National Mapping Program Technical Instructions

# Part 2
# Specifications

## Standards for Revised Primary Series Quadrangle Maps

U.S. Department of the Interior
U.S. Geological Survey

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## 2. SPECIFICATIONS

This part of the standard provides specific information on editing and completing revised primary series quadrangle maps. It also provides information on symbol treatment, lettering, and map collar notes. The main focus is on basic revision maps, although instructions for the preparation of complete revision maps have also been included.

## 2.1 MAP EDITING GUIDELINES

This section provides guidelines for determining when the editing of symbology and typography is required and, conversely, when symbology and typography that do not necessarily meet current specifications can be left as they are. Additional information on map lettering is contained in appendix 2-F. A guide to approved abbreviations and word compounds is provided in appendix 2-G.

The goals of map editing are to produce maps that match existing symbology and typography as closely as possible and to use resources efficiently and cost effectively. Unnecessary effort to make previously mapped features conform to current standards should be avoided. Time should be expended on editing only to conform to the principles listed below:

- The resulting map must support clear, unambiguous interpretation and readability of the features represented.

- The position 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.

- The overall appearance of the map must be acceptable, even if some individual symbols are not consistent with current specifications.

The decision to retain or change the existing symbology or lettering is based on the factors shown in figure 2-1. If all factors are relatively equal, the treatment of map features should confirm consistently to current standards.

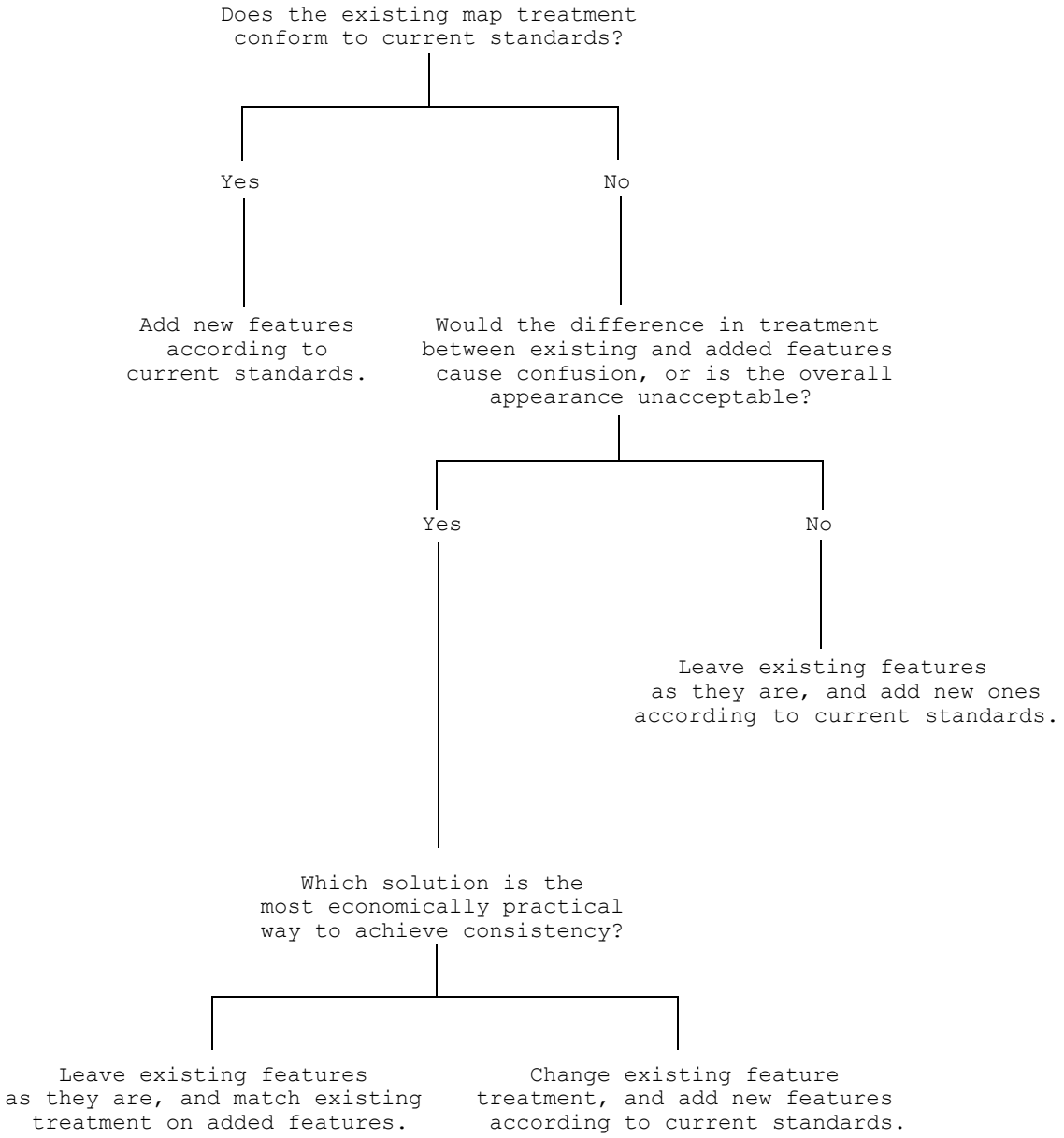


Figure 2-1
Decision-making process involving consistency issues.

2.1.1 Symbology

Current symbolization specifications are contained in Part 5: Publication Symbols and Part 6: Publication Symbols of the Standards for 1:24,000- and 1:25,000-Scale Quadrangle Maps.

2.1.1.1 Revision Symbol Set

Match the symbol set shown on the previously published map as closely as is economically practical, with the following exceptions:

- The existing Part 6 symbology can be converted to Part 5 symbology if it is determined to be more efficient to do so.

- Part 5 and Part 6 symbology can be shown on the same map, as long as the same symbology is used for an entire set of feature types, if that is the most efficient way to produce the map. For example, all of the roads or streams can be shown with Part 5 symbols even though the rest of the features are shown using Part 6 symbols.

Over the years, the specifications for some symbols have varied slightly within both symbol sets. It is not necessary to perfectly match older symbology when adding new features if the symbology is reasonably similar and there will be no confusion concerning the interpretation of the features represented. For instance, the Part 6 pit symbol has varied slightly in size over the years. The difference between the older symbol size and the currently used symbol is not noticeable enough to warrant the time and expense it would take to make the old symbology conform to current specifications.

Coincident features have been treated differently on maps in the past. Differences in the way coincident features have been treated over the years will be tolerated if the inconsistency will not cause confusion. For instance, boundaries no longer have to be reduced to

a half-lineweight if they are coincident with a road during basic revision. The lineweight of a previously mapped boundary should be increased during basic revision only if the boundary was coincident with a road that has since been deleted, because a half-lineweight boundary would be interpreted as being indefinite.

Inconsistencies in symbolization that are the result of obsolete depiction rules will be tolerated if the inconsistency does not cause confusion. For instance, some features were shown on maps in the past that are no longer added, such as small park boundaries around mobile home parks and airports. It is not necessary to delete these boundaries unless it is obvious that a boundary has changed.

Other minor inconsistencies in symbolization should be tolerated if the inconsistency does not cause the symbol to be misinterpreted as another feature type and the overall appearance is acceptable. However, less tolerance should be exercised if the line weight of the symbol alone is crucial to the proper identification of a feature type; for example, an inconsistency in line weight of 0.002 inch is too much to tolerate for PLSS lines, contours, or drains (the latter, if Part 5 symbology is used). An inconsistency of more than 0.001 inch on segments of a continuous solid line representing one of these features generally presents an overall appearance that is unacceptable.

2.1.1.2 Symbol Colors

Revision is performed using the five standard colors: black, brown, red, blue, and green. Convert the purple symbology that might have been used on the previously published map to the five standard colors.

2.1.2 Typography

Current typography specifications are shown on the style sheets contained in appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska). The typography information on the style sheets

supersedes the examples in the publication symbol books and the type specifications in the Standards for 1:24,000-Scale Digital Line Graphs and Quadrangle Maps.

2.1.2.1 Revision Typography

Different sets of type styles have been associated with Parts 5 and 6 symbology over the years. Do not mix type styles that are associated with different symbol sets on the same map, even if an entire set of feature types has been shown with symbology from a different symbol set. For instance, if all of the streams on a Part 6 map are replaced with Part 5 symbology, try to match the original Part 6 type style when new labels are added.

The typography shown on previously published maps should be matched as closely as is economically practical on revised maps, with the following exception.

Type style fonts have been purchased from several different companies and different procedures have been used to generate type over the years. Although the various type styles are standardized, there can be minor differences in fonts produced by different companies. Small variations in font sizes and shapes will be tolerated unless the difference would cause confusion. Judgment should be exercised before devoting resources to change existing type styles or fonts to match current standards.

## 2.2 FEATURE-SPECIFIC TREATMENTS

Appendix 2-A indicates which features are revised during basic revision.

The Standards for 1:24,000-Scale Digital Line Graphs and Quadrangle Maps defines feature types and provides the capture criteria used to determine if a feature instance should be added.[1] All features that are added or modified during map revision must meet the definition and capture conditions for that feature.

The treatment guidelines listed below according to feature theme are presented to illustrate the application of the principles in section 2.1. They are not intended to represent all situations. The principles in section 2.1 should be applied to determine appropriate treatments in other situations.

Unless otherwise specified, these feature-treatment guidelines apply to both basic and complete revision maps.

### 2.2.1 Hydrography

The Standards for 1:24,000-Scale Digital line Graphs and Quadrangle Maps, Part 2, Hydrography provides definitions and guidelines for classifying hydrographic features.[2] The perennial and intermittent classification of hydrographic features in the field is done during a limited time period and relies on observations and information obtained from local residents and, thus, is a subjective process. No scientific measurements are made to determine the classification.

Clear swamp from railroads and class 1, 2, and 3 roads.

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[1] For single edition maps, see Standards for USGS and USDA Forest Service Single Edition Quadrangle Maps (in preparation).

[2] See also National Mapping Division Policy 92-NMD-13, "Requests for Stream Reclassification."

Basic Revision

Retain all lakes, ponds, perennial streams, and ditches, regardless of size, unless a feature has obviously changed or no longer exists. If a feature has obviously changed, it must meet the current capture conditions to be retained. Retain all intermittent streams, except in the following situation: if P-maps are converted to finished line maps, there could be an inappropriately heavy drainage pattern, because extra drains were often compiled during the production of P-maps to help shape contours properly. If this is the case, thin the intermittent drainage pattern to better portray the actual conditions on the ground. For example, desert areas should portray relatively little drainage. If available, use finished line maps from the same area as guides for thinning the intermittent drainage pattern.

Retain the original classification for modified streams and ditches unless a change is indicated by new field investigation. Classify new streams and ditches and those originally shown in purple to match the surrounding previously mapped features. If neither classification is prominent, use the intermittent symbol.

Do not modify shorelines defining streams unless there is obvious evidence of a change in the channel.

Revise coastal shorelines only if there are obvious manmade changes or significant natural changes. Natural changes to coastal shorelines should not be revised unless there is a lateral shift ≥ 0.036 inch (73 feet at 1:24,000 scale) for a distance ≥ 0.5 inch (1,000 feet at 1:24,000 scale) and the shoreline can be positively identified as the approximate mean high water line, based on nautical charts, photographs taken at mean high water, or other evidence.

Do not revise ice masses unless they are in Alaska and there is a lateral shift ≥ 0.1 inch (528 feet at 1:63,360 scale).

2.2.2 Transportation

Class 1 and 2 roads should be classified according to the current scheme indicated for the feature ROAD in Part 3: Transportation, in the Standards for 1:24,000-Scale Digital Line Graphs and Quadrangle Maps. Regional interpretations of the highway classes should be taken into consideration to facilitate edge joins.

Show crossover roads connecting separate lanes of divided highways with the same classification as the highest ranking road entering the intersection.

It is not necessary to show median breaks on divided highways or streets represented as one road (three-line symbol).

It is not necessary to angle underpassing road ends so that they are parallel to an overpassing road at grade-separated intersections.

It is not necessary to show bridge ticks on new and revised highway interchanges.

It is not necessary to prorate dashed road fill where class 2 roads intersect if the area of non-prorated fill is not large enough to cause misinterpretation of the road class on either road and does not detract from the overall appearance of the map.

Show overall widths of road symbols based on real world dimensions measured in feet as indicated on table 2-1.

It is not necessary to taper the transition between a wider and narrower road if non-analog methods are used, unless it can be done economically.

Road intersections may be shown as straight lines unless there is an island at the intersection. Do not add islands in intersections or cul-de-sacs unless they are ≥ 0.02 inch wide (40 feet at 1:24,000 scale).

Table 2-1
Overall widths of road symbols

| **Road Width (Feet)** | **Class 1 & 2 (No Median)** | **Class 1 & 2 (Median)** | **Class 3** | **Class 4** | **Class 5** |
|---|---|---|---|---|---|
| < 40 | 0.02" | 0.037" | 0.015" Part 5<br>0.02" Part 6<br>0.02" Single Edition | 0.007" Part 5<br>0.02" Part 6<br>0.02" Single Edition | 0.007" Part 5<br>0.005" Part 6<br>0.02" Single Edition |
| 40-45 | 0.02" | 0.037" | 0.02" | | |
| 46-55 | 0.025" | 0.037" | 0.025" | | |
| 56-65 | 0.03" | 0.037" | 0.03" | | |
| 66-75 | 0.035" | 0.037" | 0.035" | | |
| 76-85 | 0.04" | 0.04" | 0.04" | | |
| 86-95 | 0.045" | 0.045" | 0.045" | | |
| 96-105 | 0.05" | 0.05" | 0.05" | | |
| 106-115 | 0.055" | 0.055" | 0.055" | | |
| 116-125 | 0.06" | 0.06" | 0.06" | | |
| ≥ 125 | 0.06" | 0.06" | 0.06" | | |

When there are new roads in close proximity to previously mapped class 4 or 5 roads, delete the roads of lesser quality if showing them all would unnecessarily clutter the map, even though they may all be operational.

Do not add trails on golf courses. However, add new footbridges if they meet minimum length requirements.

The symbology used for dismantled railroads on previous purple photorevised maps should be deleted and changed to represent trails if the capture conditions are met. Retain the "OLD RAILROAD GRADE" labels and add new labels on features that can be identified as old railroad grades.

New railroad yards can be added to match the older symbology of previously mapped railroad yards, or the original railroad yard symbology can be changed to match the new railroad yards. Use whichever method is the most efficient. See also figure 2-1 and section 2.1.1.1 Revision Symbol Set to help decide which approach to use.

Basic Revision

The original classification of modified class 3 and 4 roads should generally be retained. Exceptions should be made in areas where an entire road system has been developed or is in the process of being developed for a housing development and some of the previously mapped roads were originally shown as class 4. Existing class 4 roads in newly developed areas like this should be changed to class 3 to match the classification of the newly added roads.

It is not necessary to delete or change previously mapped class 4 roads to class 3 in built-up area tint. New roads in built-up area tint should be added as class 3 or higher roads.

It is not necessary to clear road casings inside new or revised intersections unless the intersection is illegible. This applies to all road classes shown with casings, regardless of symbol set.

Retain intersection clearings that were shown on the previous edition of the map.

Do not modify road widths unless the difference in width is ≥ 0.02 inch (40 feet at 1:24,000 scale) for a distance ≥ 1.32 inches (one-half mile at 1:24,000 scale).

2.2.3 Boundaries

The boundaries shown on USGS quadrangle maps are often regarded by the general public and local authorities as representing authoritative positions. For this reason, boundaries are delineated on maps as carefully as possible from available source documents; but the fact remains that the source documents, not the quadrangle maps, have primary legal significance with respect to boundaries. A notable exception is in the State of West Virginia, which has enacted legislation that establishes the boundaries of the State and county subdivisions to be those shown on USGS topographic quadrangle maps.

Revise boundaries by using ancillary sources and the delineations of features that define the location of the boundary, including the Public Land Survey System lines and corners. Ancillary sources for boundaries include legal descriptions, survey plats, or maps in analog or digital form.

It is not necessary to prorate boundary line symbol spacing if it can be interpreted correctly.

Boundary enhancement must be shown on all Federal reservation boundaries, regardless of the symbol set.

If two or more boundaries coincide, symbolize only the highest order boundary and, if necessary, label the lower order boundary with clarifying labels. The hierarchy of boundaries in descending order is as follows:

- National
- State or territorial
- County or equivalent
- Minor civil division
- City or equivalent
- Reservation
- Small park or equivalent

Basic Revision

Boundary lines may be shown overprinting roads or other linear features with a full-lineweight symbol.

It is not necessary to change the lineweight of a previously compiled boundary that was shown at half-lineweight because it was coincident with a road unless the road is deleted during revision. This is because a boundary shown with a half-lineweight symbol would be misinterpreted as being an indefinite boundary.

If a boundary was originally suppressed for another feature, do not restore the boundary symbol unless the other feature has moved or been deleted or unless the boundary cannot be intuitively located.

In the past, maps showed ownership and property lines for some features that are no longer added, such as small park boundaries around mobile home parks and airports. It is not necessary to delete these boundaries unless it is obvious that the boundary has changed.

2.2.4 Public Land Survey System

The Public Land Survey System (PLSS) land lines plotted on USGS quadrangle maps are not intended to show conclusive evidence of land ownership or to substitute for boundary surveys, yet these maps are sometimes used as evidence of boundaries between adjacent properties. For this reason, PLSS land lines are carefully plotted to meet current accuracy standards. This does not alter the fact that the original survey, not the lines shown on the USGS maps, constitutes the only legal basis for determining land boundaries.

Do not revise the PLSS unless there is an agreement or memorandum of understanding with another mapping agency to do so. The PLSS may be added where the existing map had no previous survey and when new survey information is available from the Bureau of Land Management's Geographic Coordinate Data Base.

Basic Revision

PLSS lines should not be shown coincident with boundaries, roads, or ditches unless it is economically impractical to suppress the PLSS lines. It is not necessary to register PLSS lines exactly to boundaries, roads, or ditches if the relationship to the other feature is obvious. Suppress the PLSS line if a coincident boundary line would otherwise be illegible.

Indicated corners whose official marks or monuments could not be recovered or identified were symbolized on maps in the past. Do not delete these symbols unless there is a new feature in the same position or the PLSS is revised.

2.2.5 Built-up

Change all previously mapped class 2 and crosshatched class 1 buildings to the solid black building symbol.

Buildings may be shown touching road casings, but no part of a building should be shown inside a road casing.

Minimum size symbols may touch if they do not convey false information.

It is not necessary to register built-up area tint that does not extend to road casings if the relationship to the road is obvious.

Do not show built-up area tint inside the outlines of athletic fields (other than tracks) or drive-in theaters.

Do not show fence lines inside built-up area tint.

It is not necessary to position a pole symbol at each angle point on a power transmission line.

Delete previously published radio or television station call letters from communication towers.

Basic Revision

Do not delete previously mapped houses of worship, schools, or their labels within or outside built-up areas unless it is obvious that the building is gone. Do not delete any other buildings that are labeled, regardless of where they are located, unless it is obvious that the buildings are gone. Do not add new houses of worship, schools, or other building information, such as crosses, flags, or labels, unless the information has been gathered for the entire quadrangle by a cooperator or a member of the Earth Science Corps in the Volunteer for Science Program. The names of buildings can be added from reliable ancillary sources as exceptions to the rule if doing so will avoid embarrassment. See section 2.3.8.12 for the building information note. See the feature BUILDING in Part 6: Built-up, in the Standards for 1:24,000- and 1:25,000-Scale Digital Line Graphs and Quadrangle Maps for a list of building types that are typically labeled.

Delete previously mapped unlabeled buildings in built-up areas that are smaller than the current minimum size requirement for unlabeled buildings in built-up areas. It is not necessary to add unlabeled buildings that were not shown previously in original built-up areas, even though they may be larger than the current minimum size requirement.

If analog methods are used, rotate new minimum size buildings to match the true ground orientation. If analog methods are not used, rotation is not necessary and the new minimum size buildings can be aligned with the neatline.

Add new pipelines and transmission lines according to the current capture conditions. It is not necessary to delete previously mapped

pipelines and transmission lines in built-up areas unless it can be done economically or retaining them would obviously be inconsistent and cause confusion.

Do not delete unlabeled disturbed surface areas that no longer exist if the contours are missing on the previous edition of the map, except in built-up area tint. Do not show disturbed surface areas inside built-up area tint, even if the contours are missing.

Do not show reclaimed/reverted/converted disposal sites or mines inside built-up area tint, even if the contours are missing.

Reclaimed/reverted/converted mines are shown with the same symbol in both Part 5 and Part 6 symbol sets.

2.2.6 Hypsography

On quadrangles shifted from NAD 27 to NAD 83, fill the void created by the datum shift by extracting the missing contours from the adjoining map. If possible, resolve all gaps and mismatches involving contours.

Basic Revision

On basic revision maps, the temporal difference between the currentness of the topography and the currentness of the planimetry in the source notes indicates why there may be discrepancies in vertical registration.

Contour revision is an optional component of basic revision. In general, cooperative funding is required for contour revision. When revising contours, compile them to meet current map accuracy standards.

If full contour revision is authorized, square off previously mapped contours on class 1 and 2 roads. Square contour crossings on class 3, 4, and 5 roads only if they coincide with the road for a distance ≥ 0.1 inch (200 feet at 1:24,000 scale).

If full contour revision is authorized, it is not necessary to revise contours in strip mines or other disturbed surface areas that have not been reclaimed/reverted/converted unless specified in the supplemental project information, except to avoid breaks in contours. See the Standards for 1:24,000-Scale Digital Line Graphs and Quadrangle Maps, Appendix 7A: Background Material for Contour for information on generalization techniques and how they apply to mines and intricate surface areas.

If full contour revision is not authorized, modify contours only to fill gaps created by the horizontal datum shift. If the adjoining map has a smaller contour interval, only those contours that match the existing contours should be incorporated. If the adjoining map has a larger contour interval, the contours from the adjoining map should be extracted and the missing contours should be created using logical contouring methods.

Logical contouring is not possible in the following situations:

- If relative positioning and shape relationships cannot be maintained or if the contour accuracy cannot be maintained within one-half of the contour interval (or one-fourth of the contour interval in areas with a slope of 10 feet or less per mile), or

- If the adjoining quadrangle has an incompatible contour interval (for example, 20 feet versus 25 feet or 5 meters versus 25 feet).

If logical contouring is not possible, join the contours that can be matched and end the rest at the old (NAD 27) neatline. Add a note in the map margin to explain why there is a gap in the contours (see section 2.3.8.3 Contour Gap Note).

Change the obsolete contour symbols that may be shown on the previous edition of the map to unbroken contour lines. Be careful not to confuse approximate contours with obsolete contours. Approximate contour symbols should be left as they are.

In 1994, fill ticks were eliminated from Part 5 symbology. If full contour revision is authorized, fills can be shown with or without fill ticks on Part 5 maps, as long as they are treated consistently across the map. Use whichever method is the most efficient.

A contour label can be shown touching or overprinting added roads unless the label is difficult to read. If the label is illegible, delete it and add a new one, if necessary (see also section 2F.3.8 Contour Labels). It is usually not necessary to add contour labels in new built-up area tint when other contour labels have been deleted to avoid overprints, because there are normally enough remaining in or adjacent to the built-up area to enable the map user to adequately identify the contours.

Unchecked spot elevations and location x's were shown in brown on maps prior to 1970. Combinations of brown elevations with black x's and black elevations with brown x's can also be found on older maps. The preferred treatment is to show the elevation type and the location x's in black. However, if the brown elevations and/or x's cannot be economically changed to black, it is permissible to leave them as they are.

Do not revise depth curves and soundings unless the cooperator requests it and new information is available. Do not delete depth curves and soundings except where they would coincide with new dry land when shorelines have been modified. See section 2.3.8.1 for source notes and section 2.3.13.5 for datum notes on depth curves and soundings.

Do not revise bathymetric information unless the cooperator requests it and new information is available. Do not delete bathymetric contours except where they would coincide with new dry land when shorelines have been modified. See section 2.3.8.2 for source notes and section 2.3.13.4 for datum notes on bathymetry.

→ Do not show bathymetric contours and Great Lakes or coastal depth curves and soundings on single edition maps. However, retain depth

curves and soundings on inland lakes and ponds if the information has been provided by a State (such as, Illinois, Minnesota, and Wisconsin).

Complete Revision

Revise contours and spot elevations to meet current map accuracy standards. Revise depth curves and soundings or bathymetry if new information is available. If new information is not available, do not delete depth curves and soundings or bathymetric contours except where there is a conflict with new dry land because of shoreline changes.

2.2.7 Nonvegetative Surface Cover

Do not revise moraines unless they are in Alaska and there is a lateral shift ≥ 0.1 inch (528 feet at 1:63,360 scale). Delete the moraine pattern from the glacial advance or retreat pattern.

2.2.8 Vegetative Surface Cover

Revise the features in the vegetative surface cover only if one of the following minimum change criteria is met for the entire quadrangle:

- If the total area is greater than 14 square inches (2 square miles at 1:24,000 scale) of addition or deletion, with no area less than 7 square inches (1 square mile at 1:24,000 scale),

  or

- If numerous areas exist, each smaller than 7 square inches (1 square mile at 1:24,000 scale), and the areas requiring update total more than 35 square inches (5 square miles at 1:24,000 scale).

Vegetation should be removed from new water bodies (with the exception of submerged woods in areas of the southeastern United States), new built-up tint areas, new mining features shown with

area tint or disturbed surface, new divided highways, new railroad yards, and new paved features ≥ 0.05 inch wide (100 feet at 1:24,000 scale). Therefore, the changes attributed to these features should not be included in the calculations above.

It is not necessary to revise the vegetative surface cover on single edition maps, although vegetation should be removed from the new features listed above.

Extend the vegetative surface cover features across the gaps created by the horizontal datum shift, even if the vegetative surface cover is not revised.

Do not add new rice fields. Delete any rice fields that may be shown on the previous edition of the map.

2.2.9 Named Landforms

Add the names of prominent islands, ridges, valleys, and so on, if reliable information is available. See section 1.1.2 for general guidelines about names on maps.

2.2.10 Survey Control and Markers

Basic Revision

Do not revise survey control and markers.

Complete Revision

Revise survey control and markers.

## 2.3 COLLAR NOTES AND OTHER MARGINAL DATA

This section concerns the requirements for correct phrasing and standardized treatments for collar notes on primary series maps.

Except where otherwise stated below, collar layout and type specifications are indicated on the style sheets in appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska).

See section 2.3.23 for collar notes on joint USGS and USDA Forest Service single edition quadrangles.

See section 2.3.24 for collar notes on maps along the U.S.-Canada border completed with source material from Natural Resources Canada and on maps along the U.S.-Mexico border completed with source material from the Instituto Nacional de Estadística, Geografía e Informática (INEGI).

See section 2.3.26 for collar notes on maps of the Tennessee Valley Authority (TVA) Watershed Area on which the TVA cooperates on.

### 2.3.1 USGS Visual Identity Logo

Place the USGS visual identity logo in the upper left margin:

### 2.3.2 USGS Department/Bureau Identifier

Place the Department/Bureau identifier in the upper left margin to the right of the USGS visual identity logo:

**U.S. DEPARTMENT OF THE INTERIOR**

**U.S. GEOLOGICAL SURVEY**

### 2.3.3 Map Title Blocks

See section 2.3.24 for quadrangle names on international border maps.

2.3.3.1 Map Title Block, Upper Right Margin

Show the quadrangle name on the first line of the map title block in the upper right margin, the State(s) and county (if applicable) name in which the quadrangle lies on the second line, and the map series and class on the third line.

Obtain the quadrangle name from the GNIS Geographic Cell Names Data Base maintained by the USGS. Append the word "QUADRANGLE" after the quadrangle name. It is permissible to abbreviate quadrangle names because of space limitations or to conform to local or legal usage.

If the quadrangle is in more than one State, list first the State containing all or the larger part of the feature for which the map is named, and list the other States in descending order by area within the quadrangle. Included in this category are maps named for features that are located on more than one quadrangle (for example, Smith West and Smith East).

If the primary State for a named feature cannot be determined because it appears that equal portions of the feature are in two or more States, list the State with the largest area first, and list the other States in descending order by area within the quadrangle.

If the quadrangle is in more than one State and the map name is derived from a 15-minute cell name (for example, Smith NW) or is a descriptor based on the location of the quadrangle (for example, East of Smith), list the State with the largest area within the quadrangle first, and list the other States in descending order by area within the quadrangle.

Show the State names in full; do not abbreviate them. Insert a hyphen (without spaces) between the State names; for example:

**TEXAS-NEW MEXICO**

Show the county name after the State name if the entire quadrangle is in one county or the only county boundary on the map cannot be

labeled, even with reduced type; otherwise, OMIT the county names from the title block (see also section 2F.3.3.1 Boundary Lines and Monuments). Insert a hyphen (without spaces) between the State and county names; use the abbreviation "CO." for "County"; for example:

**CALIFORNIA-LOS ANGELES CO.**

The map series is either the 7.5-Minute Series or 1:63 360 Series (in Alaska). The map class refers to the edition, either Topographic or Topographic-Bathymetric. One of the following notes is used (there are no Topographic-Bathymetric maps in Alaska):

**7.5-MINUTE SERIES (TOPOGRAPHIC)**

or

**7.5-MINUTE SERIES (TOPOGRAPHIC-BATHYMETRIC)**

or

**1:63 360 SERIES (TOPOGRAPHIC)**

If the quadrangle name has changed at any time, append a statement to indicate the former name. Obtain the former name from the GNIS Geographic Cell Names Data Base maintained by the USGS. 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 may appear on the previous 7.5-minute map.

2.3.3.2 Map Title Block, Lower Right Margin

Show the quadrangle name and the State(s) on the first line of the map title block in the lower right margin, the map date on the second line, and the National Imagery and Mapping Agency (NIMA) reference code on the third line.

Obtain the quadrangle name from the GNIS Geographic Cell Names Data

Base maintained by the USGS. Do not append the word "QUADRANGLE" after the quadrangle name. It is permissible to abbreviate quadrangle names because of space limitations or to conform to local or legal usage.

Obtain the State name(s) from the GNIS Geographic Cell Names Data Base (see section 2.3.3.1 Map Title Block, Upper Right Margin for the order of multiple State names in the lower map title block). Use the U.S. Postal Service two-letter abbreviations for the names of States, territories, and the District of Columbia, as shown in table 2-2. Insert a hyphen (without spaces) between multiple names. DO NOT SHOW the county name(s).

If the quadrangle name has changed at any time, insert a statement between the map title and map date to indicate the former name, patterned after the following example:

**MONTBELLO, CO**
**(FORMERLY SABLE)**
**1988**
**NIMA 5063 IV SE-SERIES V877**

Show a single map date in the lower right title block. The map date on basic revision maps should be the year of the imagery used to update the planimetry. On complete revision maps, use the year of the field check as the map date. See section 2.3.23.3 for how to determine the map date for single edition maps. OMIT all other map dates that may appear on the previous edition of the map (for example, the purple map date on photorevision maps).

The NIMA reference code normally appears on previous editions following the abbreviation "AMS" (Army Map Service) or "DMA" (Defense Mapping Agency). If "AMS" or "DMA" appears in front of the reference code on the previous edition, change the acronym to the

Table 2-2
U.S. Postal Service two-letter 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 |
| IN | Indiana | TN | Tennessee |
| IA | Iowa | 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 | DC | District of Columbia |
| MS | Mississippi | GU | Guam |
| MO | Missouri | PR | Puerto Rico |
| MT | Montana | VI | Virgin Islands |
| NE | Nebraska | | |
| NV | Nevada | | |

currently used "NIMA" on the new map. Cross-check or obtain the code from the NIMA Catalog of Topographic Products. Ordinarily, there will be one NIMA reference code in the title block. However, on maps of coastal areas, especially those involving islands, more than one NIMA reference code may apply. Show all NIMA reference codes for NIMA quadrangles that overlap USGS quadrangles by more than 20 percent. List multiple NIMA reference codes in descending order of percentage of overlap.

OMIT the map reference code on non-single edition maps that may appear on the previous edition. See section 2.3.23.3 for information on map reference codes on single edition maps.

OMIT the geographic index numbers (for example, N3337.5-W11022.5/7.5) that may appear on the previous edition of the map.

See sections 2.3.25 for information on State index codes and section 2.3.26.4 for information on Tennessee Valley Authority stock numbers.

2.3.4 "Produced by" Note

Show the following note on the first line of the legend in the lower left margin:

**Produced by the United States Geological Survey**

Since revised maps are regarded as new products, OMIT notes that may appear on the previous edition that credit other agencies for performing mapping operations (for example, notes such as "Mapped by the Defense Mapping Agency/Edited and published by the Geological Survey").

→ 2.3.5 Cooperative Headings

Since revised maps are regarded as new products, OMIT all cooperative headings and credit notes that may appear on the previous edition.

Show new cooperative headings only when cooperators have funded at least 50 percent of the cost of the update. Use the default State cooperative headings that have been established over the years as listed in appendix 2-H, unless there are instructions to do otherwise. The Coordination and Requirements offices confirm the preferred usage of cooperator names in the headings during contract negotiations.

Show the cooperative heading in the center of the upper margin.

If the cooperating agency requests that an agency logo be shown on the map, show the logo in black and white and positioned to the left of the cooperative heading. Unless otherwise agreed to, the logo must be provided by the agency as a black-and-white 1-bit image with a minimum resolution of 300 dots per inch. Cooperative agency logos are limited to a height of 0.5 inch, or the same height as the USGS visual identity logo.

Pattern the first line of the cooperative headings for State agencies after the following:

**STATE OF FLORIDA**

The official title of Massachusetts, Pennsylvania, Puerto Rico, and Virginia is "Commonwealth". Pattern the first line of the cooperative headings for these jurisdictions after the following:

**COMMONWEALTH OF MASSACHUSETTS**

Kentucky is also a Commonwealth, but the Kentucky mapping authorities prefer to be referred to as a State in the cooperative heading.

Show the name of the cooperating agency on the second line of the cooperative heading. A third and fourth line can be appended to show the name of additional cooperating agencies, if applicable. The entire cooperative heading is limited to a maximum of four lines

because of space restrictions. Pattern cooperative headings with multiple agency names after the following:

**STATE OF SOUTH DAKOTA**

**GEOLOGICAL SURVEY**

**DEPARTMENT OF HIGHWAYS**

2.3.6 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.

OMIT all notes identifying superseded maps that may appear on the previous edition, such as 15-minute map notes on 7.5-minute maps or 7.5-minute map notes on 7.5- x 15-minute maps.

OMIT notes for sources from which the USGS verifies or recompiles

content. Do not identify sources for boundary data, because boundaries are verified and updated from ancillary sources. Do not identify sources for names, because the USGS maintains the GNIS to verify names.

OMIT the control note that may appear on the previous edition of the map, unless unverified control obtained from other agencies is shown. The USGS verifies control from the National Geodetic Survey (formerly part of the U.S. Coast and Geodetic Survey)[3], the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Department of Commerce. Control from other agencies is used only through agreement. Show the following note when unverified control from other agencies is used:

**Supplemental control by (other agency or agencies)**

OMIT the map edited note that may appear on the previous edition of the map.

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

If a 7.5- x 15-minute map covers part of the same area as at least one 7.5-minute map that is being maintained at the request of a State cooperator, the following notes are added to the source notes paragraph of the 7.5- x 15-minute map:

- When both halves of the 7.5- x 15-minute map are being maintained as 7.5-minute maps, pattern the note after the following:

[3] Older control by the U.S. Coast and Geodetic Survey (USC&GS) was also verified by the USGS.

**This area also covered by the Oxford and Webster 7.5-minute, 1:24,000-scale maps**

- When only one-half of the 7.5- x 15-minute map is being maintained as a 7.5-minute map, pattern the note after the following:

  **The west half of this area also covered by the State Line 7.5-minute, 1:24,000-scale map**

If a 7.5-minute map covers part of the same area as a 7.5- x 15-minute map that is being maintained at the request of a State cooperator, the following note is added to the source notes paragraph of the 7.5-minute map:

**This area also covered by the Townsend 7.5- x 15-minute, 1:25,000-scale map**

See appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska) for the preferred line stacking of the source notes. Note that a period is not shown if a sentence stops at the end of a line.

Basic Revision

Pattern the source notes for basic revision maps after the following:

**Topography compiled 1974. Planimetry derived from imagery taken 1998 and other sources. Public Land Survey System and survey control current as of 1976. Boundaries current as of 2000**

The difference between the currentness dates in the topography and planimetry notes indicates to the map user that there may be discrepancies in vertical registration.

Information about the topography compilation can be obtained from the compilation notes on the previous edition or the Map Catalog data base maintained by the USGS. If the topography was compiled from imagery, use the year of the imagery as the currentness date in the topography note on the revised map. If there is a range of imagery years, use the oldest year. If the topography was compiled by planetable surveys, use the year of the planetable surveys as the currentness date of the topography. If there is a range of planetable survey years, use the most recent date. If the topography was compiled from a combination of imagery and planetable surveys, use the older of the two dates. If there is a "Revised from aerial photographs taken (year)" or "Revised (year)" note in the compilation notes, use the date in the revision note. If there is no imagery date, planetable surveys date, or revision date, use the field checked date. If the contour revision option has been performed on the new map, use the date of the revision imagery as the currentness date of the topography.

OMIT the date of the original base map compilation for planimetry. Instead, use the date of the revision imagery source that is used to update the planimetry. If there is a range of revision imagery dates, use the oldest date.

Use the most recent field check date as the currentness date of the Public Land Survey System (PLSS) and survey control. The most recent field check date can be obtained from the previous edition or the Map Catalog data base. If there is a range of dates, the most recent date is used in the currentness note. If there is no PLSS on the map, OMIT the phrase "Public Land Survey System and".

Use the year the boundaries were verified as the currentness date of the boundaries. Show the boundaries currentness note, regardless of whether or not there are boundaries on the map.

Complete Revision

Pattern the source notes for complete revision maps after the following:

**Derived from imagery taken 1998 and other sources. Field checked 2000**

OMIT the original base map compilation dates. If there is a range of imagery dates, use the oldest date. If there is a range of field checked dates, use the most recent date.

OMIT the currentness notes for the Public Land Survey System, survey control, and boundaries, because these features are considered current as of the field checked date.

2.3.7 Horizontal Coordinate Reference System Notes

Horizontal coordinate reference system notes identify the system used to reference locations on the ground (see section 1.1.5.1 for horizontal datum information).

All revised primary series maps are plotted on the Universal Transverse Mercator projection and North American Datum of 1983, except for joint USGS and USDA Forest Service single edition maps produced by the USDA Forest Service. See section 2.3.23.7 for horizontal coordinate reference system notes on single edition maps.

Pattern the horizontal datum, projection, and reference system notes for maps with UTM projections on NAD 83 after the following:

**North American Datum of 1983 (NAD 83). Projection and**
**1 000-meter grid: Universal Transverse Mercator, zone 13T**
**10 000-foot ticks: Colorado Coordinate System of 1983**
**(north zone)**

Use figure 2-1a to determine the UTM grid zone designation of the U.S. National Grid. See table 2-4 to determine the UTM grid spacing.

Use table 2-5 to determine the NAD 83 State Plane Coordinate System (SPCS) units for maps of the individual States and outlying areas. See table 2-4 to determine the proper SPCS tick spacing. Use the

"Index of State Plane Coordinate (SPC) Zone Codes (NAD 1983)" by the National Ocean Service, National Oceanic and Atmospheric Administration (NOS/NOAA), U.S. Department of Commerce, December 1988, to determine the SPCS zone.

Do not distinguish the difference between international feet and U.S. survey feet on maps of South Carolina.

If there is more than one zone, append the SPCS information for the other zone(s). Examples of horizontal coordinate reference system notes with more than one NAD 83 SPCS zone are shown in figure 2-2.

