

SOUTH CENTRAL OREGON FIRE MANAGEMENT PARTNERSHIP (SCOFMP)

FIRE DANGER OPERATING PLAN 2015

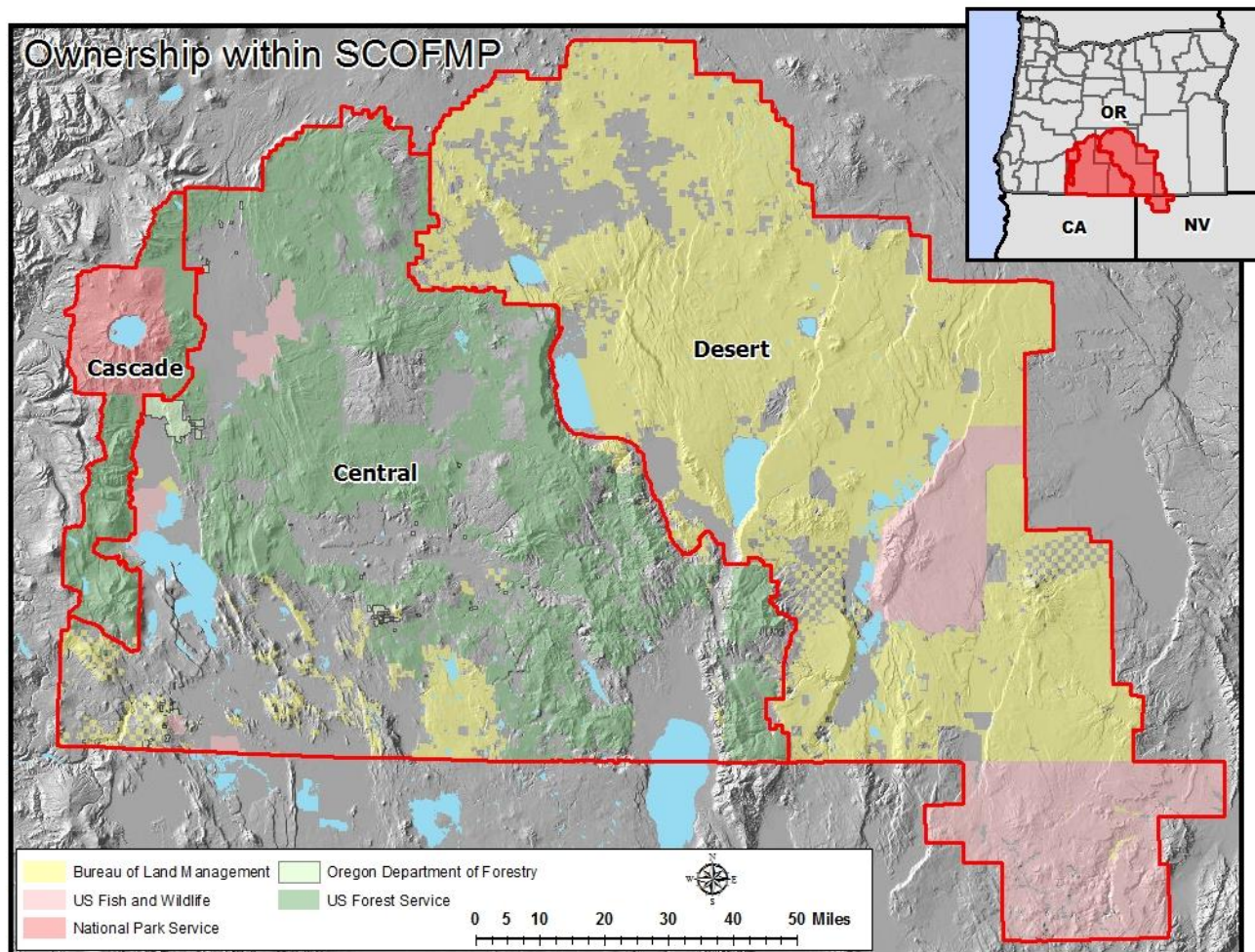
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Oregon Department of Forestry: Klamath-Lake District

Bureau of Land Management: Lakeview District


US Fish & Wildlife Service: Klamath Basin NWRC, Sheldon-Hart Mountain NWRC

National Park Service: Crater Lake National Park



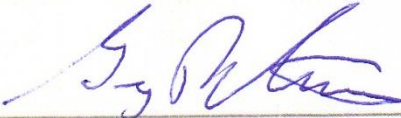
2015 Plan Approval

This Fire Danger Operating Plan is approved and will remain in effect until rescinded or revised.



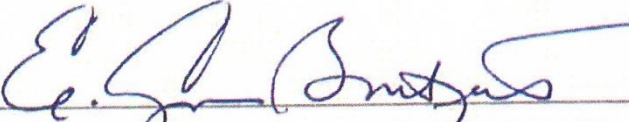
Agency Administrator US Forest Service
Fremont-Winema NF

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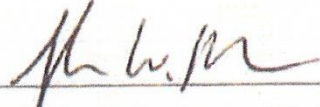
Agency Administrator Oregon Department of Forestry
Klamath-Lake District

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Agency Administrator Bureau of Land Management
Lakeview District

6/29/2015.
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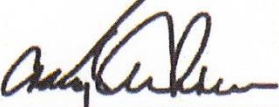
Agency Administrator US Fish & Wildlife Service
Sheldon-Hart Mountain NWR Complex

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Date



Agency Administrator US Fish & Wildlife Service
Klamath Basin NWR Complex

6/29/15
Date



Agency Administrator National Park Service
Crater Lake NP

6/24/2015
Date

Plan Prepared
April 1, 2014
By

Fire Danger Technical Group

Reviewed and updated 2014 data
June 1, 2015
Clint Albertson

See Section II Roles and Responsibilities

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I. INTRODUCTION

This Fire Danger Operating Plan (FDOP) has been developed to describe the setup and management of the National Fire Danger Rating System (NFDRS) for all wildland fire agencies in the South Central Oregon Fire Management Partnership (SCOFMP). This plan was prepared to assist in planning and operational decisions relative to fire danger, operational preparedness, resource needs, personnel briefings, and overall situational awareness.

The intent of this plan is to provide guidance to decision makers. The plan should be reviewed and updated biannually.

II. ROLES AND RESPONSIBILITIES

A. Fire Danger Technical Group

Each participating agency will be responsible for providing an NFDRS technical specialist(s) to participate in the maintenance, review, and update of this plan. The following are specific individuals by agency:

- For USFS, Fremont-Winema NF and BLM, Lakeview District: Clint Albertson
- For ODF, Klamath-Lake District: Dustin Gustaveson, Randy Baley
- For USFWS, Sheldon-Hart NWRC: Betsy Schenk
- For NPS, Crater Lake National Park: Greg Funderburk

Members of the Fire Danger Technical Group will monitor NFDRS to ensure validity, communicate any problems identified, review plan implementation, coordinate plan revisions, present the plan, and be available for NFDRS technical consultation. Some specific elements to monitor and coordinate are ensuring observations are selected appropriately (time, State of the Weather (SOW), wet flag, snow flag, consistent), station management in Weather Information Management System (WIMS) (herb state, catalog), station maintenance (instrument errors, transmit times) and station location (eliminate redundant or inappropriate stations, propose new sites where appropriate).

B. Fire Weather Station Owner

Following is the list of weather station owners for the south central Oregon area:

- WIMS owner for all SCOFMP stations is: Clint Albertson

WFMI Point of Contact (POC)

- USFWS, Klamath Basin NWRC: David Goheen
- USFWS, Sheldon-Hart NWRC: Betsy Schenk
- Parker Mountain RAWS: BLM Medford: Natalie Simrell
- USFS, Fremont-Winema NF/ BLM, Lakeview: Clint Albertson

The station owner is the primary contact for all issues regarding station management in WIMS. Physical maintenance and repair for stations is under their control. The owner and/or POC will assure that identified problems with a weather station are either corrected or assure that someone else corrects the problem.

C. Dispatch Responsibilities

Personnel at Lakeview Interagency Fire Center (LIFC) are responsible for entering weather observations daily into WIMS. LIFC updates and uploads the Energy Release Component (ERC) Charts using the Fire Danger workbook and updates the previous, current, and forecasted ERC and Burning Index (BI) to the SCOFMP website. This information is what is used for preplanned/incident dispatching (Section V c). LIFC will read Cascade, Central and Desert Special Interest Group (SIG) indices daily over the radio for trending information only. Dispatching, staffing levels, and fire business decisions are based on Fire Danger Rating Area indices updated from WIMS, which are provided on the SCOFMP website.

D. Field Operations Managers

Unit Fire Management Officers, Unit Foresters and their assistants, (e.g. District Fire Management Officers and Assistant DFMOs) will assure that their personnel understand NFDRS outputs and how they are to be used. Field Operations Managers are responsible for implementing this plan, and ensuring decisions are made consistent with the intent of the plan. Unit Fire Management Officers or Unit Foresters will also provide maintenance support for those stations either internally or covered by maintenance agreements.

E. Program Managers and Agency Administrators

The program manager, (e.g. Unit FMO, Forest or BLM District FMO and Agency Administrator (e.g. Forest Supervisors, District Managers, NWRC Project Leaders, Park Superintendents or District Foresters) will use this Fire Danger Operating Plan and NFDRS outputs as a tool to coordinate and to make informed fire related decisions. The program manager and Agency Administrator are ultimately responsible for ensuring this plan is maintained, utilized, and communicated.

III. FIRE DANGER RATING INVENTORY

A. The Administrative Unit

This plan encompasses an area of approximately 9.8 million acres in south central Oregon and NW Nevada, with wildland fire management responsibilities being shared among the US Forest Service (USFS), Bureau of Land Management (BLM), Oregon Department of Forestry (ODF), US Fish & Wildlife Service (USFWS), National Park Service (NPS) as well as numerous cooperators such as Rural Fire Protection Districts, and landowners. SCOFMP includes the peak of the Cascade Mountains on the west, vast sagebrush desert on the east, some of the highest site timber production land in Oregon east of the Cascade Mountains, and scab rock flats and lava flows. This area's Wildland Fire Environment is highly diverse in Fuels, Weather, and Topography.

B. Fire Danger Rating Areas

A Fire Danger Rating Area (FDRA) is defined as: "A geographic area relatively homogenous in climate, fuels and topography, tens of thousands of acres in size, within which the fire danger can be assumed to be uniform. Its size and shape is primarily based on influences of fire danger, not political boundaries. It is the basic on-the-ground unit for which unique fire management decisions are made based on fire danger ratings. Weather is represented by one or more NFDRS weather stations." (NWCG Fire Danger Working Team. 2002. Gaining an Understanding of the National Fire Danger Rating System. NWCG, PMS 932, Boise, Idaho.)

