

TECHNICAL NOTES

May 1, 2007

MO-1 Technical Note 47

Re: Soil Survey Quality Control Documents

Quality control for soil survey is the responsibility of the MLRA office. Attached are two documents to be used by MLRA Project Leaders for use in quality control. The documents are provided as a guide by MO-1 for initial and extensive revision soil survey areas. The documents can be modified by the MLRA project leaders as each area may operate/function differently. The document/review report does not need to be completed during a one week formal review as in the past. Portions of the document/review report can be completed as workload flow and scheduling permit. However, the total document/review report should be completed over the course of a year. The first two pages of each document contain general information that is not expected to change. This portion only needs to be completed once and then only when something significant changes. As portions of the document/review report are completed, they should be sent to the MO for conducting quality assurance. Copies should also be sent to the State Soil Scientist. This is a new procedure for quality control and quality assurance and we will all work together during the period of change.

MO1-233 Initial Soil Survey

MO1-233 Extensive Revision Soil Survey

The above quality control documents can be completed either of the following ways:

- a) Print a hard copy from this Technical Note and enter appropriate information on the hard copy

- b) Go back to the index for the Technical Notes on the MO-1 website, find Technical Note 47, and download the appropriate Word document, which will allow you to enter the information electronically.

INITIAL SOIL SURVEY QUALITY CONTROL REVIEW

Date:

Area name:

State Soil Survey Area Identification:

Major Land Resource Area(s):

This quality control report is to ensure this soil survey is science-based; the legend and correlation use the MLRA concept; and the survey meets the standards and specifications of the National Cooperative Soil Survey. This report consists of several soil survey functions. Each function (legend, soil mapping, database, etc) can be completed at different times of the year depending on the flow of work during the year. However, after one year each function should be reviewed. As a function is reviewed, the document should be signed off and sent to the MO for a quality assurance check.

GENERAL INFORMATION and SCHEDULING

Agency in charge of survey:

Cooperating agencies:

Total acres from NASIS (see legend/legend land category): land _____ census water _____

Method of Mapping: Traditional Digital Soil Modeling (if checked, complete attachment)

Status of Memorandum of Understanding:

Scheduled date - mapping completion:

Scheduled date - final correlation:

Scheduled date - manuscript to the State office for technical review:

- manuscript to the MO office for technical review:

Scheduled date - map digitizing completion:

Has a workload analysis-plan of operations been developed? _____

Does the project office have an official electronic soil survey area boundary? _____

What soil surveys does the project survey match to and what is the status of each survey:

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

For each adjoining soil survey, **ATTACH** a list of map units requiring a join by soil survey area.

NASIS: Provide location where NASIS tabular data is stored and edited:

Area Symbol _____

Area Name _____

Survey Status _____

Is soil mapping being compiled and digitized to the imagery to be used for "publication"? _____

Data and Source of imagery _____

Will the survey have a general soil map? _____

Will the survey have a "published" soil survey report? _____

If yes, list the manuscript sections and NASIS generated reports/tables to be included (this may change as reports are updated or revised)

Comments:

PROGRESS AND LEGEND

Date _____

- Cumulative total of acres reported as mapped in NASIS (see Legend / Legend Mapping Progress):
-

- Are **ALL** map symbols on the official soil maps for the survey in the legend?
 - **ATTACH** a legend from NASIS by map unit status
 - **ATTACH** a legend from NASIS by map unit name and include the additional symbols
 - **ATTACH** the SOI-37A indicating miscellaneous features and ad hoc features
 - **ATTACH** a list of map units added to the legend since the last quality control review
 - **ATTACH** a list of map units correlated or dropped since the last quality control review and include a correlation note report from NASIS identifying reason for decisions

- Does the legend contain all map units from adjacent surveys in order to have an exact join? _____

If no, list the map units that are matching but not in the legend:

Comments:

Action or Recommended Items:

TYPICAL PEDONS

Date _____

- For each series or higher taxa in the legend, is the typical or representative pedon entered into NASIS pedon? _____

If no, list the series or taxa not in NASIS pedon or attach a NASIS pedon report for typical pedons:

-
- Are all series names used in approved map units reserved? _____

If no, what names are not reserved? _____

Are all series and higher taxa properly classified using Soil Taxonomy? _____

- **ATTACH** a classification table from NASIS

- Provide a list of all soil series (OSDs) having their type location in the survey area :

-
- Are all typical pedons for series and higher taxa located within the survey area? _____

If no, list the series or higher taxa and the survey area in which it occurs:

-
- Are all typical pedons located in a map unit delineation in which the pedon is a named major or minor component? _____

