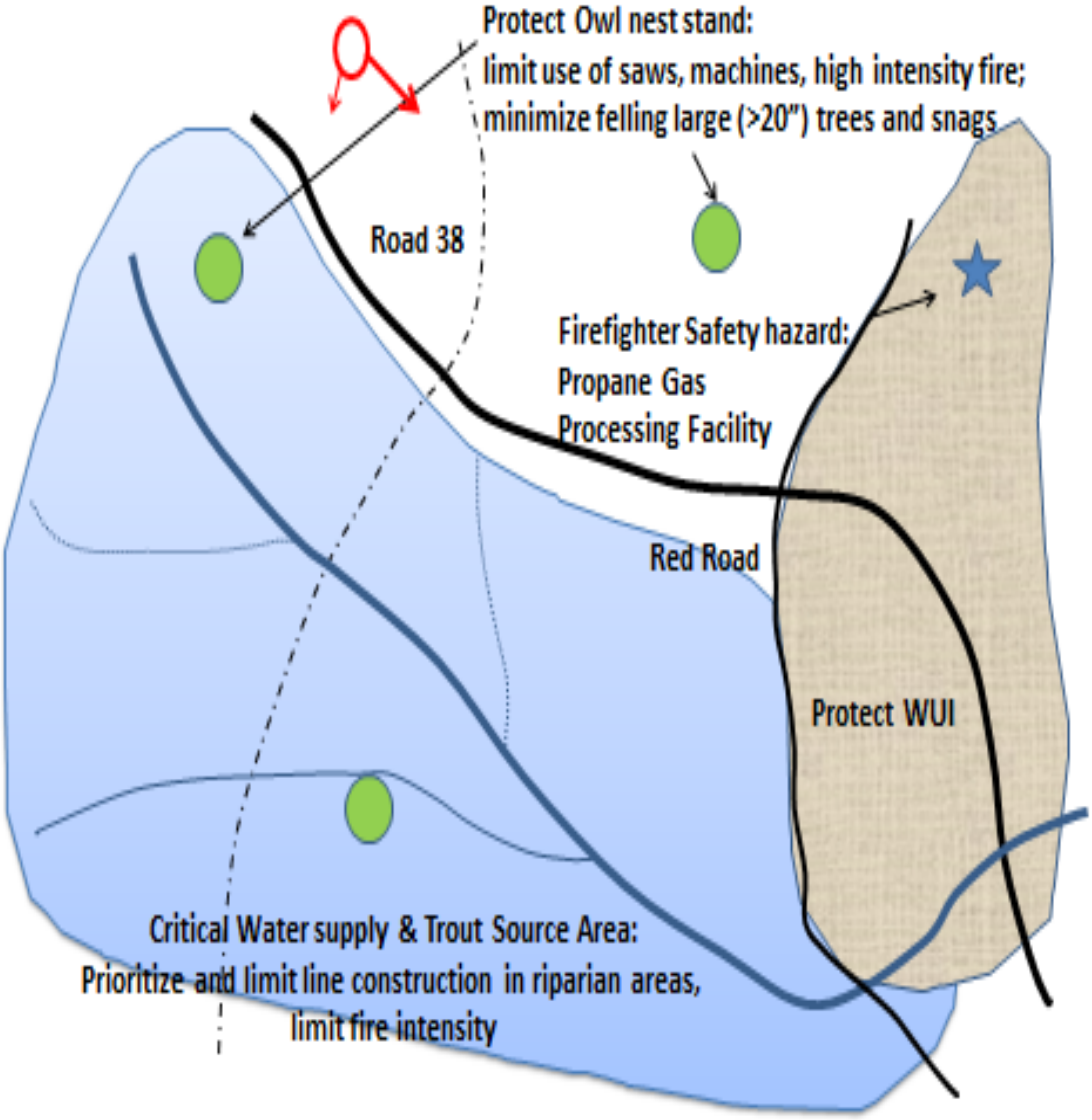
WFDSS
Spatial Fire Planning Guide



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What is Spatial Fire Planning (SFP)?

Spatial Fire Planning (SFP) is a planning process that can describe an administrative unit's Strategic Objectives and Management Requirements based on site-specific direction in the form of mapped shapes or polygons. The Wildland Fire Decision Support System (WFDSS) supports this Spatial Fire Planning process. This guide helps WFDSS users understand the Spatial Fire Planning process and how it can be implemented successfully for an administrative unit.

Two types of planning processes are available in WFDSS. Depending upon the agency affiliation and directives, one may be preferred or mandated over another.

