

Plats

THE IMPORTANCE OF THE PLAT

9-1. The plat is the drawing which represents the lines surveyed, established, retraced, or resurveyed, showing the direction and length of each line; the relation to the adjoining official surveys; the boundaries, description, and area of each parcel of the land; and, as far as practicable, the topography, culture, and improvements within the limits of the survey. Occasionally the plat may constitute the entire record of the survey.

9-2. Ordinarily an original survey of public lands does not ascertain boundaries; it creates them. The running of lines in the field and the platting of townships, sections, and legal subdivisions are not alone sufficient to constitute a survey. Although a survey may have been physically made, if it is disapproved by the authorized administrative officers, the public lands which were the subject of the survey are still classed as unsurveyed.

The returns of a survey are prepared in the state survey office or service center and transmitted to the Director, Bureau of Land Management, by the state or service center director for consideration as to acceptability. The survey only becomes official when it is accepted on behalf of the Director by the officer to whom he has delegated this responsibility. Any necessary suspension or cancellation of a plat or survey must be made by the same approving authority.

9-3. The legal significance of plat and field notes is set out in *Alaska United Gold Mining Co. v. Cincinnatti-Alaska Mining Co.*, 45 L.D. 330 (1916).

It has been repeatedly held by both State and Federal courts that plats and field notes referred to in patents may be resorted to for the purpose of determining the limits of the area that passed under such

patents. In the case of *Cragin v. Powell* (128 U.S. 691, 696), the Supreme Court said:

"It is a well settled principle that when lands are granted according to an official plat of the survey of such lands, the plat itself, with all its notes, lines, descriptions and landmarks, becomes as much a part of the grant or deed by which they are conveyed, and controls so far as limits are concerned, as if such descriptive features were written out upon the face of the deed or the grant itself."

These legal principles apply to subsequent deeds of transfer related to the official plat.

The public lands are not considered surveyed or identified until approval of the survey and filing of the plat in the administering land office by direction of the Bureau of Land Management. *United States v. Cowlinshaw*, 202 Fed. 317 (1913). No subdivisions are to be "disposed of" until so identified. *United States v. Hurlburt*, 72 F. 2d 427 (1934).

9-4. The subdivisions are based upon and are defined by the monuments and other evidences of the controlling official survey. As long as these evidences are in existence, the record of the survey is an official exhibit and, presumably, correctly represents the actual field conditions. If there are discrepancies, the record must give way to the evidence of the corners in place.

9-5. In the absence of evidence, the field notes and plat are the best means of identification of the survey and they will retain this purpose. In the event of a resurvey they provide the basis for the dependent method and the control for the fixation of the boundaries of alienated lands by the independent method.

PLAT REQUIREMENTS

9-6. Plat requirements have been given in numerous sections of the preceding chapters in

connection with technical field procedure. The following list will serve as a reference:

- Latitude and longitude, section 2-21.
- Retracements that require platting, section 3-32.
- Amended monuments to be platted, section 3-36.
- Direct tie, computed from traverse, to be platted, section 3-71.
- Subdivision of sections to be protracted on plat, section 3-74.
- Lots and some 40-acre subdivisions to be shown, sections 3-77 and 3-78.
- Protractions against segregated areas, sections 3-79 and 3-80.
- Size and shape of lots, section 3-81.
- Numbering of lots, section 3-82.
- Lotting of elongated sections, section 3-83.
- Lots adjoining defective south and east boundaries, section 3-84.
- Subdivision of sections, sections 3-87, 3-88, 3-90, and 3-92.
- Lots adjoining irregular boundaries, sections 3-97 and 3-98.
- Protraction of outlying areas, section 3-100.
- Retracements in connection with extension surveys, section 3-102.
- Completion of partially surveyed sections, sections 3-103 through 3-107.
- Lots resulting from fragmentary surveys, sections 3-111.
- Platting meanders, section 3-118.
- Showing the tie to A.M.C. and outline of artificial bodies of water, section 3-121.
- Platting of islands, section 3-122.
- Summary of items to be shown, section 3-126.
- Witness corner to be shown on plat, section 4-15.
- Adjustment of broken boundaries, sections 5-43 and 5-44.
- Conformed entries and conflicts to be shown on plat, section 6-49 (5) (6); see figure 90.
- Resurvey lottings, no duplication, sections 6-52 through 6-54.
- New lots adjacent to meanders, section 7-15.
- Townsite plats, sections 7-25, 7-28, 7-30, and 7-31.
- Beds of nonnavigable lakes and streams, sections 7-52 through 7-61.
- Plats of accretion, sections 7-66 and 7-67.
- Plats of omitted lands, sections 7-85 and 7-94.
- Showing of swampland on plats, section 7-98 (7).
- Abbreviations on plats, section 8-11.
- Field notes on plat, section 8-21.

SPECIMEN TOWNSHIP PLAT

9-7. The specimen township plat (insert 1) is a revision of the one which accompanied the Manual of 1947. All-mechanical lettering has been used, and an enlarged diagram has been added to show the required data relating to the segregation of mineral surveys. In practice,

where the detail is often more complicated, the segregations may be shown on a separate sheet at an even larger scale.

The green overlay is discontinued. The brown overlay is seldom needed but is shown for contrast where numerous examples are placed in a single township. The hachure has been retained only to show rimrocks or mesas.

9-8. The specimen plat shows the basis of the computation of all areas. The distances noted in parentheses are the regular and fractional portions of lines which constitute the boundaries of the quarter-quarter sections and fractional subdivisions. Parenthetical distances are employed where the field notes do not indicate what was used in the calculation of areas. The same lengths are adopted proportionately in establishing sixteenth-section corners on the section boundaries and for control in the subdivision of sections.

9-9. Most township plats are maps in that they show topographic and other mapping features. Strictly speaking a plat is a base drawing stripped of every detail nonessential to the identification of the subdivisions shown. The base drawing is always in black. It shows the lines of section boundaries, subdivision of sections, and lines of segregation such as mineral or other claim boundaries, meander lines (unless to be shown in blue), together with all lettering referring to title, names, memorandum, certificates, section numbers, lot numbers, areas, and lengths and directions of lines, as well as important improvements, works, or structures where required. The arrangement of data on all base drawings is made as nearly uniform as possible and in harmony with the specimen drawing, subject to modification where irregular lottings are made. Sections 3-69 and 3-71 explain the plan for relating patented irregular tracts to the rectangular system as a basis for their segregation. Conditions vary where the tracts are numerous, particularly where there is a network of patented mineral surveys to be segregated. The important plat feature is the resulting fractional lottings. It is generally unnecessary to show the courses and distances of the boundaries of the mineral surveys or their connections unless they affect the lotting, a mere outline being sufficient. Fre-

quently this permits their complete showing on the base drawing.

Occasionally it is feasible to letter the number and name of each claim on the base drawing. More often this is impracticable, and serial numbers for the purpose of indexing only should be assigned to all segregated locations throughout the township and carried to a marginal table followed by the survey number and name of each location. When this is done only the serial numbers are shown on the face of the drawing. Where a number of mineral surveys are segregated, large scale drawings on additional sheets may be required for each of the sections invaded. An outline of the mineral surveys is shown on the base plat for the sections involved, and a marginal reference is made on the base drawing calling attention to the sheets upon which the segregations in the various sections may be found. In many instances an enlarged diagram on the base plat will obviate the necessity for an additional sheet. Figure 84 (discussed in section 9-74) is an example of a drawing which should be shown as an enlarged diagram on the base plat.

9-10. Transparent color overprints are employed for those plats where topographic features tend to obscure the essential data on the base drawing. Overprints are not required where these features may readily be shown in black on the base drawing.

DRAFTING THE BASE DRAWING

9-11. Township plats are generally drawn on the scale of 1 inch equals 40 chains, on sheets 19 x 24 inches when trimmed. The scale is often enlarged to 1 inch equals 20 chains for showing portions of townships in detail; the scale of 1 inch equals 10 chains or larger is employed where necessary. A bar or graphic scale stating only the unit of measurement is shown on all plats. The size of the sheets is always made 19 x 24 inches, regardless of the scale or area to be shown; this is important on account of the need for uniformity in the dimensions of filing devices. A borderline rectangle $16\frac{1}{2}$ x 20 inches is right for the normal township plat; the size of the rectangle may be varied slightly when necessary. Generally the drawing is placed to

the left of the center of the sheet, thus allowing space for the memorandum and other data in the margin to the right and resulting in a better balanced plat.

9-12. The plat subject should be compiled or laid out with a good grade, medium hard drawing pencil, one which will make a clean mark, but not so hard that it will engrave the lines.

9-13. The township is drafted as a plane, without allowance for reduction from the spheroid, as is required in the making of small-scale topographic maps showing large areas. All *regular* townships are laid out as a rectangular grid, with allowance for fractional measurements along the north tier and west range of sections.

9-14. In the case of *irregular* townships, or those containing meanderable bodies of water, or irregular tracts, the drawing should be laid out from the field closing sheets, duly balanced. The point of origin is selected on the drawing, from which point the exteriors are carefully laid out, each salient being accurately located by scaling, from the point of origin, the balanced values of the total latitude and departure of that salient. The section boundaries are then laid out similarly from suitable points of origin on the exteriors. Finally the subdivisions of each section, including the necessary lines of segregation and meander lines, are accurately scaled by the method of total latitudes and departures from an origin on the section boundary. On this plan the work may be laid out without introducing accumulative errors of scaling.

9-15. Elements of triangulation figures and offset lines are not shown on the plat when the field procedure results in ascertaining the course and length of the line established. Such diagrams are shown in the field notes if needed for a clear understanding of the procedure but are not required on the plat.

9-16. Plats of entire townships show the complete condition of all exteriors, including closing and standard township and section corners, with connecting township and section courses and distances (figure 81). The connecting courses and distances are omitted where the scope of the work is not sufficient to determine the relationship accurately. A line common to two townships is

drawn with equal completeness for both, as far as approved surveys permit. The relative position of and the data for nearby corners of one or two townships and closing township corners, if established, are shown. Corners of maximum control are shown only as referring to the subdivisional survey on that plat. Separate diagrams of township exteriors are not required when the townships are subdivided.