- List the typical pedons (and its range of characteristics) reviewed and compared to the OSD:

If needed, list the OSDs to be submitted to the MO for revision with a proposed date for submission:

TYPICAL PEDONS (Continued)

Comments:

Action or Recommended Items:

DATABASE

Date _____

- Are all map units in the legend table linked to a data map unit (DMU) thru the correlation table? _____

If no, list the map units that are not linked to a DMU: _____

- Are all components (major and minor) to be fully populated as per MO-1 Technical Note 40? _____
 - MO-1 Technical Note 38 provides guidance on reviewing Soil Survey Data Quality in NASIS
 - List the map units and associated data map units reviewed: _____
-
-

- List the Standard Reports as identified in Tech. Note 38 that were used to review data quality, for example: * UTIL – Comparison of LL and PI, stored vs. calculated (National)

- List the NASIS Validations as identified in Tech. Note 38 that were used to review data quality, for example: * Component / Horizon

Comments:

Action or Recommended Items:

MAP UNIT DESCRIPTIONS

Date _____

- List the NASIS MUG-report to be used for the soil survey: _____
- List the map unit descriptions reviewed for quality and quantity of data populated:

For each map unit description reviewed, identify data voids or data elements needing review; see MO-1 Tech. Note 40 for data population guides:

Map Unit Symbol

Database element needing review

Comments:

Action or Recommended Items:

MLRA Project Leader

Project Leader

SOIL MAPPING

Date _____

- What are the official soil maps for the survey (field sheets, compilation sheets, digital files/plots)?
-

- What is the minimum size polygon (acres) to be delineated? _____

- **ATTACH** a small scale soil mapping progress map for the survey area

- List the official maps reviewed along with date reviewed:
-
-

Review

- Are all symbols on the maps in the NASIS legend? _____

If no, which symbols are missing? _____

- Do map unit polygons conform to landforms, landscapes and are they consistently delineated? _____

- Are all miscellaneous or ad hoc features on the maps, identified on the SO1-37A? _____

If no, which features are on the maps but not on the 37A? _____

- Is the use of the feature symbol(s) consistent across the soil survey extent? _____

- Are size of polygons consistent with specifications in the MOU? _____

Comments:

Action or Recommended Items:

MLRA Project Leader

Project Leader

DOCUMENTATION

Date _____

- List the map units in which transects were made since the last quality control review to determine map unit kind and composition:
-
-

- Are the transect locations georeferenced with a GPS unit? _____
- Recommend the creation of a spatial documentation layer in GIS. This layer would document by polygon, how the map unit was determined. Each polygon would be coded using a legend; for example: 1. transect made in polygon, 2. polygon was visited to confirm map unit, 3. polygon was observed with "high" degree of confidence; 4. polygon was observed with "low" degree of confidence, 5. polygon was remotely sensed. This layer would spatially document by map unit, how the polygons were determined.

Is a spatial documentation layer being created? _____

If yes, what is the legend? _____

For each new series proposed how many complete pedon descriptions are available? List series name and number of descriptions:

Comments:

Action or Recommended Items:

COMPILATION AND DIGITIZING

Date _____

- Describe the map compilation and digitizing process being used for the soil survey:

- Provide the following information for off-site security of soil maps:

Location of site _____

Date of last security update _____

Type of security material: paper or electronic _____

- List the compilation sheets (quads.) reviewed and digital sheets reviewed, along with date reviewed:

For each sheet reviewed list issues or concerns

Map Sheet (Quad)

Issues/Concerns

Comments:

Action or Recommended Items:

MLRA Project Leader

Project Leader

INVESTIGATIONS

Date _____

- Are there plans to have a project investigation within the survey area? _____

If yes, when is the projected date for sampling? _____

- List all pedons sampled within the survey area. This list will consist of all pedons sampled by the NSSL (reference and complete characterization). This will be a running list from year to year, for example:

<u>Sampled as Name</u>	<u>Map Unit Symbol</u>	<u>Pedon ID</u>	<u>Site ID</u>
Cosbie	2017	050R035003	99-JFD-04

Comments:

Action or Recommended Items:

MLRA Project Leader

Project Leader

DIGITAL SOIL MODELING SUMMARY ATTACHMENT

Metadata

	Primary Digital Data	Source	Contact Information
1)	_____	_____	_____
2)	_____	_____	_____
3)	_____	_____	_____
4)	_____	_____	_____
5)	_____	_____	_____
6)	_____	_____	_____
7)	_____	_____	_____
8)	_____	_____	_____

Please include any additional information concerning the creation of this data, e.g. a vegetation layer that was created from remotely sensed data or a landform map that was created by the use of aerial photos, topographic maps and field observations.

