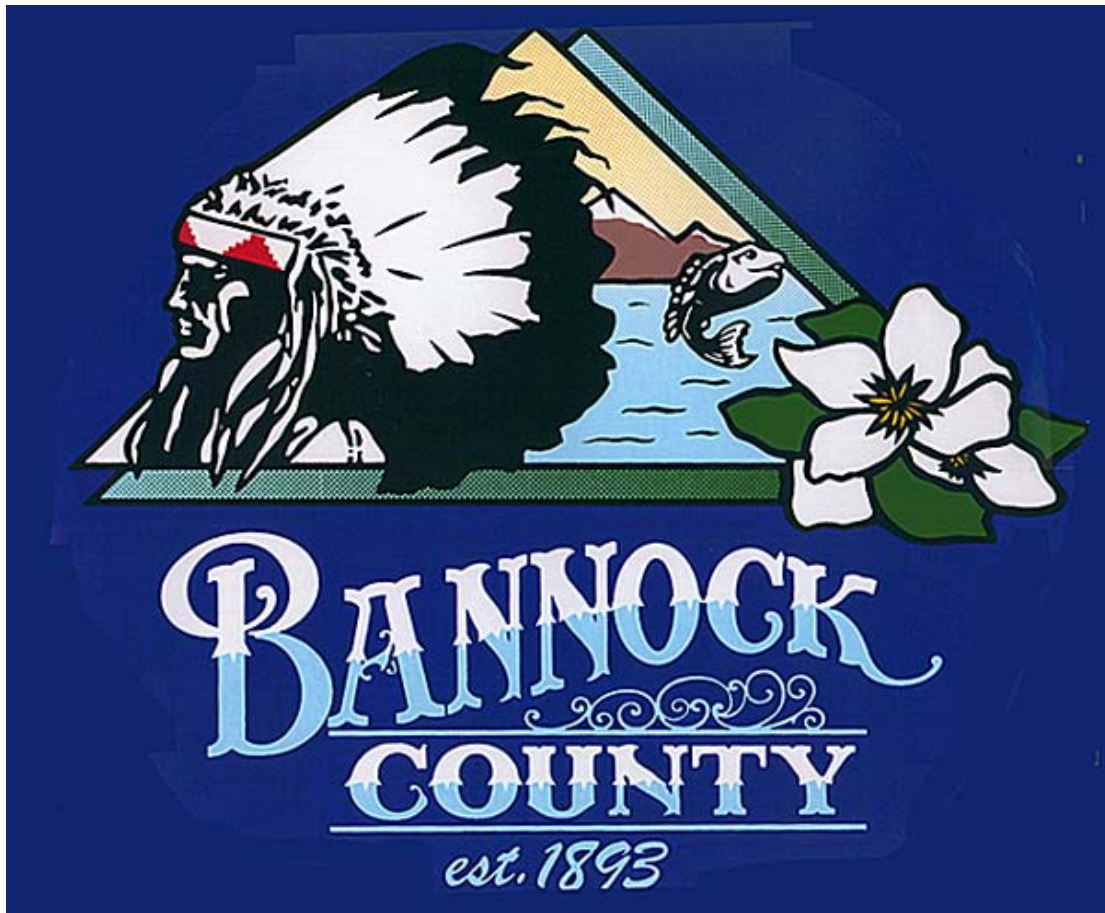


Bannock County
Wildland Urban Interface Assessment
&
Fire Mitigation Plan



Bannock County Wildland Urban Interface Fire Mitigation Plan

**A Project of The Bannock County LEPC
&
Bannock County Emergency Services**

Published October 1, 2003

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Signature Page

The below signed officials hereby promulgate and establish the Bannock County Wildland Urban Interface Mitigation Plan.

Approved by: _____ Date _____
Jim Guthrie, Chairman

Approved by: _____ Date _____
Craig Cooper, Commissioner

Approved by: _____ Date _____
Steve Hadley, Commissioner

Prepared by: _____ Date _____
Gary Moore,
Emergency Services Coordinator

Reviewed by: _____ Date _____
Fred Judd,
Fire Mitigation/Education Officer
BLM East Idaho District

Introduction

Wildland fires are a part of the natural ecological cycle of wildland ecosystems. However, as humans encroach on these areas, the risk of catastrophic disaster increases. These fires pose a threat to human life and property. The National Fire Plan calls for reducing this risk through a variety of measures including the creation of local wildland urban interface fire mitigation plans.

Bannock County has an increasing risk and extensive history with Wildland Urban Interface fire. In 2003 we have experienced multiple large interface fires with the loss of property and homes.

The following plan is the culmination of work conducted by the Bannock County Emergency Services Office and the Bannock County LEPC. It includes information obtained in a survey of all local fire districts and public input provided by public meetings conducted by Dynamac Corporation, local Departments and a citizen survey.

This plan will be forwarded to The State Of Idaho to become part of the Idaho Statewide Implementation Strategy for the National Fire Plan.

The primary goals of the National Fire plan are:

- **Improve prevention and suppression**
- **Reduce hazardous fuels**
- **Restore fire adapted ecosystems**
- **Promote community assistance**

The Bannock County Plan will include these required elements:

- **Documentation of the planning process**
- **A risk assessment to identify vulnerabilities to wildfire**
- **A prioritized mitigation strategy**
- **A process for maintenance of the plan**
- **Documentation that the plan has been formally adopted**

This plan is a comprehensive look at the wildland interface issues in Bannock County and will offer goals to improve the risks identified.

Participants in Bannock County Wildland Fire Mitigation Plan

Bannock County Local Emergency Planning Committee
Bannock County Emergency Services
Bannock County Commissioners
Bannock County Planning & Development
Bannock County Road & Bridge
Bannock County Sheriff
Bannock County Assessors Office
Pocatello Fire Department
Chubbuck Fire Department
Pocatello Valley Fire Department
Inkom Fire Department
McCammom Fire Department
Lava Fire Department
Arimo Fire Department
Downey Fire Department
BLM
US Forest Service
Swan Lake Area Citizen Group
Lava Hot Springs Area Citizen Group
Inkom Area Citizens Group
Northeast Pocatello (Pocatello Creek) Citizens Group
Bureau Of Disaster Services
Idaho State University GIS Department

Other Resources:

Bannock County Emergency Services Survey
Dynamac Corporation Mitigation Plan Reports
Three Rivers RC&D Assessments

ACKNOWLEDGEMENTS

As you can see from the list of participants in the planning process, many different people from numerous agencies were involved in this planning process. Representatives from all levels of government and citizens from throughout Bannock County made this plan possible.

A special thanks to Sheriff Lorin Nielsen. Sheriff Nielsen is the Director of Emergency Services and his efforts and support of the many programs in Bannock County including this planning process have been critical.

We would like to recognize Fred Judd with the BLM for his support of this project. Fred has been a driving force in recognizing the importance of the relationship between the Federal Agencies and the Local Jurisdictions. Without his involvement, this plan may not have been realized.

Finally, we recognize Bannock County Commissioners Jim Guthrie, Craig Cooper and Steve Hadley. The Commissioners have shown a great deal of support and participation in emergency planning. The Commissioners involvement and encouragement of others to participate in the planning process have been instrumental in our progress.

The Planning Process

The Bannock County Wildland –Urban Interface Fire Mitigation plan was developed using a number of tools and resources. Those include:

- Citizen input from local meetings
- Fire District Survey Evaluating
 1. Past Fire Occurrence
 2. Fuel conditions
 3. Population of District
 4. Suppression capabilities
- Survey distributed to District patrons
- Interviews with other agencies
- ISU-GIS assessment
- Fire District interview and assessment

Mitigation Plan Maintenance

The Bannock County Local Emergency Planning Committee will be responsible to conduct an annual review of the plan. This annual review should include progress on the action plan from the previous year or years.

The Committee will review the action plan and determine if items should be removed or additions made. Each year following the review process, all jurisdictions involved in the plan will receive a copy of the updated plan.

Bannock County Fire Mitigation Action Plan

Fire Mitigation Goals

- **Emphasize prevention of wildland urban interface fires using a proactive, cooperative approach.**
- **Ensure that the land development ordinances and building codes in Bannock County support mitigation of wildland urban interface fire danger.**
- **Promote effective fuel reduction programs in all wildland urban interface areas in Bannock County.**
- **Promote the development of water resources for wildland firefighting throughout Bannock County.**
- **Facilitate a County-wide mutual aid agreement.**
- **Produce and distribute functional maps for rural Departments.**
- **Provide wildfire training class for Road & Bridge Department**

Fire Mitigation Actions

- **Prevention-promote local jurisdictions working together and with Federal and State agencies to establish on-going local prevention programs. Encourage all rural districts to become Firewise Communities.**
- **Wildland Fire Code-institute a working group to include local jurisdictions and County Officials to develop and adopt a county Wildland Urban Interface Fire Code.**
- **Fuel Reduction-Encourage each local jurisdiction to identify a priority fuel reduction program and a plan to get the program started.**
Work closely with the BLM and Forest Service fuel reduction projects. Many of these projects will require participation from both Federal Lands and Private landowners to be successful
- **Water Resources-institute a working group to evaluate the water supply issue within the County. This should include both fixed and mobile supply issues.**

- **Cooperative Agreements-examine the current agreements within the County and assess the need to expand or update. Include agreements with Local, State and Federal Agencies.**
- **Work with ISU Department of GIS and the County to produce maps for local jurisdictions and County Emergency Management.**

Wildland Community Survey Results

A survey was developed to receive input from Fire District patrons throughout Bannock County. The survey was distributed in each of the eight Fire Districts. The survey was designed to be very easy to answer and a self addressed stamped envelope was included with each survey. 15% of surveys distributed were completed and returned. Those results are indicated below.

1. **Which area of the County do you live?**
Responses came from all parts of the County.

2. **Is the threat of wildfire a concern in your area?**
100% of the responses indicated yes.

3. **How do you feel about the firefighting capability of your local Fire Department?**
Everyone indicated confidence in the Department. There was some concern about the ability during a major event.

4. **Have you been offered any fire prevention programs to reduce the risk to your home? If so, did you attend?**

<i>Yes-did not attend</i>	<i>19%</i>
<i>Yes-</i>	<i>19%</i>
<i>Yes did attend</i>	<i>12%</i>
<i>No</i>	<i>50%</i>

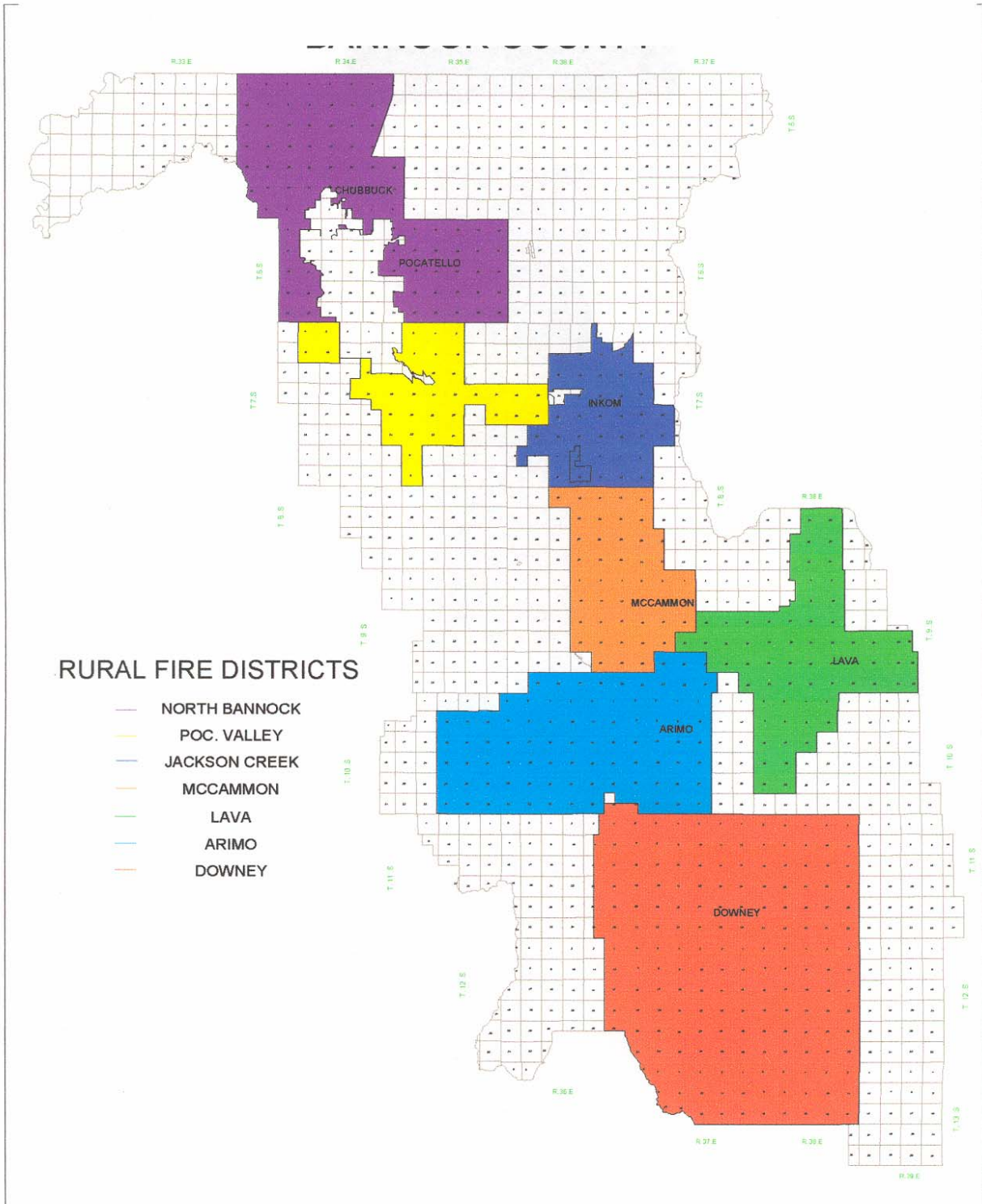
5. **Are you aware of specific areas that appear to a potential wildfire problem?**

<i>Yes</i>	<i>73%</i>
<i>No</i>	<i>27%</i>

6. **If more programs involving fire prevention and fuel reduction were made available, would you be interested in participating?**

<i>Yes</i>	<i>73%</i>
<i>No</i>	<i>7%</i>
<i>Maybe</i>	<i>20%</i>

BANNOCK COUNTY FIRE DISTRICTS



Wildland/Urban Interface and Communities at Risk

Joint Fire Modeling Project for Bannock County, Idaho Bureau of Land Management, Upper Snake River District GIS And Idaho State University GIS Training and Research Center

08-14-2003

Chad Gentry, gentchad@isu.edu, Workstation: Borah

Abstract: Wildland/Urban Interface (WUI) fires and Communities at Risk (CAR) projects are high priorities to federal land management agencies. It is important that the federal government help educate homeowners, firefighters, local officials, and land managers regarding the risk of wildland fire. The Bureau of Land Management's (BLM) Upper Snake River District (USRD) Geographic Information Systems (GIS) team and the GIS Training and Research Center (GISTReC) at Idaho State University (ISU), have created a model to predict potential wildfire risk areas for Bannock County, Idaho. During this project models were created of specific individual risks associated with wildfires: slope, aspect, sun position, vegetation moisture, fuel load, rate of spread, suppression difficulty, number of structures at risk, and ignition source. These models were evaluated together to create a final fire risk model for Bannock County, Idaho. This report describes each of the WUI fire risk components and what affect each has on the final fire risk model. This final model is an accurate depiction of the spatial distribution of wildfire risk in Bannock County, and can be used by regional fire managers to manage wildfire risk.

Keywords: Fire, Wildfire, GIS, Bannock County, Idaho, BLM

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Introduction:

The Wildland/ Urban Interface (WUI) is more than a geographic area. It is anywhere homes and other anthropogenic structures exist among flammable vegetative fuels (Owens and Durland, 2002). Because wildland fire is an essential component of healthy ecosystems, people need to live compatibly with wildland fire (Owens and Durland, 2002). As people move into the Wildland/ Urban Interface zones planners and agencies responsible for fire management and protection are in need of tools to help them assess fire risk and make decisions regarding funding, development, and deployment of suppression resources. One very valuable tool used

by fire managers is Geographic Information Systems (GIS). GIS allows for spatial analysis of large geographic areas and is easily integrated with satellite imagery.

Using these tools, we created 8 models that account for different types of fire risk. The first model created was Fuel Load/ Vegetation Moisture. This model takes into account how different levels of vegetation moisture affect fire risk. The second component model was Fuel Load/ Rate of Spread. This model takes into account how different fuel load classes spread and affect fire risk. The third component model Fuel Load/ Intensity describes how different fuel load classes release heat energy during a fire. The fourth component model, Slope/ Rate of Spread, takes into account how the angle of slope affects the rate of spread of a fire. The fifth component model, Slope/ Suppression Difficulty, takes into account how varying slope affects the effectiveness of suppression efforts of firefighters and their equipment. The sixth component model, Aspect/ Sun Position, takes into account different fire risks associated with aspect. The seventh model, Response Time, takes into account how areas that are within five minutes of a fulltime fire station are at lower risk than those beyond the five minute time frame. Finally the Structures at Risk component model takes into account structure density. Each of these component models are weighted and summed to produce the Final Fire Risk Model. The Bannock County, Idaho WUI fire risk assessment is a continuation of WUI projects that have been completed and validated for the City of Pocatello, Idaho (Mattson *et al*, 2002) the city of Lava Hot Springs, Idaho (Jansson *et al*, 2002) and for Clark County, Idaho (Gentry *et al*, 2003).

Methods:

Required data sets:

- **Digital Elevation Model (DEM) of Bannock County**
- Landsat 7 ETM+ imagery for Bannock County and environs – Path 039, Row 030
- **Digital Orthophoto Quarter-Quads (DOQQs) for Bannock County**
- **Digital Raster Graphics (DRGs) for Bannock County**
- Transportation dataset for Bannock County
- Census data for Bannock County from the year 2002

Data processing:

We defined the projection of all datasets as Idaho Transverse Mercator (GCS North American 1927) using Arc Toolbox → Data Management Tools → Projections → Define Projection.

The DEM for Bannock County was downloaded from <http://srtm.usgs.gov/data/obtainingdata.html> as a single seamless ArcInfo grid with 30m pixels. The Bannock County DEM was then clipped to the footprint of Bannock County using ArcInfo Workstation 8.2.

Landsat 7 ETM+ (Path 039, Row 030 and Row 031), bands 1, 2, 3, 4, 5, and 7 were retrieved from the GIS TReC's archives in Fast-L7A format and converted into ArcInfo grids. These ArcInfo grids were also clipped to Bannock County using ArcInfo Workstation 8.2.

The GIS TReC had all of the DOQQs and DRGs covering Bannock County. These datasets were used for visual purposes only, and no processing was necessary as they were already projected into IDTM.

The transportation dataset was also retrieved from the spatial library of the GIS TReC (<http://giscenter.isu.edu/data/data.htm>), and needed only to be clipped to the extent of Bannock County.

A polygon shapefile containing census data for Bannock County was downloaded from http://arcdata.esri.com/data/tiger2000/tiger_download.cfm and used to define structure density. This dataset was converted to an ArcInfo grid using ArcMap's Spatial Analyst extension.

Primary Models:

- NDVI model
- Fuel Load model
- Slope model
- Aspect model

Creating NDVI models

We estimated vegetation cover with satellite imagery using the Normalized Difference Vegetation Index (NDVI) for Landsat 7 ETM+, dated 07-28-2002. The NDVI, which is an estimation of photosynthetically active vegetation, was calculated from atmospherically corrected reflectance from the visible red (band 3) and near infrared (band 4) bands of Landsat 7 ETM+. The resulting NDVI has an interval of -1 to $+1$, where -1 is no vegetation and $+1$ is

pure photosynthetically active vegetation. Equation 1 shows the argument used to calculate the NDVI grid in ArcMap → Spatial Analyst → Raster Calculator.

$$NDVI = \frac{Band4 - Band3}{Band4 + Band3}$$

Equation 1: Equation for calculating NDVI.

Once the NDVI grid was completed we made several raster calculations of the NDVI grid in ArcMap → Spatial Analyst → Raster Calculator to delineate wet vegetation, dry vegetation, and no vegetation. After each raster grid was made, we compared it to DOQQs. A visual assessment determined that values >0.6 reliably indicated areas of photosynthetically active wet vegetation, values between 0.6 and 0.15 indicated photosynthetically active dry vegetation, and values <0.15 indicated no photosynthetically active vegetation.

Creating the Fuel Load Model

Supervised classification of Landsat 7 ETM+ imagery was used for estimating fuel load in Bannock County. To estimate fuel load, we used 419 sample points. Forty-one of the sample points were collected in the summer of 2003 by Ben McMahan and Chad Gentry. The remaining 378 points used were collected by Ben McMahan and Joel Sauder in the summer of 2002. Each of the sample points were classified, by McMahan, Sauder, and Gentry, into one of 7 fuel load classes: 0 = 0 tons/acre (No vegetation), 0.74 tons/acre (Grassland), 1 ton/acre (Grassland with some Sagebrush), 2 tons/acre (Low Sagebrush), 4 tons/acre (Typical Sagebrush), and >6 tons/acre (Forest).

To begin creating the fuel load model we imported bands 1, 2, 3, 4, 5, and 7 (Fast-L7A format) from two Landsat 7 ETM+ scenes (Path 39 Row 30 and Path 39 and Row 31) into ERDAS Software. The digital number values of each of the bands were converted into radiance and from radiance into reflectance using ERDAS → Model Builder. Once the bands were in reflectance we exported the files into grid format for use in ArcGIS 8.3. All identical bands, from each of the scenes, were merged using Arc → Grid → Merge. The merged grids were then exported to Idrisi 32 Software in float file format.

To develop our training sites we used 378 of the sample points. These training sites were converted to raster using ArcView 3.3 → Spatial Analysis → Convert to grid (we used ArcView

3.3, because it allowed use to select the spatial extent of an existing grid and also let us determine pixel size). This grid was then exported to Idrisi in float file format. Once all our data was in Idrisi we created a signature file using our training site grid and Landsat 7 ETM+ bands 1, 2, 3, 4, 5, and 7 using Idrisi 32 → Image Processing → Signature Development → MAKESIG. The signature file was used to make the fuel load model using Idrisi 32 → Hard Classifiers → Maxlikely. We checked this model using techniques described in the next section “Fuel load Model Validation”. Our results showed that this fuel load model classified the higher fuel load classes well, but discriminated against the lower fuel load classes. To try and improve the model accuracy a second model was created using Landsat 7 ETM+ bands 4, 5, 7, the NDVI (Normalized Difference Vegetation Index), and a Principal Component Analysis consisting of all Landsat 7 ETM+ bands, PVI, NDVI, TSAVI, Tassled Cap Greenness, and Tassled Cap Brightness to create the signature file. This signature file was used to create the second fuel load model. This model classified the lower fuel load classes well, but discriminated against higher fuel load classes. These two fuel load models were then exported to ArcGIS 8.3 and the fuel load categories with low accuracy for each model were reclassified as No Data using ArcMap → Reclassify. These two models were then merged to create the final fuel load model using Arc → Grid → Merge.

Fuel Load Model Validation

Each component was validated using a number of methodologies. The first was a standard error matrix where each predicted (modeled) class was compared against the measured (field) class at all sample point locations. The second validation method was a modified error matrix where similar classes were clumped together into sub-classes. These classes were based on Anderson (1982) United States Forest Service (USFS) fuel load classes. We also employed a third validation procedure using fuzzy set theory outlined in Congalton and Green (1999) whereby a threshold of acceptable error is established. In the case of our models, the fuzzy set threshold was +/-1 tolerance class. This procedure determined whether the predicted (modeled) class was within one class of the field-observed value. The results of these tests are reported in the text as standard/expanded, clumped, and fuzzy-set-theory accuracies, respectively.

We also completed a Kappa Statistic, using Keith T. Weber’s “Chance” program, for our model. This program allowed use to calculate the observed proportion of agreement (Po), the chance expected proportion of agreement (Pc), the Kappa statistic (Kappa), 95% confidence intervals

(LO-95 and HI-95), standard error (SE), and a test of significance (Z). The Kappa statistic describes how much better --or worse-- a classification performed relative to chance alone.

Creating the Slope Model

Using the Bannock County DEM, we made a slope grid that calculated the surface steepness using ArcMap → Spatial Analyst → Surface Analysis → Slope.

Output measurement: degree

Z-factor: 1

Output cellsize: 30m

Creating the Aspect Model

Aspect shows what direction the surface faces. We made the aspect model from the Bannock County, Idaho DEM in ArcMap → Spatial Analyst → Surface Analysis → Aspect.

Output measurement: degree

Output cell size: 30m

Wildfire risk components:

- Fuel Load/ Vegetation Moisture
- Fuel Load/ Rate of Spread
- Fuel Load/ Intensity
- Slope/ Rate of Spread
- Slope/ Suppression Difficulty
- Aspect/ Sun Angle
- Response Time
- Structures at Risk

Creating the wildfire risk components

Each component model was treated separately to learn how each affected fire risk. To be able to merge the models together easily, we reclassified each model using equal scales from 0 to 1000, where 1000 is highest risk. We used weightings based on Mattsson *et al.* (2002) and Jansson *et al.* (2002) to complete our analysis. After completing these analyses, we examined the impact each fire model component had on the overall fire risk in Bannock County, Idaho.

Fuel load/ Vegetation Moisture

We reclassified the Fuel Load grid and NDVI grid using ArcMap → Spatial Analyst → Reclassify. Table B-1 in Appendix B shows the reclassification table. To create the Fuel Load/ Vegetation Moisture component model we multiplied the fuel model with the NDVI model using ArcMap → Spatial Analyst → Raster Calculator. These values were then weighted based on Jansson *et al.* (2002) using ArcMap → Spatial Analyst → Reclassify, shown in figure 1. The weightings used are shown in table B-2 in Appendix B.

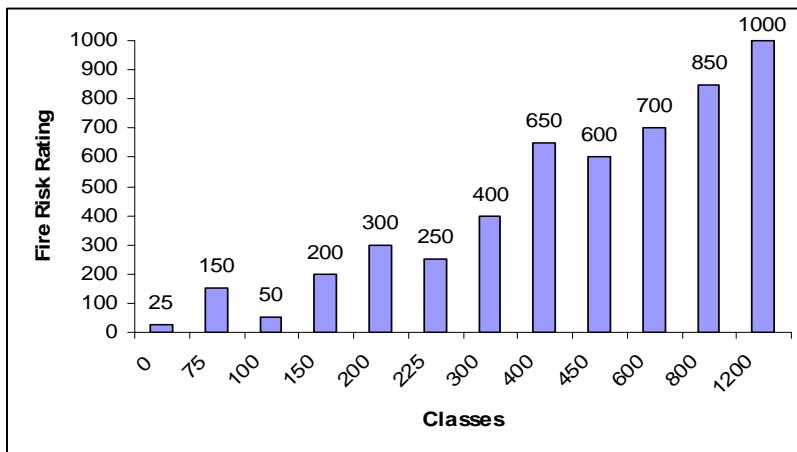


Figure1. Weightings for Fuel Load/ Vegetation Moisture (Jansson *et al.*, 2002).

Fuel load/ Rate of Spread

We reclassified the Fuel load model, following Mattsson *et al.* (2002) (table B-3 in Appendix B), using ArcMap → Spatial Analyst → Reclassify (fig. 2).

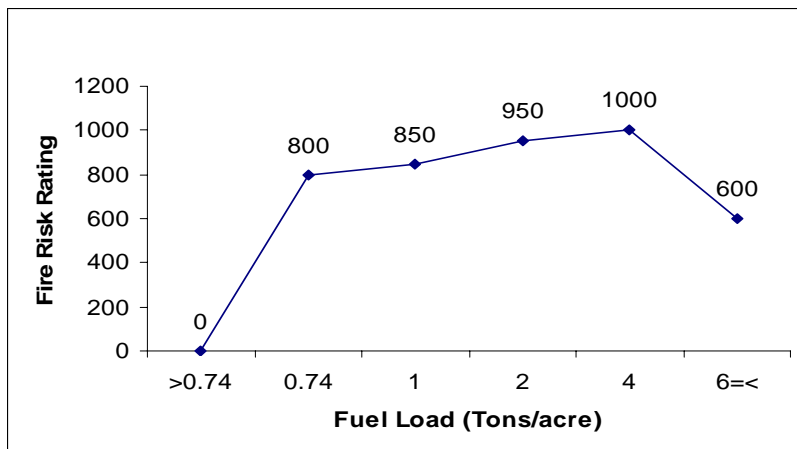


Figure2. Weightings for Fuel Load/ Rate of Spread (Mattsson *et al.*, 2002).

Fuel load/ Intensity

We reclassified the Fuel load model using values following Mattsson *et al.* (2002) (table B-4 in Appendix B) using ArcMap → Spatial Analyst → Reclassify (fig. 3).

