

**Forest Service Handbook  
National Headquarters - Washington Office  
Washington, DC**

**Forest Service Handbook 5609.11 – Boundary Management Handbook  
Chapter 50 – Land Surveyor Reviews for Land Adjustments**

**Amendment:** 5609.11-2020-1

**Effective date:** August 25, 2020

**Duration:** This amendment is effective until superseded or removed.

**Superseded Directive:**

**Approved by:** Tina Terrell, Associate Deputy Chief, NFS

**Date approved:** August 17, 2020

**Responsible Staff:**

**Explanation of changes:** Following is an explanation of the changes throughout the directive by section.

**50** - Establishes new chapter and sets forth codes, captions, and direction for Land Surveyors Reviews for Land Adjustments. Direction previously found in FSM 7150 has been removed and placed in this Handbook.

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## **50.2 – Objective**

To support Forest Service land adjustment activities, the boundary management program is responsible for ensuring that land, or interests in land, being acquired or conveyed by the United States of America is without encroachments or possible title claims, has a legal description which is free of ambiguities, has defensible boundaries, and has a verified acreage.

## **50.3 – Policy**

A Forest Service State-licensed land surveyor shall review each parcel of land to be acquired or exchanged as part of a land adjustment activity, including those lands qualifying under the Small Tracts Act (36 CFR 254.30). The land surveyor's review and report shall include the following:

1. An assessment of title documents to include, at a minimum, copies of the most recent deeds for land parcels under consideration. In certain instances it may be necessary to include a more comprehensive analysis of title records.
2. Listing and analysis of survey records for parcels of land under consideration.
3. An assessment, inventory, and description of all apparent encroachments and boundary conflicts. This should include a field inspection by the land surveyor or Forest Service realty specialist responsible for preparing a Certificate of Inspection so that the reviewer is fully informed as to the location of the boundaries of the parcel including property lines and property corners of the land parcel.
4. Completion of the appropriate Land Description Verification for Non-Federal Land (form FS-5400-40), or for Federal Land (form FS-5400-41), with acreage determination for compensation as recommended by a Forest Service State-licensed land surveyor.
5. An assessment of access and easements for powerlines, pipelines, ditches, or other utilities or encumbrances on the land that may or may not be of record.
6. An assessment of known survey plats, maps, sketches, or Geographic Information System (GIS) images of the subject land parcel.
7. Recommendations for corrective actions, including further title investigation, inspection, and/or a land survey.

## **50.6 – Land Surveyor's Review and Report**

The purpose of the land surveyor's review is to reveal the existence of boundary and/or title defects that may affect the land and resource management of the subject parcel and provide advice on resolving any such defects. Only a Forest Service State-licensed land surveyor can complete a land surveyor's review. The land surveyor is tasked with evaluating the sufficiency of the parcel's land description and the integrity of its boundaries, ascertaining the most accurate acreage for use in just compensation, and making recommendation for additional boundary survey work or curative title actions. The review is a risk analysis product that allows line

officers to make an informed decision on acquisition of lands. Ideally, the lands are without encroachments or title claims, and free of patent and latent defects.

Boundary and title conflicts identified in the land surveyor's review are typically easier and less costly to resolve under State or local laws and regulations, before Federal land adjustment activities occur. The land surveyor's review process shall be completed and included in the title docket folder before requesting a preliminary title opinion. The goal is an open exchange of land tenure information among boundary experts, title experts, land adjustment staff, land managers, and the Office of the General Counsel.

#### **50.61 – Land Surveyor Report – Review Process and Content**

The Land Surveyor's review package is composed of the following documents, in order:

1. The appropriate Land Description Verification for Non-Federal Lands (form FS-5400-40) and for Federal Lands (FS-5400-41) based on the type of adjustment.
2. A land description dependent on accepted title and survey records.
3. A narrative description of the boundary and title evidence reviewed, along with the determination of that review, including any proposed curative action.
4. Recommended actions for additional survey work, which should discuss the risks associated with that work not being completed prior to acquisition.
5. A sketch map or survey plat, which delineates the parcel and any issues regarding occupation, possible encroachments, encumbrances, and points of access.
6. Attachments of any documents demonstrating boundary or title defects that will assist the realty specialist, appraiser, land status specialist, or title specialist with completing their work.

The land surveyor's review should contain an index of documents contained in the report and must be filed in the permanent title file retained by the land status group.