9-17. The boundary of a State, surveyed reservation, or private land grant is lettered on

the plat, and connecting distances are shown from line intersections to the mile posts.

9-18. Where only a portion of a township is being surveyed, the condition of the adjacent areas is shown clearly by words lettered thereon, such as "Unsurveyed," "Rancho San Luis," "Surveyed by John Smith, 1877," or "Waste Lava Bed."

9-19. On plats of fragmentary surveys, areas previously surveyed do not have the sections and lots drawn in unless needed to show the relation of the old and new work along the common boundary.

9-20. The line of demarcation between areas previously counted in the total acreage surveyed and the new surveys is distinctly shown. A light diagonal shading with black ink on the side previously surveyed is recommended to distinguish such a line.

9-21. Each regular section shows the center lines only and the area as 640 acres. In other sections where lottings are required, each subdivision must be distinctly shown. Where a section contains one or more fractional lots, its regular parts show the usual areas as 40, 80, or 160 acres; the fractional lots each show the assigned lot number and are computed to the nearest 1/100 of an acre. The total area of public land within each irregular section is shown as equal to the sum of the several parts, as identified by the plat, disregarding parts omitted.

9-22. The complete technique of laying out the regular and fractional subdivisions of sections and the designations of the same by reference to aliquot parts and serial lot numbers is covered by sections 3-74 through 3-123.

9-23. On plats which show the completion of sections, particularly where parts have been shown as outlying areas protracted as surveyed (sections 3-100 through 3-111), it is the practice, where irregular conditions are found on the ground and no entries have been made, to annul the showing on the former plat. See section 9-2. The special instructions should provide that such unentered, protracted subdivisions need not be protected, thus simplifying the execution and platting of the new surveys.

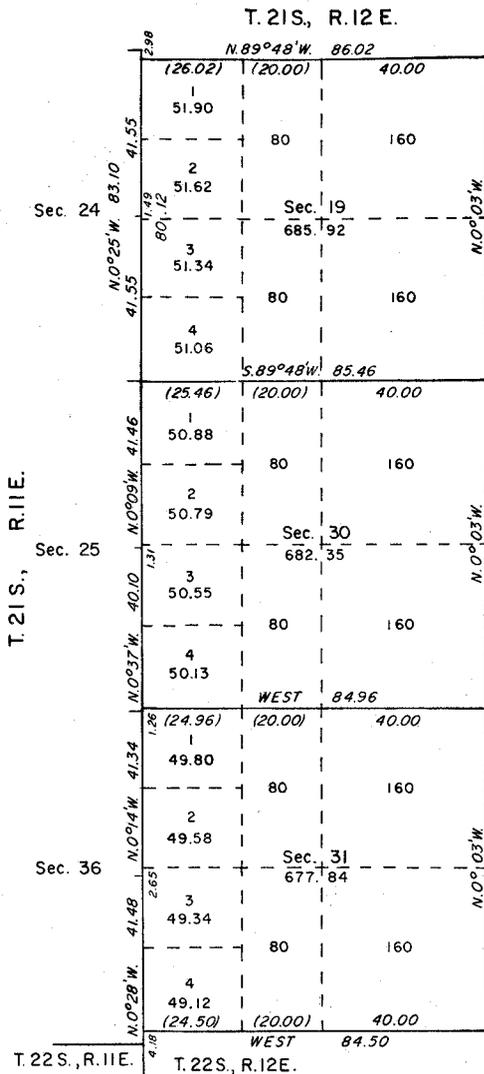


FIGURE 81.—Plat showing two sets of corners on an irregular township boundary.

COMPUTATION OF AREAS

9-24. The deficiency in area which results from the convergency of meridians is placed normally in the fractional lots adjoining the west boundary of the township. Sections 7, 18, 19, 30, and 31 each usually contains lots 1 to 4, inclusive, whose meridional dimensions are all an even 20.00 chains; the dimensions of the latitudinal boundaries of these lots are computed proportionately from the fractional measurements ascertained on the section lines. The area, in acres of each lot, is then found simply by adding the lengths, in chains, of its north and south boundaries.

9-25. For example, taking section 30, shown on the specimen plat, the dimensions of the latitudinal boundaries and the areas are found as follows:

	(1)	(2)	(3)	(4)
N.....	18.21	18.245	18.28	18.315 chs.
S.....	18.245	18.28	18.315	18.35 chs.
	36.455	36.525	36.595	36.665 acres
	36.45(+)	36.53(-)	36.59(+)	36.67(-) acres

9-26. The areas of lots 5, 6, and 7, section 6, are ascertained similarly, making due allowance, when calculating the length of the north boundary of lot 5, for any material variation from 20.00 chains in the meridional dimension of lot 4.

9-27. The surplus or deficiency in area which results from the discrepancy in the meridional measurements between the exterior boundaries and the subdivisional lines is placed normally in the fractional lots adjoining the north boundary of the township. Sections 1 through 5 each usually contains lots 1 through 4, whose dimensions on their latitudinal boundaries are all treated as an even 20.00 chains; the meridional dimensions of these lots and their areas are computed on the plan heretofore described for the fractional lots adjoining the west boundary of the township.

9-28. The areas of lots 1, 2, and 3, section 6, are ascertained similarly, making due allowance when calculating the length of the west boundary of lot 3, for the departure across lot 4, where more or less than 20.00 chains. The area of lot 4, section 6, in acres, equals the prod-

uct of its mean dimensions in chains, divided by 10.

9-29. The following is an example of ascertaining the areas of the fractional lots in section 6, shown on the specimen township plat:

	(1)	(2)	(3)	(4)
E.....	20.05	20.037	20.024	20.011 chs.
W.....	20.037	20.024	20.011	20.000 chs.
	40.087	40.061	40.035	acres
	40.09	40.06	40.03(+)	acres
				20.005 mean
	(5)	(6)	(7)	
N.....	17.78	17.81	17.84	17.75 chs.
S.....	17.81	17.84	17.87	17.78 chs.
	35.59	35.65	35.71	acres
				17.765 mean
				2.0005 × 17.765 =
				35.539 acres
				35.54 acres

9-30. In irregular sections and in sections which are invaded by meanderable bodies of water, or by lines of segregation, the center lines of the section and the center lines of each quarter section in turn are given calculated values based upon the balanced field closing sheets. Points of intersection of the center lines with the meander lines or other lines of segregation are then computed in order to complete the boundaries of each fractional lot. With the results of these computations at hand the area of each fractional lot may be most readily computed by the method of "double meridian distances."

9-31. In order to compute an area by double meridian distances, the closing error of the figure is eliminated, or the traverse of its boundary is balanced, by the most applicable rule. The general rule is that the correction to be applied to the { latitude } of any course is to the total error in { latitude } as the length of the course is to the perimeter of the figure. Another method of balancing the closing error is applicable if the purpose is to apply a uniform correction to the directions and lengths of lines. Section 5-44.

The double meridian distances (D.M.D.'s) of the several courses are then computed by the following rules:

- (1) The D.M.D. of the first course equals

the departure, or the increment in easting or westing, of the course itself;

(2) The D.M.D. of the second course, and each of the succeeding courses in turn, is ascertained by taking the D.M.D. of the preceding course, plus the departure of the preceding course, plus the departure of the course itself; and,

(3) The D.M.D. of the last course is numerically equal to its departure, but with opposite sign, thus verifying the value of each preceding D.M.D.

For convenience in making the computations, the differences in $\left\{ \begin{matrix} \text{latitude} \\ \text{departure} \end{matrix} \right\}$ to the $\left\{ \begin{matrix} \text{north} \\ \text{east} \end{matrix} \right\}$ are treated as of positive sign, to the $\left\{ \begin{matrix} \text{south} \\ \text{west} \end{matrix} \right\}$ as of negative sign. The point of beginning is taken at the westernmost salient of the figure, and the direction of the traverse is run counterclockwise. On this plan each D.M.D. and the

algebraic sign of the final result are of positive sign.

The next step is to multiply the latitude of each course by the double meridian distance of the course; the positive products are arranged in a column for "north areas," and the negative products in a column for "south areas." The sum of the negative products is subtracted from the sum of the positive products. The area, corresponding to the unit of measurement that is employed, is ascertained by taking one-half of the last result. Where the unit of measurement is the chain, the area in square chains is divided by 10 to give the area in acres.

The field closing sheets may be readily adapted to the calculation of areas by the method of double meridian distances; two examples follow:

9-32. Tabling and calculations of T. 15 N., R. 20 E., Diamond Rock, in Lins Lake, in section 18:

No.	Course	Distance	Latitudes		Departures		D.M.D.'s	Totals			
			North	South	East	West		N. areas	S. areas	Lat. N	Dep. E
Tie	N. 71° 30' E.....	21.44	6.80	.....	20.33	.....	.....	.....	6.80	20.33	
5	S. 86° 46' E.....	3.19	.....	0.18	3.185	.....	4.73	.....	0.85	6.62	23.52
4	N. 33° 00' E.....	2.20	1.845	.....	1.20	.....	9.12	16.33	.....	8.465	24.72
3	N. 48° 30' W.....	3.50	2.32	.....	.....	.....	7.70	17.86	.....	10.785	22.10
2	S. 61° 15' W.....	2.90	.....	1.395	.....	.....	2.54	.....	3.54	9.39	19.56
1	S. 16° 30' E.....	2.70	.....	2.59	.77	.....	.77	.....	1.99	6.80	20.33
			4.165	4.165	5.155	5.16	.....	34.69	6.38	.....	.....
					.005			6.38			
		14.49	4.165	4.165	5.16	5.16	.....	28.31	Double area.		

Begin total lats. and depts. at M. C. on W. bdy. sec. 19, for purposes of platting.

D. M. D.'s	
(1)	0.77 9.12 (4)
	+ .77 +1.20
	+3.19 -2.62

14.15 Square chains.
1.41 Acres.

Numbering of courses as taken from field notes, order reversed to counterclockwise.

(5)	4.73 7.70 (3)
	+3.19 -2.62
	+1.20 -2.54
(4)	9.12 2.54 (2)

Begin D. M. D.'s at angle point of meanders farthest west, end of course No. 2 running SW., or end of course No. 1 running NW.