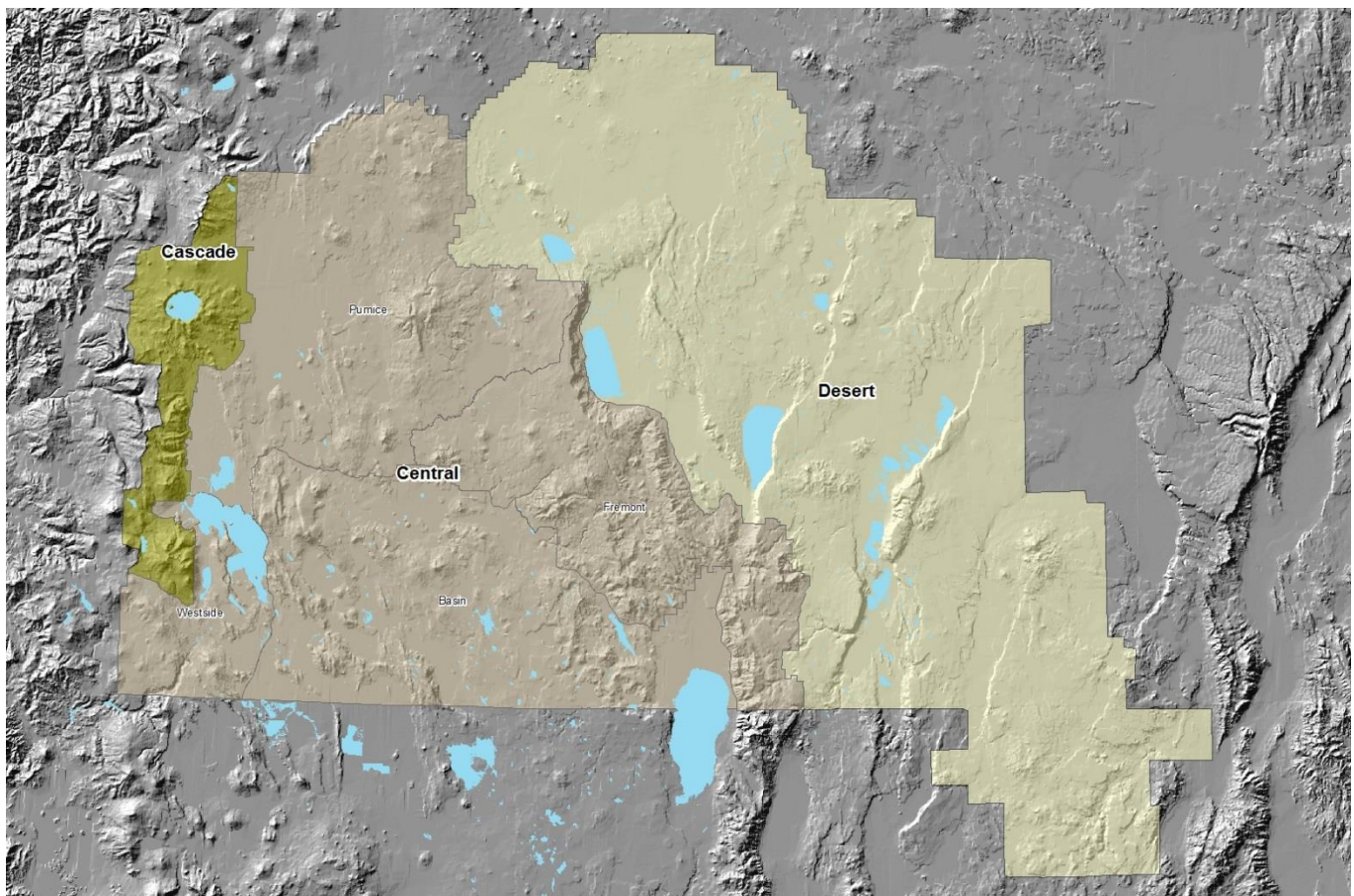


Figure 1 FDRAs

A comprehensive analysis of the south central Oregon area was conducted using Geographic Information Systems (GIS) programs and data. All of the data sources utilized were developed consistently across the entire area, not unique by ownership. The primary data utilized includes 10m Digital Elevation Model (DEM), Kuchler Potential Vegetation, Oregon and Nevada GAP Vegetation, and climate data produced by Oregon Climate Services and distributed by The Climate Source (CSI). Portions of this document include intellectual property of The Climate Source and are used herein by permission. Climate data

includes average monthly: Maximum Temperature, Average Temperature, Minimum Temperature, Relative Humidity, and Precipitation for the period 1992-2008.

Six Fire Danger Rating Areas were delineated based on identifying areas of uniform fire danger beginning in 2002. These six FDRA's are: Westside, Cascade, Basin, Pumice, Fremont and Desert. The contribution of fuels, weather, and topography were weighed for the greatest effect on wildland fire in making the delineation. A seventh FDRA was created in 2013 for common work practices such as: Pocket Card, Dispatch Level and Adjective Class. The seventh FDRA is called Central. It encompasses the area and is an equal average of Pumice, Westside, Basin and Fremont. The following table provides the results with descriptive parameters:

	FDRA NAME	Cascade	Desert	Central	Pumice	Westside	Basin	Fremont	SCOFMP AREA	Units
AREA	AREA	822	7,606	7,005	2,458	616	2,333	1,598	15,433	sq miles
	PERIMETER	210	580	507	325	135	281	313	689	miles
	ACRES	526,027	4,868,154	4,483,254	1,573,249	394,465	1,492,828	1,022,711	9,877,435	acres
ELEVATION (10M GRID)	MIN	3,651	4,146	2,755	4,120	2,755	4,031	4,152	2,755	feet
	MAX	9,089	8,006	8,449	8,167	6,583	7,262	8,449	9,089	feet
	RANGE	5,438	3,861	5,694	4,048	3,828	3,231	4,297	6,334	feet
	MEAN	5,776	5,076	5,120	5,083	4,406	4,829	5,860	5,164	feet
	STD	706	649	745	590	475	533	726	324	feet
SLOPE (10M GRID)	MIN	0	0	0	0	0	0	0	0	percent
	MAX	615	647	452	189	176	199	451	647	percent
	RANGE	615	647	452	189	176	199	451	647	percent
	MEAN	16	7	10	7	10	9	17	11	percent
	STD	16	11	12	9	12	11	15	2	percent

Table 1 Topological Statistics

C. Fire Activity

For the 17 year period used in the analysis (1998-2014) there was an average of 277 fires per year, and an average 31,124 acres burned per year (largely skewed by acres burned in 2001, 2002, and 2012). July tends to have the most fires with approximately 35%, followed by 32% in August, 12% in September, 9% in June, 6% in October, and 5% in May. Approximately 72% of the fires are less than ¼ acre, 23% ¼-9 acres, 3% 10-99 acres, and less than 2% of the fires are over 100 acres. Lightning is the ignition source for approximately 70% of the fires, which leaves 30% to human caused.

The following fire history table displays statistics, by FDRA. AC/(FIRE/YR) indicates density of fires or FDRA acres for each fire each year within the FDRA. Fire cause highlights a distinct difference between lightning and human cause.

	NAME	CASCADE	DESERT	CENTRAL	PUMICE	WESTSIDE	BASIN	FREMONT	SCOFMP
FIRE HISTORY: SCOFMP 1998-2014	ACRES	526,027	4,868,154	4,483,253	1,573,249	394,465	1,492,828	1,022,711	9,877,434
	FIRES	627	731	3,357	1,251	392	1,034	680	4,715
	FIRE/YR	36.9	43	197.5	73.6	23.1	60.8	40	277.4
	FIRE ACRES	12,148	242,454	274,510	92,606	27,809	102,307	51,788	529,111
	ACRES/YR	715	14,262	16,148	5,447	1,636	6,018	3,046	31,124
	ACRES/FIRE	19.4	331.7	81.8	74	70.9	98.9	76.2	112.2
	*AC/(FIRE/YR)	14,255	113,213	22,700	21,376	17,076	24,553	25,567	35,607
	FIRES/(*AC/YR)	0.0203	0.0026	0.0127	0.0135	0.0169	0.0118	0.0113	0.0081
	Lightning	71%	80%	69%	70%	47%	68%	81%	71%
	Human	29%	20%	31%	30%	53%	32%	19%	29%

Table 2 Fire History by FDRA

(*AC denotes total FDRA Acres not Fire Acres)

D. Weather Stations

There are 18 permanent Remote Automated Weather Stations (RAWS) in and near the SCOFMP area. A quality control process was developed and utilized on these stations, producing the most consistent, least erroneous historic weather data available (Appendix A.1: Quality Control processing of Historic Weather Data process). In general, the quality control process

involves obtaining data from NIFMID for each station. Erroneous and inappropriate readings are removed, missing readings are estimated where appropriate utilizing Fire Family Plus.

Number	Name	Elevation	State	County	Agency	Owner	Precip	Site	Aspect	Wx Zone
260111	BARREL SPRINGS	5835	Nevada	WASHOE	BLM	NORTHERN CALIFORNIA	9	Valley Bottom/Flat	Northeast	NV458
353307	CALIMUS	6629	OR	KLAMATH	USFS	FREMONT-WINEMA	25	Ridge / Peak	South	OR624
260109	CATNIP MOUNTAIN	5740	Nevada	WASHOE	FWS	SHELDON-HART	10	Valley Bottom/Flat	Southeast	NV458
353310	CHILOQUIN	4420	OR	KLAMATH	USFS	FREMONT-WINEMA	20	Ridge / Peak	South	OR624
353031	CINNAMON	4834	OR	DOUGLAS	USFS	UMPQUA NF	45	Ridge / Peak	Northwest	OR617
353422	COFFEE POT FLAT 2	5214	OR	LAKE	BLM	LAKEVIEW	22	Valley Bottom/Flat	South	OR624
353516	FISH FIN RIM	4900	OR	HARNEY	BLM	LAKEVIEW	11	Valley Bottom/Flat	Flat	OR636
353406	FORT ROCK	4430	OR	LAKE	BLM	LAKEVIEW	11	Valley Bottom/Flat	Flat	OR625
353328	GERBER RESERVOIR	4920	OR	KLAMATH	BLM	LAKEVIEW	19	Valley Bottom/Flat	Southwest	OR624
353343	HOYT CREEK	5445	OR	KLAMATH	USFS	FREMONT-WINEMA	25	Midslope	Southwest	OR624
353346	MARSH	4531	OR	KLAMATH	FWS	KLAMATH BASIN	25	Valley Bottom/Flat	Flat	OR624
353344	PARKER MOUNTAIN	5280	OR	JACKSON	BLM	MEDFORD	24	Ridge / Peak	South	OR623
353424	ROCK CREEK	5640	OR	LAKE	FWS	SHELDON-HART	12	Ridge / Peak	Northwest	OR625
353339	SELDOM CREEK	4875	OR	KLAMATH	USFS	FREMONT-WINEMA	43	Midslope	Southeast	OR623
353423	STRAWBERRY	5590	OR	LAKE	USFS	FREMONT-WINEMA	22	Midslope	South	OR624
353429	SUMMER LAKE	5085	OR	LAKE	USFS	FREMONT-WINEMA	18	Midslope	Northeast	OR624
353421	SUMMIT	6113	OR	LAKE	USFS	FREMONT-WINEMA	32	Midslope	South	OR624
353337	TIMOTHY	6099	OR	KLAMATH	USFS	FREMONT-WINEMA	28	Midslope	South	OR624