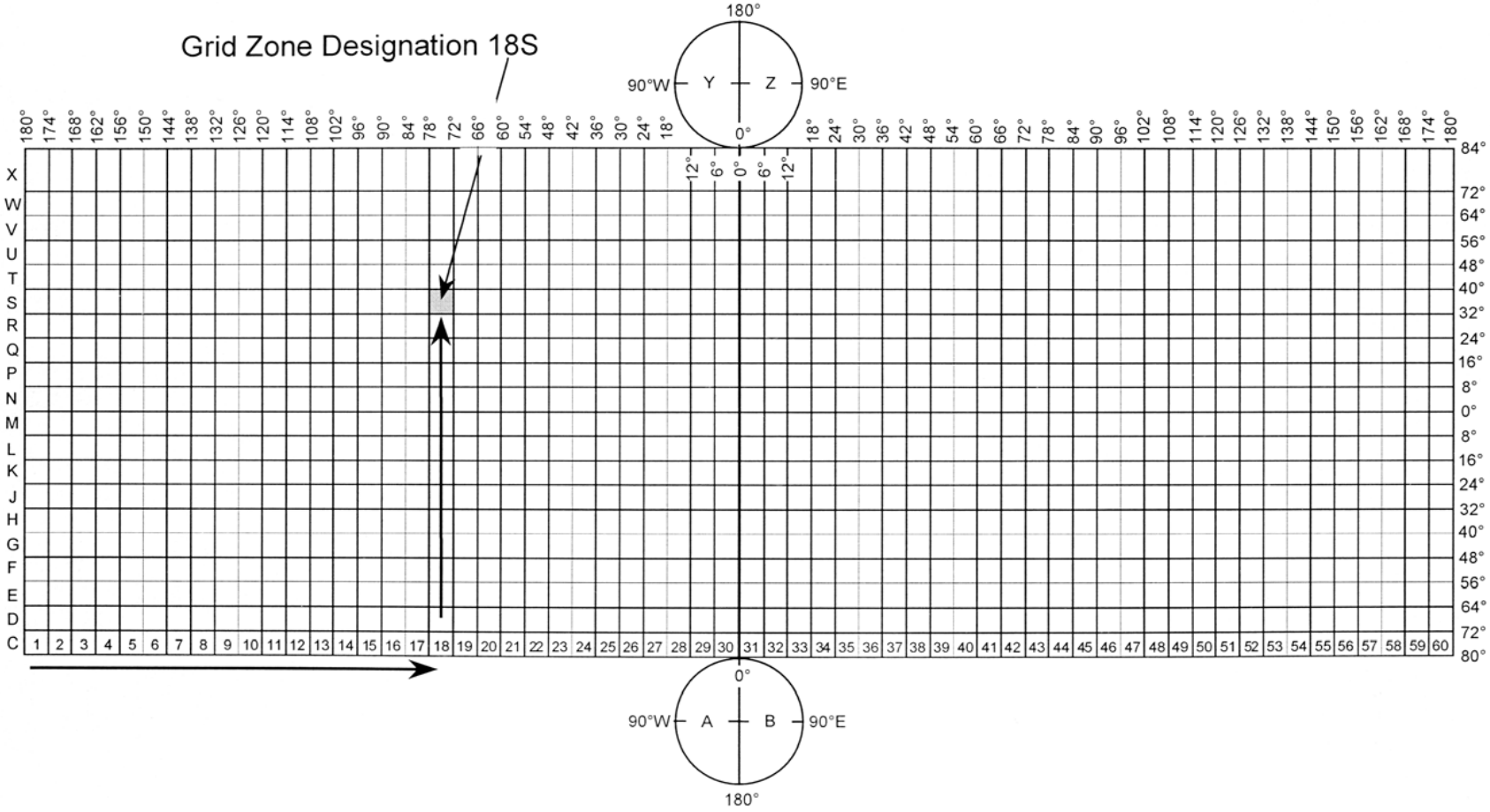



Figure 2-1a
Grid zone designations of the U.S. National Grid.

Source: United States National Grid, Federal Geographic Data Committee, 2001.

Table 2-4
Reference system spacing

| MAP SCALE | SPCS SPACING | | | UTM SPACING | | |
|---|---|---|---|---|---|---|
| | Ground Distance | Map Distance | | Ground Distance | Map Distance | |
| | | Inches | mm | | Inches | mm |
| 1:10 000 | 1 000 m<br>5 000 ft | 3.94<br>6.0 | 100.1<br>152.4 | 1 000 m | 3.94 | 100.0 |
| 1:12 000 | 1 000 m<br>5 000 ft | 3.28<br>5.00 | 83.3<br>127.0 | 1 000 m | 3.28 | 83.3 |
| 1:20 000 | 2 500 m<br>10 000 ft | 4.92<br>6.0 | 125.0<br>152.4 | 1 000 m | 1.97 | 50.0 |
| 1:24 000 | 2 500 m<br>10 000 ft | 4.10<br>5.0 | 104.1<br>127.0 | 1 000 m | 1.64 | 41.6 |
| 1:25 000 | 2 500 m<br>10 000 ft | 3.94<br>4.8 | 100.1<br>122.0 | 1 000 m | 1.57 | 40.0 |
| 1:63 360 | 5 000 m<br>20 000 ft | 3.11<br>3.78 | 79.0<br>96.0 | 5 000 m | 3.10 | 78.7 |

Table 2-5
Units of measurement for State Plane Coordinate System 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 |

<u>One State, two zones</u>
North American Datum of 1983 (NAD 83). Projection and 1 000-meter grid: Universal Transverse Mercator, zone 13S 10 000-foot ticks: Colorado Coordinate System of 1983 (south and central zones)

<u>Two States, two zones with same units of measure</u>
North American Datum of 1983 (NAD 83). Projection and 1 000-meter grid: Universal Transverse Mercator, zone 13T 10 000-foot ticks: Colorado Coordinate System of 1983 (north zone) and Wyoming Coordinate System of 1983 (west central zone)

<u>Two States, three zones with same units of measure</u>*
North American Datum of 1983 (NAD 83). Projection and 1 000-meter grid: Universal Transverse Mercator, zone 13T 10 000-foot ticks: Colorado Coordinate System of 1983 (north zone) and Wyoming Coordinate System of 1983 (west central and east central zones)

<u>Three States, three zones with same units of measure</u>
North American Datum of 1983 (NAD 83). Projection and 1 000-meter grid: Universal Transverse Mercator, zone 13T 10 000-foot ticks: Colorado Coordinate System of 1983 (north zone), Wyoming Coordinate System of 1983 (east zone), and Nebraska Coordinate System of 1983

<u>Two States, two zones with different units of measure</u>
North American Datum of 1983 (NAD 83). Projection and 1 000-meter grid: Universal Transverse Mercator, zone 13T 10 000-foot ticks: Colorado Coordinate System of 1983 (north zone). 2 500-meter ticks: Utah Coordinate System of 1983 (central zone)

<u>Three States, three zones with different units of measure</u>*
North American Datum of 1983 (NAD 83). Projection and 1 000-meter grid: Universal Transverse Mercator, zone 13S 10 000-foot ticks: Colorado Coordinate System of 1983 (south zone) and New Mexico Coordinate System of 1983 (west zone). 2 500-meter ticks: Oklahoma Coordinate System of 1983 (south zone)

*Note: Group zones in the same State together. Group foot or meter zones together, regardless of amount of area within each zone. Otherwise, list the zones in order of descending area.

Figure 2-2
Examples of horizontal coordinate reference system notes with more than one NAD 83 SPCS zone.

The horizontal datum shift note for 7.5-minute maps on NAD 83 is patterned after the following:

> **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**[4]

On Alaska 1:63,360-scale maps on NAD 83, the horizontal datum shift note is phrased as follows:

> **North American Datum of 1927 (NAD 27) is shown by dashed corner ticks. The values of the shift between NAD 83 and NAD 27 are obtainable from National Geodetic Survey NADCON software**

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". For more information on reference systems, see STI 98-1, "Reference System Treatment for Map Products of the National Mapping Program".

See section 2.3.23.7 for NAD 27 horizontal coordinate reference system notes for single edition maps.

2.3.8 Explanatory Notes

Explanatory notes describe specific features that appear in the body of the map. Unless otherwise stated, the following explanatory notes have been presented in their preferred order below the datum shift note. It is permissible to show them in a different order, if

[4] The Alaskan islands of St. Lawrence, St. Matthew, St. Paul, and St. George each have their own datum and are referenced in lieu of NAD 27. For Hawaii, the Old Hawaiian Datum is referenced in place of NAD 27; for Puerto Rico, the 1940 Puerto Rico Datum is referenced.

necessary. See appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska) for the preferred line stacking of the notes. Note that a period is not shown if a sentence stops at the end of a line.

2.3.8.1 Depth Curve and Soundings Notes

If there are depth curves and soundings or other hydrographic data taken from NOS charts (such as reefs, exposed rocks, wrecks, and so on.) shown in a sea, ocean, or other body of water connected to a sea or ocean on the map, show a note between the compilation and the horizontal datum notes, patterned after the following (the chart number and year are not included if the information is not readily available):

**Selected hydrographic data compiled from NOS Chart 264 (1970)**
**This information is not intended for navigational purposes**

If there are depth curves and soundings shown in one of the Great Lakes or in Lake St. Clair, show a note between the compilation and the horizontal datum notes, patterned after the following (the chart number and year are not included if the information is not readily available):

**Selected hydrographic data in Lake Superior compiled from U.S Lake Survey Chart 97 (1958). This information is not intended for navigational purposes**

If there are depth curves and soundings shown on the map in other inland lakes, as well as in one of the Great Lakes, show a note below the Great Lakes hydrographic note, patterned after the following (if there are no soundings, OMIT the phrase "and soundings"):

**Depth curves and soundings in other lakes compiled from charts furnished by Wisconsin Department of Natural Resources**

If there are depth curves and soundings shown in other inland lakes and none are shown in the Great Lakes (or if none of the Great Lakes are on the map), show a note between the compilation and the horizontal datum notes, patterned after the following (if there are no soundings, OMIT the phrase "and soundings"):

**Depth curves and soundings compiled from chart furnished by Illinois Department of Natural Resources**

See section 2.3.13.5 for depth curve and soundings datum notes.

2.3.8.2 Bathymetry Notes

If there is bathymetric information shown on the map, show the following notes between the compilation and the horizontal datum notes:

**Bathymetry compiled by the National Ocean Service from tide-coordinated hydrographic surveys. This information is not intended for navigational purposes**

**Mean lower low water (dotted) line and mean high water (heavy solid) line compiled by NOS from tide-coordinated imagery Apparent shoreline (outer edge of vegetation) shown by light solid line**

See appendix 2-B (1:24,000- & 1:25,000-scale) for information on the National Ocean Service Hydrographic Survey index and the Hydrographic Survey Information diagrams.

See section 2.3.13.4 for bathymetry datum notes.

2.3.8.3 Contour Gap Note

If logical contouring to accommodate the datum shift on basic revision maps is not possible and the contours are allowed to end at the old (NAD 27) neatline (see section 2.2.6 Hypsography for an explanation), show the following note below the datum shift note:

**Contour gaps near map edges are due to NAD 83 shift**

2.3.8.4 Underwater Contour Note

If there are underwater contours shown in an area inundated by a new reservoir and the contours are not obtained from a USGS source, show a note patterned after the following:

**Underwater contours in Carlyle Reservoir from USACE maps dated 1957**

2.3.8.5 Private Inholdings Note

If there is at least one Federal or State reservation shown on the map, show the following note:

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

2.3.8.6 Land Line Notes

If there are land lines missing on maps in PLSS States, show one of the following land line explanatory notes. In order to avoid unnecessary effort, assume that the information in the explanatory notes on the previous edition of the map is correct unless there is a reason to question it.

If there is at least one undivided PLSS area on the map that has not been surveyed, but there are no areas with fraudulent, poorly executed, or technically inadequate surveys, show the following note:

**Where omitted, land lines have not been established**

If there are no undivided PLSS areas on the map that have not been surveyed, but there is at least one area with fraudulent, poorly executed, or technically inadequate surveys, show the following note:

**Certain land lines are omitted because of insufficient data**

If there is at least one undivided PLSS area on the map that has not been surveyed and there is at least one area with fraudulent, poorly executed, or technically inadequate surveys, show the following note:

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

OMIT notes explaining dashed land lines that may appear on the previous edition of the map.

If there is at least one land line that was surveyed by private surveyors or a government agency other than the Bureau of Land Management (BLM) that is accepted by local land owners and courts, but is not approved by BLM, show the following note:

**Dotted land lines established by private surveys**

See section 2.3.9 for the explanatory note for protracted land lines on maps of Alaska.

See section 2.3.10 and appendix 2-E for guidelines on Ohio survey collar notes.

2.3.8.7 Fence and Field Lines Note

OMIT the fence and field line note that may appear on the previous edition of the map.

2.3.8.8 Inundation Area Note

If there is at least one area of controlled inundation on the map, show the following note:

**Area(s) covered by dashed light-blue pattern is(are) subject to controlled inundation**

If the name of the reservoir does not appear on the map, append the name of the reservoir to the note as follows:

**Area covered by dashed light-blue pattern is subject to controlled inundation by Blue Creek Reservoir**

2.3.8.9 Built-up Area Note

OMIT the built-up area note that may appear on the previous edition of the map.

2.3.8.10 Subsidence Area Note

If there are active or stabilized subsidence areas in which the vertical control is unreliable due to water, mining, or petroleum extraction, show the following note:

**This quadrangle covers a subsidence area**

2.3.8.11 Carolina Bay Note

If there is at least one Carolina Bay on the map (found along the east coast between northern Florida and New Jersey), show the following note:

**Dashed elliptical outline represents Carolina Bay**

2.3.8.12 Building Information Note

If there are buildings or built-up area tint on basic revision maps, show a note that indicates when the houses of worship, schools, and other labeled buildings were last verified, patterned after the following (the date is the year of the most recent field check or information from a cooperator or member of the Earth Science Corps):

**Houses of worship, schools, and other labeled buildings verified 1982**

The names of buildings that are added from reliable ancillary sources to avoid embarrassment should be considered exceptions and

do not affect the date in the building information note.

2.3.8.13 Entire Area Notes

If the entire quadrangle lies within one bounded area and a clarifying note is necessary to identify the area (for instance, the area name may not appear on the map), show a note patterned after the following:

**Entire area lies within the city of Jacksonville**
or (in Hawaii)
**Entire area lies within the Makawao District**

If the entire quadrangle lies within a reservation and offshore islands are included in the reservation, show a marginal note patterned after the following, rather than showing the reservation name across an extensive body of water not included in the proclamation:

**Entire land area is within Tongass National Forest**
or
**Entire land area is within Tongass National Forest except Moose Island**

2.3.8.14 Earth Science Corps Note

The Earth Science Corps is a field component of the USGS Volunteer for Science Program. Volunteers in the Earth Science Corps may participate in an ongoing USGS map annotation project by collecting new information for use on assigned maps. If any information on an assigned map is supplied by a volunteer in the Earth Science Corps, show the following note:

**Some information supplied by Earth Science Corps volunteers**

2.3.9 Alaska Collar Notes

If the Alaska Maritime National Wildlife Refuge and a sea, ocean, or other body of water connected to a sea or ocean are on the map, show

the following note:

> **The Alaska Maritime National Wildlife Refuge consists of public land in coastal waters and adjacent seas of Alaska, except for lands within other National reservations**

If there are protracted land lines on maps of Alaska that are predetermined by the Bureau of Land Management, show a note directly below the landmark buildings note, patterned after the following:

> **Protracted land lines are predetermined by the Bureau of Land Management, Folio CR-16, Copper River Meridian**

OMIT the following notes that may appear on the previous edition of the map:

> "Swamps, as portrayed, indicate only the wetter areas, usually of low relief, as interpreted from imagery"
> <u>and</u>
> "Federal reservation boundaries established by the Alaska National Interest Lands Conservation Act, PL 96-487, Dec. 2, 1980, are shown as compiled by the administering agencies"

See the following sections for further collar and margin information specifically applicable to Alaska maps:

| | |
|---|---|
| 2.3.7 | Horizontal Coordinate Reference System Notes |
| 2.3.13 | Vertical Coordinate Reference System Notes |
| 2.3.15 | For Sale Notes |
| 2.3.20 | Road Classification Legend |
| 2.3.23.7 | Horizontal Coordinate Reference System Notes (for single edition maps) |

2.3.10 <u>Ohio Survey Collar Notes</u>

Special collar notes are used to explain land lines on maps of Ohio, because surveys were performed there before the rectangular system of principal meridians and base lines was adopted. The Ohio survey

areas are identified on maps by collar notes only, by a combination of collar notes and interior labels along the boundary line between survey areas, or by interior labels only along the boundary line between survey areas. These basic approaches are modified by special treatments, where necessary. See appendix 2-E for further information on Ohio survey collar notes.

2.3.11 Declination Diagram

The declination diagram graphically depicts the direction of deviation of the UTM grid north and magnetic north from true north. It also shows the values of the deviations in both degree/minute (geographic) and mil units, in accordance with a long-standing agreement with the military. A mil, which is defined as a unit of angular measurement equal to 1/6400 of 360 degrees, is used by the military to rapidly compute artillery firing angles. For mapping purposes, 1 degree = 17.8 mils (6400/360 or 17.7777 into infinity).

The UTM grid declination is calculated as the difference in longitude (in minutes) between the central meridian of the grid zone and the center of the quadrangle multiplied by the sine of the latitude of the center of the quadrangle ($C = \Delta\ Lon \times Sin\ Lat$); where "C" is the UTM grid declination in minutes, "Lon" is the longitude in minutes, and "Lat" is the latitude. In theory, the value will not change from one map revision to another. However, differences may occur because of past errors or calculations at different levels of precision. The value on the previous edition should be cross-checked against a reliable software package. Show the UTM grid declination value to the nearest minute (**01′**). Show the converted mil value beneath the geographic value to the nearest **whole** mil.

Obtain the magnetic declination for the intended shipping date from the GEOMAG program maintained by the Branch of Earthquake and Geomagnetic Information, Geologic Division, in Golden, Colorado. Show the magnetic declination value to the nearest one-half degree (**½°**). Show the converted mil value beneath the geographic value to the nearest **whole** mil. If the magnetic declination value is zero,

express the geographic value as **0°** and leave the position of the mils value **blank**, but retain the line under 0°.

Pattern the caption for the declination diagram after the following:

**UTM GRID AND 2000 MAGNETIC NORTH**
**DECLINATION AT CENTER OF SHEET**

2.3.11a U.S. National Grid Reference Box

The U.S. National Grid (USNG) reference box contains the elements for making a complete grid reference. See figure 2-2a for methods for depicting USNG grid zone designations and 100,000-meter square identifications on the USNG in the grid reference box. See figure 2-1a to determine the grid zone designation. See table 2-5a to determine the 100,000-meter square identification(s). See appendix 2-B (1-24,000- & 1:25,00-scale) and 2-D (Alaska) for full positioning and presentation guidelines for the USNG (in preparation).

For more information concerning the USNG, refer to the Federal Geographic Data Committee standard, "United States National Grid", December 2001.

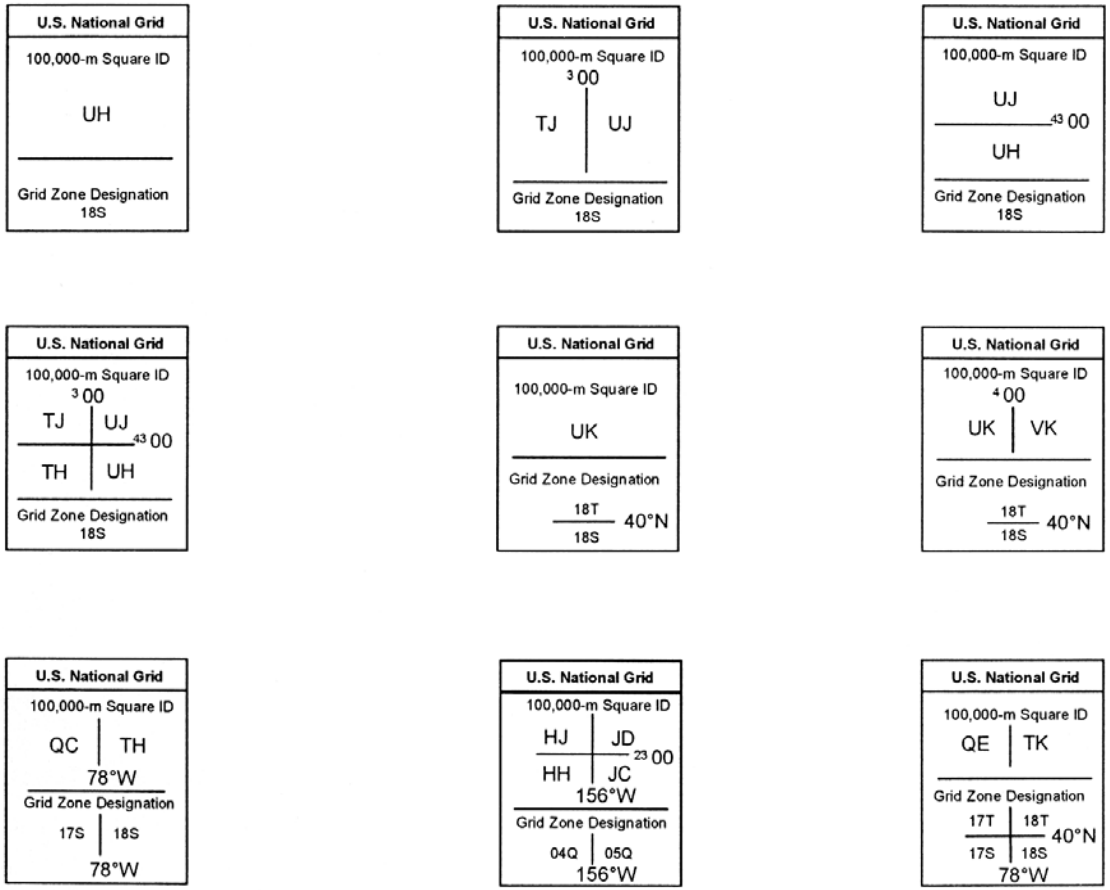



Figure 2-2a
Examples of USNG grid reference boxes.

Source: United States National Grid, Federal Geographic Data Committee, December 2001.

Table 2-5a
Organization of the U.S. National Grid 100,000-meter grid squares

| ZONES | SET 1<br>1, 7, 13, 19, 25, 31,<br>37, 43, 49, 55 | | | | | | | | SET 2<br>2, 8, 14, 20, 26, 32,<br>38, 44, 50, 56 | | | | | | | | SET 3<br>3, 9, 15, 21, 27, 33,<br>39, 45, 51, 57 | | | | | | | | SET 4<br>4, 10, 16, 22, 28, 34,<br>40, 46, 52, 58 | | | | | | | | SET 5<br>5, 11, 17, 23, 29, 35,<br>41, 47, 53, 59 | | | | | | | | SET 6<br>6, 12, 18, 24, 30, 36,<br>42, 48, 54, 60 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,000,000 m | AV | BV | CV | DV | EV | FV | GV | HV | JE | KE | LE | ME | NE | PE | QE | RE | SV | TV | UV | VV | WV | XV | YV | ZV | AE | BE | CE | DE | EE | FE | GE | HE | JV | KV | LV | MV | NV | PV | QV | RV | SE | TE | UE | VE | WE | XE | YE | ZE |
| | AU | BU | CU | DU | EU | FU | GU | HU | JD | KD | LD | MD | ND | PD | QD | RD | SU | TU | UU | VU | WU | XU | YU | ZU | AD | BD | CD | DD | ED | FD | GD | HD | JU | KU | LU | MU | NU | PU | QU | RU | SD | TD | UD | VD | WD | XD | YD | ZD |
| | AT | BT | CT | DT | ET | FT | GT | HT | JC | KC | LC | MC | NC | PC | QC | RC | ST | TT | UT | VT | WT | XT | YT | ZT | AC | BC | CC | DC | EC | FC | GC | HC | JT | KT | LT | MT | NT | PT | QT | RT | SC | TC | UC | VC | WC | XC | YC | ZC |
| | AS | BS | CS | DS | ES | FS | GS | HS | JB | KB | LB | MB | NB | PB | QB | RB | SS | TS | US | VS | WS | XS | YS | ZS | AB | BB | CB | DB | EB | FB | GB | HB | JS | KS | LS | MS | NS | PS | QS | RS | SB | TB | UB | VB | WB | XB | YB | ZB |
| 1,500,000 m | AR | BR | CR | DR | ER | FR | GR | HR | JA | KA | LA | MA | NA | PA | QA | RA | SR | TR | UR | VR | WR | XR | YR | ZR | AA | BA | CA | DA | EA | FA | GA | HA | JR | KR | LR | MR | NR | PR | QR | RR | SA | TA | UA | VA | WA | XA | YA | ZA |
| | AQ | BQ | CQ | DQ | EQ | FQ | GQ | HQ | JV | KV | LV | MV | NV | PV | QV | RV | SQ | TQ | UQ | VQ | WQ | XQ | YQ | ZQ | AV | BV | CV | DV | EV | FV | GV | HV | JQ | KQ | LQ | MQ | NQ | PQ | QQ | RQ | SV | TV | UV | VV | WV | XV | YV | ZV |
| | AP | BP | CP | DP | EP | FP | GP | HP | JU | KU | LU | MU | NU | PU | QU | RU | SP | TP | UP | VP | WP | XP | YP | ZP | AU | BU | CU | DU | EU | FU | GU | HU | JP | KP | LP | MP | NP | PP | QP | RP | SU | TU | UU | VU | WU | XU | YU | ZU |
| | AN | BN | CN | DN | EN | FN | GN | HN | JT | KT | LT | MT | NT | PT | QT | RT | SN | TN | UN | VN | WN | XN | YN | ZN | AT | BT | CT | DT | ET | FT | GT | HT | JN | KN | LN | MN | NN | PN | QN | RN | ST | TT | UT | VT | WT | XT | YT | ZT |
| | AM | BM | CM | DM | EM | FM | GM | HM | JS | KS | LS | MS | NS | PS | QS | RS | SM | TM | UM | VM | WM | XM | YM | ZM | AS | BS | CS | DS | ES | FS | GS | HS | JM | KM | LM | MM | NM | PM | QM | RM | SS | TS | US | VS | WS | XS | YS | ZS |
| 1,000,000 m | AL | BL | CL | DL | EL | FL | GL | HL | JR | KR | LR | MR | NR | PR | QR | RR | SL | TL | UL | VL | WL | XL | YL | ZL | AR | BR | CR | DR | ER | FR | GR | HR | JL | KL | LL | ML | NL | PL | QL | RL | SR | TR | UR | VR | WR | XR | YR | ZR |
| | AK | BK | CK | DK | EK | FK | GK | HK | JQ | KQ | LQ | MQ | NQ | PQ | QQ | RQ | SK | TK | UK | VK | WK | XK | YK | ZK | AQ | BQ | CQ | DQ | EQ | FQ | GQ | HQ | JK | KK | LK | MK | NK | PK | QK | RK | SQ | TQ | UQ | VQ | WQ | XQ | YQ | ZQ |
| | AJ | BJ | CJ | DJ | EJ | FJ | GJ | HJ | JP | KP | LP | MP | NP | PP | QP | RP | SJ | TJ | UJ | VJ | WJ | XJ | YJ | ZJ | AP | BP | CP | DP | EP | FP | GP | HP | JJ | KJ | LJ | MJ | NJ | PJ | QJ | RJ | SP | TP | UP | VP | WP | XP | YP | ZP |
| | AH | BH | CH | DH | EH | FH | GH | HH | JN | KN | LN | MN | NN | PN | QN | RN | SH | TH | UH | VH | WH | XH | YH | ZH | AN | BN | CN | DN | EN | FN | GN | HN | JH | KH | LH | MH | NH | PH | QH | RH | SN | TN | UN | VN | WN | XN | YN | ZN |
| | AG | BG | CG | DG | EG | FG | GG | HG | JM | KM | LM | MM | NM | PM | QM | RM | SG | TG | UG | VG | WG | XG | YG | ZG | AM | BM | CM | DM | EM | FM | GM | HM | JG | KG | LG | MG | NG | PG | QG | RG | SM | TM | UM | VM | WM | XM | YM | ZM |
| 500,000 m | AF | BF | CF | DF | EF | FF | GF | HF | JL | KL | LL | ML | NL | PL | QL | RL | SF | TF | UF | VF | WF | XF | YF | ZF | AL | BL | CL | DL | EL | FL | GL | HL | JF | KF | LF | MF | NF | PF | QF | RF | SL | TL | UL | VL | WL | XL | YL | ZL |
| | AE | BE | CE | DE | EE | FE | GE | HE | JK | KK | LK | MK | NK | PK | QK | RK | SE | TE | UE | VE | WE | XE | YE | ZE | AK | BK | CK | DK | EK | FK | GK | HK | JE | KE | LE | ME | NE | PE | QE | RE | SK | TK | UK | VK | WK | XK | YK | ZK |
| | AD | BD | CD | DD | ED | FD | GD | HD | JJ | KJ | LJ | MJ | NJ | PJ | QJ | RJ | SD | TD | UD | VD | WD | XD | YD | ZD | AJ | BJ | CJ | DJ | EJ | FJ | GJ | HJ | JD | KD | LD | MD | ND | PD | QD | RD | SJ | TJ | UJ | VJ | WJ | XJ | YJ | ZJ |
| | AC | BC | CC | DC | EC | FC | GC | HC | JH | KH | LH | MH | NH | PH | QH | RH | SC | TC | UC | VC | WC | XC | YC | ZC | AH | BH | CH | DH | EH | FH | GH | HH | JC | KC | LC | MC | NC | PC | QC | RC | SH | TH | UH | VH | WH | XH | YH | ZH |
| | AB | BB | CB | DB | EB | FB | GB | HB | JG | KG | LG | MG | NG | PG | QG | RG | SB | TB | UB | VB | WB | XB | YB | ZB | AG | BG | CG | DG | EG | FG | GG | HG | JB | KB | LB | MB | NB | PB | QB | RB | SG | TG | UG | VG | WG | XG | YG | ZG |
| 0 m | AA | BA | CA | DA | EA | FA | GA | HA | JF | KF | LF | MF | NF | PF | QF | RF | SA | TA | UA | VA | WA | XA | YA | ZA | AF | BF | CF | DF | EF | FF | GF | HF | JA | KA | LA | MA | NA | PA | QA | RA | SF | TF | UF | VF | WF | XF | YF | ZF |
| | 200,000 m<br>300,000<br>400,000<br>500,000<br>600,000<br>700,000<br>800,000 m | | | | | | | | 200,000 m<br>300,000<br>400,000<br>5 00,000<br>600,000<br>700,000<br>800,000 m | | | | | | | | 200,000 m<br>300,000<br>400,000<br>500,000<br>600,000<br>700,000<br>800,000 m | | | | | | | | 200,000 m<br>300,000<br>400,000<br>500,000<br>600,000<br>700,000<br>800,000 m | | | | | | | | 200,000 m<br>300,000<br>400,000<br>500,000<br>600,000<br>700,000<br>800,000 m | | | | | | | | 200,000 m<br>300,000<br>400,000<br>500,000<br>600,000<br>700,000<br>800,000 m | | | | | | | |

Source: United States National Grid, Federal Geographic Data Committee, December 2001.

Table 2-5a – Continued

| ZONES | SET 1<br>1, 7, 13, 19, 25, 31,<br>37, 43, 49, 55 | | | | | | | | SET 2<br>2, 8, 14, 20, 26, 32,<br>38, 44, 50, 56 | | | | | | | | SET 3<br>3, 9, 15, 21, 27, 33,<br>39, 45, 51, 57 | | | | | | | | SET 4<br>4, 10, 16, 22, 28, 34,<br>40, 46, 52, 58 | | | | | | | | SET 5<br>5, 11, 17, 23, 29, 35,<br>41, 47, 53, 59 | | | | | | | | SET 6<br>6, 12, 18, 24, 30, 36,<br>42, 48, 54, 60 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4,000,000 m | AV | BV | CV | DV | EV | FV | GV | HV | JE | KE | LE | ME | NE | PE | QE | RE | SV | TV | UV | VV | WV | XV | YV | ZV | AE | BE | CE | DE | EE | FE | GE | HE | JV | KV | LV | MV | NV | PV | QV | RV | SE | TE | UE | VE | WE | XE | YE | ZE |
| | AU | BU | CU | DU | EU | FU | GU | HU | JD | KD | LD | MD | ND | PD | QD | RD | SU | TU | UU | VU | WU | XU | YU | ZU | AD | BD | CD | DD | ED | FD | GD | HD | JU | KU | LU | MU | NU | PU | QU | RU | SD | TD | UD | VD | WD | XD | YD | ZD |
| | AT | BT | CT | DT | ET | FT | GT | HT | JC | KC | LC | MC | NC | PC | QC | RC | ST | TT | UT | VT | WT | XT | YT | ZT | AC | BC | CC | DC | EC | FC | GC | HC | JT | KT | LT | MT | NT | PT | QT | RT | SC | TC | UC | VC | WC | XC | YC | ZC |
| | AS | BS | CS | DS | ES | FS | GS | HS | JB | KB | LB | MB | NB | PB | QB | RB | SS | TS | US | VS | WS | XS | YS | ZS | AB | BB | CB | DB | EB | FB | GB | HB | JS | KS | LS | MS | NS | PS | QS | RS | SB | TB | UB | VB | WB | XB | YB | ZB |
| 3,500,000 m | AR | BR | CR | DR | ER | FR | GR | HR | JA | KA | LA | MA | NA | PA | QA | RA | SR | TR | UR | VR | WR | XR | YR | ZR | AA | BA | CA | DA | EA | FA | GA | HA | JR | KR | LR | MR | NR | PR | QR | RR | SA | TA | UA | VA | WA | XA | YA | ZA |
| | AQ | BQ | CQ | DQ | EQ | FQ | GQ | HQ | JV | KV | LV | MV | NV | PV | QV | RV | SQ | TQ | UQ | VQ | WQ | XQ | YQ | ZQ | AV | BV | CV | DV | EV | FV | GV | HV | JQ | KQ | LQ | MQ | NQ | PQ | QQ | RQ | SV | TV | UV | VV | WV | XV | YV | ZV |
| | AP | BP | CP | DP | EP | FP | GP | HP | JU | KU | LU | MU | NU | PU | QU | RU | SP | TP | UP | VP | WP | XP | YP | ZP | AU | BU | CU | DU | EU | FU | GU | HU | JP | KP | LP | MP | NP | PP | QP | RP | SU | TU | UU | VU | WU | XU | YU | ZU |
| | AN | BN | CN | DN | EN | FN | GN | HN | JT | KT | LT | MT | NT | PT | QT | RT | SN | TN | UN | VN | WN | XN | YN | ZN | AT | BT | CT | DT | ET | FT | GT | HT | JN | KN | LN | MN | NN | PN | QN | RN | ST | TT | UT | VT | WT | XT | YT | ZT |
| | AM | BM | CM | DM | EM | FM | GM | HM | JS | KS | LS | MS | NS | PS | QS | RS | SM | TM | UM | VM | WM | XM | YM | ZM | AS | BS | CS | DS | ES | FS | GS | HS | JM | KM | LM | MM | NM | PM | QM | RM | SS | TS | US | VS | WS | XS | YS | ZS |
| 3,000,000 m | AL | BL | CL | DL | EL | FL | GL | HL | JR | KR | LR | MR | NR | PR | QR | RR | SL | TL | UL | VL | WL | XL | YL | ZL | AR | BR | CR | DR | ER | FR | GR | HR | JL | KL | LL | ML | NL | PL | QL | RL | SR | TR | UR | VR | WR | XR | YR | ZR |
| | AK | BK | CK | DK | EK | FK | GK | HK | JQ | KQ | LQ | MQ | NQ | PQ | QQ | RQ | SK | TK | UK | VK | WK | XK | YK | ZK | AQ | BQ | CQ | DQ | EQ | FQ | GQ | HQ | JK | KK | LK | MK | NK | PK | QK | RK | SQ | TQ | UQ | VQ | WQ | XQ | YQ | ZQ |
| | AJ | BJ | CJ | DJ | EJ | FJ | GJ | HJ | JP | KP | LP | MP | NP | PP | QP | RP | SJ | TJ | UJ | VJ | WJ | XJ | YJ | ZJ | AP | BP | CP | DP | EP | FP | GP | HP | JJ | KJ | LJ | MJ | NJ | PJ | QJ | RJ | SP | TP | UP | VP | WP | XP | YP | ZP |
| | AH | BH | CH | DH | EH | FH | GH | HH | JN | KN | LN | MN | NN | PN | QN | RN | SH | TH | UH | VH | WH | XH | YH | ZH | AN | BN | CN | DN | EN | FN | GN | HN | JH | KH | LH | MH | NH | PH | QH | RH | SN | TN | UN | VN | WN | XN | YN | ZN |
| | AG | BG | CG | DG | EG | FG | GG | HG | JM | KM | LM | MM | NM | PM | QM | RM | SG | TG | UG | VG | WG | XG | YG | ZG | AM | BM | CM | DM | EM | FM | GM | HM | JG | KG | LG | MG | NG | PG | QG | RG | SM | TM | UM | VM | WM | XM | YM | ZM |
| 2,500,000 m | AF | BF | CF | DF | EF | FF | GF | HF | JL | KL | LL | ML | NL | PL | QL | RL | SF | TF | UF | VF | WF | XF | YF | ZF | AL | BL | CL | DL | EL | FL | GL | HL | JF | KF | LF | MF | NF | PF | QF | RF | SL | TL | UL | VL | WL | XL | YL | ZL |
| | AE | BE | CE | DE | EE | FE | GE | HE | JK | KK | LK | MK | NK | PK | QK | RK | SE | TE | UE | VE | WE | XE | YE | ZE | AK | BK | CK | DK | EK | FK | GK | HK | JE | KE | LE | ME | NE | PE | QE | RE | SK | TK | UK | VK | WK | XK | YK | ZK |
| | AD | BD | CD | DD | ED | FD | GD | HD | JJ | KJ | LJ | MJ | NJ | PJ | QJ | RJ | SD | TD | UD | VD | WD | XD | YD | ZD | AJ | BJ | CJ | DJ | EJ | FJ | GJ | HJ | JD | KD | LD | MD | ND | PD | QD | RD | SJ | TJ | UJ | VJ | WJ | XJ | YJ | ZJ |
| | AC | BC | CC | DC | EC | FC | GC | HC | JH | KH | LH | MH | NH | PH | QH | RH | SC | TC | UC | VC | WC | XC | YC | ZC | AH | BH | CH | DH | EH | FH | GH | HH | JC | KC | LC | MC | NC | PC | QC | RC | SH | TH | UH | VH | WH | XH | YH | ZH |
| | AB | BB | CB | DB | EB | FB | GB | HB | JG | KG | LG | MG | NG | PG | QG | RG | SB | TB | UB | VB | WB | XB | YB | ZB | AG | BG | CG | DG | EG | FG | GG | HG | JB | KB | LB | MB | NB | PB | QB | RB | SG | TG | UG | VG | WG | XG | YG | ZG |
| 2,000,000 m | AA | BA | CA | DA | EA | FA | GA | HA | JF | KF | LF | MF | NF | PF | QF | RF | SA | TA | UA | VA | WA | XA | YA | ZA | AF | BF | CF | DF | EF | FF | GF | HF | JA | KA | LA | MA | NA | PA | QA | RA | SF | TF | UF | VF | WF | XF | YF | ZF |
| | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 5 00,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | |

Note: Modified to reflect 100,000-meter squares for 2,000,000- to 4,000,000-meter north values.

