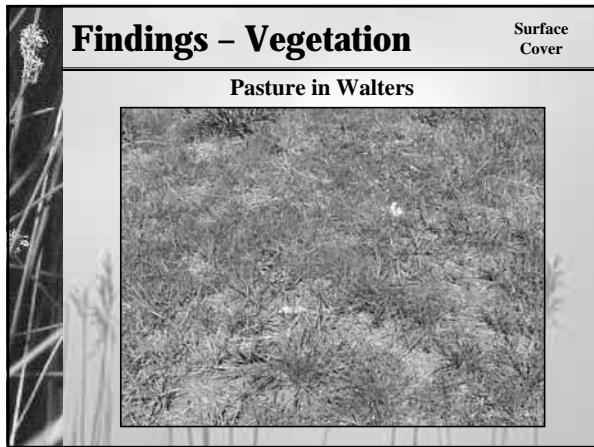
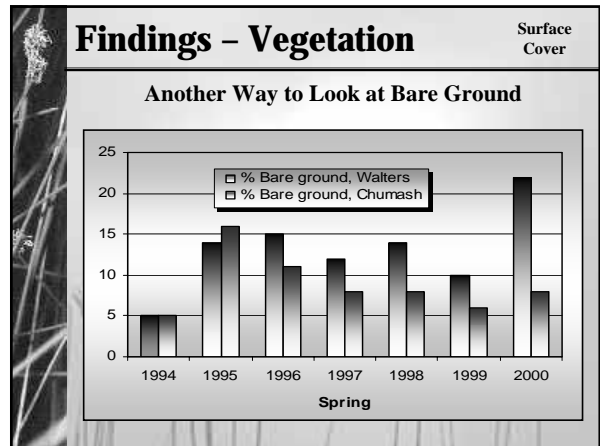
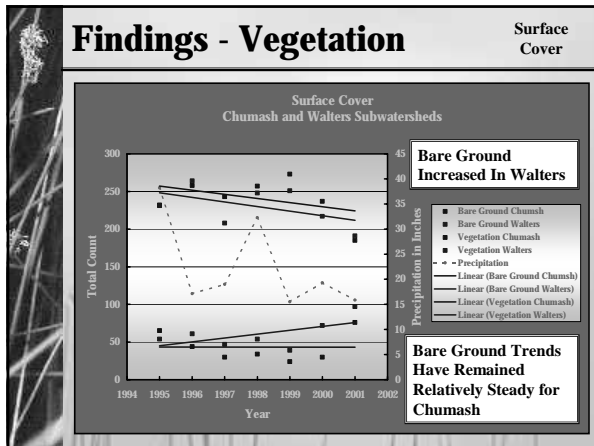
Composition of Ecologically Desirable and Undesirable Vegetation Chumash and Walters Subwatersheds



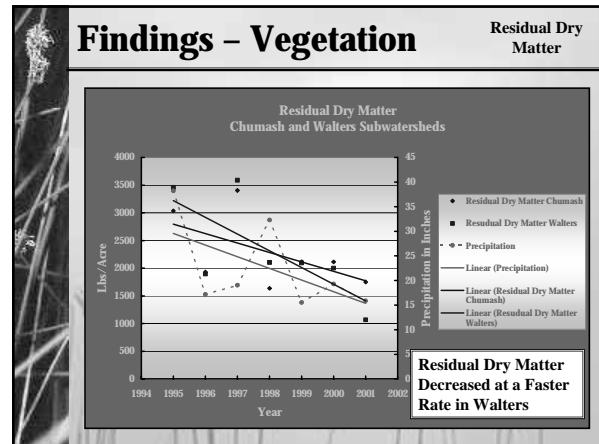
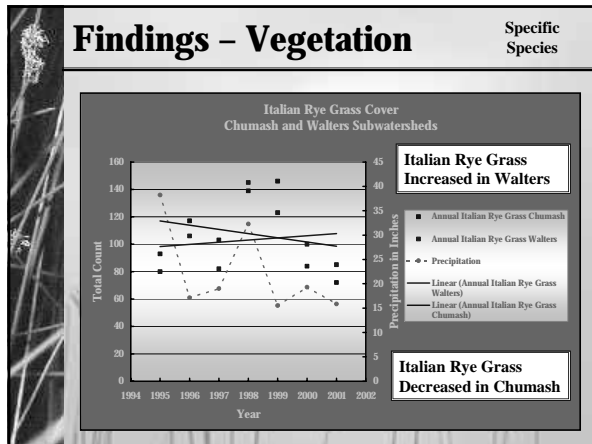
Undesirables Decreased in Both

Desirables Increased at a Faster Rate in Chumash

# Management and Restoration of California's Coastal Prairie



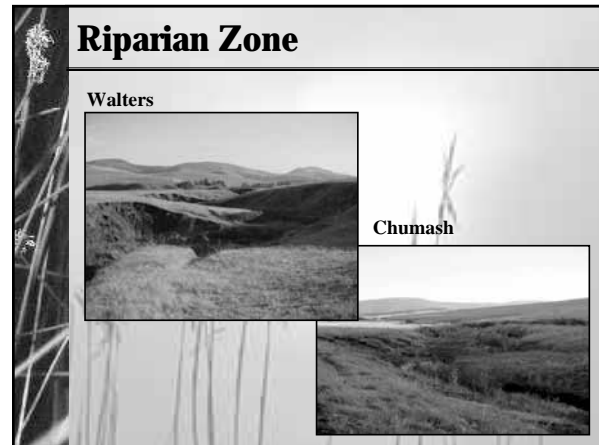
# Management and Restoration of California's Coastal Prairie



## Findings – Vegetation

Overall Findings

	Chumash	Walters
Desirable Species	Increased	Slight Increase
Bare Ground	Slight Decrease	Increased
Species Diversity	Increased	Slight Increase
Grasses	Dominate	Dominate
Perennial Species	Increase	Slight Increase
Annual Species	Slight Decrease	Decreased
Rye Grass	Decreased	Increased
Residual Dry Matter	Slight Decrease	Decreased



## Conclusion

This System of Rangeland Management Practices Improved Water Quality and Enhanced Grassland Health, Diversity, and Productivity.

- Rest-rotation Grazing
- Road Improvements
- Cross Fencing
- Riparian Pastures
- Alternative Water Supplies
- Bank & Channel Improvements

