

Part 2

Hydrography

Standards for 1:24,000-Scale Digital Line Graphs-3 Core

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2. HYDROGRAPHY--MAJOR CODE 050

Flowing and standing water and manmade features directly related to hydrography are collected in this category.

2.1 General Principles

Coding Principles

The major/minor attribute code describing the element type will always be encoded in the first position.

The DLG-3 Core codes apply only to topographic editions. If the occurrence of a feature applies only to a topographic-bathymetric edition, do not collect it as a DLG-3 Core element.

The term "water body" is used to refer to any hydrographic element collected as an area, as well as any areal hydrographic element collected as a degenerate line. Use is not limited to a lake or a pond.

Where one water body joins another water body that is attributed differently, they are separated from one another by closure lines.

If a hydrographic element is collected as a degenerate line, no shoreline code is added.

Do not collect islands that are ≤ 0.03 inch (60 ft) along the shortest axis.

Element Classification and Delineation

In the real world, hydrographic features vary considerably. The treatment of these features on USGS maps also varies considerably, making determination of the appropriate code difficult in some cases. In many cases, symbol references provide only a general idea of what a feature may look like. It is necessary, when collecting hydrographic elements, to pay attention to such things as shape or form, context within the map, names, labels, and marginal information, some or all of which may be important aids to classification. Generally, use the code that best describes the feature, even if the symbolization of that feature varies from the symbolization that is referenced.

Lakes are defined as standing bodies of water with predominantly natural shorelines. Reservoirs are constructed basins formed to contain water or other liquids for various purposes. The names and labels of these elements do not always convey the proper classification, and care must be taken not to use names and labels alone in determining how to classify them. Many elements that are known as "Reservoirs" or labeled on the graphic as "Reservoir" may in fact be lakes or ponds. As a general rule, if a water body

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has a regular geometric shape or if other information indicates that it is contained by a constructed basin, it is a reservoir. If it does not appear to be contained by a constructed basin, it is a lake or pond.

The code for a reservoir (050 0101) is used to identify all constructed basins. Swimming pools and nonwater reservoirs are not collected.

Where a stream or river has been dammed, use the following guidelines in determining whether to collect the water body above the dam as stream or lake.

- o Collect the water body as a stream if it retains its river-like appearance and if the width of the water body above the dam is similar to the width of the water body below the dam. Many rivers have been dammed to maintain water levels for navigation or for flood control, in which case there is commonly a series of dams on the river.
- o Collect the water body as a lake if it is actually an impounded water body created by the dam and if the width of the water body above the dam is significantly greater than the width of the water body below the dam. Submerged river channels are not collected within impounded lakes.

To determine whether a given feature should be collected as a stream or as a ditch or canal, use the appearance and location of the feature. Do not rely only on names and labels, because in some regions of the country the term ditch is used as a synonym for creek. Ditches and canals have regular geometric shapes and are cut through the land to provide irrigation or drainage and to allow navigation around obstacles or between water bodies. If the contours have been turned upstream and dropped at a hydrographic element or if the element parallels a contour and has little or no gradient, collect the element as a ditch or canal. Streams are naturally occurring, do not have a regular geometric form, and normally have a gradient and flow downslope. Streams that have been relocated or altered for purposes other than drainage or irrigation are considered to be streams and not ditches. In some cases, only a part of a stream has been realigned, and the purpose of that realignment cannot be determined from the map. Unless the realigned part is identified by a ditch label or a change in name to a named ditch, collect it as a stream. Streams that have been channelized or canalized for navigation (the Ohio and Mississippi Rivers, for example) are collected as streams and not canals, even though a set of locks and dams may have transformed parts of the river from a free-flowing water body to a series of slack water pools. If these guidelines do not clearly identify an element as a ditch or canal, collect it as a stream.

Hydrographic features form networks where large and small rivers, streams, lakes, ponds, and so on, flow in and out of each other. On the map, these networks appear as blue areas with no dividing lines. However, when digital data are collected, each part of the network must be classified as the appropriate element and assigned a code. What the feature is and where it begins and ends is not always clear. The following guidelines can be used to help make these determinations:

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- o There are cases where it is difficult to classify the "bumps" or "fingers" of water bodies. Where a single-line stream appears to widen as it enters a double-line stream or lake, a judgement must be made as to whether the widened area is part of the double-line stream or lake (a "finger" in the larger water body that extends to the single-line stream) or whether the single-line stream has widened to a double-line stream, which then enters the larger water body (double-line stream or lake).

