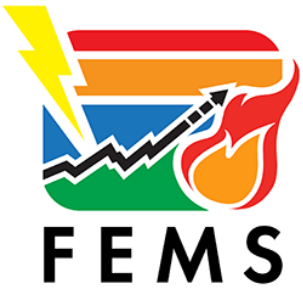

US Forest Service
Bureau of Land Management
Bureau of Indian Affairs
National Park Service
Fish and Wildlife Service

Fire Environment Mapping System (FEMS) Field Sample Database User Guide Version 3.5

January 22, 2026

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Overview

The Field Sample Database (FSD) is a web-based query system that enables users to view sampled and measured live- and dead-fuel moisture information. The FSD is a module within the Fire Environment Mapping System (FEMS). The system utilizes a database that is routinely updated by fuels specialists who monitor, sample and calculate fuel moisture data.

Purpose of FSD

FSD serves multiple purposes. Firstly, NFMD provides a repository for sampled live- and dead-fuel moisture. Fuel moisture data can now be stored in a database that serves as a national archive of the fuels record. Secondly, it provides a resource for anyone who has a need for fuel moisture data. A national database eliminates the need for multiple requests for data or exhaustive searches for such data, which can often result in little or no success. Thirdly, it allows for easy viewing of the data in formats that are consistent with other applications used in the land management arena.

History of FSD

The idea of a national fuel moisture database arose in late 2001 when the Predictive Services program was in its infancy.

Over time, fuels sampling data became available to Predictive Services. Unfortunately, the data arrived in multiple formats – spreadsheets, web pages, Portable Document Format (pdf), lists and others – which were difficult to synthesize in a coherent fashion. In Fall, 2005, BLM Utah fuels specialists and Eastern Great Basin (EGB) Predictive Services meteorologists analysis and comparison.

In Spring, 2006, EGB introduced the EGB Fuel Moisture Database. During the busy fire season in central Idaho, the EGB database became an indispensable tool for fire behavior specialists working on fires in the area. When the Predictive Services meteorologists from all the Geographic Area Coordination Centers gathered in November 2006, they agreed to develop a national database built on the EGB model. The NFMD is the result.

At a national level NFMD was hosted at the Fire Science Lab in Missoula, Montana. NFMD has existed there, with limited funding form since early 2018.

In the past couple of years, the database has become unstable and required a rebuild in 2023. User access continued to be an issue. In 2022, an effort to modernize and centralize the database to bring the database under the FEMS application was initiated.

At the end of 2023 there was a final push made to complete the FSD Module within FEMS and deploy for the 2024 field season.

The initial release of the Field Sample Database was released in FEMS 2.0 in April 2024.

The map display of the Field Sample Database was included in the release of FEMS 3.1 in March 2025.

Additional reports functionality with PowerBI was introduced in FEMS 3.4.

What's New in V3.5

- The primary focus of this release is to add Catalog Management functionality for FEMS Admin users.

- A limited number of Mesonet stations have been added to FEMS for both Weather and Fire Danger.

Access

The Field Sample Database is accessed through FEMS.
FEMS is an open system available for public viewing.
FEMS (usda.gov)

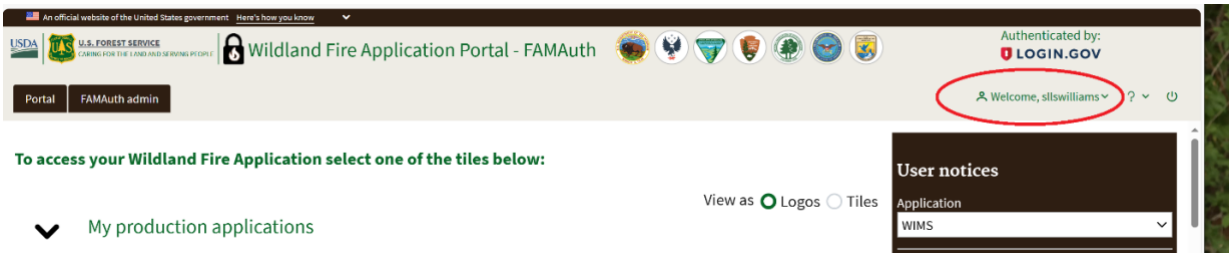
A FEMS account will provide access to additional data.

Requesting Access

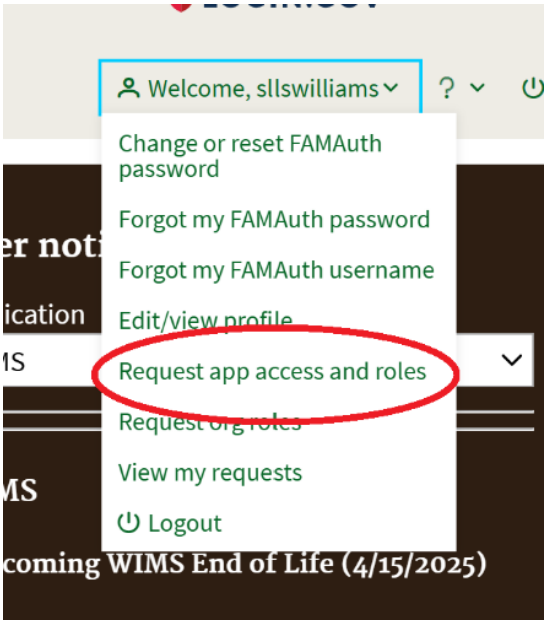
To request access through FAMAuth (FAMAuth) either with a Login.gov account or through eAuth.

See the FAMAuth User Guide for assistance in creating a FAMAuth account.

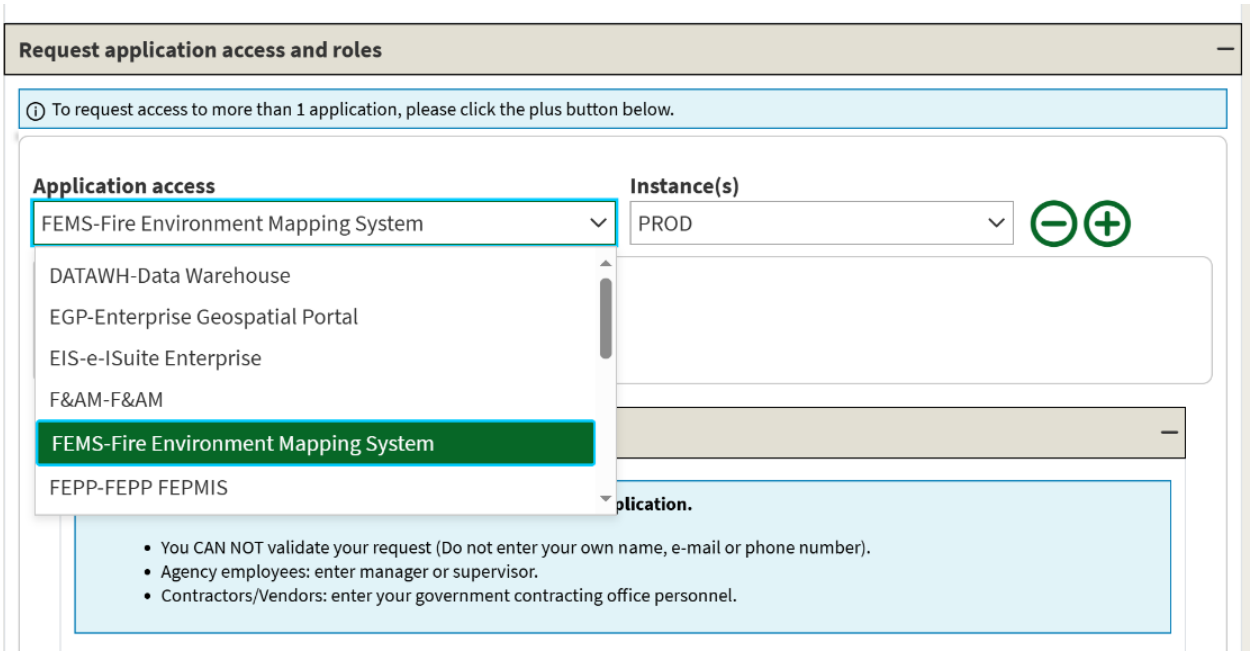
Once logged in:
Locate your account dropdown in the upper right corner.



Select “Request app access and roles”.

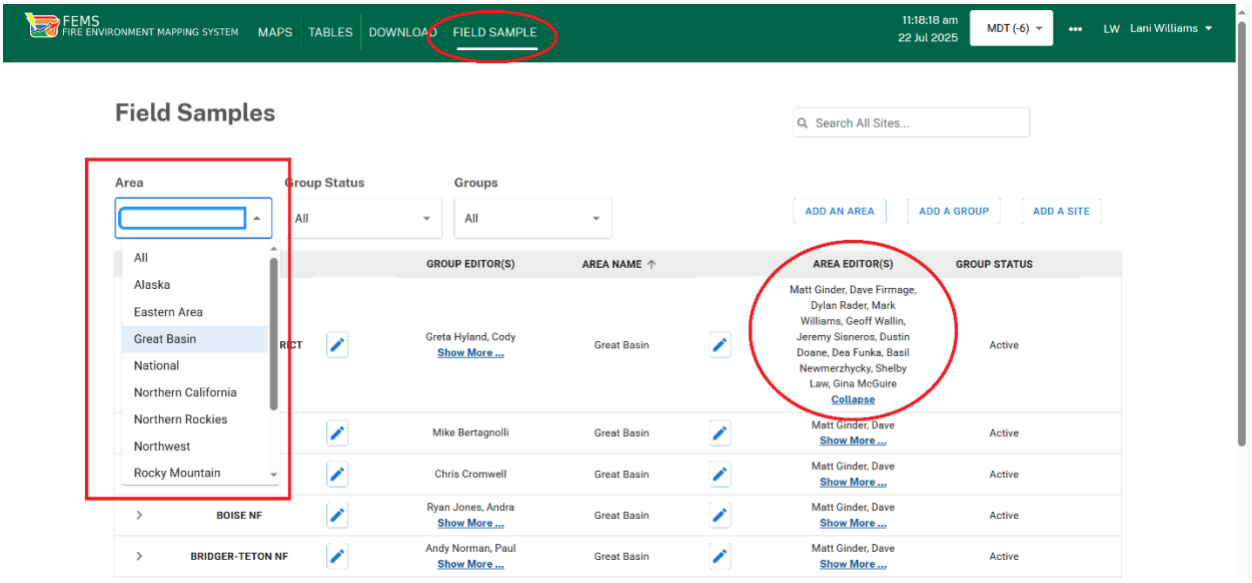


Select “FEMS” and “PROD”.



An initial Fire Environment Mapping System (FEMS) account will only grant general user access.

IMPORTANT: Assigned higher roles are needed to enter fuel sample data and those roles can be granted by **contacting your Area (GACC) Editor**.



Area Editor information is available on the Field Sample tab in FEMS.

Until field sample roles are granted users will not be able to enter fuel sample data.

Roles and Definitions

- Field Sample Collector
  - Enters and edits Fuel Moistures
- Field Sample Group Editor
  - Can enter and edit Fuel Moistures
  - Creates and edits Field Sample Sites
  - Creates and edits Field Sample Groups
- Field Sample Area Editor
  - Can enter and edit Fuel Moistures and Sample Sites
  - Creates and edits Field Sample Groups
  - Creates and edits Field Sample Areas

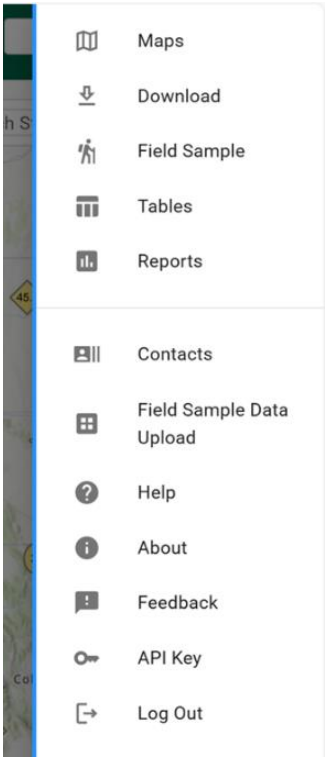
Request access for the role that fits your needs.
You will be required to list a contact. You cannot list yourself.

Home Screen

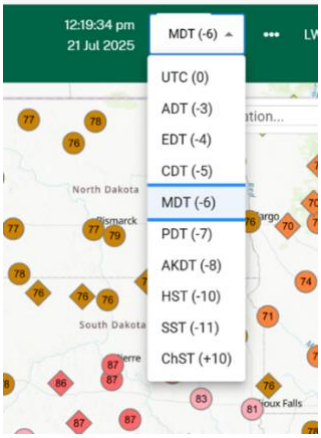
1. Click on the “Hamburger” icon in the upper right:

2. Click on the “LOGIN” button.

3. A list of menu options will appear; selections will vary with user roles:



4. Data can be displayed in UTC or Standard Time:



Accessing Fuel Samples

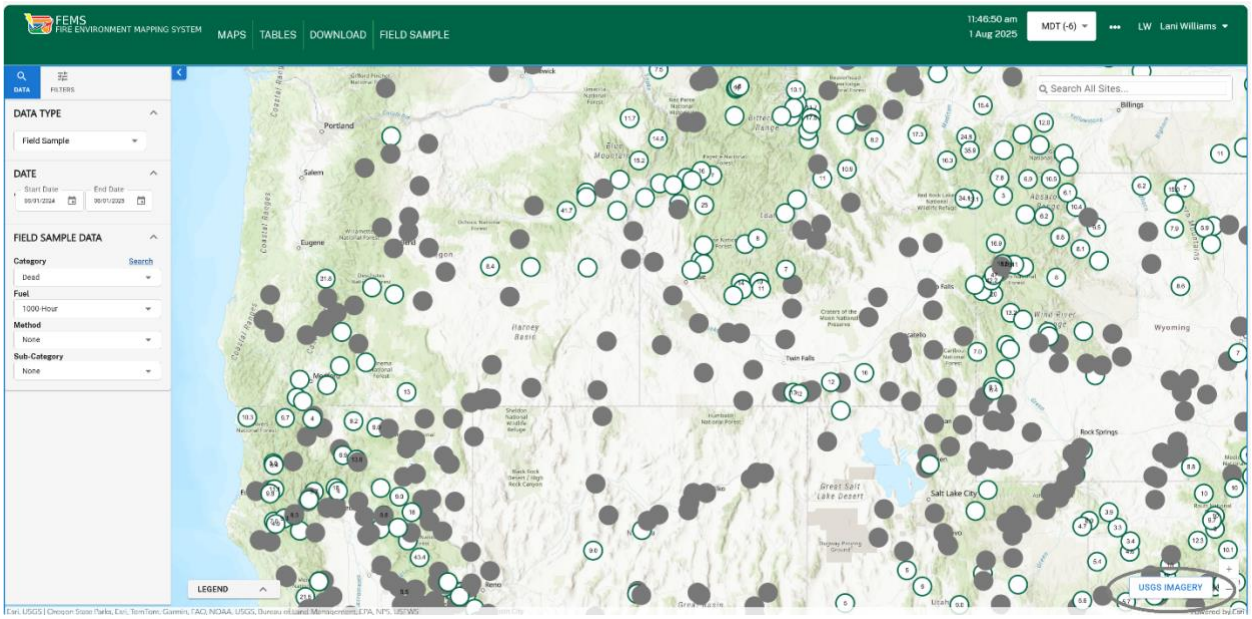
The Field Sample Tables can be accessed by either the Map or Tables Menu.