Table 2-5a – Continued

| ZONES | SET 1<br>1, 7, 13, 19, 25, 31,<br>37, 43, 49, 55 | | | | | | | | SET 2<br>2, 8, 14, 20, 26, 32,<br>38, 44, 50, 56 | | | | | | | | SET 3<br>3, 9, 15, 21, 27, 33,<br>39, 45, 51, 57 | | | | | | | | SET 4<br>4, 10, 16, 22, 28, 34,<br>40, 46, 52, 58 | | | | | | | | SET 5<br>5, 11, 17, 23, 29, 35,<br>41, 47, 53, 59 | | | | | | | | SET 6<br>6, 12, 18, 24, 30, 36,<br>42, 48, 54, 60 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6,000,000 m | AV | BV | CV | DV | EV | FV | GV | HV | JE | KE | LE | ME | NE | PE | QE | RE | SV | TV | UV | VV | WV | XV | YV | ZV | AE | BE | CE | DE | EE | FE | GE | HE | JV | KV | LV | MV | NV | PV | QV | RV | SE | TE | UE | VE | WE | XE | YE | ZE |
| | AU | BU | CU | DU | EU | FU | GU | HU | JD | KD | LD | MD | ND | PD | QD | RD | SU | TU | UU | VU | WU | XU | YU | ZU | AD | BD | CD | DD | ED | FD | GD | HD | JU | KU | LU | MU | NU | PU | QU | RU | SD | TD | UD | VD | WD | XD | YD | ZD |
| | AT | BT | CT | DT | ET | FT | GT | HT | JC | KC | LC | MC | NC | PC | QC | RC | ST | TT | UT | VT | WT | XT | YT | ZT | AC | BC | CC | DC | EC | FC | GC | HC | JT | KT | LT | MT | NT | PT | QT | RT | SC | TC | UC | VC | WC | XC | YC | ZC |
| | AS | BS | CS | DS | ES | FS | GS | HS | JB | KB | LB | MB | NB | PB | QB | RB | SS | TS | US | VS | WS | XS | YS | ZS | AB | BB | CB | DB | EB | FB | GB | HB | JS | KS | LS | MS | NS | PS | QS | RS | SB | TB | UB | VB | WB | XB | YB | ZB |
| 5,500,000 m | AR | BR | CR | DR | ER | FR | GR | HR | JA | KA | LA | MA | NA | PA | QA | RA | SR | TR | UR | VR | WR | XR | YR | ZR | AA | BA | CA | DA | EA | FA | GA | HA | JR | KR | LR | MR | NR | PR | QR | RR | SA | TA | UA | VA | WA | XA | YA | ZA |
| | AQ | BQ | CQ | DQ | EQ | FQ | GQ | HQ | JV | KV | LV | MV | NV | PV | QV | RV | SQ | TQ | UQ | VQ | WQ | XQ | YQ | ZQ | AV | BV | CV | DV | EV | FV | GV | HV | JQ | KQ | LQ | MQ | NQ | PQ | QQ | RQ | SV | TV | UV | VV | WV | XV | YV | ZV |
| | AP | BP | CP | DP | EP | FP | GP | HP | JU | KU | LU | MU | NU | PU | QU | RU | SP | TP | UP | VP | WP | XP | YP | ZP | AU | BU | CU | DU | EU | FU | GU | HU | JP | KP | LP | MP | NP | PP | QP | RP | SU | TU | UU | VU | WU | XU | YU | ZU |
| | AN | BN | CN | DN | EN | FN | GN | HN | JT | KT | LT | MT | NT | PT | QT | RT | SN | TN | UN | VN | WN | XN | YN | ZN | AT | BT | CT | DT | ET | FT | GT | HT | JN | KN | LN | MN | NN | PN | QN | RN | ST | TT | UT | VT | WT | XT | YT | ZT |
| | AM | BM | CM | DM | EM | FM | GM | HM | JS | KS | LS | MS | NS | PS | QS | RS | SM | TM | UM | VM | WM | XM | YM | ZM | AS | BS | CS | DS | ES | FS | GS | HS | JM | KM | LM | MM | NM | PM | QM | RM | SS | TS | US | VS | WS | XS | YS | ZS |
| 5,000,000 m | AL | BL | CL | DL | EL | FL | GL | HL | JR | KR | LR | MR | NR | PR | QR | RR | SL | TL | UL | VL | WL | XL | YL | ZL | AR | BR | CR | DR | ER | FR | GR | HR | JL | KL | LL | ML | NL | PL | QL | RL | SR | TR | UR | VR | WR | XR | YR | ZR |
| | AK | BK | CK | DK | EK | FK | GK | HK | JQ | KQ | LQ | MQ | NQ | PQ | QQ | RQ | SK | TK | UK | VK | WK | XK | YK | ZK | AQ | BQ | CQ | DQ | EQ | FQ | GQ | HQ | JK | KK | LK | MK | NK | PK | QK | RK | SQ | TQ | UQ | VQ | WQ | XQ | YQ | ZQ |
| | AJ | BJ | CJ | DJ | EJ | FJ | GJ | HJ | JP | KP | LP | MP | NP | PP | QP | RP | SJ | TJ | UJ | VJ | WJ | XJ | YJ | ZJ | AP | BP | CP | DP | EP | FP | GP | HP | JJ | KJ | LJ | MJ | NJ | PJ | QJ | RJ | SP | TP | UP | VP | WP | XP | YP | ZP |
| | AH | BH | CH | DH | EH | FH | GH | HH | JN | KN | LN | MN | NN | PN | QN | RN | SH | TH | UH | VH | WH | XH | YH | ZH | AN | BN | CN | DN | EN | FN | GN | HN | JH | KH | LH | MH | NH | PH | QH | RH | SN | TN | UN | VN | WN | XN | YN | ZN |
| | AG | BG | CG | DG | EG | FG | GG | HG | JM | KM | LM | MM | NM | PM | QM | RM | SG | TG | UG | VG | WG | XG | YG | ZG | AM | BM | CM | DM | EM | FM | GM | HM | JG | KG | LG | MG | NG | PG | QG | RG | SM | TM | UM | VM | WM | XM | YM | ZM |
| 4,500,000 m | AF | BF | CF | DF | EF | FF | GF | HF | JL | KL | LL | ML | NL | PL | QL | RL | SF | TF | UF | VF | WF | XF | YF | ZF | AL | BL | CL | DL | EL | FL | GL | HL | JF | KF | LF | MF | NF | PF | QF | RF | SL | TL | UL | VL | WL | XL | YL | ZL |
| | AE | BE | CE | DE | EE | FE | GE | HE | JK | KK | LK | MK | NK | PK | QK | RK | SE | TE | UE | VE | WE | XE | YE | ZE | AK | BK | CK | DK | EK | FK | GK | HK | JE | KE | LE | ME | NE | PE | QE | RE | SK | TK | UK | VK | WK | XK | YK | ZK |
| | AD | BD | CD | DD | ED | FD | GD | HD | JJ | KJ | LJ | MJ | NJ | PJ | QJ | RJ | SD | TD | UD | VD | WD | XD | YD | ZD | AJ | BJ | CJ | DJ | EJ | FJ | GJ | HJ | JD | KD | LD | MD | ND | PD | QD | RD | SJ | TJ | UJ | VJ | WJ | XJ | YJ | ZJ |
| | AC | BC | CC | DC | EC | FC | GC | HC | JH | KH | LH | MH | NH | PH | QH | RH | SC | TC | UC | VC | WC | XC | YC | ZC | AH | BH | CH | DH | EH | FH | GH | HH | JC | KC | LC | MC | NC | PC | QC | RC | SH | TH | UH | VH | WH | XH | YH | ZH |
| | AB | BB | CB | DB | EB | FB | GB | HB | JG | KG | LG | MG | NG | PG | QG | RG | SB | TB | UB | VB | WB | XB | YB | ZB | AG | BG | CG | DG | EG | FG | GG | HG | JB | KB | LB | MB | NB | PB | QB | RB | SG | TG | UG | VG | WG | XG | YG | ZG |
| 4,000,000 m | AA | BA | CA | DA | EA | FA | GA | HA | JF | KF | LF | MF | NF | PF | QF | RF | SA | TA | UA | VA | WA | XA | YA | ZA | AF | BF | CF | DF | EF | FF | GF | HF | JA | KA | LA | MA | NA | PA | QA | RA | SF | TF | UF | VF | WF | XF | YF | ZF |
| | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 5 00,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | |

Note: Modified to reflect 100,000-meter squares for 4,000,000- to 6,000,000-meter north values.

Table 2-5a – Continued

| ZONES | SET 1<br>1, 7, 13, 19, 25, 31,<br>37, 43, 49, 55 | | | | | | | | SET 2<br>2, 8, 14, 20, 26, 32,<br>38, 44, 50, 56 | | | | | | | | SET 3<br>3, 9, 15, 21, 27, 33,<br>39, 45, 51, 57 | | | | | | | | SET 4<br>4, 10, 16, 22, 28, 34,<br>40, 46, 52, 58 | | | | | | | | SET 5<br>5, 11, 17, 23, 29, 35,<br>41, 47, 53, 59 | | | | | | | | SET 6<br>6, 12, 18, 24, 30, 36,<br>42, 48, 54, 60 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8,000,000 m | AV | BV | CV | DV | EV | FV | GV | HV | JE | KE | LE | ME | NE | PE | QE | RE | SV | TV | UV | VV | WV | XV | YV | ZV | AE | BE | CE | DE | EE | FE | GE | HE | JV | KV | LV | MV | NV | PV | QV | RV | SE | TE | UE | VE | WE | XE | YE | ZE |
| | AU | BU | CU | DU | EU | FU | GU | HU | JD | KD | LD | MD | ND | PD | QD | RD | SU | TU | UU | VU | WU | XU | YU | ZU | AD | BD | CD | DD | ED | FD | GD | HD | JU | KU | LU | MU | NU | PU | QU | RU | SD | TD | UD | VD | WD | XD | YD | ZD |
| | AT | BT | CT | DT | ET | FT | GT | HT | JC | KC | LC | MC | NC | PC | QC | RC | ST | TT | UT | VT | WT | XT | YT | ZT | AC | BC | CC | DC | EC | FC | GC | HC | JT | KT | LT | MT | NT | PT | QT | RT | SC | TC | UC | VC | WC | XC | YC | ZC |
| | AS | BS | CS | DS | ES | FS | GS | HS | JB | KB | LB | MB | NB | PB | QB | RB | SS | TS | US | VS | WS | XS | YS | ZS | AB | BB | CB | DB | EB | FB | GB | HB | JS | KS | LS | MS | NS | PS | QS | RS | SB | TB | UB | VB | WB | XB | YB | ZB |
| 7,500,000 m | AR | BR | CR | DR | ER | FR | GR | HR | JA | KA | LA | MA | NA | PA | QA | RA | SR | TR | UR | VR | WR | XR | YR | ZR | AA | BA | CA | DA | EA | FA | GA | HA | JR | KR | LR | MR | NR | PR | QR | RR | SA | TA | UA | VA | WA | XA | YA | ZA |
| | AQ | BQ | CQ | DQ | EQ | FQ | GQ | HQ | JV | KV | LV | MV | NV | PV | QV | RV | SQ | TQ | UQ | VQ | WQ | XQ | YQ | ZQ | AV | BV | CV | DV | EV | FV | GV | HV | JQ | KQ | LQ | MQ | NQ | PQ | QQ | RQ | SV | TV | UV | VV | WV | XV | YV | ZV |
| | AP | BP | CP | DP | EP | FP | GP | HP | JU | KU | LU | MU | NU | PU | QU | RU | SP | TP | UP | VP | WP | XP | YP | ZP | AU | BU | CU | DU | EU | FU | GU | HU | JP | KP | LP | MP | NP | PP | QP | RP | SU | TU | UU | VU | WU | XU | YU | ZU |
| | AN | BN | CN | DN | EN | FN | GN | HN | JT | KT | LT | MT | NT | PT | QT | RT | SN | TN | UN | VN | WN | XN | YN | ZN | AT | BT | CT | DT | ET | FT | GT | HT | JN | KN | LN | MN | NN | PN | QN | RN | ST | TT | UT | VT | WT | XT | YT | ZT |
| | AM | BM | CM | DM | EM | FM | GM | HM | JS | KS | LS | MS | NS | PS | QS | RS | SM | TM | UM | VM | WM | XM | YM | ZM | AS | BS | CS | DS | ES | FS | GS | HS | JM | KM | LM | MM | NM | PM | QM | RM | SS | TS | US | VS | WS | XS | YS | ZS |
| 7,000,000 m | AL | BL | CL | DL | EL | FL | GL | HL | JR | KR | LR | MR | NR | PR | QR | RR | SL | TL | UL | VL | WL | XL | YL | ZL | AR | BR | CR | DR | ER | FR | GR | HR | JL | KL | LL | ML | NL | PL | QL | RL | SR | TR | UR | VR | WR | XR | YR | ZR |
| | AK | BK | CK | DK | EK | FK | GK | HK | JQ | KQ | LQ | MQ | NQ | PQ | QQ | RQ | SK | TK | UK | VK | WK | XK | YK | ZK | AQ | BQ | CQ | DQ | EQ | FQ | GQ | HQ | JK | KK | LK | MK | NK | PK | QK | RK | SQ | TQ | UQ | VQ | WQ | XQ | YQ | ZQ |
| | AJ | BJ | CJ | DJ | EJ | FJ | GJ | HJ | JP | KP | LP | MP | NP | PP | QP | RP | SJ | TJ | UJ | VJ | WJ | XJ | YJ | ZJ | AP | BP | CP | DP | EP | FP | GP | HP | JJ | KJ | LJ | MJ | NJ | PJ | QJ | RJ | SP | TP | UP | VP | WP | XP | YP | ZP |
| | AH | BH | CH | DH | EH | FH | GH | HH | JN | KN | LN | MN | NN | PN | QN | RN | SH | TH | UH | VH | WH | XH | YH | ZH | AN | BN | CN | DN | EN | FN | GN | HN | JH | KH | LH | MH | NH | PH | QH | RH | SN | TN | UN | VN | WN | XN | YN | ZN |
| | AG | BG | CG | DG | EG | FG | GG | HG | JM | KM | LM | MM | NM | PM | QM | RM | SG | TG | UG | VG | WG | XG | YG | ZG | AM | BM | CM | DM | EM | FM | GM | HM | JG | KG | LG | MG | NG | PG | QG | RG | SM | TM | UM | VM | WM | XM | YM | ZM |
| 6,500,000 m | AF | BF | CF | DF | EF | FF | GF | HF | JL | KL | LL | ML | NL | PL | QL | RL | SF | TF | UF | VF | WF | XF | YF | ZF | AL | BL | CL | DL | EL | FL | GL | HL | JF | KF | LF | MF | NF | PF | QF | RF | SL | TL | UL | VL | WL | XL | YL | ZL |
| | AE | BE | CE | DE | EE | FE | GE | HE | JK | KK | LK | MK | NK | PK | QK | RK | SE | TE | UE | VE | WE | XE | YE | ZE | AK | BK | CK | DK | EK | FK | GK | HK | JE | KE | LE | ME | NE | PE | QE | RE | SK | TK | UK | VK | WK | XK | YK | ZK |
| | AD | BD | CD | DD | ED | FD | GD | HD | JJ | KJ | LJ | MJ | NJ | PJ | QJ | RJ | SD | TD | UD | VD | WD | XD | YD | ZD | AJ | BJ | CJ | DJ | EJ | FJ | GJ | HJ | JD | KD | LD | MD | ND | PD | QD | RD | SJ | TJ | UJ | VJ | WJ | XJ | YJ | ZJ |
| | AC | BC | CC | DC | EC | FC | GC | HC | JH | KH | LH | MH | NH | PH | QH | RH | SC | TC | UC | VC | WC | XC | YC | ZC | AH | BH | CH | DH | EH | FH | GH | HH | JC | KC | LC | MC | NC | PC | QC | RC | SH | TH | UH | VH | WH | XH | YH | ZH |
| | AB | BB | CB | DB | EB | FB | GB | HB | JG | KG | LG | MG | NG | PG | QG | RG | SB | TB | UB | VB | WB | XB | YB | ZB | AG | BG | CG | DG | EG | FG | GG | HG | JB | KB | LB | MB | NB | PB | QB | RB | SG | TG | UG | VG | WG | XG | YG | ZG |
| 6,000,000 m | AA | BA | CA | DA | EA | FA | GA | HA | JF | KF | LF | MF | NF | PF | QF | RF | SA | TA | UA | VA | WA | XA | YA | ZA | AF | BF | CF | DF | EF | FF | GF | HF | JA | KA | LA | MA | NA | PA | QA | RA | SF | TF | UF | VF | WF | XF | YF | ZF |
| | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 5 00,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | | 200,000 m | 300,000 | 400,000 | 500,000 | 600,000 | 700,000 | 800,000 m | |

Note: Modified to reflect 100,000-meter squares for 6,000,000- to 8,000,000-meter north values.

2.3.12 Map Scale Note and Bar Scale

The map scale is a recognized way of referencing map series. The map scale note (representative fraction) may be used to relate map measurements to ground distances. Pattern the appropriate map scale note after the following:

**SCALE 1:24 000**

(Note that the thousand's place is delimited by a space rather than a comma.)

The bar scale permits direct measurement of ground distances as represented by the map. Map measurements are related to ground distances in both metric units and U.S. customary units (feet and miles). Show the bar scale below the map scale note. See appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska) for the appropriate bar scale.

2.3.13 Vertical Coordinate Reference System Notes

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

OMIT the collar note "CONTOURS AND ELEVATIONS IN METERS" that may appear on the previous edition of the map.

2.3.13.1 Contour Interval Notes

The contour interval is a measure of elevation resolution. Information about the contour interval and units can be obtained from the previous edition or the Map Catalog data base maintained by the USGS.

Pattern the contour interval note after the following:

**CONTOUR INTERVAL 20 FEET**

<u>or</u>

**CONTOUR INTERVAL 5 METERS**

If there are supplementary contours on the map, show a note patterned after the following:

**SUPPLEMENTARY CONTOUR INTERVAL 5 FEET**

<u>or</u>

**SUPPLEMENTARY CONTOUR INTERVAL 1 METER**

OMIT the "dotted contours" note that may appear on the previous edition of the map. Dotted contours are supplementary contours. Use a note patterned after the example above, instead.

If there is more than one contour interval on the map, pattern the contour interval note after the following:

**CONTOUR INTERVAL 5 AND 10 FEET**

If there is more than one contour interval on the map, a diagram that illustrates where the different contour intervals apply should be placed to the left of the quadrangle location diagram. The contour interval diagram should be 0.7 inch high and 0.5 inch wide and have the same lineweight and type specifications as the quadrangle location diagram. See appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska) for the quadrangle location diagram lineweight and type specifications. Position the

two diagrams 0.4 inch apart and center them as a unit above the adjoining quadrangles diagram. The contour interval diagram should be positioned 0.375 inch above the adjoining quadrangles diagram. The quadrangle location diagram should be centered along the side of the contour interval diagram. Outline the areas with the different contour intervals on the contour interval diagram and label each area (for example, **5 FEET** and **10 FEET**). Show the following caption below the diagram:

**CONTOUR**
**INTERVAL**

In this situation, show the quadrangle location diagram caption on two lines, as follows:

**QUADRANGLE**
**LOCATION**

See section 2.2, Dual Contour Intervals, of appendix 7A, Background Material for Contour, Part 7, Hypsography, Standards for 1:24,000-Scale Digital Line Graphs and Quadrangle Maps for more information about the dual contour interval diagram.[5]

If *all* of the elevations on the quadrangle are between zero and 5 feet (or zero and 1 meter) above or below the reference datum, OMIT the contour interval note and show a note patterned after the following:

**ALL ELEVATIONS BETWEEN ZERO AND 5 FEET ABOVE DATUM**

(Note that the smallest regular contour interval used on maps is 5 feet or 1 meter and that the elevations can also be below the datum.)

If underwater contours are shown in an area inundated by a new

[5] For single edition maps, see Standards for USGS and USDA Forest Service Single Edition Quadrangle Maps (in preparation).

reservoir and the contour interval is different from that of the rest of the map, show a note below the regular contour interval note patterned after the following:

**CONTOUR INTERVAL 20 FEET IN JONES RESERVOIR**

See section 2.3.8.4 for the underwater contour source note shown in the lower left corner of the map.

See section 2.3.24 for information on contour interval notes on international border maps.

2.3.13.2 Vertical Datum Notes

Show the following vertical datum note on maps of the conterminous 48 States and Alaska:

**NATIONAL GEODETIC VERTICAL DATUM OF 1929**

Show the following vertical datum note on maps of Hawaii and the U.S. outlying areas of American Samoa, Guam, Puerto Rico, and the Virgin Islands:

**DATUM IS MEAN SEA LEVEL**

See section 2.3.24.2 for information on vertical datum notes on international border maps on U.S.-Mexico maps.

2.3.13.3 North American Vertical Datum of 1988 (NAVD 88) Conversion Note

If the conversion factor for the National Geodetic Vertical Datum of 1929 (NGVD 29) to NAVD 88 is ≥ 0.5 foot/meter show a note directly below the NGVD 29 note on maps of the conterminous 48 States, patterned after the following:

**(TO CONVERT ELEVATIONS TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, SUBTRACT 1 FOOT)**

This note does not apply to maps of Alaska, Hawaii, or the U.S. outlying areas of American Samoa, Guam, Puerto Rico, or the Virgin Islands.

Use National Geodetic Survey VERTCON software to calculate the NAVD 88 conversion factor. Show the conversion factor to the nearest **foot.**

2.3.13.4 Topographic-Bathymetric Notes

If bathymetric information is on the map, show the bathymetric contour interval and datum note directly below the NAVD 88 conversion note (if applicable) or the National Geodetic Vertical Datum of 1929 note. Obtain this information from the previous edition of the map and pattern the note after the following:

**BATHYMETRIC CONTOUR INTERVAL 1 METER WITH SUPPLEMENTARY 0.5 METER CONTOURS - DATUM IS MEAN LOWER LOW WATER**

Note that the National Tidal Datum Convention of 1980 created a uniform, continuous tidal datum of Mean Lower Low Water for the entire United States, including Alaska, Hawaii, and outlying areas. Only the Mean Low Water and Gulf Coast Low Water Datum statements were replaced on nautical charts, because the datum change did not significantly affect shorelines, depth sounding values, or isobaths on nautical charts.

Show the following note to explain the relationship between the topographic and bathymetric datums:

**THE RELATIONSHIP BETWEEN THE TWO DATUMS IS VARIABLE**

OMIT the note identifying the limits delineated by the shoreline that may appear on the previous edition; for example, "SHORELINE REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER".

See appendix 2-B (1:24,000- & 1:25,000-scale) for information on the National Ocean Service Hydrographic Survey index and the Hydrographic Survey Information diagrams.

See section 2.3.8.2 for bathymetry notes to show in the legend in the lower left margin.

2.3.13.5 Depth Curve and Sounding Datum Notes

If depth curves and soundings are shown in a sea, ocean, or other body of water connected to a sea or ocean on the map, show the

following notes below the elevation conversion note:

**DEPTH CURVES AND SOUNDINGS IN FEET - DATUM IS MEAN LOWER LOW WATER**
**THE RELATIONSHIP BETWEEN THE TWO DATUMS IS VARIABLE**

Note that the National Tidal Datum Convention of 1980 created a uniform, continuous tidal datum of Mean Lower Low Water that replaced the Mean Low Water datum and the Gulf Coast Low Water Datum without significantly affecting shorelines, depth sounding values, or isobaths on nautical charts (see section 2.3.13.4 for further explanation).

If depth curves and soundings are shown in one of the Great Lakes or in Lake St. Clair, show the appropriate International Great Lakes Datum reference level, patterned after the following:

**DEPTH CURVES AND SOUNDINGS IN FEET**
**REFERENCE LEVEL 600.0 FEET; INTERNATIONAL GREAT LAKES DATUM**
**THE RELATIONSHIP BETWEEN THE TWO DATUMS IS VARIABLE**

The International Great Lakes Datum reference levels are as follows:

| | |
|---|---|
| Lake Ontario | 242.8 feet |
| Lake Erie | 568.6 feet |
| Lake Michigan | 576.8 feet |
| Lake Huron | 576.8 feet |
| Lake Superior | 600.0 feet |
| Lake St. Clair | 571.7 feet |

DO NOT SHOW datum notes for depth curves and soundings provided by States for other inland lakes.

See section 2F.3.6.2 for the elevations to be used for the Great Lakes water surface levels on the interior of the map.

2.3.13.6 Mean Range of Tide Note

If there is a sea, ocean, or other body of water affected by the

tide on the map (topographic or topographic-bathymetric), show a note explaining the approximate mean range of tide, patterned after the following:

**THE MEAN RANGE OF TIDE IS APPROXIMATELY 0.9 METERS**

Obtain the value from the previous edition of the map; the National Ocean Service may also provide this value as part of a bathymetric update. Values are averaged over a period of 19 years. Since the coastal shoreline is usually not revised, except where it has been altered by construction or a significant natural change, it is assumed that the mean range of tide will not change significantly over this time period.

If the previous edition of the map contains a statement that the mean range of tide is "negligible", show the following note:

**THE MEAN RANGE OF TIDE IS NEGLIGIBLE**

If there is no mean range of tide statement on the previous edition, DO NOT SHOW the note unless the information is provided by the National Ocean Service as part of a bathymetric update.

2.3.13.7 Elevation Notes

OMIT notes specifying the precision of elevation values that may appear on the previous edition; for example, "CONTROL ELEVATIONS TO THE NEAREST 0.1 METER".

OMIT notes from the previous edition that identify elevations that were not field checked. These elevations were normally shown in brown on the previous edition (see section 2.2.6 Hypsography and 2F.3.6.2 Spot Elevations for more information on unchecked elevations).

2.3.13.8 Elevation Conversion Notes

The elevation conversion notes help the user convert contour and elevation values between feet and meters. To avoid redundancy, show

only one conversion note.

If the elevation data are in feet, show the following note:

**To convert from feet to meters, multiply by 0.3048**

If the elevation data are in meters, show the following note:

**To convert from meters to feet, multiply by 3.2808**

OMIT the elevation conversion scale that may appear in the right margin of the previous edition of the map.

2.3.14 Map Accuracy Note

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

On topographic maps, if the map meets both vertical and horizontal accuracy standards as defined by NMAS, show the following note in the lower margin:

**THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS**

See section 2.3.24 for information on the map accuracy note on international border maps.

On topographic-bathymetric maps, if the base map meets both vertical and horizontal accuracy standards as defined by NMAS, show the following note in the lower margin:

**BASE MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS**
**BATHYMETRIC SURVEY DATA COMPLIES WITH**
**INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO)**
**SPECIAL PUBLICATION 44 ACCURACY STANDARDS AND/OR**
**STANDARDS USED AS OF THE DATE OF THE SURVEYS**

If the accuracy note is not shown on the previous edition, DO NOT SHOW the note unless all of the features, including contours, are recompiled to meet NMAS.

See STI 85-1-G, "Omission of the certification statement for compliance with the National Map Accuracy Standards", for quadrangles that do not meet NMAS.

Upon implementation, information will be provided on the transition to the National Standard for Spatial Data Accuracy.

2.3.15 For Sale Notes

Show the following for sale note on all revised primary series maps:

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

OMIT the reference to Reston, Virginia, that may appear on the previous edition, because all orders are now forwarded to the Denver Distribution Office for processing. On Alaska maps, OMIT references to Fairbanks, Alaska, or Anchorage, Alaska, that may appear on the previous edition, because the Denver Distribution Office is handling the distribution of these maps, as well.

Amend the for sale note when a State or Federal cooperating agency maintains a distribution center for maps falling within its sphere of interest and requests mention. Reference the cooperating agency by name and address (city, State, and ZIP code). Show the State for sale note regardless of the funding of individual maps (see the exception for the Tennessee Valley Authority for sale note in section 2.3.26.2). Default State for sale notes and headings that have been established over the years are listed in appendix 2-I. Use these notes unless there are instructions to do otherwise. Pattern the State for sale notes after the following:

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

If a quadrangle is in two or more States, show the for sale note for the State with the largest area first, followed by the other States

listed in descending order by area within the quadrangle, patterned after the following:

**FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225**
**ILLINOIS GEOLOGICAL SURVEY, CHAMPAIGN, ILLINOIS 61820**
**IOWA GEOLOGICAL SURVEY, IOWA CITY, IOWA 52240**
**AND DIVISION OF GEOLOGY AND LAND SURVEY**
**MISSOURI DEPARTMENT OF NATURAL RESOURCES, ROLLA, MISSOURI 65401**

2.3.16 Folder Information Note

Show the following note below the for sale note to inform the map user of the availability of the symbols folder:

**A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST**

2.3.17 Quadrangle Location Diagram

The quadrangle location diagram can be used to generally locate the quadrangle within a State. If a quadrangle falls within two or more States, show the outline of the State having the feature for which the map is named. Use a solid square to approximate the position of the quadrangle.

In the past, the names of several States have been abbreviated in the quadrangle location diagram. The current abbreviations for these State names are as follows: CA, DE, MN, MS, NC, NH, RI, SC, VT, and WV. Although consistency with past publications is desirable, the consistent abbreviation of State names within the quadrangle location diagram on maps of different vintages is not a requirement.

See section 2.3.13.1 Contour Interval Notes for information on the quadrangle location diagram when there is more than one contour interval on the map.

See section 2.3.26.3 for information on the quadrangle location diagram used on Tennessee Valley Authority maps.

2.3.18 Adjoining Quadrangles Diagram

The adjoining quadrangles diagram allows the user to quickly identify the adjoining USGS maps. Obtain or cross-check the names for the adjoining maps from the GNIS Geographic Cell Names Data Base maintained by the USGS. Use the State Map Index as a guide for drawing non-standard size quadrangle box outlines.

2.3.19 Imprint Note

Federal printing and binding regulations require that there be a note on all maps and other publications indicating the name of the department responsible for the publication and the name and location of the printing plant. Although printing may be contracted to remote sites, the Department of the Interior is ultimately accountable for all USGS maps. Consequently, show the Reston, Virginia location in the imprint note. Show the calendar year of the printing in the note, patterned after the following:

**INTERIOR-GEOLOGICAL SURVEY, RESTON, VIRGINIA-2000**

OMIT any associated dots and stars that may appear on the previous edition (from STI 94-9, "Plant Imprint Note and Associated Dots and Star on National Mapping Program Maps").

2.3.20 Road Classification Legend

Show standard road classification legends on all primary series maps, including maps without roads. See appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska) for the appropriate legend.

2.3.21 Bar Code

In accordance with NMD Policy Number 95-NMD-3, "Product Identification and Bar Coding Policy", all NMD products are given an International Standard Book Number (ISBN) and European Article Number symbology bar code consisting of an ISBN group identifier, ISBN publisher identifier, ISBN title identifier, and ISBN check

digit. See appendixes 2-B (1:24,000 & 1:25,000), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska) for the appropriate placement of the bar code.

2.3.22 Recycle Logo

USGS quadrangle maps are printed on partially recycled paper. See appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska) (in preparation) for the appropriate placement of the recycle logo and text.

On folded maps, such as 7.5- x 15-minute quadrangles, the first preference for the placement of the recycle logo is the lower right corner of the bottom panel. See STI 99-1, "Recycled Paper Symbol", for further information.

2.3.23 Single Edition Map Notes

In August 1993, the USGS and the USDA Forest Service signed an Interagency Agreement to begin a joint single edition mapping program. As part of the agreement, single edition maps are revised according to jointly developed standards. The content of single edition maps includes the features normally shown on USGS maps, with additional features required for the efficient management of National Forest System lands. For rules and specifications for features shown on single edition maps, see the Standards for USGS and USDA Forest Service Single Edition Quadrangle Maps (in preparation). See appendix 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska) for the appropriate collar layout and type specifications.

2.3.23.1 Forest Service Logo

Show the following Forest Service logo in the upper margin (not shown to scale):

2.3.23.2 Forest Service Department/Bureau Identifier

Show the following Department/Bureau identifier to the right of the Forest Service logo:

**U.S. DEPARTMENT OF AGRICULTURE**

**FOREST SERVICE**

Center the Forest Service logo and Department/Bureau identifier as a unit in the upper margin.

2.3.23.3 Map Title Block, Lower Right Margin

See the instructions in section 2.3.3.2 for the map title block in the lower right margin. The map date is the more recent year of either the Forest Service correction guide or the revision imagery. Show the map reference code between the map date and the NIMA reference code in the same type style and size as the NIMA reference code. Instructions for how to derive the map reference code are shown in figure 2-3.

2.3.23.4 "Produced by" Notes

The first line of the credit legend in the lower left margin of the map contains the date of the most recent USGS map. Use the black map date in the lower right title block of the most recent USGS map unless the most recent map is a purple photorevision. If the most recent USGS map is a photorevision, use the purple date in the title block of the USGS map. Pattern the note after the following:

**Produced by the United States Geological Survey 1974**

If the entire map is within a National Forest and has been prepared by the Forest Service (referred to as an "official" single edition map on the style sheets in appendix 2-C and 2-D), show the following note on the second line of the legend, patterned after the following (the year is the same as the single edition map date):

**Revision by USDA Forest Service 1995**

If the map contains only a portion of National Forest System lands along the fringes of Forest boundaries, the entire map may not have been revised. Show a note on "fringe" single edition quadrangles, patterned after the following (the year is the same as the single edition map date):

**Revision within and adjacent to National Forest System lands by USDA Forest Service 1995**

For further information about the "Produced by" note, see section 2.3.4.

The Map Reference Code (MRC) uniquely identifies each map by location, type, and scale. On single edition maps, the MRC consists of a 12-character alphanumeric code that is divided into four fields, separated by dashes:

Field 1: five-character numeric code indicating latitude and longitude
Field 2: two-character alphanumeric code indicating the cell identifier
Field 3: two-character alphabetic code indicating the map type
Field 4: three-character alphanumeric code indicating the map scale

**MAP REFERENCE CODE** **38077-H3-TF-024**

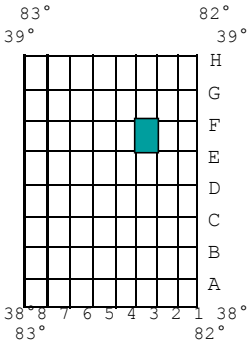
1. Coordinate code
   - Latitude
   - Longitude
2. Cell identifier
3. Map type code
4. Map scale code

**MAP TYPES**

TB-Topographic/Bathymetric
TF-Topographic (Feet)
TM-Topographic (Meters)
TR-Topographic (Shaded Relief)

**MAP SCALES**

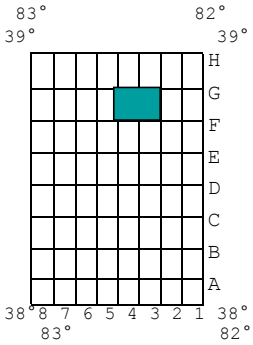
020-1:20,000
024-1:24,000
025-1:25,000
063-1:63,360




**7.5-MINUTE MAPS**

MRC 38082-F3-TF-024

Latitude
Longitude
Cell Identifier
Map Type
Unit of Measurement
Map Scale




**7.5- x 15-MINUTE MAPS**

MRC 38082-G3-TM-025

Latitude
Longitude
Cell Identifier
Map Type
Unit of Measurement
Map Scale

**Alaska** 1:63,360-scale maps are referenced to the southeast corner. However, confusion can result because the quadrangles vary in the extent of longitude and also because they are specified by alphanumeric names. The Seward quadrangles are used in the example below of the 15- x 22.5-minute maps between 59° and 62° latitude to illustrate how the 7.5-minute cell identifiers relate to the quadrangle names.

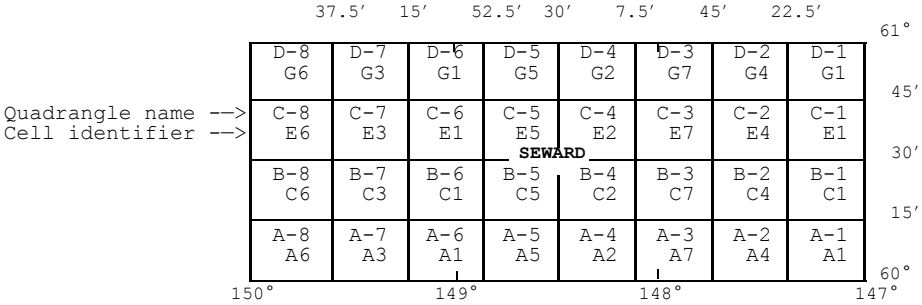



Figure 2-3
Map reference codes.

2.3.23.5 Cooperative Headings

Show a cooperative heading when cooperators have funded at least 50 percent of the cost of the update. Default State cooperative headings that have been established over the years are listed in appendix 2-H. Use these notes, unless there are instructions to do otherwise.

Show cooperative headings (and logos, if applicable) to the right of the Forest Service heading. Center the two headings in the space between the USGS heading and the upper right title block.

See section 2.3.5 for more information on cooperative headings.

2.3.23.6 Source Notes

Pattern the source notes after the following:

> **Topography compiled 1974. Planimetry derived from imagery taken 1994 and other sources. Public Land Survey System and survey control current as of 1976. Boundaries current as of 2000**

Information about the topography compilation can be obtained from the compilation notes on the previous edition or the Map Catalog data base maintained by the USGS. If the topography was compiled from imagery, use the year of the imagery as the currentness date in the topography note on the revised map. If there is a range of imagery years, use the <u>oldest</u> year. If the topography was compiled by planetable surveys, use the year of the planetable surveys as the

currentness date of the topography. If there is a range of planetable survey years, use the most recent date. If the topography was compiled from a combination of imagery and planetable surveys, use the older of the two dates. If there is a "Revised from aerial photographs taken (year)" or "Revised (year)" note in the compilation notes, use the date in the revision note. If there is no imagery date, planetable surveys date, or revision date, use the field checked date. If the contour revision option has been performed on the new map, use the date of the revision imagery as the currentness date of the topography.

OMIT the date of the original base map compilation for planimetry. Instead, use the date of the revision imagery source that is used to update the planimetry. If there is a range of revision imagery dates, use the oldest date.

Use the most recent field check date as the currentness date of the Public Land Survey System (PLSS) and survey control. If there is a range of dates, the most recent date is used in the currentness note. If all new PLSS data are used, or if there is no PLSS on the map, OMIT the phrase "Public Land Survey System and".

Use the year the boundaries were verified as the currentness date of the boundaries. Show the boundaries currentness note, regardless of whether or not there are boundaries on the map.

For further information on source notes, including notes to use when 7.5- x 15-minute and 7.5-minute maps are maintained over the same area, see section 2.3.6.

2.3.23.7 Horizontal Coordinate Reference System Notes

Single edition maps are plotted on the transverse Mercator or the Lambert conformal conic projection using the appropriate State Plane Coordinate System (SPCS) parameters and the North American Datum of 1927 (NAD 27).

Pattern the horizontal datum, projection, and reference system notes

for maps with State projections on NAD 27 after the following (see section 1.1.5.1 for horizontal datum information):

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

(Note that on NAD 27 maps cast on a State projection, the UTM interval value is shown without a space ("1000-meter").

Use table 2-6 to verify the State projection. (Note that there are no National Forests in the Virgin Islands.) See table 2-4 for the proper SPCS tick spacing.

See table 2-4 to determine the UTM tick spacing. Use table 2-5b to verify the UTM zone.

If there is more than one zone, append the SPCS information for the other zone(s). Examples of horizontal coordinate reference system notes with more than one NAD 27 SPCS zone are shown in figure 2-4.

The horizontal datum shift note for 7.5-minute maps on NAD 27 is patterned after the following:

**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**

On Alaska 1:63,360-scale maps on NAD 27, the horizontal datum shift note is phrased as follows:

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

For more information on reference systems, see STI 98-1, "Reference System Treatment for Map Products of the National Mapping Program".

Table 2-5b
Relationship between longitude and UTM zones

| West longitude (degrees) | UTM zone | East longitude (degrees) | UTM zone |
|---|---|---|---|
| 180-174 | 1 | 0-6 | 31 |
| 174-168 | 2 | 6-12 | 32 |
| 168-162 | 3 | 12-18 | 33 |
| 162-156 | 4 | 18-24 | 34 |
| 156-150 | 5 | 24-30 | 35 |
| 150-144 | 6 | 30-36 | 36 |
| 144-138 | 7 | 36-42 | 37 |
| 138-132 | 8 | 42-48 | 38 |
| 132-126 | 9 | 48-54 | 39 |
| 126-120 | 10 | 54-60 | 40 |
| 120-114 | 11 | 60-66 | 41 |
| 114-108 | 12 | 66-72 | 42 |
| 108-102 | 13 | 72-78 | 43 |
| 102-96 | 14 | 78-84 | 44 |
| 96-90 | 15 | 84-90 | 45 |
| 90-84 | 16 | 90-96 | 46 |
| 84-78 | 17 | 96-102 | 47 |
| 78-72 | 18 | 102-108 | 48 |
| 72-66 | 19 | 108-114 | 49 |
| 66-60 | 20 | 114-120 | 50 |
| 60-54 | 21 | 120-126 | 51 |
| 54-48 | 22 | 126-132 | 52 |
| 48-42 | 23 | 132-138 | 53 |
| 42-36 | 24 | 138-144 | 54 |
| 36-30 | 25 | 144-150 | 55 |
| 30-24 | 26 | 150-156 | 56 |
| 24-18 | 27 | 156-162 | 57 |
| 18-12 | 28 | 162-168 | 58 |
| 12-6 | 29 | 168-174 | 59 |
| 6-0 | 30 | 174-180 | 60 |

Table 2-6
State projections using SPCS parameters[6]

| STATE | PROJECTION | STATE | PROJECTION |
|---|---|---|---|
| AL | transverse Mercator | NE | Lambert conformal conic |
| AK | TM, LCC, & Hotine oblique Mercator | NV | transverse Mercator |
| AZ | transverse Mercator | NH | transverse Mercator |
| AR | Lambert conformal conic | NJ | transverse Mercator |
| CA | Lambert conformal conic | NM | transverse Mercator |
| CO | Lambert conformal conic | NY | transverse Mercator |
| CT | Lambert conformal conic | NC | Lambert conformal conic |
| DE | transverse Mercator | ND | Lambert conformal conic |
| FL | TM & LCC | OH | Lambert conformal conic |
| GA | transverse Mercator | OK | Lambert conformal conic |
| HI | transverse Mercator | OR | Lambert conformal conic |
| ID | transverse Mercator | PA | Lambert conformal conic |
| IL | transverse Mercator | RI | transverse Mercator |
| IN | transverse Mercator | SC | Lambert conformal conic |
| IA | Lambert conformal conic | SD | Lambert conformal conic |
| KS | Lambert conformal conic | TN | Lambert conformal conic |
| KY | Lambert conformal conic | TX | Lambert conformal conic |
| LA | Lambert conformal conic | UT | Lambert conformal conic |
| ME | transverse Mercator | VT | transverse Mercator |
| MD | Lambert conformal conic | VA | Lambert conformal conic |
| MA | Lambert conformal conic | WA | Lambert conformal conic |
| MI | Lambert conformal conic | WV | Lambert conformal conic |
| MN | Lambert conformal conic | WI | Lambert conformal conic |
| MS | transverse Mercator | WY | transverse Mercator |
| MO | transverse Mercator | PR | Lambert conformal conic |
| MT | Lambert conformal conic | | |

[6] Some islands are mapped with different State projections. See U.S. Department of Commerce, Coast and Geodetic Survey, Special Publication No. 329, "Plane Coordinate Intersection Tables", for more detailed information.

