

Agency Administrator Refresher

**Decision Making in WFDSS for the
Agency Administrator**

April 20, 2016

Water Quality
Decision Support System

This presentation has been developed to help Agency Administrators understand the tools available in WFDSS to support decision making.

Objectives

- Define the Agency Administrator role in decision making and documentation.
- Identify areas an Agency Administrator should focus on in WFDSS.
- Discuss the Risk and Complexity Analysis in WFDSS and what it tells you.
- Review decision tools and how they can inform decisions.

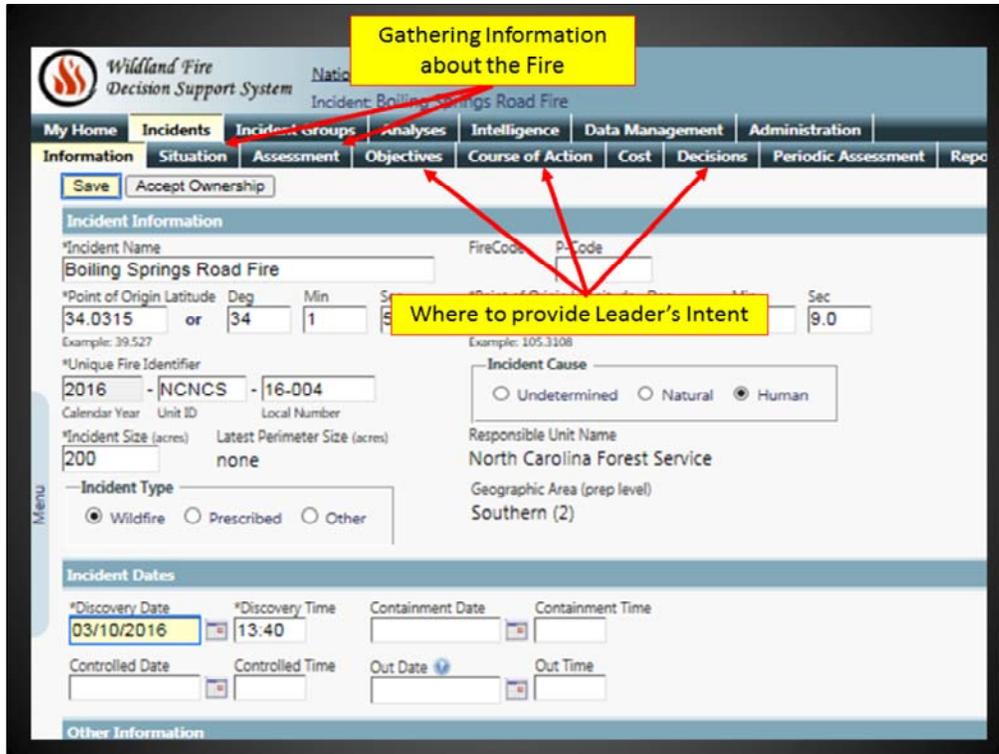
The objectives identified for the lesson are as written above.

Agency Administrator's Role...

- At a very basic level –
 - Understand the situation
 - Develop Incident Objectives and Incident Requirements
 - Provide leader's intent
 - Provide rationale for the decision
 - Evaluate / validate

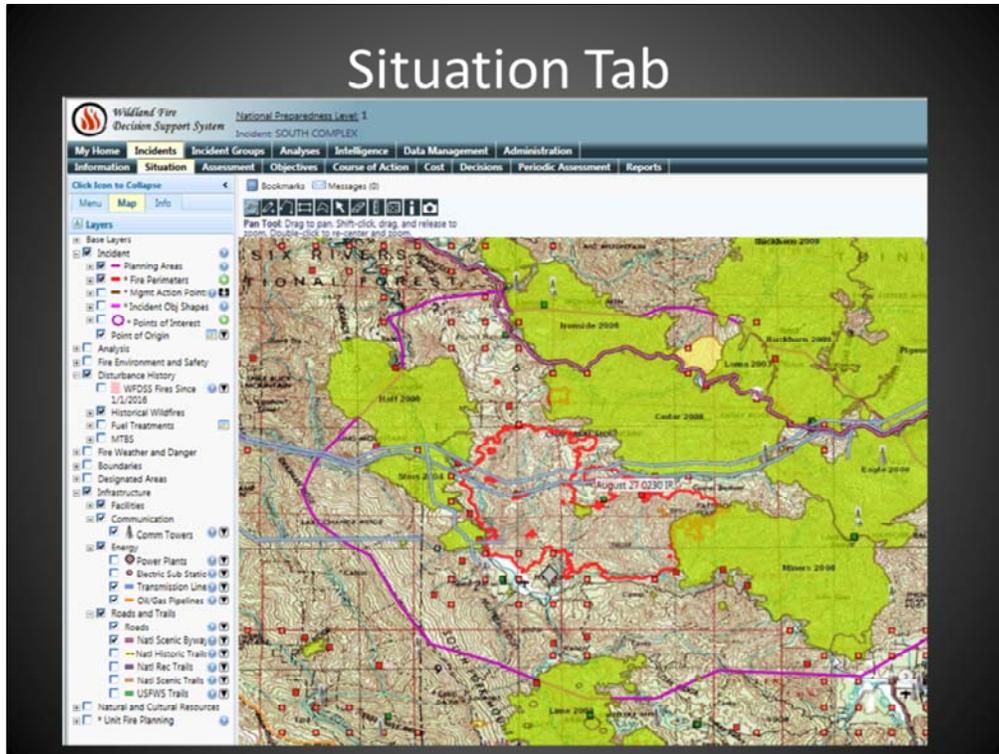
Wildland Fire
Decision Support System

Although all of the bullets above define very simply the Agency Administrator's role in WFDSS, where this presentation will focus today is understanding the situation and the tools that will assist with that understanding.