Map Option

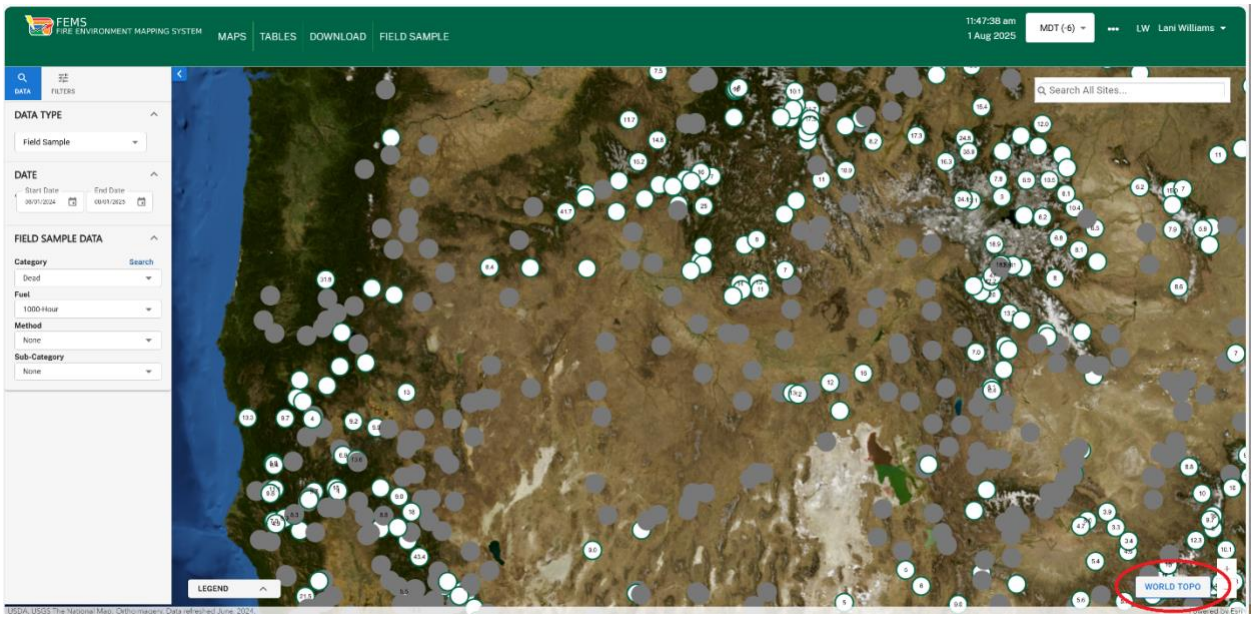
Navigating Maps

Two options are available for viewing the map.

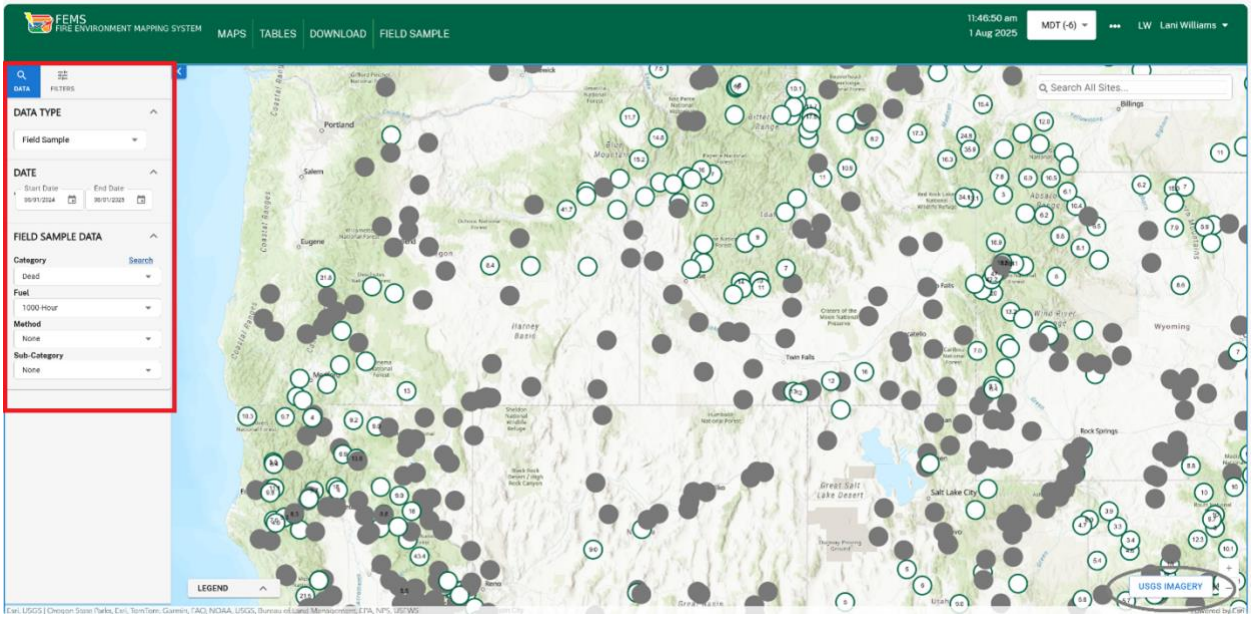
World Topo is the default.



Clicking on the “USGS IMAGERY” label will change the map.

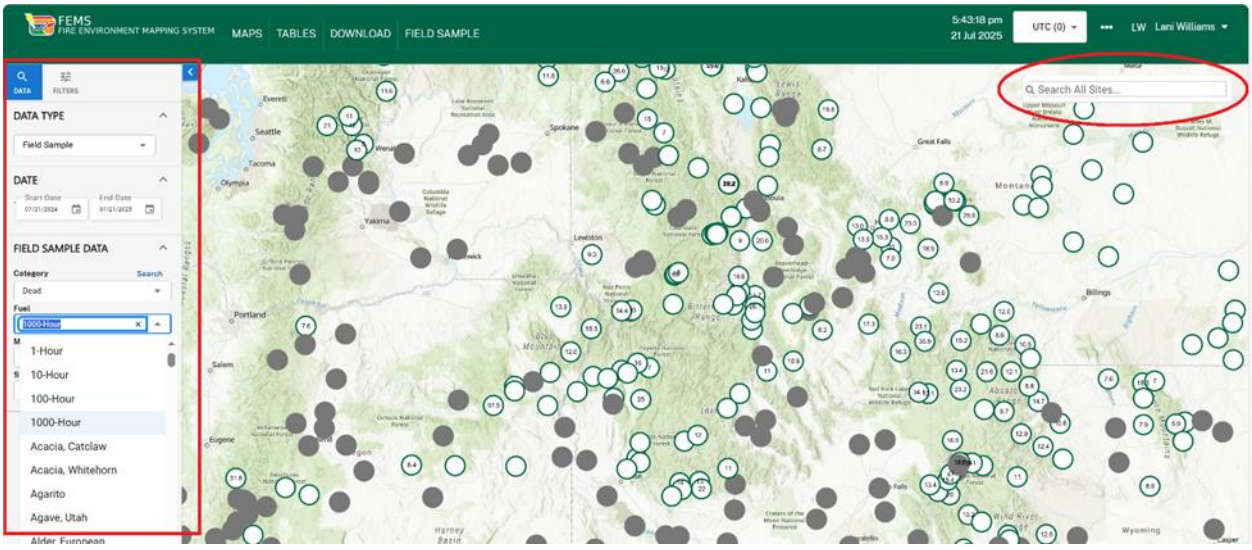


Selections on the left side will determine the map data displayed:

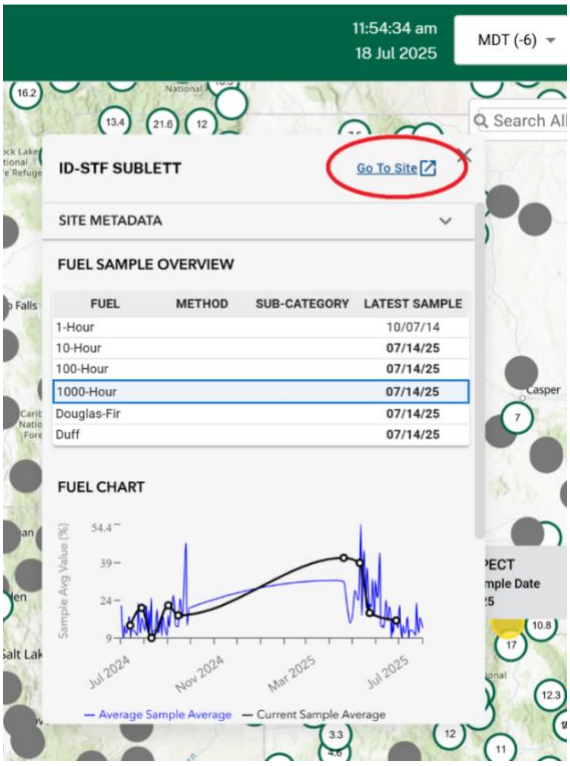


Viewing Field Sample Data

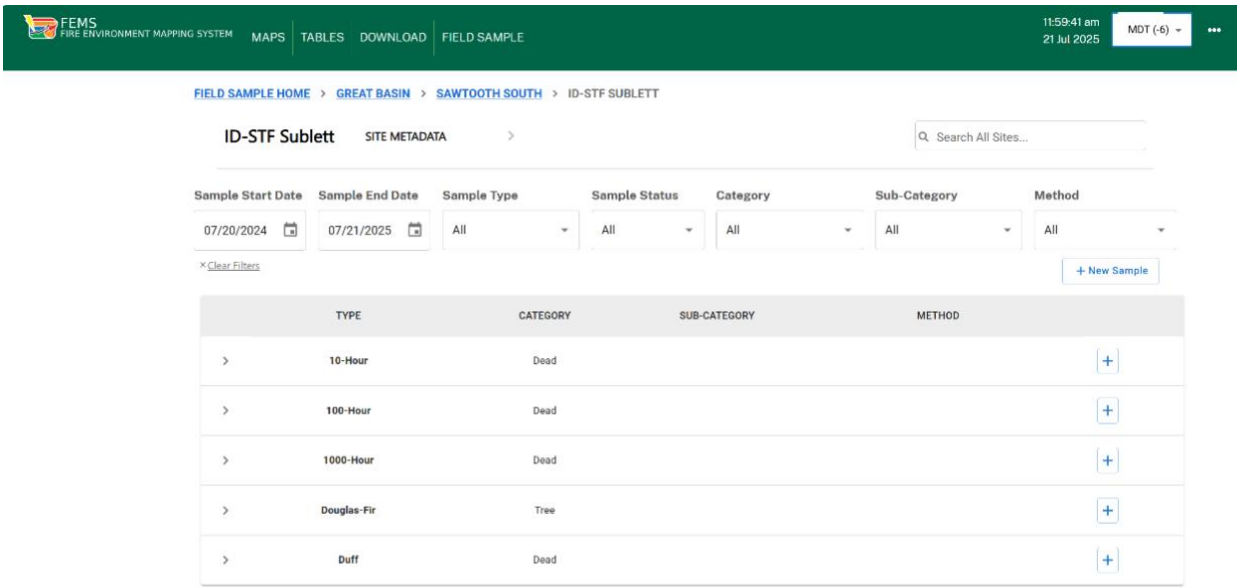
1. Data Type: Select Field Sample
2. Filter Field Sample Data: This step is essential to display sites with data.
3. You can use the “Search” option or navigate through the map.



4. Click on the site to display the current data.

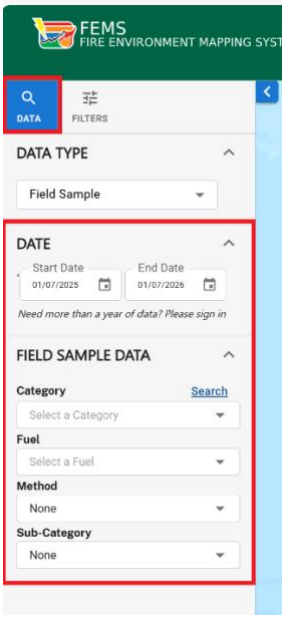


5. Click on the “Go To Site” link to access the tables for additional information.
6. Users with authorized roles will be able perform edits and record fuel moistures from here.



Data Tab:

Under the “Data” tab, date selection and dropdowns will aid selections by narrowing the search based on: Category, Fuel, Sampling Method or Sub-Category. However, since most samples may not list Sampling Method or Sub-Category, it is recommended to leave those fields as “None”.



Filter Tab:

Under the “Filter” Tab the elevation filter can be used to narrow the stations displayed.