Table 3 RAWs Parameters

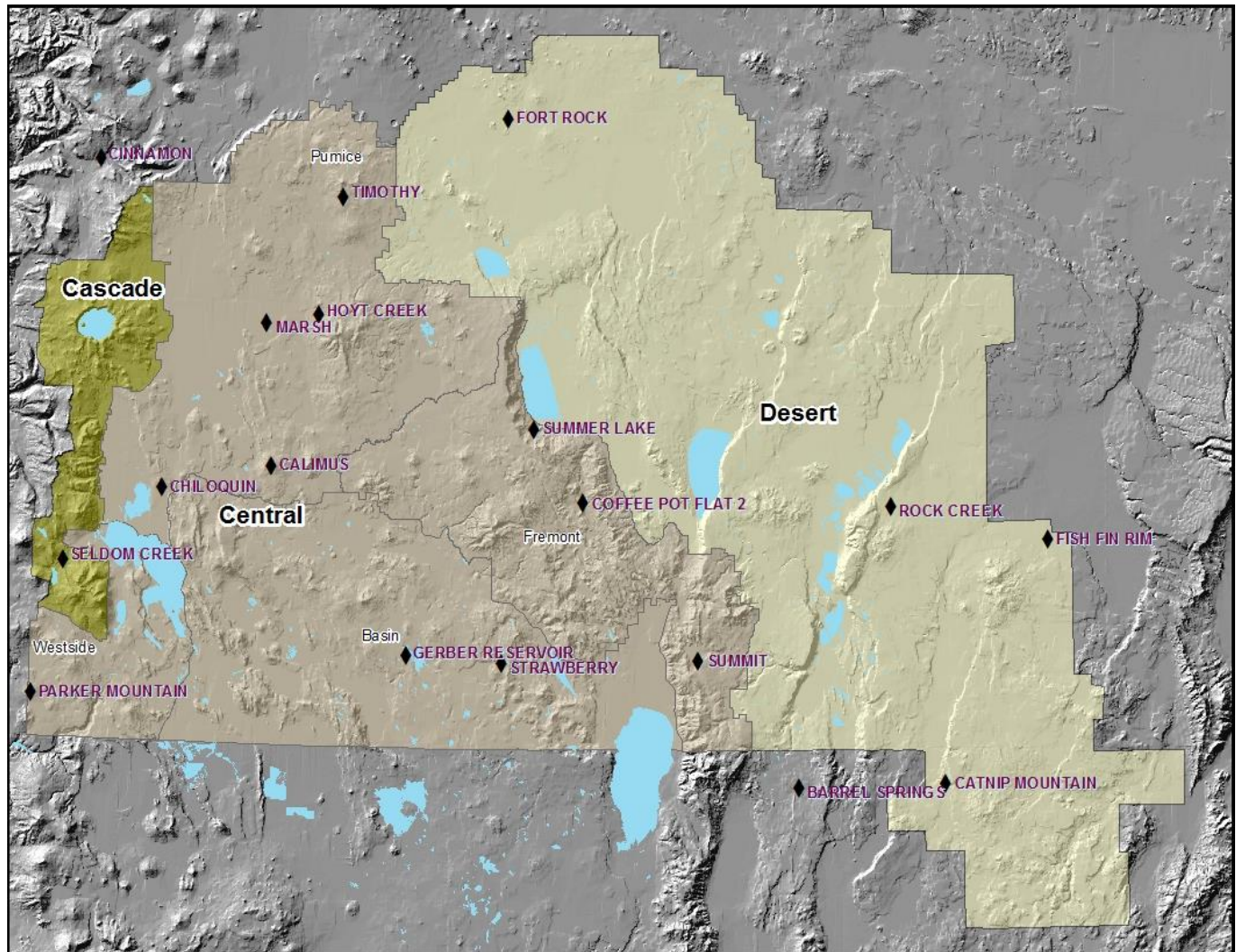


Figure 2 FDRAs with Weather Stations

E. Vegetation and Fuels

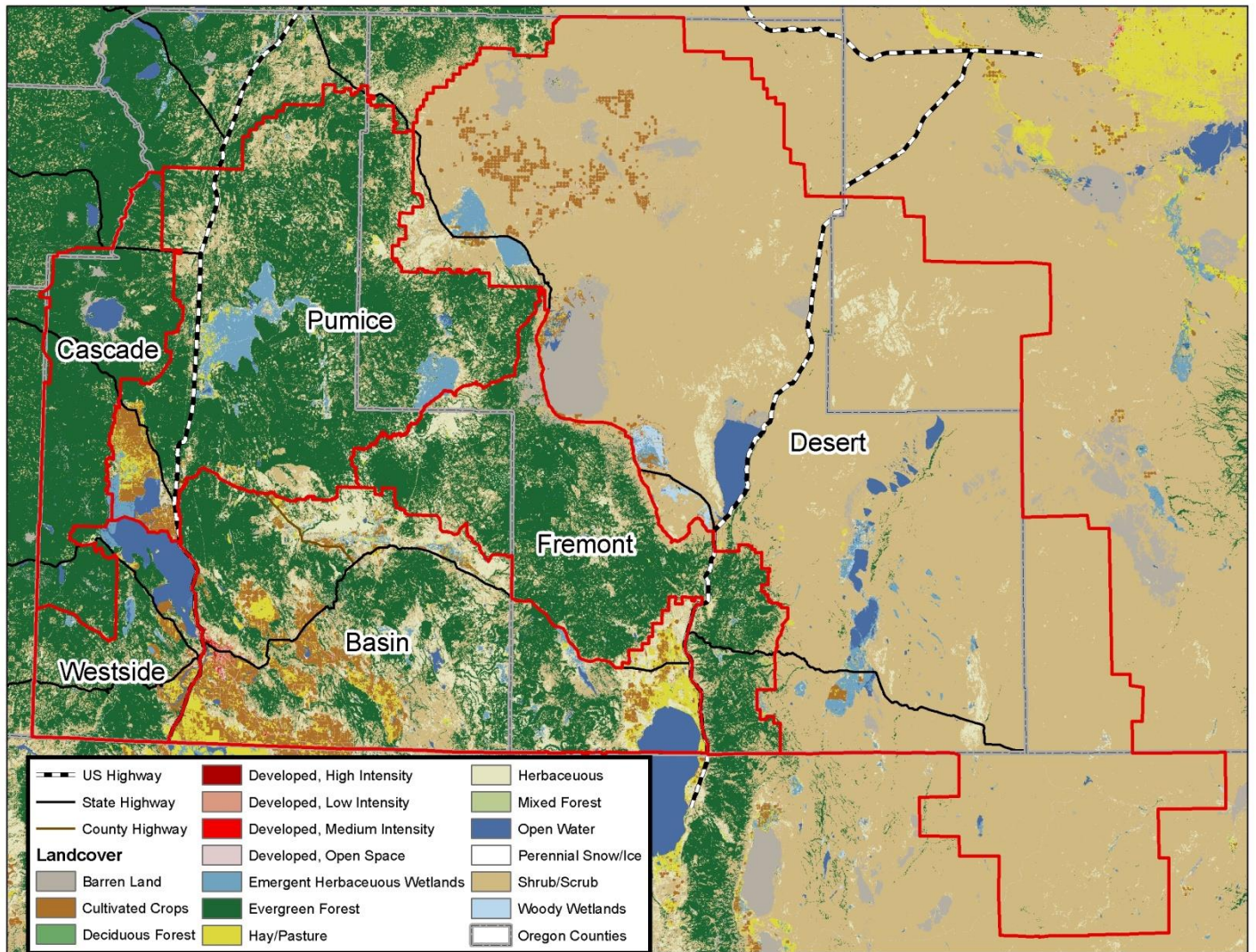


Figure 3 Anderson Level II Land Cover Classification

Two sources of GIS vegetation data were utilized in the analysis:

1. Kuchler Potential Natural Vegetation of the Conterminous United States,
2. 1998 Oregon and Nevada Gap Land Cover.

Some key elements of these data sources which make them ideal for this type of analysis are that they are developed using a consistent process of delineation and labeling across vast areas, generally fairly gross scale, and do not consider administrative boundaries. Drawbacks are that there is limited ground-truth to verify accuracy, and being fairly gross scale limits detail.

CASCADE – Mostly true Fir and Hemlock forests with significant areas of Pine forest and regeneration. Fire Behavior Prediction System (FBPS) fuel model 8.

PUMICE – Mostly Ponderosa-Lodgepole Pine forests on pumice soils, quite a lot of pine forest regeneration on JWTR ownership. Understory vegetation commonly consists of brush such as manzanita or bitterbrush, and/or grasses. Pumice soils are likely a key microclimatic factor for this area due to rapid gain and loss of temperature. FBPS fuel models 2, 6, 9.

FREMONT – Mostly Ponderosa Pine forest and woodland with some mixed conifer forest. Understory vegetation commonly consists of brush such as manzanita or bitterbrush, and/or grasses. FBPS fuel models 2, 6, 9.

WESTSIDE - Mostly Ponderosa Pine forest and woodland. Much of the forest in regeneration or younger age class. Understory vegetation commonly consists of brush such as manzanita or bitterbrush or grasses. Grasses are common in Klamath River canyon. FBPS fuel models 2, 6, 9.

BASIN – There is a wide variety of fuel types in this area. In the north, the Sprague River valley has a significant amount of sagebrush and Juniper woodland. To the south of the Sprague River is Ponderosa Pine woodland and mixed conifer woodland. Much of the Klamath Lake and Goose Lake basins are agriculture with sagebrush and juniper woodlands. FBPS fuel models 2, 6, 9.

DESERT – Sage steppe dominates the terrain with areas of sagebrush and juniper woodlands. FBPS fuel model 6.

F. Topography

With the highest elevations to the west and to the north, the area generally has a southeast aspect. Slope over the majority of the area is less than 25% with the highest slopes and terrain diversity in the Cascade FDRA and Fremont FDRA. Pumice FDRA and the Desert FDRA area have the least slope and terrain diversity.

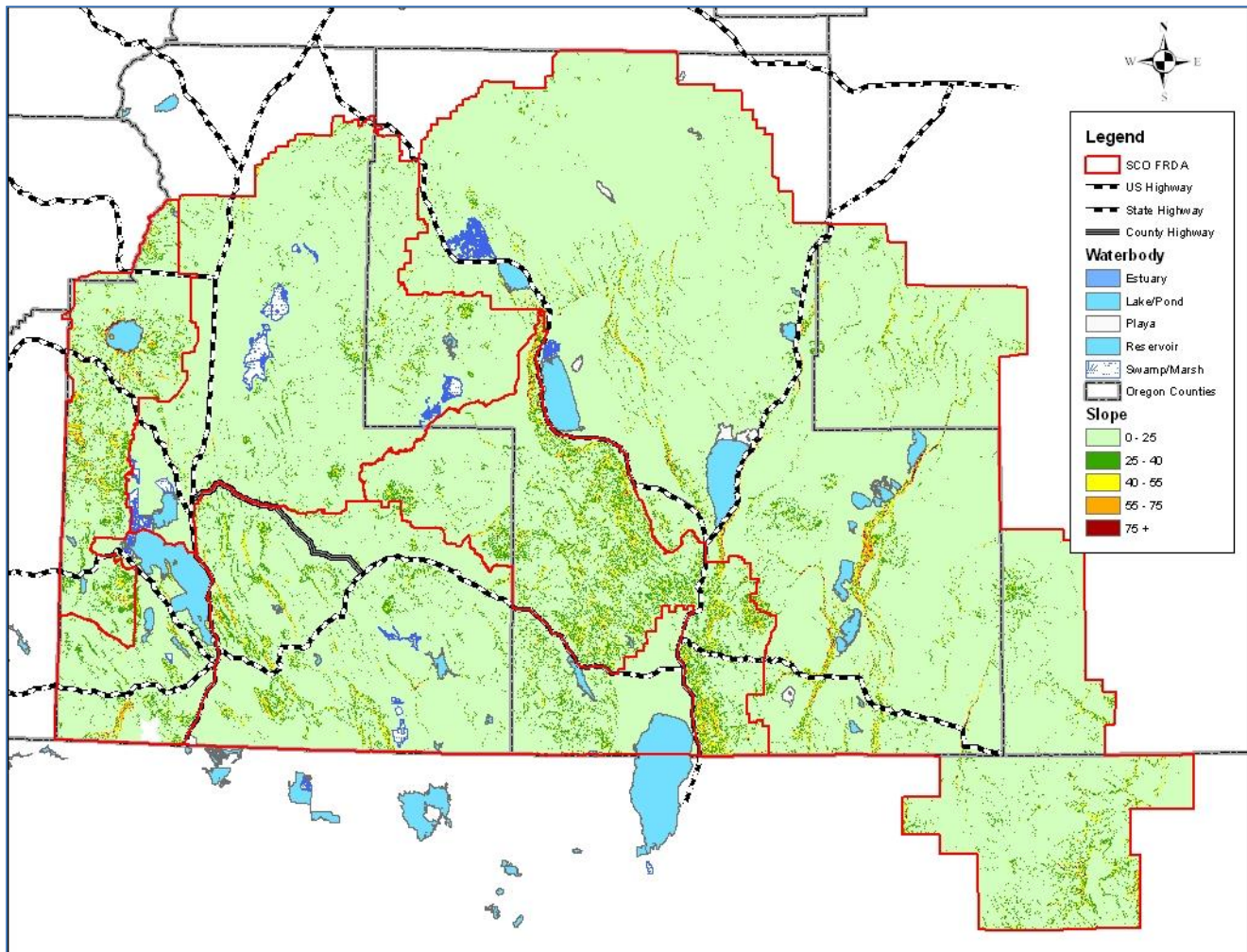


Figure 4 Slope

G. Climate Class

Climate class relates to how the NFDRS model greens up and cures live vegetation. Five of the FDRA's in the SCOFMP area are in a climate class 2 as it relates to NFDRS, the Desert area is a climate class 1. It is important to note that live fuel moistures across the landscape are much more variable than indicated by NFDRS. A climate class 2 causes green up of live fuels in the NFDRS model to move from winter cured to peak greenness in 2 weeks, in a climate class 1 peak greenness is reached in 1 week. Climate classes affect the rate of drying of live fuels with a climate class 1 drying more slowly than a climate class 2. An analysis of historic Normalized Difference in Vegetative Index (NDVI) imagery available since 1989 indicated a large variation in the amount of time from when green up begins to when it peaks across the area, generally taking 6-8 weeks, peaking around the first of June, and showing significant curing by early to mid-July.