There are many places in WFSS to gain understanding of the situation. Focus will be on the situation and assessment section of WFSS.

Situation Tab



A very simple way to gather information about the fire is to click on the data layers within the situation map. This map is meant to provide situational awareness and is available to review while making a decision about the fire. Each new perimeter can be loaded and viewed in relationship to historic fires, infrastructure, the planning area, etc. The information provided here provides managers the opportunity to either learn about the area in where the fire is burning or refresh their knowledge.

Within the Unit Fire Planning layer unit specific information (Unit Shapes) can be added that can be viewed during the incident and included in the Values Inventory.

A new feature was added last year which allows managers to keep this map open in another window while making a decision, completing the risk assessment, and other deliberations about the decision.

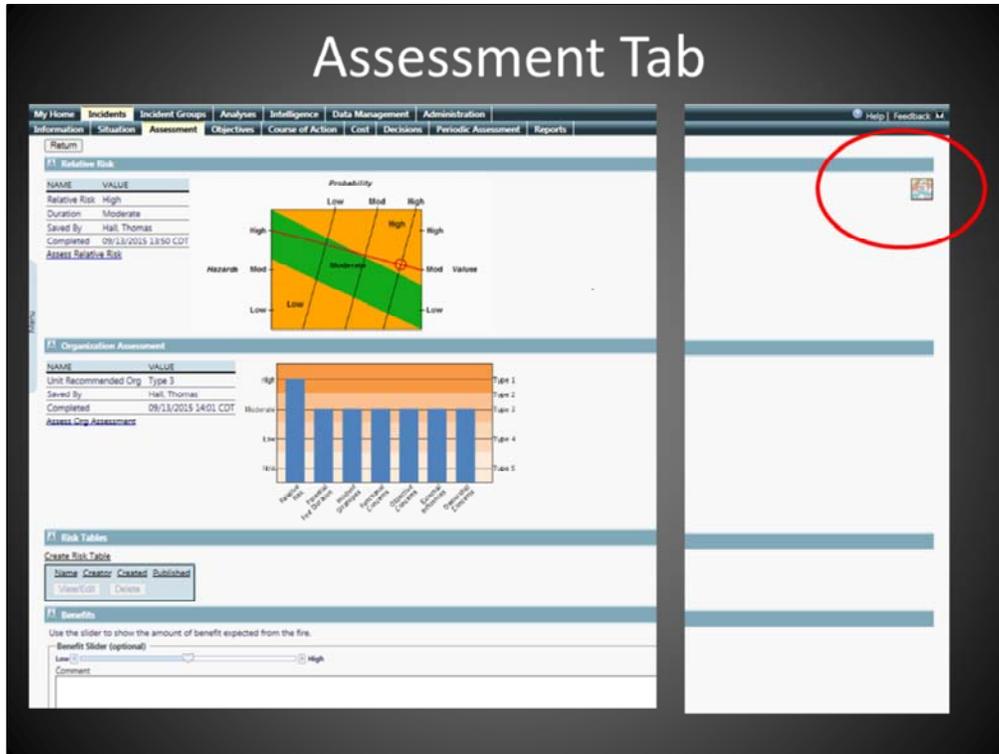
Spatial Inventory (Values Inventory)

The screenshot displays the Wildland Fire Decision Support System interface. The main content area is titled 'Planning Area Spatial Inventory' and shows a summary of the planning area: Planning Area Name: 08/21/2015 10:00, Incident Name: SOUTH COMPLEX, and Planning Area Size: 252,850 acres. Below this, there are two tables: 'Spatial Fire Planning Inventory' and 'Values Inventory'.

Category	Value	Data Source	Currency	Coverage
Aqua Retardant Avoidance	29,791 acres	USFS Enterprise Data Warehouse	7/14/2015	National (USFS Units only)
Retardant Avoidance	69,386 acres	USFS Enterprise Data Warehouse	5/15/2015	National (USFS Units only)

