Part 610 – Updating Soil Surveys

Subpart A – General Information

610.0 Definition and Purpose

A. Definition. The update of soil survey is a systematic process designed to improve official soil survey information (see General Manual, Title 430, Part 402, Section 402.5(A)) with consideration of the full extent of soils and ecological sites across a major land resource area (MLRA) (see Part 649, Subpart A, Section 649.2 of this handbook). Updating by MLRA is a continuous activity of inventory and assessment, data collection, synthesis, review, and recertification of existing soil survey and ecological site information that brings all information to a common standard. The MLRA soil survey update is planned and organized using scheduled projects that systematically focus on specific groups of soils or landforms and the associated support data, interpretations, and maps.

B. Purpose. The MLRA process will develop a seamless coverage of consistent soil survey and ecological site information across the Nation. Updating soil survey and ecological site information by MLRA ensures that appropriately detailed information which meets user needs is developed and delivered in a timely manner. Project plans are created and coordinated across the existing (i.e., traditional or non-MLRA) soil survey area boundaries and follow natural landforms. The MLRA process facilitates mapping, interpreting, and delivering seamless soil survey and ecological site information across broad geographical areas of common resource values, land uses, and management concerns.

610.1 Policy and Responsibilities

A. Policy

(1) MLRA soil survey update activities are conducted as a series of projects developed to address prioritized update needs (refer to Part 608, Section 608.05 of this handbook and Part 630, Section 630.16 of the National Ecological Site Handbook). Projects are developed in the context of the entire MLRA with the goal of developing a seamless soil survey product across political lines.

(2) Inventories and assessments are conducted on existing soil survey products to identify deficiencies and are used to make recommendations for improvement of the official soil survey and ecological site information (see Section 610.2(C)). The inventories and assessments are completed by the soil survey office (SSO) prior to commencing update activities for the MLRA soil survey area (see General Manual, Title 430, Part 402, Section 402.5(C)).

(3) Project plans are developed by the SSO staff with assistance from the SSO technical team (see Part 608 of this handbook). NASIS is used to manage project plans. All project plans are reviewed and concurred by the management team and approved by the soil survey regional director. The Board of Advisors is kept informed of project activities and progress.

(4) Projects are based on the map units occurring on natural landforms over a broad physiographic area. Maps and data are standardized to create seamless soil delineations

that follow natural landforms and flow across county, parish, or State lines and land management boundaries.

(5) The scale and intensity of mapping as well as map unit design and naming are standardized to provide consistent soil survey and ecological site information that addresses resource management needs appropriate to land uses and the majority of users needs.

(6) Project milestones are used to identify, document, and manage project activities.

(7) Project concerns are used to identify the agency resource concern(s) (see Part 610, Subpart B, Exhibits, Section 610.10).

(8) Correlation decisions are recorded in the appropriate NASIS tables.

(9) A long-range plan is developed based upon the results of the inventory and assessment and reviewed annually by the management team and technical team.

(10) Annual plans of operation are developed to guide activities and provide specific focus to the SSO staff.

(11) Project quality control review is completed by the MLRA soil survey leader with input provided by the technical team (see Part 609, Subpart A, Section 609.4 of this handbook and Exhibit A, National Instruction 430-305).

(12) Project quality assurance review of revised spatial and attribute data is completed by the soil survey regional office (SSR) prior to publication (see Part 609, Subpart A, Section 609.5 of this handbook).

(13) Projects are considered complete once issues identified by quality control and quality assurance reviews have been resolved and correlation activities have been accomplished.

(14) Projects are published as official soil survey information to the Soil Data Mart and made available through the Web Soil Survey (see General Manual, Title 430, Part 402, Section 402.5) by the state soil scientist.

(15) Project progress (in acres) is reported in the Project Mapping Progress table when the SSR staff certifies the project as completed after populating the Milestone Date Completed column for the milestone "Project completed date."

B. Responsibilities. Responsibility for the aspects of updating soil surveys is held jointly by various organizational levels within NRCS and, for some Federal lands, other NCSS partner agency representatives. The NRCS General Manual (Title 430, Part 402, Section 402.10) outlines the responsibilities of staff leaders in these offices. Refer to Part 608, Section 608.01 and Part 609, Subpart A, Section 609.1 of this handbook for an overview of additional responsibilities.