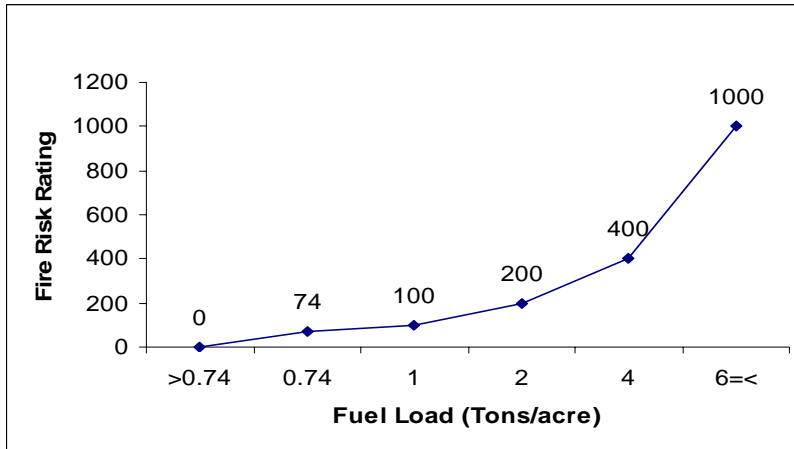


Figure 3. This chart describes all weightings for Fuel Load/ Intensity (Mattsson *et al.*, 2002).

Slope/ Rate of Spread

To make the Slope/Rate of Spread model, we reclassified the Slope model based on weightings from Mattsson *et.al.* (2002). These weightings are shown in table B-5 in Appendix B. We used ArcMap → Spatial Analyst → Reclassify (fig. 4).

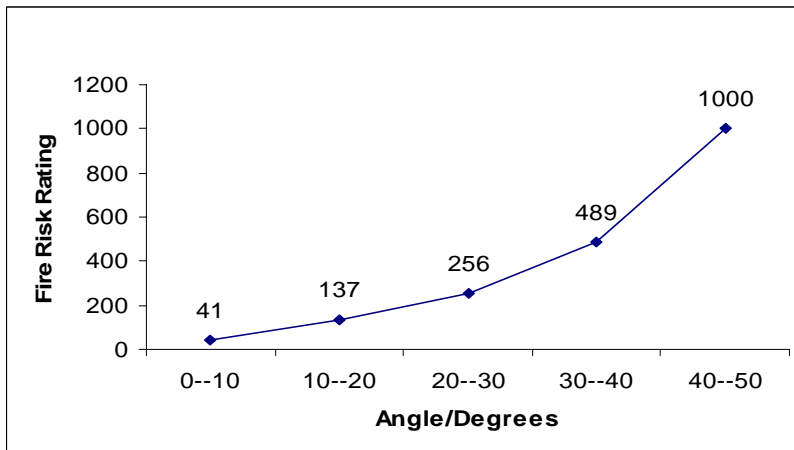


Figure 4. Weightings describe how spread rate increase with angle of slope. The weight proportion is essentially exponential with slope angle (Mattsson *et al.*, 2002).

Slope/ Suppression Difficulties

To create the Slope/Suppression Difficulties model, we used the original slope and applied weightings for Slope/ Suppression Difficulties following Mattsson *et al.* (2002) (table B-6 in Appendix B). ArcMap → Spatial Analyst → Reclassify, shown in (fig. 5).

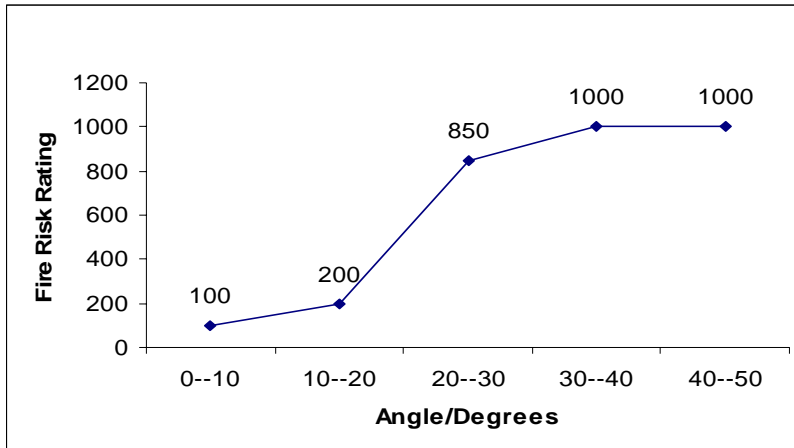


Figure 5. Weightings for slope/suppression difficulties describe how suppression difficulties are affected by the angle of slope (Mattsson *et al.*, 2002).

Aspect/ Sun position

To create the Aspect/ Sun Position we reclassified the aspect grid, following Mattsson *et al.* (2002) (table B-7 in Appendix B). We used ArcMap → Spatial Analyst → Reclassify (fig. 6).

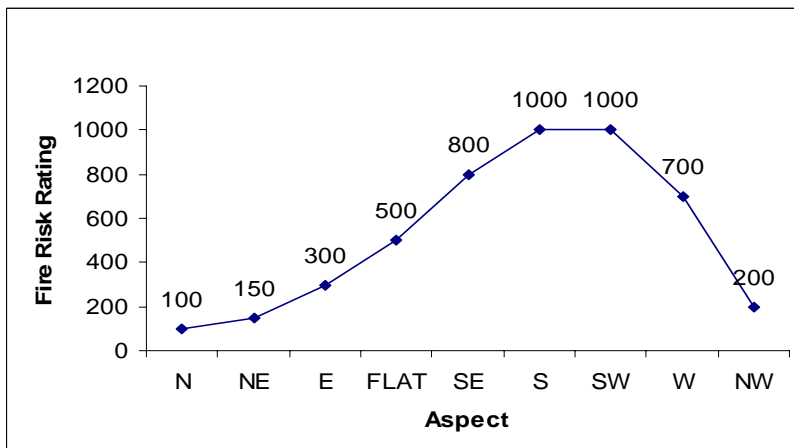


Figure 6. Weightings for Aspect/Sun position describe how the sun desiccates the ground at different aspects (Mattsson *et al.*, 2002).

Response Time

The Response time model was created using Pocatello streets and fire station shapefiles from the GIS TReC websites → Spatial Library. The Pocatello streets shapefile was clipped to the extent of Bannock County using the GeoProcessing Wizard → Clip one layer based on another. Using ArcView 3.3 → Network Analysis → Find Service Area → Load Sites = Fire stations → Properties → Cost Field = Seconds, we ran a series of times (30, 60, 90, 120, 150, 180, 210, 240, 270, and 300 seconds) from each fire station. Each station response time was converted to a grid using ArcView 3.3 → Theme → Convert to Grid (we used ArcView 3.3, because it allowed us to select the spatial extent of an existing grid and also let us determine pixel size). The polygon shapefile for the boundary of Bannock County was also converted to a grid. To do this we first had to make a new field in the attributes table with the value of 1000 using ArcMap → Open Attributes Table → Options → Add Field → Name = Z → Calculate Values = 1000. Next, we used ArcMap → Spatial Analysis → Convert → Feature to Raster → Field = Z, Output cell Size = 28.5 to complete the grid conversion. These grids were then merged together using ArcInfo → Grid → Merge. The merged grid was then reclassified following Mattsson *et al* (2002), using ArcMap → Spatial Analyst → Reclassify (table B-8 in Appendix B) (fig. 7).

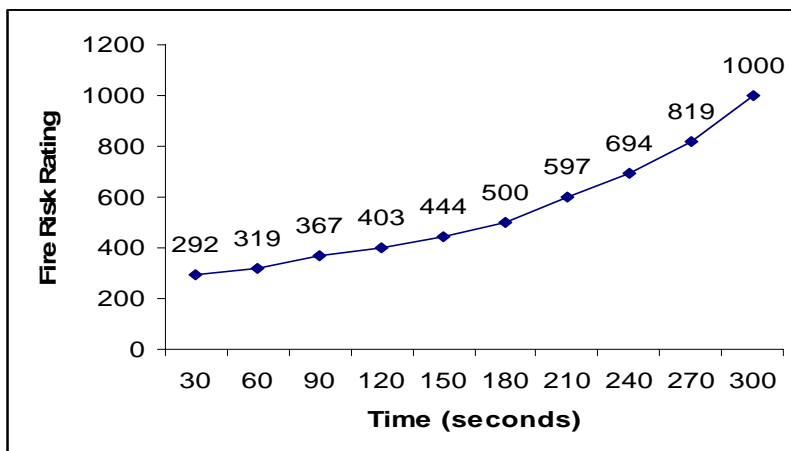


Figure 7. Weightings for Response Time describe how fire risk due to delayed travel time for the firefighters influences the risk (Mattsson *et al*, 2002).

Structures at Risk

We used census data for Bannock County, found on the ESRI website (http://arcdata.esri.com/data/tiger2000/tiger_download.cfm) in tabular form. These tables were then joined with a corresponding shapefile of census tracts, obtained from the same web site. The resulting dataset contained data on population as well as structures in each census tract. Using ArcMap's field calculator we divided the number of structures in each polygon by the area of that polygon to calculate structure density. Next, we converted the structure density polygons into a grid and applied a linear regression to fit the values between 0 and 1000 to generate the final structures at risk grid.

WUI fire risk model

After developing the different fire model components, we weighted and summed each component into the final fire risk model. Weightings were based on a regional fire manager, Fred Judd (pers. comm.). Beginning with the highest, we distributed each component as follows:

- Structure's at Risk 20%
- Fuel load/ Rate of Spread 15%
- Fuel load/ Intensity 15%
- Response Time 15%
- Fuel load/ Vegetation Moisture 10%
- Slope/ Rate of Spread 10%
- Slope/ Suppression Difficulties 10%
- Aspect/ Sun position 5%

These component models were weighted appropriately in a multi-criterion evaluation. This calculation was done in ArcMap → Spatial Analyst → Raster Calculator.

Results:

We compared the WUI fire risk models for Bannock County and Clark County, Idaho (Gentry *et al* 2003). These results are shown in figure 8.

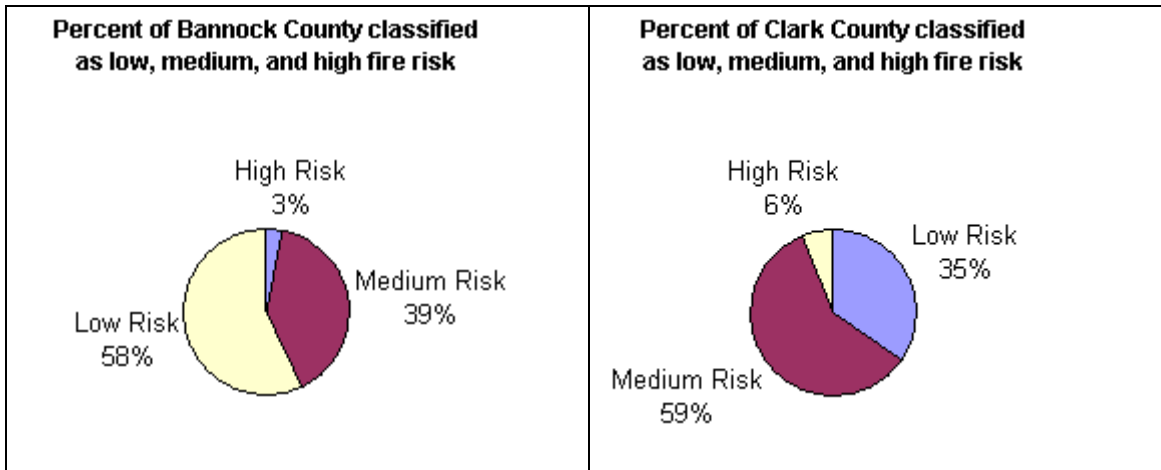


Figure 8. Comparison of fire risk model classification (low, medium, and high fire risk) for both Bannock and Clark County, Idaho .

We also compared the WUI fire risk model for the city of Pocatello, Idaho (Mattsson et al, 2002) against the city of Pocatello within the Bannock County WUI risk model. Table 1 shows the error matrix results.

Table1: Error matrix for WUI project comparison.

	Bannock County WUI project (acres)					Total	% Agree
		Low Fire Risk	Medium Fire Risk	High Fire Risk			
Pocatello WUI Project (acres)	Low Fire Risk	9529.4	1261.6	30.7	10821.7	88.06%	
	Medium Fire Risk	12703.6	2936.7	48.5	15688.8	18.72%	
	High Fire Risk	4847.9	1335.0	82.1	6265.0	1.31%	
	Total	27080.9	5533.3	161.3	32775.7		
	% Agree	35.19%	53.07%	50.90%			
					Overall Agreement	38.29%	

The NDVI grid used to generate the fuel load model is shown in figure 9. Our reclassified NDVI grid estimating the location of wet vegetation, dry vegetation and no vegetation is shown in Figure 10. Figure 11 illustrates the Fuel Load model derived from field training sites and Landsat 7 ETM+ satellite imagery. Table 2 shows the error matrix validation for the fuel load model. Table 3 shows the kappa statistics for the fuel load model.

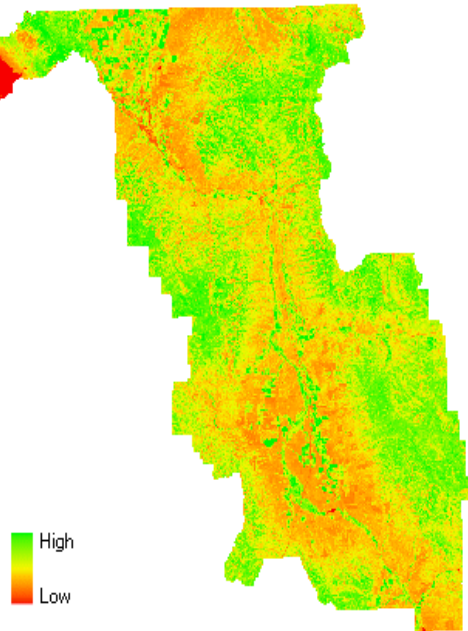


Figure 9. The NDVI has an interval of -1 to $+1$, where -1 is no vegetation and $+1$ is pure vegetation.

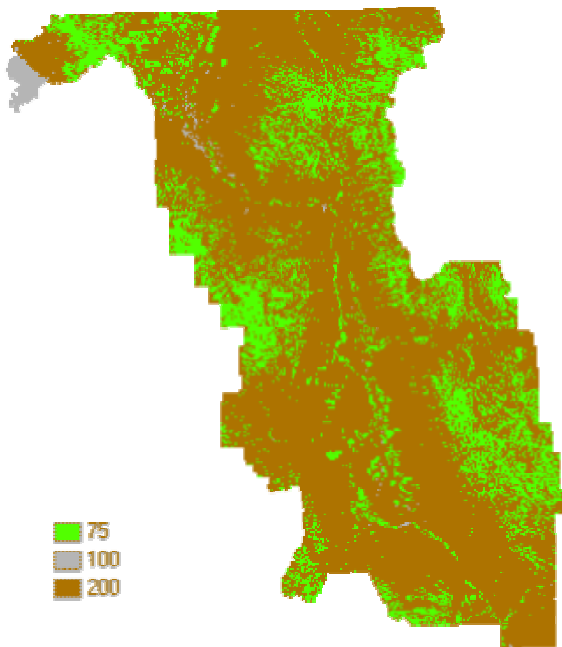


Figure 10. The results of the reclassification of NDVI into no vegetation (100), dry vegetation (200) and wet vegetation (75).

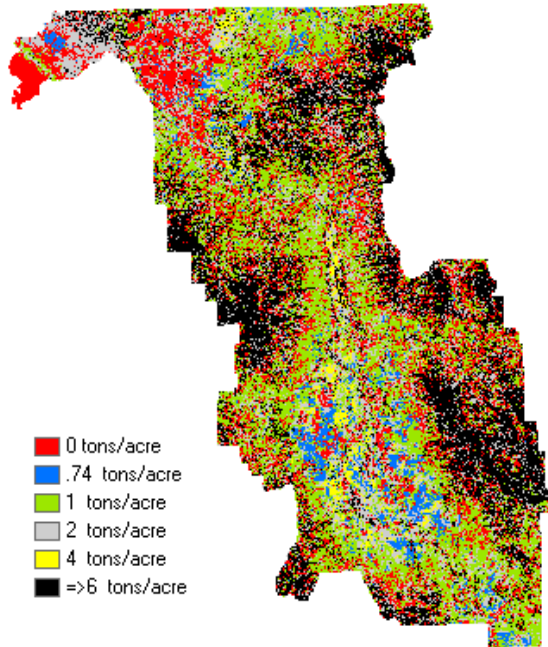


Figure 11. The fuel load model and the distribution of different fuel load classes for Bannock County, ID.

Table2: Error matrix for the fuel load model.

	Field Measurement of Fuel Load (Tons/Acre)						Total	Acc %
		0.74	1	2	4	>6		
Modeled Fuel Load (Tons/Acre)	0.74	33	11	5	6	1	56	58.93%
	1	15	23	21	10	2	71	32.39%
	2	17	25	42	27	5	116	36.21%
	4	7	12	37	59	8	123	47.97%
	>6	0	4	2	1	5	12	41.67%
Total	72	75	107	103	21	378		
Acc %	45.83%	30.67%	39.25%	57.28%	23.81%	Standard/Expanded	42.86%	
						USFS/Anderson	66.67%	
						Fuzzy Set Theory	81.22%	

Table3: Kappa Statistics for the fuel load model.

PC	PO	KAPPA	LO-95% CI	HI-95% CI	SE	Z
0.242784	0.428571	0.245356	0.178126	0.312585	0.029124	8.424444

The three component models derived from the fuel load model are shown in figures 12, 13, and 14. Figure 12 is the vegetation moisture model, irrigated and riparian areas contain the lowest risk values, while the grasses and shrubs along the I-15 corridor contain the highest values. The high risk areas are due to the low moisture content associated with sage brush steppe that dominates the area. The effect of fuel load on fire's spread rate is reported in figure 13. Mountainous areas, with larger fuel loads, contain the lowest values, where grasses and shrubs along the I-15 corridor have been classified with highest risk. The high risk areas are due to the high concentration of 4 tons/acre fuels. Finally, figure 14 is the intensity model. Conifers in the highlands, especially in the east and west sections of the county, comprise the highest risks for the most intense fires.

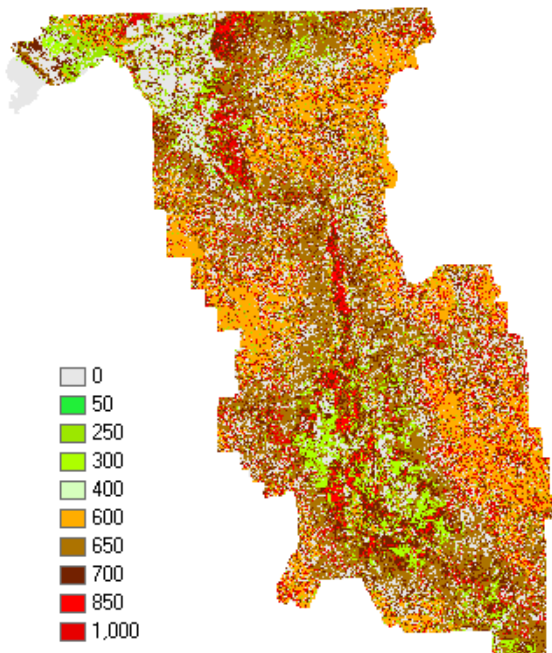


Figure 12. The Fuel Load/ Vegetation Moisture model. This model expresses how vegetation moisture and the combination of different fuel load classes affect fire risk. This model was given an overall weighting of 10% of the final model.

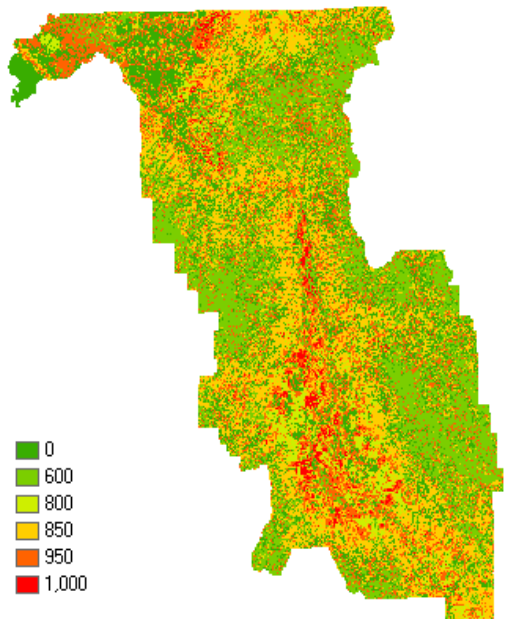


Figure 13. The Fuel Load/ Rate of Spread model. This model expresses the fire risk associated with the spread rate of different fuel load classes. This model was given an overall weighting of 15% of the final model.

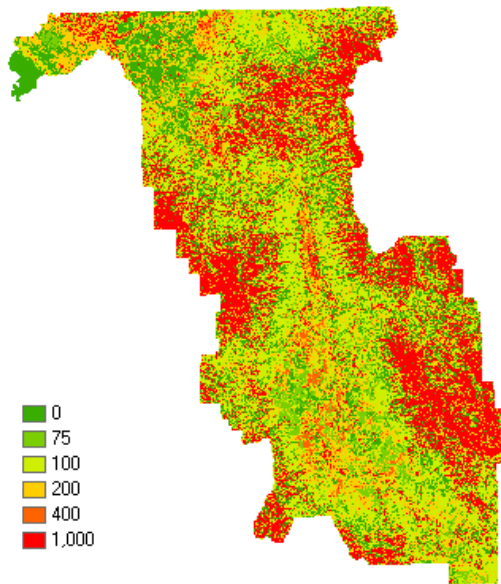


Figure 14. The Fuel Load/ Intensity model. This model expresses the fire risk associated with the amount of heat energy (intensity) each fuel load class gives off. This model was given an overall weighting of 15% of the final model.

The next three figures (15-17) are the component models generated using the Bannock County DEM. Figure 15 assesses the risk of fires spreading quickly due to steep slopes. Here, the highlands in the eastern and western portions of the county received the highest values and the bottom land, with shallow slopes, along the I-15 corridor received a much lower risk. Next is the suppression difficulty model (figure 16), where steeper slopes pose increasingly greater problems to fire fighters attempting to access fires in order to suppress them. Once again, the steeper terrain in the north is weighted the highest risk. Figure 17 is the Aspect/ Sun Position component model, south and southwest aspects contain the highest fire risk, due the intense sunlight and prevailing wind exposure. North facing slopes, which are sheltered from intense sunlight and prevailing wind through much of the day, contain the lowest fire risk.

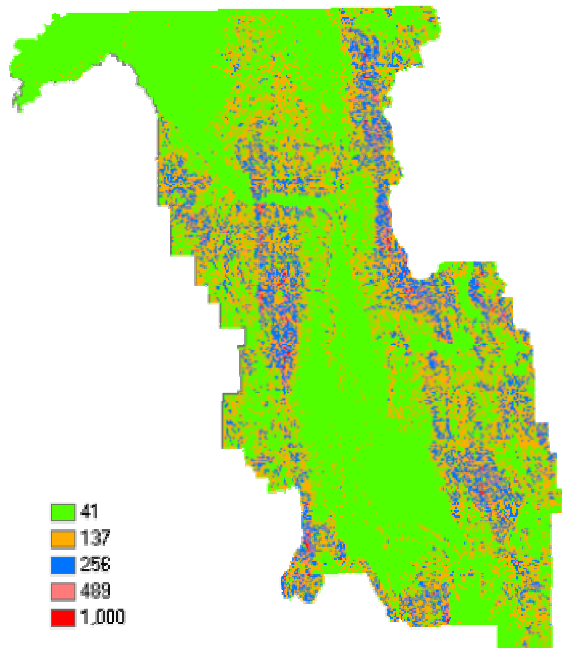


Figure 15. The Slope/ Rate of spread model. This model expresses how different angles of slope affect the spread rate of fire. Steeper slopes are given the highest fire risk. This model was given an overall weighting of 10% of the final model.

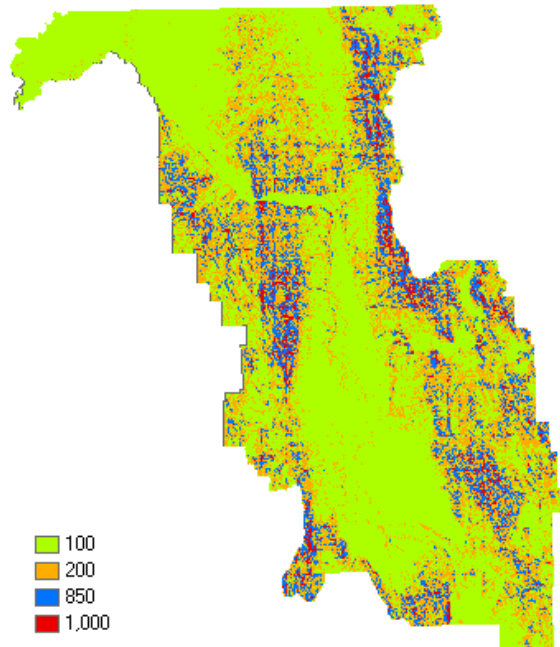


Figure 16. The Slope/ Suppression Difficulty model. This model expresses how different slope angles suppression efforts of firefighters. This model was given an overall weighting of 10% of the final model.

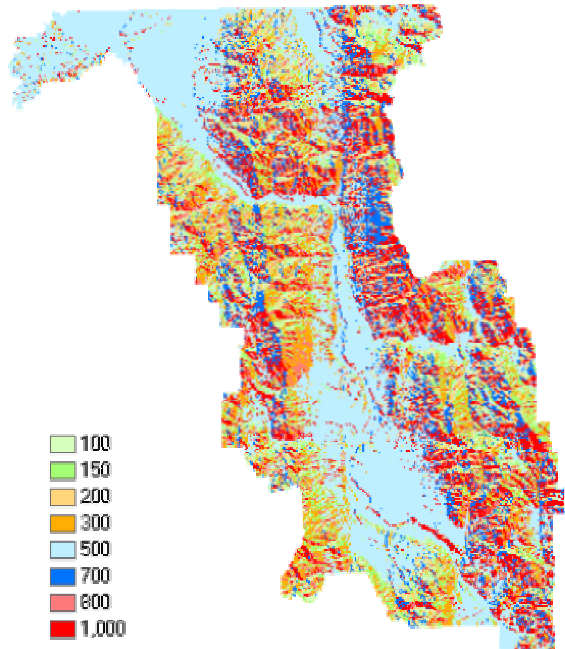


Figure 17. The Aspect/ Sun Position model. This model expresses how different aspects affect fire risk. Southern aspects have the highest fire risk. This model was given an overall weighting of 5% of the final model.

The Structures at Risk component model is shown in figure 18. Here the population centers of Bannock County; Pocatello, Chubbuck, McCammon, Arimo, Lava Hot Springs, Downey and Malad contain the highest structure density and the highest fire risk. Figure 19 show the Response Time component model. Pocatello is the only city within Bannock County that has a full time fire department and that can maintain the 300 second (5 minute) criteria. The rest of the towns and cities within Bannock County are limited to volunteer fire departments, which put them over the criteria and give them the highest risk.

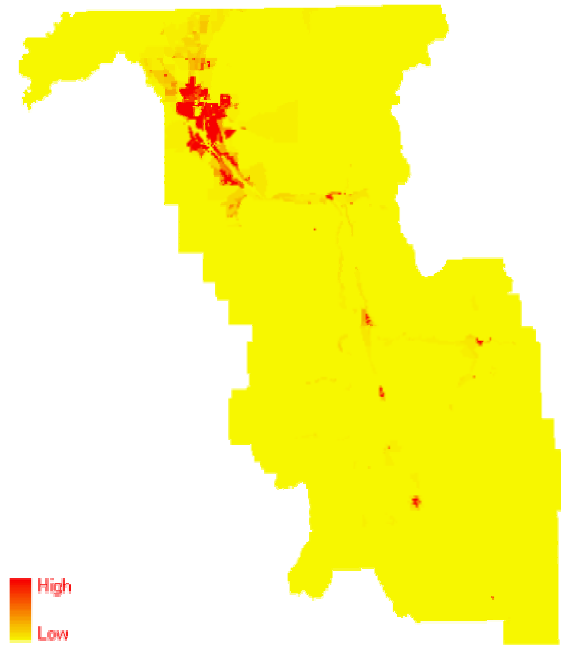


Figure 18. The Structures at Risk model. This model expresses areas that are high risk due to high structure density and is given an overall weighting of 20% of the final model.

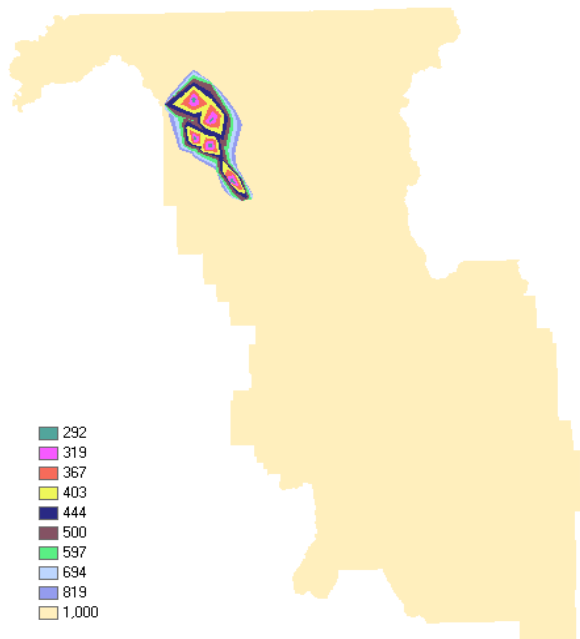


Figure 19. The Response Time model. This model expresses how quickly fire fighters can respond to a fire. The overall weighting for this model is 15% of the final model.

