National Mapping Program
Technical Instructions

Part 2
Product Generation

Miscellaneous Instruction
Technical Criteria for Digital Revision and Product Generation

1:24,000-Scale Digital Line Graphs and Quadrangle Maps

U.S. Department of the Interior
U.S. Geological Survey
National Mapping Division

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* Appendicies 2-A and 2-B are style sheets currently available in print only.

2. PRODUCT GENERATION

Produce map reproduction materials using map separates generated from the digital line graph (DLG) data and symbolized using specifications in Part 5, Publication Symbols of Standards for 1:24,000- and 1:25,000-Scale Quadrangle Maps.

→ Instructions on fonts and layout for collar information are provided on the 1:24,000- and 1:25,000-Scale Style Sheet, appendix 2-A. Instructions on fonts and layout for collar information on USGS-USFS single-edition maps are provided on the 1:24,000-Scale Style Sheet, appendix 2-B. ←

2.1 MAP EDITING GUIDELINES

The DLG data used to support revision have been collected from maps on a category basis. These categories have not been vertically registered; therefore, when maps are produced from these data, symbol conflicts arise. In addition, technical limitations of the current product generation software may not allow all current symbol specifications to be met efficiently. Correcting these conflicts and other symbol problems can be time-consuming and in some cases results in little benefit to the map user in terms of feature legibility. This instruction provides guidance for determining when interactive editing of these symbols is required and, conversely, when symbology that does not meet current specifications can be left as generated. The overriding goal is to use resources efficiently to produce maps that comply as closely as possible with the existing symbolization specifications contained in Part 5, "Publication Symbols" of Standards for 1:24,000- and 1:25,000-Scale Quadrangle Maps. These guidelines will be in effect until new software or collection processes are available that can correct these deficiencies in ways that make more efficient use of resources. As additional issues arise or clarifications are required, this document will evolve through established Technical Instruction procedures (change notices) to reflect the most current specifications.

The aesthetic expectations for the map products of the NMD have been developed over many years, based on analog map compilation and publication practices. Some of these practices are difficult to reproduce in a digital production environment and do not significantly improve representation in terms of effective communication. The impact on digital product generation is that

time is being expended to interactively edit symbology for compliance with aesthetic requirements that are a legacy of the analog era. Therefore, these guidelines have been prepared to constrain these activities in digital product generation. The underlying philosophy of this instruction is that time will be expended on editing only to conform to the principles listed below:

1. The resulting map must support clear, unambiguous interpretation of the features represented.
2. The positional and classification accuracy of the symbolized features must meet current standards, and the map as a whole must represent the scientific precision that underlies the USGS cartographic process, even though not all traditional appearance criteria may be met.
3. The overall appearance of the map must be acceptable, even if some individual symbols are not consistent with current specifications.

2.2 FEATURE-SPECIFIC TREATMENTS

The treatments listed below are presented to illustrate the application of the principles in section 2.1. They are not intended to represent all possible situations. Centers must apply these principles to determine appropriate treatments in other situations. Please provide examples of commonly encountered situations to the Chief, Branch of Technical Standards and Product Development, for consideration for inclusion in future changes to this document.

2.2.1 Hypsography

During limited update mapping, hypsography is not revised except for selected logical contouring around features in conflict, or to accommodate a datum shift. All other contours that are in conflict with planimetric features are identified as obsolete. This section is not intended to address these temporal conflicts. For specific instructions on limited update digital revision see part 1 and the Standards for 1:24,000-Scale Digital Line Graph and Quadrangle Maps. This section issues guidance on dealing with misalignment of contours and existing or revised data that are NOT the result of actual changes to the topography but are the result of simple graphic conflicts, such as those examples listed below.

Contour lines may be misaligned with other features, such as road casings and drains.

> Do not correct misalignments unless they cause misinterpretation of the feature or significantly detract from the overall appearance of the map.

Contours may not be squared off for new or revised earthen dams.

During limited update, contours are not revised, except by logical contouring, and therefore generally will not be squared off for newly added earthen dams. These contours will not be altered during product generation. Standard update projects should arrive in product generation with the contours properly squared off.

New or revised levees or spoil banks may conflict with the existing contours.

Levees and spoil banks are not added or revised during digital limited update revision. In standard update, retain and symbolize existing levees or spoil banks; collect new or revised levees or spoil banks according to specifications. Show new or revised levees or spoil banks less than 0.04 inch at the base with symbol 532.11. Do not break the contour lines for the symbol. Label if necessary to accurately identify the feature as a levee or spoil bank. Contour all levees wider than 0.04 inch at the base.

Symbols for spot elevations, PLSS corners, and survey markers may overprint, and spot elevations may overprint other features.

Do not suppress the overprinting symbol if symbols can be interpreted correctly.

Automatically generated depression ticks can overlap several contours and are therefore confusing and graphically unpleasing.

Rather than interactively edit all of the overlapping ticks, show ticks only on the top and bottom contours of a depression.

→ ~~Fill ticks are added interactively during product generation.~~

~~Fill ticks may be omitted except in those instances where omission prohibits correct interpretation of the direction of slope.~~ ←

2.2.2 Boundaries

Boundary lines may overprint roads or other linear features.

Dg not suppress boundaries generated from existing digital files if both the boundaries and conflicting features can be interpreted correctly.

Boundaries coincident with roads do not show a reduced lineweight.

Do not reduce lineweight if the boundary and road can be correctly interpreted.

Boundary symbolization is not prorated according to current specifications.

Do not edit prorating if the boundary can be interpreted correctly.

2.2.3 Transportation

Casings for intersecting roads and ramps overhang each other.

Do not clear intersections.

The dashed road fill prorating may be incorrect where two class 2 roads intersect.

Do not correct if the area of non-prorated fill is not large enough to cause misinterpretation of the road class on either road and does not significantly detract from the overall appearance of the map.

Where an underpassing road is broken for an overpassing road at a grade-separated intersection, the underpassing road ends are not angled parallel to the overpassing road.

Do not angle road end.

In the past, road intersections have been collected with flairs, that is, curved intersections instead of "T" intersections.

Show road intersections as straight lines unless there is an island at the intersection.

Class 4 roads occur in built-up areas, presumably areas not previously included in built-up tint.

Show all class 4 roads in the digital file; do not delete class 4 roads in built-up tint areas.

Class 4 roads less than 500 feet long have been collected.

Do not delete class 4 roads that are less than 500 feet long length during product generation.

The transition between a wide road and a narrower road is not smooth.

This problem is generally not readily visible at map publication scale. Therefore, do not taper, except at tollgates where the toll plaza is more than four times as wide as the road.

Median breaks on divided highways represented as one road are not captured in the digital data.

Do not show median breaks on divided highways represented as one road.

At the change in the direction of a power or transmission line, two poles may be symbolized instead of one. The duplicate poles are due to the automated placement of the towers in product generation and present incorrect or inaccurate information.

Delete the extra pole.

2.2.4 Manmade Features

Buildings may touch or fall partially within road casings.