(1) **MLRA Soil Survey Regional Office (SSR)**

The directors of the SSRs:

(i) Coordinate activities of the management teams;

(ii) Approve SSO project plans and review long-range plan reports and annual plans of operation;

(iii) Provide SSO guidance on initiating and updating soil survey and ecological site information;

(iv) Conduct quality assurance reviews as specified in Part 609, Subpart A, Section 609.5 of this handbook;

(v) Provide training to survey staff in soil survey procedures and database management;

(vi) Approve changes to soil survey legends and assignment of ecological sites; and

(vii) Coordinate the updating of soil survey information between SSOs, MLRAs, and soil survey regions.

(2) **State Office**

The state soil scientists:

(i) Serve as a member of the management team(s) for the soil survey offices servicing their State (specific roles are identified in the management team operating procedures);
(ii) Develop priorities for soil survey update projects with the management team members (refer to Part 608, Section 608.05(d) of this handbook);
(iii) Serve as the primary contact (liaison) to the NCSS cooperators and partners in the State;
(iv) Inform and obtain project priority concurrence from the state conservationists and NCSS partners; and
(v) Provide legend certification and publication of soil survey information.

(3) **Soil Survey Office (SSO)**

The MLRA soil survey leaders:

(i) Inventory and assess all correlated map units and consistency of soil survey mapping within the MLRA soil survey area (see Part 610, Subpart B, Exhibits, Section 610.11);
(ii) Manage and update attribute and spatial data within the MLRA soil survey area;
(iii) Coordinate update activities with other SSOs (imperative for those MLRAs that are assigned to multiple SSOs);
(iv) Lead the SSO technical team and carry out its functions;
(v) Develop project plans that address prioritized and approved update needs;
(vi) Review the benchmark soils and propose changes;
(vii) Populate data and manage update projects in NASIS;
(viii) Develop the long-range plan and annual plan of operations;
(ix) Inform the SSR, States, and NCSS cooperators of activities and progress;
(x) Maintain the correlation history in the NASIS Mapunit History Text table;
(xi) Maintain the component correlation decisions in the NASIS Component Text table;
(xii) Conduct quality control as specified in Part 609, Subpart A, Section 609.4 of this handbook; and
(xiii) Review and concur with soils information for ecological site projects.

610.2 Inventory and Assessment

A. Definition. An inventory and assessment is an analysis of the SSURGO-certified map units (see Part 647, Section 647.03 of this handbook) within an MLRA. The existing soil survey and ecological site data is inventoried and analyzed to determine completeness, accuracy, continuity, and appropriateness for current land management decisions within the MLRA. This information will be used to prioritize work on map units and document the need for future MLRA update projects.

B. Purpose. The inventory and assessment identifies deficiencies and improvements needed in the official soil survey information, including ecological site information. This inventory is necessary to develop the long-range plan report.

C. Procedure. Information is gleaned from a variety of sources (see Part 610, Subpart B, Exhibits, Section 610.12). Information may come from those who actively participated in developing the initial soil survey or from NCSS partners and users of the information. Major information items to be considered in the inventory and assessment are listed in Part 610, Subpart B, Exhibits, Section 610.11. The inventory and assessment may be repeated as needed to address emerging user needs and land use changes.

D. Documentation. All documentation is managed in NASIS. The information gathered is compiled for each map unit. The taxa used in the map unit name and individual delineations of the map unit are evaluated. The results of the inventory and assessment are entered into the NASIS database (see Part 638 of this handbook) in the Mapunit Text table under the specific map unit(s). All notes entered into the Mapunit Text table should be populated with—

- Kind set to "miscellaneous notes,"
- Category set to "evaluation notes," and
- Subcategory set to "spatial," "attribute," or "interpretation."

Part 610, Subpart B, Exhibits, Section 610.13 provides a sample evaluation worksheet and an example of evaluation notes.

610.3 Update Strategies

A. Definition. Strategies to update existing soil survey and ecological site information are designed to make efficient use of staff resources and their time. They address the deficiency(ies) identified by the inventory and assessment. They can address updating soil survey and ecological site information individually or concurrently or integrate multiple projects to address data issues for a geographic area.