Projection/datum:

Resolution: (please not if there were any resolution conversions made)

Program and version used to create the model:

Modeling Technique

Model or methodology used: (brief description)

Rationale for model choice:

Raster, shapefiles or combination:

Digital data conversions: (e.g., a shapefile converted to a raster)

Secondary terrain attributes (or co-variables) created: (e.g. slope)

	Type	Method
1)	_____	_____
2)	_____	_____
3)	_____	_____
4)	_____	_____
5)	_____	_____
6)	_____	_____
7)	_____	_____
8)	_____	_____

Filtering used (please include digital data layer, type, and repetitions):

Sampling Strategy:

Final Map format: (raster, polygon, scale, order)

Any Line work changes or manual digitizing?

Accuracy assessment or ground truthing techniques:

Were digital data layers used to compute values for NASIS (e.g., elevation range)? If so, please describe.

Attach a detailed description of the model, including all inputs, outputs, algorithms, and expressions.

EXTENSIVE REVISION SOIL SURVEY

QUALITY CONTROL REVIEW

Date:

Area name:

State Soil Survey Area Identification:

Major Land Resource Area(s):

This quality control report is to ensure this soil survey is science-based; the legend and correlation use the MLRA concept; and the survey meets the standards and specifications of the National Cooperative Soil Survey. This report consists of several soil survey functions. Each function (legend, soil mapping, database, etc) can be completed at different times of the year depending on the flow of work during the year. However, after one year each function should be reviewed. As a function is reviewed, the document should be signed off and sent to the MO for a quality assurance check.

GENERAL INFORMATION and SCHEDULING

Agency in charge of survey:

Cooperating agencies:

Total acres from NASIS (see legend/legend land category): land _____ census water _____

Status of Memorandum of Understanding:

Scheduled date - mapping completion:

Scheduled date - final correlation:

Scheduled date - manuscript to the State office for technical review:

- manuscript to the MO office for technical review:

Scheduled date - map digitizing completion:

Does the soil survey have a completed evaluation documenting the need for extensive revision? _____

Has a workload analysis-plan of operations been developed? _____

Does the project office have an official electronic soil survey area boundary? _____

What soil surveys does the project survey match to and what is the status of each survey:

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____

For each adjoining soil survey, **ATTACH** a list of map units requiring a join by soil survey area.

NASIS: Provide location where NASIS tabular data is stored and edited:

Area Symbol _____

Area Name _____

Survey Status _____

Is soil mapping being completed and digitized to the imagery to be used for "publication"? _____

Data and Source of imagery _____

Will the survey have a general soil map? _____

Will the survey have a "published" soil survey report? _____

If yes, list the manuscript sections and NASIS generated reports/tables to be included (this may change as reports are updated or revised)

Comments:

PROGRESS AND LEGEND

Date _____

- Cumulative total of acres reported as mapped in NASIS (see Legend / Legend Mapping Progress):
-

- Has the current legend and legacy data been designated as out-of-date? _____

- Has a new legend in NASIS been created and designated as extensive revision? _____

NOTE with the proposed change in the NSSH, soil surveys in the past identified as update are now defined as extensive revision.

Are **ALL** map symbols on the official soil maps for the survey in the legend:

- **ATTACH** a legend from NASIS by map unit status
- **ATTACH** a legend from NASIS by map unit name and include the additional symbols
- **ATTACH** the SOI-37A indicating miscellaneous features and ad hoc features
- **ATTACH** a list of map units added to the legend since the last quality control review
- **ATTACH** a list of map units correlated or dropped since the last quality control review and include a correlation note report from NASIS identifying reason for decisions

- Does the legend contain all map units from adjacent surveys in order to have an exact join? _____

If no, list the map units that are matching but not in the legend:

Comments:

Action or Recommended Items:

MLRA Project Leader

Project Leader

TYPICAL PEDONS

Date _____

- For each series or higher taxa in the legend, is the typical or representative pedon entered into NASIS pedon? _____

If no, list the series or taxa not in NASIS pedon or attach a NASIS pedon report for typical pedons:

-
- Are all series names used in approved map units reserved? _____

If no, what names are not reserved? _____

- Are all series and higher taxa properly classified using Soil Taxonomy? _____

- **ATTACH** a classification table from NASIS

- Provide a list of all soil series (OSDs) having their type location in the survey area :

-
- Are all typical pedons for series and higher taxa located within the survey area? _____