Do not correct buildings touching road casings. Move buildings if any portion falls inside the road casing.

Urban tint next to a class 3 road does not extend to the edge of the road casing.

Do not correct if the relationship of the urban tint to the road is obvious. The current standards do not require vertical alignment in the DLG.

Like symbols may touch because of product generation symbolization.

Symbols such as buildings may touch because minimum-size symbols are used. Do not correct unless the touching symbols convey false information.

2.2.5 Public Land Survey System (PLSS)

PLSS lines coincident with boundaries, roads, or ditches will overprint the symbols for these features.

Do not suppress the coincident PLSS lines unless the coincident features cannot be correctly interpreted.

2.3 COLLAR NOTES AND OTHER MARGINAL DATA

Digital product generation processes have automated the layout and type generation of collar notes. However, the need for correct phrasing and standardized treatments remains. This section addresses the requirements for correct phrasing and standardized treatments for collar notes on 1:24,000-scale topographic quadrangles, while the style sheets in Appendices 2-A and 2-B treat layout and type specifications.

See Section 2.3.20 for collar notes on USGS-USFS single-edition topographic quadrangles.

See Section 2.3.21 for collar notes on maps on the U.S.-Canada border completed with source from Natural Resources Canada and collar notes for maps on the U.S.-Mexico border completed with source from Instituto Nacional de Estadística, Geografía e Informática (INEGI).

See Section 2.3.23 for collar notes on maps covering the Tennessee Valley Authority (TVA) Watershed Area that TVA has produced in cooperation with the USGS.

2.3.1 Department/Bureau Identifier

The department/bureau identifier is placed in the upper left margin:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

This note is standard.

2.3.2 Map Titles

Map Title Block, Upper Right Margin

The map title block in the upper right margin shows the quadrangle name on the first line; the State (and county, if applicable) or States that the quadrangle covers on the second line; and the map series and class on the third line.

Obtain the quadrangle name from the Geographical Cell Names Data Base. Append the word "QUADRANGLE" after the quadrangle name.

Obtain the State name(s) from the Geographical Cell Names Data Base. If the quadrangle covers area in more than one State, first list the State that contains the feature for which the quadrangle is named. Then list other States in order of decreasing area covered on the map. Show names in full; do not abbreviate. Place hyphens between State names; for example:

TEXAS-NEW MEXICO

If there is only one county on the quadrangle, show the county name after the State name; otherwise, omit county names from the title block. Place a hyphen between the names and use the abbreviation

"CO." for "County." Pattern after the following example:

CALIFORNIA-LOS ANGELES CO.

The map series is the 7.5-minute series. The map class refers to the edition: topographic. Use the following note:

7.5-MINUTE SERIES (TOPOGRAPHIC)

If the quadrangle name had changed at any time, append a line to show the former name. Obtain the former name from the Geographical Cell Names Data Base. Pattern the title block after the following example:

MONTBELLO QUADRANGLE
COLORADO
7.5-MINUTE SERIES (TOPOGRAPHIC)
(FORMERLY SABLE)

OMIT references to the 15-minute x 15-minute quadrangle that might have appeared on the previous map.

Map Title Block, Lower Right Margin

This instruction supersedes ST1-12-9, Standards for Map Reference Codes, as applied to 1:24,000-Scale maps.

The map title block in the lower right margin shows the quadrangle name and the State(s) on the first line, the map date on the second line, and the DMA Reference Code on the third line. Do not show the county name(s). Use the Postal Service style of two-letter abbreviations for States as shown in Table 2-1.

Table 2-1
State Abbreviations

AL	Alabama	NH	New Hampshire
AK	Alaska	NJ	New Jersey
AZ	Arizona	NM	New Mexico
AR	Arkansas	NY	New York
CA	California	NC	North Carolina
CO	Colorado	ND	North Dakota
CT	Connecticut	OH	Ohio
DE	Delaware	OK	Oklahoma
FL	Florida	OR	Oregon
GA	Georgia	PA	Pennsylvania
HI	Hawaii	RI	Rhode Island
ID	Idaho	SC	South Carolina
IL	Illinois	SD	South Dakota
IA	Iowa	TN	Tennessee
IN	Indiana	TX	Texas
KS	Kansas	UT	Utah
KY	Kentucky	VT	Vermont
LA	Louisiana	VA	Virginia
ME	Maine	WA	Washington
MD	Maryland	WV	West Virginia
MA	Massachusetts	WI	Wisconsin
MI	Michigan	WY	Wyoming
MN	Minnesota	CZ	Canal Zone
MS	Mississippi	DC	District of Columbia
MO	Missouri	GU	Guam
MT	Montana	PR	Puerto Rico
NE	Nebraska	VI	Virgin Islands
NV	Nevada		

The map date is a single measure of the currentness of map information. See Section 2.3.5 for determining the map date. See Section 2.3.20 for determining the map date for single-edition maps. OMIT all other dates (for example, the purple date of photorevision) in the map title block that might have appeared on the previous map.

Obtain the DMA Reference Code from the previous map; if necessary, cross-check the code with the Defense Mapping Agency Catalog of Maps, Charts, and Related Products. OMIT the Map Reference Code. OMIT other geographic index numbers (e.g., N3337.5-W11022.5/7.5) that might have appeared on the previous map.

If the quadrangle name has changed at any time, insert "FORMERLY (old quadrangle name)" between the map title and map date. Pattern after the following example:

MONTBELLO, CO
(FORMERLY SABLE)

1988

DMA 5063 IV-SE SERIES V877

2.3.3 "Produced by" Note

Show the following note:

Produced by the United States Geological Survey

Quadrangle maps produced through digital revision procedures are regarded as new products. Consequently, OMIT notes that might have appeared on the previous map to credit other agencies for performing mapping operations: for example, omit notes such as "**Mapped by the Defense Mapping Agency/Edited and published by the Geological Survey**".

See Section 2.3.4 for cooperative credit notes for agencies contributing funds toward digital revision and product generation.

2.3.4 Cooperative Credit Notes and Headings

Agencies that cooperate in digital revision and product generation of quadrangle maps by contributing funds are given appropriate credit on the published maps.

Quadrangle maps produced through digital revision procedures are regarded as new products. Consequently, OMIT all cooperative credit headings and notes that might have appeared on the previous analog map.

Show new cooperative credit notes and headings only when cooperators have funded at least 50% of the cost of the update. Obtain information about funding and name(s) of cooperating agency or agencies from the Assignment Management System (AMS). Request that Coordination and Requirements offices ask the cooperators for preferred usage of their names in credit notes and headings.