9-33. Tabling and calculations of T. 15 N., R. 20 E., right bank of Yellowstone River, in section 25:

No.	Course	Distance	Latitudes		Departures		D. M. D.'s	N. areas	S. areas	Totals	
			North	South	East	West				Lat. N.	Dep. E.
	S. 0°01' E.....	5.36		5.36	0.00		0.00			0.00	0.00
	S. 89° 56' E.....	79.96		.09	+04		80.00		7.20	-.09	80.00
	North.....	23.20	23.20		79.96		160.00	3,712.00		23.11	80.00
				-.01	+0.01						
1	S. 85°00' W.....	13.00		1.13	12.95		147.04		164.68	21.99	67.04
2	S. 72° 00' W.....	7.10		2.19	6.75		127.33		278.85	19.80	60.29
				-.01	+0.01						
3	S. 64°30' W.....	13.00		5.60	11.73		108.84		608.42	14.21	48.55
4	S. 40° 30' W.....	5.40		4.11	3.51		93.59		384.65	10.10	45.04
				-.01							
5	S. 77° 45' W.....	7.00		1.49	6.84		83.24		123.20	8.62	38.20
				+0.01							
6	N. 76° 00' W.....	7.40	1.79		7.18		69.22	124.60		10.42	31.02
				-.01							
7	S. 80° 00' W.....	12.00		2.08	11.82		50.22		103.96	8.35	19.20
				-.01	+0.01						
8	S. 81° 08' W.....	19.43		3.00	19.19		19.20		57.41	5.36	0.00
			24.99	25.05	79.96	79.97		3,836.60	1,728.37		
			+0.01	-.05	+0.04	+0.03		1,728.37			
		84.33	25.00	25.00	80.00	80.00		2,108.23	Double area.		

Begin traverse and D.M.D.'s at M. C. on W. bdy. of sec. 25. 1,054.11 Square chains.
 Begin total lats. and depts. at point for S. 1/16 sec. cor. on W. bdy. of sec. 25, 105.41 Acres, sum of lots 5 to 8, incl.
 for purposes of platting.
 Numbering of courses as taken from field notes.

Tabling and calculations of T. 15 N., R. 20 E., section 25, lots 5 and 6:

No.	Course	Distance	Latitudes		Departures		D.M.D.'s	N. areas	S. areas
			North	South	East	West			
	South.....	19.73		19.73					
	S. 89° 56' E.....	20.00		.02	20.00		20.00		0.40
	North.....	23.20	23.20				40.00	928.00	
1	S. 85°00' W.....	13.00		1.12	12.96		27.04		30.28
2	S. 72°00' W.....	7.10		2.19	6.75		7.33		16.05
3	S. 64°30' W.....	.33		.14	.29		.29		.04
			23.20	23.20	20.00	20.00		928.00	46.77
								881.23	
								44.06	Lot 5
	South.....	9.06		9.06					
	S. 89° 56' E.....	20.00		.02	20.00		20.00		0.40
	North.....	19.73	19.73				40.00	789.20	
3	S. 64° 30' W.....	12.67		5.45	11.45		28.55		155.60
4	S. 40° 30' W.....	5.40		4.11	3.51		13.59		55.85
5	S. 77° 45' W.....	5.16		1.09	5.04		5.04		5.49
			19.73	19.73	20.00	20.00		789.20	217.34
								217.34	
								571.86	
								28.59	Lot 6

Tabling and calculations of T. 15 N., R. 20 E., section 25, lots 7 and 8:

No.	Course	Distance	Latitudes		Departures		D.M.D.'s	N. areas	S. areas
			North	South	East	West			
	S. 0° 01' E	8.51		8.51					
	S. 89° 56' E	20.00		.03	20.00		20.00		0.60
	North	9.06	9.06				40.00	362.40	
5	S. 77° 45' W	1.84		.39		1.80	38.20		14.90
6	N. 76° 00' W	7.40	1.80			7.18	29.22	52.60	
7	S. 80° 00' W	11.19		1.93		11.02	11.02		21.27
			10.86	10.86	20.00	20.00		415.00	36.77
								36.77	
								378.23	
								18.91	Lot 7
	S. 0° 01' E	5.36		5.36					
	S. 89° 56' E	20.00		.02	20.00		20.00		.40
	N. 0° 01' W	8.51	8.51				40.00	340.40	
7	S. 80° 00' W	.81		.14		.80	39.20		5.49
8	S. 81° 08' W	19.43		2.99		19.20	19.20		57.41
			8.51	8.51	20.00	20.00		340.40	63.30
								63.30	
								277.10	
								13.85	Lot 8

9-34. The use of electronic data processing equipment affords a fast and accurate means of calculating the area of irregular land and water forms. Where practical, with resultant savings in time and funds, this equipment may be used to make lengthy and complicated calculations. No specific instructions can be given for establishing a computer program or presenting the data for calculation purposes as there are several makes and sizes of this equipment available, each with the capacity to make area determinations. The computer program should be based upon the procedures of the double meridian distances method (section 9-31).

INKING THE DRAWING

9-35. The best *black* drawing ink should always be employed, and the ink should never be diluted. The drafting work should be sharp and clear, uniform in density of color, and the lettering standardized as to gage and style. It is important to bear in mind that if the drafting is done with a diluted ink or otherwise left gray in appearance, it will be lost in varying degrees during the process of reproduction.

9-36. The drafting work should be *open*, making reasonable allowance for needed separation of detail. This will help to avoid a tendency for work to close across narrow spaces during reproduction. The detail of improvements, works, or structures should be omitted when necessary to avoid overlapping or obscuring the more essential features of the plat. The arrangement of some of the more minute data on the specimen township plat illustrates the minimum to which the work may be condensed safely. Attention is directed to the space allowed between the lettering and the adjacent lines; this is never less than the space between the upper two points of the gage for the lettering; this is the rule where the drawing is to be reproduced at the same scale; proportionately more space should be allowed on special drawings where a reduction of scale is to be made on reproduction. The same safeguards should be applied in spacing the adjoining letters, and it will be noted that the spacing between letters bears a definite relation to the gage employed.

9-37. An experienced draftsman keeps the drawing as clean as possible to avoid needless

erasing. A cover sheet, with an opening, is recommended. The sharp, black lines must be preserved in their original clear-cut effect, or else, unless carefully retouched, there will follow a certain loss in the process of reproduction. If uniformity is lacking, such as a mixture of heavy and pale letters and figures of a varying degree of density, the photographing has a tendency to exaggerate the differences and the reproduction will be unsatisfactory.

LETTERING

9-38. Generally all letters and figures are drafted in pure Gothic style. The improvement in recent times of mechanical lettering templates and pens permits the almost exclusive use of such equipment in lettering the plat. If the lettering is accomplished by free hand methods, direct type impression or by the stick-up process with type printing on adhesive backing, corresponding sizes should be used.

9-39. The following list on pages 200 and 201 shows the usual styles and sizes to be followed in preparing a plat on the scale of 1 inch equals 40 chains; the number of the guide refers to thousandths of an inch.

9-40. At this stage of the drafting work attention should be given to the showing of the directions and lengths of all necessary connecting lines, in addition to the data which ordinarily appears on the section boundaries. The requirements are set out in sections 3-36, 3-71, 3-121, 3-122, and 4-15. Additional sheets, drawn to a larger scale, are used to show the detail of complicated situations. Section 9-9.

TOPOGRAPHY

9-41. Generally only the most essential topographic data need be shown upon the plat. Some plats may not require the showing of any topography, others may require the showing of many different features, where the drawing in addition to being a plat may be a complete topographic map. The map features are delineated by the standard symbols adopted by the Board of Surveys and Maps of the Federal

Government.¹ A summary of what is required is contained in section 3-126.

9-42. In the preparation of the drawing the first question to be considered, after the completion of the base and before adding the topography, is how the important map features are to be shown without obscuring the base data. In simple cases all work may be done readily in black ink on the base drawing. In the difficult cases overprints in transparent colors are occasionally required. Good judgment should be exercised regarding what is essential, and how the essential things may be shown without unwarranted cost.

9-43. If a transparent overprint of a particular conventional color is required, all of the map features usually shown in that color are included. The specimen plat is intended as an example where all map features, with the exception of certain improvements, works, or structures are shown in conventional transparent overprints.

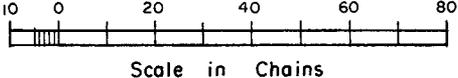
9-44. Where colors are not required, all map features or groups of features are delineated upon the base drawing in black ink, following the conventional symbols, and with the exercise of the greatest care that the map features do not interfere with or overlap, or too closely approach the base data. In all such simple cases the topography is shown as in the following outline:

Simple Drawings, All Black

Low relief	Black hachure.
Roads and highways	Black lines, parallel
Trail	Black line, broken.
Culture	Black pattern.
Alkali flats	Black depression-contour and pattern.
Sand dunes	Black pattern.
Water surface, large rivers and lakes	Black meander line, with- out water lines.
Minor drainage	Black line, or broken line and dots.
Wide sandy bottomed draws	Black pattern.
Ponds	Black pattern.
Marsh	Black pattern.
Timber	Marginal note.

¹ Standard symbol sheet may be obtained from the Director, U.S. Geological Survey, Washington, D.C., 20242.

<u>Description</u>	<u>Lettering Style</u>	<u>Guide - Pen Size</u>
Plat Heading	TOWNSHIP I NORTH	240 - 3
Subtitle	DEPENDENT RESURVEY SUPPLEMENTAL PLAT	175 - 2
North Arrow	 <p>A vertical line with arrowheads at both ends. In the center is a circle with a crosshair. The text "True Meridian" is written vertically along the line below the circle.</p>	80 - 000
Section Number	Sec. 16	120 - 0
Area (section)	160, 639.54	100 - 00
Lot Numbers & Area	10 39.95	60 - 0000
Bearing	<i>N. 89° 58' W.</i>	80 - 000
Distance	79.95	80 - 000

<u>Description</u>	<u>Lettering Style</u>	<u>Guide - Pen, Size</u>
Witness Corner	<i>w.c., N.0°05'W, 0.50</i>	60-0000
Proper Names	LAKE CITY TOWNSITE	100-00
Descriptive Names	Ivy Island, Alkali Flat	80-000
Hydrographic Names	<i>YELLOW RIVER</i>	100-00
	<i>Clear Lake</i>	100-00
	<i>Canal, Spring, Aqueduct, Clear Cr.</i>	80-000
Mineral Survey	M.S. 2053	80-000
Lode or Placer Name	NUGGET	80-000
Scale	 <p>Scale in Chains</p>	60-0000 80-000
Extra Sheets	<i>SHEET 1 OF 3</i>	140-1
Control Station	ROUNDUP 1942 U.S.C. & G.S. NORTH PEAK 1957 U.S.G.S.	60-000
Guide Meridian	<i>FIRST GUIDE MERIDIAN EAST</i>	
Standard Parallel	<i>SECOND STANDARD PARALLEL SOUTH</i>	120-0
Sectional Correction Line	<i>CORRECTION LINE</i>	80-000
Geographic Position	Latitude 48°17'46.75"N. Longitude 121°35'15.58"W.	80-000

9-45. Where groups of important map features are extensive or complicated, or are of such a character that it is impracticable to execute the drawing in black without detriment to the base, transparent overprints are employed as shown in the following outlines:

Brown Overprint

Low relief, where important, and heavy relief Brown hachure.
 Roads and highways Brown lines, parallel.
 Trails Brown line, broken.
 Culture Brown pattern.

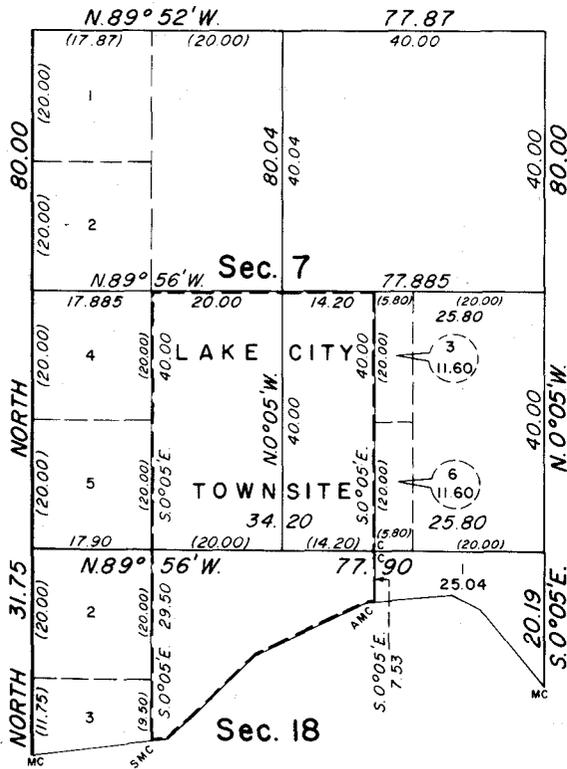


FIGURE 82.—Enlarged diagram. Boundaries of Lake City townsite.

- Alkali flats Brown depression-contour and pattern.
- Wide sandy bottomed draws Brown pattern.
- Sand dunes Brown pattern.
- Blue Overprint*
- Water surface, large rivers and lakes Blue meander line and blue water lines, or black meander line with flat blue tint.
- Minor drainage Blue line, or broken line and dots.
- Ponds Blue pattern.
- Marsh Blue pattern.

9-46. In making the drawing, where overprints are required, separate transparent sheets are employed, known as overlays, upon each of which is drawn in *black ink* all natural features which are to be shown by overprint in the same color. The transparencies must have a low coefficient of expansion so there will be an exact register with the base.

9-47. Usually it is best to transfer the section boundaries accurately from the base drawing to the overlay by carefully pricking through, then showing the lines in pencil only. For purposes of assembling, the positions of a few section corners should be indicated by very short intersecting fine black lines. The township corners and the center point of the township generally serve best for purposes of registration. Additional points may be employed if the work is complicated. The map features are then drawn on the overlay in black ink.

Each color employed requires a separate overlay.

9-48. The description of the timber throughout the township is covered by a marginal note. The use of the green overprint to show timber has been discontinued.

9-49. The hachure is seldom used on modern plats. It may be used to show abrupt changes in elevation within level and gently rolling regions, such differences as the eye would quickly note on the ground and readily follow. The hachure is also used to show important mesas, peaks, ridges, spurs, and heavy slopes, in such a manner as to portray the bold relief without attempting to show unimportant and minor detail. Only the most important slopes are shown in a gently rolling country. If the hachure is used, care should be taken in drafting to avoid giving a rolling mountainous region the appearance of abrupt or high mountainous slopes.

9-50. The blue overprint is used where there are streams and lakes of importance, or where the drainage features, if shown in black, would obscure the base, as where there are numerous lakes and streams, or extensive ponds or marshes to be shown in areas of swamp and overflowed lands.

9-51. The availability of well-prepared topographic maps of much of the public land area makes it less important to show upon the plat all of the detail relating to topography, culture, and improvements. However, it is still necessary to show the major items of topography and improvements in their correct relationship to the survey. It may be advantageous to use these maps to complete detail within the sections.

FIELD SKETCH

9-52. Where the area to be surveyed is not covered by reliable topographic maps or aerial photography, the surveyor must prepare an accurate field sketch for reference in the drafting of the final plat. The sketch should show the crest or divide forms, slope forms, and stream or drainage lines correctly related to the lines of the survey.

9-53. If hachure is to be used on the final plat, the relief is shown on the sketch plat by form lines that approximate contours, sketched without an exact interval or precise elevation above sea level. The available data for elevation above sea level and extent of ascents and descents along the surveyed lines may be incorporated in the form-line method for field sketching. The draftsman transfers the form lines to the overlay in pencil and then supplies the hachuring for the final plat.

9-54. In the areas where aerial photographs are available, copies should be supplied with the field data. While the survey is in progress, connecting lines may then be run to points selected on the photographs. A half dozen such points fairly evenly spaced along each flight afford ample control for laying out the section or other lines of the survey on the photographs.

The following statement, when applicable, is placed on the final plat above the border line in the lower left corner:

Aerial photographs, coordinated with ground control obtained during survey have been used in compiling the topography shown on this plat.

9-55. The special instructions for each survey should outline any exceptional methods to be employed in the field in obtaining topographic data, particularly where overprints will be required on the completed plat. The field sketch should represent the situation on the ground with an accuracy in details which reflects the practical relative importance.

Occasionally, in connection with resurveys, for example, the development of map data may even precede other parts of the survey work, for its value in making restorations of lost or obliterated corners, and for locating roads, improvements, and cultivated tracts upon patented and entered lands. The map features of the plat

are also important in certain classes of surveys within Indian and forest reservations, coal fields, mineral areas, waterpower sites, reservoir sites, irrigation projects, and other regions of relatively large prospective value. In these cases, which frequently embrace regions of extremely bold relief, coordinated cadastral and topographic surveys are made if advisable for administrative purposes.

9-56. The names of natural features must be given according to accepted usage. Surveyors are not authorized to report names of their own selection, but in case of doubt may submit the question through official channels to the United States Board on Geographical Names.

TITLES AND SUBTITLES

9-57. Every plat is given a title similar to that on the specimen plat. This shows the township, the principal meridian, and the State. Plats showing the original subdivision of only a portion of a township are usually given a similar title for the sake of simplicity. Supplemental plats, plats of fragmentary subdivisional surveys, and resurvey plats are given an appropriate subtitle to qualify the nature of the survey. The title and date of acceptance usually suffice to identify the plat. The subtitle, if employed, explains the special purpose of the plat.

9-58. A subtitle is modeled after one of the following forms:

- (1) Supplemental plat
- (2) Four Islands in Burntside Lake
- (3) Extension Survey
- (4) Dependent Resurvey
- (5) Independent Resurvey
- (6) Survey of Omitted Lands
- (7) Survey of Accretion Lands
- (8) Survey of Tracts 37 and 38
- (9) Subdivision of Sections
- (10) Survey of Hiatus
- (11) Survey of the Moore Coal Mine
- (12) Poplar Townsite
- (13) Segregation Survey

Only the main purpose of the plat is included in the subtitle. The detail is carried in the memorandum.

MEMORANDUM

9-59. A memorandum is required on each plat to correlate and consolidate the record of the subsisting surveys so far as shown on that plat. This memorandum will have a wide variety of references. The simple form shown on the specimen township plat is extended as required.

Where the plat represents the entire record of the survey, a statement to that effect should be placed on the plat.

A conventional symbol is shown to indicate the line of the true meridian. The mean magnetic declination over the area surveyed is shown at the base of the north arrow. Sections 2-18 and 3-126 (19).

The latitude and longitude are shown for the southeast corner of the township, lettered on the plat at that point, or for the southeast point of the survey when less than the normal township. The values are given according to the best available data, such as to the nearest even single minute when depending upon a calculation from some remote known station. The value may be extended to tenths of minutes based on an accurate map reference or to seconds if the field notes give a tie to a geodetic station of known accuracy. Section 2-21.

Each plat of an original survey carries a note of the total area surveyed, derived by taking the sum of all sectional-total areas which are identified by that plat. If resurveys are involved the rule is stated in sections 9-86 and 9-106.

The scale of the plat is shown by a bar scale.

9-60. The following list covers other marginal or tabular data that facilitate the drafting and increase the usefulness of the plat:

- Retracement of prior surveys, section 3-102.
- Witness corners, section 4-15.
- Townsites, monumentation, section 7-31.
- Townsites, titles and certificates, section 7-31.
- Erroneously omitted areas, memorandum, section 7-85.
- Plat requirements, general, section 9-6.
- Base drawing, memoranda and data on, section 9-9.
- Use of aerial photographs, section 9-54.
- Supplemental plats reference to former plats, section 9-67.
- Supplemental plats, memorandum and certificates, sections 9-72 through 9-75.
- Erosion, memorandum on plat, section 9-81.

Fragmentary surveys, reference to former plat, section 9-82.

Dependent resurvey, memorandum, section 9-85.

Independent resurvey, conformation of claims, section 9-87.

Independent resurvey, memorandum, sections 9-88, 9-89, and 9-90.

Independent resurvey, index of segregated tracts, sections 9-94, 9-95, 9-97, 9-98, and 9-110.

Independent resurvey, overlapping claims, section 9-102.

Independent resurvey, memorandum, section 9-103.

Independent resurvey, numbering of sheets, section 9-104.

Resurveys, citation of authority, section 9-107.

Resurveys, descriptions and areas, section 9-108.

Subtitles, section 9-58.

CERTIFICATES

9-61. The approval of surveys of the public lands is a part of the authority vested in the Director, Bureau of Land Management, under the direction of the Secretary of the Interior (R.S. 453; 43 U.S.C. 2). The certificate shows official acceptance of the survey as represented on the plat. The form and arrangement of the certificate of acceptance are shown on the specimen township plat and should be followed so far as practicable on all plats.

REPRODUCTION AND DISTRIBUTION OF PLATS

9-62. Two photolithographic copies of the original plat are printed on hard paper which are designated as the official duplicate original plat and triplicate original plat. The original plat is transmitted to the proper state survey office, the duplicate original is retained in the Washington office, and the triplicate original is transmitted to the proper land office. Other copies printed on map paper are transmitted to the state public survey office or retained in the Washington office for official use and to supply the public.

9-63. The original returns of current surveys within those States where the public survey offices have been discontinued are filed in the Bureau of Land Management at Washington, D.C. The duplicate original plat and field notes of such surveys are furnished to the

proper State office, noted in section 1-23. The triplicate original plat is furnished to the proper land office.

9-64. The state public survey offices should furnish to the appropriate regional office of the Geological Survey, from their supply of map paper prints, a copy of each accepted survey, resurvey, or supplemental plat. Courtesy copies of the plats are also furnished to other federal or state agencies as appropriate.

SUPPLEMENTAL PLATS

9-65. A supplemental plat is prepared entirely from office records and is designed to show a revised subdivision of one or more sections without change in the section boundaries and without other modification of the subsisting record. Supplemental plats are prepared for acceptance by the Director.

9-66. Supplemental plats are required where the subsisting plat fails to provide units suitable for administration or disposal, or where a modification of its showing is necessary. They are also required to show the segregation of alienated lands from public lands where the former are included in irregular surveys of patented mineral or other private claims made subsequent to the plat of the subsisting survey or where the segregation of the claims was overlooked at the time of its approval.

9-67. All supplemental plats should show a proper reference to the former plat, the purpose of and the authority for the preparation, and all essential data, without unnecessary duplication of that carried by the former plat. The scale of the supplemental plat may be enlarged to 1 inch equals 10 or 20 chains, as appropriate.

9-68. The new lots are numbered as required in sections 3-82 and 3-111, and proper areas returned. The areas of the lots are computed from the subsisting record. No revision of the total area within the section is required and generally there is no occasion for showing topography.

9-69. The revised lottings on supplemental plats resulting from the segregation of mineral surveys are not confined to the subdivisions embraced within the pending entry. It is desirable to lot all public land within the scope of the

plat to avoid later piecemeal preparation of additional supplemental plats.

The plat should show an appropriate direct tie between a claim and a section corner or distances along claim and section lines to points of intersection. Complete courses and distances are shown for the claim lines which bound the public lands.

9-70. The lengths of lines are expressed in feet in the record of a mineral survey and in chains in the record of the rectangular net. Whenever the segregation of mineral claims is involved, the values on the face of the drawing are given in the chain unit only.

9-71. The administrative determination of the need for a supplemental plat ordinarily rests with the State Director, subject to the plat's acceptance by the Director, Bureau of Land Management.

9-72. The certificate of acceptance follows the arrangement shown on the specimen township plat; the memoranda include the pertinent data involved in the preparation of the plat.

Following are examples for supplemental plats:

9-73. Illustration, figure 83.

A modified form of lotting to provide new descriptions, based entirely upon the public land survey record on file in the public survey office, and without additional field work.

Title: Township 8 North, Range 20 West, of the San Bernardino Meridian, California. Subtitle: Supplemental Plat.

Scale: Bar scale in chains.

Memorandum:

This plat showing a subdivision of original lots 3 and 4, sec. 19, T. 8 N., R. 20 W., S.B.M., California, is based upon the plat approved October 8, 1880.

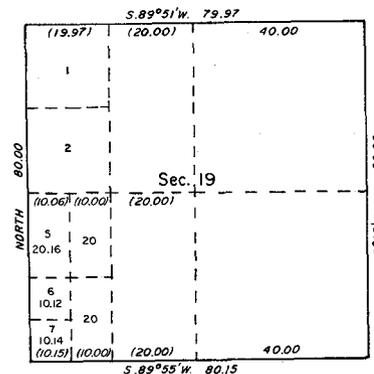


FIGURE 83.—Explanation in section 9-73.

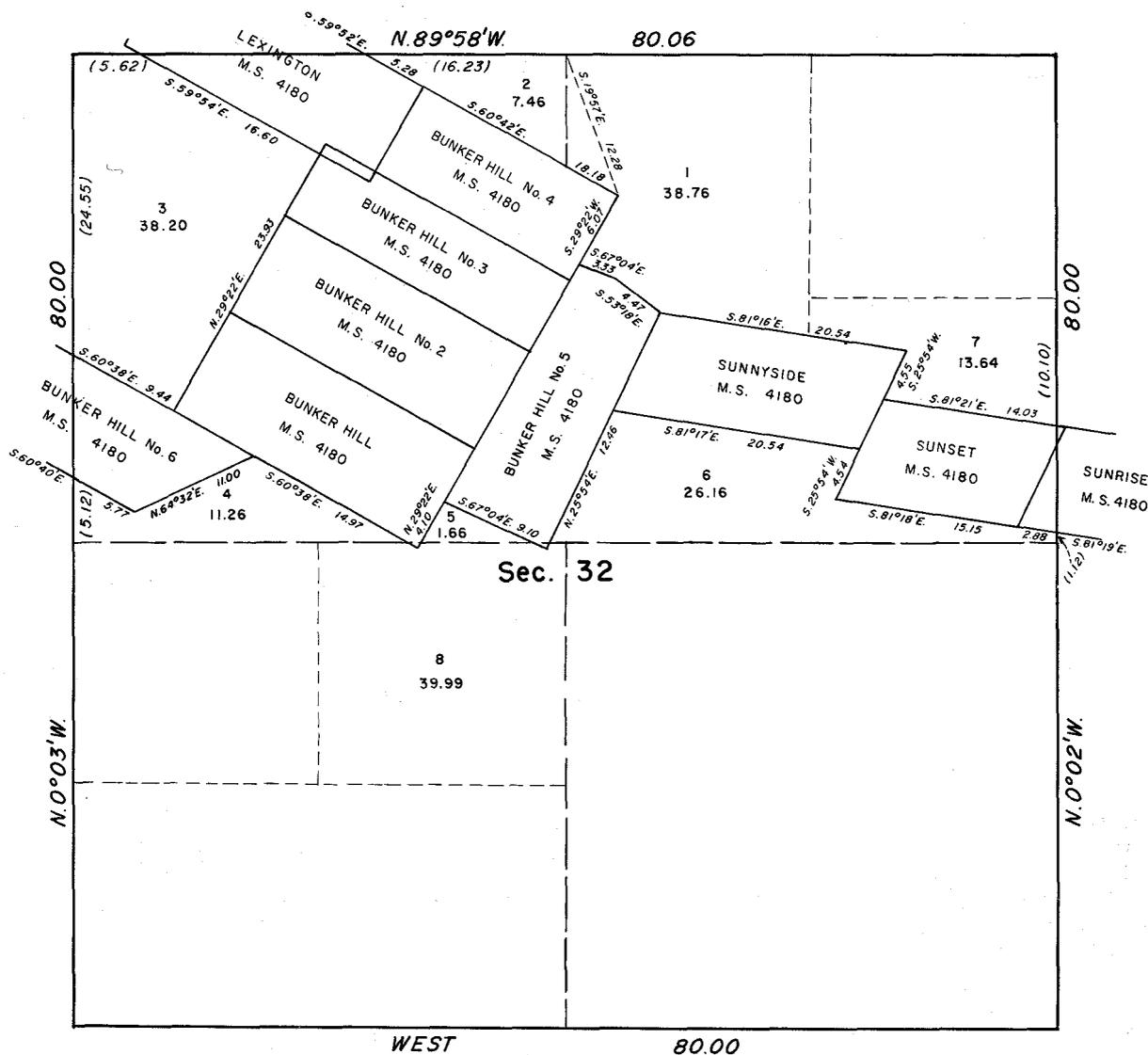


FIGURE 85.—Explanation in section 9-75.

patented mineral surveys but are based upon data obtained by a field survey rather than solely from office records. All field data are shown and used in the computation of the amended lottings.

Such plats are also accepted by the Director, as indicated by the following examples:

Illustration, figure 86.

Segregation of patented mineral claim, including a resurvey of the section boundaries. Field work required to secure connecting line from the public land net to the location monument and other data for the accurate showing of the new lots.

Title: Township 20 South, Range 10 East, of the

Gila and Salt River Meridian, Arizona. Subtitle: Mineral Segregation.

Scale: Bar scale in chains, and bar scale in feet.

Memorandum:

Dependent resurvey of section 24, and survey of connecting line to U.S.M.M. No. 6 for segregation of the Lillie Lode of Mineral Survey No. 562, executed by Roger F. Wilson, Associate Cadastral Engineer, December 20 and 21, 1946, under Special Instructions dated August 29, 1946, for Group 133, Arizona.

E. bdy. surveyed by Lewis Wolfley, D.S., in 1885, and subdivision by G. J. Roskrige, D.S., in 1886, as shown on the plat approved March 27, 1888.

Certificate: Heading similar to that shown on the specimen township plat.

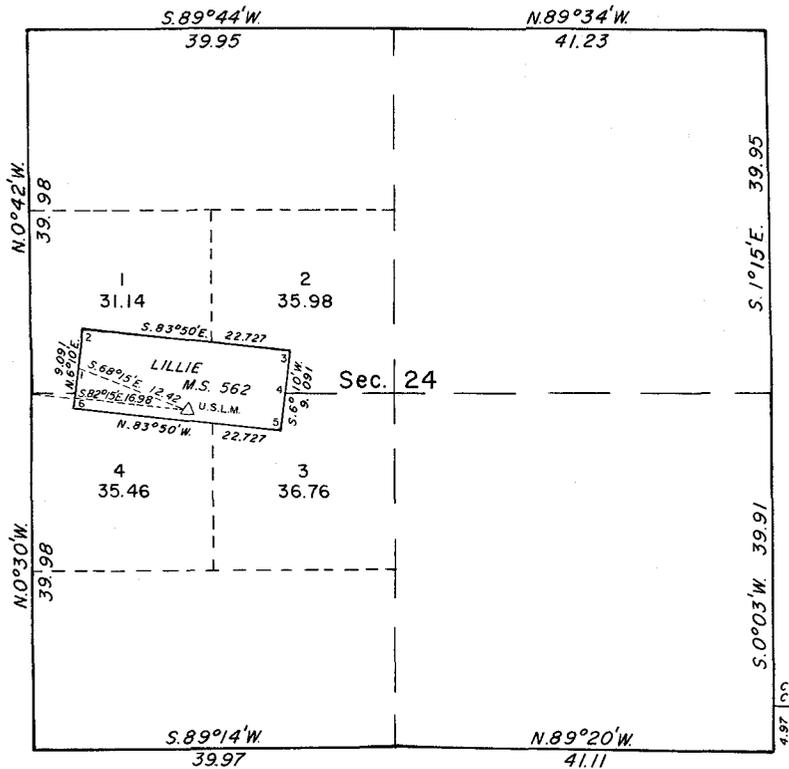


FIGURE 86.—Explanation in section 9-76.

This plat is strictly conformable to the approved field notes, and the survey, having been correctly executed in accordance with the requirements of law and the regulations of this Bureau, is hereby accepted.

For the Director

9-77. Illustration, figure 87.

Metes-and-bounds survey of an unsurveyed mineral claim, including a resurvey of the section boundaries and the survey of connections to the mineral claim.

Title: Township 21 South, Range 70 West, of the _____ Meridian, (State). Subtitle: Mineral Segregation.

Scale: Bar scale in chains, and bar scale in feet.

Memorandum:

Metes-and-bounds survey of an unsurveyed mineral claim with connecting lines and the incidental dependent resurvey of section 20, providing the basis for the segregation of the mineral claim, executed by John Smith, Cadastral Surveyor, October 7 to 12, 1972, inclusive, under Special Instructions dated September 14, 1972, for Group _____, (State).

Boundaries of sec. 20 surveyed by Albert W. Brewster, D.S., in 1879, as shown on the plat approved October 23, 1879.

Certificate: Heading similar to that shown on the specimen township plat.

This plat is strictly conformable to the approved

field notes, and the survey, having been correctly executed in accordance with the requirements of law and the regulations of this Bureau, is hereby accepted.

For the Director

PLATS OF FRAGMENTARY SURVEYS

9-78. The term "fragmentary survey" is applied to surveys made to identify parts of townships and sections that were not completed in the first instance. In this class are included partially surveyed sections; omitted islands, if title is in the United States; such areas as lands in place at date of original subdivision situated between a grossly erroneous or fictitious meander line and the actual bank of a stream or lake, where riparian rights do not obtain as under the usual doctrine; and other lands of substantial extent that for various reasons were not included in the original surveys. Section 3-100 to 3-114, 3-122, 7-65, 7-68, 7-77, and 7-94.

9-79. These types of surveys frequently require consideration of the question of title in-

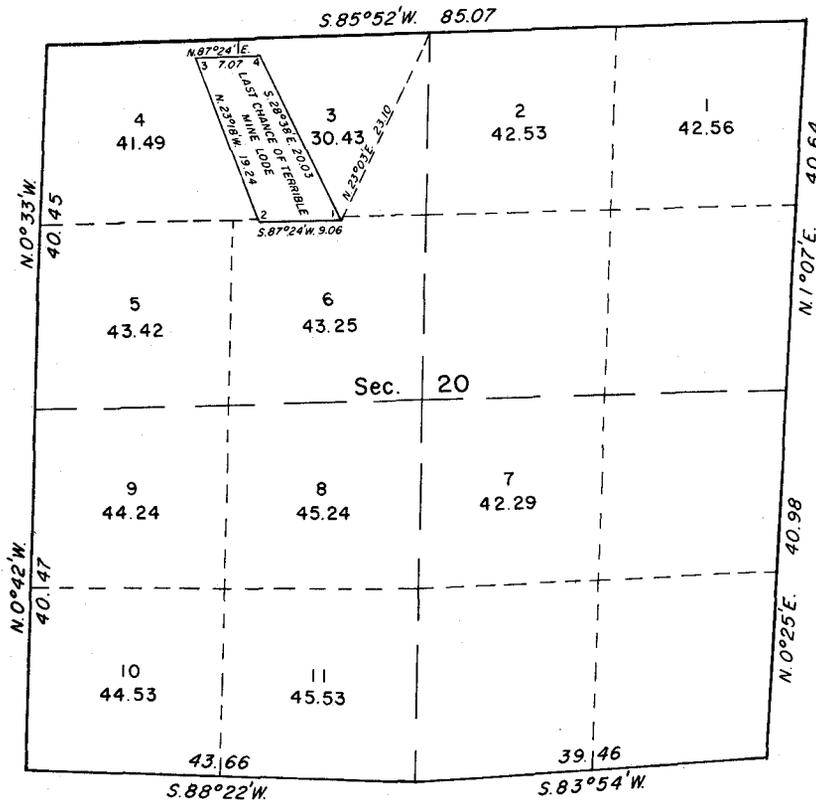


FIGURE 87.—Explanation in section 9-77.

involved preliminary to the extension of the former surveys.

9-80. In all such fragmentary surveys the new lottings are in addition to but without changing the former subdivisions if alienated. The scale of the plats may be enlarged as appropriate.

9-81. A notable exception to the principle that no changes should be made in the former lottings is found in those cases which involve retracements or resurveys where erosion has occurred along the bank of a stream or lake or other body of water which substantially changes the configuration of the former lots, and where it may be desirable to show the quantity of land remaining and that destroyed. Similar problems in platting are found in those cases of erroneous meandering where the record position of the original meander line is found to fall within the body of water. In these cases the former lot boundaries where situated within the water area are indicated in light broken

lines, and the quantities of each subdivision affected are shown in two parts; part "a" denoting land area and part "b" denoting water area. These areas are computed proportionately according to the amount shown for the original subdivision, the sum of "a" and "b" being made equal to the original total. A memorandum to this effect should appear upon the plat. This procedure is applicable in showing the effect of the flooding of public lands by artificial impoundment.

9-82. All technical data in reference to the retracement, reestablishment and extension of the section boundaries and connecting lines, and the complete topographical representation over the additional areas, are shown upon the plats of fragmentary surveys. If the retracements and remonumentation assume the character of a dependent resurvey of the boundaries of one or more sections, that fact is indicated on the plat together with a proper showing of the important map data throughout the entire area

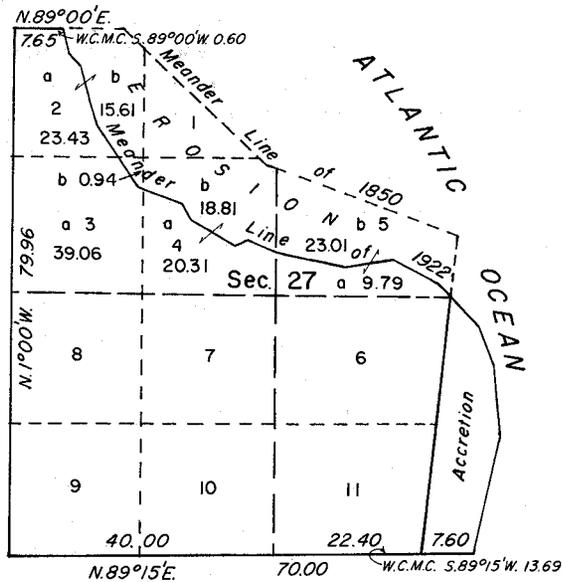


FIGURE 88.—Representing fractional subdivisions as affected by erosion and accretion after survey, without introducing questions of riparian rights. The subdivisions affected are shown in two parts: "a" denoting land area and "b" water area. A proportional adjustment is made in the computation of the quantities, if necessary, to make the sum of "a" and "b" equal to the original total.

surveyed and resurveyed. There is also shown an appropriate reference to the former approved plat or plats, and a citation of the authorization for the extension survey. The area statement includes separately the total areas surveyed and resurveyed.

In some fragmentary surveys the main purpose is to ascertain by retracement the true location of previously established monuments, and to account for discrepancies in the directions and lengths of lines, for correct plat representation and as a proper basis for the calculation of exact areas within the lottings, where the methods customarily followed in the construction of a supplemental plat are inadequate (section 9-65). Where such field work is required, the data derived by the retracement is used for all purposes as in a dependent resurvey. Thus where there are segregations to be made, the areas of the new lottings are derived by exact calculation.

In some metes-and-bounds surveys (section 7-16) not all of the directions and lengths of

lines between monuments, or between indicated corners of the subdivisions, can be carried to the plat without an overburden at the scale, or it may be unnecessary to represent all such data. In these cases it may be noted on the plat that the data will be found in the field notes of the survey.

In some cases where there are numerous and frequently very irregular lottings it may be desirable to carry the complete data to the plat. The scale of the base drawing, or that of the required additional sheets, is enlarged in these cases to accommodate the proper representation of the data. Traverse lines may be shown by marginal tabulation.

9-83. The certificate of acceptance on plats of fragmentary surveys will take the usual form; the necessary memorandum will be modeled after the examples given for the special cases already explained in chapter VII.

RESURVEY PLATS

9-84. A somewhat different type of plat is required for representing resurveys as defined in chapter VI. The identity of lands in which valid rights have been acquired based upon a prior subdivision must be preserved. The subdivision of the remaining public lands may or may not be modified, according to the type of resurvey.

Requirements on Plats of Dependent Resurveys

9-85. In addition to the usual data, the plat should carry a marginal memorandum that qualifies the character of the dependent resurvey, also a reference to the previous plat (or plats) to which it is related.

For example, in case of a whole township completely resurveyed, the following general statement is applicable:

This plat represents a dependent resurvey of the original township boundary and subdivisional lines designed to restore the corners in their true original locations according to the best available evidence.

Except as indicated hereon, the lottings and areas are as shown on the plat (or plats) approved _____ (date or dates).

If the original subdivisions were executed in two or more parts, or if the township has not been completely resurveyed, the memorandum is modified.

The reference to modified lottings or areas is omitted when there are no exceptions.

A necessary additional citation takes the following form:

Survey executed by _____
beginning _____, and completed _____,
pursuant to Special Instructions for Group No. _____,
dated _____.

9-86. On plats of dependent resurveys the areas of the subdivisions are shown only in those exceptional cases where the differences between the actual quantity of the vacant subdivisions as found by resurvey and the former area as returned on the original approved plat are so great as to warrant revision. In that case the question of a revision rests upon the element of *quantity* rather than upon that of *distortion*. For practical purposes a variation of approximately 2.00 acres to the quarter-quarter section has been found advisable before making a change. A new lot number and area are assigned to each vacant subdivision which is to be revised. No total area within the section is shown. Alienated subdivisions cannot be revised.

An exception is sometimes made to the 2-acre minimum where it can be shown that more exact acreage is needed for proper management.

The total number of acres covered by a dependent resurvey need not be shown as marginal data on the plat.

Requirements on Plats of Independent Resurveys

9-87. All claims should be accounted for on the plat of an independent resurvey either as segregated tracts or as conforming to the lines of the resurvey, as the case may be, with outline indicated by heavy black lines. An exception to this rule is made where all the claims within a township have been conformed to the lines of the resurvey *under their original description*, in which event a statement may be made on the margin of the plat that—

All claims originally described as in this township are intended to conform to the lines of the resurvey under their original description.

9-88. The additional memorandum that is placed on the plat of the independent resurvey is designed to clarify its very special and unusual character. It should especially show that a former record plat of approximately the same area has been annulled by official action as the basis for the identification, administration, or disposal of the vacant or unappropriated public lands. Moreover, in protection of whatever rights may have been acquired based upon the cancelled plat, the locations are identified in accordance with the marks of that survey.

The following should be regarded as a general suggestion:

This plat represents a resurvey which is independent of and that supersedes, so far as the public lands are concerned (hereon indicated by new subdivisional lines, lottings, and areas) all such similar units that are shown upon the plat (or plats) approved _____ (date or dates).

All tract segregations shown hereon represent the position and form of said tracts under the original description as referred to the original survey, located as such units and marked on the ground according to the best available evidence of their legal boundaries.

Where the boundaries of certain sections of the former survey have been restored as the best identification and form of protection to the alienated lands, and possibly including other sections entirely public land whose boundaries have not been changed, the memorandum, and the historical citations, take the forms that are outlined in section 9-90.

9-89. The above statement is modified if one or more of the claims shown on the status diagram are conformed to the lines of the resurvey by different legal subdivisions, as follows:

All tract segregations shown hereon and all other claims shown to conform to the lines of the resurvey, whether by the original or new legal subdivisions, represent the position and form of said tracts under the original description as referred to the original survey, located as such on the ground according to the best available evidence of their true position.

9-90. If the whole township has been resurveyed, and where the plat shows no sections whose boundaries as a whole have been restored by dependent methods, a memorandum to qualify the nature of the independent resurvey, and the reference to the prior plat (or plats) may take the form that is given in section 9-88.

Where the boundaries of some of the sections

have been restored by dependent resurvey methods, and the remainder of the township has been subdivided on a new plan that is independent of the prior survey, the memoranda should be extended to make these facts clear, as for example:

This plat represents a resurvey that combines restored boundaries of certain sections with an entirely new subdivision of the remaining portions of the township as follows:

The boundaries and corners of sections _____, _____, _____, etc., restored to their true original locations according to the best available evidence, and (excepting as new or modified vacant subdivisions are shown in these sections) the lottings and areas in said sections are as originally shown on the plat (or plats) approved _____ (date or dates.)

The remainder of the township has been subdivided by the running of new lines and the marking of new corners, thereby annulling the former record lines and corners with reference to the public lands remaining undisposed of. The tracts identified hereon represent entered or patented parts of sections shown on the plat (or plats) approved _____ (date or dates.)

The memoranda referred to in sections 9-87, 9-88, and 9-89 are supplied as appropriate.

A necessary additional citation takes the following form:

Survey executed by _____, beginning _____, and completed _____, pursuant to Special Instructions for Group No. _____, dated _____.

9-91. Important items of topography and valuable permanent improvements are shown

along the lines of the metes-and-bounds survey. However, it is apparent that the amount of data shown in connection with the metes- and-bounds surveys make it impossible, at the usual scale, to show objects of little relative importance.

9-92. The requirements for showing the positions of alienated lands on the plats of independent resurveys are given in the memorandum forms which appear in sections 9-87, 9-88, and 9-89. The following sections show how the identification is accomplished in the cases of both tract segregations and conformed entries.

9-93. The tract segregations are laid out on the plats of resurveys as any private land claim would be shown upon an original plat. In order to show the detail of complicated situations one or more additional sheets are frequently necessary. If a claim is found to be conformable as defined in section 6-49 (5), its boundaries may be shown by giving greater weight to such parts of the regular subdivision-of-section lines of the resurvey. The outline of each tract segregation is shown on the first or principal sheet on the plan usually employed to show other types of private land claims.

9-94. On any of the several sheets, as appropriate, an index is supplied to tabulate the description of each tract in terms of the original plat. The following index form is acceptable:

Index to segregated tracts

No.	Tract		Original survey			
	Entry and status	Tp.	Rg.	Sec.	Subdivn.	
39	Buffalo 2979.	58	75	29	NW $\frac{1}{4}$ NW $\frac{1}{4}$.	
	H. E.	58	75	29	S $\frac{1}{2}$ NW $\frac{1}{4}$.	
	W. J. Williams.	58	75	29	NW $\frac{1}{4}$ SW $\frac{1}{4}$.	
	Patented.					
41	Buffalo 1567.	58	75	20	SE $\frac{1}{4}$ SW $\frac{1}{4}$.	
	D. L. E.	58	75	20	W $\frac{1}{2}$ SE $\frac{1}{4}$.	
	W. J. Williams.	58	75	29	NE $\frac{1}{4}$ NW $\frac{1}{4}$.	
	Pending.					
77	Designated school section.	58	75	36	All.	
95	Sundance 03186.	58	74	30	Lot 1.	
	D. L. E.	58	74	30	Lot 2.	
	C. R. Massey.					
	Final certificate.					
101	Vacant.	58	75	24	Lot 4.	
102	Vacant.	58	75	23	NE $\frac{1}{4}$ SE $\frac{1}{4}$.	

9-95. In some cases there is a demand for the description of a tract in terms of its component parts as determined by the original survey. In these exceptional cases, and only as ap-

propriate, the several parts may be indicated by letters A, B, C, etc., with the index modified as follows:

Index to segregated tracts

Tract		Original survey				Component parts	
No.	Entry and status	Tp.	Rg.	Sec.	Subdvn.	Sub-tract	Area
42	Buffalo 0833.	58	75	20	NE $\frac{1}{4}$ SE $\frac{1}{4}$.	B	40.00
	H. E.	58	75	21	Lot 4.	A	32.00
	Thomas R. Williams.	58	75	21	NW $\frac{1}{4}$ SW $\frac{1}{4}$.	C	40.00
	Pending.	58	75	21	SW $\frac{1}{4}$ SW $\frac{1}{4}$.	D	40.00
46	Buffalo 08642.	58	75	24	Lot 3.	A	28.12
	H. E.	58	75	24	NW $\frac{1}{4}$ SW $\frac{1}{4}$.	B	40.00
	Emmet Cain.	58	75	24	NE $\frac{1}{4}$ SW $\frac{1}{4}$.	C	40.00
	Pending.	58	75	24	SE $\frac{1}{4}$ SW $\frac{1}{4}$.	D	40.00

9-96. The above method is well adapted to the identification and subdivision of isolated tracts of public lands where the tracts have been surveyed by metes and bounds. In these cases the arrangement of the data carried by the index is the same, and the status of the tract

is shown as vacant.

9-97. If there are one or more conformable claims to be identified by amended description in terms of the resurvey, without segregation by metes and bounds, another form of index is required, as follows:

Index to conformed entries under modified description

Tract		Original survey				Resurvey			
Entry and status	Tp.	Rg.	Sec.	Subdvn.	Tp.	Rg.	Sec.	Subdvn.	
Buffalo 984.	45	79	12	NE $\frac{1}{4}$ SE $\frac{1}{4}$.	45	79	12	SW $\frac{1}{4}$ SE $\frac{1}{4}$.	
T. & S.	45	79	12	NW $\frac{1}{4}$ SE $\frac{1}{4}$.	45	79	12	SE $\frac{1}{4}$ SW $\frac{1}{4}$.	
Fred A. Jones.	45	79	12	NE $\frac{1}{4}$ SW $\frac{1}{4}$.	45	79	12	SW $\frac{1}{4}$ SW $\frac{1}{4}$.	
Pending.									
Buffalo.	45	79	12	SE $\frac{1}{4}$ SE $\frac{1}{4}$.	45	79	13	NW $\frac{1}{4}$ NE $\frac{1}{4}$.	
S. S. List 6.									
Approved.									

9-98. The several forms of index may be combined into one tabulation, if desirable, in which case it should be given a general title as *Index to Segregated Tracts and Appropriate Subdivisions*. The bracket for "component parts" may be filled in only as needed. Tract segregations are required where modified descriptions embrace subdivisions that are smaller than the regular 40-acre unit.

9-99. The special requirements for lotting fractional parts of sections invaded by tract segregations are set out in sections 6-52,, 6-53, and 6-54, and are illustrated by figures 89, 90, and 91.