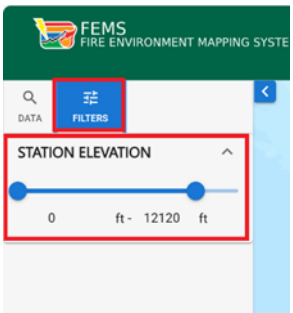


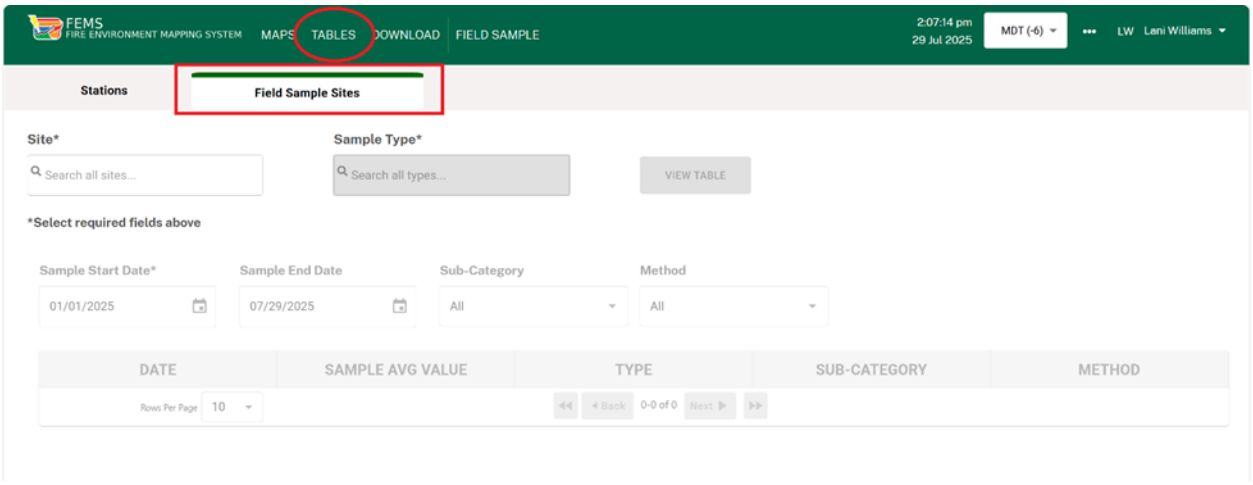
Table Option

Navigating Field Sample Tables

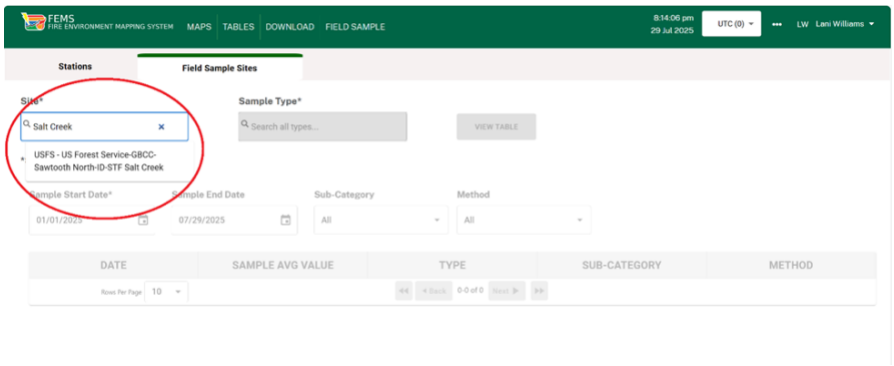
To View Field Sample Tables:

1. Select the “Tables” tab in the banner.

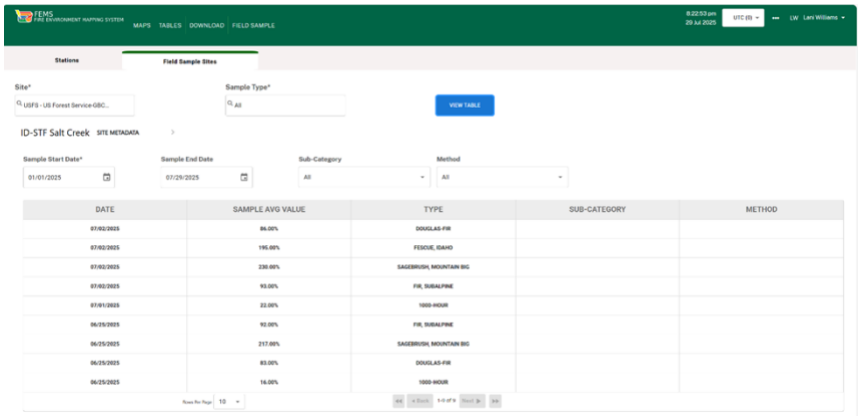
2. Select the “Field Samples Sites” tab:



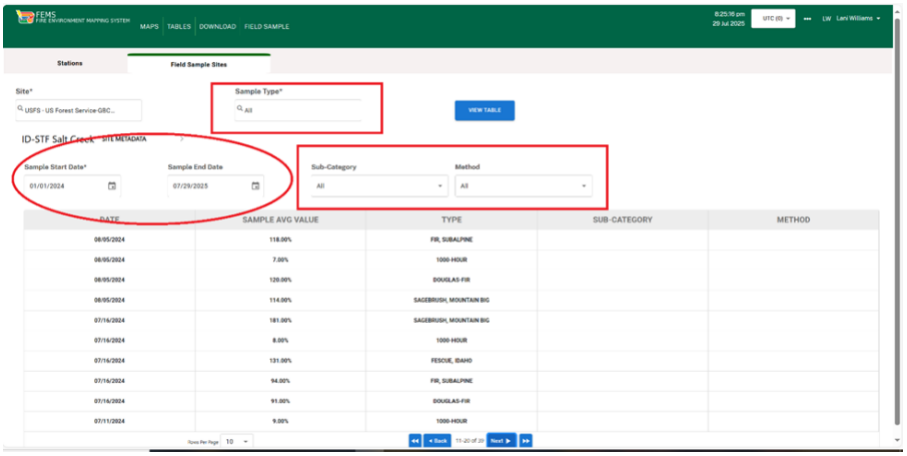
3. The blank table will appear.
4. Use the dynamic search function to view the desired Sample Site.
5. Select the “Sample Site”.



6. Select “Sample Type”. It is best to select “ALL” to ensure the greatest likelihood of viewing data.
7. Select the “View Table” button.

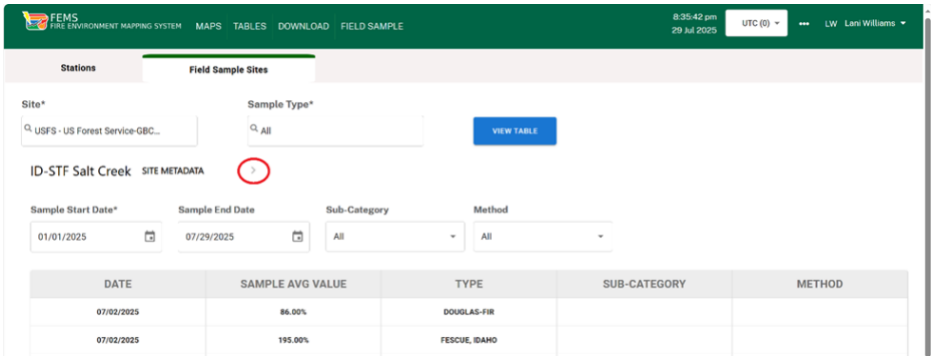


8. The table will display the data for the current year.
9. Use of the calendar feature to display additional data.
10. The use of additional filters will provide views of specific data.

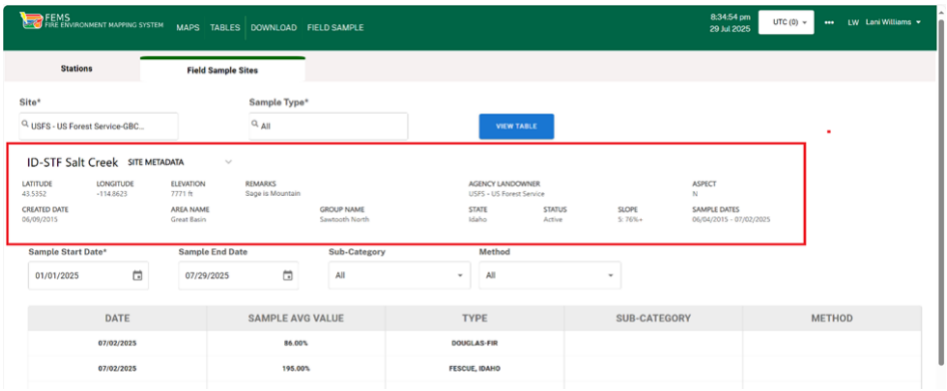


To View Field Sample Site Metadata

1. After filtering for a specific site, there will be a “carrot” to the right of the site name.



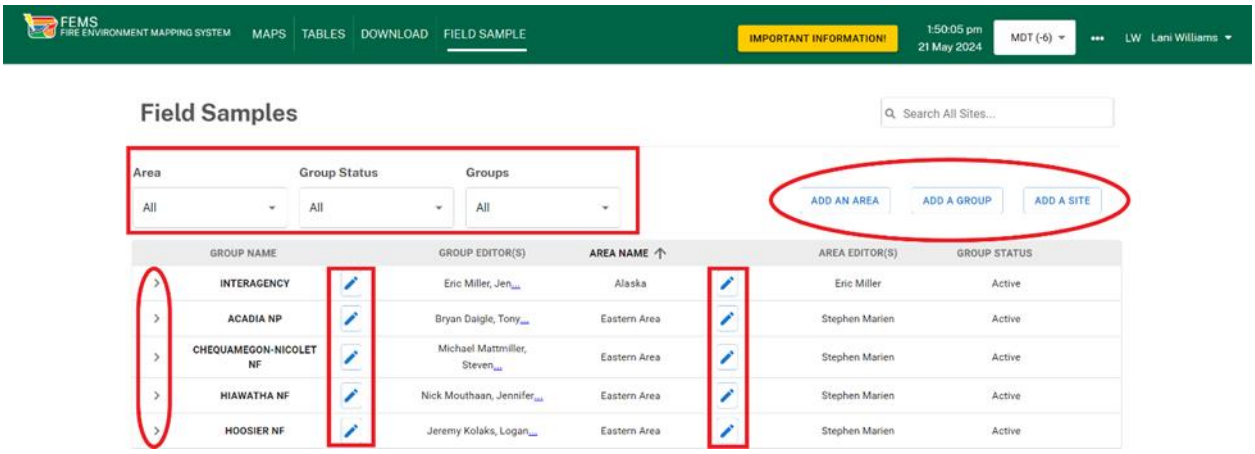
2. Select the “carrot” to display the “Site Metadata”.



Program Administration

1. Sign into FEMS and Proceed to the Field Sample tab.
2. Click on the “Field Sample” tab.

3. Field Sample can be filtered by Area (GACC), Group Status (Active, Inactive, All) or Group.
    a) Buttons to add Areas, Groups and Sites are available based on roles. Greater functionality will be released in the future.

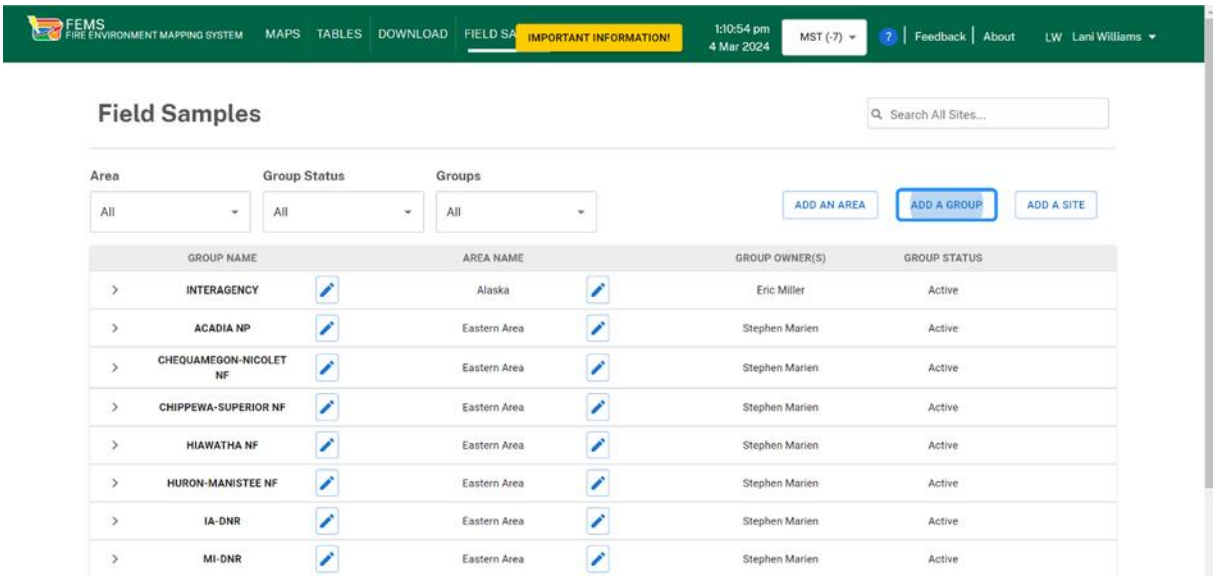


Field Sample Area Editor

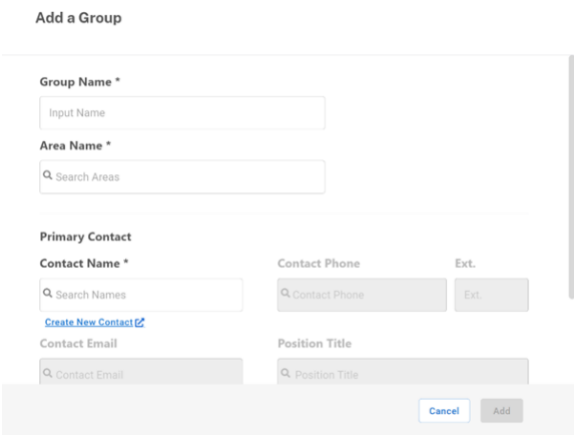
Adding, and Editing Field Sample Groups is a role that is assigned to the **Field Sample Area Editor**.

To Add a Field Sample Group:

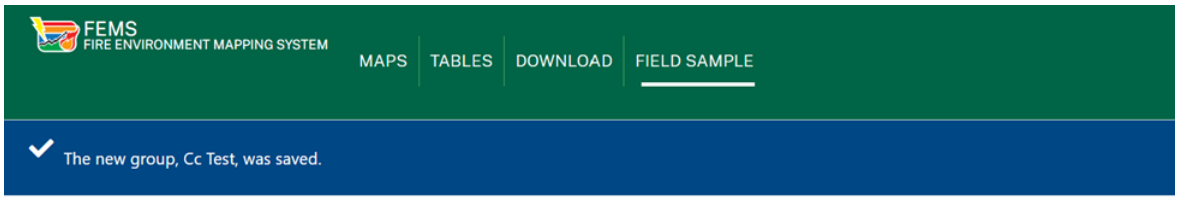
3. Sign into FEMS and proceed to the Field Sample tab.
4. Click on the “Add a Group” button:



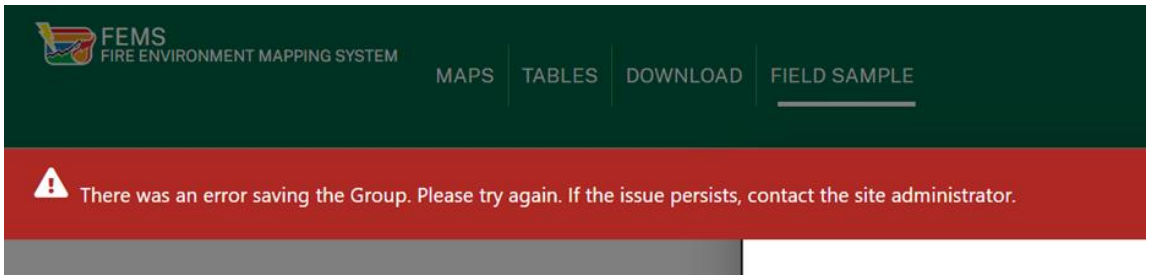
5. A popup box will appear.



6. Complete the required fields.
    a) Select “Area Name” from the dropdown list.
    b) The “Primary Contact” field is a searchable field to avoid duplicate entries in the database.
        1. More than one contact may be listed.
        2. **See “Add a New Contact” below to add a new contact.**
7. When all information has been entered, click on the “Add” button.
8. A banner will appear at the top to indicate that a Group has been created.