> **Spatial Fire Planning (SFP)** - Requires spatial data which represents Land Management Objectives and Requirements from an administrative unit's planning documents. This information is inherently spatial because it applies to an administrative unit or a part of it. In Spatial Fire Planning, Strategic Objective shapes are developed at the local level, and managed as a national dataset by submitting shapes during quarterly "data calls. Management Requirement shapes however are uploaded by a local WFDSS Data Manager and generally managed at the administrative or local unit level.
>
> **Fire Management Unit (FMU) planning** - The FMU planning process, does not require spatial data, to represent Land Management Objectives and Requirements. Strategic Objectives and Management Requirement are represented spatially but are both tied to the same FMU shape. FMU shapes are developed locally but managed nationally as a national dataset.

Where Does the Information for WFDSS Come From?

Each agency and unit has objectives and requirements that guide decision-making for the unit which come from a Land Management Plan, Resource Management Plan, Fire Management Plan, or other guiding documents (LRMP). This guidance is applied to wildfire incidents and is copied into WFDSS as Strategic Objectives (SO) and Management Requirements (MR) to be considered when managing the wildfire decision-making process.

Strategic Objectives are utilized in WFDSS to represent Land Management Objectives. There can be only one Strategic Objective for an area; in other words, across a Unit, various Strategic Objectives must "puzzle-piece" together.

> **Land Management Objectives** are the objectives set forth in an approved Land Management Plan, Resource Management Plan, Fire Management Plan, or other guiding documents that provide the basis for land and resource management in a designated area.
>
> - These are broad statements that identify desired changes in water, soil, air, or vegetation.
> - They are broad in scale and long term in nature, typically developed in terms of the options available for how a unit may respond to a wildfire
> - Can describe an existing resource condition that should be maintained, or define intended outcomes of management activities that contribute to the maintenance or achievement of future desired conditions.

Management Requirements are utilized in WFDSS to represent Land Management Requirements. In WFDSS, Management Requirements can overlap, cross Strategic Objective boundaries, or may not exist for some portions of the Unit.

Land Management Requirements are the considerations or constraints set forth in an approved Land Management Plan, Resource Management Plan, Fire Management Plan or other guiding documents that provide the basis for land and resource management in a designated area.

- Requirements include directives, standards, specifications, that must be complied with when implementing management actions, these may include the objective or desired outcome of management actions.

Pre-loading the Strategic Objectives and Management Requirements into WFDSS ensures that the incident managers are considering this information when making decisions and developing strategic direction (Incident Objectives, Incident Requirements, and Course of Action) for the wildfire incident. Whichever planning process an administrative unit chooses, the most important task is to utilize shapes and text that make sense, and clearly communicate NEPA-approved planning direction.

Why change to Spatial Fire Planning?

Implementing SFP allows users to focus on spatially relevant land management direction (LRMP Direction represented as Strategic Objectives and Management Requirements in WFDSS) when making a wildfire Decision.

Changing to SFP eliminates particular challenges inherent to FMU planning as it applies to Strategic Objectives and Management Requirements. For example, when a Decision is needed for a wildfire incident, users must draw a Planning Area within WFDSS to automatically populate the decision with all of the pertinent Strategic Objectives and Management Requirements related to where the fire might burn. Depending upon if FMU planning or SFP is being utilized, different information will be obtained.

Fire Management Unit planning

- An incident's Planning Area may have included only a small portion of a particular FMU, but all the Strategic Objectives and Management Requirements for that FMU are loaded into the decision for consideration. This makes it challenging to determine what is most relevant to address when writing the Incident Objectives, Incident Requirements and Course of Action. Because many FMUs shapes were not developed based on a single overall fire management objective, Strategic Objectives and Management Requirements often repeat between FMU polygons – resulting in redundant information in large planning areas.

Spatial Fire Planning.

- Only the Strategic Objectives and Management Requirements that the Planning Area intersects and will be represented as shapes. This simplifies the amount of information (Strategic Objectives and Management Requirements) to address while writing Incident Objectives, Incident Requirements and the Course of.

Representing LRMP information spatially is also more flexible in Spatial Fire Planning compared to FMU planning.

Fire Management Unit planning

- Specific areas of interest under FMU based planning must be entered as Unit Shapes which are vertices limited and do not display as accurately. All Unit Shapes display as the same color of unfilled polygons, and cannot have management direction associated with them.

Spatial Fire Planning.

- Users can display Management Requirements with unique colors, filled polygons, and can associate management direction.

Who Will Develop Spatial Fire Planning and How?