<u>One State, two zones</u>
North American Datum of 1927 (NAD 27). Projection: Illinois coordinate system, east zone (transverse Mercator)
10 000-foot ticks: Illinois coordinate system, east and west zones
Blue 1000-meter Universal Transverse Mercator ticks, zone 16

<u>Two States, two zones</u>
North American Datum of 1927 (NAD 27). Projection: Illinois coordinate system, east zone (transverse Mercator)
10 000-foot ticks: Illinois coordinate system, east zone and Kentucky coordinate system, south zone
Blue 1000-meter Universal Transverse Mercator ticks, zone 16

<u>Two States, three zones</u>
North American Datum of 1927 (NAD 27). Projection: Illinois coordinate system, east zone (transverse Mercator)
10 000-foot ticks: Illinois coordinate system, east and west zones and Kentucky coordinate system, south zone
Blue 1000-meter Universal Transverse Mercator ticks, zone 16

<u>Three States, three zones</u>
North American Datum of 1927 (NAD 27). Projection: Illinois coordinate system, east zone (transverse Mercator)
10 000-foot ticks: Illinois coordinate system, east zone, Kentucky coordinate system, south zone, and Indiana coordinate system, west zone
Blue 1000-meter Universal Transverse Mercator ticks, zone 16

Figure 2-4
Examples of horizontal coordinate reference system notes with more than one NAD 27 SPCS zone.

2.3.23.8 Inholdings Notes

Show the following notes to the right of the box with the example of the Non-National Forest System lands tint, regardless of whether or not there are Non-National Forest System lands, inholdings, or National or State reservations on the map:

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

2.3.23.9 Legal Disclaimer Note

Show the following note on all single edition maps:

**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**

2.3.23.10 Land Line Notes

If there are protracted land lines on the map that are approved by the Bureau of Land Management, show the following note:

**Protracted Blocks (PB) are unsurveyed land of uncertain acreage**

If there are unofficial protracted land lines on the map, show the following note:

**Unsurveyed land net is not official**

If both situations occur on the map, show both notes.

2.3.23.11 Additional Collar and Margin Information

See the following sections for further collar and margin information applicable to single edition maps:

2.3.1 USGS Visual Identity Logo
2.3.2 USGS Department/Bureau Identifier
2.3.3 Map Title Blocks

2.3.8 Explanatory Notes
2.3.9 Alaska Collar Notes
2.3.10 Ohio Survey Collar Notes
2.3.11 Declination Diagram
2.3.12 Map Scale Note and Bar Scale
2.3.13 Vertical Coordinate Reference System Notes
2.3.14 Map Accuracy Note
2.3.15 For Sale Notes
2.3.16 Folder Information Note
2.3.17 Quadrangle Location Diagram
2.3.18 Adjoining Quadrangles Diagram
2.3.19 Imprint Note
2.3.20 Road Classification Legend
2.3.21 Bar Code
2.3.22 Recycle Logo
2.3.24 Notes on International Border Maps
2.3.25 State Index Code Numbers
2.3.26 Maps Within Tennessee Valley Authority Area

## 2.3.24 Notes on International Border Maps

### Quadrangle Names

Rename all primary series maps that are not already named after features in the United States. New quadrangle names must be submitted to the Geographic Names Information System for approval before publishing. See section 2F.1.3 for information on how to reassign quadrangle names.

### Contour Interval Notes

If the contour interval is the same for both the U.S. and the other country, pattern the contour interval note after the following:

**CONTOUR INTERVAL 10 METERS**

If there are different contour intervals in the same units for the U.S. and the other country, pattern the contour interval note after the following:

**CONTOUR INTERVAL 10 METERS IN THE UNITED STATES**

**CONTOUR INTERVAL 5 METERS IN MEXICO**

If the contour intervals are in different units for the U.S. and the other, pattern the notes after the following:

**CONTOUR INTERVAL 10 FEET IN THE UNITED STATES**

**CONTOUR INTERVAL 5 METERS IN CANADA**

See section 2.3.13 for further information on contour interval and elevation conversion notes.

2.3.24.1 U.S.-Canada Maps

Revise Canadian map detail when the Natural Resources Canada provides more recent information than what is shown on the previous edition of the map. If Canada does not provide a more recent source, do not revise the Canadian portion of the map, even though more recent imagery may be available.

If the Natural Resources Canada provides source material, whether in map or digital form, keep the Canadian portion of the map separate from the U.S. portion. Do not sell materials obtained from Canada, or map separation materials produced directly or indirectly from Canadian materials. Refer requests for Canadian information to the Natural Resources Canada.

Map Title Block, Upper Right Margin

If there is no map detail shown beyond the U.S. border, OMIT the name of the Canadian Province.

If there is map detail shown beyond the U.S. border, append the full Canadian Province name(s) after the U.S. State name(s); do not abbreviate either name. Insert a hyphen (without spaces) between the State and Province names.

Map Title Block, Lower Right Margin

If there is no map detail beyond the U.S. border, OMIT the name of the Canadian Province.

If there is map detail beyond the U.S. border, append the abbreviation for the Canadian Province(s) after the State name abbreviation(s). Insert a hyphen (without spaces) between the State and Province names. See table 2-2 for the State abbreviations. Use the following International Organization for Standardization abbreviations for the Canadian Provinces that border the United States:

| | |
|---|---|
| AB | Alberta |
| BC | British Columbia |
| MB | Manitoba |
| NB | New Brunswick |
| ON | Ontario |
| QC | Quebec |
| SK | Saskatchewan |
| YT | Yukon Territory |

Source Notes

If the Natural Resources Canada has provided the revision source in map form, add a Canadian source note to the source notes paragraph and pattern after the following:

**Canadian portion copied from Natural Resources Canada, 1:50,000-scale topographic map dated 1998**

If the Natural Resources Canada has provided the revision source in digital form, add a Canadian source note to the source notes paragraph and pattern after the following:

**Canadian portion produced from Natural Resources Canada digital data dated 1998**

If there is a Canadian source note on the previously published map,

but the Natural Resources Canada does not provide source material for the current revision, show one of the Canadian source notes from above.

If there is not a source note on the previously published map and the Natural Resources Canada does not provide source material for the current revision, do not add a Canadian source note.

Canadian Copyright Note

If the Natural Resources Canada provides source material, add the following copyright note in a paragraph below the source notes:

**Canadian portions of this map © by Her Majesty the Queen in Right of Canada, and may not be reproduced or redistributed without express consent of Natural Resources Canada, 4th Floor, 615 Booth Street, Ottawa, Ontario, K1A 039**

If the Natural Resources Canada does not provide source material for the current revision and there is not a Canadian copyright note on the previously published map, do not add the Canadian copyright note, even if Canada provided source information for the previously published map. In this situation, since the Canadian information is not copyrighted, it is not necessary to keep the Canadian portion of the map separate from the U.S. portion and the Canadian map detail can be sold or distributed without permission from Canada.

Map Accuracy Note

If the U.S. portion meets National Map Accuracy Standards and Canadian source material has been used to compile or revise the map, show the following note and DO NOT SHOW an accuracy note for the Canadian portion:

**THE UNITED STATES PORTION COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS**

If the map meets National Map Accuracy Standards and Canadian source material has never been used to compile or revise the Canadian portion, show the following note:

**THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS**

See section 2.3.14 for further information on the map accuracy note.

2.3.24.2 U.S.-Mexico Maps

Map Title Block, Upper Right Margin

Append the full Mexican State name(s) after the U.S. State name(s); do not abbreviate either name. Insert a hyphen (without spaces) between the State name(s).

Map Title Block, Lower Right Margin

Append the abbreviations for the Mexican State name(s) after the U.S. State name abbreviation(s). Insert a hyphen (without spaces) between the State names. See table 2-2 for the U.S. State abbreviations. Use the following International Organization for Standardization abbreviations for the Mexican States that border the United States:

| | |
|---|---|
| BCN | Baja California |
| CHH | Chihuahua |
| COA | Coahuila |
| NLE | Nuevo Leon |
| SON | Sonora |
| TAM | Tamaulipas |

INEGI Source Note

Show a source note giving credit to the Instituto Nacional de Estadística, Geografía e Informática (INEGI) above the horizontal coordinate reference system notes in the legend in the lower left margin.

If the Mexican content is plotted from INEGI digital data, show a note patterned after the following:

**Mexico portion produced from Instituto Nacional de Estadística, Geografía e Informática (INEGI) data, dated 2000**

If the Mexican content is produced using analog source materials, show a note patterned after the following:

**Mexico portion copied from Instituto Nacional de Estadística, Geografía e Informática (INEGI) 1:50,000-scale topographic map(s), dated 1998**

Vertical Datum Notes

Show the following vertical datum note directly below the U.S. contour interval note:

**U.S. PORTION ON NATIONAL GEODETIC VERTICAL DATUM OF 1929**

Show the North American Vertical Datum of 1988 (NAVD 88) conversion note directly below the NGVD 29 vertical datum note. See section 2.3.13.3 for further information on the NAVD 88 conversion note.

Show the following Mexican vertical datum note directly below the Mexican contour interval note:

**MEXICO DATUM IS MEAN SEA LEVEL**

Map Accuracy Note

If the U.S. portion complies with current National Map Accuracy Standards, show the following note:

**THE UNITED STATES PORTION COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS**

DO NOT SHOW an accuracy note for the Mexican portion.

See section 2.3.14 for further information on the map accuracy note.

For Sale Notes

Maps and color separation materials containing Mexican content reproduced from materials produced directly or indirectly from the INEGI source may be sold through normal USGS distribution channels. Show the following for sale note:

**FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225 AND BY SERVICIO A USARIOS, INEGI, DIRECCIÓN DE INTEGRACIÓN Y ANÁLISIS, SUBDIRECCIÓN DE COMERCIALIZACIÓN, HÉROE DE NACOZARI 2301 PUERTA 11, COL. DEL PARQUE C.P. 20290, AGUASCALIENTES, AGS, MEXICO**

See section 2.3.15 for more information on for sale notes.

See appendix 2-J for information on the portrayal of areas in Mexico.

2.3.25 State Index Code Numbers

State index code numbers are used by some States for map storage and inventory purposes. The USGS has agreed to show State index codes on maps containing at least a part of Texas and Louisiana, but the instructions in this section are intended to apply to maps of any other State with which the USGS makes an agreement in the future.

In general, the State index code number is shown below the adjoining quadrangle diagram. On topographic-bathymetric maps, the State index code number is shown in the same position as on topographic maps; however, the adjoining quadrangle diagram is positioned elsewhere. See appendixes 2-B (1:24,000- & 1:25,000-scale) and 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale) for specific placement and type specifications.

If the State index code cannot be obtained from the previous edition of the map, the information will be provided by the State.

Show the appropriate State abbreviation in front of the index code (for example, **TX 3093-213** or **LA 176A**). If there is more than one State index code, vertically list the index codes in the same order that the States are shown in the map title block.

The rest of the information in this section is background information on the Texas index code system.

The Texas index code 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°00'00" north and 101°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 index code number 3101-123 identifies a 7.5-minute quadrangle where the southeast coordinates are 31°07'30" north and 101°22'30" west.

2.3.26 Maps Within Tennessee Valley Authority Area

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

2.3.26.1 TVA Cooperative Heading

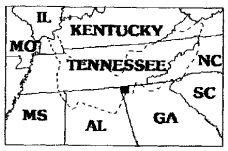
If the TVA contributes at least **50 percent** of the cost of the update, show the TVA cooperative heading (see appendix 2-H). See section 2.3.5 for further information on cooperative headings.

2.3.26.2 TVA For Sale Note

Unlike the rest of the for sale notes, the TVA for sale note is shown only on revised maps that the TVA cooperates on (see appendix 2-I). For more information on for sale notes, see section 2.3.15.

2.3.26.3 TVA Quadrangle Location Diagram

If the TVA cooperates on the update, replace the standard quadrangle location diagram described in section 2.3.17 with a special location diagram that outlines the TVA area of responsibility and States covered by that area (shown to scale):



QUADRANGLE LOCATION

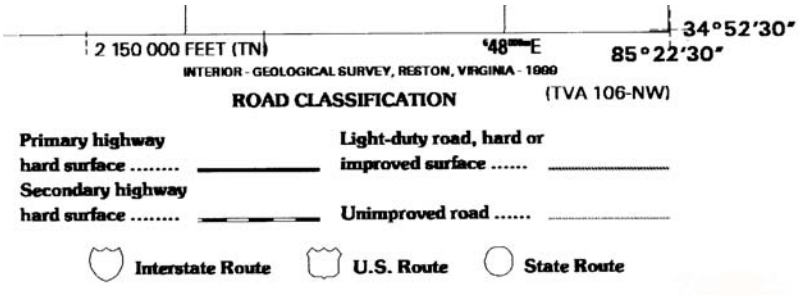
2.3.26.4 TVA Stock Number

Show the TVA stock number on all quadrangles within the TVA area of responsibility, regardless of whether TVA cooperates on the update or not. The TVA stock number is formatted as xxx-yy, where xxx represents a three-digit code that identifies a 15-minute cell, and yy represents a two-letter code (NE, NW, SE, or SW) that locates the 7.5-minute quadrant in the 15-minute cell. Obtain the stock number from the previous edition or from TVA's index map, "Index to Topographic Maps Available through TVA", dated January 15, 1992.

Show the TVA stock number in the upper right title block, patterned after the following:

**HOOKER QUADRANGLE**
**GEORGIA-TENNESSEE**
**7.5-MINUTE SERIES (TOPOGRAPHIC) 106-NW**

Show the TVA stock number in parentheses beneath the southeast corner longitude value and flush with the east neatline in Univers 45 Light (UL) 7-point uppercase type (not shown to scale):




Also, show the TVA stock numbers to the right of the quadrangle names in the adjoining quadrangles diagram:

**1 Sequatchie 100-SE**
**2 Wauhatchie 105-SW**
**3 Chattanooga 105-SE**
**4 New Home 101-NE**
**5 Fort Oglethorpe 106-NE**
**6 Trenton 101-SE**
**7 Durham 106-SW**
**8 Kensington 106-SE**

# APPENDIX 2-A

## Basic Revision Feature Content

The following chart indicates which features should be revised during basic revision. The features are listed alphabetically within each feature theme. Every reasonable effort should be made to revise features in the "Revise" category. Features in the category "Revise if Possible" should be revised if they can be positively interpreted from source imagery or their position can be verified by available ancillary sources. However, it is not necessary to revise every occurrence of a feature in the "Revise if Possible" category if this would result in a significant strain on resources.

The Standards for 1:24,000-Scale Digital Line Graphs and Quadrangle Maps defines feature types and provides the criteria used to determine if a feature instance should be added. All features that are added or modified during map revision must meet the definition and capture conditions for that feature.

Complete revision is a possible option for future single edition maps, particularly those revised by the USGS. According to the current agreement, however, single edition maps produced by the Forest Service will be prepared according to basic revision content guidelines. Some information that is normally not revised during basic revision will be supplied by the Forest Service from information gathered in the field. Features that are revised only on single edition maps are **bolded** on the following chart and noted in the "Comments" column. For a more complete understanding of what is revised on single edition maps, see the Standards for USGS and USDA Forest Service Single Edition Quadrangle Maps (in preparation).

**Basic Revision Feature Content**

| Theme/Feature | Revise | Revise if Possible | Do Not Revise. Retain Existing. | Comments |
|---|---|---|---|---|
| **HYDROGRAPHY** | | | | |
| Anchorage | | X | | Topo/Bathy revision only. |
| Area of Complex Channels | X | | | Revise only if in Alaska. |
| Area to be Submerged | | X | | Limits may have to be obtained from operating agency or ancillary source. |
| Bay/Inlet | | X | | |
| Bridge | X | | | |
| Canal/Ditch | X | | | |
| Connector | | | | Not applicable. |
| Crevasse Field | | | X | Omitted on maps created from Alaska NHD data. |
| Dam/Weir | X | | | |
| Estuary | | X | | |
| Fish Ladder | | X | | |
| Flume | | X | | |
| Foreshore | | X | | Modify if change in shoreline. |
| Fumarole | | | X | |
| Gaging Station | | X | | Revise only when information is provided by agreement (e.g., FL). |
| Gate | | X | | |
| Geyser | | | X | |
| Hazard Zone | | X | | |

| Theme/Feature | Revise | Revise if Possible | Do Not Revise. Retain Existing. | Comments |
|---|---|---|---|---|
| Ice Mass | | X | | Revise only if in Alaska and change is ≥ 0.1" wide. |
| Inundation Area | | X | | Modify if change in shoreline. |
| Junction | | | | Not applicable. |
| Lake/Pond | X | | | |
| Lock Chamber | | X | | Revise only on 2-D canal/ditches or stream/rivers. |
| Mile Marker | | | X | |
| Mud Pot | | | X | |
| Nonearthen Shore | X | | | |
| Pipeline | | X | | Revise aboveground only. |
| Playa | | X | | |
| Post | X | | | Topo/Bathy revision only. |
| Rapids | | | X | |
| Reef | | X | | Topo/Bathy revision only. |
| Reservoir | X | | | |
| Rock | | | X | |
| Sea/Ocean | | X | | Modify if change in shoreline. |
| Shoreline | | X | | Modify coastal shorelines if there are obvious manmade changes or natural changes are 0.036" wide and 0.5" long. |
| Sink/Rise | | | X | |
| Snag/Stump | | X | | Topo/Bathy revision only. |

| Theme/Feature | Revise | Revise if Possible | Do Not Revise. Retain Existing. | Comments |
|---|---|---|---|---|
| Sounding Datum Line | | X | | Topo/Bathy revision only. |
| Special Use Zone | | X | | Topo/Bathy revision only. |
| Special Use Zone Limit | | X | | Topo/Bathy revision only. |
| Spillway | X | | | |
| Spring/Seep | | X | | |
| Stream/River | | X | | Modify only if obvious change to channel. |
| Submerged Stream | X | | | |
| Swamp/Marsh | | X | | When available, use National Wetlands Survey. |
| Tunnel | X | | | |
| Underpass | X | | | |
| Wall | | X | | |
| Wash | | X | | Modify only if obvious change to wash. |
| Water Intake/Outflow | | | X | |
| Watercourse | | | | Not applicable. |
| Waterfall | | X | | |
| Well | | | X | |
| Wreck | | | X | |
| **TRANSPORTATION** | | | | |
| Aircraft Facility | | X | | |
| Bridge | X | | | |
| Cul-de-sac | X | | | |
| Draw Span | | X | | |

| Theme/Feature | Revise | Revise if Possible | Do Not Revise. Retain Existing. | Comments |
|---|---|---|---|---|
| Ford | | | X | |
| Gate | | X | | Revise only tollgates. |
| Helipad | X | | | |
| **Helispot** | **X** | | | **Single Edition** |
| Interchange | X | | | |
| Junction | | | | Not applicable. |
| Lane | | | X | |
| Monorail | X | | | |
| Railway | X | | | |
| Railway Yard | X | | | |
| Rest Site | | X | | Revise only on controlled access highways. |
| Road | X | | | Add islands in intersections and cul-de-sacs if ≥ 0.02" wide. Modify road widths if change is ≥ 0.02" wide and ≥ 1.32" long. |
| **Road Block/Berm/ Barrier** | **X** | | | **Single Edition** |
| Route | X | | | |
| Runway/Apron/Taxi way | X | | | |
| **Scenic Byway** | **X** | | | **Single Edition** |
| Traffic Inspection Facility | | X | | Revise only custom stations and ports of entry. |
| Trail | | X | | |
| Tunnel | X | | | |
| Tunnel Entrance | | X | | |

| Theme/Feature | Revise | Revise if Possible | Do Not Revise. Retain Existing. | Comments |
|---|---|---|---|---|
| Turntable | | X | | |
| Underpass | X | | | |
| **BOUNDARIES** | | | | |
| Boundary Line | X | | | |
| Boundary Point | X | | | |
| City | | X | | |
| County | X | | | |
| **Land Parcel** | **X** | | | **Single Edition** |
| Minor Civil Division | X | | | |
| Nation | X | | | |
| Point Monument | | | X | |
| Reservation | X | | | |
| State/Territory | X | | | |
| **PUBLIC LAND SURVEY SYSTEM** | | | | |
| Land Grant | | | X | |
| Point Monument | | X | | Revise if new information is available from BLM. |
| Principal Meridian | | X | | Revise if new information is available from BLM. |
| Public Land Survey System Area | | X | | Revise if new information is available from BLM. |
| Special Survey Area | | X | | Revise if new information is available from BLM. |

| Theme/Feature | Revise | Revise if Possible | Do Not Revise. Retain Existing. | Comments |
|---|---|---|---|---|
| Survey Corner | | X | | Revise if new information is available from BLM. |
| Survey Line | | X | | Revise if new information is available from BLM. |
| **BUILT-UP** | | | | |
| Aquaculture Site | | X | | |
| Archeological Site/Ruin | | X | | Show only if authorized by administering agency. |
| Athletic Field | | X | | |
| Boardwalk | X | | | |
| Building | X | | | See section 2.2.5 for buildings to show in BUA. |
| Built-Up Area | X | | | |
| Cable/Pipeline Site | | X | | Topo/Bathy revision only. |
| Cableway | | X | | |
| Campground | | X | | |
| Cemetery | | X | | |
| Chimney | | | X | |
| Conveyor | | | X | |
| Dish | | X | | |
| Disposal Site | | X | | |
| Disturbed Surface | X | | | Revise only if ≥ 0.5" wide. |
| Drive-In Theater Screen | | X | | |
| Drydock | | X | | |

| Theme/Feature | Revise | Revise if Possible | Do Not Revise. Retain Existing. | Comments |
|---|---|---|---|---|
| Embankment | | X | | |
| Exhibition Ground | | X | | |
| Fence Line | | | X | |
| Filtration Plant | | X | | |
| Historical Monument | | | X | |
| Holding Pen | | X | | |
| Institutional Site | | X | | |
| Kiln | | | X | |
| Launch Facility | | X | | |
| Launch Pad | | X | | |
| Launching Ramp | | X | | |
| Locale | | X | | |
| Marina | | X | | |
| Mine | | X | | |
| Mine Entrance | | | X | |
| Mobile Home Park | X | | | |
| Offshore Platform | | X | | |
| Outdoor Theater | | X | | |
| Park | | X | | |
| Pier/Breakwater/ Jetty | X | | | |
| Pipeline | | X | | Revise aboveground only. |
| Pipeline Regulation Station | | | X | |
| Populated Place | | X | | |
| Power Site | | X | | |

| Theme/Feature | Revise | Revise if Possible | Do Not Revise. Retain Existing. | Comments |
|---|---|---|---|---|
| Prospect | | | X | |
| Proving Ground | | X | | |
| Racetrack | X | | | |
| Recreational Slide | | X | | |
| Reservoir | X | | | |
| Sewage Disposal Plant | | X | | |
| Shopping Center | | X | | |
| Ski Jump | | X | | |
| Sports Site | | X | | |
| Substation | X | | | |
| Tank | X | | | |
| Tower | | X | | Delete radio and TV station call letters from communication towers. |
| **Trailhead** | **X** | | | **Single Edition** |
| Transmission Line | X | | | |
| Underpass | X | | | |
| Wall | | X | | |
| Well | | | X | |
| Well Field | | | X | |
| Wharf | X | | | |
| Windmill | | X | | |

| Theme/Feature | Revise | Revise if Possible | Do Not Revise. Retain Existing. | Comments |
|---|---|---|---|---|
| **HYPSOGRAPHY** | | | | |
| Contour (Land) | | X | | Revise under certain circumstances. If revised, square off where coincidence with 3, 4, and 5 roads is ≥ 0.1" long. |
| Depth Curve | X | | | Revise only if cooperator requests. |
| Sounding | X | | | Revise only if cooperator requests. |
| Spot Elevation | | | X | |
| **NONVEGETATIVE SURFACE COVER** | | | | |
| Barren Land | X | | | |
| Beach | | X | | |
| Dunes | X | | | |
| Fractures | | X | | |
| Moraine | X | | | Revise only if in Alaska and change is ≥ 0.1" wide. |
| **VEGETATIVE SURFACE COVER** | | | | |
| Cultivated Cropland | X | | | Do not revise unless Vegetative Surface Cover is revised. |
| Shrubland | X | | | |
| Tree | | X | | |
| Trees | X | | | |

| Theme/Feature | Revise | Revise if Possible | Do Not Revise. Retain Existing. | Comments |
|---|---|---|---|---|
| **NAMED LANDFORMS** | | | | |
| Arch | | X | | Modify name only, per GNIS. |
| Bar | | X | | Modify name only, per GNIS. |
| Basin | | X | | Modify name only, per GNIS. |
| Bend | | X | | Modify name only, per GNIS. |
| Cape | | X | | Modify name only, per GNIS. |
| Cave Entrance | | X | | Show only if capture conditions are met. |
| Cliff | | X | | Modify name only, per GNIS. |
| Desert | | X | | Modify name only, per GNIS. |
| Divide | X | | | |
| Fracture | | X | | Modify name only, per GNIS. |
| Gap | | X | | Modify name only, per GNIS. |
| Iceberg | | | X | Antarctica only. |
| Iceberg Tongue | | | X | Antarctica only. |
| Incline/Flow | | X | | Modify name only, per GNIS. |
| Island | | X | | Modify name only, per GNIS. |
| Isthmus | | X | | Modify name only, per GNIS. |
| Mount | | X | | Modify name only, per GNIS. |
| Pinnacle | | X | | Modify name only, per GNIS. |

| Theme/Feature | Revise | Revise if Possible | Do Not Revise. Retain Existing. | Comments |
|---|---|---|---|---|
| Plateau | | X | | Modify name only, per GNIS. |
| Range | | X | | Modify name only, per GNIS. |
| Ridge | | X | | Modify name only, per GNIS. |
| Sastrugi | | | X | Antarctica only. |
| Terrace | | X | | Modify name only, per GNIS. |
| Valley | | X | | Modify name only, per GNIS. |

# APPENDIX 2-B

## 1:24,000- & 1:25,000-Scale Style Sheet

**PLEASE NOTE**

The print size for APPENDIX 2-B 1:24,000- & 1:25,000-Scale Style Sheet is 23.06 x 34.67 inches. Due to file and print size it has not been included in the file for Part 2 Specifications, Standards for Revised Primary Series Quadrangle Maps.

To get the complete Part 2: Specifications, Standards for Revised Primary Series Quadrangle Maps you will need to download this file (2rqm0602.pdf), 2brqm0600.pdf, 2crqm0798.pdf, and 2drqm0499.pdf.

CLICK HERE TO LAUNCH APPENDIX 2-B

# APPENDIX 2-C

## USGS & USDA Forest Service Single Edition 1:24,000- & 1:25,000-Scale Style Sheet

**PLEASE NOTE**

The print size for APPENDIX 2-C USGS & USDA Forest Service Single Edition 1:24,000- & 1:25,000-Scale Style Sheet is 23.08 x 27.72 inches. Due to this, it has not been included in the file for Part 2: Specifications, Standards for Revised Primary Series Quadrangle Maps.

The complete Part 2: Specifications, Standards for Revised Primary Series Quadrangle Maps consists of this file (2rqm0602.pdf), 2brqm0600.pdf, 2crqm0798.pdf, and 2drqm0499.pdf.

**CLICK HERE TO LAUNCH APPENDIX 2-C**

# APPENDIX 2-D

## Alaska Style Sheet

PLEASE NOTE

The print size for APPENDIX 2-D Alaska Style Sheet is 19.13 x 28.63 inches. Due to this, it has not been included in the file for Part 2: Specifications, Standards for Revised Primary Series Quadrangle Maps.

The complete Part 2: Specifications, Standards for Revised Primary Series Quadrangle Maps consists of this file (2rqm0602.pdf), 2brqm0600.pdf, 2crqm0798.pdf, and 2drqm0499.pdf.

CLICK HERE TO LAUNCH APPENDIX 2-D

# APPENDIX 2-E

## Preparation of Names and Collar Notes for Ohio Surveys

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## 2E. PREPARATION OF NAMES AND COLLAR NOTES FOR OHIO SURVEYS

The information in this appendix is intended to serve as an explanation of the Ohio land survey subdivisions and how they are identified on USGS 7.5-minute quadrangle maps.

For more information about Ohio surveys, see Original Ohio Land Subdivisions, Volume III, Ohio Cooperative Topographic Survey, C.E. Sherman,(State of Ohio, Department of Natural Resources, Division of Geological Survey, 1925, Reprinted 1991, Columbus, Ohio); Ohio Lands - A Short History, by T.A. Burke, Fifth Edition, 1994, Columbus: Ohio Auditor of State; or Manual of Surveying Instructions, Chapter III, (Bureau of Land Management, 1973).

## 2E.1 BACKGROUND INFORMATION OHIO SURVEYS

The rectangular system of surveys was in its initial stage of development when the State of Ohio was surveyed, beginning in 1785. Because the current system of principal meridians and base lines was not yet established, the Ohio surveys used many different reference meridians and base lines.

Eight public land surveys were conducted that had no initial point as an origin for both township and range numbers. These include seven surveys in Ohio and one in Indiana. They commenced between 1785 and 1805, a period when the laws prescribing the subdivision of the public domain were in flux. Although rectangular in nature, these surveys do not strictly conform to the current plan.

Within several surveys, townships depend on crooked rivers for base lines. This causes offsets in the township tiers and irregular sequences of numbering. In addition, the subdivision of townships is not consistent. The current system of numbering sections within a township was not adopted until passage of the Land Act of May 18, 1796. Before this time, the original Ordinance of May 24, 1785, applied, in which sections were numbered commencing with number 1 in the southeast section of the township, proceeding north to section 6, then continuing with section number 7 in the southernmost section of the next column to the west, and proceeding north to section 12, and so on, to number 36 in the northwest section of the township.

The Ohio land survey subdivisions, reference meridians, and base lines are illustrated in figure 2E-1.

The survey names, secondary survey names, private survey names, and origins of survey are listed in table 2E-1.

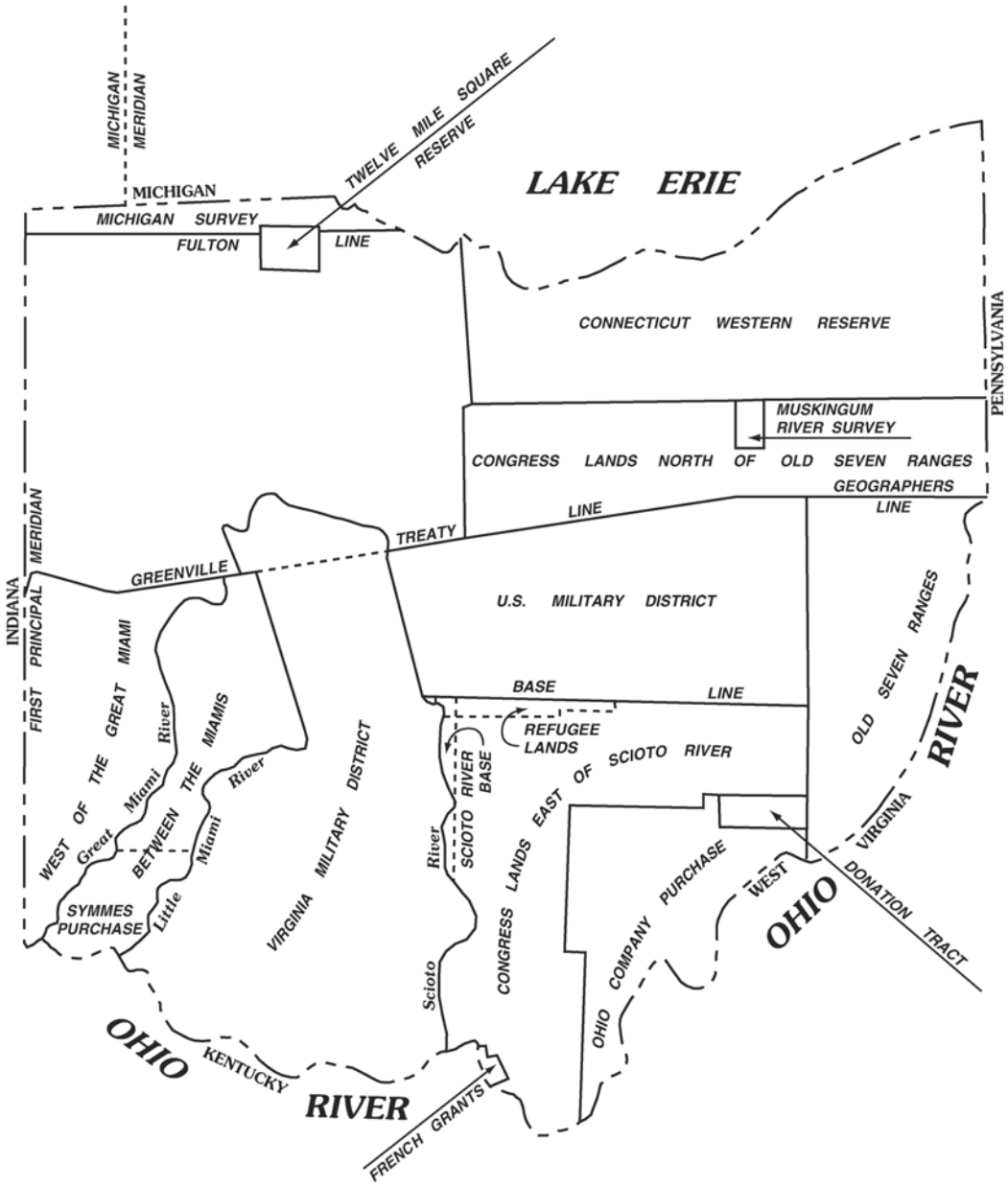


Figure 2E-1
Ohio land surveys, reference meridians, and base lines.

Table 2E-1
Ohio surveys and origins of survey

| **Name** | **Secondary Survey Name** | **Origin of Survey** |
|---|---|---|
| Between the Miamis, North of Symmes Purchase | Not Applicable | Great Miami River |
| Connecticut Western Reserve | Not Applicable | Unspecified |
| Donation Tract | Not Applicable | Not Applicable |
| French Grants | Not Applicable | Not Applicable |
| Michigan Survey | Not Applicable | Michigan Meridian |
| Muskingum River Survey[1] | Not Applicable | Muskingum River |
| Ohio Company Purchase | Not Applicable | Unspecified |
| Ohio River Survey[2] | Congress Lands East of Scioto River[3] | Ohio River |
| Ohio River Survey | Congress Lands North of Old Seven Ranges | Ohio River |
| Ohio River Survey | Old Seven Ranges | Ohio River |
| Scioto River Base[4] | Congress Lands East of Scioto River[5] | Scioto River |
| Symmes Purchase | Not Applicable | Unspecified |
| Twelve Mile Square Reserve | Not Applicable | Twelve Mile Square Reserve |
| United States Military District | Not Applicable | Base Line of the United States Military District |
| Virginia Military District | Not Applicable | Unspecified |
| West of the Great Miami | Not Applicable | Great Miami River |

[1] Applies to two townships only: R 10 W, T 1 N and T 2 N.

[2] R 21 W has duplicate Townships numbered 9, 10, 11.

[3] Lands in northernmost township in R 16 W through R 21 W are also part of the Refugee Lands.

[4] Covers only R 22 W; and R 23 W, T 1 N. R 22 W has duplicate Townships numbered 2, 3, 4.

[5] R 22 W, T 5 N is also part of the Refugee Lands.

2E.1.1 Ohio Public Land Surveys

This section provides a brief description of each of the public land surveys in Ohio.

2E.1.1.1 Ohio River Survey

The Ohio River is the base line (origin of survey) for these surveys. Townships are numbered north from the Ohio River, and ranges west from the Ohio-Pennsylvania boundary (Ellicott's Line).

Marginal notes on maps of the Ohio River Survey area identify that land lines are based on the Ohio River Base. Marginal notes also identify the Seven Ranges and the Congress Lands. The Geographer's Line and the boundaries of the Congress Lands are labeled on the maps.

The Ohio River Survey consists of three separate areas:

Old Seven Ranges

The first rectangular survey was begun in 1785 with the establishment of a point of origin on the north bank of the Ohio River at the Ohio-Pennsylvania boundary and the running of a line westward for 42 miles (seven ranges). This line is termed the "Geographer's Line". Ranges 1 through 7 of the Ohio River Survey, south of the Geographer's Line, are referred to as the "Seven Ranges" or the "Old Seven Ranges". Sections in this area are numbered according to the Ordinance of 1785.

Congress Lands East of Scioto River

This area includes the land west of the Seven Ranges, east of the Scioto River, and south of the U.S. Military District, except for the large Ohio Company tract, which lies in the southeast. Sections within the Congress Lands are numbered according to the present system. The Refugee Lands lie within the Congress Lands East of the Scioto River, at the northernmost extremity; the exterior boundaries of the Refugee Lands are labeled. Three small areas along the Scioto River, including the western part of the Refugee Lands, are based on the Scioto River rather than the Ohio River.

Congress Lands North of Old Seven Ranges

This includes all the lands north of the Seven Ranges and the U.S. Military District and south of the Connecticut Western Reserve, except for the two townships in the Muskingum River Survey. Sections are numbered according to the present plan.

2E.1.1.2 Ohio River Base - Indiana

In this area of southeast Indiana, townships are numbered north from the Ohio River, and ranges west from the Ohio-Indiana boundary and its projection south. The area is bounded on the north and west by the Greenville Treaty Line.

2E.1.1.3 Between the Miamis, North of Symmes Purchase

The Great Miami River is the origin of survey for these surveys. Townships are numbered east from the Great Miami River, and ranges are numbered north from the Ohio River. Sections are numbered according to the Ordinance of 1785. This represents an extension of the system used in the private survey of the Symmes Purchase Tract. This area is also called the Congress Lands East of the Miami River. It is bounded on the northeast by the Virginia Military District. Marginal notes on maps of this area identify that land lines are based on the Great Miami River Base and that the area lies within the Between the Miamis. The north and south boundaries of the area are labeled on the map.

2E.1.1.4 Muskingum River Survey

This area consists of only two townships, within the Congress Lands North of the Old Seven Ranges and bounded on the north by the Connecticut Western Reserve. Townships are numbered 1 and 2 north, and the range is 10 west. The range continues the numbering of the Ohio River Survey. A marginal note identifies the specific townships that are based on the Muskingum River Base.

2E.1.1.5 Scioto River Base Surveys

The Scioto River is the base line of the following surveys, which are part of the Congress Lands East of the Scioto River. (The remainder of the Congress Lands East of the Scioto River are based

on the Ohio River.) Townships are numbered north from the Scioto River, and ranges west from the Ohio-Pennsylvania boundary, continuing the numbering of the Ohio River Survey.

First Scioto River Base

This is the southernmost of the three small surveys at the western edge of the Congress Lands East of the Scioto River. It contains townships numbered 1 through 4 north, and range 22 west. The standard plan for numbering sections is disrupted at the Scioto River, that is, if section 2 is the last section on the top tier of a township, the section below it (on the next tier) is number 3. This area is bounded on the south by the Scioto River (Chillicothe East quadrangle), on the east by range 21 west of the Ohio River Survey, on the west by the Scioto River, and on the north by the Second Scioto River Base (Ashville quadrangle).

Second Scioto River Base

The survey contains townships numbered 2 through 5 north, and range 22 west. (Township 5 north, range 22 west of this survey is part of the Refugee Lands.) Sections are numbered according to the standard plan. The area is bounded on the south by the First Scioto River Base (Ashville quadrangle), on the east by range 21 west of the Ohio River Survey, on the west by the Scioto River and the Third Scioto River Base (Southwest Columbus quadrangle), and on the north by the U.S. Military District.

Third Scioto River Base

This survey contains only a single township: township 1 north, range 23 west. Sections are numbered according to the standard plan. It is bounded on the south and west by the Scioto River, on the east by the Second Scioto River Base Survey, and on the north by the U.S. Military District (Southwest Columbus quadrangle).

2E.1.1.6 Twelve Mile Square Reserve

This small area in northwest Ohio consists of only four townships, numbered 1 through 4. There is no associated range number. Exterior boundaries of the area are labeled.

2E.1.1.7 West of the Great Miami

The Great Miami River is the base line for this survey. Townships are numbered north from the Great Miami River, and ranges east from the Ohio-Indiana boundary. This area is also called the Congress Lands West of the Miami River. It is bounded on the north by the Greenville Treaty Line.