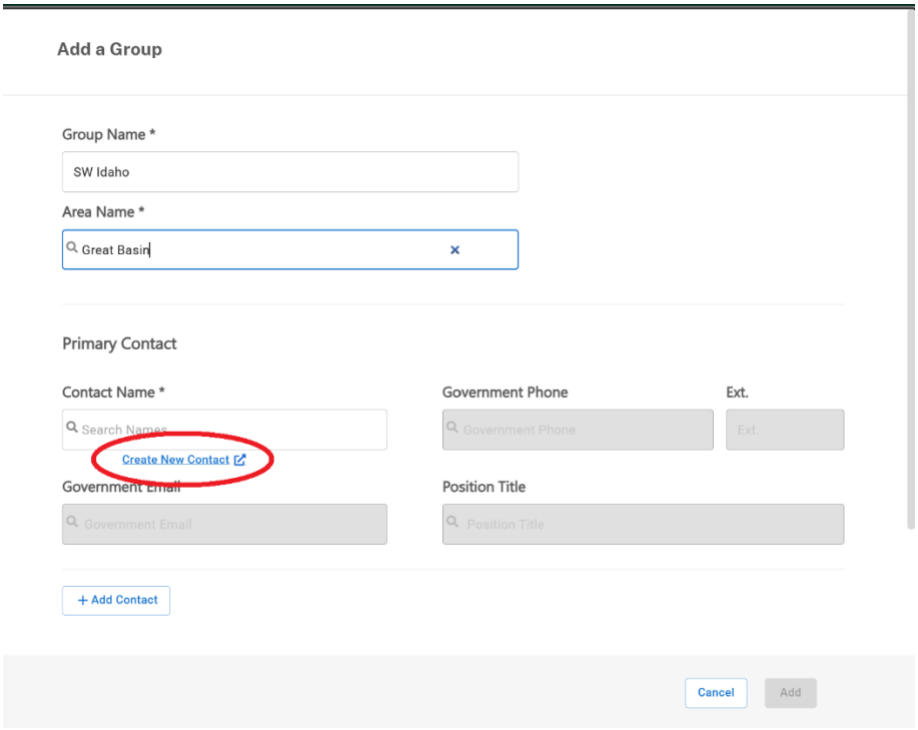
9. Each Group must have a unique name. If a duplicate is attempted a red error banner will appear at the top.



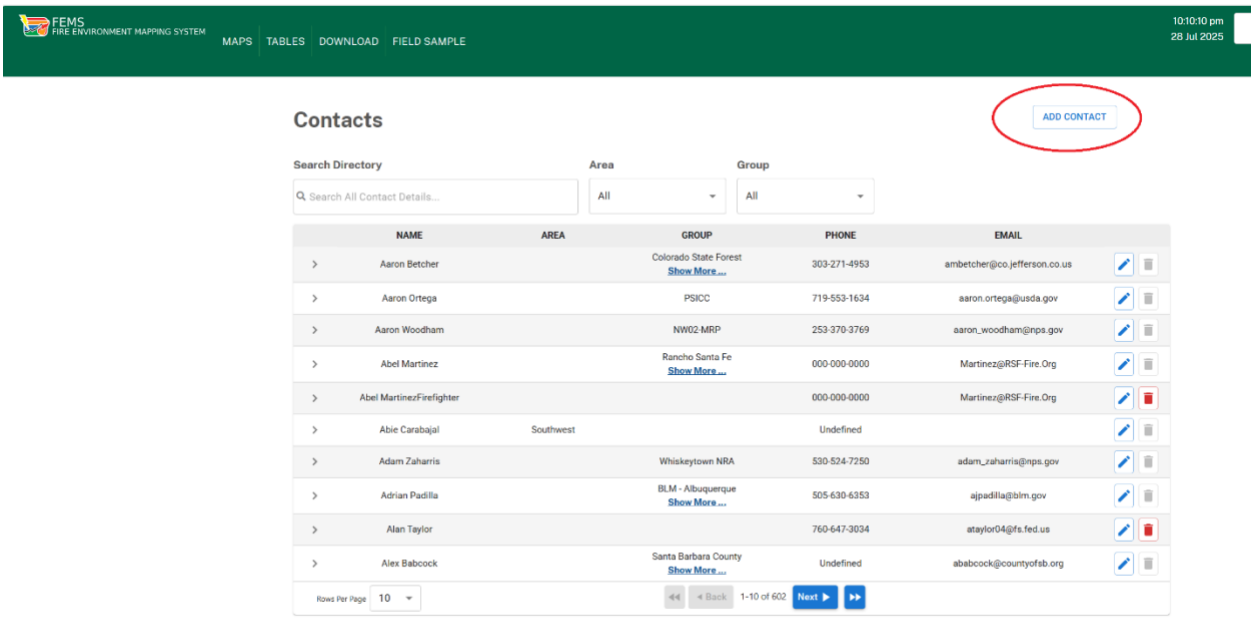
10. To add another group, click on "Add a Group" again and begin a new group.

To Add a New Contact:

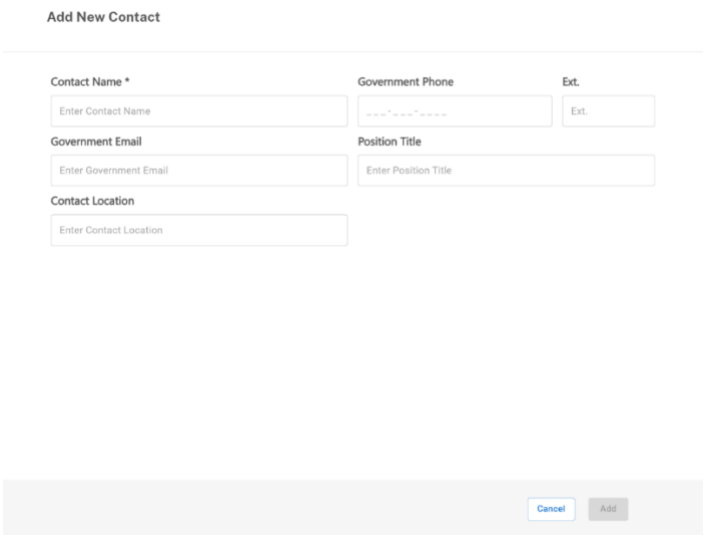
1. Select "Add New Contact":



2. You will be redirected to the "Contacts" Table.
3. Click on the "ADD CONTACT" button:



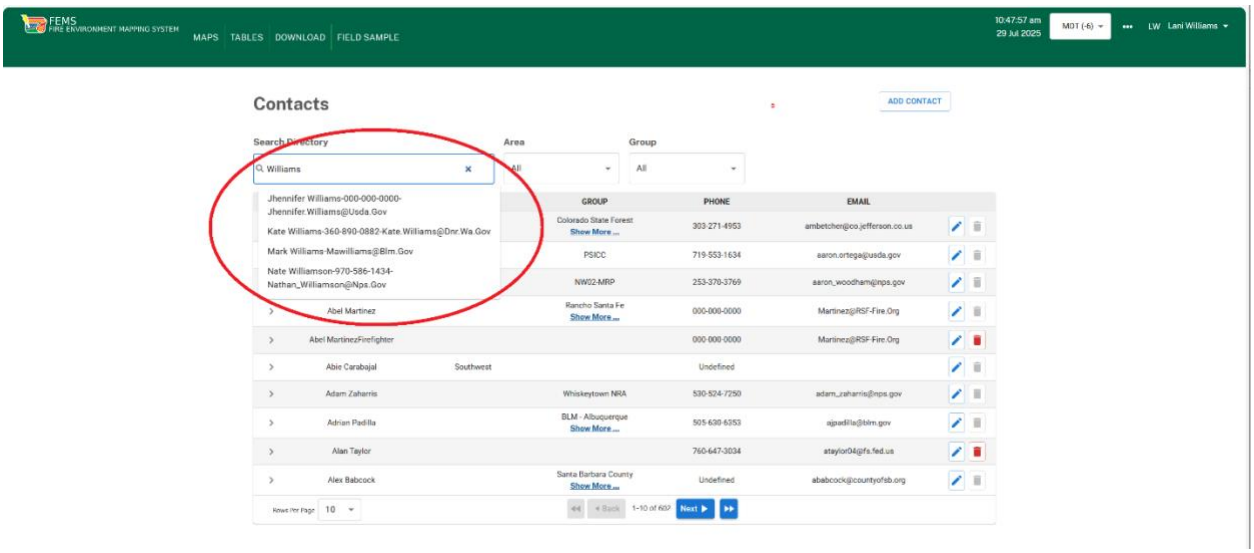
4. A popup will appear:



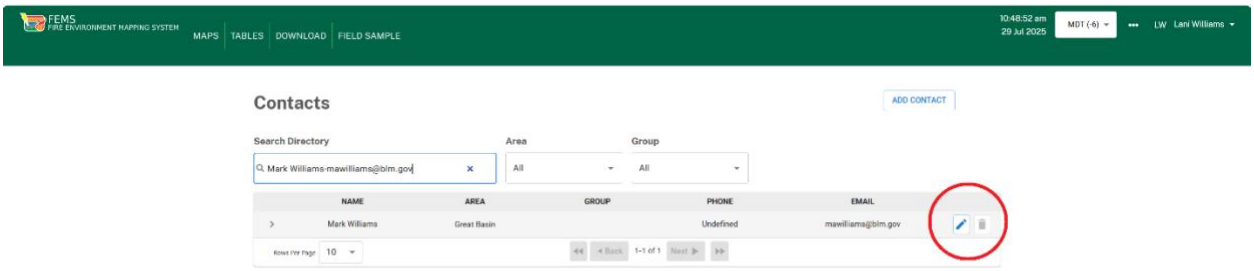
5. Fill in the requested information and select “Add”.
6. The individual should now be available to add as a contact.

To Edit an Existing Contact:

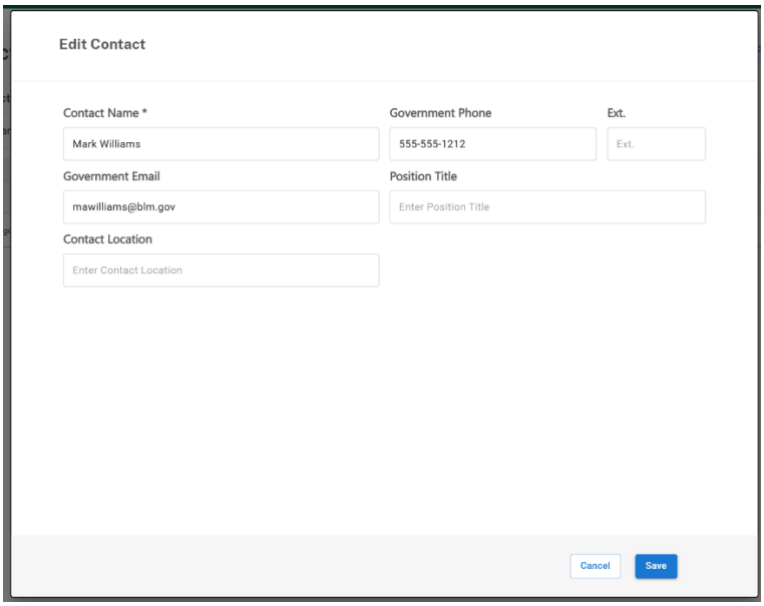
1. Navigate to the “Contacts” table by using the “Add A Group” icon.
2. Click on the “Add A Contact” link.
3. Use the dynamic search feature on the “Contacts” table:



4. Click on the **Edit link** located on the Contact Screen:

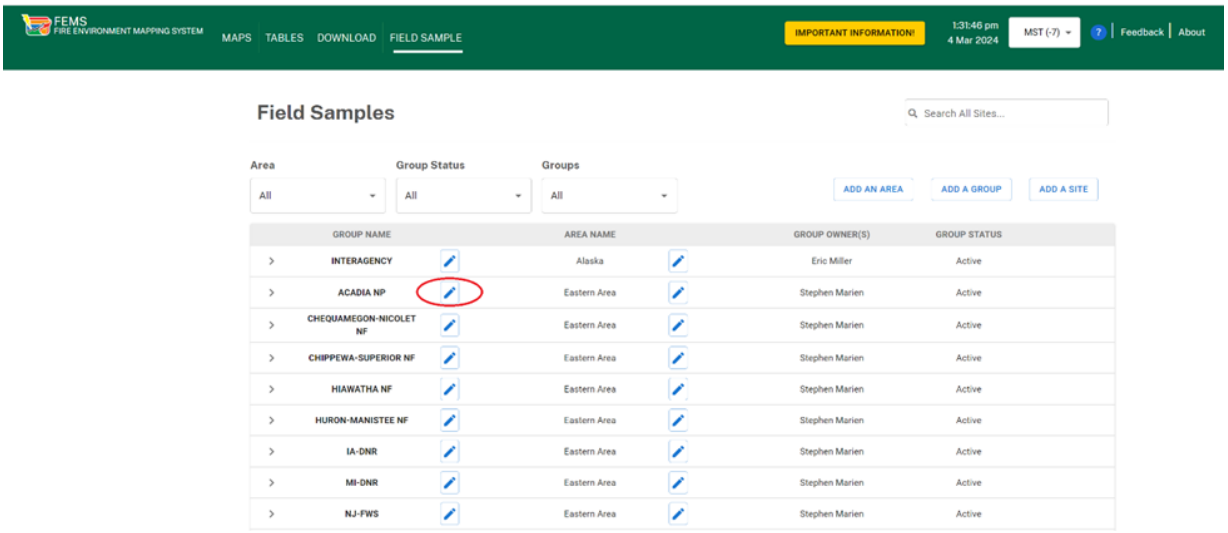


5. A popup box will appear.
6. Make the desired edits and click “Save”:

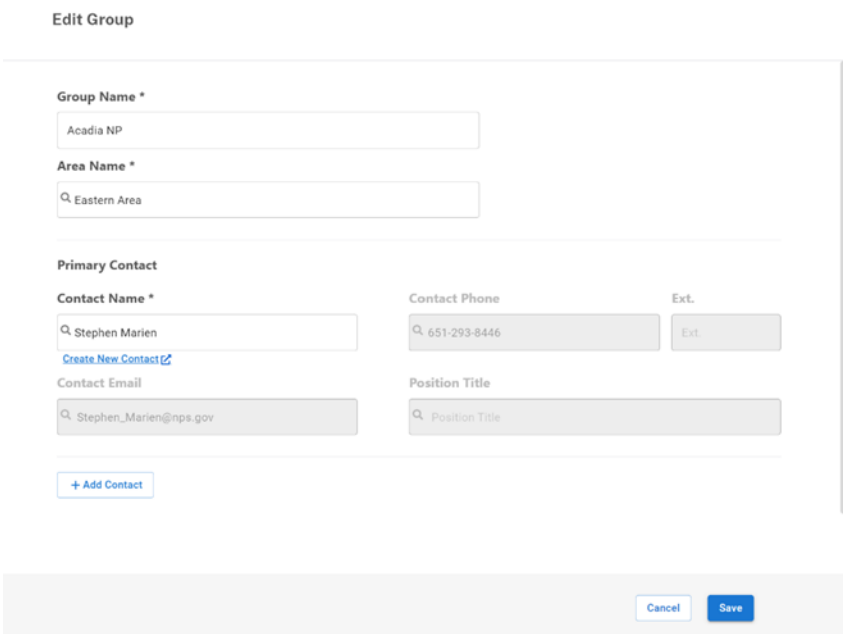


To Edit a Field Sample Group:

