APPENDIX G

FIRE WEATHER OPERATING PLAN

NATIONAL FIRE DANGER RATING SYSTEM OPERATING PLAN
Fire Weather Operating Plan

Amador-El Dorado- Sacramento-Alpine Unit
California Department of Forestry and Fire Protection
Amador, El Dorado, Alpine, Sacramento, and portions of San Joaquin Counties and the Tahoe Basin

April 21, 2010

Camanche Fire July 10th 2006 Buena Vista Buttes, Amador County

Plan Prepared By:

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Justin Sanders, ECC Chief, Amador El Dorado Unit, CAL FIRE **Date**

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I. Introduction

This National Fire Danger Rating System Fire Danger Operating Plan discusses the setup and management of the National Fire Danger Rating System (NFDRS) fire danger modeling program for the Amador-El Dorado-Sacramento-Alpine Unit (AEU). Fire danger is only one factor affecting operational decision making. The analysis framework used to develop this operating plan tries to account for the weather, fuels and topography driven factors as they affect fire danger and burning conditions throughout AEU. This analysis framework does not necessarily account for other factors such as resource draw down, training levels, political factors, mutual aid status, over riding budget constraints, and other pertinent issues.

AEU created a Fire Weather Working Group charged with the creation and maintenance of this plan. Individuals with specific expertise were selected to work towards a Unit wide operating plan that fulfills the objectives set forth by the California Department of Forestry and Fire Protection. The following individuals participated in the development of this plan and make up the Fire Weather Working Group:

Jody Gossner	Division Chief / Operations
Mark Brunton	Battalion Chief / Battalion 2
Charlie Blankenheim	Battalion Chief / Battalion 3
Mike Olivarria	Battalion Chief / Battalion 4
Justin Sanders	Battalion Chief / ECC
Patrick McDaniel	VMP Coordinator
Douglas Ferro	Fire Captain / Pre-Fire Engineer

II. Roles and Responsibilities

A. Fire Weather Program Coordinator

The AEU Fire Weather Program Coordinator is Mike Olivarria. The Fire Weather Coordinator is responsible for the annual data analysis and preparation of this Fire Weather Operating Plan. Annual review will be completed at which point CAL FIRE FRAP has completed and made available the data conversion from Unit Fire Reporting System (CAIRS) to the Fire Family Plus format.

The Fire Weather Program Coordinator will be responsible for the management of the NFDRS models which will include fuel model green up and associated quality control as the fire season progresses. The Fire Weather Program Coordinator will monitor the seasonal vegetation development to properly manage the NFDRS models through the green up phase. No one else in the Unit is authorized to make any changes in the WIMS NFDRS settings as the green up process begins.

B. Dispatch/Communications/Emergency Command Center

Staff assigned to the AEU Interagency Command Center (ECC) in Camino, California have the responsibility for the implementation of this NFDRS Fire Danger Operating Plan and maintenance of the Weather Information Management System (WIMS). The ECC will have the responsibility of calculating the NFDRS daily indices and the responsibility for transmission of index information to the field. The Daily Operations Appendix of this plan will outline the ECC roles and responsibilities for the day to day NFDRS operation.

C. RAWS Station Maintenance Responsibilities

Weather station maintenance and training is the responsibility of the following individuals:

Weather Station	*Agency*	*Position*	*Site Maintenance*
Zion RAWS (NFDRS)	CAL FIRE	**Battalion 3**	**Zion Station**
Ben Bolt RAWS (NFDRS)	CAL FIRE	**Battalion 1**	**El Dorado Station**
Pilot Hill RAWS (NFDRS)	CAL FIRE	**Battalion 2**	**Pilot Hill Station**
Campo Seco RAWS (NFDRS)	**East Bay MUD**	**Campo Seco TCU**	**East Bay MUD**
CAL FIRE Portable #27	CAL FIRE	**Pre-Fire/VMP**	**F2790**

Weather station site maintenance is described in Chapter 4 of the *Weather Station Handbook – an Interagency Guide for Wildland Managers* by Arnold I. Fiklin and William Fischer. This guide has been adopted as CAL FIRE policy by reference in CAL FIRE's Fire Weather Handbook, Handbook 7800. Weather station standards are also described in *National Fire Danger Rating System – Weather Station Standards,* NWCG-PMS-426-3, *May 2005 Revision*. The above publications will be used to consistently manage the weather station network utilized by AEU for this plan.

Station site maintenance will include regular site visits no less than once per month (weather permitting) to inspect site conditions, conduct routine weed control, exclusion fence repair, and any other task that is not related to the station operation or technology related to the station.

Station maintenance and repair will be the responsibility of the Forest Technology Systems (FTS) representative that has been assigned to the service area where the station is located. Weather stations owned by other entities will be maintained by those entities. The Camino ECC and the Fire Weather Coordinator will monitor station readings as well as the weekly ASCADS reports to ensure the stations are operating properly. In the event that maintenance or repair is required, the FTS representative will be contacted immediately to repair what ever problem is detected.

Weather Station	*FTS Representative*	*Phone Number*
Mount Zion RAWS	**Tri Vong**	**(800) 548-4264**
Ben Bolt RAWS	**Tri Vong**	**(800) 548-4264**
Pilot Hill RAWS	**Tri Vong**	**(800) 548-4264**
Campo Seco RAWS	**N/A East Bay MUD**	**(209) 772-8338**
CAL FIRE Portable #27	**Tri Vong**	**(800) 548-4264**

D. Program Managers

Fire protection program managers are responsible for establishing appropriate actions based on the fire danger adjective ratings and NFDRS indices. These program managers include Operations, Fire Prevention, Vegetation Management, and Public Affairs/Prevention Specialist. The Camino ECC staff will calculate the NFDRS indices and related components. The program managers are responsible for decision matrix implementation.

III. Fire Danger Inventory

A. The Command Area

The command area for this Operating Plan includes those portions of Amador, El Dorado, Sacramento, and San Joaquin Counties that make up the Direct Protection Area (DPA) of AEU.

B. Fire Activity

Fire activity data from 1998 through 2007 is used for the analysis that supports this Operating Plan. Emergency Activity Reporting System (EARS) and CAIRS data for AEU is used for the analysis phase of this plan utilizing FireFamily Plus software to complete the statistical analysis. EARS and CAIRS data are not collected in a format which can be utilized by FireFamily Plus directly; therefore the Unit Fire Weather Program Coordinator must manually convert data to the Federal format for use with FireFamily Plus. The crosswalk for converting data sets to a format that is compatible with Fire Family Plus is included within the Appendix section of this plan.

Fire occurrence data will need to be analyzed and validated to ensure there are as few missing fire occurrences and incorrect acreage values as possible. This is especially true in the era of CAIRS. It will be necessary for the Fire Weather Program Coordinator to build the fire data input tables with direct consultation with the Prevention Bureau and the Unit Fire Report File (LE-66's). Instructions on the development of the necessary input data format are included in Appendix F of this plan.

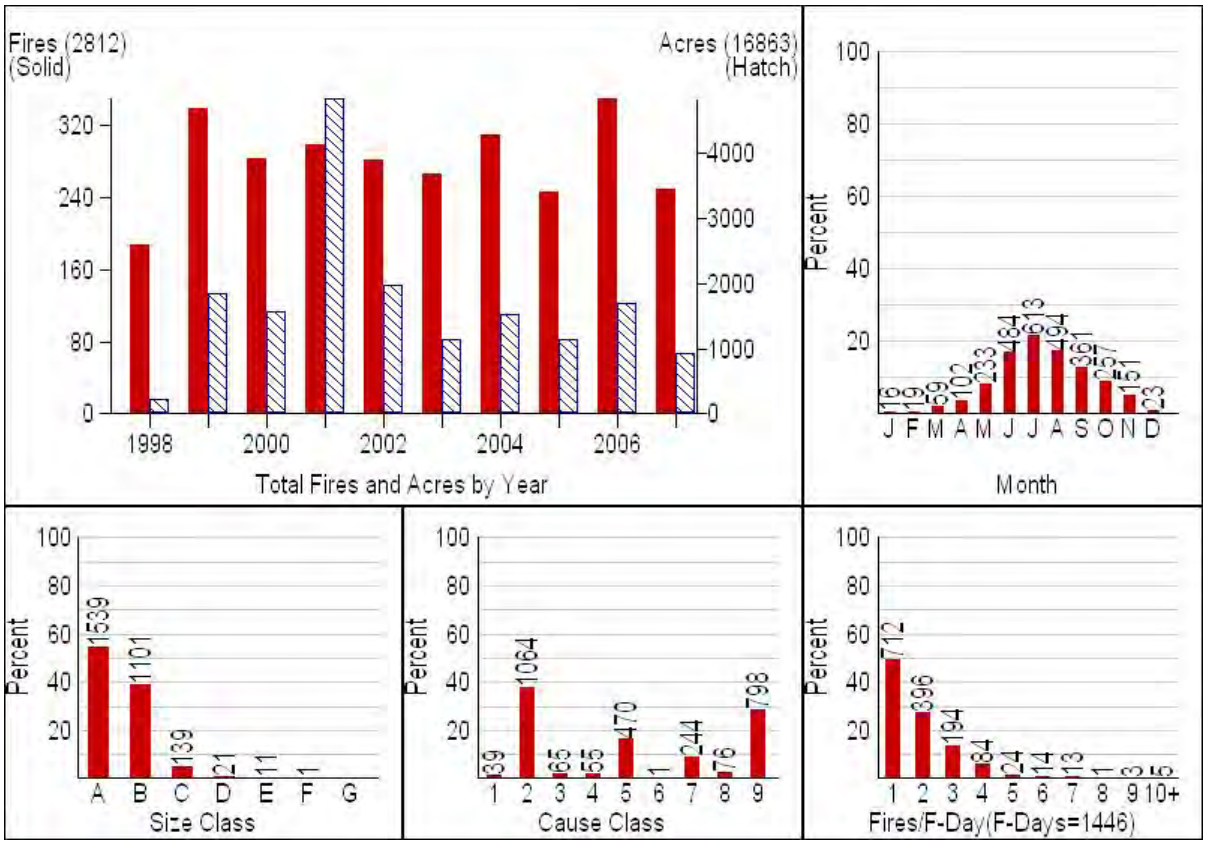
The discrepancy between the Federal and CAL FIRE vegetation fire reporting systems present some interpretation issues as it relates to fire cause codes. The Federal system does not classify fires that have an electrical cause within a separate category. FireFamily Plus only recognizes the ten federal cause codes which would typically place electrical cause ignitions as Miscellaneous. Interpretation of the fire perimeter data for AEU required further analysis to identify electrical fire cause category. The Pre-Fire Management Planning process was utilized to further evaluate the actual number of electrical caused fires. This is due to the impacts that electrical caused fires can have on unit fire business.

The two tables below represent the Cause Class Codes and Size Classes that are utilized in FireFamily Plus.

Cause Class Code	*Cause*
0	**Unknown**
1	**Lighting**
2	**Equipment**
3	**Smoking**
4	**Campfire**
5	**Debris Burning**
6	**Railroad**
7	**Arson**
8	**Children**
9	**Miscellaneous**

Size Class Code	*Fire Size*
A	**0.0 - 0.25 Acres**
B	**0.26 – 9.9 Acres**
C	**10.0 – 99 Acres**
D	**100 – 299 Acres**
E	**300 – 999 Acres**
F	**1000 – 5000 Acres**
G	**5000 + Acres**

The table below shows AEU fire history as evaluated in FireFamily Plus analysis for the period starting in 1998 and ending in 2007. The data below is unfiltered and represents fires occurring for the entire year. Data will be added annually as it comes available for each subsequent year. Data for these analyses are prepared by FRAP in Sacramento after all fire reporting data has been received from the local Units.



The following points can be drawn from the above data set:

1. The major cause of fires in the Unit is Equipment Use, closely followed by the general category of Miscellaneous. The Miscellaneous category will include those fires that do not match any Federal category, most notably Electrical and Undetermined.

2. Over the last 10 years, 94% of fires are less than 10 acres in size.

3. Fire Season for the Unit historically starts early in May and ends sometime in October.

4. July and August are historically the busiest months of the year for fire activity.

C. Weather Stations

The AEU has three NFDRS RAWS with historic weather data in the National Interagency Fire Management Integrated Database (NIFMID) which is accessible at the KCFAST link in FamWeb http://fam.nwcg.gov/fam-web/. This data is available for use in daily NFDRS operations.

The AEU ECC has the responsibility for the management and editing of the daily weather observations that are required within the WIMS system. The action of marking the "0" observation closest to 1300 hrs. is required on a consistent basis for the NFDRS decision support tool to function properly. The 1200 hr. observation in WIMS will be observation closest to 1300 hrs. based on the transmission time of each station. **This observation must be edited in WIMS prior to 1430 hrs.**

Weather stations in adjoining Units may be utilized for the selected Fire Danger Rating Areas if they are close enough or representative enough to make fire business decisions. Further evaluation of RAWS in TCU and NEU will be made to determine if data collected from those locations will provide additional correlation value.

Initial contact has been made with the East Bay Municipal Utility District (EBMUD) in Calaveras and Amador Counties concerning the status of the Campo Seco RAWS located above Comanche Reservoir. The Campo Seco RAWS is owned by EBMUD and not CAL FIRE. The station is maintained as a NFDRS station and is available in the WIMS system. EBMUD has given AEU permission to monitor and record the 1300 observations for the NFDRS calculations. AEU will notify EBMUD if the station data indicates repair needs and EBMUD will be maintaining the site as a part of the park operations. Discussions with the TCU ECC will have to occur in the future to develop a plan to make sure the 1300 observation is recorded for the benefit of both Units.

The purpose of NFDRS is to rate the relative fire danger as a worst case scenario for a given Fire Danger Rating Area. Initial examination of the data from Pilot Hill RAWS data indicate that there may be some local influence which sets the weather data less extreme than expected. Evaluation of the statistical fit for fuel models however indicates that Pilot Hill RAWS is very much appropriate for decision making with certain fuel models. The fuel model chosen for the decision making in NFDRS is reflective of the goodness of fit test that was conducted for every fuel model. Statistical analysis and the associated predictive tools used to develop decisions thresholds and associated adjective ratings are difficult to verify when the data is poorly fit. In this case fit is very good and the decision thresholds should support adequate accuracy. Particular attention will be paid to the Pilot Hill RAWS and corresponding indices as the season progresses to ensure the RAWS is appropriate for the fuel model chosen.

One area within the Unit that may be lacking in RAWS influence coverage is the "*Front Country"* in the valley floor at the western edge of the Unit DPA. This area has typically been represented by the Ben Bolt RAWS in the Latrobe area. The significant wind influence created by the summer Delta Push and North wind events is partially lost at the Ben Bolt RAWS. The terrain and vegetation around the station may reduce the effect of the highest potential winds that may be surfacing in the valley floor. This is significant because nearly all of the significant fire spread in the valley floor is wind driven and is lacking the topographic relief or vegetation to cause noticeable friction caused wind speed reductions. The Ben Bolt RAWS may not bring the worst case scenario for the NFDRA, which is dominated by the valley floor topography and fuel type. Further evaluation needs to be made to evaluate the appropriateness of Ben Bolt for the NFDRA that covers the valley floor.

Weather Information Management System (WIMS) Station Catalog Settings

Catalog Information	*Ben Bolt*	*Pilot Hill*	*Mount Zion*	*CAL FIRE Portable RAWS 27*
Station ID	042612	042609	042701	049915
Mean Precipitation	18	25	40	
Latitude	38 35' 27"	38 49' 56.6"	38 23' 27.6"	
Longitude	120 56' 01"	121 00' 36.39"	120 39' 6.3"	
Aspect	Southeast	Flat/None	South	
Elevation	905	1250	2960	
Site	Midslope	Valley Bottom/Flat	Ridgetop/Peak	
Time Zone	Pacific	Pacific	Pacific	
Transmission Time	59:00	58:30	59:30	52:41
Observation Time	1200 hrs.	1200 hrs.	1200 hrs.	1200 hrs.
Danger Rating Area	West	East	East	

Station Photographs

Ben Bolt RAWS
Assigned to the West NFDRA

Station ID: 042612
NESDIS ID: CA21B4C0
Forest Technology Systems FWS-12S

Site Owner: Everett Fox

General Location: Latrobe. Station is located above French Creek Road approximately ¼ mile north of the intersection with Brandon Road. Station is located above the road on a small knoll which overlooks French Creek

Pilot Hill RAWS
Assigned to the East NFDRA

Station ID: 042609
NESDIS ID: CA21D126
Forest Technology Systems FWS-12S

Site Owner: CAL FIRE, State of California

General Location: Pilot Hill. RAWS is located behind CAL FIRE Pilot Hill Fire Station.

Mount Zion RAWS
Assigned as Reserve

Station ID: 042612
NESDIS ID: CA21C250
Forest Technology Systems FWS-12S

Site Owner: CAL FIRE, State of California

General Location: Mount Zion. Station is located adjacent to the Mount Zion lookout on the Mount Zion State Forest.

Contact Frequency:
Primary DTMF Code: 4593
Secondary DTMF Code: 4594

CAL FIRE PORTABLE #27 RAWS

Station ID: 049915
NESDIS ID: CA49774A
Forest Technology Systems Quick Deploy FWS-12S

Contact Frequency: Cal Fire TAC 8
DTMF Code: 1234

D. Vegetation and Fuels

The area covered by this Operating Plan is dominated by three distinctly different vegetation types. The area referred too as the *Front Country* by some Unit personnel is grassy foothill slopes comprised of annual grasses. Occasional oaks or California Gray Pine may be present. This fuel type is characterized by fine, very porous, and continuous herbaceous fuels that seasonally cure. The elevation range of this vegetation type runs from around 100' to 800' elevation.

The second vegetation type is primarily dominated by mixed chaparral and live oak stands. This fuel type is characterized by varying age classes of Chamise, Manzanita, and related chaparral species. Occasional live oak stands will be found intermixed with the chaparral vegetation within drainages and over favorable aspects. The elevation where this vegetation type can be found is as low in elevation as 300' and as high as 2,500'.

The third vegetation type is mixed conifer forest. This fuel type is dominated by conifer forest comprised of Ponderosa Pine, Sugar Pine, Incense Cedar, Black Oak, and Douglas Fir. The vegetation in this area consists of well developed forests with varying degrees of density. The elevation where this vegetation type can be found is between 1500' elevation and the transition to true fir belt at around 6,000' elevation.

The attached NFDRS Fuels Map gives a broad indication of the distribution of the above fuel types. This map is the most current for AEU; however requires professional interpretation and adjustments to account for local knowledge and significant changes due to type conversion. An NFDRS Fuel Model map for the Unit is included in the attached appendices.

E. Topography

AEU is an area of wildly varying topography that begins very near sea level in the Delta Region, runs to the crest of the Sierra Nevada Mountains, and continues to the east side plateau beyond the Sierra crest. The area for which this plan covers is the unit DPA which lies between eastern portions of Sacramento County and the central portions of Amador and El Dorado Counties where the state DPA ends. There are three distinct topographic regions of the plan area; the Front Country, the Foothill Region and the Mountainous Region.

The *Front Country* is within the central valley and is subject to the Delta Weather Influence as well as the fall foehn winds that originate from the north and east during the summer months. The Delta Influence has a duel role during the summer months by providing higher humidity's which limit fire behavior, however, on the other hand the Delta can bring significant increases in wind speed as the weather phenomenon strengthens. This region of the unit is characterized by flat to rolling hills with mild intervening ridges and valleys from the major river systems in the Unit. The terrain in this region presents the mildest topographic relief of all the areas within AEU.

The Foothill Region of the Unit is characterized by continuous rolling hills and intervening canyons with an occasional flat valley bottom. The mountains in this region are typically rolling however some extreme topography can be found at the transition with the more mountainous regions of AEU. Wind interaction with this topography is fairly predictable, increasing turbulence and velocity through canyon bottoms. Wind interaction with this topography can have a significant impact on fire behavior by increasing the effect of the topography when alignment is parallel with wind. Delta wind influence in this region significantly increases fire behavior with canyon alignment or exceedingly high winds.

The Mountainous Region of the Unit can be characterized as a typical Sierra Nevada relief with long roaming ridges that run east to west. Between these major ridges are intervening drainages that vary from steep to nearly vertical. The topography is dominated by the major river systems that run through the region. The Mokelumne River, the Cosumnes River System, and at least two major forks of the American River cut through the Sierra within the unit. These canyons are typically very steep and dominate the wind patterns that flow through them.

Area	*Slopes*	*NFDRS Slope Class*
Valley Floor (*Front Country*)	**gentle**	**1**
Mid Elevation Brush Areas	**moderate**	**2**
Mountainous Areas	**steep**	**3**

NFDRS Slope Class	*Percent Slope Range*
1	**0 - 25%**
2	**26 - 40%**
3	**41 - 55%**
4	**56 - 75%**
5	**Greater than 75%**

F. Climate Class

Climate Class can be utilized to prolong or shorten the Green Up and subsequent Curing of dead fuels. The following table shows the Climate Class and corresponding Green Up periods. The Green Up and curing of fuels within the fuel models can affect NFDRS outputs as the season progresses. Changes to Climate Class can be made to more accurately reflect seasonal vegetation development. The Fire Weather Coordinator will monitor spring green up conditions and be the only person allowed to modify climate class within WIMS.

All of AEU is classified as an NFDRS Climate Class II, rainfall deficit in the summer. Climate class was selected to appropriately model the green up phase of the NFDRS calculations. Other Climate classes didn't respond adequately to model actual conditions, however it will not exclude other Climate Classes if seasonal spring conditions warrant.

NFDRS Climate Class	*Green Up Period*
I	**7 Days**
II	**14 Days**
III	**21 Days**
IV	**28 Days**

G. Fire Danger Rating Areas (FDRA)

Two fire danger rating areas are used to define fire danger in the AEU. These two areas capture the major differences in the Unit without drawing too much detail for the scale required for NFDRS evaluation and decision outputs. State Highway 49 was utilized as the Fire Danger Rating Area break point to provide an easy reference to Unit personnel and cooperators.

1. **FDRA CAAEU EAST** (DPA east of State Highway 49) The Timber and heavy brush region of the Unit DPA is that of Sierran Mixed Conifer and Chaparral. The area is generally managed for timber however there has been a significant increase in development and public use. Heavy dead fuels have a common presence throughout the fuel profile. Vegetation consists of Chaparral consisting of Chamise, Manzanita and Live Oak and Sierran Mixed Conifer/Ponderosa Pine. NFDRS fuel model J is used for this area and is represented by the Pilot Hill RAWS.

2. **FDRA CAAEU WEST** (DPA west of State Highway 49) Elevation below 800' is considered the Annual Grass region of the DPA. This area is dominated by annual grasslands with scattered oaks and oak groves. Small areas of heavy brush are present within the area; however, not in quantities large enough to change the area to some other fuel type. NFDRS fuel model A best represents this area and will be used for purposes of this plan. The area is represented by the Ben Bolt RAWS.