2E.1.1.8 U.S. Military District

Townships are numbered from the south boundary of the U.S. Military Tract, and ranges west from the west boundary of the Seven Ranges. This area is subdivided into 5-mile-square townships; sections are numbered 1 to 25. Section numbering follows the present plan, commencing with number 1 in the northeast corner of the township, to number 25 in the southwest corner. Some townships are divided into quarters, which are numbered 1 to 4, beginning with the northeast quarter and proceeding counterclockwise.

2E.1.2 Private Surveys in Ohio

This section provides a brief description of the major private surveys in Ohio that are shown on USGS 7.5-minute quadrangle maps.

The State of Ohio also contains several large tracts of land that were excluded from the public domain. Two large areas were claimed by existing States: the Connecticut Western Reserve and the Virginia Military District. Two additional tracts were sold to private concerns: the Ohio Company Purchase and Symmes Purchase. These areas were subdivided by private surveys.

2E.1.2.1 Connecticut Western Reserve

This area in northwestern Ohio was divided into 5-square-mile townships and irregular tracts by the Connecticut Land Company. Townships are numbered north from the southern boundary of the reserve, and ranges west from the Ohio-Pennsylvania boundary. In the western part of this area (the Fire Lands), townships were divided into quarter townships, which are numbered 1 to 4, commencing with 1 in the southeast quarter and proceeding counter-clockwise. In the eastern part, only township and range lines are

mapped. The boundaries of the Connecticut Western Reserve are labeled.

2E.1.2.2 Virginia Military District

This area was surveyed according to the laws of the State of Virginia. It does not conform to the rectangular system. Land lines are not shown within this area. The boundaries of the Virginia Military District are labeled. The area may be labeled "Virginia Military Reservation" or "Virginia Military Survey" on previous editions of the map.

2E.1.2.3 Ohio Company Purchase

This area in southeastern Ohio was subdivided by private surveys. Land lines are mapped as dotted lines. The Ohio River is the base line for these surveys. Townships are numbered north from the Ohio River, and ranges west from the Ohio-Pennsylvania boundary, continuing the system of the Ohio River Survey. Sections are numbered according to the Ordinance of 1785. There are many irregularities in the subdivisions, and these irregular lots are not mapped. The boundaries of Ohio Company lands are labeled.

2E.1.2.4 Symmes Purchase

The Great Miami River is the base line for the private surveys of this area. Townships are numbered <u>east</u> from the Great Miami River and ranges <u>north</u> from the Ohio River. Ranges 1 and 2 are duplicated in the southern part of the area. The first occurrence is labeled "F.R." (Fractional Range). Sections are numbered according to the Ordinance of 1785. The Between the Miamis public land survey continued the numbering adopted in the survey of this tract. The north boundary of Symmes purchase is labeled.

## 2E.2 IDENTIFYING OHIO SURVEY AREAS ON MAPS

The Ohio survey areas are identified on maps using one of three methods:

- Collar notes only, <u>or</u>
- A combination of collar notes and interior labels along the boundary line between survey areas, <u>or</u>
- Interior labels only 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. Consequently, use judgment and discretion when applying these methods. These instructions do not provide all the guidance necessary to show the required collar notes and/or interior labels.

### 2E.2.1 <u>Use of Collar Notes Only</u>

Identify the Ohio survey area(s) with collar notes ONLY, if the area(s) can be unambiguously located on the interior of the map, as follows:

- If the entire quadrangle is within one survey area, show the following note:

  **Entire area lies within (name of survey area). Land lines based on the (origin of survey)**

- If the Ohio part of the quadrangle is within one survey area, show the following note:

  **Ohio area lies within (name of survey area). Land lines based on the (origin of survey)**

- If the quadrangle has multiple survey areas AND the survey areas are separated by named survey lines or rivers, show one of the following notes (see section 2E.2.4 Special Treatments and Editing for quadrangles where the survey area is bordered by both a named survey line and river).

  If the quadrangle contains the FULTON LINE, GREENVILLE TREATY LINE, GEOGRAPHERS LINE, or BASE LINE OF THE U.S. MILITARY DISTRICT, show the following note:

  **Area north of (name of survey line) lies within (name of survey area). Land lines based on the (origin of survey)**
  **Area south of (name of survey line) lies within (name of survey area). Land lines based on the (origin of survey)**

  See table 2E-2 for the directional relationships between the survey areas and the named survey lines.

  If the quadrangle contains the Scioto River, the Great Miami River, or the Little Miami River, show the following note:

  **Area east of (name of river) lies within (name of survey area). Land lines based on the (origin of survey)**
  **Area west of (name of river) lies within (name of survey area). Land lines based on the (origin of survey)**

  See table 2E-3 for directional relationships between the survey areas and the rivers.

  See section 2E.2.4 for special treatments and editing for the Symmes Purchase (private surveyed areas), the Refugee Lands, areas where land lines are based on the First Principal Meridian, and the Virginia Military District (undivided survey area).

Table 2E-2
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<br>is north of | Geographers Line<br>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 District | is north of<br><br>is south of<br>is south of | Base Line of U.S. Military District<br>Greenville Treaty Line<br>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 District |

Table 2E-3
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<br>is west of | Great Miami River<br>Little Miami River |
| Between the Miamis, North of Symmes Purchase | is east of<br>is west of | Great Miami River<br>Little Miami River |
| Virginia Military District | is east of<br>is west of | Little Miami River<br>Scioto River |
| U.S. Military District | is east of | Scioto River |
| Congress Lands East of Scioto River | is east of | Scioto River |

2E.2.2 Use of Both Interior Labels and Collar Notes

Identify the Ohio survey area(s) with interior labels AND collar notes if the quadrangle has multiple survey areas divided by unnamed survey lines. Interior boundary labels are shown in black.

Show the survey area names along the unnamed survey lines *in Ohio.* Identify the lines separating the survey areas as the North, South, East, or West boundary, patterned after the following (from the Freeport quadrangle)[6]:

**EAST BOUNDARY UNITED STATES MILITARY DISTRICT**
**WEST BOUNDARY OLD SEVEN RANGES**

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

**Land lines within (name of survey area) based on the (origin of survey)**

For instance, the collar notes for the survey names in the example above would be as follows:

**Land lines within United States Military District based on the Base Line of the United States Military District**
**Land lines within Old Seven Ranges based on the Ohio River**

2E.2.3 Use of Interior Labels Only

Identify the survey areas with interior labels along the boundary lines ONLY for the following areas (interior boundary labels are shown in black):

- TWELVE MILE SQUARE RESERVE (the origin of survey, the Twelve Mile Square Reserve, is self-referring)

[6] Oriented appropriately with the survey lines.

- REFUGEE LANDS (see section 2E.2.4 Special Treatments and Editing)

- DONATION TRACT (the area is not subdivided; consequently, the origin of survey is not applicable)

- FRENCH GRANTS (the area is not subdivided; consequently, the origin of survey is not applicable)

Add NORTH BOUNDARY, SOUTH BOUNDARY, EAST BOUNDARY, or WEST BOUNDARY as a prefix to the name of the survey area along the boundary line. For example,

**SOUTH BOUNDARY MICHIGAN SURVEY**
**NORTH BOUNDARY TWELVE MILE SQUARE RESERVE**

2E.2.4 Special Treatments and Editing

Special treatments and editing procedures are used for maps of the following areas.

2E.2.4.1 Areas Along State Boundaries

OMIT the name of the survey area along State boundaries.

2E.2.4.2 Areas Where Origin of Survey Is Not Applicable

OMIT the land lines note if the origin of survey is not applicable (i.e., undivided survey area). See also section 2E.2.4.12 Virginia Military District.

2E.2.4.3 Miscellaneous Areas

OMIT Fire Lands, College Lands, and other names that may appear on the previous edition of the map but are not listed on table 2E-1.

2E.2.4.4 Areas with Unspecified Origin of Surveys (Privately Surveyed)

If the origin of survey is unspecified (i.e., area was privately surveyed) AND conditions are met for showing collar notes alone, substitute the following for the land lines note:

**Dotted land lines established by private survey**

If the origin of survey is unspecified AND conditions require showing both interior labels and collar notes, substitute the following for the land lines note:

**Land lines within (name of survey area) established by private survey**

2E.2.4.5 Areas within the Ohio River Survey

The following secondary survey names exist for areas within the Ohio River Survey: Congress Lands North of Old Seven Ranges, Congress Lands East of Scioto River, Old Seven Ranges, 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 the name of the survey with the secondary survey name on the interior of the map and in the collar note, where appropriate. See section 2E.2.4.9 for instructions for quadrangles covering Refugee Lands.

If there are interfaces between these survey areas, show only one land line note, patterned after the following (from the Quaker City quadrangle):

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

2E.2.4.6 Areas Based on the 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.

Show one land line note only when the quadrangle covers both of these survey areas, 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**

2E.2.4.7 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. The following 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: Southeast Columbus, Lockbourne, Ashville, Circleville, Kingston, and Chillicothe East. Show the following notes for these quadrangles:

**Area west of the Scioto River lies within the Virginia Military District**

**Area east of the Scioto River lies within Congress Lands East of Scioto River**

**Land lines within R. 22 W. based on the Scioto River**

**Land lines within R. 21 W. based on the Ohio River**

2E.2.4.8 Areas Bordering Both a River and Named Survey Line

If there are areas that border both a river and a named survey line, combine the land line notes and pattern after the following (from the Prospect quadrangle):

**Area south of Greenville Treaty Line and east of the Scioto River lies within the United States Military District**

2E.2.4.9 Quadrangles Covering the Refugee Lands

Identify the Refugee Lands only on the interior of the map. The following quadrangles contain the Refugee Lands: Southeast Columbus, Reynoldsburg, Pataskala, Millersport, Thornville, and Glenford. Show the secondary survey name for the Congress Lands East of Scioto River within the Refugee Lands for these quadrangles, as follows:

**Area north of the Base Line lies within the United States Military District. Land lines based on the Base Line of the United States Military District**
**Area south of the Base Line lies within Congress Lands East of Scioto River. Land lines based on the Ohio River**

Modify the above note on the Southeast Columbus quadrangle, since the Congress Lands East of Scioto River has two origins of survey on this map.

2E.2.4.10 Lands in Northwestern Ohio Based on First Principal Meridian
DO NOT SHOW the name "Congress Lands", although that name may appear on the previous edition of the map.

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

**Land lines based on the First Principal Meridian**

If the Ohio part of the quadrangle is entirely within this area, show only the following note:

**Land lines in Ohio based on the First Principal Meridian**

If the quadrangle has 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**

Where the quadrangle has survey areas divided by unnamed survey lines, identify the area based on the First Principal Meridian by

township and range designators in order to clarify the location and 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**

2E.2.4.11 Muskingum River Survey Area

DO NOT identify the Muskingum River Survey areas on the interior of quadrangles. The following quadrangles contain parts of this survey area: Canal Fulton, Dalton, Doylestown, and Massillon.

Identify areas based on the Muskingum River in the collar only by township and range designators and numbers. Show the following note on the Canal Fulton and Doylestown quadrangles:

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

Show the following note on the Dalton and Massillon quadrangles:

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

2E.2.4.12 Virginia Military District

OMIT notes that apply to named survey lines on quadrangles where the Greenville Treaty Line crosses the Virginia Military District (undivided survey area). See also section 2E.2.4.2 Areas Where Origin of Survey is Not Applicable. The quadrangles involved are as follows: Huntsville, Rushsylvania, West Mansfield, York Center, Richwood, and Prospect.

# APPENDIX 2-F

## Map Lettering Guidelines

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# 2F. MAP LETTERING GUIDELINES

The guidelines in this appendix are intended to serve as the current editing procedures for adding new names and labels to revised maps. In most cases, these procedures are consistent with past editing practices. However, in some cases, current procedures may differ from past practices.

The editing of map lettering consists of the selection of names for publication; the choice of the proper type style, size, and letter spacing; and the appropriate name and label placement.

See section 2.1 for general editing guidelines and section 2.1.2.1 for information about revision typography. Current typography specifications are shown on the style sheets contained in appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska). The typography information on the style sheets supersedes the examples in the publication symbol books and the type specifications in the Standards for 1:24,000-Scale Digital Line Graphs and Quadrangle Maps.

Unless otherwise specified, there is no distinction made in this appendix between basic revision and complete revision. If a feature is not revised during basic revision, the information in this appendix may only be relevant to complete revision. See appendix 2-A for features to revise during basic revision.

Exceptions to the examples used in this appendix must be made for names approved by the Board on Geographic Names or included in the Geographic Names Information System.

## 2F.1 MAP PUBLICATION NAMES AND LABELS

The names shown on quadrangle maps are those in local usage as nearly as can be determined from officials and residents of the area and from other ancillary sources, such as previously published maps, historical records, and reference publications. In selecting the names that are to be published, give priority to the most important ones, so that the overall density of names and labels is appropriate for the scale of the map. Names that disagree with other government publications or are controversial in local usage must be submitted to the Board on Geographic Names (BGN), an interdepartmental board which is the legal authority on names used on Federal maps and in other Federal publications. See also section 2F.1.2 Controversial Names and Name Changes.

All new and changed names must be checked against approved Geographic Names Information System (GNIS) sources and submitted to GNIS through the Geographic Names Office (GNO) before the map materials are sent to be printed. The GNO submits the names to the BGN, if necessary. All names submitted to the BGN should be approved by the Board before the map is printed. The BGN must be notified of all recommended name changes or additions to the GNIS content, including those that are not under the purview of the Board, before the map is printed.

It is not necessary to check names that have been previously published or otherwise verified and found to be in local use against reference materials. However, if there is evidence that the older usage or BGN decision is no longer correct or that a name application or spelling used by another recognized authority differs from the latest reliable information, the name must be submitted to the BGN for consideration or review.

Many names that have not been previously shown on published maps are also not in the GNIS. New names may be added to maps being revised without reporting them to the BGN, but they must be submitted to the GNIS before the map is sent to be printed. Rely upon authoritative

ancillary sources if there is no field information to aid in the verification of these names. If a discrepancy is found in the spelling or application of a name, all available data should be considered, rather than accepting any one source of information as complete and final. If there is no field verification, additional information can be obtained through correspondence if necessary because of the importance of the name.

The names of manmade features are generally the responsibility of the organization having administrative control of the features. Inquiries concerning the names of these features should be addressed to the proper authorities; for example, inquiries concerning the names of dams should be made to either the Corps of Engineers, the Bureau of Reclamation, State water authorities, the Tennessee Valley Authority, power companies, or other related private organizations.

2F.1.1 Derogatory or Unusual Names

One of the policies of the BGN is not to adopt a name that is derogatory to any racial, ethnic, gender, or religious group for use on Federal maps, charts, or other publications. Any individual or agency may request that the Board change a currently used name on the grounds that the name is derogatory or patently offensive. Consequently, do not show names on revised maps that may be considered obscene, vulgar, whimsical, or merely amusing or inconsequential, unless the name is so important and well known that it would be considered embarrassing not to show it.

2F.1.2 Controversial Names and Name Changes

All names of natural features are the responsibility of the BGN. The Board also considers place and other names when necessary. Whenever possible, the proper usage of names should be determined before the maps involved are sent to be printed.

If a discrepancy is discovered in the application, spelling, or local usage of a geographic name, or the examination of references reveals some controversy or confusion in the usage of a name, refer

the name to the Board through the GNO as soon as the facts necessary for proper submission of the problem are known.

If a name discrepancy involves a publication prepared by another agency, send a report to that agency for comment and/or appropriate action. Once the name conflict is resolved to the satisfaction of both agencies, process and submit a Domestic Geographic Name Report to the Executive Secretary for Domestic Geographic Names of the BGN. Include a full statement of the problem and all supporting data with the report to ensure that complete information is made available to the Board and that the resulting decision is rendered promptly and accurately. Include an annotated copy of the map manuscript, a paper composite, or a map on which the entire feature has been delineated with any report or correspondence concerning geographic names.

2F.1.3 Quadrangle Names

Approved quadrangle names are entered in the Geographic Cell Names Data Base maintained by the USGS and on State administrative index maps available from the Earth Science Information Center. The USGS is responsible for submitting new quadrangle names to the GNIS for approval when the original name is no longer applicable. In addition, all primary series maps along the international border should be renamed, if necessary, after features in the United States (see also section 2.3.24 Notes on International Border Maps).

If field investigation results in a recommendation, this is considered along with any other available pertinent information. The field recommendation is very important, since it is based on a specific investigation of the area and an intimate knowledge of the local names and their relationships.

Maps should ideally be named after a feature contained entirely or almost entirely within the quadrangle. The relative importance of features in the area is an important consideration. The names of the following features are listed in the desired order of

preference: principal city, town, or village; most prominent mountain, peak, lake, or stream; rural localities, such as post offices, prominent ranches, well-established country schools, or railroad sidings; or minor physical features.

Use subdivision names cautiously when selecting quadrangle names, because it is difficult to determine whether the subdivision will become a permanent locality. The identity of subdivisions is often lost when the areas are incorporated or adjacent developed areas expand.

If a well-known physical feature or place straddles a quadrangle boundary, the name can be used with a directional designation; for example, Crater Bench North/Crater Bench South or Washington East/ Washington West.

Individual and distinctive quadrangle names are preferable, but in some situations this is not possible, because there is a shortage of named features. Quadrant designations can be appended to the old 15-minute quadrangle name for any of the quarters that do not contain distinctive or well-established names; for example, Matlin Mountain NE and Long Ridge SE.

Do not select a quadrangle name if it has already been used for another map in the same State. In order to avoid confusion, the selected name should not be similar to another published map name; for example, Grant Mountain should be avoided if there is a published map named Mt. Grant, Grand Mountain, or Grant Peak.

The duplication of quadrangle names is permissible only when the name is common to maps of different series; for example, Williamsburg is an appropriate name for both the 30- X 60-minute and 7.5-minute Williamsburg, VA, quadrangles. If a quadrangle is in two or more States and the logical name for it has already been used on a map of the same series in one of the States, the name of a less prominent feature on the map should be selected, as long as it

adequately identifies the quadrangle. However, if there is only one suitable feature on the map, the name of the feature can be used as the quadrangle name, even though the name has been used for another map entirely within one of the adjacent States.

2F.1.4 Commercial Names

Commercial cultural features should be identified with generic labels, rather than the company name. Exceptions can be made for the names of well-known landmarks if the omission would be embarrassing. Consider the private or public character of the organization controlling the feature when selecting names for publication. Since maps are not an advertising medium, base the decision to label the feature with the full name on whether or not it is of a public character. For example, show the names of private colleges and universities, because they are organizations of a public character. However, factory names should not be shown, because they are not of a public character. Do not show subtitles such as BSA, GSA, and YMCA in camp names.

2F.1.5 Native American Names

Names that were derived from Native American languages are spelled in various ways because they were originally phonetic interpretations. For this reason, retain the spelling of names shown on previously published maps unless an incorrect spelling can be confirmed by the BGN. Bulletin 30, "The Indian Tribes of North America", and Bulletin 145, "Handbook of American Indians", published by the Bureau of Ethnology, Smithsonian Institution, Washington, D.C., are regarded as authoritative sources of Native American spelling. Inquiries to the Bureau should include information such as the language in which the name was spoken, the place where the information was obtained, the possible phonetic spellings, and the type of feature that is named. Native American names generally do not have hyphens or diacritical marks. Possible exceptions to this are when BGN decisions or local usage requires the use of such marks (see section 2F.2.5 Punctuation).

2F.1.6 Plural and Possessive Forms

Names can be shown in either plural or possessive form, in accordance with local usage and GNIS naming conventions. However, omit the apostrophe from the possessive form (see section 2F.2.5 Punctuation). If local usage regarding the final "s" is inconsistent and the name is derived from a family name, omit the "s" unless the name would instead be confused with a common noun or adjective with the same spelling. When the name is descriptive, omit the "s" unless a plural meaning is intended.

2F.1.7 Abbreviations

It is common practice to use abbreviations such as Cem, Ch, Cr, Fk, L, PO, R, Sch, Sew Disp, Spr, and WT. However, it is often necessary to abbreviate other words, as well, because of space limitations. Always use standard approved abbreviated forms, when available. See appendix 2-G for accepted standard abbreviations for use on maps. Consult the U.S. Government Printing Office Style Manual, the Suggestions to Authors of the Reports of the United States Geological Survey, or a dictionary for any desired abbreviations not listed in appendix 2-G. If no standard abbreviation is available, any logical abbreviation can be used as long as it is consistently applied and is spelled out somewhere else on the map, so that the map user can infer the correct meaning by association.

On small features with long specific names, abbreviating the generic, stacking the type, and blocking it toward the feature often helps identify which feature is being labeled. Conversely, when there is a short specific, it is often helpful to spell the generic out. For example,

| | | | | |
|---|---|---|---|---|
| **Jackstraw Mtn** | vs. | **Jackstraw Mountain** | and | **Jackstraw Mountain** |

or

| | | |
|---|---|---|
| **Hen Mountain** | vs. | **Hen Mtn** |

Do not abbreviate place names unless they are officially or locally acceptable; for example, "St Louis" and "St Petersburg".

Proper names of reservations can be abbreviated as long as the name is spelled out somewhere else on the map.

See also section 2F.2.5 Punctuation for the proper use of periods on maps.

2F.1.8 Combined Words

When words are combined to be used as component parts of the names of map features, the general rule is to show the name in the legally or locally accepted form. Retain proper names in the form they were originally shown on the previously published map unless there is evidence that an incorrect form has been used. If the form of a new or previously published name is in question, refer the name to the Board on Geographic Names. If the legal or local usage of a new name that is in question cannot be determined, the BGN has followed the principle that it is better, when possible, to combine words into a one-word form.

Custom has sanctioned some combinations for geographic names that are not used otherwise. There is no fixed rule for such compounding; the guiding principle is that the resulting compound should be quickly understood and easily pronounced, such as Bearpaw, Wolfpit, or Sugarloaf. The accent on these words falls naturally, in accordance with the rules for accenting English words. Custom dictates that combinations of words that introduce a confusing sequence of vowels should be avoided, because of pronunciation difficulties. Compounds such as Bakeoven, Twooaks, or Threeelephant are in this category. A sequence of consonants can also be confusing, such as in Bakersoven, Runningrabbit, Smalllog, or Biggeranium.

The common names for plants and animals that are translations of scientific names are seldom compounded; for example, White Oak, Jack

Pine, Snowshoe Rabbit, Black Bear, Golden Eagle, and Blue Jay may sometimes erroneously appear on reference maps or in texts as compound words. Such names should not be combined unless they are legally or locally accepted.

The proper form used for names based on mileages is to use the one-word form for Onemile through Twentymile, then every distance divisible by 10 miles up to and including 90 miles, with the intermediate distances being used as two words; for example, Twentyone Mile and Fortysix Mile. Above one hundred, the proper form is One Hundred and Thirtysix Mile. See section 2G.2.3 for examples and further information on numeral compounds.

See appendix 2-G for other commonly accepted word compounds.

## 2F.2 MAP LETTERING COMPOSITION

Much of the information on maps is conveyed by the lettering. This information should be composed clearly and with an artistic arrangement that will enhance the readability and appearance of the map, rather than serving as a distraction to the map reader. In the body of the map, lettering includes place and feature names, descriptive labels, control marks, spot elevations, and contour labels.

Current typography specifications are shown on the style sheets contained in appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska). The typography information on the style sheets supersedes the examples in the publication symbol books and the type specifications in the Standards for 1:24,000-Scale Digital Line Graphs and Quadrangle Maps.

### 2F.2.1 Positions for Lettering

The positioning of lettering requires care, judgment, a procedure, a knowledge of map composition, and an understanding of proportion and balance.

Place lettering so that there is a minimum amount of interference with other map detail to ensure immediate and unmistakable identification of the feature being labeled.

Maps are usually read from the bottom or south edge. Therefore, position as many names and labels as is practical parallel to the south projection line, in order to make the reading of labels easier. Try to avoid straight-line lettering on a diagonal unless it parallels a linear feature to which it refers. Where lettering must be placed diagonally, position it so that it always reads from left to right, regardless of the angle (see figure 2F-1).

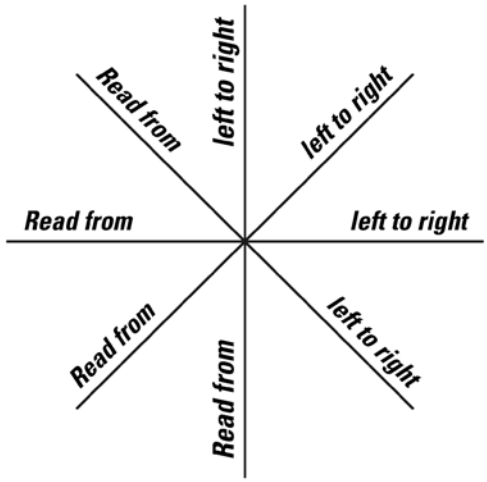



Figure 2F-1
Orientation of labels.

Names which must be placed vertically should be positioned to read from south to north, so that they can be read from the right or east side of the map. Exceptions should be made when surrounding names are almost parallel to the meridian and read from north to south. This slight departure avoids a direction-of-reading contrast that rigid application of the general rule would otherwise produce.

If the area is adequate, place the lettering within the feature, preferably centered in the middle one-third. If necessary, use abbreviations to fit the label inside the feature. See section 2F.1.7 and appendix 2-G for information on abbreviations. When the name consists of two or more words, the lettering may be placed on either one or two lines, depending on the length of the name and the size and shape of the area. Where these area names are placed on two lines, the vertical separation between the lines of type should generally not be greater than one-third the length of the longer line nor greater than the length of the shorter line, whichever is less. Do not show lettering on three lines unless there is no other alternative.

For small or spot features, the preferred placement for lettering is

to the right of the feature, on one or two lines, depending on the length of the name. If that placement is impractical, the other locations that can be used are, in order of preference, to the left, centered above, and centered below the feature (see figure 2F-2).

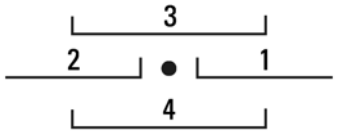



Figure 2F-2
Preferred type placement for small features.

Compound names can be divided and the parts placed above and below the feature, but do this only if it is unavoidable. Except in rare situations, lettering for small or spot features should be placed parallel with the south projection line. If no suitable position can be found and abbreviation is not feasible, omit the less important names.

The labels for straight or meandering linear features, such as canals, ditches, streams, rivers, trails, streets, roads, highways, and pipelines, should be positioned on the upper side of the feature and along the middle one-third of the symbol, whenever practical. More than one placement can be used if necessary to adequately identify longer features. If the feature is labeled more than once, position the sets so that they are apportioned symmetrically and in positions that clearly identify the entire feature. It is preferable that all components of names are placed on the same side of the feature. If it is important that a short part of a linear feature be labeled, it is permissible, as a last resort, to place part of the name above and the remaining part below the symbol. Do not place lettering across the symbol being labeled unless it is unavoidable and the name is too important to omit.

See section 2F.3.3.1 Boundary Lines and Monuments for the proper positioning of boundary labels.

Other general principles for the positioning of lettering are as follows:

- Do not place lettering in such a position that it overprints or reads through other labels.

- Do not position lettering where it might be read as part of the label of another feature.

- Do not place lettering on tight curves or reverse curves, except where necessary.

- Do not allow labels to touch symbols of the features they identify (except hypsographic features). Avoid positioning lettering so that it touches the symbols of other spot or linear features, especially if they are printed in the same color.

- Lettering may be placed across roads, boundaries, or other cultural features where space is crowded; however, avoid acute angle crossings.

- When applicable, position alternative names or other parenthetical information below the principal name for spot or area features and following the principal name for linear features in one type size smaller.

- When two separated features, such as islands, share the same name, the preferred treatment is to spread the collective name between the features. If the distance between the two features is too far to clearly associate them with the name, use two labels (see Priest Lake NE, Idaho, for example).

2F.2.2 Alignment of Lettering

The flow or alignment of lettering is a very important factor in map

appearance and readability. Position lettering on a straight line or a smooth curve, avoiding an angular or zig-zag arrangement. Whenever practical, align the components of names for natural features on broad arcs of easy curves following the general trend of the feature. Stream names do not lend themselves to this practice as readily as those applying to relief features, however placements should be selected that keep the components generally in line with each other, avoiding sharp changes in direction wherever possible. Since mountain, ridge, and valley names afford more latitude of placement, generalize the curve of the feature for name alignment.

Both vertical and italic type styles are used in map lettering. Regardless of the type style used in curved labels, align the base of each letter on a tangent to the curve, if practical (see figure 2F-3).

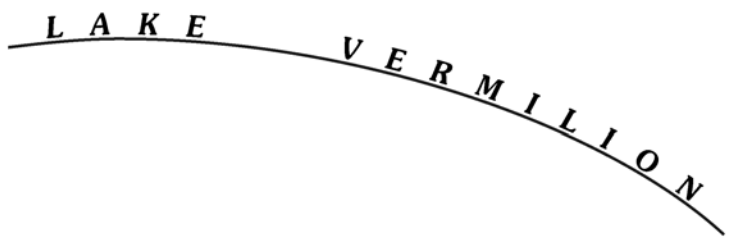



Figure 2F-3
Curving of letters.

If it is not practical to align the letters of component names to the curve, align the individual words as a unit to the curve as best as possible (see figure 2F-4).

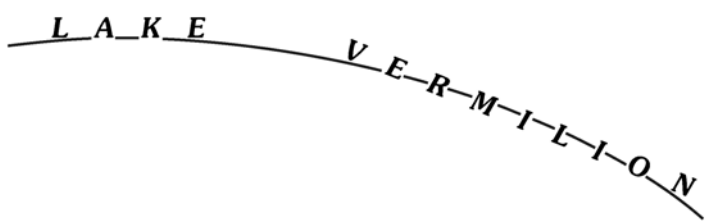



Figure 2F-4
Curving of words.

2F.2.3 Letter Spacing

The spacing of letters for various types of names is governed by convention as well as appearance. The readability of some styles of lettering is enhanced by expanding the normal spacing between letters. As an example, 1-point letter spacing is preferred on all lowercase stream names where space is available. Avoid spacing individual letters of words so widely apart that the map appears to be dotted with odd unrelated letters. Lowercase italic type is particularly vulnerable to overspacing. Letter spacing greater than 1-point is seldom required for the smaller type sizes. If large capital letters are used, avoid letter spacing that exceeds approximately four times the individual letter height. The type size and style and the effect of surrounding names and other map content may influence this ratio considerably. Letter spacing is also influenced by the amount of spacing between component words of labels.

Current typography specifications are shown on the style sheets contained in appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska).

2F.2.4 Word Spacing

Spacing between words helps to indicate the extent of named features. Avoid placing the component words of stream, ridge, valley, and certain other names so far apart that their relationship is not immediately evident. For example, on a stream that is not long enough to justify two placements, the tendency is to spread the component parts of the single placement. This practice is justified only when the relationship and sequence of the component parts are evident at a glance. It is preferable to repeat a name on a long feature rather than to spread its component parts too far apart. Where features are of such extent that two or more labels are necessary, the space between the successive name sets should be larger than the space between the component parts of one name set. This is particularly applicable to road and stream names.

Position lettering so that component names are approximately equally spaced. However, if there is a relationship between the components, apportion less space between the related components, for example:

**Jim Stuart Ridge**

**White Gravel Run**

**Harry Brown Ditch**

The relationship between components should be maintained when it is necessary to place the name on two lines, for example:

| | | |
|---|---|---|
| **Rock Creek Sch** | not | **Rock Creek Sch** |

When the name of any linear feature is composed of the names of two other map features or of family names, try to space the components uniformly, for example:

**GREENVILLE TAYLOR ROAD**
or
**SMITH BROWN DITCH**

If one or both of the primary parts of such a name is a double name, such as Taylor Valley, the spacing should indicate that the double name is a unit, for example:

**GREENVILLE TAYLOR VALLEY ROAD**

When the components of the names for branches, forks, or prongs of streams or valleys contain words indicating relative position, direction, or size, position them so that they are equally spaced; for example:

**EAST BRANCH WHITE RIVER**
or
**NORTH PRONG BLUE CANYON**
or
**LITTLE JONES CREEK**

Except when very short words are used, avoid spacing the components of ridge names greater than the length of the longer word.

When numerals are part of the name, show the generic first followed by the abbreviation for "number" (do not use a period); for example:

| | | |
|---|---|---|
| **Reservoir No 1** | **CANAL NO 2** | **LATERAL NO 3** |
| not | | |
| **No 1 Reservoir** | **NO 2 CANAL** | **NO 3 LATERAL** |

or

| | |
|---|---|
| **Buckhorn Tank No 3** | **Meadow Canyon Well No 2** |
| not | |
| **Buckhorn Tank No 3** | **Meadow Canyon No 2 Well** |

If numerals or the abbreviation for "number" or "numbers" are used in a name, the spacing between the specific numerical components should be about three-fourths the amount of space between the generic and the specific numerical components; for example:

**D I S T R I C T  N O S  7 7  A N D  7 8**
2 2 2 2 2 2 2  8  1 1  6  1  6  1 1  6  1

(Numerals indicate point spacing)

When placing the components of the names of small or spot features, such as cemeteries, peaks, houses of worship, and schools, on two lines, use standard vertical line spacing (about one-half the height of the lettering).

2F.2.5 Punctuation

For simplicity and uniformity, and because it is not good practice to use any mark that could be mistaken for a map symbol, punctuation marks are normally omitted from the interior of maps. Exceptions to the following guidelines are made for names with special marks that have been approved by the BGN.

The presence of diacritical marks, special letters, or symbols will not necessarily bar approval of a geographic name by the BGN. Although each name will be reviewed on a case-by-case basis, a spelling that includes diacritical marks, special letters, or symbols will be considered only if consistent with a widely accepted standard orthography. There must also be substantial evidence of active local use or acceptance of the name as proposed. In cases where diacritical marks, special letters, or symbols are not approved, name forms that carry them are considered variant names.

The period is not shown, and the apostrophe is normally not used to indicate possession, except as approved by the BGN. Harpers Ferry and Pikes Peak are the correct map forms, not Harper's Ferry or Pike's Peak. The apostrophe should only be used where necessary to conform to official spelling, such as O'Brien Creek. The hyphen should also be used only to conform to official spelling, as in Pre-emption Road, Shut-in Cove, Geneva-on-the-Lake, or Hole-in-One-Mountain, and for separating parts of names with double specifics, as Hall-Mills School, Plainville-Hillytown Park, or Smith-Brown Cemetery.

Diacritical marks are used in names in Puerto Rico, where the official language is Spanish (see also appendix 2-J for Spanish names on U.S.-Mexico border maps). In other areas, diacritical marks should not be used on anglicized words of foreign origin, except to conform to official spelling; for example:

- Names containing both foreign and English words (for instance, Santa Maria Valley).

- Names of foreign origin applied to places in the United States, even if the foreign names are not mixed with English words (for instance, Los Angeles).

2F.2.6 Type Styles and Sizes

The proper type style and size is a very important factor in feature identification, map readability, and overall map appearance. Current typography specifications are shown on the style sheets contained in appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska).

Although the general standards for styles and sizes of type are well established, sound judgment should be used in selecting the appropriate type style and size.

Variations in type styles are used to identify and differentiate between the various kinds of map features.

The use of the appropriate type size results in a gradation corresponding to the relative importance of the surrounding map features. Select a more suitable size where space prohibits the use of the prescribed size or where the prescribed size obviously distorts the relative importance of a feature.

Where linear features extend to adjoining maps, the sizes of type for these features should be compatible when positioned near the projection lines.

If areas such as cities, civil townships, national forests and parks, and hydrographic features extend to adjoining maps, the size of the named feature on each map determines the selection of the type size. However, if the larger part of an area falling on two maps warrants capital letters, then use capital letters on both areas, but in different sizes.

## 2F.3 MAP FEATURE LABELING

The following information explains how to label different categories of features on revised maps. In most cases, these procedures are consistent with past editing practices. All of the features in the examples in this section are assumed to meet content guidelines. See section 1.1.7 Content for the feature content of revised primary series quadrangle maps.

### 2F.3.1 Hydrographic Features

The names of hydrographic features, such as streams, rivers, creeks, ponds, lakes, reservoirs, swamps, marshes, glaciers, oceans, bays, coves, fiords, straits, and so on, are shown on primary series maps.

Abbreviations for generics and directional components of names are permissible if there is not enough space for the full label. See section 2F.1.7 for information on abbreviations and appendix 2-G for approved abbreviations.

The density of labels for symbols or features that appear on maps is a matter of editorial judgment; it is not necessary to label all unnamed springs, wells, or related features. The number of features that are labeled and the general distribution of the labels varies with the circumstances. Avoid cluttering the map with unnecessary labels of less important features.

Stream names are normally omitted if there is still not enough space to position the label along the stream after the name has been abbreviated. If there are numerous small lakes and ponds, the names of the smaller features can be omitted to avoid cluttering the map.

Avoid the use of two generics with the same or similar meaning. The fact that the primary name may be in another language should not influence the decision; for example, an impoundment named Lac Qui Parle should not be redundantly labeled Lac Qui Parle Reservoir; similarly, Rio Grande should not be labeled Rio Grande River.

Navajo names with To or Toh in them refer to water and can be either springs or wells. When these terms appear on source information, omit the English generic. Where Navajo names have been anglicized, use the name as reflected on the source.

2F.3.1.1 Streams and Rivers

Where the name of a long stream is repeated, the type size can be reduced in the upper reaches of the stream, thereby emphasizing the decreased size of the stream.

If the relationship of a stream fork to its parent stream is obvious, the name of the parent stream does not have to be repeated on the fork. For example, "North Fork" and "South Fork" are appropriate labels if North Fork Blue River and South Fork Blue River merge with the Blue River on the map being labeled. However, if the North Fork is very long, "North Fork Blue River" is preferable to two "North Fork" labels. If the relationship is not obvious, show the full name.

Show the names of impounded double-line streams along channel symbols within large reservoirs, as well as the names of their tributaries, if their identity is not otherwise evident.

Use blue arrows to indicate the direction of flow for double-line streams where the direction of flow is not apparent. An example of this situation would be if there are no contour crossings or if the contour crossings that exist are difficult to detect on the map. The arrows are preferably positioned within the stream symbol near the projection where the features enter and exit the quadrangle. They can also be positioned above, below, or near the center of shorter sections of symbols.

2F.3.1.2 Lakes and Ponds

The labels of small lakes and ponds are normally positioned to the side of the feature if there is not enough space to position the label inside.

Do not show descriptive labels for such unnamed features as mill, beaver, and logging ponds. For example, Jones Millpond can be shown; however, Millpond should not be shown.

2F.3.1.3 Miscellaneous Hydrographic Features

If the names are known, named cutoffs, dredged navigation channels, diversion channels, flood control channels, and ditches should be labeled. See section 2F.3.5 Named Landforms for the labeling of named floodways, bypasses, flood control basins, and percolation basins.

Use hydrographic type for the labels of the following named features when they are mostly covered with water or marsh: meadows, cienegas, swales, Carolina bays (shallow elongated depressions in southeast States), and bends, where the name applies to the water area of a stream. Use named landform type for the names of these features when they are <u>not</u> mostly covered with water or marsh.

Show the name or generic label for seeps if they appear as separate features, rather than when they are adjacent to springs. Do not label seeps in wet, marshy areas where springs are plainly evident.

Do not use the term "Artesian Well". However, because of their conspicuous character, they should be mapped and labeled "Flowing Well" in descriptive type, along with the name, if known. Do not show labels for wells that are closer together than approximately 1 mile in congested areas.

Recording gaging stations should be labeled "Gaging Station" or "Gaging Sta". Crest-stage partial record gages and other gages without recording devices that might have been labeled "Gage" on the previous edition of the map should not be shown on the revised map. The USGS has agreed to update gaging station information provided by the State of Florida. Dismantled gaging stations in Florida should be indicated with the word "site" in parentheses and the station number.

## 2F.3.2 Transportation Features

### 2F.3.2.1 Street Names in Built-up Area Tint

Show the maximum number of street names inside built-up area tint that is compatible with the map scale after the application of essential descriptive labels and other feature names. Preference should be given to the names of principal or through arteries. Additional names should be shown at intervals to serve as ready points of orientation without unduly cluttering the map.

Reduce the density of labels where streets are parallel and have an orderly sequence of alphabetical letters or numbers. If the street pattern or naming system is irregular, show the names of streets as frequently as the density of map detail permits.

### 2F.3.2.2 Road and Trail Names

Posted or locally well established road names should be shown where space is available unless there is a conflict with an official designation or local usage. Omit names such as "Jonesville Smithville Road" unless they are posted. Road names should also be omitted if the designation is uncertain or is not recognized by local residents.

Private class 3 roads that connect the public road network should be labeled "PRIVATE" to distinguish them from the public road system. Public roads that are open to traffic only at specified times or for specific purposes, such as roads through military reservations, roads through national parks and forests, or lumber access roads, should be labeled "RESTRICTED", regardless of classification.