1. Select the **Edit link** to the right of the Field Sample Group name.

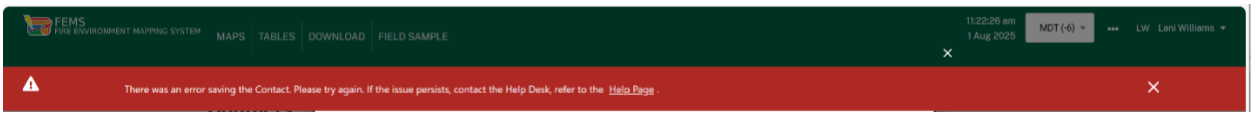


2. A popup box will appear.



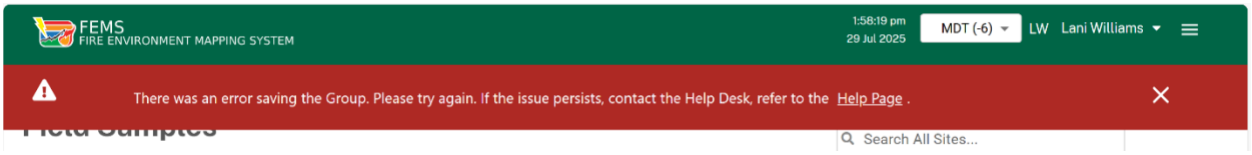
3. Edit the requested fields.
    a. Select “Area Name” from the dropdown list.
4. Additional contacts may be added.

a. The Field Sample Database will not allow duplicate contacts to be entered.
b. If a duplicate is attempted a red error banner will appear at the top.



5. When finished, click on the Save Changes button to save the information to the database.
6. A banner will appear at the top to indicate that a Group has been saved.

7. Each Group must have a unique name.
    a) If a duplicate group is entered an error message will be displayed:



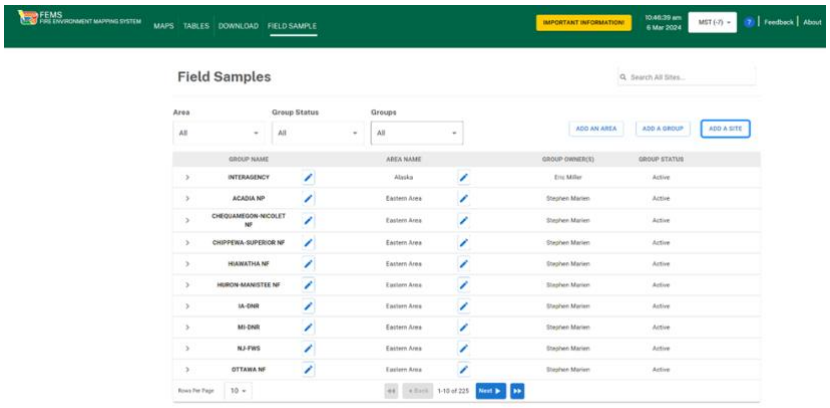
Field Sample Group Editor

Managing a Field Sample Site

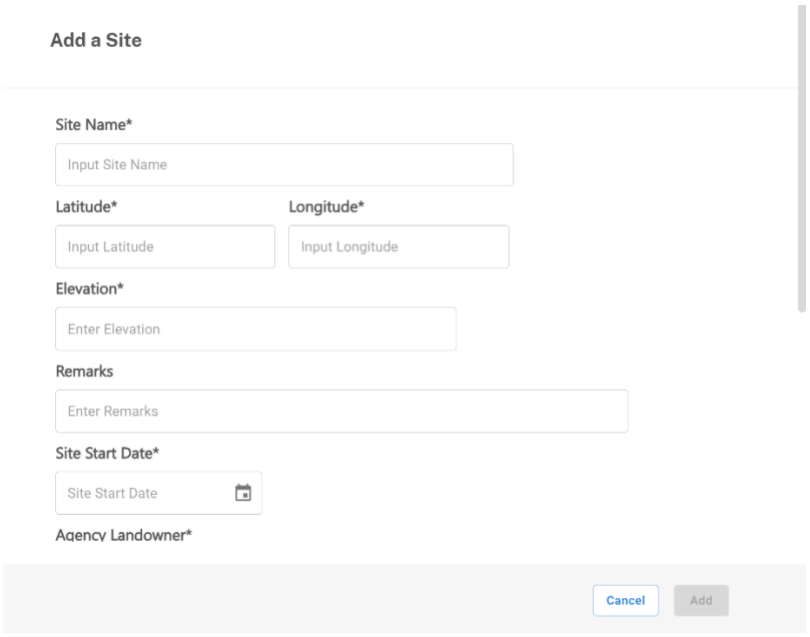
Creating, Editing and Deleting Fields Sample Sites is a role that is assigned to the **Field Sample Group Editor**.

To Add a Field Sample Site:

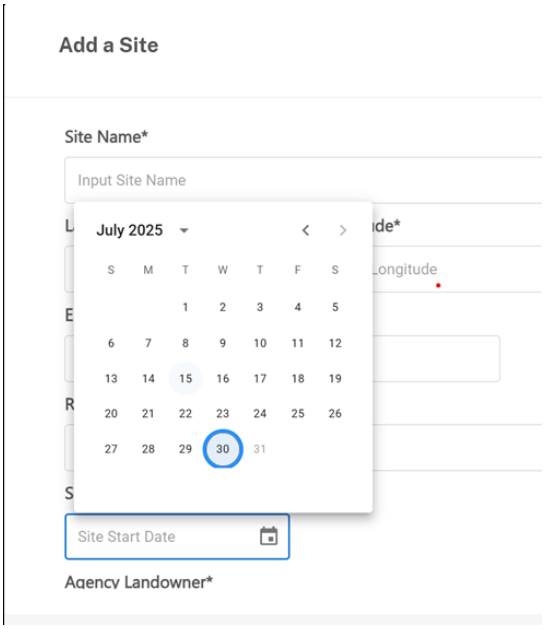
1. Sign into FEMS and Proceed to the Field Sample tab.
2. Click on the “Add a Site” button.



3. A popup box will appear.

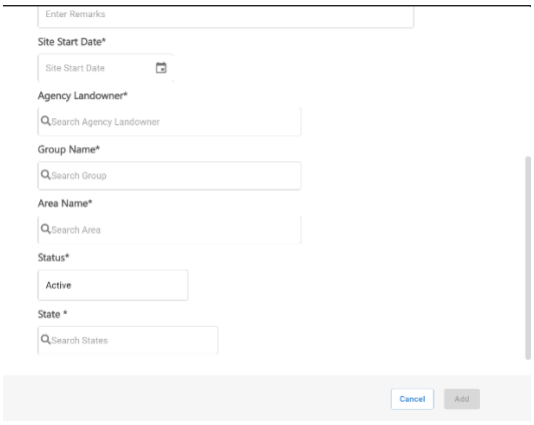


4. Fill in the required information.
   a) Site Name – Needs to be unique.
   b) Latitude and Longitude.
   c) Elevation
   d) Remarks should pertain to the site. **Remarks related to the sample will be available in a future release.**
   e) Site Start Date – available with a calendar option.



f) Agency Landowner – Select from a dropdown – searchable field.
g) Group Name – Select from a dropdown – searchable field.
h) Area Name – Select from a dropdown – searchable field.
i) Status – Select from a dropdown.
j) State - Select from a dropdown – searchable field.

5. Be sure to scroll down for then additional fields.

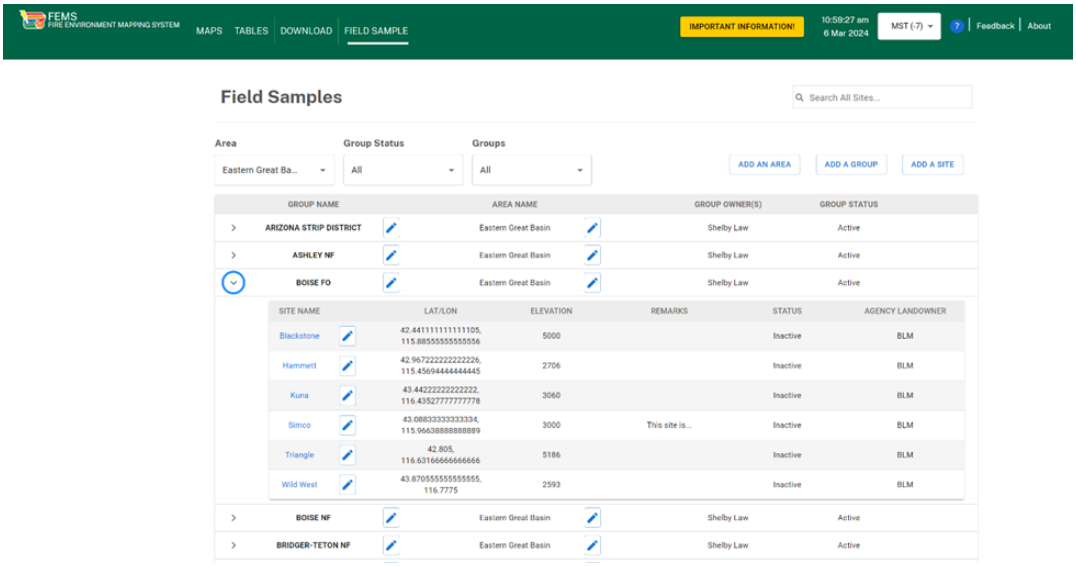


To Edit a Field Sample Site:

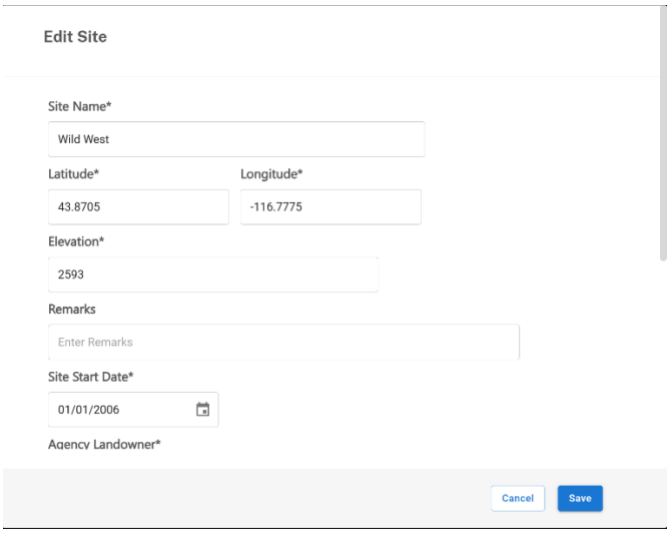
A Field Sample Site can either be edited from the data entry table or when viewing the Site Metadata.

Edit from the Data Entry Table:

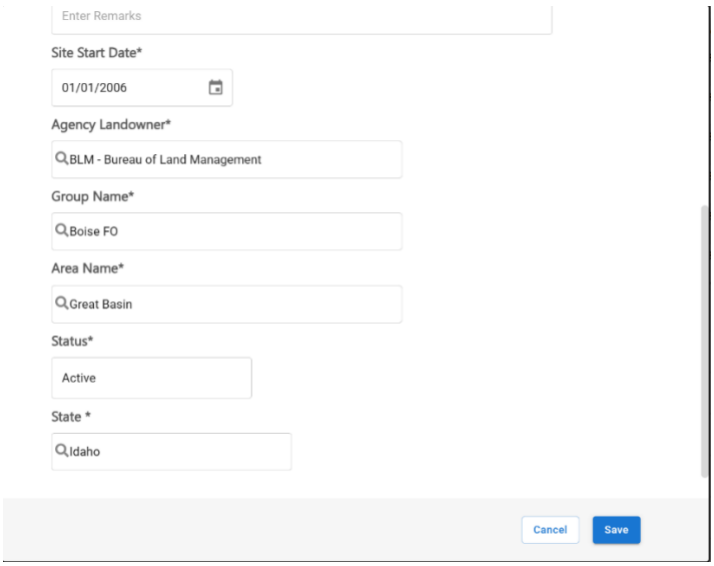
1. To edit a Field Sample Site, from the data entry table select the **icon** to the left of the Field Sample Group name.



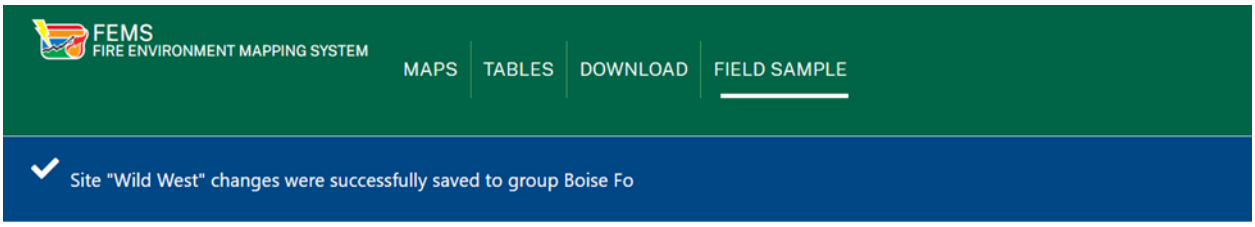
2. A popup will appear.



3. Make the desired edits.
    a) Remarks should pertain to the site. **Remarks related to the sample will be available in a future release.**
    b) Start Date – available with a calendar option.
    c) Time – select the hour on the right of the calendar.
    d) Agency Landowner – Select from a dropdown – searchable field.
    e) Group Name – Select from a dropdown – searchable field.
    f) Area Name – Select from a dropdown – searchable field.
    g) Status – Select from a dropdown.
    h) State - Select from a dropdown – searchable field.
4. Be sure to scroll down for additional fields.