Spatial Fire Planning requires resource specialists, fire staff and Line Officers involvement to ensure planning direction is appropriately represented in WFDSS. If WFDSS is populated with relevant LRMP direction that is important to all specialists and the Line Officer on the unit, it can be utilized in making timely and informed decisions. At least one individual must have a Data Manager role in WFDSS to manage SFP information and associated tasks. The following steps can be utilized to work through the process:

Develop a Transition Strategy for an Administrative Unit:

A transition strategy may include the following tasks:

- Obtaining approval from leadership to change an administrative unit's planning process from the FMU to SFP process.
- Defining a working group to guide the SFP process. This includes planning, data entry, implementation and monitoring as well as identifying a Data manager(s).
- Reviewing planning documents to gather information that is applicable for wildfire management.
- Setting timelines for planning, review and implementation. This will be important to ensure the proper spatial data is loaded and ready for fire season. There is a specific schedule for loading Strategic Objectives which must be considered when developing a timeline prior to fire season. (SO/FMU download Schedule)
- Developing Strategic Objectives and Management Requirements ensuring review by appropriate resource specialist, fire staff and Line Officers.
- Working with State/Regional/National Fire Staff to ensure consistency regionally and nationally.

Once a plan has been developed it will be important to ensure team members stay engaged throughout the entire process. As with FMU planning, Spatial Fire Planning requires monitoring so revision can be made to Strategic Objectives and Management Requirements so they remain valid and reflect current management direction and planning documents.

Creating Strategic Objectives and Management Requirements:

The working group will review planning documents to identify Strategic Objectives and Management Requirements that apply to wildfire management. Unique polygons, that represent Strategic Objectives and Management Requirements, will be loaded in to WFDSS and sized to the area where the direction applies.

Strategic Objectives:

Strategic Objectives are Land Management Objective(s) related to wildfire. The following apply to Strategic Objectives Shapes:

- The Strategic Objectives shapes define the unit boundary.
- Strategic Objective shapes may require regional or national review and are submitted to a WFDSS GIS Team for upload into WFDSS (SO/FMU download Schedule). Due to these constraints it is recommended that they be developed first outside of WFDSS and evaluated.

Based on review of Strategic Objectives currently in WFDSS most Strategic Objectives fall into one of the four basic objectives below. There may be other reasons for objective development, but these were the most common and may be considered as Strategic Objectives are being developed.

- Suppress all fires while considering cost, firefighter risk, and values at risk
- Suppress all fires while considering and evaluating resource damage
- Resource benefit optional – management of fire to meet resource objectives can be considered
- Resource benefit promoted – management of fire to meet resource objectives is encouraged

Text and spatial content loaded into WFDSS must accurately represent LRMP direction for the administrative unit and is used to support incident decision-making. Figure 1 is an example of spatially represented Strategic Objectives, which do not overlap and defines the administrative unit boundary.

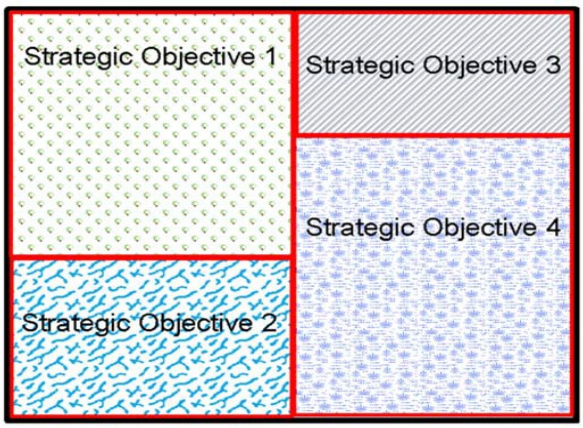

Figure 1 An example of Strategic Objectives on a landscape

Management Requirements:

Management Requirements are Land Management Requirement(s) related to wildfire which essentially provide "sideboards" for implementation of the objectives. The following applies to Management Requirement Shapes:

- Administrative units control their Management Requirement shapes and each shape has associated text that describes a specific standard or guideline applicable to that area.
- Management Requirement shapes must be located within an administrative units boundary. WFDSS automatically clips Management Requirements to the administrative unit's boundary to eliminate overlapping edges where the shapes fall outside the unit boundary.
- Management Requirement shapes can overlap Strategic Objective shapes and/ or overlap each other as shown in Figure 2.

Data Managers can upload or draw Management Requirement shapes directly in WFDSS, and can edit both the shapes and text as needed throughout the fire season to ensure the most current information is activated in WFDSS.