#### **50.62 – Land Description Verification Form**

The Land Description Verification forms for Federal and non-Federal land (FS-5400-40, FS-5400-41) must be accompanied by a review of the following categories of information, with a narrative report of findings and a map or plat.

1. The "Legal Description" box should reference the public record book and page of the vesting deed if the record description is acceptable for use. A recommended new land description, if needed, will be cited as an attachment.
2. The "Area" box should contain the most reliable or best available acreage figure, with the source referenced in the appropriate box. Specific sources such as Government Land

Office (GLO) plats, recorded plats of survey, Forest Service or other Federal agency unrecorded plats, or county tax office records should be specifically cited.

3. The “Record Documents” box should reference all documents reviewed.
4. The “Comments” box should state the surveyor’s findings and recommendations.
5. The form should be signed by the reviewing Forest Service State-licensed land surveyor as a Forest Service employee. They are not required to certify or stamp the Land Description Verification form as a State-licensed land surveyor. Certification and stamping of the land description is voluntary; however, it may be needed for compliance with State registration laws for land surveyors.
6. Prepare new land descriptions, as necessary, using the guidelines in chapter 10 of this Handbook.

#### **50.63 – Chain of Title Documents**

1. As appropriate, review Bureau of Land Management (BLM) Master Title Plat and Historical Indexes.
2. Review the Forest Service Land Status Record System.
3. Review all documents cited in the vesting land description for sufficiency in quantifying the parcel of land.
4. Review all adjoiner deeds and land descriptions to determine if common boundaries exist without overlaps and/or gaps.
5. Review any outstanding grants or exceptions in the chain of title to determine proper changes have been made to the land description.
6. Review schedules A and B in the preliminary title commitment, report, or policy, and all documents referenced therein, for effects to the land description and the location of encumbrances or exceptions in relation to the subject parcel.
7. Consider if the title policy exceptions (such as records of survey) present any concerns.
8. Determine if there are extraneous exceptions in the title policy (for instance, not applicable to the subject parcel).
9. Consider the effect of any unrecorded documents or undocumented encumbrances, if any are found, on the land.
10. Review tax assessor’s maps.
11. Note the existence of water rights, water facilities, and their respective locations.

12. Note any appurtenant interests.
13. Note any unacceptable terms or conditions in appurtenant easements or covenants, and recommend curing prior to vesting title.

#### **50.64 – Chain of Survey**

1. Search and review BLM plats and notes, and State and county records, for all survey or mapping information related to the subject parcel.
2. Search and review State and local highway, railroad, utility, and other Federal/State agency surveys.
3. Examine the effect of every subsequent survey since the GLO plats and notes, or other original surveys, for creation of boundary defects such as gaps or overlaps.
4. Review the procedures within surveys of record to ensure proper methodology was used to locate the parcel on the ground in the past.
5. Evaluate if original Public Land Survey System (PLSS) or other original corner evidence has been properly utilized in prior surveys, if possible.
6. Determine if the land description in the vesting deed is in conformance with the chain of surveys.
7. Determine if the subject parcel has a land description based on a current and correct boundary survey.
8. Check with local surveyors for knowledge of surveys conducted prior to the State recording act or any unrecorded surveys.

#### **50.65 – Land Descriptions**

Consider the following when reviewing and preparing land descriptions.

1. All land descriptions must meet State requirements and be written or accepted by a Forest Service State-licensed land surveyor. Based upon review of applicable land title and survey documents, the Forest Service State-licensed land surveyor will determine if the proposed vesting land description is acceptable or requires correction. Land descriptions that contain problems that can be cured without performance of a land survey will be addressed in the Land Description Verification form.
2. If minor inconsistencies of deed construction or interpretation exist which can be cured by performing a boundary survey, they must be documented by the Forest Service State-licensed land surveyor on the Land Description Verification form.
3. A determination by the Forest Service State-licensed land surveyor that serious land title issues exist that may require a corrective deed action must be addressed on the Land

Description Verification form, with recommended corrective action outlined on the form or attached Surveyor's Report.

