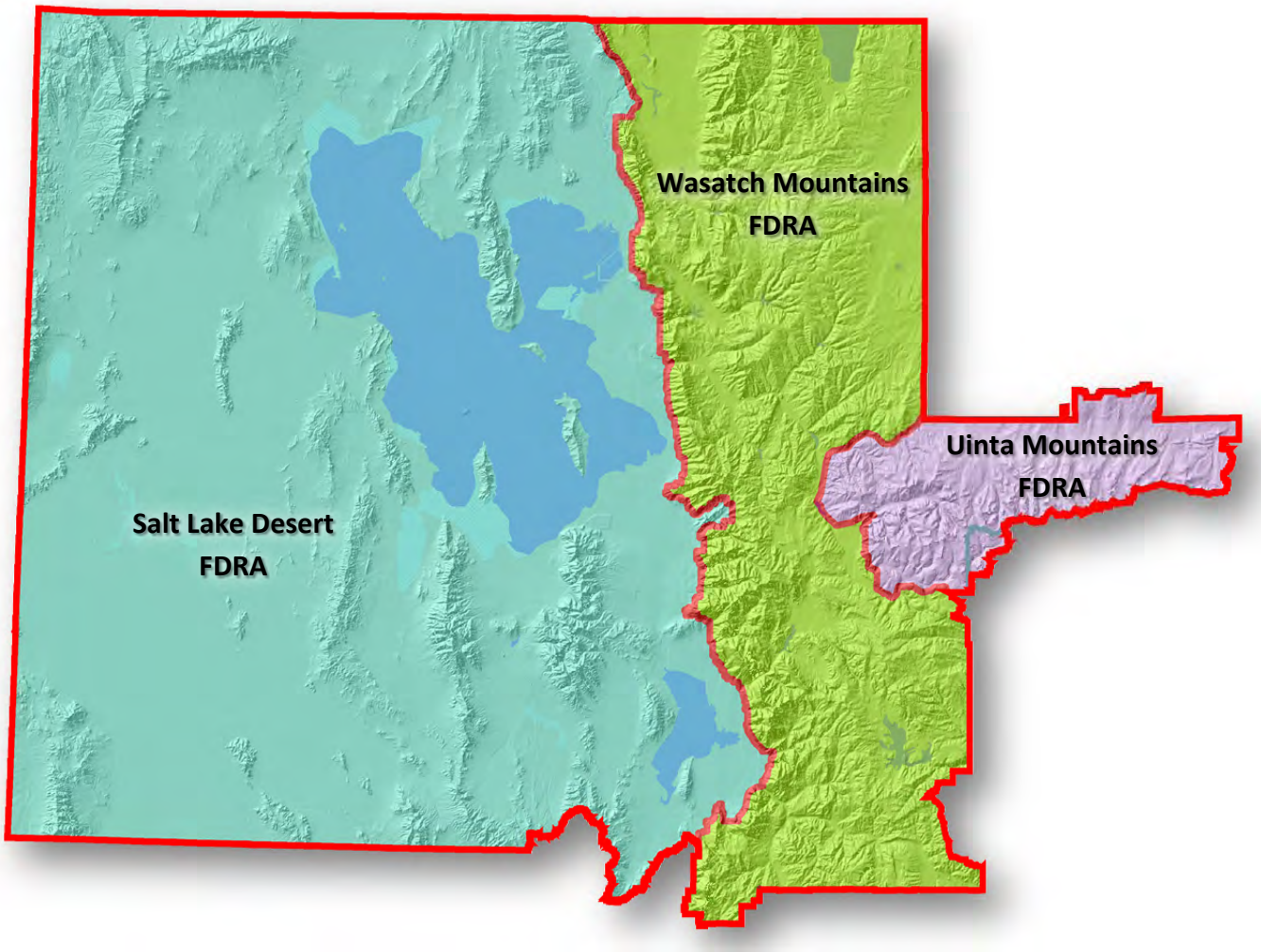
Northern Utah Interagency

Fire Danger Operating and Preparedness Plan

June 2012



Northern Utah Interagency

Fire Danger Operating and Preparedness Plan

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Table of Contents

I. INTRODUCTION

This plan is intended to document a decision-making process for agency administrators, fire managers, dispatchers, agency cooperators, and firefighters by establishing agency planning and response levels using the best available scientific methods and historical weather/fire data.

An appropriate level of preparedness to meet wildland fire management objectives is based upon an assessment of vegetation, climate, and topography utilizing the National Fire Danger Rating System (NFDRS) modeling. This plan combines an Operating Plan with a Preparedness Plan for the four primary wildland fire management agencies responsible for wildland fire management in Northern Utah (BLM, USFS, FWS, and State).

Guidance and policy for development of a Fire Danger Operating and Preparedness Plan can be found in the *Interagency Standards for Fire & Aviation Operations* (*Red Book*), *Wildland Fire and Aviation Program and Management and Operation Guide* (*Blue Book*), and *Forest Service Manual 5120*.

On July 6, 1994, the South Canyon Fire resulted in the deaths of 14 firefighters in Colorado. In 1995, an Interagency Management Review Team for the South Canyon Fire charged the National Advisory Group for Fire Danger Rating with developing "an implementation plan to improve technical transfer of fire danger technology." On July 10, 2001, four firefighters lost their lives on the Thirtymile Fire in Washington. The Thirtymile tragedy prompted an Accident Prevention Plan which contained specific actions to enhance firefighter safety, including the need to identify thresholds for critical fuels and weather conditions that lead to extreme burning conditions and publishing these on pocket cards for use by firefighters. On July 22, 2003, two firefighters lost their lives in the Cramer Fire in central Idaho. OSHA levied serious violations which included the failure to recognize fire danger thresholds for large fires and respond accordingly. In addition, a remote automated weather station (RAWS) near the fire had not received maintenance and calibration before the start of the fire season. This plan addresses action items identified in these tragic fires by providing the direction necessary to convey fire danger awareness to fire management personnel of escalating fire potential. This awareness is critical when wildland fire danger levels exceed thresholds which may significantly compromise safety and control.

This is the fourth revision (since 2000) of the Northern Utah Interagency Fire Danger Operation and Preparedness Plan. Since 2004, the Northern Utah Interagency Fire Center (NUIFC) area has been incorporated into the Advanced NFDRS course taught at the National Advanced Fire and Resource Institute (NAFRI) in Tucson, Arizona. In addition, this plan has been utilized as an example for many other Fire Danger Operating Plans throughout the United States. This widespread exposure can be attributed to the many fire management professionals who have provided valuable input to this plan. Furthermore, this document serves as an ***interagency*** example where consistent and effective applications of fire danger decisions have been successfully applied across multiple jurisdictional boundaries.

II. OBJECTIVES

A. Provide a tool for agency administrators, fire managers, dispatchers, agency cooperators, and firefighters to correlate fire danger ratings with appropriate fire business decisions in Northern Utah.

B. Delineate fire danger rating areas (FDRAs) in Northern Utah with similar climate, vegetation, and topography.

C. Establish an interagency fire weather-monitoring network consisting of Remote Automated Weather Stations (RAWS) which comply with *NFDRS Weather Station Standards* (PMS 426-3).

D. Determine fire business thresholds using the Weather Information Management System (WIMS), National Fire Danger Rating System (NFDRS), FireFamilyPlus software to analyze and summarize an integrated database of historical fire weather and fire occurrence data.

E. Define roles and responsibilities to make fire preparedness decisions, manage weather information, and brief fire suppression personnel regarding current and potential fire danger.

F. Determine the most effective communication methods for fire managers to communicate potential fire danger to cooperating agencies, industry, and the public.

G. Provide guidance to interagency personnel outlining specific daily actions and considerations at each preparedness level.

H. Identify seasonal risk analysis criteria and establish general fire severity thresholds.

I. Identify the development and distribution of fire danger pocket cards to all personnel involved with fire suppression activities within the Northern Utah Fire Danger Rating Areas.

J. Identify program needs and suggest improvements for the Fire Danger Operating and Preparedness Plan.

III. INVENTORY AND ANALYSIS

In order to apply a system which will assist managers with fire management decisions, the problems must be inventoried and analyzed to determine the most appropriate management control mechanism which will adequately address the issues.

A. Involved Parties

This plan will affect a wide range of entities. However, these entities can be grouped into three primary categories:

1. **Agency:** Employees of the federal, state, and local governments involved in the cooperative effort to suppress wildland fires. This includes BLM, USFS, NPS, FWS, BIA, and State of Utah employees, along with volunteer fire departments and military firefighting personnel.
2. **Industry:** Organizations that either utilize the natural resources or have permits to conduct activities on federal, state, or private lands for commercial purposes. These entities include utility companies (power/phone), ranchers, hazardous material disposal sites, railroads, timber harvesting, filming, ski resorts, building construction, etc.
3. **Public:** Individuals who use the land for recreational purposes such as off-highway vehicle (OHV) use, camping, hiking, fishing, skiing, firewood gathering, mountain biking, or general travel. This group also includes those living within the wildland/urban interface.

B. Fire Problem Analysis

The following table demonstrates the differences between the target groups (Agency, Industry, and Public). The ability to regulate, educate, or control a user group will be based upon the interface method and how quickly they can react to the action taken. In addition, each action will result in positive and/or negative impacts to the user groups. Consequently, the decision tool which would be most appropriate would depend upon the sensitivity of the target group to the implementation of the action. In selecting a component and/or index, several factors must be considered:

1. **Problem/Issue:** This is the problem specific to the area of concern and includes ignition causes. The problem is "framed" to focus on the wildland fire management issue, such as the point when fire activity becomes a burden to the local suppression forces.
2. **Management Action (Application):** This is the decision(s) which will affect the public, industry, or agency personnel. This includes fire management applications which can be used to formulate decisions regarding the potential issues which have been identified for the specific area. Management actions represent a way to link fire danger information with fire management decisions which affect specific target groups. Consider the appropriate set of decision thresholds to address the issue (i.e., Dispatch Level, Staffing Level, Preparedness Level, Adjective Rating, Public/Industrial Restrictions, etc.).
3. **Target Group:** The group of people commonly associated with the problem (Agency, Industry, or Public).
4. **Degree of Control:** This is a general description of how much control the agencies have over these entities (High $\rightarrow$ Low) and how quickly a target group can respond to management actions.

5. **Communication:** Forms of communication used with the user group (face-to-face, radio, telephone, email, newspaper, television, signing/posting, text-messaging, etc.).

6. **Potential Impacts:** The potential impacts on the target group and the likely consequences of a good (or bad) decision.

7. **Component/Index:** Sensitivity of the NFDRS outputs should be consistent with the ability to react (or communicate) to the target group. Memory and variability of the selected component or index must be understood to appropriately match the task and user group. If a situation where control and ability to communicate with the target group is high, the component and/or index which would be most appropriate should also be highly reactive to changing conditions (i.e., Ignition Component, Spread Component). If the situation was reversed where the control and ability to communicate with the target group is low, the appropriate component and/or index should not vary significantly over time (i.e., Energy Release Component).

Fire Problem Analysis Chart

PROBLEM	MANAGEMENT ACTION (CONTROL MECHANISM)	TARGET GROUP			DEGREE OF CONTROL	COMMUNICATION	POTENTIAL IMPACTS	COMPONENT / INDEX
		AGENCY	INDUSTRY	PUBLIC				
Unattended (and escaped) Campfires around developed recreation sites	Fire Restrictions (web, radio, TV, newspaper) Roadside Prevention Signs based on **Adjective Rating** Level	• USFS Uinta-Wasatch-Cache National Forest • BLM West Desert District • State of Utah		Campers Picnickers	Moderate	Communicated by Dispatch Center staff once per day to agency personnel for implementation. The intent is to raise the awareness of potential fire danger in simple, easy to communicate terms via local radio, TV, newspaper, "Smokey's Arm" sign at the entrance to developed recreation areas.	Public Anger and Resistance Loss of Credibility LEO, recreation, and fire patrol workload	Energy Release Component / Ignition Component
Unattended (and escaped) Campfires in Wilderness areas	Wilderness Patrols Roadside Prevention Signs based on **Adjective Rating** Level	Interagency: • USFS • State • BLM • NPS • FWS • BIA		Backcountry Hikers/Campers	Low	Communicated by Dispatch Center staff daily to agency personnel for implementation. Backcountry wilderness patrols will be necessary to conduct face-to-face awareness of fire danger. Prevention personnel must be notified to change signs.	Educ/Mitigation Workload LEO Workload Agency Prevention Costs vs. Suppression Costs	Energy Release Component / Ignition Component
Fires caused by downed power lines during periods of high wind events	Modify daily operational activities based on **Adjective Rating** Level	Dispatch Center	Power Company		Moderate	Dispatch Center staff retrieves the forecasted fire danger from WIMS and communicate this information to Duty Officers. Duty Officers then work with Educ/Mitig personnel to communicate with Rocky Mountain Power company.	Loss of Productivity Loss of Credibility Socio-Economic	Burning Index
Suppression resources committed to multiple fires	Preposition resources based on **Staffing Level**	Dispatch Center			High	Dispatch Center staff retrieves the actual and forecasted fire danger indices from WIMS and orders/releases resources based upon the Step-up Plan.	Agency Mob/Demob Costs vs. Suppression Costs	Burning Index
Initial fire response with little or no information available	Initial Response Plan based upon **Dispatch Level** and Dispatch Area	Dispatch Center			High	Dispatch Center staff retrieves the actual or forecasted fire danger indices from WIMS and dispatches pre-attack plan resources to reported fire based on dispatch level/zone.	Staffing Cost vs. Suppression Cost	Burning Index
Suppression resources unavailable after work hours and/or on scheduled days off	Extended or Supplemental staffing based upon **Staffing Level**	Dispatch Center			High	Dispatch Center staff retrieves the actual or forecasted fire danger indices from WIMS and notifies Duty Officer(s). Duty Officer notifies respective agency personnel via telephone or radio.	Agency Costs vs. Suppression Costs	Burning Index
Fires caused by target shooting	Roadside Prevention Signs based on **Adjective Rating** Level Restrictions and/or closure based upon **Preparedness Level**	• Dispatch Center • Ed/Mit Specialists		Recreationists/Target Shooters	Low	Communicated by Dispatch Center staff once per day to agency personnel for implementation. Increase level of public awareness of fire danger via local radio, TV, newspaper, adjective rating signs at typical problem areas (i.e., Lake Mountain).	Public Anger and Resistance Loss of Credibility LEO/fire patrol workload	Energy Release Component / Ignition Component
Fires resulting from fuelwood cutting activities	Modify daily operational activities based on **Adjective Rating** Level			Woodcutters	Low	Permit stipulations. Post adjective fire danger via web, newspaper, radio. Fire prevention patrolling for face-to-face communication and enforcement.	Public Anger Loss of Credibility LEO recreation, and fire patrol workload	Energy Release Component / Ignition Component

C. Fire Danger Rating Areas

A Fire Danger Rating Area (FDRA) is a geographic area relatively homogenous in *climate*, *vegetation* and *topography*. It can be assumed that the fire danger within a region is relatively uniform.

1. Salt Lake Desert FDRA

a. Location: The Salt Lake Desert FDRA is geographically defined as paralleling the east side of Interstate 15 along the lower bench of the Wasatch Mountains. The southern end borders the Tooele/Juab and Utah/Juab County lines. The western edge of the FDRA is defined by the Utah/Nevada State Line. The northern border follows the Utah/Idaho border. The Salt Lake Desert FDRA encompasses over 10,500,000 acres. However, much of this area is comprised of water (Great Salt Lake and Utah Lake) and military reservation land.

b. Vegetation: Lower elevations of this FDRA are dominated by desert shrubs characterized by greasewood, shadscale, fourwing saltbush, Gardner saltbush, horsebrush, ephedra, gray molly, winterfat, kochia, rabbitbrush, snakeweed, black sagebrush, and small areas of big sagebrush. Grasses consist of Indian ricegrass, galleta grass, needle-and-thread grass, squirreltail, sand dropseed, and cheatgrass. Forbs include globemallow, princess plume, evening primrose, and a variety of annual forbs. Juniper are scattered over much of the area, with more dense stands of the trees in the upper elevations. The upland sites within the unit are dominated by big sagebrush, black sagebrush, rabbitbrush, snakeweed, and agricultural areas. Upper elevations have mountain mahogany, bitterbrush, quaking aspen, serviceberry, white fir, and Douglas fir. This FDRA has been impacted by large and numerous fires in the past and has many areas dominated by cheatgrass. Most wind driven wildfires typically grow large due to the significant continuity of cheatgrass in the area. NFDRS Fuel Model A (Western Annual Grass) is the dominate fuel model in this FDRA. However, Fuel Model A does not correlate as well as fuel model G with historical fire occurrence. In this FDRA, NFDRS Fuel Model G correlates well for both Burning Index and Energy Release Component.

c. Climate: Hot and dry weather typically dominates the Salt Lake Desert FDRA during fire season. Utah is the second driest state in the nation. Annual precipitation averages 4 to 12 inches. Westerly flows generally bring hot and dry air into the region with little or no precipitation. The main concern is that the low-pressure systems or upper level disturbances pass through the area with enough energy and moisture to initiate thunderstorm activity and produce erratic winds. Fire activity may be frequent, and the potential for large fire growth is high. Southwesterly flows typically bring monsoonal moisture into the region. Strong up-canyon winds cause control problems during the afternoon. The Great Salt Lake, like other large bodies of water, has a significant influence on local winds. Lake breezes (or sea breezes) are wind currents that blow from the bodies of water toward the land. Land breezes are wind currents that blow from land towards the bodies of water. In the summertime during the day, lake breezes occur when the cool air over the lake moves inland. During a summer night, the air over the lake may be warmer than the air over the land and the cooler air over the land may move towards the lake resulting in a land breeze. When a lake breeze penetrates inland, the forward edge of the cool lake air is called the Lake Breeze Front. This front is similar to a typical "Cold Front", but is smaller in scale, but can have a significant influence on

the behavior of fires adjacent to the Great Salt Lake or Utah Lake after sunset. Fires in this FDRA are typically in climate class 1 (Arid/Semi-arid).

d. Topography: The Salt Lake Desert FDRA is made up of basins that are broken up by several mountain ranges that are generally oriented from north to south. The basin terrain is flat and generally accessible by vehicle, while the mountain ranges are steep, rocky, and inaccessible. Generally, fire occurrence in this area is generally considered in slope class 1.

2. Wasatch Mountains FDRA

a. Location: The Wasatch Mountains FDRA western boundary is geographically defined as paralleling the east side of Interstate 15 along the lower bench of the Wasatch Mountains. The southern edge borders the Utah/Juab and Utah/Sanpete County lines east of Nephi, UT. The eastern edge follows the Utah/Wyoming State line on the north half, the Summit/Daggett County line in the middle and The Wasatch/Duchesne county line on the southern portion. The northern border follows the Utah/Idaho border and includes a small area of the Wasatch-Cache National Forest that extends into southwestern Wyoming. The Wasatch Mountains FDRA encompasses over 4,100,000 acres.

b. Vegetation: The fuel complex of the Wasatch Mountains FDRA consists of sagebrush, grasses, oakbrush, maple and pinyon-juniper at lower elevations. Lodgepole pine, mixed conifer and aspen are found at higher elevations. Most wind driven wildfires typically grow large due to the continuity of annual grasses (including cheatgrass) in the area. Most fires on the Wasatch front grow large due to preheating of live woody fuels on steep slopes. NFDRS Fuel Model G correlates well with Burning Index and Energy Release Component in this FDRA.

c. Climate: The climate ranges from high desert to Alpine Forest. Precipitation generally increases with elevation. Lower elevations typically receive 12-15 inches per year with higher mountain peaks receiving up to 60 inches per year. February and April tend to be the wettest months while summer and early fall are typically the driest. Summer temperatures can rise to over 100 °F at lower elevations and mid-eighties at higher elevations. The prevailing wind pattern during the fire season is southwest except where modified by local topography. Strong up-canyon winds cause control problems during the afternoon. After sunset, fires adjacent to the Great Salt Lake and Utah Lake will often be influenced by a pressure gradient force resulting in surface winds blowing from the land to the water body. Relative humidity can drop to the lower teens and occasionally into the single digits. Fires in this FDRA are typically in climate class 2 (Sub humid).

e. Topography: Elevations in the FDRA range from 3,000 to 12,000 feet. The Wasatch Range is generally oriented north to south. The Wasatch Front (from Idaho border to Nephi) is characterized by steep canyons. Upper and mid-elevations of the mountains are steep slopes and canyons where fires can make significant runs. Fire occurrence in this area is generally considered in slope class 2-3.

3. Uinta Mountains FDRA

a. Location: The western boundary of the Uinta Mountains FDRA is geographically defined from the Wyoming State line to the Chalk Creek road, south from Coalville along the

eastern side of I-80 to Wanship, south along State Route 32 to Kamas, and south to the Wasatch/Summit county line. The southern boundary is the Wasatch/Duchesne county line. The Wasatch/Duchesne county line follows the Utah/Wyoming State line on the north half and also including a small area of the Wasatch-Cache National Forest that extends into southwestern Wyoming. The Uinta Mountains FDRA encompasses nearly 900,000 acres.

b. Vegetation: The vast majority of the mountain slopes are forested. Coniferous trees (lodge pole pine, Engelmann spruce, Douglas-fir, sub-alpine fir) grow in large continuous stands. Quaking aspen occur in scattered patches throughout most of the lower elevations. Isolated meadows - resembling large parks - and willow fields add variety to the timbered areas. Many peaks extend above tree line.

c. Climate: the Uinta Mountains receive about 40 inches of precipitation annually, mostly as snow. The growing season is short; consequently, fire season is usually only two months (July-August). Temperatures in areas above 10,000 feet are seldom above 80 degrees during summer days. Nighttime temperatures during the summer are 30-40 degrees, with the possibility of freezing. Summer afternoon thunderstorms often occur in late July and August with the probability of precipitation increasing with elevation.

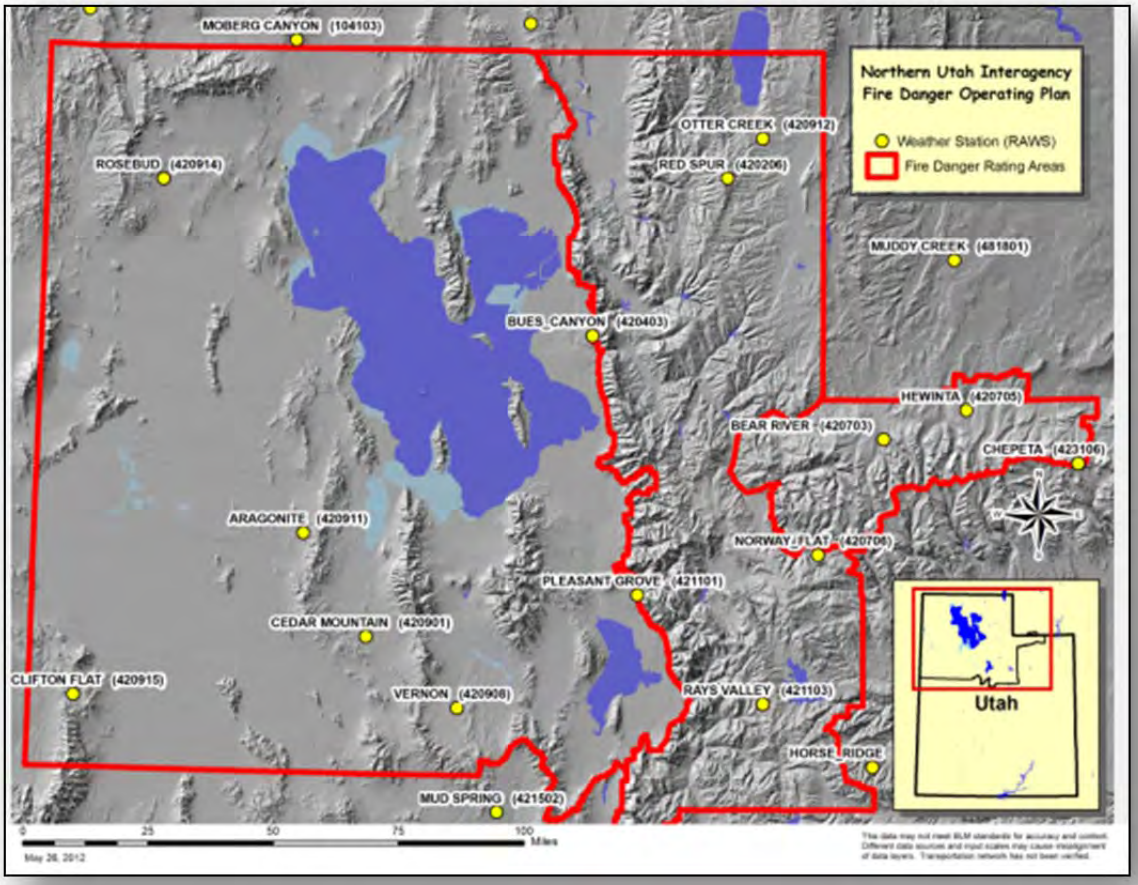
d. Topography: The Uinta Range is the highest in Utah, and is the only major range in the contiguous United States with an east-west orientation. Elevations range from 8,000 feet in the lower canyons to 13,528 feet atop Kings Peak - the highest point in Utah. Ridges divide the area into large basins; many ridges rise abruptly several thousand feet above the basins.

D. Weather Stations

1. Description

The West Desert District Office (BLM) manages six active RAWS: Vernon, Cedar Mountain, Aragonite, Otter Creek, Rosebud, and Clifton Flat. The Uinta-Wasatch-Cache National Forests (USFS) manage seven active RAWS: Bear River, Bues Canyon, Hewinta, Norway Flat, Pleasant Grove, Ray's Valley, and Red Spur. Each of these stations comply with NWCG NFDRS Weather Station Standards (*http://www.nwcg.gov/pms/pubs/PMS426-3.pdf*).

2. RAWS Locations and Status (Map)

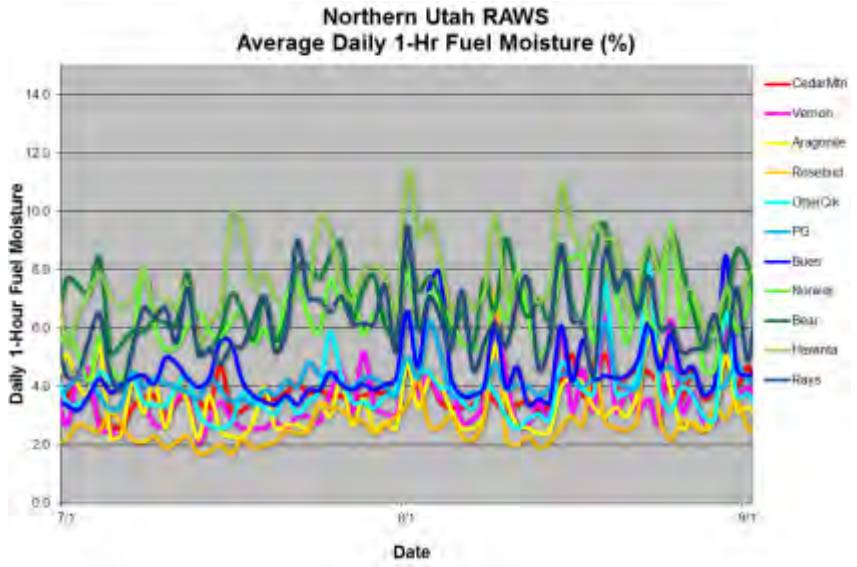


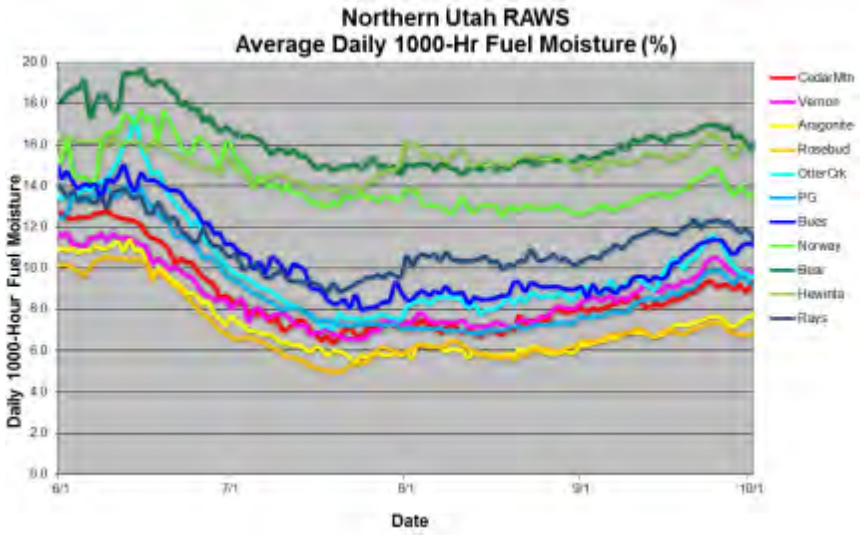
3. RAWS Summary (Table)

Station ID	Station Name	Status	Agency/Owner	Data Years	Elevation	Reporting Time
104103	Moberg Canyon	Active	USFS-ID-STF	1982-present	6400	XX:05
104203	Flint Creek	Active	USFS-ID-CAF	1985-present	5200	XX:09
104204	Hansel Mountain	Inactive	BLM-ID-BUD	1990-1996	5890	
260308	Spring Gulch	Active	BLM-NV-EKD	1990-present	5470	XX:41
260309	Rock Spring Creek	Active	BLM-NV-EKD	1990-present	5380	XX:41
260805	Cedar Pass	Active	BLM-NV-ELD	1989-present	7185	XX:31
420103	Red Dome	Inactive	BLM-UT-SLD	1979-1998	4720	
420206	Red Spur	Active	USFS-UT-WCF	2007-present	8872	XX:07
420403	Bues Canyon	Active	USFS-UT-WCF	1993-present	5100	XX:01
420601	Ensign	Inactive	USFS-UT-WCF	1983-1997	5600	
420703	Bear River	Active	USFS-UT-WCF	1983-present	8475	XX:03
420705	Hewinta	Active	USFS-UT-WCF	1984-present	6500	XX:10
420706	Norway Flat	Active	USFS-UT-WCF	1983-present	8200	XX:04
420901	Cedar Mountain	Active	BLM-UT-SLD	1965-present	4820	XX:55
420907	Skunk Ridge	Inactive	BLM-UT-SLD	1987-1996	4550	
420908	Vernon	Active	BLM-UT-SLD	1990-present	5500	XX:42
420909	Muskrat	Inactive	BLM-UT-SLD	1993-1996	4400	
420910	Simpson Springs	Inactive	BLM-UT-SLD	1993-1996	4900	
420911	Aragonite	Active	BLM-UT-SLD	1997-present	5030	XX:58
420912	Otter Creek	Active	BLM-UT-SLD	2002-present	7160	XX:45
420914	Rosebud	Active	BLM-UT-SLD	2002-present	5040	XX:42
420915	Clifton Flat	Active	BLM-UT-SLD	2003-present	6384	XX:44
421101	Pleasant Grove	Active	USFS-UT-UIF	1970-present	5200	XX:55
421103	Rays Valley	Active	USFS-UT-UIF	1983-present	7300	XX:13
421202	West Fork	Inactive	USFS-UT-UIF	1987-1996	8400	
421501	Sevier Reservoir	Active	USFS-UT-RID	1987-present	5330	XX:51
421502	Mud Spring	Active	BLM-UT-RID	1990-present	5760	XX:37
481801	Muddy Creek	Active	BLM-WY-RID	1983-present	6970	XX:43

4. Special Interest Groups (SIGs)

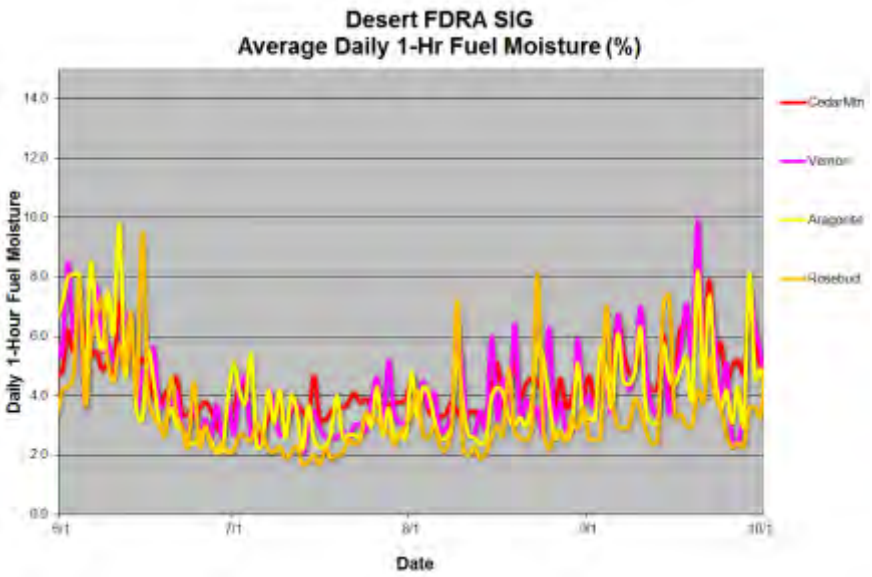
Remote Automated Weather Stations (RAWS) located in different geographical locations with common sensitivity to NFDRS model inputs can be grouped together to form a SIG. A technique developed by Michael Fosberg and William Furman (Fosberg, Furman. 1973) utilizes the 1-hour timelag fuel moisture as the integrator of weather elements to help define fire climate zones. In addition, 1000-hour timelag fuel moisture was evaluated for dead fuel moisture modeling of heavy fuels in the 3 to 8 inch diameter classification. The following graphics depict the modeling sensitivity using the past 10 years of historical weather data obtained from each RAWS. Of the 13 RAWS in the Northern Utah area, 2 (Clifton Flat and Red Spur) have been eliminated from this analysis since they do not yet have 10 years of historical weather data. RAWS with common modeling sensitivity have been grouped into SIGs for each FDRA.