The Final Fire Risk Model is shown in figure 20.

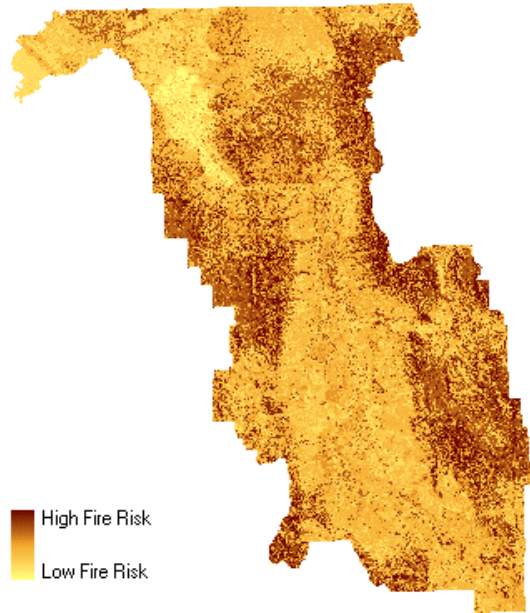


Figure 20. The Final Fire Risk Model for Bannock County, Idaho. Fire risk is shown on a graduated symbology.

Discussion:

Bannock and Clark County are considered high desert sage brush steppe ecosystems. Comparison between fire risk models for Bannock County and Clark County, Idaho, reveals a similarity in high fire risk classification. The high fire risk classification for both counties is consistently in the mountainous areas. This is due to the influence of the topography component models Aspect/ Sun Position, Slope/ Suppression Difficulty, and Slope/ Rate of Spread. Bannock County did show distinct differences in medium and low fire risk classification. This is due to the distribution of different landscapes among the two. Clark County consists of mostly low elevation with the mountainous areas along the northern perimeter, while Bannock County has more variation in elevation and has mountainous areas throughout.

Comparing the city of Pocatello using both the Bannock County WUI and the city of Pocatello WUI project (Mattsson *et al* 2002) showed a 38.22% overall similarity. Many factors may influence the differences between these models. Factors, such as difference in georectification,

different Landsat ETM+ satellite imagery dates (August 7, 2001 and July 28, 2002), different fuel load models used, and different component model weightings. To make any assumption based on the differences between the two models without fully understanding each project would be based on biased opinions.

NDVI values vary with absorption of red light by plant chlorophyll and the reflection of infrared radiation by water-filled leaf cells. It is correlated with Intercepted Photo-synthetically Active Radiation (IPAR) (Land Management Monitoring, 2003). In most cases (but not all) IPAR and hence NDVI is correlated with photosynthesis. Because photosynthesis occurs in the green parts of plant material the NDVI is normally used to estimate green vegetation. The NDVI is a nonlinear function which varies between -1 and +1 but is undefined when RED and NIR are zero (Land Management Monitoring, 2003). Early in this project we determined thresholds for no-vegetation, dry-vegetation, and moist vegetation using NDVI. We chose the value 0.15 as a threshold between no vegetation and general vegetation based on where and how well the NDVI values matched a DOQQ. We chose the second threshold (separating dry vegetation from moisture vegetation) using similar methods. The NDVI value of 0.6 was the threshold limit between dry vegetation and moist vegetation.

The overall accuracy of the 2003 fuel load model was quantified using all three methodologies described above (standard/expanded, clumped, and fuzzy set). These results emphasize the difficulties associated with using multispectral remote sensing imagery to delineate vegetation types with extremely similar spectral signatures.

The Structures at Risk component was weighted most heavily (20%). This is due to the nature of this project; we were most interested in quantifying risk for the Wildland/ Urban Interface. This model allowed us to emphasize the interface areas. Areas of high structure density received the highest fire risk values and areas of low or no structure got the lowest fire risk values.

The Fuel Load/ Rate of Spread takes into account how fast a fire will spread depending on different fuel load classes. The lower fuel load classes were considered to be the primary carrier of fire (e.g. grasses), and have the fastest spread rate. Fuel Load class 4 tons/acre received the highest fire risk value, because of its high load of fine, low-standing fuels. Fuel

Load class >6 tons/acre received the lowest fire risk value since these fuels are of a larger size and higher moisture content, so they will not ignite as quickly.

The Slope/ Rate of Spread component model takes into account how different angles of slope affect the rate of spread of a fire. When fire moves across flat land it moves more slowly than fire moves up a mountainside (Amdahl, 2001). The steeper angles in this model have the highest fire risk values, because fire increases exponentially with slope. Correspondingly, shallower angles have lower fire risk values.

The Fuel Load/ Vegetation component accounts for moist vegetation and different fuel load classes that may be abundant but not readily flammable. Areas with dry vegetation and high fuel load (>6 tons/acre) had the highest fire risk value. Areas that had wet vegetation and lower fuel load had the lowest fire risk values.

The Fuel Load/ Intensity component takes into account how intense a fire of different fuel load classes affects fire risk. Intensity is considered the amount of energy a fire produces. The more energy the fire produces, the more difficult it is for the firefighters to suppress it. Intense fires create their own wind system, drying out fuel ahead of the fire. This Intensity depends on fuel load and other factors such as wind and ground conditions at the time of the fire. Thus if firefighters do not suppress the fire, it will keep spreading. The fuel load class >6 tons/acre had the highest fire risk value, due to the high intensity fires associated with these larger fuels.

The Slope/Suppression Difficulties component describes how difficult it is for firefighters to suppress fire based on slope/terrain steepness. If firefighters cannot reach the fire, it will keep burning even though it may be a low risk area according to other criteria. Slopes that are > 20 degrees affect wheeled vehicle support and slopes > 30 degrees affect tracked vehicle support. Without the aid of motorized equipment support suppression efforts are slowed, allowing the fire to spread. Slopes with the greatest degree of inclination had the highest fire risk values and shallow slopes received the lowest fire risk values.

The Response Time component describes how delayed travel time, by fire fighters, influences fire risk. The criteria for this model, was established by fire managers and knowledgeable persons, during Pocatello WUI project. The criteria is based on a 300 seconds (5 minute) flash over (fig. 21). Pocatello is the only city within Bannock County that has a full time fire

department. The rest of the towns and cites have volunteer fire department, which put them over the five minute criteria.

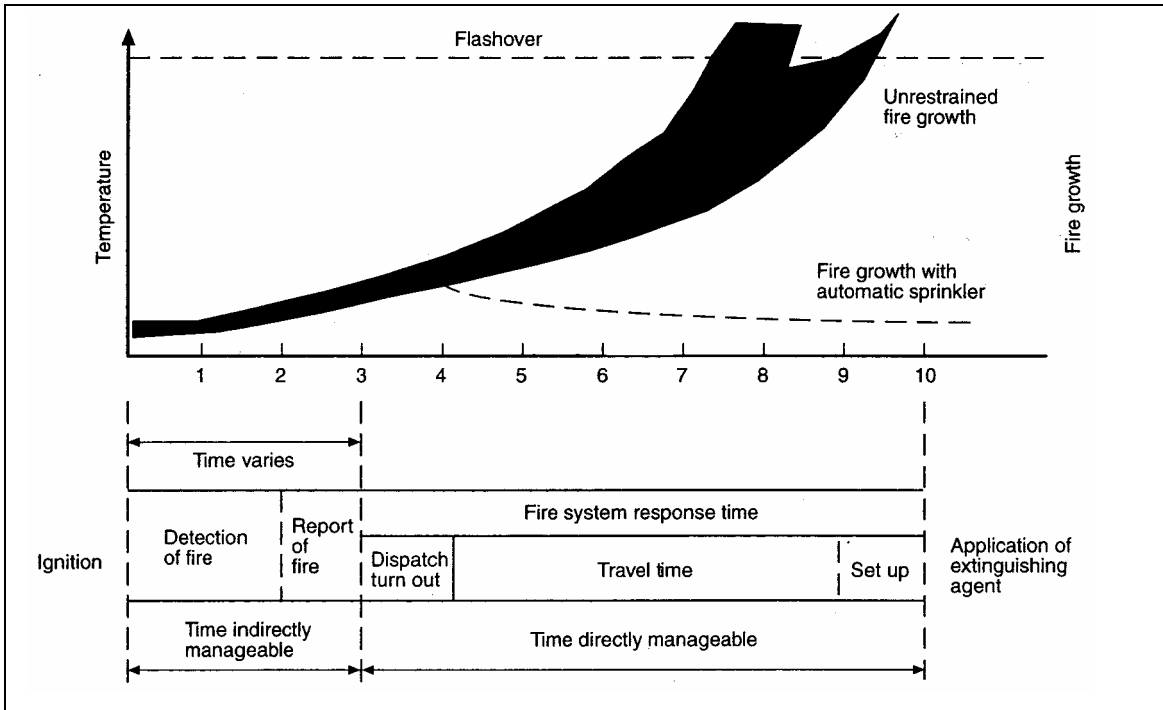


Figure 21. This chart shows how fire grows during the time when emergency vehicles travel to the fire (Mattsson et al, 2002).

The Aspect/ Sun position component models the direction each slope faces and the extent to which the sun desiccates the ground/vegetation. The sun will desiccate the ground/vegetation more on southern aspects and least on northern aspects. Southern aspects received the highest fire risk values and northern aspects received the lowest.

Assessments of error and bias:

The first part of our project was completed using ArcGIS 8.2. ArcGIS 8.3 was installed during the project. Although this should not cause any difficulty with the methods described above, it has been noted within the text.

All estimations in this report are made based upon our knowledge of the criteria and the expert knowledge of Keith T. Weber, Felicia Burkhardt, and Fred Judd. We have discussed our analyses and results with these people and believe our results to be valid.

The goal for our model is to be a tool to assist fire managers and decision-makers. As we treated each analysis separately, we believe the results have accuracy adequate to fit this purpose. We further believe our model gives a good overview of the fire risk in our study area and that it is easy to understand. Because the model is easy to understand, it should be applied to other users, which was a primary objective with this study.

Not all conditions affecting wildfire could be accurately modeled in this study. Factors not taken into account, such as wind direction and wind speed, are difficult to model without building many assumptions into the model (e.g., yearly weather patterns). Since the scope of this study is broad, we felt that removing these factors from the final model helped its overall effectiveness as a management tool. This also allowed us to place more emphasis on the factors us and Fred Judd (pers.comm.) felt were more important.

The date (July 28, 2002) during which the Landsat 7 ETM+ data was gathered plays a significant role in the outcome of the Fuel Load-based components of the final model.

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- Congalton R.G and Green K. 1999. *Assessing the Accuracy of Remotely Sensed Data: Principles and Practices*. Lewis Publishers, Boca Raton.
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- Land Management Monitoring. 2003. <http://www.ea.gov.au/land/monitoring/ndvi.html>
- Mattsson, D., Thoren, F., Weber K.T., and Burkhardt F. 2002. *Wildland/Urban Interface and Communities at Risk: Pocatello, Idaho*
- Owens J. and Durland P. 2002. *Wild Fire Primer/ A Guide for Educators*. United States Government Printing Office.

Acknowledgements:

On July 9, 2003, we had a presentation of our project and discussed the project as a whole. We decided to make maps of each of the component models and break them down into the seven Rural Fire Districts for Bannock County.

These people were attending:

Zac Muirbrook: GIS Tech, USRD BLM

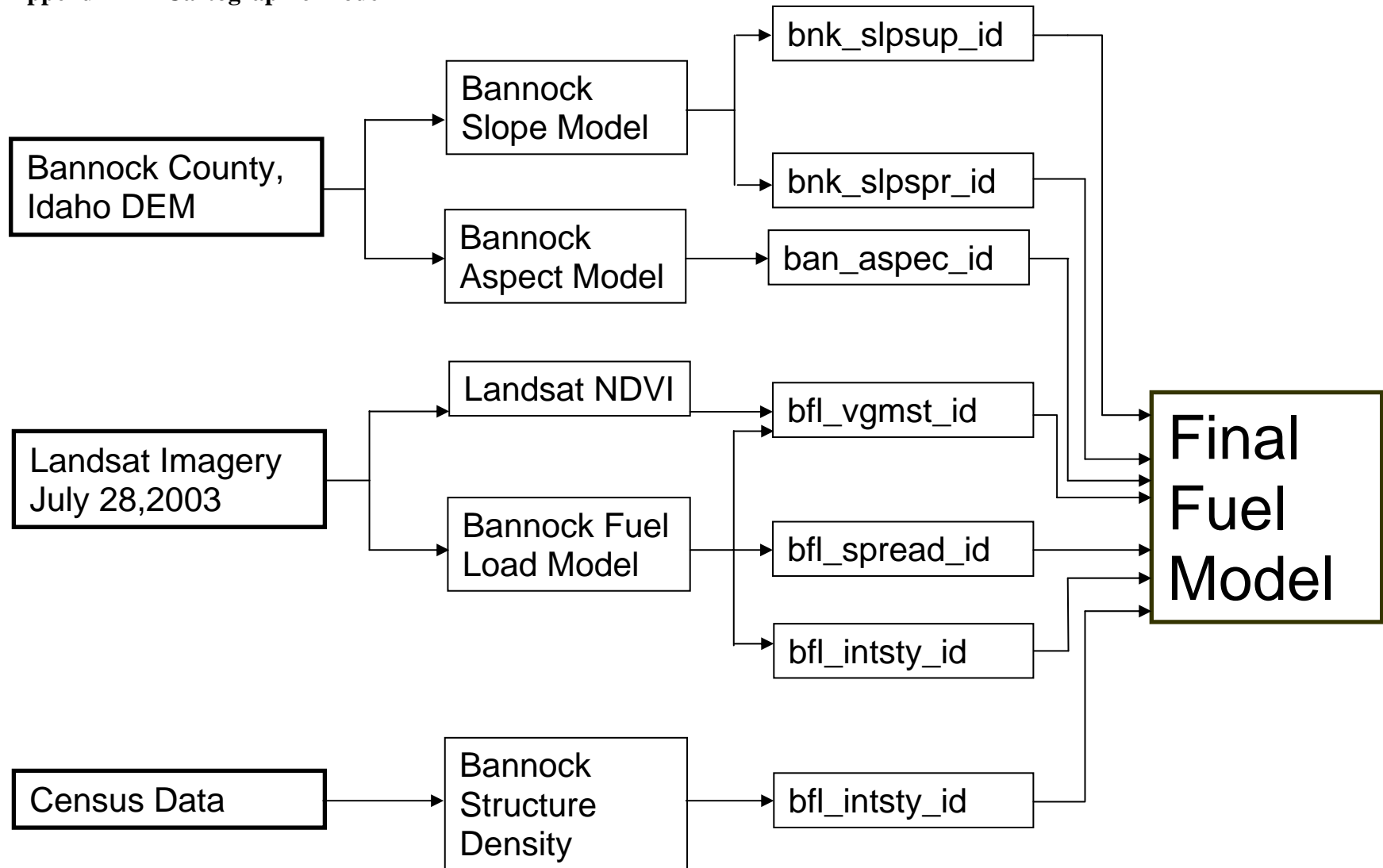
Gary Moore: Bannock County Sheriff's Dept., Emergency Services

Dennis Hill: GIS Coordinator, Pocatello

Keith T. Weber: GIS Director, Idaho State University (ISU), GIS Training and Research Center

Chad Gentry: GIS Intern, ISU, GIS Training and Research Center

Appendix A – Cartographic Model



Appendix B – Weightings

These tables show the weightings we used to weight our fire risk model components.

Table B-1: Reclassification system of the Fuel Load and NDVI grids. Compare with figure 1.

Fuel Load	NDVI
0 = 0 tons/acre	100 = No Vegetation
1 = 0.74 tons/acre	200 = Dry Vegetation
2 = 1 tons/acre	75 = Moist Vegetation
3 = 2 tons/acre	
4 = 4 tons/acre	
6 = >6 tons/acre	

Table B-3: Weighting data for Fuel Load/ Rate of Spread. Compare with figure 2.

Classes (Tons/acres)	Weights
< 0.74	0
0.74	800
1	850
2	950
4	1000
>6	600

Table B-5: Weighting data for Slope/ Rate of Spread. Compare with figure 4.

Angle/degree Intervals	Weights
0—10	41
10—20	137
20—30	256
30—40	489
40—50	1000

Table B-2: Weighting data for Fuel Load/ Vegetation Moisture component model (Jansson et al. 2002). Compare with figure 1.

Fuel Load *	Vegetation =	Class	Weights
1	75	75	150
1	100	100	50
2	75	150	200
1	200	200	300
3	75	225	250
4	75	300	400
2	200	400	650
6	75	450	600
3	200	600	700
4	200	800	850
6	200	1200	1000

Table B-4: Weighting data for Fuel Load/ Intensity. Compare with figure 3.

Classes (Tons/acres)	Weights
< 0.74	0
0.74	74
1	100
2	200
4	400
>6	1000

Table B-6: Weighting data for Slope/ Suppression Difficulties. Compare with figure 5.

Angle/degree Intervals	Weights
0--10	100
10--20	200
20--30	850
30--40	1000
40--50	1000

Table B-7: Weighting data for Aspect/
Sun Position. Compare with figure 6.

Degree Interval	Aspect	Weight
337.5--22.5	N	100
22.5--67.5	NE	150
67.5--112.5	E	300
112.5--157.5	SE	800
157.5--202.5	S	1000
202.5--247.5	SW	1000
247.5--292.5	W	700
292.5--337.5	NW	200

Table B-8: Weighting data for Response
Time.

Compare with figure 7.

Time (Seconds)	Weights
30	292
60	319
90	367
120	403
150	444
180	500
210	597
240	694
270	819
300	1000

Appendix C – Data dictionary

Data	File name	Full path to dataset	Description	Format
County bound	banock_idtm.shp	\\Alpine\Data\urbint\Bannock\all_datasets	Boundary of Bannock county	polygon coverage
Roads	Roads_streets.shp	\\Alpine\Data\urbint\Bannock\all_datasets	Roads and streets in Bannock County	line shapefile
Bands used for NDVI	B3mrger30r31	\\Alpine\Data\urbint\Bannock\all_datasets	Landsat Band 3 for Bannock County	Grid - 28.5m pixels
	b4mrger30r31	\\Alpine\Data\urbint\Bannock\all_datasets	Landsat Band 4 for Bannock County	Grid - 28.5m pixels
	pow_ban_ndvi	\\Alpine\Data\urbint\Bannock\all_datasets	Landsat NDVI model for all of Bannock and Power County	Grid - 28.5m pixels
Fuel Load	fuelload_id	\\Alpine\Data\urbint\Bannock\all_datasets	Fuel Load model for Bannock County. Classes are .74 tons/acre, 1 tons/acre, 2 tons/acre, 4 tons/acre, and =>6 tons/acre	Grid - 28.5m pixels
DEM	powban_dem	\\Alpine\Data\urbint\Bannock\all_datasets	Digital Elevation Model of Bannock County	Grid - 30m pixels
Component models	ban_aspec_id	\\Alpine\Data\urbint\Bannock\all_datasets	Risk associated with aspect angle i.e. North, East,.....	Grid - 30m pixels
	bnk_slpspr_id	\\Alpine\Data\urbint\Bannock\all_datasets	Risk associated with how fire spreads with angel of slope.	Grid - 30m pixels
	bnk_slpsup_id	\\Alpine\Data\urbint\Bannock\all_datasets	Risk associated with how Suppression efforts are affected by angle of slope.	Grid - 30m pixels
	bfl_spread_id	\\Alpine\Data\urbint\Bannock\all_datasets	Risk associated with how quick different fuel load classes spread during a fire.	Grid - 26m pixels
	bfl_intsty_id	\\Alpine\Data\urbint\Bannock\all_datasets	Risk associated with how intense (release heat energy) different fuel load classes burn.	Grid - 26m pixels
	bfl_vgmst_id	\\Alpine\Data\urbint\Bannock\all_datasets	Risk associated with vegetation moisture.	Grid - 26m pixels
	bnk_densty_id	\\Alpine\Data\urbint\Bannock\all_datasets	Risk associated with structure density.	Grid - 30m pixels
Final Model	fīn_fire_mdl	\\Alpine\Data\urbint\Bannock\all_datasets	Final risk model - 30m pixels - ArcInfo Grid	Grid - 30m pixels
Reports	Bannock_WUI_Final_Report	\\Alpine\Data\urbint\Bannock\reports	Report covering methods, results, & conclusions of WUI modeling	Word Document

Composite Report

Bannock County Fire Departments & Districts

Three Rivers Resource, Conservation & Development Area

June 2003

Bannock County, located in Southeastern Idaho, is named for the Bannock Indians, the first inhabitants of the area. The area includes the Snake River plains, mountain ranges and agricultural land. Pocatello, the county seat, is home to Idaho State University. The population has experienced some growth with census population estimates of 75,323 as of July 1, 2001. The land area totals 1,148 square miles. It is part of the District 6 Health District and the Three Rivers Resource, Conservation and Development Area. Bannock County includes seven fire districts/departments within its boundaries. These include Inkom Fire District, Lava Fire District, McCammon Fire District, Pocatello Fire Department, Pocatello Valley Fire Department, Downey Fire Department and Chubbuck Fire Department.

Following is a composite of the needs identified for each of the Bannock County Fire Departments and Districts. These are organized according to the major topics covered in the Fire Assessment including: Firefighting Program, Hazardous Materials Program, EMS Program, Training and Certification, Communication, Prevention and Inspection, and Public Education. Details of this needs list can be found in the respective Assessment Overview Reports for each Department and District.

Bannock County

Firefighter Program

Identified Needs

- Fire Stations
 - New Station = 6
 - Bays = 3
 - Storage = 2
 - Classroom/Training Space = 4
 - Record Keeping Space = 1
- Heavy Brush Truck = 1
- Light Brush Truck = 1
- Wildlands Equipment = 1
- More Maneuverable Apparatus = 1
- Testing Equipment
 - Current NFPA Testing Manuals & Workbooks = 4
 - Testing Equipment = 2
 - Testing Systems = 1
- Small, More Maneuverable Apparatus = 1
- Grant Related Needs
 - Grant Funding = 3
 - Grant Writer = 2
 - Assistant with Grant Process = 1
 - Grant Resource Library Specific to EMS/Fire = 3
 - Grant Writing Course = 1
 - Improved Grant Notification to District = 1
- Improved Records Management System = 2
- Computerization
 - Desk Top Computer = 2
 - Computer/Software Training = 2
 - Software = 3
- Red Zone Mapping = 1

Firefighter Program

Identified Needs - Continued

- Road Maintenance/Improvement/Access/Code Issues = 7
- Water System Additions/Improvements
 - Pumps = 4
 - Add Hydrants = 3
 - Water Tender = 6
 - Improved Appliances for Pumps = 1
 - Under Water Storage Tanks = 3
 - Wells = 1
 - Housing Developments Prove Water Supply = 2
- Better Utilization of Mutual Aid Agreements = 1

Hazardous Materials Program

Identified Needs

- None Identified

EMS Program

Identified Needs

- Additional Vehicles = 1
- Assistance with Training Costs = 1
- Defibrillators = 1
- Durable Goods = 1
- Additional Personnel = 2

Training and Certifications

Identified Needs

- Wildlands Response Training = 4
- Training Aids: Videos, Slides, Table Top Simulators = 3
- Outside Instructors = 1
- In-house Instructors = 1
- On-going Classes On Site = 2
- Current NWCG Manual/Refresher Training = 1
- Use of Pocatello Airport Training Facility = 1
- Computer-based Training/CD's = 2
- Training Manuals and Workbooks = 2
- IFSTA Training Program = 2

Communications

Identified Needs

- Hand-held Radios = 4
- Repeaters = 1
- Vehicle Radios = 2
- Upgrade Multi-frequency Capabilities = 3
- Talk-a-Round Channel = 1
- Improved Maintenance and Service = 1
- Improved Communication with Other Entities = 2

Prevention and Inspection

Identified Needs

- Fire Code Enforcement Training = 1
- Fire Cause and Origin Investigations Training= 1
- Educational Programs = 1
- Handout Materials = 1
- Improved Code Enforcement = 1
- Locally Trained Personnel = 3
- Area Fire Marshal Inspector = 1
- Increased Communication with Developers on Codes = 3

Public Education

Identified Needs

- Pre-packaged Presentation/Instructional Materials = 2
- Handout Materials = 4
- Equipment (e.g., smoke detectors) = 1
- Lap Top Computer = 1
- Improved Programming = 1
- Instructor Training = 1

Wildfire Risk Assessment

The Bannock County Wildfire Risk Assessment was accomplished by a survey of all Fire Departments in the County. The survey was completed by the local jurisdiction and returned. The purpose of the survey was to determine the vulnerability to the threat of wildfire in each jurisdiction and to use this information to formulate a County Strategy.

The evaluation criteria provided from each jurisdiction included:

<u>Past Fire Occurrence</u>	Rated 1 to 5	Lowest to Highest
<u>Wildland Fuel Conditions</u>	Rated 1 to 5	Lowest to Highest
<u>Number of People Affected</u>	Rated 1 to 5	Lowest to Highest
<u>Local Suppression Ability</u>	Rated 1 to 5	Highest to Lowest
Total Rating 1-9	Low	
Total Rating 10-12	Moderate	
Total Rating 13 up	High	

In addition to the survey, information provided in the Dynamac Corporation Hazard Assessment Reports and Final Mitigation Plan Reports were reviewed.

Contact Information

Emergencies In Bannock County Dial 911

Bannock County Commissioners

624 East Center
Pocatello, Idaho 83201
208-236-7211

Bannock County Emergency Services

Gary Moore-Coordinator
P.O. Box 4666
Pocatello, Idaho 83205
208-236-7104

Pocatello Valley Fire Department

Chief Karen Aguilar
4598 W. Old Hwy 91
Inkom, Idaho 83245
208-775-3581

McCammom Fire Department

Chief Rich Pierson
302 Center Street
McCammom, Idaho 83250
208-254-3109

Inkom Fire Department

Chief Chris Ottonello
P.O. Box 60
Inkom, Idaho 83245
208-775-3372

Lava Fire Department

Chief Joel Price
P.O. Box 187
Lava Hot Springs, Idaho 83246
208-776-5820

USFS

415 South Arthur
Pocatello, Idaho 83204
208-236-7513

BLM

Fred Judd-Fire Specialist
1405 Hollipark Drive
Idaho Falls, Idaho 83401
208-524-7602

Downey Fire Department

Chief Dave Perreault
339 East 1st North
Downey, Idaho 83234
208-897-5080

Arimo Fire Department

Chief Derald Armstrong
P.O. Box 88
Arimo, Idaho 83214
208-254-3507

Chubbuck Fire Department

Chief Eric King
4727 Yellowstone Ave
Chubbuck, Idaho 83202
208-237-3212

Pocatello Fire Department

Chief Kevin Quick
408 East Whitman
Pocatello, Idaho 83201
208-234-6202

Idaho Bureau Of Disaster Services

Ken Fagnant-Area Field Officer
10714 North Fairgrounds Road
Pocatello, Idaho 83202-5219
208-238-9113

National Weather Service

Vernon Preston
1945 Beechcraft Avenue
Pocatello, Idaho 83204
208-232-9306

Bannock County Sheriff

Lorin Nielsen
P.O. Box 4666
Pocatello, Idaho 83205-4666
208-236-7111

Idaho State Police

Region 5
5205 South 5th
Pocatello, Idaho 83201
208-236-6466

Potential Funding Sources

Rural Fire Assistance

BLM provides funds to rural Fire Departments for wildland firefighting; also provides fire equipment, training and fire prevention materials.

Bureau Of Land Management
Don Goswiler
1405 Hollipark Drive
Idaho Falls, Idaho 83401
208-524-7620

Communities at Risk

Assistance to communities for hazardous fuels reduction projects in the wildland interface; includes funding for assessments and mitigation planning.

Bureau Of Land Management
Fred Judd
1405 Hollipark Drive
Idaho Falls, Idaho 83401
208-524-7602

Firefighters Assistance

Financial assistance to help improve fire fighting operations, services and to purchase equipment.

Federal Emergency Management Agency
www.usfa.fema.gov
Steven Weiser
Idaho Bureau Of Disaster Services
4040 Guard Street
Boise, Idaho 83705-5004

Federal Excess Property

Provides assistance to state, county and local departments by providing excess federal property that may include equipment, supplies, tools for wildland and rural community fire response.

Idaho Department Of Lands
Brian Shiplett
208-666-8650

Three Rivers RC & D

Provides assistance through grants and may provide manpower for projects in rural fire jurisdictions.

Paula Jones
1551 Baldy Avenue
Pocatello, Idaho 83201
208-237-4628 ext. 104

Potential Training Resources

Eastern Idaho Technical College

Keith Birch
208-313-3446 cell
208-354-8239 home

Will provide fire training courses to rural departments through the College at no cost to the department.

Idaho Emergency Services Training

650 West State Street
Boise, Idaho 83720
208-334-3216

National Fire Academy

www.fema.gov

Emergency Management Institute

www.fema.gov

Pocatello Valley Fire District-Mitigation Plan

The Pocatello Valley Fire District is located in the northern part of Bannock County and consists of agricultural and rural housing. The District covers approximately 37 square miles and the Department protects 716 homes with a value of \$62,918,000.00.

The Pocatello Valley Fire District is a volunteer department currently with 28 volunteers including the Fire Chief. The Department responds to 30 calls for service each year.

The Department operates a 6x6 250 fast attack pumper, a 750 gallon brush truck and a 2500 gallon tender.