4. Collect and review all adjoining land descriptions for conflicts.
5. Determine if the land description closes within acceptable tolerances for the time it was written. (see EM-7150-3, Land Surveying Guide, Positional Tolerances, p. 140).
6. Determine if the land description contains boundaries that may have changed (such as water boundaries, boundary line adjustments, and out grants).
7. Assess if the land description includes all parcels intended for land title adjustment.
8. Assess if the land description conflicts with any exclusions in the title policy.
9. A land description, when appropriate, should have calls to the bounds of adjoining ownerships. Calls for adjoining are not necessary when aliquot descriptions of PLSS are used.
10. When writing a new land description, include a citation to the grantor's source of title and other pertinent chain of title documents, as recommended in section 4.4 of the Department of Justice publication, "Regulations of the Attorney General Governing the Review and Approval of Title for Federal Land Acquisitions 2016".
11. The land description approved by a Forest Service land surveyor must be in the final title policy and all conveyance documents.

#### **50.66 – Access and Easements Affecting the Subject Parcel**

1. Determine the location of both legal and physical access, and if they differ.
2. Determine if there are trail or water access location issues.
3. Assist in determining if roads described or excepted in the land description, or cited in the title policy, are an easement interest or fee ownership.
4. Determine if any public or third-party uses of roads and trails on or to the parcel exist.
5. Determine if there are reversionary clauses on access roads.
6. Note concerns regarding access easement assignability to the public, and for limitations on public access.
7. Recommend acceptance or refusal of any appurtenant access routes.
8. During field inspection, take note of any hazards to public safety or imminent resource damage such as failing bridges or washouts. Note the adequacy of the access route for land management, such as easement width and alignment.

9. Examine access to the parcel from the nearest public road and determine if the appurtenant easement(s) conveys rights for the entire route or only a portion.
10. Note the needs for additional access to the parcel, if any.
11. Follow the same procedure for all outstanding easements encumbering the property, whether of record or not.

#### **50.67 – Boundary Survey Considerations**

1. Document all issues and recommend solutions for known problems, including: poor land description, title conflicts, occupational issues, and acreage errors.
2. Recommend boundary survey for any parcels where improvements are contemplated, new exterior boundaries will be created, encroachments are suspected, or other boundary and title defects are found. See section 4.4 of the Department of Justice publication, “Regulations of the Attorney General Governing the Review and Approval of Title for Federal Land Acquisitions 2016”.
3. Quantify the risk of not completing the recommended boundary survey.

#### **50.67a – Acreage Determination**

There are four categories of acreage determination on the Land Description Verification (forms FS-5400-40 and FS-5400-41). Great care should be exercised in the proper determination of acreage, as this will be used in the appraisal process for the determination of just compensation to the land owner. The following categories are listed from most to least reliable:

1. Actual. A factual determination from available recent land survey records or other new measurement data. Data may come from county survey records of the subject parcel, a compilation of records on adjoining parcels, or new measurement data which creates a mathematical figure for the parcel under consideration. The acreage calculation may be derived from actual field measurement, or from acceptable record documents, and will be reported to the least significant figure of the least reliable information used in the analysis. The intent of this category on the Land Description Verification form is to use the best available measurement data to determine actual acreage.
2. Official. Acreage shown on Federal authority cadastral survey plats by the GLO/BLM. These acreages will typically be the “nominal” acreage for a particular aliquot part subdivision or section of land. Patent-based aliquot parts of the original survey do not convey exact acreage as described or listed in the patent. Instead, they convey the actual acreage defined by correctly located actual corner locations, or subdivided from such corners as they are found, recovered, or established on the ground by a cadastral survey. This generally will not be as reliable as acreage calculated from more recent or more complete measurement data. Also, be aware that dependent resurveys by the BLM generally do not show acreage changes on public domain lands unless they vary by more than five percent from previous calculations of acreage, nor do they show any changes to



patented lands. Additionally, in the case of riparian lands, the official acreage on the GLO/BLM survey plat is the upland land area lying between the record meander line of the water body and the section, aliquot part, or subdivision-of-section lines. The appraiser may find that the riparian lands are of greater consideration in just compensation determinations than the upland areas behind the riparian acreages. Whenever riparian uplands are involved in the appraisal process, the appraiser shall consult the Forest Service land surveyor for determining the actual acreage to be appraised.

3. Tax Assessor's. This acreage is often determined using basic methods. The assessor's acreage may reflect information in a deed or other records, including surveys, or represent some calculation made in a tax assessor's office using unsophisticated methodology, like dot counting or GIS-derived acreage from digitized tax records. Its primary viability is for prior taxing purposes.
4. Record. This is an acreage that can be found in the official records of a county somewhere other than those sources already listed. It is the least reliable acreage because it cannot be substantiated using methods described within one of the above categories. At best, it should be considered as only an estimate, especially for metes and bounds parcels.