B. Purpose. Strategies provide the tactical framework from which to initiate, conduct, and deliver updated soil survey and ecological site information to users under the auspices of the National Cooperative Soil Survey program. Key projects, milestones, and resource concerns are identified in the long-range plan and annual plan of operations.

C. Policy. There are four soil survey update strategies. These strategies allow for a mixture of concurrent projects in order to achieve efficient operation and timely reporting of updated soil survey information. All soil survey update activity will encompass the map unit or landform as it occurs in the MLRA. The NASIS Project object is used to manage MLRA updates. The update strategy selected for a project should be identified in the project description. Project milestones are used to manage tasks and document progress. Project concern types are used to identify the agency resource concerns (see Part 610, Subpart B, Exhibits, Section 610.10). For detailed information on population of the NASIS project, see Chapter 14 of the NASIS User Guide (available on the NASIS webpage).

(1) **MLRA assessment and correlation**

This strategy compiles historical documentation and uses limited field time to reconcile map unit names, map unit composition, and component and horizon properties for developing a seamless coverage of soil survey and ecological site information. It will be applied to all map units. The process focuses on reducing the number of duplicative map unit information for soil map units that have the same map unit concept. It reconciles map units that represent a continuation of mapping concepts across non-MLRA soil survey area boundaries. A single MLRA map unit is created with fully populated properties, qualities, and interpretations for components and horizons. This process is the underpinning of MLRA correlation. Reportable acres are 20 percent of the total project map unit acres. Projects are goaled and reported within the assigned fiscal year.

The MLRA assessment and correlation strategy:

(i) Bridges the inventory and assessment and the MLRA field project using information obtained from the map unit inventory and assessment to readily accomplish MLRA correlation and database population;

(ii) Uses existing soil survey information and correlation documents in conjunction with limited field visits;
(iii) Relies on the experience and knowledge of technical team members;
(iv) Ensures that same-named and similarly named map units are reviewed and that duplicate map units with the same map unit concept are correlated into a single map unit that extends seamlessly across political boundaries;
(v) Requires map unit names to be correlated to common MLRA phase criteria;
(vi) Contains a project name beginning with the prefix "SDJR – MLRA XXX - <project name>"; and
(vii) Assists staff in identifying additional MLRA field projects.

(2) **MLRA field projects**

MLRA field projects collect additional data necessary to re-correlate map units; document and populate soil properties, qualities, and interpretations; and update the spatial data to bring all soil survey information on a specific map unit or landform to a common and current standard. A "map unit" approach is effective when the update need is to collect data to fill voids in the data mapunit or to determine map unit composition. A "landform" approach is effective in areas where current mapping concepts or soil survey maps are inconsistent. The result is a seamless coverage of attribute and spatial data across political boundaries within the MLRA.

MLRA field projects involve the field collection of data or spatial revision that is beyond the scope of MLRA assessment and correlation, as described in Section 610.3(C)(1). MLRA field projects are intended to address most, if not all, of the prioritized update needs identified during the inventory and assessment. Reportable acres are 100 percent of the total project map unit acres.

An MLRA field project requires, and is focused on, the results of an inventory and assessment. It identifies the project concern and collects the necessary documentation to address the agency resource concerns. It focuses on a single map unit concept or landform or on multiple map unit concepts and a catena or landform. Timeframes range from weeks to as much as 2 years, depending on the project size and extent.

Extensive update needs are to be addressed on a map unit or landform basis. Key update issues must be identified in the inventory and assessment. The work is then prioritized and ranked. Proposed project plans are developed and included in the long-range plan report. These projects are addressed within the confines of an approved MLRA project and contained within its timelines. Assistance from National Cooperative Soil Survey partners may be necessary or desired for extensive updates. Extensive updates must be reviewed and prioritized by the management team and board of advisors based on the overall needs of the entire MLRA soil survey area. Updated soil survey information is supported by the documentation requirements as given in Part 627, Section 627.08 of this handbook. Approval to conduct any extensive revision must be obtained from the Director of the Soil Science Division (refer to General Manual, Title 430, Part 402, Subpart A, Section 402.5(C)). The project evaluation is submitted as supporting documentation.