Category	Value	Data Source	Currency	Coverage
Building Clusters: Humboldt, CA	2	US Counties / PGDC Cadastral Subcomm.		Available counties
Building Clusters: Trinity, CA	527	US Counties / PGDC Cadastral Subcomm.		Available counties
Campgrounds	6	BLM (FAMS) and USFS INFRA	02/03/2015	National (BLM and USFS only)
Communication Towers	11	PCC	06/14/2012	National
County: Humboldt, CA	21,485 acres	HSIP 2011, US Census Bureau TIGER data	07/01/2010	National
County: Trinity, CA	231,364 acres	HSIP 2011, US Census Bureau TIGER data	07/01/2010	National
Electric Power Plants	1	HSIP Gold 2015	April 2015	National
Electric Sub Stations	8	HSIP Gold 2015	April 2015	National
Electric Transmission Lines	62.8 miles	HSIP Gold 2015	April 2015	National
Est Ground Evac Time: 1-2 Hrs	143,139 acres	National Park Service NFC	11/01/2012	CONUS
Est Ground Evac Time: 2-4 Hrs	65,357 acres	National Park Service NFC	11/01/2012	CONUS
Est Ground Evac Time: 4-6 Hrs	7,921 acres	National Park Service NFC	11/01/2012	CONUS
Habitat: Marbled murrelet	150 acres	US Fish and Wildlife Service	12/31/2014	National
Habitat: Northern spotted owl	138,157 acres	US Fish and Wildlife Service	12/31/2014	National
IRA: Cow Creek IRA	11,527 acres	Various		National
IRA: Eagle IRA	189 acres	Various		National
IRA: Little French C IRA	7,366 acres	Various		National
IRA: Panther IRA	12,029 acres	Various		National
IRA: Pattison IRA	29,658 acres	Various		National
IRA: Pilot Creek IRA	1,006 acres	Various		National
IRA: South Fork IRA	490 acres	Various		National
IRA: Underwood IRA	10,206 acres	Various		National
Jurisdictional Agency: BLM	43 acres	Various	05/29/2015	National

The Spatial Inventory (Values Inventory) can be especially beneficial to review in making a decision as it will summarize the values found within the planning area and assist managers in understanding what might need to be addressed in the decision. If Unit Shapes have been added and this feature has been selected, they will also appear in the Values Inventory. This information is also very valuable to review both spatially (Situation Tab) and tabularly (Spatial Inventory) when completing the Relative Risk Assessment.



This tab was added in 2015 to allow managers to assess their situation in one location rather than completing this from the left menu. There are many features within this tab that are worth taking time to assess. The Relative Risk Assessment must be completed for any decision being made on a fire. The Organizational Needs Assessment which uses the Relative Risk Assessment as one component assists Agency Administrators determine which sized organization might be needed to manage the incident. The benefits slider has also been added to allow Agency Administrators to document benefits that might occur with this fire.

As discussed on the previous Situation Tab, the map can be opened on this tab (upper right image) so it can be viewed as this portion of the assessment is completed.

Relative Risk Assessment

Values
 Proximity & Threat of Fire To Values
 Natural/Cultural Resource and Infrastructure Values | Social/Economic Concerns
 Values Notes: There are some social concerns with Highway 19 to the south. There are no values at risk currently.

Hazards
 Fire Behavior
 Fuel Condition | Potential Fire Growth
 Hazards Notes: Fire behavior has been primarily surface fire with some torching. Fire behavior analysis indicates that the fire has potential to spread if not contained.

Probability
 Barriers to Fire Spread
 Time of Season | Seasonal Severity
 Probability Notes:

Relative Risk (More Recent Assessment Exists)
 Relative Risk: **Moderate**
 Potential Fire Duration: Moderate
 Saved By: Elenz, Lisa
 Assessment Published: 03/07/2015 13:32 CDT
 Relative Risk Notes: There are a number of fires going in the area limiting available resources which may delay control and containment. There are some concerns in the area especially impacting

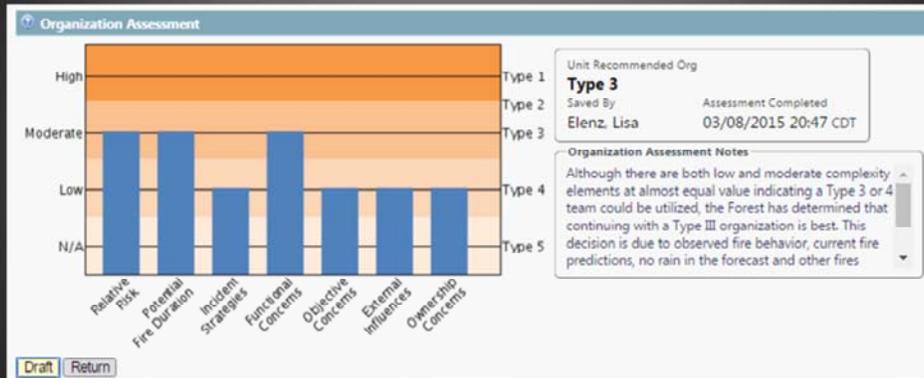
Buttons: Draft | Current Assessment | Return

The Relative Risk Assessment is a tool available for Agency administrators to quickly evaluate the relative risk in a comprehensive manner based on values, hazards, and probability. It must be must be completed to publish a Decision. It is intended to characterize the general magnitude of the risks associated with the fire itself at a specific point in time. Agency Administrators must decide what level of risk is acceptable based on the situation at the time of the decision.