The names of principal and connecting four-wheel-drive roads and trails and of those leading to other features should be shown.

Retain the "OLD RAILROAD GRADE" labels found on previous editions of the map, and add new labels on features that can be identified as old railroad grades.

The following guidelines are used for the placement of labels:

- Features shorter than approximately 4" - one label in the center
- Features longer than approximately 4" - label the middle third of each half or third, whichever is appropriate
- Normal distance between word components - approximately 1-2"
- Maximum distance between word components - approximately 3"

2F.3.2.3 Names on Federal and State Routes

The names of Federal and State routes are less important than in the past, because the motoring public has virtually ceased to refer to named highways. There is no longer a reliable or authoritative source for highway names. The Federal Highway Administration, the American Association of State Highway and Transportation Officials, Rand McNally, and the American Automobile Association have dropped many references to highway names and normally use the designated numbering or lettering system instead. Highway name determination is further complicated when local civic groups propose and often effect adoption of a new name for part or all of a route already designated by a well-established name. For these reasons, highway names are usually not shown on Federal and State designated routes.

Memorial and commemorative highway names, such as United Spanish War Veterans Memorial Highway, Jefferson Davis Highway, Lincoln Highway, Grand Army of the Republic Highway, and Blue Star Memorial Highway, should generally be omitted on Federal and State numbered routes. However, this does not apply to historical names, such as the Santa Fe Trail, Wilderness Road, National Road, and Chisholm Trail, where the name has significant historic importance and is needed to preserve the continuity with the labeled original route that may depart from, or follow in part, the Federal or State numbered routes. The distinction between commemorative and historical names

is not always obvious. The decision to show the name or not is based on the association of the name with the history of the route; for example, the Chisholm Trail should be shown because it is a nationally known historic route, but a purely honorary designation for a person, such as the Alvin C. York Highway, should not be shown because it is not a nationally known historic route.

The names of prominent landmark turnpikes, parkways, and toll roads should be shown; for example, the Pennsylvania Turnpike, New York State Thruway, and Santa Ana Freeway, even though they are also Interstate, Federal, or State numbered routes. Toll roads should be further identified with the label "TOLL ROAD".

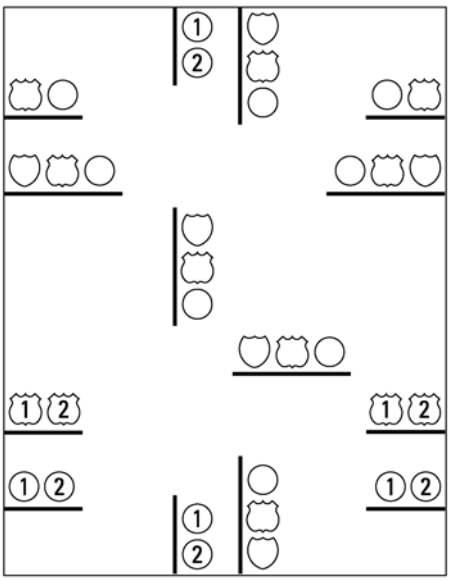
In built-up area tint, where the names of numbered highways are frequently well established as part of the street system and are marked as such, the names should be shown as part of the street naming system.

Omit the road name if the application of the name is doubtful or if any conflict develops concerning the presentation.

2F.3.2.4 Highway Route Markers

Interstate, Federal, and primary State highways are identified by route markers (route numbers within a shield or circle). Verify route numbers using the official highway map of the State or county involved. To identify the routes clearly, place route markers near principal junctions and intersections and near points where highways cross map edges (see figure 2F-5). Position route markers in the map margin only if the interior map detail is congested. Try to avoid overprinting other cultural features with route markers. Do not overprint route markers with other labels. In areas of dense culture, where a route marker must cross street symbols, choose the most legible position.

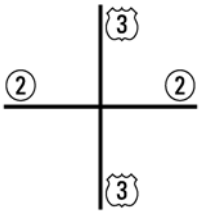
All multiple route numbers should be shown. If multiple route shields are placed near the neatline, position the shields in descending order of hierarchy, with the highest ranking shield



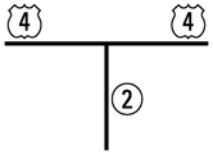
- If multiple route shields are placed near the neatline, position the shields in descending order of hierarchy, with the highest ranking shield placed near the neatline.

- If multiple route shields are not placed near the neatline, position the highest ranking shield on top along north-south roads and to the left along east-west roads.

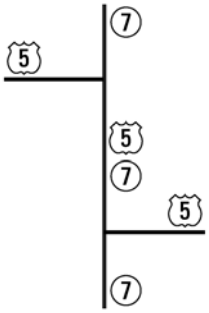
- If there are multiple route shields of the same kind on the same road, the lower number is shown on top along north-south roads and to the left along east-west roads.



When both roads continue, position further from junction.



When one route ends, position closer to junction.



When two routes are on the same road, separate and continue.

Figure 2F-5
Positions of highway shields.

placed near the neatline. If multiple route shields are not placed near the neatline, position the highest ranking shield on top along north-south roads and to the left along east-west roads. If there are multiple route shields of the same kind on the same road, the lower number is shown on top along north-south roads and to the left along east-west roads.

Multiple route numbers of the same kind can be shown with the smaller number on top inside the same shield or circle to conserve space. The shields or circles can be elongated, if necessary. Adjacent additional shields or circles can be used in cases of congestion or to improve the readability or overall appearance of the map.

Route numbers should be shown on State secondary highways in Louisiana, Kentucky, North Carolina, South Carolina, Texas, and Virginia. In addition, county highway route letters should be shown with State highway shields on maps in Missouri and Wisconsin, because they are considered part of the State secondary highway system.

If known, toll road labels and interchange names or numbers should be shown.

Do not show Indian route numbers.

2F.3.2.5 Railroad Names

Railroad names are normally **not shown or revised**, per Supplemental Topographic Instruction 87-1-G. The following instructions are provided <u>only</u> if a cooperator requests that they be shown and agrees to reimburse the costs involved.

Show the names of the operating company and any company with trackage rights parallel to the track symbol in 7-point Univers Italic (UI) uppercase type. Where space permits, the name of the operating company should be placed above the track. The names of

companies with trackage rights should be shown below the track and centered under the operating company's name. Where space does not permit labeling above and below the track, stack both labels on the same side of the track, with the operating company's name placed nearest to the track.

Omit the word "railroad" or its abbreviation "RR" except when it is part of a descriptive label or proper name; for example, "Logging Railroad" or "Central Railroad of New Jersey". Government-owned railroads, such as spur lines to military installations, should be labeled "U S Government Railroad" (do not show periods). See section 2F.3.2.2 Road and Trail Names for instructions on how to label old railroad grades.

Determining these names can require considerable research due to recent developments in the transportation industry. Frequent changes of operating company names, consolidations, discontinuations, and abandonments have led to the operation of most of the Nation's tracks by only a few companies. When a railroad has lost its separate identity through absorption or lease by a larger operating organization, only the name of the larger organization should be shown. However, if the affiliation does not include operation, show the name of the operating railroad, instead.

The following are reliable sources for determining the operating company and companies with trackage rights:

The Official Railway Guide
K-III Directory Corp.
424 West 33rd St., 11th Floor
New York, NY 10001

Official Open and Prepay Station List
Station List Publishing Company
906 Olive Street
St. Louis, MO 63101

Commercial Atlas & Marketing Guide
Rand McNally
P.O. Box 1697
Skokie, IL 60076

2F.3.3 Political Divisions and Designated Areas

Verify the names of grants, cities, civil subdivisions, reservations, parks, and similar areas by using reliable ancillary sources or other information provided by the administering agency. Where there is space, place the names horizontally near the centers of the areas. If only part of such an area is shown on the map, position the name off-center to indicate that the feature extends beyond the limits of the map. Except for place names, labels can be positioned vertically where space limitations or appearance warrant. Place names should always be positioned parallel to the south projection. If necessary, position the names of irregularly shaped areas such as forests, parks, and reservations on curves symmetrical to the boundaries of the area (see section 2F.2.2 Alignment of Lettering for alternative ways to curve type).

2F.3.3.1 Boundary Lines and Monuments

Whenever practical, position the names for nations, States, and counties along and parallel to the boundary lines, centered one over the other. The abbreviation for "county" should normally be separated from the county name by a standard word space (about 1½ letter spaces). Do not show a period after the county abbreviation.

On international boundaries, the labeling sequence should normally be from left to right: nation, State, county, or corresponding divisions, as shown in figure 2F-6.

When a State boundary crosses a map and there is only one county involved in each State, position the county names near the margins and place the State names near the center of the boundary, if space permits (see figure 2F-7). If there is only room for one county name, position it to the left of the State name. Where three States or counties meet forming a "T", arrange the names as shown in figure

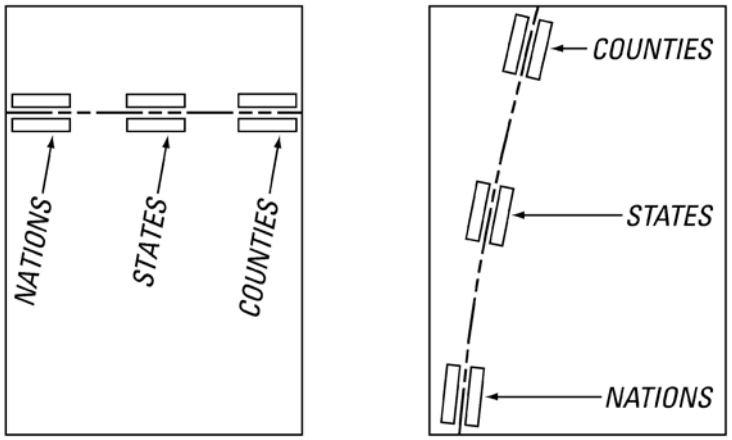



Figure 2F-6
Arrangement of labels along international boundaries.

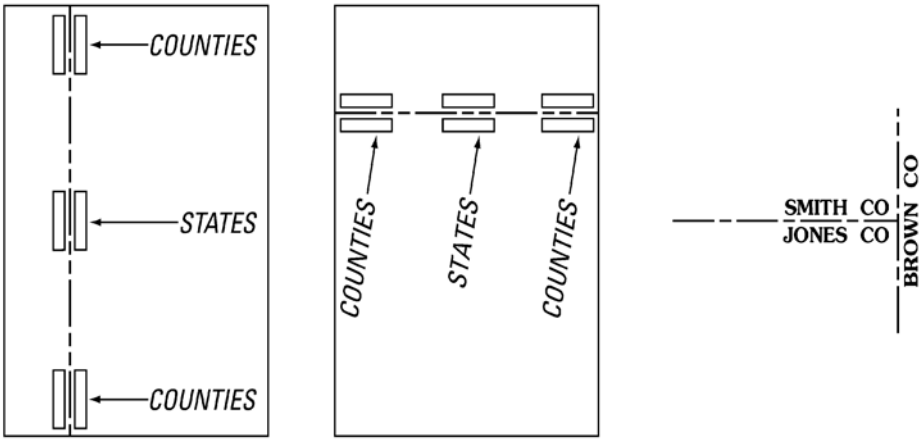



Figure 2F-7
Arrangement of labels for State and county names.

2F-7. Where a county boundary is parallel and close to a projection line, the county name can be shown in the margin paralleling the projection line. If a county name appears on the map, the name should not be shown in the upper right margin of the map as part of the title block (see also section 2.3.3.1 Map Title Block, Upper Right Margin). This includes overedges, overhangs, and so on.

When two or more boundaries coincide, identify the lower order boundary(s) with label(s) if the position of the area label does not adequately identify its boundary; for example, NATIONAL FOREST BOUNDARY, MILITARY RESERVATION BOUNDARY, or CORPORATE BOUNDARY. The name of the forest, reservation, city, or village does not have to be included in the boundary label unless it is needed to clarify unusual cases; for example, where the city of Alexandria is independent of Fairfax County:

**ALEXANDRIA CITY**
**FAIRFAX CO**

When one reservation overlaps all or part of another, the relationship between the two can be indicated either by positioning the name of the primary reservation across the boundary of the secondary one, or by adding boundary clarification labels to identify the areas being delineated.

If boundaries follow single-line streams or centerlines of roads, place the labels along the boundaries, if necessary, for clarity.

Place boundary line labels on the same side of the boundary as the area being identified.

The allowable positional tolerances are broad enough to permit all boundaries to be mapped, including indefinite boundaries or boundaries in dispute. Boundary lines of indefinite location should carry the qualifying label, "INDEFINITE BOUNDARY". Boundary lines in dispute should be labeled "DISPUTED BOUNDARY". If a boundary clarification label is necessary, show the qualifying label in

parentheses to avoid redundancy; for example:

**NATIONAL FOREST BOUNDARY (INDEFINITE)**

Boundary clarification and qualifying labels can be abbreviated where space or appearance dictates. See section 2F.1.7 for information on abbreviations and appendix 2-G for approved abbreviations.

If known, boundary monument numbers or letter designations should be shown. However, omit the words "Monument", "Mon", "Milepost", "MP", or "Post" that may appear on the previous edition of the map.

2F.3.3.2 Reservations

All large reservation-type areas, such as national forests and parks, State parks, Federal military reservations, naval reserve training sites, and so on, should be fully identified on the map. When the entire quadrangle is within one reservation, the ideal position for the label is slightly above the center of the map. Exceptions to this practice are sometimes necessary; for example, if offshore islands are included in a national forest, a marginal note can be added, rather than showing the forest name across an extensive body of water not included in the proclamation. See section 2.3.8.13 for entire area notes.

Navy and Marine Corps reservations without specific names should be labeled "U S Naval Reservation". Army and Air Force areas without specific names should be labeled "U S Military Reservation" (U S MIL RES is an acceptable abbreviation). If a reservation status is indicated by a name, such as Langley Air Force Base, Pensacola Naval Air Station, or Fort Myers Military Reservation, omit the "U S Military Reservation" label. Even though the official military name has the proper name last, as in Naval Air Station Alameda, the proper name should be placed first for readability, as in Alameda Naval Air Station. Do not show "UNITED STATES" or "U S" in reservation boundary labels.

Avoid redundant wording in reservation names. For example, the name of the State(s) that the quadrangle is in is shown in the title blocks, so the use of the State name in State reservation labels is unnecessary; for example:

| | | |
|---|---|---|
| **Peninsula State Park** | not | **Peninsula Wisconsin State Park** |
| **Brule River State Forest** | not | **Brule River Wisconsin State Forest** |
| **Scuppernong State Wildlife Area** | not | **Scuppernong Wisconsin State Wildlife Area** |

When one reservation overlaps all or part of another, the relationship between the two can be indicated either by positioning the name of the primary reservation across the boundary of the secondary one or by adding boundary clarification labels to identify the areas being delineated.

National wildernesses are shown and named, regardless of overlaps with other reservation areas. Omit the word “Area” on national wilderness names.

To provide map users with agency information, include the identifying jurisdictional terms "State", "National", "County", "Municipal", or "City" with the name of large features such as parks, game refuges, wildlife management areas, and forests whenever the correct agency is known. This is applicable even though the term is not part of the proper name. The exceptions to this rule are as follows:

- Do not add an identifying term to the names of game ranges or other similar areas jointly owned or operated by both Federal and State agencies.

- Do not add "City" as part of the name of a city park except when it is part of the name.

- Do not add "County" or "City" as part of the name for golf courses, airports, and so on, except when it is part of the name.

- Do not add "National" on the names of national wildernesses that overlap or are contained within other national reservations.

If known, Indian agency headquarters should be shown with the proper name (such as Warm Springs Indian Agency), regardless of whether or not they are within reservations.

2F.3.3.3 Public Land Subdivisions and Grants

The names of principal meridians should be shown on the map; however, base lines should be labeled "BASE LINE", without any further designation.

Identification labels for sections, township and range lines, and grants can be verified by comparison with Bureau of Land Management (BLM) plats.

The use or omission of section numbers should be based on whether acreage is shown on the BLM plats. (This does not apply to meandered sections.) Position the section numbers in relation to the size and shape of the area. Center the numbers in irregularly shaped sections (see figure 2F-8). For sections that extend overedge, position the numbers near the true center of the section, preferably not closer than 0.1 inch to the projection line. If only a small part of a section is shown and it is important to identify that area, the section number can be placed as close as 0.02 inch to the neatline. Section numbers should ordinarily be omitted where space is insufficient for a standard size label; however, smaller type can be used in irregular townships with small fractional sections if it is important to identify the areas. Section numbers should normally be oriented parallel to the south projection line. Rare exceptions can be made when most of the

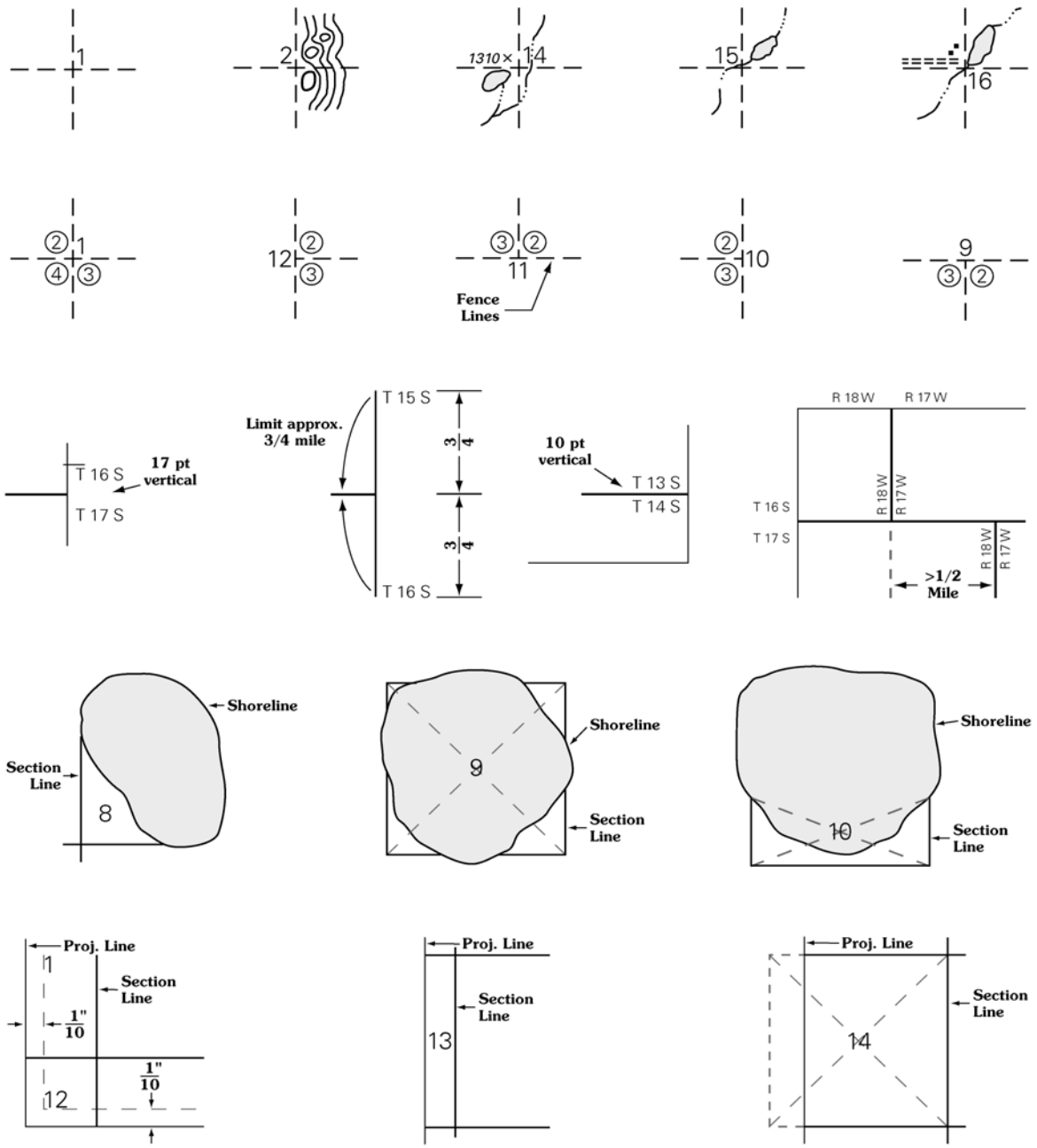



Figure 2F-8
Section number and township and range designator positions.

sections shown on the map are elongated and lie at a consistent angle. In such situations, the numbers can be aligned at the same angle if this improves the appearance of the map.

Township and range designators should ordinarily be placed in the map margin, equidistant from the intersection of the survey line and the projection.

If other collar information prevents the placement of township or range designators closer than three-quarters of a mile apart in the map margin, or if the township or range lines are interrupted and do not extend to the proximity of the margin, position the township and range designators near the ends and on either side of the lines in the interior of the map, as shown in figure 2F-8.

If there are township or range line offsets in the interior of the map larger than one-half mile, place the designators near the end of each part of the line, as shown in figure 2F-8.

If a grant line has been dropped because it is coincident with a natural or cultural feature and the outline of the area is not readily apparent, label the grant line along the feature that has been shown. Where possible, the names of grants should be shown near the center of the area; however, omit the word "GRANT" from grant names, with one exception: when an entire quadrangle lies within a grant, the word "GRANT" should be added to the name to identify the area clearly. The choice of type size should be based on the size and shape of the area. The names of smaller, less important grants in congested areas can be omitted, to avoid cluttering the map.

In Hawaii, show Districts, Ahupua'a, Homesteads, Ilis, and other bounded or labeled land ownership features with the same treatment used on the previous edition of the map. Revise the boundaries and label placements as necessary. Use the same type style (or equivalent) and size as indicated on the previous edition. If the

entire quadrangle is within one District, add an explanatory note in the map collar. See section 2.3.8.13 Entire Area Notes for the proper wording.

Do not label town sites on public land.

Do not show bearing tree labels.

2F.3.3.4 Place Names

The legal spelling for incorporated places should normally be followed. However, the locally used name should be given preference over the legal name unless the names differ only in being contracted forms, such as "boro" versus "borough". If the locally used name is given preference, show the legal name one type size smaller in parentheses below the local usage name; for example (where Jonesboro is the locally accepted name):

**Jonesboro**
**(Smith)**

If the name of the post office differs from the name of the railroad station or if either one differs from the locally used place name, the latter is given preference and the other name is shown in one type size smaller in parentheses below the local usage name; for example:

**Jonesboro**
**(Smith PO)**

In addition to towns and localities designated by their post office or railroad station names, all other well-known localities should be designated by their locally used names. Well-established locality names within cities and their environs can also be shown. Generally, within a metropolitan area, branch post offices are named for the localities in which they are located. When housed in their own buildings, branch post offices should be shown as landmark buildings and labeled "Post Office" or "PO".

Place names that are regarded as sites should be shown if the name is in current use or if the source material indicates that it has prominent historic or legal importance. The term "Site" can be used with a located object symbol when there are no features to define the location. However, do not use the term "Site" if there are buildings or cultural features in the area. Railroad siding names that are considered sites should be treated in the same manner.

The names of places, villages, towns, and cities should be positioned horizontally and, when practical, to the right of the feature to which they apply. Names with multiple components can be stacked and blocked to one side if this helps to locate the feature. If the area is large enough, position the name near a main intersection or cluster of buildings. Incorporated names should be positioned inside the corporate boundaries, as long as the label properly identifies the area. Otherwise, the label should be positioned outside of the boundary. If a part of the boundary is on the map and there are only a few buildings shown within the boundary, it is generally more appropriate to show a clarification label on the boundary and omit the area place name.

2F.3.4 Manmade Features

The frequency with which labels should be shown for manmade features that appear repeatedly, or in closely spaced groups, differs with the circumstances. Use editorial judgment, follow the general rules for clarity, and consider the relative importance of features in the area when selecting names for publication. Parenthetical descriptive type can be added to labels if it helps to clarify the nature of the feature.

2F.3.4.1 Located Object and Spot Features

Features that are shown with the located object symbol, such as lighthouses, lookout towers, airway beacons, guzzlers, and communication towers, should always be differentiated from one another with a label.

Some relatively small manmade features are distinctively symbolized. These features should normally be labeled; however, avoid repetitious or individual labeling where features appear repeatedly or in closely spaced groups.

If a group of gas or oil wells are closely spaced, label the area, rather than the individual wells. Show the name of the well field, if known.

Towers supporting any type of radio antenna should be labeled. Do not show radio or television station call letters associated with communication towers or other facilities, such as buildings or satellite dishes.

Ground storage tanks, elevated tanks, water towers, or standpipes used for water supply should be labeled "Water Tank" or "WT". Do not label tanks with other contents.

Railroad stations should be labeled "Station" or "Sta", rather than "RR Station", "RR Sta", or "Depot".

2F.3.4.2 House of Worship and School Names

If they are known, show the names of all houses of worship and schools in rural areas (see section 2.2.5 Built-up for the feature-specific treatment of buildings during revision). House of worship and school names should normally be omitted in small localities, because there is usually less space for the labels. Show the names of schools in built-up area tint, but only the names of houses of worship that have significant historic or landmark importance should be shown in built-up area tint. For instance, if a well known historical event has occurred at the house of worship, or the house of worship is unusually large, well known, or important (such as a cathedral), the name should be shown in built-up area tint

The word "Church" should always be abbreviated "Ch" when it is the last word of a name. However, "Church" can be spelled out if it

appears elsewhere in the name. Do not show the denomination as part of the name, except when it is a part of a numerical designation, such as "First Baptist Ch".

Biblical names are frequently used in house of worship and other names. Since Biblical names are subject to a variety of spellings, retain the names as previously published unless an incorrect spelling can be confirmed.

The names of schools, colleges, and universities should generally be given preference over house of worship names when they are in the same building and should be selected for publication in order of their importance; for example, the name of a university should take precedence over the name of a high school if they are both in the same building. Show the names of private schools if the buildings are of landmark value and the name is of a public character (see section 2F.1.4 for guidelines on commercial names). The numerical designations of public schools should be shown because they are considered part of the name.

The word "School" should always be abbreviated "Sch" when it is the last word of a name. However, "School" can be spelled out if it appears elsewhere in the name.

Omit the words "Elementary", "Grammar", and "Grade" from school names; for example, "Wilson Elementary Sch" should be labeled "Wilson Sch". Do not label lower grade schools if they have the same name as the community.

High schools and junior high schools should be identified as such, but the word "Junior" should always be abbreviated. For example,

| | |
|---|---|
| **Glosier** | **Melick** |
| **High Sch** | **Jr High Sch** |

Omit the proper name of high schools or junior high schools if they are the same as the community name; they should instead be labeled

"High Sch" or "Jr High Sch".

Many State universities have campuses in different towns and cities (for instance, California, Illinois, Missouri, and Wisconsin). Discretion should be used for the consistency of campus names on maps within a State. However, a hyphen should generally be substituted for the word "at" if the name is shown on one line. If the name is shown on two lines, the hyphen, as well as the word "at", should be eliminated. For example,

**University of Missouri - Rolla**

**University of California**
**Berkeley**

The names of abandoned or inactive schools can be used as place names if the names continue to be used, although the school flag symbol should be omitted from the building. Omit the descriptive labels "Abandoned" or "Inactive" that may appear on the previous edition of the map.

2F.3.4.3 Cemeteries

Named and unnamed cemeteries should be shown on primary series maps. The word "Cemetery" should be abbreviated "Cem" unless the label can be spelled out inside the cemetery outline (see figure 2F-9). If it is necessary to identify a cemetery and the word "Cemetery" is not part of the name, such as "National Memorial Park" or "Memorial Gardens", show the word "Cemetery" or "Cem" in parentheses under the name. If known, animal cemeteries can be shown and labeled.

2F.3.4.4 Miscellaneous Cultural Features

Since sand, gravel, clay, and borrow pits are shown with the same symbol, they need to be labeled to be properly identified. Quarries and open pit mines should also be distinguished by labels, because the same symbol is used for both features. Where similar features are closely spaced, only selective spot labeling is necessary.

| Part 6 Symbology | Part 5 Symbology |
|---|---|
| Cem | Cem |
| Jones Cem | Jones Cem |
| | Cem |
| Jones Cem | Jones Cem |
| Cem | Same |
| Cem Jones Ch | Same |
| Cem | Same |
| Cemetery | Same |
| Jones Cem | Same |
| Memorial Gardens (Cem) | Memorial Gardens (Cem) |
| Memorial Gardens | Memorial Gardens (Cem) |
| Memorial Gardens (Cemetery) | Same |

Figure 2F-9
Cemetery labels.

Some mine names in heavily mined areas can be eliminated to avoid cluttering the map with less important labels. Do not show the commodity produced from the mine unless it is a recognized part of the name; for example, "Phoenix Silver Mine" or "Ophir Gold Mine".

If river mileage reference marks are shown, labels should only be applied to the symbol nearest to where the stream enters and exits the map and on every 5-mile point along the course of the stream.

Label levees only when necessary for clarity of identification.

Label only named racetracks; for example, Jonesville Raceway or Piedmont Speedway. Do not indicate the type of racetrack in the label.

The names of golf or country clubs should be placed adjacent to the clubhouse if the location is known. Otherwise, show the name within the limit of the golf course or off to the side of the area. The name of the club or golf course is preferred, such as "Congressional Country Club" or "Odana Hills Golf Course". If there are no club facilities or if the name of the golf course is not known, apply the descriptive label "Golf Course" to the area. Private golf courses should be treated in the same manner as public ones. Do not use the terms "Private" or "Public" in the labels.

Do not label swimming pools.

Do not label parking areas.

Large, unified shopping centers of landmark significance can be identified by their proper name, if known, or by the label "Shopping Center" if the name is not known or space is limited.

Named ranches can be shown with place name type if they are well known landmark names in remote areas. The name should apply to an area exceeding 15 square miles, with indicated potential for

continued use, or should have well known historical significance beyond the immediate locality.

Commercial dude ranch names generally should not be shown. However, the name can be shown when the ranch is in an isolated area. If the name is used, omit the term "Dude".

Label prison farms and penitentiaries with descriptive type unless they are reservations, in which case reservation type should be used.

Industrial buildings or plants should ordinarily not be identified. See section 2F.1.4 for information on commercial names.

2F.3.5 Named Landforms

The frequency with which names of landforms, such as mountains, ridges, hills, valleys, canyons, bluffs, points, and islands, are shown on published maps is a matter of editorial judgment, based on the general rules for clarity and a knowledge of the relative importance of features in the area.

The names of small features, such as mountain peaks, hills, gaps, and passes, should preferably be positioned to the right of their highest points. The preferred position for the names of long, narrow mountains or ridges is slightly above the axis of the feature, clear of the top contour lines. Align the names of broad-topped features along the general axis of the feature.

The names of long linear features with a definite main ridge, such as the Blue Ridge and the Continental Divide, should normally be shown on the map. Apply the name to the slope of the feature to indicate linear continuity if the main ridge is located along the edge of an adjoining map. Place the names of narrow valleys, canyons, gorges, gulches, bluffs, and coves along the general trend of the feature. The preferred position is along the upper side.

Regional or area names are often not as well known by local residents as names of more clearly defined features in the immediate vicinity. A name may have historic value or significant legal importance, as noted in legislative acts or land deeds, although local recognition may be vague. For this reason, regional or area names that have been published for many years should normally be retained, even though they may no longer be well known locally.

The applicable extent of large areal or regional names is frequently more evident and more easily studied on small-scale maps. When the probable extent of application is determined from small-scale maps or field investigation, the placement of the label on the larger scale primary series map should attempt to convey this impression. In general, broad areal feature names should be omitted when they cover more than 7 complete quadrangles, or approximately 400 square miles. An exception is on maps of sparsely populated western States, such as Nevada, where the name of the feature should not be omitted unless it covers more than 10 complete quadrangles. The reason for this is that there are comparatively few names in these regions and many of the names are of large regional features. Where there are few names, the names assume a greater importance. Names for extensive areas, such as Sierra Nevada, Cascade Range, Wasatch Range, Salmon River Mountains, Rocky Mountains, Great Smoky Mountains, Shenandoah Valley, and Allegheny Mountains, should normally be omitted from primary series maps. The names of elongated area features should usually be shown, regardless of the length of the feature. Where the limits of an important feature are well defined, such as the escarpment of the Cumberland Plateau, the name should be shown.

Use named landform type styles for the labels of the following named features: meadows that are not partially covered by ponds or swamps, bays in the southeastern States that are not partially covered by swamps, bend names that apply to land areas, and dry lakes that are not partially covered by intermittent water or swamp. Use hydrographic type for the names of these features when they are

mostly covered with water or marsh.

Named floodways, bypasses, flood control basins, and related features can be labeled with either named landform or descriptive type, depending on their relative importance. Label related features, such as percolation basins, with descriptive type.

Named lava flows should be labeled with named landform type. Label unnamed lava and lava flows with descriptive type.

Named sand dunes should be labeled with named landform type. Label unnamed sand dunes with descriptive type.

2F.3.6 Elevations

Two main classes of elevations are shown on USGS maps: bench marks (including supplemental bench marks) and spot elevations. The presentation depends on the accuracy with which they were determined and the way they are marked on the ground.

2F.3.6.1 Bench Marks

Bench marks are third-order accuracy or better elevations that are marked in the field by a metal tablet. The symbol for first-, second-, and third-order bench marks should be labeled "BM" with the elevation in vertical type.

Supplemental bench marks (also referred to as "useful elevations" or "UE's") are elevations of third-order accuracy or better that are recoverable but not marked with a tablet. They are marked in the field with a chiseled square or cross, a copper nail and washer, a railroad spike, and so on. The elevation value should be shown on the map with vertical type, but the letters "BM" or "UE" should be omitted.

Bench marks shown in U.S. customary units should be rounded to the nearest foot.

Bench marks shown in metric units should be rounded to the nearest 0.1 meter, regardless of the contour interval.

2F.3.6.2 Spot Elevations

All other elevations are regarded as spot elevations. The location of the elevation should be identified by a symbol only when its location is not evident. The elevation value should be shown with italic type.

The selection of spot elevations for publication should be based primarily on the potential importance of the elevation to the map user. Omit any elevation that may be ambiguous. Spot elevations should preferably be located at positions or on features that are easily and positively identifiable and recoverable. However, they can be shown at unidentifiable positions in very flat areas if no identifiable positions are available. It is customary to show elevations of prominent road forks and intersections and street intersections in urban areas; section corners, fence corners, and boundary markers; summits of mountains, hills, and passes; stable water surfaces, such as lakes or ponds; and other well-defined points. Elevations are also useful on prominent or high points on roads, tops of levees, large mine dumps, bottoms of depressions, and large excavations, such as quarries and open-pit mines.

Elevation values should always be placed parallel to the south projection line, except where it may be necessary to place a water surface elevation at an angle within a shoreline, or when the elevation is centered under and parallel to the name of a lake or reservoir positioned within and following the configuration of the feature. Water surface elevations can be positioned alongside small ponds if the ponds are not large enough to accommodate the elevation value and the surrounding area lacks other elevations.

When locating spot elevations on hilltops, use a black "x" where the top contour has a diameter of more than 0.1 inch. Where the top contour has a diameter of less than 0.1 inch, the small contoured

top is enough to adequately identify the position. On a long narrow ridge, the "x" should be used if the top contour is longer than 0.2 inch. It is not necessary to use the "x" at road intersections or other points if the location of the elevation is apparent. The "x" should be used to locate elevations of high or low points on roads, railroad grades, levees, or similar works, or at isolated features such as buildings, where there is no obvious indication of the position.

Spot elevations shown in U.S. customary units should be rounded to the nearest foot.

Spot elevations shown in metric units on maps with contour intervals greater than or equal to 4 meters should be rounded to the nearest meter. On maps with contour intervals of 1.5, 2, or 3 meters, the spot elevations should be rounded to the nearest 0.5 meter. Spot elevations on maps with 1-meter contour intervals should be rounded to the nearest 0.1 meter.

If the field or photogrammetric manuscript shows that the elevation for a top or bottom and a contour value are of equal value, the elevation has no added information and should normally not be shown. Spot elevations normally agree with adjacent contour lines. However, since elevations are rounded values, they may not necessarily coincide with a contour of the same value. Since the contour and elevation are both technically correct, the elevation can be shown in the compiled position; however, the selection of a less confusing elevation is preferable.

If it is necessary to show a bridge elevation, pattern the label after "BR 612". This includes bridges for road or highway grade separations.

"AT" elevations (indicated on map manuscripts and some provisional maps) are aerotriangulation points established by control extension. These elevations have the same (or slightly better) accuracy as

photogrammetrically derived "T" elevations; however, AT elevations are generally not placed on recoverable map points as often as "T" elevations. "AT" elevations can be used as spot elevations if they appear to be on recoverable points. Supplemental control elevations, field-established elevations, or field-checked elevations (indicated on map manuscripts without an "AT" or "T") are at least as good as "AT" elevations and should be selected for publication as spot elevations rather than "AT" elevations if they are at recoverable locations on the map.

On maps produced before 1970, spot elevations determined by photogrammetric methods and not checked by field surveys were shown in brown slanted type; also, vertical-angle bench marks (VABM's) were identified with special labels. These are now considered to have the same vertical accuracy and should be labeled as spot elevations. Do not show the letters "VABM" on vertical-angle bench marks.

Spot elevations are ordinarily omitted when they are near bench marks. Spot elevations should not be shown any closer than one-half mile. Spot elevations on provisional maps may be overcrowded because extra elevations were normally compiled on manuscripts to assist in shaping contours. When converting a P-map to a finished line map, thin out the elevations to a maximum of one every one-quarter mile apart. When determining which of the elevations to delete, the ones identified with "T" (unchecked photogrammetric elevations) should be deleted first, then the elevations with either "A" or "B", then the elevations with no letter indication.

If known, water elevations can be shown for lakes and controlled reservoirs. An attempt should be made to center the elevations of uncontrolled lakes and ponds below the name of the body of water. The elevations of controlled unnavigable bodies of water should be preceded with the word "ELEVATION" or "ELEV". The elevations of controlled navigable bodies of water should be preceded with the words "NORMAL POOL ELEVATION" or "NORMAL POOL ELEV". If the normal

operating level cannot be established, but the spillway elevation is known, the elevation should be preceded by the words "SPILLWAY ELEVATION" or "SPILLWAY ELEV"; for example, a spillway elevation should be used for a flood-control reservoir that impounds water only when runoff exceeds a predetermined amount or for a reservoir that is used for storage or irrigation and in which the water level fluctuates considerably. For a multipurpose reservoir, both the water surface elevation and the spillway elevation should be shown, if known. The date of the elevation should be shown when it is a significant factor, such as for Great Salt Lake; for example, ELEVATION 4295 MARCH 1973.

The water surface elevations of the Great Lakes are preceded with "APPROXIMATE MEAN LAKE ELEVATION" on many previously published maps, but on newer maps the elevations are preceded only by the word "ELEVATION". It is not necessary to change the wording of water surface elevation labels on basic revision maps. However, the Great Lakes water surface elevations should be shown as "ELEVATION ___" if they have to be added, if the hand-scribed labels of a provisional map are converted to those of a finished line map, or if the map is prepared as a complete revision. These water surface elevations should not be confused with the Great Lakes datum reference levels for depth curves and soundings mentioned in section 2.3.13.5. The water surface elevations have been averaged over long periods of time. Although they are relatively stable, they are not the same as the reference datum used to determine the depth curves and soundings. The water surface levels for the Great Lakes system are as follows:

| Lake Name | Customary Units | Metric Units |
|---|---|---|
| Superior | 601 feet | 183.2 meters |
| Michigan-Huron | 579 feet | 176.5 meters |
| St. Clair | 574 feet | 174.9 meters |
| Erie | 572 feet | 174.2 meters |
| Ontario | 246 feet | 74.8 meters |

2F.3.7 Triangulation Stations

The names of all monumented triangulation stations should usually be shown on the map, with certain exceptions. It is unnecessary to show the name of the station if an associated topographic feature with the same name is near the station. However, if the spelling differs, both names should be shown. If the triangulation station has a number, the number designation should be considered part of the name and be shown; for instance, "South Cape 2". The USGS no longer attests to the validity of the positions listed for horizontal control established by transit traverse (TT) procedures. This control is now considered to be less than third order and should be omitted from complete revision maps. Only horizontal control stations established by electronic traverse (ET) methods should be shown on complete revision maps.

A number of stations in Los Angeles County carry a double designation, such as "Blackwood (Glendora G-10)", the former being the USGS designation, and the latter being the Los Angeles County designation. When appropriate, the name of the station assigned by the agency whose values were used to establish the station should be shown first. Since this distinction requires costly research of the control notes to verify the usage on the previous edition of the map, the labels can be retained as they were originally shown.

If two agencies use the same station name for triangulation stations in close proximity, show both the station and agency name.

