B. General Description of the Desired Future Condition

Fire History

Wildfire history is a significant factor of the pre-fire management planning process. The fire plan assessment framework incorporates detailed information for determining the most beneficial locations for pre-fire management projects, an idea of the level of service in SRA for the unit, and various assets at risk information. Fire history is a piece of the puzzle that allows unit personnel to learn from our past and make an attempt to prepare for future fire behavior. Having knowledge of fire history provides an account of historic fire travel in a particular area. Armed with knowledge of historic fire spreads, fire suppression forces are better equipped to predict fire spread potentials. Identifying where the largest and most damaging fires have occurred is a necessary step in preparing for future wildfire. The most significant aspect of fire history in Lassen Modoc Unit is that personnel are able to compare the relationship between identified assets at risk and the historic burning patterns of wildfire which allows for more informed decision making processes when preparing fire planning documents and procedures.

Appendix B shows fire history just for 2004. Appendix C shows the Fire History from 1900 to 2004. Appendix D includes fire history from 1994 through 2004. The maps display significant patterns that are used in pre-fire planning processes.

Ignition Workload Assessment (Level of Service)

The legislature has charged the Board of Forestry and CDF with delivering a fire protection system that provides an equal level of protection to lands of similar type and is based in *Public Resources Code 4130*. In order to do this, CDF needed an analysis process that would define a level of service rating that could be applied to the wildland areas in California to provide a comparison of the level of fire protection being provided. The rating is expressed as the percentage of fires that are successfully attacked.

California has a complex fire environment, and CDF data on assets at risk to damage from wildfire is incomplete. These factors combine to make it very difficult to develop a true performance-based fire protection planning system. CDF has resorted to prescription-based fire protection planning (travel times of firefighting resources to incidents, report times for the detection system, the same acreage goal statewide, etc.) as a way to overcome the complexity of the issues. Prescription-based planning is possible but tends to oversimplify some issues. Prescription standards also make it difficult to integrate the interrelationships of various fire protection programs, such as the value of fuel-reduction programs in reducing the level of fire protection effort required.

The following approximation method is proposed to overcome these shortcomings and allow the Unit to proceed with a damage-plus-cost analysis of fire

protection performance. This is a relative system, attempting to measure the impact of fire on the various assets at risk. At the same time, this process produces a level of service rating (LOS). The rating can be used to describe fire protection services to civilian stakeholders. The level of service rating also provides a way to integrate the contribution of various program components (fire prevention, fuels management, engineering and suppression) toward the goal of keeping damage and cost within acceptable limits. It is important to reiterate that this system is a relative system and that the ratings are only approximations. In this system, a fire may be considered a failure, based on the firefighting resource draw and size of fire; however, the final fire size and assets protected may have been a true success based on firefighting activities in extreme fire weather conditions.

The Level of Service (LOS) rating is a ratio of successful fire suppression efforts to the total fire starts, a method to measure initial attack success and failure rates throughout the Unit and is based on fire sizes. The LOS uses a Geographic Information System (GIS) that overlays a 10 year history of wildfires onto a map and derives the average annual number of fires by size, severity of burning and assets lost. This data provides an LOS rating, in terms of a success and failure calculation.

$$\text{Success Rate} = \frac{\text{Annual number of fires that were small and extinguished by initial attack}}{\text{total number of fires}} * 100 = \text{Success rate in percent}$$

The result is an initial attack success rate in percentage of fires by vegetation type and area. “Success” is defined as those fires that are controlled before unacceptable damage and cost are incurred and where initial attack resources are sufficient to control wildfires. “Failure” is not meant pejoratively; it just means that, for whatever reasons (access, lack of resources, etc.) the ignition was not contained before it became a more dangerous and damaging fire.

The Fire Plan Ignition Workload Assessment map is designed to show effectiveness of the suppression organization in meeting the initial attack fire workload. The attempt at controlling fires before they become large and costly is evaluated in this assessment. The underlying assumption is that fires, successfully contained in the initial attack stages, are not the primary problem. Problem fires are the few that are costly to control or exceed suppression organization capabilities and cause damage.

Fires are grouped into "success" and "failure" categories based on various factors. The assessment groups fires by general vegetation or fuel types (planning belts). Within the fuel type, fires are further classified based on final fire size and weather conditions at the time of ignition. Each fire is classified and labeled as either a successful initial attack or a failure.