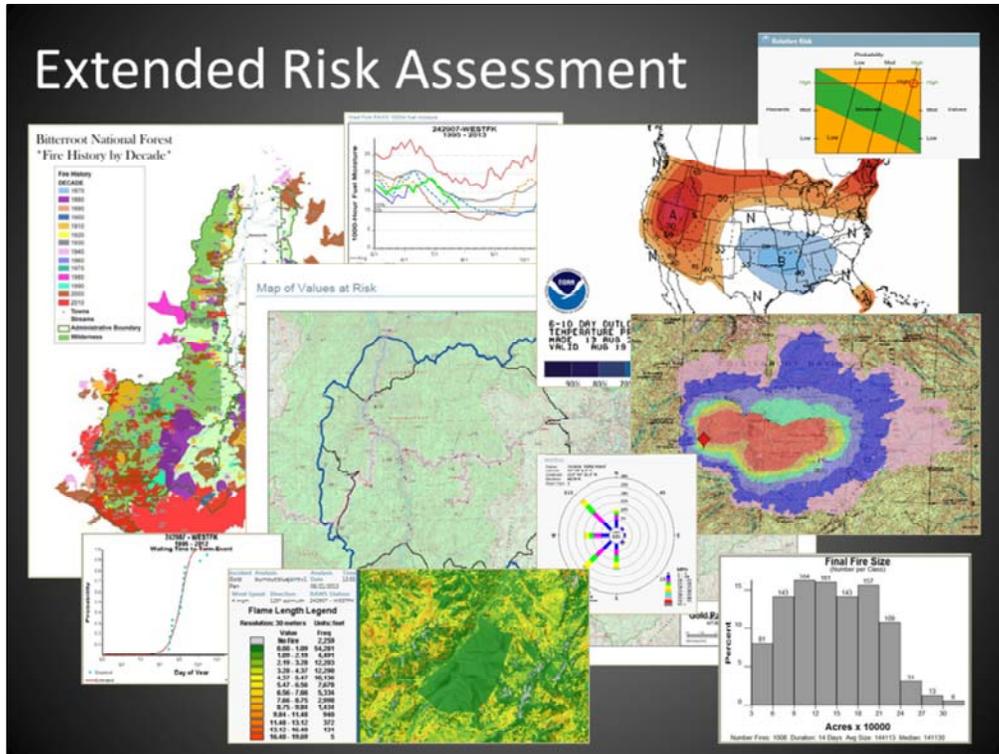
Although the Relative Risk Assessment is typically completed qualitatively at the start of the incident, there are many tools that are available to further quantify the rating. Agency Administrators must not only feel confident in this rating, but consider what the risk might be over time. This can be changed at any time during the incident and will be reflected with the current decision on the Decision Tab.

For additional information about quantifying the relative risk go to the following website in the Risk Assessment section. http://www.wfmrda.nwcg.gov/reference_&_guidance.php

Organizational Assessment

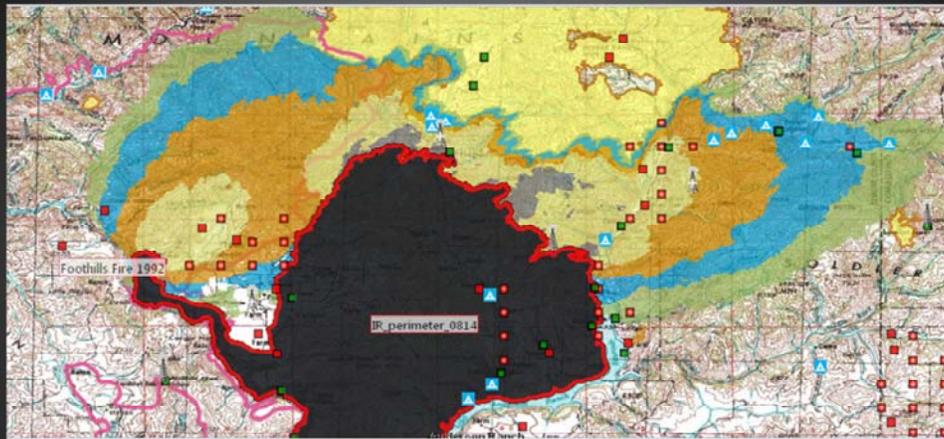


The Organizational Assessment utilizes the Relative Risk Assessment information as well as information regarding the Implementation Difficulty and Socio/Political Concerns to assess the organization needed to manage the incident. Agency Administrators can consider this information and then select a team type based on their findings. Attention should be paid to where the 'bars' are and what factors lead to this rating. There may be times that a team may be selected because one 'blue bar' is in an area that is of particular concern to the Agency Administrator.



After the current situation has been assessed, one must begin to look at the information that can be provided an extended outlook on things. This information is readily available to Agency Administrators and can be obtained through the use of a Long Term Analyst or Strategic Operational Planner. Although much of this information is being evaluated concurrently, the more time spent in analyzing the information and weighing out the risks and benefits, the more support the Agency Administrator will have or the more informed a decision will be. Often those initial decisions are based on information readily at hand, but they can be supported through analysis and can be revised as new and more detailed information is obtained.

Assessment Continued — Near Term Fire Behavior (NTFB)



As discussed earlier, fire behavior modeling can be completed to assist managers in making decisions on fires. These models not only add quantitative information for completing a risk assessment but can also assist Line Officers in evaluating concerns they have.