For cooperative credit headings for State agencies, show on the first line:

STATE OF (Name, STATE/TERRITORY)

Commonwealth is the official title of Puerto Rico; Commonwealth is also the official title for these States: Kentucky, Virginia, Massachusetts, and Pennsylvania. For these jurisdictions, show on the first line:

COMMONWEALTH OF (Name, STATE/TERRITORY)

Show the name of the cooperating agency on the second line. Append a third line to show the name of a second cooperating agency, if applicable. Pattern the note after the following example:

STATE OF SOUTH DAKOTA
GEOLOGICAL SURVEY
DEPARTMENT OF HIGHWAYS

Append a cooperative credit note to the "Produced by" note as patterned after the following example:

Produced by the United States Geological Survey
in cooperation with (funding agency or agencies)

Where there are two or more cooperating agencies, show as many agency names as space permits. If there is not adequate space to show names of all cooperating agencies within a State, show a note patterned after the following example:

Produced by the United States Geological Survey
in cooperation with State of Kansas agencies

2.3.5 Source Notes

Source notes indicate the currentness of map content. Source notes may also credit agencies for maintaining and contributing data that the USGS does not verify or recompile.

For both Limited Update and Standard Update maps:

Always show the date of imagery source used to update map content. If there are multiple dates of imagery source, select the date of the oldest imagery to evaluate and collect new feature information.

OMIT notes for sources from which the USGS verifies or recompiles content. Do not identify sources for boundary data, as the USGS verifies and updates boundaries from ancillary sources. Do not identify the source for names, as the USGS maintains the Geographic Names Information System (GNIS) to verify names.

OMIT the control note, unless the USGS obtains control from other agencies by agreement and does not verify that control. The USGS still verifies control from the National Geodetic Survey (NGS), National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce. Older control by the U.S. Coast and Geodetic Survey (USC&GS) was also verified by USGS. Control from agencies other than those listed above is used only through agreement. When unverified control from other agencies is used, show the following note:

Supplemental control by (other agency or agencies)

OMIT the map edit year.

Do not identify the currentness of vegetative surface cover content. OMIT notes identifying currentness of source for vegetative surface cover that may have appeared on the previous map; typically, these notes were phrased as, "Revisions shown in purple and woodland compiled from aerial photographs taken (year) and other source data."

Limited Update

The date of the image source used to update the map content serves as the map date in the lower right margin.

Show the date of topographic compilation; however, OMIT the original base map compilation date for planimetry. The difference between currentness of planimetry and currentness of topography indicates that there may be discrepancies in vertical registration. Pattern the note after the following example:

Topography compiled (year).

Obtain information about topography compilation from values in the METHOD_ID and PROCEDURE_ID fields in the Map Catalog. If topography was compiled from imagery, show the value for the AERIAL_PHOTO_YEAR_BEGIN field in the Map Catalog. If topography was compiled from planetable surveys, show the value for the PROCEDURE_DATE field in the Map Catalog. Information may also be obtained from the previous map.

Pattern the source note for Limited Update after the following example:

> **Topography compiled 1974. Planimetry derived from imagery taken 1988. Public Land Survey System and survey control current as of (most recent field check date)**

The "most recent field check date" is historical data and may be obtained from the value for the FIELD_CHECK_END field in the Map Catalog or the previous map.

Standard Update

Show only the date of image source and the field check date for Standard Update. The field check date serves as the map date in the lower right margin.

OMIT base map compilation dates. OMIT separate source notes for Public Land Survey System and survey control, as these features are verified by field check. Pattern the source note for Standard Update after the following example:

> **Derived from imagery taken 1988. Field checked 1990**

2.3.6 Horizontal Coordinate Reference System Notes

Horizontal Coordinate Reference System notes explain the system used to reference locations on the ground.

Maps produced from digitally revised Digital Line Graphs are on the Universal Transverse Mercator projection and North American Datum of 1983 (NAD 83); refer to Section 1.1.2.1., Datums. Show notes for horizontal coordinate reference systems as defined by the following example:

> **North American Datum of 1983 (NAD 83). Projection and 1000-meter grid: Universal Transverse Mercator, zone 13**
> **10 000-foot ticks: Colorado Coordinate System of 1983 (south zone)**
> **North American Datum of 1927 (NAD 27) is shown by dashed corner ticks. The values of the shift between NAD 83 and NAD 27 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software**

Obtain the UTM zone from the DLG-3 header or Digital Geospatial Metadata. For most maps, the UTM zone can be verifed with longitude using Table 2-2.

Table 2-2
Relationship Between Longitude and UTM Zones

West Longitude (degrees)	UTM Zones
180-174	1
174-168	2
168-162	3
162-156	4
156-150	5
150-144	6
144-138	7
138-132	8
132-126	9
126-120	10
120-114	11
114-108	12
108-102	13
102-96	14
96-90	15
90-84	16
84-78	17
78-72	18
72-66	19
66-60	20

Obtain State Plane Coordinate System (SPCS) units for individual States from Table 2-3. Spacing is 2 500-m for metric SPCS units; 10 000-foot for SPCS in U.S. Customary units. Verify the SPCS zone with "Index of State Plane Coordinate (SPC) Zone Codes (NAD 1983)," by National Ocean Service, National Oceanic and Atmospheric Administration (NOS/NOAA), U.S. Department of Commerce, December 1988.

Table 2-3
Units of Measurement for State Plane Coordinate Systems on NAD 83

STATE	SPCS UNITS	STATE	SPCS UNITS
Alabama	U.S. Survey Foot	Nebraska	U.S. Survey Foot
Alaska	Meters	Nevada	Meters
Arizona	Meters	New Hampshire	U.S. Survey Foot
Arkansas	U.S. Survey Foot	New Jersey	Meters
California	U.S. Survey Foot	New Mexico	Meters
Colorado	U.S. Survey Foot	New York	Meters
Connecticut	U.S. Survey Foot	North Carolina	Meters
Delaware	U.S. Survey Foot	North Dakota	Meters
Florida	Meters	Ohio	Meters
Georgia	U.S. Survey Foot	Oklahoma	U.S. Survey Foot
Hawaii	U.S. Survey Foot	Oregon	Meters
Idaho	U.S. Survey Foot	Pennsylvania	Meters
Illinois	U.S. Survey Foot	Rhode Island	U.S. Survey Foot
Indiana	Meters	South Carolina	International Foot
Iowa	Meters	South Dakota	U.S. Survey Foot
Kansas	Meters	Tennessee	U.S. Survey Foot
Kentucky	U.S. Survey Foot	Texas	U.S. Survey Foot
Louisiana	U.S. Survey Foot	Utah	Meters
Maine	Meters	Vermont	Meters
Maryland (and DC)	U.S. Survey Foot	Virginia	Meters
Massachusetts	U.S. Survey Foot	Washington	Meters
Michigan	U.S. Survey Foot	West Virginia	Meters
Minnesota	U.S. Survey Foot	Wisconsin	Meters
Mississippi	Meters	Wyoming	U.S. Survey Foot
Missouri	U.S. Survey Foot	Puerto Rico	Meters
Montana	Meters	Virgin Islands	Meters

If there is more than one zone, append SPCS information for the other zone(s). Examples of horizontal coordinate reference system notes with more than one SPCS zone are shown in Figure 2-1.

The phrasing of the NADCON note for conversion from NAD 83 to NAD 27 is standard.