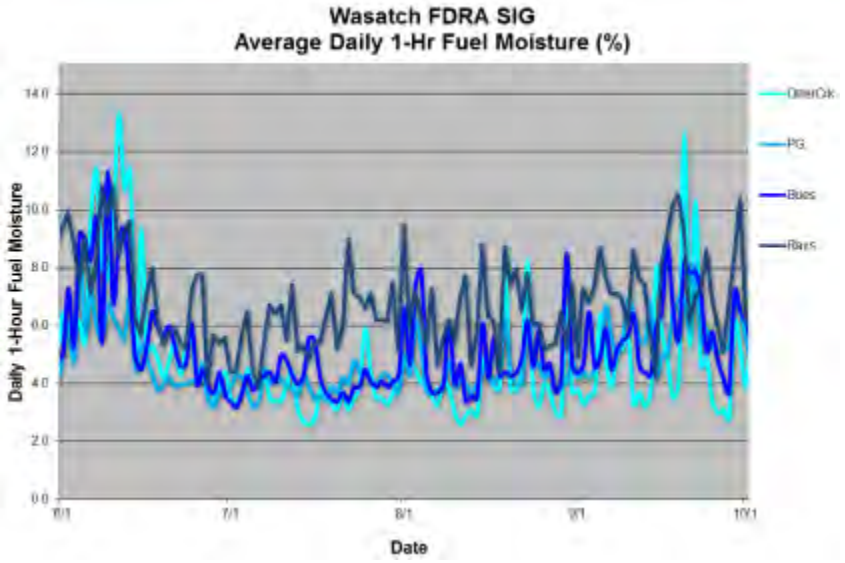
a. Salt Lake Desert SIG

The Vernon, Cedar Mountain, Aragonite and Rosebud RAWS have been combined as a Special Interest Group (SIG) to compute an equally weighted set of fire danger indices for the Salt Lake Desert FDRA.



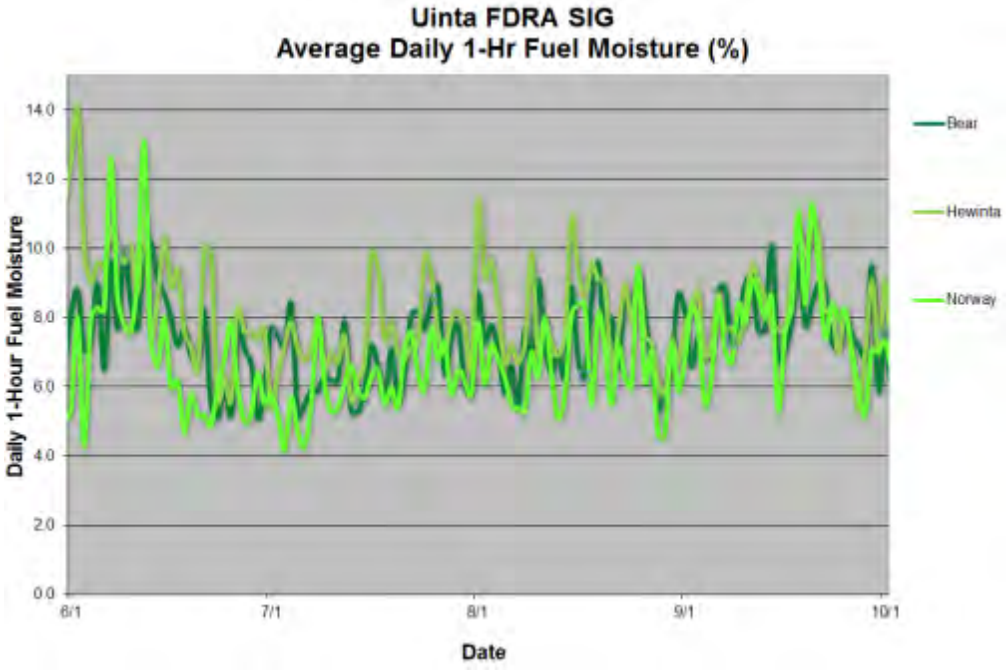
b. Wasatch Mountains SIG

The Otter Creek, Pleasant Grove, Rays Valley, and Bues Canyon RAWS have been combined as a Special Interest Group (SIG) to compute an equally weighted set of fire danger indices for the Wasatch Mountain FDRA.

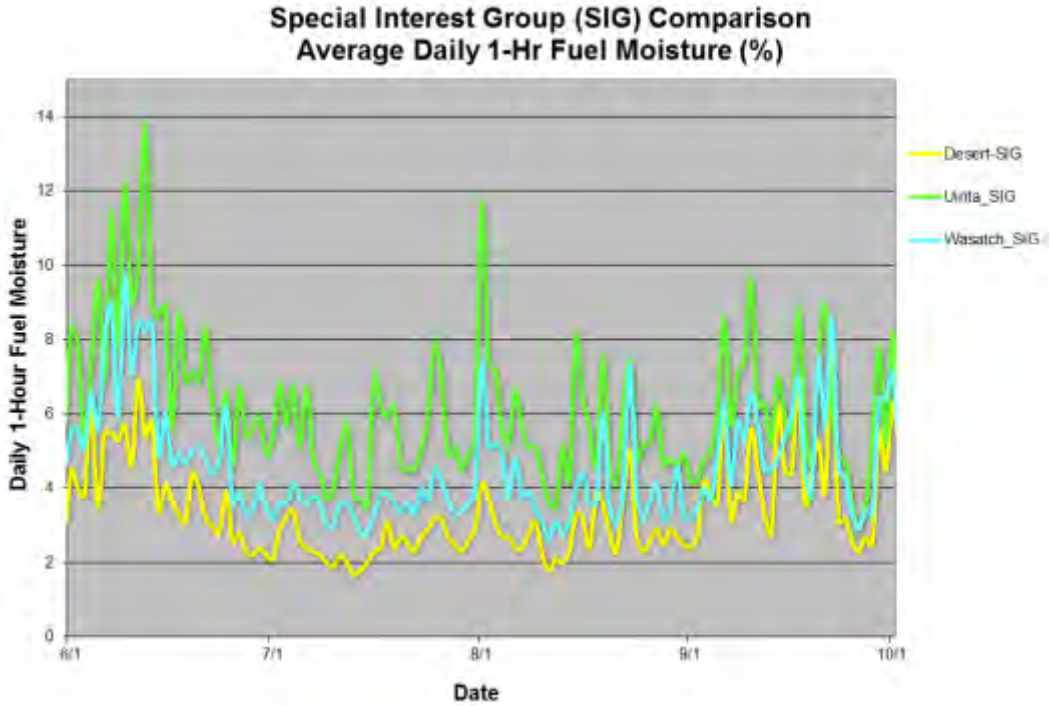


c. Uinta Mountains SIG

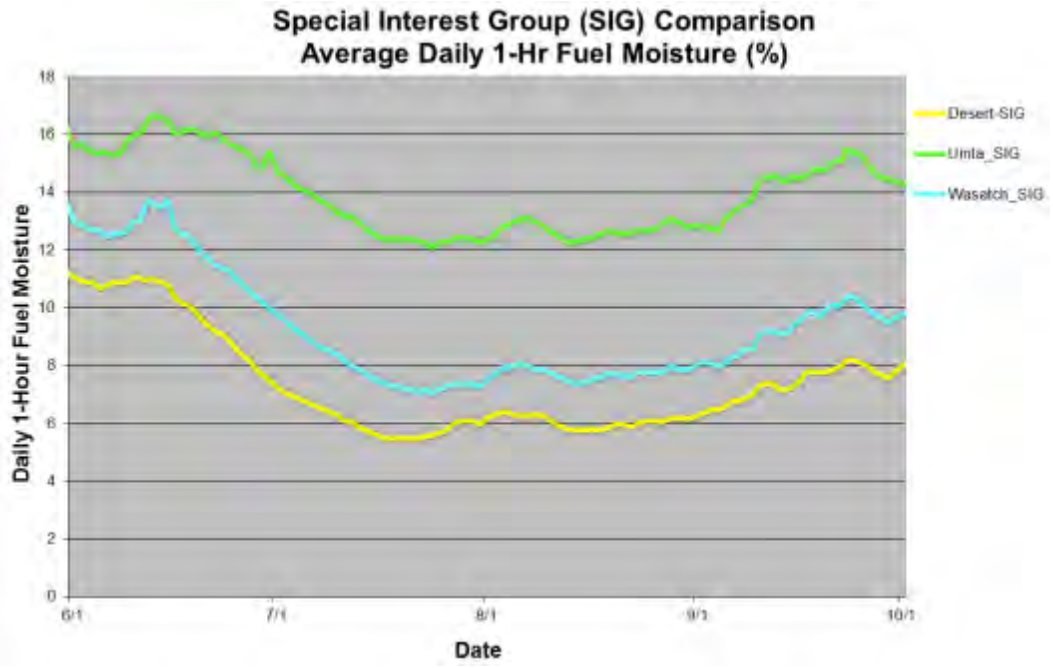
The Bear River, Hewinta and Norway Flats RAWS have been combined as a Special Interest Group (SIG) to compute an equally weighted set of fire danger indices for the Uinta Mountain FDRA.



d. 1-hour Fuel Moisture (SIG Comparison)



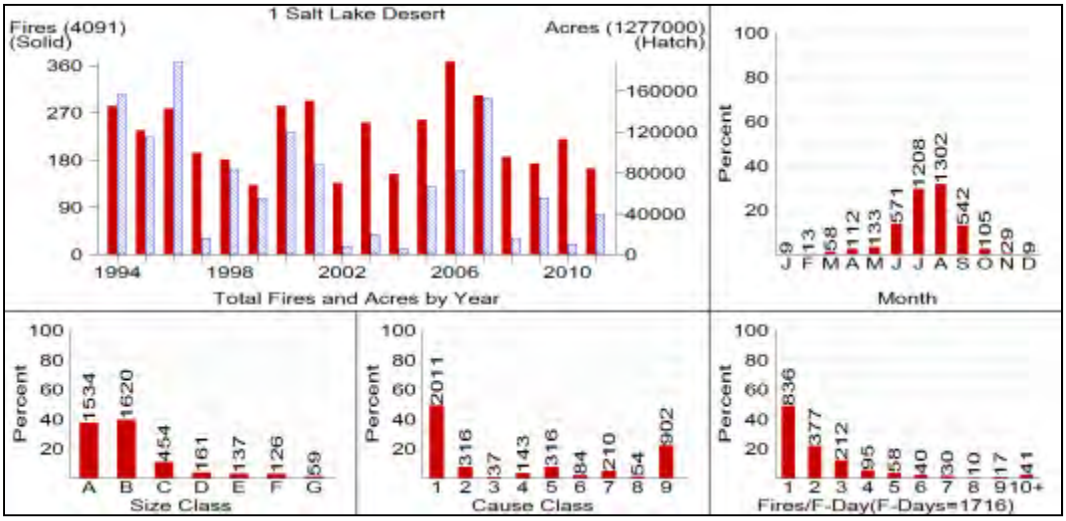
e. 1000-hour Fuel Moisture (SIG Comparison)



E. Fire Occurrence

Eighteen years (1994-2011) of fire occurrence data was used for the statistical analysis. Department of Interior BLM, NPS, BIA, FWS fire occurrence data was obtained from the *Wildland Fire Management Information* system. Department of Agriculture Forest Service fire occurrence data was obtained from the National Interagency Fire Management Integrated Database (NIFMID) via *Kansas City Fire Access SofTware (*KCFAST). State of Utah data was obtained from their agency database with the assistance of Kevin Wells (IT Specialist) who is the fire occurrence data steward for the State of Utah. Since all three agencies may have reported the same fire in their respective databases, the fires were cross-referenced and duplicate fires were eliminated (to the extent possible) to avoid misrepresentation (skewing) of the statistical correlation with large and multiple fire days. FireFamilyPlus software was utilized to produce statistics and graphs. The following fire summary graphs do not differentiate between agencies; fires are depicted without regard to agency affiliation.

1. Salt Lake Desert FDRA



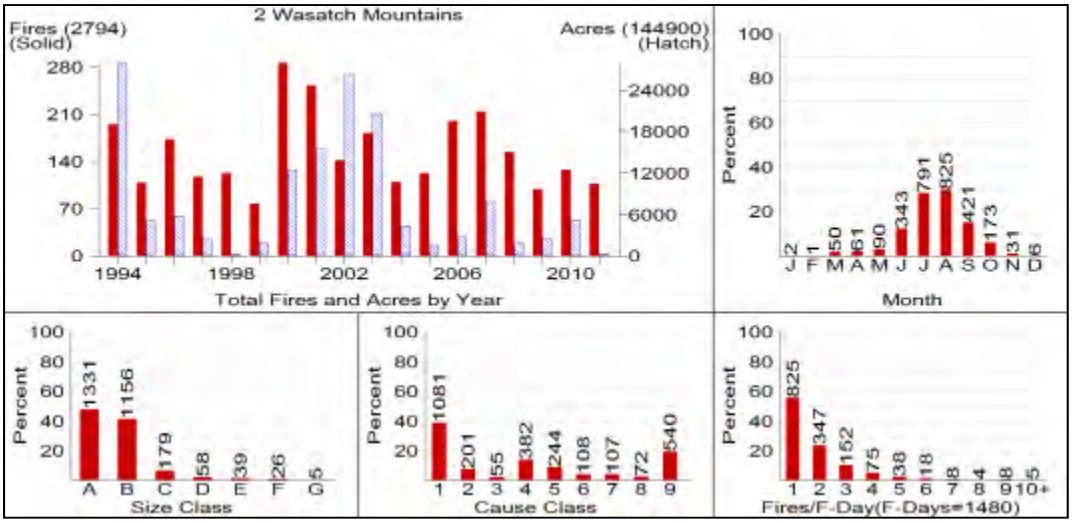
Size Class:

A =	0	—	.25 acres
B =	.30	—	9 acres
C =	10	—	99 acres
D =	100	—	299 acres
E =	300	—	999 acres
F =	1000	—	4999 acres
G =	5000	+	acres

Cause Class:

1 = Lightning	6 =Railroad
2 = Equipment	7 =Arson
3 = Smoking	8 =Children
4 = Campfire	9 =Misc
5 = Debris Burning	

2. Wasatch Mountains FDRA



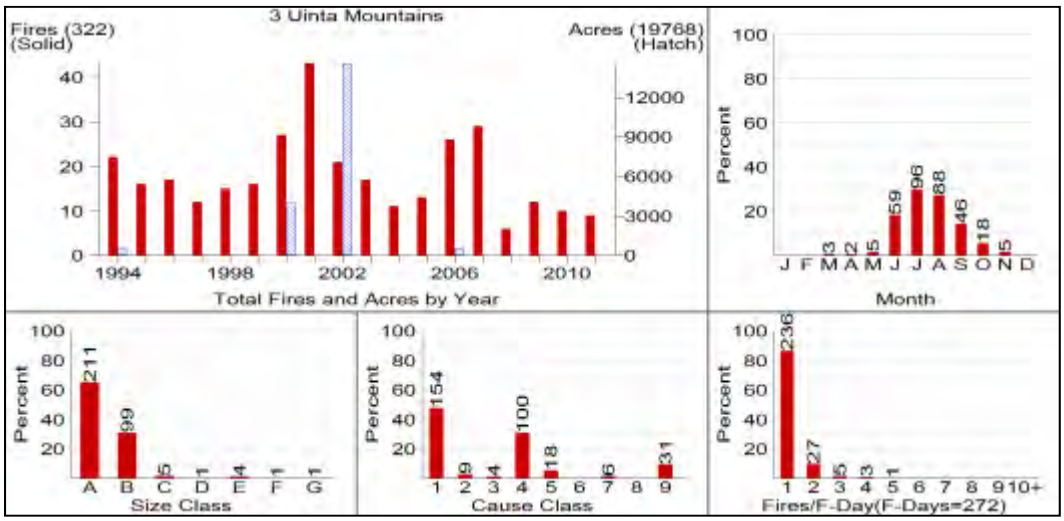
Size Class:

A =	0	—	.25 acres
B =	.30	—	9 acres
C =	10	—	99 acres
D =	100	—	299 acres
E =	300	—	999 acres
F =	1000	—	4999 acres
G =	5000	+	acres

Cause Class:

1 = Lightning	6 =Railroad
2 = Equipment	7 =Arson
3 = Smoking	8 =Children
4 = Campfire	9 =Misc
5 = Debris Burning	

3. Uinta Mountains FDRA



Size Class:

A =	0	— .25	acres
B =	.30	— 9	acres
C =	10	— 99	acres
D =	100	— 299	acres
E =	300	— 999	acres
F =	1000	— 4999	acres
G =	5000	+	acres

Cause Class:

1 = Lightning	6 =Railroad
2 = Equipment	7 =Arson
3 = Smoking	8 =Children
4 = Campfire	9 =Misc
5 = Debris Burning	

F. Fire Danger Decision Levels

The NFDRS utilizes the WIMS processor to manipulate weather data and forecasted data stored in the National Interagency Fire Management Integrated Database (NIFMID) to produce fire danger ratings for corresponding weather stations. NFDRS outputs from the WIMS processor can be used to determine various levels of fire danger rating to address the fire problems identified previously in the *Fire Problem Analysis Chart*. The system is designed to model worst-case a fire danger scenario. NFDRS will be utilized to produce outputs to assist fire management with four sets of decisions.

- ***Dispatch Levels*** will be used as a decision tool for dispatchers to assign initial attack resources to a fire reported in a specific dispatch zone.
- **Staffing Levels** will be used for appropriate day-to-day suppression resource staffing.
- ***Preparedness Levels*** will assist fire managers with more long-term (or seasonal) decisions with respect to fire danger.
- ***Adjective Fire Danger Rating*** levels are intended to communicate fire danger to the public, such as fire danger signs.

Climatological Percentiles are discussed in this section; however, climatological percentiles will not be used for making fire business decisions in the Northern Utah area.

1. Dispatch Level Analysis

Dispatch Levels are established to assist fire managers with decisions regarding the most appropriate response to an initial fire report until a qualified Incident Commander arrives at the incident. The FireFamilyPlus software has been used to establish the Dispatch Level

thresholds. A statistical analysis of fire occurrence and historical weather has been completed for each Fire Danger Rating Area (FDRA). The correlation of various combinations of NFDRS outputs with weather records is listed in the appendix. Each agency will utilize the same Dispatch Levels calculated for each FDRA in response to wildland fires in Northern Utah.

Dispatch Level: FireFamilyPlus Analysis Factors and Determinations

FDRA	RAWS		Data Years Used	Weight Factor	Fuel Model	NFDRS Index	Class	Range
	NWS #	Name						
Desert	420901	Cedar Mtn	2002 – 2011	1.0	7G	BI	Low	0 - 65
	420908	Vernon	2002 – 2011	1.0			Mod	66 - 83
	420911	Aragonite	2002 – 2011	1.0			High	84 +
	420914	Rosebud	2002 – 2011	1.0				
Wasatch	420912	Otter Creek	2001 – 2011	1.0	7G	BI	Low	0 - 59
	420403	Bues Canyon	2001 – 2011	1.0			Mod	60 - 73
	421101	Pleasant Grove	2001 – 2011	1.0			High	74 +
	421103	Ray's Valley	2001 – 2011	1.0				
Uinta	420703	Bear River	1990 – 2011	1.0	7G	BI	Low	0 - 43
	420705	Hewinta	1990 – 2011	1.0			Mod	44 - 58
	420706	Norway Flat	1990 – 2011	1.0			High	59 +

2. Staffing Level Analysis

Staffing Levels are established to assist fire managers with internal/agency staffing decisions. Staffing Levels will be a function of Dispatch Level, current fire activity, and the potential for ignitions in the next 24-hour period. *NUIFC's process for determining local Staffing Levels is not the same as Staffing Level calculated directly from WIMS.* WIMS calculates Staffing Level on climatological breakpoints; NUIFC will calculate Staffing Level on fire business thresholds. Each agency will develop their respective management actions based upon five Staffing Levels.

3. Preparedness Level Analysis

Preparedness Levels are established to assist fire managers with weekly or monthly planning decisions based upon seasonal fire danger elements. The FireFamilyPlus software has been used to establish the fire business thresholds. A statistical analysis of fire occurrence and historical weather has been completed for each Fire Danger Rating Area. The correlation of various combinations of NFDRS outputs with weather records is listed in the appendix. The final Preparedness Level determination will also incorporate a measure of current and projected levels of resource commitment due to fire activity and a measure of Ignition Risk. Each agency will consider management actions identified in the appendix based upon five local Preparedness Levels.

Preparedness Level: FireFamilyPlus Analysis Factors and Determinations

FDRA	RAWS		Data Years Used	Weight Factor	Fuel Model	NFDRS Index	Class	Range
	NWS #	Name						
Desert	420901	Cedar Mtn	2002 – 2011	1.0	7G	ERC	1	0 – 55
	420908	Vernon	2002 – 2011	1.0			2	56 – 77
	420911	Aragonite	2002 – 2011	1.0			3	78 – 86
	420914	Rosebud	2002 – 2011	1.0			4	87 – 94
							5	95 +
Wasatch	420912	Otter Creek	2001 – 2011	1.0	7G	ERC	1	0 – 54
	420403	Bues Canyon	2001 – 2011	1.0			2	55 – 68
	421101	Pleasant Grove	2001 – 2011	1.0			3	69 – 76
	421103	Ray's Valley	2001 – 2011	1.0			4	77 – 83
							5	84 +
Uinta	420703	Bear River	1990 – 2011	1.0	7G	ERC	1	0 – 31
	420705	Hewinta	1990 – 2011	1.0			2	32 – 40
	420706	Norway Flat	1990 – 2011	1.0			3	41 – 48
							4	49 – 59
							5	60 +

4. Adjective Fire Danger Ratings

The Adjective Fire Danger Rating will be used by agency personnel to inform the public of the current level of fire danger associated with a specific Fire Danger Rating Area. The amount of interaction will depend on the magnitude of the adjective fire danger. Although NFDRS processors (such as WIMS) will automatically calculate the adjective class rating, *NUIFC's process for determining local Adjective Fire Danger Ratings is not the same as Adjective Fire Danger Ratings calculated directly from WIMS.* NUIFC will manually determine Adjective Fire Danger Rating based upon *fire business thresholds*. All agencies will use the same Adjective Fire Danger Ratings calculated for each FDRA.

5. Climatological Percentiles

Climatological breakpoints are points on the cumulative distribution curve of one fire weather/danger index computed from climatology (weather) without regard for associated fire occurrence/business. For example, the value at the 90th percentile ERC is the climatological breakpoint at which only 10 percent of the ERC values are greater in value. Climatological percentiles were originally developed for budgetary decisions by federal agencies and are predetermined by agency directive, as shown below.

BLM - *80th and 95th percentiles*
FWS - *90th and 97th percentiles*
NPS - *90th and 97th percentiles*
USFS - *90th and 97th percentiles*

It is equally important to identify the period or range of data analysis used to determine the agency percentiles. The percentile values for the calendar year (Jan – Dec) will be different from the percentile values for the fire season (Jun – Sept). Each agency will have specific (and perhaps different) direction for use of climatological percentiles. This plan does not support the use of ***climatological breakpoints (percentiles)*** as decision points. Rather,

decisions will be based upon ***fire business thresholds*** determined through a comprehensive statistical analysis of historical weather correlated with fire occurrence data.

IV. OPERATIONS AND APPLICATIONS

Worksheets (flowcharts) will be used to determine the daily dispatch, staffing, preparedness and adjective rating levels. The resultant dispatch and staffing levels for each FDRA will be broadcast in conjunction with the morning information report and documented on the daily resource status report. The Dispatch, Staffing, Preparedness and Adjective Fire Danger Rating levels will also be posted on the NUIFC homepage.

Although fire danger ratings do not prevent human-caused fires, a strong effort should be made to communicate the fire danger as it changes throughout the fire season. The social, political, and financial impacts of wildfires on agency, public, and industrial entities can be far reaching. Loss of life, property, and financial resources can potentially be associated with any wildfire. As the fire danger fluctuates, agency personnel need to have pre-planned and appropriate responses. These actions should not only focus on appropriate fire suppression, but also detection and mitigation/education.

A. WIMS Setup and Application

The Weather Information Management System (WIMS) is a comprehensive system that enables users to manage weather information.

WIMS can be accessed at *http://fam.nwcg.gov/fam-web/*.

The WIMS User Guide can be downloaded from the following web site: *http://fam.nwcg.gov/fam-web/pocketcards/wims_ug_final/wims_ug.html*

1. NSIG: Create a Special Interest Groups (SIG)

Enter SIG name (i.e., “Desert”) and select Setup

Enter the associated station numbers for the SIG. . . . then select Save

SIG: Salt Lake Desert

Station Id
420901
420908
420911
420914

SIG: Uinta Mountains

Station Id
420703
420705
420706

SIG: Wasatch

Station Id
420403
420912
421101
421103

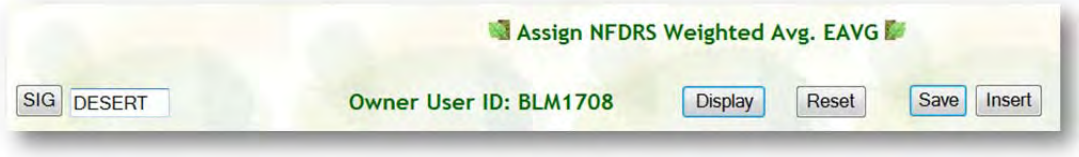
Repeat the steps until all three SIGs have been created.

These SIGs represent the weather station network associated with the three Fire Danger Rating Areas in Northern Utah.

2. EAVG: Assign NFDRS Weighted Avg.

Enter the SIG name and select Display

By default, each station is weighted equally for the first priority fuel model. Keep the default value by selecting Save



If successful, the following message will be displayed: *Weighted average for SIG 'XXXXX' has been successfully updated.*

Repeat these steps for each SIG.

Desert SIG Weights

✕	Station ID	Priority	Model Info	Weight Factor %
	420901	1		25
	420908	1		25
	420911	1		25
	420914	1		25

Uinta SIG Weights

✕	Station ID	Priority	Model Info	Weight Factor %
	420703	1		34
	420705	1		33
	420706	1		33

Wasatch SIG Weights

✕	Station ID	Priority	Model Info	Weight Factor %
	420403	1		25
	420912	1		25
	421101	1		25
	421103	1		25

3. DAVG: Display NFDRS Weighted Averages

Enter the SIG name, Type "O", and current date for daily indices, then select Find

Enter the SIG name, Type "F", and date of forecasted indices, then select Find

The weighted average of fire danger outputs is displayed for the respective SIG.

B. Dispatch Level

Agency personnel use the dispatch level (response level) to assign initial attack resources based on pre-planned interagency "Run Cards." Combined with predefined Dispatch Zones, the Dispatch Level is used to assign an appropriate mix of suppression resources to a reported wildland fire based upon fire danger potential. The dispatch levels are derived from the most

appropriate NFDRS index and/or component that correlate to fire occurrence. Burning Index (BI) with NFDRS Fuel Model G has been determined to be the most appropriate NFDRS index that statistically correlates to the potential for large fires to occur. Due to the ability of BI to reflect the most current fire danger potential, and the Dispatch Center's ability to track agency personnel throughout the course of any given day, BI will be computed and implemented for initial attack response levels until a qualified Incident Commander evaluates the need for the dispatched resources.

Dispatch Level Worksheet
Northern Utah Interagency Fire Center

Fire Danger Rating Area (FDRA)	Burning Index (Model G)		
Salt Lake Desert FDRA	0 - 65	66 - 83	84 +
Wasatch Mountains FDRA	0 - 59	60 - 73	74 +
Uinta Mountains FDRA	0 - 43	44 - 58	59 +
Dispatch Level →	LOW	MODERATE	HIGH

C. Staffing Level

The Staffing Level forms the basis for decisions regarding the "degree of readiness" of initial attack (IA) resources and support resources. The Staffing Level is based on an analysis of cumulative frequency of occurrence of Burning Index (BI) as they relate to a Dispatch Level. Staffing Levels are expressed as numeric values where 1 represents the low end of the fire danger continuum and 5 the high end. Staffing Level is intended to provide fire managers with day-to-day decision support regarding staffing of suppression resources. Staffing Level will be used to determine staffing which requires employee overtime associated with working people beyond their normal schedules (i.e., days off, after hours). In addition, the extended staffing of shared resources such as air tankers, helicopters, hotshot crews and other large fire support resources will be a function of the Staffing Level.

Staffing Level Worksheet
Northern Utah Interagency Fire Center

Dispatch Level →	LOW		MODERATE		HIGH	
Fire Activity? (Y/N) N	1	2	2	3	3	4
Fire Activity? (Y/N) Y	2	3	3	4	4	5
Significant Fire Potential? Forecasted High Risk Day/Event (Y/N)	N	Y	N	Y	N	Y

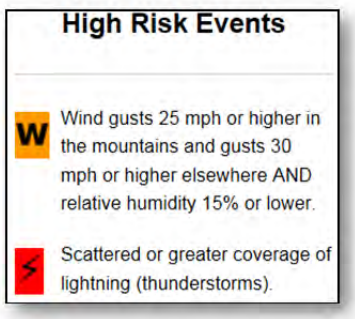
1. **Dispatch Level:** the actual or forecasted Dispatch Level will be the first factor input to the Staffing Level Worksheet.
2. **Fire Activity:** fire activity can be defined as any wildland fire (including prescribed fire) within the Northern Utah Interagency Dispatch Area (regardless of FDRA) that requires a

commitment of NUIFC suppression (ground or aviation) resources. For example, if NUIFC suppression resource is committed to a local incident, Fire Activity is "YES".

3. **Significant Fire Potential:** The Predictive Service Area (PSA) *7-Day Fire Potential Outlooks* combine forecasted fuel dryness with significant weather triggers to identify high risk areas. The a 7-day Fire Potential Outlook is posted daily during fire season and forecasts significant fire potential for the next 7 days.

   Tomorrow's Significant Fire Potential can be found on the Predictive Services (Outlooks) page of the EGBCC web site: *http://psgeodata.fs.fed.us/7day/action/forecast/2*.

If a *High Risk Event* in PSAs EB07, EB08, or EB09 for wind or lightning is forecasted for today or tomorrow, Significant Fire Potential is a "Y" input; otherwise, it is an "N" input.



FDRA	PSA Zone	FWX Zone
Salt Lake Desert	**EB07**	**478**
Wasatch Mountains	**EB08**	**479**
Uinta Mountains	**EB09**	**480**

If a Red Flag Watch or Warning has been issued by the National Weather Service for FWX Zone 478, 479, or 480, the Significant Fire Potential is a "Y" input for that respective FDRA.

D. Preparedness Level

The Preparedness Level is a five-tier (1-5) fire danger rating system that will be based on Energy Release Component (ERC) and indicators of fire business. The fire business indicators used to calculate the preparedness level include an indication of fire activity, draw-down levels, and a measure of Ignition Risk. Several procedures and guidelines are to be followed and/or considered once the preparedness level has been determined (Appendix G). The thresholds for the preparedness level are set using an historical analysis (FireFamilyPlus) of fire business and its relationship to 1300 (LST) RAWS observations entered into the NIFMID database and processed by WIMS, which calculates the staffing index values (BI, IC, SC, ERC, etc).