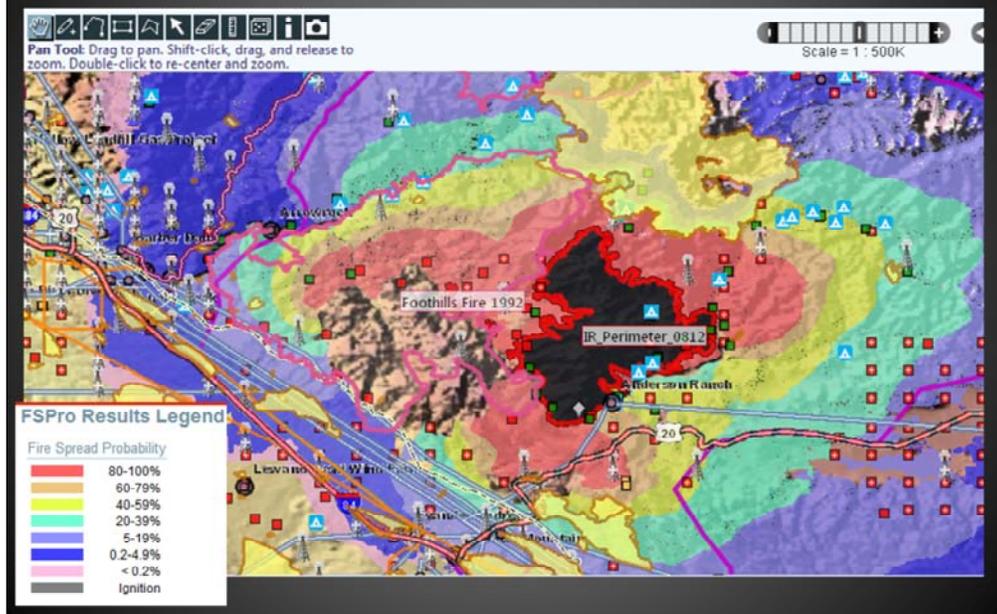
Near Term Fire Behavior (NTFB) models fire growth in the form of a fire progression. Unlike Short-Term Fire Behavior, NTFB models fire behavior using inputs for weather and wind that change over the duration of the simulation. NTFB can model fire growth for up to 7 days, however caution should be used when projecting beyond reliable weather forecast timeframes. Near Term Fire Behavior simulates where and when a fire may grow, and also predicts fire behavior characteristics on the landscape where it does burn. In this example of NTFB output below each color represents a 3-hour interval; the black lines represent daily burn periods.

This model was utilized by the Line officer to discuss evacuations with the land owners ahead of this fire. (identified within the ellipse on the map) She could show that over the next four days, if weather continued as anticipated and suppression actions were unsuccessful, the fire would burn through the area where their homes were. This could also be discussed in the context of whether fire personnel should be dealing with evacuations on a one way in/out road or fighting the fire.

NTFB can be utilized to answer Line Officer concerns such as –

- The district ranger is concerned about a thermal trough pushing the fire; what might that look like?
- Given the changing winds and weather, when do you think the fire will reach the containment line?
- We are doing a large burn-out operation; if we get a spot across the line, what size will the fire be with and without a frontal passage?
- What fire behavior (e.g. flame length, rates of spread, spotting) is expected with known weather and fuel conditions?
- Can you reconstruct the growth of this fire if we provide you an ignition and the final fire perimeter?
- If a fire reaches a point of concern, what fire behavior can I expect at that location?

Assessment Continued — Fire Spread Probability (FsPro)



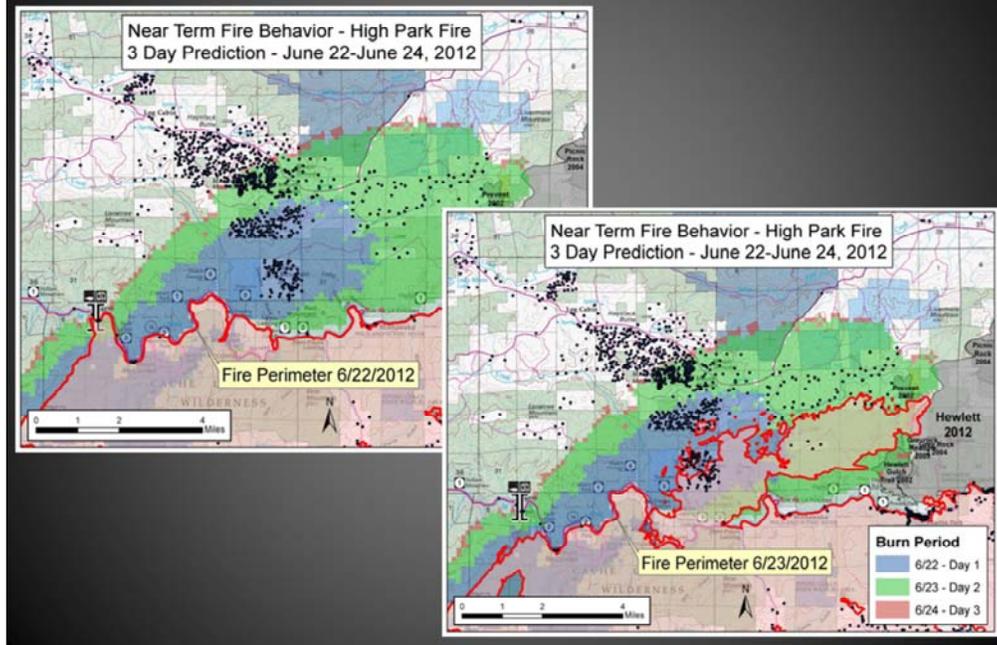
When determining what potential outcomes there are with a fire burning longer term on the landscape, the Fire Spread Probability (FsPro) model can be used. FsPro is a geospatial probabilistic model that predicts fire growth, and is designed to support long-term decision-making (more than 5 days). FsPro addresses fire growth beyond the timeframes of reliable weather forecasts by using historic climatological data. FsPro calculates and maps the probability that fire will visit each pixel on the landscape of interest during the specified period of time, in the absence of suppression, based on the current fire perimeter or ignition point.