The Department has participated in some wildland fire training offered through the BLM. The Department has several new employees that need initial training and would be interested in some advanced courses.

The Department has a good history of prevention programs. They conduct an annual open house and distribute information to District patrons. Many home evaluations have been conducted through the SCA program.

The Department has the **Red Zone** program and is preparing to start the project.

Several fuels reduction projects have been accomplished in the District. Several homes near the Station have had projects completed. Larger projects include the Cinnamon Ridge Fire Break, West Side and Portneuf projects.

The Fire Chief identified two properties which have opted not to participate in the Fire District. Fraziers Egg Farm and the Gunter Farm in Blackrock. The District has ongoing discussions with the property owners about the value of belonging to the District.

Water resources currently used by the Department are Pocatello City water with hydrants on Bannock Highway and Portneuf Road. The Gaile Mountain Subdivision water system and the Portneuf River are other sources.

Fire Mitigation Goals

- Station Addition \$150,000.00
- 1 Heavy Truck 100,000.00
- 1 Light Truck 50,000.00
- Small Equipment 5,000.00
- Wood Chipper 20,000.00
- Wildland Fire Training 2,000.00
- County Wildland Fire Code
- County Mutual Aid Agreement
- Portable Water Supply

Fire Mitigation Actions

- Station and Equipment upgrades-work with the Federal Agencies to identify funding sources. Participate in training opportunities for grant writing and work with County, State and Federal Agencies to acquire needed funding.
- Fuels Reduction-Continue to work with BLM and Forest Service on reduction projects in the District. Caribou, Autumn Lane and Gaile Mountain Drive have been discussed as needing fuels reduction. Apply for grants to fund a chipper to be used in the District.
- Wildland Fire training-work with the BLM on setting up courses needed for new volunteers and advanced courses for others. Those are now available through the Eastern Idaho Technical College.
- Wildland Fire Code-participate with a Countywide group to draft and adopt a code.
- Mutual Aid Agreement-participate with other Fire Districts in the County to adopt a mutual aid agreement.
- Portable water Supply-participate with other Fire Districts to acquire and share water tenders.

Pocatello Valley Fire Department

Mink Creek/Caribou Road HIGH

Past Occurrence 3

Fuel Conditions 5

Population 4

Suppression 3

Suggested Mitigation Projects-Fuel reduction project. Adopt wildland interface fire code.

Mink Creek/Cinnamon Ridge/Charlotte/Autumn Lane HIGH

Past Occurrence 3

Fuel Conditions 5

Population 4

Suppression 3

Suggested Mitigation Projects-Fuel reduction project. Adopt wildland interface fire code.

Gibson Jack HIGH

Past Occurrence 3

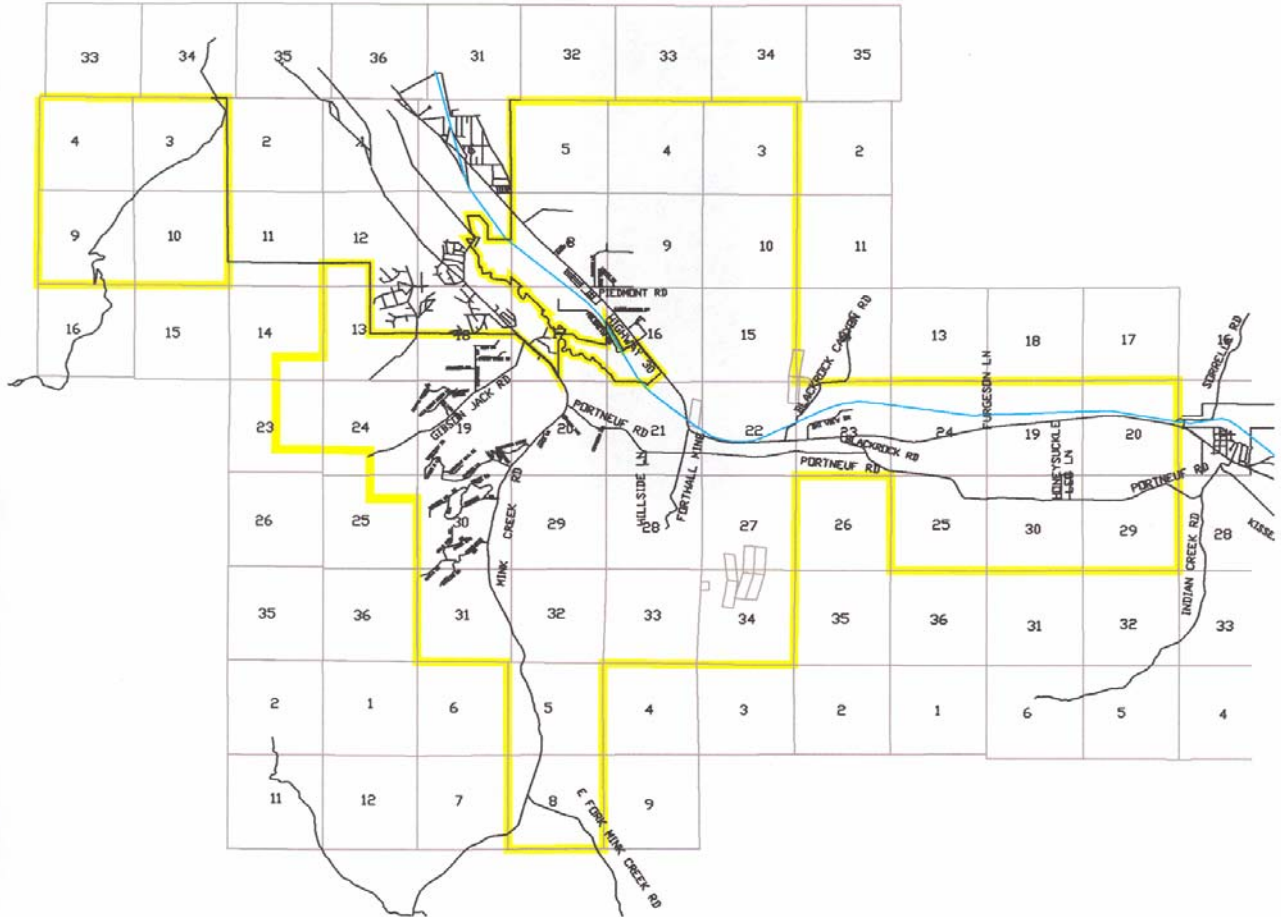
Fuel Conditions 4

Population 4

Suppression 3

Suggested Mitigation Projects-Fuel reduction. Adopt wildland interface fire code.

POCATELLO VALLEY FIRE DISTRICT



Assessment Overview Report
Pocatello Valley Fire District
Three Rivers Resource, Conservation and Development Area
June 2003

Profile of the District:

The Pocatello Valley Fire District is a fire protection district only. Pocatello is the third largest city in the State of Idaho and the Pocatello Valley District is located just South of the City limits. Its topography is made up of steep hills covered with juniper, pine trees and grasslands. This has been a fast growing area with the primary development being residential. Many of the homes are located on steep banks in the hills overlooking the newly built Century High School. The Caribou National Forest is located to the District's Southern border.

Organizational Structure

The Pocatello Valley Fire District reports to the Fire District Commission. The organizational structure includes one chief, an assistant chief, three battalion chiefs, four captains and 20 firefighters. All personnel are volunteers.

Facilities:

The District has two fire stations with a total of six bays. One station is located in an area called Cinnamon Ridge which has four bays and the other station is located at Old Highway 91 and Ferguson Road with two bays.

Response Area:

The Fire District provides fire protection for agriculture, rangelands, wildland urban interface, forest, residential, business, high tech (new telephone company switch) and high risk (tire warehouse, truck repair shop). The District serves 20 square mile area.

Budget and Funding:

The budget has remained steady over the past five years. Tax dollars fund 100% of the budget. Funding through grants is not added to the base budget.

Grants:

Grants have been a source of funding for the District in the past including grants from the BLM and Forest Service, private foundations and individual donations. The District is familiar with the National Fire Plan and the organization will continue to seek grant funding opportunities.

Records Management:

A comprehensive, computerized records management system is in place that tracks training, personnel, and building and vehicle maintenance. The Chief is in the process of building a database system for the old records. The District currently uses Windows Office Manager software.

Firefighting Program:

There are 30 personnel within the firefighting program that are volunteers. Fire response includes protection for structures, wildland fire suppression, EMS, HazMat, and terrorist threat. The area is at high risk for wildland urban interface fires but is of little risk for terrorist attack. All members of the firefighting team are trained in wildland suppression. The District responds to approximately 27 fire-related incidents annually. Water sources are adequate and reliable with the primary water supply coming from water mains, hydrants and bodies of water. The District is capable of meeting the 10-minute arrival on the scene response for scene size-up, initial attack interior and exterior, call for assistance, water supply hydrant or water tender operations.

Firefighting Program Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">● 2 Station, 6 Bays● Volunteer Personnel● 3,000 Structural/150 Wildland Total GPM Capacity● Computerized Record Keeping System● Fire Response: Structural, Wildlands, HazMat, EMS, Terrorist Threat● 1Structural/2 Structural/Wildlands & 2 Wildlands Response Vehicles● Lighting and Generator Trailer● Grid Access Address System	<ul style="list-style-type: none">● Fire Software● High Speed Computer with Additional Memory● Red Zone Mapping● Implementation of Codes for Roads & Driveways● Dry Hydrants● Underground Water Storage Tanks and Pumps● Housing Developers Prove They Can Supply Water for Fire Protection of Development● Professional Grant Writer● Improved Grant Notification to the Districts● Library of Grant Sources for Fire/EMS Only

Hazardous Materials Program:

The District does not have a HazMat team in place. It will respond to assist and stabilize the scene until a team arrives. Current mutual aids agreements are in place with the Forest Service, BLM. The chief is working on an agreement with the Inkom Fire District.

EMS Program:

The Department does not provide EMS services because of its close proximity to Pocatello. It will respond for support if called.

Training and Certification:

All Fire District members are required to attend 60% of all District meetings and trainings. Minimum training requirements include structural protection, wildland fire suppression, EMS, HazMat and emergency vehicle driving.

Training and Certification Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> ● Structural Protection - IFSTA Essentials ● Wildlands Fire Suppression ● EMS CPR, First Aid ● HazMat Awareness ● IFSTA Training Program ● Standard Operating Procedures ● Training Materials 	<ul style="list-style-type: none"> ● Ongoing Classes, On-Site ● Refresher Courses ● Grants to Fund Training ● Current NWCG Manuals & Refresher Training ● IFSTA Student Manuals and Workbooks ● Current Videos, Overheads, Slides ● Distance Learning Program

Communications:

Communications are dispatched out of the Bannock County 911 system. The District does respond to remote alarm calls and all vehicles are radio equipped. The District does not have sufficient portable hand-held radios. Communication is not adequate with other entities.

Communication Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> ● Responds to Remote Alarm Calls ● Portable Radios ● All Vehicles Radio Equipped 	<ul style="list-style-type: none"> ● Increase Frequencies ● Mobile and Hand-Held Radios ● Communication with Other Entities

Prevention and Inspection:

The District does administer and enforce Fire Code regulations. It does not conduct investigations for fire cause and origin. The Chief would like to see more communication with contractors and developers to make sure codes are being met before construction begins.

Prevention and Inspection Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> ● Fire Code Enforcement 	<ul style="list-style-type: none"> ● Increased Communication with Developers

Public Education:

The Department does provide public educational programs for wildland fires, structural fires, home safety and general safety tips. It also conducts public outreach at fairs, public events, and fire station events.

Public Education Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">• Public Education• Public Outreach	<ul style="list-style-type: none">• Improve Programming

McCammom Fire District-Mitigation Plan

The McCammom Fire District is located in central Bannock County and is predominately agricultural. The District covers approximately 44 square miles and the Department protects 346 homes with a value of \$25,113,000.00

The McCammom Fire Department is a volunteer department with 16 members including the Fire Chief. The Department responds to approximately 20 calls for service each calendar year.

The Department operates 1 4x4 250 gallon light wildland truck, 1 old model heavy truck and has a 3400 gallon tender which is very old.

The Chief states the Department has had very little wildland firefighter training. Also indicated the need to recruit more volunteers. Recruitment and retention of volunteers is an ongoing issue.

The Department has no history of fire prevention programs. The limited number of volunteers and limited resources make providing these types of program very difficult. The Department has not been involved in any fuels reduction projects. There are some properties in the District which could use some home evaluations and possible fuels reduction projects. The Department has not looked at using the Red Zone program.

The Department has a history of wildland fire with one of the largest being the Walker Creek Fire in 2001. The Department responds to a number of wildland fires each year. Most recently the District experienced a large wildfire in the District, the Harkness Fire, which burned approximately 5,000 acres and two homes were lost.

The Chief indicated there were several homes near the end of Jensen and Marsh Creeks roads which may not be in a fire district.

Water resources currently used by the Department are the City water system and the Portneuf River and Marsh Creek.

The Chief indicated the need to work more closely with the Federal Agencies which respond to assist in the District. This issue was discussed at a post incident review following the Harkness Fire.

Fire Mitigation Goals

- Funding for a new fire station \$300,000.00
- Light brush truck 60,000.00
- Small Equipment (hand tools, saws, etc.) 5,000.00
- Personal Protective Equipment 5,000.00
- Wildland Fire Training 2,000.00

- County wildland fire code
- County mutual aid agreement
- Portable water supply
- Become a Firewise Community

Fire Mitigation Actions

- Station Replacement and equipment upgrades-work with Federal Agencies to identify funding sources. Participate in training opportunities for grant writing and work with County, State and Federal agencies to acquire needed funding.
- Wildland Fire Training-work with the BLM on setting up training now available through the Eastern Idaho Technical College. Design the training to be accessible to the volunteers schedules.
- Wildland Fire Code-participate with a Countywide group to draft and adopt a code.
- Mutual Aid Agreement-participate with other Fire Districts in the County to adopt a mutual aid agreement.
- Portable water supply-participate with other Fire Districts to acquire and share water tenders.

McCammon Fire District

HIGH

Past Occurrence 4

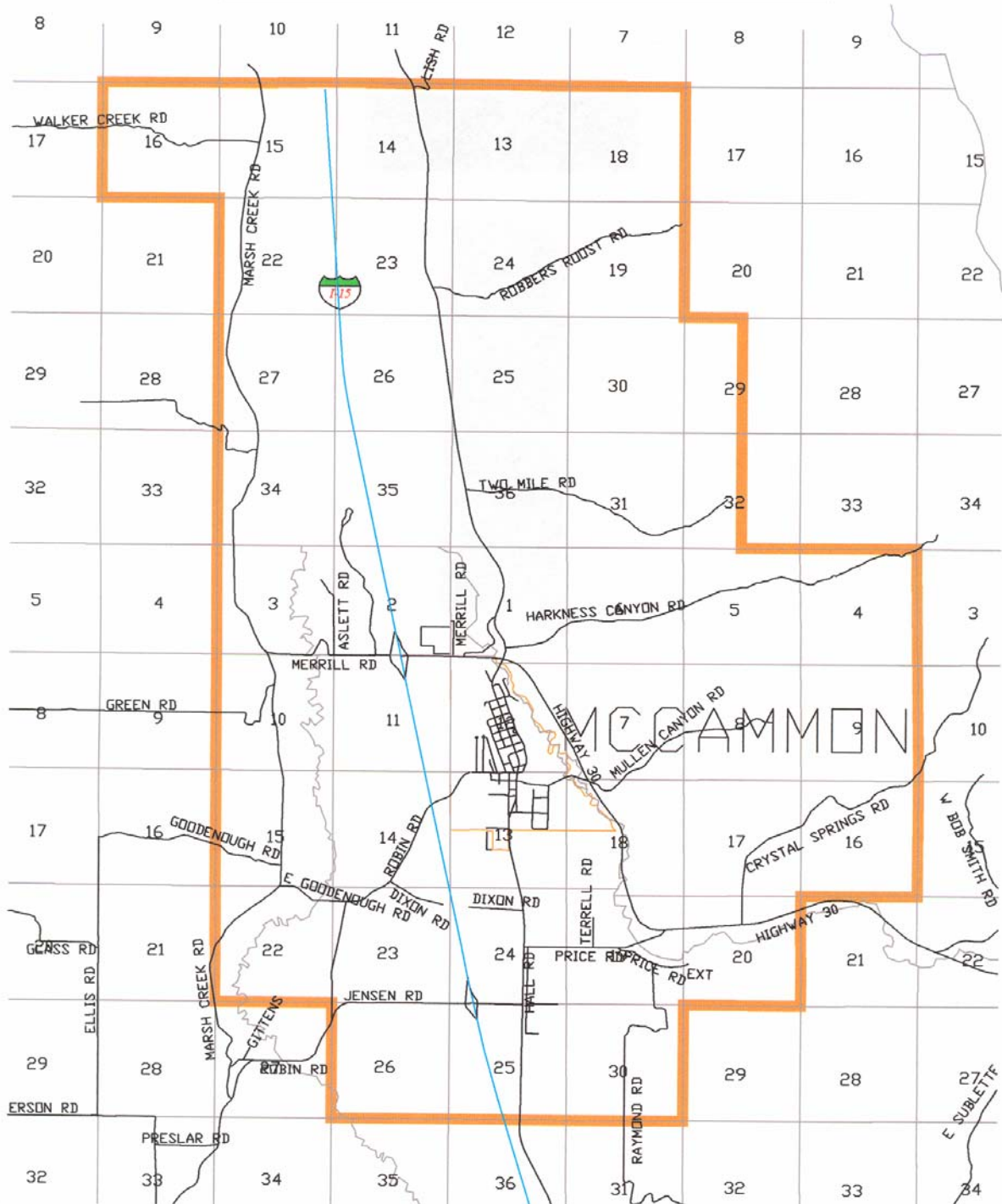
Fuel Conditions 5

Population 2

Suppression 3

Suggested Mitigation Projects-Home evaluations in target areas

McCAMMON FIRE DISTRICT



Assessment Overview Report
McCammon Fire District
Three Rivers Resource, Conservation and Development Area
June 2003

Profile of the District:

The McCammon Fire District is a combined municipal and fire protection district. The protection area includes a slow growing area of Southeastern Idaho including structural protection and wildland fires. McCammon has rolling hills with streams and mountainous areas primarily agricultural in nature.

Organizational Structure

The District reports to the City Council. The structure includes a fire chief, an assistant fire chief and 14 firefighters. All personnel are volunteers. The Chief indicated he would like to add additional personnel including a captain and lieutenant.

Facilities:

The District has one station with four bays. A reserve pump is moved into the City shop during the winter to make room for its tender. The District is in need of a new station that included enough bays to accommodate all of the apparatus as well as training and office space.

Response Area:

The fire protection area includes agricultural, rangelands, wildland urban interface, residential and business. The response area includes 15 square miles.

Budget and Funding:

Actual budget figures are not available. The budget is funded 100% from tax dollars.

Grants:

The Fire District has received grant funds from the BLM and Forest Service. The District is not yet familiar with the National Fire Plan and it hopes to improve its grant funding knowledge.

Records Management:

A manual records management system is in place. The District recently started tracking more aspects of the District's operations from reports to apparatus, training and personnel records.

Firefighting Program:

The McCammon Fire District has 16 personnel within the firefighting program that are all volunteers. Fire response includes protection for structures and wildland fire suppression. The District reports it responds to 6 fire calls a year. The area is at high risk for wildland urban interface fires but little risk for terrorist attacks. All 16 of the firefighters are trained in wildland suppression. The District does have some adequate and reliable water sources including water mains, hydrants and bodies of water. The 10-minute place into action requirement is a capability of the District with scene size-up, external initial attack, tender operations and water supply.

Firefighting Program Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> ● 1 Station, 4 Bays ● Volunteer Personnel ● 2,250 Structural/275 Wildland Total GPM Capacity ● Manual Record Keeping System in Progress ● Fire Response: Structural & Wildlands ● 2 Structural/2 Wildland/ 1 Structural/Wildland Vehicles 	<ul style="list-style-type: none"> ● New Station with Office and Training Space ● Improved Roadways ● New Tender ● Grant Writing and Grant Resources ● Local Grant Writing Courses ● NFPA Apparatus Maintenance Manuals ● Develop Testing System

Hazardous Materials Program:

The Fire District does not have a HazMat response team.

EMS Program:

The District does not support an EMS system at this time.

Training and Certification:

The District’s training program includes no minimal requirements at this point.

Training and Certification Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> ● None 	<ul style="list-style-type: none"> ● Wildlands Refresher Courses ● Initial Training, Manuals, Workbooks ● Videos, Slides ● Low-Cost, State or Federal Funding Assistance

Communications:

Communication is dispatched through the Bannock County 911 dispatch center. Radio communication capacity is sufficient. Some vehicles are equipped with radios but the District does not have a sufficient number of hand-held radios. All District members have pagers. Communication with other entities is good.

Communication Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">• Responds to Remote Alarm Calls• Portable Radios• Radios in Some Vehicles	<ul style="list-style-type: none">• Radios in All Response Vehicles• Hand-held Radios

Prevention and Inspection:

The District does not have Fire Code regulation enforcement capacity. Fire cause and origin investigations are also not conducted. Inspections are handled by the county building inspector. Investigations of cause and origin are handled through the State Fire Marshal’s Office.

Prevention and Inspection Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">• Inspections Handled by County Building Inspector	<ul style="list-style-type: none">• Locally Trained Personnel

Public Education:

The District does conduct public education programs for structural fires and home safety. It also regularly participates in public outreach with schools.

Public Education Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">• Public Education Programs• Outreach Education	<ul style="list-style-type: none">• Materials for Public Education

Inkom Fire District (Jackson Creek)-Mitigation Plan

The Inkom Fire District is located in northern Bannock County and is predominately agricultural. The District covers approximately 36 square miles and the Department protects 284 homes with a value of \$24,354,000.00.

The Inkom Fire Department is a call paid Department with 17 members including the Fire Chief. The Department responds to approximately 25 calls for service each calendar year.

The Department operates 2 light and 1 heavy wildland trucks as well as structural apparatus. The Chief indicated the trucks are in fair condition.

The Department has been fairly active with training programs. Members have completed basic fire behavior, standards for survival and basic ICS. Some members have completed the BLM Fire School.

The Chief indicated the Department has been active with prevention programs. They conduct programs in the schools and the annual 4th of July program. The Department has started the Red Zone program with approximately 50 homes completed. They have conducted controlled burns on City property for fuels reduction.

The Department has an active wildfire history with several 200+ acre fires per year. 2003 has been a very busy fire year with the most recent being the Spider Fire and responding to several other large fires to assist other Districts. The Fire Chief indicated the District has a significant amount of urban interface.

Currently, two fuels reduction projects, Indian Creek and The West Bench projects are in progress. The Chief indicated fuels reduction projects need in Rapid Creek, Marsh Creek and the Jackson Creek Subdivision.

There were several homes identified at the top of Rapid Creek and McNabb Roads that were not currently in the Fire District. The District is talking with the residents about joining the District.

Water resources currently used by the Department include the City water system, Portneuf River, and ponds on Rapid and Upper Rock Creeks.

Fire Mitigation Goals

- Funding for fire station additions \$300,000.00
- 1 light truck 60,000.00
- 1 heavy truck 120,000.00
- Small equipment (saws, hand tools) 5,000.00
- Wildland Fire Training
- Become a Firewise Community
- Complete red Zone Assessments
- County Mutual Aid Agreement
- County Wildland Fire Code
- Portable Water Supply

Fire Mitigation Actions

- Fire station additions and equipment needs-work with Federal Agencies to identify funding sources. Participate in training opportunities for grant writing and work with County, State and Federal agencies to acquire needed funding.
- Work with Three Rivers RC&D and others to acquire assistance in completing the Red Zone assessment.
- Fuels Reduction-Identify specific projects and work with BLM to complete projects.
- Mutual Aid Agreement-participate with the other Fire Districts in the County to adopt a mutual aid agreement.
- Wildland Fire Code-participate with a Countywide group to draft and adopt a code.
- Portable water Supply-work with other Fire Districts to acquire and share water tenders.
- Training-promote training programs that bring together members of other Departments to train together. Work with the BLM to continue to participate in training programs available.

Inkom Fire Department

Inkom/Rapid Creek/Jackson Creek

HIGH

Past Occurrence	4
Fuel Conditions	5
Population	5
Suppression	2

Suggested Mitigation Projects-Adopt wildland interface fire code. Continue home evaluations and public workshops.

Indian Creek/Marsh Creek

HIGH

Past Occurrence	4
Fuel Conditions	5
Population	4
Suppression	2

Suggested Mitigation Projects-Adopt wildland interface fire code. Continue home evaluations and public workshops.

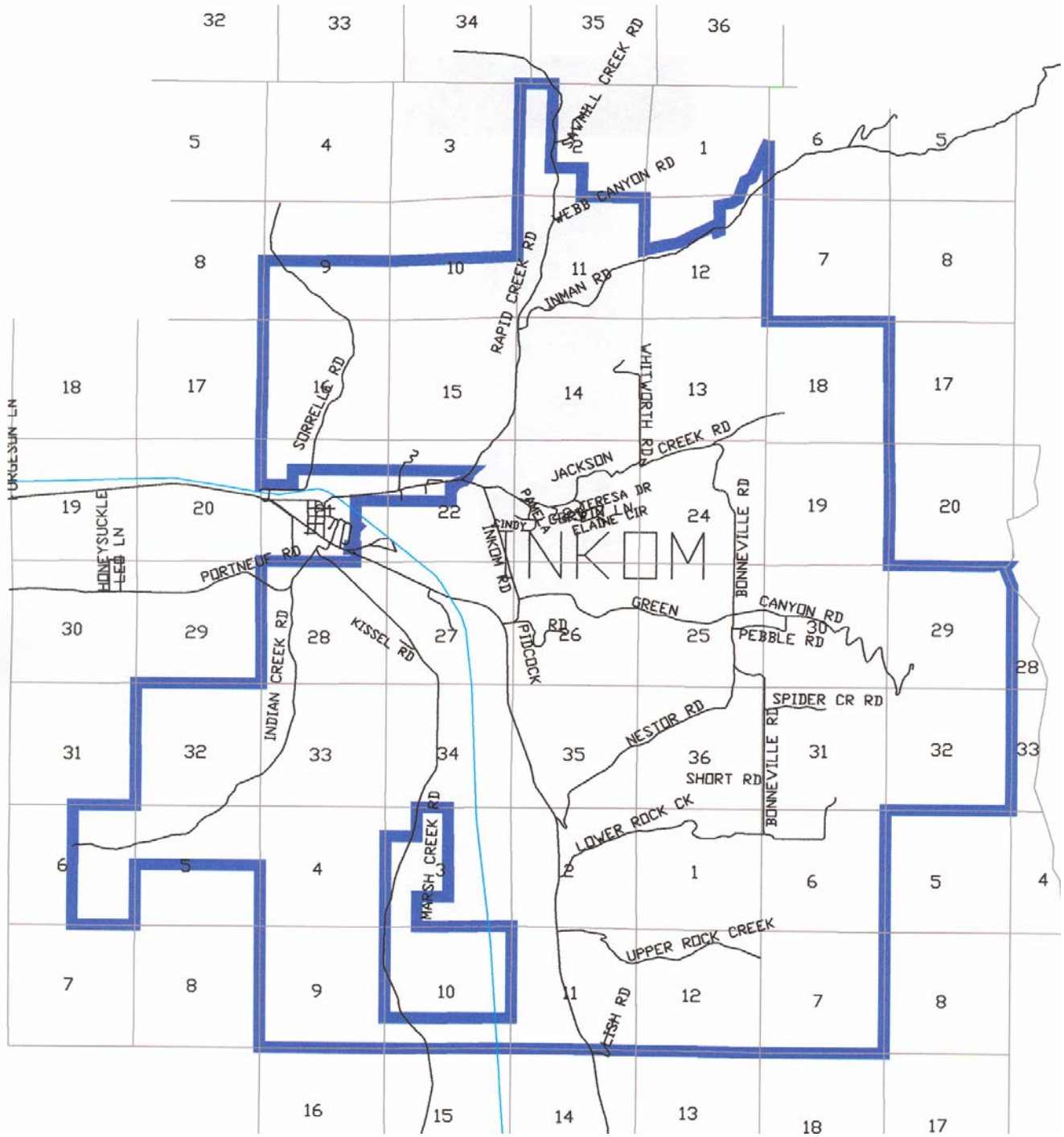
South Old Hwy 91/Crane Creek

HIGH

Past Occurrence	4
Fuel Conditions	5
Population	4
Suppression	2

Suggested Mitigation Projects-Acquire additional wildland truck. Equipment is old and needs replaced.

JACKSON CREEK FIRE DISTRICT



Assessment Overview Report
Inkom Fire District
Three Rivers Resource, Conservation and Development Area
June 2003

Profile of the District:

The Inkom Fire District is a combined municipal and fire protection district. The protection area includes a slow growing area of Southeastern Idaho including structural protection, EMS, wildland fires and HazMat support. Inkom is a bedroom community to Pocatello and the topography is varied from flat grasslands, lava flows to mountainous areas including the Pebble Creek Ski Area.

Organizational Structure

The District reports to the Mayor and Inkom City Council. There is one chief, a QRU coordinator, EMT, a fire captain, a lieutenant, two operator drivers and nine firefighters. All personnel are paid part-time, on call.

Facilities:

The District has one station with two bays. The District is in need of a new station because they lack training space, apparatus and equipment storage space.