IV. Fire Danger Indexes and Fire Business

The following list represents the array of NFDRS indices that are used by the NFDRS system to quantify Fire Danger:

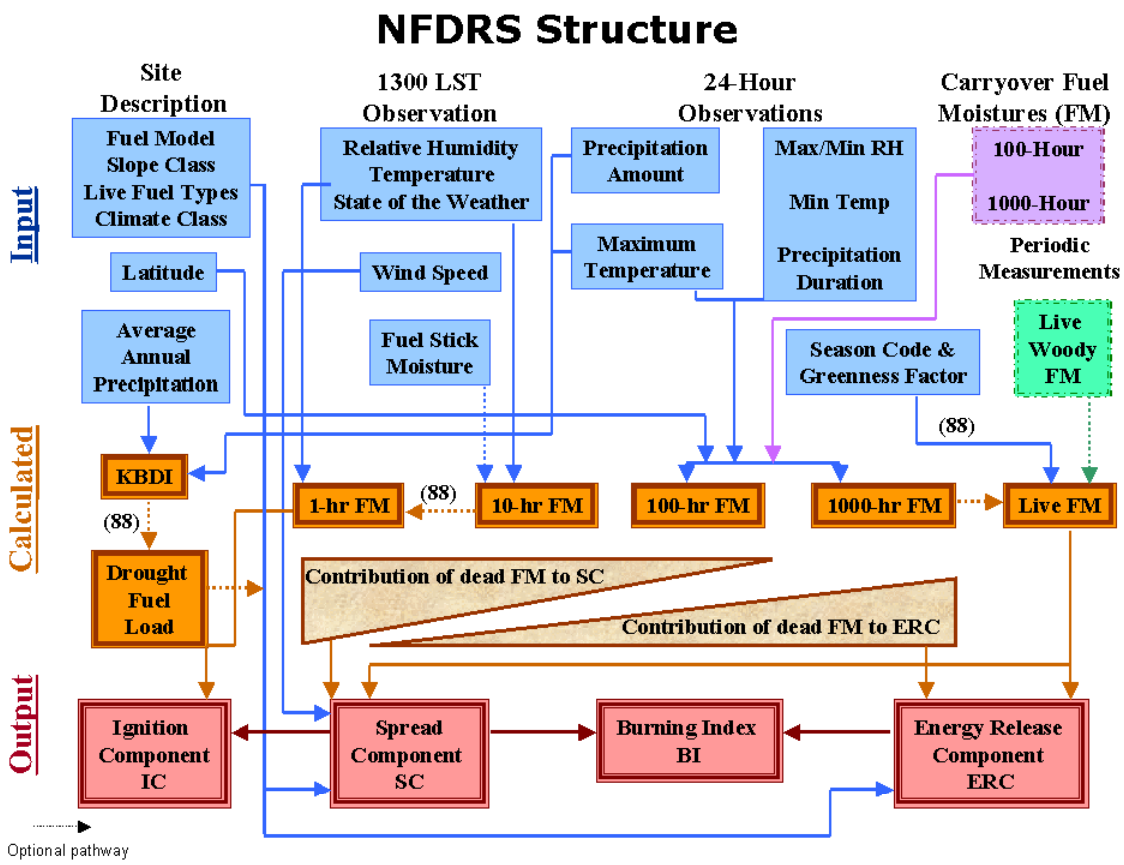
Spread Component (**SC**) is an estimate of the spread of a fire at its head. It is projecting the potential rate of a fire's spread at its head in feet per minute under the assumed weather, fuels, and topographic conditions associated with the fire danger rating area.

Ignition Component (**IC**) is an expressed probability that a firebrand will cause an actionable fire, one that requires suppression action.

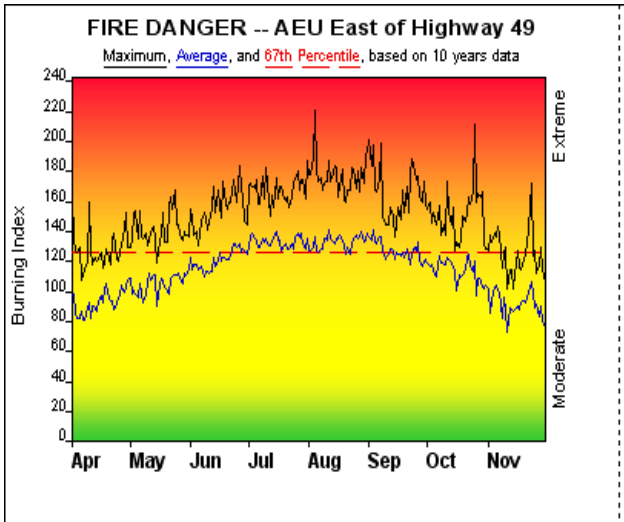
Burning Index (**BI**) is a number that relates the contribution of a fire's behavior in containing the fire. Containment difficulty is directly related to fireline intensity (BTU's/ft/sec). This is the heat release along the fire perimeter at its head. BI is an index that rates fire danger related to potential flame length over a fire danger rating area.

Energy Release Component (**ERC**) is a number related to the available energy (BTU) per unit area (square foot) within the flaming front at the head of the fire. It evaluates the contribution of various fuel loadings represented mathematically in the NFDRS fuel models.

*Thousand Hour Time Lag (**1000-hr FM**)* In addition to the above NFDRS output indices, the intermediate output which models the 1000 time lag fuel moisture content can also be utilized as a fire danger index. This long term trending output can be a valuable tool in evaluating the larger fuels within an area where larger fuels make up the primary fuel bed indicator.



The above diagram gives the basic structure of the NFDRS and the various inputs, intermediate calculations, and the final index outputs. The flow chart shows the process model and how the indices are impacted by the various inputs.



Fire Danger Area:

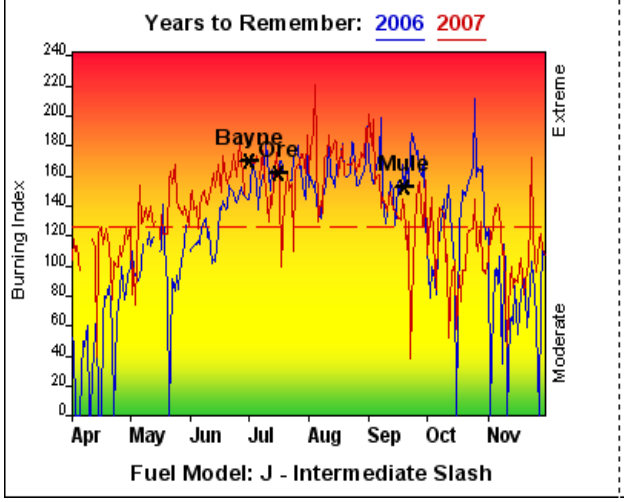
- AEU East of Highway 49
- State DPA
- Pilot Hill RAWS 042609
  * Meets NWCG Wx Station Standards

Fire Danger Interpretation:

EXTREME -- Use extreme caution
(Caution) -- Watch for change
Moderate -- Lower Potential, but always be aware

Maximum -- Highest Burning Index by day for 1998 - 2007
Average -- shows peak fire season over 10 years (2388 observations)
67th Percentile -- Only 33% of the 2388 days from 1998 - 2007 had an Burning Index above 125

Local Thresholds - Watch out: Combinations of any of these factors can greatly increase fire behavior: 20' Wind Speed over 7 mph, RH less than 20%, Temperature over 90, 10-Hour Fuel Moisture less than 6



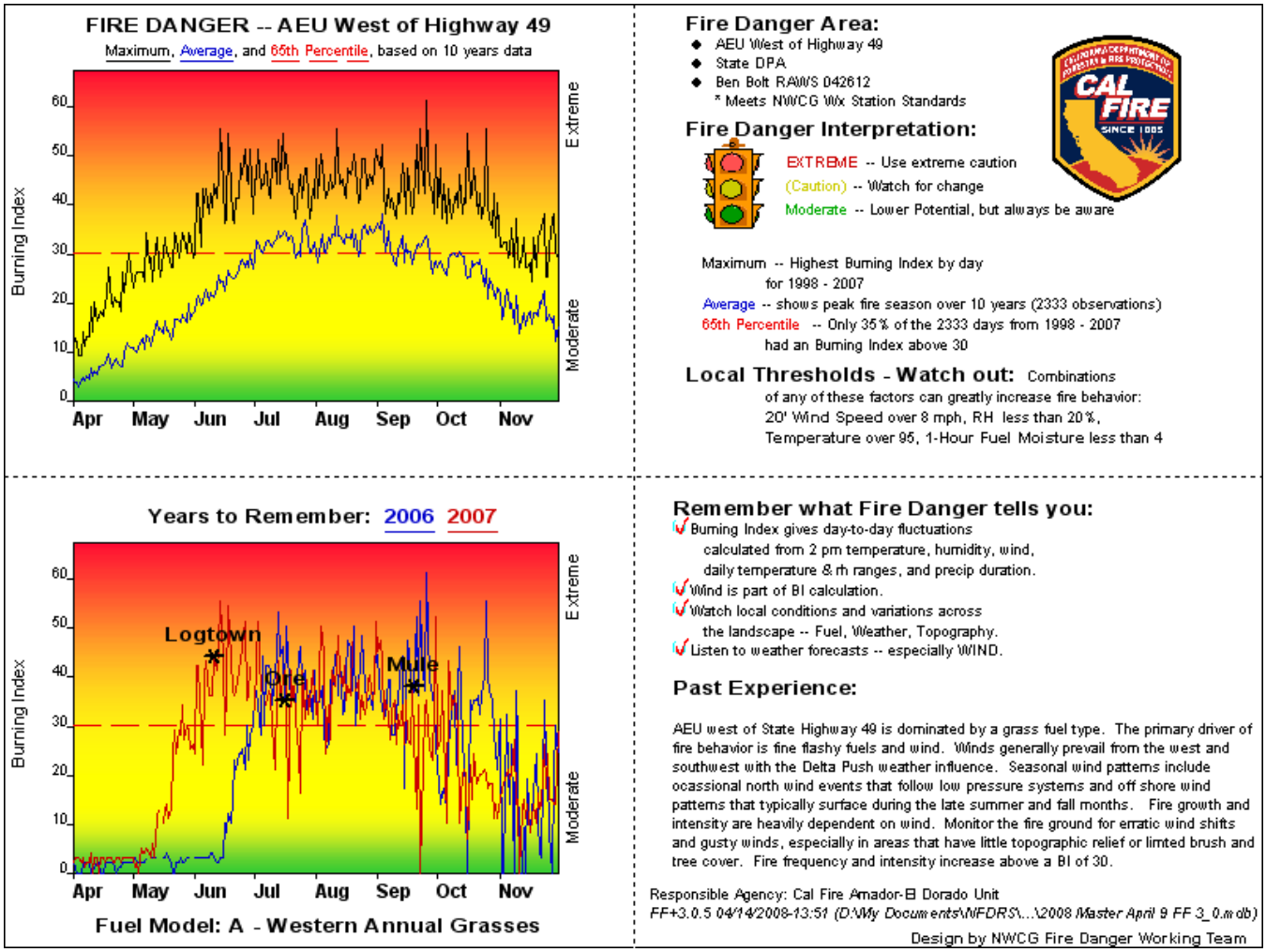
Remember what Fire Danger tells you:

- Burning Index gives day-to-day fluctuations calculated from 2 pm temperature, humidity, wind, daily temperature & rh ranges, and precip duration.
- Wind is part of BI calculation.
- Watch local conditions and variations across the landscape -- Fuel, Weather, Topography.
- Listen to weather forecasts -- especially WIND.

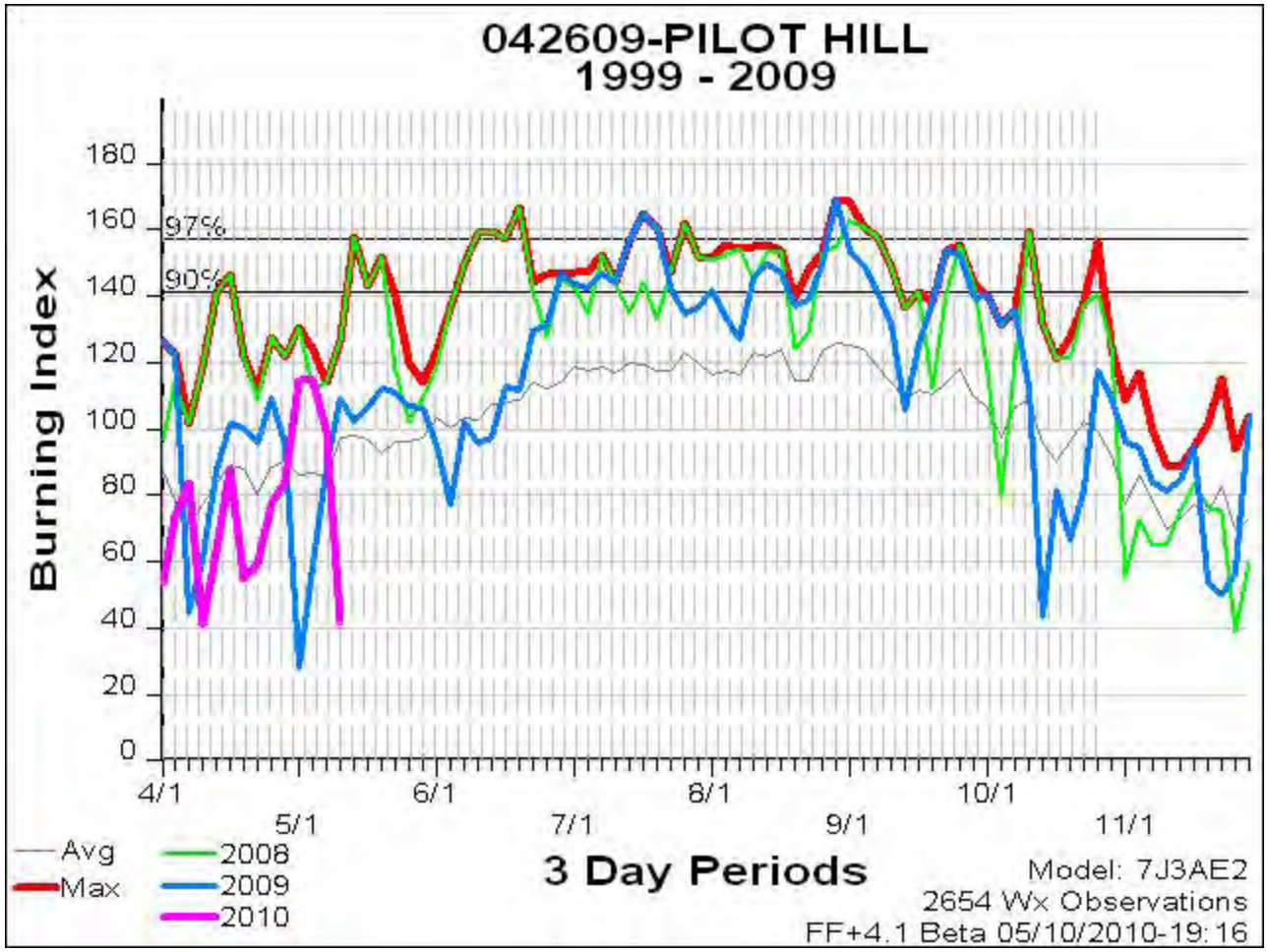
Past Experience:

AEU east of State Highway 49 is characterized by heavy brush and timber stands with heavy dead fuel accumulations. Steep river canyons covered in California Chaparral and Mixed Conifer Forest are the general vegetation that dominates the critical fire behavior of the area. The prevailing Delta Push winds are generally in alignment with most of the major river canyons within the Unit. Seasonal wind patterns include the occasional north wind events that follow low pressure systems and off shore wind patterns in the fall. The fuel model selected for this area models mostly dead fuel response to environmental conditions. Fire frequency and intensity increase above a BI of 125.

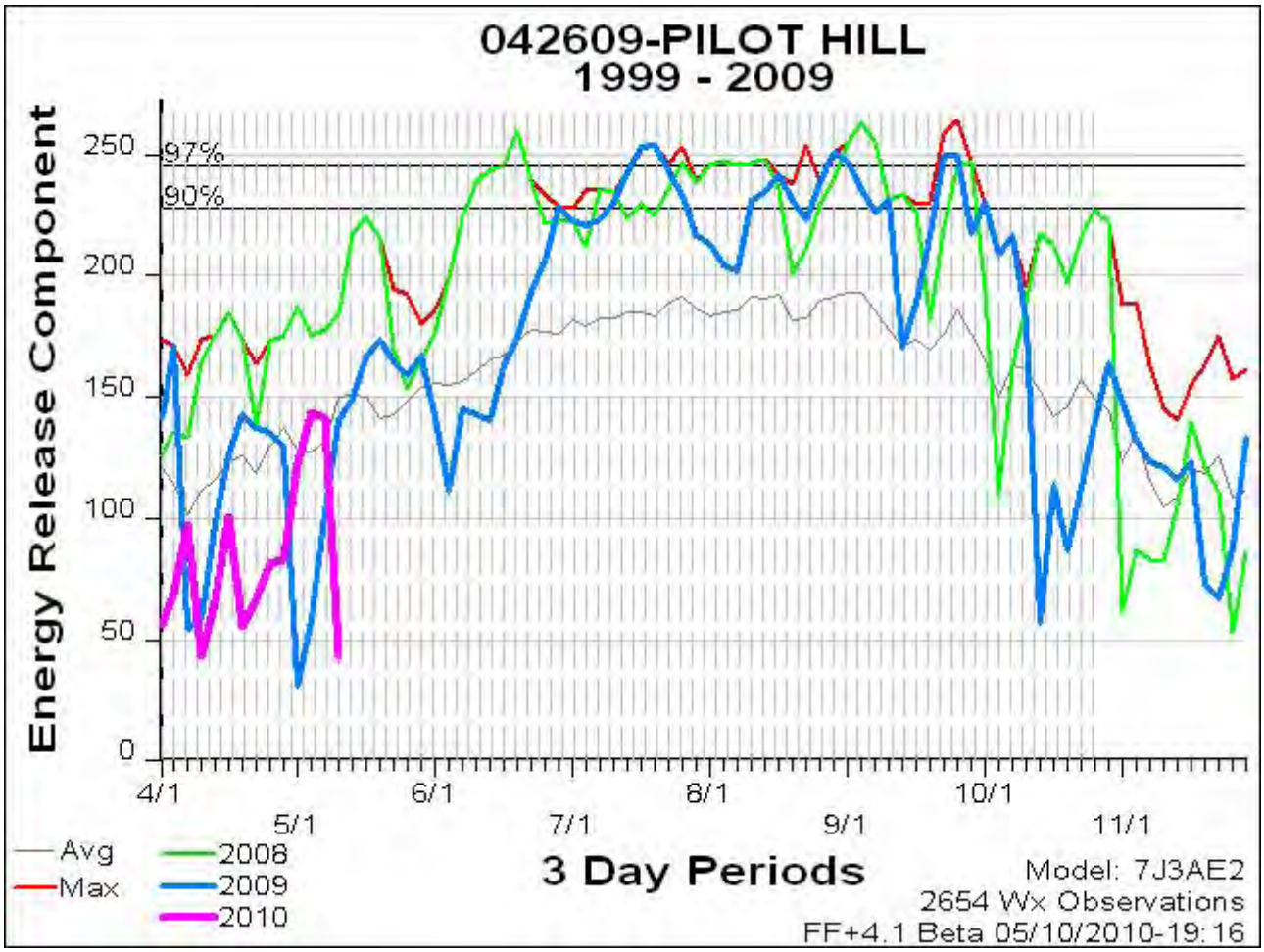
Responsible Agency: Cal Fire Amador El Dorado Unit
FF+3.0.5 04/14/2008-13:50 (D:\My Documents\NFDRS\...\2008 Master April 9 FF 3_0.mdb)
Design by NWCG Fire Danger Working Team


FIRE DANGER -- AEU West of Highway 49
Maximum, Average, and 65th Percentile, based on 10 years data
Burning Index
Extreme
Moderate
Apr May Jun Jul Aug Sep Oct Nov
Fire Danger Area:
AEU West of Highway 49
State DPA
Ben Bolt RAWS 042612
* Meets NWCG Wx Station Standards
Fire Danger Interpretation:
EXTREME -- Use extreme caution
(Caution) -- Watch for change
Moderate -- Lower Potential, but always be aware
Maximum -- Highest Burning Index by day for 1998 - 2007
Average -- shows peak fire season over 10 years (2333 observations)
65th Percentile -- Only 35% of the 2333 days from 1998 - 2007 had an Burning Index above 30
Local Thresholds - Watch out: Combinations of any of these factors can greatly increase fire behavior: 20' Wind Speed over 8 mph, RH less than 20%, Temperature over 95, 1-Hour Fuel Moisture less than 4
Years to Remember: 2006 2007
Logtown
Mule
Fuel Model: A - Western Annual Grasses
Remember what Fire Danger tells you:
Burning Index gives day-to-day fluctuations calculated from 2 pm temperature, humidity, wind, daily temperature & rh ranges, and precip duration.
Wind is part of BI calculation.
Watch local conditions and variations across the landscape -- Fuel, Weather, Topography.
Listen to weather forecasts -- especially WIND.
Past Experience:
AEU west of State Highway 49 is dominated by a grass fuel type. The primary driver of fire behavior is fine flashy fuels and wind. Winds generally prevail from the west and southwest with the Delta Push weather influence. Seasonal wind patterns include ocassional north wind events that follow low pressure systems and off shore wind patterns that typically surface during the late summer and fall months. Fire growth and intensity are heavily dependent on wind. Monitor the fire ground for erratic wind shifts and gusty winds, especially in areas that have little topographic relief or limted brush and tree cover. Fire frequency and intensity increase above a BI of 30.
Responsible Agency: Cal Fire Amador-El Dorado Unit
FF+3.0.5 04/14/2008-13:51 (D:\My Documents\NFDRS\...\2008 Master April 9 FF 3_0.mdb)
Design by NWCG Fire Danger Working Team

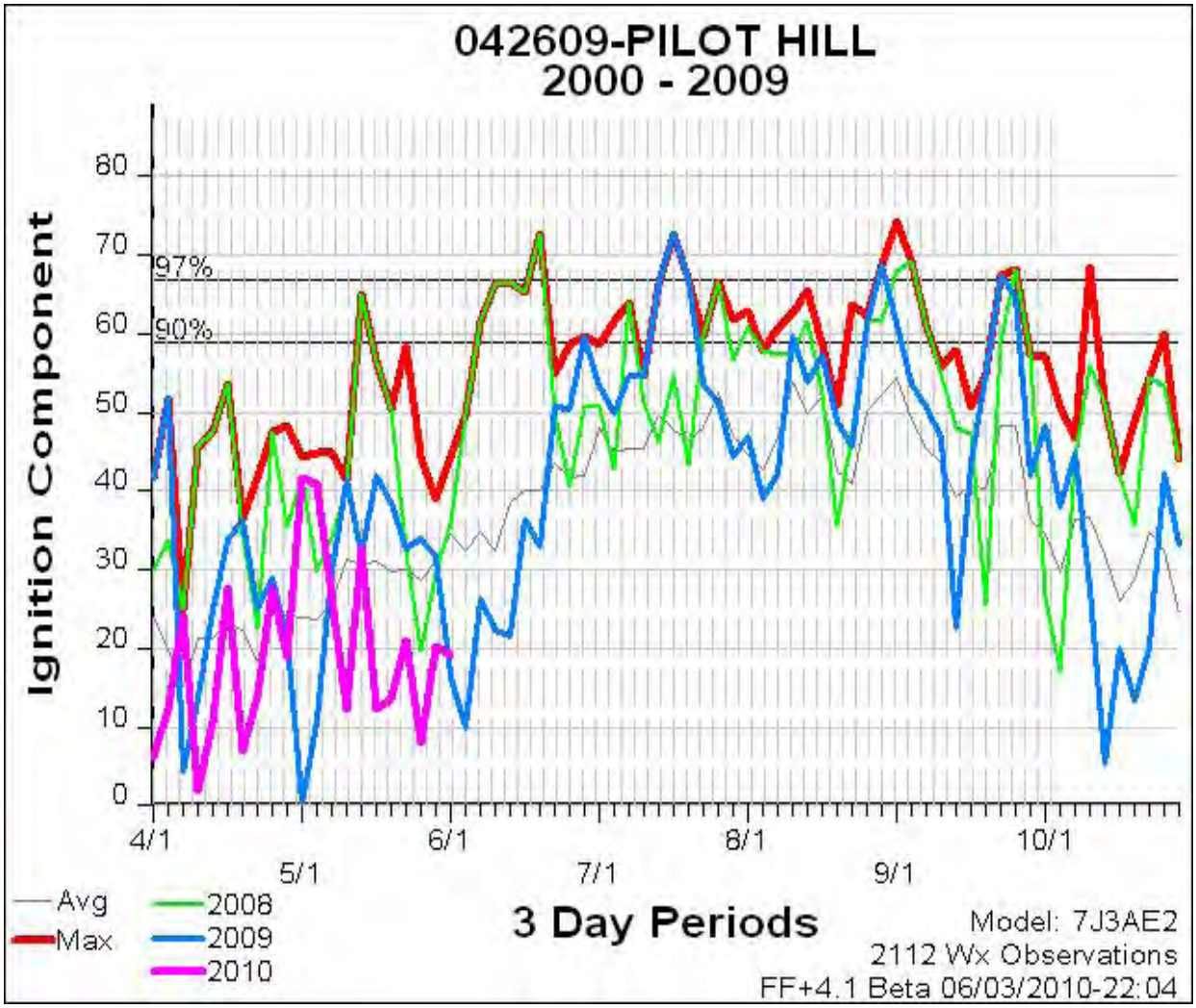
AEU EAST Burning Index (BI) Pilot Hill RAWS