The results do not predict actual fire perimeters, but instead show the probability that each cell will burn. Based on the historical data FsPro produces many weather scenarios for the selected time period. Each weather scenario is used to model an individual fire, (normally 1,000 to 4,000 fires), that are overlaid to produce a map with the probabilities. The FsPro output map produced is often misinterpreted as a perimeter map. The red area represents a 80-100% probability of being burned. The orange area represents 60-79%, the yellow area 40-59%, the green area 20-39%, the light purple 5-19%, the dark purple .2-4.9%, and the pink < .2 % change of burning in the 7 day period under the modeled conditions.

FSPro can be utilized to answer Line Officer Concerns such as –

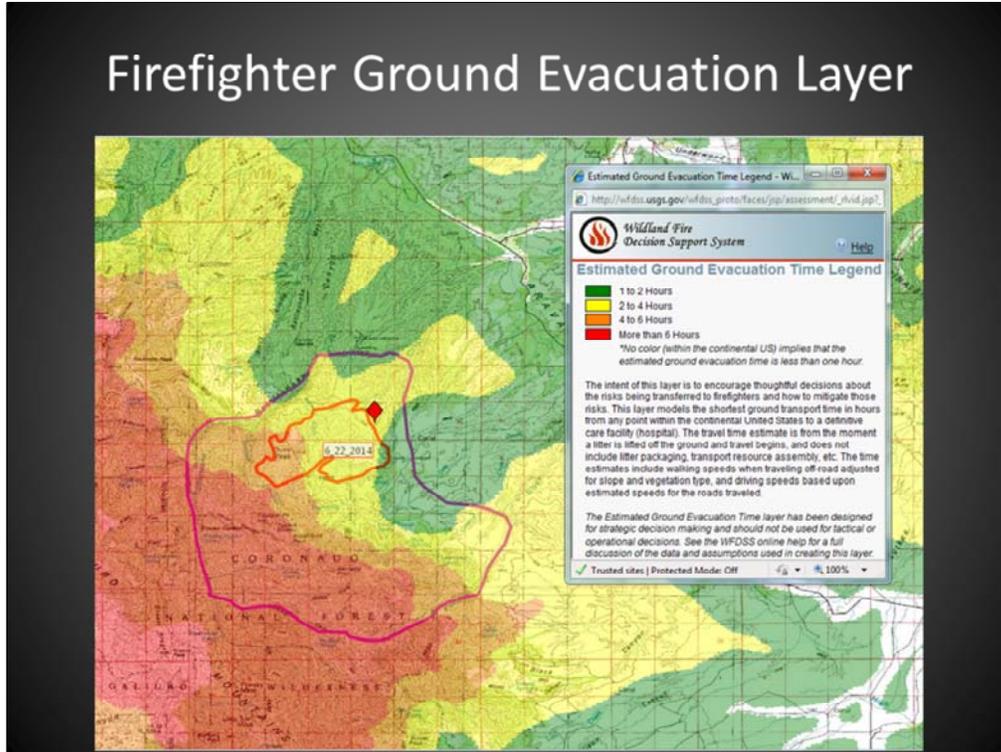
- What is the probability the fire will reach the Interstate?
- The fire has hung in the higher elevations and the season is coming to a close, what is the likelihood the fire will run again and threaten the communities in the valley?
- There are fires all over the place; what is the chance these fires will merge in the next week or two?