As a general rule, lakes tend to have many "fingers," and most of the time these are considered to be part of the lake. A single-line stream usually enters a lake without becoming a double-line stream. However, "fingers" on a double-line stream are usually part of the incoming stream. In both cases, the length and width relationship of the incoming water body must be taken into consideration. If it is longer than it is wide, or has a narrow neck, it may be considered as a separate incoming element from the single-line stream.

- o A single-line stream may flow into something other than a double-line stream, which then connects to the larger water body. Determine the element based on shape, size, and positioning of the feature. For example, a single-line stream may flow into a partial oxbow (lake or pond) that connects to a double-line stream. Each of these three features is collected as an individual element.
- o Where a "finger" occurs in a water body, whether there is an entering stream or not, the overall size and the size of the opening neck are criteria that can be used to decide if it is part of the larger water body or not. Generally, the larger the size of the "finger" and the more narrow the neck, the more likely it is to be a separate, and possibly different, element.
- o Whether a widened part of a single-line stream is collected as a small lake or as a double-line part of the single-line stream, is dependent on its relative width, shape (linearity versus roundness), and name. Use judgment and common sense in determining whether you have a lake or a stream.
- o The "fingers" on impounded water bodies are considered part of the impounded water body up to the point where the entering stream returns to its normal channel. The normal channel of a stream can be recognized by its fairly consistent width, or it may be indicated on the map by the previous streambed or contours.
- o Name is not always an indicator of the element classification and should be used only in conjunction with other criteria.
- o In all cases, use your knowledge of what these features look like on the ground, along with your best judgment and common sense. Recognize that there may not be a single "right" way of delineating and coding connecting water bodies; several different solutions may all be equally "correct."

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The classification of some hydrographic elements added during photorevision cannot be determined solely on symbology, because earthen and manmade shorelines are both shown in purple. Classification of these elements must, therefore, be based on context. If a photorevised shoreline has a regular, geometric shape or a similar nearby shoreline is shown as manmade, collect the shoreline as manmade. If in doubt, collect the shoreline as earthen (050 0200). Perennial and intermittent codes are not collected.

Flow Direction

The direction of flow for surface water elements is not collected.

2.1.1 Node Attribute Codes

There are no node attribute codes.

2.1.2 Area Attribute Codes

In a structured file, it is not necessary to explicitly code the line around an area unless the line itself has characteristics that must be described. However, USGS maps have traditionally described characteristics of the limits of some hydrographic elements. This includes whether a shoreline is earthen (blue) or masonry (black) and whether or not it can be accurately located (solid versus dashed).

The line around a hydrographic element is usually attributed, because the characteristics of the line can vary. For example, sewage disposal ponds may have earthen shorelines (blue) or they may have masonry shorelines (black). Therefore, the line around a sewage disposal pond must always be attributed. Sometimes, however, the line around a hydrographic element is simply a symbol; it is collected as an unattributed line, and the line symbology is derived from the area code. For example, the blue, dashed lines on published maps around channels in water areas (050 0419) show the extent of the hydrographic element but do not describe any characteristics of the line; the line is, therefore, unattributed. Please note that although in the past aquaculture ponds, filtration ponds, and industrial water impoundments have been shown with either earthen shorelines (blue) or masonry shorelines (black), the distinction is no longer considered important, and in the future these elements will always be outlined in black.

Where the outline of a water body is attributed, the entire outline is attributed. Although the shoreline may be interrupted by a manmade structure, the line of contact between a water area and a land area is always also collected as some type of shoreline.

Appendix 2.A provides unambiguous information on the attribution of the outlines of hydrographic elements collected as areas. In general, if the outline of the element is always shown on the map with the same symbology, the line is unattributed because it

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is in essence a symbol. Follow these guidelines even if an individual element on a map is outlined using a nonstandard symbol. In some cases, the outlines of two hydrographic elements may coincide, so the instructions for coding of the outlines of both elements must be considered. Also, if part of the outline of an area is formed by another hydrographic element, that part of the outline is collected as that element.

Additional hydrographic elements can exist within a larger hydrographic element. This is most common in a bay, estuary, gulf, ocean, or sea, but can also occur in a lake, a double-line stream, or a canal. Even though the additional elements can be collected as areas, the integrity of the larger hydrographic element is not affected. All areas within a larger hydrographic element receive the code of the larger element and their own code or codes. This includes areas that are created by linear elements that close, and elements collected as areas.

The use of the common attribute codes for outside area and void area is discussed in Part 1: Data Description and Template Development.

2.1.3 Line Attribute Codes

Line attribute codes are used only where specific characteristics of a line that surrounds an area must be described. Unlike general purpose attribute codes, line attribute codes apply to elements that can only be collected as a line.

USGS maps use line symbology to distinguish between earthen shorelines (blue) and manmade shorelines (black) and to describe the accuracy of the location, definite (solid line) versus indefinite (dashed line). There are unique codes to collect these characteristics: 050 0200 for earthen definite shoreline; 050 0201 for manmade shoreline; 050 0203 for earthen indefinite shoreline.

In addition, closure lines (050 0202) are used to code lines that are not shown on the map and must be added to the digital file.

Where no specific information is required to describe characteristics of the line, an unattributed line is collected. Unattributed lines can be collected regardless of whether an area element has a symbolized perimeter or not. If the perimeter of an area is always symbolized in a particular way, the line symbol can be derived from the area element and no specific line coding is required.

A closure line is used where it is necessary to separate polygons that represent different hydrographic elements when the separation is not explicitly indicated on the graphic. For example, in order to separate a stream polygon from a lake polygon, a closure line is collected where the double-line stream enters the lake.

Closure lines between like elements are not necessary, since flow is not coded. For

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example, no closure line is collected where two sections of double-line ditch connect with one another. The banks of both sections of ditch are coded as shoreline or manmade shoreline.

Closure lines are not used to close small gaps in linear elements where the symbology has been broken on the map, although they have been used in this way in the past. In most cases, the symbology has been intentionally broken, because the feature is not visible on the Earth's surface. In particular, map editors took great care to ensure that the dash-and-dot pattern of an intermittent stream was adjusted to clearly indicate stream junctions. For example, editors made sure that intermittent streams started, and joined other streams, with the dash part of the symbol, and that the dot part of the symbol did not occur at sharp bends or other places where it might be confusing. If a gap is clearly the result of a scribing or registration error, and not an intentional break in the symbology, then the gap is ignored and the hydrographic element is collected as a continuous line through the gap.

The closure line code is not assigned to the line segment digitized across the gap created where the symbol for an underpassing element is broken back from the symbol of an overpassing element, although it has been used in this way in the past. Instead, the line segment is assigned the underpassing code (050 0617) and the code or codes of the hydrographic element.

See section 2.1.2 Area Attribute Codes for when to apply a line attribute code and when to collect an unattributed line around a specific area. See the description for closure line (050 0202) for more information on the use and placement of these lines.

2.1.4 Single-Point (Degenerate Line) Attribute Codes

There are no general principles that apply to the single-point attribute codes.

2.1.5 General Purpose Attribute Codes

Hydrographic elements that are symbolized as single line are collected as lines, whereas elements that are symbolized as double line are collected as areas.

2.1.6 Descriptive Attribute Codes

There are no general principles that apply to the descriptive attribute codes.

2.1.7 Parameter Attribute Codes

When unrevised collection is done from a graphic only, the parameter code for a

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photorevised element is applied to elements shown in purple on the published map. No other parameter attribute codes are collected. The use of the common attribute codes for photorevised elements are discussed in Part 1: Data Description and Template Development.

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2.1.8 List of Hydrography Attribute Codes

o Node Attribute Codes

There are no node attribute codes.

o Area Attribute Codes

000 0000 Outside Area

050 0101 Reservoir

050 0116 Bay, Estuary, Gulf, Ocean, or Sea

050 0120 Void Area

o Line Attribute Codes

050 0200 Shoreline

050 0201 Manmade Shoreline

050 0202 Closure Line

050 0203 Indefinite Shoreline

o Single-Point (Degenerate Line) Attribute Codes

There are no single-point attribute codes.

o General Purpose Attribute Codes

050 0412 Stream

050 0413 Braided Stream

050 0414 Ditch or Canal

050 0419 Channel

050 0420 Wash

050 0421 Lake or Pond

o Descriptive Attribute Codes

050 0602 Overpassing

050 0617 Underpassing

o Parameter Attribute Codes

050 0000 Photorevised Feature

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2.2 Attribute Coding

This section contains the DLG-3 Core hydrography attribute coding descriptions. They are listed in alphabetical order, according to the DLG-3 Core elements for which they apply.

050 0116 Bay, Estuary, Gulf, Ocean, or Sea

This code identifies a seaward area of water.

DELINEATION

The limit of a Bay, Estuary, Gulf, Ocean, or Sea is the approximate line of mean high water (the shoreline). Where a river enters the Bay, Estuary, Gulf, Ocean, or Sea, the limit is where the conformation of the land and water make the division obvious, or, if the land and water do not suggest an obvious limit, the limit is where the river reaches a width of 1 nautical mile (6,076.1 feet, or 1.15 statute miles) with no further constrictions.

DATA EXTRACTION

Capture Conditions

- Type/category of element
- Name
- Source of information

If a water body is a Bay, Gulf, Ocean, or Sea,
Or

If a water body has been identified as an Estuary by the National Wetlands Inventory,
Then capture.

Attribute Information

N/A

Representation Conditions

A Bay, Estuary, Gulf, Ocean, or Sea is always represented as an area.

Source Interpretation Guidelines

All

If a Bay, Estuary, Gulf, Ocean, or Sea is captured, the perimeter of the area is collected as a Shoreline, Manmade Shoreline, and (or) a Closure Line.

The minimum size for the collection of islands within a Bay, Estuary, Gulf, Ocean, or Sea is 0.03" (60 ft) along the shortest axis.

Graphic

N/A

Revision

Do not collect new elements. Modify existing elements to accommodate a change in the Shoreline.

050 0413 Braided Stream

This codes identifies naturally flowing water in a predominantly arid or semiarid region; the stream has frequently changing braided subchannels that expose island-like sand or gravel bars during its prevailing stage, rather than covering its bed entirely.

DELINEATION

The limit of a Braided Stream is the outer bank of the outermost channel or the outer limit of the sand or gravel stream bed, whichever extends the farthest. The upstream and downstream limits of a Braided Stream are the points where the Stream is unbraided, or insufficiently braided.

DATA EXTRACTION

Capture Conditions

- Number of subchannels
- Size

If a Braided Stream has at least five subchannels, and the area is ≥ 0.66 " (1,320 ft) along the shortest axis and ≥ 2.64 " (5,280 ft) along the longest axis,
Then capture.

Attribution Information

N/A

Representation Conditions

A Braided Stream is always represented as an area.

Source Interpretation Guidelines

All

If a Braided Stream meets the capture conditions,
Then capture both the Braided Stream and a Shoreline.

If a Braided Stream does not meet the capture conditions,
Then capture it as a Stream, if the capture conditions are met.

Graphic

N/A

Revision

Do not add new elements. Modify existing elements only if there are obvious changes in the streambed on the image.

If the image shows a lower than average water level,
Then capture the Braided Stream at the average water level by using the existing published graphic, an ancillary source, or the evidence of water marks on the image.

If the image shows a lower than average water level and the average water level cannot be determined,
Then capture the Braided Stream at the visible edge of the stream bed as it appears on the image.

If the image shows a higher than average water level,
Then capture the Braided Stream at the average water level by using the existing published graphic, or an ancillary source.

If the image shows a higher than average water level and the average water level cannot be determined,
Then capture the Braided Stream at the visible edge of the outermost stream channel or the outer limit of the sand or gravel streambed as it appears on the image.

050 0419 Channel

This code identifies a dredged channel or a named undredged channel.

DELINEATION

The limit of a Channel is the extent of the area in the water that has been dredged or designated for a particular purpose.

DATA EXTRACTION

Capture Conditions

- Type/category of element
- Source of information
- Size

If a Channel is a dredged shipping lane or a turning basin and is shown on a National Ocean Service (NOS) chart and is $\geq 0.02''$ (40 ft) along the shortest axis,

Or

If a Channel is an undredged shipping lane and is shown on an NOS chart,
Then capture.

Attribute Information

N/A

Representation Conditions

If a Channel is an undredged shipping lane,
Then represent the Channel as a line.

If a Channel is used as a dredged shipping lane or a turning basin,
Then represent the Channel as an area.

Source Interpretation Guidelines

All

If a Channel is represented as an area, the part of the perimeter that would be symbolized on a

graphic is unattributed. A Closure Line is digitized to close off any part of the area perimeter that would not be symbolized on a graphic.

This code does not apply to the course of a submerged river in an impounded water body. Old river courses inundated by an impounded water body are not collected.

Graphic

Capture all.

Revision

Do not revise. Retain existing elements.

050 0202 Closure Line

This code identifies a line segment digitized to form the closure or separation of different kinds of adjacent areal elements whose perimeters are not explicitly symbolized.

DELINEATION

The limit of a Closure Line is the shortest straight imaginary line that separates two adjacent areas distinguished by a difference in attribution.

DATA EXTRACTION

Capture Conditions

Capture all.

Attribute information

N/A

Representation Conditions

A Closure Line is always represented as a line.

Source Interpretation Guidelines

All

The limit of a Closure Line must match the limits of adjacent elements that are attributed differently and represented as areas, as described in other templates.

If a Ditch, Canal, Lake, Pond, or Stream joins or intersects another Ditch, Canal, Lake, Pond, or Stream, and if both meet capture conditions, are represented as areas, and are attributed differently, Then collect the intersection as a Closure Line.

If a Channel, Ditch, Canal, Lake, Pond, or Stream that meets capture conditions and is represented as an area joins or intersects a Bay, Estuary, Gulf, Ocean, or Sea that meets capture conditions, Then capture the intersection as a Closure Line.

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Closure Line

Graphic

N/A

Revision

N/A

050 0414 Ditch or Canal

This code identifies any manmade, open waterway used for irrigation, drainage, or transportation.

DELINEATION

The limit of a Ditch or Canal is the top of the banks of the artificial waterway.

DATA EXTRACTION

Capture Conditions

○ Size

If a Ditch or Canal is $\geq 0.005''$ (10 ft) along the shortest axis,
Then capture.

Attribute Information

The following descriptive attribute codes are used with the primary attribute code for a Ditch or Canal:

050 0602 Overpassing. The grade separation where part or all of a Ditch or Canal passes over, rather than intersects, another hydrography or transportation element.

050 0617 Underpassing. The grade separation where part or all of a Ditch or Canal passes under, rather than intersects, another hydrography element.

Representation Conditions

If a Ditch or Canal is $< 0.025''$ (50 ft) along the shortest axis,
Then represent the Ditch or Canal as a line.

If a Ditch or Canal is $\geq 0.025''$ (50 ft) along the shortest axis,
Then represent the Ditch or Canal as an area.

To accommodate variations in the shortest axis of a Ditch or Canal:

If the shortest axis of a Ditch or Canal is:

$< 0.025''$ (50 ft) but $\geq 0.01''$ (20 ft) for a distance $< 2.64''$ (5,280 ft), and is connected at both ends to a Ditch or Canal represented as an area,

Then represent the Ditch or Canal as an area.

< 0.025" (50 ft) but \geq 0.01" (20 ft) for a distance \geq 2.64" (5,280 ft), or < 0.01" (20 ft) regardless of distance, and is connected at both ends to a Ditch or Canal represented as an area,
Then represent the Ditch or Canal as a line.

\geq 0.025" (50 ft) but < 0.04" (80 ft) for a distance < 2.64" (5,280 ft), and is connected at both ends to a Ditch or Canal represented as a line,
Then represent the Ditch or Canal as a line.

\geq 0.025" (50 ft) but < 0.04" (80 ft) for a distance \geq 2.64" (5,280 ft), or \geq 0.04" (80 ft) regardless of distance, and is connected at both ends to a Ditch or Canal collected as a line,
Then represent the Ditch or Canal as an area.