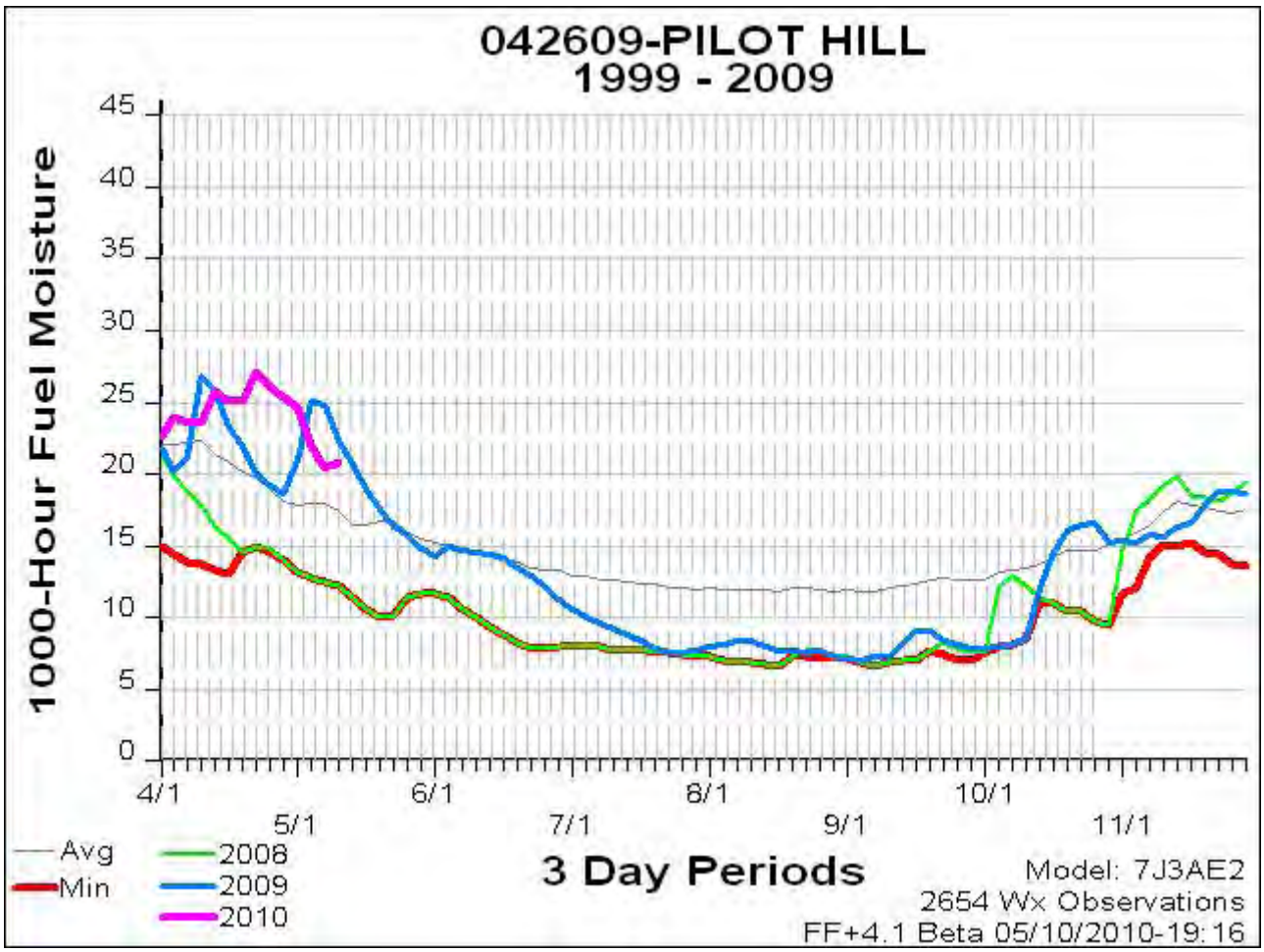
AEU EAST Energy Release Component (ERC) Pilot Hill RAWS



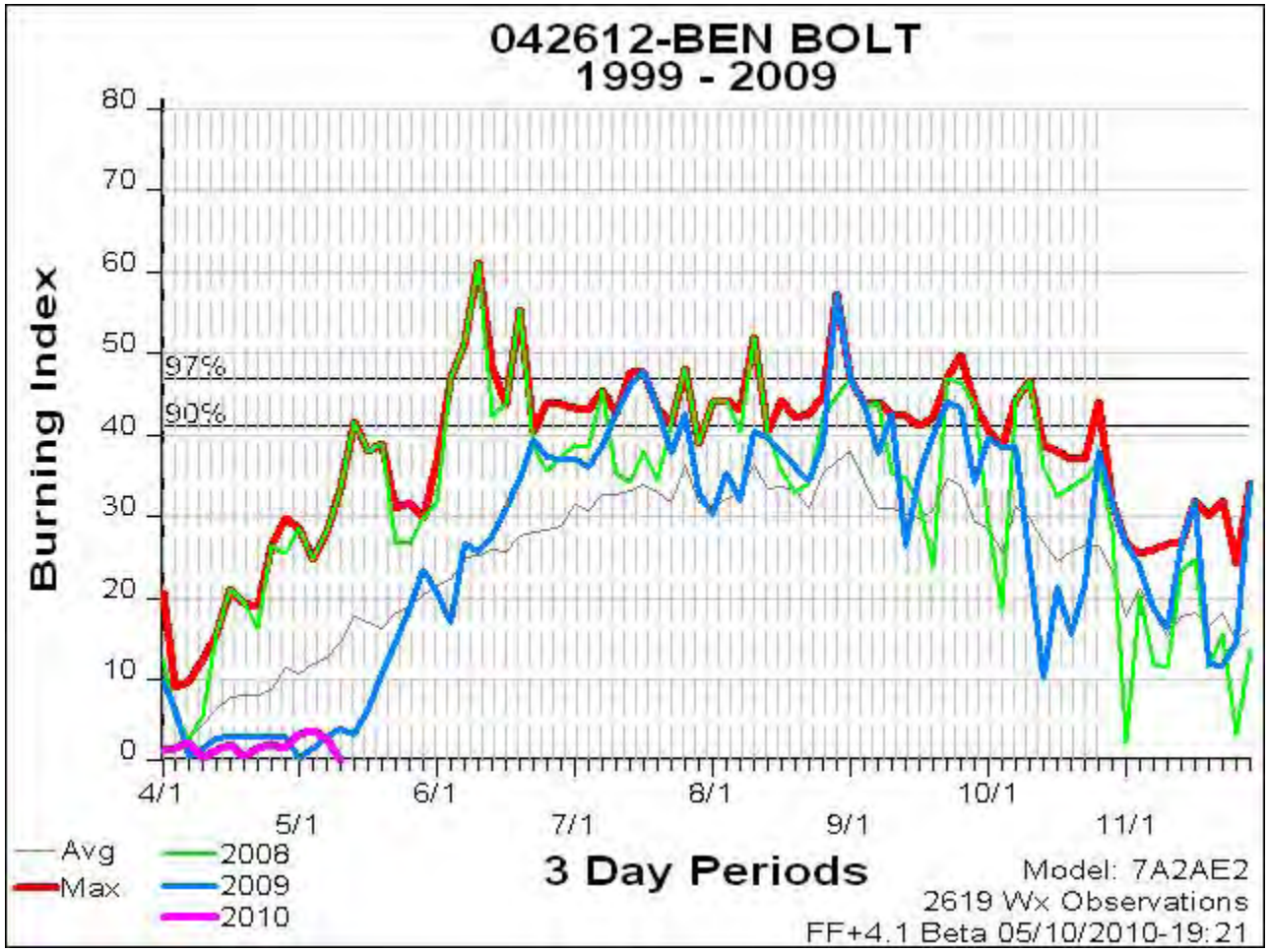
AEU EAST Ignition Component (IC) Pilot Hill RAWS



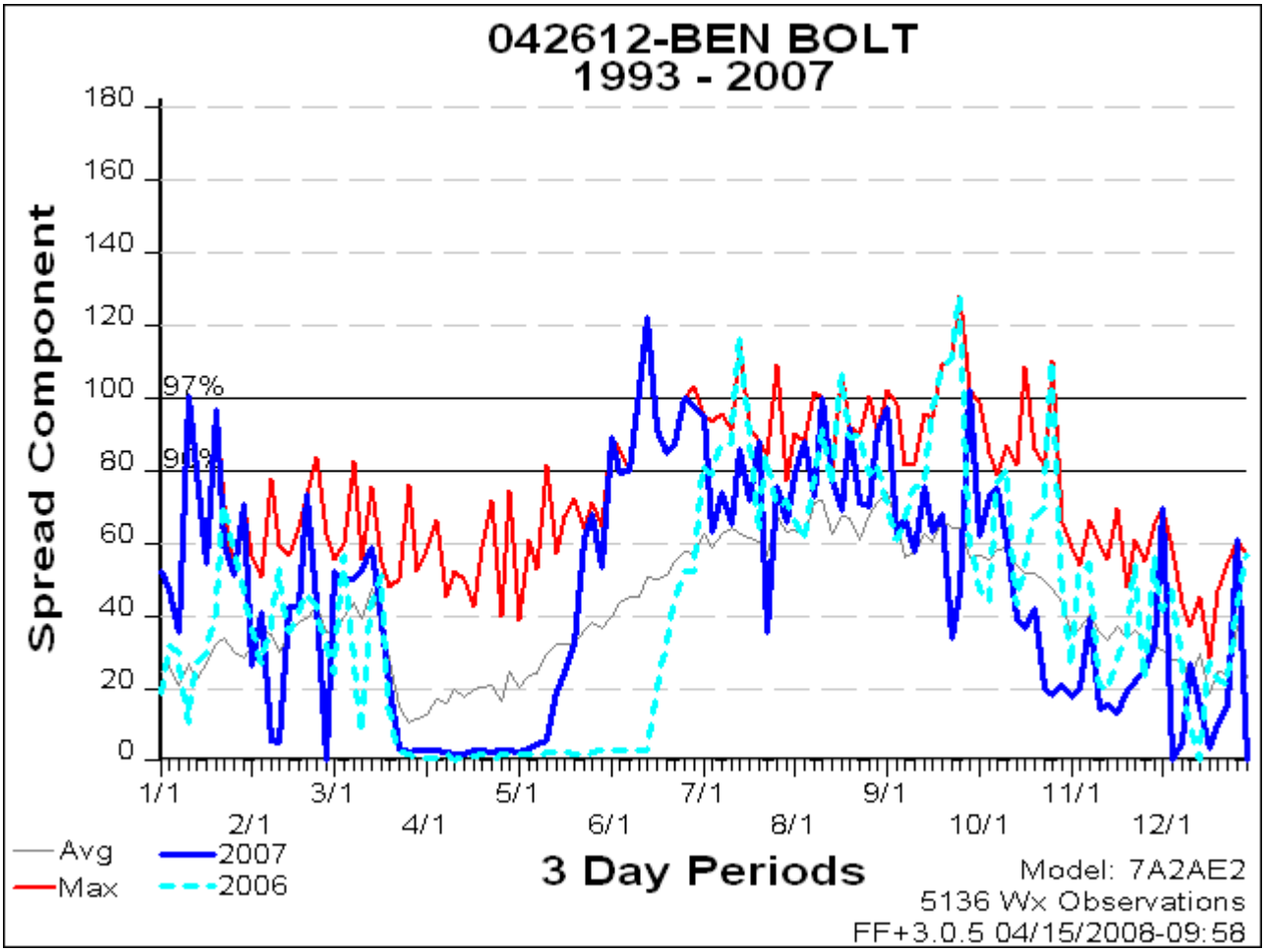
AEU EAST 1000 Hr. Fuel Moisture Pilot Hill RAWS



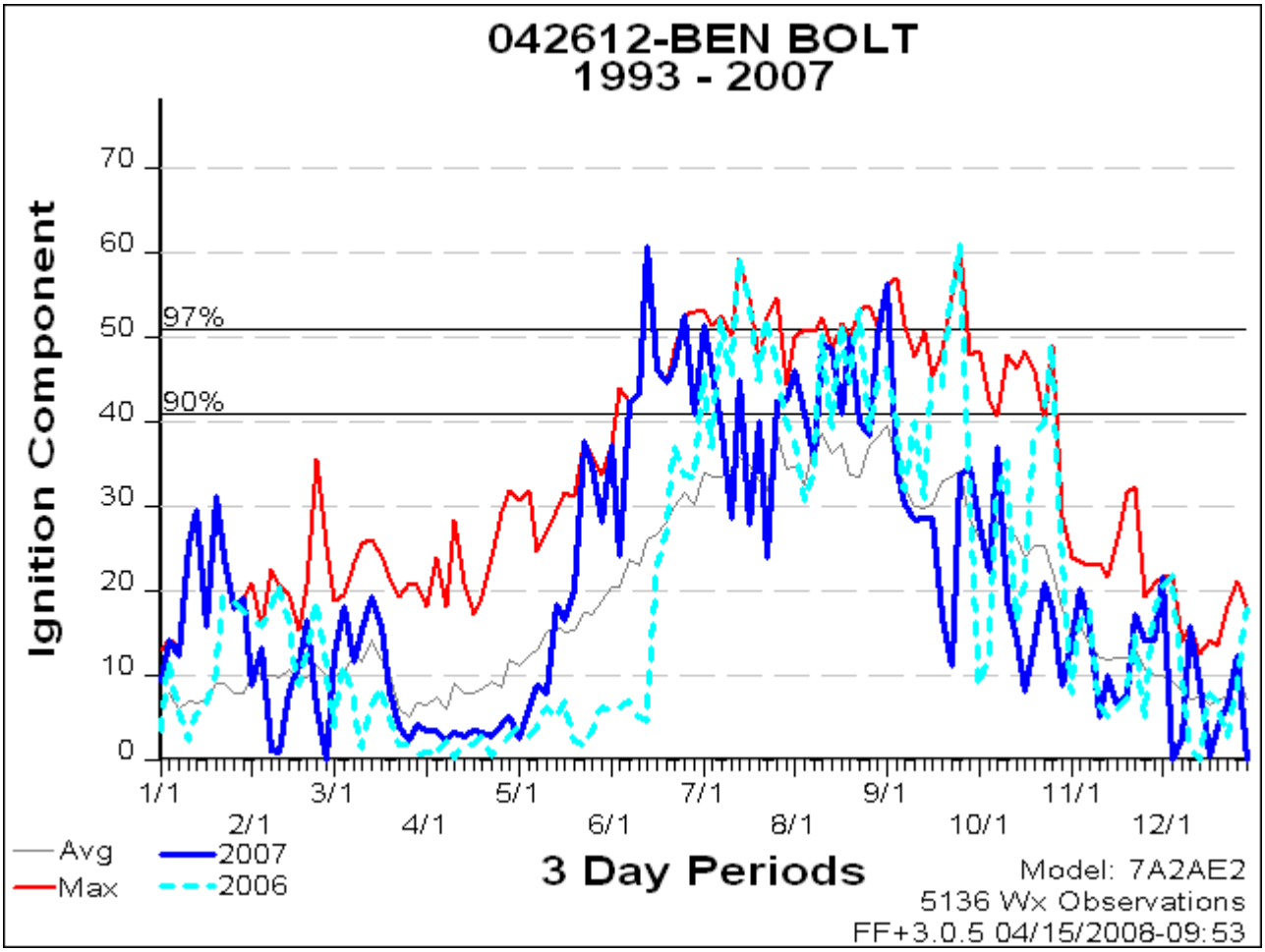
AEU WEST Burning Index (BI) Ben Bolt RAWS



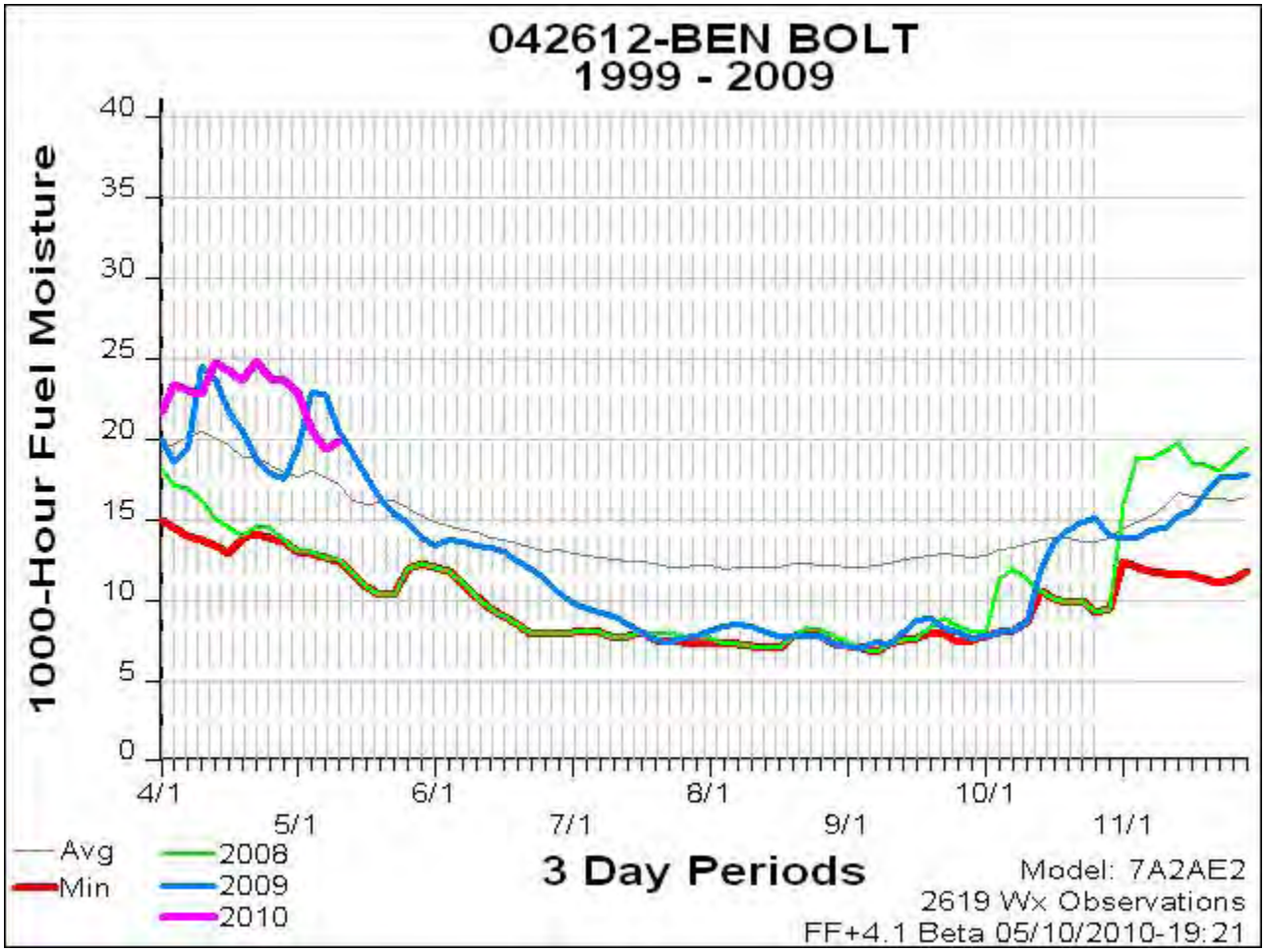
AEU WEST Spread Component (SC) Ben Bolt RAWS



AEU WEST Ignition Component (IC) Ben Bolt RAWS



AEU WEST 1000 Hr. Fuel Moisture Ben Bolt RAWS



AEU Adjective Rating Definitions

Fire Danger information in AEU is important to decision makers outside the Unit. Those decision makers may represent the general public, local fire district, industry or other departmental decision makers at the regional or statewide level. The following Adjective Fire Danger Rating definitions will be used for reporting the relative fire danger ratings to decision makers that will need the applicable fire danger rating information for their respective operations. Adjective rating definitions are calculated on all observations that are edited within the WIMS system. These can be calculated for any observation that has been transmitted by the RAWS to the NIFMID database. Adjective ratings are defined by a calculated Staffing Level and five Ignition Component classes as defined by the 90th and 97th percentile weather using Burning Index as the reference index. Those two values have been agreed upon by wildland agencies in California for use with the Adjective Class ratings. These values will be loaded into the WIMS Station Catalogs so Adjective Ratings can be determined throughout the day as well as forecasted for the next day. AEU will utilize the model which best represents the RAWS for the corresponding calculations.

Adjective Rating Settings in WIMS

				Percentile Values for May to October		
NFDR Area	**Weather Station**	**Fuel Model**	**Index**	**90'th**	**97'th**	**Number of years**
EAST	**Pilot Hill** (042609)	**J**	**BI**	**139**	**152**	**14**
WEST	**Ben Bolt** (042612)	**A**	**BI**	**38**	**43**	**16**
East *(Reserve)*	**Mount Zion** (042701)	**J**	**BI**	**134**	**148**	**16**

Following are the terms and definitions for adjective fire danger as defined by the National Wildfire Coordinating Group (NWCG) Fire Danger Working Team in 2000.

Fire Danger Rating 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 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 attacked successfully 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 range 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 conifer stands may be unmanageable while the extreme burning conditions last. Under these circumstances the only effective and safe control actions are on the flanks until the weather changes or the fuel loading decreases.

Fire Weather Watches and Red Flag Warnings

NWS offices issue Fire Weather Watches and Red Flag Warnings for critical fire weather patterns that contribute to extreme fire danger and/or fire behavior.

Fire Weather Watch is used to alert agencies to the high potential for development of a Red Flag event in the 12-72 hour time frame. The Watch may be issued for all or selected portions of a fire weather zone or zones. A watch may be issued in the first 12 hour time period only for an expected dry thunderstorm event.

Red Flag Warning is used to inform agencies of the imminent or actual occurrence of Red Flag conditions. A Red Flag Warning is issued when there is high confidence that Red Flag criteria will be met within the next 24 hours, or if those criteria are already being met.

Criteria for Red Flag Warnings/Fire Weather Watches

Dry Lightning - A lightning event that is not accompanied by enough precipitation to significantly wet fuels that have been identified as critically dry. Significant precipitation is defined as ranging from .05 inches for grass or brush fuels to .15 inches for closed-canopy timber/heavy fuels. Watches and warnings will be issued when dry lightning is expected to be widespread. Isolated events or events of short duration (i.e., events which start dry but become wet within an hour or two) do not need warnings but will be headlined in the forecast.

Wind and Humidity - Wind and humidity criteria are geared toward those situations which may result in rapid spread of wildfires. Because topography and vegetation play a big role in this, several sets of criteria are used across California. Where possible, issuance criteria have been meshed with those used in adjacent states to meet the needs of agencies whose jurisdictions cross state lines. Criteria are listed in the Wind/Humidity Table below.