The initial attack workload assessment is displayed in the maps below with statistical data related to these maps. Initial attack points of origin are plotted and

color-coded based on success/failure scores. Some of the successes and failures are not matched with weather readings and are shown on this analysis. Further validation will be conducted to match weather with the ignitions in the future. The workload can be summarized in the Quad 81st grid. Results can also be summarized into a percentage success score and displayed by Quad 81st grid. Combining fire business workload patterns with aggregated assets at risk can be useful in defining target areas for focusing Pre-fire Management project efforts.

Initial attack Success and Failures:

Represents a ten year period for analyses May thru September 1994 to 2005; planning belt vegetation types were analyzed.

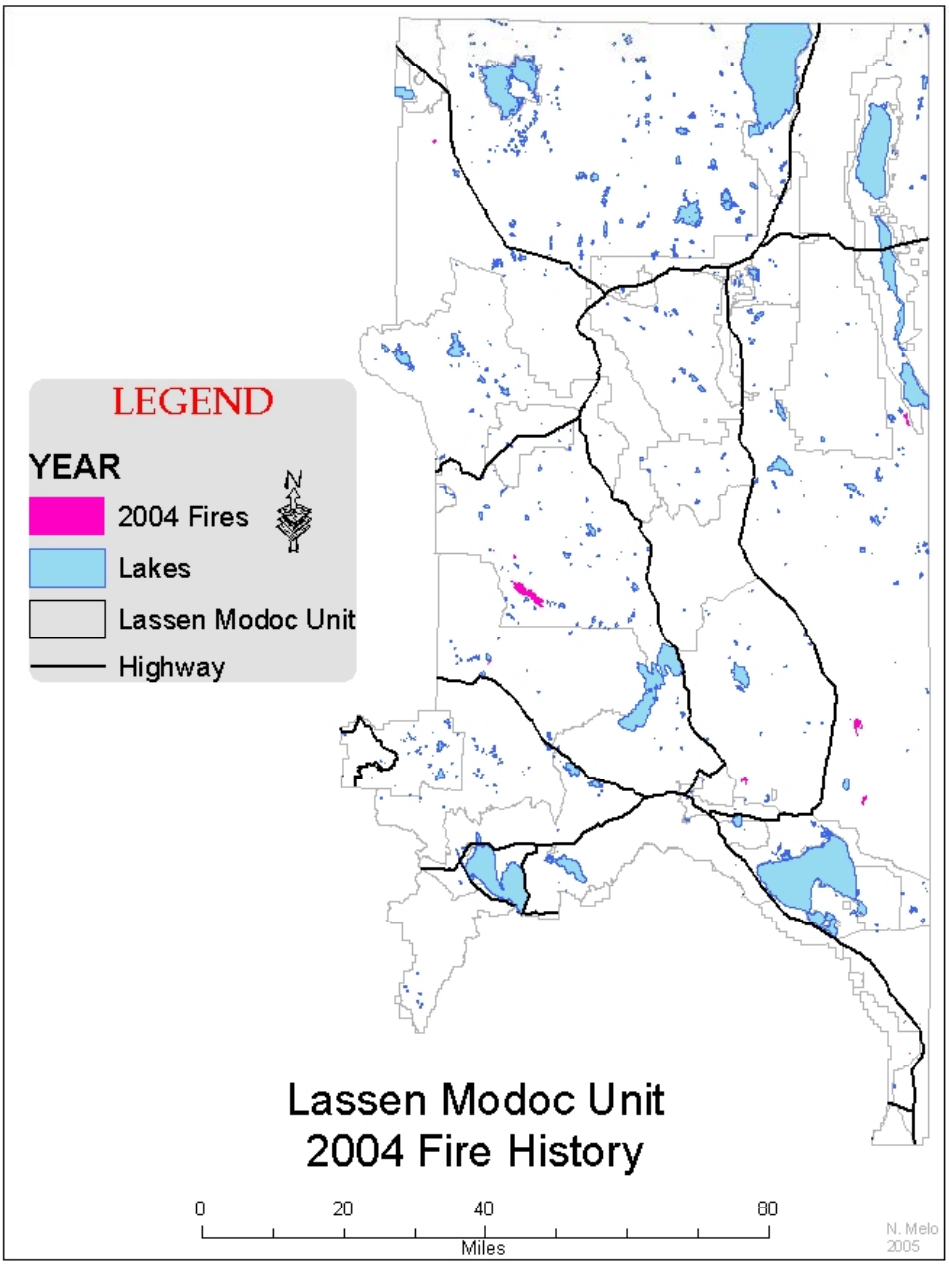
Planning Belt	**Success Rate**	**Successful I.A.**	**I.A. Failure**
Grass	100%	54	0
Brush	95%	370	20
Interior	98%	1920	34
Woodland	98%	3523	80
Agricultural or Urban	96%	248	9