Management Requirement shapes may represent any of the following:

- Temporal or condition based requirements, such as "no mechanical equipment use in this area during the April 1-June 1 nesting season". This allows a unit's direction to change throughout fire season as species of concern migrate, or drought conditions worsen or improve to name a few examples.
- Considerations and constraints: Blue Butterfly Habitat; Minimize disturbance during July.
- Required actions in specific areas: Line Officer Approval is needed for use of Retardant and Mechanical Equipment.
- Areas that have equipment and retardant restrictions: Continental Divide Trail Corridor-Do not damage trail surface when implementing wildfire actions.
- Objectives for desired future condition that affect a small area of the unit without conflicting with the Strategic Objectives they overlap. An example might be while the overall Strategic Objective may be to "manage fires to meet resource objectives" a Management Requirement might be used to differentiate between "enhance old growth ponderosa pine" in one area "reduce juniper encroachment" in another and "enhance natural processes in Wilderness" in another, all within the same Strategic Objective shape.

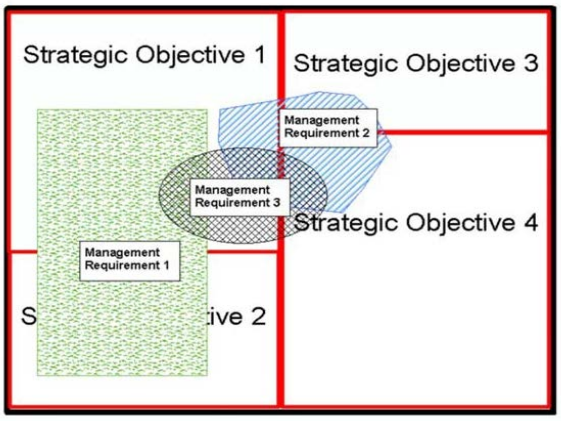

Figure 2 An example of Management Requirements overlaying Strategic Objectives.

Changing to SFP in WFDSS:

Once the decision has been made to change to Spatial Fire Planning, it's time to start working in WFDSS. An evaluation must be made as to whether the FMU shapes and layer codes can be used or not. Depending upon findings, the following steps will be utilized.

Retaining the FMU Shapes and Codes:

If the team determines the FMU shape layer and codes are representative of the Strategic Objective shapes and codes, they can keep their FMU shapes and codes. A WFDSS user with the Data Manager role will select Spatial Fire Planning within the Planning Process box on the Data Management Tab. (this tab is not accessible to users without the Data Manager role in WFDSS) This will initiate the following actions within the application:

- FMU level Management Requirements are immediately disabled and can NEVER be re-enabled (they can be recreated but not re-enabled). Prior to initiating this action copy the FMU Management Requirements by downloading the excel spreadsheet from the Data Management tab and save it to a safe storage area for later use.
- All existing FMU shapes become Strategic Objective Shapes.
- All Existing FMU codes become Strategic Objective codes.

The unit and Data Manager must complete the following:

- Update new Strategic Objective codes and text converted from old FMU codes and text as needed.
- Create new Management Requirements shapes and associated text and upload.

Creating New Strategic Objective Shapes:

If the FMU shapes or codes require revision before they can be used or a new Strategic Objective shape layer is warranted, they must be developed.

- Strategic Objective shapes must be submitted to the WFDSS Data Team Contact and added to the spatial data in the National FMU layer. Consideration must be given to the download schedule. (SO/FMU download Schedule)
- Units can change to SFP before their SO shapes are loaded and begin creating SO codes and SO text but they must match the codes associated with the SO shapefiles that were submitted.
- Once activated, the text for a Strategic Objective cannot be edited or deleted, but if edits are required, the Strategic Objective can be deactivated, and new Strategic Objective text created with corrections. This new Strategic Objective must be activated to replace the original. Once a Strategic Objective has been deactivated, it will not be available for incident decision-making.

Creating Management Requirement Shapes:

Management Requirement Shapes must have text associated with them. Because Management Requirement shapes are managed by the administrative unit, data does not need to be submitted to a WFDSS Data Team Contact and is not added to the National FMU layer. The Data Manager will:

- Upload all Management Requirement Shapefiles.
- Add appropriate text and information associated with each.
- Activate them once the information (text and shapefiles) is satisfactory to the unit's team managing the information.

Data Manager Role in WFDSS and SFP:

Identifying the Data Manager early in the planning process, ensuring they have the appropriate role and are available throughout the process is critical.