California Wind/Humidity Table

Area Description	NWS Fire Weather Zones	Criteria	
Southern California desert area excluding the Lower Colorado River Valley	226-228, 230, 232, 260-262	Relative Humidity ≤ 15% and wind gusts ≥ 35 mph for 6 hours or more, assuming fuel conditions are critical.	
Lower Colorado River Valley	229,231	Relative Humidity ≤ 15% with sustained winds ≥ 20 mph or wind gusts ≥ 35 mph for 3 hours or more.	
Antelope Valley and SE Kern County Deserts	298, 299, 259	Relative Humidity ≤ 15% and sustained (20-foot) winds ≥ 25 mph for a duration of 8 hours or more.	
Southern California from mountains westward	234-258, 288-297,547,548	234-258, 288-297, **547,548** Relative Humidity ≤ 15%, with sustained winds ≥ 25 mph and/or frequent gusts ≥ 35 mph (duration ≥ 6 hours).	288-297**Or** Relative Humidity ≤ 10% (duration ≥ 10 hours) regardless of wind.
Northern California East of Cascade/Sierra Crest and Western Great Basin including the Modoc Plateau	214, 270-273, 278, 284, 285	Three hours of wind gusts ≥ 30 mph and Relative Humidity ≤ 15% (≤ 20% Tahoe Mgmt Basin).	**Or** Three hours of wind gusts ≥ 20 mph and Relative Humidity ≤ 10% **for Fire Weather Zones 284-285 only**.
Northern California West of the Cascade/Sierra Crest	006, 201-204, 211-213, 215-221, 263, 264, 266-269, 276, 277, 280-282, 505-513, 516-518, 528-530	Refer to Wind/RH RFW Decision Matrix for Northern California West of the Cascade/Sierra Crest.	

Wind/RH RFW Decision Matrix for Northern California West of the Cascade/Sierra Crest

- Matrix assumes daytime 10-hour fuel moisture (NFDRS obs time) is ≤ 6%, annual grasses have cured, and no wetting rain (greater than 0.10 inch) has fallen in the past 24 hours.
- The sustained wind refers to the standard 20-foot, 10 minute average fire weather wind speed.
- The wind event should be expected to last for at least 8 hours to qualify for a Red Flag warning. [This guidance was developed for foehn wind events, which normally exceed 12 hours duration, and may last as much as 3-5 days].
- a **'W'** in the matrix indicates that the forecaster should consider a warning.

Relative Humidity	**Sustained Wind 6-11 mph**	**Sustained Wind 12-20 mph**	**Sustained Wind 21-29 mph**	**Sustained Wind 30+ mph**
Daytime Minimum RH 29-42% and/or Nighttime Maximum RH 60-80%				**W**
Daytime Minimum RH 19-28% and/or Nighttime Maximum RH 46-60%			**W**	**W**
Daytime Minimum RH 9-18% and/or Nighttime Maximum RH 31-45%		**W**	**W**	**W**
Daytime Minimum RH < 9% and/or Nighttime Maximum RH < 31%	**W**	**W**	**W**	**W**

Red Flag Warnings and Fire Weather Watches will remain in effect through the expiration time noted in the forecast, or until canceled or upgraded

Red Flag Warnings and Fire Weather Watches are available via WIMS, from the California Fire Weather web page (http://www.wrh.noaa.gov/sto/cafw/) and the web site of the issuing NWS office. Links to all forecasts and NWS office web pages can be found on the National Fire Weather Page at http://fire.boi.noaa.gov/.

V. Fire Danger Based Decisions

For NFDRS to be an effective tool for decision making the Unit must identify the fire management problems and answer the following questions:

1. What are the fire occurrence patterns in AEU?

2. What type of fire problems are common to AEU and which of those have the greatest significance to the various managers within the Unit?

3. Can NFDRS outputs be used to identify critical decision thresholds that will aid AEU management staff in the development and implementation of management control mechanisms that could result in fewer or smaller fires?

4. Who is affected by these management control mechanisms and how much control do we have over the affected parties?

5. What is the appropriate NFDRS component or index that will best fit each management control mechanism selected?

Target Group Decision Master Checklist Master
(example)

Description:
This section describes in general terms, the purpose of the decision.

Control:

Who does decision affect		***Level of Control and Communication***	
[ ] Agency Personnel [ ] Industry [ ] Public	This section describes the "public" being controlled by the decision. Generally, most control can be exercised over our own people, some control over industry people subject to regulation and the least control over the general public.	[ ] High [ ] Medium [ ] Low	The ability of the "public" to respond to changing conditions is the issue. This is often driven by the communication method. We usually have quick communication with our own people and infrequent communication with the public.

Decision Action:

[ ] Use Adjective Levels

Adjective	***Action***
Low **Medium** **High** **Very High** **Extreme**	Indicate the general action that should happen at each adjective level. Indicate who is responsible for the action.

[ ] Use Custom Decision Criteria

If the general adjective ratings are not appropriate for the decision, then a "custom" decision criteria can be set up. Consider the control issues described above when selecting an index to drive the decision. For example, Ignition Component and Spread Component are volatile and difficult to predict. Burning Index is a little more stable and is usually based on more predictable factors. Energy Release Component tends to be slow to respond to short term fluctuations in weather and is therefore more stable and predictable.

NFDR Area	Weather Station	Index to use	Index Values	Action

A. Incident Dispatch

Control:

Incident Dispatch is simply stated the initial incident response level for resource allocation for incidents within the Unit. This decision typically sets the tone for an effective initial attack response to wildland fires as well as for times when command center personnel have a report of a wildland fire and a location, but possibly little additional information prior to the first Report-On-Conditions. The intent is to send sufficient resource strength given the potential fire behavior for that time. The intent is also to save time, money, and resources by not sending resources that probably won't be needed. Specific resource amounts by dispatch level are identified in CAD for each response area.

Control:

Who does decision affect		*Level of Control and Communication*	
		[X] Extreme	**Notification to duty chief for dispatch level decision.**
[X] Agency Personnel	**Initial attack forces USFS ENF Local Government Fire Agencies (all counties)**	**[X] High**	**Radio communication at all times. Alpha Pager Links in CAD**
[ ] Industry		**[ ] Medium**	
[ ] Public		**[ ] Low**	

Decision Action:

[ ] Use Adjective Levels

Adjective	*Action*
Low	
Medium	
High	
Very High	
Extreme	

[X] Use Custom Decision Criteria

Decision criteria for AEU was developed using different breakpoint criteria for each NFDRA within the Unit. Within NFDRA East, Burning Index (BI) will be used exclusively for setting the corresponding Dispatch Level throughout the day. For the NFDRA West

there will be a custom matrix utilized which will correlate Burning Index (BI) and Spread Component (SC) to set the Dispatch Level throughout the day. The tables below represent the thresholds that will be utilized in both NFDRA's within AEU.

The afternoon dispatch level will be set by actual indices calculated in WIMS or with the NFDRS calculator. Forecasted indices are available at approximately 1630 hrs. for use the next day and will be available as a planning tool for the next day's operation. Daytime actual calculations will be used to modify dispatch level every two hours or as needed throughout the day.

NFDRA EAST

Pilot Hill RAWS
Fuel Model J

		Index Break Points			
Weather Station	**Index**	**Low**	**Medium**	**High**	**Extreme**
Pilot Hill	**BI**	**0-95**	**96-125**	**126-160**	**<161**

NFDRA WEST

Ben Bolt RAWS
Fuel Model A

Dispatch Level					
		Burning Index			
		0-20	21-33	34-47	< 48
Spread Component	0-35	LOW	MEDIUM	HIGH	EXTREME
	36-65	MEDIUM	MEDIUM	HIGH	EXTREME
	66-95	HIGH	HIGH	HIGH	EXTREME
	< 96	EXTREME	EXTREME	EXTREME	EXTREME

B. Cooperating Fire Agencies, Adjacent Units, Law Enforcement, and Local OES

Description:

All of the groups listed below bring fire control resources, organizational support, or overhead resources to bear in the event of a wildland fire in AEU. This support will place additional strains on their own jurisdictional responsibilities as it relates to delivering the services they provide. The Fire Danger Adjective Rating will allow them to make preparations for impacts that may occur as a result of a wildland fire within AEU.

Control:

Who does decision affect		*Level of Control and Communication*	
[X] Agency Personnel	**Amador, El Dorado, Sacramento, and Alpine County Fire Agencies Local OES Reps. USFS TMU, ENF, & HTF BLM CAL FIRE TCU, NEU, HQ/CFA**	**[X] High**	**Local Unit or Sacramento ECC's contact various offices via alpha page or email.**
[ ] Industry		**[ ] Medium**	
[ ] Public		**[ ] Low**	

Decision Action:

[X] Use Adjective Levels

Adjective	*Action*
Low	
Medium	
High	
Very High	**Alpha Page or Email Local Cooperators.**
Extreme	**Alpha Page or Email Local Cooperators.**

[ ] Use Custom Decision Criteria

			Index Break Points		
NFDR Area	**Weather Station**	**Index**	**Low**	**Medium**	**High**

Land Management Agencies (other than USFS & BLM)

Description:

Land management organizations typically have some fire prevention responsibility related to public utilization of the organization's lands. Notification of the Fire Danger Adjective Rating will give them the necessary information for the control of public activity relating to the use of open fires as well as road and trail access through wildland areas.

Control:

Who does decision affect		*Level of Control and Communication*	
[X] Agency Personnel	**Bureau of Reclamation Calif. Dept. of Parks and Rec. Folsom Lake and Auburn State Rec. Area EID Sly Park and Forebay**	**[ ] High**	
[ ] Industry		**[X] Medium**	**Local Unit or Sacramento ECC's contact various offices via alpha page or email.**
[ ] Public		**[ ] Low**	

Decision Action:

[X] Use Adjective Levels

Adjective	*Action*
Low	
Medium	
High	
Very High	**Alpha Page or Email Cooperators.**
Extreme	**Alpha Page or Email Cooperators**

[ ] Use Custom Decision Criteria

			Index Break Points		
NFDR Area	**Weather Station**	**Index**	**Low**	**Medium**	**High**

C. PG&E, SMUD, Cal Trans, & Water Delivery Agencies

Description:

Utilities, CalTrans, Local Water Agencies, and Private Industry will modify some of their daily operational activities based on the fire danger. This is primarily a fire prevention measure to eliminate risk sources during very high and extreme fire danger conditions. Sacramento Command Center staff retrieves the predicted fire danger from Regions and then communicates this information to the state offices of PG&E, SMUD, and CalTrans. Those entities have the opportunity to change their operational plans based upon the relative fire danger in work areas. The predicted adjective ratings will be used to determine the need to make contact with the appropriate entities. See Notification Matrix.

Control:

Who does decision affect		*Level of Control and Communication*	
[ ] Agency Personnel		**[ ] High**	
[X] Industry	**PG&E, SMUD, CalTrans, El Dorado Irrigation District, Amador Water Agency**	**[X] Medium**	**Local Unit or Sacramento ECC's contact various offices via alpha page or email.**
[ ] Public		**[ ] Low**	

Decision Action:

[X] Use Adjective Levels

Adjective	*Action*
Low	
Medium	
High	
Very High	**Alpha Page or Email Cooperators.**
Extreme	**Alpha Page or Email Cooperators**

[ ] Use Custom Decision Criteria

			Index Break Points		
NFDR Area	**Weather Station**	**Index**	**Low**	**Medium**	**High**

D. Public and Fire Safe Council Notification

Description:

This is the general, once daily description of the fire danger. The intent is to raise awareness of the potential fire danger in simple easy to communicate terms. This is primarily a fire prevention tool to alert the public to be fire safe. The main contact for this notification will be the El Dorado and Amador Fire Safe Councils. The actual (real time) and predicted (forecasted) adjective ratings will be used to determine the need to make contact with the appropriate entities. See Notification Matrix.

Control:

Who does decision affect		*Level of Control and Communication*	
[ ] Agency Personnel		**[ ] High**	
[ ] Industry		**[ ] Medium**	
[X] Public	**General public, local citizens, and tourists. Includes agency personnel and industry but not specifically aimed at their activities.**	**[X] Low**	**Low relative control and relatively good communication. Notification by phone, page, or email.**

Decision Action:

[X] Use Adjective Levels, Forecasted and Actual

Adjective	*Action*
Low	
Medium	
High	
Very High	**Alpha Page or Email Fire Safe Councils**
Extreme	**Alpha Page or Email Fire Safe Councils Prevention Specialist will prepare a Public Service Announcement for distribution.**

[ ] Use Custom Decision Criteria

			Index Break Points		
NFDR Area	**Weather Station**	**Index**	**Low**	**Medium**	**High**

E. Draw Down Staffing Patterns

Description:

Occasionally it is necessary to hold employees on duty or call employees back from days off to staff equipment when other resources are out of county or committed to an incident within the unit. When fire potential is severe enough, it may be required to take action before a new incident occurs. The question frequently arises about the need to fight the fire on hand; or fight the fire we might have. This plan provides the starting point for such decisions and the decision to initiate staffing patterns should be made with consideration of Draw Down Level and relative fire danger.

AEU Draw Down Levels				
	Blue Book	Draw Down Level		
	Assigned	1	2	3
Engines	*13*	*11*	*7*	*3*
Crews	*9*	*7*	*5*	*2*
Dozers	*2*	*2*	*1*	*1*

Control:

Who does decision affect		*Level of Control and Communication*	
[X] Agency Personnel	**Initial attack suppression employees and conservation camp crews.**	**[ ] High**	
[ ] Industry		**[X] Medium**	**Personnel management policy establishes the minimum call back period.**
[ ] Public		**[ ] Low**	

Decision Action:

[X] Use Adjective Levels

Adjective	*Action*
Low	
Medium	
High	
Very High	**Consider the need to initiate local staffing pattern.**
Extreme	**The need for local staffing pattern highly likely.**

[ ] Use Custom Decision Criteria

			Index Break Points		
NFDR Area	**Weather Station**	**Index**	**Low**	**Medium**	**High**

F. Initiation of the Burn Ban

Description:

Every year AEU is tasked with making a determination to cancel permitted open burning within the DPA. This can be a very contentious decision because it's the role of the local unit to encourage homeowners to remove hazardous vegetation while still allowing them to burn within conditions that allow the safe use of fire. The absence of an adequate mechanism, other than open burning, to dispose of vegetation created while maintaining clearance standards presents an administrative quandary. On one hand you want the public to manage the vegetation near their homes, while on the other we need to protect the community from the use of fire during those times when conditions can cause escape or large fire development. NFDRS lends itself to making these kinds of decisions; however, it is recognized that it will only be one of the many factors that are considered to make the final decision.

This decision is also one that relates directly to the credibility of the local unit. The burn ban, once initiated, cannot be reversed until the end of fire season. The Level of Control and Ability to Communicate are very low at best. The ability to communicate with the public in a timely and efficient manor makes this decision one of the more difficult administrative actions undertaken each year. The most appropriate index or intermediate calculation to use will be one that demonstrates a long term trend throughout and does not fluctuate wildly over the course of the season.

Control:

Who does decision affect		*Level of Control and Communication*	
[ ] Agency Personnel		[ ] High	
[ ] Industry		[ ] Medium	
[X] Public	Homeowners and other members of the community who utilize open burning to dispose of vegetation.	[X] Low	Press release to the local publications and contact with the local Air Quality Management Districts to change recordings.

Decision Action:

[ ] Use Adjective Levels

Adjective	*Action*
Low	
Medium	
High	
Very High	
Extreme	

[X] Use Custom Decision Criteria

			Index Break Points		
NFDR Area	Weather Station	Index	Low	Medium	High
EAST	Pilot Hill Model J	ERC			125

At the point where the ERC at Pilot Hill RAWS reaches 125, *AFTER GREEN UP is complete*, for Fuel Model J, Consideration of the Unit Burn Ban will be made by the Unit Chief, Prevention Bureau, and Operational Staff.

G. Timber Operations

Description:

The fire prevention program in aimed at preventing ignitions in forested areas when the potential for large and damaging fires becomes excessive. The daily NFDRS forecast which is available in WIMS every afternoon will provide the necessary planning tool. This information will be transmitted to local operators with the means to receive the information after the forecasted indices have been made available in WIMS.

Control:

Who does decision affect		*Level of Control and Communication*	
[ ] Agency Personnel		**[ ] High**	
[X] Industry		**[X] Medium**	**Larger timberland owners have contact with employees through radio or cell phones.**
[ ] Public		**[X] Low**	**Smaller contract operators do not typically have frequent contact with timberland owners.**

Decision Action:

[X] Use Adjective Levels

Adjective	*Action*
Low	
Medium	
High	
Very High	**Zion RAWS: Contact local timber operators via Alpha Page or Email**
Extreme	**ZION RAWS: Contact local timber operators via Alpha Page or Email**

[ ] Use Custom Decision Criteria

			Index Break Points		
NFDR Area	**Weather Station**	**Index**	**Low**	**Medium**	**High**

H. Lightning

Description

Lightning activity within the area covered by this plan can occasionally present a significant ignition source during the summer and fall months when fuels conditions are most critical. Lightning activity can cause large numbers of ignitions over wide areas which overwhelm local resources engaged in detection and suppression. Pre-Planning for possible lightning activity is critical to ensure the unit is successful in mitigating lightning caused wildfire events.

Lightning events come in two basic forms; those not accompanied by precipitation known as "dry", and those that come with precipitation. Both types present unique fire suppression problems. Dry lightning events present immediate ignitions that are brought to life by the dry fuels conditions and high winds that result from the associated thunderstorms. These events have the potential to cause large rapidly moving wildfires. Lightning events with precipitation are still a significant threat, often long after the event has passed. Ignitions can remain seeded in damp fuel beds until the warmer and drier weather brings them to life. The delay in detection can extend the impact of these events for days.

Control:

Who does decision affect		*Level of Control and Communication*	
[X] Agency Personnel	**CAL FIRE AEU and the El Dorado National Forest**	**[X] High**	**Interagency Emergency Command Center**
[ ] Industry		**[ ] Medium**	
[ ] Public		**[ ] Low**	

Decision Action:

[ ] Use Adjective Levels

Adjective	*Action*
Low	
Medium	
High	
Very High	
Extreme	

[X] Use Custom Decision Criteria

See the attached Lightning and Complex Incident Plan in Appendix H of this Plan.

VI. *Notification Matrix For Predictions*

Predictions can come in any number of formats and can come from various sources. The two basic types of predictions that will be used as a part of this plan will be that created from WIMS and those created from the National Weather Service. WIMS directions are included as an appendix to this plan and the National Weather Service Fire Weather Products can be found at the following site: **http://www.wrh.noaa.gov/sto/cafw/index.php** In addition to the products listed above, there is a weekly Smoke Management Conference Call which will include Predictive Services staff as well as representation form operational resources. This call is generally intended for prescribed fire users however it is an excellent venue to discuss other issues. The call is Mondays at 1300 hrs. Phone number 877-874-5440; Pass Code 357238#. During the Monday call it will be determined whether the call will also be held on other days during the week. A summer meteorological conference call is held at the same number and pass code as needed when there is a red flag warning.

Action/ Notify	**Battalion Chiefs Division Chiefs Fire Weather Coordinator**	**Prevention Duty Officer and Staff**	**Duty Chief**	**Stations, Camps, Shops**	**Local Government USFS & BLM County OES State Parks Duty Chief/Officer**	**Timber Harvesting Operations**	**Fire Safe Council and Public Notification**
Event/ Situation							
Fire Weather Watch Red Flag Warning or Lightning Event	**Page prior to reading weather**	**Page prior to reading weather**	**Page prior to reading weather**	**Read AM and PM wx BC's responsible for station contact and confirmation**	**Page LG Duty Chiefs & Other Agencies**	**Page Prevention Duty Officer**	**Page Prevention Duty Officer** **Prepare PSA**
Very High Adjective Prediction	**Page prior to reading weather**	**Page prior to reading weather**	**Page and notify when giving 1600 predictios**	**Read adjective predictions at end of PM weather**	**Page LG Duty Chiefs & Other Agencies**	**Page Prevention Duty Officer who will notify cooperators.**	
Extreme Adjective Prediction	**Page prior to reading weather**	**Page prior to reading weather**	**Page and notify when giving 1600 predictions**	**Include adjective predictions at end of PM weather**	**Page LG Duty Chiefs & Other Agencies**	**Page Prevention Duty Officer who will notify cooperators.**	**Page Prevention Duty Officer** **Prepare PSA**
NWS Winter Storm Warning			**Page prior to reading advisory over AEU Local**	**Read advisory over AEU Local**	**Page LG Duty Chiefs & Other Agencies**		

VII. Needs Assessment

A. **Weather Station Sites**

New weather station sites will not be necessary for AEU fire business and NFDRS system support. The scale of NFDRS doesn't require additional RAWS to be effective. Placement of the RAWS is more likely an issue of review for AEU.
Evaluation of the area referred to as the Front Country will need further review to ensure the Ben Bolt RAWS is adequate in capturing the valley bottom fire associations. Weather conditions are often more extreme in this area and an analysis is required to determine the need for further changes in the RAWS network. CAL FIRE Portable RAWS 08 will be at the Van Vleck Ranch in Rancho Murrieta to test NFDRS weather parameters.

B. **WIMS & NFDRS Training**

WIMS and NFDRS training needs to be a priority for AEU ECC staff. The ECC is the anchor point for the implementation of this Fire Weather Operating Plan. Communication Operators, ECC Captains, ECC Chief, and Management will need to make training a priority. Further effort should be made to identify candidates for the Advanced National Fire Danger Rating course offered at NAFRI in Tucson, Arizona. This course is the final in the NFDRS series which provides the student with the tools to create and manage an NFDRS Fire Danger Rating Operating Plan.

C. **Quality Assurance and Analysis**

As is the case with any new tool, this Fire Danger Rating Operating Plan must undergo continuous quality assurance and analysis to ensure the plan is functioning as needed to fulfill operational objectives. As this product is rolled out to the field it will require input from responding field staff to validate the appropriateness of the decisions that are made throughout the season. The evaluation must be as objective as possible and address the problems with a given incident or administrative decision in an honest manner. The field staff will be asked to provide written feedback throughout the first year to refine the decision making process.

D. **Contact Updates**

Contacts not included as part of the CAD at the Camino ECC will have to be reviewed annually.

VIII. ***Appendix***

A. Annual Review

Annual review of this plan will be made by the Unit Fire Weather Coordinator, Operations Chief, ECC Chief, and the Unit Chief prior to December 31st of every year. Fire analysis will be conducted and reviewed by the same individuals annually as the data is available to evaluate the indices and decision thresholds. This will be completed after the CAIRS data has been converted to a format that can be utilized with Fire Family Plus.