Response Area:

The fire protection area includes agricultural, rangelands, forest, wildland urban interface, residential, business and a high risk high, pressure natural gas line and pump station. The response area includes 25 square miles.

Budget and Funding:

Actual budget figures are not available. However approximately 65% of the budget is funded through tax dollars and the remainder is funded through a contract with the Jackson Fire District.

Grants:

The Fire District has received grant funds from the State IDS and EMS, and the National Fire Plan. The District is familiar with the National Fire Plan and they do intend to continue to pursue grant opportunities.

Records Management:

A manual records management system is in place. The District is beginning the transition to a computerized system. They presently track personnel, apparatus, training and finances. The District utilizes the NIFIRS software.

Firefighting Program:

The Inkom Fire District has 14 personnel within the firefighting program that are paid on call. Fire response includes protection for structural protection, wildland fire suppression, and EMS, HazMat and rescue extrication. The District reports it responds to 15 fire calls a year and 65 EMS calls a year. The area is at high risk for wildland urban interface fires but it is unsure about its risk to terrorist attacks. Fourteen of the firefighters are trained in wildland suppression. The District does have some adequate and reliable water sources including water mains, hydrants, bodies of water and a tender shuttle system. The 10-minute place into action requirement is a capability of the District with scene size-up and initial attack.

Firefighting Program Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">● 1 Station, 2 Bays● On Call Paid Personnel● 4,200 Structural/1,250 Wildland Total GPM Capacity● Computerized Record Keeping System in Progress● Fire Response: Structural, Wildlands, EMS, HazMat & Rescue Extrication● 2 Structural/2 Wildland/Structural/2 Wildland Vehicles● 1 QRU Unit● Extrication Equipment	<ul style="list-style-type: none">● New Station (Training and Apparatus/Equipment Storage)● Updated Codes for Roadways● More Maneuverable Apparatus● Tender● Fire Pumps to New Water System● Fire/EMS Based Software● Improve Appliances for Pumpers● NFPA Manuals● Manuals & Testing Equipment for Apparatus● Wildlands Refresher Courses

Hazardous Materials Program:

The Fire District does not have a HazMat response team. The Chief would like to increase the District's minimum training to the tech level and add proper PPE and other HazMat equipment/vehicles for HazMat use.

EMS Program:

The District does provide EMS services. The District is licensed for the EMT-Basic non-transport level. It responds to approximately 63 calls annually.

EMS Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> • EMT- Basic • 1 QRU Vehicle 	<ul style="list-style-type: none"> • Additional Personnel • Training on Recruiting Programs • Assistance with Training Costs • EMS Designed Vehicle

Training and Certification:

The District’s training program includes structural protection (essentials), wildland fire suppression (firefighter Type II), and EMT (Basic).

Training and Certification Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> • Structural Protection • Wildland Fire Suppression • EMT Basic • Standard Operating Procedures 	<ul style="list-style-type: none"> • Classroom Space • Current Training Manuals, Workbook, Videos • Local, Low-cost Instruction

Communications:

Communication is dispatched through the Bannock County 911 for EMS and the South Bannock County 911 for fire. Radio communication capacity is sufficient. All of the vehicles are equipment with radios and the District does have a sufficient number of hand-held radios.

Communication Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> • Responds to Remote Alarm Calls • Portable Radios • Radios in All Vehicles 	<ul style="list-style-type: none"> • Improve Communication with Other Entities

Prevention and Inspection:

The District does have Fire Code regulation enforcement capacity. Fire cause and origin investigations are also conducted. If there is a cause or origin question, the State Fire Marshal's Office is called in for assistance with investigation.

Prevention and Inspection Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">• Fire Code Enforcement• Fire Cause & Origin Investigations	<ul style="list-style-type: none">• Inspection Process Training• Door-to-Door Information Handouts

Public Education:

The District does conduct public education programs for wildland fires, structural fires, home first aid and home safety. It also regularly participates in public outreach with fairs schools, fire station activities and other public events.

Public Education Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">• Public Education Programs• Outreach Education• Grants for Flyers, Handouts & Presentations	<ul style="list-style-type: none">• None Identified

Chubbuck Fire District (North Bannock County)-Mitigation Plan

The Chubbuck Fire District is located in the North end of Bannock County. The District is agricultural and rural housing. The District covers 86 square miles and the Department protects 1600 homes with a value of \$142,474,000.00.

The Chubbuck Fire Department has 5 full time employees including the Fire Chief. The remaining 35 members are call paid. The Department responds to approximately 300 fire and 550 EMS calls for service each year.

The Department operates 3 heavy and 2 light wildland trucks and a 3500 gallon tender as well as structural equipment.

The Department has a very good training program. The Department hosts BLM courses and is working toward red card certification. Courses completed include incident command, fire behavior and wildland apparatus. The Department meets NFPA requirements. *The Chief indicated the desire for a standard level of training to be identified for Departments involved in mutual aid.*

The Department has active Fire Prevention programs. Homeowners meetings have been held and prevention programs are continuing. The Department does plan review of new homes and addresses wildland issues. The Red Zone assessment has been started and home evaluations have been conducted the past two years.

There is no history of fuel reduction projects however a project in the Buckskin area is scheduled to begin this year. There is a need for fuel reduction projects in the both the Pocatello Creek and Buckskin areas.

The District has an active history of wildfire with many small fires and 2 or more 100 acre+ fires per year the past five years. These generally occur in the Pocatello Creek-Buckskin area.

The Fire Chef indicated there were some homes located in the east end of the Hoot Owl area that were not in the Fire District.

Water resources currently used include the City water system, Hiline canal and the wastewater pond located near 21/2 mile road. The Chief indicated the issue of water is a big concern in the Pocatello Creek-Buckskin area due to the distance from water sources.

Fire Mitigation Goals

- | | |
|----------------------------------|--------------|
| • Funding for Additional Station | \$500,000.00 |
| • 2 light trucks | \$160,000.00 |
| • Water tender | 150,000.00 |
| • Small equipment | 5,000.00 |
| • Personal Protective Equipment | 15,000.00 |
| • Become a Fire wise Community | |
| • Complete Red Zone | |
| • Fire Prevention | |
| • Wildland Fire Training | |
| • County Mutual Aid Agreement | |
| • County Wildland Fire Code | |
| • Portable Water Supply | |

Fire Mitigation Actions

- Work with Federal Agencies to identify funding sources. Participate in training opportunities grant writing and work with County, State and Federal Agencies to acquire needed funding.
- Prevention-work with Three Rivers RC&D to complete red Zone project. Work with neighborhoods by holding Block Parties. Continue ongoing prevention programs.
- Training-continue to work with the BLM in participating in wildland training course needed by the Department.
- Mutual Aid Agreement-participate with the other Fire Districts in the County to adopt a mutual aid agreement.
- Wildland Fire Code-participate with a Countywide group to draft and adopt a code.
- Portable water supply-work with other Fire Districts to acquire and share water tenders.

Chubbuck Fire Department

Barton Road

LOW

Past Occurrence	1
Fuel Conditions	3
Population	2
Suppression	3

Suggested Mitigation Projects-Evaluate access to area. Look to improve water supply.

Pocatello Creek/Buckskin

HIGH

Past Occurrence	5
Fuel Conditions	4
Population	5
Suppression	2

Suggested Mitigation Projects-Improve water supply. Install water storage facilities.

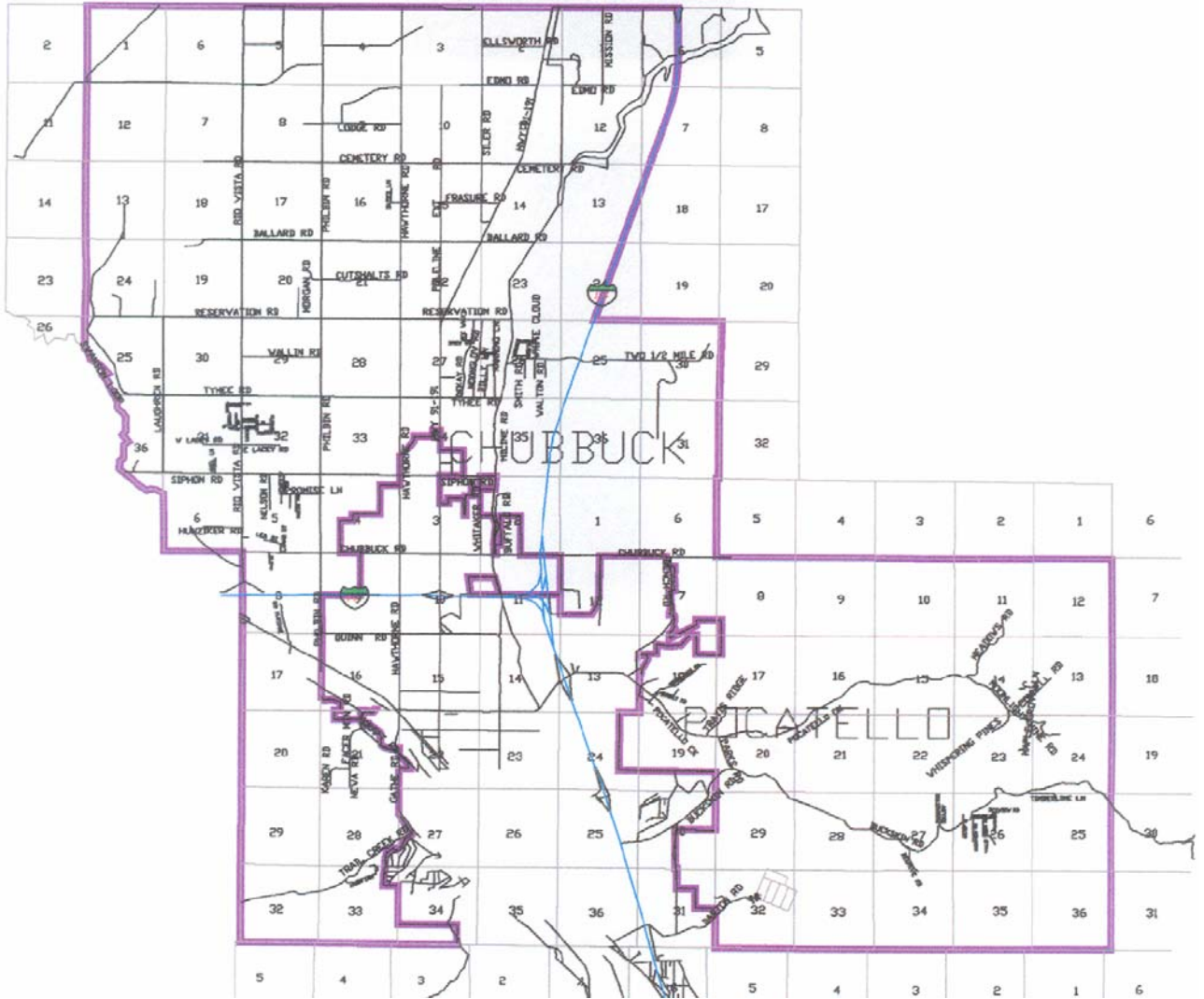
Trail Creek Area

MODERATE

Past Occurrence	3
Fuel Conditions	3
Population	2
Suppression	2

Suggested Mitigation Projects-Add access road and water supply facility.

NORTH BANNOCK FIRE DISTRICT



Assessment Overview Report
Chubbuck Fire District
Three Rivers Resource, Conservation and Development Area
June 2003

Profile of the District:

The Chubbuck Fire District is a combined municipal and fire protection district. Chubbuck is a steadily growing area located just North of the Pocatello City limits. The District also provides rural protection in Bannock and Power Counties and on the Fort Hall Indian Reservation. The topography of the District is diverse. It has flatlands, rolling hills and mountainous terrain. Major industry ranges from large shopping malls, to grocery stores and hotels.

Organizational Structure

The District reports to the City Council and Fire District Commission, respectively. The organizational structure includes a chief/EMT, a deputy chief, two battalion chiefs, eight captains, 10 drivers, 18 firefighters/EMT and 10 EMT.

Facilities:

The District has one station with ten bays two of which are used for a shop. The District would like to add two new stations with adequate personnel, apparatus and equipment; one in the Tyhee area and one in the Pocatello Creek area.

Response Area:

The fire protection area includes agricultural, rangelands, forest, wildland urban interface, residential, business and high risk with the HazMat warehouse and the J.R. Simplot Company. The response area includes 200 square miles.

Budget and Funding:

The budget has steadily increased with the growth of the area. The budget is funded 100% from taxes.

Grants:

The Fire District has received grant funds from a variety of sources including the State IDS and EMS, BLM, Forest Service, the INEEL, the FEMA National Fire Plan, from private foundations and from other rural assistance sources. The District is familiar with the National Fire Plan and hopes to continue to pursue grant funding in the future. The City has a grant writer that assists with this process.

Records Management:

A comprehensive, computerized records management system is in place. The present system can track all District operations. The District uses Firehouse, word processing and Excel software.

Firefighting Program:

The Chubbuck Fire District has 50 personnel within the firefighting program who are paid staff. Fire response includes protection for structural protection, wildland fire suppression, EMS QRU, HazMat and rescue extrication. The District reports it responds to 700 calls annually. The area is at high risk for wildland urban interface fires and terrorist attacks. Forty of the firefighters are trained in wildland suppression. The District does have some adequate and reliable water sources including water mains, hydrants and bodies of water. The 10-minute place into action requirement is a capability of the District with scene size-up, initial attack internal and external, water supply, city hydrants, water tender operations, exposure protection, utilities, and the Institute ICS system.

Firefighting Program Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> ● 1 Station, 10 Bays ● Paid Personnel ● 6,250 Structural/500 Wildland Total GPM Capacity ● Computerized Record Keeping System ● Fire Response: Structural, Wildlands, EMS QRU, HazMat, Rescue Extrication ● 4 Structural/2 Wildland/Structural & 4 Wildlands Vehicles 	<ul style="list-style-type: none"> ● 2 Stations with Adequate Personnel, Apparatus & Equipment (Tyhee & Pocatello Creek) ● Improved Adherence to Access Road Codes; Upgrade ● Improved Water Capacity in the District (Hydrants, Dry Hydrants, Water Storage with Pumps) ● Expand Water Distribution System ● Developers Required to Demonstrate Water Capacity ● Water Tender ● Grant Funding ● Library of Grants for Fire/EMS

Hazardous Materials Program:

Fire District members are trained to operation HazMat level but they do not have an official response team. It will respond and begin operations and assist teams on their arrival.

EMS Program:

The District does provide EMS services. The District is licensed to provide EMT-Basic and QRU support. Personnel are trained in First Responder, EMT Basic, and EMT Advanced-Intermediate. The District responds to approximately 500 calls annually.

EMS Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> ● First Responder ● EMT Basic ● EMT Advanced-Intermediate ● 1 QRU Unit 	<ul style="list-style-type: none"> ● Wildlands Training (Red Card) ● Upgrade Older Durable Goods (Longbone Immobilization Devices, Suction Units)

Training and Certification:

The District does have minimum training and certification requirements. Training includes structural protection, wildland fire suppression, EMS, HazMat, terrorist threat and rescue. The ISTA Training Program is utilized.

Training and Certification Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> ● NFPA Standards Level 1 & 2 ● Wildland Standards for Survival ● EMT-Basic ● HazMat Operations ● Terrorist Threat Weapons of Mass Destruction ● Rescue Extrication ● NFPA Manuals, Videos and Training Materials ● IFSTA Training Program ● Standard Operating Procedures 	<ul style="list-style-type: none"> ● Wildlands Training (Red Card) ● Increased Use of Fire Service Training ● Use of Pocatello Airport Training Facilities ● In-house Instructors and from Outside Sources ● Grants for Training

Communications:

Communication is dispatched through the Chubbuck 911 dispatch center. Radio communication capacity is sufficient. All of the vehicles are equipped with radios but the District does not have a sufficient number of hand-held radios.

Communication Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> • Responds to Remote Alarm Calls • Portable Radios • Radios in All Vehicles 	<ul style="list-style-type: none"> • Upgrade all Personnel to Two-way Radios • Proper Frequencies for All Radios

Prevention and Inspection:

The District does have Fire Code regulation enforcement capacity and a fire cause and origin investigations process. The District does have an inspection division and a prescribed inspection program in place.

Prevention and Inspection Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> • Fire Code Enforcement • Fire Cause & Origin Investigations • Inspection Division 	<ul style="list-style-type: none"> • Grants for Ongoing Training and Materials

Public Education:

The District does conduct public education programs for wildland fires, structural fires, home safety, extinguisher training and smoke detectors. It also participates in public outreach with fairs, schools, public events and fire station activities.

Public Education Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> • Public Education • Public Outreach 	<ul style="list-style-type: none"> • Grants for Public Education Handouts • Visual Aids for Presentations

Lava Fire District-Mitigation Plan

The Lava Fire District is located in Southeast Bannock County and predominately agricultural and has a large number of summer homes. Lava is known for its hot pools and attracts a large number of tourists each year. The Fire District covers approximately 64 square miles and the Department protects 398 homes with a value of \$23,756,000.00.

The Lava Fire District provides protection for a large number of homes in the interface area. There are several large developments in the District in which homes continue to be built in the interface. Heavy fuels are present in most of these areas.

The Lava Fire Department is a volunteer department currently with 16 members including the Fire Chief. The Department responds to approximately 60 calls for service each year.

The Department operates with 1 medium and 1 light brush truck as well as a 4,000 gallon tender. In addition, the Department operates structural firefighting trucks. There has been significant discussion about acquiring an additional light truck to place in the Lava Ranch area for quick response capability. Homeowners have expressed a desire to participate in such a project.

The Department has been active with wildland fire training. All members have completed the standards of survival training and basic wildland fire school. Some members have completed intermediate fire behavior and wildland operations and the goal is to have all members complete these courses.

The Department has been very active with fire prevention programs. Annual meetings with homeowner groups and home visits are ongoing. The Department is conducting the **Red Zone** assessment and they expect to be finished this year. The Department distributes information regarding fire prevention and fuels reduction. The BLM is currently working on a fuels reduction project in the Smith Canyon area on a 40 acre parcel.

The Fire Chief indicated the need for fuels reduction projects in most of the subdivisions. There has been some discussion with the Forest Service and BLM regarding disposal of the products. The Federal agencies indicated they would be willing to work with the Department on this issue.

The Lava Fire District has a history of wildfire. The Department has responded to several fires each year some being very significant.

The Fire Chief indicated a home in section 33 that is not included in the District. They have approached the individuals and are encouraging the residents to become members.

Water resources currently used by the Department include City water system, portneuf river and a large pond in the Smith Canyon area. Some irrigation water is available early in the season.

Fire Mitigation Goals

• Funding for fire station addition	\$200,000.00
• 2 new light trucks	100,000.00
• 1 new heavy truck	100,000.00
• Small equipment (saws, hand tools)	5,000.00
• Personal Protective Equipment (including shelters)	5,000.00
• Wildland Training	2,000.00
• Home Evaluations	5,000.00
• Evacuation Planning	
• County Mutual Aid Agreement	
• County wildland fire code	
• Portable water supply	

Fire Mitigation Actions

- Fire station additions and equipment needs-work with Federal Agencies to identify funding sources. Participate in training opportunities for grant writing and work with County, State and Federal agencies to acquire needed funding.
- Wildland fire training-continue to work with the BLM to train volunteers. Courses currently available through the Eastern Idaho technical College.
- Evacuation Planning-work to promote a notification program using the NOAA weather radios.
- Fuels reduction projects-continue to work with homeowner associations in identifying and promoting projects. Work with BLM and Forest Service on fuels issues.
- Wildland Fire Code-participate with a Countywide group to draft and adopt a code.
- Mutual Aid Agreement-participate with other Fire Districts in the County to adopt a mutual aid agreement.
- Portable Water Supply-work with other Fire Districts to acquire and share water tenders.

Lava Fire Department

Moose Hollow

HIGH

Past Occurrence	1
Fuel Conditions	5
Population	5
Suppression	2

Suggested Mitigation Projects-Fuels reduction project. Develop water supply. Adopt wildland interface fire code.

Lava Ranch/Smith Canyon

HIGH

Past Occurrence	2
Fuel Conditions	5
Population	5
Suppression	2

Suggested Mitigation Projects-Fuels reduction project. Develop water supply. Adopt wildland interface fire code.

Spring Creek

HIGH

Past Occurrence	1
Fuel Conditions	5
Population	5
Suppression	2

Suggested Mitigation Projects-Fuels reduction project. Develop water supply. Adopt wildland interface fire code.

Thunder Mountain

HIGH

Past Occurrence	1
Fuel Conditions	5
Population	5
Suppression	2

Suggested Mitigation Projects-Fuels reduction project. Develop water supply. Adopt wildland interface fire code.

Pine Haven

HIGH

Past Occurrence	1
Fuel Conditions	5
Population	5
Suppression	2

Suggested Mitigation Projects-Fuels reduction project. Develop water supply. Adopt wildland interface fire code.

Indian Falls

MODERATE

Past Occurrence	1
Fuel Conditions	2
Population	5
Suppression	2

Suggested Mitigation Projects-Develop water supply. Adopt wildland interface fire code. Enforce current building codes.

Lava Hills

MODERATE

Past Occurrence	1
Fuel Conditions	2
Population	5
Suppression	2

Suggested Mitigation Projects-Develop water supply. Adopt wildland interface fire code. Enforce current building codes.

Juniper Ranchettes

LOW

Past Occurrence	1
Fuel Conditions	2
Population	4
Suppression	2

Suggested Mitigation Projects-Develop water supply. Adopt wildland interface fire code. Enforce current building codes.

Lava West

LOW

Past Occurrence	1
Fuel Conditions	1
Population	3
Suppression	2

Suggested Mitigation Projects-Develop water supply.

Thunder Canyon

LOW

Past Occurrence	1
Fuel Conditions	1
Population	4
Suppression	2

Suggested Mitigation Projects-Develop water supply.

Creekside Circle

MODERATE

Past Occurrence	1
Fuel Conditions	2
Population	5
Suppression	2

Suggested Mitigation Projects-Develop water supply.

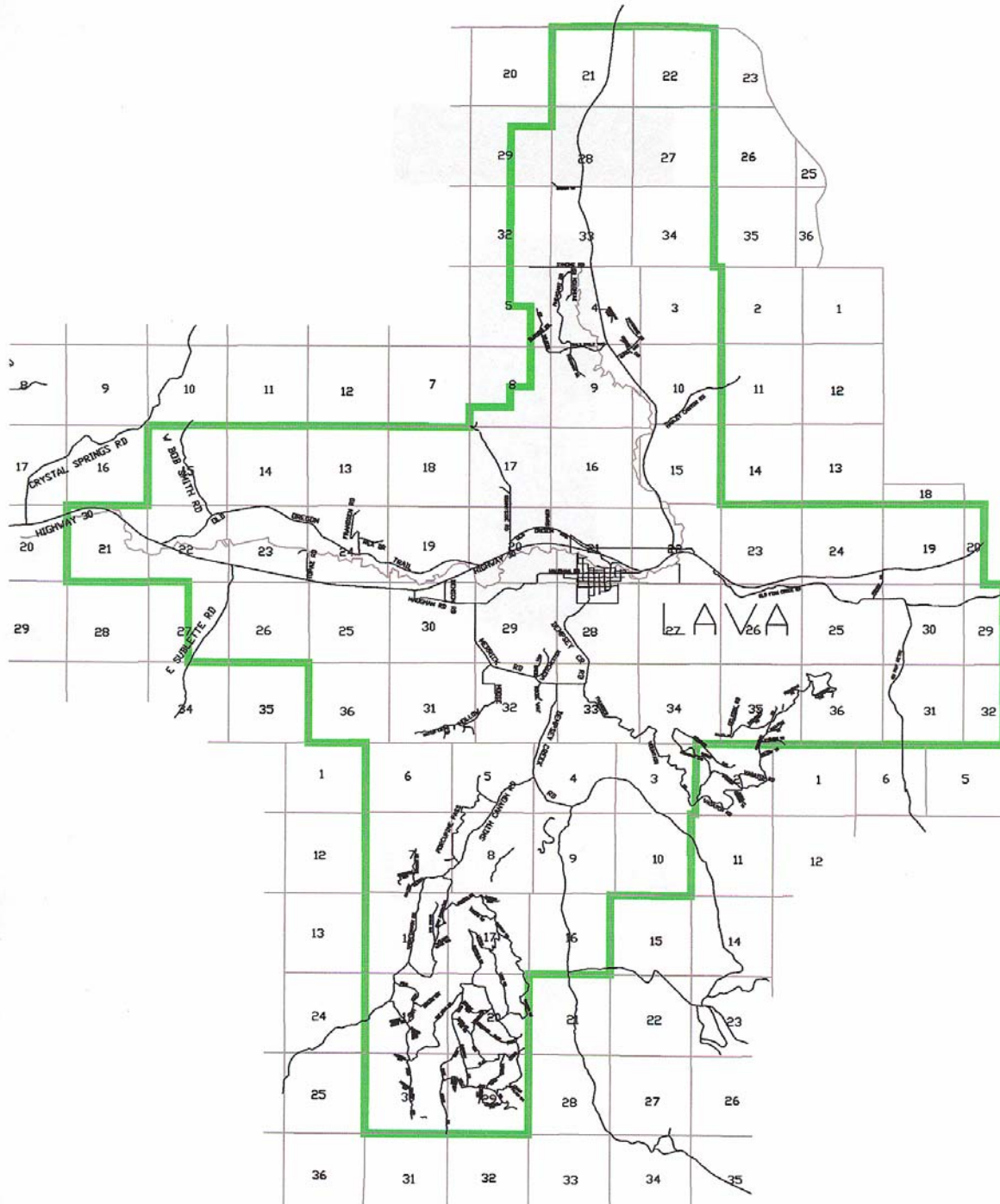
Deer Creek Estates

MODERATE

Past Occurrence	1
Fuel Conditions	5
Population	2
Suppression	2

Suggested Mitigation Projects-Fuel reduction project. Develop water supply.

LAVA FIRE DISTRICT



Assessment Overview Report
Lava Fire District
Three Rivers Resource, Conservation and Development Area
June 2003

Profile of the District:

The Lava Fire District is a combined municipal and fire protection district. The protection area includes a moderately growing area of Southeastern Idaho including structural protection, wildland fires and HazMat support. Lava Hot Springs is located at the Base of Fish Creek Summit that boasts a world-class natural hot springs operated by the State of Idaho and Lava Hot Springs Foundation. The area is primarily recreational with rolling hills and mountains with the Portneuf River running through the area.

Organizational Structure

The District reports to the City and Fire District Commission, respectively. There is one chief, one assistant chief, a training officer and 16 firefighters. All personnel are volunteers. The Disaster Services Coordinator represents the District.

Facilities:

The District has one station with four bays. It is in need of adding a training area to the existing station. At present, the District is required to move trucks around to make room for training. An office for record keeping and report writing is also needed.

Response Area:

The fire protection area includes agriculture, rangelands, forest, wildland urban interface, residential and business. The response area includes 250 square.

Budget and Funding:

Actual budget figures are not available. However approximately 68% of the budget is funded through tax dollars and the remainder is funded through special fees.

Grants:

The Fire District has received grant funds from the State IDS, the BLM, Forest Service and the National Fire Plan. The District is familiar with the National Fire Plan and they do intend to continue to pursue grant opportunities.

Records Management:

A comprehensive, computerized records management system is in place. The District has been using the Fire Programs systems for approximately one year and it tracks personnel, incident reports, training, apparatus and equipment.

Firefighting Program:

The Lava Fire District has 18 personnel within the firefighting program that are all volunteers. Fire response includes protection for structural protection and wildland fire suppression. The District reports it responds to 24 fire calls a year. The area is at high risk for wildland urban interface fires and for terrorist attacks. Eighteen of the firefighters are trained in wildland suppression. The District does have some adequate and reliable water sources including water mains, hydrants, bodies of water and tender operations. The 10-minute place into action requirement is a capability of the District with scene size-up, attack lines and water supply.

Firefighting Program Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">● 1 Station, 4 Bays● Volunteer Personnel● 2,750 Structural/180 Wildland Total GPM Capacity● Computerized Record Keeping System in Progress● Fire Response: Structural & Wildlands● 3 Structural 2 Wildland Vehicles● Investigating a Grid Access Address System	<ul style="list-style-type: none">● Training Space Addition● Office and Record Keeping Area● Computer Use and Software Training● Improved Enforcement of Current Codes● Improved Communication with Developers● Increased Water Supply – Add 1-2 Tenders● Ease in Accessibility and Applying for Grants● NFPA Manuals on Maintenance & Testing● Add 1 Light and 1 Heavy Wildland Truck● Hand-held Radios

Hazardous Materials Program:

The Fire District does not have a HazMat response team.

EMS Program:

The District does not support an EMS system at this time.

Training and Certification:

The District’s training program includes structural protection (essentials), wildland fire suppression (essentials), and HazMat awareness. The District has been acquiring study materials to implement NFPA courses and it does utilize the IFSTA Training Program.

Training and Certification Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> • Structural Protection • Wildland Fire Suppression • HazMat Awareness • IFSTA Training Program • Standard Operating Procedures 	<ul style="list-style-type: none"> • Training Space Build • Complete Set of IFSTA Training Materials

Communications:

Communication is dispatched through the Bannock County 911 dispatch center. Radio communication capacity is sufficient. Some vehicles are equipped with radios and the District does not have a sufficient number of hand-held radios.