- Data Managers manage the text and spatial Land, Resource and Fire Management plan-related data for their administrative unit.
- Data Managers can upload, manage, and associate shapes to represent their unit's planning direction, and make changes as needed throughout the year.
- Data Managers can export or import, unit planning processes and later replace this data using the import planning processes. Data that can be exported and imported includes active FMU/Strategic Objective codes, active Strategic Objectives, active Management Requirements and associated shapes and/or text for each. WFDSS users assigned the role of Data Manager can export a current planning process and its associated shapes and text from Production to Training, or from Training to Training. Exporting does not allow for export out of the system, but instead allows users to save a 'snapshot' of the current planning process that can be used to restore the planning process at a later time.

Can the unit change back to the FMU planning process?

If the unit would like to transition back to the FMU planning process in WFDSS a Data Manager can switch from Spatial Fire Planning back to Fire Management Unit planning but the following should be considered:

- Is there Agency guidance and direction indicating that FMU planning process can still be utilized?
- Does the Line Officer and administrative unit support converting back to the FMU planning process?

Changing to SFP deactivates Management Requirement text associated with the FMU planning process, therefore FMU content will have to be re-loaded to WFDSS if converting back to the FMU planning process. Utilize the exported excel spreadsheet to cut and paste the information back in to WFDSS. The spreadsheet cannot be imported to auto-populate any fields.

Once Spatial Fire Planning Has Been Completed, What's Next?

Testing the Information & Preseason Planning

Once the SFP process has been completed the data entered must be validated. This can be completed by creating a fire in training and completing the process of publishing a Decision. Include fire staff, line officers and other WFDSS users to ensure all aspects of management and leadership weigh in. This allows managers and fire staff to view the information layout in a decision format to evaluate how it flows and if it meets the needs of the unit. A unit can evaluate the way SOs and MRs are now represented in WFDSS and make improvements as needed. This is an excellent way to not only complete the review but accomplish preseason planning and training.

Monitor and update

There may be changes to policy and other guiding documents each fire season therefore it is important to ensure that the most current planning guidance is included in WFDSS. Data Manager(s) should establish a timeline preseason or midway through fire season to review the data and input new or changing updates.

What About Other Spatial Data?

Unit Shapes

Other unit shapes are points, lines, or polygons that a Data Manager can upload that may contain information about local values data, directives or recent ecosystem changes not directly listed in LRMP direction. They can be used to further clarify overall strategic direction, priorities, or site-specific concerns. This information may be important in assisting the Line Officers in making timely and well informed decisions. Examples of values that may fall into the Other Unit Shape category include, but are not limited to:

- A new or recent vegetative disturbance from insects and disease or wind damage
- Department of Defense (Training routes, ranges, etc.).
- Hazmat
- Other values or points/areas of interest
- Values layers specific to local fire decisions
- Threatened and endangered species not found in current national GIS layer.
- Prescribed burn and fuels treatment areas
- Barriers
- Management Action Points (preplanned)
- Structures not already in WFDSS
- Campgrounds and trails not in WFDSS
- Mine shafts
- Private property when it is not represented in the WFDSS values layer.

Uploaded shapes may be viewed using the Unit Map which displays the administrative unit's outline, associated FMUs, Strategic Objectives, Management Requirements, and Other Unit Shapes. The Unit Map is especially helpful for Data Managers, as it allows drawing of Unit Shapes and immediate viewing of Unit Shapes recently uploaded thus eliminating the need for users to navigate away from the Data Management tab to a different map display.

Data Managers can use the Unit Shapes feature to pre-load shapefiles and create a shapefile library of local values data for decision making on their unit. These values can also be included as part of the values inventories generated when creating a decision, but must be activated in the Data Management Tab.

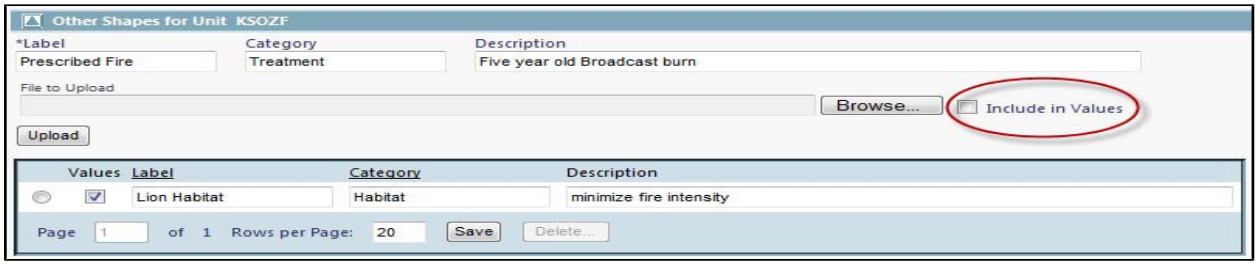

Figure 3 illustrates the check box for allowing a unit shape to be included in a values inventory.