To assist the appraiser in all acreage determinations, regardless of category, the land surveyor should note the portions of a parcel that contain greatly dissimilar land types, if possible. For example: "Official Acres: 160.00, with 135 acres timberland and 25 acres rocky alpine slopes," or "Record Acreage: 40.00, with 8 acres in lake."

#### **50.67b – Physical Examination**

A physical field examination of the subject parcel should denote the following, if applicable:

1. Probable encroachments that may result based on the current property description and/or survey.
2. Occupations by structures, such as fence lines, apparent rights-of-way, or other uses.
3. Acceptability of existing monumentation to mark property corner locations.
4. Condition of boundary line marking and posting, if any.
5. As-built locations of easements and other encumbrances.
6. Suspected or verified trespasses or unauthorized uses, such as timber harvest, access, and so forth.

#### **50.68 – Plat, Map, or Sketch of Subject Tract**

If a parcel survey is required for a land adjustment activity, ensure the survey adheres to Forest Service standards and corners are geo-referenced to the National Spatial Reference System for inclusion in the Land Status Record System.

The land surveyor's review should include spatial relationship information for the following items:

1. Existing monuments, and possible conflicts with the legal boundary location, or lines of occupation.
2. Points of access, easements, rights of way, encumbrances, occupations, possible encroachments or trespasses, and any other found boundary or title defects.
3. In PLSS States, a survey plat, map, or sketch of the subject tract is not required for simple acquisitions with no boundary or title elements of concern.

The land surveyor's review package must include a peer review by the Regional Land Surveyor or other Forest Service State-licensed land surveyor. The land surveyor's review shall be prepared for land exchanges, land purchases, and land donations. However, it is not a guarantee of condition and carries no express warranty on the matters under review. It is a tool to fully inform management of risks associated with the parcel under consideration.

#### **50.69 – Additional Guidance References**

Additional guidance for the land surveyor's review may be acquired from the following policies and standards:

1. American Land Title Association/National Society of Professional Surveyors, "2016 Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys" (<http://www.nsps.us.com/?page=ALTAACSMStandards>).
2. DOI Department Document 52IAM2-H, "Standards for Indian Trust Lands Boundary Evidence Handbook" (05/08/2012) ([https://www.bia.gov/sites/bia\\_prod.opengov.ibmcloud.com/files/assets/public/raca/handbook/pdf/idc-018418.pdf](https://www.bia.gov/sites/bia_prod.opengov.ibmcloud.com/files/assets/public/raca/handbook/pdf/idc-018418.pdf)).
3. Department of Justice, "Regulations of the Attorney General Governing the Review and Approval of Title for Federal Land Acquisitions 2016" (<https://www.justice.gov/enrd/page/file/922431/download>).
4. USDA Office of the General Counsel, "Land Title Issues for Land Transactions, Title Evidence" (see the Washington Office Regional Surveyor's SharePoint site).

#### **50.69a – Process for Land Description Verification Review**

The Forest Service State-licensed land surveyor should refer to the following documents as part of their review:

Land Description Verification (LDV) Background Material

These documents/items may be supplied by a land law examiner or realty specialist or collected during the Land Surveyor review. Not all listed items will apply in each case.

Title Review:

1. Preliminary title report that includes, at a minimum, all referenced title and survey documents for the subject lands.
2. Adjoiners' legal land descriptions.
3. Unrecorded deeds (color of title).

Land Status:

1. Forest Service land status, Automated Lands Program (ALP), Land Status Records System (LSRS).
2. BLM master title plat and historical index.
3. Local zoning and planning departments.
4. State or county status maps.

Rights of Way:

1. Highway or county road right-of-way plats and or deeds.
2. Forest Service grants, acquisitions, or cost-share instruments.
3. SUP (Special Use Permit).

Land Surveys:

1. Federal surveys of record (GLO/BLM).
2. State and county survey records (Division of Natural Resources or county auditor).
3. County engineers or surveyors office.
4. Private engineering and land survey companies (unrecorded surveys documents prior to the Survey Recording Act of 1973).
5. Forest Service land surveys (unrecorded and recorded).

Maps:

1. USGS quadrangle map.
2. Forest or District maps.
3. Aerial photos (such as Forest Service, Google Earth).
4. County and State website maps.