H. Fire Weather Forecast Zones

Fire Weather Forecast Zone 623 covers the Cascades area. Zone 624 is a diverse weather zone with wide ranges of temperature and humidity covering the Pumice, Fremont, Westside, and Basin FDRAs. Zone 625 covers the majority of the Desert area. The Sheldon NWR, at the southern extreme of the Desert FDRA, is covered by Fire Weather Forecast Zones 458 and 467. Forecasting for zones 623, 624, and 625 is provided by the Medford NWS office. Zone 458 is forecasted by Reno NWS and 467 by Elko NWS.

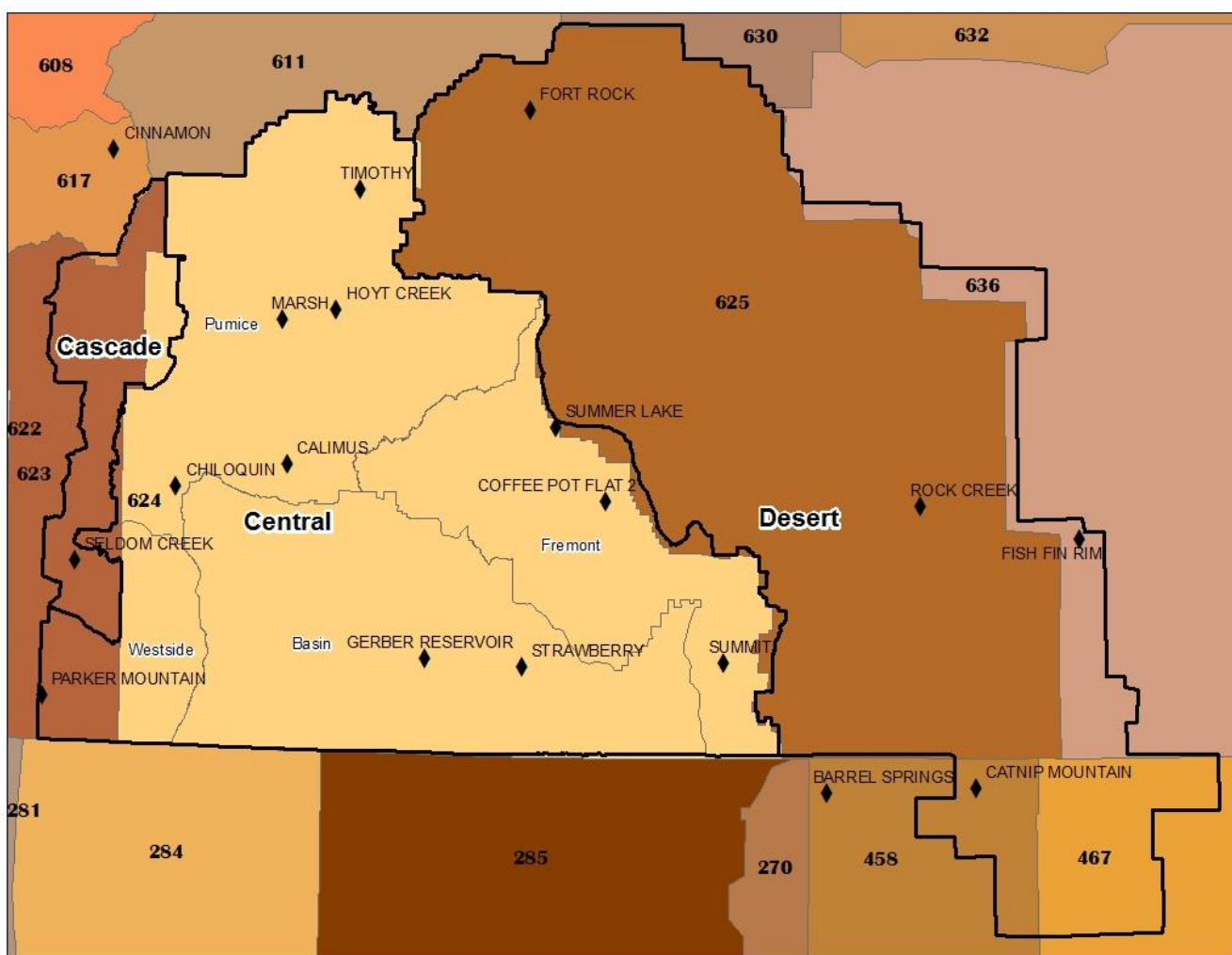


Figure 5 Fire Weather Forecast Zones and Weather Stations

IV. FIRE DANGER INDEXES AND FIRE BUSINESS ANALYSIS

A. Fire Family Plus Correlations/Analysis

1. Fire Weather history was re-created for 16 RAWs using a quality control process resulting in the most consistent, least erroneous historic weather data available. Weather history data, 1989-2014, was imported into Fire Family Plus.
2. Fire Danger Rating Areas were developed based on Fuels, Weather, and Topography using GIS tools and data.
3. Fire histories of the USFS Fremont-Winema NF, BLM Lakeview District, ODF Klamath-Lake District, Crater Lake NP, USFWS Klamath Basin NWRC and Sheldon-Hart Mountain NWRC were obtained.
 - a) Imported into Fire Family Plus and exported to GIS.
 - b) The Fire history table was edited to eliminate most duplicate fires between agencies using GIS.
 - c) All agency fire histories were assigned to a Fire Danger Rating Area.
 - d) The GIS Fire table was imported into Fire Family Plus as a custom import. A custom agency was set up allowing the fire history to be selected by Fire Danger Rating Area.
4. Fire Family Plus probability analysis runs were made for each FDRA using all RAWs within the FDRA. Run results and the Fire Family Plus database location information is available in Appendix A.2.
5. Generally the Cumulative Fire Analysis graphs were used to identify the best fit by looking for the best separation between All Days, Fire Days, Multiple Fire Days, and Large Fire Days. The statistics do not always correlate with the best fit looking at the graphs.
6. Generally ERC, Model G had the best fit by consistently having the best visual fit over the range of values.
 - a) Fuel models C, G, K, T and U were considered throughout the analysis process.
 - b) Indices analyzed extensively included ERC, Burning Index (BI), 100hr fuel moisture, and 1000hr fuel moisture with ERC and BI having a higher correlation.
 - 1) ERC frequently had good visual correlation but not always the best statistical correlation. Thresholds were fairly easy to identify and tended to filter all days reasonably.
 - 2) BI had good visual correlation but lacked consistency with a better fit for Large Fire Days. Possible reasons could include that the day of maximum fire growth does not always occur on the ignition date which is used in the analysis. Thunderstorms could start numerous fires on a particular day, also providing some precipitation which could cause the BI to have a low value that day. Some of the fires resulting from the lightning could grow large a day or two later when the BI has a higher value. For analysis purposes, final fire size is associated with the day of ignition when the BI value was low. It is still possible BI could be a good index to use in decision making, but needs to be monitored.
 - 3) The Cascade FDRA's Large Fire Days are based on significant fire growth days. Specific to the Cascade FDRA, a large fire analysis was conducted (see Appendix F) to identify significant fire growth days as opposed to date of discovery for greater accuracy and better correlations of indices to large fire days.

B. Adjective Fire Danger Rating Definitions and Analysis

The following table describes the Adjective fire danger rating definitions. The two columns on the left are copied out of “Gaining an Understanding of the National Fire Danger Rating System”, and are considered the national standard. The column at the right describes the point where fire business thresholds were consistently identified as a result of the analysis and utilized in this plan. This plan currently does not use “VERY HIGH”.

ERC does not include wind in any part of the index calculation, and is heavily weighted to large fuel moistures. Due to this fact, the ERC index shows the cumulative effect of weather over time on large fuels. The drying of large fuels result in an increasing ERC, while an ERC decrease indicates a net gain in large fuel moisture. Large fuel moistures are a key factor in fire intensity, high intensity fires having a high resistance to control. The ERC was selected because it is very stable and displays a seasonal trend.

Fire Danger Rating and Color Code	Description	SCOFMP Analysis
Low (L) (Green)	Fuels do not ignite readily from small firebrands although a more intense heat source, such as lightning, may start fires in duff or punky wood. Fires in open cured grasslands may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting.	Historically there have been few to no fires at this range of index values. See table 7 for Public Information chart
Moderate (M) (Blue)	Fires can start from most accidental causes, but with the exception of lightning fires in some areas, the number of starts is generally low. Fires in open cured grasslands will burn briskly and spread rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot.	Historically fires have occurred during this range of index values, but few to no large fires (as defined in the analysis) have occurred See table 7 for Public Information chart
High (H) (Yellow)	All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are attacked successfully while small.	Historically large fires have occurred during this range of index values. There may be less probability of high intensity, high resistance to control, and fires than in the Extreme category. Large fires during this range of index values may be most related to fine fuels. See table 7 for Public Information chart
Very High (VH) (Orange)	Fires start easily from all causes and, immediately after ignition, spread rapidly, and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels.	Not Used
Extreme (E) (Red)	Fires start quickly, spread furiously, and burn intensely. All fires are potentially serious. Development into high intensity burning will usually be faster and occur from smaller fires than in the very high fire danger class. Direct attack is rarely possible and may be dangerous except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions the only effective and safe control action is on the flanks until the weather changes or the fuel supply lessens.	Historically large fires have occurred at a higher rate, more fire for a given number of days, than during the High range of index values. Large fires may have a higher resistance to control due to greater intensity, more fuel participating in the fire due to all components of fuel being more available, drier. See table 7 for Public Information chart

Table 4 Fire Danger Rating Descriptions

C. Dispatch Level Analysis

The following table describes thresholds for dispatch decisions. The intent is to differentiate thresholds that would require different strategic and tactical considerations to successfully manage a fire. A BI for a fuel model G was used to set dispatch levels. The fuel model G had better correlation with fire history than any other fuel model for all FDRA's. The BI was selected because:

- 1) it considers wind
- 2) a forecasted index value for the next day is available so dispatch levels can be set the afternoon before
- 3) and firefighting resources are adaptable to changing dispatch levels.

The BI is a combination of ERC and Spread Component (SC). ERC does not include wind in the index calculation, and is highly weighted to large fuel moistures. SC is very sensitive to wind and is weighted to fine fuel moistures. The BI can fluctuate fairly dramatically from day to day, but does have a seasonal trend. Fires can occur at a BI of zero, but would have little spread potential as long as conditions on the fire were similar to conditions at the weather station, where the index value was computed from.

Dispatch Level Color	SCOFMP Analysis
Blue	Historically fires have occurred during this range of index values, but few to no large fires (as defined in the analysis) have occurred.
Yellow	Historically large fires have occurred during this range of index values. There may be less probability of high intensity, high resistance to control, and fires than in the Extreme category. Large fires during this range of index values may be most related to fine fuels.
Red	Historically large fires have occurred at a higher rate, more fire for a given number of days, than during the High range of index values. Large fires may have a higher resistance to control due to greater intensity, more fuel participating in the fire due to all components of fuel being more available, drier.

Table 5 Dispatch Levels

V. FIRE DANGER BASED DECISIONS

A. Seasonal Fire Danger Tracking

1. Seasonal Chart

A Microsoft Excel workbook has been developed which includes an automated process to import data derived directly from the Weather Information Management System (WIMS), posted to appropriate worksheets, and automatically update numerous charts for display. Adjective Class charts in the workbook can be used to easily see, and to communicate current season tracking. Data Select charts in the workbook and the station worksheets can be used for validation of model outputs and station inputs.

2. Fire Danger Pocket Card for Firefighter Safety

The Pocket Card for SCOFMP is a two-sided page including three charts (refer to section III B), one for each Fire Danger Rating Area. The pocket card is posted on the National Wildfire Coordination Group (NWCG), Fire Danger Working Team, Pocket Card website at: <http://fam.nwcg.gov/fam-web/pocketcards/pocketcards.htm>

B. Daily Staffing Levels

1. Personnel and Initial Attack Resources

Staffing levels will vary throughout the year by FDRA. When fire danger rating is Low, typically during pre/post and early season, no or limited initial attack capability is required. FDRA's have unique characteristics, for example the Central FDRA is Low only 23% of the season days compared to the Cascades FDRA which is Low 32% of the season days. Resources needed by staffing level should increase with increasing fire danger. Resources of higher firefighting production capability (dozers, air tankers) should be utilized as fire danger increases.

2. Aircraft – Detection

Detection aircraft and aerial observer(s) are often utilized following lightning episodes. Such use is limited when the fire danger is Low. Detection flights for human-caused fires are limited to rare instances of arson activity.