Obtaining Assistance While Working on Spatial Fire Planning in WFDSS?

There are a number of avenues to obtain help with Spatial fire Planning. There may be operating procedures and/or an agency designated individual to assist with Spatial Fire Planning or one of the best ways to find the answers is to visit the WFDSS website at: http://wfdss.usgs.gov/wfdss/WFDSS_Home.shtml

There are links to documents on the website as well as training that can inform and give step by step instructions for working in WFDSS.

Also located on the site are two handy ways to obtain information. One is the WFDSS Google Search engine, located in the upper right corner of the webpage, Figure 4.

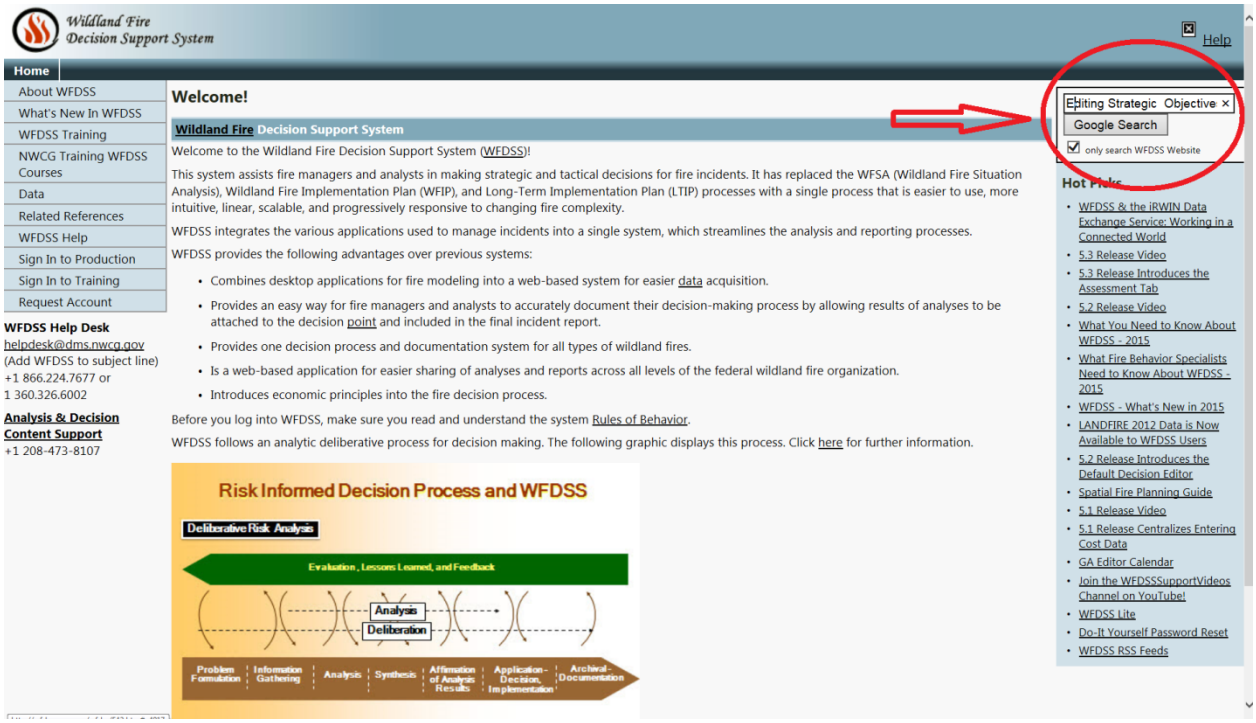

Figure 4 the google search engine is on the WFDSS homepage.

The Google Search engine allows users to search topics and instructions located on the WFDSS website by clicking the check box, or other websites. Enter the topic of interest such as "editing Strategic Objectives", and links to help documents will be displayed. (Figure 5 & Figure 6)