## **50.69b – Land Surveyor Review**

The Forest Service State-licensed land surveyor should address the following in their review:

Land Description:

1. Does the description mathematically close (within acceptable tolerances?)
2. Does the description follow the chain of title?
3. Does the description match available survey plats?
4. Does the description conflict with anything in the title policy?
5. Does the description conflict with adjacent parcels?
6. Does the description include legal access?
7. Does the description include all lands intended for adjustment?
8. When is the last time the parcel was surveyed?

Title Policy:

1. Does the policy legal description differ from the vesting deed or any other documents?

2. Do the policy exceptions present any concerns?
3. Do the policy exceptions contain extraneous information or things that could be removed?

#### Survey History Review and Field Investigation:

1. Are there copies of the most recent surveys, or surveys cited in the title policy?
2. Is the tract monumented?
3. Does physical access match legal access?
4. Does monumentation conflict with the legal description or adjacent surveys?
5. Does the tract contain a boundary that may have changed since the last survey (such as water boundaries, boundary line agreements)?
6. Is there any apparent gap or overlap with adjoining?
7. Does there appear to be any occupational conflicts?
8. Does the tract lie on the forest exterior boundary?

#### Land Surveyor's Review and Report

The Land Surveyor's review and report should address:

1. Conflicts with occupation, boundary identification, title, local regulations, and access.
2. If the existing legal description is NOT sufficient, prepare and include a new description in accepted format (Specifications for Descriptions of Tracts of Land, BLM, 1979). [https://www.blm.gov/or/gis/geoscience/files/Land\\_Descriptions.pdf](https://www.blm.gov/or/gis/geoscience/files/Land_Descriptions.pdf)
3. Clearly identify the most representative acreage for the parcel.
4. Include a recommendation for the need of an updated boundary survey, if necessary, and include an evaluation of the risks associated with NOT performing this survey.
5. Include a sketch of the parcel if needed to identify encroachments, title conflicts and access issues.

### 51 – Land Surveys for Land Adjustment Activities

A Forest Service State-licensed land surveyor, a qualified State-licensed land surveyor hired by the project proponent, or a BLM cadastral surveyor may perform land surveys for Forest Service land adjustment activities. Depending upon the proposed adjustment activity, the Forest Service enters into formal agreements with the project proponent. If professional land survey services are required, a collection agreement between the Forest Service and proponent may be adequate to define the scope of the land survey and responsibilities of the parties. The feasibility analysis for land exchanges may also document required land survey needs necessary for a land adjustment project to move forward.

The level of survey required is dependent on the proximity of existing National Forest System land boundaries:

1. Interior Parcels. Interior parcels (inholdings) are defined as parcels of land completely surrounded by National Forest System land. Do not survey property lines of interior parcels if the entire inholding is to be acquired unless viable title claims are suspected, a land survey is required to verify the acreage being acquired, or if there will be outstanding rights after acquisition, such as mineral rights, rights-of-way, or other

interests. In PLSS States, an aliquot part legal description of the interior parcel to be acquired is acceptable and recommended when there will be no remaining inholding remnants. In those instances where the legal description of the lands to be acquired are described by a series of courses (bearings, distances, natural and man-made features, and adjoining lands), and the intention is to acquire all of the inholding, deed courses and calls should reference adjoining Forest Service parcels in the legal description to prevent gaps or overlaps in ownership.

2. Exterior Parcels. Exterior, isolated, or separated parcels are defined as not adjoining any existing National Forest System land. A risk analysis will be made by a Forest Service State-licensed land surveyor to determine if the Forest Service should complete land surveys of the exterior parcels and prepare a new land description, survey plat, and a land surveyor's report prior to acquisition by the Forest Service. In PLSS States, aliquot part legal descriptions of the exterior parcel to be acquired are acceptable when there will be no remaining remnants of the parcel, the record acreage to be acquired is determined to be reliable by a Forest Service State-licensed land surveyor, and there are no title, occupancy, or use issues on the parcel.
3. Adjoining Exterior Parcels. Exterior parcels are those that have some boundary lines in common with existing National Forest System lands. Complete new land surveys of property lines not coincident with existing National Forest System lands to verify the location, extent, boundaries, and acreages of these parcels.
4. Access Corridors. Access, right-of-ways, easements, and authorized use corridors shall be surveyed if necessary (see ch. 40).