Worksheet Instructions:

1. **Staffing Index Value:** Place a checkmark in Row One indicating the appropriate staffing index (Energy Release Component, Fuel Model G). These indices (forecasted by the Salt Lake Weather Office) are based on the 1300 RAWS observations which are input to the WIMS processor by NUIFC personnel.
2. **Live Fuel Moisture:** Place a checkmark in Row Two indicating the appropriate Live Fuel Moisture for the associated FDRA. Data can be obtained from the National Fuel Moisture Data (NFMD) Sample Site or the NUIFC webpage under Predictive Services (Fuels / NFDRS).

a. **Salt Lake Desert FDRA – Sagebrush LFM:** Average of the most recent samples from the Muskrat and Vernon Sagebrush sites.

- **Muskrat:** *http://72.32.186.224/nfmd/public/site.php?site_fuel=Muskrat&gacc=EGBC&state=UT&grup=Salt%20Lake%20Field%20Office&sitefuel=site&display_type=Table Only Actual Data*
- **Vernon:** *http://72.32.186.224/nfmd/public/site.php?site_fuel=Vernon&gacc=EGBC&state=UT&grup=Salt%20Lake%20Field%20Office&sitefuel=site&display_type=Table Only Actual Data*

b. **Wasatch Mountains FDRA – Gambel Oak LFM:** Average of the most recent samples from the Squaw Peak, Maple Canyon, Hobble Creek and Bues Canyon Gambel Oak sites.

- **Squaw Peak:** *http://72.32.186.224/nfmd/public/site.php?site_fuel=Squaw%20Peak&gacc=EGBC&state=UT&grup=Uinta%20NF&sitefuel=site&display_type=Table Only Actual Data*
- **Maple Canyon:** *http://72.32.186.224/nfmd/public/site.php?site_fuel=Maple%20Canyon&gacc=EGBC&state=UT&grup=Uinta%20NF&sitefuel=site&display_type=Table%20Only%20Actual%20Data*
- **Bues Canyon:** *http://72.32.186.224/nfmd/public/site.php?site_fuel=Beus&gacc=EGBC&state=UT&grup=Wasatch-Cache%20NF&sitefuel=site&display_type=Table Only Actual Data*
- **Hobble Creek:** *http://72.32.186.224/nfmd/public/site.php?site_fuel=Hobble%20Creek&gacc=EGBC&state=UT&grup=Uinta%20NF&sitefuel=site&display_type=Table Only Actual Data*

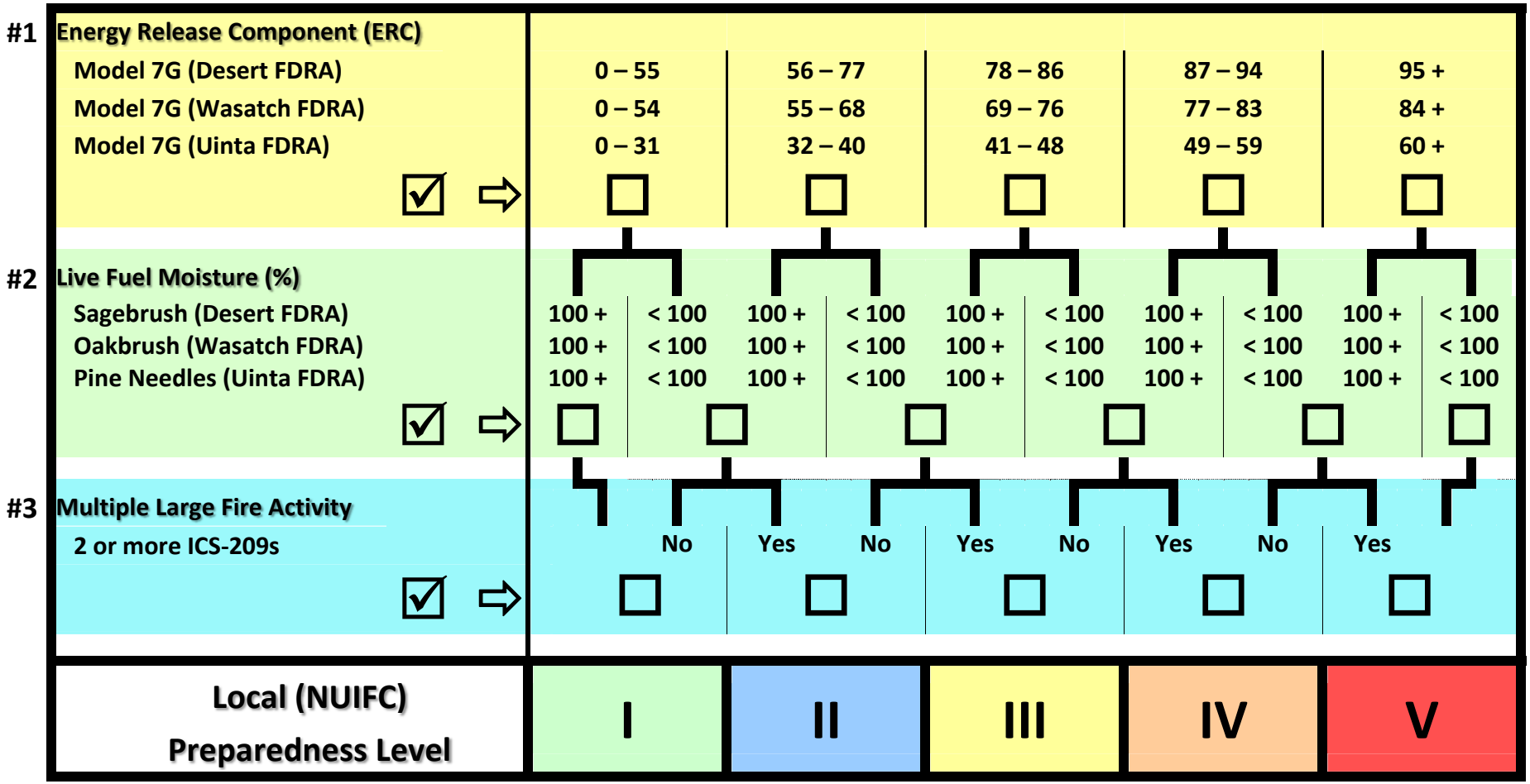
c. **Uinta Mountains FDRA – Lodgepole Pine LFM:** The most recent samples from the Norway Flat Lodgepole Pine site.

- **Norway Flat:** *http://72.32.186.224/nfmd/public/site.php?site_fuel=Norway%20Flats&gacc=EGBC&state=UT&grup=Uinta%20NF&sitefuel=site&display_type=Table Only Actual Data*
- **Bear River:** *http://72.32.186.224/nfmd/public/site.php?site_fuel=Bear%20River&gacc=EGBC&state=UT&grup=Wasatch-Cache%20NF&sitefuel=site&display_type=Table Only Actual Data&fuel_selected=Pine%2C%20Lodgepole*

3. **Multiple Large Fire Activity**: Multiple large fire activity will be defined when two or more Incident Status Summaries (ICS-209s) have been (or will be) submitted within the next 12 hour period for incidents managed within the Northern Utah Interagency Dispatch Area (regardless of FDRA).

4. **Multiple Large Fire Activity:** Multiple large fire activity will be defined when two or more Incident Status Summaries (ICS-209s) have been (or will be) submitted within the next 12 hour period for incidents managed within the Northern Utah Interagency Dispatch Area (regardless of FDRA). Incident Status Summaries submitted for fires in "monitor" status will not be included; only ICS-209s submitted for incidents which are utilizing local resources will be included in the tally.

Local Preparedness Level Worksheet
Northern Utah Interagency Fire Center



E. Adjective Fire Danger Rating

1. Adjective Fire Danger Rating Description

In 1974, the Forest Service, Bureau of Land Management and State Forestry organizations established a standard adjective description for five levels of fire danger for use in public information releases and fire prevention signing. For this purpose only, fire danger is expressed using the adjective levels and color codes described below.

Fire Danger Class and Color Code	Description
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.
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. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious and control is relatively easy.
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 hit hard and fast while small.
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 in heavier fuels.
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 lessons.

2. Adjective Fire Danger Rating Determination

Although NFDRS processors (i.e., WIMS) will automatically calculate the adjective class rating, NUIFC will manually determine Adjective Fire Danger Rating based upon *fire business thresholds*. The actual determination of the daily adjective rating is based on the current or forecasted value of a selected staffing index (ERC) and ignition component using the table below.

Salt Lake Desert FDRA

Staffing Index (ERC-G)	Adjective Fire Danger Rating				
0 – 55	L	L	L	M	M
56 – 77	L	M	M	M	H
78 – 86	M	M	H	H	VH
87 – 94	M	H	VH	VH	E
95 +	H	VH	VH	E	E
	0-20	21-45	46-65	66-80	81-100
	Ignition Component (G)				

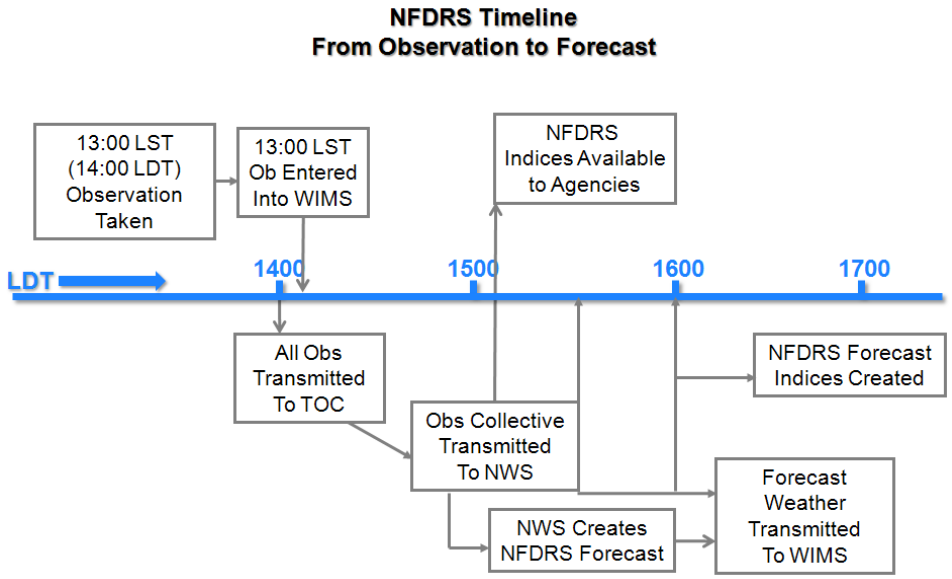
Wasatch Mountains FDRA

Staffing Index (ERC-G)	Adjective Fire Danger Rating				
0 – 54	L	L	L	M	M
55 – 68	L	M	M	M	H
69 – 76	M	M	H	H	VH
77 – 83	M	H	VH	VH	E
84 +	H	VH	VH	E	E
	0-20	21-45	46-65	66-80	81-100
	Ignition Component (G)				

Uinta Mountains FDRA

Staffing Index (ERC-G)	Adjective Fire Danger Rating				
0 – 31	L	L	L	M	M
32 – 40	L	M	M	M	H
41 – 48	M	M	H	H	VH
49 – 59	M	H	VH	VH	E
60 +	H	VH	VH	E	E
	0-20	21-45	46-65	66-80	81-100
	Ignition Component (G)				

F. Daily Timeline



1. Dispatch Level

a. **Morning Level** — effective from midnight to 16:00

Inputs will be taken from the following:

- *Forecasted* Burning Index (Fuel Model G) issued for that day and available in WIMS by 16:00 the previous day.

b. **Afternoon Level** — effective from 16:00 to midnight

Inputs will be taken from the following:

- *Actual* Burning Index (Fuel Model G) available in WIMS after the observations are edited by 15:15

2. Staffing Level

a. Morning Level — effective from midnight to 16:00

Inputs will be taken from the following:

- *Forecasted* ***Dispatch Level*** Issued for that day.
- If a ground or aviation resource has been committed to any wildfire (or prescribed fire) within the Northern Utah Interagency Dispatch Area (regardless of FDRA), ***Fire Activity*** is a "Y" input; otherwise, it is an "N" input.
- If a *High Risk Event* for wind or lightning is forecasted for that day, ***Significant Fire Potential*** is a "Y" input; otherwise, it is an "N" input.

b. Afternoon Level — effective from 16:00 to midnight

Inputs will be taken from the following:

- *Actual* ***Dispatch Level*** Issued for that day.

- If a ground or aviation resource has been committed to any wildfire (or prescribed fire) within the Northern Utah Interagency Dispatch Area (regardless of FDRA), ***Fire Activity*** is a "Y" input; otherwise, it is an "N" input.
- If a *High Risk Event* for wind or lightning is forecasted for that day, ***Significant Fire Potential*** is a "Y" input; otherwise, it is an "N" input.

3. Preparedness Level

a. Daily Preparedness Level — effective from 08:00 (today) to 07:59 (tomorrow)

Inputs will be taken from the following:

- *Forecasted* ***Energy Release Component*** (ERC-G) issued for that day and available in WIMS by 16:00 the previous day.
- ***Live Fuel Moisture*** for the FDRA.
- ***Multiple Large Fire*** activity (2 or more on-going incidents which require an ICS-209).

4. Adjective Rating Level

a. Daily Adjective Rating Level — effective from 08:00 (today) to 07:59 (tomorrow)

Inputs will be taken from the following:

- *Forecasted* ***Energy Release Component*** issued for that day and available in WIMS by 16:00 the previous day.
- *Forecasted* ***Ignition Component*** issued for that day and available in WIMS by 16:00 the previous day.

5. Duty Officer Briefing

a. Morning Level — briefing between 08:30 and 09:00

b. Afternoon Level — briefing between 16:00 and 16:30

G. Seasonal Risk Analysis

Seasonal risk analysis is a comparison of the historic weather/fuels records with current and forecasted weather/fuels information. Seasonal risk analysis is an on-going responsibility for fire program managers. The most reliable indicators of seasonal fire severity have been measurements of fine fuel loading, live fuel moisture, 1000-hour (dead) fuel moisture, and ERC. These levels will be graphically compared to historical maximum values and the average; these graphs will be routinely updated and distributed to fire suppression personnel and dispatch. Seasonal risk analysis information will be used as a basis for pre-positioning critical resources, dispatching resources, and requesting fire severity funding. It has been proven that specific indicators are most useful to predict fire season severity and duration in the Salt Lake Desert, Wasatch Mountains and the Uinta Mountains Fire Danger Rating Areas.

H. Thresholds (Extreme Fire Danger)

Seasonal risk escalation in fuel complexes of Northern Utah relies upon a combination of factors, which will ultimately trigger an extreme state of fuel volatility and a high potential for large fire growth or multiple ignition scenarios.

1. **Fire Activity:** The occurrence of large/multiple fires is the reliable indicator of severity conditions and the potential for seasonal risk. Any one incident reaching type one or two complexity would be an indicator of severity. Two or more type three incidents within a two to four week period would also be a strong indicator. Three or more initial attack fires in the same day indicate a point where resources are limited. A progressive approach to assessing seasonal risk will prepare the local unit for these occurrences and the necessary resources will already be in place.

2. **Live Fuel Moisture:** Live woody (juniper) and herbaceous (sagebrush) fuel moisture plots were established in the vicinity of the Vernon (1996) and Muskrat (1995) Fire Stations. Since that time, valuable data has been collected and a direct correlation has been drawn between fire intensity (controllability) and live moisture levels. Consequently, fire severity is determined by comparing current trends to historical averages. Live gambel oak samples have been collected at six sites on the Wasatch Front (Northern Utah Mountains FDRA) since 2002. Beginning in 2007, a site at Snowbasin in the Wasatch Mountains has been sampled for live (twigs and needles) Douglas-fir and subalpine fir, and a site at Norway Flats in the Uinta Mountains for mountain big sagebrush, Rocky Mountain juniper, and Lodgepole pine. Comparison of fuel moisture to historical conditions at various locations within the Utah and surrounding areas can be located on the National Fuel Moisture Database at: http://72.32.186.224/nfmd/public/index.php

    a. **Live Fuel Moisture (Juniper):** The average woody fuel moisture of juniper typically fluctuates between 100% (June) and 75% (August). Any readings below 80% indicate increased risk relating to large fire growth and severity conditions. Below average readings may indicate an early or extended fire season. Preliminary data from juniper in the Uinta Mountain show live fuel moisture values between 55% (July) and 90% (September).

    b. **Live Fuel Moisture (Sagebrush):** The average herbaceous fuel moisture of sagebrush in the Salt Lake Desert fluctuates between 200% (June) and 80% (August). Readings below 75% indicate increased risk relating to large fire growth and severity conditions. Below average readings may indicate an early or extended fire season. Preliminary data from mountain big sagebrush in the Uinta Mountains shows live fuel moisture values between 180% (June) and 60% (September).

    c. **Live Fuel Moisture (Gambel Oak):** The average herbaceous fuel moisture of Gambel oak on the Wasatch Front fluctuates between approximately 220% (May/June) and 75-85% (September/October). Readings below 90% indicate increased risk relating to large fire growth and severity conditions. Below average readings may indicate an early or extended fire season.

    d. **Live Fuel Moisture (Conifers):** Preliminary data show Lodgepole pine in the Uinta Mountains varies between 77% (July) and 115% (August), subalpine fir in the Wasatch Mountains varies between 94% (June) and 128% (September), and Douglas-fir varies between 91% (September 2008) and 108% (September 107%) for live fuel moisture.

3. **Fine Fuel Loading:** There are six fine dead fuel load plots located in the Salt Lake Desert FDRA. Fuel load determinations are made on an annual basis and compared to historical averages in order to determine the potential intensity of wildfires. However, fuel loading over .5 tons/acre indicates a fire controllability problem. If plots exhibit significant amounts

of carry-over fuel and/or matted grass, it will contribute to continuity and fuel bed density, resulting in control problems and increased fireline intensity.

4. **NFDRS Thresholds:** ERC and 1000-hr (3" – 8" diameter dead) fuel moisture are used as the primary indicators to track seasonal trends of fire danger potential. NFDRS fuel model G has been chosen due to its good "fit" with the BI and ERC models. Other fuel models which might seem to be more appropriate due to their classification (grass/brush) do not correlate very well statistically with the NFDRS models. Consequently, fuel model **G** was chosen due to its ability to predict fire occurrence; specifically, a day when a large fire is likely to occur. It has been statistically proven that large fire events will occur statistically more often when these thresholds are exceeded. Early and late-season ERC values that trend above average may indicate an extension of the normal fire season.

5. **Weather Thresholds:** Seasonal weather assessments rely upon long-range (30-90 day) forecasts. This information is available in two formats: seasonal long-lead outlooks and 30-90 day outlooks. This information is provided by NOAA Climate Prediction Center. The observable weather factors that contribute to large fires and the potential for extreme fire behavior can be determined from the same percentiles determined from NFDRS thresholds. Any of these factors significantly increase the potential for extreme fire behavior and large fire growth. Combination of these factors will increase the risk.

6. **Drought Indicators:** The Keetch-Byrum Drought Index (KBDI) and Palmer Drought Index track soil moisture and have been tailored to meet the needs of fire risk assessment personnel. Current KBDI information is located on the Wildfire Assessment System (WFAS) Internet site (*http://www.wfas.us/*). Tracking and comparing 1000-hour fuel moisture is another method to assess drought conditions. Palmer Drought Index graphics display current drought conditions while KBDI values of 500-800 indicate the potential for rapid curing and drying of the fine fuels and potential for live fuel moisture to drop. The 1000-hour fuel moisture is also a good drought indicator. Values between below 10 percent indicate the potential risk for extreme burning conditions.

7. **Normalized Difference Vegetation Index (NDVI):** NDVI data is satellite imagery, which displays vegetative growth and curing rates of live fuels. The WFAS Internet site (http://www.wfas.us/) provides several different ways to analyze current and historical greenness imagery, which can be a significant contributor to seasonal risk assessments. An analysis of this imagery will assist in the assessment of current fuel moisture conditions and provide historical as well as average greenness comparisons.

I. Season Ending Event

Utilizing the Term Module of the Rare Event Risk Assessment Process (RERAP) software, the Weibull waiting-time distribution was developed from historical season-ending dates. The probability graphs along with the event locator parameters from the FireFamilyPlus software dialog box are contained in Appendix J. From this analysis, it can be estimated that there is an equal probability of a season-ending event occurring before or after the 50th percentile date. For the Salt Lake Desert FDRA, this occurs near October 21th; for the Wasatch Mountains FDRA, this occurs near October 22rd; and the Uinta Mountains FDRA can be approximately September 15th.

Historical fire records were examined for all FDRAs to determine the combination of weather parameters which would indicate the end of the fire season. The following season-ending events have been identified:

1. **Salt Lake Desert FDRA:** two (2) consecutive days when the minimum temperature for the Salt Lake Desert SIG has been below freezing (≤ 32 °F).
2. **Wasatch Mountains FDRA:** three (3) consecutive days when the minimum temperature for the Wasatch Mountains SIG has been below freezing (≤ 32 °F).
3. **Uinta Mountain FDRA:** four (4) consecutive days when the minimum temperature for the Wasatch Mountains SIG has been below freezing (≤ 32 °F).

J. Fire Danger Pocket Cards

The Fire Danger Pocket Card is a tool which can aid fire suppression personnel to interpret NFDRS outputs and understand local fire danger thresholds for a local area. Pocketcards can relate current NFDRS outputs with the historical average and worst-case values in a specific geographic location. Burning Index was the NFDRS output chosen as a measure of fire controllability (Deeming et al. 1978). NFDRS fuel model G was selected for all fire danger rating areas as it provides a good statistical correlation to large fire occurrence and responds quickly to changing weather and fuel conditions. Refer to Appendix H for an example. Visiting resources can use the pocketcard to familiarize themselves with local fire danger conditions. The Northern Utah PocketCards meet NWCG guidelines and are posted on the interagency web site: *http://fam.nwcg.gov/fam-web/pocketcards/*

K. Roles and Responsibilities

1. **Fire Danger Operating and Preparedness Plan:** The Northern Utah Interagency Fire Center (NUIFC) Manager will ensure that necessary amendments or updates to this plan are completed. Updates to this plan will be made at least every three years and approved by the line officers (or delegates) from each agency. Revised copies will be distributed to the individuals on the primary distribution list.
2. **Suppression Resources:** During periods when local preparedness levels are High to Extreme, the Fire Management Officers from each agency will strive to achieve the most efficient and effective organization to meet Fire Management Plan objectives. This may require the pre-positioning of suppression resources. The FMO/AFMO from each agency will also determine the need to request/release off unit resources or support personnel throughout the fire season.
3. **Duty Officer:** For the purposes of this plan, the Duty Officer(s) from each agency will be identified to the Northern Utah Interagency Fire Center Manager; daily from June through October. The Duty Officer is designated to provide input and guidance regarding staffing, preparedness and dispatch levels. It is the Duty Officer's role to interpret and modify the daily staffing, preparedness and dispatch levels (if warranted) by extenuating factors not addressed by this plan. Modifications of the staffing, preparedness and/or dispatch levels must be coordinated through the Fire Center Manager. The Duty Officer will keep their respective agency's fire and management staff updated (as needed). The BLM, Forest Service and State of Utah will ensure the dispatch center is aware of their respective Duty Officer(s) at all times.
4. **Fire Weather Forecasting:** Daily fire weather forecasts will be developed by the National Weather Service, Salt Lake Fire Weather Forecast Office, and posted on the Internet and in WIMS for the NUIFC to retrieve.

5. **NFDRS Outputs and Indices:** The NUIFC Manager will ensure that the daily fire weather forecast (including NFDRS indices) is retrieved and that the daily staffing, preparedness, dispatch, and adjective levels are calculated and communicated to the appropriate target group.
6. **Risk Analysis Information:** The FMO from each federal agency will ensure that seasonal risk assessments are conducted monthly during the fire season. The risk analysis will include information such as live fuel moisture, 1000-hour fuel moisture, fuel loading, NFDRS (BI/IC/ERC) trends, NDVI imagery, and other pertinent data. This information will be distributed to agency staff and the NUIFC Manager. The NUIFC Manager, AFMOs, and FMOs will ensure information is posted at fire suppression duty stations.
7. **Weather Station Maintenance:** The Remote Sensing Laboratory located at the National Interagency Fire Center (NIFC) maintains and calibrates the BLM RAWS stations on an annual basis. The BLM Fuels Staff and Fire Operations Specialists are qualified as first responders to RAWS malfunctions. The Salt Lake Interagency Fire Cache Manager is responsible for maintaining and calibrating the USFS RAWS stations on an annual basis. Currently, the Cache Manager is also qualified as a first responder for RAWS malfunctions.
8. **WIMS Access, Daily Observations, and Station Catalog Editing:** The BLM FMO is listed as the station owner for the BLM RAWS. The NUIFC Manager (or Assistant) is listed as the station owner for the Uinta-Wasatch-Cache National Forest RAWS. The owner maintains the WIMS Access Control List (ACL). The station owner will ensure appropriate editing of the RAWS catalogs. The NUIFC Manager will ensure the timely editing of daily 1300 (LST) weather observations of all stations.
9. **Staffing, Preparedness, Dispatch, and Adjective Level Guidelines:** Each agency's fire management staff along with the NUIFC Manager will be responsible for establishing and reviewing the staffing, preparedness, dispatch, and adjective level guidelines every three years (as a minimum).
10. **Public and Industrial Awareness:** Education and mitigation programs will be implemented by the agency Public Information Officers, Law Enforcement Officers, FMOs, AFMOs, Fire Wardens, and Fire Education/Mitigation Specialists based on Preparedness Level Guidelines and direction provided by each agency's FMO and Duty Officer.
11. **NFDRS and Adjective Fire Danger Thresholds:** The FDOP team will review weather and fire data at least every three years (when the FDOP is re-analyzed). The team will ensure that the thresholds reflect the most accurate information with the concurrence of the FMOs.
12. **Fire Danger Pocket Cards:** The FMOs will ensure that pocket cards are prepared at least every two years and are in compliance with NWCG standards. The cards will be distributed to all interagency, local and incoming firefighters and Incident Management Teams (IMTs). The pocket cards will be posted on the NUIFC and National Wildfire Coordinating Group (NWCG) pocket card web site (*http://fam.nwcg.gov/fam-web/pocketcards/*). Fire suppression supervisors will utilize pockets cards to train and brief suppression personnel ensuring that they are posted at their respective fire stations.

V. PROGRAM IMPROVEMENTS

A. Modeling

1. Compare the 1- and 10-hour fuel moisture values with the Nelson values to evaluate the differences and future utilization.

B. Training

1. Provide FDOP training to cooperators including county fire wardens, cooperating dispatch centers, and military fire departments.
2. Provide refresher training on fire danger applications and PocketCards, emphasizing the differences between BI, ERC, Staffing/Dispatch/Preparedness Levels, and Adjective Fire Danger Rating Levels.
3. Train more personnel as RAWS first responders.
4. Establish local WIMS/NFDRS training courses for agency personnel.
5. Emphasize NFDRS training (S-491) for mid-level fire management personnel and Advanced NFDRS for upper-level fire management personnel.

C. RAWS

1. Find and input missing weather data.
2. Perform an in depth analysis of data from USFS weather stations that were excluded from this analysis due to poor quality data. Compare weather station data to other data sources to determine usefulness of data.
3. Explore the possibility of contracting with the NIFC RAWS personnel to provide annual maintenance of USFS weather stations.
4. Analyze the effect of weighting RAWS within each SIG to better represent the potential fire danger for each FDRA.

D. Technology & Information Management

1. Integrate preparedness level flow chart into a software package.
2. Improve the NUIFC Internet Site where pertinent seasonal risk assessment information can be reviewed.

Appendix A – Team Members

Fire Danger Operating and Preparedness Plan

Jeff Kline
Assistant District Manager (Fire, Fuels, & Aviation Management Division)
Bureau of Land Management, West Desert District Office

Blain Hamp
Area Manager, Bear River Area
State of Utah, Division of Forestry, Fire and State Lands

Tracy Swenson
Fire Management Officer
Fish and Wildlife Service

Robert Lamping
Assistant Fire Management Officer
U.S. Forest Service, Uinta-Wasatch-Cache National Forest

Teresa Rigby
Education/Mitigation Specialist
Bureau of Land Management, West Desert District Office

Celeste Hancock
Assistant Center Manager
Northern Utah Interagency Fire Center

Veronica McCabe
Center Manager
Northern Utah Interagency Fire Center

Appendix B – Primary Distribution List

Name	Title	Agency	Mailing Address	E-mail
Kevin Oliver	District Manager	BLM	West Desert District Office 2370 S. 2300 W. Salt Lake City, UT 84119	KOliver@blm.gov
Richard Buehler	State Forester	State of Utah	Div. of Forestry, Fire, & State Lands 1594 W. North Temple Suite 3520 P.O. Box 145703 Salt Lake City, UT 84114-5703	dickbuehler@utah.gov
David Whittekiend	Forest Supervisor	USFS	Uinta-Wasatch-Cache National Forest 88 West 100 North Provo, Utah 84603	DWhittekiend@fs.fed.gov
Tracy Dunford	Fire Management Coordinator	State of Utah	Division of Forestry, Fire, & State Lands 1594 W. North Temple Suite 3520 P.O. Box 145703 Salt Lake City, UT 84114-5703	tracydunford@utah.gov
Jeff Kline	Fire Management Officer	BLM	West Desert District Office 2370 S. 2300 W. Salt Lake City, UT 84119	JKline@blm.gov
Kevin Pfister	Fire Staff Officer	USFS	Uinta-Wasatch-Cache National Forest 8236 Federal Bldg 125 S. State Street Salt Lake City, UT 84138	kpfister@fs.fed.gov
Shane Freeman	Assistant Fire Management Officer	State of Utah	Division of Forestry, Fire, & State Lands 1594 W. North Temple, Suite 3520 P.O. Box 145703 Salt Lake City, UT 84114-5703	shanefreeman@utah.gov
Tracy Swenson	Fire Management Officer	US Fish & Wildlife Service	Bear River Migratory Bird Refuge 2155 West Forest Street Brigham City, UT 84302	tracy_swenson@fws.gov
Veronica McCabe	Fire Center Manager	USFS	Northern Utah Interagency Fire Center 14324 Pony Express Rd. Draper, UT 84020	vmccabe@fs.fed.us
Celeste Hancock	Assistant Fire Center Manager	BLM	Northern Utah Interagency Fire Center 14324 Pony Express Rd. Draper, UT 84020	CelesteHancock@blm.gov
Sean Lodge	Assistant Fire Center Manager	USFS	Northern Utah Interagency Fire Center 14324 Pony Express Rd. Draper, UT 84020	SLodge@fs.fed.us
L.J. Brown	Asst Fire Mngmt Officer	BLM	West Desert District Office 2370 S. 2300 W. Salt Lake City, UT 84119	LBrown@blm.gov
Blain Hamp	Area Manager	State of Utah	Div. of Forestry, Fire & State Lands 1780 North Research Parkway Logan, UT 84321	blainhamp@utah.gov
Robert Lamping	Assistant Zone FMO	USFS	Heber Ranger District 2460 South Highway 40 PO Box 190 Heber City, UT 84032	rlamping@fs.fed.gov

Name	Title	Agency	Mailing Address	E-mail
Gayle Sorenson	Asst Fire Staff Officer	USFS	Uinta-Wasatch-Cache National Forest 507 25th Street Ogden, UT 84401	
Shelly Allen	Fire Management Officer South Zone	USFS	Uinta-Wasatch-Cache National Forest 88 West 100 North Provo, Utah 84601	slallen@fs.fed.us
Cody Peel	Fire Management Officer North Zone	USFS	Uinta-Wasatch-Cache National Forest 507 25th Street Ogden, UT 84403	cpeel@fs.fed.gov

The above list indicates key personnel associated with this plan. Copies of the FDOP will also be distributed to Utah Division of Forestry and State Lands mangers, and Uinta-Wasatch-Cache National Forest personnel, military airspace coordinators, military fire departments, and surrounding county cooperators.