3. Lookouts

Lookouts have historically been staffed to support the wildfire season. Some federal lookouts are staffed pre/post season to support prescribed fire activities.

C. Planning of Incident Dispatching

1. Dispatch Level

A coordinated Dispatch Level based on the fire danger system will be utilized by all agencies within the SCOFMP area using a three level system described by colors, delineated by fire danger rating area, and tracked by the dispatch center. The described dispatch colors indicate likely differences in fire business. As dispatch levels change, the number of suppression resources should change to meet production capability requirements. Specific resources to be dispatched to specifically described areas will be addressed in Dispatch Block Cards.

FDRA Name	CASCADE		CENTRAL		DESERT	
Station/SIG	Seldom		Parker/Chiloquin/Gerber/Summit		Ft Rock/Rock Cr	
MODEL	7G2PE2		7G2PE2		7G1PE1	
Index	BI	% Days	BI	% Days	BI	% Days
BLUE	0-28	30%	0-47	34%	0-43	25%
YELLOW	29-39	42%	48-61	34%	44-56	30%
RED	40-64	28%	62-111	32%	57-118	44%
90 th	47	10%	72	10%	74	10%
97 th	53	3%	80	3%	85	3%

Table 6 Dispatch Level Thresholds by FDRA

D. Public Information

1. Public Fire Danger Signs

A coordinated adjective fire danger system will be utilized by all agencies within the SCOFMP area using a four level system displayed on signs throughout the area. Adjective Class for SCOFMP is based on ERC data from each FDRA and input from the ODF Significant Fire Potential Map http://nfdrs.smkmgmt.com/sfp/ODF_Significant_Fire_Potential.htm. The ODF Significant Fire Potential Map is based on an ERC SIG of Parker Mountain (25%), Timothy (37%), and Coffee Pot (38%). As much as possible Adjective Class will be the same for all of SCOFMP, for greatest consistency of public message and to minimize potential for administrative conflicts and workload. Although the data is derived from FDRAs, a best practice is to implement Adjective Class by administrative unit. Federal agencies use Adjective Class to provide fire danger information to the public. The Oregon Department of Forestry uses Adjective Class to communicate fire danger level to the public and to regulate industrial operations (see Section F Industrial Restrictions).

An analysis was completed in 2014 of the Cascades FDRA to consider large fire growth days as opposed to discovery date. The ERC data is derived from this analysis. Refer to Appendix F.

FDRA/SIG Name	CASCADE		CENTRAL		DESERT	
Station/SIG	Seldom		Parker/Chiloquin/Gerber/Summit		Ft Rock/Rock Cr	
MODEL	7G2PE2		7G2PE2		7G1PE1	
Index	ERC	% Days	ERC	% Days	ERC	% Days
LOW	0-30	32%	0-41	23%	0-44	21%
MODERATE	31-46	38%	42-60	29%	45-59	27%
HIGH	47-53	15%	61-72	24%	60-72	27%
EXTREME	54-72	15%	73-89	24%	73-92	25%
90 th	56	10%	79	10%	79	10%
97 th	62	3%	83	3%	83	3%

Table 7 Adjective Rating

For each FDRA the column on the left describes the adjective class threshold value. The percent value on the right is the average number of days between May 1 and October 31, during the analysis period (1998-2014).

2. News Releases

Public news releases related to Fire Danger should utilize information consistent with this FDOP.

E. Public Use Restrictions/Regulated Use Closures

For federal agencies, the best practice is to implement Public Use Restrictions (PURs) to coincide with going to an IFPL III. This provides a more consistent message to the public. As much as possible, implementation of PURs is coordinated between agencies but agencies can and have implemented as needed to meet their needs. The final decision to implement restrictions/closures will not only be based on fire danger levels but will also consider other political and social factors, preparedness levels, and fire activity. It is important to note that PURs require Forest/District (BLM) level signature to implement and drop, regardless if all or only portions of the Forest/District (BLM) are affected.

1. U.S. Forest Service – Fremont-Winema NF

Public use restrictions are put in place when the fire danger reaches a point where there is high potential for human starts. Restrictions are put in place to restrict smoking, driving vehicles off of system roads, building campfires, use of internal combustion engines, welding or cutting torches. These restrictions are put in place using a Forest Supervisor's Order, which are tied to CFRs.

2. Bureau of Land Management – Lakeview District

Public use restrictions are put in place when the fire danger reaches a point where there is high potential for human starts. Restrictions are put in place to restrict smoking, driving vehicles off of system roads, building campfires, use of internal combustion engines, welding or cutting torches. These restrictions are put in place using a District Manager's Order, which are tied to CFRs.

3. Oregon Department of Forestry – Klamath-Lake District

- 1) Burning inside or within 1/8 mile of a forest protection district requires a permit. The forest, by use of the permit, shall prescribe conditions necessary to be observed in setting a fire and preventing it from spreading out of control. The forester may waive the requirement for a burn permit, except during a fire season. {ORS 477.515, OAR 629-043-0040}
- 2) Fire season is declared when conditions of fire hazard exist in a forest protection district, and continue until fire hazard conditions no longer exist. The State Forester issues a formal proclamation to place a district into fire season, which remains in effect until lifted by the State Forester. {ORS 477.505}
 - a) Automatic fire season regulations:
 - b) Smoking while working or traveling in an operation area; and
 - c) The use of fuses and caps for blasting {ORS 477.510}.
- 3) Public closures designated by proclamation {ORS 477.535-550}:
 - a) Regulated closures, limits what the public can do while they are on forestland such as: campfires, smoking, non-industrial power saw use, motorized vehicles, travel requirements, metalwork, fireworks, exploding targets, tracer ammunition, and sky lanterns.
 - b) Permit closure limits public access to forestland. People must have written permission from the District before they can enter the closed area.
 - c) Absolute closures limit all access to forestland. Everyone is banned from entering the designated area, except to prevent and extinguish fires.

4. U.S. Fish & Wildlife Service – Sheldon-Hart Mountain NWRC

Public use restrictions are put in place when the fire danger reaches a level where there is high potential for human starts. Restrictions are issued to restrict smoking, back country use, operating vehicles off of unimproved system roads, building campfires, welding or cutting torches, or other spark generating industrial activities. These restrictions are put in place by the Project Leader pursuant to 50 CFR 25.21(e).

Campfire use (wood or charcoal) is only allowed within designated public campgrounds, on developed campsites with established campfire rings during non-restricted periods.

Fireworks are prohibited on the refuges at all times (50 CFR 27.41)

5. U.S. Fish & Wildlife Service – Klamath Basin NWRC

- a) Public use restrictions are put in place when fire danger reaches a level where there is high potential for human starts. Restrictions are issued to restrict smoking, off-road travel, mowing, welding or other potential spark generating activities. These restrictions are put in place using the Project Leader's order, which are tied to CFRs.
- b) Camping and campfires are prohibited on the refuges at all times.
- c) Fireworks are prohibited on the refuges at all times (50 CFR 27.41).

Decision to Implement Fire Use Restrictions

The Fire Management Officer will recommend implementation of restrictions based on current and potential conditions based on the following factors:

- * Weather data
- * Fuels data
- * Amount of standing water in marsh units
- * Public use trends (holidays, hunting seasons, etc)
- * Period of Fire Season
- * Fire situation and available resources within and adjacent to the FDRA
- * Fire use restrictions and emergency closures on adjoining public lands
- * Regional and national preparedness plan levels
- * Social-political factors

The Fire Management Officer will consult with the Refuge Managers and Project Leader. The Project Leader will render a decision and coordinate efforts with adjoining public land managers for public notification.

Partial Public Use Fire Restrictions

1. Decision Point Criteria

Once the following conditions have been reached, and are anticipated to continue for an extended period of time, fire use restrictions will be implemented:

- * Similar fire restrictions are in effect or being considered for adjoining public lands
- * NFDRS Staffing Class for Chiloquin RAWS is three or higher
- * Public Fire Danger Rating of Extreme

2. Smoking

Smoking is permitted only in the following areas:

- * In vehicles, provided that an ashtray is used for ashes and butts.
- * Within an area at least three (3) feet in diameter that is barren or free of all flammable materials. Ashes and butts must be disposed of safely and may not be discarded on the ground.

3. Fireworks

Fireworks are prohibited on the refuges at all times.

4. Vehicular Travel

All motorized vehicles are required to carry the following equipment

- * One shovel not less than 26 inches in length, with a blade not less than eight inches wide.
- * One water container of at least one gallon filled to capacity or a 2.5 pound fully charged fire extinguisher.
- * One axe or Pulaski with a handle at least 26 inches in length and a head weight of not less than two pounds.
- * Vehicles parked off roadways must be in an area barren of flammable material, including vegetation.
- * Spark arresting devices must be properly installed and maintained on all internal combustion engines.

5. Power Saws

Power saw operations are restricted for commercial and non-commercial activities as governed by the current Industrial Fire Precaution Levels (IFPL).

6. Mowing Operations

Mowing operations are restricted for commercial and non-commercial activities as governed by the current Industrial Fire Precaution Levels (IFPL).

7. Notification

News releases and public service announcements detailing restrictions to be implemented will be issued as directed by the Project Leader. Efforts to coordinate like public use restrictions will be coordinated with neighboring agencies.

Public use restrictions will be posted at Refuge Offices.

Full Public Fire Use Restrictions

1. Decision Point Criteria

Once the following conditions have been reached, and are anticipated to continue for an extended period of time, additional fire use restrictions will be implemented based on the following conditions:

- * Similar fire restrictions are in effect or being considered for adjoining public lands.
- * NFDRS Staffing Class for Chiloquin RAWS is at four or higher.
- * ERC is trending above the 97th percentile.
- * Fire suppression workload is active.

2. Smoking

Smoking is permitted only in the following areas:

- * In vehicles, provided that an ashtray is used for ashes and butts.

3. Fireworks

Fireworks are prohibited on refuges at all times.

4. Notification

News releases and public service announcements detailing restrictions to be implemented will be issued as directed by the Project Leader. Efforts to coordinate like public use restrictions will be coordinated with neighboring agencies.

Public use restrictions will be posted at Refuge Offices. Road barriers with attached notices will be placed as appropriate.

5. Additional Emergency Fire Restriction Orders

Full or partial refuge closures may be issued as determined by the Project Leader.

Procedures for lifting Fire Use Restrictions or Closures when fire danger and fire occurrence levels moderate, the Fire Management Officer will recommend the reduction of fire use restrictions and emergency closures. The Fire Management Officer and Refuge Managers will use the same factors previously used to implement the restrictions to develop a recommendation for the Project Leader to approve.

6. National Park Service – Crater Lake National Park

Public use restrictions and emergency closures for fire prevention purposes are implemented based upon the analysis of weather and fuels data, visitor use trends, and the fire situation within the park. Seasonal fire restrictions may limit or prohibit the use of wood or charcoal fires and smoking within the park. Fireworks are prohibited in the park at all times. Additional Emergency Fire Restriction Orders can be put in place using Park Superintendent Orders.

Public use restrictions and emergency closures shall be made in compliance with the requirements set forth in 36 Code of Federal Regulations (CFR), sections 1.5 and 2.13(c). Decision memoranda will be approved by the Superintendent when fire use restrictions, or emergency closures for fire prevention or public safety reasons, are implemented. Whenever fire use restrictions or area closures are implemented, public notice must be given in compliance with 36 CFR, section 1.7.

F. Industrial Restrictions/Closures

1. U.S. Forest Service/Bureau of Land Management/U.S. Fish and Wildlife Service

For federal agencies, the Industrial Fire Precaution Level (IFPL) system is used to regulate industrial and firewood cutting operations. Industrial operations may require a signed contract (timber sales, road maintenance, trail maintenance, silviculture operations, etc). By signing the contract the signer agrees to abide by the IFPL provisions in the contract. The intent of the system is to prevent large fires.

IFPL, for the interagency area, is monitored by the Fire Staff. IFPL is determined from WIMS, utilizing a weighted value of Ignition Component (IC) and ERC of the timber weather stations. East of the Cascades a fuel model "C" is used with a 90th percentile value of 16 and 97th percentile value of 20. The formula $PV = (ERC/4) + ((IC-45)/10)$, developed by John Deeming.

IFPL will be observed during fire season unless otherwise specified in a contract. As a general practice, readouts greater than IFPL 1 should not be adhered to until green-up is initiated and the adjective class is moderate.

