Chapter 13: Managing Soil Survey Data

Contents

Chapter 3 introduced the concept of database objects and explained the creation of the new Mapunit Object. Chapter 7 introduced the objects and tables associated with the aggregated map unit data (including area, legend, map unit, and data mapunit). Chapter 13 introduces the database correlation concepts of managing the map units.

There are four typical correlation activities that affect map unit management:

1. Creating a new map unit,
2. Combining existing map units,
3. Splitting an existing map unit into two or more map units, and
4. Analyzing multiple same-named map units into an MLRA concept.

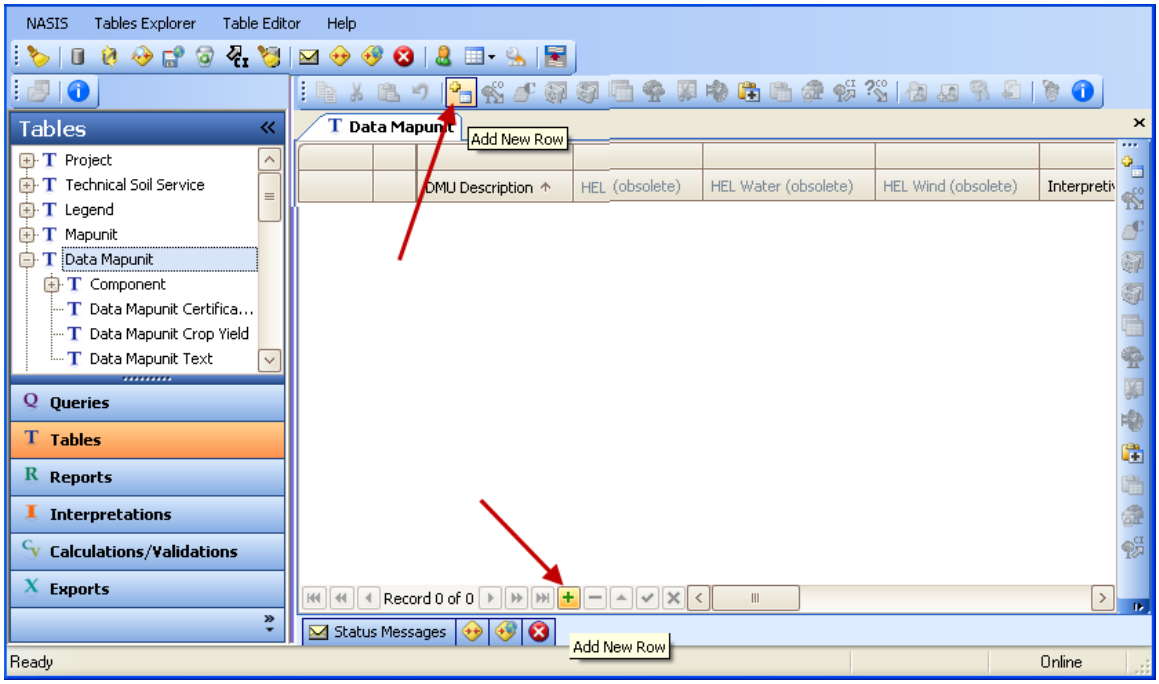
Chapter 13 explains the first three. The fourth is explained in Chapter 14.

Creating a New Map Unit

The creation of a new map unit begins with identifying the "map unit concept." Historically, the map unit concept was found by reading the map unit description in the soil survey manuscript. The idea is to translate the map unit concept into the database. This process begins in the Data Mapunit Object where the map unit concept is created. Once created, the map unit concept is linked to a map unit and then to a legend.

Step 1 – Create a new data mapunit

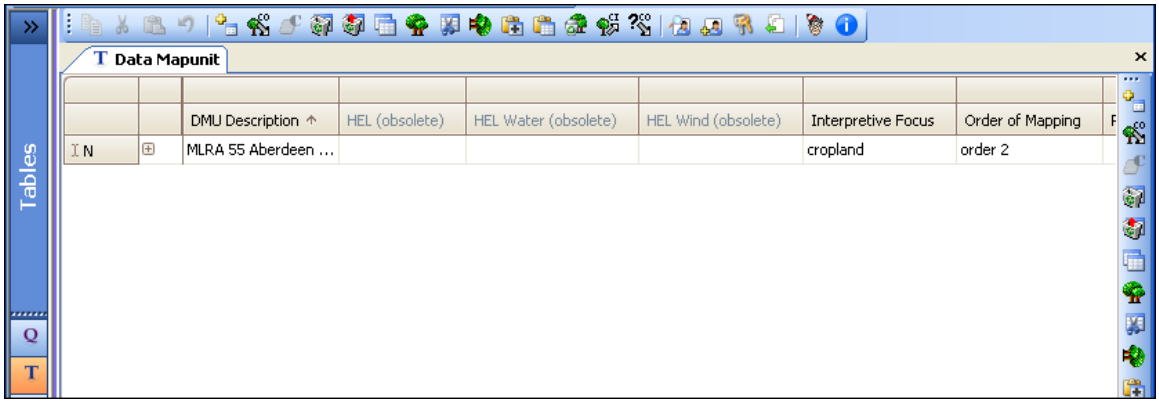
From the Tables Explorer, open the Data Mapunit table.



Toolbar icons or the table Editor Menu can be used to add a new row.

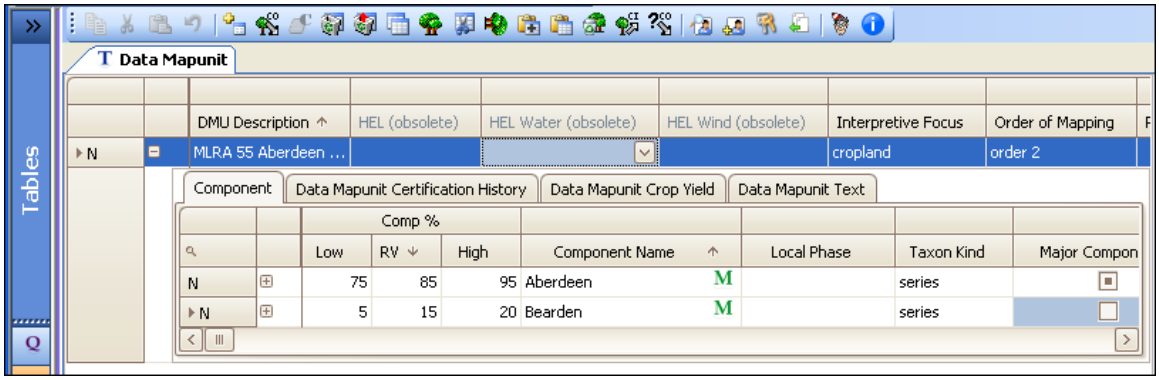
Step 2 – Populate the data mapunit

Typically, a data mapunit is populated by copying an existing data mapunit or by copying an existing component and pasting that record into the new data mapunit. In this example, the Aberdeen series is developed into a new map unit.



The DMU Description field is used to provide a descriptive name. The HEL fields are no longer available to edit and can be hidden. The Interpretative Focus field identifies the basic interpretation for the map unit. The Order of Mapping field identifies the order for the map unit. The remaining columns in the Data Mapunit table are State-specific map unit interpretations that will be populated for map units that reside in those States.

Step 3 – Open and populate the Data Mapunit child tables

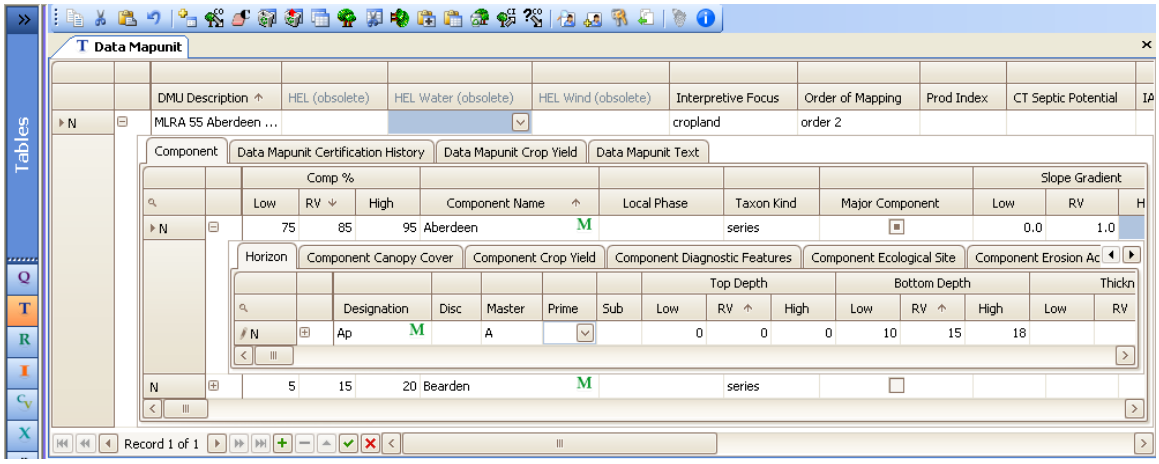


Click on the plus sign to the left in the Data Mapunit table to open the child tables. Using the toolbar or menu, insert a new row in the Component table and begin the process of populating the map unit concept. Insert new rows to add additional components.

Population Rules:

- If a component is added, all fields should be reviewed and populated to meet the needs of the survey.
- The Component Name field is for the name only and should not contain phase criteria.