(3) **Special investigations and/or monitoring**

Special investigations or monitoring programs are designed to answer specific questions about a particular soil, a catena of soils across the landscape, or regional questions regarding geology, climate, or plant communities. They are undertaken in order to clarify or augment existing soil survey or ecological site information used in update projects. These studies may address hydric soils, saturated soil layers, saturated hydraulic conductivity, chemistry or mineralogy, climate, dynamic soil properties, and other site-specific soil conditions.

Consideration should be given to involving NCSS partners, adjoining soil survey offices, and staff of the National Soil Survey Center (NSSC) and Kellogg Soil Survey Laboratory (KSSL). Such involvement should be designed to reduce the local workload, shorten the time required to complete, or bring expertise to support the project.

Special investigations are a milestone activity within a MLRA field project. An investigation plan is developed by the soil survey leader in consultation with the regional office, NSSC liaison, and partner agencies. Investigation plans are written in the Project Text table (see Section 610.4(C)). Progress and reportable acres are managed in the associated MLRA field project.

Most special investigations should focus upon soils or conditions occurring extensively within the MLRA, so that findings can be applied to similar adjacent soils and ecological sites. Those for soils with limited extent should address issues critical to interpretation or management of these areas.

The milestone "Scheduled Completion Date" for some special investigations and monitoring activities may extend beyond the "Scheduled Completion Date" for the associated MLRA field project. In these cases, the MLRA field project can still be completed and acres reported if all other milestone activities are accomplished. Once the special investigation or monitoring activity is complete, the information gained can be used to refine the map unit data. The project acres, however, are not reported a second time.

(4) **Supplemental mapping**

Supplemental mapping provides a more detailed order of soil survey (order 1 or 2), including the soil map and attribute data, and requires more intensive onsite investigations.

(i) *Mapping that provides order 1 detail within a higher order soil survey*.—This produces a separate soil map for specific planning needs of limited extent. It is maintained as improved documentation and attribute data but is not considered a change to the official soil survey information (see General Manual, Title 430, Subpart A, Section 402.5(F)). This method of supplemental mapping is conducted, and reported, as a Technical Soil Service activity for a specific customer and managed as a site-specific investigation (see Part 629 of the Technical Soil Services Handbook for more information). Results can be referenced in the long-range plan and captured as pedon information in the NASIS database to serve as additional documentation to support future update projects. Progress is reported through the NASIS Technical Soil Service table.

(ii) *Mapping that provides order 2 detail within a higher order survey*.— This is managed within the confines of an approved MLRA field project to address the prioritized update need. For example, an area within the MLRA previously mapped at order 3 detail could be mapped to order 2 detail utilizing mapping concepts from surrounding areas and field visits to ground truth decisions. Supplemental mapping is often performed at the request of partners and land management agencies requiring more detailed information to address management needs. The resulting information is official soil survey data and is delivered to the Web Soil Survey. Progress and reportable acres are managed in the associated MLRA field project.

610.4 Project Plan

A. Definition. The project plan details work activities necessary to address deficiencies and improve soil survey and ecological site information on an MLRA-wide basis. All projects are managed in the NASIS database. Projects are developed from the information gathered during the inventory and assessment. The project milestones and goals are used to manage project completion with available resources in a timely manner.

B. Purpose. The project identifies specific soil map units, geographic areas, landforms, soil catena, or soil properties to be investigated for improving the official soil survey information. It manages the timeframe and coordinates strategies to be employed, resources required, investigations needed, and quality control and quality assurance activities. Project plans may take on various forms depending on the update strategy (see Section 610.3). The project objective is the publication of seamless soil survey information that is accurate, complete, and consistent to meet user needs across the MLRA. The updated information is correlated into soil survey legends and published to the Web Soil Survey via the Soil Data Mart.

C. Development.

(1) Project plans are developed for the approved and prioritized update needs identified in the long-range plan. The Project object is populated using the Project Plan Checklist (see Part 610, Subpart B, Exhibits, Section 610.14) and the process steps found in Chapter 14 of the NASIS User Guide (available on the NASIS webpage). The Project Plan is a NASIS report extracting data entered in the Project object and requires:

(i) A project description containing an initial summary paragraph followed by project details, including objective, procedures, project extent, timeframe, benefits, outcome, deliverables, and travel budget;

(ii) Map units that will be updated;

(iii) Staff, including all field, regional, State, and national personnel who will provide time and resources;

(iv) A project mapping goal based on the sum of the project map unit acres;

(v) Concerns that address agency resource concerns (see Part 610, Subpart B, Exhibits, Section 610.10); and

(vi) Project milestones necessary to manage a project.