Failures were defined as:

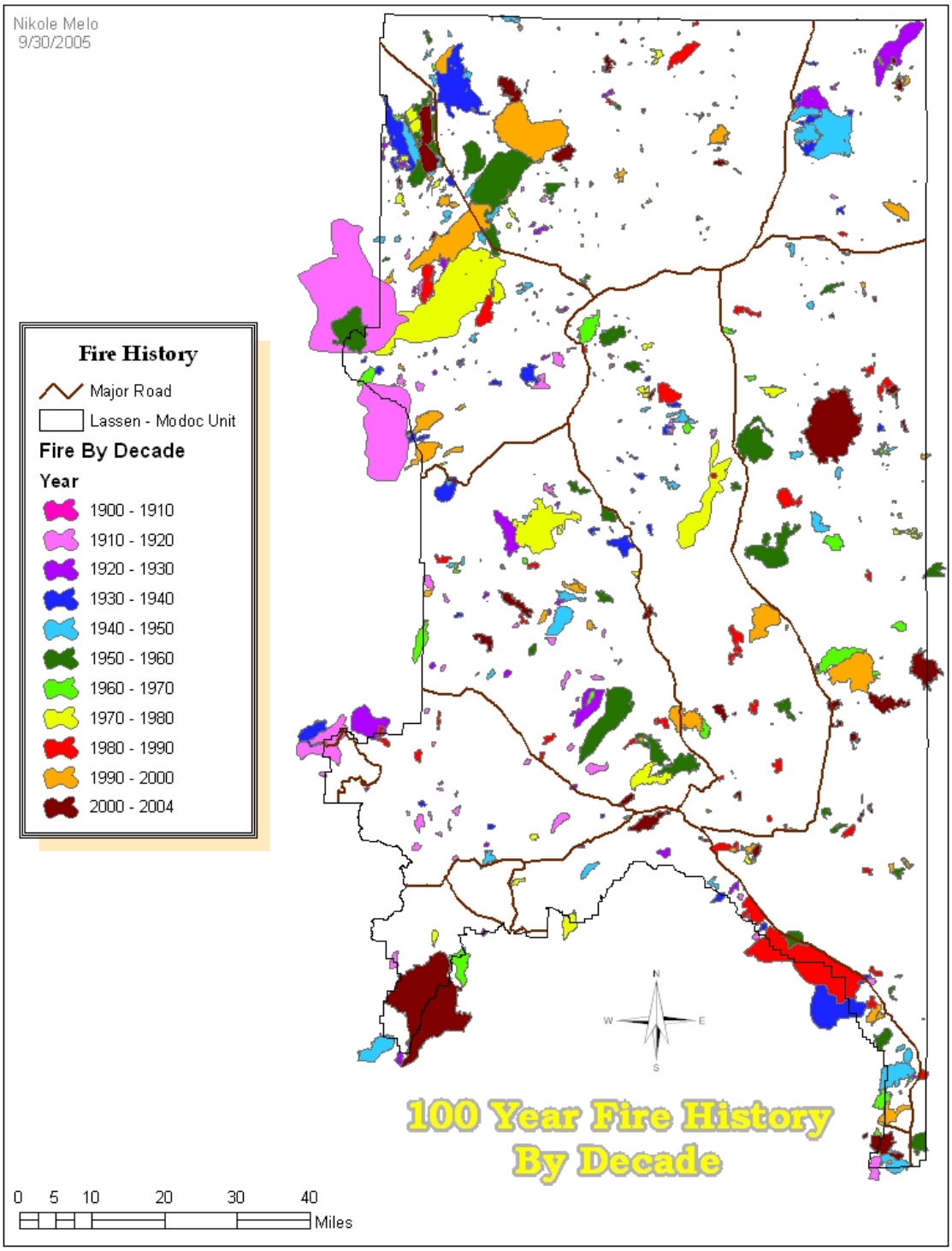
Grass: Fires = 10 acres and above
Brush: Fires = 5 acres and above
Interior: Fires = 3 acres and above
Woodland: Fires = 5 acres and above
Agricultural or Urban: Fires = 10 acres and above

(For a Map of Success and Failures see Appendix E)