Step 4 – Open and populate the Component child tables



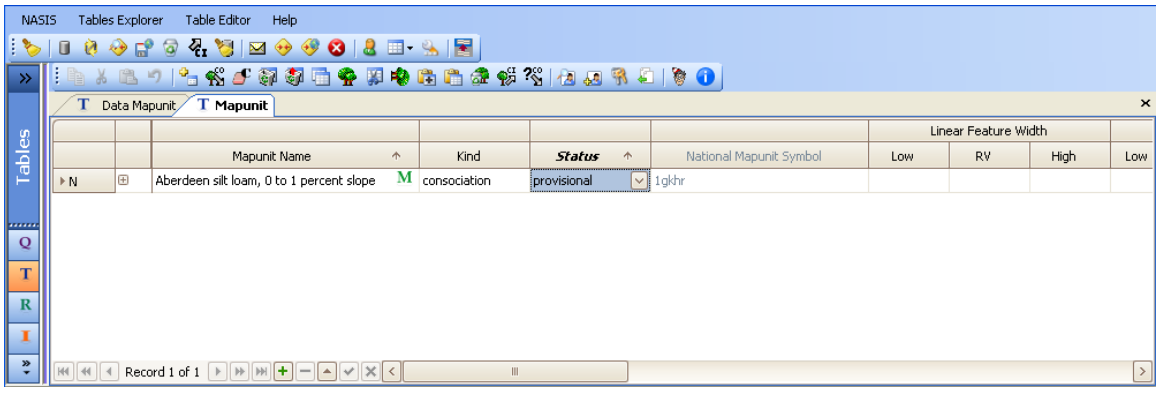
Once again, click on the plus sign to the left of the Component table to open its child tables. Insert new row(s) into the horizon table and begin populating the horizon level data. Completely populate all Component child tables and Horizon child tables.

Population Rules:

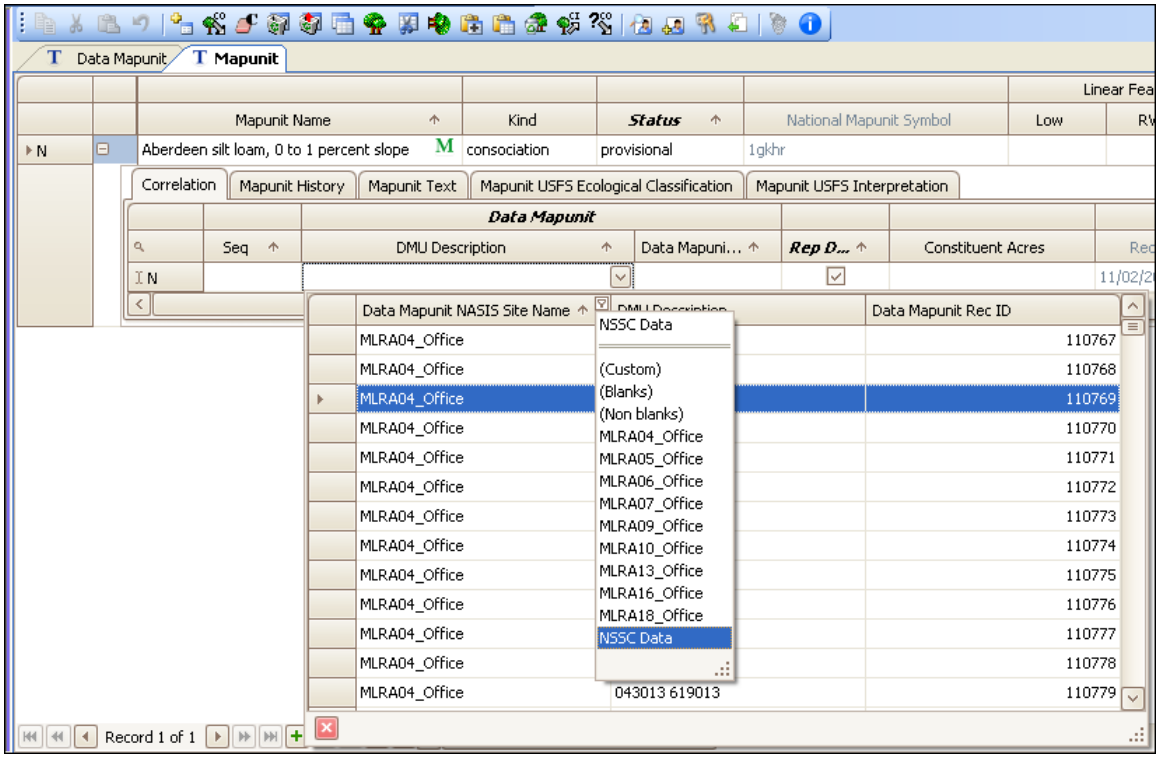
- Minimize the use of calculations by examining existing laboratory or field-determined data.
- Populate all fields.

Step 5 – Create the map unit

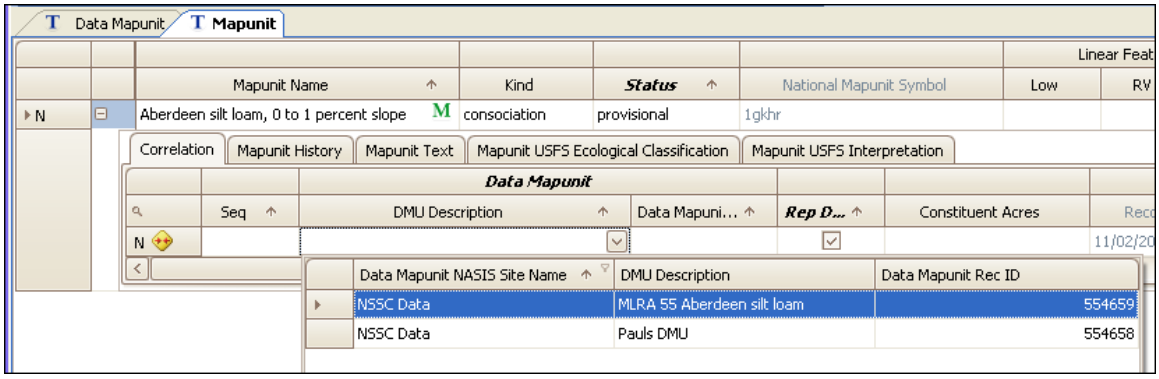
Open the Explorer Panel and navigate to the Mapunit table. Insert a new row and begin populating the map unit fields. Notice that the map unit is identified as provisional. The national map unit symbol is assigned after the edit is finished or the user moves the cursor from the specific row. This national symbol is assigned by converting the record ID number to a Base31 alphanumeric character.



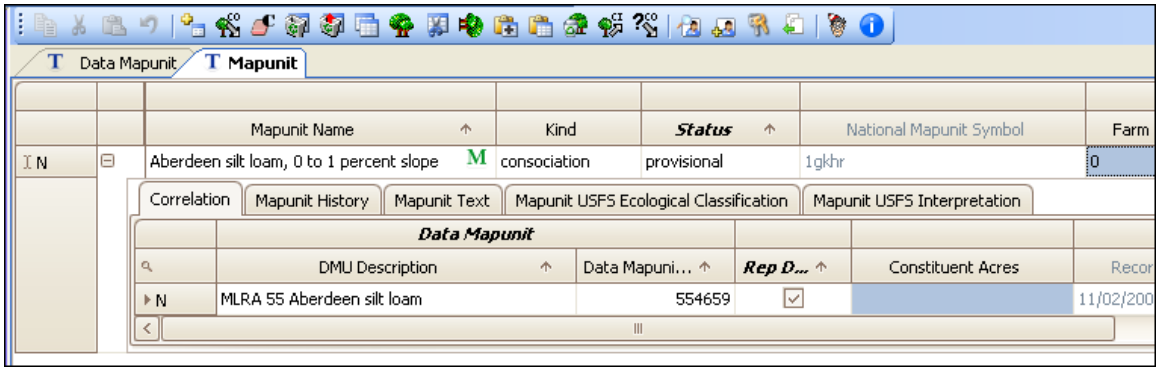
Step 6 – Link the map unit and data mapunit



Open the Mapunit child tables by clicking on the plus sign. Open the Correlation table. Insert a new row into the Correlation table. Use the choice list in the DMU Description field. The list of data mapunits contained within the local database appears. All choice lists are temporary tables that can be sorted or filtered. In this instance, the new data mapunit is owned by the NSSC Data site. By filtering on this site the data mapunit can be easily identified.

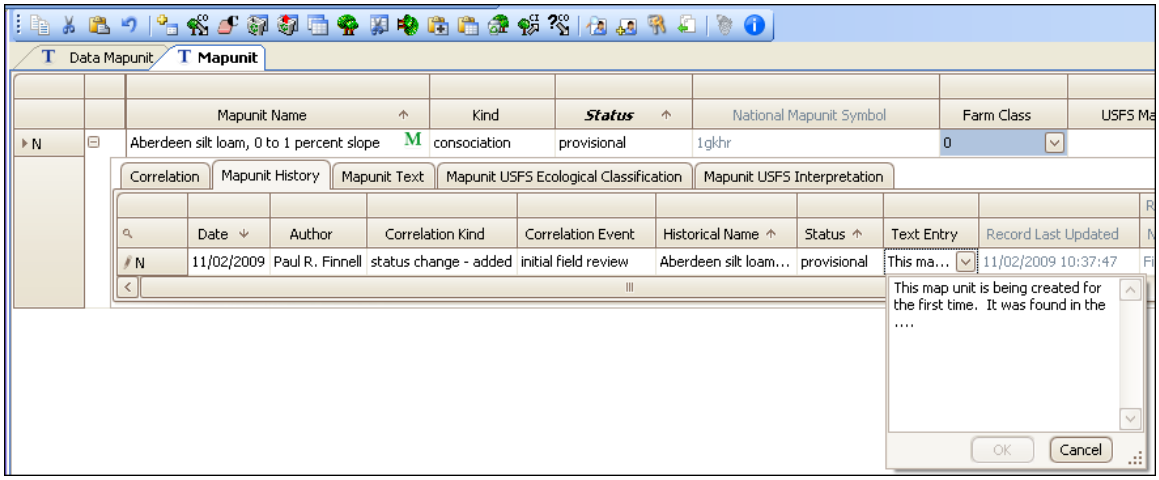


The data mapunit is now linked to its map unit.



Step 7 – Document the map unit

The map unit **must be documented** at each correlation event. The creation of the map unit initiates the first correlation event of the map unit. Open the Mapunit History table and populate the first record.