For more information on horizontal datums, see STI 93-4-D, "Horizontal Datum Use and Reference on National Mapping Division (NMD) Map and Digital Products," and STI 94-10, "Reference System Treatment for Map Products of the National Mapping Program."

One State, two zones

North American Datum of 1983 (NAD 83). Projection and 1000-meter grid: Universal Transverse Mercator, zone 13
10 000-foot ticks: Colorado Coordinate System of 1983 (south and central zones)

Two States, two zones with same units of measure

North American Datum of 1983 (NAD 83). Projection and 1000-meter grid: Universal Transverse Mercator, zone 13
10 000-foot ticks: Colorado Coordinate System of 1983 (north zone) and Wyoming Coordinate System of 1983 (west central zone)

Two States, three zones with same units of measure

North American Datum of 1983 (NAD 83). Projection and 1000-meter grid: Universal Transverse Mercator, zone 13
10 000-foot ticks: Colorado Coordinate System of 1983 (north zone) and Wyoming Coordinate System of 1983 (west central and east central zones)

Three States, three zones with same units of measure

North American Datum of 1983 (NAD 83). Projection and 1000-meter grid: Universal Transverse Mercator, zone 13
10 000-foot ticks: Colorado Coordinate System of 1983 (north zone), Wyoming Coordinate System of 1983 (east zone) and Nebraska Coordinate System of 1983

Two States, two zones with different units of measure

North American Datum of 1983 (NAD 83). Projection and 1000-meter grid: Universal Transverse Mercator, zone 13
10 000-foot ticks: Colorado Coordinate System of 1983 (north zone). 2500-meter ticks: Utah Coordinate System of 1983 (central zone)

Three States, three zones with different units of measure

North American Datum of 1983 (NAD 83). Projection and 1000-meter grid: Universal Transverse Mercator, zone 13
10 000-foot ticks: Colorado Coordinate System of 1983 (south zone). 2500-meter ticks: Utah Coordinate System of 1983 (south zone) and New Mexico Coordinate System of 1983 (west zone)

Figure 2-1.
Examples of horizontal coordinate reference system notes with more than one SPCS zone

2.3.7 Explanatory Notes

Explanatory notes describe certain features that appear on the body of the map. These notes will be evaluated when a tailored symbol legend is added to the map.

Obsolete contour note - Show the following note when there is at least one feature instance of CONTOUR, Positional Accuracy = Obsolete in the quadrangle area (Limited Update mapping only):

Contours that conflict with updated major features are dashed

Private inholdings note - Show the following note where there is at least one feature instance of RESERVATION, Administrative Status = Federal OR Administrative Status = State in the quadrangle area:

There may be private inholdings within the boundaries of the National or State reservations shown on this map

Land line notes - Show land line omission notes to explain why land lines are missing in PLSS States.

If there is at least one feature instance of PUBLIC LAND SURVEY SYSTEM AREA, First Division Type = Undivided Area, Existing Condition = Unsurveyed AND there are no feature instances of PUBLIC LAND SURVEY SYSTEM AREA, First Division Type = Undivided Area, Existing Condition = Insufficient Data, show the following note:

Where omitted, land lines have not been established

If there is at least one feature instance of PUBLIC LAND SURVEY SYSTEM AREA, First Division Type = Undivided Area, Existing Condition = Insufficient Data AND there are no feature instances of

PUBLIC LAND SURVEY SYSTEM AREA, First Division Type = Undivided Area, Existing Condition = Unsurveyed, show the following note:

Certain land lines are omitted because of insufficient data

If there exists at least one feature instance of PUBLIC LAND SURVEY SYSTEM AREA, First Division Type = Undivided Area, Existing Condition = Unsurveyed AND at least one feature instance of PUBLIC LAND SURVEY SYSTEM AREA, First Division Type = Undivided Area, Existing Condition = Insufficient Data, show the following note:

Where omitted, land lines have not been established or are not shown because of insufficient data

DO NOT SHOW notes explaining dashed land lines (Positional Accuracy = Approximate).

Show the following note where there is at least one feature instance of SURVEY LINE, Type = Surveyed AND Positional Accuracy = Unspecified, associated with the feature PUBLIC LAND SURVEY SYSTEM AREA, Survey Status = Not approved by BLM:

Dotted land lines established by private surveys

Show special collar notes for land lines in the State of Ohio, as surveys were performed before the rectangular system of principal meridians and base lines was adopted. Appendix 2-C, Preparation of Names and Collar Notes for Ohio Surveys, contains rules for completing Ohio survey collar notes.

Fence and field lines note - DO NOT SHOW under any conditions.

Inundation area note - Show the following note where there is at least one feature instance of INUNDATION AREA, Type = General Case AND Status = Controlled in the quadrangle area:

Areas covered by dashed light-blue pattern are subject to controlled inundation

Built-up area note - DO NOT SHOW under any conditions.

Subsidence area note - Show the following note for quadrangles where there are active or stabilized subsidence areas in which vertical control is unreliable, due to water, mining, or petroleum extraction:

This quadrangle covers a subsidence area

Carolina Bay note - Show the following note when there is at least one feature instance of BASIN, Category = Carolina Bay on maps along the coast between northern Florida and New Jersey:

Dashed elliptical outline represents Carolina Bay

2.3.8 Declination Diagram

The declination diagram graphically depicts the direction of deviation of UTM grid north and magnetic north from true north. It also shows values of the deviations in both degree-minute-second units and mil units. The declination diagram permits users in the field to orient the map to true north with a compass.

Obtain the UTM grid declination from the quadrangle report or the previous map.

Obtain the current magnetic declination from the GEOMAG program maintained by the Branch of Earthquake and Geomagnetic Information, Geologic Division, in Golden, Colorado. Magnetic declination is shown to the nearest 30 minutes.

The declination diagram is automatically generated from values and directions for UTM grid declination and magnetic declination. Below the declination diagram, show the following note:

UTM GRID AND (year) MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

2.3.9 Map Scale Note and Bar Scale

The map scale note and bar scale relate map measurements to ground distance. The map scale note may be used to derive ground distance from map measurements. Map scale is a recognized way of referencing primary maps. The bar scale permits direct measurement of ground distances as represented by the map.

Show the following map scale note:

SCALE 1:24 000

Note that the thousands place is delimited by a space.

The bar scale is shown below the map scale note. The bar scale relates map measurements to ground distances in both metric units and U.S. Customary units (feet and miles).

2.3.10 Vertical Coordinate Reference System Notes

Vertical coordinate reference system notes provide guidance on using elevation data shown on the body of the map. These notes include contour interval notes, vertical datum notes, and conversion notes.

OMIT the red collar note "CONTOURS AND ELEVATIONS IN METERS" that may have appeared on the previous map.

Contour Interval Notes:
The contour interval is a measure of altitude resolution. Obtain the contour interval AND units from the previous map or from the results for the SQL query, "desc MC_CONTOUR_INTERVALS," on the Map Catalog database.