To provide additional IFPL information that represents localized conditions, two discrete areas within SCOFMP are used.

Westside

IFPL will be calculated for the Klamath, Chiloquin and Chemult Ranger Districts utilizing Westside SIG, fuel model C (Chiloquin 30%, Calimus 25%, Hoyt 25%, Parker 10% and Seldom 10% RAWS).

Eastside

The IFPL for the remainder of the SCOFMP will be calculated using Eastside SIG, fuel model C (Gerber 25%, Coffee Pot 25%, Timothy 25%, and Summit 25%)

The two IFPL areas will be maintained at the same IFPL as much as possible.

Industrial operations on BLM lands, with the exception of those BLM lands that are protected by the Oregon Department of Forestry (ODF) west of Highway 97 are regulated using the IFPL system. On those lands that are protected by ODF the industrial operations are regulated according to ODF rules.

IFPL Implementation

When the calculated IFPL has been above a 2 for 3 consecutive days and the weather forecast or pattern shows no relief, the duty officers, LIFC coordinator, deputy fire staff, and fire staff are consulted about moving to an IFPL 2. The decision to move is generally made in the afternoon of the third consecutive day. The official move will be made on the morning of the second calendar day after the decision, or later as determined by the fire leadership.

When the calculated IFPL has been above a 3 for 7 consecutive days and the weather pattern shows no relief, the duty officers, LIFC coordinator, deputy fire staff and fire staff are consulted by the about moving to an IFPL 3. The decision to move is generally made in the afternoon of the seventh consecutive day. The official move will be made on the morning of the second calendar day after the decision, or later as determined by the fire leadership. The same consultation process will be utilized when moving from an IFPL 3 to an IFPL 4.

With consultation of the duty officers, LIFC coordinator, deputy fire staff and fire staff and notification of partners and cooperators, movement downward of the IFPL can happen at any time without a waiting period if the future weather pattern indicates a holding or downward trend.

The Public Information Officers make agency and media contacts. The LIFC coordinator will make appropriate changes to their respective web sites and recorded phone messages. This is done so that all parties involved will have time to be informed and react to the change.

The Fremont-Winema National Forest and Lakeview District Bureau of Land Management adhere to the same IFPL and public use restrictions decisions. The Klamath-Lake District ODF is consulted before an IFPL change is made.

The following table shows the stations, and their weighting, that are used to determine the IFPL levels for each individual FDRA.

FDRA_NAME	CASCADE	PUMICE	FREMONT	WESTSIDE	BASIN	DESERT
Station	Seldom	Chiloquin	Summit	Parker Mtn.	Gerber	Ft Rock
Model	7C2PC	7C2PC	7C2PC	7C2PC	7C2PC	7C2PC
Weight %	100 %	40%	50 %	100 %	50 %	50%
Station		Calimus	Coffeepot		Strawberry	Rock Creek
Model		7C2PC	7C2PC		7C2PC	7C2PC
Weight %		20%	50 %		50 %	50%
Station		Hoyt				
Model		7C2PC				
Weight %		40%				

Table 8 IFPL

The IFPL system allows for waivers of IFPL restriction if the situation on a particular site is different than is represented by the model. The basic principle is that the Agency will not be assuming additional risk by granting a waiver. Waiver guidelines were prepared and agreed to by members of the Pacific Northwest Wildfire Coordinating Group (PNWCG). The waiver guidelines can be found in Appendix C.

2. Industrial Restrictions/Closures for Klamath Basin NWRC

Industrial operations on US Fish and Wildlife Service lands are limited primarily to agricultural operations (haymaking), hazard fuels reduction and refuge maintenance projects. The Klamath Basin NWRC will adhere to the IFPL system for all commercial operations on the Bear Valley, Upper Klamath and Klamath Marsh National Wildlife Refuges. The portion of the Lower Klamath NWR in Oregon is primarily agricultural grain land and will be exempt from the restrictions found in this plan. Waivers may be issued by the Project Leader, Deputy Project Leader or Fire Management Officer for commercial and non-commercial activities.

3. Industrial Restrictions/Closures for Oregon Department of Forestry

When Fire Season is declared, industrial restrictions are implemented. Operators are required to have a "Fire Box" with the appropriate number of fire tools for the size of operation, tools are required for trucks and power saws, fire extinguishers and approved spark arrestor/muffler are required for each internal combustion engine on the operation, adequately sized water supply, and a fire watchman. The Watchman service is linked to the adjective class: 1 hour fire watch at Low, 2 hour fire watch at Moderate, and 3 hour fire watch at High and Extreme. In addition, at the adjective class of Extreme, tracked equipment, slash busters, and mechanized Harvesters with high speed rotary saws are required to be shutdown from 1pm to 8pm (unless waived by forester on operation specific basis). High speed rotary saws also require an operation area observer and additional fire suppression capabilities on the operation.

G. Severity

1. Season

A brief methodology is described in “Interagency Standards for Fire and Aviation Operations” (Red Book).

Agency specific analysis includes a determination of fire season start and end dates. Although weather conditions vary from season to season, this process drives the fire program budget for most federal agencies. Severity is generally identified when current fire season ERC thresholds are exceeding the standard fire season thresholds, or other agency specific guidelines.

2. Episode – Event Considerations

- a) Mass ignitions such as forecast lightning, especially when not accompanied by precipitation – dry.
- b) A very unstable atmospheric condition, one indication is a Haines Index of 5 or 6.
- c) Forecast high wind events.
- d) Prolonged low relative humidity events, such as provided by subsidence.
- e) Ignition sources believed to be arson.
- f) NFDRS analysis defines multiple-fire days.

These episodes certainly increase the workload for initial attack modules, but typically do not account for large fires. Onset of forecasted conditions for lightning episodes when the Adjective Class is High or Dispatch Level is Yellow, or higher, should prompt consideration for additional IA resources.

VI. OPERATIONAL PROCEDURES

A. Seasonal Schedule

1. Station Initialization

The Station Owner is responsible to ensure station initialization; timing should be coordinated with the Fire Danger Technical Group. Annual cycle would be for stations to have the herb state at frozen during the winter. Approximately two weeks prior to the peak of greenness set the herb state to green to trigger green-up. This point would typically be about mid-May, with peak of green-up being early June. NDVI imagery should be used to monitor greenness. Once a killing frost has occurred in the fall, the station herb state should be set to frozen. A killing frost typically involves several days with minimum temperatures at approximately 28 degrees or less, for several hours.

2. Station Catalog inputs in WIMS

The Station Owner is responsible to ensure appropriate catalogs are tracked in WIMS; catalogs should be coordinated with the Fire Danger Technical Group.

B. Daily Schedule

1. Personnel at LIFC will access WIMS daily and enter observations.

2. Quality Control Station Data

3. Weather readings for the previous 24 hours will be checked by looking at hourly readings (DRAWS fast-path in WIMS) for abnormal or inappropriate readings, possibly indicating instrument errors.

4. Enter Observations

5. All observations will be for the hourly weather record closest to 13:00 hours. For stations with transmit times more than :30 minutes after the hour, that will be a 12 hour reading in WIMS, all rest will be a 13 hour reading in WIMS. SOW has been automated as of November 2010 based on solar radiation readings. Originally, SOW was manually selected based on conditions at 14:00 hours (daylight savings time) for the majority of the FDRA the station represents, not necessarily just the station. SOW should still be reported and monitored as a check on the automated system. Tasks associated with selecting an observation should be accomplished by 15:00 hours each day, so that the

observations will be available to the Medford National Weather Service, so they can enter trend forecasts, therefore allowing forecasted indices to be available for the next day.

6. Fire Danger Chart

DIDX and DOBS will be downloaded from WIMS daily after forecasted indices become available, then the Microsoft Excel Workbook for SCO_NFDRS_Tracking will be opened, the "Import_DIDX_DOBS" macro executed, automatically updating the workbook. Instructions will be stored with the Excel Workbook.

C. Large Fire Support

1. Location of local data will be provided upon request.
2. Seasonal Chart – Pocket Card – Posters

VII. PROGRAM NEEDS

A. Weather Station Sites

Weather station location, maintenance, and data management is to be evaluated annually to ensure the stations are meeting the intent and needs of fire danger rating and weather forecasting.

B. Training

1. Development of future Fire Danger Technical Specialists. It takes a number of years to become proficient as a technical specialist, developing technical specialists requires forethought so that they are available when needed.
2. Managers. To interpret NFDRS data appropriately and to make the best decisions within a fire program requires some understanding of NFDRS. S-491 is recommended for all area fire managers.

APPENDICES

A. Supporting Data and Documents

The following data and documents are available for download at:

Contact Clint Albertson (calbertson@fs.fed.us) for Dropbox information

(BLM) S:\Fire\Fire Management Reference Guide

(FS) T:\r06\frewin\so\program\fire_management\Fire Management Reference Guide\Preparedness

1. Quality Control Processing of Historic Weather Data for South Central Oregon

SCOFMP_2014_FDOP_Analysis_Final.xlsx (Weather QC) tab

*2014 fire and weather data is incorporated into 2013 data and analysis

2. Fire Family Plus probabilities spreadsheets

SCOFMP_2014_FDOP_Analysis_Final.xlsx (Analysis Runs) tab

*2014 fire and weather data is incorporated into 2013 data and analysis

3. Fire Danger Pocket Card for Firefighter Safety

B. Fire Danger Rating Areas – 2010 Boundary Descriptions

The following are the descriptions that will be used to identify boundaries on the ground for the six fire danger rating areas identified in the South Central Oregon Fire Danger Operating Plan (Note these described boundaries do not exactly match the boundaries identified in the plan but were developed to facilitate the identification of the Fire Danger Rating Area boundaries on the ground):

CASCADE

The described boundary of this Fire Danger Rating Area starts at point where the Klamath/Jackson County line intersect with the Dead Indian Memorial highway and proceeds north along the Klamath County and the Jackson County line to where it intersects Forest Road 3795, then east along the Skylakes Wilderness boundary to where it intersects with the Southwest corner of Crater Lake National Park, then north and east along the west and north boundary of Crater Lake to where it intersects with the Umpqua and the Fremont-Winema National Forest boundary, then north along the boundary of the Umpqua and Fremont – Winema National Forest boundary to where it intersects with the Range line, R. 6/6 ½ E./ R.7E., and then south along the and R. 6/6 ½ E./ R.7 E., range line to where it intersects Highway 138, then east on Highway 138 to the Fremont – Winema Boundary N.F., then south along the Fremont – Winema boundary to where it intersects with the boundary of Sun Pass State Forest, then west along the boundary line of Sun Pass State Forest to the point it intersects with the boundary of Crater Lake National Park, then west along the boundary line of Crater Lake National Park to the point it intersects with the Fremont – Winema National Forest boundary and then south along the boundary line of Fremont – Winema National Forest to the point it intersects with the 8th Standard Parallel South, the west along the 8th Standard Parallel South to the point it intersects with Forest Road 3651 then south along Forest Road 3651 to where it intersects with Highway 140, then east on Highway 140 to where it intersects with Forest Road 3610, then south along Forest Road 3610 to where it intersects with Forest Road 3637 then east on Forest Road 3637 to where it intersects with Highway 140 then SE on Highway 140 to where it intersects with the Range line between Range 6 and Range 7 E, then south along the Range line between R. 6, 7 E. to the SE section corner of Section 25, T. 39 S., Range 6 E, then west along the southern section line of Section 25 to where it intersects with Forest Road 3828, then south on Forest Road 3828 to where it intersects with the Clover Creek Road then north on the Clover Creek Road to where it intersects with the Dead Indian Memorial highway and then west on the Dead Indian Memorial Highway to the starting point, the intersection of Dead Indian Memorial Highway and the Jackson/Klamath County line.

DESERT

The described boundary of this Fire Danger Rating Area starts Starting at the SE section corner of Section 23, T. 41 S., R. 22 E., at the Oregon/California Border north following the ODF Protection District boundary to where it intersects with Forest Road 2901 in the NE ¼ of Section 34, T. 29 S., R. 16 E., then north following the boundary of the Lakeview BLM in a clock wise manner to where it intersects with the Oregon/California border then west along the Oregon/California border to the starting point, the SE section corner of Section 23, T. 41 S., R. 22 E.. This fire danger rating area also includes the Sheldon National Wildlife Refuge in Nevada.