Appendix C – Terminology

1-hour Timelag Fuels	The 1-hour fuel moisture content represents the modeled fuel moisture of dead fuels from herbaceous plants or roundwood that is less than one quarter inch in diameter. Also estimated is the uppermost layer of litter on the forest floor.
10-hour Timelag Fuels	Dead fuels consisting of roundwood in the size range of one quarter to 1 inch in diameter and, very roughly, the layer of litter extending from just below the surface to three-quarters of an inch below the surface.
100-hour Timelag Fuels	Dead fuels consisting of roundwood in the size range of 1 to 3 inches in diameter and, very roughly, the forest floor from three quarters of an inch to 4 inches below the surface.
1000-hour Timelag Fuels	Dead fuels consisting of roundwood 3 to 8 inches in diameter or the layer of the forest floor more than about 4 inches below the surface or both.
Adjective Rating	A public information description of the relative severity of the current fire danger situation.
Annual Plant	A plant that lives for one growing season, starting from a seed each year.
Burning Index (BI)	BI is a number related to the contribution of fire behavior to the effort of containing a fire. The BI (difficulty of control) is derived from a combination of Spread Component (how fast it will spread) and Energy Release Component (how much energy will be produced). In this way, it is related to flame length, which, in the Fire Behavior Prediction System, is based on rate of spread and heat per unit area. However, because of differences in the calculations for BI and flame length, they are not the same. The BI is an index that rates fire danger related to potential flame length over a fire danger rating area. The fire behavior prediction system produces flame length predictions for a specific location (Andrews, 1986). The BI is expressed as a numeric value related to potential flame length in feet multiplied by 10. The scale is open-ended which allows the range of numbers to adequately define fire problems, even during low to moderate fire danger.
Climatological Breakpoints	Points on the cumulative distribution of one fire weather/fire danger index without regard to associated fire occurrence/business. They are sometimes referred to as exceedence thresholds.
Duff	The partially decomposed organic material of the forest floor that lies beneath the freshly fallen twigs, needles and leaves. (The F and H layers of the forest soil profile.)
Energy Release Component (ERC)	ERC is a number related to the available energy (BTU) per unit area (square foot) within the flaming front at the head of a fire. Since this number represents the potential "heat release" per unit area in the flaming zone, it can provide guidance to several important fire activities. It may also be considered a composite fuel moisture value as it reflects the contribution that all live and dead fuels have to potential fire intensity. The ERC is a cumulative or "build- up" type of index. As live fuels cure and dead fuels dry, the ERC values get higher thus providing a good reflection of drought conditions. The scale is open-ended or unlimited and, as with other NFDRS components, is relative. Conditions producing an ERC value of 24 represent a potential heat release twice that of conditions resulting in an ERC value of 12.
Equilibrium Moisture Content	The moisture content that a fuel particle will attain if exposed for an infinite period in an environment of constant temperature and humidity. When a fuel particle has reached its equilibrium moisture content, the net exchange of moisture between it and its environment is zero.
Fire Business Thresholds	Values of one or more fire weather/fire danger indexes that have been statistically related to occurrence of fires (fire business). Generally, the threshold is a value or range of values where historical fire activity has significantly increased or decreased.
Fire Danger	The resultant descriptor of the combination of both constant and variable factors that affect the ignition, spread, and control difficulty of control of wildfires on an area.
Fire Danger Continuum	The range of possible values for a fire danger index or component, given a set of NFDRS parameters and inputs.
Fire Danger Rating	A system that integrates the effects of existing and expected states of selected fire danger factors into one or more qualitative or numeric indices that reflect an areas protection needs.
Fire Danger Rating	A geographic area relatively homogeneous in climate, fuels and topography, tens of thousands of

Area	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 danger decisions are made based on fire danger ratings. Weather is represented by one or more NFDRS weather (RAWS) stations.
Fire Weather Forecast Zone	A grouping of fire weather stations that experience the same weather change or trend. Zones are developed by the National Weather Service to assist NWS production of fire weather forecasts or trends for similar stations. Fire weather forecast zones are best thought of as a list of similar-weather stations, rather than an area on a map.
Forb	A non- grass-like herbaceous plant.
Fuel Class	A group of fuels possessing common characteristics. In the NFDRS, dead fuels are grouped according to their timelag (1, 10, 100, and 1000 hr) and live fuels are grouped by whether they are herbaceous (annual or perennial) or woody.
Fuel Model	A simulated fuel complex for which all the fuel descriptors required by the mathematical fire spread model have been supplied.
Fuel Moisture Content	The water content of a fuel particle expressed as a percent of the oven-dry weight of the particle. Can be expressed for either live or dead fuels.
Fuels	Non-decomposed material, living or dead, derived from herbaceous plants.
Green-up	Green-up within the NFDRS model is defined as the beginning of a new cycle of plant growth. Green- up occurs once a year, except in desert areas where rainy periods can produce a flush of new growth more than once a year. Green- up may be signaled at different dates for different fuel models. ***Green-up should not be started when the first flush of green occurs*** in the area. Instead, the vegetation that will be the fire problem (represented by the NFDRS fuel model associated with the weather station) when it matures and cures should be identified. Green-up should start when the majority of this vegetation starts to grow.
Herb	A plant that does not develop woody, persistent tissue but is relatively soft or succulent and sprouts from the base (perennials) or develops from seed (annuals) each year. Included are grasses, forbs, and ferns.
Herbaceous Vegetation Moisture Content	The water content of a live herbaceous plant expressed as a percent of the oven-dry weight of the plant.
Ignition Component (IC)	IC is a rating of the probability that a firebrand will cause a fire requiring suppression action. Since it is expressed as a probability, it ranges on a scale of 0 to 100. An IC of 100 means that every firebrand will cause a fire requiring action if it contacts a receptive fuel.
Keetch-Byram Drought Index (KBDI)	KBDI is a stand-alone index that can be used to measure the effects of seasonal drought on fire potential. The actual numeric value of the index is an estimate of the amount of precipitation (in 100ths of inches) needed to bring the soil back to saturation (a value of 0 is complete saturation of the soil). Since the index only deals with the top 8 inches of the soil profile, the maximum KBDI value is 800 or 8.00 inches of precipitation would be needed to bring the soil back to saturation. The Keetch-Byram Drought Index's relationship to fire danger is that as the index value increases, the vegetation is subjected to increased stress due to moisture deficiency. At higher values, desiccation occurs and live plant material is added to the dead fuel loading on the site. Also, an increasing portion of the duff/litter layer becomes available fuel at higher index values.
Litter	The top layer of the forest floor, typically composed of loose debris such as branches, twigs, and recently fallen leaves or needles; little altered in structure by decomposition. (The layer of the forest soil profile.)
Live Fuels	Naturally occurring fuels whose moisture content is controlled by the physiological processes within the plant. The National Fire Danger Rating System considers only herbaceous plants and woody material small enough (leaves, needles and twigs) to be consumed in the flaming front of a fire.
Moisture of Extinction	The theoretical dead fuel moisture content above which a fire will not spread.
Perennial Plant	A plant that lives for more than two growing seasons. For fire danger rating purposes, biennial plants are classed with perennials.
Roundwood	Boles, stems, or limbs of woody material; that portion of the dead wildland fuel which is roughly cylindrical in shape.

Shrub	A woody perennial plant differing from a perennial herb by its persistent and woody stem; and from a tree by its low stature and habit of branching from the base.
Slash	Branches, bark, tops, cull logs, uprooted stumps, and broken or uprooted trees left on the ground after logging; also debris resulting from thinning or wind storms.
Slope	The rise or fall in terrain measured in feet per 100 feet of horizontal distance measurement, expressed as a percentage.
Spread Component (SC)	SC is a rating of the forward rate of spread of aheadfire. Deeming, et al., (1977), states that "the spread component is numerically equal to the theoretical ideal rate of spread expressed in feet-per-minute". This carefully worded statement indicates both guidelines (it's theoretical) and cautions (it's ideal) that must be used when applying the Spread Component. Wind speed, slope and fine fuel moisture are key inputs in the calculation of the spread component, thus accounting for a high variability from day-to-day. The Spread Component is expressed on an open-ended scale; thus it has no upper limit.
Staffing Index	Adjective rating calculations are keyed off the first priority fuel model listed in your station record in the processor. It uses the staffing index (such as ERC or BI) the user associates with the first fuel model/slope/grass type/climate class combination.
Staffing Level	The basis for decision support for daily staffing of initial attack resources and other activities; a level of readiness and an indicator of daily preparedness.
Surface-Area-to-Volume Ratio	The ratio of the surface area of a fuel particle (in square- ft) to its volume (in cubic-ft). The "finer" the fuel particle, the higher the ratio; for example, for grass this ratio ranges above 2,000; while for a ½ inch diameter stick it is 109.
Timelag	The time necessary for a fuel particle to lose approximately 63 percent of the difference between its initial moisture content and its equilibrium moisture content.
Timelag Fuel Moisture Content	The dead fuel moisture content corresponding to the various timelag fuel classes.
X-1000 Hr Fuel Moisture	X-1000 is the live fuel moisture recovery value derived from the 1000-hr fuel moisture value. It is an independent variable used in the calculation of the herbaceous fuel moisture. The X-1000 is a function of the daily change in the 1000-hour timelag fuel moisture, and the average temperature. Its purpose is to better relate the response of the live herbaceous fuel moisture model to the 1000-hour timelag fuel moisture value. The X-1000 value is designed to decrease at the same rate as the 1000-hour timelag fuel moisture, but to have a slower rate of increase than the 1000-hour timelag fuel moisture during periods of precipitation, hence limiting excessive herbaceous fuel moisture recovery.

Appendix D – WIMS User ID List

User Id	User Name
BLM1618	KEVIN OLIVER
BLM1640	GAYLE SORENSON
BLM1642	TERESA RIGBY
BLM1645	LESTER J. BROWN
BLM1672	WANDA GREY
BLM1708	JEFF KLINE
BLM1720	STEVE JACKSON
BLM1728	BROOK CHADWICK
BLM2404	PATRICK KENNY
BLM2417	GREG BLANK
BLM2470	CHRIS KIRBY
BLM2499	KALLIE PETERSON
BLM2810	ROXANNE TEA

User Id	User Name
FS11178	SEAN LODGE
FS6899	VERONICA MCCABE
FS7081	ROBERT LAMPING
FS7082	DAREN TURNER
FS7084	WADE STODDARD
FS7091	MEGAN TALLON
FS7240	LAURIE MURPHY
FS7452	NUIFC
FS7476	CELESTE HANCOCK
FS7493	KEVIN PFISTER
WIUT004	TRACY DUNFORD
WIUT005	DAN AMES
WIUT006	BLAIN HAMP

For assistance with passwords you may contact the WIMS help desk at 1-800-253-5559 or 208-387-5290, fax 208-387-5292, email: fire_help@fs.fed.us.

Appendix E – Weather Station Catalogs

(*Active RAWS Only*)

Station	Priority	Model	Slope	Herb Grass Type	Climate Class	Staffing Index	Decision Classes	Staffing Index Breakpoints			
								Low		High	
								SI%	VAL	SI%	VAL
Cedar Mountain (420901)	1	7G	1	A	1	ERC	5	80	92	95	103
	2	7G	1	P	1	ERC	5	80	91	95	102
	3	7H	1	A	1	ERC	5	80	51	95	58
	4	7Q	1	A	1	ERC	5	80	75	95	81
Vernon (420908)	1	7G	1	P	1	ERC	5	80	89	95	100
	2	7G	1	A	1	ERC	5	80	88	95	98
	3	7H	1	A	1	ERC	5	80	50	95	56
	4	7Q	1	A	1	ERC	5	80	73	95	80
Aragonite (420911)	1	7G	1	A	1	ERC	5	80	99	95	106
	2	7G	1	P	1	ERC	5	80	100	95	106
	3	7H	1	A	1	ERC	5	80	54	95	60
	4	7Q	1	A	1	ERC	5	80	77	95	83
Rosebud (420914)	1	7G	1	A	1	ERC	5	80	93	95	103
	2	7G	1	P	1	ERC	5	80	93	95	103
	3	7H	1	A	1	ERC	5	80	54	95	60
	4	7Q	1	A	1	ERC	5	80	77	95	83
Clifton Flat (420915)	1	7G	2	A	1	ERC	5	80	94	95	103
	2	7G	2	P	1	ERC	5	80	94	95	103
	3	7H	2	A	1	ERC	5	80	54	95	59
	4	7Q	2	A	1	ERC	5	80	77	95	82
Bues Canyon (420403)	1	7G	3	P	2	ERC	5	90	85	97	90
	2	7G	3	A	2	ERC	5	90	85	97	90
	3	7H	3	P	2	ERC	5	90	48	97	51
	4	7Q	3	P	2	ERC	5	90	72	97	75
Norway Flat (420706)	1	7G	4	P	3	ERC	5	90	72	97	83
	2	7G	4	A	3	ERC	5	90	73	97	83
	3	7H	4	P	3	ERC	5	90	42	97	48
	4	7Q	4	P	3	ERC	5	90	67	97	73
Otter Creek (420912)	1	7G	1	A	2	ERC	5	80	81	95	91
	2	7G	1	P	2	ERC	5	80	82	95	93
	3	7H	1	A	2	ERC	5	80	46	95	53
	4	7Q	1	A	2	ERC	5	80	70	95	77
Pleasant Grove (421101)	1	7G	3	P	2	ERC	5	90	93	97	99
	2	7G	3	A	2	ERC	5	90	93	97	99
	3	7H	3	P	2	ERC	5	90	53	97	56
	4	7Q	3	P	2	ERC	5	90	76	97	79
Ray's Valley (421103)	1	7G	4	P	3	ERC	5	90	80	97	92
	2	7G	4	A	3	ERC	5	90	83	97	93
	3	7H	4	P	3	ERC	5	90	47	97	53
	4	7Q	4	P	3	ERC	5	90	71	58	77
Bear River (420703)	1	7G	3	P	2	ERC	5	90	61	97	71
	2	7G	3	A	2	ERC	5	90	61	97	71
	3	7H	3	P	2	ERC	5	90	35	97	41
	4	7Q	3	P	2	ERC	5	90	60	97	66
Hewinta (420705)	1	7G	4	P	3	ERC	5	90	60	97	68
	2	7G	4	A	3	ERC	5	90	60	97	69
	3	7H	4	P	3	ERC	5	90	34	97	39
	4	7Q	4	P	3	ERC	5	90	58	97	65
Red Spur (420206)	1	7G	4	P	3	ERC	5	90	77	97	84
	2	7G	4	A	3	ERC	5	90	77	97	84
	3	7H	4	P	3	ERC	5	90	44	97	47
	4	7Q	4	P	3	ERC	5	90	67	97	71

Appendix F – Weather Station Data Analysis

							FIRE DAY				LARGE FIRE DAT					MULITPLE FIRE DAY				
SIG/Station	YEARS	ANNUAL FILER	VARIABLE	MODEL	GREENUP	FREEZE	R^2	CHI^2	P-VAL	P-RANGE	# ACRES	R^2	CHI^2	P-VAL	P-RANGE	# FIRES	R^2	CHI^2	P-VAL	P-RANGE
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7C	1-May	31-Oct	0.87	34.40	0.0000	0.07 - 0.98	100 (C)	0.62	16.63	0.0342	0.03 - 0.71	3 (C)	0.52	9.36	0.3130	0.15 - 0.58
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7C	1-May	31-Oct	0.86	35.33	0.0000	0.07 - 0.98	300	0.87	9.24	0.3221	0.00 - 0.77	3	0.74	23.65	0.0026	0.03 - 0.73
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7C	1-May	31-Oct	0.86	35.33	0.0000	0.07 - 0.98	300 (C)	0.71	12.83	0.1178	0.01 - 0.73	3 (C)	0.56	7.85	0.4484	0.15 - 0.58
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7C	1-May	31-Oct	0.86	35.33	0.0000	0.07 - 0.98	600	0.94	4.02	0.8557	0.00 - 0.80	3	0.74	23.65	0.0026	0.03 - 0.73
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7C	1-May	31-Oct	0.87	34.40	0.0000	0.07 - 0.98	600 (C)	0.82	9.39	0.3102	0.00 - 0.78	3 (C)	0.52	9.36	0.3130	0.15 - 0.58
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7F	1-May	31-Oct	0.75	81.12	0.0000	0.20 - 0.97	100	0.75	23.27	0.0030	0.02 - 0.66	3	0.68	43.44	0.0000	0.05 - 0.70
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7F	1-May	31-Oct	0.75	81.12	0.0000	0.20 - 0.97	100 (C)	0.76	8.11	0.4225	0.06 - 0.61	3 (C)	0.48	20.61	0.0083	0.16 - 0.61
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7F	1-May	31-Oct	0.75	81.12	0.0000	0.20 - 0.97	300	0.76	15.10	0.0572	0.01 - 0.58	3	0.68	43.44	0.0000	0.05 - 0.70
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7F	1-May	31-Oct	0.75	81.12	0.0000	0.20 - 0.97	300 (C)	0.85	3.87	0.8690	0.03 - 0.54	3 (C)	0.48	20.61	0.0083	0.16 - 0.61
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7F	1-May	31-Oct	0.75	81.12	0.0000	0.20 - 0.97	600	0.80	13.42	0.0981	0.01 - 0.62	3	0.68	43.44	0.0000	0.05 - 0.70
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7F	1-May	31-Oct	0.75	81.12	0.0000	0.20 - 0.97	600 (C)	0.76	8.82	0.3574	0.01 - 0.61	3 (C)	0.48	20.61	0.0083	0.16 - 0.61
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	100	0.88	11.29	0.1858	0.01 - 0.81	3	0.71	32.43	0.0001	0.02 - 0.80
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	100 (C)	0.82	6.28	0.6159	0.03 - 0.74	3 (C)	0.58	9.46	0.3049	0.11 - 0.66
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	200	0.86	10.89	0.2081	0.00 - 0.80	3	0.71	32.43	0.0001	0.02 - 0.80
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	200	0.86	10.89	0.2081	0.00 - 0.80	5	0.57	22.56	0.0040	0.01 - 0.52
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	200 (C)	0.81	6.40	0.6026	0.02 - 0.73	3 (C)	0.58	9.46	0.3049	0.11 - 0.66
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	200 (C)	0.81	6.40	0.6026	0.02 - 0.73	4 (C)	0.48	13.91	0.0841	0.05 - 0.54
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	200 (C)	0.81	6.40	0.6026	0.02 - 0.73	2 (C)	0.67	9.43	0.3073	0.22 - 0.87
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	200 (C)	0.81	6.40	0.6026	0.02 - 0.73	5 (C)	0.28	20.40	0.0089	0.04 - 0.36
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	300	0.89	8.23	0.4117	0.00 - 0.81	3	0.71	32.43	0.0001	0.02 - 0.80
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	300	0.89	8.23	0.4117	0.00 - 0.81	4	0.63	32.25	0.0001	0.01 - 0.69
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	300	0.89	8.23	0.4117	0.00 - 0.81	5	0.57	22.56	0.0040	0.01 - 0.52
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	300 (C)	0.84	5.90	0.6585	0.01 - 0.76	3 (C)	0.58	9.46	0.3049	0.11 - 0.66
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	300 (C)	0.84	5.90	0.6585	0.01 - 0.76	4 (C)	0.48	13.91	0.0841	0.05 - 0.54
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	300 (C)	0.84	5.90	0.6585	0.01 - 0.76	5 (C)	0.28	20.40	0.0089	0.04 - 0.36
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	600	0.92	6.13	0.6328	0.00 - 0.83	3	0.71	32.43	0.0001	0.02 - 0.80
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7G	1-May	31-Oct	0.84	44.78	0.0000	0.05 - 0.99	600 (C)	0.87	6.35	0.6082	0.00 - 0.81	3 (C)	0.58	9.46	0.3049	0.11 - 0.66
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7H	1-May	31-Oct	0.87	37.49	0.0000	0.06 - 0.99	100	0.86	13.66	0.0911	0.01 - 0.81	3	0.74	29.07	0.0003	0.02 - 0.78
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7H	1-May	31-Oct	0.87	37.49	0.0000	0.06 - 0.99	100 (C)	0.72	10.94	0.2052	0.03 - 0.74	3 (C)	0.44	15.64	0.0478	0.12 - 0.63
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7H	1-May	31-Oct	0.87	37.49	0.0000	0.06 - 0.99	300	0.82	16.09	0.0411	0.00 - 0.80	3	0.74	29.07	0.0003	0.02 - 0.78

							FIRE DAY				LARGE FIRE DAT					MULITPLE FIRE DAY				
SIG/Station	YEARS	ANNUAL FILER	VARIABLE	MODEL	GREENUP	FREEZE	R^2	CHI^2	P-VAL	P-RANGE	# ACRES	R^2	CHI^2	P-VAL	P-RANGE	# FIRES	R^2	CHI^2	P-VAL	P-RANGE
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7H	1-May	31-Oct	0.87	37.49	0.0000	0.06 - 0.99	300 (C)	0.71	12.19	0.1428	0.01 - 0.76	3 (C)	0.44	15.64	0.0478	0.12 - 0.63
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7H	1-May	31-Oct	0.87	37.49	0.0000	0.06 - 0.99	600	0.89	9.54	0.2988	0.00 - 0.82	3	0.74	29.07	0.0003	0.02 - 0.78
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7H	1-May	31-Oct	0.87	37.49	0.0000	0.06 - 0.99	600 (C)	0.84	8.16	0.4183	0.00 - 0.81	3 (C)	0.44	15.64	0.0478	0.12 - 0.63
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7Q	1-May	31-Oct	0.88	38.89	0.0000	0.04 - 0.99	100	0.89	10.11	0.2576	0.00 - 0.79	3	0.77	26.64	0.0008	0.01 - 0.79
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7Q	1-May	31-Oct	0.88	38.89	0.0000	0.04 - 0.99	100 (C)	0.81	6.87	0.5502	0.02 - 0.72	3 (C)	0.65	10.39	0.2389	0.09 - 0.67
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7Q	1-May	31-Oct	0.88	38.89	0.0000	0.04 - 0.99	300	0.91	7.08	0.5278	0.00 - 0.78	3	0.77	26.64	0.0008	0.01 - 0.79
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7Q	1-May	31-Oct	0.88	38.89	0.0000	0.04 - 0.99	300 (C)	0.84	6.06	0.6402	0.01 - 0.74	3 (C)	0.65	10.39	0.2389	0.09 - 0.67
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7Q	1-May	31-Oct	0.88	38.89	0.0000	0.04 - 0.99	600	0.94	4.22	0.8368	0.00 - 0.81	3	0.77	26.64	0.0008	0.01 - 0.79
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7Q	1-May	31-Oct	0.88	38.89	0.0000	0.04 - 0.99	600 (C)	0.84	8.48	0.3882	0.00 - 0.79	3 (C)	0.65	10.39	0.2389	0.09 - 0.67
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7T	1-May	31-Oct	0.87	41.53	0.0000	0.10 - 0.99	100	0.91	8.78	0.3609	0.01 - 0.82	3	0.75	28.12	0.0005	0.03 - 0.82
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7T	1-May	31-Oct	0.87	41.53	0.0000	0.10 - 0.99	100 (C)	0.84	5.45	0.7089	0.04 - 0.75	3 (C)	0.65	8.12	0.4223	0.13 - 0.68
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7T	1-May	31-Oct	0.87	41.53	0.0000	0.10 - 0.99	300	0.86	10.92	0.2065	0.01 - 0.82	3	0.75	28.12	0.0005	0.03 - 0.82
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7T	1-May	31-Oct	0.87	41.53	0.0000	0.10 - 0.99	300 (C)	0.85	6.11	0.6352	0.02 - 0.76	3 (C)	0.65	8.12	0.4223	0.13 - 0.68
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7T	1-May	31-Oct	0.87	41.53	0.0000	0.10 - 0.99	600	0.88	11.39	0.1804	0.00 - 0.85	3	0.75	28.12	0.0005	0.03 - 0.82
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7T	1-May	31-Oct	0.87	41.53	0.0000	0.10 - 0.99	600 (C)	0.83	9.19	0.3262	0.01 - 0.83	3 (C)	0.65	8.12	0.4223	0.13 - 0.68
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7U	1-May	31-Oct	0.83	46.00	0.0000	0.06 - 0.98	100	0.86	12.70	0.1226	0.01 - 0.76	3	0.73	24.90	0.0016	0.02 - 0.72
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7U	1-May	31-Oct	0.83	46.00	0.0000	0.06 - 0.98	100 (C)	0.76	9.72	0.2853	0.03 - 0.70	3 (C)	0.37	15.54	0.0494	0.14 - 0.57
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7U	1-May	31-Oct	0.83	46.00	0.0000	0.06 - 0.98	300	0.89	7.41	0.4930	0.00 - 0.75	3	0.73	24.90	0.0016	0.02 - 0.72
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7U	1-May	31-Oct	0.83	46.00	0.0000	0.06 - 0.98	300 (C)	0.77	10.29	0.2454	0.01 - 0.71	3 (C)	0.37	15.54	0.0494	0.14 - 0.57
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7U	1-May	31-Oct	0.83	46.00	0.0000	0.06 - 0.98	600	0.94	3.62	0.8896	0.00 - 0.78	3	0.73	24.90	0.0016	0.02 - 0.72
SIG - Desert	2002 - 2011	6/1 - 10/31	BI	7U	1-May	31-Oct	0.83	46.00	0.0000	0.06 - 0.98	600 (C)	0.92	3.94	0.8624	0.00 - 0.77	3 (C)	0.37	15.54	0.0494	0.14 - 0.57
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7C	1-May	31-Oct	0.90	21.09	0.0069	0.04 - 0.78	100	0.90	5.12	0.7444	0.00 - 0.25	3	0.60	27.42	0.0006	0.02 - 0.29
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7C	1-May	31-Oct	0.90	21.26	0.0065	0.04 - 0.78	100 (C)	0.81	3.29	0.8572	0.02 - 0.28	3 (C)	0.04	14.57	0.0419	0.23 - 0.33
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7C	1-May	31-Oct	0.90	21.09	0.0069	0.04 - 0.78	300	0.90	3.53	0.8967	0.00 - 0.17	3	0.60	27.42	0.0006	0.02 - 0.29
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7C	1-May	31-Oct	0.90	21.26	0.0065	0.04 - 0.78	300 (C)	0.89	1.13	0.9925	0.02 - 0.19	3 (C)	0.04	14.57	0.0419	0.23 - 0.33
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7C	1-May	31-Oct	0.90	21.09	0.0069	0.04 - 0.78	600	0.86	5.85	0.6636	0.00 - 0.16	3	0.60	27.42	0.0006	0.02 - 0.29
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7C	1-May	31-Oct	0.90	21.26	0.0065	0.04 - 0.78	600 (C)	0.79	3.71	0.8128	0.00 - 0.17	3 (C)	0.04	14.57	0.0419	0.23 - 0.33
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7F	1-May	31-Oct	0.73	82.12	0.0000	0.18 - 0.86	100	0.85	10.62	0.2241	0.02 - 0.31	3	0.60	43.65	0.0000	0.05 - 0.38
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7F	1-May	31-Oct	0.73	82.12	0.0000	0.18 - 0.86	100 (C)	0.77	5.95	0.6534	0.07 - 0.36	3 (C)	0.36	15.56	0.0492	0.19 - 0.41
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7F	1-May	31-Oct	0.73	82.12	0.0000	0.18 - 0.86	300	0.76	13.53	0.0949	0.01 - 0.22	3	0.60	43.65	0.0000	0.05 - 0.38
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7F	1-May	31-Oct	0.73	82.12	0.0000	0.18 - 0.86	300 (C)	0.71	4.70	0.7887	0.05 - 0.24	3 (C)	0.36	15.56	0.0492	0.19 - 0.41
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7F	1-May	31-Oct	0.73	82.12	0.0000	0.18 - 0.86	600	0.79	11.40	0.1799	0.01 - 0.19	3	0.60	43.65	0.0000	0.05 - 0.38
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7F	1-May	31-Oct	0.73	82.12	0.0000	0.18 - 0.86	600 (C)	0.75	5.44	0.7100	0.02 - 0.22	3 (C)	0.36	15.56	0.0492	0.19 - 0.41

							FIRE DAY				LARGE FIRE DAT					MULITPLE FIRE DAY				
SIG/Station	YEARS	ANNUAL FILER	VARIABLE	MODEL	GREENUP	FREEZE	R^2	CHI^2	P-VAL	P-RANGE	# ACRES	R^2	CHI^2	P-VAL	P-RANGE	# FIRES	R^2	CHI^2	P-VAL	P-RANGE
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.23	0.0000	0.02 - 0.88	50	0.93	6.41	0.6011	0.00 - 0.39	3	0.80	23.81	0.0025	0.00 - 0.47
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.23	0.0000	0.02 - 0.88	50 (C)	0.78	4.07	0.8510	0.07 - 0.40	3 (C)	0.70	8.89	0.3517	0.07 - 0.50
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.23	0.0000	0.02 - 0.88	100	0.97	2.09	0.9781	0.00 - 0.34	3	0.80	23.81	0.0025	0.00 - 0.47
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.09	0.0000	0.02 - 0.88	100	0.96	2.99	0.9352	0.00 - 0.33	3	0.79	26.45	0.0009	0.00 - 0.46
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.09	0.0000	0.02 - 0.88	100 (C)	0.76	6.03	0.6437	0.03 - 0.36	3 (C)	0.76	6.89	0.5490	0.07 - 0.49
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.23	0.0000	0.02 - 0.88	200	0.94	4.31	0.8281	0.00 - 0.30	3	0.80	23.81	0.0025	0.00 - 0.47
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.23	0.0000	0.02 - 0.88	200 (C)	0.67	6.39	0.6033	0.03 - 0.31	3 (C)	0.70	8.89	0.3517	0.07 - 0.50
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.23	0.0000	0.02 - 0.88	300	0.89	6.82	0.5557	0.00 - 0.25	3	0.80	23.81	0.0025	0.00 - 0.47
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.09	0.0000	0.02 - 0.88	300	0.89	7.23	0.5122	0.00 - 0.24	3	0.79	26.45	0.0009	0.00 - 0.46
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.23	0.0000	0.02 - 0.88	300	0.89	6.82	0.5557	0.00 - 0.25	5	0.81	11.10	0.1959	0.00 - 0.24
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.09	0.0000	0.02 - 0.88	300 (C)	0.65	6.91	0.5461	0.02 - 0.26	3 (C)	0.76	6.89	0.5490	0.07 - 0.49
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.23	0.0000	0.02 - 0.88	500	0.86	7.07	0.5295	0.00 - 0.23	3	0.80	23.81	0.0025	0.00 - 0.47
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.23	0.0000	0.02 - 0.88	500 (C)	0.71	6.88	0.5492	0.01 - 0.26	3 (C)	0.70	8.89	0.3517	0.07 - 0.50
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.23	0.0000	0.02 - 0.88	600	0.85	7.52	0.4816	0.00 - 0.22	3	0.80	23.81	0.0025	0.00 - 0.47
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.23	0.0000	0.02 - 0.88	600 (C)	0.71	6.94	0.5426	0.01 - 0.24	3 (C)	0.70	8.89	0.3517	0.07 - 0.50
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.23	0.0000	0.02 - 0.88	800	0.83	7.27	0.5075	0.00 - 0.18	3	0.80	23.81	0.0025	0.00 - 0.47
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7G	1-May	31-Oct	0.89	39.23	0.0000	0.02 - 0.88	800 (C)	0.63	7.65	0.4680	0.01 - 0.20	3 (C)	0.70	8.89	0.3517	0.07 - 0.50
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7H	1-May	31-Oct	0.88	39.42	0.0000	0.04 - 0.86	100	0.91	6.99	0.5377	0.00 - 0.32	3	0.76	27.42	0.0006	0.01 - 0.41
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7H	1-May	31-Oct	0.88	39.42	0.0000	0.04 - 0.86	100 (C)	0.72	7.82	0.4513	0.02 - 0.36	3 (C)	0.53	8.73	0.3652	0.08 - 0.44
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7H	1-May	31-Oct	0.88	39.42	0.0000	0.04 - 0.86	300	0.80	12.18	0.1434	0.00 - 0.23	3	0.76	27.42	0.0006	0.01 - 0.41
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7H	1-May	31-Oct	0.88	39.42	0.0000	0.04 - 0.86	300 (C)	0.63	7.37	0.4976	0.01 - 0.26	3 (C)	0.53	8.73	0.3652	0.08 - 0.44
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7H	1-May	31-Oct	0.88	39.42	0.0000	0.04 - 0.86	600	0.75	13.39	0.0991	0.00 - 0.20	3	0.76	27.42	0.0006	0.01 - 0.41
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7H	1-May	31-Oct	0.88	39.42	0.0000	0.04 - 0.86	600 (C)	0.64	8.56	0.3807	0.00 - 0.24	3 (C)	0.53	8.73	0.3652	0.08 - 0.44
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7Q	1-May	31-Oct	0.86	43.35	0.0000	0.02 - 0.82	100	0.97	2.02	0.9804	0.00 - 0.28	3	0.75	27.01	0.0007	0.00 - 0.35
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7Q	1-May	31-Oct	0.86	43.35	0.0000	0.02 - 0.82	100 (C)	0.68	9.48	0.3031	0.01 - 0.32	3 (C)	0.37	13.42	0.0982	0.08 - 0.39
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7Q	1-May	31-Oct	0.86	43.35	0.0000	0.02 - 0.82	300	0.86	7.13	0.5222	0.00 - 0.20	3	0.75	27.01	0.0007	0.00 - 0.35
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7Q	1-May	31-Oct	0.86	43.35	0.0000	0.02 - 0.82	300 (C)	0.50	12.46	0.1317	0.01 - 0.23	3 (C)	0.37	13.42	0.0982	0.08 - 0.39
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7Q	1-May	31-Oct	0.86	43.35	0.0000	0.02 - 0.82	600	0.81	10.14	0.2552	0.00 - 0.17	3	0.75	27.01	0.0007	0.00 - 0.35
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7Q	1-May	31-Oct	0.86	43.35	0.0000	0.02 - 0.82	600 (C)	0.55	11.87	0.1570	0.00 - 0.21	3 (C)	0.37	13.42	0.0982	0.08 - 0.39
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7T	1-May	31-Oct	0.86	38.75	0.0000	0.08 - 0.82	100	0.91	6.52	0.5897	0.01 - 0.27	3	0.71	31.01	0.0001	0.02 - 0.34
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7T	1-May	31-Oct	0.86	38.75	0.0000	0.08 - 0.82	100 (C)	0.76	5.24	0.7313	0.04 - 0.30	3 (C)	0.29	12.53	0.1292	0.15 - 0.37
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7T	1-May	31-Oct	0.86	38.75	0.0000	0.08 - 0.82	300	0.90	4.51	0.8087	0.00 - 0.19	3	0.71	31.01	0.0001	0.02 - 0.34
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7T	1-May	31-Oct	0.86	38.75	0.0000	0.08 - 0.82	300 (C)	0.73	3.77	0.8773	0.03 - 0.21	3 (C)	0.29	12.53	0.1292	0.15 - 0.37