Show a contour interval note patterned after the following example:

CONTOUR INTERVAL (20 FEET, 5 METERS)

For supplementary contour intervals, add a note patterned after the following example:

SUPPLEMENTARY CONTOUR INTERVAL (5 FEET, 1 METER)

OMIT “dotted contours” notes that might have appeared on the previous map. Dotted contours are supplementary contours. Use a note patterned after the above example.

If there is more than one contour interval, show a separate note for each contour interval. See Section 2.2, Dual Contour Intervals, of Appendix A, Background Material for Contour, Part 7, Hypsography, Standards for 1:24,000-Scale Digital Line Graphs and Quadrangle Maps for more information.

If *all* elevations on the quadrangle are between zero and five feet or one meter (above or below the reference datum), omit the contour interval note and show a note patterned after the following examples:

ALL ELEVATIONS BETWEEN ZERO AND (5 FEET, 1 METER) (ABOVE, BELOW) DATUM

A contour interval of 5 feet or 1 meter, depending on map elevation units, is the smallest regular contour interval, according to Appendix A, Background Material for Contour, Part 7, Hypsography, Standards for 1:24,000-Scale Digital Line Graphs and Quadrangle Maps.

OMIT depth curve or soundings notes that may have appeared on the previous map, unless a cooperator has requested that depth curves be shown on the body of the map (from STI 94-7, "Treatment of Depth Curves on Primary Series Maps").

Vertical Datum Note
Show the note

NATIONAL GEODETIC VERTICAL DATUM OF 1929

until instructions for converting to the North American Vertical Datum of 1988 (NAVD 88) are issued (see Section 1.1.2.2, Datums). Obtain the vertical datum from the previous map or the value for VERTICAL_DATUM_ID field in the Map Catalog.

Elevation notes
OMIT notes on the precision of elevation values (for example, CONTROL ELEVATIONS TO THE NEAREST 0.1 METER).

OMIT notes from the previous map that identify elevations that were not field checked. These elevations may have been shown in brown on the previous map. According to the SPOT ELEVATION template in Part 7, Hypsography, Standards for 1:24,000-Scale Digital Line Graphs and Quadrangle Maps, no distinction is made between field checked elevations (black type) and non-field checked elevations (brown type).

Conversion notes

Conversion notes help the user convert contour and elevation values between English units and metric units. Show only one conversion note to eliminate redundancy.

Show only the following note when elevation data are in feet:

To convert from feet to meters, multiply by .3048

Show only the following note when elevation data are in meters:

To convert from meters to feet, multiply by 3.2808

Notes on coastal topographic maps

OMIT the note identifying the limits delineated by the shoreline, e.g., “SHORELINE REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER”, that might have appeared on the previous map.

Show the "Mean Range of Tide" note for topographic maps that contain feature instances of SEA/OCEAN. Obtain the value from the previous map; the National Ocean Service may also provide this value as part of shoreline data. According to the National Ocean Service, these values are averaged over a period of nineteen years. As the coastal shoreline is usually not revised, except where it is modified by construction, assume that the mean range of tide will not change significantly over time.

2.3.11 Map Accuracy Note

The following instruction will remain in effect until the adoption of the National Standard for Spatial Data Accuracy by the Federal Geographic Data Committee.

The map accuracy note certifies that the quadrangle meets positional accuracy as defined by the National Mapping Accuracy Standard (NMAS) of 1947.

Apply the following label to those maps that meet both vertical and horizontal accuracy standards as defined by NMAS:

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS

Do not show an accuracy note if the map does not meet either horizontal or vertical accuracy standards as defined by NMAS.

See Section 1.1.1.1, Preliminary Evaluation of Existing Data and Positional Accuracy, for production planning guidelines. See STI 85-1-G, "Omission of the certification statement for compliance with the National Map Accuracy Standards," for notifying the Chief, National Mapping Division, that a quadrangle did not meet NMAS.

2.3.12 "For Sale" Note

This instruction will be in effect until the approval of a note that reflects current NMD product distribution policy.

Show the following note on all 1:24,000-Scale maps updated by digital revision procedures:

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225

OMIT the reference to Reston, Virginia on all maps, as Reston forwards orders to the Denver Distribution Office for processing. On Alaska maps, OMIT reference to Fairbanks, Alaska or Anchorage, Alaska, as the Denver Distribution Office is handling all distribution.

Amend the “For Sale” note when a State or Federal cooperating agency maintains a distribution center for maps falling within its sphere of interest. Append an additional line to reference the cooperating agency by name and address (city name, State name, and ZIP code). Obtain the cooperator’s name from the previous analog map or from AMS; update agency name and/or address, where appropriate. Pattern after the following example:

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND ILLINOIS GEOLOGICAL SURVEY, CHAMPAIGN, ILLINOIS 61820

2.3.13 Information Note

Show the following note:

A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

This note will be evaluated when a tailored symbol legend is added to the map.

2.3.14 Quadrangle Location Diagram

The quadrangle location diagram locates the quadrangle within a State. Where a quadrangle falls within two or more States, the outline of the State having the feature for which the map is named should be shown. Use automated symbol fonts for this diagram and place the square representing the quadrangle accurately.

2.3.15 Adjoining Quadrangle Names Diagram

The adjoining quadrangle names diagram allows the user to quickly identify the adjoining quadrangles for area coverage beyond the neatline of the map.

Show the standard adjoining quadrangle names diagram. Obtain names for adjoining USGS 1:24,000-scale quadrangles from the Geographic Cell Names Data Base.

2.3.16 Imprint Note

Show the following imprint note:

INTERIOR-GEOLOGICAL SURVEY, RESTON, VIRGINIA-(year)

OMIT associated dots and star (from STI 94-9, "Plant Imprint Note and Associated Dots and Star on National Mapping Program Maps.") The year refers to the year of printing.

The Government Printing Office (GPO) has requirements to show the Department name (covered in Section 2.3.1) and the name and location of the printer. Although printing may be contracted to remote sites, the USGS is ultimately accountable for the map product. Consequently, the Reston, Virginia headquarters location is shown in the imprint note.

2.3.17 Road Classification Legend

Show the standard road classification legend, except on quadrangles where there are no roads. Where there are no roads, omit the road classification legend and show instead the following note:

There are no roads on this quadrangle

This legend will be evaluated when a tailored symbol legend is added to the map.

2.3.18 Bar Code

NMD Policy Number 95-NMD-3, "Product Identification and Bar Coding Policy," states that NMD products will be given an International Standard Book Number (ISBN) and European Article Number (EAN)

symbology bar code consisting of an ISBN Group Identifier, ISBN Publisher identifier, ISBN Title identifier, and ISBN Check digit. The Data Production and Integration office will issue change notices to the style sheets in Appendixes 2-A and 2-B for the placement of bar codes.

2.3.19 "Supersedes" Note

Remove all notes identifying superseded maps, e.g., 15-minute x 15-minute maps, that may have appeared on the previous map (from STI 91-1-C, '"Supersedes" Note on USGS Standard Series Topographic Quadrangle Maps'.