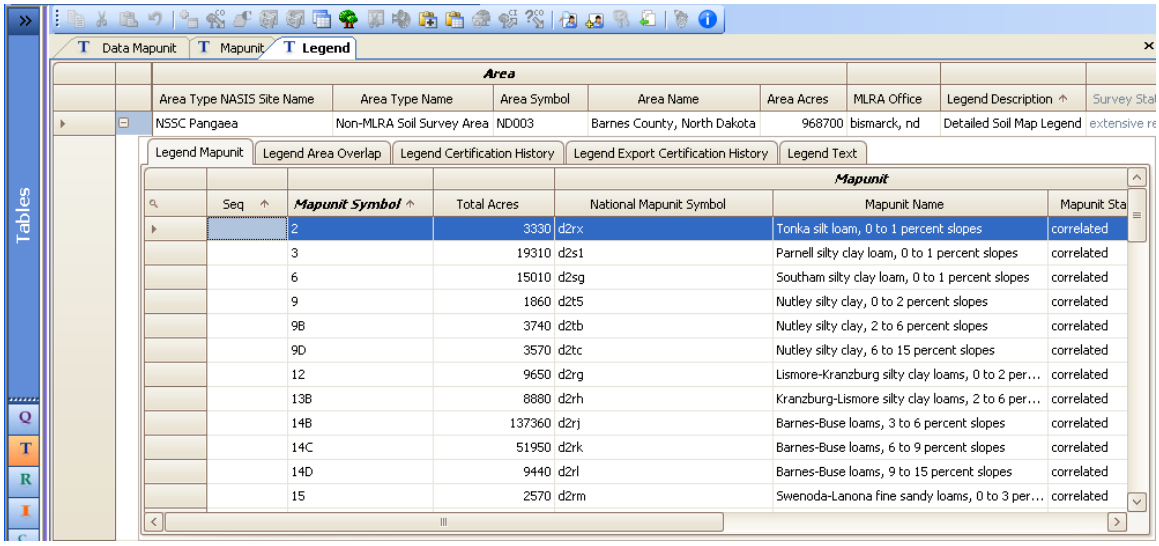
The map unit is documented in the Mapunit History table at all subsequent correlation events.

Step 8 – Link the map unit to the legend

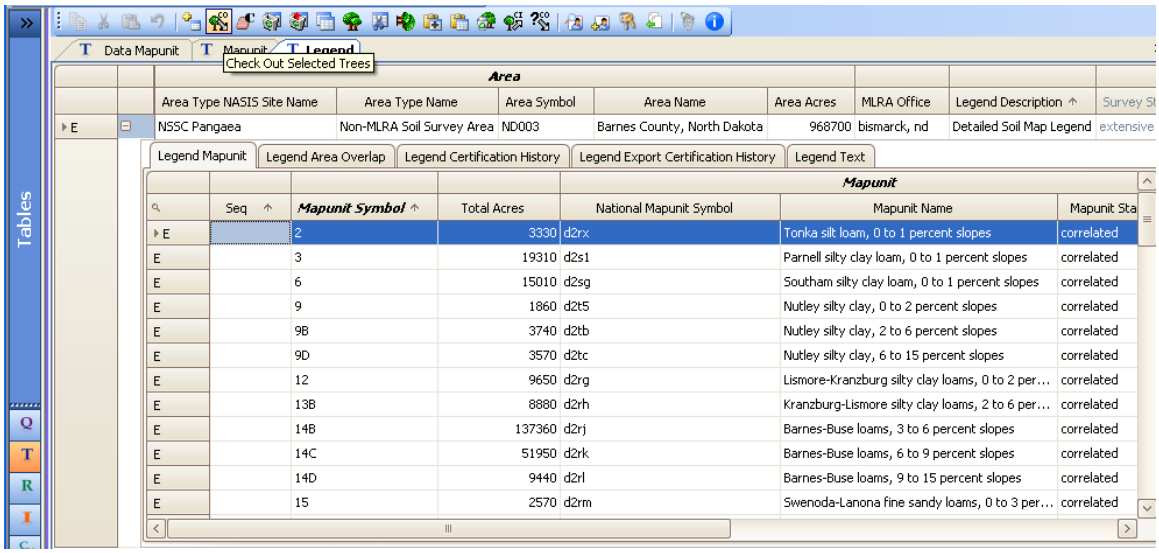
Notice that the map unit status is assigned in the Mapunit table. The status is provisional since this is a new map unit.

To link this new map unit to a legend, load the legend into the Editor Panel. Verify that the legend is checked out so that it can be edited.

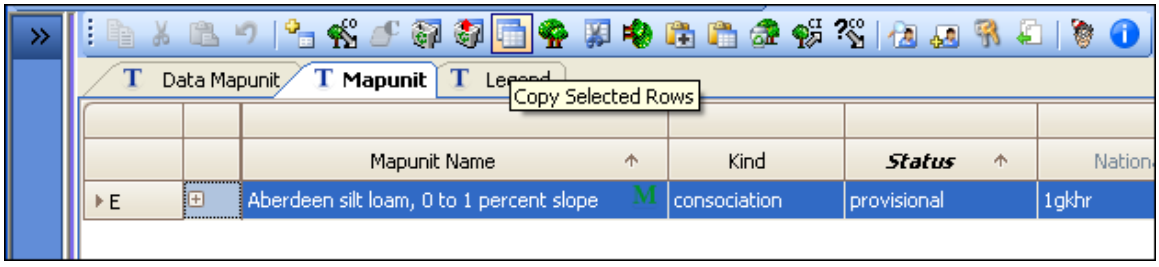
Open the Legend child tables and view the Legend Mapunit table.



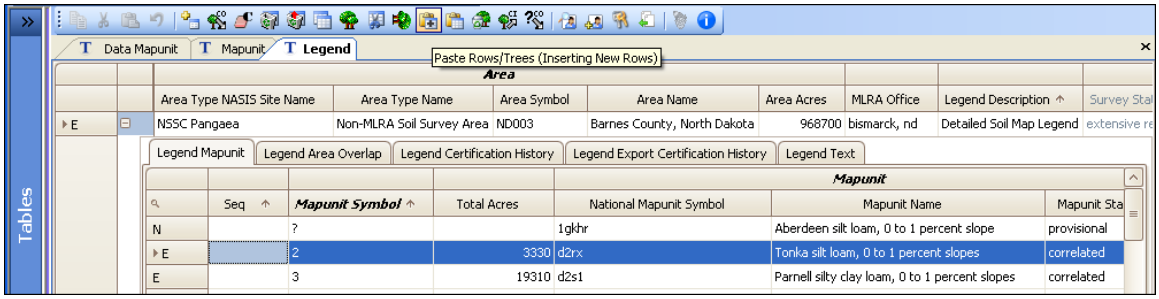
The “E” in the far left row indicates that the legend is checked out and ready to edit.



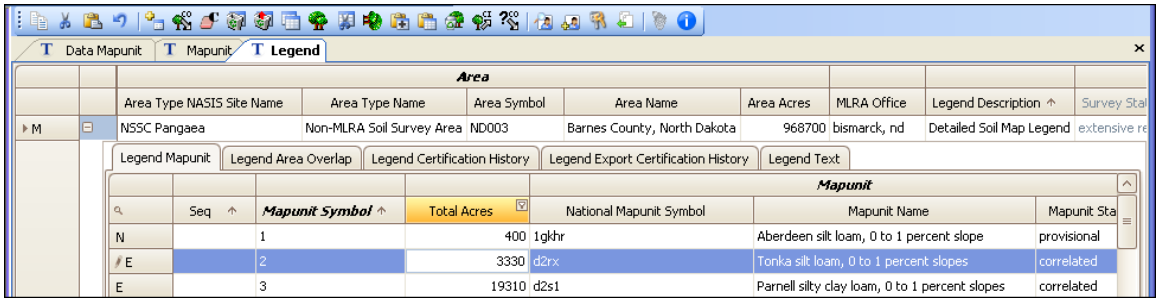
Return to the Mapunit table and use “Copy Selected Rows” for the new map unit.



Return to the Legend Mapunit table and select “Paste Rows/Trees (Inserting New Rows)” for the new map unit. The record designation is now “N” for new record.



Notice that there are only two fields to be populated: Mapunit Symbol and Total Acres.



The data is now uploaded to the national server and the legend is checked in.

At the time this map unit is correlated, the correlation is documented in the Data Mapunit Certification History table and the Legend Certification History table:

- The soil survey leader certifies that she/he has verified 100 percent of all the data populated and that the quality control (QC) review has been completed.
- The MLRA office staff adds a second row of data and certifies that the quality assurance (QA) review has been completed.

After certification of the data mapunit, the status in the Mapunit table is changed to “C” for correlated. The state soil scientist is informed that the data has passed the QC and QA reviews and is ready to submit to the Staging Server for release to the Soil Data Mart.

The soil data quality specialist (SDQS), working with the state soil scientist (SSS), adds the map unit to the appropriate legends. The SDQS then inserts a row in the Legend Certification History table and certifies that the QA review has been completed for the map unit for each legend in which it appears. This completes the scenario of creating a new map unit.