B. Maps

1. Unit and Direct Protection Area Map

2. Fire Danger Rating Area Map

3. Weather Station Map

4. Vegetation Map

C. Daily Operations

D. WIMS Procedures

E. WIMS State of the Weather and Wet Flag Definitions

F. Data Import Procedures for CAL FIRE Fata into Fire Family Plus

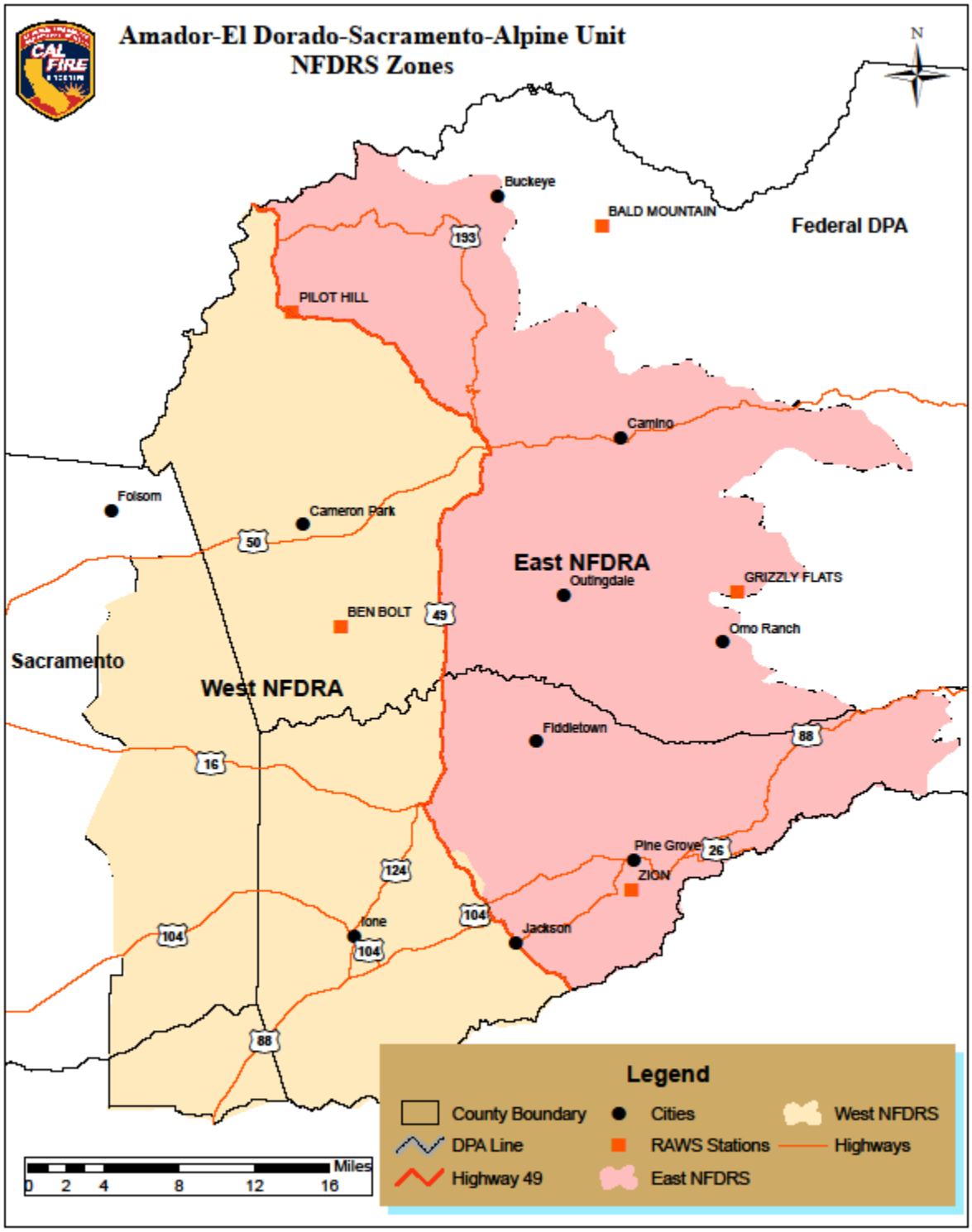
G. Quality Assurance

H. Lightning and Complex Incident Plan

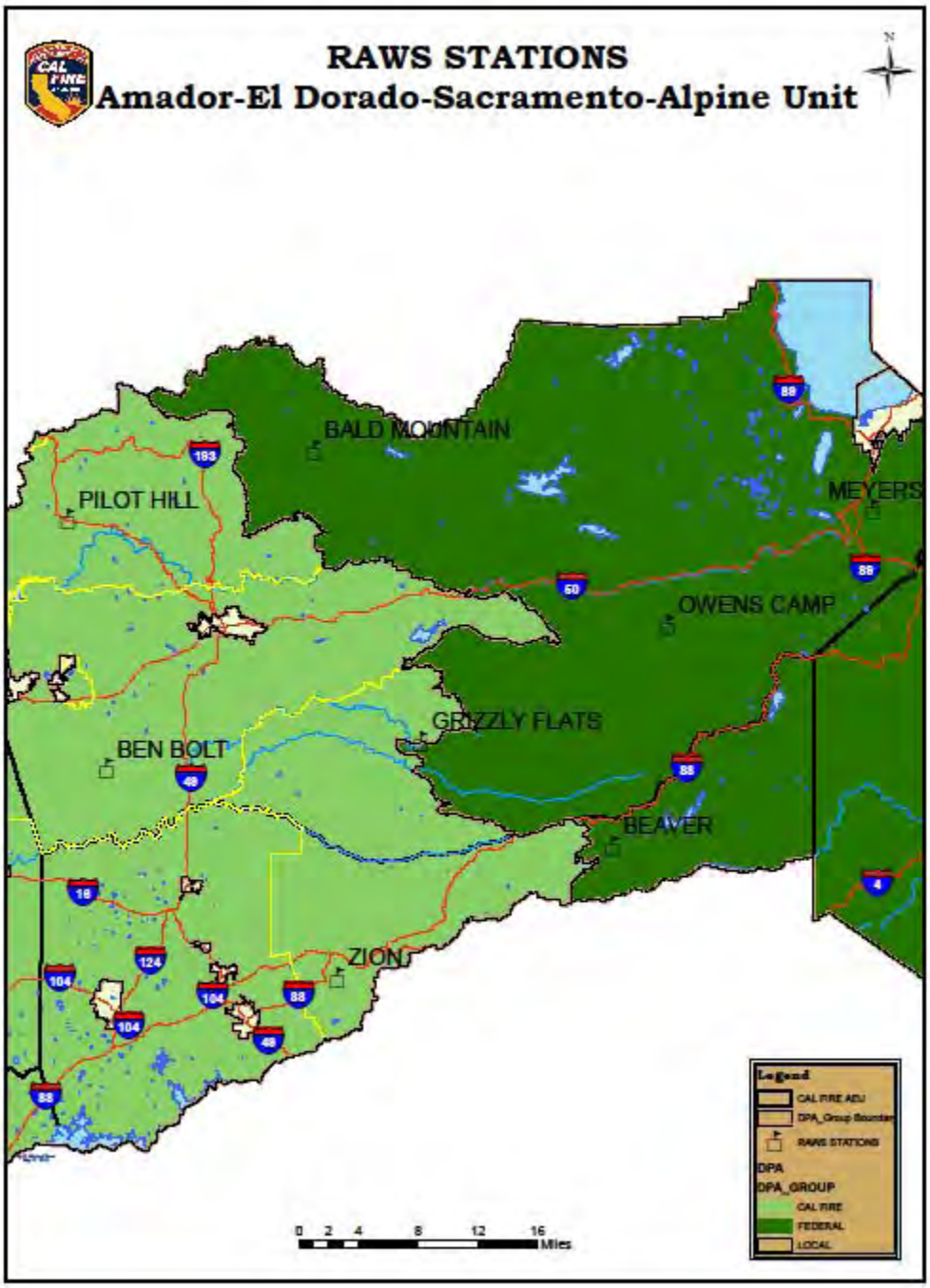
Unit Map/DPA

Amador-El Dorado-Sacramento-Alpine Unit
DPA Map
N
USFS
CAL FIRE
SAC County
Legend
DPA
DPA_GROUP
FEDERAL
CAL FIRE
LOCAL
Miles
0 3.75 7.5 15 22.5 30

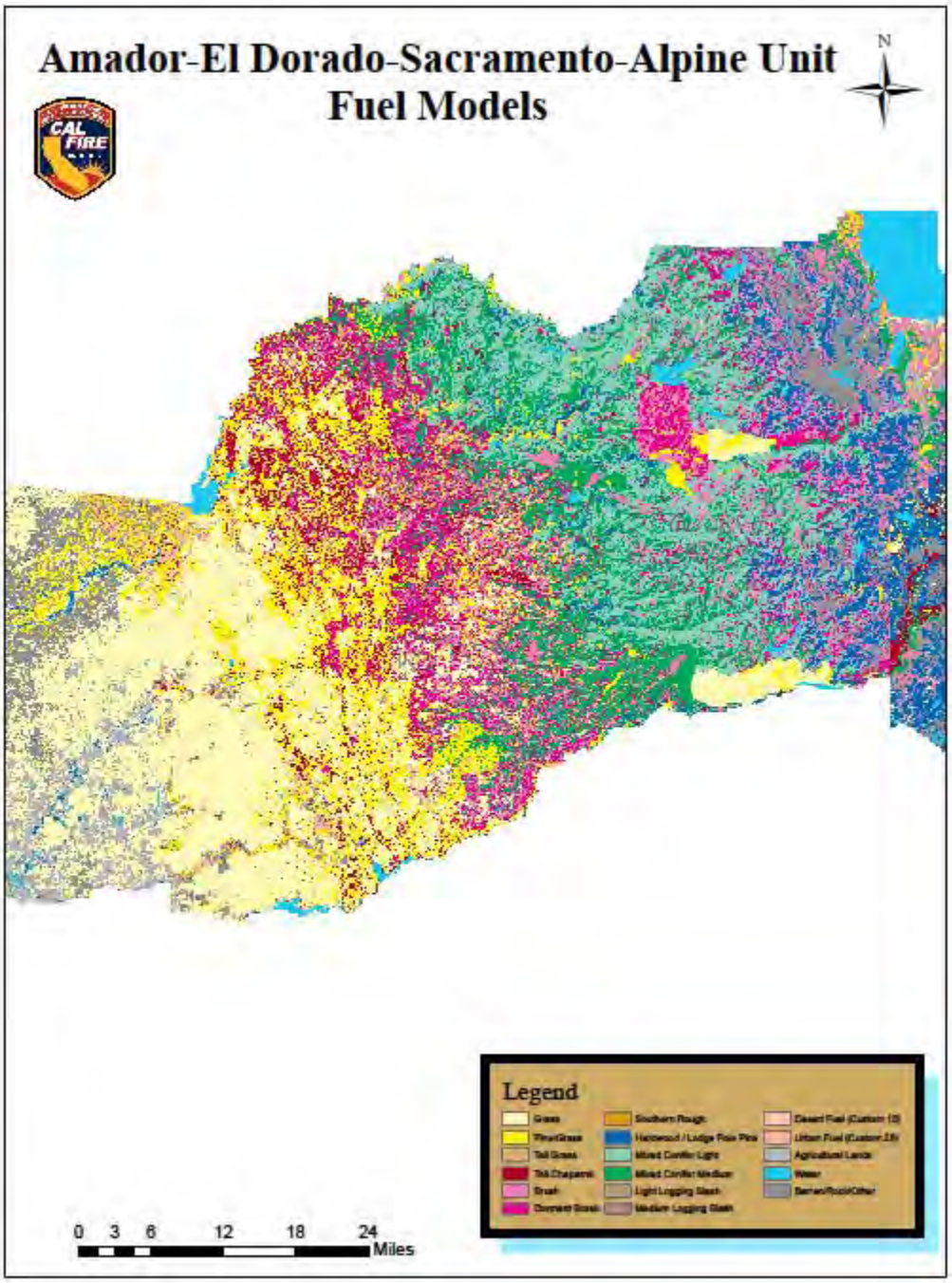
National Fire Danger Rating Areas



RAWS Map


RAWS STATIONS
Amador-El Dorado-Sacramento-Alpine Unit
N
BALD MOUNTAIN
PILOT HILL
MEYERS
OWENS CAMP
GRIZZLY FLATS
BEN BOLT
BEAVER
ZION
193
88
60
49
16
124
104
4
0 2 4 8 12 16
Miles
Legend
CAL FIRE ADU
DPA_Group Boundary
RAWS STATIONS
DPA
DPA_GROUP
CAL FIRE
FEDERAL
LOCAL

Vegetation Type Map



Appendix C

Daily Operations

ECC Operations

0900 hrs.	Review WIMS for forecasted indices, review Notification Matrix for possible notifications to users.
1000 hrs.	Broadcast Weather Forecast and Last Night's Predicted Indices with Morning Report over AEU Local Net
1030 hrs.	First Dispatch Level Calculation (Use latest observation*)
1230 hrs.	Second Dispatch Level Calculation
1330 hrs.	Edit the 1200 Observation in WIMS for all stations in AEU and make third Dispatch Level Calculation.
1530 hrs.	Fourth Dispatch Level Calculation (1400 Observation)
1600 hrs.	Tomorrow's Predicted Indices Should be Available in WIMS. Review thresholds and Notification Matrix. Begin Notifications for tomorrows predicted Adjective Ratings.
Sundown + 2 Hours	Last Dispatch Level Calculation (Reset for Tomorrow)

*** If the observation has not arrive in WIMS than use the latest available observation. Data transmission times for AEU RAWS are all after the 58th minute of the hour. Therefore the 1200 hr. observation is actually transmitted to the satellite at 1258 hrs. This makes 1200 hr. observation the closest observation to the 1300 hour, which is the target time for NFDRS. Always remember the observation time is rounded DOWN to the whole hour.**

Daily Dispatch Level and Adjective Rating Data Sheet

Date:_____

Forecasted Indices and Adjective Ratings (WIMS forecast from yesterday, read with morning weather)

NFDRA Dispatch Zone	Temp	RH	Wind Sp/Dr	IC	SC	BI	Adjective Rating	Dispatch Level
EAST **Pilot Hill** **RAWS 042609**								
WEST **Ben Bolt** **RAWS 042612**								

1200 Hr. Observation From WIMS

NFDRA Dispatch Zone	Temp	RH	Wind Sp/Dr	IC	SC	BI	Adjective Rating	Dispatch Level
EAST **Pilot Hill** **RAWS 042609**								
WEST **Ben Bolt** **RAWS 042612**								

Afternoon Supplemental Calculations

WIMS Ob Time:

NFDRA Dispatch Zone	Temp	RH	Wind Sp/Dr	IC	SC	BI	Adjective Rating	Dispatch Level
EAST **Pilot Hill** **RAWS 042609**								
WEST **Ben Bolt** **RAWS 042612**								

Supplemental Dispatch Level and Adjective Rating Data Sheet

Date:_____

WIMS Ob Time:

NFDRA Dispatch Zone	Temp	RH	Wind Sp/Dr	IC	SC	BI	Adjective Rating	Dispatch Level
EAST Pilot Hill RAWS 042609								
WEST Ben Bolt RAWS 042612								

WIMS Ob Time:

NFDRA Dispatch Zone	Temp	RH	Wind Sp/Dr	IC	SC	BI	Adjective Rating	Dispatch Level
EAST Pilot Hill RAWS 042609								
WEST Ben Bolt RAWS 042612								

WIMS Ob Time:

NFDRA Dispatch Zone	Temp	RH	Wind Sp/Dr	IC	SC	BI	Adjective Rating	Dispatch Level
EAST Pilot Hill RAWS 042609								
WEST Ben Bolt RAWS 042612								

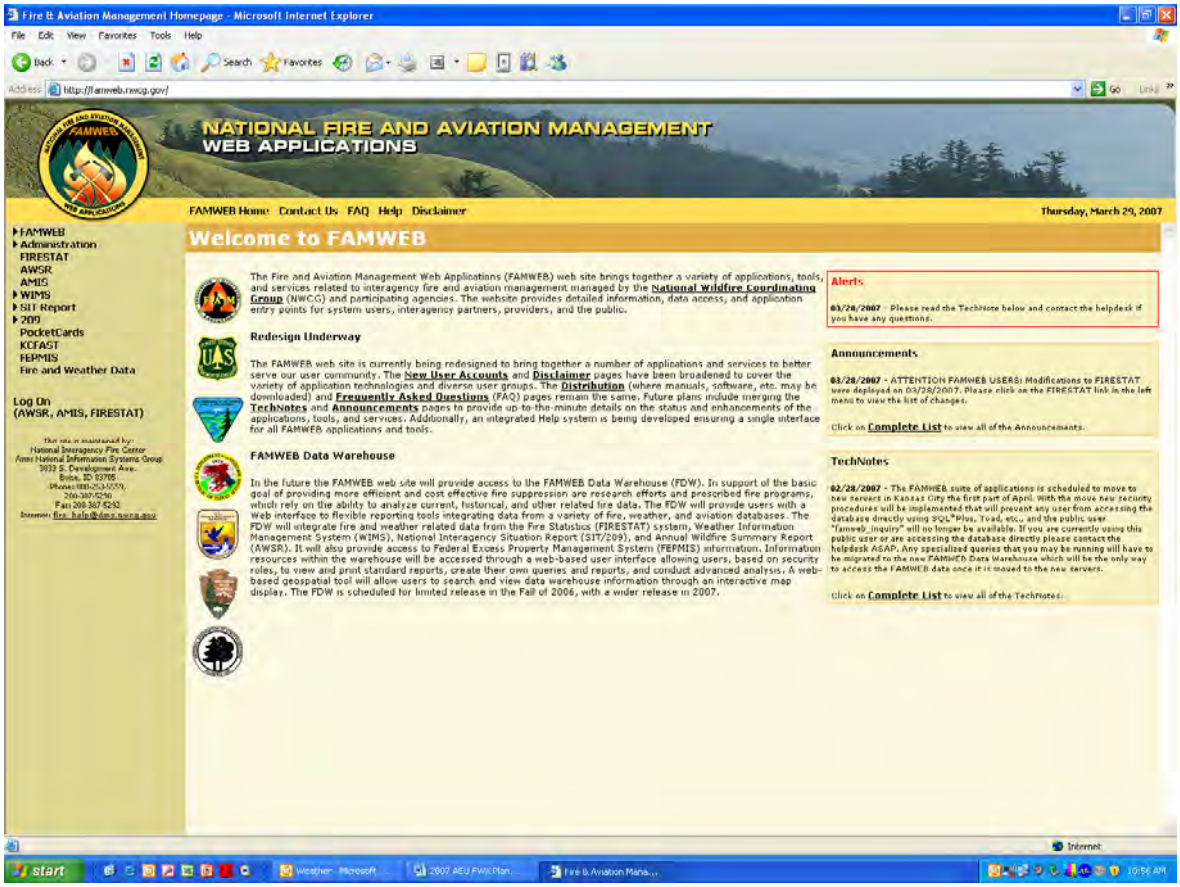
Appendix D

WIMS Procedures

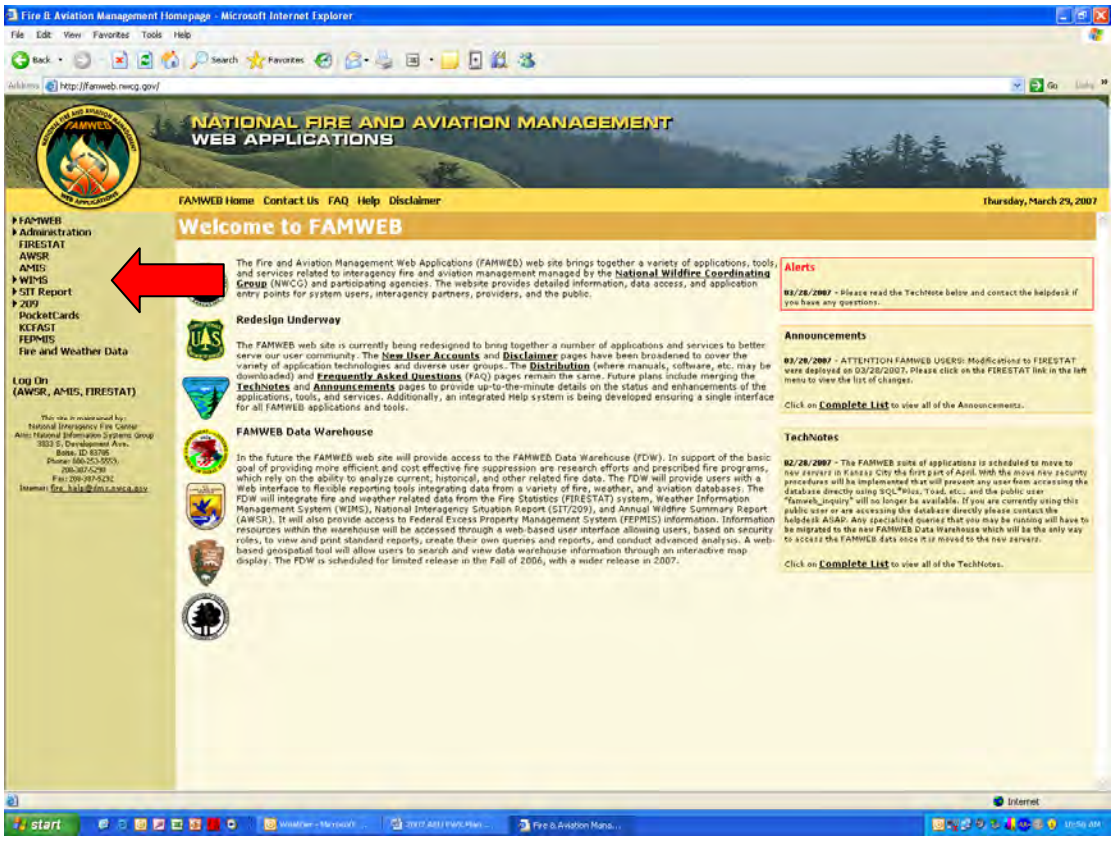
Step by Step WIMS Directions for the ECC, Editing OBS

Step 1: Start *Internet Explorer*

Step 2: Type http://fam.nwcg.gov/fam-web/ in the Address Bar and hit Go.

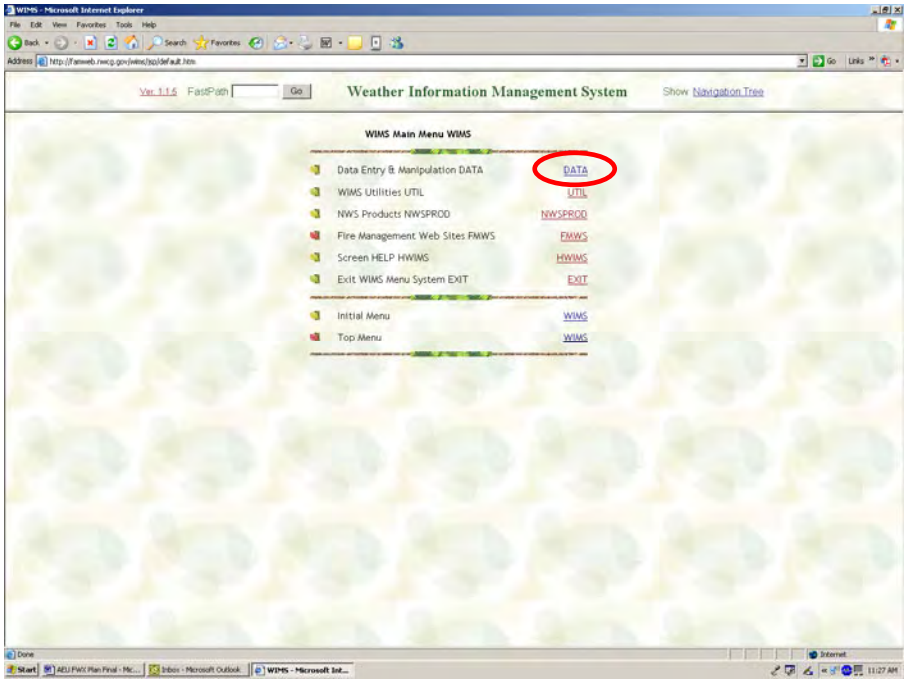


Step 3: The screen shown below will appear. Click WIMS.