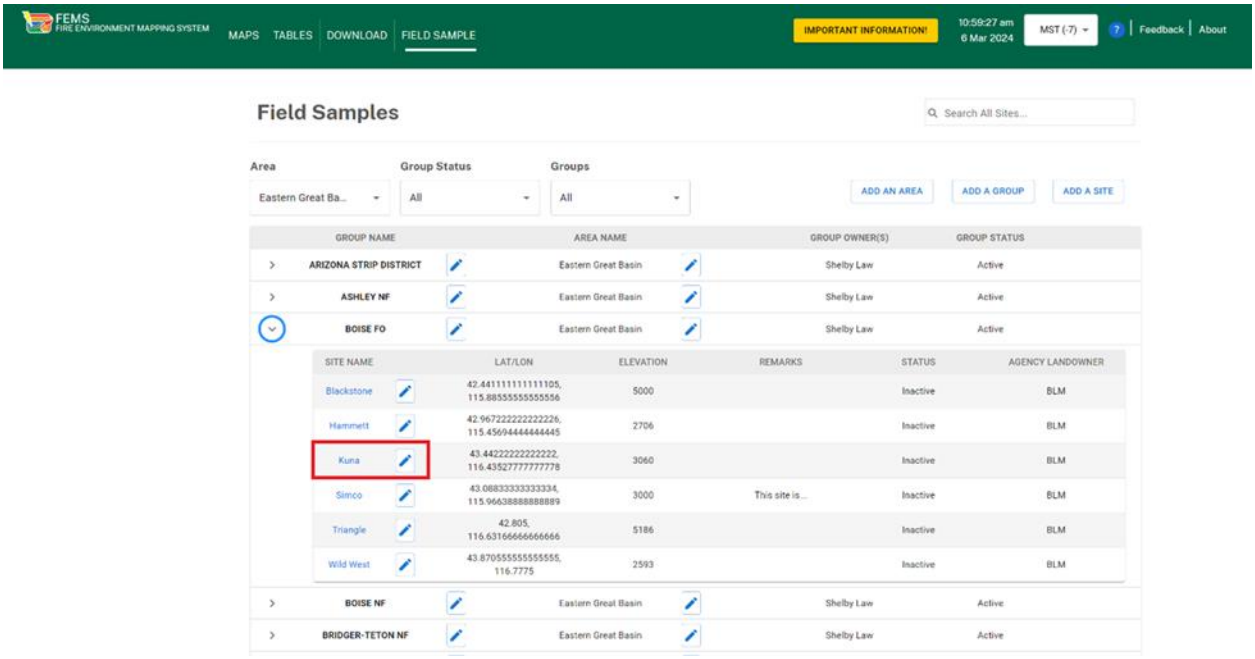


5. Click on “Save”.
6. A banner will appear at the top to indicate that the Site has been edited.

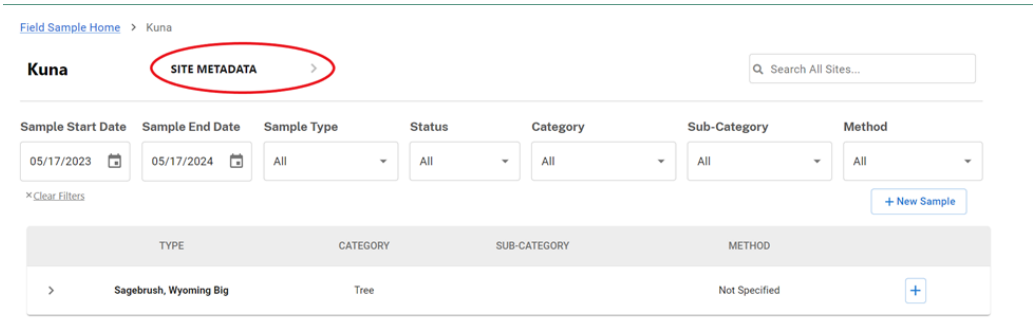


Edit from Site Metadata:

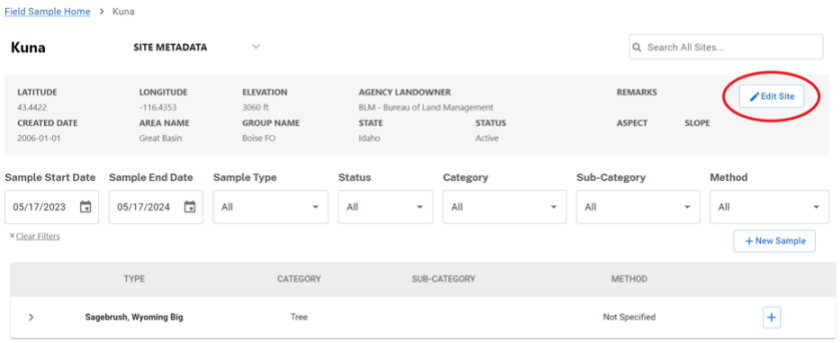
1. Open the Site by clicking on the site name.



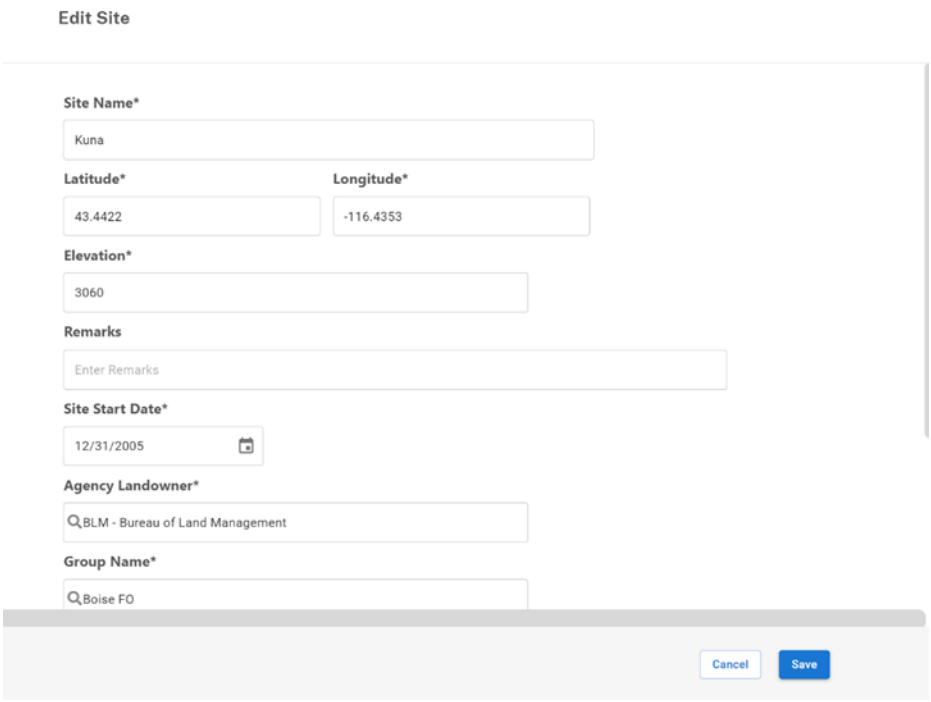
2. The Site information will display.
3. Click on “Site Metadata”.



4. The Metadata will be displayed.
5. Click on the “Edit Site” button.



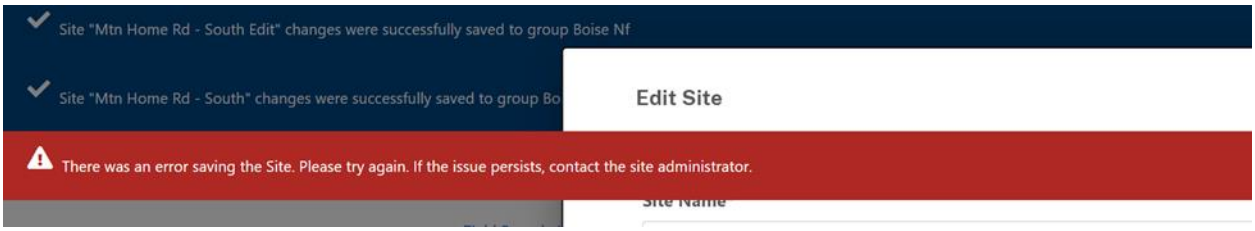
6. The popup to edit site information will appear.



7. After making the desired edits, click “Save”.
    a) Remarks should pertain to the site. **Remarks related to the sample will be available in a future release.**
    b) Start Date – available with a calendar option.
    c) Time – select the hour on the right of the calendar.
    d) Agency Landowner – Select from a dropdown – searchable field.
    e) Group Name – Select from a dropdown – searchable field.
    f) Area Name – Select from a dropdown – searchable field.
    g) Status – Select from a dropdown.
    h) State - Select from a dropdown – searchable field.
8. 8. After making the desired edits, click “Save”.

9. A banner will appear at the top to indicate that the site has been edited.

Error Banner



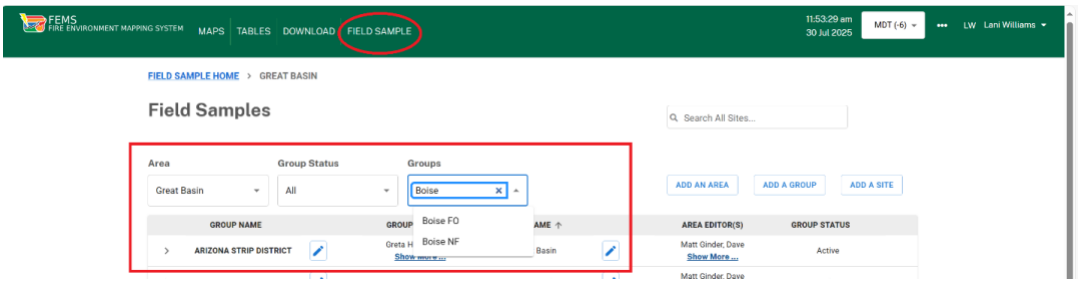
A red banner across the top may appear to indicate an error when creating or editing a site.

If this occurs – contact the IIA HelpDesk (866-224-7677.

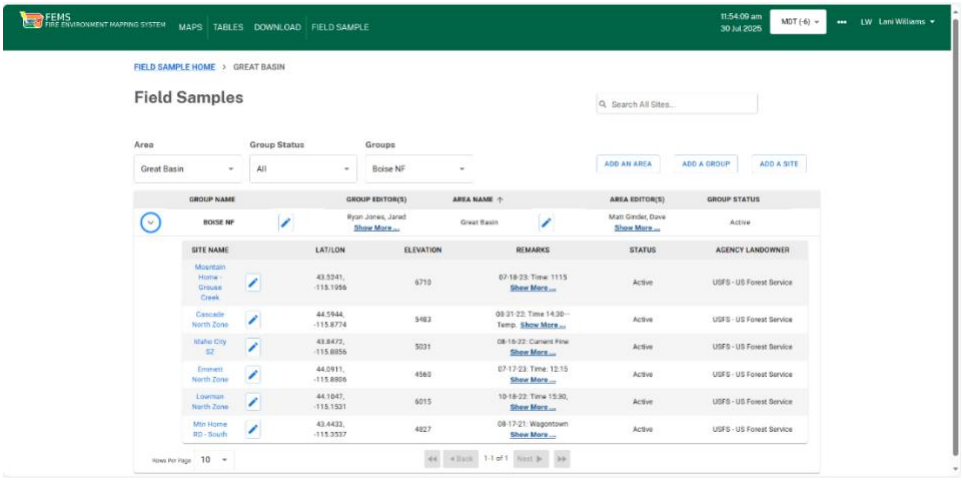
Field Sample Collector

Entering and editing Fuel Moistures is the role of the **Field Sample Area Editor**, Group Editor and Sample Site Collector.

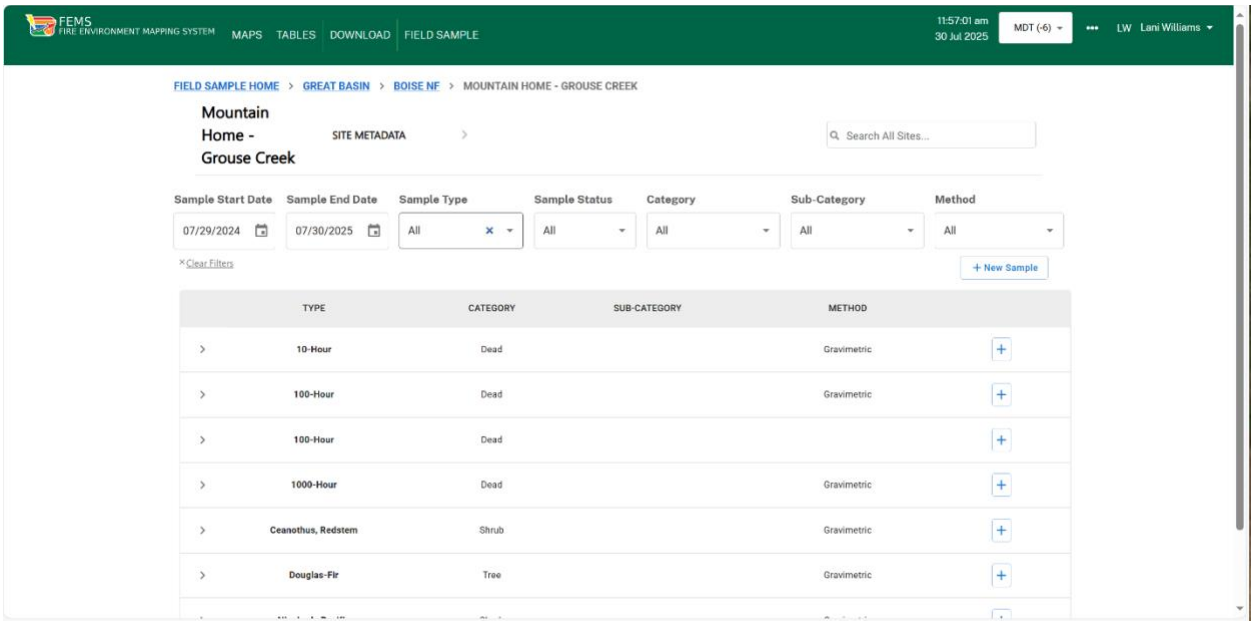
1. Sign into FEMS and select the Field Sample tab.
2. Use dynamic filters to locate the desired Group.