CENTRAL

Central is the combination of: Westside, Pumice, Basin and Fremont.

WESTSIDE

The described boundary of this Fire Danger Rating Area starts at the point where the Klamath/Jackson County line intersect with the Oregon/California border and proceeds north following the Klamath /Jackson County line to the Dead Indian Memorial highway, then east along the Dead Indian Memorial Highway to the junction of the Dead Indian Memorial Highway and the Clover Creek road, then south on the Clover Creek Road to the junction of the Clover Creek Road and the FS Road 3828 then east on FS Road 3828 to where it intersects with the southern boundary of Section 25, then east along the southern line of Section 25 to the SE section corner of Section 25, T. 39 S., Range 6 E, then north along the Range line between R. 6, 7 W. to where that Range line intersects with Highway 140, then NW on Highway 140 to the junction of Highway 140 and Forest Road 3637, then west on Forest Road 3637 to the junction of Forest Road 3637 and Forest Road 3610, then north on Forest Road 3610 to the junction of Forest Road 3610 and Highway 140, then west on Highway 140 to the junction of Highway 140 and Forest Road 3651, then north on Forest Road 3651 to where it intersects with the 8th Standard Parallel South, then east along the 8th Standard Parallel South to where it intersects with Pelican Bay, Upper Klamath Lake, then the boundary follows the northern edge of Upper Klamath Lake to Highway 97, then south on Highway 97 to the California border then west following the Oregon/California border to the beginning point, the intersection of the Klamath/Jackson County line and the Oregon/California border.

PUMICE

The described boundary of this Fire Danger Rating Area starts at Modoc point on Highway 97, and proceeds west along the northern edge of Upper Klamath Lake to where it intersects with the Fremont – Winema National Boundary, then north following the Fremont – Winema National Forest boundary to where it intersects with the Crater Lake National Park boundary, then east along the Crater Lake National Park boundary to where it intersects with the boundary of Sun Pass State Forest, then east along the boundary line of Sun Past State Forest to where it intersects with the boundary of the Fremont – Winema National Forest then north following the Fremont - Winema boundary to Highway 138, then west on Highway 138 to where it intersects with the R. 6/6 ½ E./ R. 7 E. range line then north following the R. 6/6 ½ E./ R.7 E. range line to where intersects with the Fremont - Winema National Forest and Umpqua National Forest boundary then north to where it intersects with the Deschutes National Forest boundary, then east along the boundary of the Fremont/Fremont – Winema National Forest boundary to where it intersects with the Lakeview District BLM boundary then south along the Lakeview to where it intersects with Forest Road 2901 in the NE ¼ of Section 34, T. 30 S., R. 16 E., to where it intersects with Forest Road 3219, then west following Forest Road 3129 to where it intersects with Forest Highway 28, then north on Forest Highway 28 to where it intersects Forest Road 3239, then southwest following Forest Road 3239 to where it intersects with the Sycan River, then following the Sycan River down stream to where it intersects with the Fremont – Winema National Forest boundary, then west along the Fremont - Winema National Forest boundary to the Sprague River Road/Lone Pine Road junction, then west on the Sprague River road to where the road intersects with the Fremont – Winema National Forest boundary, then south following the Fremont – Winema National Forest boundary to the point of origin, Modoc Point on Highway 97.

BASIN

The described boundary of this Fire Danger Rating Area starts at the California border on Highway 97, then north on Highway 97 to the Fremont – Winema Forest Boundary at Modoc Point then north on the Fremont – Winema Boundary to the Sprague River road, then east on the Sprague River Road to the Sprague River Road/Lone Pine Road junction, then at this point east along the Fremont – Winema boundary to where the Ivory Pine Road, the Fremont – Winema boundary and the North Fork of the Sprague River intersect, then east on the North Fork of the Sprague River to Forest Road 3411, then south on Forest Road 3411 to the 3400335 Road, then south on the 335 to Forest Highway 34, then east on Forest Highway 34 to the Klamath/Lake County, County line, then south following the Klamath/Lake County, County line to Highway 140, then east on Highway 140 to where Highway 140 intersects the ODF Protection District Boundary, then north following the ODF Protection District Boundary to the NE section corner of Section 26, T. 37 S., R 20 E., then south until it intersects with Highway 395, then south on Highway 395 to the Oregon/California border, then west along the Oregon/California border until it intersects with Highway 97, the starting point.

FREMONT

The described boundary of this Fire Danger Rating Area starts at the Oregon/California border on Highway 395, then north on Highway 395 to it's intersection with the ODF Protection District boundary, then north on the ODF Protection District Boundary to the NE section corner of Section 26, T. 37 S., R. 20 E., then west along the ODF Protection District boundary to where it intersects with Highway 140, then west on Highway 140 to the Klamath/Lake County, County line, then north following the Klamath/Lake County, County line to where it intersects with Forest Highway 34, then west on Forest Highway 34 to the intersection with road 335 , then north following Road 335 where it intersects with Forest Road 3411, then north on Forest 3411 to where it intersects the North Fork of the Sprague River, then west down the North Fork of the Sprague River to where the Ivory Pine Road, the Fremont – Winema boundary and the North Fork of the Sprague River intersect, then west along the Fremont – Winema National Forest boundary to where the boundary intersects with the Sycan River, then north following the Sycan River to where it intersects with Forest Road 3239 then follow Forest Road to where it intersects with Forest Highway 28, then south following Forest Highway 28 to where it intersects with Forest Road 3129 then northeast following Forest Road 3129 to where it intersects with Forest Road 2901, then north following Forest Road 2901 to where it intersects the ODF Protection District boundary in the NE ¼ of Section 34, T. 29 S., R. 16 E., then south following the ODF Protection District boundary to where it intersects with the Oregon/California state line, then west along the Oregon/California state line to the beginning point, the Oregon/California border and Highway 395.

C. IFPL Procedures

The following is the IFPL waiver guidelines that were developed and agreed to by the Pacific Northwest Wildfire Coordinating Group (PNWCG) in 1989.

PACIFIC NORTHWEST REGION WAIVER MANAGEMENT GUIDELINES

1989

PREPARED BY INDUSTRIAL FIRE PRECAUTIONS LEVELS REVIEW TEAM

I. WAIVER MANAGEMENT GUIDELINES

A. Background

The issuance and management of waivers is a problem that has surfaced in both the 1987 and 1988 reviews. This concern has resulted in an action item that was agreed to by the 1988 Industrial Fire Precaution Levels (IFPL) Review Team (see appendix I). The action item called for the development of interagency waiver management guidelines by June 30th.

The following guidelines have been developed by the Northwest Interagency Fire Prevention Group (NWIFPG) and Industry. The guidelines are general and will require administrative field units to develop specific guidelines/procedures that will support interagency and industry coordination and cooperation in the Pacific Northwest Region.

B. Objective

To enhance interagency uniformity and industry cooperation in the management of waivers.

To provide a framework for the development of more specific guidelines/procedures by field administrative units.

C. Introduction

A waiver may be considered when local site conditions, prevention, detection, suppression capabilities, or combinations of these alternatives can be used to effectively reduce risk.

Administrative field units should use the guidelines as a base to develop specific guidelines that support the review team's coordination and cooperation in the Pacific Northwest Region.

D. Definitions

Waiver: A written authorization that allows an operation to commence or continue so long as the level of risk present in the lower IFPL is not exceeded.

II. DIFFERING SITE CONDITIONS AND ADDITIONAL/SUBSTITUTE MEASURES

The specific operation site is not representative of the overall conditions in shutdown zone/regulated use area.

A. Site Specific Considerations:

- Area of continuous slash versus unit surrounded by timber.
- Type of work being performed.
- Opportunities for control.
- Time and distance from initial attack resources.
- Adjacent values at risk.

- Moist sites.
- Aspect (north slope versus south slope).
- Fog belt.

Note Specific guidelines can be determined on an agency basis for weather parameters to be used on waivers.

B. Additional/Substitute Measures:

1. Prevention

- Raising of fuel moisture.
- Exceeding fuel clearing precautions required by law/contract, i.e., tail block clearing wider than required. Clearing moss/fuel off potential line rubs, etc.
- Cleaning all tracked and rubber tired skidders daily i.e., belly pans, manifolds and radiators.
- Timing of operation (at night, earlier shut-down, etc.).

2. Detection

- Additional watchman/security service at high hazard and risk locations at agreed time intervals.
- Special detection measures (IR).

3. Extra Suppression

- Positioning personnel and equipment in addition to that required (on site).

NOTE Should be reasonable based on predicted fire behavior in the event of a start

4. Other

- Communication system exceeds minimum requirements.
- Weather controls (humidity, temperature, wind, shut-down).

III. EXPERIENCE WITH OPERATOR

- History of compliance
- History of law/contract violations
- History of ignitions
- Condition of equipment
- Operators attitude towards prevention

IV. LANDOWNER/LAND MANAGEMENT AGENCY CONSIDERATIONS

- Landowner in agreement with the waiver issued to the operator (N/A USFS)
- Insure coordination with adjoining cooperators

V. AVAILABILITY OF SUPPRESSION RESOURCES

- National/Regional/State situation

- Ability to mobilize resources to respond to an ignition
- Ability to support an extended attack situation
- Ability to administer waivers due to a shortage of personnel

NOTE Any combination of the above factors could result in the cancellation of waivers.

NOTE This is a supervisor/staff/agency decision (not “on the ground” administrator decision)

NOTE The above may include additional resources made available by the operator

IFPL REVIEW TEAM

- Roberto Rodriguez -USFS (Chairperson)
- Jaime Pinkham - BIA
- Ken Roegner - BLM
- Dan Shults - ODF
- Howard Thronson - DNR
- Mike Miller - AOL
- Dave Jessup - OFIC
- Bill Pickell - WaCLA
- Jim Harberd -BC

D. Interagency IFPL Waiver Form

INTERAGENCY IFPL WAIVER

1. The following entity is requesting that a waiver be granted from certain requirements that are set forth in the Industrial Fire Precaution Levels (IFPL) guidelines.

(Name of Company or Individual Requesting Waiver)

(Address and Telephone #)

(Signature)

(Date)

(Contract Number)

(Project Name)

(Legal Location)

(Agency Unit Receiving Request)

2. Applicable IFPL levels and restrictions that are requested to be waived:

3. Measures submitted by requesting party for waiving applicable IFPL levels and restrictions:

(Include Effective Dates)

4. Additional measures taken to prevent wildfires or respond to any incident that may occur:

(To be determined by Fire Staff or District FMO in conjunction with line officer)

5. This waiver will be revoked if any fire requirements in the contract or this waiver are not met at all times. This waiver will remain in effect until the project is completed or the IFPL level changes.

Recommended by:

Date:

(COR/TSO/ER/Other)

Reviewed by:

Date:

(Fire Management Staff Officer or District FMO)

***Reviewed by:**

Date:

(Appropriate Line Officer)

***Approved by:**

Date:

(Appropriate Line Officer/FSR/CO)

Cancelled by:

Date:

Steps for filling out Waiver Form

1. Requesting party fills out all applicable items in 1 thru 3; the requesting party may be assisted by the recommending official.
2. If the government feels additional measures need to be added for the waiver to be granted Fire Management in conjunction with the line officer includes this in item 4.
3. Applicable signatures need to be in place before the waiver is granted.

*Under some contracts such as Timber Sale Contracts the Line Officer may not be the Approving Official, the FSR or CO is the approving official. In such cases the Line Officer becomes one of the Reviewing Officials and the FSR or CO of the contract becomes the Approving Official. All other waivers in which the Line Officer is the Approving Official the reviewed by line for the Line Officer is not needed.