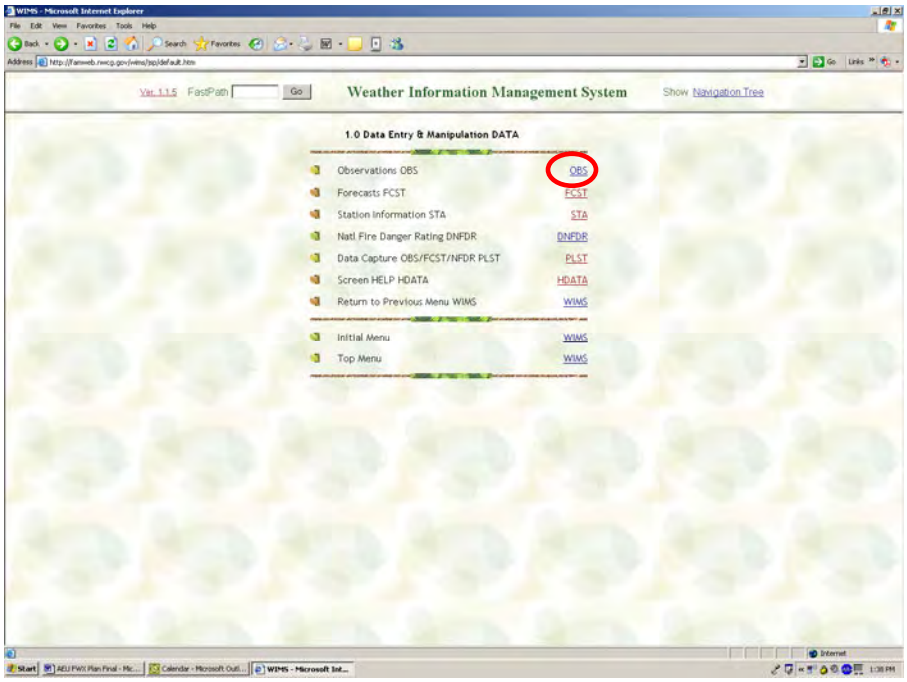


Step 4: Enter User Name and Password

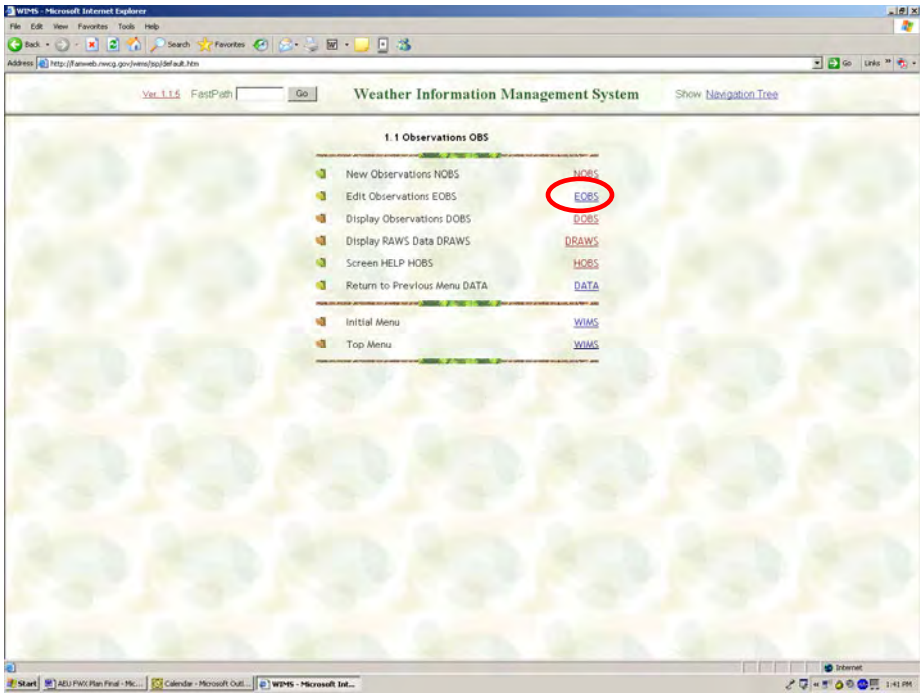
Step 5: WIMS Main Menu Click "DATA"



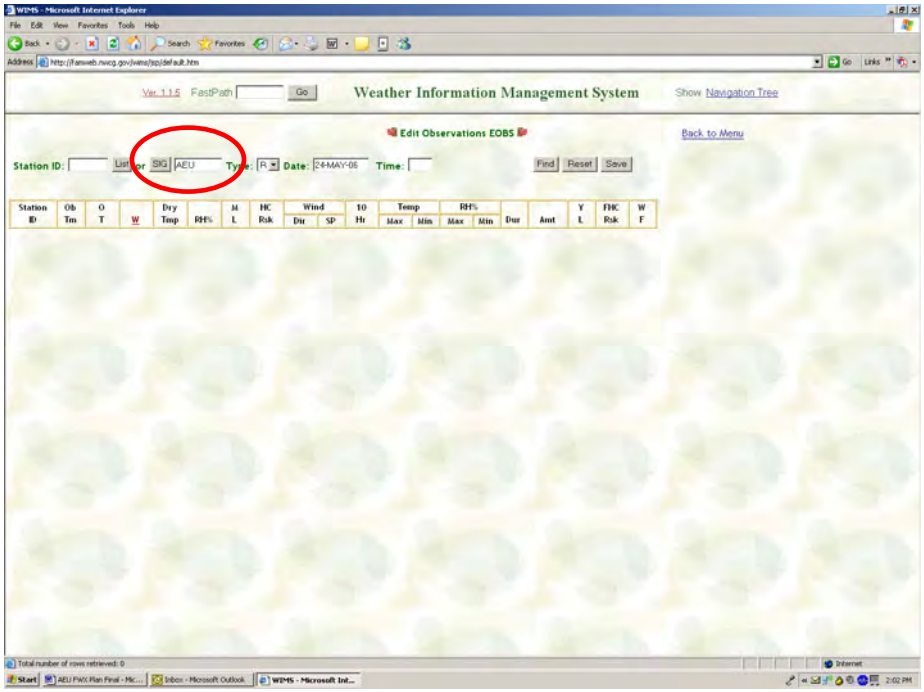
Step 6: WIMS Main Menu Click "OBS"



Step 7: WIMS Main Menu Click "OBS"

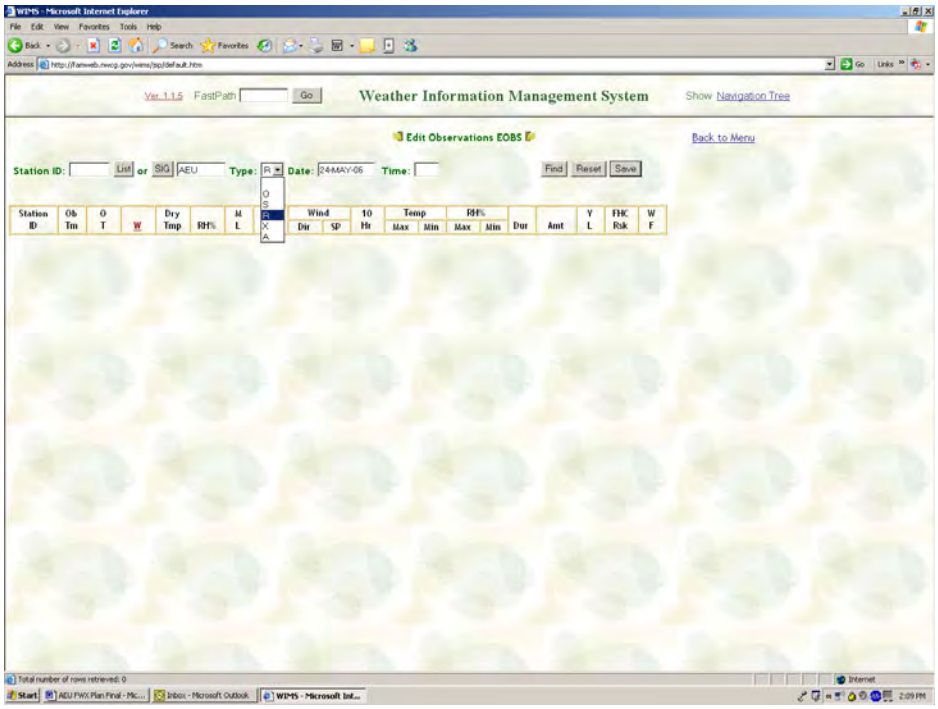


Step 8: WIMS Edit Observations Screen

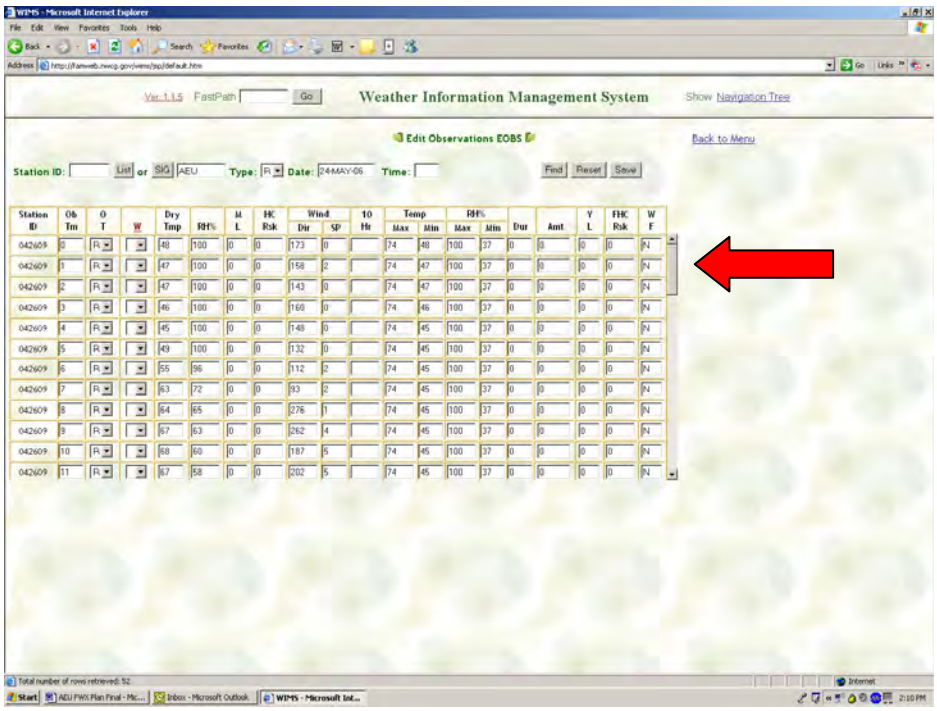


The SIG cell should be "AEU", if it doesn't, click the SIG button and scroll down to it to fill the cell properly.

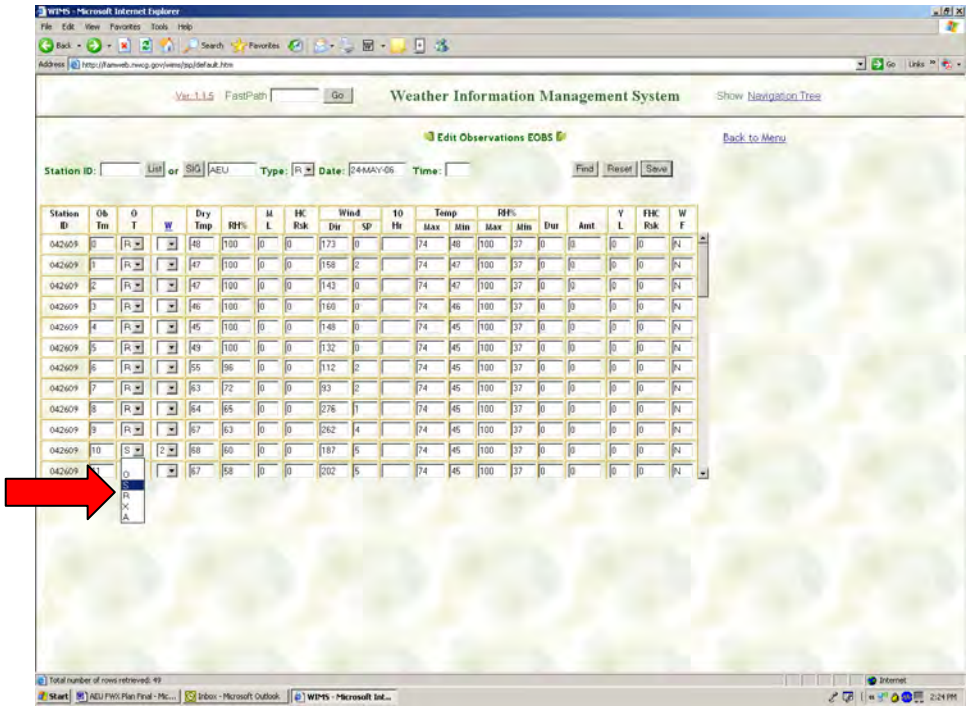
Step 9: Change the Type Field to "R" for Raw Data and then click the "FIND" button to bring all the observations for all three RAWS up.



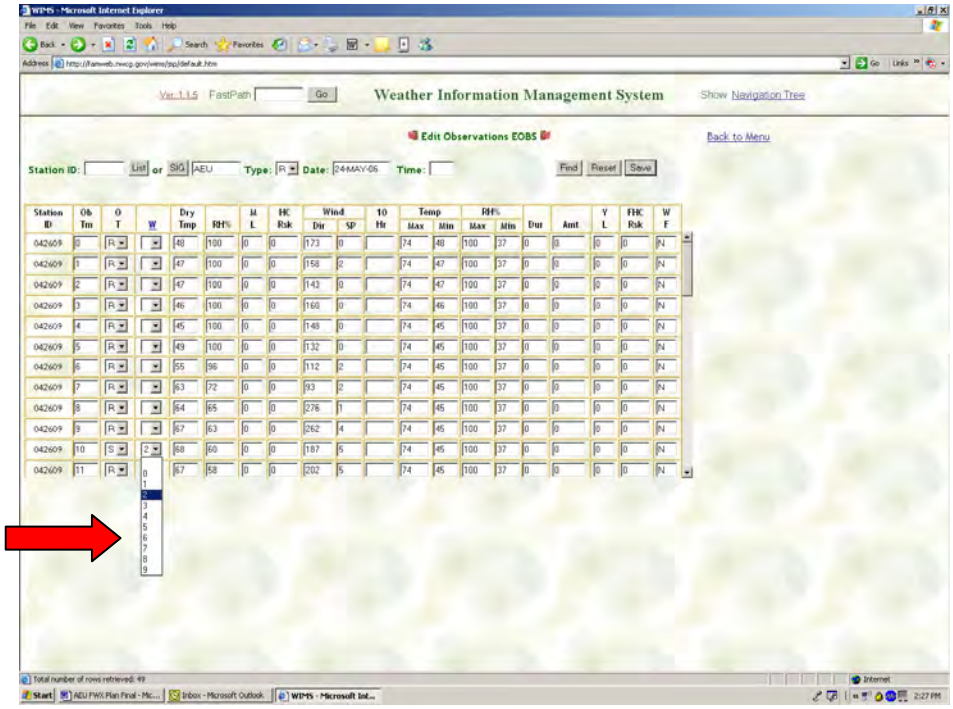
The screen below will appear with the daily observations for all three RAWS which can be scrolled through with the bar to the right of the observations.



Step 10: It's now time to make the necessary edits so WIMS can work for you. There are two types of observations; "S" for Special or "O" for Observation. The "S" observation will be used for making daily dispatch level calculations or determining the Adjective Rating for that time. The "O" observation will also be utilized for the Dispatch Level and Adjective Ratings however the "O" observation is saved in the system permanently for future NFDRS calculations. The "S" type observation can be done at any time and the "O" type observation is only done to the 1200 hrs. observation for each station.

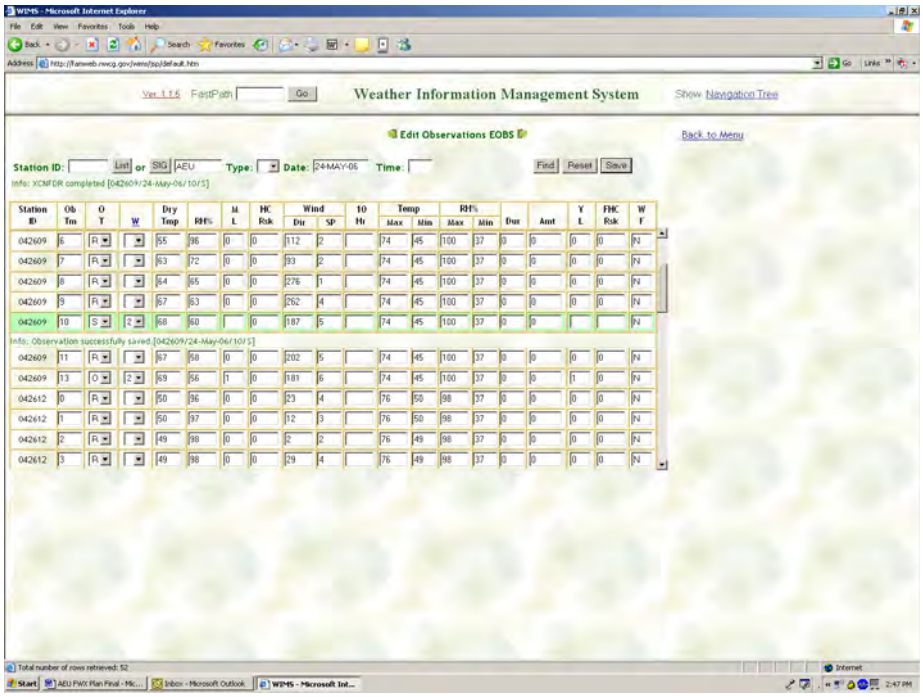


Edit the OT field reflect the required information. The image above shows a change to an "S" observation.

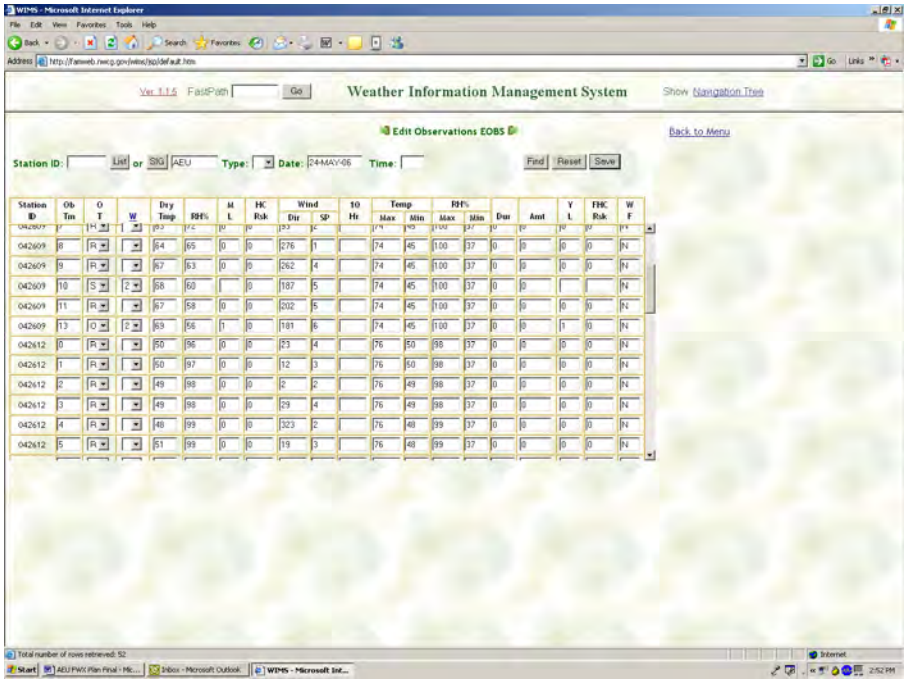


Edit the State of the Weather Field "W" to reflect the cloud cover and possible precipitation. There is a discussion of the State of the Weather codes at the end of these instructions for your review. Please review this information prior to selecting the State of the Weather.

After editing all three RAWS observations for the same time hit "SAVE". After a save any accepted change will appear in green as shown below.



Scroll down to make sure all three were successfully saved. If not, go back and make the edits again and save again. Eventually it will take. To check and see if they did in fact take, change the Type field to blank and hit FIND again. All of the obs. should appear, regardless of type and will appear as shown below.

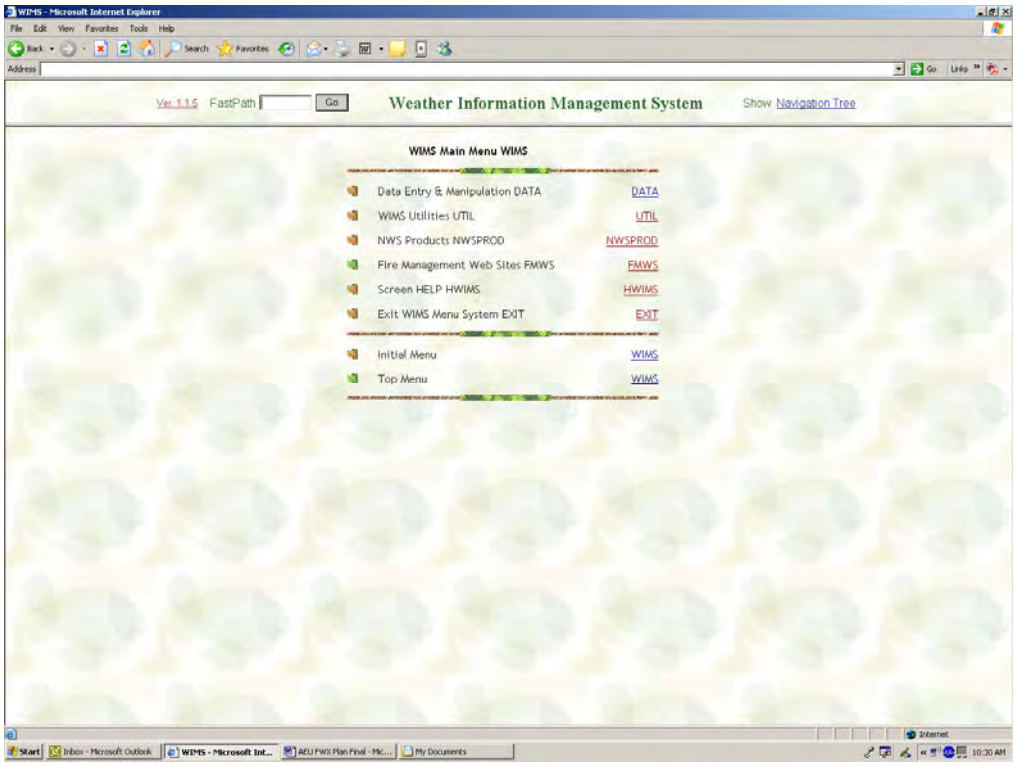


Step by Step WIMS Directions for the ECC, Retrieving Indices

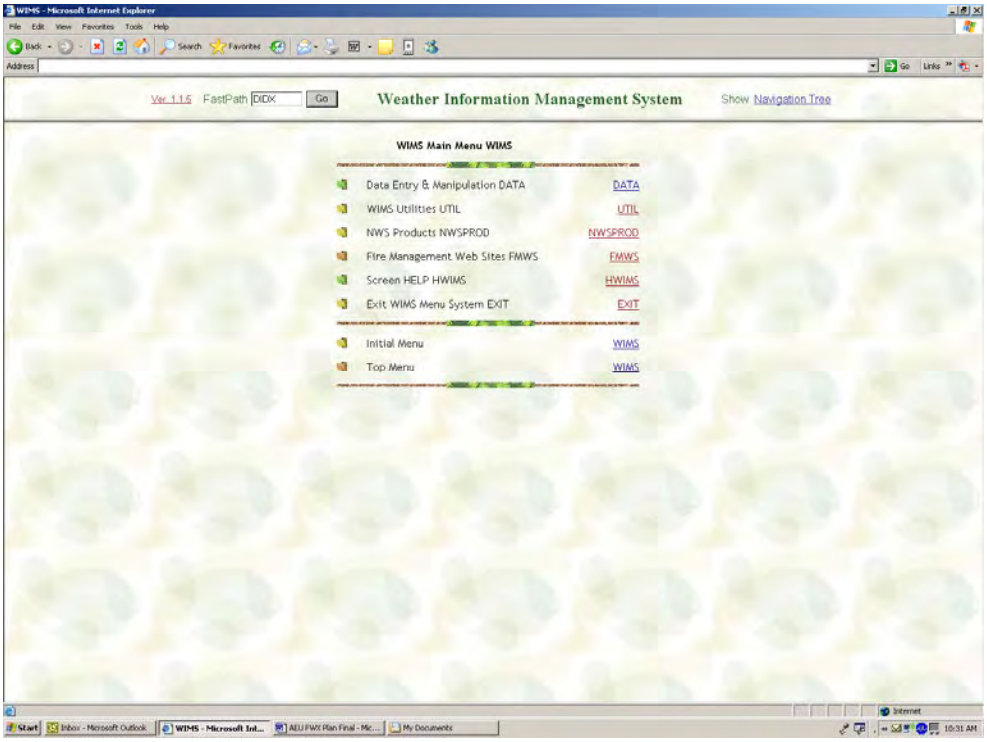
Remember, when retrieving NFDRS indices the observation must first be edited as described as above.