3. To edit access Field Sample Site, select the "**carrot**" to the left of the Field Sample Group name.

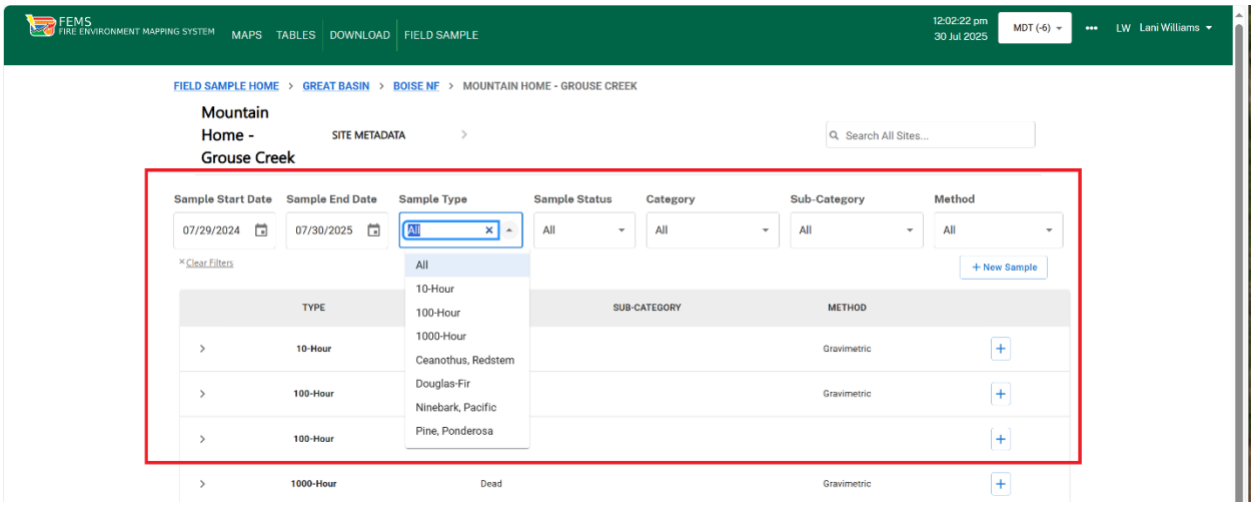


4. A dropdown of Field Sample Sites will appear.
5. Click on the name of the Field Sample Site to edit.
6. A new screen will appear listing all the fuel types currently being monitored.

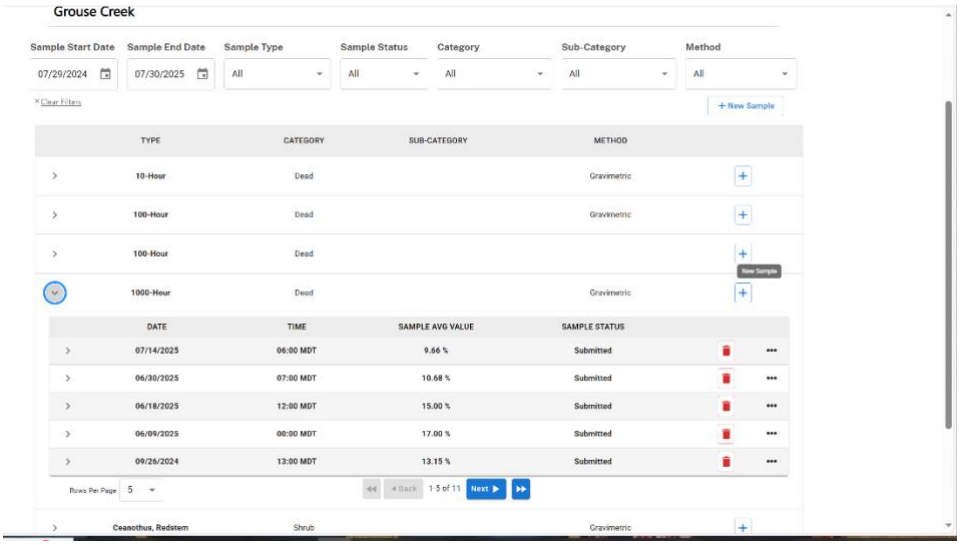


Adding Fuel Moistures for Fuel Types being Monitored:

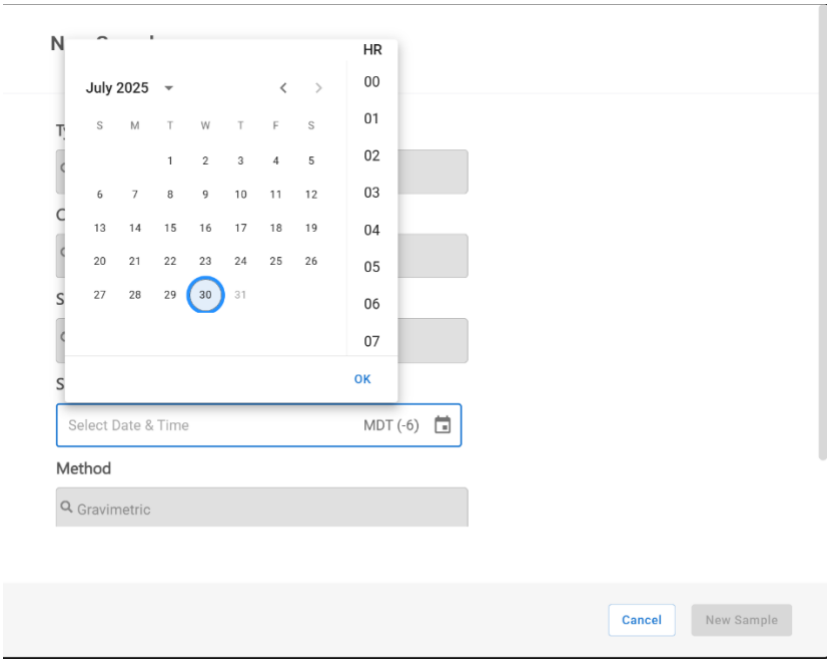
1. Select the fuel type being sampled.
    a. Fuel types may also be filtered by: Date, Sample Type, Status, Category, Sub-Category (New Field) Method.
    b. The “Sample Type” dropdown will only include fuel types with sample data.



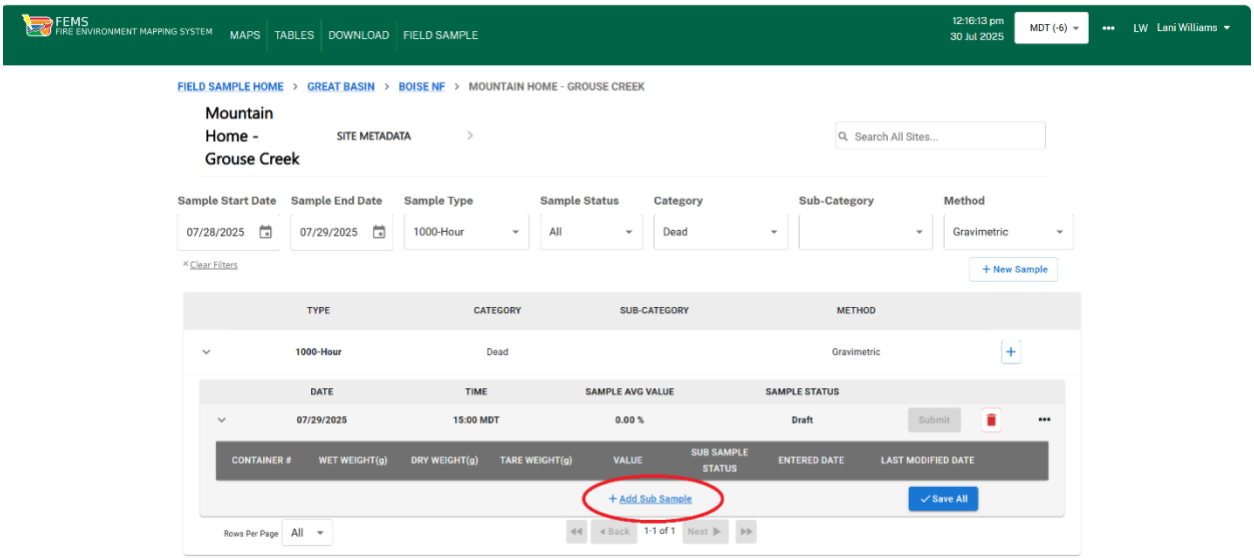
2. A table will populate.



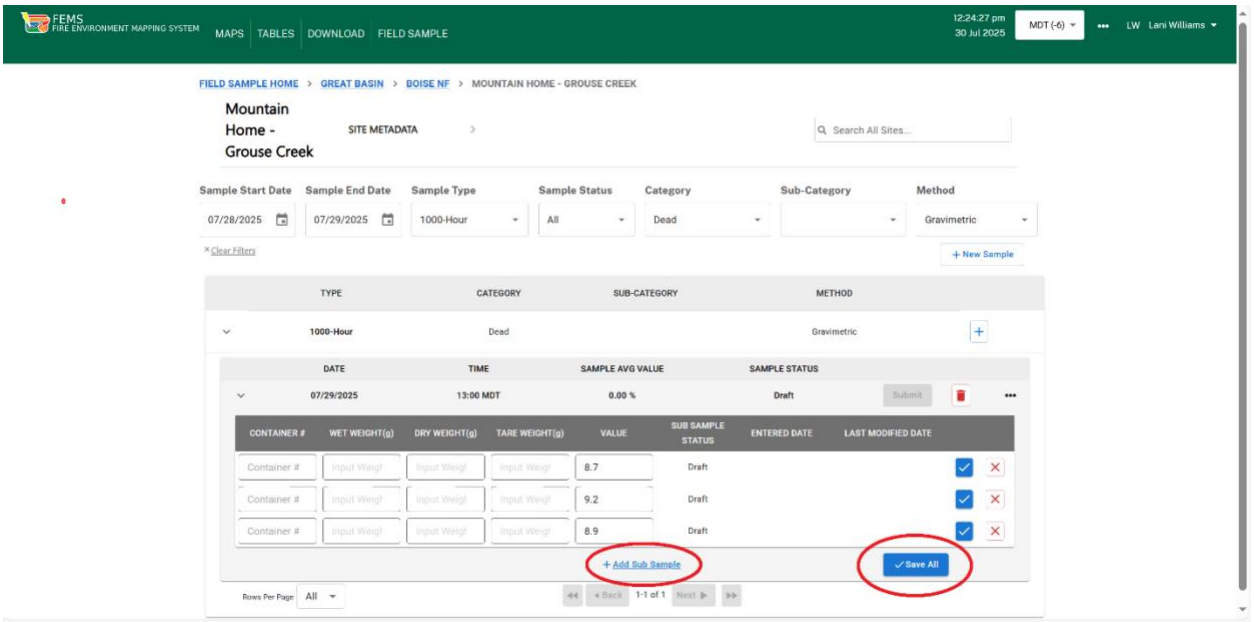
3. Click on the "+" icon to add new fuel moistures for the same fuel type.
4. A popup will appear preloaded to the selected sample type.
5. Enter the Sample Date & Time and click on the "**New Sample**" button.
    a. Notice the time selection to the right of the calendar.
    b. Select the desired time.



6. A table will open.
7. Click on "**Add Sub-Sample**".

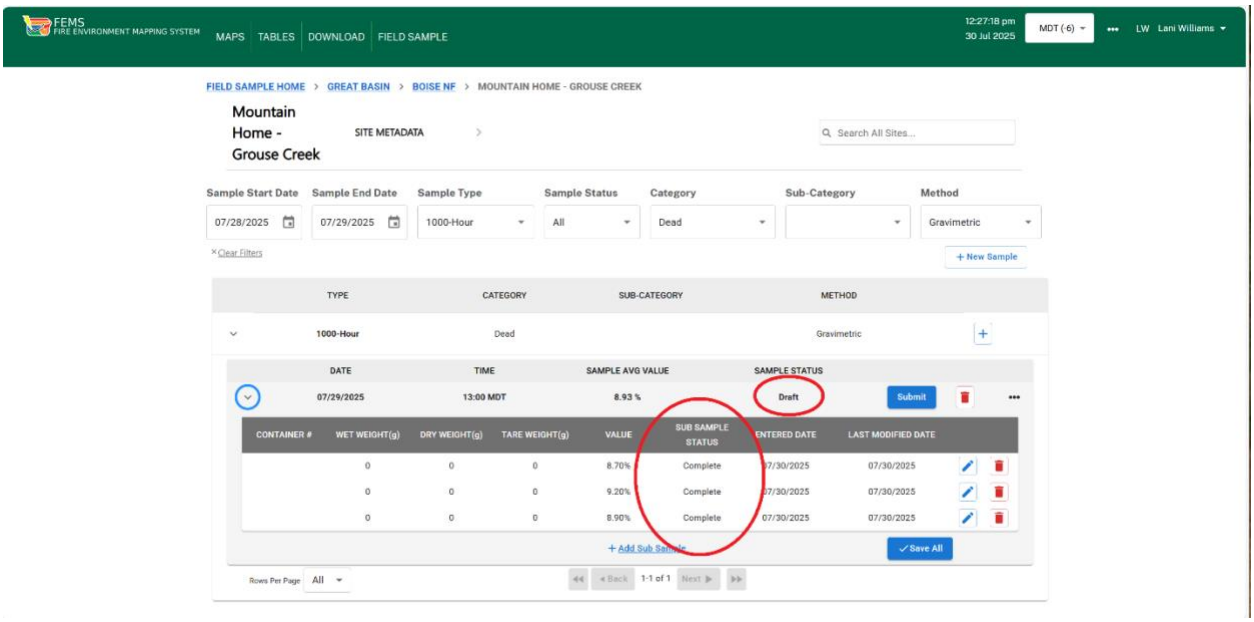


8. Enter the sample data.
    a. Enter weights or value, you cannot enter both.
    b. Weights are limited to two (2) decimal places.
        i. The Sample Average Value will be rounded where necessary.
        ii. The system will not allow a negative entry.
    c. When a value has been entered, a “check box” will appear.
    d. Click on the “check box” to save your sample.
    e. The “check box” will change to a pencil to for editing icon.
    f. Multiple entries can be added at the same time by clicking on the “Add Sub-Sample” multiple times.

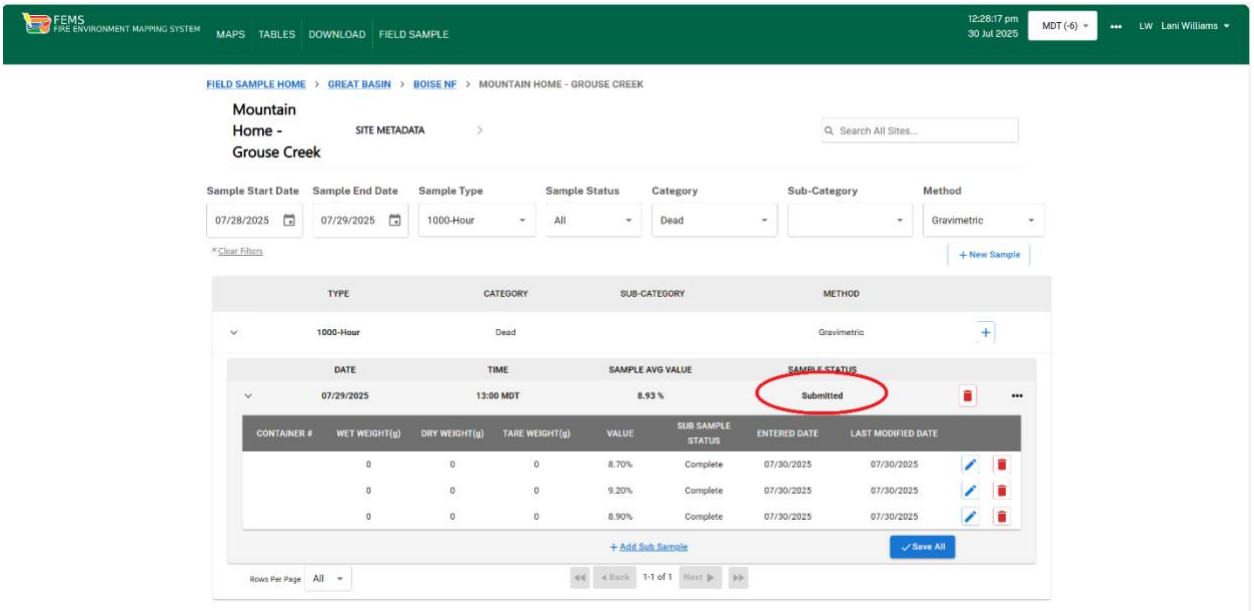


    g. An “**X**” will reset the sub-sample.

h. The “trash can” will delete the record, if in “Draft”.
    i. The ability to view archive data will be available in a future release.
i. If you are finished entering values, click on “Save” or “Save All” and the status will change from “Draft” to “Complete”.