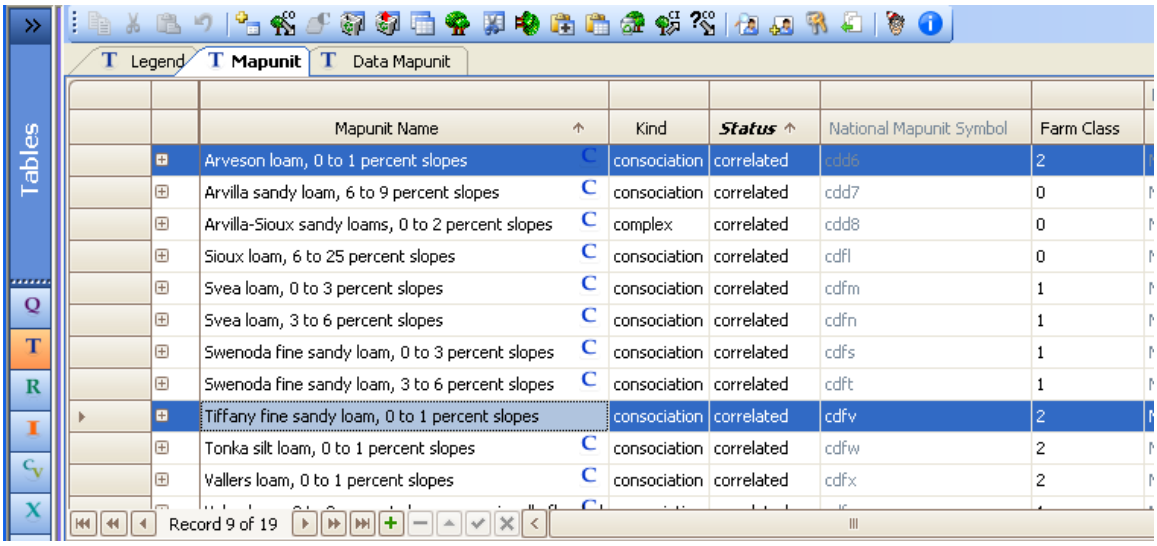
Once all certifications are completed, the SSS can export the data to the Soil Data Mart for publication. Prior to the export, the SSS inserts a record in the Legend Export History table and documents changes to the legend for the metadata record.

Combining Existing Map Units

The combination of existing map units includes:

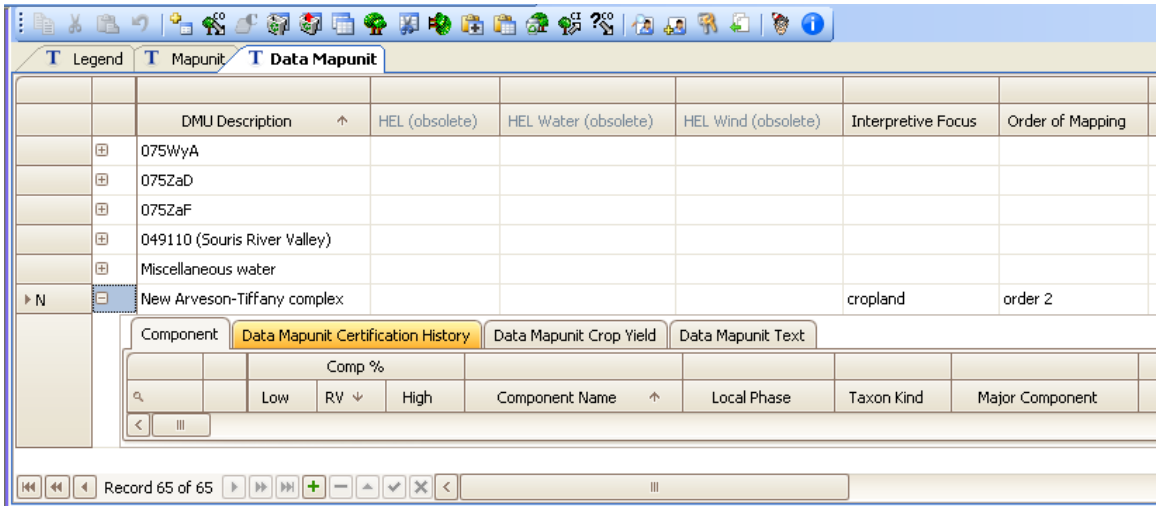
- The combining of two consociations into a complex,
- The combining of two similar map units by “mapping out” a closely similar map unit in favor of a dominant map unit, and
- The combining of similarly named map units in various survey legends and replacing multiple map units/datamapunits with a single map unit/datamapunit for all legends.

The following scenario combines two existing consociations into a new complex. The steps are the same for all three types of combination.



Note the Arveson and Tiffany consociations. It is decided that these two map units should be combined into a new complex. The data is already loaded into the selected set.

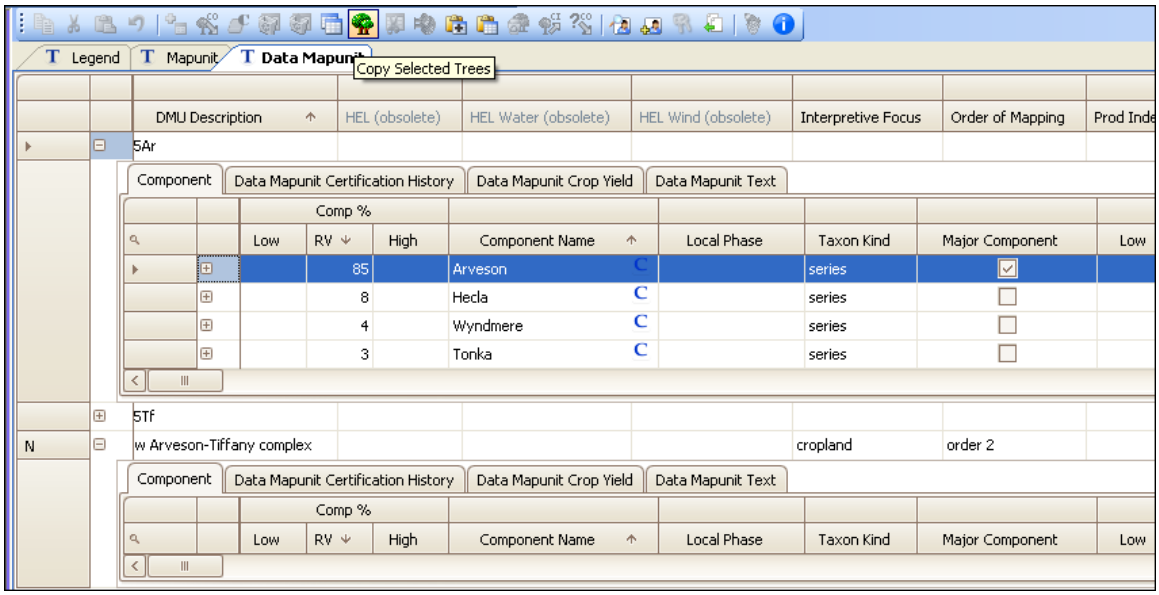
Step 1 – Create a new data mapunit



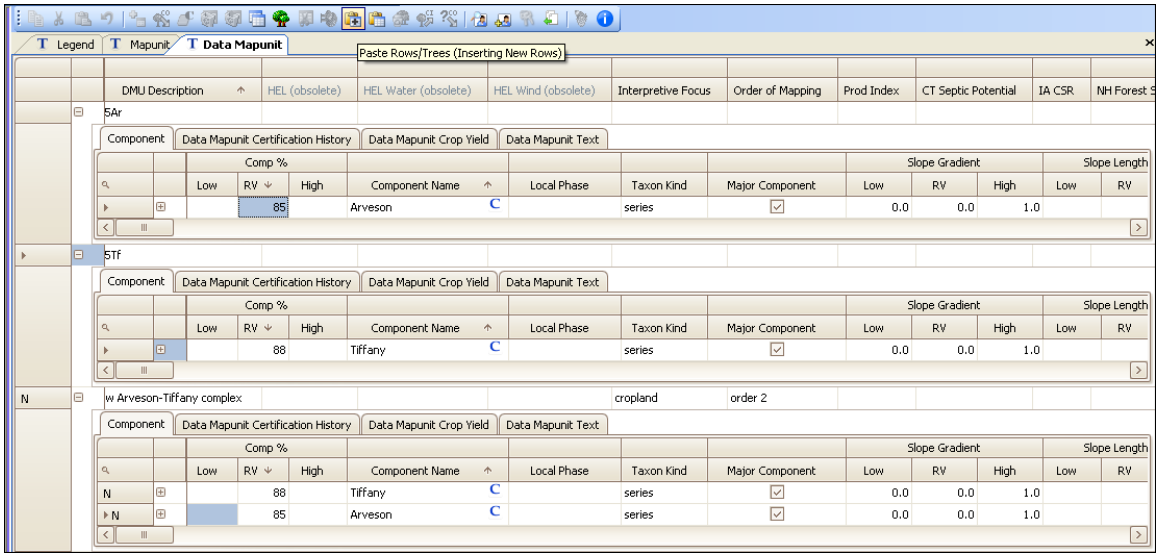
A new record is created in the Data Mapunit table and a new map unit concept is populated that combines both original map units into one.

Step 2 – Copy existing components into the new data mapunit

Find the Arveson data mapunit and open the Component table. The entire Component tree (parent and child tables) is copied. Return to the new data mapunit and paste, inserting the tree.



After pasting in the Arveson data, find the Tiffany data mapunit and copy the Tiffany tree. Return to the new data mapunit and paste in the Tiffany data.

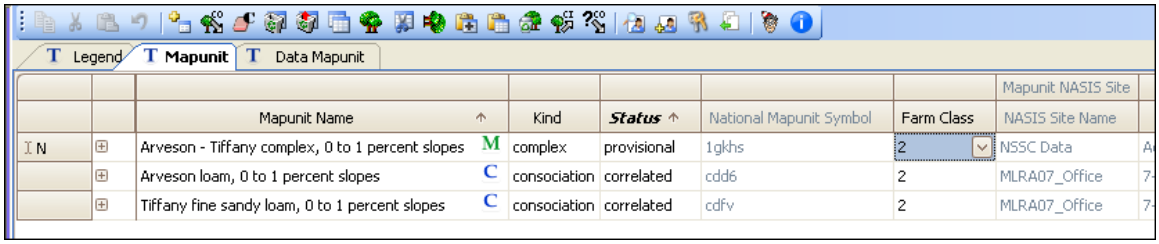


The result is a new data mapunit for the Arveson-Tiffany complex that contains the Averson component and the Tiffany component. The component percentages are adjusted to reflect the

new map unit concept for the complex. In addition, all component fields in both components are reviewed to populate to the new map unit concept.