							FIRE DAY				LARGE FIRE DAT					MULITPLE FIRE DAY				
SIG/Station	YEARS	ANNUAL FILER	VARIABLE	MODEL	GREENUP	FREEZE	R^2	CHI^2	P-VAL	P-RANGE	# ACRES	R^2	CHI^2	P-VAL	P-RANGE	# FIRES	R^2	CHI^2	P-VAL	P-RANGE
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7T	1-May	31-Oct	0.86	38.75	0.0000	0.08 - 0.82	600	0.89	5.57	0.6948	0.00 - 0.17	3	0.71	31.01	0.0001	0.02 - 0.34
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7T	1-May	31-Oct	0.86	38.75	0.0000	0.08 - 0.82	600 (C)	0.79	4.03	0.8548	0.01 - 0.19	3 (C)	0.29	12.53	0.1292	0.15 - 0.37
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7U	1-May	31-Oct	0.86	35.02	0.0000	0.04 - 0.81	100	0.87	9.40	0.3096	0.00 - 0.27	3	0.57	44.13	0.0000	0.02 - 0.32
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7U	1-May	31-Oct	0.86	35.02	0.0000	0.04 - 0.81	100 (C)	0.71	6.91	0.5459	0.02 - 0.31	3 (C)	0.18	12.10	0.1467	0.17 - 0.35
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7U	1-May	31-Oct	0.86	35.02	0.0000	0.04 - 0.81	300	0.82	8.96	0.3454	0.00 - 0.19	3	0.57	44.13	0.0000	0.02 - 0.32
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7U	1-May	31-Oct	0.86	35.02	0.0000	0.04 - 0.81	300 (C)	0.58	7.34	0.5005	0.01 - 0.22	3 (C)	0.18	12.10	0.1467	0.17 - 0.35
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7U	1-May	31-Oct	0.86	35.02	0.0000	0.04 - 0.81	600	0.77	12.66	0.1243	0.00 - 0.17	3	0.57	44.13	0.0000	0.02 - 0.32
SIG - Desert	2002 - 2011	6/1 - 10/31	ERC	7U	1-May	31-Oct	0.86	35.02	0.0000	0.04 - 0.81	600 (C)	0.46	17.27	0.0274	0.00 - 0.19	3 (C)	0.18	12.10	0.1467	0.17 - 0.35
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7C	1-Jun	31-Oct	0.59	17.63	0.0242	0.05 - 0.20	1	0.33	9.77	0.2818	0.01 - 0.04	2	0.49	6.82	0.5567	0.00 - 0.04
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7C	1-Jun	31-Oct	0.59	17.63	0.0242	0.05 - 0.20	1 (C)	0.05	8.04	0.4300	0.11 - 0.18	2 (C)	0.19	4.60	0.7995	0.08 - 0.19
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7C	1-Jun	31-Oct	0.59	17.63	0.0242	0.05 - 0.20	2	0.30	6.04	0.6433	0.00 - 0.02	2	0.49	6.82	0.5567	0.00 - 0.04
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7C	1-Jun	31-Oct	0.59	17.63	0.0242	0.05 - 0.20	2 (C)	0.01	7.02	0.5344	0.08 - 0.11	2 (C)	0.19	4.60	0.7995	0.08 - 0.19
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7G	1-Jun	31-Oct	0.90	7.12	0.5241	0.02 - 0.35	1	0.56	12.54	0.1287	0.00 - 0.09	2	0.71	5.83	0.6665	0.00 - 0.11
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7G	1-Jun	31-Oct	0.90	7.12	0.5241	0.02 - 0.35	1 (C)	0.10	7.19	0.5163	0.07 - 0.24	2 (C)	0.21	8.39	0.3961	0.04 - 0.27
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7G	1-Jun	31-Oct	0.90	7.12	0.5241	0.02 - 0.35	2	0.36	12.32	0.1377	0.00 - 0.05	2	0.71	5.83	0.6665	0.00 - 0.11
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7G	1-Jun	31-Oct	0.90	7.12	0.5241	0.02 - 0.35	2 (C)	0.01	8.68	0.3698	0.06 - 0.13	2 (C)	0.21	8.39	0.3961	0.04 - 0.27
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7H	1-Jun	31-Oct	0.92	5.20	0.7356	0.03 - 0.32	1	0.41	14.65	0.0664	0.00 - 0.08	2	0.77	3.40	0.9070	0.00 - 0.09
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7H	1-Jun	31-Oct	0.92	5.20	0.7356	0.03 - 0.32	1 (C)	0.10	10.06	0.2606	0.08 - 0.23	2 (C)	0.15	8.71	0.3670	0.06 - 0.23
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7H	1-Jun	31-Oct	0.92	5.20	0.7356	0.03 - 0.32	2	0.26	13.80	0.0870	0.00 - 0.05	2	0.77	3.40	0.9070	0.00 - 0.09
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7H	1-Jun	31-Oct	0.92	5.20	0.7356	0.03 - 0.32	2 (C)	0.03	9.60	0.2943	0.06 - 0.13	2 (C)	0.15	8.71	0.3670	0.06 - 0.23
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7Q	1-Jun	31-Oct	0.88	8.11	0.4228	0.03 - 0.27	1	0.49	11.60	0.1700	0.00 - 0.06	2	0.75	4.33	0.8264	0.00 - 0.07
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7Q	1-Jun	31-Oct	0.88	8.11	0.4228	0.03 - 0.27	1 (C)	0.08	6.78	0.5600	0.08 - 0.21	2 (C)	0.10	11.70	0.1652	0.05 - 0.23
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7Q	1-Jun	31-Oct	0.88	8.11	0.4228	0.03 - 0.27	2	0.29	12.66	0.1241	0.00 - 0.03	2	0.75	4.33	0.8264	0.00 - 0.07
SIG - Uinta	1990 - 2011	6/1 - 10/31	BI	7Q	1-Jun	31-Oct	0.88	8.11	0.4228	0.03 - 0.27	2 (C)	0.00	8.49	0.3875	0.07 - 0.11	2 (C)	0.10	11.70	0.1652	0.05 - 0.23
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7C	1-Jun	31-Oct	0.54	19.39	0.0129	0.05 - 0.16	1	0.26	14.24	0.0757	0.01 - 0.03	2	0.39	7.51	0.4824	0.01 - 0.02
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7C	1-Jun	31-Oct	0.54	19.39	0.0129	0.05 - 0.16	1 (C)	0.05	10.41	0.2376	0.11 - 0.18	2 (C)	0.06	5.01	0.7566	0.10 - 0.16
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7C	1-Jun	31-Oct	0.54	19.39	0.0129	0.05 - 0.16	2	0.15	11.06	0.1985	0.00 - 0.02	2	0.39	7.51	0.4824	0.01 - 0.02
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7C	1-Jun	31-Oct	0.54	19.39	0.0129	0.05 - 0.16	2 (C)	0.00	8.56	0.3812	0.08 - 0.10	2 (C)	0.06	5.01	0.7566	0.10 - 0.16
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7G	1-Jun	31-Oct	0.96	3.63	0.8893	0.02 - 0.31	1	0.48	14.75	0.0643	0.00 - 0.06	2	0.77	5.15	0.7410	0.00 - 0.07
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7G	1-Jun	31-Oct	0.96	3.63	0.8893	0.02 - 0.31	1 (C)	0.05	11.57	0.1717	0.10 - 0.18	2 (C)	0.18	7.89	0.4439	0.06 - 0.22
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7G	1-Jun	31-Oct	0.96	3.63	0.8893	0.02 - 0.31	2	0.38	18.84	0.0157	0.00 - 0.04	2	0.77	5.15	0.7410	0.00 - 0.07
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7G	1-Jun	31-Oct	0.96	3.63	0.8893	0.02 - 0.31	2 (C)	0.03	15.79	0.0455	0.07 - 0.12	2 (C)	0.18	7.89	0.4439	0.06 - 0.22
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7H	1-Jun	31-Oct	0.93	5.54	0.6982	0.03 - 0.27	1	0.72	5.64	0.6878	0.00 - 0.06	2	0.71	5.77	0.6734	0.00 - 0.06

							FIRE DAY				LARGE FIRE DAT					MULITPLE FIRE DAY				
SIG/Station	YEARS	ANNUAL FILER	VARIABLE	MODEL	GREENUP	FREEZE	R^2	CHI^2	P-VAL	P-RANGE	# ACRES	R^2	CHI^2	P-VAL	P-RANGE	# FIRES	R^2	CHI^2	P-VAL	P-RANGE
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7H	1-Jun	31-Oct	0.93	5.54	0.6982	0.03 - 0.27	1 (C)	0.12	7.27	0.5082	0.08 - 0.22	2 (C)	0.11	8.46	0.3897	0.07 - 0.20
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7H	1-Jun	31-Oct	0.93	5.54	0.6982	0.03 - 0.27	2	0.55	7.06	0.5302	0.00 - 0.04	2	0.71	5.77	0.6734	0.00 - 0.06
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7H	1-Jun	31-Oct	0.93	5.54	0.6982	0.03 - 0.27	2 (C)	0.09	6.30	0.6136	0.06 - 0.13	2 (C)	0.11	8.46	0.3897	0.07 - 0.20
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7Q	1-Jun	31-Oct	0.84	12.03	0.1498	0.03 - 0.22	1	0.53	9.16	0.3287	0.00 - 0.04	2	0.87	1.72	0.9884	0.00 - 0.04
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7Q	1-Jun	31-Oct	0.84	12.03	0.1498	0.03 - 0.22	1 (C)	0.20	4.85	0.7739	0.08 - 0.20	2 (C)	0.12	9.47	0.3039	0.07 - 0.18
SIG - Uinta	1990 - 2011	6/1 - 10/31	ERC	7Q	1-Jun	31-Oct	0.84	12.03	0.1498	0.03 - 0.22	2	0.41	8.27	0.4075	0.00 - 0.03	2	0.87	1.72	0.9884	0.00 - 0.04
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7C	15-May	31-Oct	0.91	13.85	0.0857	0.12 - 0.83	50	0.70	10.70	0.2193	0.00 - 0.20	3	0.74	11.19	0.1911	0.02 - 0.31
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7C	15-May	31-Oct	0.91	13.85	0.0857	0.12 - 0.83	50 (C)	0.33	17.55	0.0249	0.02 - 0.23	3 (C)	0.24	12.61	0.1261	0.12 - 0.32
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7C	15-May	31-Oct	0.91	13.85	0.0857	0.12 - 0.83	100	0.69	9.01	0.3411	0.00 - 0.18	3	0.74	11.19	0.1911	0.02 - 0.31
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7C	15-May	31-Oct	0.91	13.85	0.0857	0.12 - 0.83	100 (C)	0.49	11.39	0.1803	0.01 - 0.21	3 (C)	0.24	12.61	0.1261	0.12 - 0.32
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7G	15-May	31-Oct	0.90	20.23	0.0095	0.07 - 0.88	10	0.81	13.37	0.0998	0.01 - 0.39	3	0.78	15.41	0.0516	0.01 - 0.39
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7G	15-May	31-Oct	0.90	20.23	0.0095	0.07 - 0.88	10 (C)	0.70	6.01	0.6466	0.03 - 0.41	3 (C)	0.46	10.88	0.2084	0.07 - 0.40
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7G	15-May	31-Oct	0.90	20.23	0.0095	0.07 - 0.88	50	0.70	11.61	0.1693	0.00 - 0.22	3	0.78	15.41	0.0516	0.01 - 0.39
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7G	15-May	31-Oct	0.90	20.23	0.0095	0.07 - 0.88	50 (C)	0.49	6.54	0.5866	0.02 - 0.22	3 (C)	0.46	10.88	0.2084	0.07 - 0.40
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7G	15-May	31-Oct	0.90	20.23	0.0095	0.07 - 0.88	100	0.69	10.92	0.2065	0.00 - 0.19	3	0.78	15.41	0.0516	0.01 - 0.39
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7G	15-May	31-Oct	0.9	21.15	0.0068	0.06 - 0.88	100	0.7	10.73	0.2176	0.00 - 0.20	3	0.79	13.98	0.0824	0.01 - 0.40
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7G	15-May	31-Oct	0.90	20.23	0.0095	0.07 - 0.88	100 (C)	0.55	6.09	0.6366	0.01 - 0.20	3 (C)	0.46	10.88	0.2084	0.07 - 0.40
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7G	15-May	31-Oct	0.9	21.15	0.0068	0.06 - 0.88	100 (C)	0.54	5.79	0.6711	0.01 - 0.20	3 (C)	0.46	10.96	0.2037	0.07 - 0.40
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7H	15-May	31-Oct	0.90	18.96	0.0151	0.08 - 0.88	10	0.85	7.78	0.4556	0.01 - 0.41	3	0.76	14.33	0.0736	0.01 - 0.39
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7H	15-May	31-Oct	0.90	18.96	0.0151	0.08 - 0.88	10 (C)	0.86	3.19	0.9216	0.03 - 0.43	3 (C)	0.49	8.27	0.4073	0.08 - 0.39
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7H	15-May	31-Oct	0.90	18.96	0.0151	0.08 - 0.88	50	0.79	6.48	0.5939	0.00 - 0.24	3	0.76	14.33	0.0736	0.01 - 0.39
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7H	15-May	31-Oct	0.90	18.96	0.0151	0.08 - 0.88	50 (C)	0.64	4.80	0.7784	0.02 - 0.24	3 (C)	0.49	8.27	0.4073	0.08 - 0.39
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7H	15-May	31-Oct	0.90	18.96	0.0151	0.08 - 0.88	100	0.77	6.19	0.6259	0.00 - 0.21	3	0.76	14.33	0.0736	0.01 - 0.39
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7H	15-May	31-Oct	0.90	18.96	0.0151	0.08 - 0.88	100 (C)	0.61	6.19	0.6257	0.01 - 0.22	3 (C)	0.49	8.27	0.4073	0.08 - 0.39
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7Q	15-May	31-Oct	0.94	11.86	0.1574	0.07 - 0.86	10	0.91	6.08	0.6378	0.00 - 0.38	3	0.87	8.55	0.3820	0.01 - 0.38
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7Q	15-May	31-Oct	0.94	11.86	0.1574	0.07 - 0.86	10 (C)	0.88	2.60	0.9569	0.03 - 0.40	3 (C)	0.42	14.98	0.0595	0.07 - 0.39
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7Q	15-May	31-Oct	0.94	11.86	0.1574	0.07 - 0.86	50	0.83	5.85	0.6640	0.00 - 0.21	3	0.87	8.55	0.3820	0.01 - 0.38
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7Q	15-May	31-Oct	0.94	11.86	0.1574	0.07 - 0.86	50 (C)	0.72	3.25	0.9176	0.02 - 0.22	3 (C)	0.42	14.98	0.0595	0.07 - 0.39
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7Q	15-May	31-Oct	0.94	11.86	0.1574	0.07 - 0.86	100	0.75	7.39	0.4950	0.00 - 0.18	3	0.87	8.55	0.3820	0.01 - 0.38
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7Q	15-May	31-Oct	0.94	11.86	0.1574	0.07 - 0.86	100 (C)	0.61	6.60	0.5805	0.01 - 0.20	3 (C)	0.42	14.98	0.0595	0.07 - 0.39
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7T	15-May	31-Oct	0.92	15.53	0.0496	0.16 - 0.85	10	0.92	5.64	0.6873	0.01 - 0.37	3	0.78	13.93	0.0836	0.03 - 0.33
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7T	15-May	31-Oct	0.92	15.53	0.0496	0.16 - 0.85	10 (C)	0.80	4.86	0.7728	0.05 - 0.41	3 (C)	0.32	14.92	0.0607	0.12 - 0.34
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7T	15-May	31-Oct	0.92	15.53	0.0496	0.16 - 0.85	50	0.78	6.71	0.5683	0.01 - 0.20	3	0.78	13.93	0.0836	0.03 - 0.33

							FIRE DAY				LARGE FIRE DAT					MULITPLE FIRE DAY				
SIG/Station	YEARS	ANNUAL FILER	VARIABLE	MODEL	GREENUP	FREEZE	R^2	CHI^2	P-VAL	P-RANGE	# ACRES	R^2	CHI^2	P-VAL	P-RANGE	# FIRES	R^2	CHI^2	P-VAL	P-RANGE
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7T	15-May	31-Oct	0.92	15.53	0.0496	0.16 - 0.85	50 (C)	0.54	7.62	0.4715	0.03 - 0.22	3 (C)	0.32	14.92	0.0607	0.12 - 0.34
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7T	15-May	31-Oct	0.92	15.53	0.0496	0.16 - 0.85	100	0.78	6.23	0.6220	0.00 - 0.17	3	0.78	13.93	0.0836	0.03 - 0.33
SIG - Wasatch	2001 - 2011	6/1 - 10/31	BI	7T	15-May	31-Oct	0.92	15.53	0.0496	0.16 - 0.85	100 (C)	0.60	6.48	0.5938	0.02 - 0.19	3 (C)	0.32	14.92	0.0607	0.12 - 0.34
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7C	15-May	31-Oct	0.90	12.79	0.1191	0.12 - 0.68	100	0.82	5.36	0.7185	0.00 - 0.11	3	0.77	8.16	0.4180	0.02 - 0.19
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7C	15-May	31-Oct	0.90	12.79	0.1191	0.12 - 0.68	100 (C)	0.70	6.33	0.6099	0.00 - 0.17	3 (C)	0.30	5.69	0.6822	0.11 - 0.27
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7G	15-May	31-Oct	0.95	13.53	0.0948	0.03 - 0.80	10	0.87	9.42	0.3083	0.00 - 0.26	3	0.93	6.45	0.5965	0.00 - 0.35
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7G	15-May	31-Oct	0.95	13.53	0.0948	0.03 - 0.80	10 (C)	0.66	7.94	0.4389	0.03 - 0.30	3 (C)	0.80	7.15	0.5206	0.02 - 0.42
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7G	15-May	31-Oct	0.95	13.53	0.0948	0.03 - 0.80	50	0.74	9.70	0.2866	0.00 - 0.16	3	0.93	6.45	0.5965	0.00 - 0.35
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7G	15-May	31-Oct	0.95	13.53	0.0948	0.03 - 0.80	50 (C)	0.53	10.48	0.2328	0.01 - 0.19	3 (C)	0.80	7.15	0.5206	0.02 - 0.42
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7G	15-May	31-Oct	0.95	14.33	0.0736	0.03 - 0.80	100	0.91	3.07	0.9299	0.00 - 0.13	3	0.93	7.28	0.5069	0.00 - 0.36
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7G	15-May	31-Oct	0.95	14.33	0.0736	0.03 - 0.80	100 (C)	0.64	6.36	0.6064	0.01 - 0.15	3 (C)	0.87	4.54	0.8055	0.02 - 0.43
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7H	15-May	31-Oct	0.93	15.95	0.0431	0.07 - 0.78	10	0.84	10.46	0.2340	0.00 - 0.26	3	0.85	11.66	0.1671	0.01 - 0.32
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7H	15-May	31-Oct	0.93	15.95	0.0431	0.07 - 0.78	10 (C)	0.78	4.28	0.8311	0.03 - 0.31	3 (C)	0.72	7.66	0.4678	0.04 - 0.38
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7H	15-May	31-Oct	0.93	15.95	0.0431	0.07 - 0.78	50	0.76	9.52	0.3000	0.00 - 0.17	3	0.85	11.66	0.1671	0.01 - 0.32
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7H	15-May	31-Oct	0.93	15.95	0.0431	0.07 - 0.78	50 (C)	0.73	4.49	0.8101	0.01 - 0.20	3 (C)	0.72	7.66	0.4678	0.04 - 0.38
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7H	15-May	31-Oct	0.93	15.95	0.0431	0.07 - 0.78	100	0.77	7.36	0.4986	0.00 - 0.14	3	0.85	11.66	0.1671	0.01 - 0.32
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7H	15-May	31-Oct	0.93	15.95	0.0431	0.07 - 0.78	100 (C)	0.73	4.40	0.8189	0.00 - 0.17	3 (C)	0.72	7.66	0.4678	0.04 - 0.38
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7Q	15-May	31-Oct	0.95	9.26	0.3207	0.05 - 0.73	10	0.85	10.24	0.2487	0.00 - 0.23	3	0.93	5.19	0.7369	0.00 - 0.26
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7Q	15-May	31-Oct	0.95	9.26	0.3207	0.05 - 0.73	10 (C)	0.74	5.96	0.6520	0.01 - 0.29	3 (C)	0.64	6.49	0.5927	0.04 - 0.33
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7Q	15-May	31-Oct	0.95	9.26	0.3207	0.05 - 0.73	50	0.78	9.94	0.2693	0.00 - 0.14	3	0.93	5.19	0.7369	0.00 - 0.26
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7Q	15-May	31-Oct	0.95	9.26	0.3207	0.05 - 0.73	50 (C)	0.66	7.78	0.4550	0.00 - 0.18	3 (C)	0.64	6.49	0.5927	0.04 - 0.33
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7Q	15-May	31-Oct	0.95	9.26	0.3207	0.05 - 0.73	100	0.81	7.38	0.4964	0.00 - 0.12	3	0.93	5.19	0.7369	0.00 - 0.26
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7Q	15-May	31-Oct	0.95	9.26	0.3207	0.05 - 0.73	100 (C)	0.58	8.50	0.3865	0.00 - 0.16	3 (C)	0.64	6.49	0.5927	0.04 - 0.33
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7T	15-May	31-Oct	0.91	15.50	0.0501	0.16 - 0.72	10	0.90	6.98	0.5389	0.01 - 0.22	3	0.82	10.44	0.2356	0.02 - 0.22
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7T	15-May	31-Oct	0.91	15.50	0.0501	0.16 - 0.72	10 (C)	0.75	6.21	0.6235	0.04 - 0.30	3 (C)	0.40	10.54	0.2292	0.11 - 0.29
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7T	15-May	31-Oct	0.91	15.50	0.0501	0.16 - 0.72	50	0.89	3.74	0.8794	0.00 - 0.14	3	0.82	10.44	0.2356	0.02 - 0.22
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7T	15-May	31-Oct	0.91	15.50	0.0501	0.16 - 0.72	50 (C)	0.77	4.98	0.7597	0.01 - 0.19	3 (C)	0.40	10.54	0.2292	0.11 - 0.29
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7T	15-May	31-Oct	0.91	15.50	0.0501	0.16 - 0.72	100	0.82	7.94	0.4389	0.00 - 0.11	3	0.82	10.44	0.2356	0.02 - 0.22
SIG - Wasatch	2001 - 2011	6/1 - 10/31	ERC	7T	15-May	31-Oct	0.91	15.50	0.0501	0.16 - 0.72	100 (C)	0.75	4.67	0.7919	0.01 - 0.16	3 (C)	0.40	10.54	0.2292	0.11 - 0.29

Appendix G – Preparedness Level Actions

The following Preparedness Level actions are guidelines for agency personnel. They are discretionary in nature and usually will require a consensus between agency personnel prior to implementation.

Responsible Party	Suggested Action	PL 1	PL 2	PL 3	PL 4	PL 5	Affected Entity
Agency Administrator	Ensure supervisors approve fire availability of staff and notify Duty Officer.	●	●	●	●	●	Agency
	Ensure resource advisors are designated and available for fire assignments.	●	●	●	●	●	Agency
	Evaluate work/rest needs of fire staff.		●	●	●	●	Agency
	Consider need for fire restriction or closures.				●	●	Public Industry
	Provide appropriate political support to fire staff regarding the implementation of preparedness level actions.			●	●	●	Agency Public Industry
	Review and transmit severity requests to the appropriate level.				●	●	Agency
	Issue guidance to respective agency staff indicating severity of the season and increased need and availability for fire support personnel.				●	●	Agency
Fire Staff Officer or FMO	Evaluate season severity data (BI and ERC trends for season, fuel loadings, live FM, drought indices, and long term forecasts).	●	●	●	●	●	Agency
	Evaluate fire staff work/rest requirements.		●	●	●	●	Agency
	Brief agency administrator on burning conditions and fire activity.			●	●	●	Agency
	Review geographical and national preparedness levels and evaluate need to suspend local prescribe fire activities.			●	●	●	Agency
	Ensure Education/Mitigation personnel have initiated media contacts and public notification.				●	●	Public Industry
	Ensure agency staff is briefed on increasing fire activity.				●	●	Agency
	Brief next higher level of fire management on increasing/decreasing fire activity.				●	●	Agency
	Consider fire severity request and pre-positioning of resources including: suppression resources, aerial support, aerial supervision, command positions, dispatch, logistical support, and prevention.				●	●	Agency
	Coordinate with interagency partners the need for fire restrictions or closures.					●	Public Industry
	Request that the Agency Administrator issue guidance to respective agency staff regarding the need for increased fire availability in support positions.				●	●	Agency
	Pre-position a Type 3 organization/Type 2 Team.					●	Agency

Responsible Party	Suggested Action	PL 1	PL 2	PL 3	PL 4	PL 5	Affected Entity
Duty Officer	Confirm (or adjust) the Preparedness and Dispatch Levels with the NUIFC Manager.	●	●	●	●	●	Agency
	If preparedness level is decreasing, consider releasing pre-positioned and detailed resources.	●	●	●			Agency
	Evaluate work/rest needs of IA crews, dispatchers, & aviation bases.			●	●	●	Agency
	Consider aerial detection flight.				●	●	Agency
	Evaluate need to change or shift duty hours of IA resources.				●	●	Agency
	Evaluate draw-down levels for suppression, command, and oversight positions.				●	●	Agency
	Consider extending staffing beyond normal shift length.				●	●	Agency
	Brief FMO on severity of conditions and consider severity request.				●	●	Agency
	Consider pre-positioning and/or detailing of additional IA resources.				●	●	Agency
	Consider pre-positioning and automatic dispatch of ATGS.				●	●	Agency
	Consider bringing in local IA resources from scheduled days off.				●	●	Agency
	Consider patrols and pre-positioning of local IA resources in high risk areas.				●	●	Agency
	Consider automatic dispatch of helicopter, SEAT and/or heavy air tankers for IA				●	●	Agency
NUIFC Manager	Determine and broadcast the morning and afternoon preparedness, dispatch, and adjective fire danger levels to interagency fire personnel.	●	●	●	●	●	Agency
	Evaluate work/rest needs of center staff.			●	●	●	Agency
	If preparedness level is decreasing, consider release of pre-positioned or detailed dispatchers and logistical support personnel.	●	●	●			Agency
	Consult with Duty Officer concerning potential for extended staffing beyond normal shift length.				●	●	Agency
	Consider pre-positioning or detail of off-unit IA dispatchers and logistical support personnel.				●	●	Agency
	Consider discussing activation of local area MAC Group.					●	Agency
	Consider ordering a Fire Behavior Analyst.					●	Agency
	Consult with duty officer and FMO regarding potential need for severity request.				●	●	Agency
	Consider bringing additional dispatch personnel in from scheduled days off.					●	Agency
	Notify appropriate military personnel of high/extreme fire danger and request the drop heights of chaff/flares be increased.					●	Agency
	Consult with Eastern Great Basin Coordination Center (EGBCC) regarding availability of resources at the geographical and national levels.			●	●	●	Agency

Responsible Party	Suggested Action	PL 1	PL 2	PL 3	PL 4	PL 5	Affected Entity
Assistant Fire Staff or AFMO	Ensure that roadside fire danger signs reflect the current adjective fire danger rating.	●	●	●	●	●	Public
	Ensure IA crews are briefed on local preparedness level, burning conditions, and availability of IA resources and air support.	●	●	●	●	●	Agency
	Ensure incoming pre-position or detailed personnel are briefed on local conditions.	●	●	●	●	●	Agency
	Evaluate work/rest needs of crews.			●	●	●	Agency
	Increase patrols in camping and recreation areas.				●	●	Public
	Consider suspension of project work away from station.					●	Agency
	Provide duty officer with feedback regarding unique/unexpected fire behavior and severity conditions and the need to increase IA capabilities.				●	●	Agency
Fire Education & Mitigation	Ensure that roadside fire danger signs reflect the current adjective fire danger rating.	●	●	●	●	●	Public
	Initiate press release to inform public/industry of the potential fire danger.				●	●	Public Industry
	Ensure the public and industrial entities are aware of the policy regarding fire trespass investigations for human-caused fires and cost recovery for suppression action.				●	●	Public Industry
	Consider need for increased prevention patrols.				●	●	Public Industry
	Contact local fire chiefs to make them aware of fire danger.				●	●	Agency
	Consider door to door contacts in rural communities or ranch areas.					●	Public Industry
	Post signs and warnings in camp and recreation areas.				●	●	Public
	Consult with FMO regarding severity request and potential need for additional prevention personnel.				●	●	Public Industry
	Consult with AFMO and FMO regarding need for fire restrictions, closures and the need to order a Fire Prevention Team.				●	●	Agency Public Industry

Appendix H – Pocket Cards

Salt Lake Desert and Wasatch Mountains FDRAs

Fire Danger PocketCard

Northern Utah Interagency Fire Center

http://fam.nwcg.gov/fam-web/pocketcards/

Fire Danger Interpretation

Dispatch Levels	Burning Index – Model G	
	SL Desert	Wasatch Mtns
High: Potential for high to extreme intensity. Expect high rates of spread, flame length, and control difficulty.	84 + (79th percentile)	74 + (78th percentile)
Moderate: Anticipate moderate fire intensity. The BI can change rapidly with variable weather conditions.	66 - 83	60 - 73
Low: Expect low fire intensity. Containment should be attainable. However, always be cautious.	0 - 65	0 - 59

Local (Critical) Thresholds: any of these factors will significantly increase the risk for extreme fire behavior. The more factors present, the greater the risk.

Weather Observations (at the Critical Percentile)	SL Desert FDRA (79th percentile)	Wasatch FDRA (78th percentile)
20-ft Wind (mph)	> 11	> 9
Min. Relative Humidity (%)	< 8	< 12
Max. Temperature (°F)	> 93	> 88

- **Wind Gusts** exceeding 30 mph will increase the probability of erratic fire behavior and large fire growth.
- **Microbursts** are powerful downdrafts from thunderstorms which can seriously affect the spread rate, intensity, and direction from several miles away.
- **Lake Effect Winds** will enhance up-slope winds (in the afternoon) & down-slope winds (after sunset) resulting in unexpected fire intensity adjacent to the Great Salt Lake and Utah Lake.