E. Central SIG Analysis

Central SIG - Parker Mountain (25%), Summit (25%), Gerber (25%), Chiloquin (25%)

Burning Index

Correlation to Central SIG

Parker	0.7979
Summit	0.8842
Gerber	0.9080
Chiloquin	0.7677

Correlation (P-Value) to Large Fires (50 ac)

Central	0.7044
Parker	0.1945
Summit	0.0536
Gerber	0.2521
Chiloquin	0.2685

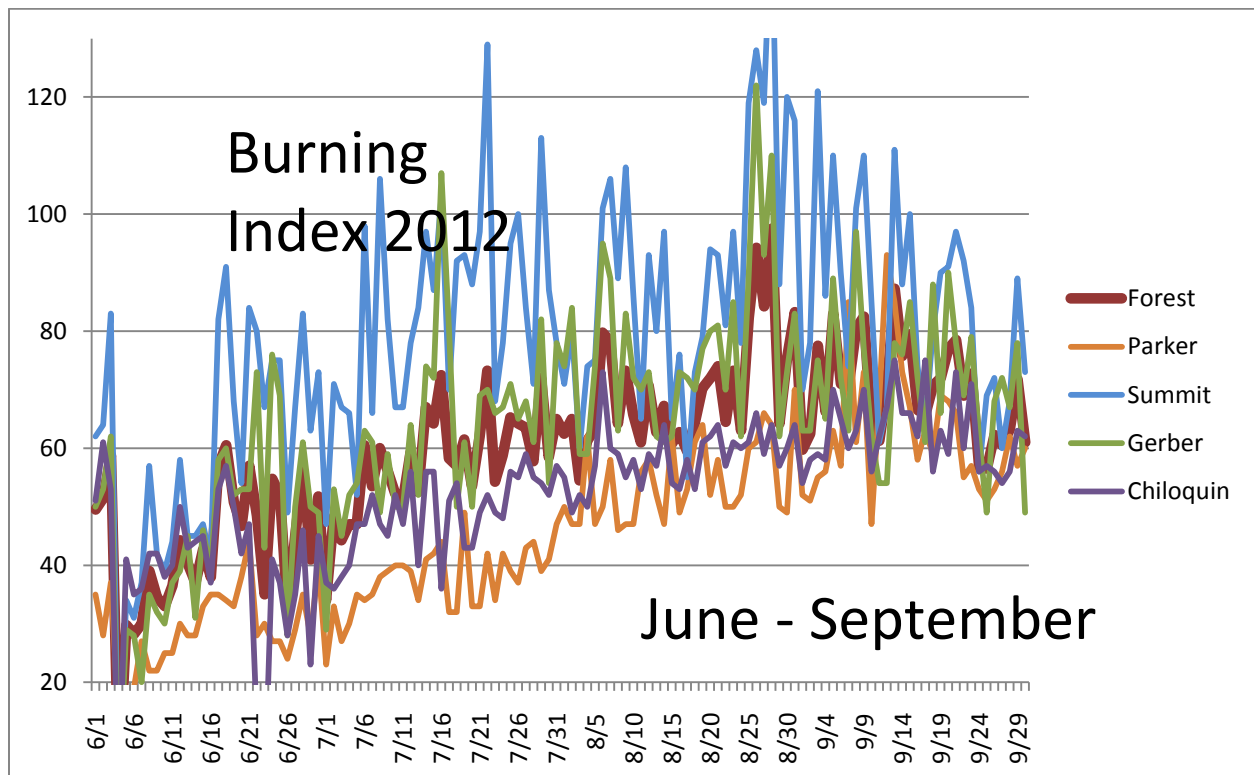
Energy Release Component

Correlation to Central SIG

Parker	0.7979
Summit	0.8842
Gerber	0.9080
Chiloquin	0.7677

Correlation (P-Value) to Large Fires (50 ac)

Central	0.8077
Parker	0.9358
Summit	0.8741
Gerber	0.3130
Chiloquin	0.8277

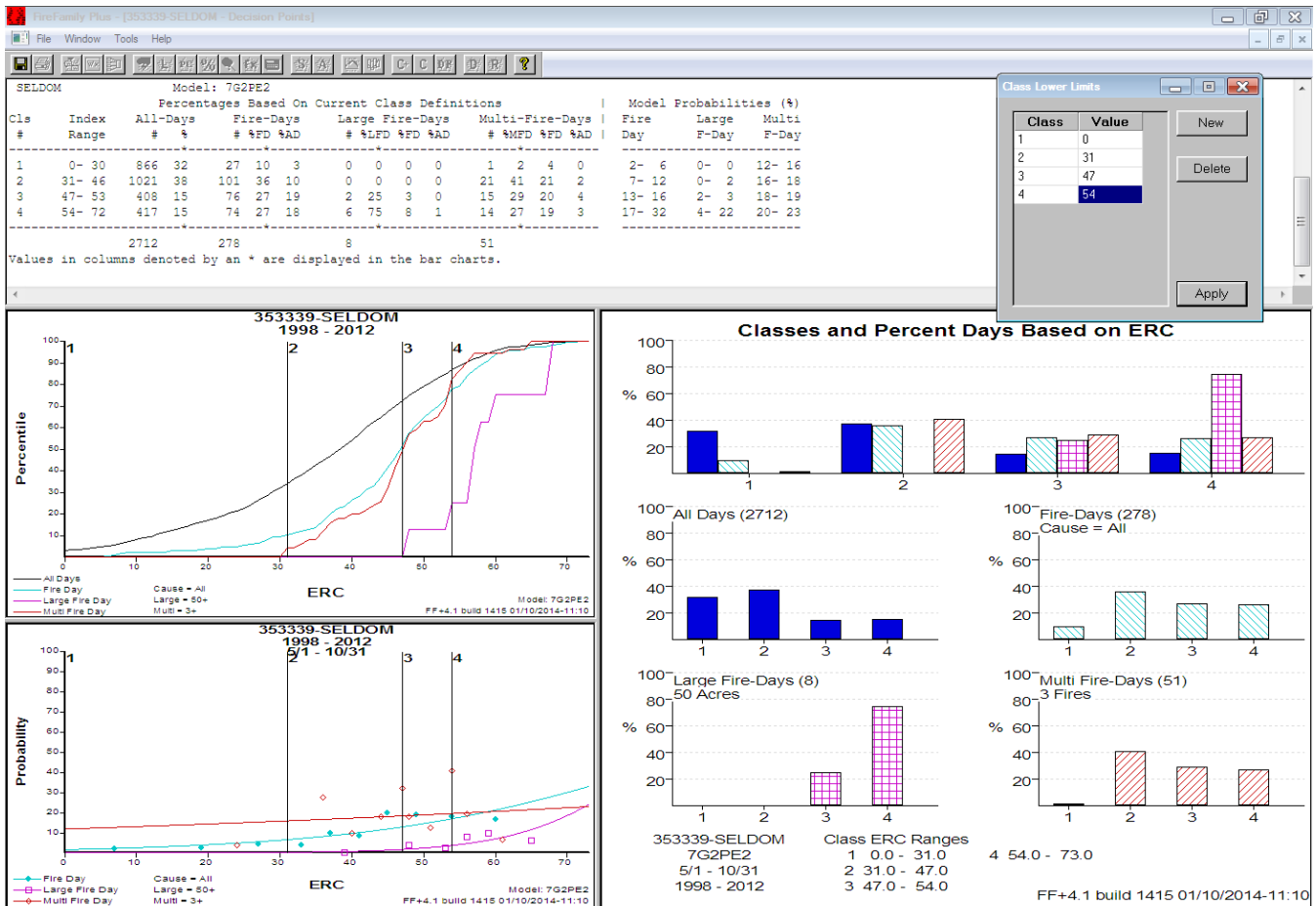


F. Cascades Large Fire Day Analysis

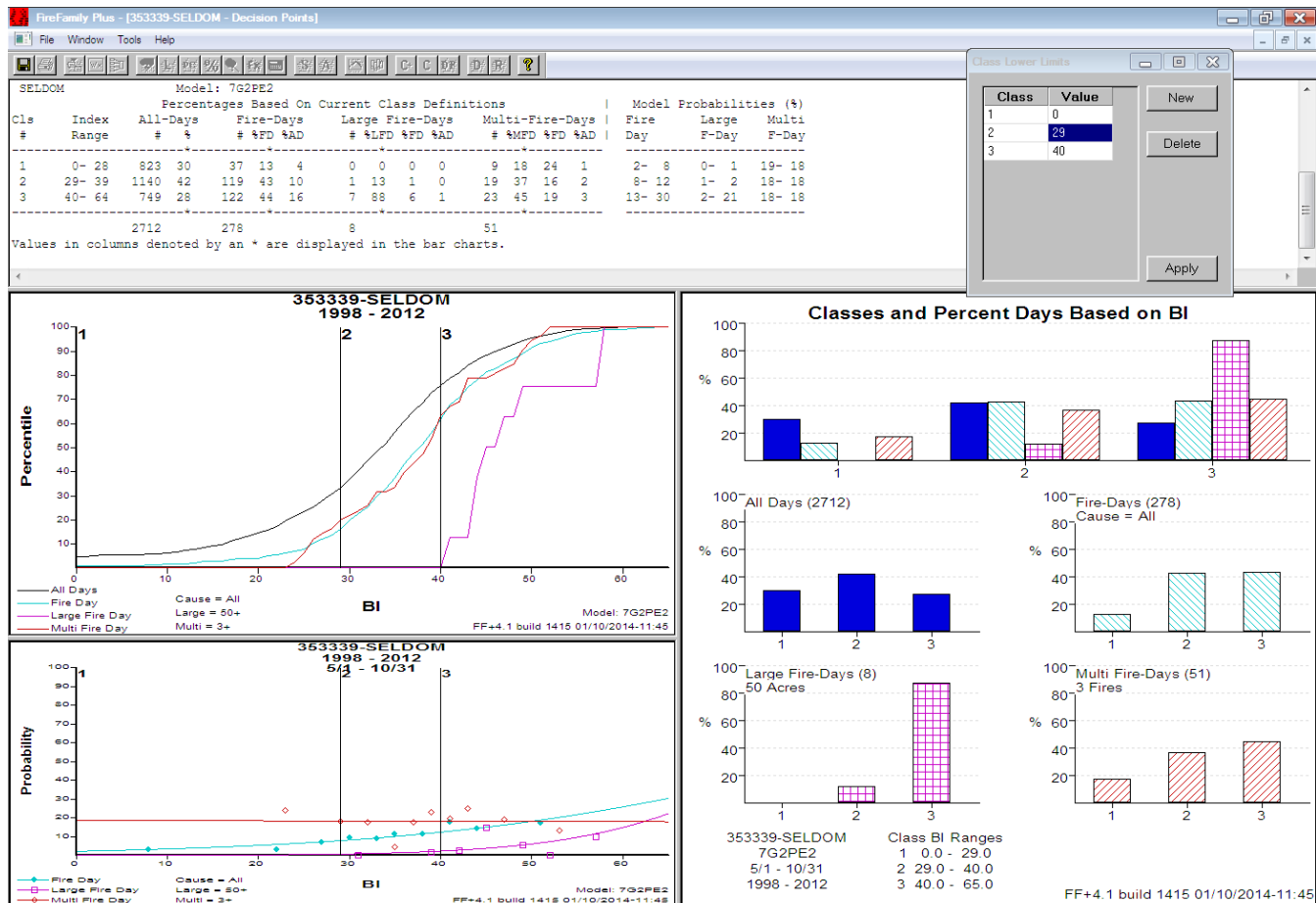
CRATER LAKE NATIONAL PARK
LARGE FIRES

FIRE	ACRES	DISCOVERY	GROWTH	ERC	HAINES	
Bybee '06	2930	7/23/2006	8/19/2006	58	6	
Middlefork	2000NPS	RSF-Start	9/18/2008	68	4	
Phoenix	754	8/18/2010	8/25/2010	57	5	
Trail	645	8/28/2011	9/9/2011	54	5	
Red Cone	322	8/20/2011	9/9/2011	54	5	
Desert Ridge '09	276	7/3/2009	7/17/2009	47	5	
Oasis	254	9/8/2011	9/9/2011	54	5	
Whitney	92	7/3/2009	7/17/2009	47	5	
Bybee '04	74	8/13/2004	8/14/2004	57	4	Discovery Day Haines
Border	63	8/12/2001	8/15/2001	48	4	Discovery Day Haines
Castle	140	8/18/2008	9/11/2008	60		
Prophecy	2000		8/23/1988	51		

Adjective Class (ERC)



Dispatch Level (BI) same as 2013 levels



Local Thresholds (watchouts)

- 1000hr-12%
- 100hr-10% This has better statistical correlation than 1000-hr might consider using instead.
- Woody- 95%
- Wind-15mph- standard across all our FDRAs since you really can't correlate using FF+
- RH-20% captures most large fires and only 21% of days
- Temp- 85 degrees captures 75% of LFD (Preferred alternative). Can lower to 80 degrees but start adding lots more days and only 13% of LFD. You go from 19% of days to 36% respectively.