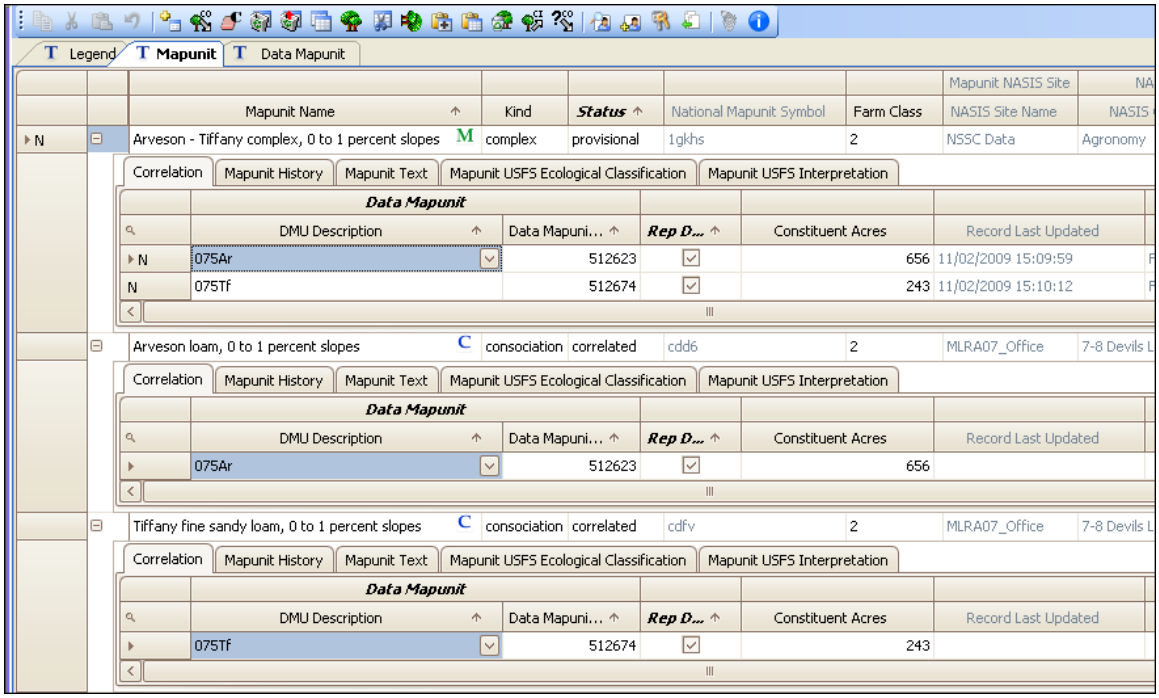
Step 3 – Create a new map unit

Returning to the Mapunit table, a new row is inserted and the Mapunit table is populated.



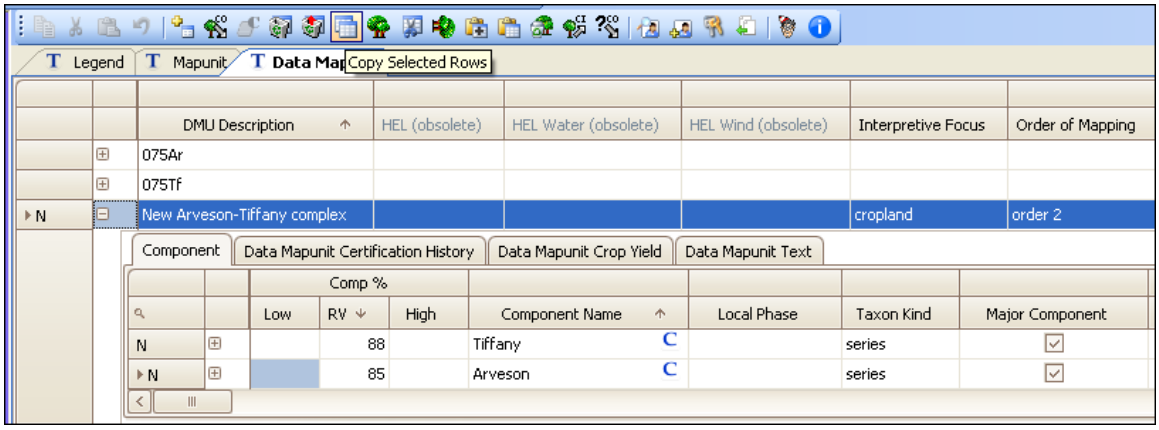
Step 4 – Link the old map units to the new map unit

The map units must be linked together in order to build a conversion legend. The conversion legend is used to identify what map unit was replaced with new symbols. To complete this step, the records from the Correlation table from the old map units are copied and pasted into the new map unit. This process links the old map units to the new map unit. Notice that the new map unit has two records in its Correlation table.

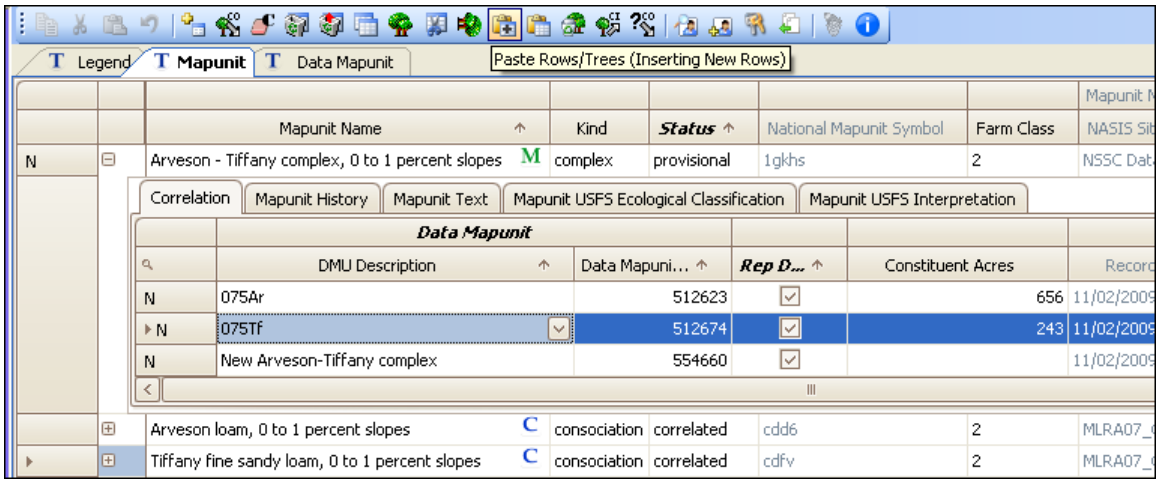


Step 5 – Link the new data mapunit to the new map unit

Return to the Data Mapunit table and choose “Copy Selected Rows.” This copies the necessary information from the data mapunit record. Return to the Data Mapunit table, find the new map unit, and paste this record into its Correlation table.



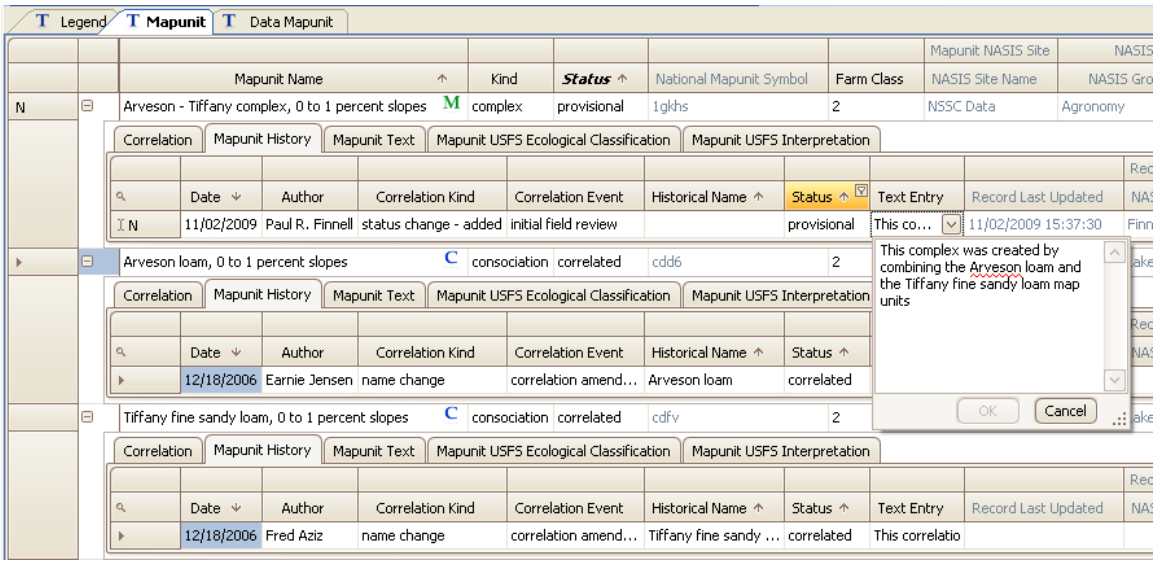
The image below shows the Correlation table for the new map unit.



The Correlation table for the new map unit now contains the correlation records from the two map units that it replaces in addition to the new data mapunit created for the complex. Constituent acres are the acres that each former map unit contributed to the new map unit.

Step 6 – Document the map unit

All three map units need to be documented to identify the changes.



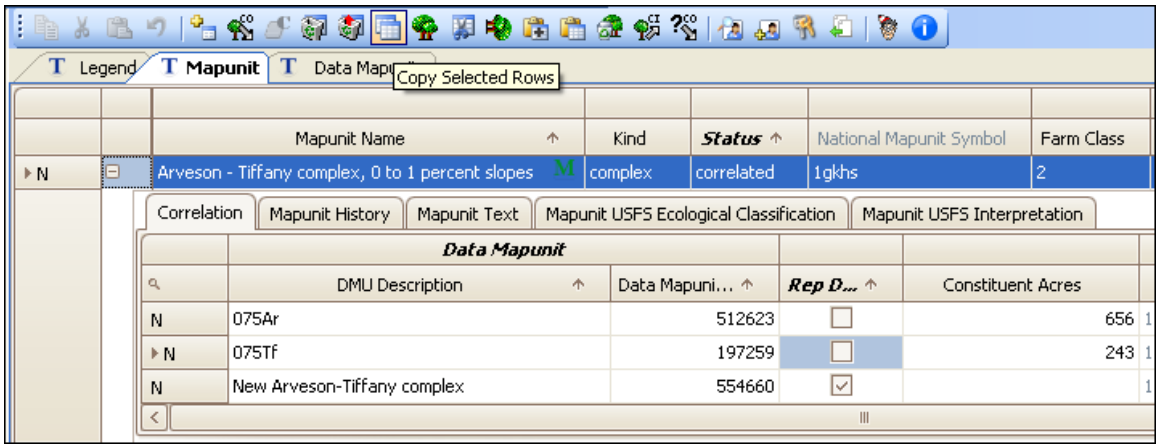
Each map unit has a record in the Mapunit History table. The new map unit documents the map units that were combined to create the complex. The old map units document why the map unit was combined and which map unit it was combined into.