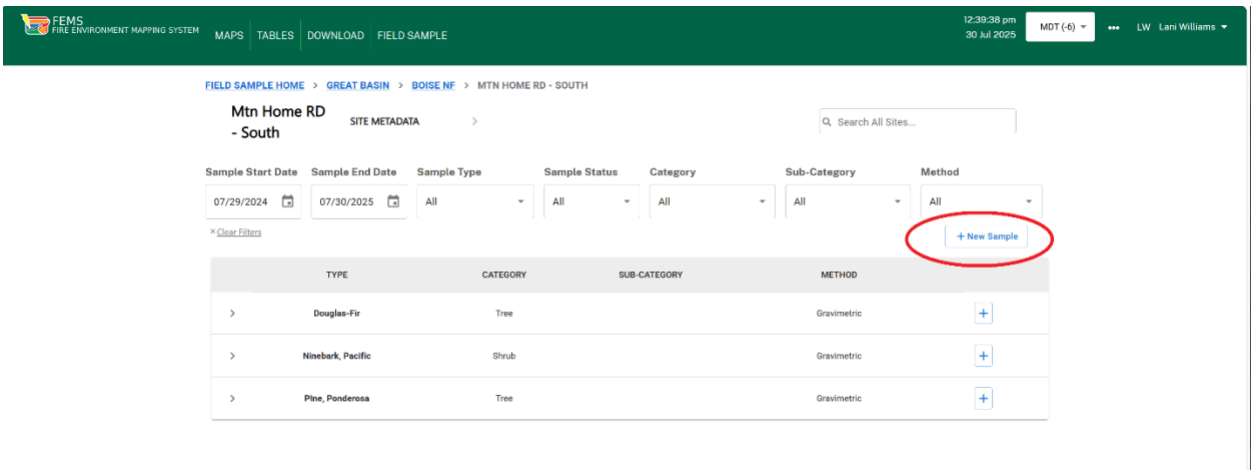


j. Click on “Submit” to change the status from “Draft” to “Submitted”.
k. There will be a pop-up box to confirm that the data is to be submitted.

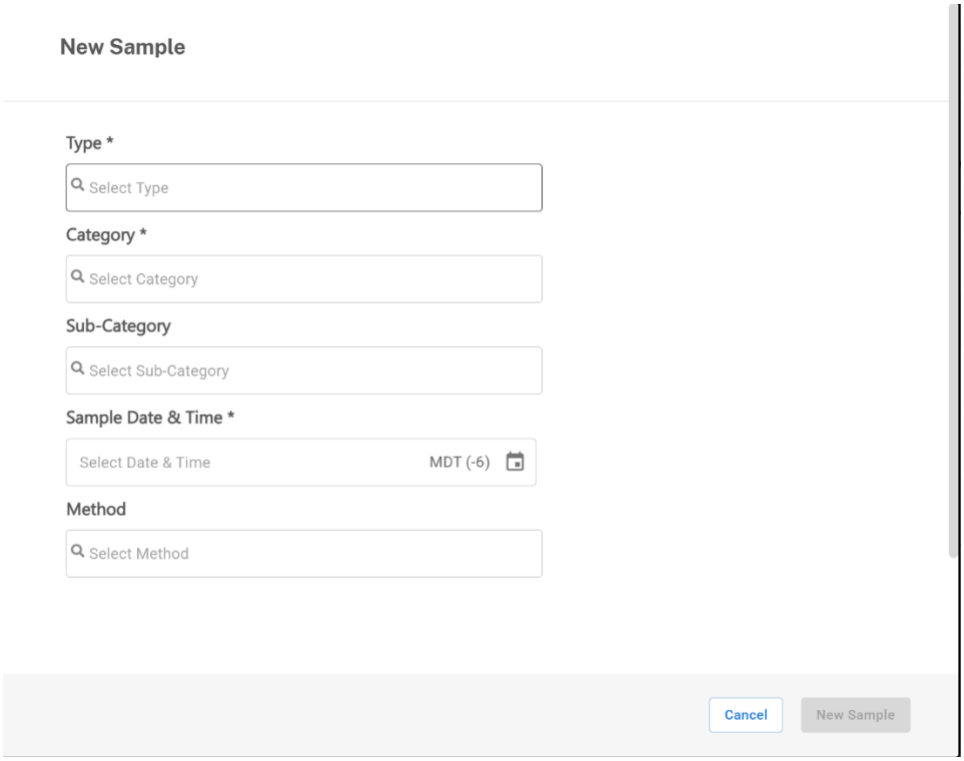


Adding Fuel Moistures for a new Fuel Type:

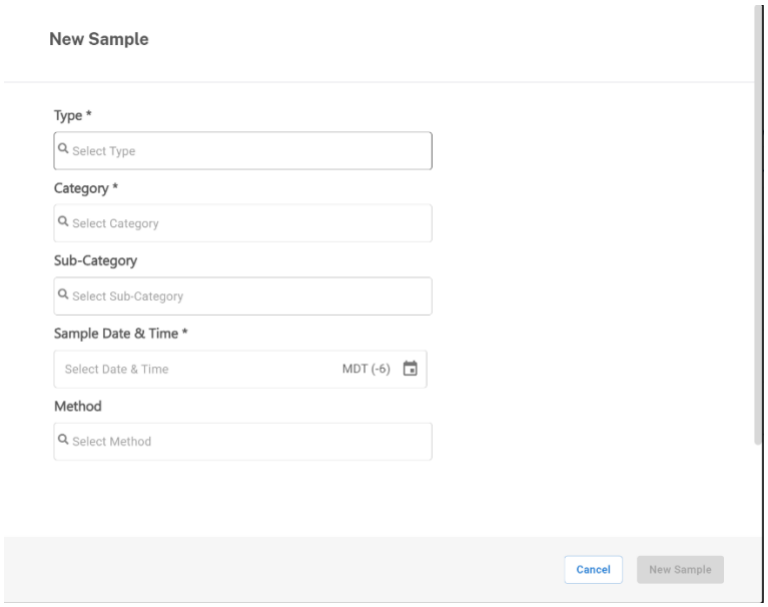
1. Click on the "+ New Sample" at the top of the table.



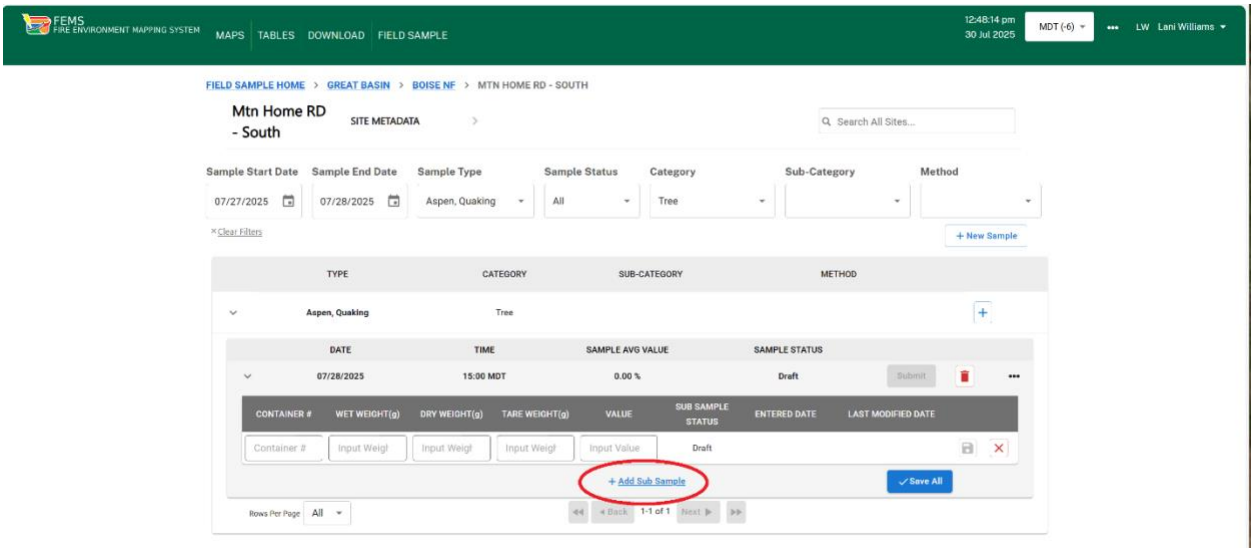
2. A popup will appear.



3. Fill in the required items.

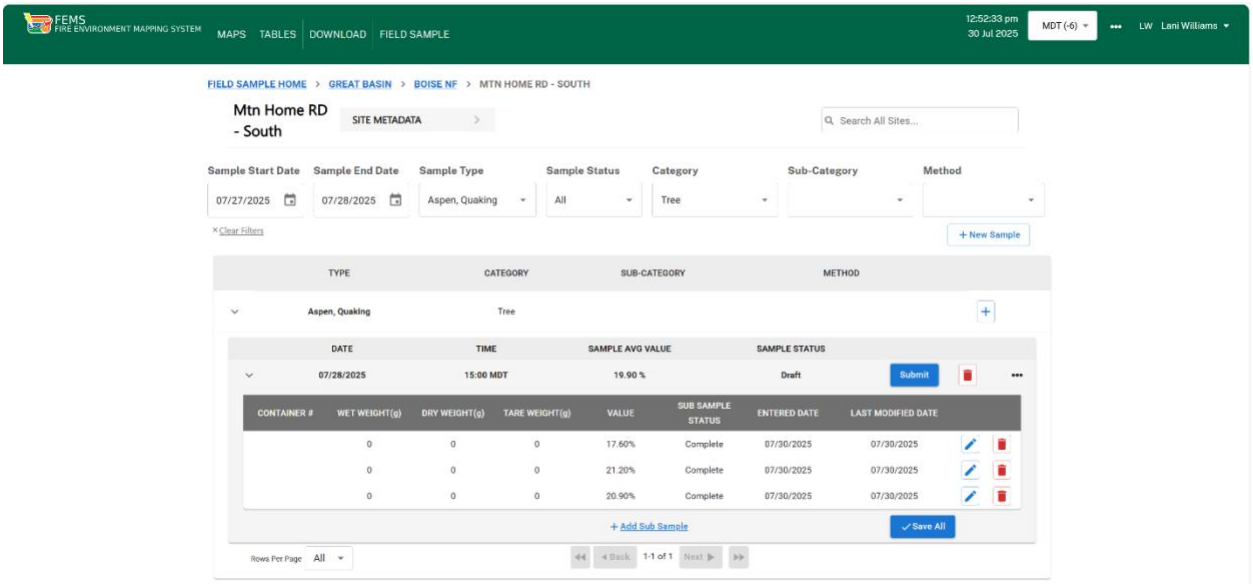
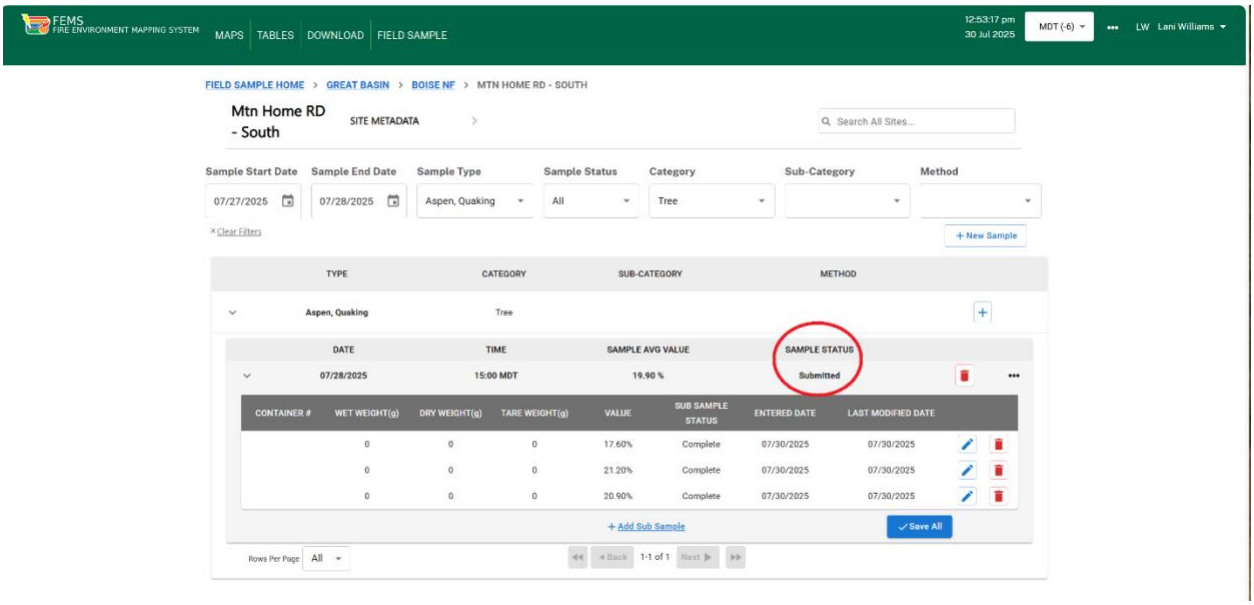


4. Click on the “New Sample” box.
5. The table will appear showing the new sample type.
6. Click on the “+ Add Sub-Sample”.
7. The table will expand to enter the new sample data.
    a. Multiple Sub-Samples” may be added at the same time.



8. Enter the sample data.
    a. Enter weights or value, you cannot enter both.
    b. Weights are limited to two (2) decimal places.
        i. The Sample Average Value will be rounded where necessary.
        ii. The system will not allow a negative entry.

c. When a value has been entered, a “check box” will appear.
d. Click on the “check box” to save your sample.
e. The “check box” will change to a pencil to for editing icon.
f. Multiple entries can be added at the same time by clicking on the “Add Sub-Sample” multiple times.



g. If you are finished entering values, click on “Save” or Save All” and the status will change from “Draft” to “Complete”.
h. The “X” will reset the sub-sample.’
i. The “trash can” will delete the record, if in “Draft”.