If no, list the series or higher taxa and the survey area in which it occurs: _____

-
- Are all typical pedons located in a map unit delineation in which the pedon is a named major or minor component? _____

- List the typical pedons (and its range of characteristics) reviewed and compared to the OSD:

If needed, list the OSDs to be submitted to the MO for revision with a proposed date for submission:

TYPICAL PEDONS (Continued)

Comments:

Action or Recommended Items:

DATABASE

Date _____

- Are all map units in the legend table linked to a data map unit (DMU) thru the correlation table? _____

If no, list the map units that are not linked to a DMU _____

- Are all components (major and minor) to be fully populated as per MO-1 Technical Note 40? _____

- MO-1 Technical Note 38 provides guidance on reviewing Soil Survey Data Quality in NASIS
 - List the map units and associated data map units reviewed: _____
-

- List the Standard Reports as identified in Tech. Note 38 that were used to review data quality, for example: * UTIL – Comparison of LL and PI, stored vs. calculated (National)
-
-

- List the NASIS Validations as identified in Tech. Note 38 that were used to review data quality, for example: * Component / Horizon
-
-
-
-

Comments:

Action or Recommended Items:

MLRA Project Leader

Project Leader

MAP UNIT DESCRIPTIONS

Date _____

- List the NASIS MUG-report to be used for the soil survey: _____
 - List the map unit descriptions reviewed; for quality and quantity of data populated: _____
-

For each map unit description reviewed, identify data voids or data elements needing review; see MO-1 Tech. Note 40 for data population guides:

Map Unit Symbol

Database element needing review

Comments:

Action or Recommended Items:

SOIL MAPPING

Date _____

- What are the official soil maps for the revision mapping? (field sheets, compilation sheets, digital files/plots): _____
 - What is the minimum size polygon (acres) to be delineated? _____
 - **ATTACH** a small scale soil mapping progress map for the survey area
 - List the field sheets reviewed along with date reviewed: _____
-
-

Review

- Are all symbols on the maps in the NASIS legend? _____
If no, which symbols are missing? _____
- Do map unit polygons conform to landforms, landscapes and are their segments visible on the photobase? _____
- Are all miscellaneous or ad hoc features on the maps, identified on the SO1-37A? _____
If no, which features are on the maps but not on the 37A? _____
- Is the use of the feature symbol(s) consistent across the soil survey extent? _____
- Are size of polygons consistent with specifications in the MOU? _____

Comments:

Action or Recommended Items:

MLRA Project Leader

Project Leader

DOCUMENTATION

Date _____

- In NASIS map unit history text notes, document by map unit how the current map units relate to the map units in the out-of-date legend. This will provide a track for users and future soil scientists. **ATTACH** a report from map unit history text notes.
 - List the map units in which transects were made since the last quality control review to determine map unit kind and composition:
-
-

- Are the transect locations georeferenced with a GPS unit? _____
- Recommend the creation of a spatial documentation layer in GIS. This layer would document by polygon, how the map unit was determined. Each polygon would be coded using a legend; for example: 1. transect made in polygon, 2. polygon was visited to confirm map unit, 3. polygon was observed with "high" degree of confidence; 4. polygon was observed with "low" degree of confidence, 5. polygon was remotely sensed. This layer would spatially document by map unit, how the polygons were determined.

Is a spatial documentation layer being created? _____

- For each new series proposed how many complete pedon descriptions are available? List series name and number of descriptions:
-
-

Comments:

Action or Recommended Items:

COMPILATION AND DIGITIZING

Date _____

- Describe the map compilation and digitizing process being used for the soil survey:

- Provide the following information for off-site security of soil maps:

Location of site _____

Date of last security update _____

Type of security material: paper or electronic _____

- List the compilation sheets (quads.) reviewed and digital sheets reviewed, along with date reviewed:

For each sheet reviewed list issues or concerns

Map Sheet (Quad)

Issues/Concerns

Comments:

Action or Recommended Items:

MLRA Project Leader

Project Leader

INVESTIGATIONS

Date _____

- Are there plans to have a project investigation within the survey area? _____

If yes, when is the projected date for sampling? _____

- List all pedons sampled within the survey area. This list will consist of all pedons sampled by the NSSL (reference and complete characterization) prior to revision mapping and during revision mapping. This will be a running list from year to year, for example:

<u>Sampled as Name</u>	<u>Map Unit Symbol</u>	<u>Pedon ID</u>	<u>Site ID</u>
Cosbie	2017	050R035003	99-JFD-04

Comments:

Action or Recommended Items: