

**DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT**

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Memorandum

To: Manual File

From: Bob Dahl

Subject: **Fractional Sections and Their Identification with Glossary of Related Terms**

*{NOTE: This is the working opinion of the author only and is not a statement of BLM policy.}*

**Purpose**

- Clarity when a section is fractional by law for subdivision purposes.
- Clear definitions of types of townships, sections and lots.
- Clear definitions of *protracted* and *protraction*.
- Clear and consistent usage of terms describing and identifying townships, sections and lots.
- Clarity in distinguishing between the processes of *subdivision by protraction* and *subdivision by survey* of sections.

**Conclusion**

By law, a fractional section is subdivided using procedures different from those used to subdivide other sections, and clear guidance must be provided to the federal authority surveyor.

Clarity should extend to terminology and be reflected in the next edition of the *Glossaries of BLM Surveying and Mapping Terms*.

**The Problem**

Confusion exists in cases as to whether a section is fractional or not. Three major reasons have contributed to this confusion among surveyors when determining whether or not a section is fractional:

- 1) failure to understand or properly consider the intended audience of the *Manual of Instructions for the Survey of the Public Lands of the United States*, (*Manual*);
- 2) the organization of chapter III of the *Manual*; and
- 3) the meaning by Congress of “fixed” in a statute written in 1805.

### **Historical Perspectives and Intended Audience of the *Manual***

Since the earliest editions of the *Manual*, the intended audience has been the men and women authorized to administer and conduct the surveys of federal interest lands. The methods of administering and conducting the surveys of the public land survey system (PLSS) continually evolve to meet the demands of the public and of national interests.

Almost from the beginnings of the system, however the five groups of specialists comprising the principal intended audience of the *Manual* have remained unchanged. These are: 1) The Special Instructions Writer, 2) The Field Surveyor, 3) The Survey Reviewer, 4) The Draftsperson, and 5) The Approving Official, who collectively perform the five major aspects of an official survey.

Hence, a reader of the *Manual* must understand it to be a compilation of general instructions intended for surveyors performing the five major aspects of federal authority surveys (i.e., official surveys or cadastral surveys). The reader will best be able to correctly interpret the instructions by understanding that any particular instruction may be intended for the special instructions writer, the field surveyor, the reviewer, the draftsperson, the cadastral chief, or some combination thereof.

Special Instructions are written for each survey to specifically address the issues pertaining to that survey. The “Specials” are detailed specifications for each official survey set out by the officer in administrative charge of the work. The draft field notes and sketch plat, called draft field returns, are prepared by the field surveyor. The survey reviewer examines the draft field returns for compliance with the special instructions, the *Manual* and the law. The draftsperson, using the draft field notes and sketch plat, prepares the final plat. The chief cadastral surveyor, for the Director of the Bureau of Land Management, and under the direction of the Secretary of the Interior, approves the field notes, accepts the plat, and submits the plat for filing in the official survey records of the United States.

### **Chapter III of the *Manual***

Many surveyors and others have been confused by the organization of chapter III of the *Manual* which, in each of the 1973, 1947, 1930 and 1919 editions, discusses the rectangular survey system.

The organization of chapter III in the 1973 edition of the *Manual* can be traced back to the 1919 Advance Sheets which, with some changes, were incorporated into the first six chapters of the 1930 edition of the *Manual*. Chapter IX – Plats was issued in 1928 and, with minor changes, became chapter IX of the 1930 edition.

The organization of chapter III is generally:

*Subdivision of Townships into Sections:* Sections 3-17 thru 3-73 and 3-93 thru 3-114 (1973 ed.) are instructions primarily for the special instructions writer. The field surveyor, using the special instructions as guidance, executes the field survey as consistently with the general plan and special instructions as possible. Adjustments to the general plan and special instructions are made based upon the field conditions encountered. The field notes are the written record (the evidence) of the field survey, and document whether a corner has been or can be marked and fixed by monumentation, or fixed by measurement and reference. The survey plat is made from the field notes.

*Subdivision of Section by Protraction:* Sections 3-77 thru 3-84 (1973 ed.) are instructions primarily for the draftsman. The subdivision of sections into lots is performed in the drafting division of the several offices, and not by the field surveyor. The draftsman prepares the plat from the draft field returns, consisting of the field notes and sketch plat, submitted by the field surveyor. The draftsman is **first**, to plat the section in accordance with the field notes, and **second**, to subdivide, by protracted lines, the section as nearly as possible in conformity with the uniform plan, including connecting by straight lines opposite corresponding corners, creating as many aliquot part legal subdivisions as possible, putting the excess or deficiency in measurement against the boundary, and following other lotting principles as stated in the *Manual* and outlined in 43 U.S.C. 752(2)(Clause 2) and 753(Clauses 1&3). In the case of a fractional section, the draftsman may subdivide it into lots as nearly as possible in conformity with the field notes and the procedures outlined for fractional sections in 43 U.S.C. 752(2)(Clause 3) and 753(Clauses 2&4).

*Subdivision of Section by Survey:* Sections 3-85 thru 3-92 (1973 ed.) are instructions primarily for the field surveyor assigned to subdivide a new section or a previously returned section. The subdivision of section by survey is performed during the field work by the field surveyor. The surveyor is guided by special instructions, the official plat(s), if any, the general plan of the rectangular survey system, and the conditions encountered on the ground. The draft field notes and a sketch plat prepared by the field surveyor are submitted to the approving office for review, plat preparation and approval. It is by the field survey and the field note record that a corner position is fixed or not.

### **Fractional Section**

By law, a fractional section is to be subdivided as nearly as possible in conformity with the procedures outlined for fractional sections in 43 U.S.C. 752(2)(Clause 3) and for fractional quarter sections in 43 U.S.C. 753(Clauses 2&4): “but in those portions of the fractional townships, where no such opposite corresponding corners have been or can be fixed, the said boundary lines shall be ascertained, by running from the established corners, due north and south, or east and west lines, as the case may be, to the water-course, Indian boundary line, or other external boundary of such fractional township.”

Act of February 11, 1805; 2 Stat. L. 313, section 2, subsection 2, clause 3; 43 U.S.C. 752(2)(Clause 3).

For the purposes of the statute, a corner is *fixed* by the field surveyor by either setting a monument or by measurement and reference. The corners fixed are reported by the field surveyor in the draft field returns (the field notes and sketch plat). The field notes are approved by the cadastral chief and become official upon the official filing of the plat.

## **Glossary**

The definitions below are intended to be consistent with the next edition of the *Manual* and should be considered for inclusion into the next edition of the *Glossaries of BLM Surveying and Mapping Terms*.

1. Township
  - a. regular township
  - b. irregular township
    - i. elongated
      1. invaded
    - ii. invaded
    - iii. partly surveyed

*township* – **1)** under the rectangular system, the unit of survey; **2)** nominally a quadrangle approximately 6 miles on a side, containing 36 sections.

*regular township* – a township whose boundaries are, or were considered, within the rectangular limits, and with 25 regular sections; 10 irregular sections, against two adjacent boundaries, each containing aliquot parts totaling 480 acres with 4 additional regular lots each containing 40 acres plus or minus the excess or deficiency in measurement; and one irregular section, adjoining the 10 irregular sections, containing aliquot parts totaling 360 acres with 7 additional regular lots, each containing 40 acres plus or minus the excess or deficiency in measurement.

*irregular township* – a township having one or more boundary(s) exceeding, or considered as exceeding, the rectangular limits, or, is not a regular township.

*elongated township* – **1)** an irregular township which exceeds 485 chains in either length or width; **2)** an irregular township with one or more elongated section(s).

*invaded township* – an irregular township invaded by a meanderable body of water or by an approved claim, grant, or reservation at variance with the regular legal subdivisions.

*partly surveyed township* – an irregular township having one or more exterior boundary(s) not completed for reasons other than being invaded by a meanderable body of water or by an approved claim, grant, or reservation at variance with the regular legal subdivisions.

## 2. Section

- a. regular section
  - i. outlying areas protracted as surveyed
  - ii. partially surveyed
- b. irregular section
  - i. elongated
    - 1. invaded
      - a. fractional
  - ii. invaded
    - 1. fractional
  - iii. outlying areas protracted as surveyed
  - iv. partially surveyed

*section* – **1)** under the rectangular system, the unit of subdivision of a township; **2)** nominally a quadrangle approximately one mile on a side, containing 640 acres.

*regular section* – **1)** a section whose boundaries are, or were considered, within the rectangular limits, with no lots, and 16 aliquot part legal subdivisions; **2)** the method of *subdivision by protraction* is in conformity with the uniform plan of connecting by straight lines opposite corresponding corners outlined in 43 U.S.C. 752(2)(Clause 2) and 753(Clauses 1&3); **3)** the method of *subdivision by survey* is identical with the *subdivision by protraction*.

*irregular section* – **1)** a section having one or more boundary(s) exceeding the rectangular limits, or containing one or more lots, or is not a regular section; **2).** the method of *subdivision by protraction* is **first**, in accordance with the field notes, and **second**, - **2a)** in conformity with the uniform plan of connecting by straight lines opposite corresponding corners outlined in 43 U.S.C. 752(2)(Clause 2) and 753(Clauses 1&3); including creating as many aliquot part legal subdivisions as possible, putting the excess or deficiency in measurement against the boundary, and following other lotting principles stated in the *Manual*, and where necessary, the section lines are protracted regularly and completed in theory, and the protracted position of the subdivision of section lines is controlled by the theoretical points so determined, or, **2b)** if a fractional section, as nearly as possible in conformity with the procedures outlined for fractional sections in 43 U.S.C. 752(2)(Clause 3) and 753(Clauses 2&4) may be used; **3)** the method of *subdivision by survey* is - **3a)** in conformity with the uniform plan of connecting by straight lines opposite corresponding corners outlined in 43 U.S.C. §§ 752(2)(Clause 2) and 753(Clauses 1&3); or, **3b)** if a fractional section, as nearly as possible in conformity with the plat and the procedures outlined in 43 U.S.C. §§ 752(2)(Clause 3) and 753(Clauses 2&4).

*elongated section*: - an irregular section which exceeds 85 chains in either length or width.

*invaded section* – **1)** an irregular section invaded by a meanderable body of water or by an approved claim, grant, or reservation at variance with the regular legal subdivisions; **2)** the method of *subdivision by protraction* into lots, is **first**, in accordance with the field notes, and **second**, - **2a)** as nearly as possible in conformity with the uniform plan of connecting by straight lines opposite corresponding corners outlined in 43 U.S.C. 752(2)(Clause 2) and 753(Clauses 1&3), including creating as many aliquot part legal subdivisions as possible, putting the excess or deficiency in measurement against the boundary, and following other lotting principles stated in the *Manual*, and where necessary, the section lines are protracted regularly and completed in theory, and the protracted position of the subdivision of section lines is controlled by the theoretical points so determined, or **2b)** if a fractional section, as nearly as possible in conformity with the procedures outlined in 43 U.S.C. 752(2)(Clause 3) and 753(Clauses 2&4) may be used; only in extreme cases is there a significant difference between the two methods; **3)** the method of *subdivision by survey* is - **3a)** in conformity with the uniform plan of connecting by straight lines opposite corresponding corners outlined in 43 U.S.C. §§ 752(2)(Clause 2) and 753(Clauses 1&3); or, **3b)** if a fractional section, as nearly as possible in conformity with the plat and the procedures outlined in 43 U.S.C. §§ 752(2)(Clause 3) and 753(Clauses 2&4).

*outlying areas protracted as surveyed* – a section having one or more section line boundaries not completed for reasons other than being invaded by a meanderable body of water or by an approved claim, grant, or reservation at variance with the regular legal subdivisions, and having an area protracted.

*outlying areas protracted as surveyed, regular* – an outlying area protracted as a surveyed section whose controlling boundaries were considered within the rectangular limits, and with no lots.

*outlying areas protracted as surveyed, irregular* - an outlying area protracted as a surveyed section whose controlling boundaries were considered as exceeding the rectangular limits, or, containing one or more lots.

*partially surveyed section* – a section having one or more section line boundaries not completed for reasons other than being invaded by a meanderable body of water or by an approved claim, grant, or reservation at variance with the regular legal subdivisions.

*partially surveyed regular section* – a partially surveyed section whose surveyed boundaries are, or were considered, within the rectangular limits, and with no lots.

*partially surveyed irregular section* – a partially surveyed section having one or more surveyed boundary(s) exceeding the rectangular limits, or, containing one or more lots.

*fractional section* – **1)** an invaded section in which *by the field notes* no such opposite corresponding corners have been or can be fixed for at least one subdivision of section line; **2)** the method of *subdivision by protraction* into lots, is **first**, in accordance with the field notes, and **second**, - **2a)** as nearly as possible in conformity with the uniform plan of

connecting by straight lines opposite corresponding corners outlined in 43 U.S.C. 752(2)(Clause 2) and 753(Clauses 1&3), including creating as many aliquot part legal subdivisions as possible, putting the excess or deficiency in measurement against the boundary, and following other lotting principles stated in the *Manual*, and where necessary, the section lines are protracted regularly and completed in theory, and the protracted position of the subdivision of section lines is controlled by the theoretical points so determined, or **2b**) as nearly as possible in conformity with the procedures outlined for fractional sections in 43 U.S.C. §§ 752(2)(Clause 3) and 753(Clauses 2&4) may be used; only in extreme cases is there a significant difference between the two methods; **3**) the method of *subdivision by survey* is as nearly as possible in conformity with the original survey, the plat and the procedures outlined for fractional sections in 43 U.S.C. 752(2)(Clause 3) and 753(Clauses 2&4).

### 3. Lot

- a. regular lot
- b. irregular lot
  - i. fractional

*lot* – **1**) under the rectangular system, the unit of administration of a section; **2**) nominally a quadrangle approximately 20 chains on a side, containing 40 acres; **3**) a legal subdivision of a section; **4**) a legal subdivision of a section without the aliquot part characteristics of an aliquot part legal subdivision; **5**) the subdivision of a lot is by a supplemental plat.

*regular lot* – a lot whose boundaries are formed entirely by township exterior, section, or subdivision of section lines.

*irregular lot* – a lot where one or more boundaries are formed by lines other than township exterior, section, or subdivision of section lines.

*fractional lot (per 1973 edition)* – a lot created when a regular legal subdivision is invaded.

### 4. Protract, protracted, protraction and related terms

*protract* – to draw to a scale; to put off to a later time; to lay down the lines and angles of with scale and protractor.

*protracted corner* – in the rectangular survey system, **1**) a corner position not marked and fixed by field survey as evidenced by the field notes; **2**) a corner position determined in the office by subdivision by protraction.

*protracted line* – in the rectangular survey system, **1**) a boundary line not actually run and marked by field survey as evidenced by the field notes; **2**) a dashed line showing a

boundary of a returned area on an official plat; **3)** a boundary line whose distance is parenthetical, not supplied by the field notes, but supplied in the office by the subdivision by protraction.

*protraction* – **1)** the act or an instance of protracting; the drawing to scale of an area of land; a plan drawn to scale of an area; **2)** in the rectangular survey system, the representation of a boundary or corner not run, marked, or fixed by the field survey as evidenced by the field notes.

*within the rectangular limits* – implicit is: ‘in effect at the time of the survey used to prepare the plat.’

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