(2) Soil survey investigations may be needed as part of the MLRA field project plan. The investigation plan is developed by the soil survey leader in consultation with the regional office, NSSC liaison, and/or partner agencies. Investigation plans are included in the Project object:

(i) The NSSC liaison is added as a project staff member.

(ii) The investigation plan is written in the Project Text table:

- The Kind column is populated as "project plan."
- The Category column is populated as "KSSL."
- The Text column stores the investigation plan. (See Part 631 of this handbook for more information on soil survey investigations.)

(iii) The milestone "KSSL Investigation Plan" is included in the Project Milestone table. "Scheduled Start Date" and "Scheduled Completion Date" are populated to assist staff in scheduling.

D. Managing Spatial Data. Spatial adjustments (e.g., map unit polygon line adjustments, adjustments to delineations so they coincide better with landforms, map unit symbol changes, spot

symbol changes) can be made during the normal course of work for a project. Spatial updates that contribute to updating the soil survey on a MLRA basis are handled within the confines of MLRA field projects. The spatial update needs are identified in the MLRA inventory and assessment, prioritized and ranked, developed into proposed project plans along with attribute update needs, included in the long-range plan, and addressed within the confines of approved projects and their timelines. Adjustments to lines in areas beyond the boundaries of project map units are not considered. Analysis of map unit delineations is made at publication scale. Digital line editing will follow digital soil mapping standards as addressed in Part 647 of this handbook.

E. Approval Process. The SSO submits proposed project plans to the regional office for preliminary review. Next, they go to the management team for review, comment, and concurrence. The soil survey regional director approves project plans based on management team recommendations and informs the SSO to mark accepted plans as approved in NASIS. The SSO then begins conducting the approved projects.

610.5 Prioritizing and Ranking

A. Definition. Future projects (update needs), including those identified during the SDJR Initiative, are prioritized and ranked in order to help balance local needs with those of the Nation, State(s), NCSS partners, and agency. Input from technical team members is used in determining local priorities. The local issues are merged with the priorities of the Nation, State(s), NCSS partners, and agency that were identified during work planning conferences.

B. Purpose. The purpose of prioritizing and ranking is to efficiently utilize SSO staff and permit timely reporting of progress. Agency resource concerns, project cost and benefit, ease or difficulty of project effort, acres impacted, staff capabilities, and equitable assistance to users are among the various factors considered in prioritizing projects. Prioritizing and ranking focuses agency resources on highest priority update needs.

C. Prioritizing and ranking considerations. Priority status for update needs is evaluated annually. The scientific merit, external merit, internal merit, financial/partnership inputs, and efficiency are used in the ranking process. Part 610, Subpart B, Exhibits, Section 610.15 (Example of a Project Evaluation Ranking Procedure) can be used to create a soil survey office area ranking and prioritizing formula. A ranking procedure that evaluates the need and importance of individual projects, especially projects that require substantial resources, aids in prioritization of staff and resources. Soil survey offices should periodically review their ranking procedures to ensure that they are addressing important issues and are consistent across the soil survey office area. Ranking criteria are created to defend ranking decisions. Each soil survey office will have unique issues to consider when developing ranking criteria. Items to consider when ranking projects include:

- Status of initial soil surveys and the specific map units requiring re-correlation
- Age of the survey and soil series and issues with the series concept or classification
- Agency resource concerns for addressing Farm Bill and technical or financial assistance (see Part 610, Subpart B, Exhibits, Section 610.10)
- Program and project needs of cooperating agencies
- Requests by local constituents and frequency of complaints or appeals
- Needs of Federal partners regarding Federal lands
- Information that aids in land use planning and decisions, such as tax evaluation consistency
- Rapid land use changes in areas where critical soil problems are expected

- Cost share contributions of funds or staffing
- Other factors of specific local importance
- Survey boundary join status
- Consistency in map unit kind (phases, taxadjuncts, miscellaneous units)
- Consistency of the soil property data
- Interpretive issues
- Number of acres affected
- Spatial line placement and conflicts with the landscape model
- Amount of KSSL lab data
- Benchmark status of the series

D. Process. After the technical team and soil survey office have prioritized and ranked all future projects, the soil survey office leader populates the priority in the "user project identification" column. The SSO then proceeds with developing the long-range plan.