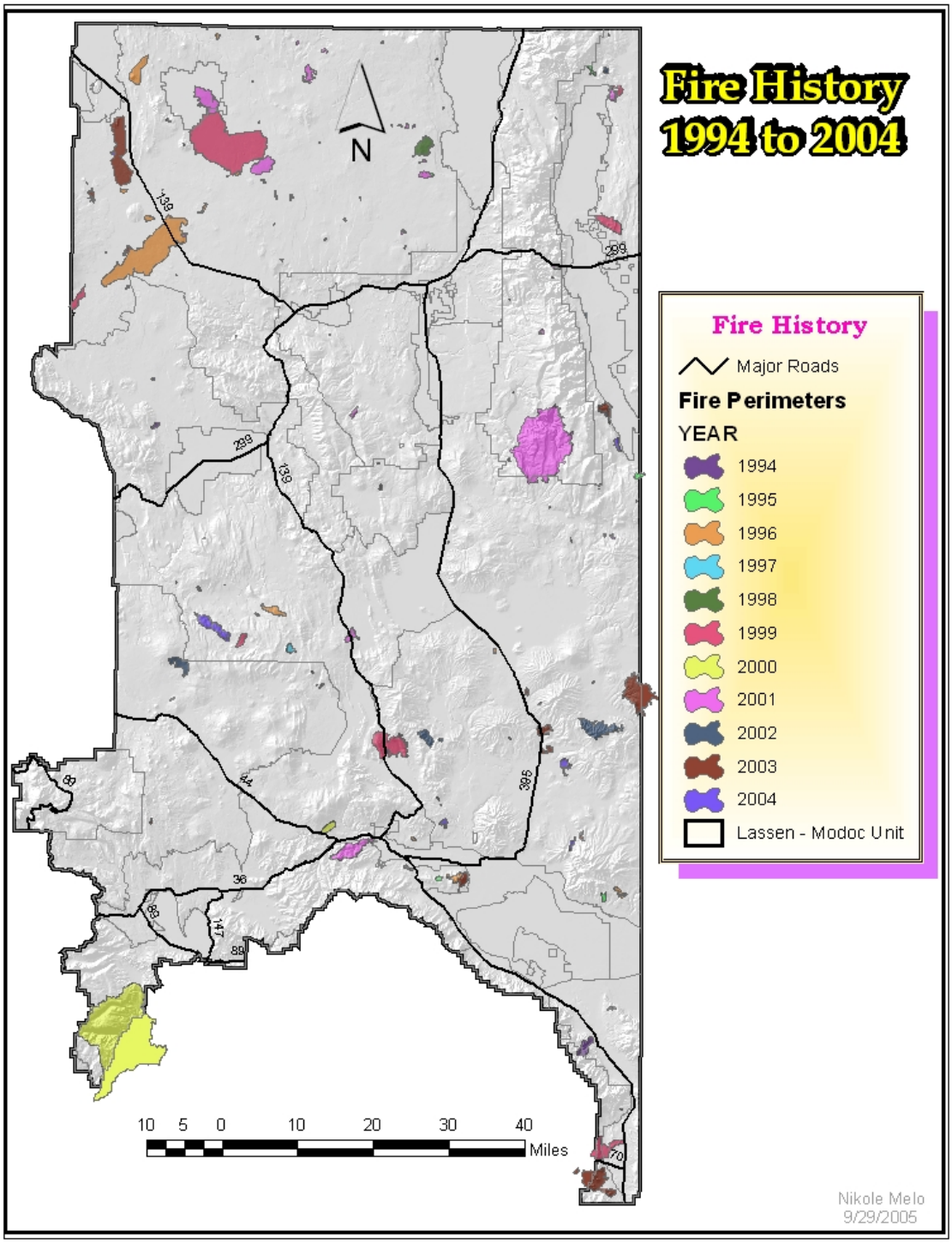
Appendix B


LEGEND
YEAR
2004 Fires
Lakes
Lassen Modoc Unit
Highway
N
Lassen Modoc Unit
2004 Fire History
0
20
40
80
Miles
N. Melo
2005