Near Term Fire Behavior



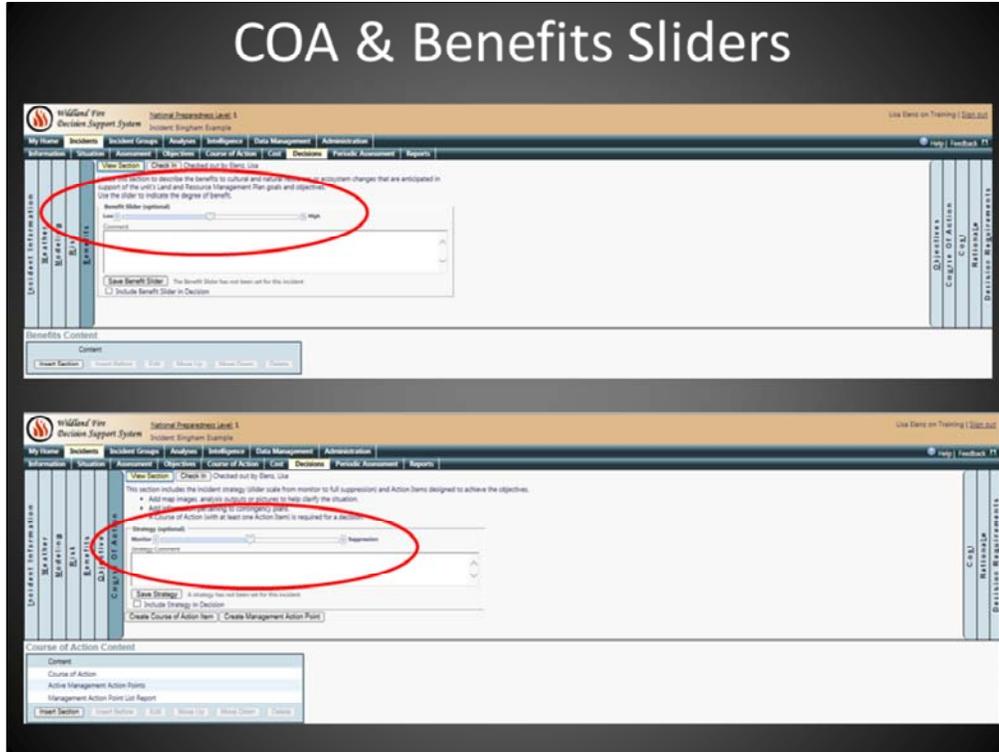
On the High Park incident, the fire spotted to the north and were challenging crews to suppress all of them. With a high wind forecast a few days out, the Near Term Fire Behavior model was run to project what the fire might do under these wind conditions. (upper left). Because of this projection the structures (black dots) were evacuated ahead of the wind event. The lower right image shows the actual fire perimeter as compared to the model's projection. Although not perfect, the analysis does show that this was a concern, did help the Line Officer make the decision in advance, and put fewer public and firefighters at risk.

Firefighter Ground Evacuation Layer



The Estimated Ground Evacuation Time layer was added as another tool to assist managers in considering actions to take on the fire versus exposure to firefighters. It provides perspective on how difficult it will be to evacuate a firefighter if injured which can help decision makers evaluate if the firefighting effort to limit fire spread is worth the exposure to the firefighter.

COA & Benefits Sliders



Both the Course of Action and Benefits slider bars were added in 2015. This is being emphasized because it is a new tool for Agency Administrators to evaluate what the LRMP direction is compared to the Incident Objectives, Incident Requirements, and Course of Action written based on the assessment completed. If there is misalignment of LRMP versus Leader's Intent perhaps modifications can be made prior to a decision being published. These types of conflicts should be addressed in the Rationale.

Too often we do not adequately evaluate the benefits a fire might have on the landscape. This allows Agency Administrators to evaluate LRMP direction and what potential benefits might occur.

Periodic Assessment

Editor Name	Action	Date (CST)	Status	Comment
Petersen, Brant	Decision Still Valid	07/23/2013 08:44	Published	Fire is within planning area and costs have been reviewed by Agency Administrators. Mop up 100 in from fire line continues. Transitioning to a type III organization at 1800 today.
Petersen, Brant	Decision Still Valid	07/22/2013 09:03	Published	Monday July 22nd, all actions are within the DOA, letter of Leader's intent and planning area. The team is working on staffing chart to transition to a type three fire organization on Wednesday. Costs were reviewed by Forest Service Agency Administrator and are within plan costs.
Petersen, Brant	Decision Still Valid	07/21/2013 08:45	Published	Sunday July 21st, all actions are within the DOA, letter of Leader's intent and planning area. Cost were reviewed by Forest Service Agency Administrator and are intin plan costs. Sunday July 21st, all actions are within the DOA, letter of Leader's intent and

Comment
<p>Fire is within planning area and costs have been reviewed by Agency Administrators. Mop up 100 in from fire line continues. Transitioning to a type III organization at 1800 today.</p> <p>Monday July 22nd, all actions are within the DOA, letter of Leader's intent and planning area. The team is working on staffing chart to transition to a type three fire organization on Wednesday. Costs were reviewed by Forest Service Agency Administrator and are within plan costs.</p> <p>Sunday July 21st, all actions are within the DOA, letter of Leader's intent and planning area. Cost were reviewed by Forest Service Agency Administrator and are intin plan costs. Sunday July 21st, all actions are within the DOA, letter of Leader's intent and planning area. Costs were reviewed by Forest Service Agency Administrator and are within plan costs. All divisions plan to mop-up 100 from containment lines. All divisions will begin pulling in hose lay and back hauling operations. Demobilization will begin today for crew, aviation and fire support staff.</p> <p>As of Saturday July 20th AM actions are still within the DOA, Letter and Leader's intent and planning area. Costs were reviewed by both the State of Idaho Agency Administrator and the Forest Service Agency Administrator and are within the planned costs. Focus for Saturday July 20th is the continued burnout operations along Grimes Creek road. Consideration was given to potential spotting across Grimes Creek and debris rolling on to the Grimes Creek road as burnout operations progress. Division Y is staring to GPS and for use in rehab operations.</p>

Although this is not a tool per se, it is a requirement for incidents that require a Decision. Agency Administrators will be completing the Periodic Assessment utilizing many of the tools reviewed above. When this is completed, it is very important to document what was considered in assessing the current situation by adding notes. The notes will remain within the system and will be important if the fire is reviewed later to 'rebuild' the routine validation and thought process. In the future we are hoping to more closely link this information with the Decision when the pdf is created because they are all part of the documentation. At this time previous periodic assessment notes can be found in the left hand menu in the Incident History.