Remember that, as with all editing in NASIS, the existing map units must be checked out in order to insert a new record in the Mapunit History table.

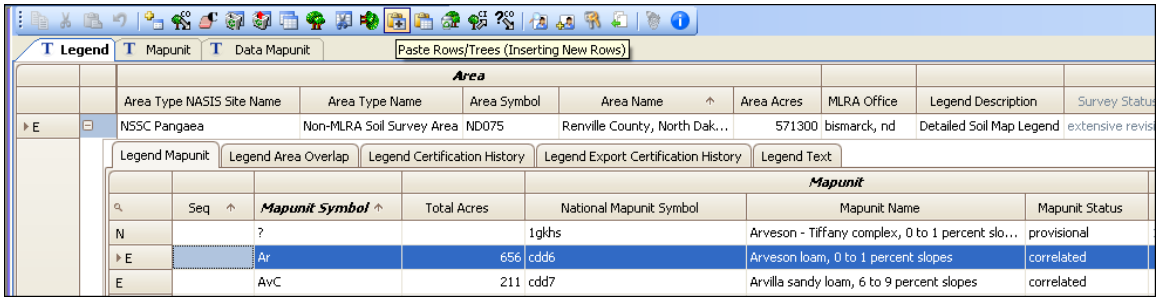
Step 7 – Link the new map unit to the legend

Set the new data mapunit to be the representative data mapunit and uncheck the old data mapunit correlation records. A map unit can only have one representative data mapunit.

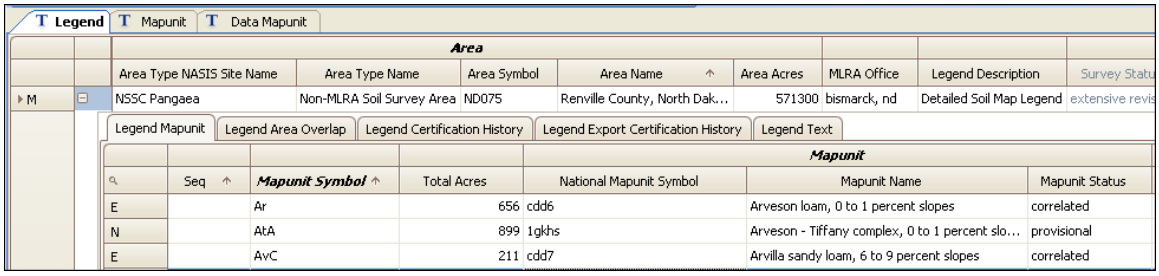
In the Mapunit table, highlight and copy the new map unit record.



Navigate to the Legend table and verify that the legend has been checked Out and is in an edit mode (note the “E” status). Then paste the new map unit record into the Legend Mapunit table.



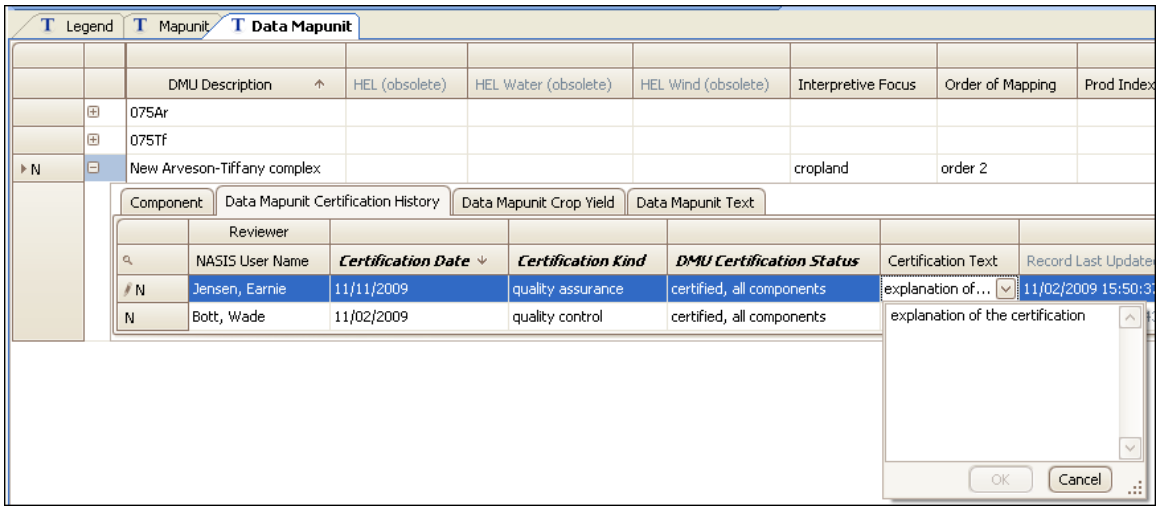
The new map unit symbol and new map unit acres are then populated.



Notice that the map unit is provisional. Through correlation events the status of the map unit will progress from provisional to approved to correlated. The status is changed after the quality control and quality assurance reviews have been certified.

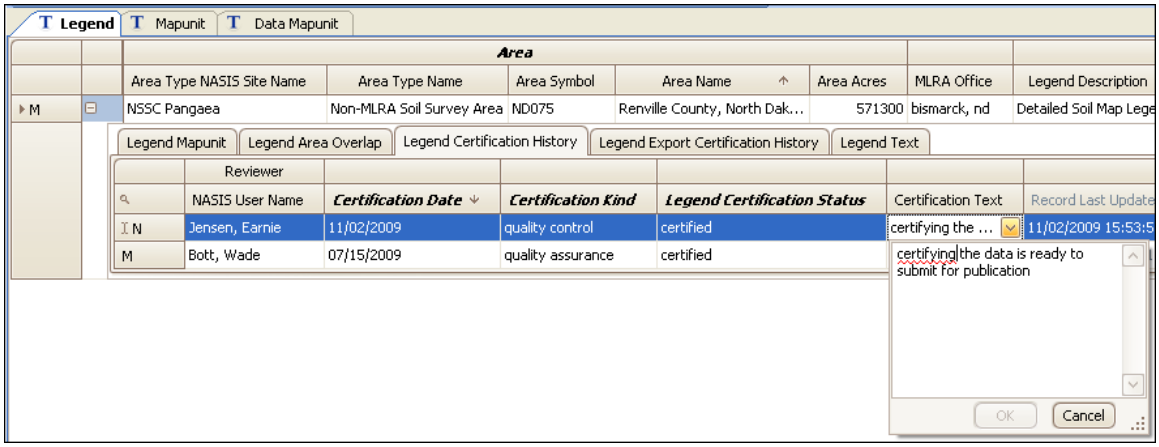
Step 8 – Certify the data

Before the new map unit can be given a status of correlated and before it is released to the state soil scientist for publication, the data must be certified. Return to the Data Mapunit Object and open the Data Mapunit Certification History child table.



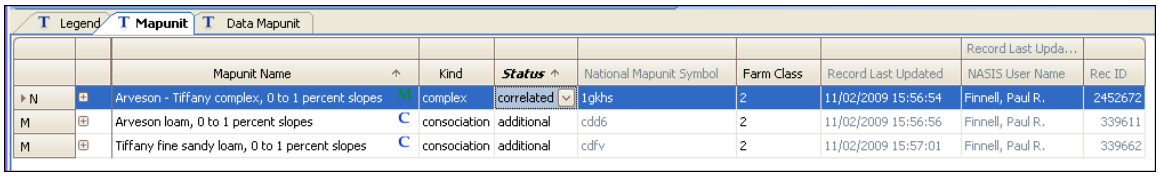
The soil survey leader and the soil data quality specialist are required to certify the data mapunit.

Return to the Legend Object, open the Legend Certification History table, and repeat the process.



Step 9 – Modify the map unit status

Return to the Mapunit Object and modify the map unit status to reflect the correlation. The new mapunit is now correlated and the old map units are set to “additional.”



Notice the Record Last Updated and NASIS User Name fields. These fields are populated each time the record is modified. Each record in the database now records the last person to edit and the data and time of the edit.