Recent Fire Experience

Salt Lake Desert FDRA

Date	Fire Name	Size (ac)	BI	RH (%)	Temp (°F)	Wind (mph)
07/16/11	Lakeside	16,267	105	9	88	16
08/06/11	Chaparral	1,712	78	7	92	9
08/31/11	Maple Canyon	4,900	124	9	94	19
10/01/11	Timpie 2	849	107	11	90	17

Wasatch Mountains FDRA

Date	Fire Name	Size (ac)	BI	RH (%)	Temp (°F)	Wind (mph)
07/22/11	Cottonwood 2	25	79	11	88	10
07/26/10	Green Canyon	25	81	11	93	9
08/16/09	Hobble Creek	157	77	19	70	10
08/25/08	Corner Canyon	808	87	11	94	9

Burning Index (BI) Facts:

- BI is an index representing the potential difficulty containing a fire due to flame length (intensity) at the head of the fire
- BI is very sensitive to small fluctuations in wind speed
- BI with Fuel Model G has a very good statistical correlation to large fire occurrence in Northern Utah.

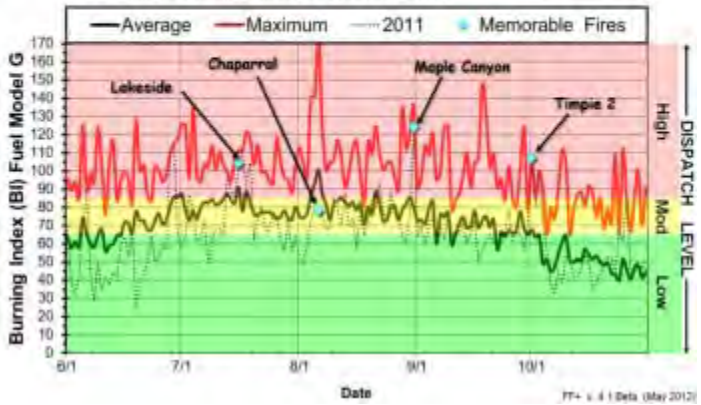
Updated: May 2012

Salt Lake Desert FDRA

NWS Forecast Zone 478

RAWS (in SIG)	Number	Elevation	Data Years	Model
Cedar Mountain *	420901	4650'	2002 - 2011	7G
Vernon *	420908	5510'	2002 - 2011	7G
Aragonite *	420911	5030'	2002 - 2011	7G
Rosebud *	420914	4987'	2002 - 2011	7G

* These stations comply with NWCG Weather Station Standards (PMS 426-3)

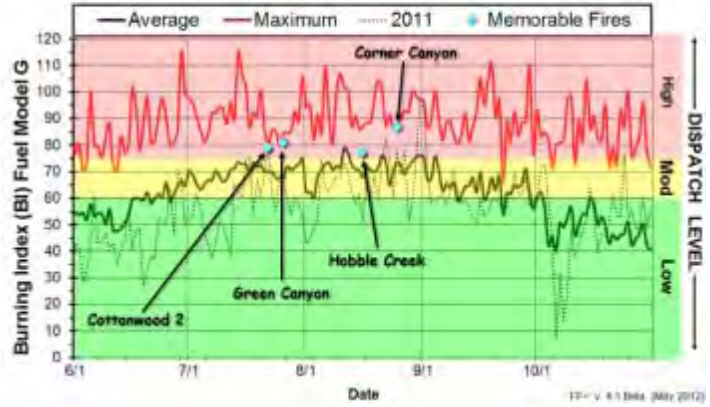


Wasatch Mountains FDRA

NWS Forecast Zone 479

RAWS (in SIG)	Number	Elevation	Data Years	Model
Beus Canyon *	420403	5100'	2001 - 2011	7G
Otter Creek *	420912	7160'	2001 - 2011	7G
Pleasant Grove *	421101	5200'	2001 - 2011	7G
Rays Valley *	421103	7300'	2001 - 2011	7G

* These stations comply with NWCG Weather Station Standards (PMS 426-3)



Fire Danger PocketCard

Northern Utah Interagency Fire Center

http://fam.nwcg.gov/fam-web/pocketcards

Fire Danger Interpretation

Dispatch Levels	Burning Index – Model G	
	Wasatch Mtns	Uinta Mtns
High: Potential for high to extreme intensity. Expect high rates of spread, flame length, and control difficulty.	74 + (78th percentile)	59 + (78th percentile)
Moderate: Anticipate moderate fire intensity. The BI can change rapidly with variable weather conditions.	60 - 73	44 - 58
Low: Expect low fire intensity. Containment should be attainable. However, always be cautious.	0 - 59	0 - 43

Local (Critical) Thresholds: any of these factors will significantly increase the risk for extreme fire behavior. The more factors present, the greater the risk.

Weather Observations (for the Critical Percentile)	Wasatch FDRA (78th percentile)	Uinta FDRA (78th percentile)
20-ft Wind (mph)	> 9	> 10
Min. Relative Humidity (%)	< 12	< 12
Max. Temperature (°F)	> 88	> 89

- **Wind Gusts** exceeding 30 mph will increase the probability of erratic fire behavior and large fire growth.
- **Microbursts** are powerful downdrafts from thunderstorms which can seriously affect the spread rate, intensity, and direction from several miles away.
- **Lake Effect Winds** will enhance up-slope winds (in the afternoon) & down-slope winds (after sunset) resulting in unexpected fire intensity adjacent to the Great Salt Lake and Utah Lake.

Recent Fire Experience

Wasatch Mountains FDRA

Date	Fire Name	Size (ac)	BI	RH (%)	Temp (°F)	Wind (mph)
07/22/11	Cottonwood 2	25	79	11	88	10
07/26/10	Green Canyon	25	81	11	93	9
08/16/09	Hobble Creek	157	77	19	70	10
08/25/08	Corner Canyon	808	87	11	94	9

Uinta Mountains FDRA

Date	Fire Name	Size (ac)	BI	RH (%)	Temp (°F)	Wind (mph)
09/21/10	C1	2.0	84	11	71	8
09/01/09	Gilbert Creek	0.5	65	16	76	5
09/14/09	Christmas	0.3	58	34	64	5
06/29/02	East Fork	14,208	85	10	77	8

Burning Index (BI) Facts:

- BI is an index representing the potential difficulty containing a fire due to flame length (intensity) at the head of the fire
- BI is very sensitive to small fluctuations in wind speed
- BI with Fuel Model G has a very good statistical correlation to large fire occurrence in Northern Utah.

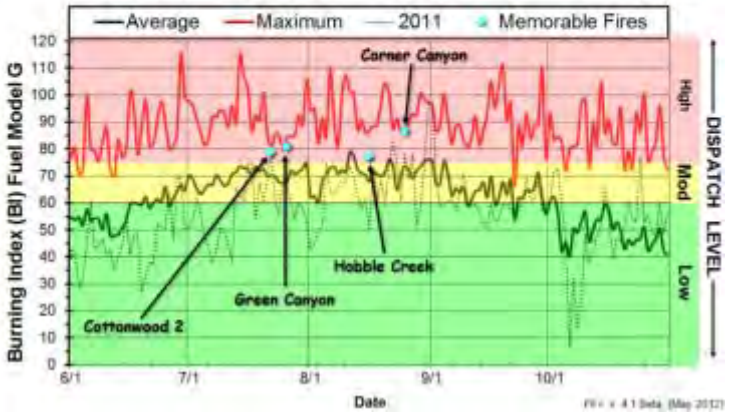
Updated: May 2012

Wasatch Mountains FDRA

NWS Forecast Zone 479

RAWS (in SIG)	Number	Elevation	Data Years	Model
Beus Canyon *	420403	5100'	2001 - 2011	7G
Otter Creek *	420912	7160'	2001 - 2011	7G
Pleasant Grove *	421101	5200'	2001 - 2011	7G
Rays Valley *	421103	7300'	2001 - 2011	7G

* These stations comply with NWCG Weather Station Standards (PMS 426-3)

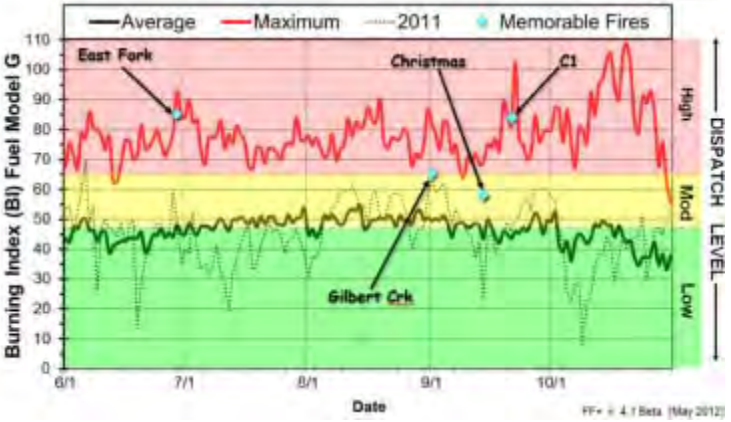


Uinta Mountains FDRA

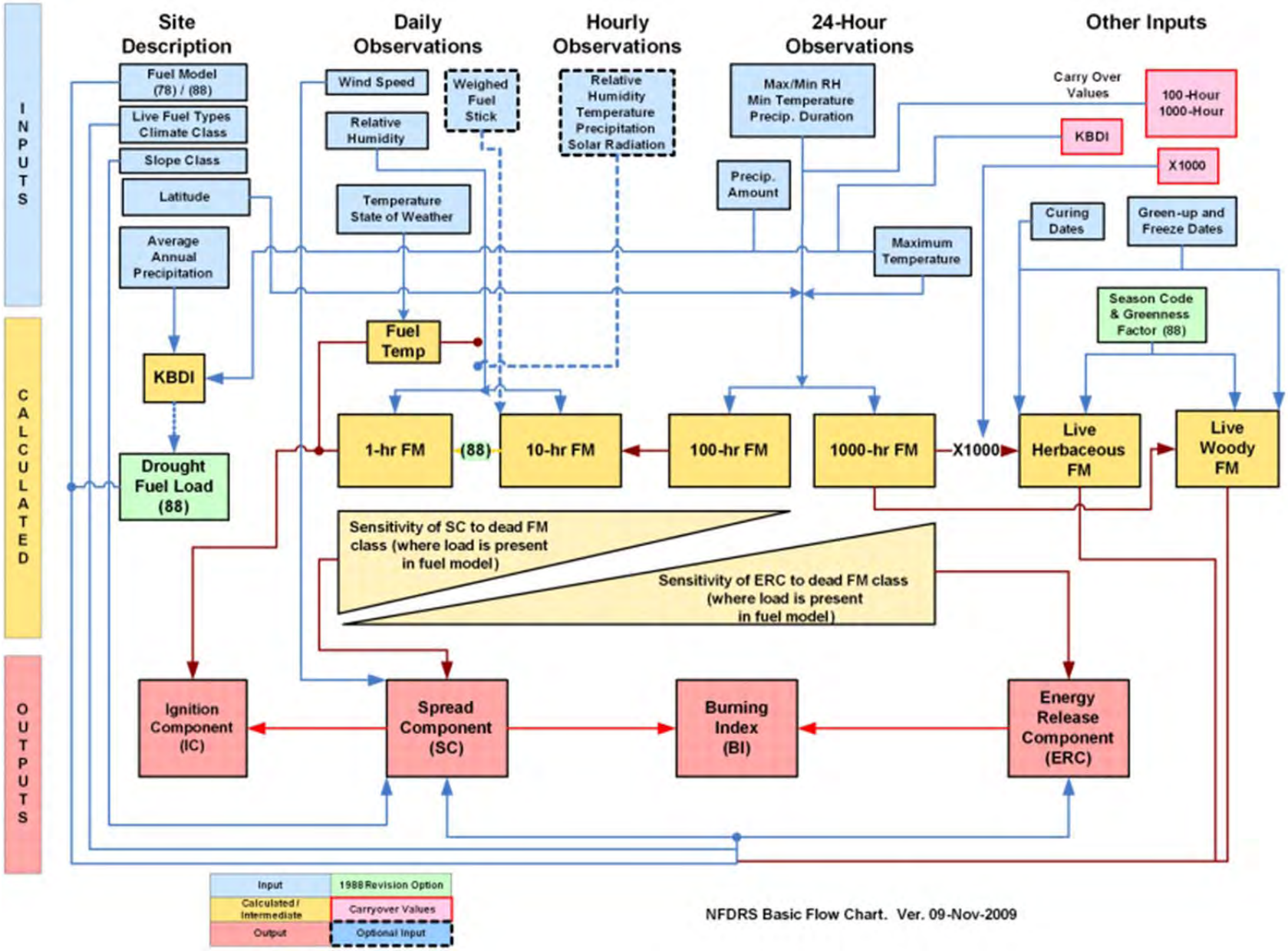
NWS Forecast Zone 480

RAWS (in SIG)	Number	Elevation	Data Years	Model
Bear River *	420703	8536'	1990 - 2011	7G
Hewinta *	420705	9186'	1990 - 2011	7G
Norway Flat *	420706	8280'	1990 - 2011	7G

* These stations comply with NWCG Weather Station Standards (PMS 426-3)

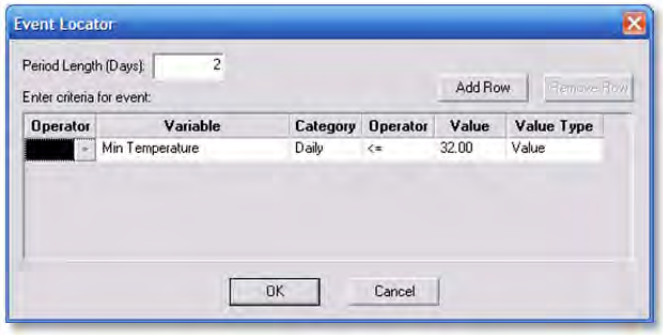


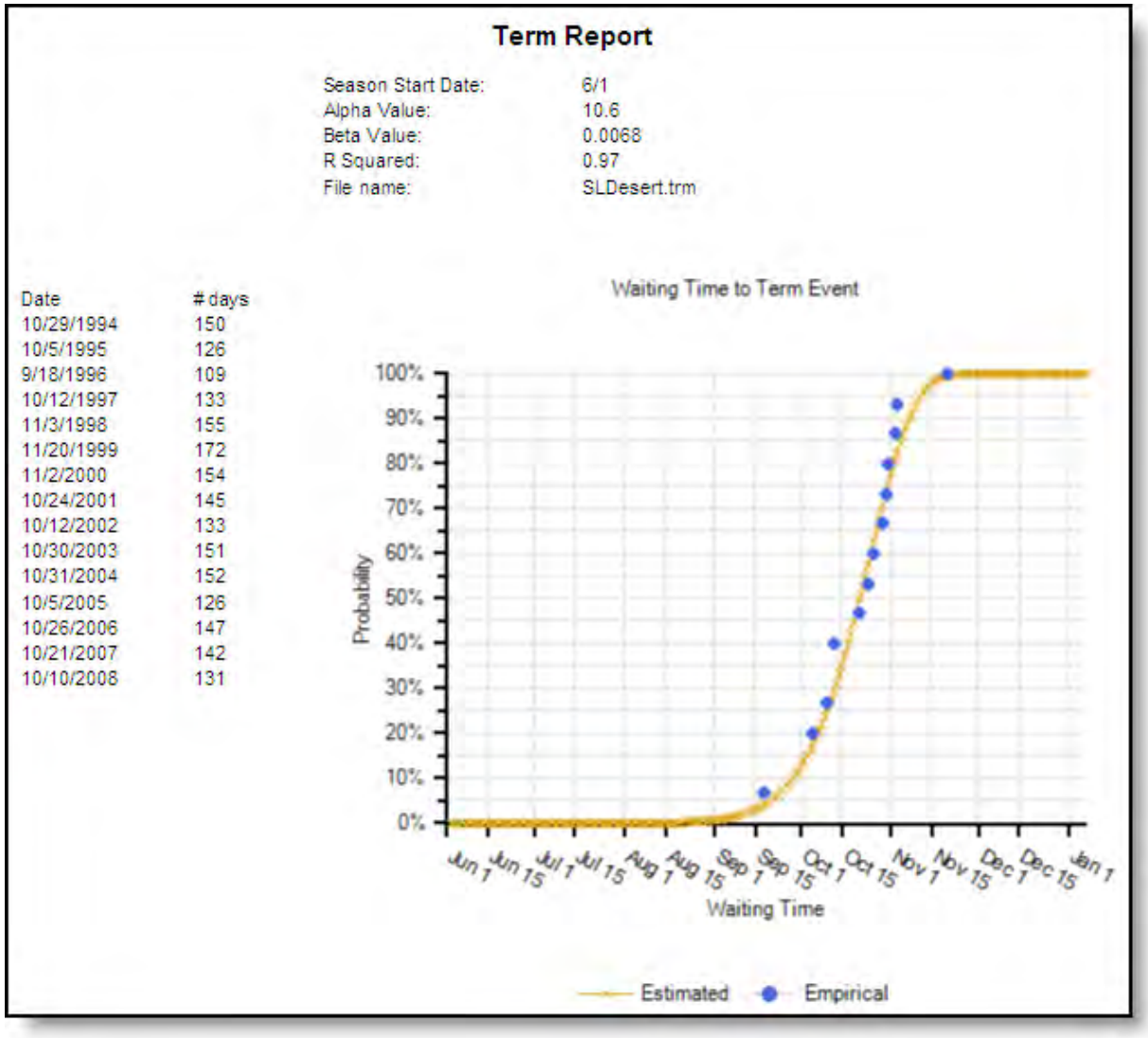
Appendix I – NFDRS Structure Chart



Appendix J – RERAP Analysis (Season-Ending Event Probabilities)

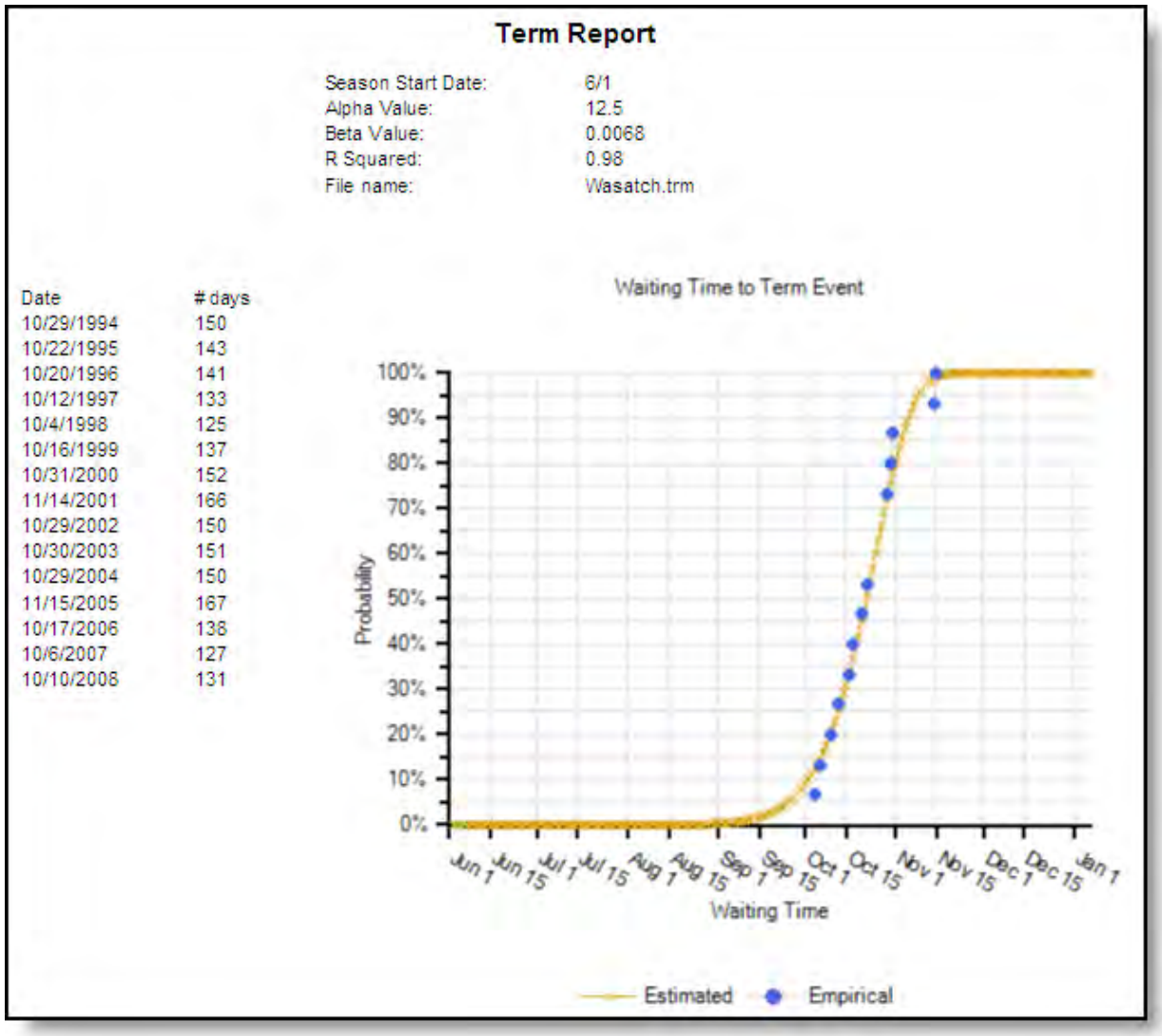
Salt Lake Desert FDRA





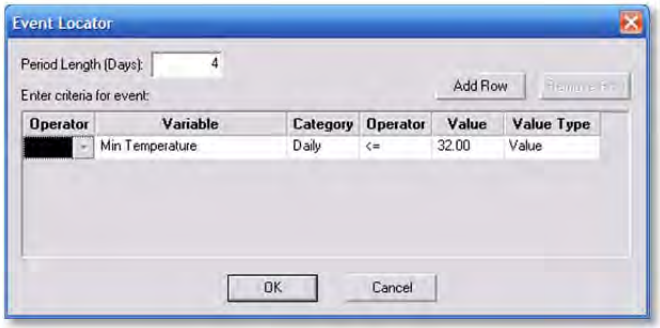
RERAP Analysis (Season-Ending Event Probabilities)

Wasatch Mountains FDRA



RERAP Analysis (Season-Ending Event Probabilities)

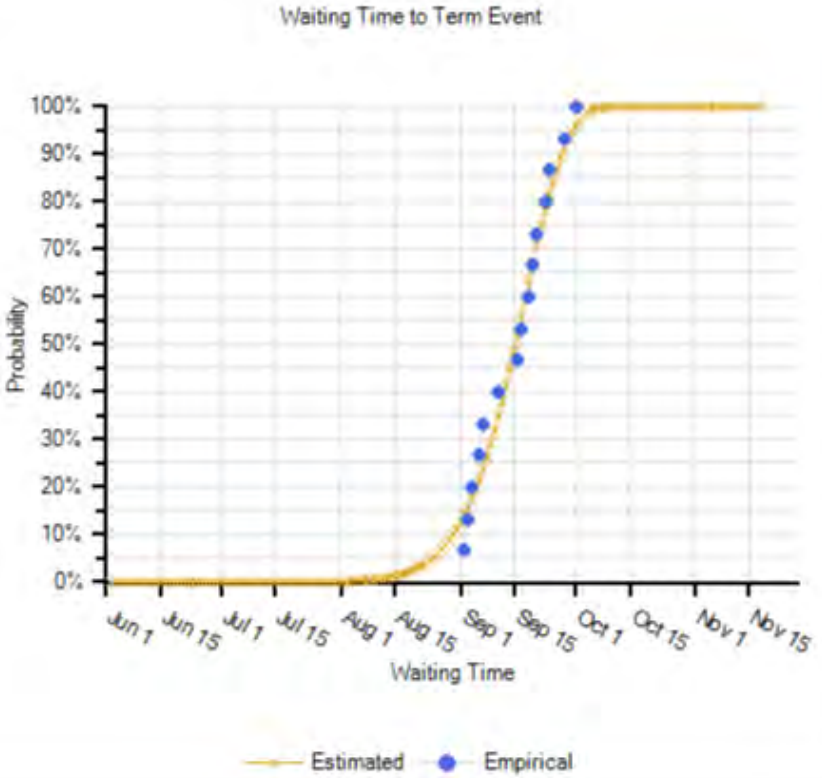
Uinta Mountains FDRA



Term Report

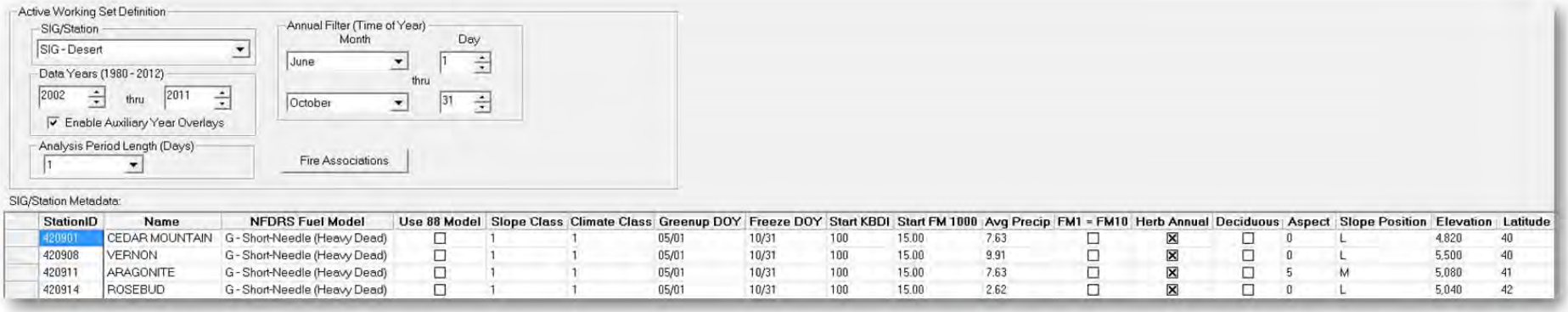
Season Start Date:	6/1
Alpha Value:	11.3
Beta Value:	0.0091
R Squared:	0.97
File name:	Uinta.trm

Date	# days
9/4/1994	95
9/21/1995	112
9/6/1996	97
9/28/1997	119
9/19/1998	110
9/3/1999	94
9/23/2000	114
9/7/2001	98
10/1/2002	122
9/17/2003	108
9/20/2004	111
9/11/2005	102
9/16/2006	107
9/24/2007	115
9/2/2008	93

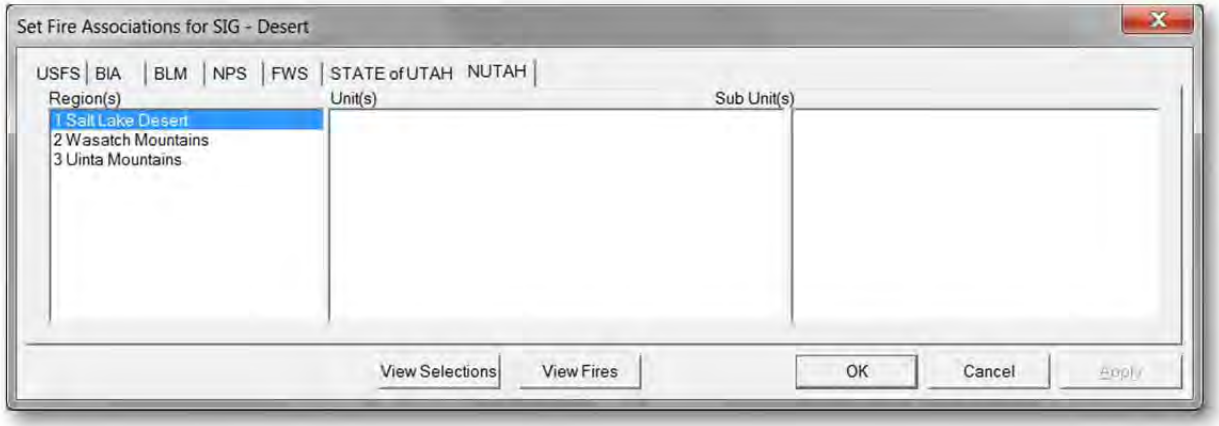


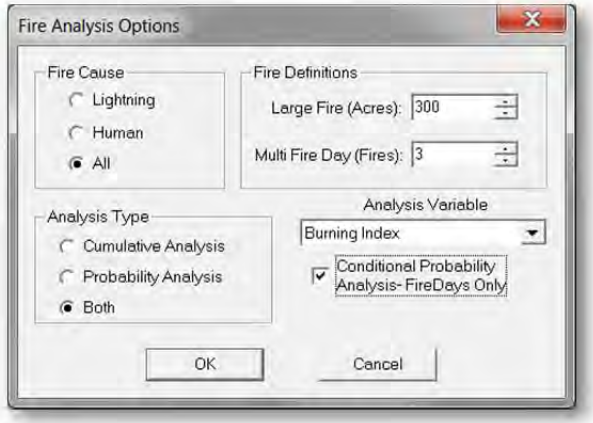
Appendix K – FireFamilyPlus Analysis

Working Set (Salt Lake Desert FDRA)

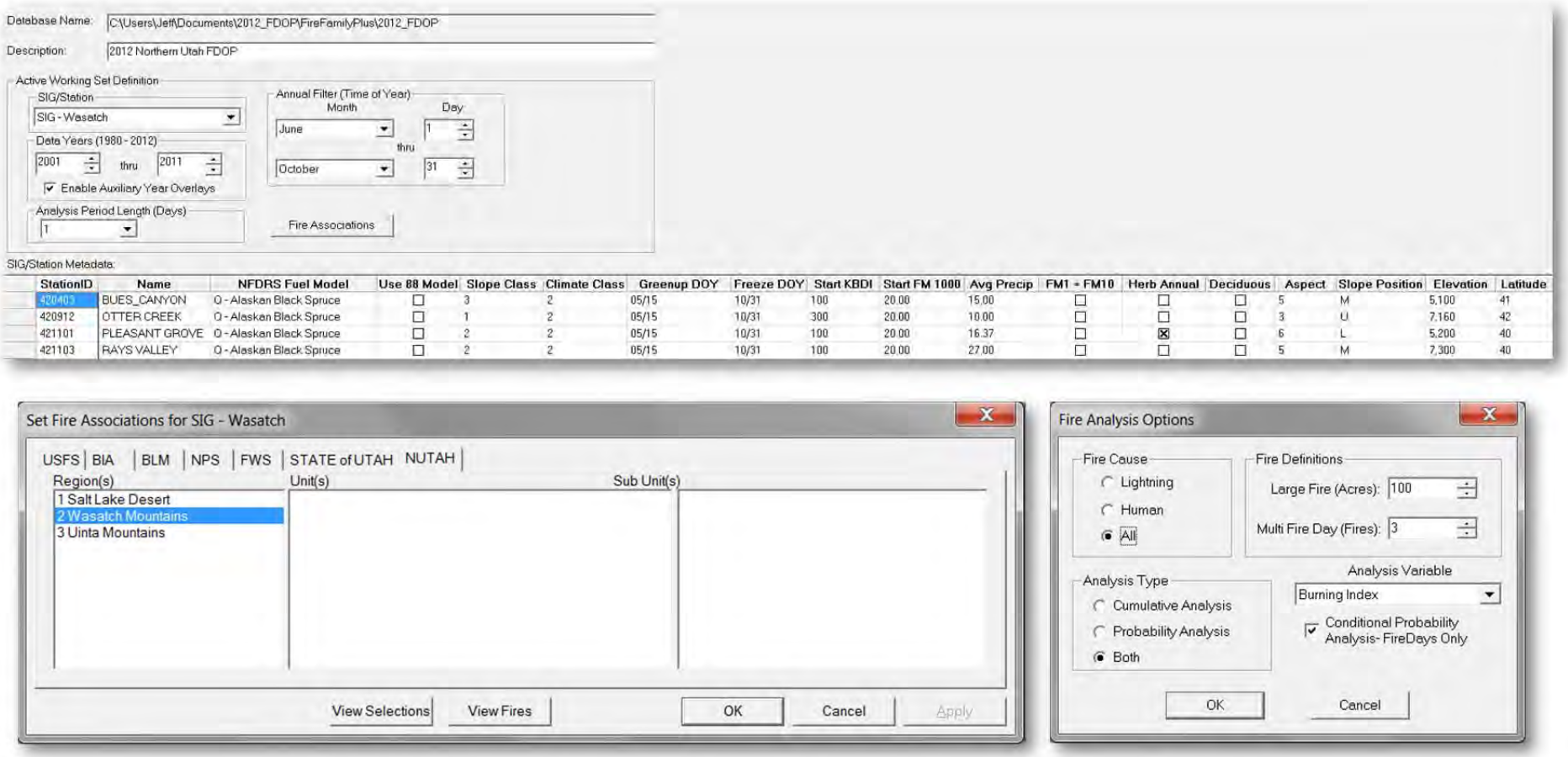


StationID	Name	NFDRS Fuel Model	Use 88 Model	Slope Class	Climate Class	Greenup DOY	Freeze DOY	Start KBDI	Start FM 1000	Avg Precip	FM1 = FM10	Herb Annual	Deciduous	Aspect	Slope Position	Elevation	Latitude
420901	CEDAR MOUNTAIN	G - Short-Needle (Heavy Dead)	☐	1	1	05/01	10/31	100	15.00	7.63	☐	☒	☐	0	L	4,820	40
420908	VERNON	G - Short-Needle (Heavy Dead)	☐	1	1	05/01	10/31	100	15.00	9.91	☐	☒	☐	0	L	5,500	40
420911	ARAGONITE	G - Short-Needle (Heavy Dead)	☐	1	1	05/01	10/31	100	15.00	7.63	☐	☒	☐	5	M	5,080	41
420914	ROSEBUD	G - Short-Needle (Heavy Dead)	☐	1	1	05/01	10/31	100	15.00	2.62	☐	☒	☐	0	L	5,040	42

