

Map Unit Development and Progressive Correlation on an Initial Soil Survey

The following is an idealized sequence of the common steps necessary to develop a map unit and prepare it for approval and progressive correlation. These steps are intended for initial soil surveys, and may not be applicable for update surveys.

1. Identify need for a new map unit
 - Use premapping, remote sensing, digital analysis to start characterizing the unit.
 - Preliminary field investigation with traverses/transects.
 - Identify ecological sites that need to be recognized (Range Spec. assistance).
2. Develop Provisional Map unit concept
 - Record provisional composition on a form to provide to project staff (could be done immediately in NASIS).
 - Assign map unit symbol for all staff to use.
3. Refine map unit composition with additional traverses/transects
 - Space the locations of documentation to represent the extent of the map unit.
 - Revise provisional map unit concept as needed.
4. As a central concept is developed for each major component, collect complete pedon descriptions (with box samples) that are representative of that concept (no outliers or similar soils) (with backhoe if necessary)
 - Collect lab reference samples to resolve taxonomic or correlation questions.
 - Identify range inventory sites for major components (Range Spec.).
 - As a significant extent is mapped, ensure the amount of documentation (pedon and map unit) meets the local MOU and NSSH standards.
5. Acquire assistance from the MLRA Soil Survey Leader or MO Soil Data Quality Specialist if there are some soil features or questions that need to be resolved before finalizing the map unit. These may be taxonomic questions, help with landform or parent material identification, map unit design questions, etc.
6. Select and fully describe a DMU typical pedon for the major components (which may also serve as the survey area TUD typical pedon).
7. If significant acreage is mapped, adequate documentation is collected, and the map unit is well-defined, the map unit can be presented on a field review. **See note below.** If the map unit contains the TUD typical pedon, a pit of that typical pedon needs to be shown. If a TUD typical pedon has already been observed on a review only the pedon descriptions (not a pit) of the DMU typical pedons need be shown. Be aware that this step is only a part of the quality assurance necessary for map unit approval; it is not the final step.
8. Address any recommendations or deficiencies identified during the progress review (such as collecting additional documentation, a new typical pedon, etc.).
9. Compile and analyze map unit composition documentation (transects, traverses, notes)
 - Populate NASIS DMU and Component data.
10. Compile and analyze pedon data (pedon descriptions, lab data, transect/traverse points) for the component within the map unit only.
 - Run in-office analyses (CCE, sieving, hydrometer, etc.).

- If a DMU typical pedon has been selected and fully described, populate NASIS component and horizon data.

11. Generate or update a current TUD for the major components in the map unit. If a given component is in more than one map unit, the TUD will be the aggregation of properties of those units.

12. Quality Control – everyone checks their own work; the project leader checks all staff work, the MLRA Soil Survey leader reviews all work from the project office.

13. Quality Assurance – after QC is complete the map unit is submitted to the MO for approval. Accompanying TUDs are submitted for each major component of the map unit – the TUD must encompass the properties of the DMU component. If a NSSL-sampled pedon is within the map unit, site info for that pedon such as MU symbol, approved taxon name, and updated taxonomic class is also forwarded to the MO.

14. The project office performs any follow-up edits, in NASIS or on the TUD, that were identified during MO review.

15. When the TUD has been finalized, the project staff compares it characteristics with the OSD and proposed changes to the OSD. If a new proposed series, an OSD is drafted.

16. After QC reviews, the TUD and edited or draft OSD are submitted to the MO for review.

17. The OSD is processed and the map unit status is changed to approved.

Note for planning the progress review, step 7:

The timing of the progress field review is the prerogative of the soil survey project leader. The review may be planned for any time after a map unit is well-defined and typical pedons are selected (after step 6) but prior to the MO review of the database and soil descriptions (step 13). Having the review early in the process gives the project staff confidence that the map unit and soil features have concurrence from the Soil Data Quality Specialist before proceeding with the database, TUDs, and OSDs. Some individuals prefer to postpone a review until pedon descriptions are thoroughly analyzed and lab data from reference sampling is available. The progress review may be planned for later in the process, for example after the database, MUDs, TUDs, and OSDs are complete (step 12). However, at this point there is a possibility that review decisions may require revision of that work. For example a classification change at the review may require a new soil series search and repeating the OSD revision work. The project leader must keep this in mind and plan accordingly.