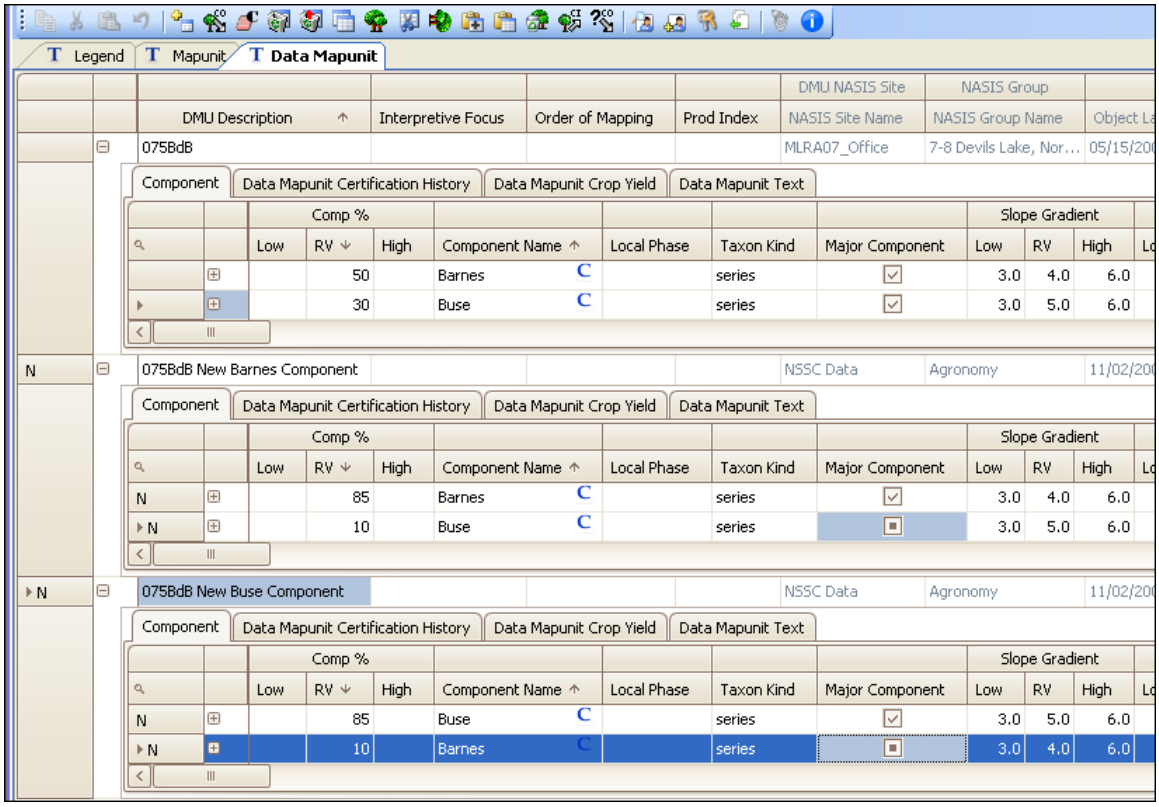
The “Combining Existing Map Units” scenario is completed.

Splitting Map Units

This scenario is the reverse of the previous scenario. The steps in splitting a map unit are explained below.

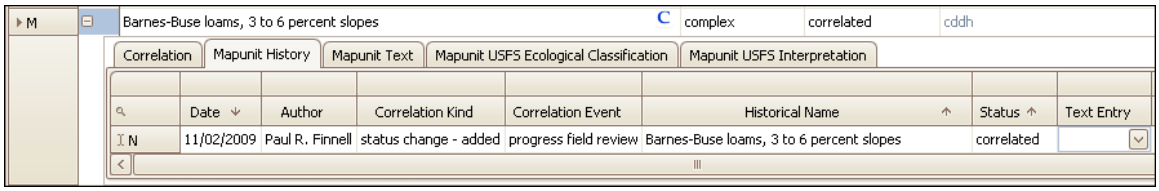
Step 1 – Create new data mapunits

Create new data mapunits and edit them to reflect the new map unit concepts. This can be accomplished by copying the original data mapunit and pasting it to create copies. Then each copy can be modified to reflect the new map unit concept of the split.



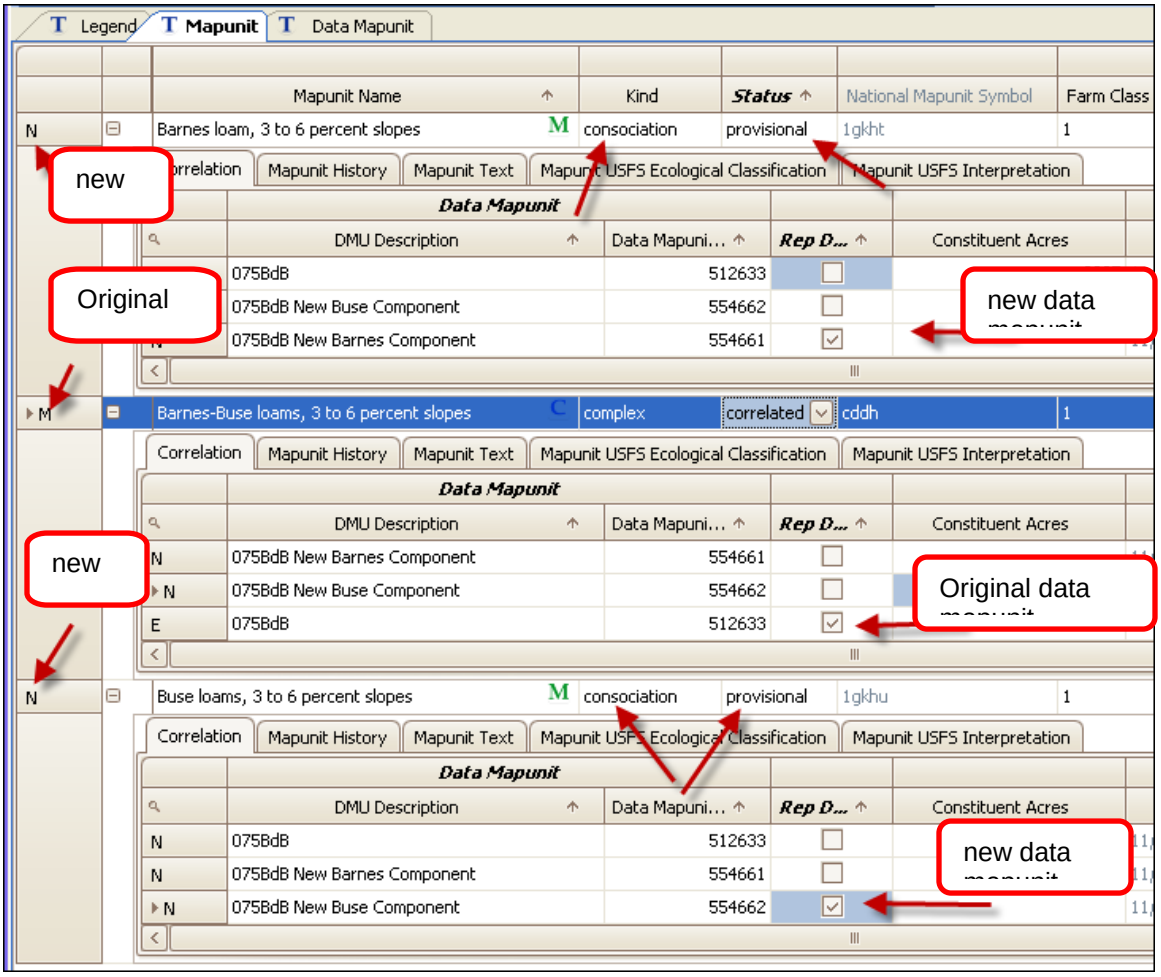
Step 2 – Document the map unit

Move to the Mapunit History table and document the map unit. By doing so now, before copying and pasting the map unit, the new map units will retain the original documentation.



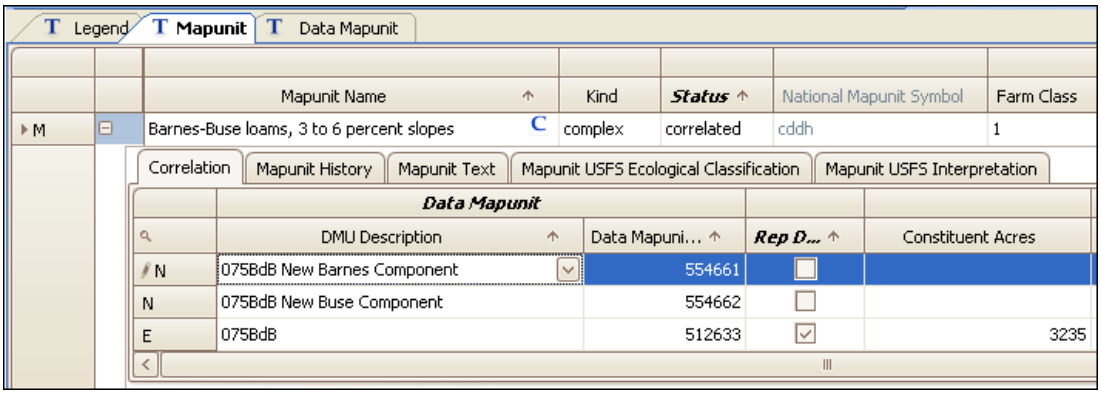
Step 3 – Create the new map units

This is best done by copying the original map unit and pasting it twice to represent the split. By copying the original map unit, the correlation records are retained. Change the map unit name and set the map unit status to "provisional" on the new map units.



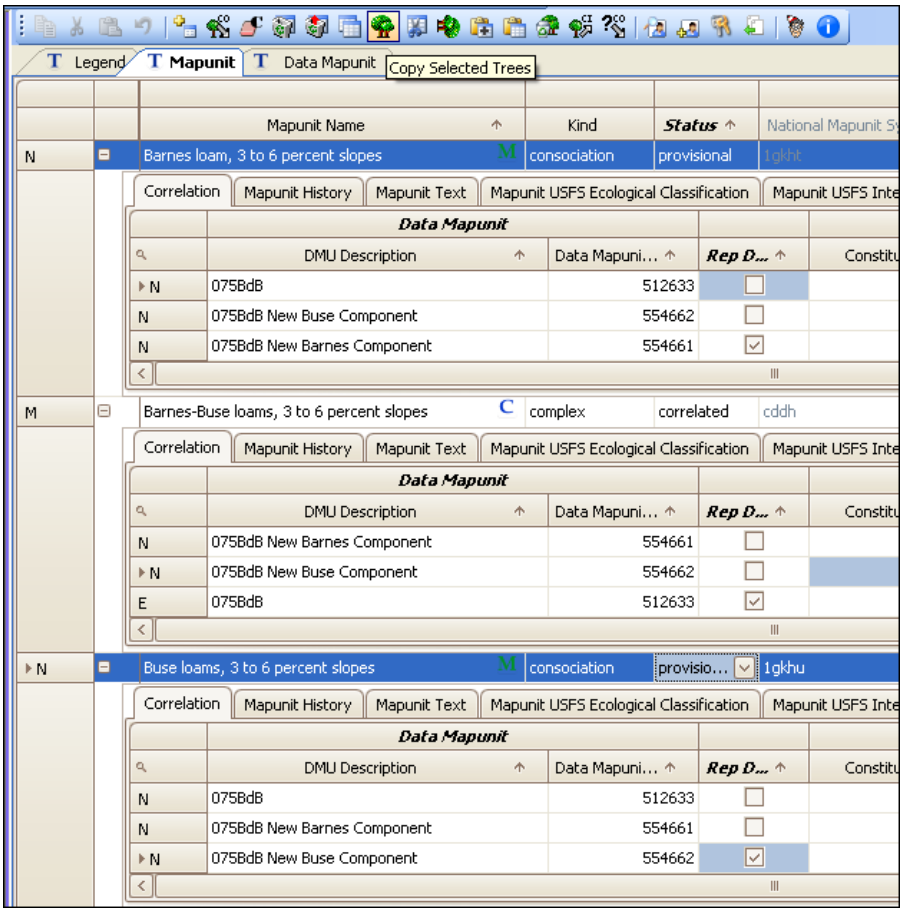
Step 4 – Populate the Correlation table

Return to the Mapunit table.
Check out the new map units.
Enter the new data mapunits into the correlation table of the new map unit and check the new data mapunit as representative. Uncheck the original data mapunit as representative.