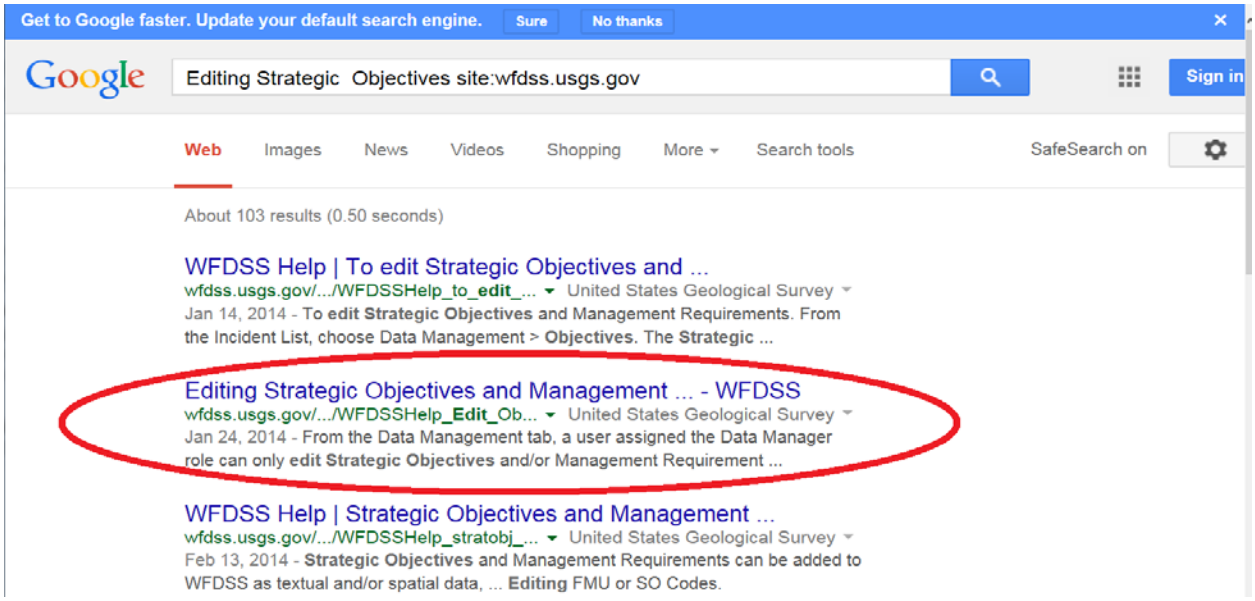

Figure 5 examples of help topics produced from the google search engine that can be reviewed..

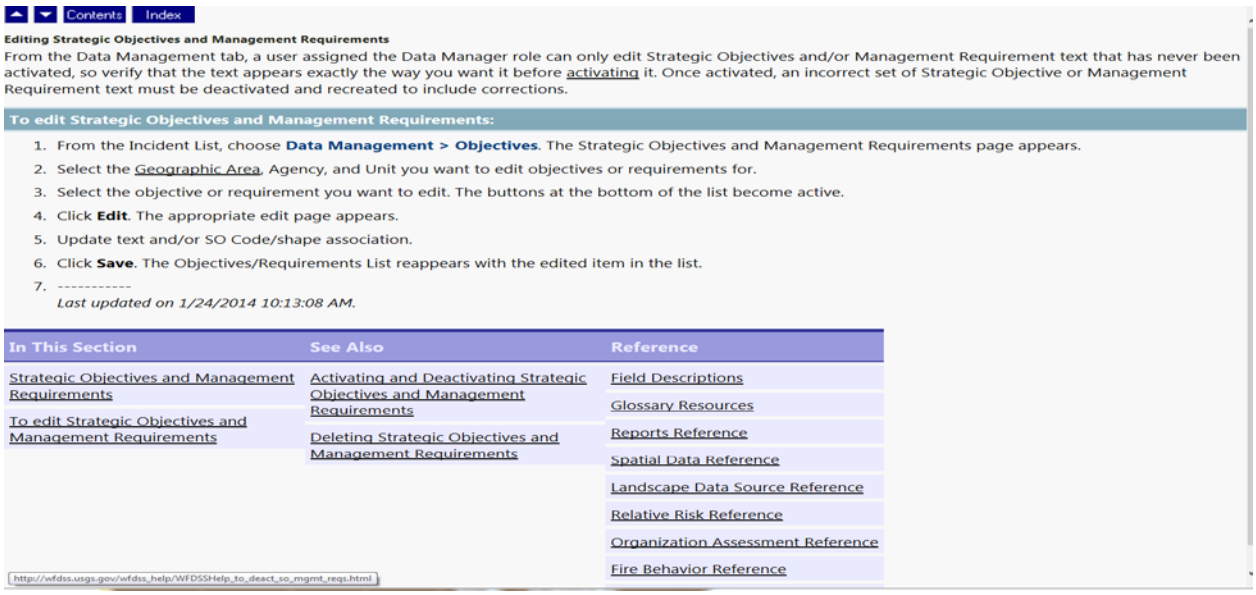

Figure 6 information that can be found in the google documents found in figure 5.

Once the content index is displayed, users can then navigate the topics and references for answers and view step by step instructions.