Communication Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> • Responds to Remote Alarm Calls • Portable Radios • Radios in Some Vehicles 	<ul style="list-style-type: none"> • Talk-a-round Channel • Communication Frequencies with the BLM & Forest Service • Hand-held Radios

Prevention and Inspection:

The District does not have Fire Code regulation enforcement capacity. Fire cause and origin investigations are conducted. If there is a cause or origin question, the State Fire Marshal’s Office is called in for assistance with investigation.

Prevention and Inspection Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> • Fire Cause & Origin Investigations 	<ul style="list-style-type: none"> • Locally Trained Personnel • Area Inspector from the State Marshal’s Office

Public Education:

The District does conduct public education programs for wildland fires, structural fires and home safety. It also regularly participates in public outreach with schools, fire station activities and scouting events.

Public Education Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">• Public Education Programs• Outreach Education	<ul style="list-style-type: none">• Prepackaged Programs

Arimo Fire District-Mitigation Plan

The Arimo Fire District is located in Southern Bannock County and is predominantly agricultural. The District covers approximately 85 square miles and the Department protects 153 homes with a value of \$8,976,000.00.

The Arimo Fire Department is a volunteer department with an average of 12 volunteers including the Fire Chief. The Department responds to approximately 20 calls for service per calendar year.

The Department operates 2 pumpers, a 1,000 gallon brush truck, a 250 gallon brush truck and a 2500 gallon tender which is old and slow. The Department also has structural equipment.

The Chief feels that the Department is adequately trained given their resources and could do better if funding for training was available. Personnel turnover is often times an issue with the Department. The ability to compensate the volunteers for required training would help with the turnover issue.

The Department has a limited history of fire prevention programs. A limited number of volunteers and limited resources make programs difficult to achieve. The Department has not been involved in any fuel reduction projects and is not aware of any planned projects in the District.

The Department has a history of several large wildfires each year and a number of smaller field fires.

There are several homes located near the District that are not included in the District. They are located on Rattlesnake Road near Power County. Additionally, there are several homes that opted not to participate in the District.

Water resources currently used by the Department are the City water system, connectivity to agricultural sources and Hawkins Reservoir.

Fire Mitigation Goals

- Funding for Station upgrade \$200,000.00
- New brush truck 60,000.00
- Small equipment (hand tools-saws, etc.) 5,000.00
- Personal Protective Equipment 5,000.00
- Fuel Reduction Projects-Homes near Hawkins
- Fire breaks on CRP land 2,000.00
- Home Evaluations 2,000.00
- Wildland Fire Training 10,000.00
- County wildland fire code
- County mutual aid agreement
- Portable water supply
- Become A Firewise Community

Fire Mitigation Actions

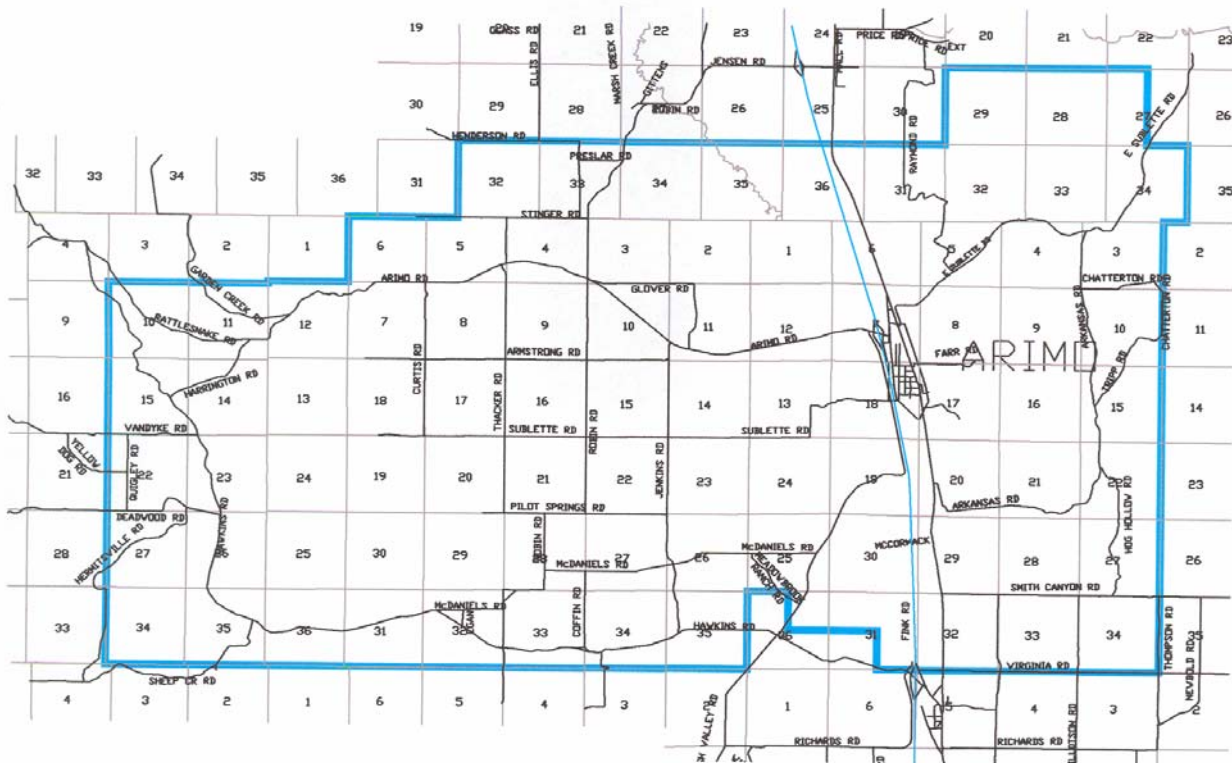
- Station and Equipment upgrades-work with the Federal Agencies to identify funding sources for these issues. Participate in training opportunities for grant writing and work with County, State and Federal Agencies to acquire needed funding.
- Fuel Reduction Projects-work closely with the BLM and Forest Service programs to identify projects adjacent to Federal lands.
- Home Evaluations-work with Three Rivers RC&D in getting their assistance with home evaluations.
- Participate with the BLM training now available through the Eastern Idaho Technical College and look for funding ideas to compensate volunteers.
- Wildland Fire Code-participate with a Countywide group to draft and adopt a code.
- Mutual Aid Agreement-participate with other Fire Districts in the County to adopt a mutual aid agreement.
- Portable Water Supply-participate with other Fire Districts to acquire and share water tenders.

Arimo Fire District

MODERATE

Past Occurrence	3
Fuel Conditions	2
Population	3
Suppression	4
Suggested Mitigation Projects-Fire breaks for homes near CRP Lands	

ARIMO FIRE DISTRICT



Downey Fire District-Mitigation Plan

The Downey Fire District is located at the South end of Bannock County and is predominately agricultural. The District covers approximately 172 square miles and the Department protects 314 homes with a value of \$15,658,000.00.

The Downey Fire Department is a volunteer department currently with 8 members including the Fire Chief. The Department responds to approximately 50 calls for service each calendar year.

The Department operates 3 brush trucks and a 5,000 gallon tender. The Fire Chief states that the equipment is in fair condition.

The Chief feels the Department could use some wildland fire training and has been discussing the need with the BLM. The Department could use more volunteers and a training officer. Recruitment and retention of volunteers is an ongoing issue.

The Department has no history of fire prevention programs. The limited number of volunteers and limited resources make providing these types of programs very difficult. The Department has not been involved in any fuels reduction projects but has had some discussion with the BLM about a project in the Swan Lake area.

The Department has a history of wildland fires on or near Federal lands and responds to several every year. The Swan Lake area has the greatest concentration of homes in the interface area and is a long response from Downey. Some discussion has taken place to acquire a light truck to place in the Swan Lake area and train additional volunteers in that area.

The Fire Chief was not aware of any homes near the District that were not included in a fire district.

Water resources currently used by the Department are the City water system, irrigation water Swan Lake and Hawkins Reservoir.

Fire Mitigation Goals

- Funding for new Fire Station \$300,000.00
- Collapsible water tanks 4,000.00
- Brush Truck (Swan Lake Area) 60,000.00
- Small Equipment (hand tools-saws, etc) 5,000.00
- Personal Protective Equipment 5,000.00
- Wildland Fire Training 2,000.00
- Fuels Reduction Project (Swan Lake)
- County wildland fire code
- County mutual aid agreement
- Portable water supply
- Become A Firewise Community

Fire Mitigation Actions

- Station Replacement and equipment upgrades- work with Federal Agencies to identify funding sources. Participate in training opportunities for grant writing and work with County, State and Federal Agencies to acquire needed funding.
- Fuels reduction programs-work closely with the BLM on the project in the Swan Lake area. Evaluate need for fire breaks on CRP land.
- Wildland fire training-work with the BLM on setting up training now available through the Eastern Idaho Technical College.
- Wildland Fire Code-participate with a Countywide group to draft and adopt a code.
- Mutual Aid Agreement-participate with other Fire Districts in the County to adopt a mutual aid agreement.
- Portable Water Supply-participate with other Fire Districts to acquire and share water tenders.

Downey Fire District

MODERATE

Past Occurrence	4
Fuel Conditions	3
Population	1
Suppression	4

Suggested Mitigation Projects-Fuel reduction in the Swan Lake area(Currently working with BLM on Project)

DOWNEY FIRE DISTRICT



Assessment Overview Report
Downey Fire District
Three Rivers Resource, Conservation and Development Area
June 2003

Profile of the District:

The Downey Fire District is a combined municipal and fire protection district. Downey is a small, slow growing community located on Old Highway 91 just east of Interstate 15. The topography of the District is mostly flat farm and ranch lands. There is little industry in the area that is primarily agriculturally based.

Organizational Structure

The District reports to the City Council and Fire District Commission, respectively. The District is in the process of restructuring and the chief and most of the firefighters are new. There is one chief, an assistant chief and two firefighters. All personnel are volunteers.

Facilities:

The District has one station with one bay that is two trucks deep. The District is looking for grant funds to build a new station with four bays in Downey. They would also like to build a two-bay station in the Swan Lake area.

Response Area:

The fire protection area includes agricultural, rangelands, wildland urban interface, residential, and business. The response area includes 267square. The District provides fire protection for Downey, Virginia and Swan Lake.

Budget and Funding:

The budget has remained steady from year to year with 100% of funding coming from taxes.

Grants:

The Fire District has received grant funds from the BLM, Forest Service rural assistance, the FEMA National Fire Plan and from fund raising. The District is in the process of becoming more familiar with the National Fire Plan and hopes to pursue grant funding in the future. The City has hired a grant writer and has already benefited from this action.

Records Management:

The Chief has just begun searching records for the District. Records are now being tracked for training and a computerized records management system is in the planning stages.

Firefighting Program:

The Downey Fire District has six personnel within the firefighting program that are volunteers. Fire response includes protection for structural protection, wildland fire suppression, HazMat assist only and good intent response. The District reports it responds to 125 calls annually. The area is at high risk for wildland urban interface fires and terrorist attacks. None of the firefighters are trained in wildland suppression. The District does have some adequate and reliable water sources including water mains, hydrants and bodies of water. The 10-minute place into action requirement is a capability of the District with scene size-up and exterior attack.

Firefighting Program Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> ● 1 Station, 1 Bay 2 Trucks Deep ● Volunteer Personnel ● 1,000 Structural/20 Wildland Total GPM Capacity ● Manual Record Keeping System ● Fire Response: Structural & Wildlands ● 1 Structural/4 Wildland/Structural Vehicles 	<ul style="list-style-type: none"> ● Computer and Software ● Computer/Software Training ● New Station with 4 Bays (Downey) ● Additional Station with 2 Bays (Swan Lake) ● County Codes for Development/Driveway Access ● Improve Roadway Maintenance ● Grants for Underground Storage Tanks, Wells & Pumps ● Dry Hydrants ● Grants for One-time Purchases ● Current NFPA Standards Manual & Testing Equipment

Hazardous Materials Program:

The Fire District does not have a HazMat response team. It will respond for scene stabilization only until a HazMat team arrives. The District has mutual aid agreements with the U.S. Forest Service and the BLM.

EMS Program:

The District does not provide EMS services. It will respond to assist if called.

Training and Certification:

Because the District is restructuring, at this time no minimums have been established for training and certification. The Chief is currently doing research on what the District will need to establish minimums.

Training and Certification Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> • None Identified 	<ul style="list-style-type: none"> • Grants for In-house Training, Materials, Videos, Slides • AV Materials, Video Machine • Computers for CD-based Learning • Grants for Outsourcing Instructors

Communications:

Communication is dispatched through the Bannock County 911 dispatch center. Radio communication capacity is sufficient. All of the vehicles are equipped with radios but the District does not have a sufficient number of hand-held radios.

Communication Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> • Responds to Remote Alarm Calls • Portable Radios • Radios in All Vehicles 	<ul style="list-style-type: none"> • Upgrade all Personnel to Two-way Radios

Prevention and Inspection:

The District does not have Fire Code regulation enforcement capacity or fire cause and origin investigations process. If there is a cause or origin question, the State Fire Marshal's Office is called in for advice and investigation.

Prevention and Inspection Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Grants for Personnel Training, Materials and Records Management

Public Education:

The District is looking at several options for offering public education at this time. The Chief indicated that this is important for public safety and understanding of hazards they might face.

Public Education Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">• None at This Time	<ul style="list-style-type: none">• Grants for Personnel Training• Grants for Handout Materials and Presentations

City of Pocatello



Comprehensive Plan For the Wildland/Urban Interface

This report compiled by
Roger B. Sears
Division Chief/Fire Marshal

ACKNOWLEDGEMENTS

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Kristy Borzymowski	Fire Secretary for the Pocatello Fire Department
Glen Blackwell	Division Chief for the Pocatello Fire Department

Cover photography courtesy of Bureau of Land Management

This homeowner implemented pre-fire activities including defensible space, a green and well maintained landscape, reduction of wildland vegetation around the perimeter of the property, as well as a fire resistant roof. As seen in the photo, these treatments are very effective.

Wildland/Urban Interface Communities at Risk Comprehensive Plan for Pocatello

In the summer 1987, a small grassfire was started in the City Creek area, on the west bench of Pocatello. The cause of this fire was kids playing with matches, starting a small “campfire”, which, fanned by winds, quickly grew to what is now called the “Johnny Creek Fire”. Although the origin of this fire was 2-3 miles north of the Johnny Creek Subdivision, a number of factors contributed to create Pocatello’s most disastrous wildfire.

One of the resultant benefits of this fire was the formation of a cooperative partnership of all the agencies involved, including BLM, US Forest Service, Pocatello Fire Department, Chubbuck Fire Department, Portneuf Valley Fire District, Inkom Fire Department and the Fort Hall Fire Department. This partnership is the Gateway Interagency Fire Front (GIFF). GIFF has been a very useful tool in reducing the time needed to put fire crews on wildland fires that occur within the GIFF area. It has also been a useful tool in starting communication between the various agencies, and keeping a continual flow of information between these agencies. As has been shown in other areas of the fire service, communication between agencies results in stronger relationships, which results in better mitigation efforts for all problems within the area.

During the summer of 2000, dry lightning storms passed through the Pocatello area, and although the numerous fires that were started in the area were quickly extinguished due to the cooperative efforts of the GIFF members, other areas of Idaho, as well as Wyoming, Montana and other neighboring states did not fair as well, and the disastrous fire season of 2000 began. In the wilderness of central Idaho, these fires were not fully extinguished until the winter snow storms came. The Eastern Idaho Complex Fire, which is within the BLM Idaho Falls District, burned 192,450 acres, and was the third largest fire in the Northwest during the 2000 fire season. One result of the 2000 fire season was the formation of the National Fire Plan. This Comprehensive Plan is the result of efforts to reduce the risk of wildfire.

This Comprehensive Plan, hereafter referred to as the “Plan,” supplements the National Fire Plan, to help communities at risk due to wildland/urban interface areas. Interface areas are located where communities have developed homes and businesses within the wildlands surrounding these communities. These areas have inherent problems that contribute to the loss of life and destruction of property, such as homes built in the forest with trees encroaching on the house’s siding, and on occasion growing through the deck, as homeowners think of the aesthetic beauty of their homes, without considering the risks. Other problems include limited access into these areas due to narrow roads with timber and vegetation overgrowth, limited water supplies, and construction materials that contribute to fire spread.

This plan will address two major items. (1) It will identify and assess areas within Pocatello that are at risk due to development in the Wildland areas; and (2) It will identify mitigation projects, which by priority, will reduce the risks to property, both public and private.

In order to identify and assess the risks, the Pocatello Fire Department will utilize a study conducted and completed by Idaho State University titled “Wildland/Urban Interface and Communities at Risk, Joint Fire Modeling Project”. This study has identified areas at risk using the following criteria:

1. Topography and vegetation. This includes slope and aspect and the resulting affects of spread rate of a fire, as well as how it creates difficulties in suppression efforts.
2. Suppression access. Slope and the accompanying vegetation dictate the ease or difficulty to get suppression crews to the fire.

The Plan will also show fuel types within the area, including unusually heavy concentrations of fuels, over mature or decadent fuels and other abnormalities that increase severity of fire behavior. Areas within the Wildland/Urban Interface that have high value homes and subdivisions will be identified.

In addition to using the ISU study, the Plan will give information on fire occurrences and risks for an average year, and from that information, identify areas in which mitigation efforts will result in the most benefit in saving the largest number of homes.

We will utilize organizations, such as the Student Conservation Association, in our mitigation efforts, having them contact homeowners within the high risk areas, setting public meetings in order to gain public input and to educate the public of our goals and objectives. Once we have identified the high hazard/high risk areas and made contact with homeowners within these areas, we will use that input to establish mitigation proposals that will reduce the risk in those areas.

Meetings will be scheduled with all interested parties, including local, state and federal agencies that share jurisdictions within the greater Pocatello area. These meetings will keep all parties informed of progress and also to get input into mitigation ideas, as well as what strategies should be used and where our mitigation efforts should be concentrated.

Hazard Analysis and Risk Assessment

As discussed earlier, the hazard analysis and risk assessment are based on a study completed by Idaho State University. This study was done specifically to help pro-active fire managers to develop plans such as this one. Each of the criteria used in their study will be discussed and derived conclusions will be shown. The two major criteria are topography/vegetation and suppression access. The study broke these down further into six categories:

1. Slope/spread rate
2. Slope/suppression difficulties
3. Aspect/sun and daily temperatures
4. Fuel load/spread rate
5. Fuel load/intensity
6. Response time

Slope/Spread Rate:

The criterion slope was split into two parts: (1) How slope affects rate of fire spread;, and (2) How slope affects suppression efforts.

1. The spread rate of a fire is linear and the surface of a fire increases exponentially to the angle of slope. This means as the slope of an area increases, the rate of fire spread increases more rapidly. Figure 1 shows the areas within Pocatello that have a slope which could create increased fire risk.

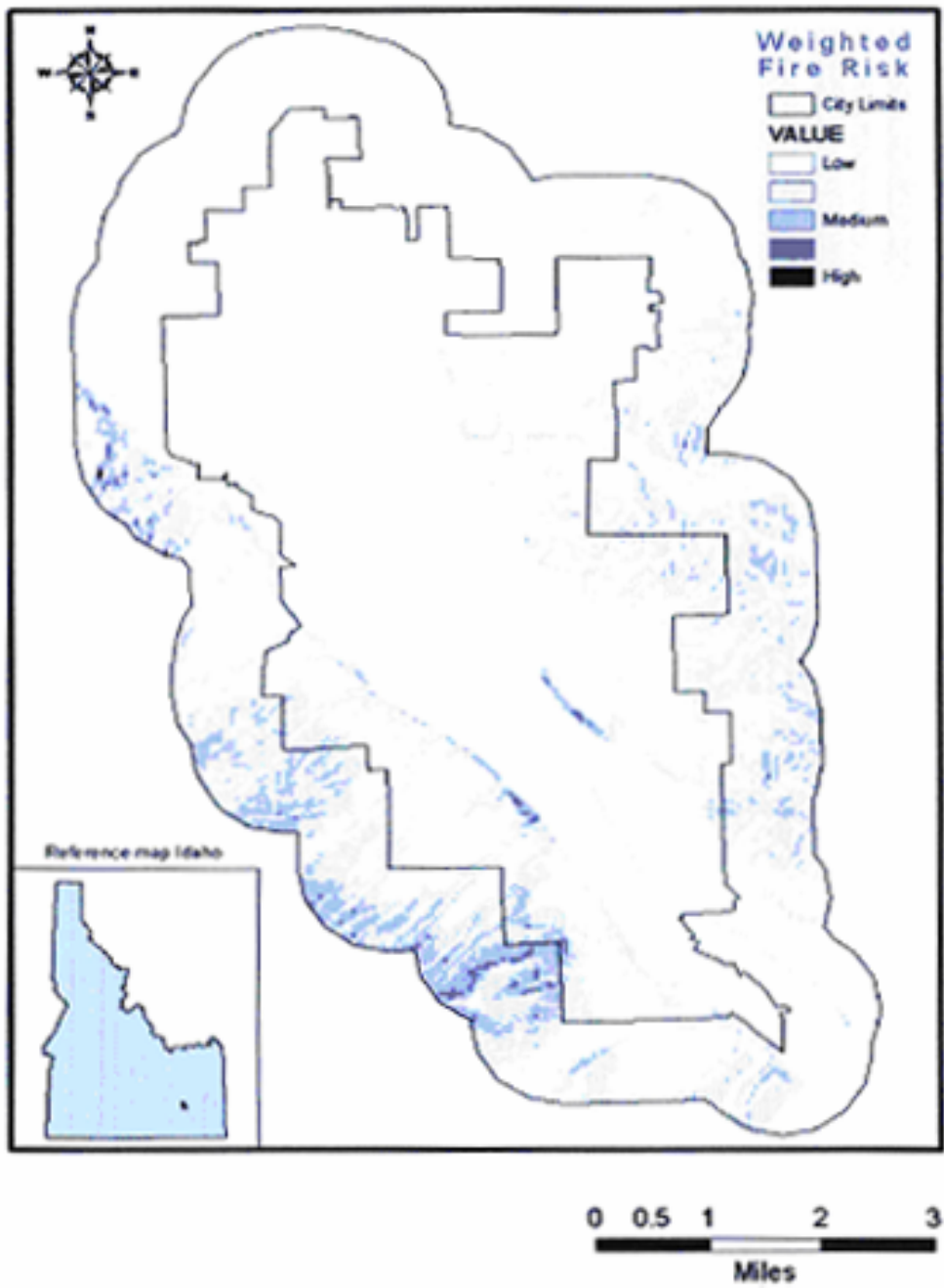


Figure 1. This map shows areas with a steeper slope, these areas may have a higher fire risk due to rate of spread increasing

2. The second part of the slope criteria discusses suppression difficulties associated with increased slope. Areas with hillsides where the slope is greater than twenty degrees will begin to have difficulties in suppression. On slopes greater than twenty-five degrees, heavy fire suppression machinery, such as BLM's "heavy engines" and bulldozers, will have difficulties in operating, and when the slope is twenty-five to fifty degrees, suppression activities are limited to manpower only, without any vehicle support. Figure 2 shows areas where the steeper slope creates increased difficulties in suppression, therefore contributing to a higher fire risk.

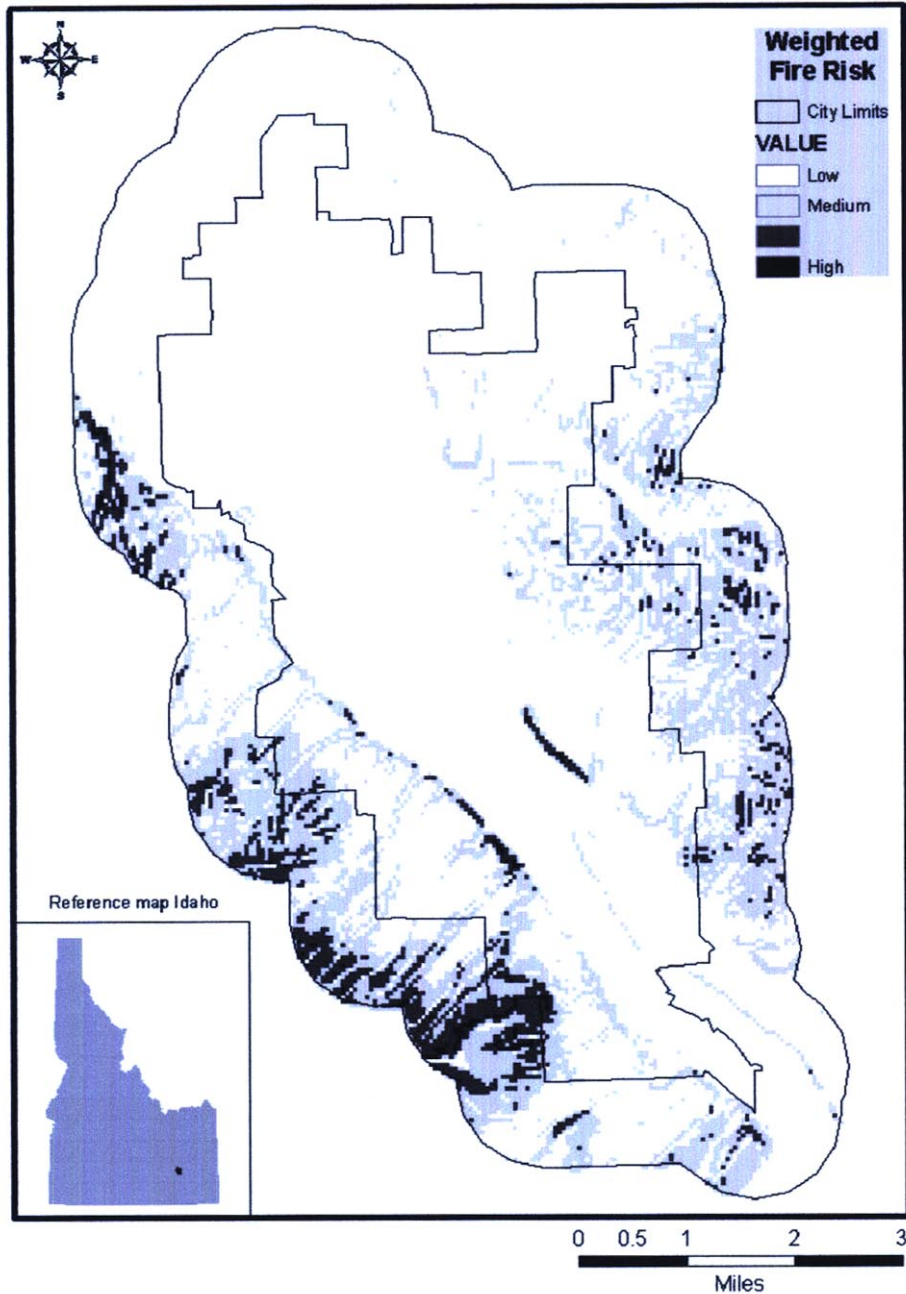


Figure 2. This map shows areas with steep slopes which may increase suppression difficulties.

Aspect/Sun and Daily Temperature:

The third criterion considers the angle of the sun and the daily temperature, and what affect it has on fire risk. The sun will, predictably, desiccate the ground and vegetation more on south facing slopes than on east-west slopes. It is also assumed that the sun's affects is greater in the afternoon due to the cumulative affects of increasing the daily temperatures. Therefore, sun and high daily temperatures will dry out vegetation on south facing slopes more quickly. Figure 3 shows how the sun's position and daily temperature affects fire risk.

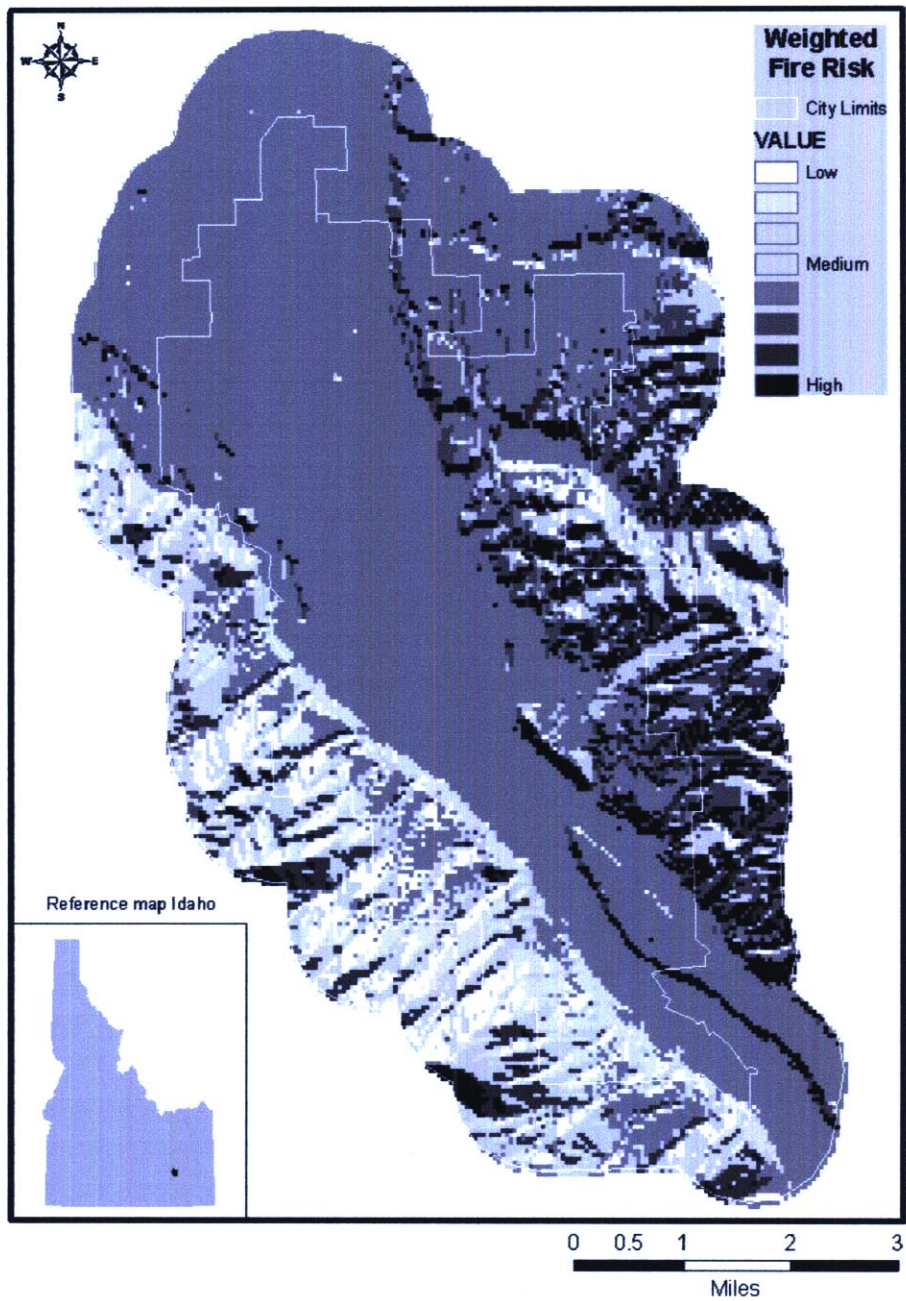


Figure 3. This map shows sun position and daily temperature which may affect fire risk.