In areas of closely spaced triangulation stations, such as coastal areas where stations are numerous, omit the names with the less important landmark value to avoid cluttering the map. Retain enough labels to adequately facilitate reference to control lists.

2F.3.8 Contour Labels

Contour labels are shown on maps to facilitate the approximation of any elevation without a tedious search for a reference number. Positions for the labels can be selected either before or after the

rest of the interior lettering has been positioned. Use whichever method is necessary to efficiently ensure clearance with other labels and good balance on the map as a whole. Although contour labels are distributed systematically, try to avoid a mechanical appearance. The labels should be centered on the axis of the contour lines to avoid confusion.

The determination of the best positions and density for contour labels requires good judgment and is influenced by the nature of the terrain, the density of the contour lines, the complexity of the culture and names, and the distribution of bench marks and spot elevations. Complex topography generally requires more contour numbers than simple terrain.

Where possible, priority should be placed on positioning contour labels on the index contour lines. The second priority should be to place labels on widely spaced intermediate contours. Key positions for index contour labels are near the tops of ridges, bottoms of valleys, and along pronounced changes of slope. Avoid placing contour labels where they will obliterate pertinent hypsographic detail or overprint streams, cultural features, public land lines, or other labels. Although intermediate and supplemental contours should be labeled, the labels should not replace or interfere with the optimum distribution of index contour labels. Some identifying labels should be placed on supplemental contours that have a limited distribution, but not at the expense of index contour labels or the exclusion of labels on adjacent intermediate contours. The ultimate criteria should be whether the map has balance and is easy to read; this can only be achieved by good editorial judgment.

The following general guidelines should be used to achieve the proper density of contour labels:

- Position index contour labels approximately 1 to 1½ miles apart, if possible.

- Avoid positioning labels on intermediate contours adjacent to index contours.

- Avoid positioning labels closer than 1,000-2,000 feet from spot elevations or control marks.

- Avoid positioning labels on contours that trend north to south.

- Position the label on the smoothest part of the contour so that the least amount of contour detail is obliterated.

- Contour label density can normally vary between 3 to 5 labels per square mile, depending on the complexity of the topography and other map detail. However, a density of 1 or 2 labels per square mile is acceptable if there are few contours or a great deal of map detail.

- Label supplemental contours adequately enough to enable quick identification of the contour value.

The zero contour line, when shown, should be labeled "SEA LEVEL" if space permits; otherwise, "00" should be used.

Contour crossings on wide, low gradient, double-line streams should be labeled between the shorelines if space permits. Brown leaders can be used on contour crossings on major low-gradient ditches, single-line streams, or narrow double-line streams, but centering the label on the contour is preferable if space permits.

2F.3.9 Depth Curve and Soundings Values

Each depth curve must be properly identified because hydrographic charts from which the curves and selected soundings are copied usually show depth curves at selected intervals, rather than at regular intervals. Center the depth curve values on the depth curve lines.

Enough soundings should be shown to give general information on depths, including critical highs and lows, but not in such density as to create the impression that they are shown for navigational purposes. Coastal and Great Lakes soundings should not be spaced any closer than 1 inch where the depths are less than 30 feet, or 2 inches where the depths are greater than 30 feet. The spacing of soundings on inland lakes from information provided by States can be much closer, as long as the information does not appear too cluttered.

## 2F.4 MAP MARGIN INFORMATION COMPOSITION

See section 2.3 for information on collar notes and other marginal data. The proper layout and type specifications for marginal data are indicated on the style sheets contained in appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska). The following information is not included in section 2.3 or on the style sheets.

### 2F.4.1 Overedge Mapped Areas

Overedge areas that were shown on the previous map are usually retained on revised primary series maps. The following information is supplied to give background on how the original map was formatted and to provide guidance if questions arise because of the shift from NAD 27 to NAD 83.

For economy or utility, relatively small mapped areas that extend across and beyond the regular bounding projections are sometimes included on quadrangle maps. Firm specifications cannot be provided for all aspects of their preparation because overedge areas occur in a variety of sizes, shapes, and positions. General rules are as follows:

- The bounding projection lines of the regular quadrangle area should not be broken for overhangs; however, a projection line can be extended from the normal corner to intersect a boundary enclosing an overhang area. Where a projection line is extended from the normal corner of a quadrangle map to limit one side of the overedge area, it should be drawn to the extremity of the area, and the geographic coordinate value should be placed at the end of the line.

- Grid ticks and their values should be shown in their normal positions along the projection lines of the regular quadrangle area. State Plane Coordinate System ticks and

(on single edition maps) UTM grid ticks should be added to the extended projection line, but should not be shown unsupported around the perimeter of the overedge area.

- UTM grid lines should be extended over the entire mapped area and labeled along the extended and regular projection lines. The grid lines should be broken back 0.02 inch from the UTM, SPCS, and geographic labels along the projection line of the regular quadrangle.

- On quadrangles that have an east or west overhang, all marginal data in the north and south margins should be shown in their normal position relative to the regular bounding projection. North and south overhangs sometimes will require the displacement of marginal data other than the geographic values and grid coordinates.

Some exceptions to these general rules are to be expected; for example:

- An area shown overedge to a State boundary that closely parallels the projection line may not allow enough space for the geographic and grid tick labels. These labels should then be positioned outside the overedge area, even though the ticks to which they apply are wholly or partially inside.

- The blue water tint should not be extended merely to show features such as foreshore flats, depth curves, and rocks. Normally, the tint should be shown to about 0.5 inch from the shoreline and major islands, along the general configuration of the land area. Straight lines should be avoided.

- If a major amount of land area and adjacent detail extends across and nearly parallels the bounding projection of the

quadrangle for a minimum width of 1 minute of latitude or longitude, the projection should be **shifted**. In this case, all grid ticks and marginal labels should be shown in the normal position relative to the new projection line.

The following guidelines govern the choice of names for maps with overedge mapped areas:

- If the land area from an adjoining quadrangle is treated as an overedge area on a regular quadrangle, only the regular quadrangle name should be shown.

- On Alaska 1:63,360-scale maps, where the projection is shifted to include all of the land area of two quadrangles, both quadrangle designations should be shown.

- In areas other than Alaska, if the projection is shifted to include all the land area of two quadrangles, a quadrangle name suitable for the area as a whole should be selected (see section 2F.1.3 for information on selecting quadrangle names).

2F.4.2 Highway and Road Destinations

As a result of the Graphic Simplification Technical Exchange Meeting held June 21-22, 1994, in Reston, VA, highway and road destinations are **not shown** on revised maps. Those attending included representatives from the Bureau of Land Management, USGS, Tennessee Valley Authority, and USDA Forest Service. The following instructions are provided **only** if a cooperator requests that they be shown and agrees to reimburse the costs involved.

Mileages to destinations outside the map area enable the map user to determine the distance to the next town or important road junction beyond the map border and to orient the map to the surrounding area (see figure 2F-10). Overedge destination labels include the

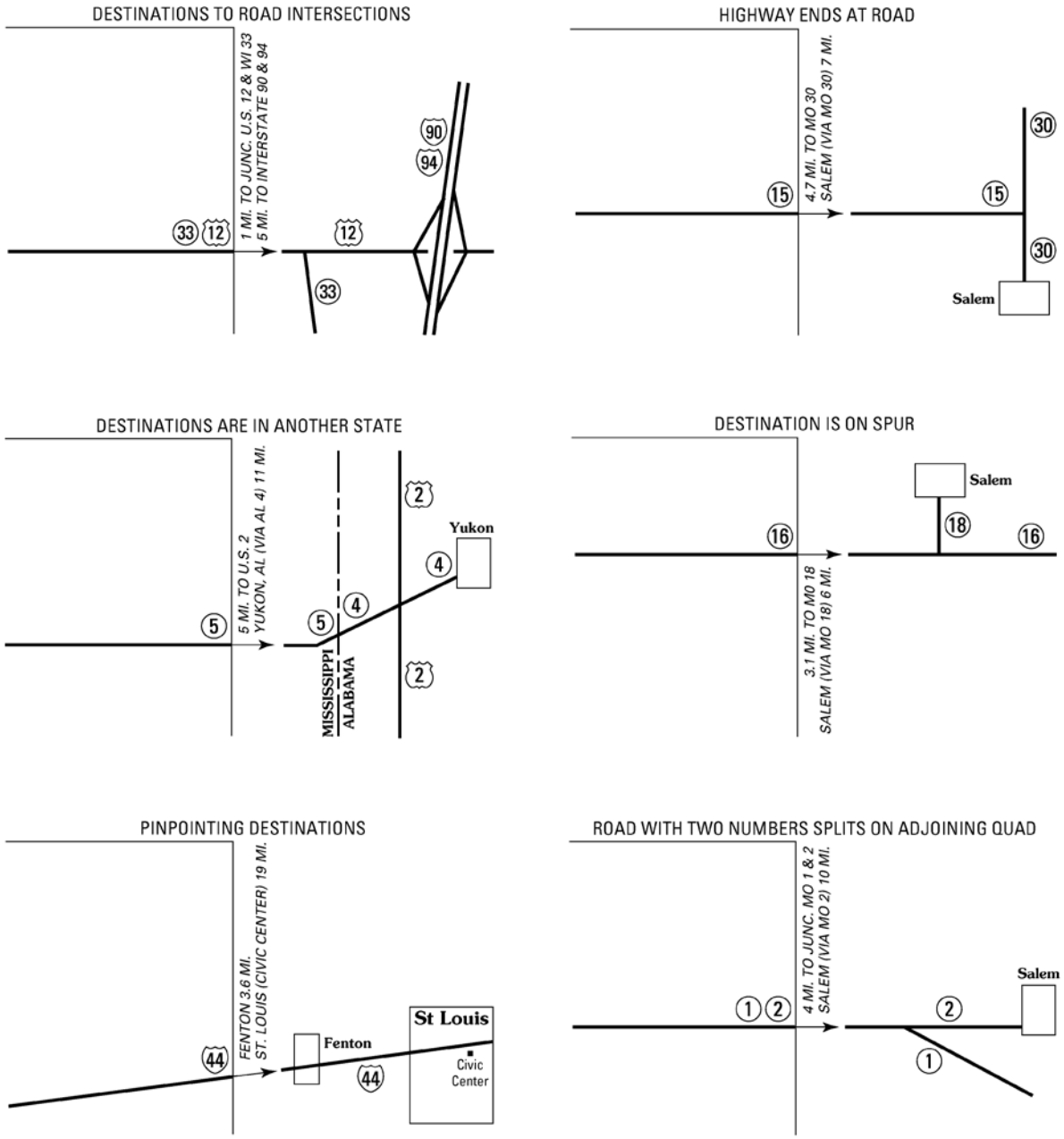



Figure 2F-10
Sample destinations.

destination, the road mileage to the destination, and an arrow pointing in the general direction of the road after it leaves the map. The labels are shown in 6-point Univers Italic (UI) uppercase type and printed in red. Destinations along the north and south margins should read east to west and destinations along the east and west margins should read south to north.

All class 1 and class 2 roads should have double destinations except in areas of high urban density, where only the major highways should have two destinations. Class 3 roads should have a single destination, providing that the area is sparsely populated with cultural features, no higher class road is going overedge, and the destination is on a direct route from the map's edge.

Double destinations consist of an immediate and an important destination. The immediate destination should be the next populated place or intersecting numbered or named highway. If possible, it should be on the adjoining sheet. The important destination should be a sizeable locality. If a sizeable locality is not within a reasonable distance (about 50 miles), the intersection of a Federal or State highway is acceptable. Double destination labels should be stacked flush with the arrow. The immediate destination should be positioned next to the map projection line.

Road mileages are map distances measured along the road to town centers, landmark features, or intersections. Mileages greater than 5 miles should be rounded to the nearest mile, while mileages less than 5 miles should be rounded to the nearest 0.1 mile. Whole numbers should be expressed as "5 MI.", rather than "5.0 MI.". Mileages less than a mile should be expressed as "0.4 MI.", rather than ".4 MI.". When mileages are rounded to the nearest mile or 0.1 mile, "0.5" or "0.05" should be rounded to the nearest even number. For instance, "8.5 MI." should be rounded to "8 MI." and "1.35 MI." should be rounded to "1.4 MI.".

Occasionally, cities are too large or too close to the edge of the

map for the city name to be used as a meaningful destination. In these cases, a specific feature shown on the map should be pinpointed, such as a post office, courthouse, civic center, or intersection with a major highway. Use the following guidelines for when to pinpoint:

| Population | Distance |
|---|---|
| Over 1,000,000 | ≤ 50 miles |
| 500,001 to 1,000,000 | ≤ 30 miles |
| 100,001 to 500,000 | ≤ 20 miles |
| 15,000 to 100,000 | ≤ 15 miles |

Destinations for limited access highways are different from those on other highway types. Immediate destinations should always be the next interchange. The interchange number can be used as the immediate destination if no populated place exists at the interchange. The important destination should be the next major city connected by the highway. It may be up to 100 miles away. If an exit for a major city is not within the city, the number of the Federal or State route connecting the city with the limited access highway should be included with the city name in the destination.

The following miscellaneous rules apply to destinations:

- Destinations can be shown for roads classified as "Under Construction", but not for proposed roads.

- Some destinations are in a different State than the highway is in when it leaves the map. If the immediate destination is in the same State but the important destination is in another State, then the other State’s abbreviation should be added to the important destination. If both destinations are in another State, then only the immediate destination includes the other State’s abbreviation.

- The two-letter postal abbreviation should be used to designate a State name. Do not show a period after the abbreviation.

- The word "Interstate" (such as Interstate 94) is preferred, rather than the abbreviation "I-94", because of possible confusion with an interchange number.

- Other abbreviations that are used should be approved USGS abbreviations followed by a period. See section 2F.1.7 for information on abbreviations and appendix 2-G for approved abbreviations.

- Avoid cluttering the map margin with destinations.

# APPENDIX 2-G

## Abbreviations and Word Compounds

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## 2G. ABBREVIATIONS AND WORD COMPOUNDS

This appendix contains guiding principles for the use of abbreviations and word compounds, as well as a list of acceptable abbreviations and approved word compounds for use on primary series maps.

The U.S. Government Printing Office Style Manual, Suggestions to Authors of the Reports of the United States Geological Survey, or a standard dictionary should be used as references if an abbreviation or word compound cannot be found in this appendix.

## 2G.1 ABBREVIATIONS

See section 2F.1.7 for further information on the use of abbreviations on maps.

### 2G.1.1 Limited Space Requires Short Labels

Words should be abbreviated on maps where space is insufficient for them to be spelled out or where the spelled-out words would clutter the map or otherwise detract from its appearance. Readability should not be impaired whenever abbreviations are used. If no standard abbreviation is available, any logical abbreviation can be used, as long as it is consistently applied. Proper names can be abbreviated, if necessary, as long as the name is spelled out somewhere else on the map.

This section neither authorizes nor suggests the labeling of features other than those for which labeling is specified. Rather, it is a guide to be used when abbreviations are needed in the application of feature names, descriptive labels, and marginal data.

### 2G.1.2 Interior Names and Labels

Some map features are so well known and appear so frequently on maps that their labels are always abbreviated. For example, bench marks are labeled BM even where enough space is available for the words to be shown in full. Other words that are normally abbreviated are church (Ch) and school (Sch), when they are at the end of a name, and cemetery (Cem), when the full word will not fit inside the cemetery outline. Less familiar but unmistakable abbreviations, such as Ave, Cr, Fk, L, Mtn, PO, R, Sew Disp, Spr, and WT, can be used with considerable freedom, as space and appearance warrant. Relatively unfamiliar abbreviations, such as C (cape), Fd (ford), and PH (powerhouse), should be used only where a lack of space is the principal consideration. Improvised or ambiguous abbreviations should be avoided wherever possible and are only permitted when the word is spelled out somewhere else on the map so that the map reader can infer the correct meaning by association.

The degree of abbreviation is often determined by the amount of space available. For example, STANISLAUS NATIONAL FOREST should be labeled in full wherever possible, but small, isolated parcels can be labeled STANISLAUS NAT FOR, STANISLAUS N F, or even S N F in the smallest parcels. The shortest form illustrates one type of abbreviation that should never be used unless the full name is shown somewhere else on the map.

2G.1.3 Marginal Data

The treatment of abbreviations in marginal data is fairly well standardized. The style sheets contained in appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska) serve as guides. Improvisation or departure from the general practices illustrated on the style sheets is seldom justified.

2G.1.4 Acceptable Abbreviations

Because abbreviations are essentially makeshifts, no list of standard or acceptable ones can cover all situations. The list presented here is derived from many sources and includes universally recognized abbreviations and also some that have been devised especially for map use.

| | | | |
|---|---|---|---|
| Above | Abv | Ancient | Anc |
| Abutment | Abut | And | & |
| Academy | Acad | Antenna, Antennae | Ant |
| Administration | Adm | Approximate(ly) | Approx |
| Aeronautical | Aero | Aquarium | Aquar |
| Agency | Agcy | Aqueduct | Aque |
| Agriculture | Agr | Archipelago | Arch |
| Agricultural | Agr | Arizona | AZ |
| Airfield | Afld | Arkansas | AR |
| Air Force Base | AFB | Arroyo | A |
| Airport | Aprt | Asphalt | Asph |
| Airway | Awy | Association | Assn |
| Alabama | AL | Astronomical | Astr |
| Alaska | AK | Astronomy | Astr |
| Alkali | Alk | Atlantic | Atl |
| Alluvial | Alluv | Atoll | At |
| Alternate | Alt | Auxiliary | Aux |
| Altitude | Alt | Auxiliary Meridian | Aux Mer |
| Anchorage | Anch | Avenue | Ave |

| | |
|---|---|
| Average | Av |
| Aviation | Avn |
| Awash (rock) | Awsh |
| | |
| Bank | Bk |
| Bar | Bar |
| Bay | B |
| Bayou | B |
| Beacon | Bn |
| Bearing | Brg |
| Bench Mark | BM |
| Bluff | Blf |
| Boat Harbor | B Hbr |
| Bog | Bog |
| Bottom | Bot |
| Boulevard | Blvd |
| Boundary | Bdy |
| Braided | Brd |
| Branch | Br |
| Breakwater | Bkwr |
| Bridge | Br |
| Brook | Bk |
| Building | Bldg |
| Bureau | Bu |
| Business Route | B-R |
| Bypass | Byp |
| | |
| Cableway | Cblwy |
| California | CA |
| Campground | Cpgrd |
| Canal | Can |
| Canyon | Can |
| Cape | C |
| Capitol | Cap |
| Carline | CL |
| Cartography | Cartog |
| Castle | Cas |
| Cathedral | Cath |
| Causeway | Cswy |
| Cave | Cv |
| Cemetery | Cem |
| Center | Ctr |
| Central | Cent |
| Channel | Chan |
| Chapel | Ch |
| Chemical(ly) | Chem |
| Chemistry | Chem |
| Chimney | Chy |
| Church | Ch |
| Civil, Civilian | Civ |
| Clearance | Cl |
| Cliff | Clf |
| Coast Guard Station | CGS |
| College | Col |

| | |
|---|---|
| Colony | Col |
| Colorado | CO |
| Commercial | Cml |
| Communication Tower | Comm Tr |
| Company | Co |
| Concrete | Conc |
| Connecticut | CT |
| Conservation | Consv |
| Construction | Constr |
| Continent | Cont |
| Cooperative | Coop |
| Coral | Crl |
| Corner | Cor |
| Corporation | Corp |
| Correction | Cor |
| County (margin) | CO. |
| County (interior) | CO |
| Court | Ct |
| Courthouse | CH |
| Cove | C |
| Covered | Cov |
| Crater | Ctr |
| Creek | Cr |
| Crevasse | Crev |
| Crossing | Xing |
| Culvert | Cul |
| Customhouse | Cus Ho |
| | |
| Dam | Dam |
| Degree(s) | Deg |
| Delaware | DE |
| Department | Dept |
| Depot | Dep |
| Depression | Depr |
| Desert | Des |
| Destination | Dest |
| Destroyed | Dest |
| Diameter | Diam |
| Director | Dir |
| Discontinued | Discon |
| Distance, Distant | Dist |
| District | Dist |
| District of Columbia | DC |
| Ditch | D |
| Divide | Div |
| Division | Div |
| Dock | Dk |
| Dockyard | Dkyd |
| Dolphin | Dol |
| Dormitory | Dorm |
| Drive | Dr |
| | |
| East | E |
| Electric(al) | Elec |

| | |
|---|---|
| Electricity | Elec |
| Elevated | Elev |
| Elevation | El or Elev |
| Elevator | Elev |
| Emergency | Emer |
| Engineer, Engineering | Engr |
| Entrance | Entr |
| Equator | Eq |
| Equipment | Eqpt |
| Equivalent | Equiv |
| Escarpment | Escrp |
| Established | Estab |
| Estimated | Est |
| Estuary | Est |
| Executive | Exec |
| Experimental | Exper |
| Exposed Wreck | Exp Wk |
| Extension | Ext |
| Extinct | Ext |
| Factory | Fcty |
| Falls | Fls |
| Fathom | Fm |
| Federal | Fed |
| Feet | Ft |
| Ferry | Fy |
| Field | Fld |
| Filtration | Filtr |
| Firebreak | FB |
| First (numeric) | 1ST |
| Fishery | Fish |
| Fjord | Fjd |
| Flat | Fl |
| Flood | Fl |
| Florida | FL |
| Flume | Flm |
| Foot | Ft |
| Ford | Fd |
| Forest | For |
| Fork | Fk |
| Fort | Ft |
| Foundry | Fdry |
| Gage | Ga |
| Gaging Station | Gaging Sta |
| Gardens | Gdns |
| Gatehouse | GH |
| General | Gen |
| Geodesy, Geodetic | Geod |
| Geographic(al) | Geog |
| Geography | Geog |
| Geologic(al) | Geol |
| Geology | Geol |
| Geometric(al) | Geom |
| Geometry | Geom |
| Geophysical | Geoph |
| Geophysics | Geoph |
| Georgia | GA |
| Geothermal | Geotherm |
| Glacier | Gl |
| Government | Govt |
| Grade | Gr |
| Grant | Gt |
| Gravel Pit | Gr Pit |
| Great | Gt |
| Ground | Grd |
| Guide Meridian | G Mer |
| Gulch | Gl |
| Gulf | Gf |
| Gymnasium | Gym |
| Hachures | Hach |
| Hammock | Hmk |
| Harbor | Hbr |
| Hawaii | HI |
| Head | Hd |
| Headquarters | Hdqrs |
| Height | Ht |
| Heights | Hts |
| High School | HS |
| High Water | HW |
| Higher High Water | HHW |
| Highway | Hy |
| Historic(al) | Hist |
| Hollow | Hol |
| Hook | Hk |
| Horizontal | Hor |
| Hospital | Hosp |
| Hour | Hr |
| House | Ho |
| Hydraulic(s) | Hyd |
| Hydrography | Hyd |
| Idaho | ID |
| Illinois | IL |
| Inch(es) | In |
| Incorporated | Inc |
| Indefinite | Indef |
| Indian | Ind |
| Indiana | IN |
| Industrial | Ind |
| Industry | Ind |
| Inspection | Insp |
| Institute | Inst |
| Institution | Inst |

| | |
|---|---|
| Interior | Int |
| Intermittent | Int |
| Intracoastal | Intracstl |
| Iowa | IA |
| Irrigation | Irr |
| Island | I |
| Islands | Is |
| Islet | It |
| Isthmus | Isth |
| Jetty | Jty |
| Junction | Junc |
| Junior | Jr |
| Kansas | KS |
| Kentucky | KY |
| Kilometer(s) | Km |
| Laboratory | Lab |
| Lagoon | Lag |
| Lake | L |
| Land Grant | Ld Gt |
| Landing | Ldg |
| Landing Field | Ldg Fld |
| Landing Strip | Ldg Str |
| Landmark | Ldmk |
| Lane | La |
| Large | Lge |
| Latitude | Lat |
| Left | L |
| Levee | Lv |
| Library | Libr |
| Lifesaving Station | LSS |
| Light | Lt |
| Lighthouse | LH |
| Lithograph | Litho |
| Lithography | Litho |
| Little | L |
| Location | Loc |
| Location Approximate | Loc Approx |
| Location Monument | LM |
| Logarithm | Log |
| Longitude | Long |
| Lookout | LO |
| Lookout Tower | LT |
| Lousiana | LA |
| Low Water | LW |
| Lower Low Water | LLW |
| Magazine | Mag |
| Magnetic | Mag |
| Maine | ME |
| Mainland | Mnlnd |
| Maintenance Station | Maint Sta |
| Management | Mgmt |
| Mangrove | Mngrv |
| Manufacturing | Mfg |
| Marine | Mar |
| Marsh | Msh |
| Maryland | MD |
| Massachusetts | MA |
| Maximum | Max |
| Meadow | Mdw |
| Meander Corner | MC |
| Mean High Water | MHW |
| Mean Higher High Water | MHHW |
| Mean Low Water | MLW |
| Mean Lower Low Water | MLLW |
| Mean Sea Level | MSL |
| Mean Tide Level | MTL |
| Memorandum | Memo |
| Memorial | Mem |
| Meridian | Mer |
| Meter(s) | M |
| Michigan | MI |
| Middle | Mid |
| Mile(s) | Mi |
| Milepost | MP |
| Military | Mil |
| Mine(s) | Min |
| Mineral | Min |
| Mineral Monument | MM |
| Minimum | Min |
| Minnesota | MN |
| Minute(s) | Min |
| Mississippi | MS |
| Missouri | MO |
| Montana | MT |
| Monument | Mon |
| Moraine | Mor |
| Mount | Mt |
| Mountain | Mtn |
| Mountains | Mtns |
| Municipal | Muni |
| Museum | Mus |
| National | Nat |
| National Guard | NG |
| Nautical | Naut |
| Navigable, Navigation | Navig |
| Nebraska | NE |
| Neck | Nk |
| Nevada | NV |
| New Hampshire | NH |

| | | | |
|---|---|---|---|
| New Jersey | NJ | Promontory | Prom |
| New Mexico | NM | Property | Prop |
| New York | NY | Proposed | Prop |
| North | N | Province | Prov |
| North Carolina | NC | Provisional | Prov |
| North Dakota | ND | Public | Pub |
| Northeast | NE | Public School | PS |
| Northwest | NW | Puerto Rico | PR |
| Number | No | Pumping Station | Pumping |
| Numbers | Nos | | Sta |
| | | | |
| Object | Obj | Quadrangle | Quad |
| Observatory | Obsv | Quadrant | Quad |
| Obstruction | Obstr | Quarantine | Quar |
| Ocean | O | Quarry | Qry |
| Ohio | OH | | |
| Oklahoma | OK | Race (water) | Race |
| Oregon | OR | Radio | Rad |
| Original | Orig | Radio Beacon | R Bn |
| Outcrop | OC | Radio Detection | |
| Overhead | Ovhd | and Ranging | Radar |
| | | Radio Tower | R Tr |
| Pacific | Pac | Railroad | RR |
| Parallel | Par | Railway | Ry |
| Park | Pk | Ramp | Rmp |
| Parking | Pkg | Range | R |
| Parkway | Pkwy | Ranges (land) | Rs |
| Passage | Pass | Ranges (hypsographic) | Rngs |
| Pavilion | Pav | Rapids | Rap |
| Peak | Pk | Ravine | Rav |
| Peninsula | Pen | Reef | Rf |
| Pennsylvania | PA | Reference Mark | RM |
| Penstock | Pnstk | Reference Monument | RM |
| Perennial | Per | Reflector | Ref |
| Pilot Station | Pil Sta | Refuge | Rfg |
| Pipeline | Pl | Reproduction | Repro |
| Plateau | Plat | Reservation | Res |
| Point | Pt | Reservoir | Res |
| Pond | Pd | Restricted | Restr |
| Population | Pop | Rhode Island | RI |
| Position | Pos | Ridge | Rdg |
| Possession | Poss | Right | R |
| Post Office | PO | Rimrock | Rmrk |
| Power | Pwr | River | R |
| Powerhouse | PH | Road | Rd |
| Powerplant | PP | Rock | Rk |
| Preliminary | Prelim | Rocky | Rky |
| Preserve | Presv | Roundhouse | RH |
| Principal Meridian | Prin | Route | Rte |
| | Mer | Ruins | Rns |
| Private | Priv | Run | R |
| Project | Proj | | |
| Projection | Proj | Saddle | Sad |
| Prominent | Prom | Saint | St |

| | |
|---|---|
| Sainte | Ste |
| Saints | SS (SS Peter & Paul Ch) |
| Sanatorium | San |
| Sand | Sand |
| Sanitarium | San |
| School | Sch |
| Science | Sci |
| Seawall | SW |
| Second(s) (time) | Sec |
| Second (numeric) | 2D |
| Section | Sec |
| Sections | Secs |
| Seminary | Sem |
| Sewage | Sew |
| Shoal | Shl |
| Siding | Sdg |
| Signal Station | Sig Sta |
| Slip | Slp |
| Slough | Slu |
| Small | Sml |
| Society | Soc |
| Sound | Sd |
| Sounding | Sdg |
| South | S |
| South Carolina | SC |
| South Dakota | SD |
| Southeast | SE |
| Southwest | SW |
| Spring | Spr |
| Springs | Sprs |
| Spur | Sp |
| Square | Sq |
| Standard | Std |
| Standard Parallel | Std Par |
| Station | Sta |
| Strait | Str |
| Stream | Str |
| Street | St |
| Strip Mine | SM |
| Subdivision | Sub |
| Submerged | Subm |
| Substation | Substa |
| Supplement | Supp |
| Surface | Surf |
| Survey | Surv |
| Syphon | Syph |
| Tailings | Tail |
| Technical, Technology | Tech |
| Telegraph | Teleg |
| Telephone | Tel |
| Television | TV |
| Temperature | Temp |
| Temporary | Temp |
| Tennessee | TN |
| Terminal | Term |
| Terrace | Ter |
| Territory | Terr |
| Texas | TX |
| Theater | Thtr |
| Third (numeric) | 3D |
| Thoroughfare | Thoro |
| Tidal Flat | Tid Fl |
| Timber | T |
| Tollgate | TG |
| Topographic(al) | Topog |
| Topography | Topog |
| Tower | Tr |
| Township, Land | T |
| Township, Civil | Twp |
| Townships | Ts |
| Track | Tk |
| Training | Tng |
| Tramway | Tram |
| Transit | Trans |
| Transmission | Trans |
| Transmitter | Trans |
| Transportation | Transp |
| Tributary | Trib |
| Truck Route | T-R |
| Tundra | Tund |
| Tunnel | Tun |
| Turnpike | Tnpk |
| Under Construction | U C |
| United States (margin) | U.S. |
| United States (interior) | U S |
| University | Univ |
| Utah | UT |
| Valley | Val |
| Vermont | VT |
| Vertical | Vert |
| Vertical Angle | VA |
| Vertical Angle Bench Mark | VABM |
| Viaduct | Viad |
| Village | Vil |
| Virginia | VA |
| Virgin Islands | VI |
| Volcano, Volcanic | Volc |

| | | | |
|---|---|---|---|
| Warehouse | Whs | Signal Station | Sta |
| Wash | Wsh | West | W |
| Washington | WA | West Virginia | WV |
| Water | W | Wharf | Whf |
| Waterhole | WH | Wharves | Whvs |
| Water Level | WL | Windmill | WM |
| Water Line | WL | Wisconsin | WI |
| Water Surface | WS | Witness Corner | WC |
| Water Tank | WT | Wreck | Wk |
| Water Tanks | WTs | Wyoming | WY |
| Water Tower | WT | | |
| Water Towers | WTs | Yard | Yd |
| Waterway | Wwy | Yards | Yds |
| Waterworks | WW | Year | Yr |
| Weather Bureau | WB | | |
| Weather Service | WS Sig | | |

2G.1.5 Abbreviations for Agencies and Organizations

Although few of the abbreviations are used on maps, the following list is helpful in map editing and related duties, such as researching and evaluating sources of technical and background information and preparing correspondence and reports.

| | |
|---|---|
| Advance Research Projects Agency | ARPA |
| Aeronautical Chart and Information Center (now National Imagery and Mapping Agency) | ACIC |
| American Congress on Surveying and Mapping | ACSM |
| American Federation of Labor and Congress of Industrial Organizations | AFL-CIO |
| American Petroleum Institute | API |
| American Red Cross | ARC |
| American Society of Civil Engineers | ASCE |
| American Society for Photogrammetry and Remote Sensing | ASPRS |
| American Society for Testing Materials | ASTM |
| Army Map Service (now National Imagery and Mapping Agency) | AMS |
| Atomic Energy Commission (now Department of Energy) | AEC |
| Board on Geographic Names | BGN |
| Branch of Printing | BOP |
| Bureau of Agricultural Economics | BAE |
| Bureau of Employees Compensation | BEC |
| Bureau of Labor Statistics | BLS |
| Bureau of Land Management (formerly General Land Office) | BLM |
| Bureau of Public Roads (now Federal Highway Administration) | BPR |
| Business and Defense Services Administration | BDSA |
| Central Intelligence Agency | CIA |
| Chief Topographic Engineer | CTE |
| Civil Aeronautics Board | CAB |
| Coast and Geodetic Survey (now National Ocean Service and National Geodetic Survey) | C&GS |

| | |
|---|---|
| Commission on Civil Rights | CCR |
| Commodity Credit Corporation | CCC |
| Commodity Stabilization Service | CSS |
| Council of Economic Advisers | CEA |
| Council on Environmental Quality | CEQ |
| Defense Air Transportation Administration | DATA |
| Defense Mapping Agency (now National Imagery and Mapping Agency) | DMA |
| Defense Minerals Exploration Administration | DMEA |
| Defense Mobilization Board | DMB |
| Department of Energy | DOE |
| Department of Health, Education, and Welfare (now Department of Health and Human Services) | HEW |
| Department of Health and Human Services (formerly Department of Health, Education, and Welfare) | HHS |
| Department of the Interior | DOI |
| Department of Transportation | DOT |
| Development Loan Fund | DLF |
| Earth Resources Observation Systems | EROS |
| EROS Data Center | EDC |
| Earth Science Information Center | ESIC |
| Engineer Research and Development Laboratories | ERDL |
| Farm Credit Administration | FCA |
| Farmers Home Administration | FHA |
| Federal Aviation Administration | FAA |
| Federal Communications Commission | FCC |
| Federal Deposit Insurance Corporation | FDIC |
| Federal Emergency Management Agency | FEMA |
| Federal Highway Administration (formerly Bureau of Public Roads) | FHWA |
| Federal Home Loan Bank Board | FHLBB |
| Federal Housing Administration | FHA |
| Federal Insurance Contributions Act (Social Security) | FICA |
| Federal Maritime Board | FMB |
| Federal Mediation and Conciliation Service | FMCS |
| Federal National Mortage Association (Fannie Mae) | FNMA |
| Federal Power Commission (now part of the Department of Energy) | FPC |
| Federal Reserve System | FRS |
| Federal Security Agency | FSA |
| Federal Trade Commission | FTC |
| Fish and Wildlife Service | FWS |
| Food and Agriculture Organization | FAO |
| Food and Drug Administration | FDA |
| Foreign Agriculture Service | FAS |
| Forest Service | FS |
| General Accounting Office | GAO |
| General Land Office (BLM since 1947) | GLO |
| General Services Administration | GSA |
| Geographic Names Information System | GNIS |
| Geometronics Service Center (now Geospatial Service and Technology Center) | GSC |
| Geospatial Service and Technology Center | GSTC |
| Government Printing Office | GPO |

| | |
|---|---|
| Housing and Home Finance Agency | HHFA |
| Information Resources Division | IRD |
| Institute of Radio Engineers | IRE |
| Inter-American Defense Board | IADB |
| Interdepartmental Radio Advisory Committee | IRAC |
| Internal Revenue Service | IRS |
| International Atomic Energy Agency | IAEA |
| International Cartographic Association | ICA |
| International Civil Aviation Organization | ICAO |
| International Cooperation Administration | ICA |
| International Finance Corporation | IFC |
| International Labor Organization | ILO |
| International Maritime Consultative Organization | IMCO |
| International Organization for Standardization | ISO |
| International Telecommunication Union | ITU |
| International Trade Organization | ITO |
| International Typographical Union | ITU |
| Interstate Commerce Commission | ICC |
| Joint Committee on Printing | JCP |
| Joint Mapping and Photography Committee | JMPC |
| Map Information Office | MIO |
| Mapping Applications Center | MAC |
| Maritime Administration | MA |
| Mid-Continent Mapping Center | MCMC |
| Military Advisory Group | MAG |
| Military Air Transport Service | MATS |
| Mississippi River Commission | MRC |
| Missouri River Basin (also Map Reproduction Branch) | MRB |
| Missouri River Commission | MORC |
| National Academy of Sciences | NAS |
| National Aeronautics and Space Administration | NASA |
| National Bureau of Standards (now National Institute of Standards and Technology) | NBS |
| National Geodetic Survey (formerly part of Coast and Geodetic Survey, now part of NOS) | NGS |
| National Hydrographic Office (now National Imagery and Mapping Agency) | NHO |
| National Imagery and Mapping Agency (formerly AMS, ACIC, DMA, and NHO) | NIMA |
| National Institute of Standards and Technology (formerly National Bureau of Standards) | NIST |
| National Labor Relations Board | NLRB |
| National Mapping Division | NMD |
| National Mapping Program | NMP |
| National Oceanic and Atmospheric Administration | NOAA |
| National Ocean Service (formerly part of Coast and Geodetic Survey, now a line office of NOAA) | NOS |
| National Office of Vital Statistics | NOVS |
| National Park Service | NPS |
| National Science Foundation | NSF |
| National Security Council | NSC |
| National Shipping Authority | NSA |
| Natural Resources Conservation Service (formerly the U.S. Soil Conservation Service) | NRCS |

| | |
|---|---|
| Navy Hydrographic Office (now National Imagery and Mapping Agency) | NHO |
| North Atlantic Treaty Organization | NATO |
| Office of the Chief of Engineers | OCE |
| Office of International Trade | OIT |
| Office of Mobilization and Civil Defense | OMCD |
| Office of Research and Development | ORD |
| Office of the Secretary of Defense | OSD |
| Organization for Trade Cooperation | OTC |
| Pan American Institute of Geography and History | PAIGH |
| Public Buildings Service | PBS |
| Public Health Service | PHS |
| Public Housing Administration | PHA |
| Renegotiation Board | RB |
| Research and Development Board | RDB |
| Rocky Mountain Mapping Center | RMMC |
| Rural Electrification Adminstration | REA |
| Securities and Exchange Commission | SEC |
| Selective Service System | SSS |
| Small Business Administration | SBA |
| Social Security Administration | SSA |
| Society of Automotive Engineers | SAE |
| Soil Conservation Service (now Natural Resources Conservation Service) | SCS |
| Southeast Asia Treaty Organization | SEATO |
| Special United Nations Fund for Economic Development | SUNFED |
| Standards, Costs, and Procedures | SCAP |
| Strategic Air Command | SAC |
| Surveys, Investigations, and Research | SIR |
| Tennessee Valley Authority | TVA |
| United Nations | UN |
| United Nations Educational, Scientific, and Cultural Organization | UNESCO |
| U.S. Air Force | USAF |
| U.S. Army | USA |
| U.S. Army Corps of Engineers | USACE |
| U.S. Bureau of Reclamation | USBR or BOR |
| U.S. Coast and Geodetic Survey | USC&GS |
| U.S. Coast Guard | USCG |
| U.S. Department of Agriculture | USDA |
| U.S. Employment Service | USES |
| U.S. Forest Service (USDA Forest Sevice) | USFS |
| U.S. Geological Survey | USGS |
| U.S. Information Agency | USIA |
| U.S. Lake Survey | USLS |
| U.S. Marine Corps | USMC |
| U.S. Navy | USN |
| U.S. Navy Hydrographic Office | USNHO |
| U.S. Soil Conservation Service (now the Natural Resources Conservation Service) | USSCS |
| Veterans Administration | VA |
| Western Mapping Center | WMC |

## 2G.2 WORD COMPOUNDS

See section 2F.1.8 for further information about combining words on maps.

### 2G.2.1 Compounding Clarifies Meaning

A word compound is a union of two or more words, either with or without a hyphen. It conveys a unit idea that is not as clearly or quickly conveyed by the component words in unconnected succession. Current language trends are toward closing up words which, through frequent use, have become associated in the reader's mind as units of thought. This tendency to amalgamate words, particularly two short words, is a natural progression from the older and less flexible treatment.

A general distinction can be made between compounds made up of two or more complete words and those consisting of one complete word and a combining form prefix or suffix. The former normally are compounded only when the sense or sound is clarified thereby; the latter normally are one-word forms, except where the insertion of a hyphen aids comprehension or pronunciation. The hyphen, when used in either type of compound, is a mark of punctuation that not only unites but separates and thus facilitates understanding, aids readability, and ensures correct pronunciation. In general, however, hyphens and other punctuation symbols are omitted on maps, because the symbol is often lost or confused with other symbols (see section 2F.2.5 Punctuation).