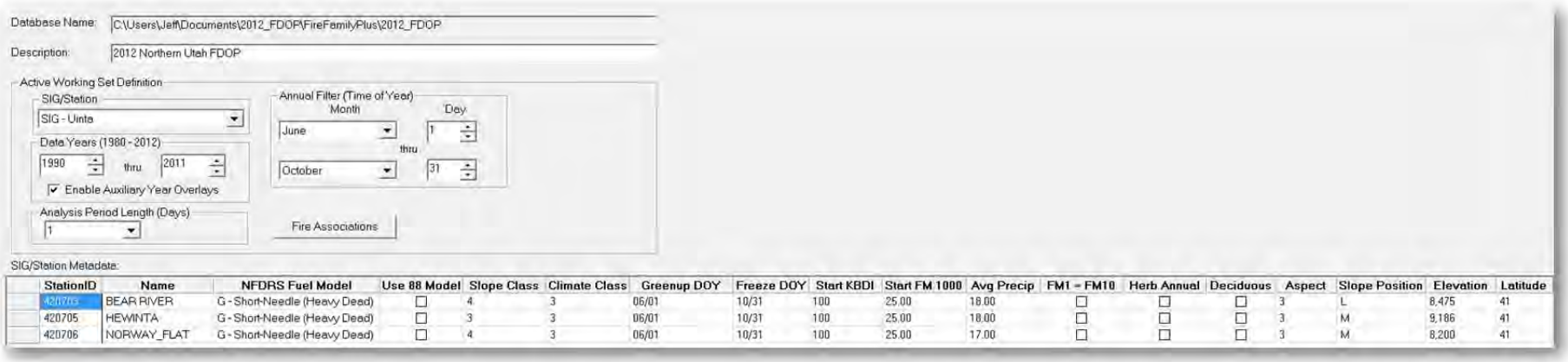


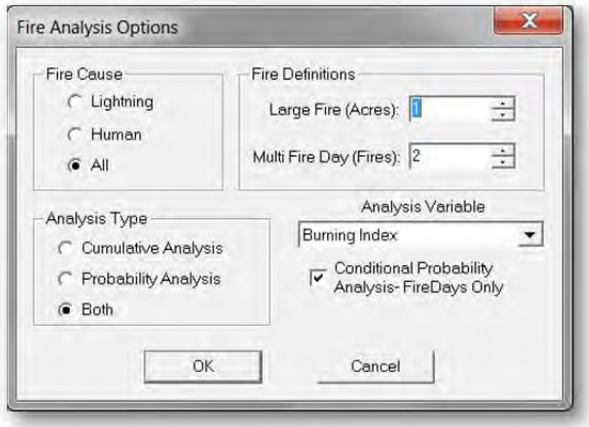


Working Set (Wasatch Mountains FDRA)

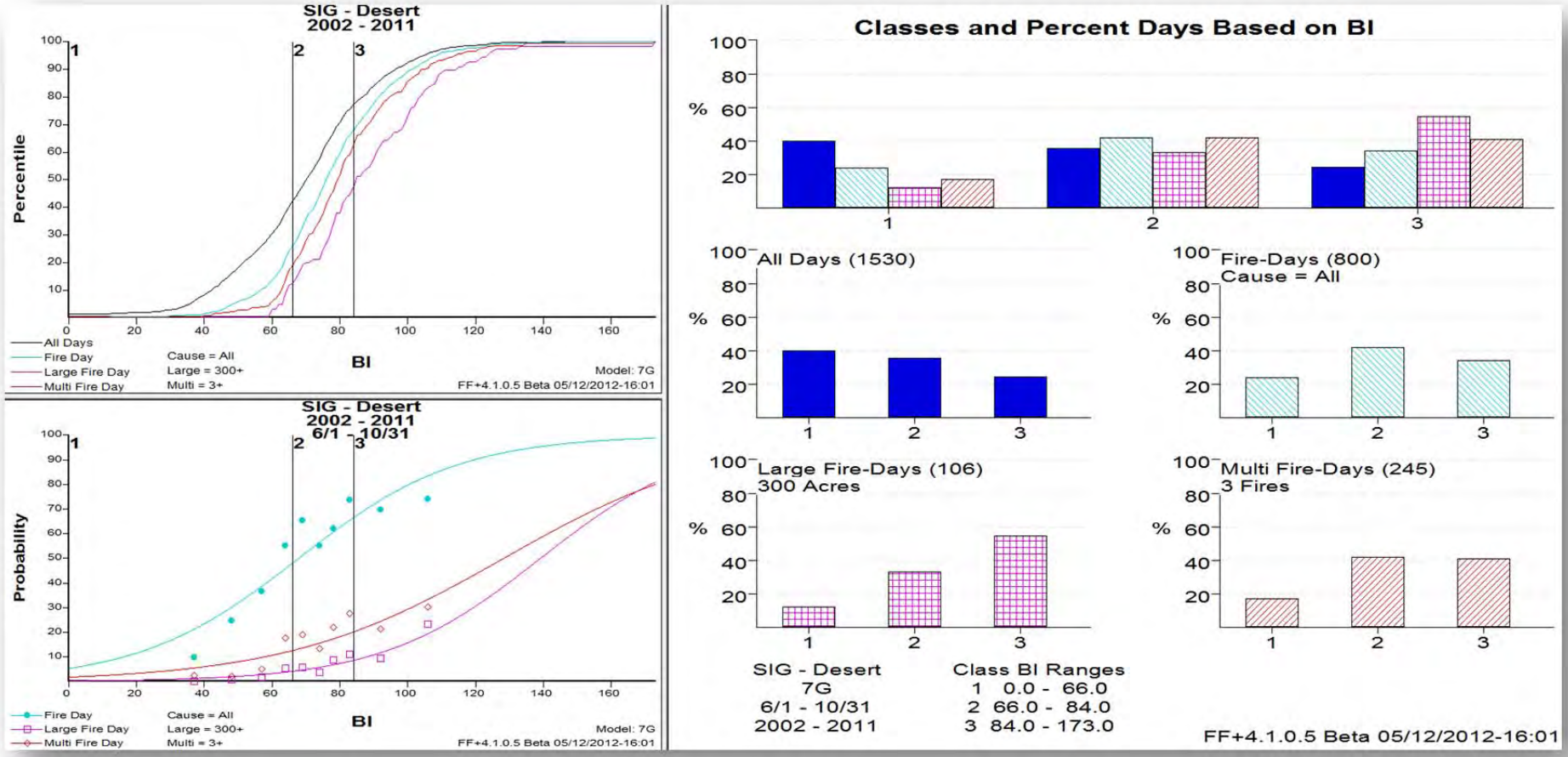


Working Set (Uinta Mountains FDRA)

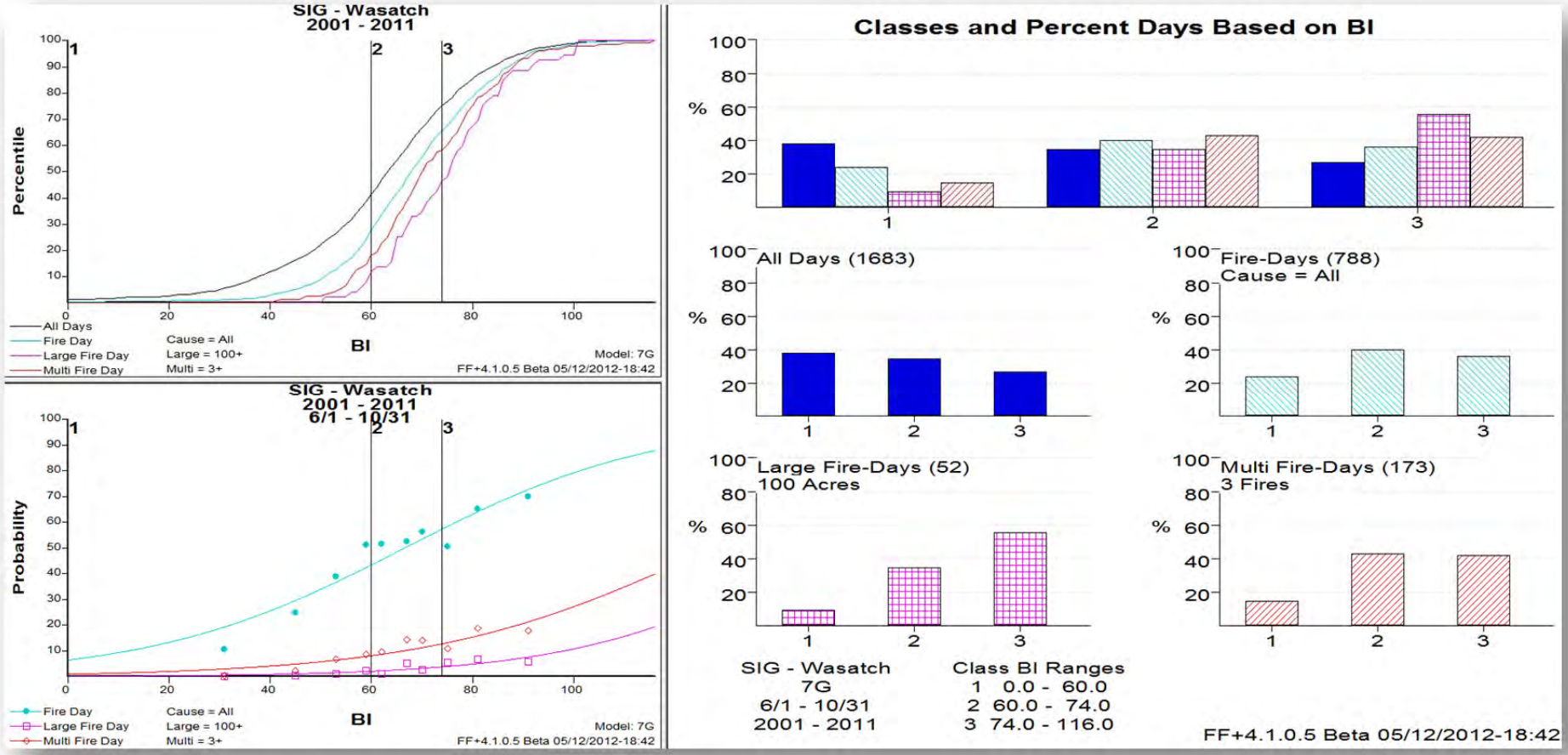




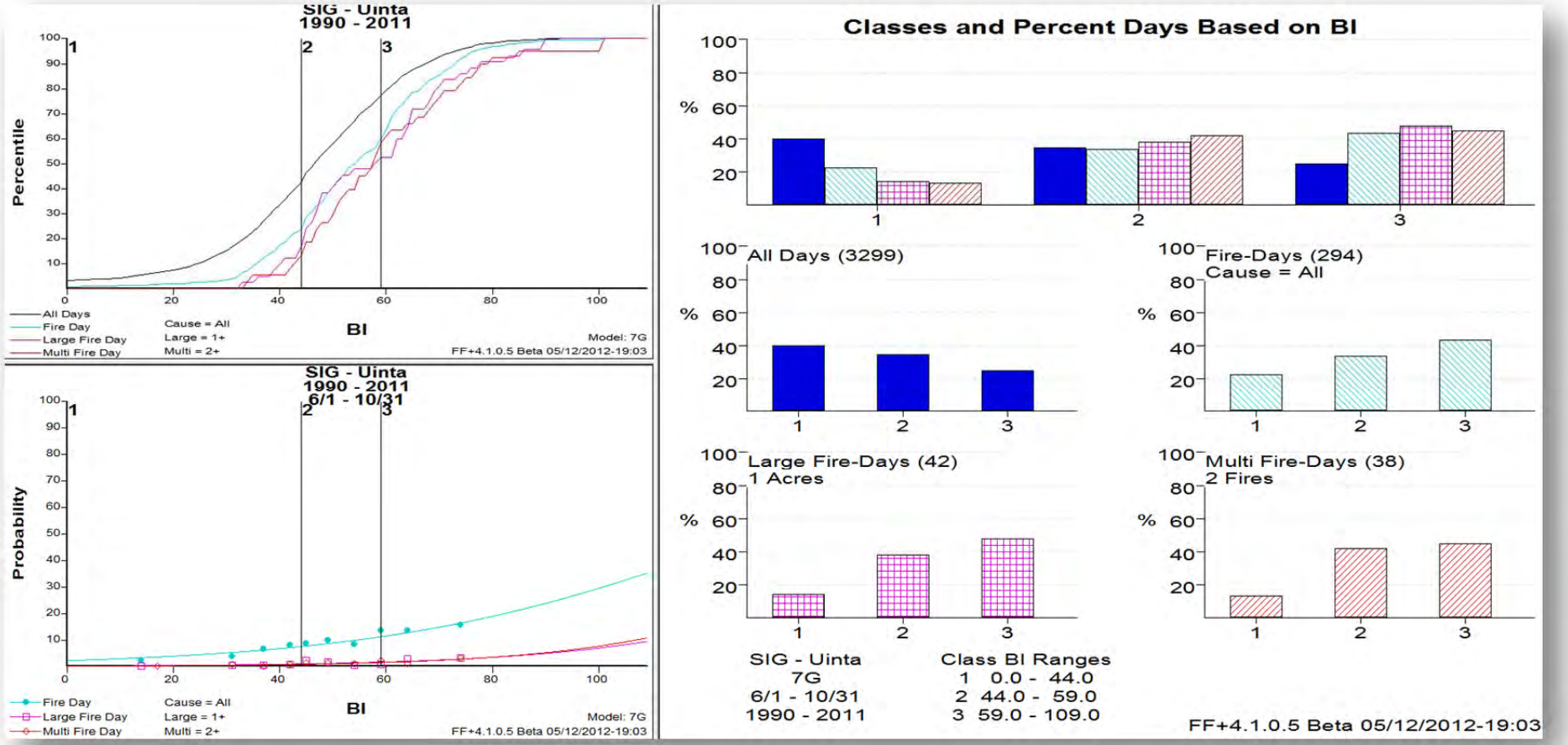
Dispatch Level Decision Points (Salt Lake Desert FDRA)



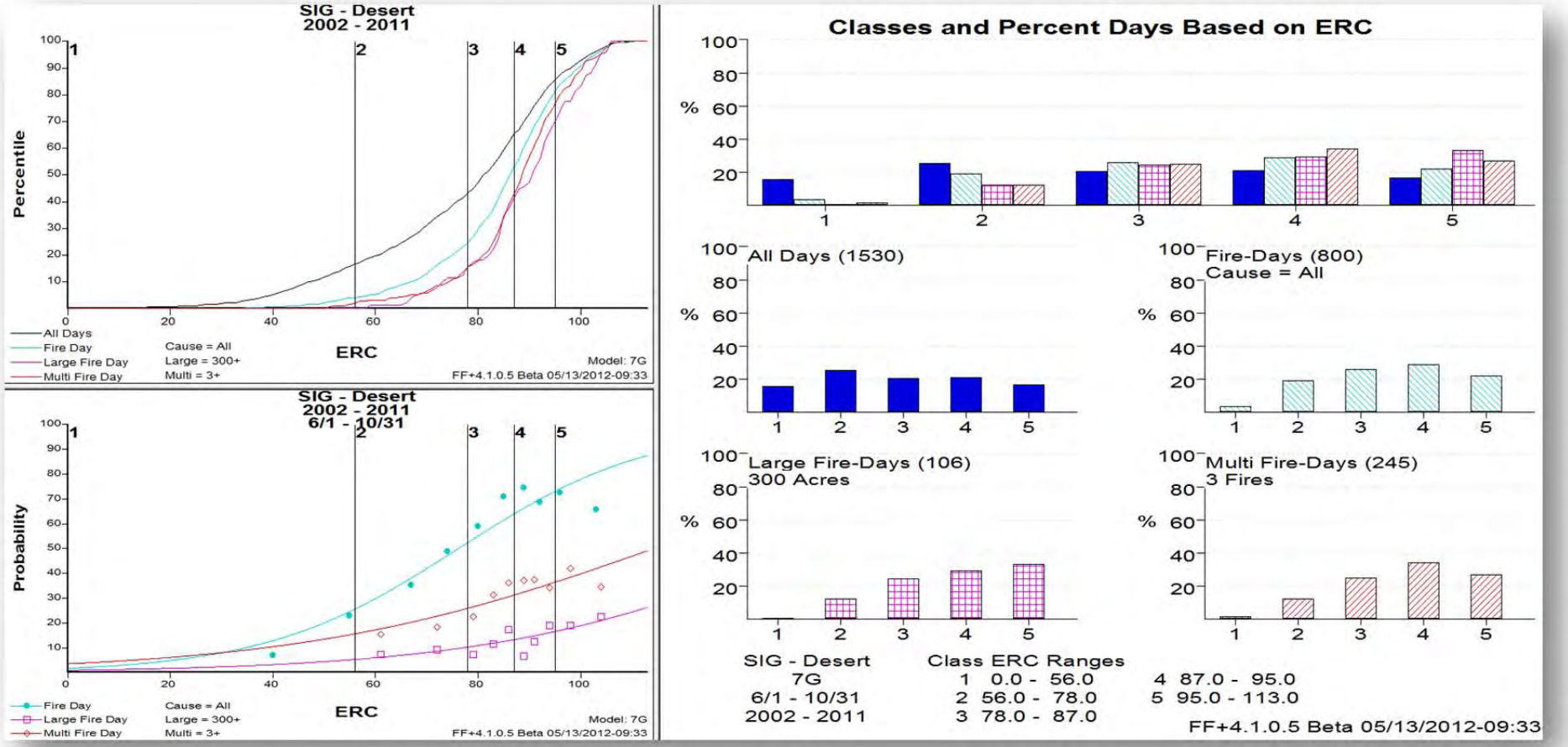
Dispatch Level Decision Points (Wasatch Mountains FDRA)



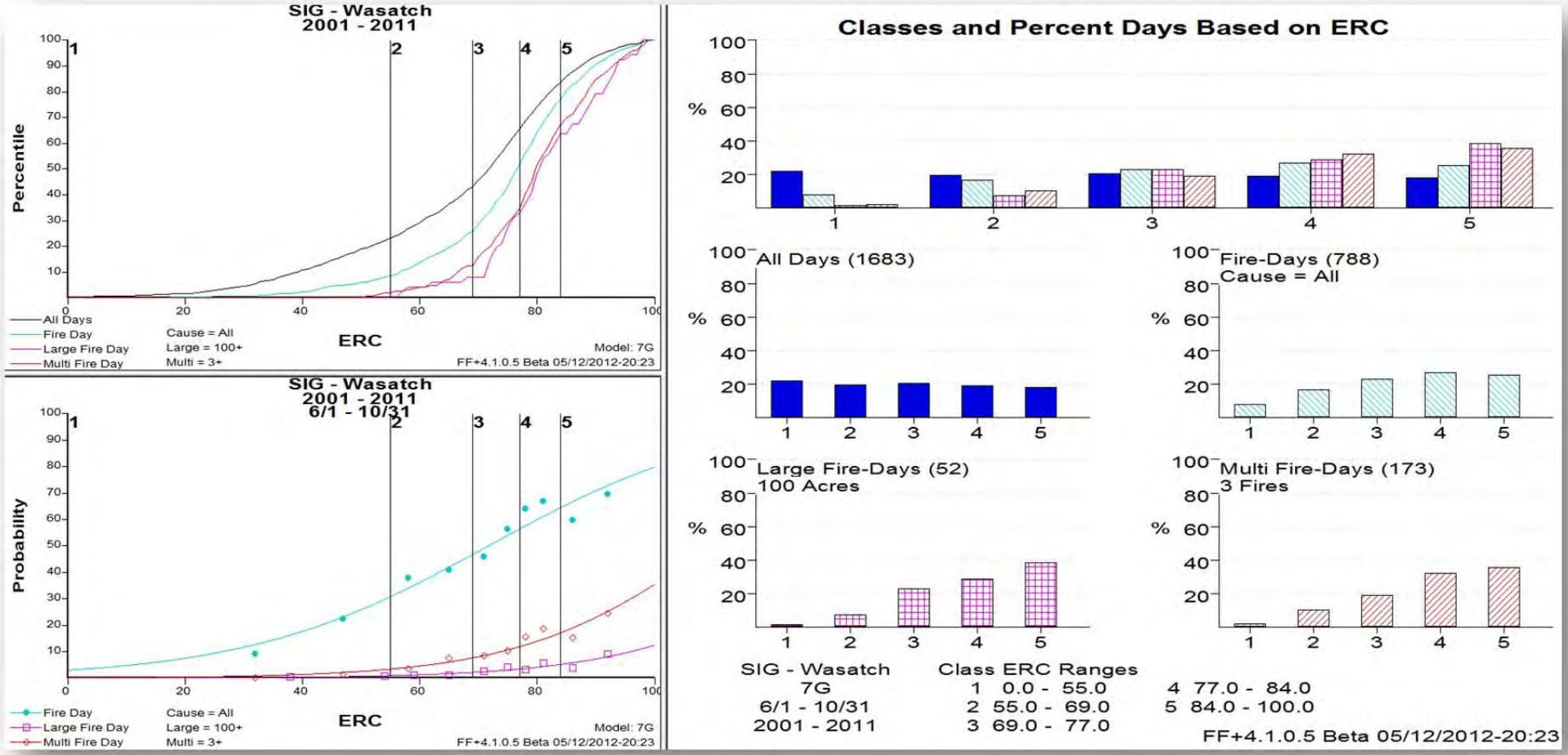
Dispatch Level Decision Points (Uinta Mountains FDRA)



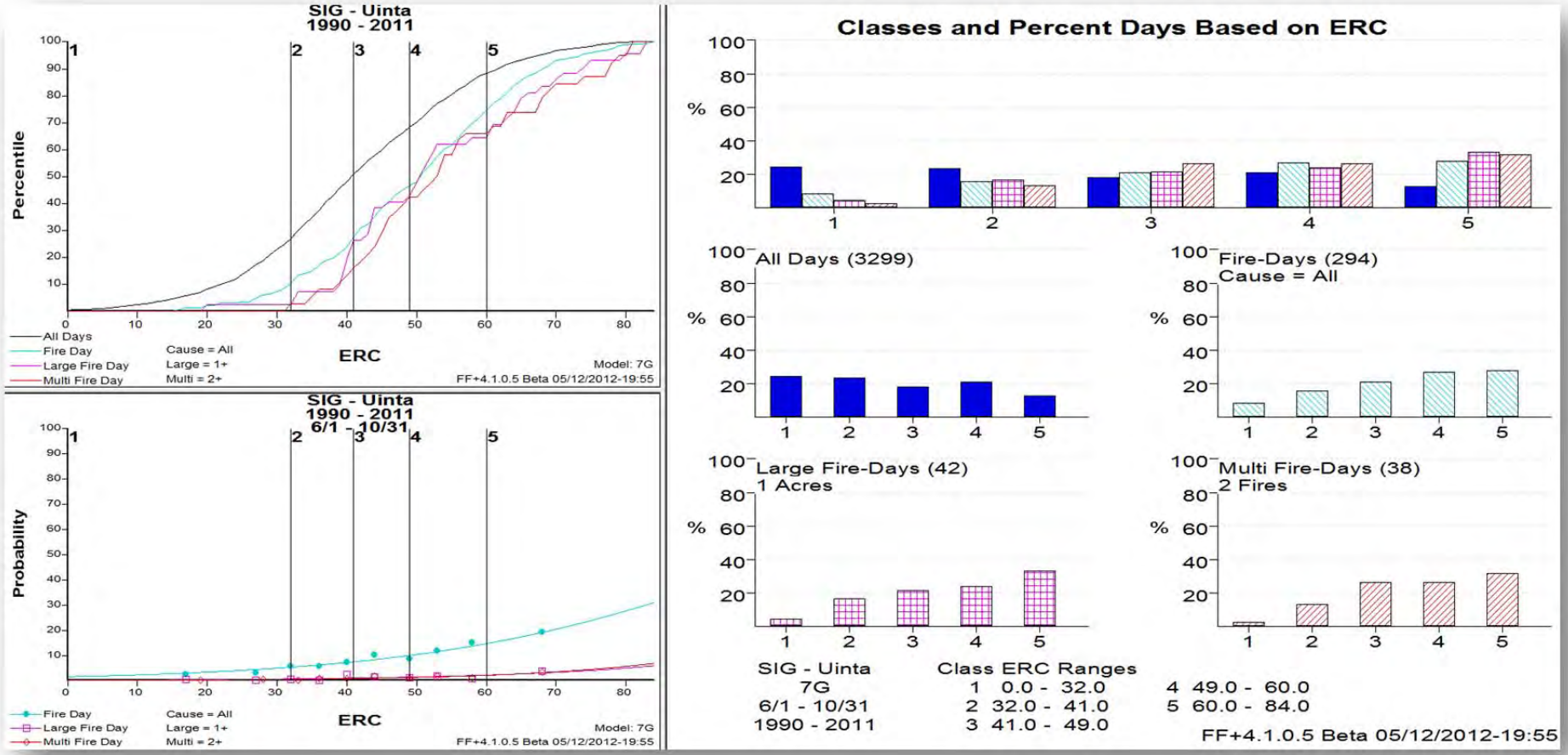
Preparedness Level Decision Points (Salt Lake Desert FDRA)



Preparedness Level Decision Points (Wasatch Mountains FDRA)

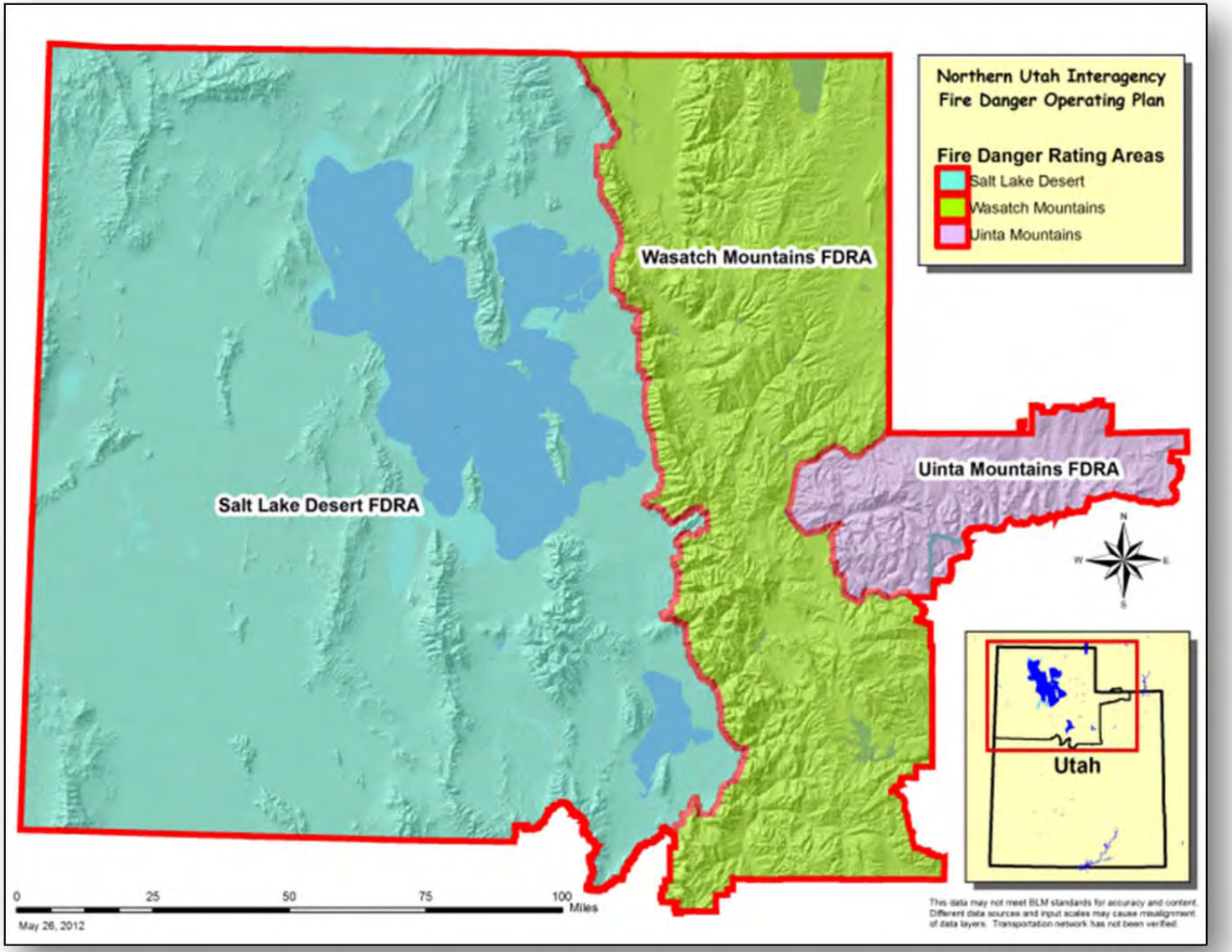


Preparedness Level Decision Points (Uinta Mountains FDRA)