9-100. Occasionally there is need for de-

noting the several parts of a tract in terms of quarter-quarter sections and fractional lots of the *resurvey*. This may be accomplished by protraction, showing lot numbers and areas as determined by the resurvey. The lottings within the tract should be made to complete the adjoining fractional quarter-quarter sections of the resurvey. This type of lotting requires no change in the index.

9-101. Where a tract is subdivided, preference is given to the method best suited to the situation: (1) If it is essential to perpetuate the units of the original survey, then the lines of the original quarter-quarter sections are shown; but (2) in those cases of relinquish-

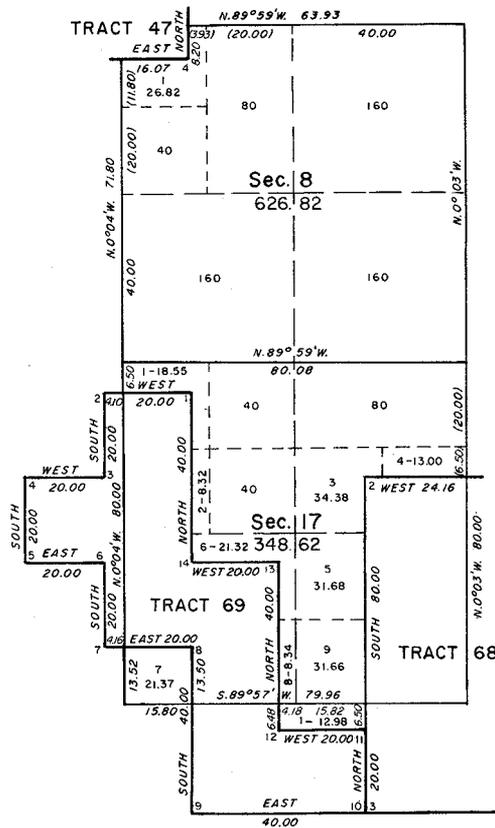


FIGURE 89.—Normal tract segregations, with fractional lotting of the adjoining public land. The tract segregations are laid out on the plat as any private land claim would be shown on an original plat.

ment or cancellation where it is probable that any new entry will be coupled with adjoining lottings by the resurvey, then a lotting within the segregated tract as determined by the section boundaries of the resurvey should be adopted. In the great majority of cases the patent eventually issues in accordance with the original entry, and the necessity for the subdivision of segregated tracts is exceptional. If it is necessary to subdivide a tract on the resurvey plat, the method should be based upon the type of disposal and the purpose to be served. Where such necessity is not clearly apparent no subdivision of this nature should be made, but a supplemental plat may be prepared at a later date to meet specific requirements.

9-102. If there are overlapping claims as defined in section 6-49(6), the conflict is indicated on the plat of the resurvey; but no new

lot numbers should be assigned nor quantities shown within the segregated tracts that are involved in the conflict (figure 90). The showing of the component parts must await the construction of a supplemental plat.

A memorandum is added to the index as follows: *See field notes for area of any part of a tract in conflict with another tract.* The uninvolved public land outside of the segregated tracts is lotted regularly except that the description of any subdivision of the original survey embraced in a tract or conformed entry under modified description is not repeated on the resurvey plat; instead it is assigned an appropriate lot number.

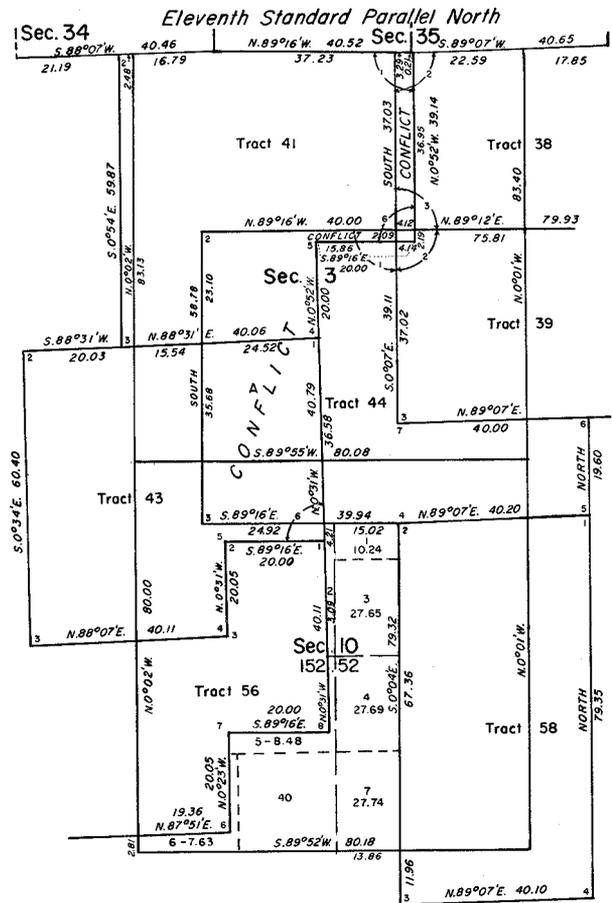


FIGURE 90.—Tract segregations in conflict, but not an adequate basis for amendment of descriptions. If there are overlapping claims the conflict is indicated on the plat of the resurvey.

of previous conflicts. The appropriate section numbers, lot numbers, and areas of the reduced tract subdivisions which are conflict free are listed in the columns of resurvey descriptions and areas of component parts. A footnote will follow the index referring to each new lot indicating the lot is a portion of the original subdivision free of conflict.

9-109. The usual rules of field procedure are observed in the protraction of the tract subdivisions. Where adequate control is shown in the record, the original sections are subdivided regularly. But if tracts have been segregated by in-

dependent resurvey with limited control, the points for intermediate sixteenth-section, quarter-section, and section corners on the original tract boundaries are determined by proportionate intervals between the established angle points, and the interior lines are drawn to connect corresponding points on the opposite sides of the tract boundaries, fixing the corners of each component part by intersections. The computed areas are based upon the data derived in the resurvey.

9-110. The following table is a revised index conforming to figure 91:

Index to segregated tracts

Tract		Original survey				Component parts ¹		Resurvey			
No.	Entry and status	Tp.	Rg.	Sec.	Subdvn.	Subtract	Area	Tp.	Rg.	Sec.	Subdvn.
38	Buffalo 010118.	44	80	1	Lot 4.	A	35.16				
	H. E.	44	80	2	Lot 1.	B	35.86				
	Ralph R. Baldwin.	44	80	2	Lot 2.	C	36.06				
	Pending.	44	80	2	SW $\frac{1}{4}$ NE $\frac{1}{4}$.	D	40.00				
		44	80	2	SE $\frac{1}{4}$ NE $\frac{1}{4}$.	E	40.00				
		44	80	1	SW $\frac{1}{4}$ NW $\frac{1}{4}$.	F	40.00				
		44	80	2	Lot 3.		28.81	44	80	3	Lot 5.*
		44	80	2	SE $\frac{1}{4}$ NW $\frac{1}{4}$.		30.97	44	80	3	Lot 7.*
41	Buffalo 09311.	44	80	3	Lot 1.	A	36.66				
	H. E.	44	80	3	Lot 2.	B	36.85				
	Henry J. Brun-	44	80	3	Lot 3.	C	37.00				
	ning.	44	80	3	SE $\frac{1}{4}$ NW $\frac{1}{4}$.	D	40.00				
	Pending.	44	80	3	SW $\frac{1}{4}$ NE $\frac{1}{4}$.	E	40.00				
		44	80	3	NW $\frac{1}{4}$ SE $\frac{1}{4}$.	F	40.00				
		44	80	3	NE $\frac{1}{4}$ SW $\frac{1}{4}$.	G	40.00				
		44	80	3	SE $\frac{1}{4}$ NE $\frac{1}{4}$.		39.76	44	80	3	Lot 6.*
43	Buffalo 011734.	44	80	3	SW $\frac{1}{4}$ SW $\frac{1}{4}$.	A	40.00				
	H.E.	44	80	10	NW $\frac{1}{4}$ NW $\frac{1}{4}$.	B	40.00				
	Perry Barnes.	44	80	10	SE $\frac{1}{4}$ NW $\frac{1}{4}$.	C	40.00				
	Pending.	44	80	10	SW $\frac{1}{4}$ NW $\frac{1}{4}$.	D	40.00				
		44	80	3	SE $\frac{1}{4}$ SW $\frac{1}{4}$.		28.32	44	80	3	Lot 9.*
							2.94	44	80	4	Lot 9.*
							4.47	44	80	3	Lot 10.*
							0.41	44	80	4	Lot 10.*
							2.12	44	80	9	Lot 8.*
							25.37	44	80	10	Lot 9.*
						8.42	44	80	10	Lot 8.*	
						*0.00					
44	Buffalo 07532.	44	80	11	NW $\frac{1}{4}$ NE $\frac{1}{4}$.	A	40.00				
	H. E.	44	80	11	NE $\frac{1}{4}$ NW $\frac{1}{4}$.	B	40.00				
	Antoine Faure.	44	80	11	NW $\frac{1}{4}$ NW $\frac{1}{4}$.	C	40.00				
	Pending.	44	80	10	NE $\frac{1}{4}$ NE $\frac{1}{4}$.	D	40.00				
		44	80	2	NW $\frac{1}{4}$ SW $\frac{1}{4}$.		27.51	44	80	3	Lot 8.*
		44	80	3	SE $\frac{1}{4}$ SE $\frac{1}{4}$.		32.90	44	80	3	Lot 11.*
		44	80	2	SW $\frac{1}{4}$ SW $\frac{1}{4}$.		38.12	44	80	3	Lot 12.*
	44	80	3	NE $\frac{1}{4}$ SE $\frac{1}{4}$.		*0.00					

¹ See section 9-95.

* Portion of original subdivision that is free of conflict.

9-111. Not all resurvey plats can be treated similarly. Methods suited to situations not involved in a particular case should be set aside to avoid unnecessary complications. The nor-

mal resurvey may be brought within a fairly definite, standardized drafting practice, but each unusual case needs a special analysis as to how the detail may be most suitably platted.