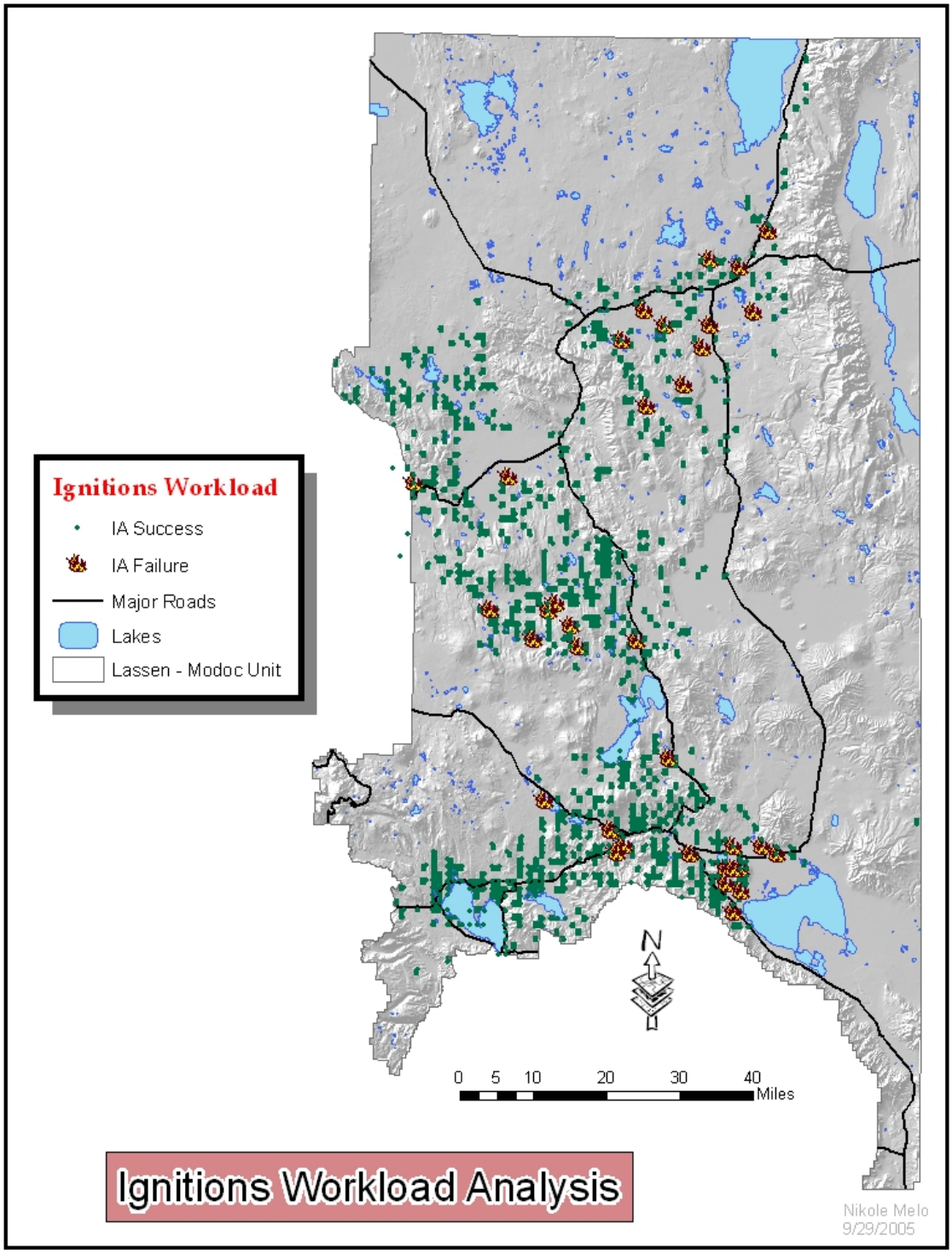
Appendix C


Nikole Melo
9/30/2005
Fire History
Major Road
Lassen - Modoc Unit
Fire By Decade
Year
1900 - 1910
1910 - 1920
1920 - 1930
1930 - 1940
1940 - 1950
1950 - 1960
1960 - 1970
1970 - 1980
1980 - 1990
1990 - 2000
2000 - 2004
N
W
E
S
100 Year Fire History
By Decade
0 5 10 20 30 40
Miles

Appendix D


Fire History
1994 to 2004
N
Fire History
Major Roads
Fire Perimeters
YEAR
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Lassen - Modoc Unit
10 5 0 10 20 30 40
Miles
Nikole Melo
9/29/2005

Appendix E


Ignitions Workload
IA Success
IA Failure
Major Roads
Lakes
Lassen - Modoc Unit
N
0 5 10 20 30 40
Miles
Ignitions Workload Analysis
Nikole Melo
9/29/2005