This action will require the user to log into WIMS in the same fashion as described above however the method to access the indices will be a little different. WIMS uses two different ways to execute commands; use the menus or use a FastPath command in the upper left hand corner of the WIMS screen. Please follow the steps below to access the indices and associated NFDRS Adjective Ratings.

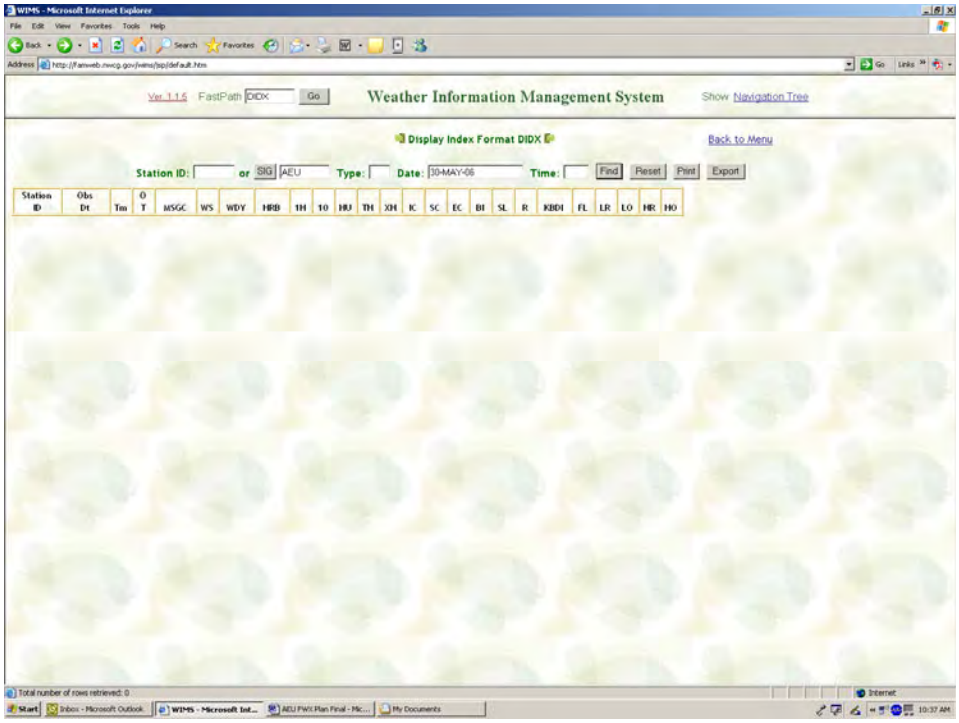
Step 1: Access the WIMS Main Menu Screen as shown below.



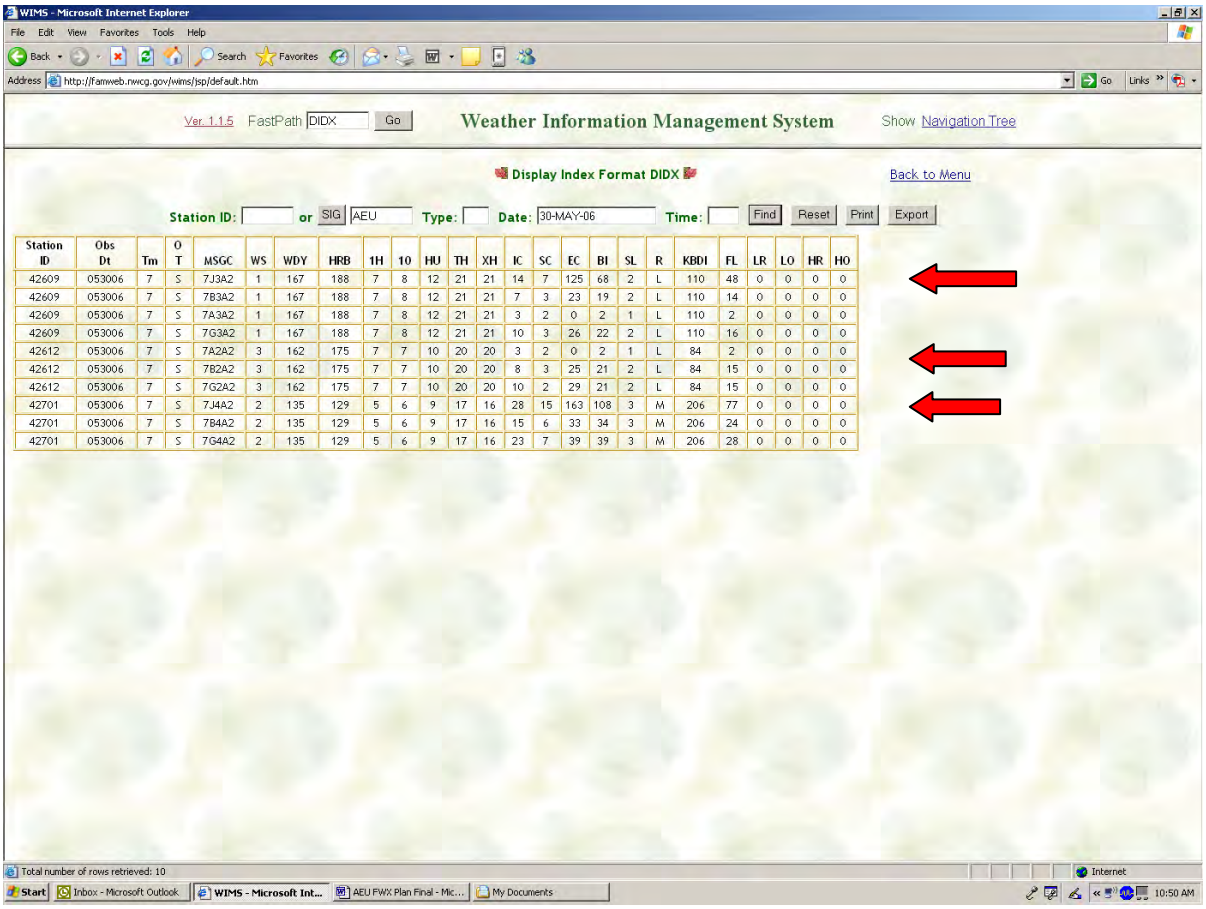
Step 2: Type "DIDX" in the FastPath box at the top left hand side of the screen and hit *Enter.*



Step 3: The screen below will come up which will require some information to access data. You can either enter a station number, or type "AEU" in the SIG box and hit *Enter* to have all three stations pulled up.



Note: When accessing indices from the "DIDX" FastPath you can also designate a specific observation time so there isn't so much information to scroll through. If you take a close look at the screen below you will notice a number of rows for each station number. WIMS makes calculations for every fuel model shown in the station catalogs. There are various fuel models for different purposes associated with each station. The only one that will be used for ECC purposes will be the one first shown for each station. See below.



Station ID	Obs Dt	Tm	O T	MSGC	WS	WDY	HRB	1H	10	HU	TH	XH	IC	SC	EC	BI	SL	R	KBDI	FL	LR	LO	HR	HO
42609	053006	7	S	7J3A2	1	167	188	7	8	12	21	21	14	7	125	68	2	L	110	48	0	0	0	0
42609	053006	7	S	7B3A2	1	167	188	7	8	12	21	21	7	3	23	19	2	L	110	14	0	0	0	0
42609	053006	7	S	7A3A2	1	167	188	7	8	12	21	21	3	2	0	2	1	L	110	2	0	0	0	0
42609	053006	7	S	7G3A2	1	167	188	7	8	12	21	21	10	3	26	22	2	L	110	16	0	0	0	0
42612	053006	7	S	7A2A2	3	162	175	7	7	10	20	20	3	2	0	2	1	L	84	2	0	0	0	0
42612	053006	7	S	7B2A2	3	162	175	7	7	10	20	20	8	3	25	21	2	L	84	15	0	0	0	0
42612	053006	7	S	7G2A2	3	162	175	7	7	10	20	20	10	2	29	21	2	L	84	15	0	0	0	0
42701	053006	7	S	7J4A2	2	135	129	5	6	9	17	16	28	15	163	108	3	M	206	77	0	0	0	0
42701	053006	7	S	7B4A2	2	135	129	5	6	9	17	16	15	6	33	34	3	M	206	24	0	0	0	0
42701	053006	7	S	7G4A2	2	135	129	5	6	9	17	16	23	7	39	39	3	M	206	28	0	0	0	0

Use the information from the first row for each RAWS and record the data on the daily *WIMS, RAWS, Dispatch, and Adjective Rating Data sheet*.

Appendix E

WIMS State of the Weather and Wet Flag Definitions

State of the Weather Codes for WIMS

Code	Associated State of Weather
0	Clear (less than 1/10 of the sky cloud covered.)
1	Scattered clouds (1/10 to 5/10 of sky cloud covered).
2	Broken clouds (6/10 to 9/10 of sky cloud covered).
3	Overcast (more that 9/10 of sky cloud covered).
4	Foggy
5	Drizzling (precipitation of numerous fine droplets, misting).
6	Raining
7	Snowing or sleeting
8	Showering (in sight of or occurring at station).
9	Thunderstorms in progress (lightning seen or thunder heard within 30 miles of observation site).

State of the Weather Codes 5, 6, & 7 Set Wet Flag to YES

State of the Weather Selection in WIMS

This section has been created to demystify the issue of State of the Weather selection in the WIMS system and the other issues that have to be considered as one selects one of the 10 State of the Weather codes. State of the Weather code selection is important for two reasons: to evaluate the effect of cloud cover on fire fuels and the level to which fuels have been wetted by precipitation. State of the Weather selection will assign the appropriate values in the NFDRS calculations to model the impact of cloud cover and associated moisture on fire fuels. State of the Weather is the condition that exists over the RAWS itself. This can vary between RAWS due to differing weather conditions over the Unit.

State of the Weather will have to be selected for each station each time a selected observation is to be utilized by the NFDRS calculations. This will be the normal afternoon “O” observation as well as the interval observations “S” that will be necessary to calculate the Adjective Ratings and the scheduled NFDRS indices, as well as dispatch levels. The selected State of the Weather code can cause wild swings in NFDRS indices if the incorrect code is selected. This is especially true with Codes 5, 6, & 7.

State of the Weather Codes 5, 6, & 7 will cause the Wet Flag setting to switch to "Yes" (the Wet Flag setting can be found at the far right side of the WIMS page where observations are edited). The Wet Flag setting of "Yes" or "No" refers to whether the fuels are so saturated with precipitation moisture to the level that a handful of the fuels will produce noticeable quantities of water when squeezed or swung. That's a lot of moisture. This is important because most NFDRS indices will automatically get driven to 0 when the Wet Flag is tripped to "Yes". During the winter months this isn't much of a problem, but during Fire Season this is a major problem because we are trying to model the NFDRS indices to accurately reflect fire danger. Driving the indices to zero during the Fire Season will cause wild swings within index values for the remainder of the fire season. Furthermore, it's almost impossible to accumulate enough rainfall during the fire season to cause wild swings in the actual fire danger and risk of ignition is only slightly reduced for a short period. Thunderstorm precipitation isn't adequate to change the overall fire danger picture. Minor day to day variations are normal however wild swings back and forth are not. Only what is described as a "Season Ending Event" would cause this.

So, between May 1st and the first MAJOR fall rains, don't use State of the Weather Codes 5, 6, & 7. Use one of the other codes that will reflect rainfall without tripping the Wet Flag to "Yes". The Unit Fire Weather Coordinator will make the determination when the season ends within the NFDRS models in WIMS.

One additional issue with respect to the Wet Flag needs to be clarified for the Zion RAWS. The issue revolves around the treatment of snow over fuels. As long as there is snow on the fuels the Wet Flag must be tripped manually. For example, the sun is shining bright however the fuels are covered in two inches of snow. The State of the Weather Code will be a 0 or 1, however the Wet Flag will need to be manually tripped to Yes to ensure the models know the fuels are covered in snow. This may sound trivial, however in late fall when early snows can be followed by dry spells, the unit needs to accurately model the fuels that are impacted by persistent snow.

In Summary:

1. State of the Weather is entered in WIMS to model the affect of cloud cover and precipitation over fire fuels.

2. State of the Weather must be entered for all observations used in NFDRS.

3. State of the Weather Codes 5, 6, & 7 are not to be used after May 1st.

4. Manually trip the Wet Flag to Yes if the fuels are covered in snow, if it does not trip automatically (5, 6, & 7).

5. State of the Weather represents conditions over or near the RAWS as described above in the Codes Description. Not over or near the ECC.

6. The Unit Fire Weather Coordinator will determine when the Fire Season ends in the WIMS NFDRS models. This relates to the use of the 5, 6, & 7 State of the Weather Codes.

IX. ***Appendix***

I. Annual Review

Annual review of this plan will be made by the Unit Fire Weather Coordinator, Operations Chief, ECC Chief, and the Unit Chief prior to December 31st of every year. Fire analysis will be conducted and reviewed by the same individuals annually as the data is available to evaluate the indices and decision thresholds. This will be completed after the CAIRS data has been converted to a format that can be utilized with FireFamily Plus.

J. Maps

1. Unit and Direct Protection Area Map

2. Fire Danger Rating Area Map

3. Weather Station Map

4. Vegetation Map

K. Daily Operations

L. WIMS Procedures

M. WIMS State of the Weather and Wet Flag Definitions

N. Data Import Procedures for CAL FIRE Fata into Fire Family Plus

O. Quality Assurance

P. Lightning and Complex Incident Plan

Appendix F

Data Import Procedures for CAL FIRE Data into Fire Family Plus 3

N. Chris Waters, CAL FIRE AEU

March 22, 2007

One of the biggest hurdles for CAL FIRE folks trying to utilize NFDRS and the associated processors is acquiring data sets that are compatible with Fire Family Plus. Other agencies have made efforts to post fire occurrence data sets on the FAMWEB site and CAL FIRE is no exception. There may come a time however where CAL FIRE may not process the data as timely as necessary or you may need to convert the data yourself. The following pages will generally guide you through the process.

If this is the first time setting up Fire Family Plus: Before data can be imported into Fire Family Plus you must first set up Fire Family Plus to receive the data. This will require you to create Agencies, Regions, and Units under the main menu option "Data".

The following format is how the CDF data is typically imported into Fire Family Plus

Agency: CDF

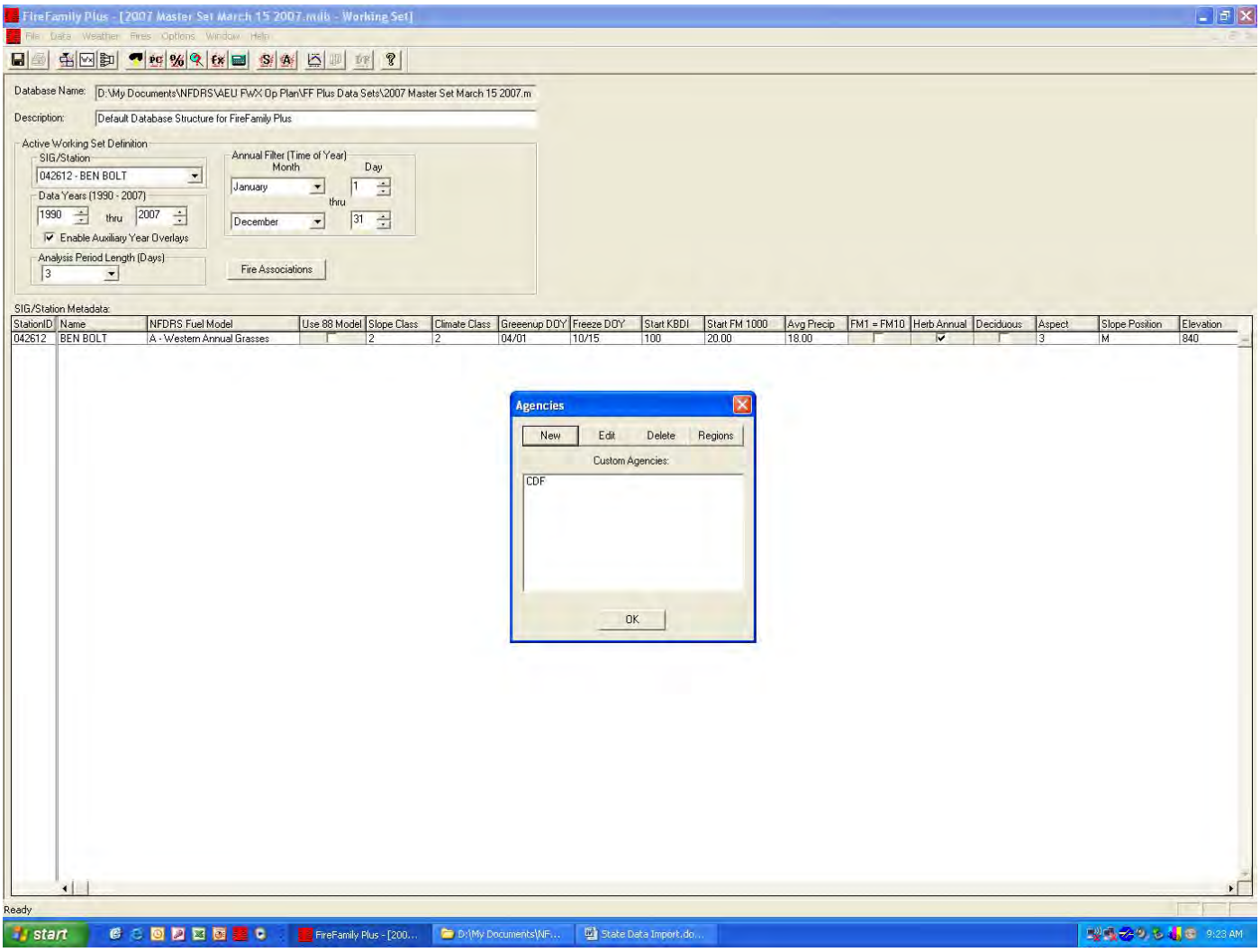
Region: 1	Units: HUU
	MEU
	CZU
	SCU
	LNU
	MRN
Region: 2	Units: SKU
	LMU
	SHU
	BTU
	TGU
	NEU
Region: 3	Units: MVU
	RRU
	BDU
	SLU
	LAC
	ORC
	VNC
	SBC
Region: 4	Units: AEU***
	TCU
	MMU
	FKU
	TUU
	KRN

The Regions will remain as the old four region format to manage data set size while importing to Fire Family Plus. Contract county fire occurrence data will be treated like any other unit for vegetation fires on SRA.

*** For purposes of NFDRS calculations, AEU will remain in Region 4.

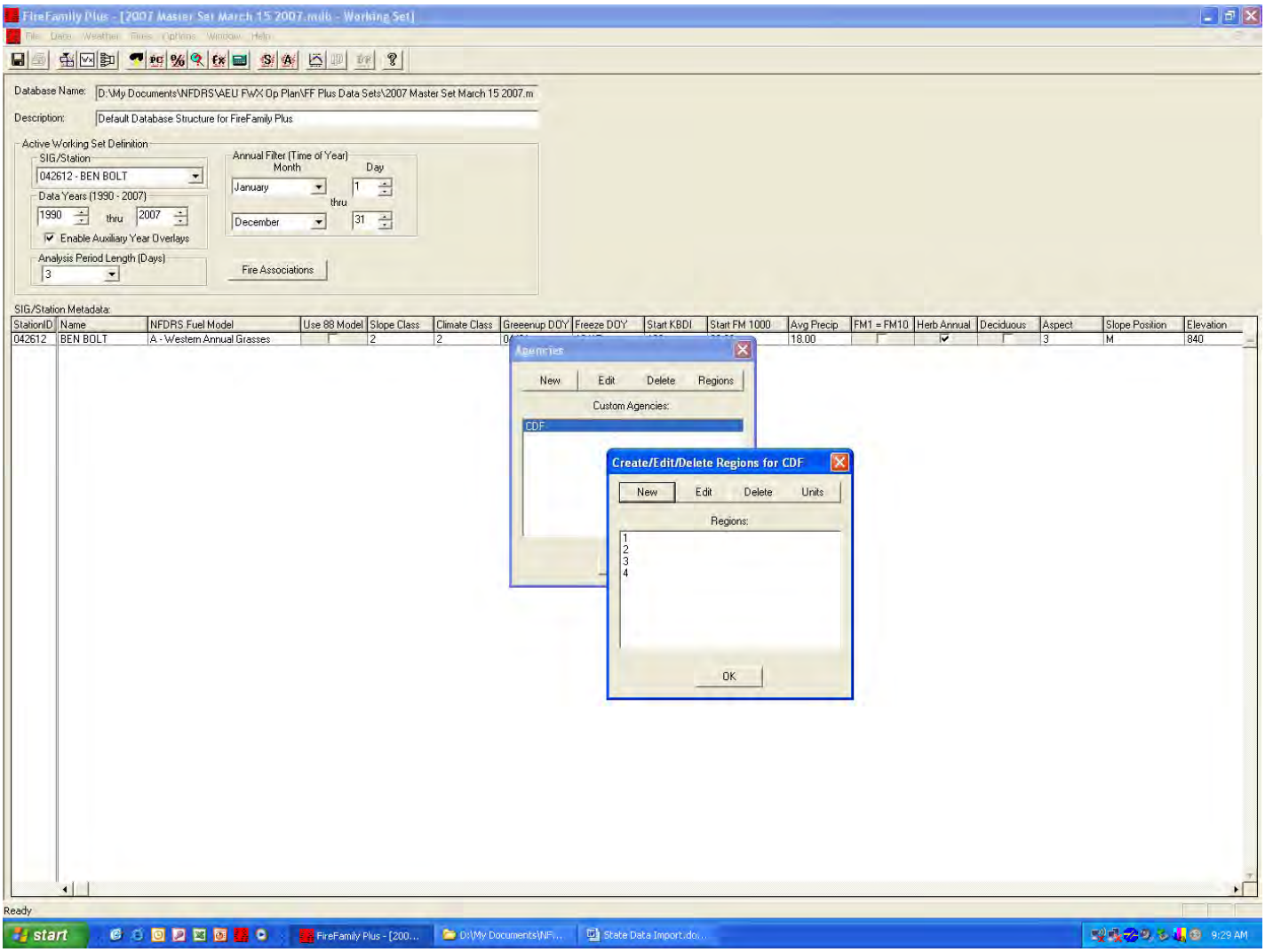
The first step is to check to see if CDF has been added to the working set summary selection menu. Select the following: **Data>Agencies**

The screen shown below will pop up and if CDF is there, then everything is OK. If not, Add CDF using the **New** button and add CDF.