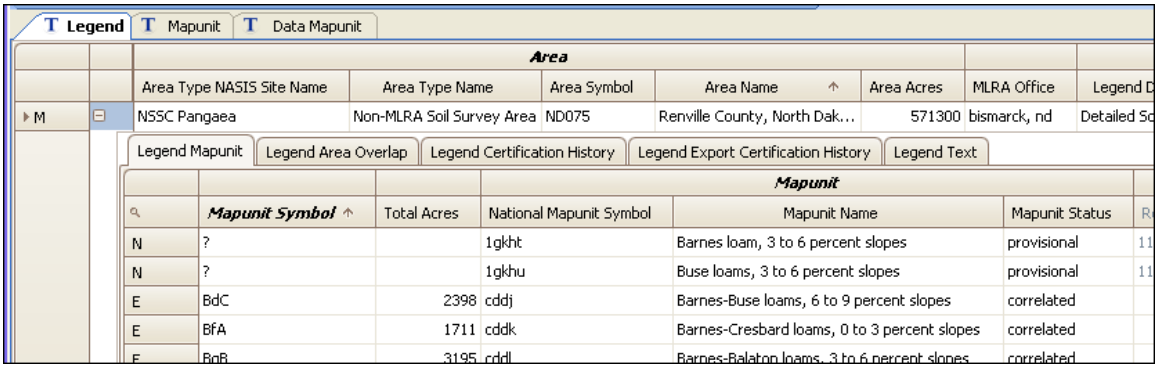
Step 5 – Link the provisional map units to the legend

Copy the provisional map units and paste them into the appropriate Legend Mapunit table.
Using the “Ctrl” button and the left click, highlight both map unit records and then copy selected trees.

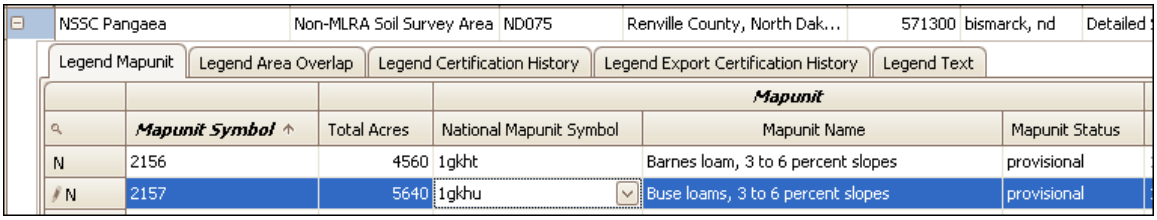


Step 6 – Paste the new provisional map units into the legend

After being copied, the new map units are pasted into the legend.



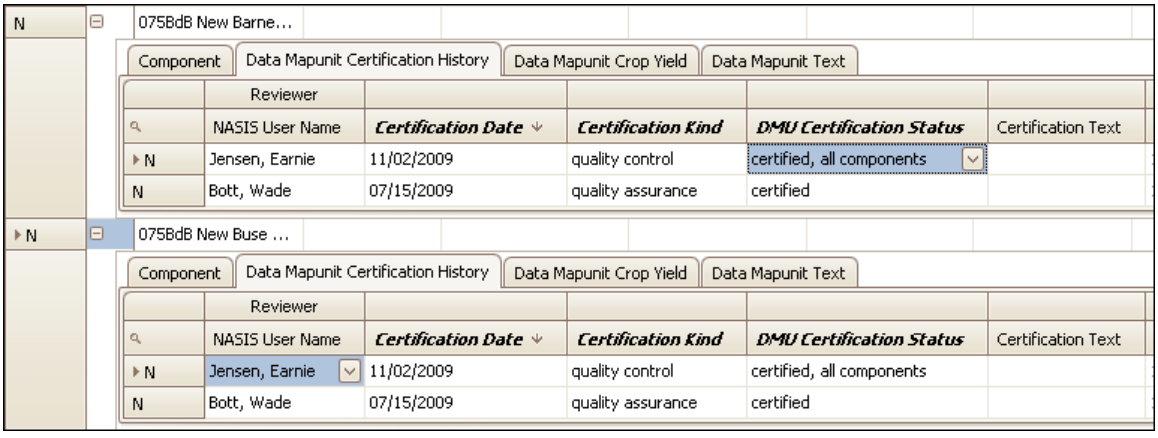
Populate the publication “Mapunit Symbol” and “Total Acres.”



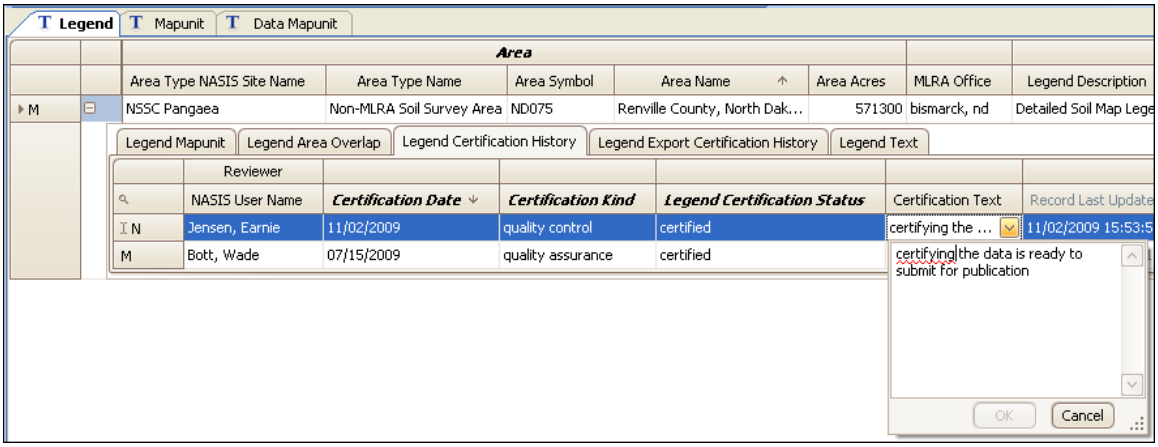
Step 7 – Obtain certification of the data mapunit and legend

Before the new map unit can have its status changed to “correlated” and before it is released to the state soil scientist for publication, the data must be certified. Return to the Data Mapunit Object and open the Data Mapunit Certification History child table.

The soil survey leader and the soil data quality specialist are required to certify the data mapunit.

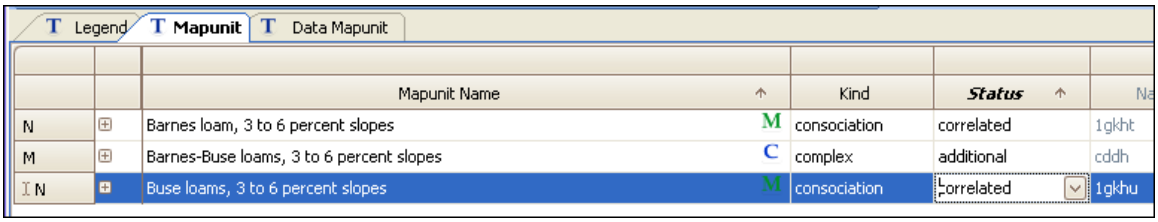


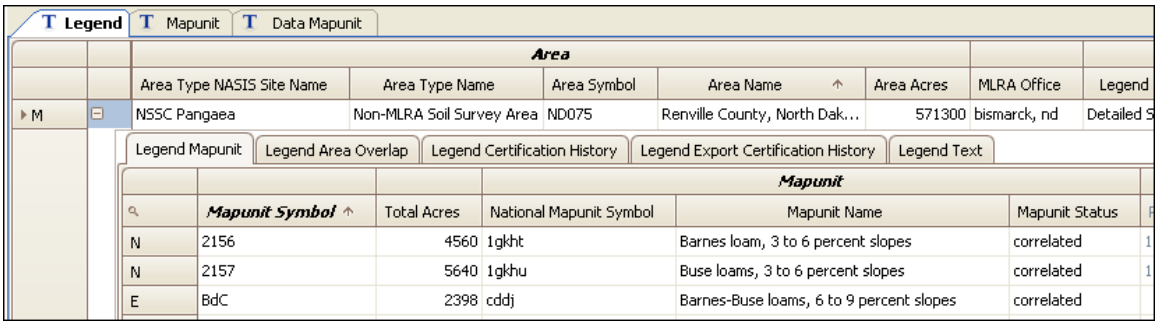
Return to the Legend Object, open the Legend Certification History table, and repeat the process.



Step 8 – Correlate the new map units

Return to the Mapunit table and modify the map unit status to reflect the correlation. The new mapunit's status is now "correlated" and the old map unit is set to "additional."





The "Splitting Existing Map Units" scenario is completed.