Fuel Load/Spread Rate:

Fuel loads were mapped using Landsat 7 Enhanced Thematic Mapper (ETM+) Imagery, with 128 different sites on the Snake River Plain being sampled. These sample points were used to estimate fuel loads. One concern with the fuel load model is that it seems to have problems detecting juniper vegetation in some areas. The fuel load model will be validated in 2002 and these problems corrected. (Note: At the time this document is written, it is unsure if these conditions have been corrected). The fuel load classes that are found in the Pocatello study area are:

- 0 = Water and rock;
- 0.74 = Grassland;
- 1 = grassland with some sagebrush;
- 2 = low sagebrush;
- 4 = typical sagebrush;
- 6 = juniper;
- 10 = forest.

In the Wildland/Urban Interface model, fuel loading was used in two ways: (1) How fire spread rate is affected; and (2) How the fire intensity depends on the fuel load.

First, low fuel loads such as grasses and shrubs are considered to be the primary carrier of the fire, with a rapid spread rate. Fuel load class 4 has a higher spread rate than fuel class less than 4 because the vegetation is denser, and the fire burns more intensely, therefore it spreads faster. In fuel loads greater than 4, the vegetation that carries the fire reduces in density and the moisture content increased making the spread rate slower for this study. Figure 4 shows how the fire spread rate is affected by fuel loading.

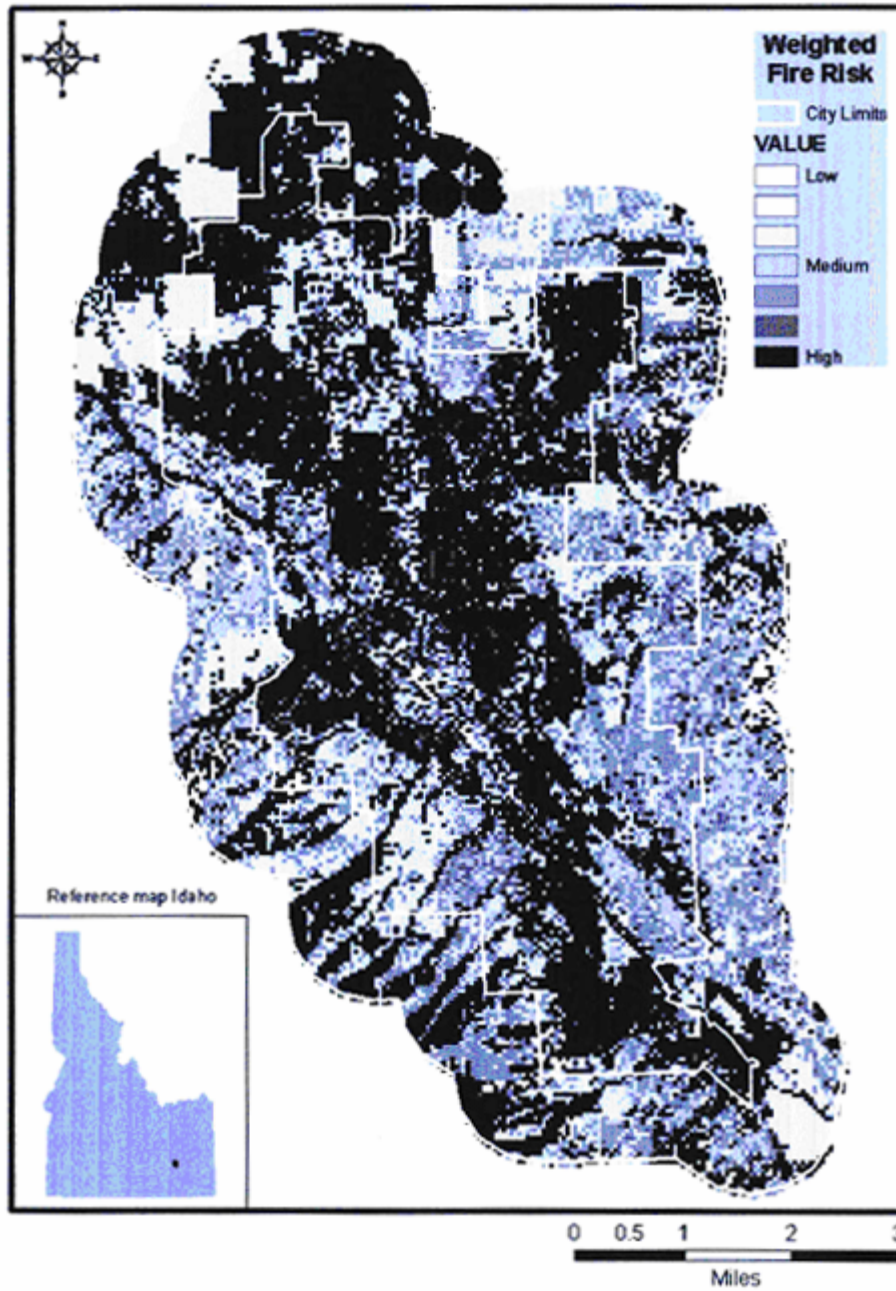


Figure 4. This map shows the fuel load within the study area which affects fire spread rate.

Next, the intensity of the fuel loading was considered. For this example, “intensity” is measured as the energy that the fire produces. The more energy a fire produces, the more difficult it is to suppress, making it a higher risk to the community. Figure 5 shows where fuel load can affect fire intensity.

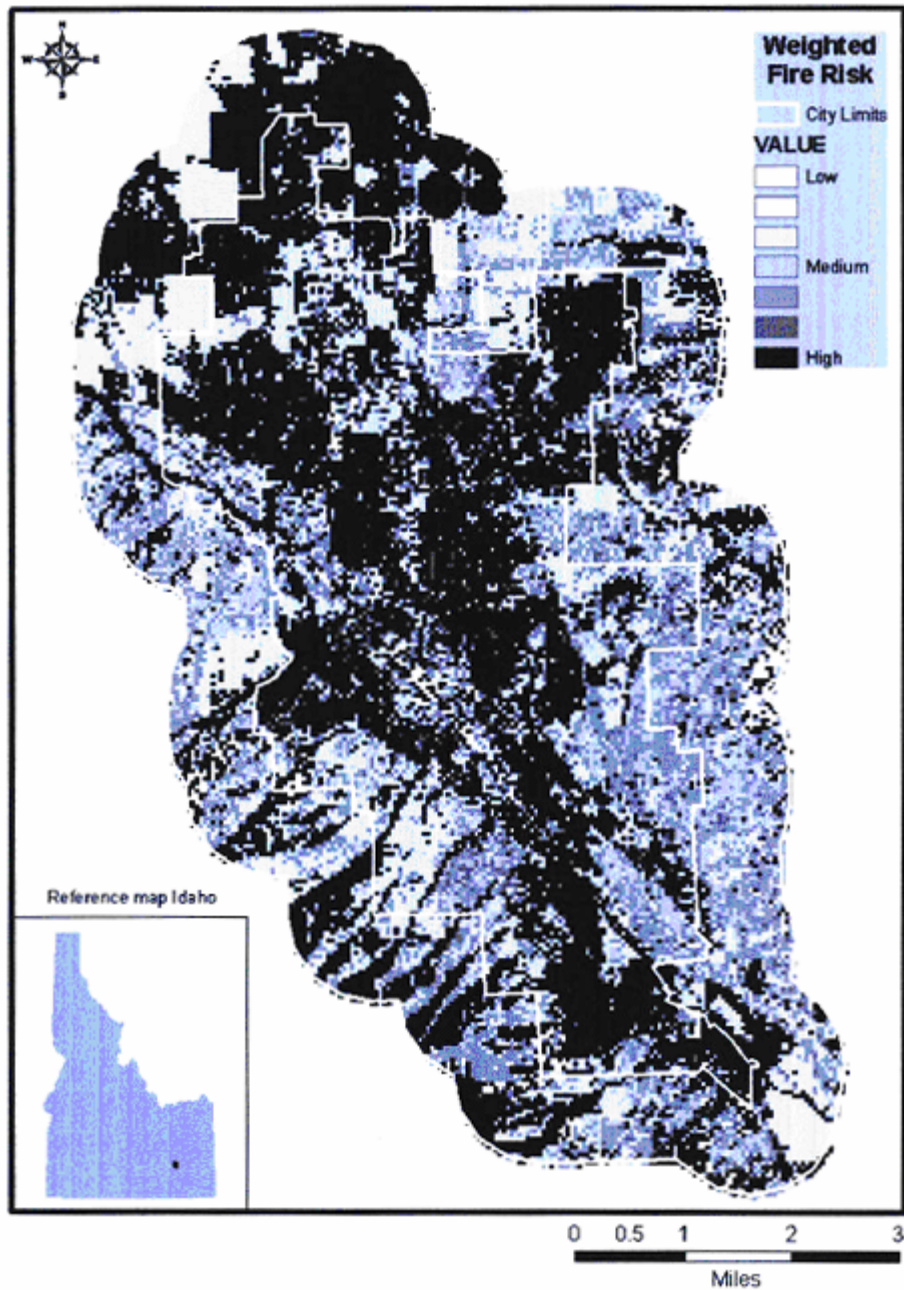


Figure 5. This map shows the fuel load and how the fire intensity could be affected.

Response Time:

The last criterion considered in the study was response time. The study tracked the time it takes for response vehicles to reach different areas within Pocatello. The weighting of this criterion was calculated based on the time a house catches fire until it flashes over. A wildfire that spreads into urban areas is going to be detected and reported before it reaches houses, thus the time it takes for firefighters to reach those houses is less relevant and this criterion gets a lower risk rate in the total model. Figure 6 shows how the calculated response time (identified by the red line) for Fire Station 1 in Pocatello compares to the tested response time, (green dots are locations responded to). As is shown, with few exceptions, the calculated and actual response times coincide.



Figure 6. This map shows how the calculated response time (line) for Fire Station 1 in Pocatello compares to the tested time (points).

Figure 7 shows how response times are distributed within the Pocatello study area. Darker areas indicate slower responses, and where the dark is close to the red dots (station locations), it shows how the terrain dictates response, even in an urban setting.

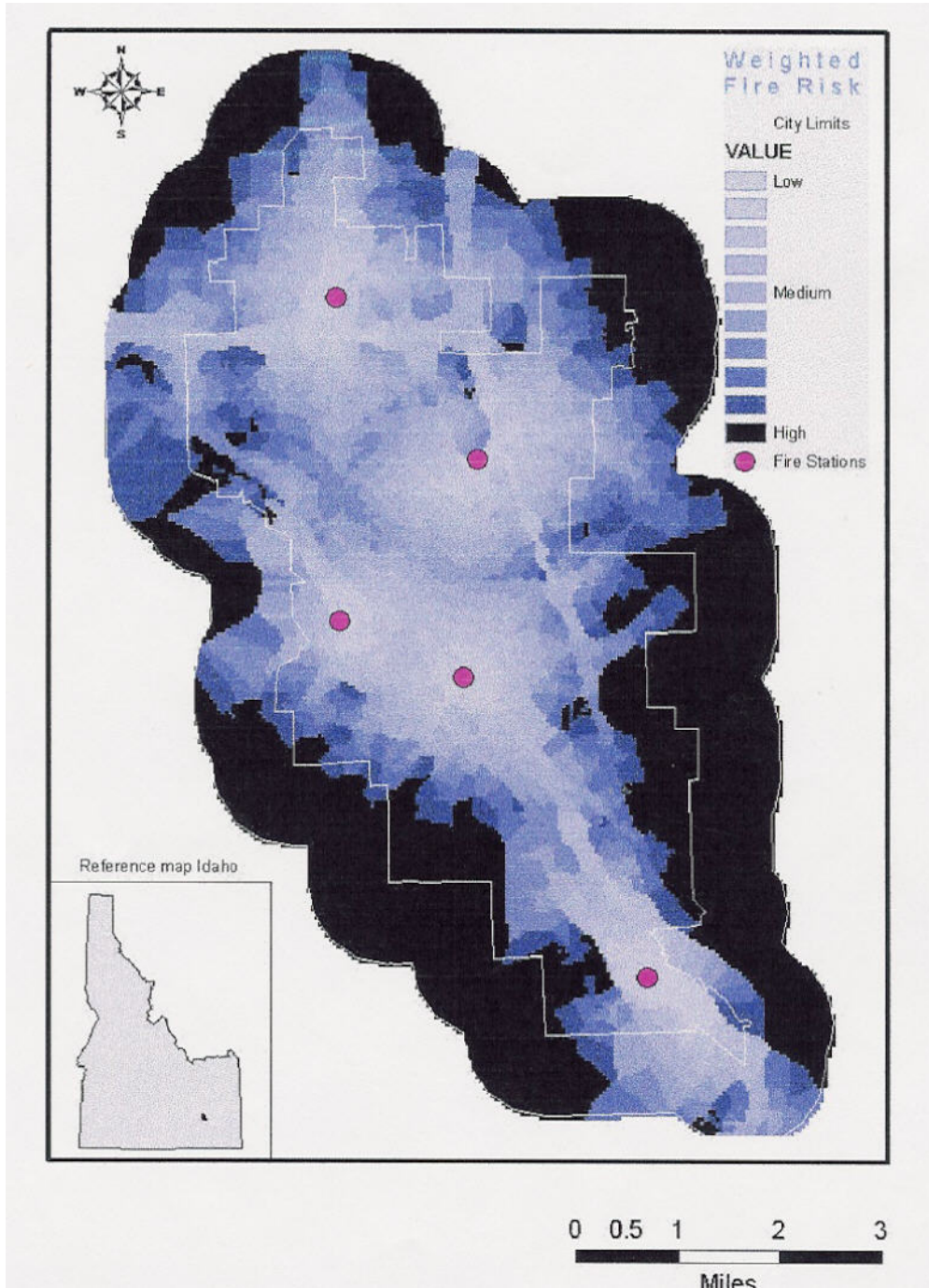


Figure 7. This map shows how response time is distributed within the study area.

The results of this study weighted the criteria as follows:

- Fuel load/spread rate = 25% (of total fire model)
- Fuel load/intensity = 22%
- Slope/suppression difficulties = 19%
- Slope/spread rate = 14%
- Aspect/sun position and daily temperatures = 12%
- Response time = 8%

The resultant Wildland/Urban Interface Communities at Risk Model is shown in Figure 8. It gives a good overview of the Pocatello Wildland/Urban Interface, and is easy to understand.

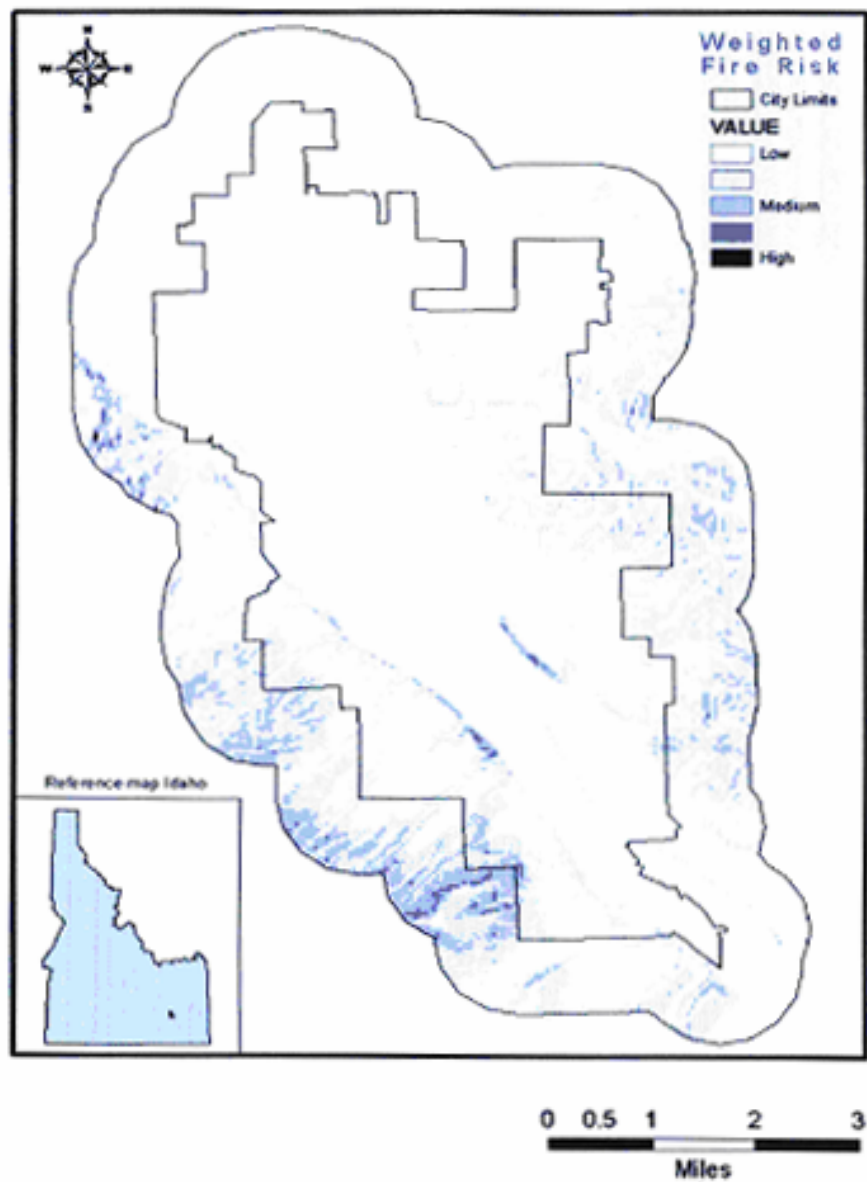


Figure 8. Wildland/Urban Interface Communities at Risk fire model.

One criterion that was not considered, however, was wind. It is assumed that fire spread rate will increase exponentially, depending on wind speed. This assumption applies better to smaller fires, since large fires tend to create their own wind systems. In addition to spread rate, wind will dry out heavy vegetation, such as trees with deep roots, more on the windward slopes, but it will only dry out the surface of the plant. Light vegetation such as grass, however, will be more affected because the wind will dry out the soil surface layer where the grass takes its water. It is assumed in this study to be a minor part of the wind criterion since the core of heavy vegetation will stay unaffected by this wind speed.

To summarize this portion of the Plan, by looking at the information shown by the ISU study, it can be seen that there are four areas-at-risk in the City of Pocatello that border the wildland. These areas are High Country Subdivision, Sagewood Hills designation, Fremont Heights designation, and Johnny Creek designation. First, consider these subdivisions with respect to number of homes and the value of the property in these subdivisions. Figure 9 shows the relationship of these four areas in terms of the value of homes at risk. The majority of this property, by far, is private ownership. Once we have discussed the value and number of homes in each subdivision, we will look at the vegetation surrounding them, and the make up of the subdivision with respect to their urban interface problems. We will then look at the infrastructure as it relates to water supply and access, and finally we will look at any special hazards specific to each subdivision.

High Country Subdivision

High Country Subdivision is located on the northeast corner of Pocatello. It is a relatively new subdivision that has recently been annexed into the city. There is potential for more expansion in this area of town. As the current tax roles indicate, there are eight new streets, with a total of fifty-seven homes built. The value of the homes total \$14,083,549. The average is \$247,080; the highest valued home is \$899,444. The total value of all property is \$56,071,441. The wildland interface surrounds the subdivision, with drainages behind the properties. The interface is comprised of juniper and sage brush, as well as grasses.

High Country is a new development, located in an area that has previously been designated by the Pocatello Fire Department as a “Hazardous Fire Area”. It was built according to guidelines and requirements found in the pamphlet, “Fire Protection Requirements for Residential Development in Hazardous Fire Areas”, published by the Pocatello Fire Department in April of 1996. Road widths in this area were determined by the Pocatello Municipal Code, and comply with the City’s current subdivision requirements. The area’s water supply is from a water tank located above the subdivision, and delivered through the City’s system, with fire hydrants spaced 500 feet apart. Due to the infrastructure that is in place, the main threat is from fire occurring either from the wildland above the subdivision moving down into the subdivision, or a fire occurring in the drainages spreading into the subdivision and up into the hillsides above.

Sagewood Hills Designation

Sagewood Hills designation will include Sagewood Hills, Somerset, and Mountain Valley Subdivision. These are located between Center Street and Buckskin Road on the east side of Pocatello. The total number of homes is 236, with an appraised value of \$30,889,087. The average home value is \$130,886, with the highest value home being \$287,416. The total value of

all property is \$77,197,123. This subdivision is located on a hillside, with the interface at the upper areas and edges, containing sparse juniper and sagebrush, but mostly grasses.

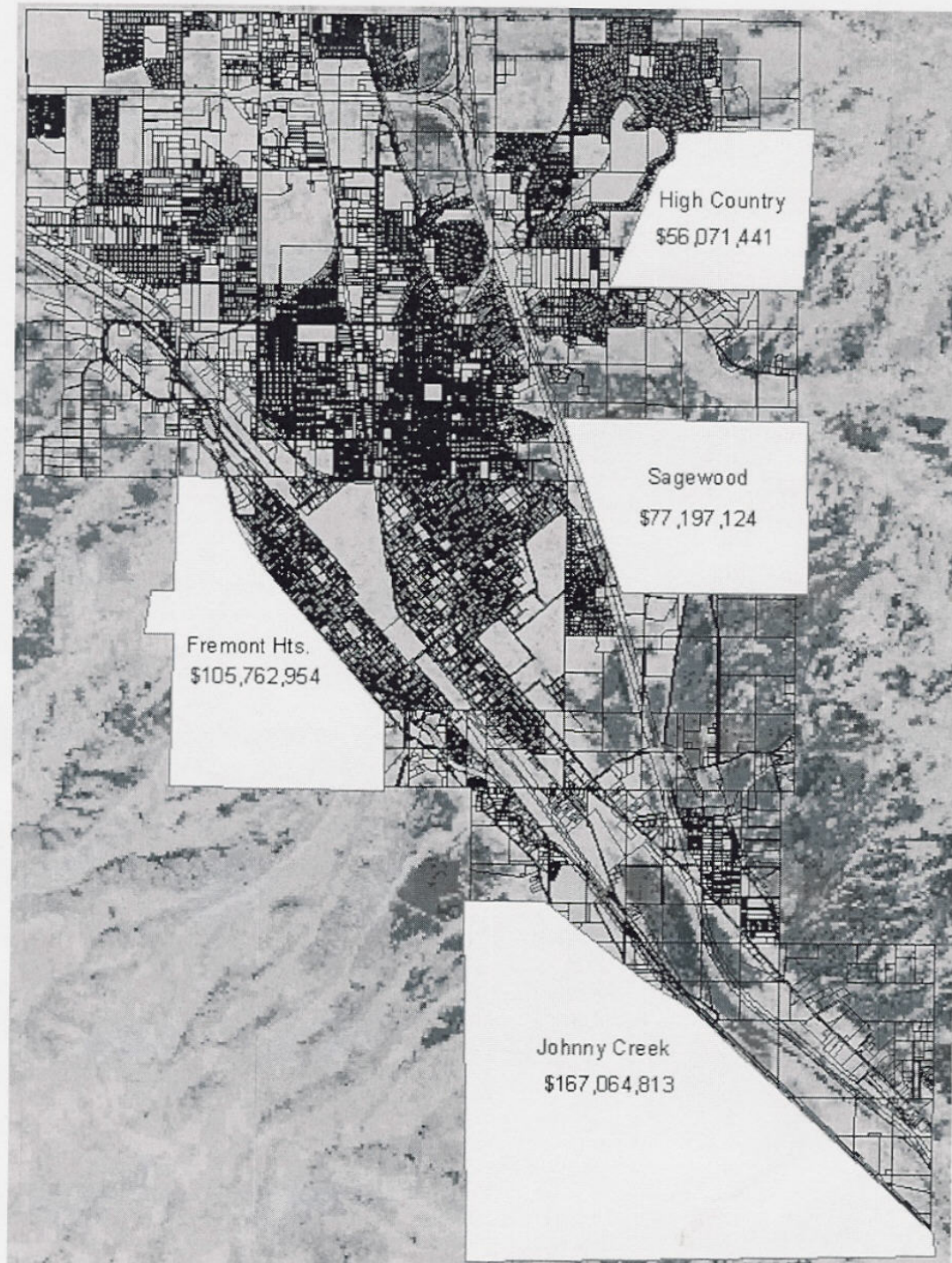


Figure 9. This shows a comparison of the value of homes in our four Wildland/Urban Interface areas.

There are open hillsides between streets, that are too steep to build on, as well as drainage gullies. These areas have natural vegetation, which include sparse junipers, sagebrush, and grasses. The older areas were built with exceptions to the City's code requiring fifty foot wide streets, and the streets are 30 foot wide, with no curb, gutter, or sidewalks. The water supply is from the City's water main system, with hydrant spacing at 500 foot. The newer areas have been developed with the "Fire Protection Requirements for Residential Development of Hazardous Fire Areas" guidelines followed, as well as the City's subdivision ordinance. The streets in these newer areas are fifty foot, with curb and gutter and some sidewalks, where required. The fire danger in the older section is from a grass fire starting in the hills above the older section burning down into the subdivision, or a fire starting in the drainages and burning outward. The newer portions of the subdivision have less threat to them.

Fremont Heights Designation

Fremont Heights designation will include Fremont Heights, Hillside, Hyland Park, Jensen, and Westello. They are located on the west bench of Pocatello. There are a total of 564 homes totaling a value of \$44,056,059. The average home value is \$78,114, with the highest valued home being \$182,264. The total value of all property in the subdivision is \$105,762,954. The homes consist of a mix of single family homes, duplexes, and triplexes. These are older subdivisions, with some new homes built in recent years. This designation is built on hillsides, with the interface at the upper areas and edges, with two major drainages that divide the vicinity into two distinct areas. The vegetation is mostly sagebrush and grasses in these drainages, with the upper areas having juniper trees approaching the homes. The subdivisions were built utilizing the City's subdivision code, with streets being wide; curb, gutter and sidewalks are common. The fire hazard from wildfire is only at the edges of the subdivision, with the interior being normal neighborhood type lawns and vegetation. The water supply is from the City's hydrant system. A fire has occurred in the past, every year or two. These fires are in the main drainage and the damage has been limited to the homes bordering the drainage, and the fire has not spread beyond those backyards.

Johnny Creek Designation

Johnny Creek designation is located in the southwest portion of Pocatello. This is the City's largest interface area, comprising of many smaller subdivisions, and having a current total of 716 homes, covering an area of approximately nine square miles. The total value of this subdivision is \$115,362,865, with the average value of homes \$161,121, and the highest valued home being \$503,271. The area is also one of the fastest growing areas with an approximate total of 82 lots available for building. The total value of all property is \$167,064,813.

Johnny Creek was originally built outside the city limits, and then annexed. This area has narrow roads of varying widths – fifteen to twenty-four feet – without curbs, gutters or sidewalks, and vegetation growing within two to three feet of the right of way. It is connected to the City's hydrant system. There are two main roads through the area. Johnny Creek Road begins at the north end of the neighborhood and Country Club Drive begins at the south end. The two roads

both start at South Bannock Highway and dead-end into each other on a hillside in the middle of the Johnny Creek area. Many dead-end streets shoot off of these main roads through the subdivision. Most of the roads that are not dead end wind their way off of, and back to Johnny Creek Road and Country Club Drive.

The vegetation is varied depending on the date the particular area was developed. The older areas both east and west of Johnny Creek Road have dense juniper trees, with sagebrush and tall grasses in open areas not covered with the junipers. This area has houses dotted on the hillside with junipers coming up to the house's siding, at times being incorporated into the wooden decks for esthetic purposes. There are numerous long, narrow driveways, without turnarounds, that are lined with old, mature junipers, making access to these structures difficult during fire conditions. The property surrounding the Johnny Creek area and the Fremont Heights subdivision are owned by either the City of Pocatello or the Bureau of Land Management.