### 2G.2.2 Rules for Compounding

Detailed rules for compounding have been formulated by the Government Printing Office (see the U.S. Government Printing Office Style Manual and the Suggestions to Authors of the Reports of the United States Geological Survey). Although some of these rules apply principally to textual matter, others are suitable criteria for compounding words used on maps. These rules are not inflexible, and some exceptions may be necessary. The appearance of a name on a previously published map does not necessarily supply strong

support for an exception. However, when an exception occurs, it should be thoroughly investigated and it must be known that the excepted usage is valid. Allowable exceptions are legalized names or other names which, because of overwhelmingly strong local and knowledgeable opinion, must be judged on their own merit.

In general, words should not be combined if they appear in a regular order and are not ambiguous in sense or sound:

rift zone
sand dunes
gravel pit

Two or more words should be combined to express a unit idea that would not be as clearly expressed by the two words in an unconnected form:

airfield
right-of-way
seawall

Except after the short prefixes co, de, pre, pro, and re, which are generally shown solid, a hyphen should be used to avoid doubling a vowel or tripling a consonant:

cooperation
cross-shaft
photo-offset

Two nouns that form a third when the compound has only one primary accent should be combined, especially when the prefixed noun consists of only one syllable or when one of the elements loses its original accent:

highlands
lifeboat
shipyard

A noun consisting of a short verb and an adverb as its second element should be compounded, except when the solid form would resist comprehension:

pickup
runoff
cut-in

Compounds beginning with the following nouns should usually be shown solid:

| | |
|---|---|
| book | school |
| eye | shop |
| house | snow |
| horse | way |
| house | wood |
| mill | work |
| play | |

Compounds ending in the following should usually be shown solid, especially when the prefixed word consists of one syllable:

| | | | |
|---|---|---|---|
| berry | house | piece | wide |
| blossom | keeper | power | wise |
| boat | keeping | proof | woman |
| book | light | room | wood |
| borne | like | shop | work |
| bound | maker | smith | worker |
| brained | making | stone | working |
| bush | man | store | worm |
| fish | master | tail | wort |
| flower | mate | tight | writer |
| grower | mill | time | writing |
| hearted | mistress | ward | yard |
| holder | monger | week | |

Compass directions consisting of two points should be shown as one word, but a hyphen should be used after the first point when three points are combined:

northeast
north-northeast
southwest

Two or more words, or a combination of abbreviations and words or numerals and words that form a unit modifier immediately preceding the word being modified should be connected with a hyphen if clarity and readability are thereby improved. However, restraint should be exercised in forming unnecessary combinations of words used in normal sequence. See the Government Printing Office Style Manual for specific exceptions to this rule. The noun unit may consist of more than one word -- for example, "flood control dam" or "transit traverse surveys". In both of these, the noun unit can be construed as compound ("control dam" and "traverse surveys"), although the hyphenated unit modifier would not necessarily be wrong. In general, the tendency should be to avoid the hyphens in many of the groups that can be construed in two or more ways -- or at least to be very careful about where the hyphens are placed:

| | |
|---|---|
| Baltimore-Washington Road | flood control dam |
| drive-in theater | game management area |
| 1:24,000-scale maps | Tennessee Valley Authority |

2G.2.3 Numeral Compounds

Mileage names up to and including 20 miles should be shown as one word. This rule applies to the "even-ten" numbers above 20 up to and including 90:

| | | | |
|---|---|---|---|
| Onemile | Ninemile | Fifteenmile | Fortymile |
| Twomile | Tenmile | Nineteenmile | Seventymile |
| Fivemile | Elevenmile | Twentymile | Ninetymile |

All other numeral-mile names should be shown as multiple words:

| | | |
|---|---|---|
| Twentyone Mile | Thirtyone Mile | One Hundred Mile |
| Twentytwo Mile | Eightynine Mile | One Hundred and One Mile |
| Twentynine Mile | Ninetyone Mile | Five Hundred and Fifty Mile |

When a number modifies another word in the specific part of a name, the elements of the number should be combined into one word, such as Twentyone Camp Creek and Fortyfour Mine Road. If the number is the specific part of a name, the number should also be combined into one word, as in Seventyone Reservoir, Twentyone Camp, and Fortyfour Mountain.

2G.2.4 Approved Compounds

The following list of compound words for use on maps is by no means complete. It is based on Government Printing Office (GPO) rules but contains some exceptions that have been established through long usage and are more appropriate for map use than the forms prescribed by the GPO. Certain two-word forms are included to illustrate applications of the rules and exceptions. Some words in the list are compounded only when used in the nonliteral sense, such as bighorn (species of wild sheep) as opposed to big horn (large horn).

The abbreviations adv. (adverb), n. (noun), v. (verb), u.m. (unit modifier) indicate function.

| | | |
|---|---|---|
| aboveground (u.m.) | airman | anything |
| acidworks | airpark | anywhere |
| acre-foot | airphoto | applegrower |
| adderstongue | airplane | applejuice |
| aide-de-camp | airport | applesauce |
| airbase (photog.) | airpower | aquaplane |
| air base (mil.) | air shaft | arborvitae |
| airborne | airship | arborway |
| aircraft | airstrip | areaway |
| airdrome | airway | armchair |
| air duct | air well | arrowhead |
| airfield | alleyway | arrowweed |
| airfreight | angle iron | ashcan |
| airgap | angleworm | ash heap |
| airhole | anteater | ashpit |
| airlane | anthill | ax grinder |
| airlift | anybody | axhead |
| airline (aviation) | anyhow | |
| airmail | anyone | backbone |

backbreaker
backdrop
backfill
backfire
backpack
backstop
backward
backwater
badlands
baggageman
baggage room
bagpipe
bakeshop
ballroom
bandstand
banknote
barbershop
bargehouse
barnyard
barrelhead
barroom
baseball
base line
basketball
basswood
bathhouse
battlefield
battleground
battleship
batwing
bayberry
beachhead
bearpaw
bearpin
bearskin
bear wallow
bedrock
beechnut
beefsteak
beehive
bellboy
bell buoy
bench mark
bighorn
billboard
birdhouse
birdseye
birthplace
bitteroot
bittersweet
blackberry
blackfoot
blackthorn
blockhouse
blowhole
bluebell
blueberry
bluebird
bluefish
bluegill
bluegrass
blue line
blue-line (u.m.)
blueprint
boardinghouse
boarding school
boardwalk
boathouse
boatyard
bobcat
bobsled
bobwhite
bogland
boilerhouse
bonefish
borderland
borderline
boxcar
box elder
boxwood
brassworks
breakwater
breastworks
breezeway
brickkiln
brickwork
brickyard
bridgehouse
broadcast
broadside
broadway
broomsedge
brotherhood
brushwood
buckbrush
buckeye
buckhorn
buckskin
bucktail
buckthorn
buckwheat
bulkhead
bulldog
bullfrog
bullhead
bullpen
bumblebee
bunkhouse
burdock
busline
buttercup
butterfly
buttermilk
butternut
bypass

cableway
campfire
campground
campsite
canebrake
canvasback
carbarn
carline
carriageway
catbird
catbrier
catfish
cattail
catwalk
causeway
centerline
checkpoint
cheerystone
chickenhouse
chicken yard
chokecherry
churchyard
city hall
clamshell
claybank
claypit
clayworks
clearinghouse
clockwise
cloverleaf
clubhouse
coalfield
coal mine
coalpit
coastline
codfish
commonwealth
copperhead
copper mine
copperplate
cornerstone
cottonfield
cotton mill
cotton seed
cottonwood
courthouse

courtyard
crabapple
cranberry
creekbed
crossarm
crossbar
crossframe (u.m.)
crosshatch
crosslines
crossroad
crosstie
crosswalk
crowfoot
cul-de-sac
customhouse
cutoff (n., u.m.)

damsite
dancehall
data base
daybeacon
dead horse
deadline
deadman
diamondback
dockyard
dogwood
downslope
downstream
drag strip
drainpipe
drawbridge
drawspan
drive shaft
drive-in theater
driveway
drugstore
drydock
drywash
duckblind
duckpond
dugout
dugway
dyeworks

earthbound
earthfill
earthquake
earthslide
earthwall
earthwork
east-northeast
east-southeast
eastward

elderberry
elkcalf
elkhorn
enginehouse
engine shop
engine yard
entryway
everglade
evergreen
expressway

fairground
farmhouse
farmland
faultline
fence line
fenland
ferryboat
ferry slip
ferryway
fieldhouse
firebreak
firehouse
firewall
fisherman
fishpond
fishtrap
fishweir
flagpole
flatland
flat top
floodgate
floodmark
flood plain
floodwall
flyway
foghorn
football
footbridge
foothill
footnote
footpath
forebay
foreshore
four bit
foxglove
freeway
freezeout
frogpond
frostline

gas field
gashouse
gasline

gas main
gas well
gasworks
gatehouse
gateway
glassworks
goldenrod
goldfield
gold mine
gooseberry
grandstand
grapefruit
grapevine
gravel pit
graveyard
greenbrier
greenhorn
greenhouse
gridline
gristmill
groundhog
guard house
guesthouse
guideline

hackberry
hailstone
half moon
halftone
hardhack
hayfield
hayseed
haystack
hazelnut
headgate
headland
headquarters
headwall
headwater
heathland
hedgerow
hencoop
henhouse
herringbone
hickorynut
highland (n., u.m.)
high tide
high water
highway
hillside
hilltop
hogback
hog's back (geol.)
homestead

honeysuckle
horsehead
horseshoe
hothouse
houseboat
huckleberry
humbug

iceberg
icefield
icehouse
intake
interstate
iron mine
ironwood
ironworks

jackrabbit
jay bird

keystone

lakebed
land line
landforms
landmark
land office
landscape
landslide
lean-to
left hand
lifeboat
light buoy
light-table
 (carto.)
lighthouse
lightship
limekiln
limestone
lineweight
lookout (n., u.m.)
lowland (n., u.m.)
low tide
low water
lumberyard

mainland
mangrove
manmade (u.m.)
marshland
meetinghouse
metalworks
milepost
milldam
millpond
millrace
millstone
moonlight
moonshine
mudflat

neatline (map)
northbound
northeast
north-northeast
north-northwest
northwest

offset
offshore
oil field
oil shale
oil well
opencut (mining)
open pit
open-air theater
outline
overall
overlay
overlook
overpass
overprint
oxbow
oysterbed
oystershell

packinghouse
packsaddle
papermill
parkway
pass point
peelcoat
penstock
permafrost
pierhead
pigweed
pine tree
pipeline
planetable (surv.)
playfield
playground
plumbline
plumb point
poison-ivy
poison-oak
pondlily
poorhouse
potash
pothole
powerhouse
powerline
powerplant
pressplate
pricklypear
pronghorn
proofread
proofsheet
pulpmill
pumphouse
pussywillow

quicksand
quicksilver

racecourse
racetrack
raceway
ragweed
railhead
railroad
railway
rams horn
ranchhouse
range line
raspberry
rattlesnake
razorback
redbird
redfern
redfish
redwood
ricefield
right hand
right-of-way
rimrock
riverbank
riverbed
river bottom
riverside
roadbed
roadhouse
roadway
rockfill
rockslide
roominghouse
roundhouse
runway

sagebrush
sagehen
salt marsh
saltpeter

saltpond
salt water (n.)
saltwater (u.m.)
saltworks
sandbar
sand dune
sandhill
sandpit
sandspit
sawmill
sawtooth
schoolhouse
scribe coat
seabed
seaboard
seacoast
sea gate
seagoing
seagull
sea level
sea lion
seaplane
seaport
seashore
seawall
sea water
seaway
sewerline
sewer pipe
shadberry
sheepdip
shellfish
shipway
shipwreck
shipyard
shoreline
shotgun
sidelap
sidewalk
signpost
sinkhole
six-shooter
skidway
skyline
skyway
slateworks
slaughterhouse
sluicebox
sluice gate
sluiceway
smokestack
snowfield
snowline
snowshed
snowslide
soapstone
sourdough(u., u.m.)
southbound
southeast
south-southeast
south-southwest
southwest
spearhead
speedway
spillway
stagecoach
stageline
standpipe
steamboat
steamplant
steamship
steelworks
stereomodel
stereopair
stockyard
storehouse
straightedge
strawberry
streambed
streetcar
substation
sugar beet
sugarcamp
sugarcane
sugarloaf
sugar maple
superhighway
swampland
sweetbrier
sweet corn
sweetfern
sweetgum
switchback
switch tower
switchyard

tableland
tabletop
tanbark
tarpit
tarworks
taxiway
tenderfoot
thornapple
thoroughfare
three dollar
through road
throughway
thumb screw
thunderbolt
tidal flat
tideflat
tide gage
tideland
tiderace
tidewater
timberline
timberwolf
toll bridge
tollgate
tollhouse
toll road
tombstone
tomcat
townhall
township
townsite
towpath
trafficway
trainshed
tramway
trolley line
truckline
truckway
turnpike
turntable
two bits

underground
underpass
upstream

view point
vineyard

walkway
warehouse
washbowl
wasteland
waste pipe
wastewater
wasteway
watercourse
watercress
waterfall
waterfowl
waterfront
water gage
watergate
waterhold
water level
waterlily

waterline (map)
water line (text)
watershed
water tank
water tower
waterway
waterworks
wellhouse
westbound
west-northwest
west-southwest
whirlpool
whitefish
white oak
wildcat
wildfowl
wild horse
wildlife
windbreak
windmill
wingwall
witch-hazel
wolfpit
woodbine
woodland
workhouse

yellow jacket

# APPENDIX 2-H

## Cooperative Headings

Cooperative headings are shown only when cooperators have funded at least 50 percent of the cost of the update. The headings in this appendix have been established over the years and should be regarded as default listings unless there are supplemental project instructions to do otherwise. In the past, State mapping authorities have made very few changes to these listings because cooperative funding is generally funneled through a designated agency, regardless of the derivation of the funds. It is cautioned that this practice may change in the future. The Coordination and Requirements offices confirm the preferred usage of cooperator names in the headings during contract negotiations. If there is updated information about the cooperating agency to be referenced, this information will be provided with the project information and should be used on the revised map.

In general, if a cooperative heading is used, show the State or Commonwealth in the top line and the agency name(s) on the line(s) below. For more information on cooperative headings, see section 2.3.5. For collar layout and type specifications, see the style sheets contained in appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska). For information on for sale notes, see appendix 2-I.

**(ALABAMA)**

STATE OF ALABAMA
GEOLOGICAL SURVEY OF ALABAMA

---

**(ALASKA)**

No Coop Heading

---

**(ARIZONA)**

No Coop Heading

---

**(ARKANSAS)**

STATE OF ARKANSAS
GEOLOGICAL COMMISSION
LITTLE ROCK

---

**(CALIFORNIA)**

No Coop Heading

---

**(COLORADO)**

No Coop Heading

---

**(CONNECTICUT)**

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL RESOURCES CENTER

**(DELAWARE)**

STATE OF DELAWARE
DELAWARE GEOLOGICAL SURVEY

---

**(DISTRICT OF COLUMBIA)**

DISTRICT OF COLUMBIA

---

**(FLORIDA)**

STATE OF FLORIDA

---

**(GEORGIA)**

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
GEORGIA GEOLOGIC SURVEY

---

**(HAWAII)**

No Coop Heading

---

**(IDAHO)**

No Coop Heading

---

**(ILLINOIS)**

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DEPARTMENT OF NATURAL RESOURCES
SPRINGFIELD, ILLINOIS

**(INDIANA)**

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
INDIANAPOLIS, INDIANA

---

**(IOWA)**

STATE OF IOWA
IOWA GEOLOGICAL SURVEY

---

**(KANSAS)**

STATE OF KANSAS

---

**(KENTUCKY)**

STATE OF KENTUCKY
KENTUCKY GEOLOGICAL SURVEY
UNIVERSITY OF KENTUCKY

---

**(LOUISIANA)**

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

---

**(MAINE)**

STATE OF MAINE
PUBLIC UTILITIES COMMISSION

**(MARYLAND)**

STATE OF MARYLAND
MARYLAND GEOLOGICAL SURVEY

---

**(MASSACHUSETTS)**

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

---

**(MICHIGAN)**

STATE OF MICHIGAN

---

**(MINNESOTA)**

STATE OF MINNESOTA

---

**(MISSISSIPPI)**

STATE OF MISSISSIPPI
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF GEOLOGY

---

**(MISSOURI)**

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

---

**(MONTANA)**

No Coop Heading

**(NEBRASKA)**

No Coop Heading

---

**(NEVADA)**

No Coop Heading

---

**(NEW HAMPSHIRE)**

STATE OF NEW HAMPSHIRE

---

**(NEW JERSEY)**

STATE OF NEW JERSEY

---

**(NEW MEXICO)**

No Coop Heading

---

**(NEW YORK)**

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

---

**(NORTH CAROLINA)**

STATE OF NORTH CAROLINA
NORTH CAROLINA GEOLOGICAL SURVEY
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

**(NORTH DAKOTA)**

STATE OF NORTH DAKOTA
WATER COMMISSION

---

**(OHIO)**

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGIC SURVEY

---

**(OKLAHOMA)**

STATE OF OKLAHOMA

---

**(OREGON)**

No Coop Heading

---

**(PENNSYLVANIA)**

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
BUREAU OF TOPOGRAPHIC AND GEOLOGIC SURVEY

---

**(PUERTO RICO)**

COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
DENNIS W. HERNANDEZ, SECRETARY

**(RHODE ISLAND)**

STATE OF RHODE ISLAND

---

**(SOUTH CAROLINA)**

STATE OF SOUTH CAROLINA

---

**(SOUTH DAKOTA)**

STATE OF SOUTH DAKOTA
GEOLOGICAL SURVEY
DEPARTMENT OF HIGHWAYS

---

**(TENNESSEE)**

STATE OF TENNESSEE
DEPARTMENT OF CONSERVATION
DIVISION OF GEOLOGY

---

**(TENNESSEE VALLEY AUTHORITY)**

UNITED STATES
TENNESSEE VALLEY AUTHORITY
MAPS AND SURVEYS DEPARTMENT

---

**(TEXAS)**

No Coop Heading

---

**(UTAH)**

No Coop Heading

**(VERMONT)**

STATE OF VERMONT
VERMONT AGENCY OF ENVIRONMENTAL CONSERVATION

---

**(VIRGIN ISLANDS)**

VIRGIN ISLANDS OF THE UNITED STATES
OFFICE OF THE GOVERNOR

---

**(VIRGINIA)**

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
DEPARTMENT OF MINES, MINERALS, AND ENERGY

---

**(WASHINGTON)**

No Coop Heading

---

**(WEST VIRGINIA)**

STATE OF WEST VIRGINIA
REPRESENTED BY THE
STATE OF WEST VIRGINIA GEOLOGICAL AND ECONOMIC SURVEY
AND OTHER STATE AGENCIES

---

**(WISCONSIN)**

STATE OF WISCONSIN
DIVISION OF HIGHWAYS
GEOLOGICAL AND NATURAL HISTORY SURVEY

**(WYOMING)**

No Coop Heading

# APPENDIX 2-I

## For Sale Notes

The following standard for sale note is shown on all maps:

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

Amend the for sale note when a State or Federal cooperating agency maintains a distribution center for maps falling within its sphere of interest and requests mention. Reference the cooperating agency by name and address (city, State, and ZIP code). Show the State for sale note regardless of the funding of individual maps (see the exception for the Tennessee Valley Authority for sale note in this appendix and in section 2.3.26.2). If the quadrangle lies within two or more States, show the for sale note for the State with the largest area first, followed by the other States listed in descending order by area within the quadrangle. Add the word "AND" in front of the last for sale note.

Default for sale notes that have been established over the years are listed in this appendix. These are to be used unless there are supplemental project instructions to do otherwise. In the past, State sales agencies have remained very stable as a convenience to map customers. However, it is cautioned that changes could occur in the future. The State mapping authorities have contacted the Coordination and Requirements offices in the past when changes were necessary. Since changes are so infrequent, the Coordination and Requirements offices are not required to confirm the State sales offices during contract negotiations.

If the standard for sale note is used alone, it is listed as the only for sale note in this appendix. If a State or Federal agency has a sales agency that has requested mention, it has been appended to the standard for sale note. For more information on the for sale notes, see section 2.3.15. For collar layout and type specifications, see the style sheets contained in appendixes 2-B (1:24,000- & 1:25,000-scale), 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale), and 2-D (Alaska). For information on cooperative headings, see appendix 2-H.

**(ALABAMA)**

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

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**(ALASKA)**

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

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**(ARIZONA)**

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

---

**(ARKANSAS)**

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND ARKANSAS GEOLOGICAL COMMISSION, LITTLE ROCK, ARKANSAS 72204

---

**(CALIFORNIA)**

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**(COLORADO)**

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

---

**(CONNECTICUT)**

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

**(DELAWARE)**

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

---

**(DISTRICT OF COLUMBIA)**

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

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**(FLORIDA)**

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

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**(GEORGIA)**

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

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**(HAWAII)**

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

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**(IDAHO)**

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

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**(ILLINOIS)**

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

**(INDIANA)**

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND INDIANA DEPARTMENT OF NATURAL RESOURCES, INDIANAPOLIS, INDIANA 46204

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**(IOWA)**

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND IOWA GEOLOGICAL SURVEY, IOWA CITY, IOWA 52240

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**(KANSAS)**

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND KANSAS GEOLOGICAL SURVEY, LAWRENCE, KANSAS 66044

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**(KENTUCKY)**

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
KENTUCKY GEOLOGICAL SURVEY, LEXINGTON, KENTUCKY 40506
AND KENTUCKY DEPARTMENT OF COMMERCE, FRANKFORT, KENTUCKY 40601

---

**(LOUISIANA)**

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT, BATON ROUGE, LOUISIANA 70804

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**(MAINE)**

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

**(MARYLAND)**

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

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**(MASSACHUSETTS)**

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

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**(MICHIGAN)**

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND GEOLOGICAL SURVEY DIVISION
MICHIGAN DEPARTMENT OF NATURAL RESOURCES, LANSING, MICHIGAN 48909

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**(MINNESOTA)**

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

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**(MISSISSIPPI)**

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

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**(MISSOURI)**

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND DIVISION OF GEOLOGY AND LAND SURVEY
MISSOURI DEPARTMENT OF NATURAL RESOURCES, ROLLA, MISSOURI 65401

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**(MONTANA)**

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

**(NEBRASKA)**

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

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**(NEVADA)**

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

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**(NEW HAMPSHIRE)**

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

---

**(NEW JERSEY)**

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

---

**(NEW MEXICO)**

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

---

**(NEW YORK)**

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

---

**(NORTH CAROLINA)**

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

**(NORTH DAKOTA)**

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND NORTH DAKOTA GEOLOGICAL SURVEY, BISMARCK, NORTH DAKOTA 58505

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**(OHIO)**

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

---

**(OKLAHOMA)**

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND OKLAHOMA GEOLOGICAL SURVEY, NORMAN, OKLAHOMA 73069

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**(OREGON)**

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

---

**(PENNSYLVANIA)**

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

---

**(PUERTO RICO)**

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS, SAN JUAN, PR 00910

---

**(RHODE ISLAND)**

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

**(SOUTH CAROLINA)**

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

---

**(SOUTH DAKOTA)**

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

---

**(TENNESSEE)**

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND TENNESSEE DEPARTMENT OF CONSERVATION, DIVISION OF GEOLOGY,
NASHVILLE, TENNESSEE 37243

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**(TENNESSEE VALLEY AUTHORITY)**

Note: The following note is appended to the last for sale note only if the TVA contributes at least **50 pecent** of the revision funding:

AND U.S. TENNESSEE VALLEY AUTHORITY, CHATTANOOGA, TENNESSEE 37402

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**(TEXAS)**

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

---

**(UTAH)**

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

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**(VERMONT)**

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

**(VIRGIN ISLANDS)**

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

---

**(VIRGINIA)**

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND VIRGINIA DIVISION OF MINERAL RESOURCES, CHARLOTTESVILLE, VIRGINIA 22903

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**(WASHINGTON)**

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

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**(WEST VIRGINIA)**

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

---

**(WISCONSIN)**

FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND WISCONSIN GEOLOGICAL AND NATURAL HISTORY SURVEY, MADISON, WISCONSIN 53706

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**(WYOMING)**

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

# APPENDIX 2-J

## Portrayal of Areas in Mexico

Add or revise Mexican feature content on primary series maps that straddle the border between the United States and Mexico if newer information than the previous edition of the map is available from the Instituto Nacional de Estadística, Geografía e Informática (INEGI). The Mexican information may be furnished in digital vector or analog graphic format. Plot the Mexican feature content from INEGI digital vector data if newer digital data are available to completely cover the Mexican part of the quadrangle. Copy the analog source material and change the scale, if necessary, to complete the Mexican part of the map. Use INEGI analog source material to complete the maps only when INEGI digital vector data are not available.

Digital Vector Data

Software developed as part of a border pilot project will translate INEGI feature codes to USGS symbology. If INEGI collects a feature type or attribute that the USGS does not collect, **suppress** the INEGI feature type or attribute.

To complete the map, clip the digital data derived from INEGI 15-minute x 20-minute 1:50,000-scale maps to the neatline. Mexican feature content should be **excluded** from the digital line graph, regardless of whether or not it is shown on the revised map.

Align transportation features between the United States and Mexico when the dimensionality of the features is the same on each side of the border. Align hydrography features of the U.S. and Mexican parts when the dimensionality is the same on each side of the border and the dates of the USGS and INEGI sources are similar. The border region is semiarid or arid, and watercourses may change; consequently, U.S. and Mexican hydrography features may not align if the USGS and INEGI sources were collected at different times. Do not edge match other USGS and INEGI features. Do not convert INEGI contour intervals or contour units to match USGS intervals or units.

Plot Mexican feature content using standard USGS symbology (see section 2.1.1 Symbology). Combine the Mexican content with the U.S. content on the printing composite negatives to be printed in the five standard colors.

Analog Source Material

To show Mexican content on primary series maps, obtain **unscreened** film negatives of the color separates for the INEGI 1:50,000-scale maps. Photomechanically enlarge the negatives to the 7.5-minute x 7.5-minute neatline to produce emulsion-up, left-reading negatives. Do not edit the Mexican content. Combine the Mexican and USGS content on the printing negatives. The map should be prepared to be printed in the five standard colors, using standard USGS symbology on the U.S. part.

Typography

The boundary between the U.S. and Mexico should be labeled as follows:

**UNITED STATES OF AMERICA**
**ESTADOS UNIDOS MEXICANOS**

The names of the United States and Mexican States should be shown along the international boundary (see figure 2F-6).

When the Mexican content is obtained from INEGI, show the local Mexican feature names and labels in Spanish according to INEGI usage, using current type specifications shown on the style sheets contained in appendixes 2-B (1:24,000- & 1:25,000-scale) and 2-C (USGS & USDA Forest Service single edition 1:24,000- & 1:25,000-scale).

Label the river dividing the two countries "Rio Grande" on the U.S. side of the border and "Rio Bravo" on the Mexican side. Use both the Spanish name approved by INEGI and the English name approved by the Board on Geographic Names or supported by the Geographic Names Information System for other transborder features.

# APPENDIX 2-K

## Minor Revision Procedures

Minor revisions are intended to replace the existing stock of primary series maps with new editions containing updated collar content and selected map detail.

The target stock level for minor revisions is based on the estimated number of maps required for a 5-year supply. This target stock level may change according to a more complex schema. The target stock level for USGS & USDA-Forest Service single edition maps is a 7-year supply. The existing map stock is destroyed and new automatic sendings (maps sent to libraries and ESIC offices) are made. Print run quantities are determined by adding the target stock level to the automatic sendings. The print run quantity figure is supplied by the mapping center submitting the map for printing.

The following changes are made to the map separates, if necessary. See the back of this appendix for changes to maps within TVA areas. When necessary, refer to other parts of this standard for more specific information:

- Names information: update names to reflect BGN decisions from GNIS and to correct previous errors from the correction file. Reposition or add boundary labels or area names associated with boundaries.

- Delete railroad names.

- Change “JEEP TRAIL” labels to “4WD”.

- Correction file: correct errors that can be readily verified.

- Boundaries: update all boundaries, except for corporate limits. Update corporate limit boundaries only when there is a source readily available, or the time required to procure the information will not delay the minor revision process. Update the Public Land Survey System to the extent required to plot the boundary information. Eliminate the enhancement tint that was previously shown on the boundaries of lands administered by the National Park Service.

- UTM grid: show the full-line grid on all maps, except USGS & USDA-Forest Service single editions. Add the 100,000-meter U.S. National Grid designators in the margin, when necessary. Show UTM grid ticks on

single edition maps.

- Show dashed corner ticks for NAD 83 based on actual shift values if ticks do not exist or if existing ticks are not within .02 inches of the correct position.

- Show the current horizontal coordinate reference system notes.

  Note: The Alaskan islands of St. Lawrence, St. Matthew, St. Paul, or St. George each have their own datum and they should be referenced in lieu of NAD 27. For Hawaii, reference the Old Hawaiian Datum in place of NAD 27; for Puerto Rico, reference the 1940 Puerto Rico datum. NADCON supports conversion from these island datums to NAD 83.

- Retain State cooperator headings as shown on the previous edition unless they have become obsolete because of administrative name changes. In such cases, update the heading. Otherwise retain the cooperator heading as is. Retain Federal agency headings as previously shown. Add a State cooperative heading and logo (if required) when the minor revision is cooperatively funded.

- Delete the cooperative credit note below the "Produced by" note in the credit legend. Do not account for cooperative credit in the photorevision notes on the previously published map in new map legends.

- Delete the control note unless unverified control obtained from another agency is shown.

- Delete the supersedes note.

- Show the Natural Resources Canada copyright note, if appropriate.

- Delete the built-up area tint note.

- Delete the fence line note.

- Add the inholdings note, if appropriate.

- Inspection/revision notes:

  - Pattern the source notes of maps for which the latest mapping has been verified in the field (as indicated by a "field checked" or "planetable surveys" with a corresponding date) after the following:

    **Derived from imagery taken (year) and other sources. Photoinspected using imagery taken (year); no major culture or drainage changes observed. PLSS and survey control current as of (most recent field check date). Boundaries (if appropriate, add "other than corporate") verified (or "revised") (year the boundaries were verified or revised)**

  - Pattern the source notes of maps for which the latest mapping has <u>not</u> been verified in the field (photorevision, limited update, or basic revision) after the following:

    **Topography compiled (year). Planimetry derived from imagery taken (year) and other sources. Photoinspected using imagery taken (year); no major culture or drainage changes observed. PLSS and survey control current as of (most recent field check date). Boundaries (if appropriate, add "other than corporate") verified (or "revised") (year the boundaries were verified or revised)**

  - Pattern the source notes and map legends of provisional maps that have <u>not</u> been revised by photorevision methods after the following:

    **PRODUCED BY THE UNITED STATES GEOLOGICAL SURVEY**
    **DERIVED FROM IMAGERY TAKEN . . . . . 1982**
    **PHOTOINSPECTED USING IMAGERY TAKEN . . . . . 1999**
    **NO MAJOR CULTURE OR DRAINAGE CHANGES OBSERVED**
    **PLSS AND SURVEY CONTROL CURRENT AS OF . . . . . 1983**
    **BOUNDARIES VERIFIED . . . . . 2001**
    **PROJECTION . . . . . TRANSVERSE MERCATOR**
    **1 000-METER UNIVERSAL TRANSVERSE MERCATOR GRID . . . . . ZONE 16S**
    **10 000-FOOT STATE GRID TICKS . . . . . ALABAMA, WEST ZONE**
    **UTM GRID DECLINATION . . . . . 0° 25′ WEST**
    **2001 MAGNETIC NORTH DECLINATION . . . . . 2° 30′ EAST**
    **VERTICAL DATUM . . . . . NATIONAL GEODETIC VERTICAL DATUM OF 1929**
    **HORIZONTAL DATUM . . . . . NORTH AMERICAN DATUM OF 1927 (NAD 27)**
    **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**
    **There may be private inholdings within the boundaries of the Federal or State reservations shown on this map**

- Pattern the source notes and map legends of provisional maps that have been revised by photorevision methods after the following:

**PRODUCED BY THE UNITED STATES GEOLOGICAL SURVEY**
**TOPOGRAPHY COMPILED FROM IMAGERY TAKEN . . . . . 1982**
**PLANIMETRY DERIVED FROM IMAGERY TAKEN . . . . . 1989**
**PHOTOINSPECTED USING IMAGERY TAKEN . . . . . 1999**
**NO MAJOR CULTURE OR DRAINAGE CHANGES OBSERVED**
**PLSS AND SURVEY CONTROL CURRENT AS OF . . . . . 1983**
**BOUNDARIES VERIFIED . . . . . 2001**
**PROJECTION . . . . . TRANSVERSE MERCATOR**
**1 000-METER UNIVERSAL TRANSVERSE MERCATOR GRID . . . . . ZONE 16S**
**10 000-FOOT STATE GRID TICKS . . . . . ALABAMA, WEST ZONE**
**UTM GRID DECLINATION . . . . . 0° 25′ WEST**
**2001 MAGNETIC NORTH DECLINATION . . . . . 2° 30′ EAST**
**VERTICAL DATUM . . . . . NATIONAL GEODETIC VERTICAL DATUM OF 1929**
**HORIZONTAL DATUM . . . . . NORTH AMERICAN DATUM OF 1927 (NAD 27)**
**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**
**There may be private inholdings within the boundaries of the Federal or State reservations shown on this map**
**Information shown in purple may not meet USGS content standards and may conflict with previously mapped contours**

The "derived from imagery" date is the year of the image source of the base map compilation when there were no subsequent revisions.

The "topography compiled" date is the year of the image source or the planetable survey of the topographic compilation.

The "planimetry derived from imagery" date is the year of the most recent revision imagery.

The "most recent field check date" is historical data that may be obtained from the Map Catalog data base maintained by the USGS or the previously published map.

Omit any reference to the PLSS if there is no PLSS on the map.

The dates in the source notes for provisional maps are derived using the same methods as for finished maps.

On provisional map notes, add "OTHER THAN CORPORATE" between BOUNDARIES

and VERIFIED and change VERIFIED to "REVISED", when appropriate.

- Add the following note to the black lettering plate below the map legend, if there is purple symbology on maps that have been revised using analog photorevision methods:

  **Information shown in purple may not meet USGS content standards and may conflict with previously mapped contours**

- Declination diagram: change to current values and style.

- Add the U.S. National Grid reference box.

- Add or move the recycle logo.

- Show the appropriate bar scale.

- Correct the vertical datum note.

- NAVD 88 conversion note: add, if the conversion factor is ≥ 0.5 foot/meter.

- Show the appropriate elevation conversion note.

- Show the current for sale note.

- Show the current road classification legend.

- If the quadrangle is in more than one State, then show the location diagram for the State containing the feature for which the map is named. If the map name is a 15-minute directional name, show the location diagram for the State with the largest area on the map. Show the TVA location diagram for maps in TVA areas.

- If the quadrangle is in more than one State, then show the State name containing the feature for which the map is named in the first position in the map title blocks. If the map name is a 15-minute directional

name, show the State with the largest area in the first position in the map title blocks.

- Change the State abbreviations to the current standard two-letter form.

- If the quadrangle name has changed at any time, append a line to show the former name in parentheses below the series note in the upper right title block and below the quadrangle name in the lower right title block, e.g., "(FORMERLY SABLE)".

- Adjoining quadrangles diagram: add to the bottom margin of the map and delete the side sheet names along the projection.

- Omit the map reference code, except on USGS & USDA-Forest Service single edition maps.

- Omit the quarter quadrangle note.

- Map date: change the map date to the year of the primary source used to photoinspect the map.

- Change the "DMA" reference number to "NIMA".

- Remove special printing notes, such as "Contours and Woodland Omitted", from the map margins.

- Add the International Standard Book Number (ISBN) and European Article Number (EAN) symbology bar code.

- Delete all dots and stars preceding the imprint note; replace the GPO imprint note with the current USGS imprint note; change the imprint date.

- Remove the USGS Centennial logos or any of the various State Centennial or Sesquicentennial logos from the map margins.

- Add the USGS visual identity.

- Update the highway shields, where possible.

- Delete the road destinations.

Maps Within Tennessee Valley Authority (TVA) Area

The following changes apply specifically to maps within TVA areas:

- For sale note: omit the TVA for sale note unless the TVA cooperatively funds the minor revision.

- Location diagram: omit the TVA location diagram unless the TVA cooperatively funds the minor revision.

- Stock numbers: retain the TVA stock numbers in the upper right title block, below the southeast corner longitude value, and after the quadrangle names in the adjoining quadrangles diagram, regardless of funding.

- Cooperative heading: omit the TVA cooperative heading unless the TVA cooperatively funds the minor revision.

- "Produced by" note: change the note to the following, regardless of how it was worded on the previous edition:

  **Produced by the United States Geological Survey**

- Control note: omit the previously published control note. If the TVA established control on the map, add the following note:

  **Supplemental control by Tennessee Valley Authority**

  If unverified control from some other agency is shown, reference that agency in the control note, as well.

- TVA inspection/revision notes: acknowledge TVA in the data currentness notes for work they have done and for any field checking they have performed. Use the source notes on the previously published maps as a guide. In the tables that follow, x's indicate which agency did the work. The form of the notes (other than the TVA field checked note) and the way the dates are derived are the same as for non-TVA maps:

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | X | X | | | |
| TVA | | | | | |

**Derived from imagery taken 1975 and other sources. Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1976 Boundaries[2] verified[3] 2001**

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | X | X | | | X |
| TVA | | | | | |

**Topography compiled 1964. Planimetry derived from imagery taken 1981 and other sources. Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1965. Boundaries[2] verified[3] 2001**

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | X | X | | | |
| TVA | | | | | X |

**Topography compiled 1964. Planimetry derived by TVA from imagery taken 1981 and other sources. Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1965. Boundaries[2] verified[3] 2001**

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | X | X | X | X | |
| TVA | | | | | |

**Derived from imagery taken 1977 and other sources. Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1978 Boundaries[2] verified[3] 2001**

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | X | X | X | X | X |
| TVA | | | | | |

**Topography compiled 1977. Planimetry derived from imagery taken 1985 and other sources. Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1978. Boundaries[2] verified[3] 2001**

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | X | X | X | X | |
| TVA | | | | | X |

**Topography compiled 1977. Planimetry derived by TVA from imagery taken 1981 and other sources. Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1978. Boundaries[2] verified[3] 2001**

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | X | | | | |
| TVA | | X | | | |

**Derived from imagery taken 1964 and other sources. Field checked by TVA 1965. Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1965. Boundaries[2] verified[3] 2001**

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | X | | | | X |
| TVA | | X | | | |

**Topography compiled 1964. Field checked by TVA 1965. Planimetry derived from imagery taken 1981 and other sources. Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1965 Boundaries[2] verified[3] 2001**

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | X | | | | |
| TVA | | X | | | X |
| **Topography compiled 1964. Field checked by TVA 1965. Planimetry derived by TVA from imagery taken 1981 and other sources Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1965. Boundaries[2] verified[3] 2001** | | | | | |

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | X | | | | |
| TVA | X | X | | | |
| **Derived in part by TVA from imagery taken 1964. Field checked by TVA 1965. Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1965. Boundaries[2] verified[3] 2001** | | | | | |

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | X | | | | X |
| TVA | X | X | | | |
| **Topography compiled in part by TVA 1964. Field checked by TVA 1965. Planimetry derived from imagery taken 1981 and other sources. Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1965. Boundaries[2] verified[3] 2001** | | | | | |

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | X | | | | |
| TVA | X | X | | | X |
| **Topography compiled in part by TVA 1964. Field checked by TVA 1965. Planimetry derived by TVA from imagery taken 1981 and other sources. Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1965. Boundaries[2] verified[3] 2001** | | | | | |

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | | | | | |
| TVA | X | X | | | |
| **Derived by TVA from imagery taken 1964 and other sources. Field checked by TVA 1965. Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1965. Boundaries[2] verified[3] 2001** | | | | | |

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | | | | | X |
| TVA | X | X | | | |
| **Topography compiled by TVA 1964. Field checked by TVA 1965 Planimetry derived from imagery taken 1981 and other sources Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1965. Boundaries[2] verified[3] 2001** | | | | | |

| | Compiled | Field Check | Revised | Revision Field Check | Photorevision |
|---|---|---|---|---|---|
| USGS | | | | | |
| TVA | X | X | | | X |
| **Topography compiled by TVA 1964. Field checked by TVA 1965 Planimetry derived by TVA from imagery taken 1981 and other sources. Photoinspected using imagery taken 2000; no major culture or drainage changes observed. PLSS[1] and survey control current as of 1965. Boundaries[2] verified[3] 2001** | | | | | |

[1]Omit any reference to PLSS if there is not PLSS on the map.

[2]If appropriate, add "other than corporate".

[3]Or "revised".