610.6 Long-Range Plan

A. Definition. A long-range plan presents future update activities based upon a continuation of current trends and needs. In an MLRA soil survey update, the long-range plan report is used to document the status of current soil survey and ecological site projects and identify emerging information needs.

B. Purpose. The long-range plan report is a succinct document presenting the prioritized projects from the NASIS Project object. It is designed to maintain effective and efficient soil survey area resource workload and is available to the management team and board of advisors using the Soil Science Division Management Reports webpage. The long-range plan provides the framework for the MLRA update process and SSO operations. It assists in the logical creation of shorter term MLRA field projects and ecological site projects with specific objectives, goals, strategies, and milestones.

C. Development. The SSO staff, with input from the technical team, uses the results of the inventory and assessment to populate the NASIS Project object with information necessary to prepare a long-range plan report. The report is used to assist stakeholders in understanding the value and condition of the soil survey and ecological site information. It presents the work necessary to improve existing soil survey and ecological site information and maps. The NASIS national report "PROJECT - Soil Survey Office Long Range Plan" extracts specific project information from survey office projects. Major data fields used in building the long-range plan report are:

(1) Project table

(iv) User Project Identification column.—This is populated with the proposed SSO and technical team priority. The priority (see Section 610.5(d)) is populated based on region guidance, such as the four-digit fiscal year and the priority number (e.g., 2018-1).

(v) Project name.—This is populated with the type of project, the MLRA, and the project name (e.g., MLRA 133B – Cahaba fine sandy loam, 1 to 3 percent slopes). Specific population guidance is found in Chapter 14 of the NASIS User Guide.

(vi) Project Description column.—This includes an initial summary paragraph, limited to 1000 characters, that provides managers with an overview of the project. Additional project information is populated after the summary paragraph. Part 610, Subpart B,

Exhibits, Section 610.14 provides guidance for preparing the project description. Section 610.16 offers examples of the project summary.

(vii) Project Approved? box.—This is left unchecked unless the project has received prior approval from the management team.

(viii) MLRA Soil Survey Office Area.—This is populated with the MLRA SSO area responsible for the project.

(2) Project Mapunit table.—This is populated with the map units associated with the project.

(3) Project Mapping Goal table.—This can be populated with the proposed year in which the project will begin but it is not required. If populated, the information will appear on the Long Range Plan report.

(4) Project Concern Need table.—The Project Concern Type column is populated with the agency resource concern that the project is designed to address (see Part 610, Subpart B, Exhibits, Section 610.10).

(5) Project Milestone table.—The Milestone Type Name column is populated with the "Future Project" milestone and the proposed "Scheduled Start Date" date.

(6) Project Land Category Breakdown table.—"Land Category Acres" is populated with the sum of map unit acres associated by land category for the project.

D. Publication. The NASIS long-range plan report is accessed as a NASIS report or from the Soil Science Division Management Reports webpage. The long-range plan is used by national managers, management teams, and technical teams to review the prioritized update needs (refer to Part 608, Section 608.05(d) of this handbook).

E. Approval of project priorities. The SSO notifies the soil survey regional director that the project plans have been populated and available for review in the long-range plan report. The soil survey regional director distributes the report to the management teams for their review, comments, recommendations, and concurrence. The comments from the management team are returned to the soil survey regional director. After review, the soil survey regional director notifies the SSO to finish developing the approved project plans.

This process is repeated when update needs change or when work is scheduled for a different work period. The scheduled start date and scheduled completion date are updated to reflect SSR approval. The long-range plan is a dynamic document that is reviewed annually by the SSO and maintained as work progresses or concludes, needs emerge, agency priorities shift, or special initiatives are undertaken that impact workload planning. The technical team and management team remain involved in the development and adjustment of the long-range plan.

610.7 Annual Plan of Operation (APO)

A. Definition. Annual plans of operation (aka business plans) are developed to guide and provide specific focus to staff as projects are being implemented in accordance with the long-range plan. An APO is developed by the SSO each fiscal year and designed to identify staff, projects, goals, milestones, objectives, timelines, and responsibilities to guide the staff in planning day-to-day operations to complete the targeted work. See Part 608 of this handbook for more information.