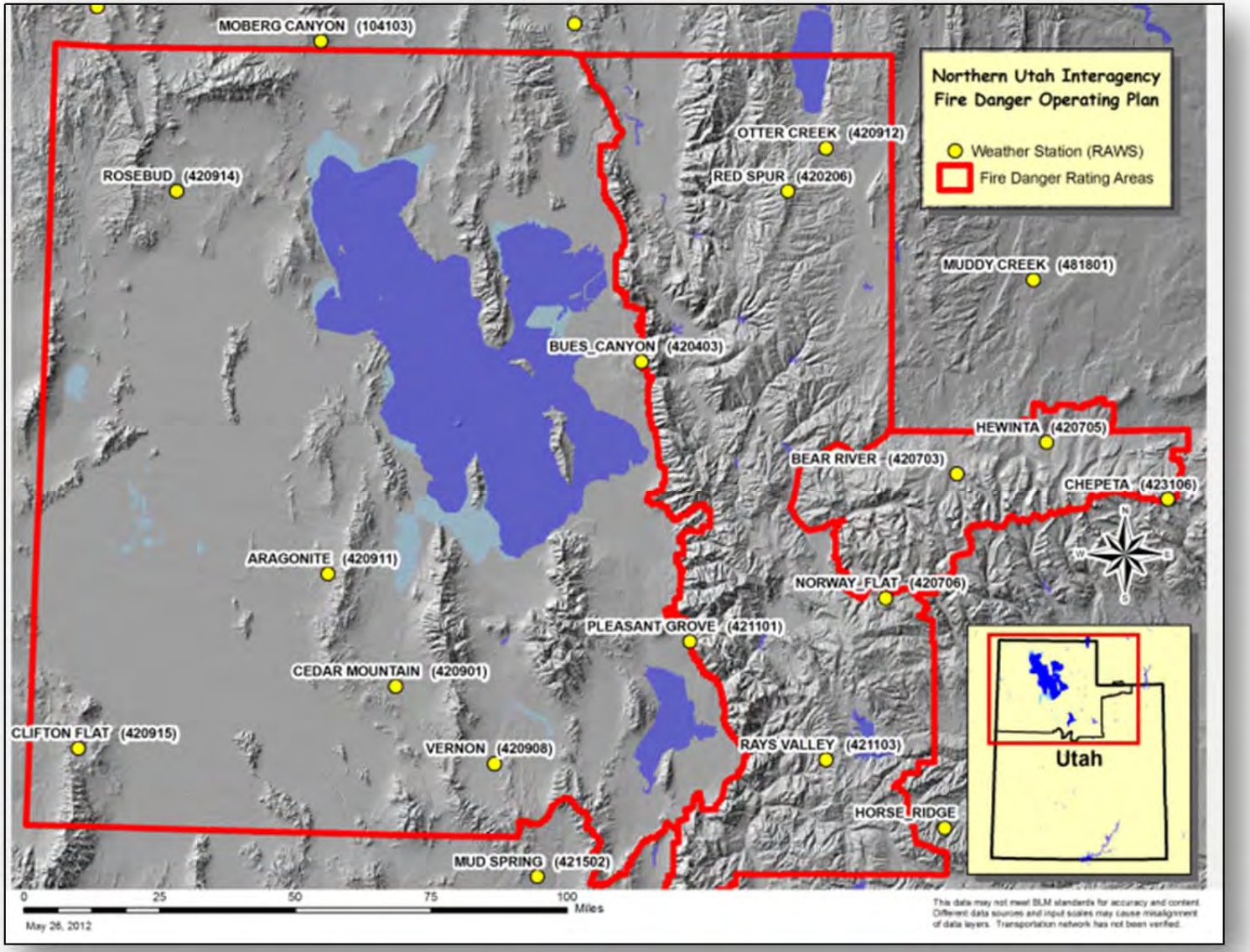


Appendix L – Maps

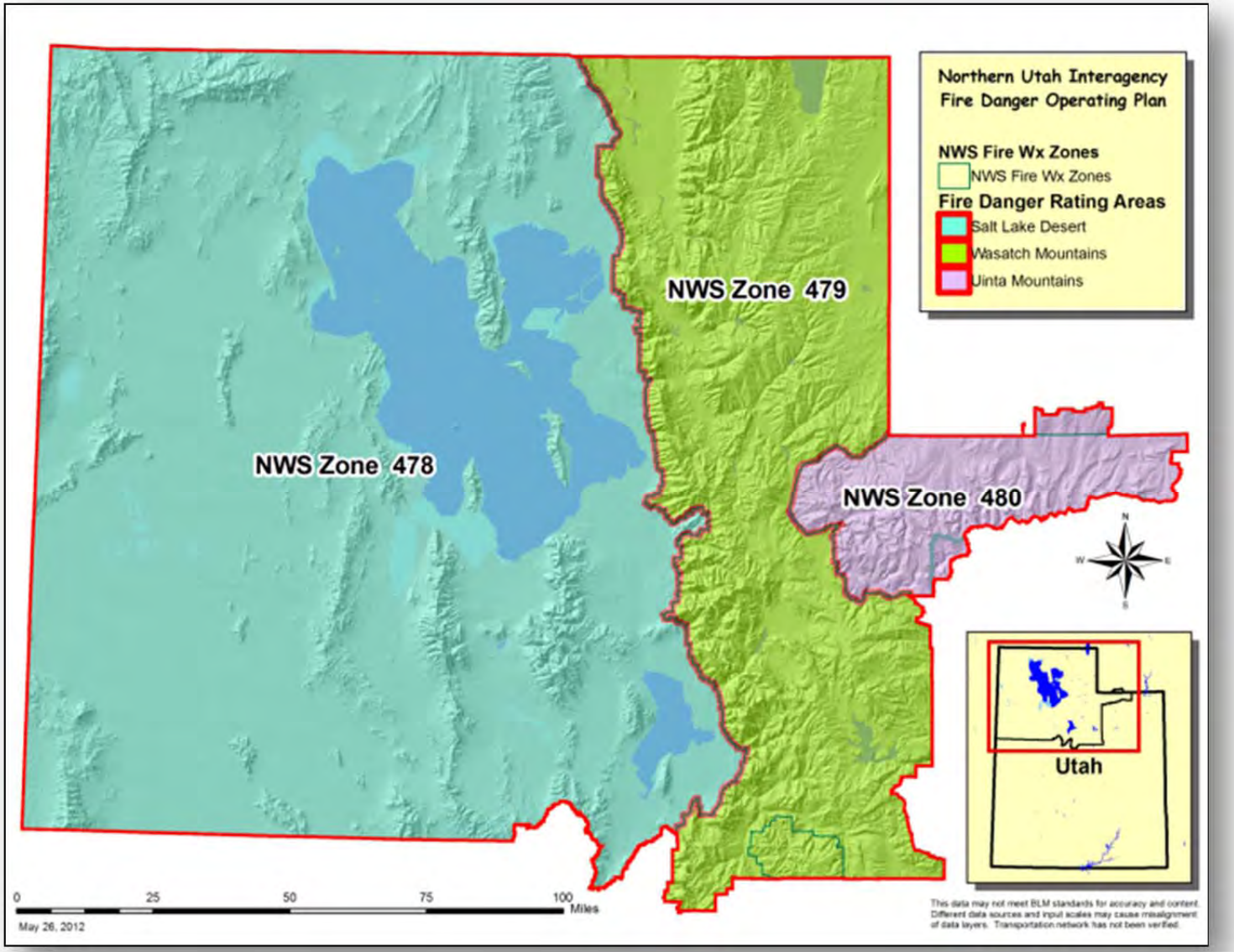
Fire Danger Rating Areas



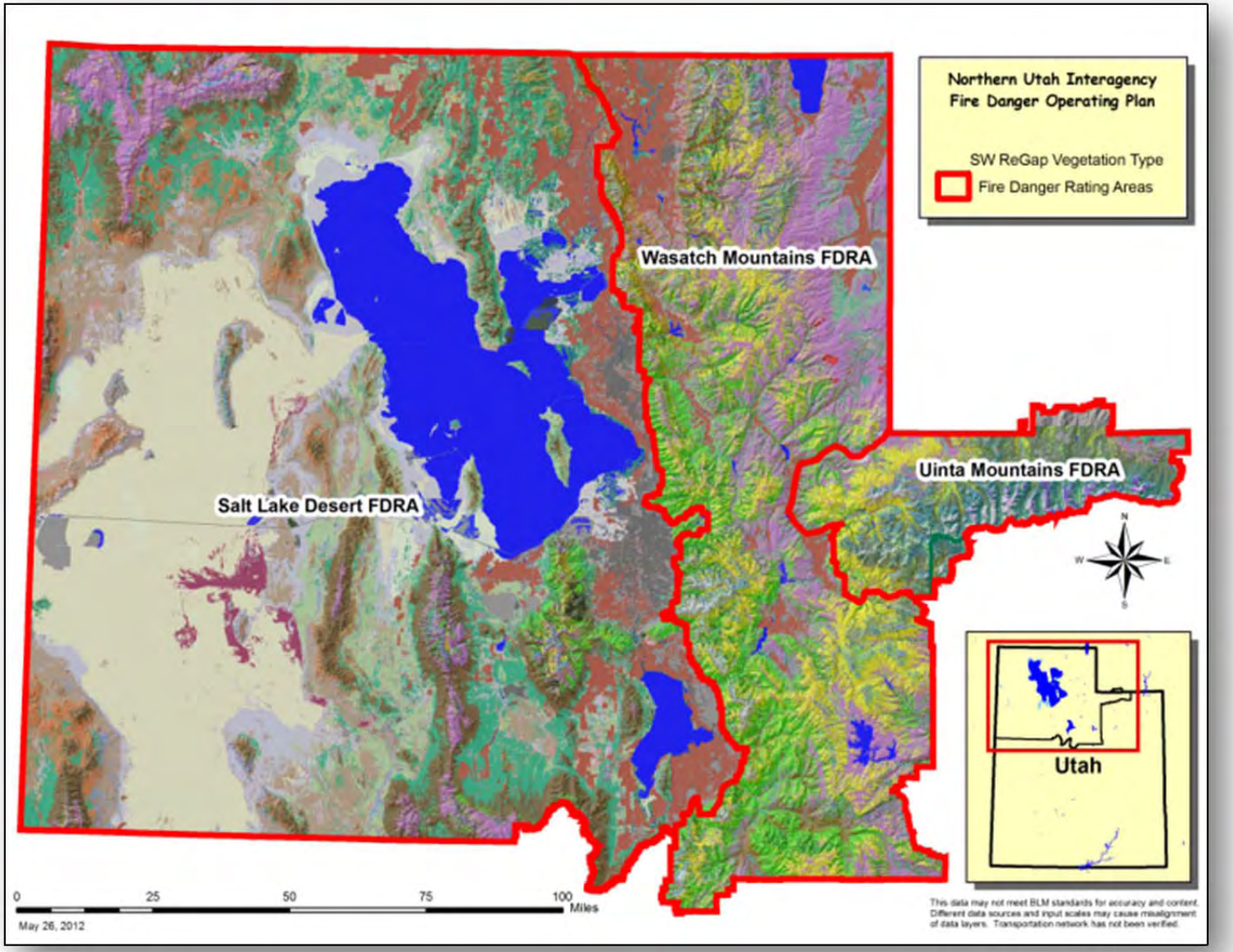
Remote Automated Weather Stations (RAWS)



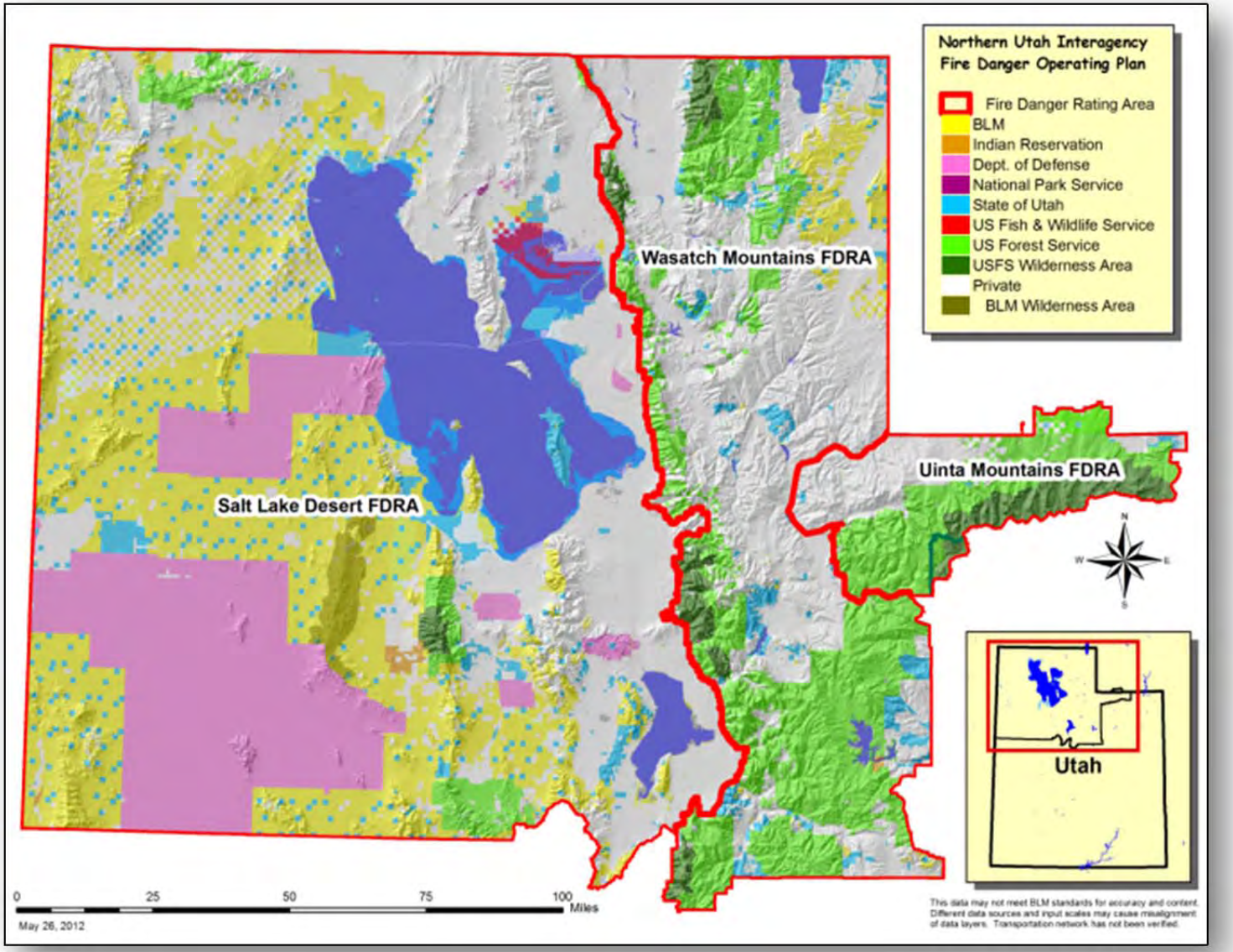
National Weather Service Forecast Zones



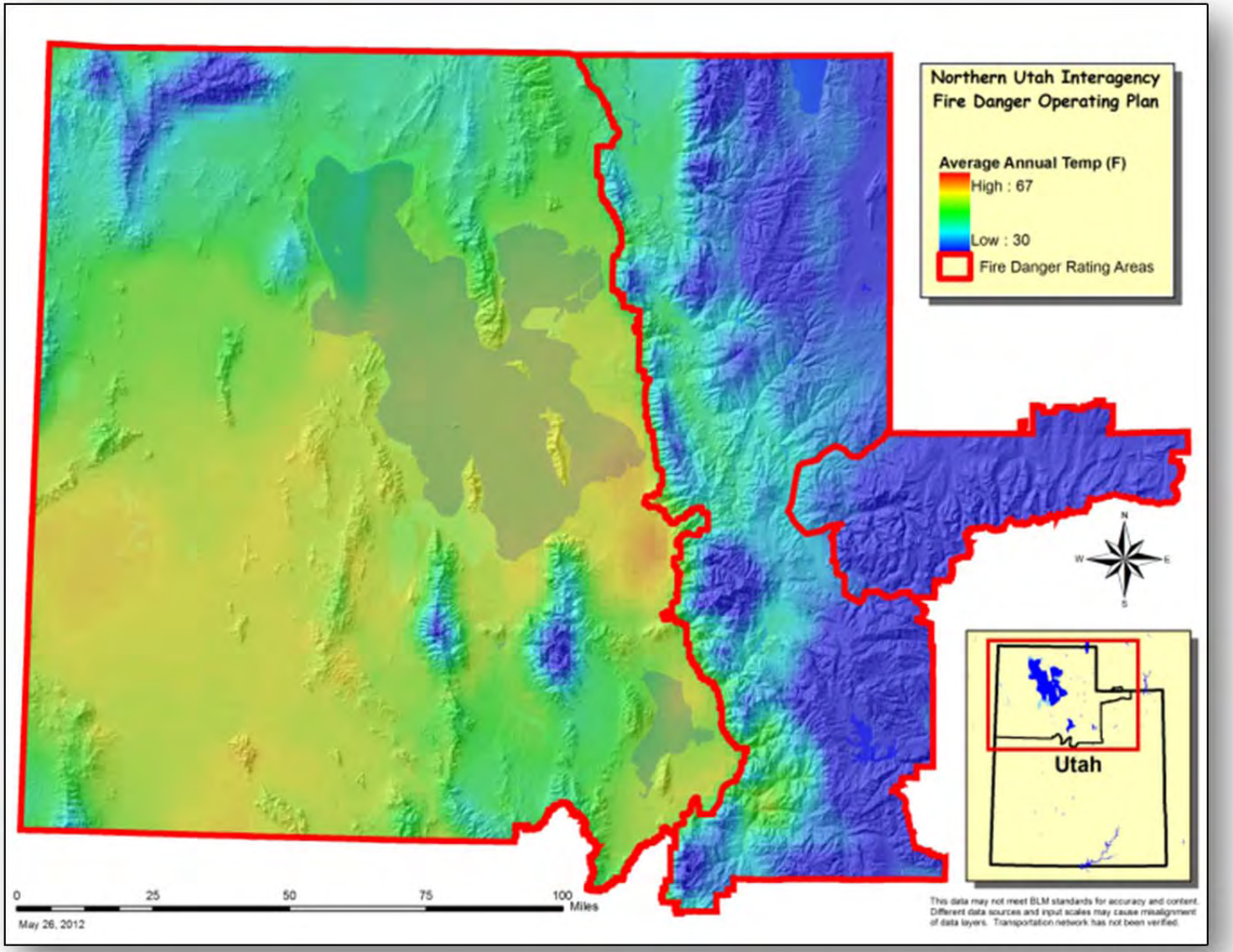
Vegetation (SWReGAP)



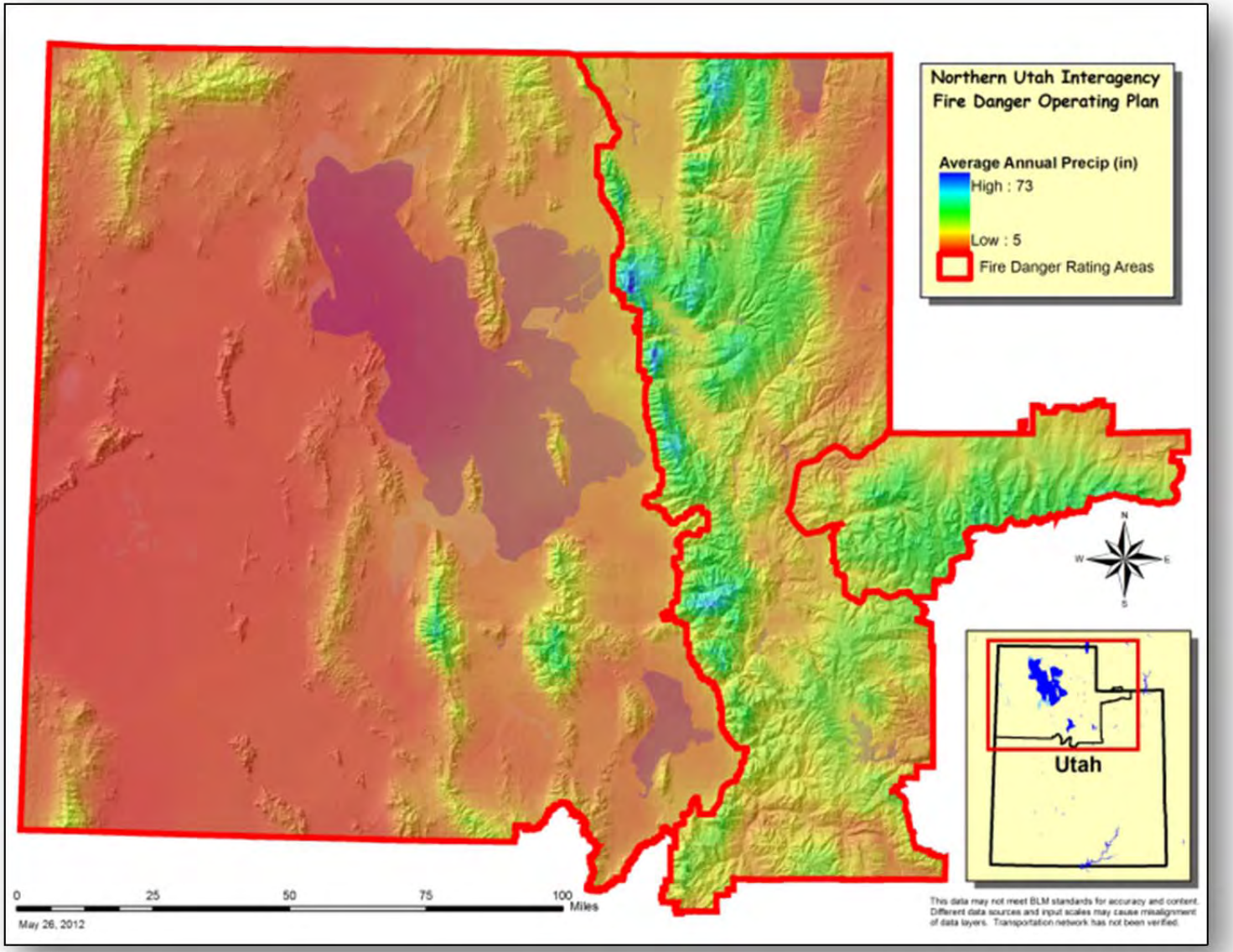
Ownership


Northern Utah Interagency
Fire Danger Operating Plan
Fire Danger Rating Area
BLM
Indian Reservation
Dept. of Defense
National Park Service
State of Utah
US Fish & Wildlife Service
US Forest Service
USFS Wilderness Area
Private
BLM Wilderness Area
Wasatch Mountains FDRA
Uinta Mountains FDRA
Salt Lake Desert FDRA
Utah
0
25
50
75
100
Miles
May 26, 2012
This data may not meet BLM standards for accuracy and content. Different data sources and input scales may cause misalignment of data layers. Transportation network has not been verified.

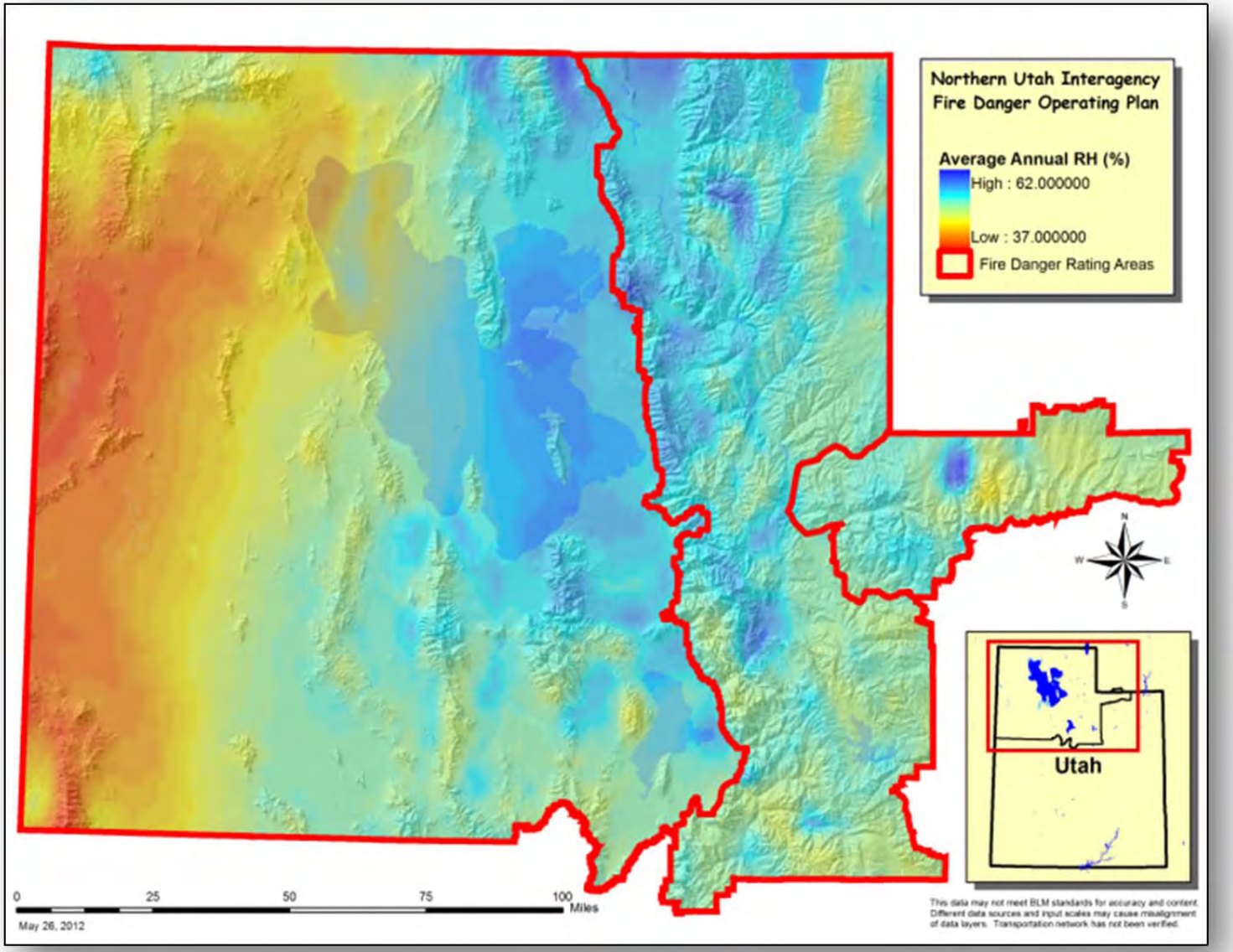
Climate – PRISM (Annual Average Temperature)



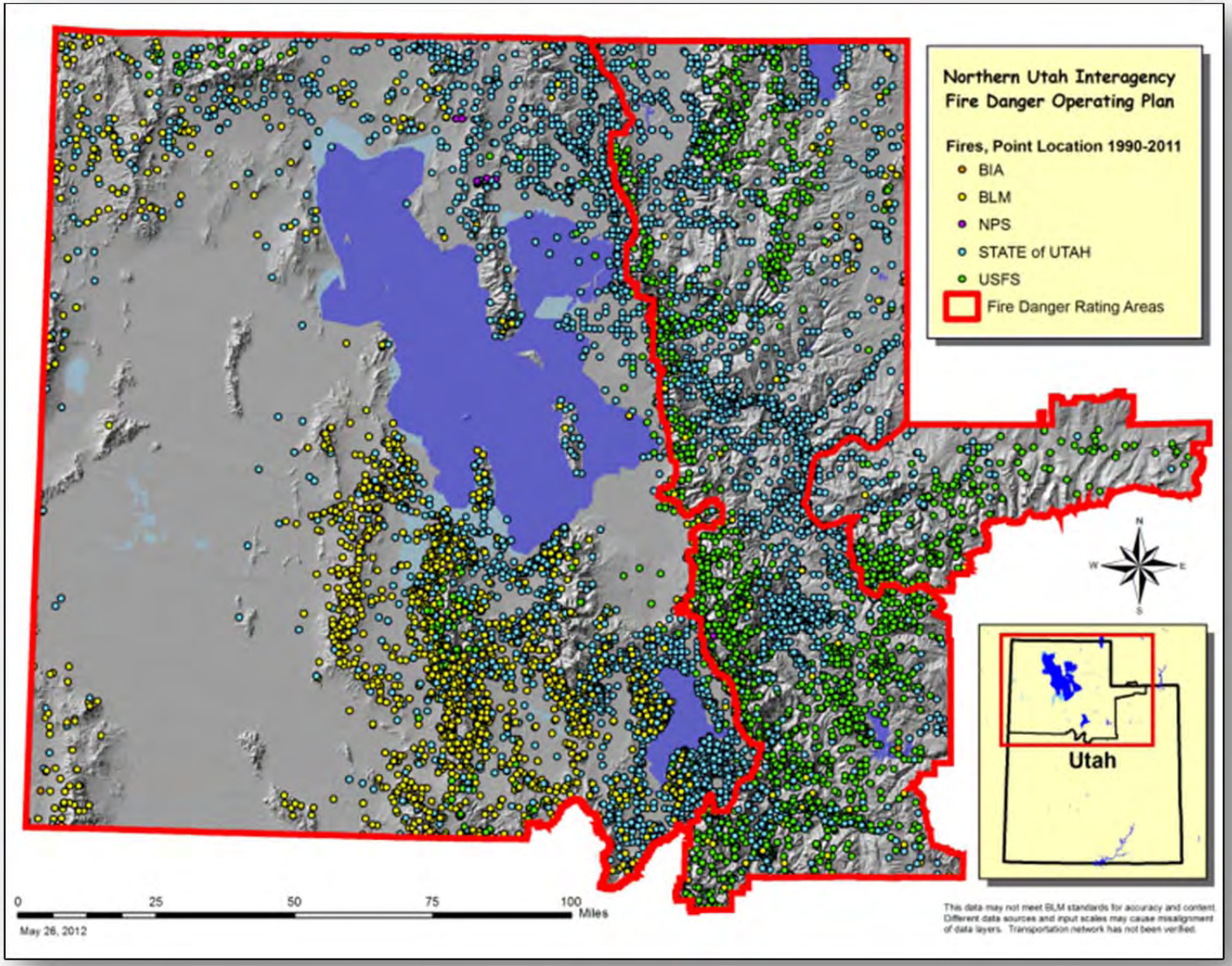
Climate – PRISM (Annual Average Precipitation)



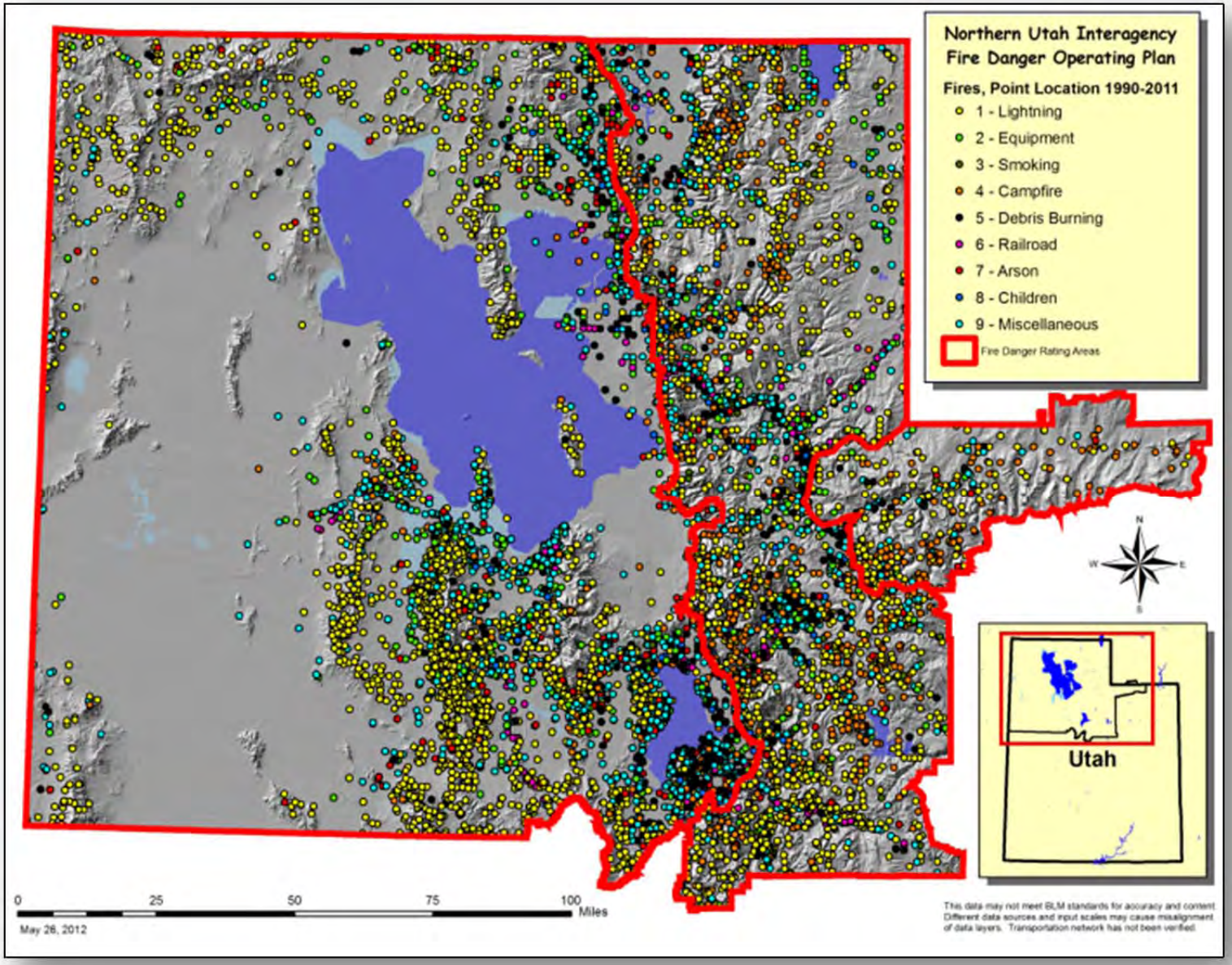
Climate – PRISM (Annual Average Relative Humidity)



Fire Occurrence (Point Location by Agency)



Fire Occurrence (Point Location by Cause)



Fire Occurrence (Large Fire Perimeters)