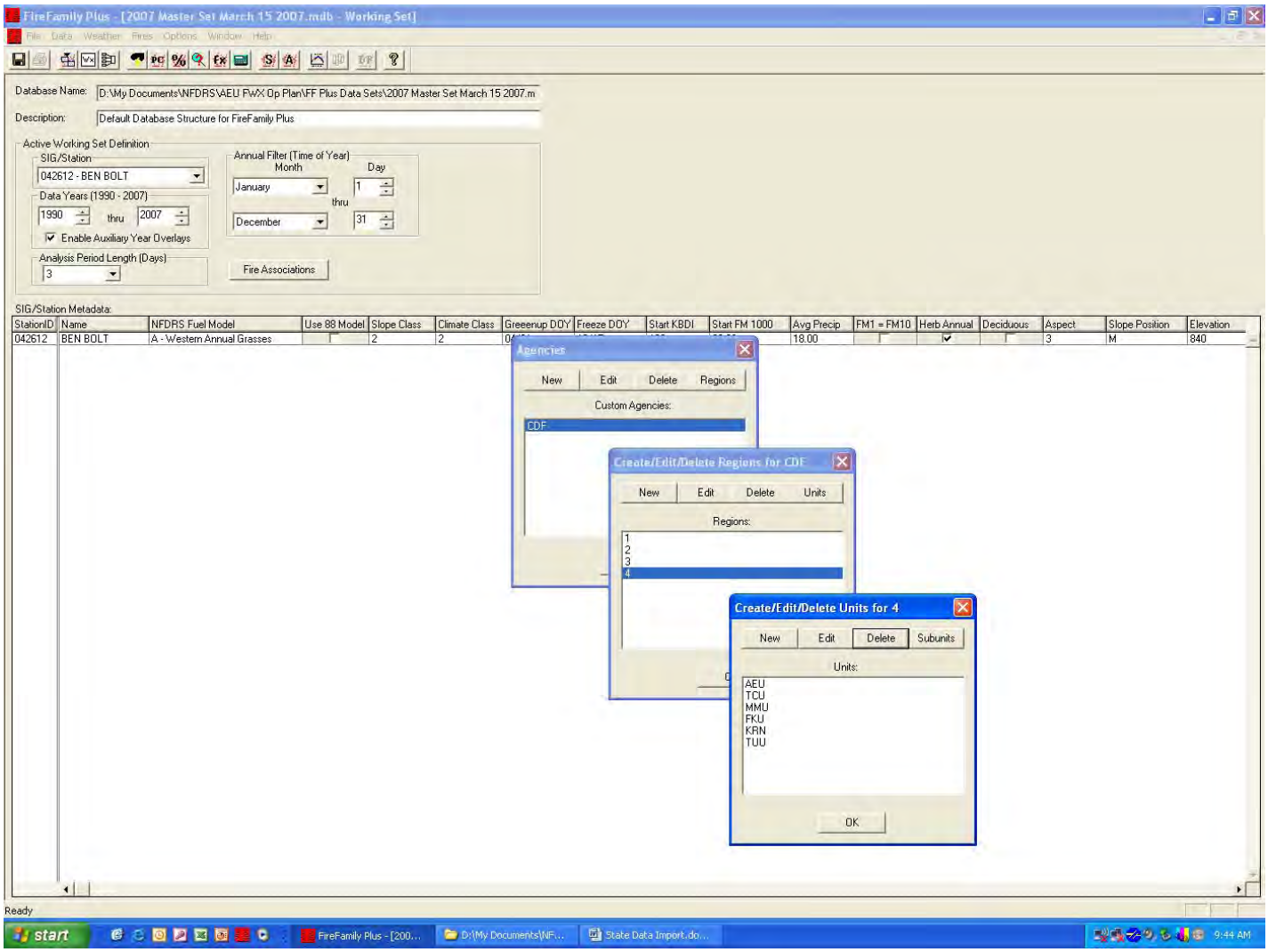
The next step is to make sure the Regions are in place. Select the following: **Data>Agencies, Highlight CDF>Regions**

The screen below will be visible. Regions are numbered 1 through 4 using single digits. If Regions are absent, add them using the **New** button and add each Region.



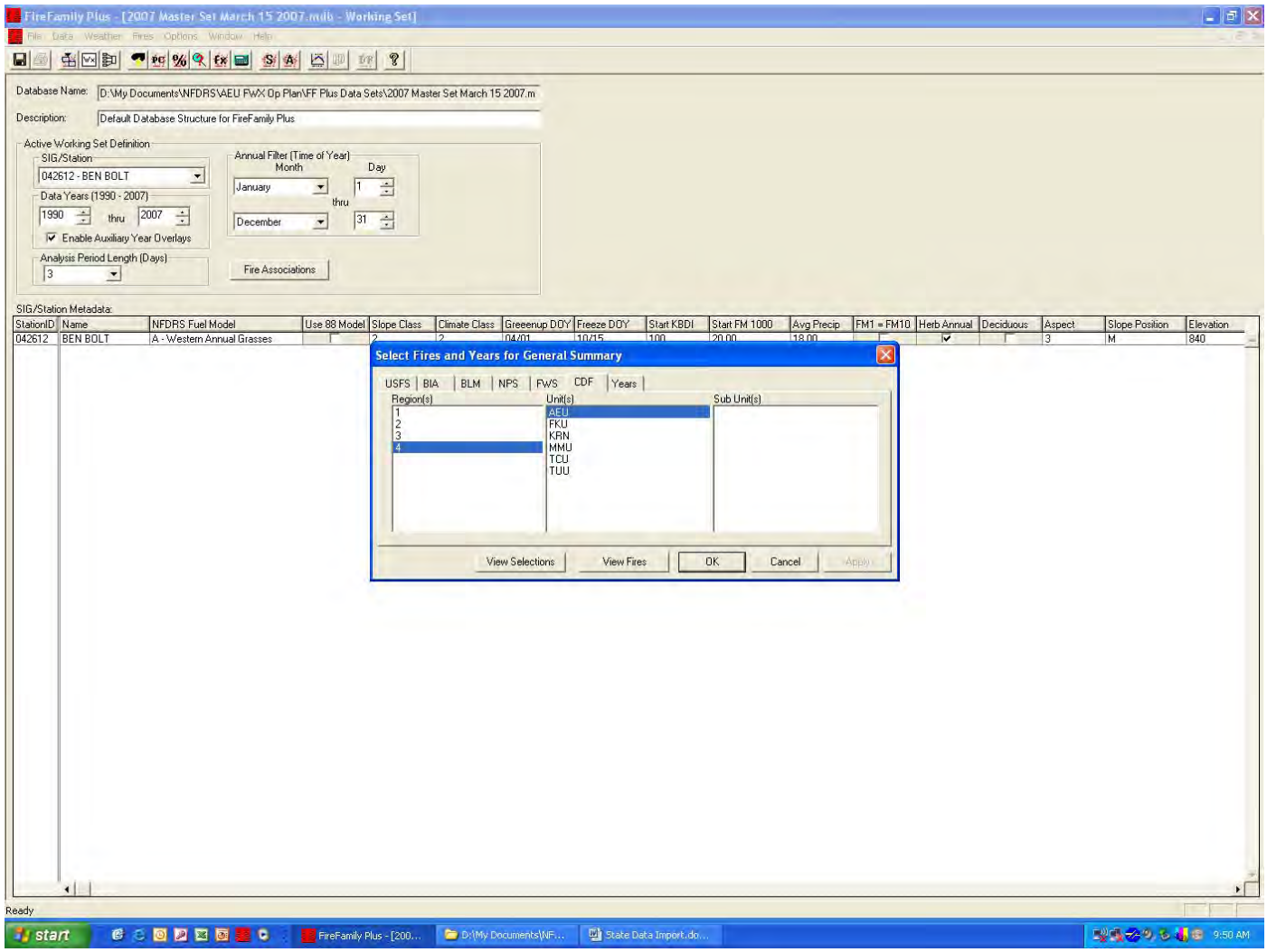
The last step is to add the Units to each Region. Select the following: **Data>Agencies, Highlight CDF>Regions, highlight the region>Units**

The screen below will be visible. Add the appropriate Units. AEU will remain in Region 4 as shown since all of the historical data was prepared in that fashion.



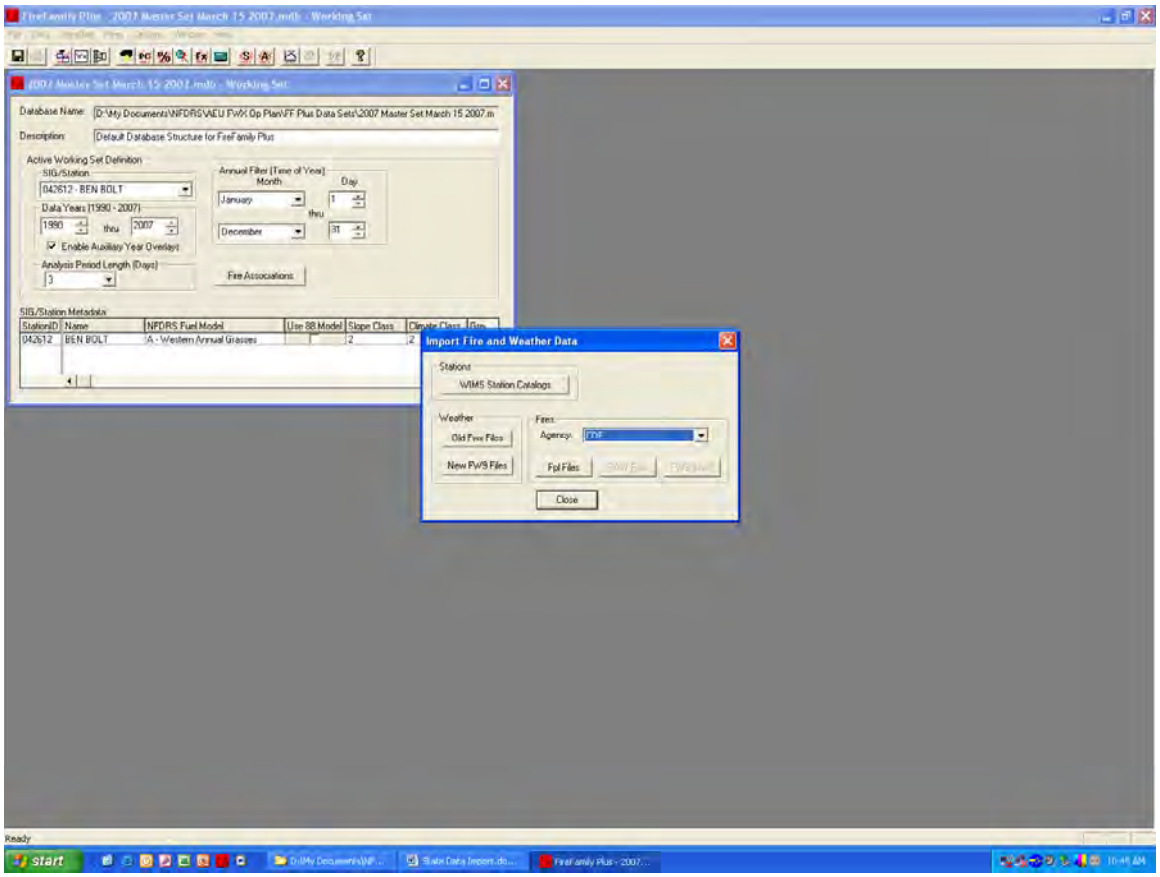
The last step before importing data will be to check the fire summary to see if the tabs have assigned properly. Select the following: **Fires>Summary>General**

The screen below will be visible. Notice the CDF tab and notice the Units that are shown when one of the regions gets highlighted. If the Units or Regions are not visible, go back and add them.



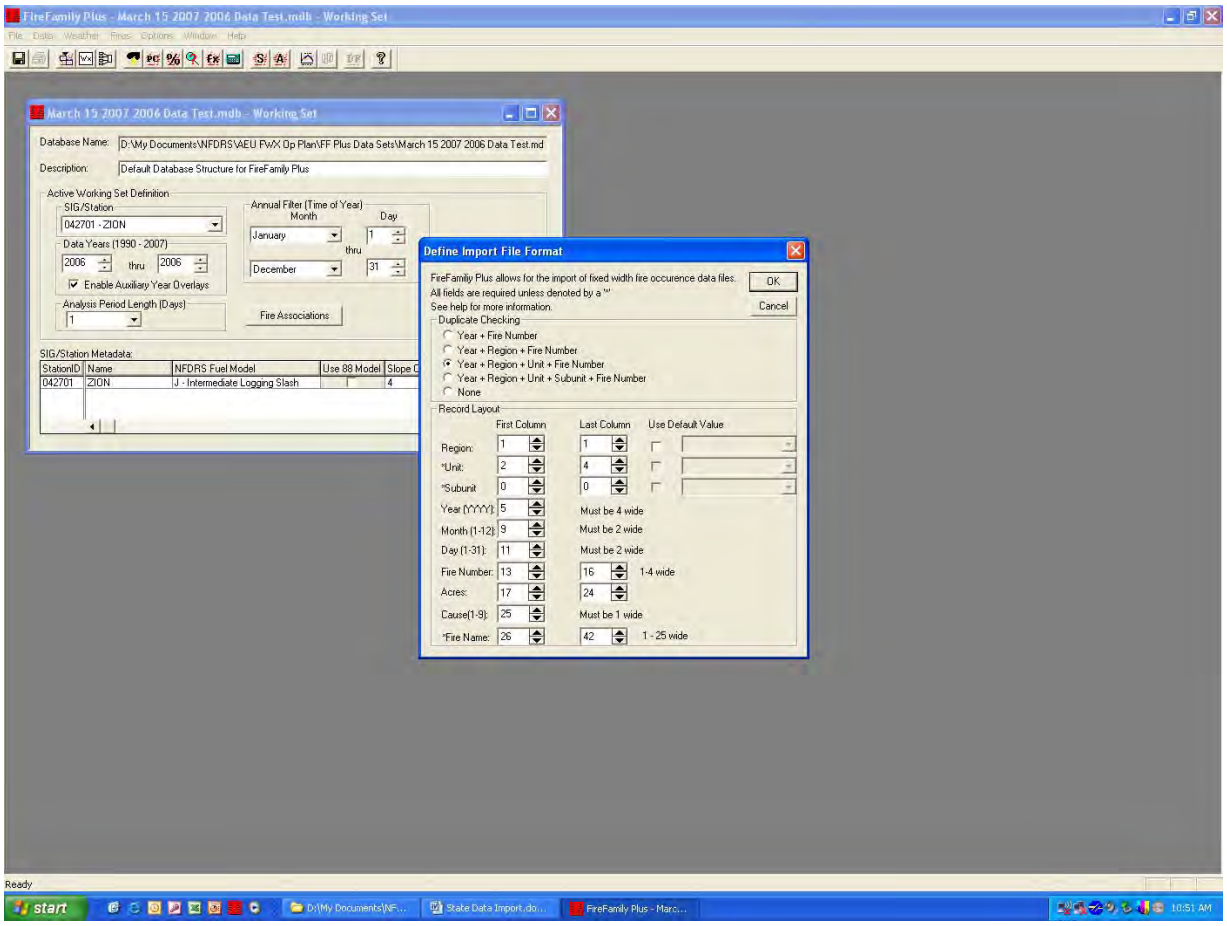
If Fire Family Plus has already been set up to receive data, you're ready to import the data: The State data up to 2005 can be found on the FAMWEB website under California. The data is broken into four pieces which are labeled for the specific Region they are from. Keep in mind the data for Region 4 is mislabeled; it's the fourth CDF data set down. Fire Family Plus will be looking for a file with an .fpl extension. Copy the data set from the FAMWEB site to your computer.

Import the data by Selecting the following: **Data>Import, select the Agency and click the Fpl Files Button.**



Fire Family Plus will give you a browse menu so you can find the .fpl file. Select the file you want to load.

The next screen that will appear will be used to assign place holders for the data set. Make it look like the one shown below.



Hit OK!

The data set should load. After Fire Family Plus completes loading the data it will show a dialog box with the number of records loaded and any possible errors.

Fire Occurrence Data Conversion from CAL FIRE data set to a format that an be used in Fire Family Plus

One problem with fire occurrence data across all state agencies is the lack of standardization for fire cause codes. For data to be used in Fire Family Plus it needs to be converted to the Federal cause code classes and then be formatted to the required data placement. The following instructions will guide you through the process of converting the cause code classes to the ones used in Fire Family Plus and how to take a standard spread sheet and convert it to an .fpl file that can be downloaded into Fire Family Plus.

The CAL FIRE fire occurrence data can be found on the Fire Plan web page or you can have the Unit Pre Fire Engineer pull it off for you. It will probably be in a .dbf format so you will need to open it up in Excel and save it as a spread sheet so it can be edited in Excel.

Seven pieces of information are required for Fire Family Plus in the following column order; Region Number, Unit 3 Letter Identifier, Date (YYYYMMDD), Fire Number, Acres (to one decimal place), Fire Cause Code, Fire Name.

Region, Unit, Date, Fire Number, Acres, Fire Cause Code, Fire Name

Step 1: Arrange the columns in the order shown above, delete anything else that may come with the data set.

Step 2: Sort the data set by date, ascending.

Step 3: Convert the Cause Class Codes using Table #1.

Step 4: Make sure the acres column is formatted to show figures to one decimal place.

Step 5: Assign Fire Numbers, starting with 0001 and continue to the last fire for

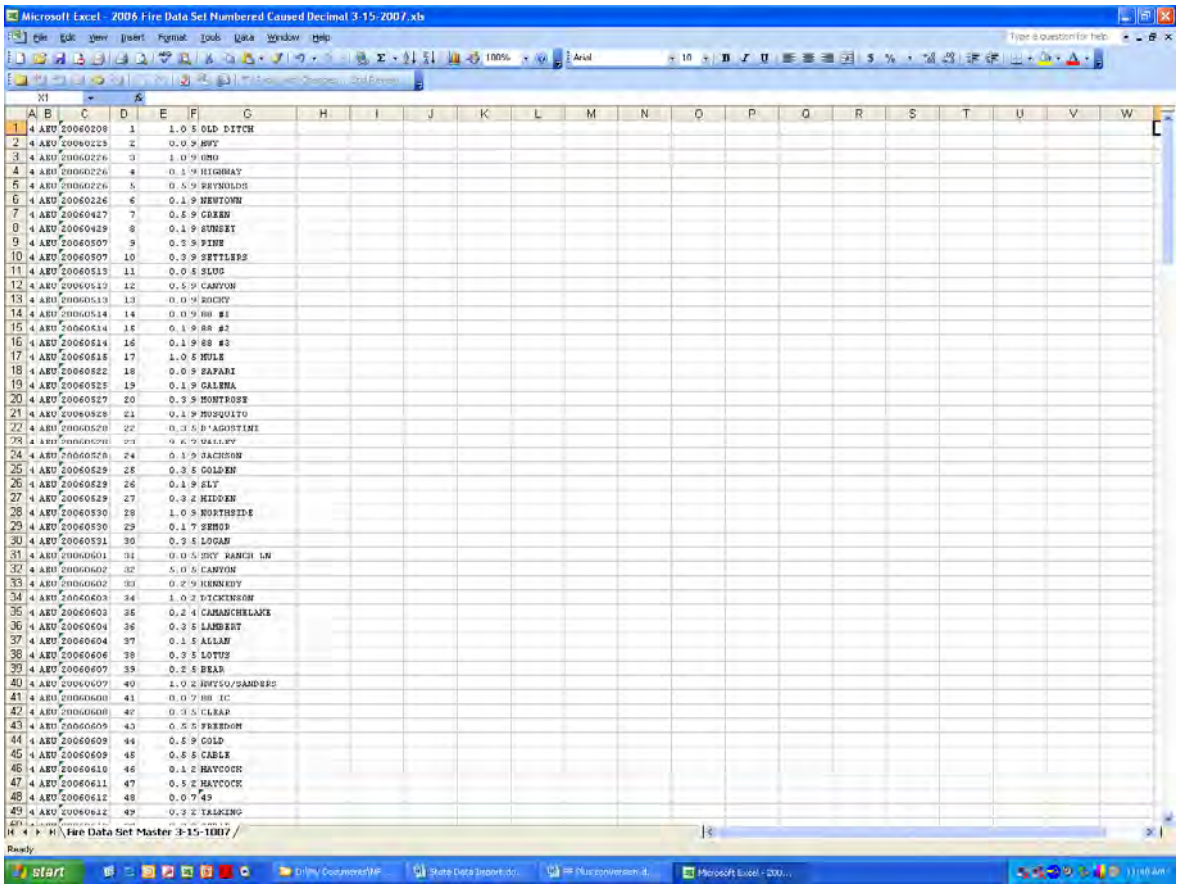
Step 6: Remove the titles.

Step 7: Change the font to “Courier New” font size 8.

Step 8: Format column **width** to the following:

Region: 1
Unit: 3
Date: 8
Fire Number: 4
Acres: 8
Cause Code: 1
Fire Name: 16

The spread sheet will look like this:



1	4	AEU	20060208	1	1.0	5	OLD DITCH
2	4	AEU	20060225	2	0.0	9	HWY
3	4	AEU	20060226	3	1.0	9	OHO
4	4	AEU	20060226	4	0.1	9	HIGHWAY
5	4	AEU	20060226	5	0.5	9	REYNOLDS
6	4	AEU	20060226	6	0.1	9	NEWTOWN
7	4	AEU	20060427	7	0.5	9	GREEN
8	4	AEU	20060429	8	0.1	9	SUNSET
9	4	AEU	20060507	9	0.3	9	PINE
10	4	AEU	20060507	10	0.3	9	SETTLERS
11	4	AEU	20060513	11	0.0	5	SLUG
12	4	AEU	20060513	12	0.5	9	CANYON
13	4	AEU	20060513	13	0.0	9	ROCKY
14	4	AEU	20060514	14	0.0	9	88 #1
15	4	AEU	20060514	15	0.1	9	88 #2
16	4	AEU	20060514	16	0.1	9	88 #3
17	4	AEU	20060515	17	1.0	5	MULE
18	4	AEU	20060522	18	0.0	9	SAFARI
19	4	AEU	20060525	19	0.1	9	GALENA
20	4	AEU	20060527	20	0.3	9	MONTROSE
21	4	AEU	20060528	21	0.1	9	MOSQUITO
22	4	AEU	20060528	22	0.1	5	D'AGOSTINI
23	4	AEU	20060528	23	0.6	9	VALLEY
24	4	AEU	20060528	24	0.1	9	JACKSON
25	4	AEU	20060529	25	0.3	5	GOLDEN
26	4	AEU	20060529	26	0.1	9	SLY
27	4	AEU	20060529	27	0.3	2	HIDDEN
28	4	AEU	20060530	28	1.0	9	NORTHSIDE
29	4	AEU	20060530	29	0.1	7	SENOR
30	4	AEU	20060531	30	0.3	5	LOGAN
31	4	AEU	20060601	31	0.0	5	SKY RANCH LN
32	4	AEU	20060602	32	5.0	5	CANYON
33	4	AEU	20060602	33	0.2	9	KENNEDY
34	4	AEU	20060603	34	1.0	2	DICKINSON
35	4	AEU	20060603	35	0.2	4	CAMANCHELAKE
36	4	AEU	20060604	36	0.3	5	LAMBERT
37	4	AEU	20060604	37	0.1	5	ALLAN
38	4	AEU	20060606	38	0.3	5	LOTUS
39	4	AEU	20060607	39	0.2	5	BEAR
40	4	AEU	20060607	40	1.0	2	HWYSO/SANDERS
41	4	AEU	20060608	41	0.0	7	88 IC
42	4	AEU	20060608	42	0.3	5	CLEAR
43	4	AEU	20060609	43	0.5	5	FREEDOM
44	4	AEU	20060609	44	0.5	9	GOLD
45	4	AEU	20060609	45	0.5	5	CABLE
46	4	AEU	20060610	46	0.1	2	HAYCOCK
47	4	AEU	20060611	47	0.5	2	HAYCOCK
48	4	AEU	20060612	48	0.0	7	49
49	4	AEU	20060612	49	0.3	2	TALKING

Step 9: Save the file as Formatted Text (space delimited) *.prn file extension.

Step 10: Change the extension from *prn. to *.fpl

Step 11: It's ready to load.

Table 1: Cause Code Converter CAL FIRE to Federal/Fire Family Plus

Cause code converter		
Cal Fire Cause_Code	**Cause Description**	**Fed Cause Code**
0	Unknown	9
1	Undetermined	9
2	Lightning	1
3	Campfire	4
4	Smoking	3
5	Debris Burning	5
6	Arson	7
7	Equipment Use	2
8	Playing / Fire	8
9	Misc	9
10	Vehicle	2
11	Railroad	6
12	Powerline	9