2.3.20 Single Edition Map Notes

This section applies to special treatments for all maps covering National Forest System lands. Refer to Appendix 2-B, Style Sheet for USGS-USFS Single Edition Topographic Quadrangles.

Department/Bureau Identifier

Show this note in the top center margin:

UNITED STATES
DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Map Title Block, Lower Right Margin

Follow instructions in Section 2.3.2 for the map title block, lower right margin. If the date that the Forest Service correction guide was completed at the Forest site is more recent than the date of imagery for revision, the map date is the date of the Forest Service correction guide. If the date of imagery for revision is more recent than the correction guide date, the map date is the date of imagery for revision.

"Produced by" Notes

Show the following note:

Produced by the U.S. Geological Survey
Revised by the U.S. Forest Service

Note that the abbreviation "U.S." is used.

Show this note immediately below:

Areas outside the National Forest Systems lands may not have been revised

Source Notes

Follow instructions in Section 2.3.5 for preparing source notes. Append the following note for single-edition maps:

Partial field check by U.S. Forest Service (year)

The year is the year that the correction guide was completed at the Forest site.

Inholdings Note

Show the following notes to the right of the tinted box:

Non-National Forest System lands within the National Forest Inholdings may exist in other National or State reservations

Legal Disclaimer Note:

Show the following note:

This map is not a legal land line or ownership document. Public lands are subject to change and leasing, and may have access restrictions; check with local offices. Obtain permission before entering private lands

Horizontal Coordinate Reference System Notes

Single-edition maps will be plotted on North American Datum of 1927 (NAD 27) until Forest Service has converted to NAD 83. The exception to this instruction is when quadrangles covering National Forest System lands are revised through agreement with other cooperators: refer to STI 93-4-D, "Horizontal Datum Use and Reference on National Mapping Division (NMD) Map and Digital Products."

Pattern the horizontal coordinate reference system note for NAD 27 after the following example:

North American Datum of 1927 (NAD 27). Projection and 10 000-foot ticks: Oregon coordinate system, north (Lambert conformal conic) Blue 1000-meter Universal Transverse Mercator ticks, zone 10

North American Datum of 1983 (NAD 83) is shown by dashed corner ticks The values of the shift between NAD 27 and NAD 83 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software

For more information on horizontal datums, see STI 94-10, "Reference System Treatment for Map Products of the National Mapping Program."

Road Classification Legend

Replace the standard road classification legend described in Section 2.3.17 with one that includes symbols and route markers for National Forest roads and trails.

Where there are no roads or trails, omit the road classification legend and show instead the following note:

There are no roads or trails on this quadrangle

2.3.21 Notes on International Border Maps

This section covers special treatments for collar notes on maps on the international border with Canada or Mexico completed with source provided by the respective country's mapping agency. Abbreviations for names of Canadian Provinces and Mexican States are from STI 93-5-C, "Abbreviations for State and Province Names."

U.S.-Canada border maps

Append the Canada Province name(s) to the USGS map name. In the title block in the upper right margin, show the Province name(s) in full; do not abbreviate. In the title block in the lower right margin, use these abbreviations for the Provinces:

Newfoundland-Nfld., Prince Edward Island-PEI, Nova Scotia-NS, New Brunswick-NB, Quebec-Que., Ontario-Ont., Manitoba-Man., Saskatchewan-Sask., Alberta-Alta., British Columbia-BC, Yukon Territory-YT, Northwest Territories-NWT

See STI 94-8, "Portrayal of Canadian Areas on National Mapping Program Products," for notes on maps on the U.S.-Canada border completed with source from Natural Resources Canada. This STI covers special treatments for source notes, contour interval and elevation notes, accuracy labeling, and copyright notes for graphic source provided by Natural Resources Canada.

U.S.-Mexico border maps

Append the Mexico State name(s) to the USGS map name. In the title block in the upper right margin, show the State name(s) in full; do not abbreviate. In the title block in the lower right margin, use these abbreviations for the Mexico States:

Baja California-B.C., Chihuahua-Chih., Coahuila-Coah., Nuevo Leon-N.L., Sonora-Son., Tamaulipas-Tam.

See the draft STI, "Portrayal of Mexican Areas on National Mapping Program Map Products," released for review by the Mapping Centers on November 18, 1994, for notes on the U.S.-Mexico border completed with source from Instituto Nacional de Estadística, Geografía e Informática (INEGI). This STI covers special treatments for contour interval notes, vertical and horizontal datum notes, source notes, accuracy labeling, and "For Sale" notes.

2.3.22 Texas Code Index Numbers

Show the Texas code index number on maps that cover Texas. The Texas code index number is centered below the adjoining quadrangle names diagram.

The Texas code index number is a seven-digit code formatted as xxxx-xxx. The four digits preceding the hyphen identify the latitude and longitude, in whole degrees, for the southeast corner of the 1-degree cell where the map is located. The first two digits identify the latitude; the next two digits identify the longitude. If the longitude is west of the 100th meridian, only the last two digits of the whole-degree meridian are used: for example, the four digits are 3101 for a map which lies in the 1-degree cell based on 30^{o}00'00" north and 101^{o}00'00" west.

The three digits that follow the hyphen identify the 7.5-minute cell within the larger 1-degree cell.

1. The first of the three digits identifies one of four 30-minute cells into which the 1-degree cell is quartered. The 30-minute cells are numbered clockwise from 1 to 4, starting with the southeast quadrant.
2. The second digit identifies one of four 15-minute cells into which the 30-minute cell is quartered. The 15-minute cells

are also numbered clockwise from 1 to 4, starting with the southeast quadrant.

3. The third and last digit identifies one of four 7.5-minute cells into which the 15-minute cell is quartered. The 7.5-minute cells are also numbered clockwise from 1 to 4, starting with the southeast quadrant.

For example, the Texas code index number 3101-123 identifies a 7.5-quadrangle where the southeast coordinates are 31º07'30" north and 101º22'30" west.

2.3.23 Maps within Tennessee Valley Authority Area

The Tennessee Valley Authority (TVA) has prepared 805 topographic maps of the TVA Watershed Area in cooperation with USGS. These quadrangles cover portions of Alabama, Georgia, Illinois, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.

Follow instructions in Section 2.3.4 for showing cooperative credit notes. If TVA contributes 50% of the cost of the update, show the following cooperative credit heading:

UNITED STATES
TENNESSEE VALLEY AUTHORITY
MAPS AND SURVEYS DEPARTMENT

and the following cooperative credit note:

Produced by the United States Geological Survey
in cooperation with the United States Tennessee Valley Authority

Replace the standard quadrangle location diagram described in Section 2.3.14 with a special quadrangle location diagram that outlines the TVA area of responsibility and States covered by that area.

Show the TVA stock number for the map. It is formatted as xxx-yy, where xxx represents a three-digit code which identifies a 15-minute cell, and yy represents a two-letter code (NE, NW, SE, or SW), which locates the 7.5-minute quadrant in the 15-minute cell. Obtain the TVA stock number from the previous map or from TVA's index map, "Index to Topographic Maps Available through TVA", dated January 15, 1992.

Show the stock number in the upper right title block, as patterned by the following example:

DOE QUADRANGLE

TENNESSEE

7.5-MINUTE SERIES (TOPOGRAPHIC) 214-NW

Also show the TVA stock number, enclosed by parentheses, above the road classification legend and beneath the southeast corner longitude value, flush with the east neatline.

TVA stock numbers are shown to the right of the quadrangle names on the adjoining quadrangle name diagram.

Append a line to the “For Sale” note which identifies TVA, as patterned after the following example:

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND U.S. TENNESSEE VALLEY AUTHORITY, CHATTANOOGA, TENNESSEE 37401

2.3.24 Ohio Survey Collar Notes

The current rectangular survey system of principal meridians and base lines was being developed when Ohio was surveyed. Consequently, Ohio survey areas have different reference meridians and base lines than the rectangular survey system. Ohio survey areas are identified by name and the origin or basis of land lines.

On the printed map, Ohio survey areas are identified using one of three methods:

1. collar notes only
2. a combination of collar notes and interior labels along the boundary line between survey areas
3. interior labels along the boundary line between survey areas

More than one method may be used on a map. These basic approaches are modified by special treatments, where necessary. See Appendix 2-C for methods and special treatments for Ohio Survey interior names and collar notes.

APPENDIX 2-C
Preparation of Names and Collar Notes for Ohio Surveys

Introduction

The current rectangular survey system of principal meridians and base lines was being developed when Ohio was surveyed. Consequently, Ohio survey areas have different reference meridians and base lines than the rectangular survey system. Ohio survey areas are identified by name and the origin or basis of land lines.

On the printed map, Ohio survey areas are identified using one of three methods:

1. collar notes only
2. a combination of collar notes and interior labels along the boundary line between survey areas
3. interior labels along the boundary line between survey areas

More than one method may be used on a map. These basic approaches are modified by special treatments, where necessary.

The editor should use judgement and discretion when applying these methods. These instructions do not provide all rules necessary to automatically generate the required collar notes and/or interior labels. For example, spatial relationships expressed as cardinal directions (north, east, south, and west) are not imbedded in Digital Line Graphs. Rules and tables need to be developed to generate these labels and collar notes automatically.

Appendix D, Part 5, Public Land Survey System, Standards for 1:24,000-Scale Digital Line Graphs and Quadrangle Maps shows attribute values for Ohio survey areas in Digital Line Graphs. It also presents valid combinations of attribute values to ensure logical consistency. As the map is generated from Digital Line Graphs, Appendix D is the basis for the instructions to follow.

Use of Collar Notes Only

Ohio surveys are identified by collar notes alone when the survey area can be unambiguously located on the body of the map. This is possible when:

1. The entire quad is within one survey area. Use the following note:

   Entire area lies within (Name, PUBLIC SURVEY SYSTEM AREA). Land lines based on (Origin of Survey, PUBLIC SURVEY SYSTEM AREA)

2. The Ohio portion of the quad is within one survey area. Use the following note:

   Ohio area lies within (Name, PUBLIC SURVEY SYSTEM AREA). Land lines based on (Origin of Survey, PUBLIC SURVEY SYSTEM AREA)

3. The quadrangle has multiple survey areas AND survey areas are separated by named survey lines or rivers. See section on Special Treatments and Editing for quadrangles where the survey area is bordered by both a named survey line and river.

   a. When the quadrangle contains the named survey line FULTON LINE, GREENVILLE TREATY LINE, GEOGRAPHERS LINE, or BASE LINE OF THE U.S. MILITARY SURVEY, use the following note:

      Area north of (Name, SURVEY LINE) lies within (Name, PUBLIC SURVEY SYSTEM AREA). Land lines based on (Origin of Survey, PUBLIC SURVEY SYSTEM AREA)
      Area south of (Name, SURVEY LINE) lies within (Name, PUBLIC SURVEY SYSTEM AREA). Land lines based on (Origin of Survey, PUBLIC SURVEY SYSTEM AREA)

See Table 2-C-1 for directional relationships between survey areas and named survey lines.

Table 2-C-1
Relationships Between Survey Areas and Named Survey Lines

SURVEY AREA	RELATIONSHIP	SURVEY LINE
MICHIGAN SURVEY	is north of	FULTON LINE
CONGRESS LANDS NORTH OF OLD SEVEN RANGES	is north of is north of	GEOGRAPHERS LINE GREENVILLE TREATY LINE
WEST OF GREAT MIAMI	is south of	GREENVILLE TREATY LINE
BETWEEN THE MIAMIS, NORTH OF SYMMES PURCHASE	is south of	GREENVILLE TREATY LINE
U.S. MILITARY SURVEY	is north of is south of is south of	BASE LINE OF U.S. MILITARY SURVEY GREENVILLE TREATY LINE GEOGRAPHERS LINE
OLD SEVEN RANGES	is south of	GEOGRAPHERS LINE
CONGRESS LANDS EAST OF SCIOTO RIVER	is south of	BASE LINE OF U.S. MILITARY SURVEY

See section on Special Treatments and Editing for Refugee Lands, Virginia Military Survey, and areas where land lines are based on the First Principal Meridian.

b. When the quadrangle contains the Scioto River, Great Miami River, or Little Miami River, use the following note:

Area east of (Name, STREAM/RIVER) lies within (Name, PUBLIC SURVEY SYSTEM AREA). Land lines based on (Origin of Survey, PUBLIC SURVEY SYSTEM AREA)
Area west of (Name, STREAM/RIVER) lies within (Name, PUBLIC SURVEY SYSTEM AREA). Land lines based on (Origin of Survey, PUBLIC SURVEY SYSTEM AREA)

See Table 2-C-2 for directional relationships between survey areas and rivers.

Table 2-C-2
Relationships between survey areas and rivers

SURVEY AREA	RELATIONSHIP	RIVER
WEST OF GREAT MIAMI	is west of	GREAT MIAMI RIVER
SYMMES PURCHASE	is east of is west of	GREAT MIAMI RIVER LITTLE MIAMI RIVER
BETWEEN THE MIAMIS, NORTH OF SYMMES PURCHASE	is east of is west of	GREAT MIAMI RIVER LITTLE MIAMI RIVER
VIRGINIA MILITARY SURVEY	is east of is west of	LITTLE MIAMI RIVER SCIOTO RIVER
U.S. MILITARY SURVEY	is east of	SCIOTO RIVER
CONGRESS LANDS EAST OF SCIOTO RIVER	is east of	SCIOTO RIVER

See section on Special Treatments and Editing for Symmes Purchase (private survey), Refugee Lands, and Virginia Military Survey (undivided survey area).

Use of Combination of Interior Labels and Collar Notes

Both collar notes and interior labels are used where the quad has multiple survey areas divided by unnamed survey lines.

The survey area names are shown along unnamed survey lines *in Ohio*, and the lines separating the survey areas are identified as the North, South, East, or West boundary, as appropriate. Pattern after the following example[1]:

WEST BOUNDARY U.S. MILITARY SURVEY

EAST BOUNDARY OLD SEVEN RANGES

Pattern the collar note to identify origin of survey for each survey area after the following example:

> **Land lines within (Name, PUBLIC LAND SURVEY SYSTEM AREA) based on (Origin of Survey, PUBLIC LAND SURVEY SYSTEM AREA)**

For the survey names shown above, the collar notes would be as follows:

> **Land lines within U.S. Military Survey based on Base Line of the U.S. Military Survey**
> **Land lines within Old Seven Ranges based on Ohio River**

[1] Orient appropriately with survey lines.

Use of Interior Names Alone

Interior names are shown along boundary lines for areas not requiring identification in the collar.

Areas not needing identification in the collar are:

1. TWELVE MILE SQUARE RESERVE - Origin of Survey, Twelve Mile Square Reserve, is self-referring
2. REFUGEE LANDS - see Special Treatments and Editing
3. DONATION TRACT - area is not subdivided; consequently, Origin of Survey is not applicable
4. FRENCH GRANTS - area is not subdivided

Add NORTH BOUNDARY, SOUTH BOUNDARY, EAST BOUNDARY, or WEST BOUNDARY, where appropriate, as a prefix to Name, PUBLIC LAND SURVEY SYSTEM AREA along the boundary line. For example,

SOUTH BOUNDARY MICHIGAN SURVEY

NORTH BOUNDARY TWELVE MILE SQUARE RESERVE

Special Treatments and Editing

1. State boundaries: DO NOT show Name, PUBLIC LAND SURVEY SYSTEM AREA, along State boundaries

2. If Origin of Survey=not applicable (N/A), i.e., undivided survey area, omit land lines note

3. Privately surveyed areas

a. If Origin of Survey=unspecified, i.e., area was privately surveyed, AND conditions are met for showing collar notes alone, substitute the land lines note with the following note:

Dotted land lines established by private survey

b. If Origin of Survey=unspecified AND conditions require showing both collar notes and interior names for a survey area, substitute the land lines note with the following note:

Land lines within (Name, PUBLIC LAND SURVEY SYSTEM AREA) established by private survey

4. Secondary survey names for Ohio River Survey

The Ohio River Survey consists of several individually named surveys: Old Seven Ranges, Congress Lands North of Old Seven Ranges, Congress Lands East of Scioto River, and the Refugee Lands. For all of these areas, townships were numbered from the Ohio River and ranges were numbered from the State boundary with Pennsylvania.

Replace Name, PUBLIC LAND SURVEY SYSTEM AREA with the Secondary Survey Name shown above in the body of the map and the interior, where appropriate. See Section 8 for instructions for quadrangles covering Refugee Lands.

Where there are interfaces between these survey areas, show only one land lines note: for example,

Land lines within Congress Lands North of Old Seven Ranges and the Old Seven Ranges based on the Ohio River

This example is taken from the Quaker City quadrangle.

5. Areas based on Great Miami River

Both the survey areas West of the Great Miami and Between the Miamis, north of Symmes Purchase are based on the Great Miami River.

Where the quadrangle covers both of these survey areas, show only one land lines note: for example,

Area west of the Great Miami River lies within West of the Great Miami
Area east of the Great Miami River lies within Between the Miamis, north of Symmes Purchase
Land lines based on the Great Miami River

6. Areas along the Scioto River

A small strip of Congress Lands East of Scioto River along the river is based on the Scioto River Base. Six quadrangles along the Scioto River have both the Ohio River and the Scioto River as origins of survey for Congress Lands East of Scioto River. These quadrangles are: Southeast Columbus, Lockbourne, Ashville, Circleville, Kingston, and Chillicothe East. For these quadrangles, use the following notes:

Area west of the Scioto River lies within the Virginia Military Survey
Area east of the Scioto River lies within Congress Lands East of Scioto River
Land lines within R. 22 W. based on Scioto River
Land lines within R. 21 W. based on Ohio River

7. Survey areas that border both a river and a named survey line

Combine land line notes, as patterned by the following example (Prospect quadrangle):

Area south of Greenville Treaty Line and east of the Scioto River lies within the U.S. Military Survey

8. Quadrangles covering Refugee Lands

Refugee Lands are identified only on the interior of the map, not on the collar. The quadrangles containing Refugee Lands are: Southeast Columbus, Reynoldsburg, Pataskala, Millersport, Thornville, and Glenford. Secondary Survey Name is captured as multivalued for Congress Lands East of Scioto River and Refugee Lands for areas within Refugee Lands. For these quadrangles, show the following note:

Area north of the Base Line lies within the U.S. Military Survey. Land lines based on the Base Line of the U.S. Military Survey
Area south of the Base Line lies within Congress Lands East of Scioto River. Land lines based on Ohio River

The above note will be modified for Southeast Columbus, as Congress Lands East of Scioto River has two Origins of Survey on this quadrangle.

9. Lands in northwestern Ohio based on First Principal Meridian

Do not show the name "Congress Lands," although that name may have appeared on the previous analog map.

a. If the entire quadrangle is within this survey area, show only the note:

Land lines based on the First Principal Meridian

b. If the Ohio portion of the quad is entirely within this area, show only the note:

Land lines in Ohio based on the First Principal Meridian

c. If the quadrangle covers multiple survey areas and contains the FULTON LINE or the GREENVILLE TREATY LINE, show a note patterned after one of the following examples:

Land lines south of the Fulton Line based on the First Principal Meridian

Land lines north of Greenville Treaty Line based on the First Principal Meridian

d. Where the quadrangle has survey areas divided by unnamed survey lines, identify area based on the First Principal Meridian by township and range designators in order to clarify location. Pattern after the following example from the Mount Gilead quadrangle:

Land lines within Ts.5 and 6 S.-R.17 E. based on the First Principal Meridian

10. Omit Fire Lands, College Lands, and other names that may have appeared on the previous analog map BUT are not attribute values for Name, PUBLIC LAND SURVEY SYSTEM AREA.

11. Muskingum River Survey area

Do not identify survey area on the interior of the map for quadrangles containing the Muskingum River Survey area. These quadrangles are: Canal Fulton, Dalton, Doylestown, and Massillon.

Identify areas based on the Muskingum River in the collar by township and range directions and numbers. The following note applies to the Canal Fulton and Doylestown quadrangles:

Area within R.10 W.-T.1 N. and T.2 N. based on the Muskingum River

The following note applies to the Dalton and Massillon quadrangle:

Area within R.10 W.-T.1 N. based on the Muskingum River

12. Virginia Military Survey

For quadrangles where the Greenville Treaty Line crosses the Virginia Military Survey, omit notes that apply to named survey lines. These quadrangles are: Huntsville, Rushsylvania, West Mansfield, York Center, Richwood, and Prospect.