The newer areas of the Country Club Drive have spots of dense junipers, but also have open, clear areas that consist of more traditional yards. The newer developments in this area are being built utilizing the City's subdivision requirements, which require wider roads, curb and gutter as well as sidewalks. The water supply is, again, the City's water system. All of the areas have drainages intertwining through them, some containing heavy junipers and grasses, others having sagebrush and grasses. The surrounding hillsides are a mix of dense junipers and open sagebrush hills and grassy hills. The hillside property surrounding the High Country Estates subdivision is mostly privately owned.

The threat from wildfire in this subdivision is three-fold. Fires started outside the subdivision can move into it due to directional prevailing winds. Fires started within the subdivision can spread easily due to heavy fuel loading, and swirling winds. A fully involved house fire that has vented to the outside could most predictably spread to the surrounding junipers in more than seventy-five percent of the Johnny Creek subdivision, thereby creating a certain wildfire. The fire station located on South Bannock Highway allows a 2-5 minute initial response to most of the Johnny Creek area, and during the fire season of the summer months, the Bureau of Land Management keeps fire attack crews housed at that station.

When appraising the special hazards that would make fighting a wildland fire difficult, these four areas of concern all have specific problems. However, the Johnny Creek area presents the most difficult hazards. This is due to houses that are located within the midst of thick junipers, the narrow access roads, which in some areas are fifteen feet wide and contain junipers encroaching into that fifteen foot of roadway, dead-end streets that have inadequate or no turn-around, and long driveways that themselves are overgrown with junipers, to the point that it would be difficult to send an engine company on them to protect the homes. As all the previous data illustrates, the Johnny Creek area is our community's biggest threat of an urban/interface conflagration.

Mitigation Strategies for the Urban/Interface

This section will discuss strategies for mitigation of the hazards within the defined high fire hazard areas. The biggest hazard, with the most significant potential for loss, as shown above is the Johnny Creek area. The hazards in this vicinity include thick junipers, which in some places encroach on the homes themselves, narrow access roads, with no clear area alongside roadways.

Our mitigation strategies all start with education. As with any project dealing with the public, the most important aspect is educating the public to our concerns. The goal is to inspire the public to take action. During this education period, we will do the following activities:

1. Develop an information and comment handout for distribution to residents in the urban/interface areas. This will help us get the public's input on what they feel is the most important risk they face living within an urban/interface area.
2. Establish citizens workshops and open houses to promote fuels mitigation and the Fire Wise Communities concept.

With the help of Three Rivers Resource Conservation and Development, we will then contact the homeowners in the Johnny Creek area. During this contact, we will be doing the following:

1. Home surveys utilizing the Red Zone Software.
2. Answering questions that the homeowner may have regarding the Wildland/Urban Interface.
3. Setting meeting dates and inviting homeowners to attend a public education meeting.
4. Gathering names of homeowners interested in fuels reduction projects.

Emphasis will be placed on having neighborhood meetings, during which we will talk about the Fire Wise community concept, defensible space, and fuels reduction around their home, as well as answering any questions they might have. We will partner with other interested agencies, such as BLM and the US Forest Service, to help get the message across in a unified and effective manner.

Other mitigation strategies include purchasing a fire safety trailer and truck to pull it, which will, in effect, be a mobile classroom, allowing the fire department to take it to the neighborhood meetings, and use it as a focal point for the meeting. **The cost is approximately \$70,000.**

We will purchase the Red Zone software and laptop computer to do home surveys, tracking all the homes in the Johnny Creek Subdivision. **Cost is approximately \$5000.** These surveys will help us in planning strategies to use should there be a fire within the subdivision, as well as

letting the homeowner see the problems their home presents to firefighters during a wildland fire. We will emphasize the importance of defensible space, fuels mitigation, and the benefits of thinning the junipers to keep fires from getting close to structures. We will collect names of homeowners interested in fuels mitigation, and set thinning projects to accomplish the fuels mitigation strategy.

During the summer of 2002, approximately 33 properties were contacted by the SCA, and home surveys completed. There was a pilot fuels mitigation project initiated and completed in the Johnny Creek area, located on Wildflower and Kim Drive, and the drainage between these two streets. This very successful project will be the example for future fuels reduction projects in the Johnny Creek vicinity. Names of homeowners contacted are on file at the Pocatello Fire Department. Figures 10 through 12 show the before and after photos of this project.



Figure 10.



Figure 11.





Figure 12.

Another mitigation goal is to ensure land development ordinances and building and fire codes are adhered to and support the mitigation of urban/interface fire danger. We will also contact other communities and agencies to learn what fire prevention techniques they have used, which ones worked and those that didn't, and then use this knowledge in future prevention activities.

In order to perform the above strategies, we will be looking for help from Three Rivers Resource Conservation and Development with homeowner contacts and in performing home surveys. In order for this to happen we will need to acquire grant funds to hire a coordinator and 4 students to form a project team. The coordinator will be administering the fuels mitigation project, developing work plans for the 4 member team doing the home surveys and mitigation of fuels, and keeping records of the entire project. This coordinator will also be instrumental in helping establish Firewise Communities within the Johnny Creek area. The coordinator and 4 person team will be utilized for approximately 5 to 7 years to start and finish the project. **Cost for 7 years is approximately \$339,444.**

We will also seek grant funds to purchase a chipper to be used for the fuels mitigation project. The City of Pocatello's Urban Forestry Department of Parks and Recreation, will agree to maintain the chipper, in exchange for the use of the chipper. **The cost of the chipper is approximately \$28,457.** We will also seek agreements with the county landfill to possibly allow homeowners doing the fuels mitigation to have reduced fees for the chipped debris. We will also pursue partnering with the Bureau of Land Management and U. S. Forest Service in this project to coincide with the Portneuf /West Bench Project.

Another objective of this risk/analysis plan is to identify suppression needs in case a wildland fire does happen in the Johnny Creek area, or any of the high fire hazard areas. Should a fire occur in this area we will need enough response equipment to handle the unique fire behavior. This equipment should include:

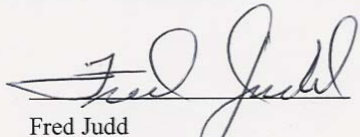
1. One "heavy" wildland fire truck to be stationed at the Indian Hills Fire Station. **Cost approximately \$40,000.**

2. Three “light” wildland fire trucks to be stationed at the other 3 fire stations within the city. **Cost approximately \$150,000.**
3. Wildland firefighting equipment to supply the above trucks, including but not limited to hose, nozzles, fire shelters, backpack pumps, Pulaski axes, round nose shovels, hard suction hose and strainer basket, etc. **Cost of equipment for 4 trucks approximately \$9620.**
4. Hot shields face mask and particle filters. **Cost approximately \$5200.**
5. Barricade firefighting gel to pre-treat 60 homes. **Cost approximately \$15,000.**

To summarize, a hazard risk analysis has been completed for the City of Pocatello, and the surrounding communities. This risk analysis has pointed out the major target area for mitigation efforts in the community, based on values and numbers of homes at risk. Some initial efforts at education have been started, and a pilot fuels reduction project has been completed. Educating the public, creating defensible space around homes, and fuels reduction are ongoing projects, and the benefits that are expected from these projects are a safer environment for homeowners, fewer urban/interface fires, and less intense fires which relates to less dollar loss to the community at large. The efforts of all parties involved will continue well into this decade, as this is a project that will continue as long as the areas involved continue to grow.

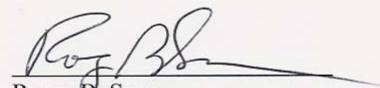
This Comprehensive Plan reviewed and approved this 6th day of May, 2003


For Bureau of Land Management:


Fred Judd
Fire Mitigation/Education Specialist


Rick Belger
Fire Management Officer

For the Pocatello Fire Department:


Roger B. Sears
Division Chief/Fire Marshal


Ben Estes
Fire Chief

Pocatello Fire Department

Johnny Creek

HIGH

Past Occurrence	2
Fuel Conditions	5
Population	5
Suppression	1

Suggested Mitigation Projects-Fuels Reduction

Pocatello Creek/Buckskin

HIGH

Past Occurrence	3
Fuel Conditions	3
Population	3
Suppression	4

Suggested Mitigation Projects-Public Education

Center Street East

LOW

Past Occurrence	1
Fuel Conditions	2
Population	5
Suppression	1

Suggested Mitigation Projects-Not a real problem area now. Watch future development.

Assessment Overview Report
Pocatello Fire Department
Three Rivers Resource, Conservation and Development Area
June 2003

Profile of the Department:

The Pocatello Fire Department is a municipal program. Pocatello is the third largest city in the State of Idaho. The Department is responsible for the protection of the city as well as surrounding areas. The topography is varied from steep hills and streets with steep undeveloped areas to the east and west of the city to flat land through the center of the city. There are two major interstate highways that serve the city and it is home to Idaho State University.

Organizational Structure

The Pocatello Fire Department reports to the City Council. The organizational structure consists of one chief, an office manager, a secretary and ambulance billing clerk, four division chiefs (Public Safety, Training, Operations and EMS), three captains (two for Prevention and one for Training), and three platoons. The "A" platoon includes a shift commander, four captains, six drivers, four paramedics and seven firefighters. The "B" platoon includes a shift commander, four captains, six drivers, four paramedics and seven firefighters. The "C" platoon includes a shift commander, four captains, six drivers, four paramedics and seven firefighters. All personnel are paid staff.

Facilities:

The Department has five fire stations with a total of thirteen bays throughout the city. Facilities also include an airport training center with fire, rescue props, rail cars, truck trailer and a large warehouse for hands on training. The Department does have to store some older and reserve equipment outside. The Department would like to either add bays to the existing stations or build a holding/storage building to house this equipment.

Response Area:

The Fire Department provides fire protection for city property, wildland urban interface, residential, business, high tech (AMI Semiconductor plant) and high risk (Bowen Petroleum Bulk Storage). The Department serves 34 square mile area.

Budget and Funding:

The budget has remained steady over the past five years. Tax dollars fund 100% of the budget. Funding from EMS services and grants are not added to the base budget.

Grants:

Grants have been a source of funding for the Department in the past including grants from the INEEL, the State EMS Bureau and community development grants. The Department is familiar with the National Fire Plan and the Department's Fire Marshal is currently work with the BLM and Forest Service on grants for wildland urban interface prevention.

Records Management:

A comprehensive, computerized records management system is in place that tracks training, fire reports, personnel records, fire prevention, equipment and building maintenance, and EMS incident reports. The Department utilizes Spillman, NFIRS, Amazon Suite of medical records, Red Zone, and GIS mapping interface fire preplanning software.

Firefighting Program:

There are 67 personnel within the firefighting program that are paid personnel. Fire response includes protection for structural, wildland fire suppression, EMS, HazMat, rescue, terrorist threat and other special circumstances such as natural disasters, good intent, vehicle fires and alarm investigations. The area is at high risk for wildland urban interface fires as well as for terrorism. All members of the firefighting team are trained in wildland suppression. The Department responds to approximately 6,892 fire-related incidents annually. Water sources are adequate and reliable with the primary water supply coming from water mains and city hydrants. The Department is capable of meeting the 10-minute arrival on the scene response.

Firefighting Program Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">• 5 Station, 13 Bays• Paid Personnel• 10,750 Structural/110 Wildland Total GPM Capacity• Computerized Record Keeping System• Fire Response: Structural, Wildlands, HazMat, EMS, Rescue, Terrorist Threat• 8 Structural/5 Wildlands Response Vehicles• Grid Access Address System• Meetings All NFPA Standards	<ul style="list-style-type: none">• Increased Wildland Equipment – All Wheel Drive Apparatus; Vehicles With Increased Capabilities; Heavier Weight Carrying Vehicles• Better Utilization of Mutual Aid Agreements• Add Bays to Existing Stations or Build a Storage Building• Additional Water Tenders• Grant Funding

Hazardous Materials Program:

The Department does have a HazMat Team. It is a state and regional response unit. This was the first HazMat response unit in the State of Idaho. The Department participates in mutual aid agreements with the Forest Service, BLM, INEEL and other GIFF members and selected departments.

HazMat Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> ● State & Regional Response Unit ● Departmental & State Approved S.O.P.'s 	<ul style="list-style-type: none"> ● Equipment Upgrades ● Continuing Education

EMS Program:

The Department does provide an EMS program that includes paramedic and ACLS. Personnel are trained in EMT Basic, EMT Advanced-Intermediate and Paramedic levels. The Department responds to an average of 4,250 calls annually.

EMS Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> ● EMT Basic ● EMT Advanced-Intermediate ● Paramedic ● 7 Type I Units/1 I-Transfer Ambulance 	<ul style="list-style-type: none"> ● Additional Paramedic Personnel ● AED Semi Automated External Defibrillators for All Response Vehicles

Training and Certification:

Minimum training for the Department includes structural protection (NFPA firefighter 1 & 2), wildland fire suppression, EMS, HazMat, and rescue. Training does meet some standards and the Department does utilize the IFSTA Training Program.

Training and Certification Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none"> ● Structural Protection ● Wildlands Fire Suppression ● EMS ● HazMat ● Rescue (RIC Training, Rope, Water Extrication, Trench Rescue) ● IFSTA Training Program ● Standard Operating Procedures ● Training Materials 	<ul style="list-style-type: none"> ● Basic Wildland Training

Communications:

Communications are dispatched out of the Pocatello Police 911 system. The Department does respond to remote alarm calls and all vehicles are radio equipped. The Department does have sufficient portable hand-held radios. Some communication is adequate with other entities.

Communication Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">• Responds to Remote Alarm Calls• Portable Radios• All Vehicles Radio Equipped• 16 VHF/16 UHF Channels, Air-to-Ground and Tower-to-Ground Communications	<ul style="list-style-type: none">• Increase Frequencies• Additional Repeaters• Improved Maintenance Service

Prevention and Inspection:

The Department does administer and enforce Fire Code regulations. The engine companies do inspections under the direction of the Fire Marshal. The Department also investigates fire cause and origin.

Prevention and Inspection Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">• Fire Cause and Origin Investigations• Fire Code Enforcement	<ul style="list-style-type: none">• Increase Number of Personnel to Do Public Education• 1 Civilian Public Educator

Public Education:

The Department does provide public educational programs for home safety. It also conducts public outreach at fairs, schools, public events, and fire station events.

Public Education Summary of Existing Resources, Assets and Needs

Existing Resources/Assets	Needs
<ul style="list-style-type: none">• Public Education• Public Outreach to Scouting Programs	<ul style="list-style-type: none">• Grants for Smoke Detectors• Laptop Computer for Presentations• Handouts for Public Presentations

Fuel Management by the USFS in Bannock County

General Overview of Lands:

Forest ecological types of the Caribou-Targhee National Forest have been classified and mapped using a hierarchical system that stratifies ecological units into progressively smaller units of increasingly uniform ecological potentials. The Forest boundary falls within seven ecological subsections. Land managed by the Caribou-Targhee National Forest within Bannock County are described and listed below.

BASIN AND RANGE TRANSITIONAL MOUNTAINS SUBSECTION

Location: Portneuf River Basin of southeast Idaho

The Basin and Range Transitional Mountains subsection consists of the Bannock and Malad Mountain Ranges of Paleozoic aged sedimentary and volcanic rock, such as limestone, dolomite, siltstone, conglomerate, sandstone, and volcanic materials, that have been modified by fluvial, colluvial and residual geomorphic processes. Elevations range from 5,000 to 9,095 feet (1,524 to 1,091 meters). Slopes range from 30 to 70 percent. The major vegetation types include coniferous forest and shrublands. This map unit is separated from similar subsections based upon the transitional characteristics of the Basin and Range geomorphic features. Climate is more moist and cooler than surrounding subsections.

Mean annual precipitation ranges from 18 inches (46 cm) at the lowest elevations to 30 inches (76 cm) at the highest elevations. Most precipitation occurs in the winter and spring with most of the precipitation falling as snow. The mean annual air temperature is 29 to 38 degrees F (-1.7 to 3.3 degrees C).

Live streams typically occur in the major drainageways and canyons. The landscape is slightly to moderately dissected. The natural disturbance processes are fire, insects, disease, windthrow and some flooding in the drainageways. Some gully erosion has occurred in the lower foothill draws and drainageways. Human-caused disturbances include roads, logging, mining and grazing. Mining of perlite and pumice occurs near Wright Creek.

Landscape Settings: mountains and narrow valleys

The mountain ranges are located on high elevation sites with slopes ranging from 30 to 70 percent. These landscapes include mountain slopes and ridges that are formed in sedimentary parent materials. Soils are shallow (less than 20 inches) to deep (40 to 60 inches) and well drained. Surface textures are loam and silt loam. Soils are classified as Pachic Cryoborolls and Argic Cryoborolls associated with sagebrush/maple potential natural vegetation, and Argic Pachic Cryoborolls associated with Douglas-fir potential natural vegetation.

The narrow valleys are located on mid-elevation sites with slopes ranging from 5 to 20 percent. These landscapes include narrow canyons and valleys that are formed in sedimentary parent materials. Soils are deep (40 to 60 inches) to very deep (greater than 60 inches) and well to

somewhat poorly drained. Surface texture are loam or sandy loam. Soils are classified as Cumulic Cryoborolls and Pachic Cryoborolls associated with willow/sedge and sagebrush potential natural vegetation.

Landtype Associations

Pocatello Foothills, Toeslopes and Canyons/Sagebrush Steppe

Pocatello Ridglands, Mountain Sideslopes and Canyons/Douglas-Fir Forest and Sagebrush Steppe

Elk Meadows Uplands, Basins and Mountain Sideslopes/Douglas-Fir Forest and Sagebrush Steppe

Malad Range Foothills and Toeslopes/Sagebrush-Mountain Mahogany-Juniper

Malad Range Canyon Sideslopes and Dissected Foothills/Sagebrush-Juniper-Douglas-fir

Malad Range Stable Uplands, Basins and Mountain Sideslopes/Sagebrush-Aspen-Mountain

Mahogany-Douglas-fir

Elkhorn-Oxford Mountain Sideslopes and Ridglands/Sagebrush-Douglas-fir-Bigtooth Maple-Juniper-Aspen

Management Emphasis

Through prescription area application, the following will be emphasized within this subsection. This does not preclude other activities but with limited resources, management would be focused in these areas.

- °Wildland fire use, particularly in the Deep Creek/Clarkston, Oxford and Elkhorn areas
- °Wildland/Urban Interface fuel reduction projects in the foothills near Pocatello and other high risk areas
- °Maintenance and improvement of winter habitat for mule deer, particularly in the mountains west of Malad
- °Management of existing recreational residences in the Mink Creek area near Pocatello
- °Restoration of deteriorated rangelands, particularly in the southern half of the subsection
- °Restoration and protection of Yellowstone cutthroat trout strongholds, particularly in the Mink Creek area
- °Retention of roaded natural and semi-primitive recreation opportunities near the urban center of Pocatello
- °Tribal Trust responsibilities and coordination adjacent to the Shoshone-Bannock Reservation

General Overview of Caribou Forest Management Direction of Fire Management

Desired Future Conditions

- °Fuel management strategies are coordinated with adjacent landowners to reduce risk to life and loss of property from wildfire.
- °Fire use, both prescribed fire and wildland fire use, enhances ecosystem integrity and resiliency, and maintains desired fuel levels.
- °Wildland fire operates within historic fire regimes appropriate for the vegetation and site.

Goals

- °Forest resources are managed in accordance with the National Fire Plan, Ten-Year Comprehensive Strategy and Implementation Plan, and Cohesive Strategy to improve fire prevention and suppression, assist rural communities, reduce hazardous fuels, and restore fire-adapted ecosystems.
- °Fire is allowed to play its natural role where appropriate and desirable to reduce the risk of uncharacteristic wildland fires.
- °Fire and other management activities restore or maintain desirable vegetative communities and ecosystem processes. Fire management prescriptions are written to take advantage of natural lightning starts and to restore historical fire regimes.
- °Fire and other management activities are used to treat natural and activity fuels with priority on reducing risk from uncharacteristically large or intense wildland fires and protecting communities in the wildland-urban interface.



Objectives

- °Develop and implement at least one wildland fire use plan each year at the subsection scale. Priority should be given to the ecological subsections where this activity is emphasized.
 - °Within 1 year of signing the ROD, develop and begin implementation of a prioritized strategy for wildland/urban interface projects in the ecological subsections where this activity is emphasized.

Standard

All fires shall be suppressed if they are in areas not covered by a pre-approved fire management plan.

Guidelines

- °Prescribed and wildland fire use is allowed and encouraged unless prohibited by individual prescription area direction. 
- °When developing vegetation treatment projects, give priority to those reducing fuels in the wildland/urban interface. Strive to move vegetation currently in Fire Condition Class 3 to Condition Classes 1 and 2.
-  When developing wildland fire use plans, consider noxious weed infestations when determining which areas to allow wildland fire use.

General Overview of Fuels Management Projects:

The Westside Ranger District is actively managing wildland fuel both in and out of the wildland urban interface in Bannock County. Several projects have been completed (Gibson-Slate Prescribed Burns I, II, III), several projects are underway (Gibson-Slate Prescribed Burns IV, V, VI, Kinney Creek and Scout Mountain) and several more projects are in the planning phase (Portneuf Westbench Fuels Management Project).

We are using prescribed fire and mechanical treatments to manage fuel loadings. We are also working with Idaho Department of Lands, the Bureau of Land Management, and Gateway

Interagency Fire front and local landowners to coordinate efforts and resources for effective management of the wildland fuels situation in Bannock County

Map of Project areas within Bannock County:

See attached map

Past, Present and Future Fuels Management Projects.

PROJECT NAME	TYPE OF WORK	ACRES	YEAR COMPLETE
Gibson-Slate I	RX Burn	100	2000
Gibson-Slate II	RX Burn	100	2001
Gibson-Slate III	RX Burn	100	2002
Gibson-Slate IV	RX Burn	100	2004
Gibson-Slate V	RX Burn	100	2004
Gibson-Slate VI	RX Burn	100	2004
Kinney Creek	Mechanical	75	2003
Scout Mountain	Mechanical	75	2004
Summit	Mechanical	50	2004
Gibson Jack Trail I	Mechanical	50	*2004
Gibson Jack	RX Burn	470	*2004
Mud Springs	RX Burn	100	*2004
Bighorn	RX Burn	25	*2004
Dry Creek	RX Burn	65	*2004
Mink Creek	RX Burns	45	*2005
Gibson Jack Fence	Mechanical	15	*2006
Watershed Road	Mechanical	90	*2006
Wild Horse Mtn.	RX Burn	306	*2006
Gibson Jack Trail II	Mechanical	45	*2007

*NEPA decision pending

Fuels Management by the BLM in Bannock County

Note: *With the exception of annual precipitation ranging from 12 inches to 30 inches annually (due to lower elevation), the physiography is the same as described in the FS portion of this mitigation plan.*

Introduction: Woodlands (Juniper, Aspen, Maple) and conifer (Douglas-fir, lodgepole, sub-alpine fir) constitute the major fuel types of concern within those Bannock County lands managed by the Bureau of Land Management (BLM). Consequently, all fuels reduction projects conducted by the BLM are done either in consultation or conjunction with the forestry staff. Multiple projects are planned to occur concurrently.

Projects

Firefighter and Public safety are the primary emphasis of fuels reduction projects within those lands managed by the BLM. Management emphasis is placed on Wildland Urban Interface (WUI) areas as identified by the National Fire Plan, Ten Year Comprehensive Strategy and Implementation Plan, and the Cohesive Strategy.

Recently completed WUI projects in Bannock County include:

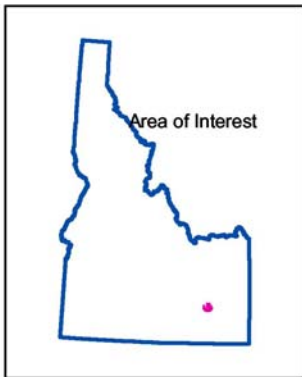
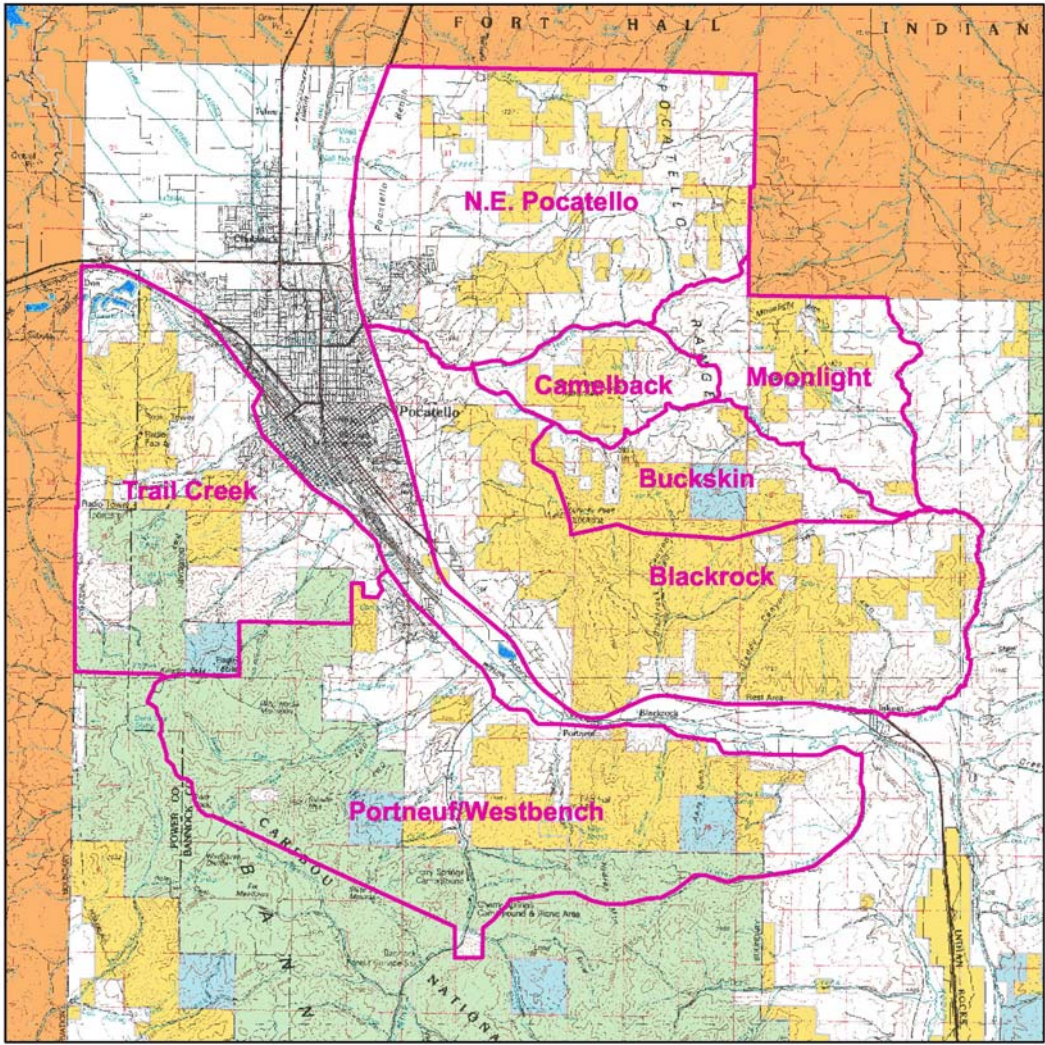
- a.) **Yago Canyon/ Swan Song T.S.**, Downey Municipal Watershed/WUI. Completed fall 2002. Further planning in progress.
- b.) **Moonlight Mountain Harvest**, Pocatello WUI. Harvest phase completed in 1991. Further fuels reduction planning underway.
- c.) **Garden Gap**. Pocatello WUI. Thinning completed in 2001.

WUI Projects currently in Progress in Bannock County include:

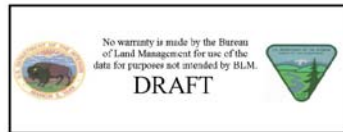
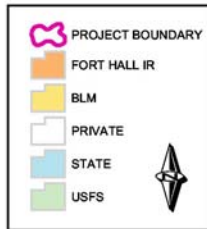
- a.) **Buckskin**. 6,237 acres. Located directly east and adjacent to Pocatello. Includes private, state and federal lands.
- b.) **Portneuf /Westbench**. 27,206 acres located directly south and adjacent to Pocatello. Includes private, state and federal lands.
- c.) **Lava Ranch**. 1,065 acres. Located south west of Lava Hot Springs. Includes BLM lands directly adjacent to Lava Ranch Subdivision.

WUI projects in planning include:

- a.) **Sawmill Creek.** 411 acres. Scheduled to begin implementation in 2004. Located directly north of Inkom. Includes BLM lands in proximity to homes located along Rapid Creek and Webb Creek.
- b.) **Moonlight Mountain.** 2005. 1,672 acres
- c.) **Camelback Mountain.** 2006. 1400 acres
- d.) **N.E. Pocatello** 2007. 4779 acres
- e.) **Trail Creek** 2008. 4090 acres
- f.) **Blackrock Canyon** 2009. 12, 500 acres
- g.) **Downey Watershed** Unknown
- h.) **Petticoat Peak** Unknown



BLM Pocatello Field Office Wildland Urban Interface Fuels Projects



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