B. Purpose. APOs are developed, managed, and implemented by SSO staff. The APO incorporates the variety of MLRA project plans being managed during the course of the fiscal year. The list of needs and priorities may change with time (according to Farm Bill priorities, cost share opportunities, etc.), and flexibility should be maintained for possible adjustments within this process.

(1) The APO should account for all projects and staff activities, including field mapping and investigations, database maintenance, formal and informal training, technical soil services, technical and management team meetings, staff meetings, and personnel management (leave) and supervision.
(2) The APO is maintained and adjusted for the gains or losses in staffing at the SSO.
(3) NASIS reports are available to assist in the development of the APO.

610.8 Certification of Soils Data

A. Definition. Data certification is a three-step process for ensuring that project attribute and spatial information are accurate, complete, and meet NCSS standards. The soil survey office leader begins the certification process with a quality control review (see Part 609, Subpart A, Section 609.4 of this handbook and Exhibit A, National Instruction 430-305) of new or edited attribute and spatial data. The second certification step is a project quality assurance review by the SSR (Part 609, Subpart A, Section 609.5) where the project information is reviewed and ultimately correlated into the appropriate legends. Quality control and quality assurance reviews are described in Part 609 of this handbook. The final certification step is the state office review of the attribute and spatial information and the SSURGO (Part 647, Section 647.01(B)(6) of this handbook) and legend certification (Part 609, Subpart A, Section 609.1) by the state soil scientist.

B. Purpose. The data certification process ensures that all significant changes to any previously certified database are reviewed, documented, and recorded. By exporting the data (attribute and spatial), the State is certifying that the information posted to the Soil Data Warehouse has passed SSO quality control and SSR quality assurance inspections, meets National Cooperative Soil Survey standards, and is suitable for use by the general public. Progressive soil correlation, quality control, and quality assurance are essential and integral tools in data certification. These processes are used throughout the progression of a soil survey update project.

C. Data Documentation. The certification of attribute data is documented in NASIS. This documentation includes quality control and quality assurance reviews of changes made to the previously certified survey. Changes to an attribute dataset and what was actually changed are documented in export metadata. Procedures for certifying and documenting changes to a spatial dataset are discussed in Part 647 of this handbook. The certification level is assigned to the data mapunit, legend, and export for the particular soil survey area. It indicates the degree of confidence with which the new information may be used. As new records are created, the previous records are retained in order to maintain a certification history. The following NASIS tables are used for recording certification:

(1) *Data Mapunit Certification History table*.—This records information about the review and certification of data in the Data Mapunit object. The completion of quality control reviews is recorded by the MLRA soil survey leader. The completion of quality assurance reviews is recorded by the SSR staff. A level of certification is assigned to the data mapunit. This level indicates whether or not the data mapunit should be used and the degree of confidence with which it may be used. This certification relates to the whole data mapunit, including all of its components, horizons, etc.
(2) *Legend Certification History table*.—This records information about the review and certification of data in the Legend object. The SSR certifies completion of quality assurance reviews, and a level of certification is assigned to the legend. This level indicates whether or not the legend should be used and the degree of confidence with which it may be used. The state soil scientist certifies legends by populating the Legend

Export Certification History table identifying the modification to the legend by the project.

(3) *Legend Export Certification History table*.—This records information about the export of all data associated with a legend, including map units, soil property data, and interpretations. A level of certification is assigned by the state soil scientist to the export package for a particular soil survey area. Information on the reason for changes to a dataset and what was actually changed are documented in narrative text notes (export metadata). The export metadata explains to customers the changes made in the survey area.

610.9 Publication of Soils Data

Following certification of attribute and spatial data, the final step is the export of the soil survey legends to the staging server by the state soil scientist and the export of the soil survey spatial databases by the regional office to the staging server. The state soil scientist verifies the spatial and attribute databases on the staging server. After verification, the databases are then committed to the Soil Data Warehouse. The version with the most recent time stamped is forwarded to the Soil Data Mart. The databases are committed to the Soil Data Warehouse as frequently as needed to meet NRCS or cooperator needs. The annual publication to the Web Soil Survey refresh (see Part 644 of this handbook) occurs in the first week of October.