Download KMZs

The screenshot displays a web application interface with a top navigation bar and a main content area. The left sidebar contains a menu with items like 'Incident List', 'Download Parameters', and 'Incident KMZ'. The main content area is divided into sections for 'Incident Information' and 'Group Information'. In the 'Incident Information' section, the 'Incident KMZ' option in the left menu is circled in red. In the 'Group Information' section, the 'Download Parameters' and 'Generate KMZ' options are circled in red. A table below shows a list of incidents within a group, with columns for Incident Name, Unique Fire Identifier, Owner Name, etc.

Incident Name	Unique Fire Identifier	Owner Name	Agency/Authority	Jurisdiction(s)	Size	Discovery	Status
● SOUTH COMPLEX	2015-CASHF-002108	Multiple	Northern California	USFS, Other	29,416	08/01/2015	Out 10/30/15
○ Route Complex	2015-CASRF-0002476	Multiple	Northern California	USFS	35,476	08/01/2015	Contained 09/01/15
○ RIVER COMPLEX	2015-CASHF-002066	Multiple	Northern California	BIA/Tribal, USFS, Other	73,696	07/30/2015	Out 12/02/15
○ Mad River Complex	2015-CASRF-001433	Multiple	Northern California	USFS	36,055	07/30/2015	Contained 09/03/15
○ FORX COMPLEX	2015-CASHF-002067	Multiple	Northern California	BIA/Tribal, BLM, USFS	36,499	07/30/2015	Out 10/30/15

Again, although this is not a tool per se, it is another place to support decision making. If google earth is a preferred platform a KMZ file can be downloaded. In a single incident this ability is located in the left menu. If multiple incidents are being viewed as a group, a KMZ can be downloaded to view all of the fires within that group.

References

Decision Making for Wildfire Incidents: A Reference Guide for Applying the Risk Management Process at the Incident Level
RMRS-GTR-298



Line Officer's Desk Reference For Fire Program Management

www.wfmrda.nwcg.gov



There are many great references to help people understand both the decision making process and WFDSS. The Decision Making GTR was referenced earlier and was written to help people understand the decision making process, rather than the WFDSS process. The Line Officer's Desk Reference has been developed for Forest Service Line officers to provide them with one place to find fire related information.

The Wildland Fire Management RD&A is setting up a location on their website, working with the FS National Line Officer's Team, to host information in one place for Line Officers. Although the FS Line Officer's Desk Reference is hosted here, there are many other documents of interest to interagency Line Officers available here too.

Questions ????



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Reference & Guidance

Introduction
 This page includes a short list of documents, references, and guidance pertaining to wildfire decision support. The list is meant to be dynamic in nature and we will be making efforts to continually update the content on the page. If you have useful documents and/or links that you would like to share with the wildland fire community please [contact us](#) and we will work to add things.

Incident Objectives Project
 Examination of wildland fire incident decisions revealed that most incident objectives are written general enough that they could apply to any fire in the country. This makes them of little use to incident management teams in developing strategies and tactics to achieve an agency administrator's intent for managing a specific fire and for agency administrators seeking to clarify the objectives they want accomplished.

A systematic evaluation of wildfire incident decisions was undertaken during the 2014 fire season, to better understand the situation and recommend solutions. Findings from this work are summarized in the following briefing paper.

[USDA FS Briefing Paper 2015 Findings](#) - WFDSS Decision review of Incident Objectives and Incident Requirements (Updated April 8, 2016)

[Incident Objectives & Incident Requirements Presentation \(.pptx\)](#) - PowerPoint presentation summarizing findings from 2014 and 2015 Incident Objectives and Incident Requirements review. (Updated April 8, 2016)

[USDA FS Briefing Paper](#) - Wildland Fire Decision Making Incident Objectives & Incident Requirements (Updated May 27, 2015)

[White Paper](#) - Improving WFDSS Incident Objectives & Incident Requirements and Relaying Leader's Intent (Updated May 27, 2015)

[Creating Incident Specific Objectives in WFDSS](#) - This document outlines some best practices for creating incident specific objectives (October 2015)

[Fire Example](#) - This is a fire example that demonstrates how Incident Objectives, Incident Requirements, and Course of Action can be consolidated and written to provide clear leader's intent within a decision. (New February 2015)

Risk Assessment
 A video series called, "Strategic-Level Risk Assessment for Fire Behavior Specialists" is available on the WFDSS YouTube Channel. There are seven videos that explain the role of the FBAN and LTAN in providing and communicating products to inform the risk decision. Topics include the Relative Risk Assessment, an Extended Risk Assessment, effects analysis, and the risk conclusion. A

There are many great resources being produced on the WFM RD&A webpage to support you in writing Incident Objectives and Incident Requirements. Consider utilizing them when making your next decision.

Thank you for attending the presentation and reviewing this PowerPoint!