In the event users are still looking for answers they can click on the WFDSS HELP tab in the left menu on the WFDSS homepage, Figure 7. Within this tab there are links to WFDSS Online help, other websites, frequently asked questions and the WFDSS Help Desk email and phone number. At the top of any WFDSS internet page, in the upper right hand corner, there is also a direct link to the WFDSS Online help WFDSS online help, also seen in Figure 7.

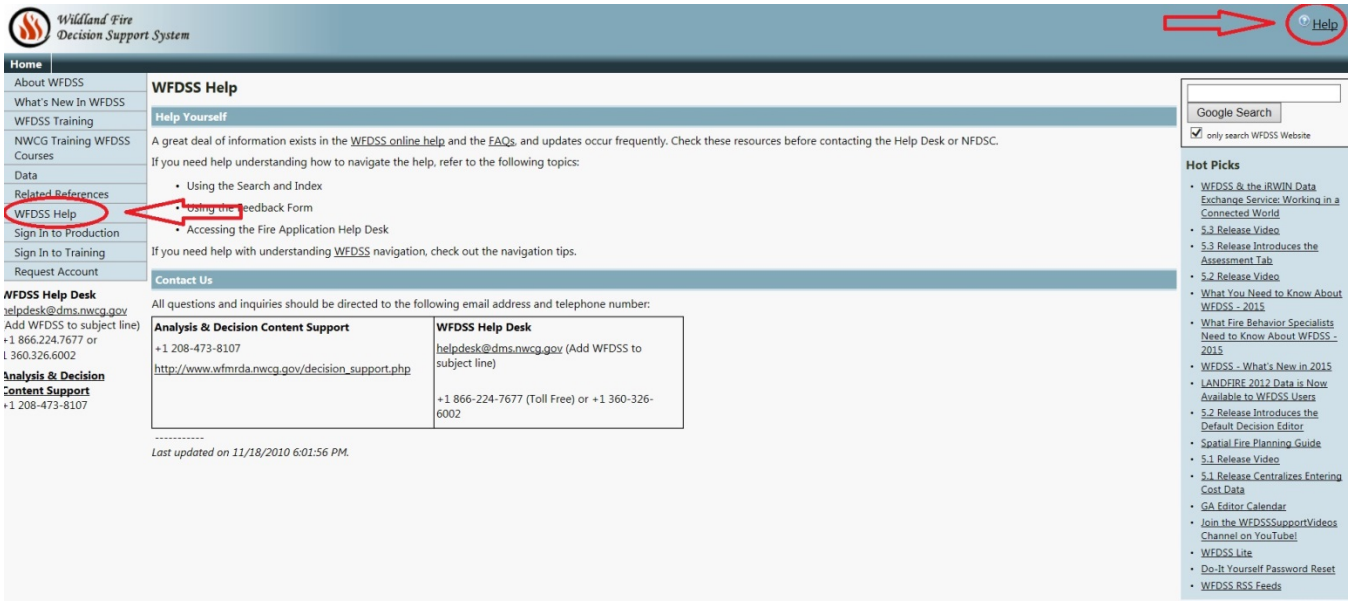

Figure 7 Figure showing where the WFDSS Help tab is located on the WFDSS homepage.

Reference and help content is updated periodically. Using WFDSS Help (WFDSS online help) or Google search at the WFDSS Homepage are two good ways to find the most up to date information and instructions for viewing, creating and updating fire planning information. Other Information, YouTube videos and more related to Spatial Fire Planning can also be found on the WFDSS website. Below are some key word examples to use to search for content when working with Spatial Fire Planning in WFDSS.

Strategic Objectives in Spatial Fire Planning	
Working with Strategic Objective Shapes	Entering Strategic Objective Text
Activating and Deactivating Strategic Objectives	Editing Strategic Objectives
View strategic objectives from the Data Management tab	Deleting Strategic Objectives
View strategic objectives from a map display	Exporting planning processes
Management Requirements in Spatial Fire Planning	
Working with Management Requirement Shapes	Management Requirements and Shapes
Management Requirement Shape Considerations	Entering Management Requirement Text
Drawing Management Requirement Shapes	Uploading Management Requirement Shapes
Changing Associations for a Management Requirement Shape	Replacing a Management Requirement shape
Activating and Deactivating Management Requirements	Editing Management Requirements
Deleting Management Requirements	
The Role Unit Shapes Play in SFP	
Drawing Other Unit Shapes	Uploading Other Unit Shapes
Viewing or Downloading Other Unit Shapes	Deleting Other Unit Shapes

Figure 8 list examples for search topics when working with Strategic Objectives, Management Requirements and Unit Shapes