Source Interpretation Guidelines

All

If a Ditch or Canal is represented as an area, the perimeter of the area is captured as a Shoreline, Manmade Shoreline, Indefinite Shoreline, or Closure Line.

If a Ditch or Canal that meets the capture conditions crosses but does not intersect another element that meets the capture conditions,
Then capture the Ditch or Canal and add the Overpassing or Underpassing code to define the relationship between the Ditch or Canal and the element over or under which it passes.

Do not use the Underpassing code if a Ditch or Canal passes under a transportation element.

Do not capture rivers that have been channelized to control flooding or erosion, or to maintain flow for navigation as a Ditch or Canal. See Stream. Capture as a Ditch or Canal only those inland navigation waterways that are cut through land to bypass outcrops or rapids, or to connect two bodies of water.

If it is not obvious that an element is a Ditch or Canal,
Then capture it as a Stream, if the capture conditions are met.

Do not capture ditches within a cranberry bog.

Graphic

Capture all, except ditches within cranberry bog.

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Ditch or Canal

Revision

N/A

050 0203 Indefinite Shoreline

This code identifies a natural line of contact between an inland body of water and the land that cannot be confidently positioned within 0.02", at map scale, of the true ground position.

DELINEATION

The limit of an Indefinite Shoreline is the estimated line of contact between water and land.

DATA EXTRACTION

Capture Conditions

- Relationship to other elements

If an Indefinite Shoreline is associated with a Ditch or Canal, Lake or Pond, or a Stream ≥ 0.025 " along the shortest axis,
Then capture.

Attribute Information

N/A

Representation Conditions

An Indefinite Shoreline is always represented as a line.

Source Interpretation Guidelines

All

If an Indefinite Shoreline is captured,
Then do not capture a Shoreline or a Manmade Shoreline.

If an Indefinite Shoreline meets capture conditions,
Then capture both the Indefinite Shoreline and the element with which it is associated.

Graphic

On 1:24,000-scale maps compiled using older Part 6 symbology, the same symbol that is now

used for an Indefinite Shoreline was used for both indefinite shorelines and the shorelines of intermittent water bodies. Apply this code to the indefinite perimeter of water bodies shown on published maps with perennial water fill. Do not apply the code to the shorelines of water bodies shown on published maps with intermittent water fill.

Revision

Collect a new Indefinite Shoreline if a new Ditch or Canal, Lake or Pond, or Stream is collected and represented as an area, and the line of contact between the land and water cannot be accurately ascertained.

Modify existing Indefinite Shorelines on inland water bodies only if there are obvious changes to the perimeter and the line of contact between the land and water cannot be accurately ascertained.

050 0421 Lake or Pond

This code identifies a standing body of water with a predominantly natural shoreline.

DELINEATION

The limit of a Lake or Pond where a Stream enters or leaves is determined by the conformation of the land.

The limit of a naturally formed Lake or Pond is the position of the Shoreline when the water is at the stage that prevails for the greater part of the year, or, if this limit cannot be determined, the visible edge of the water body.

The limit of an artificially formed Lake or Pond is the position of the Shoreline when the water is at the stage that prevails for the greater part of the year, or, if this limit cannot be determined, the limits defined by the spillway or the visible edge of the water body.

DATA EXTRACTION

Capture Conditions

- Location
- Size

If a Lake or Pond is in an arid area,

Or

If a Lake or Pond is not in an arid area, and is $\geq 0.05''$ (100 ft) along the shortest axis,
Then capture.

Attribute Information

N/A

Representation Conditions

If a Lake or Pond is $< 0.05''$ (100 ft) along the shortest axis,
Then represent the Lake or Pond as a degenerate line.

If a Lake or Pond is $\geq 0.05''$ (100 ft) along the shortest axis,
Then represent the Lake or Pond as an area.

Source Interpretation Guidelines

All

If a Lake or Pond is represented as an area, the perimeter of the area is collected as a Shoreline, Indefinite Shoreline, Manmade Shoreline, or Closure Line.

Do not capture dry lakes as a Lake or Pond. Dry lakes are not collected.

Refer to the element definition to decide how to categorize a given element instance. Do not use the proper name of the element as a guide. Many elements that are known as "Reservoirs" or labeled on the graphic as "Reservoir" will be captured as Lakes or Ponds. Elements that are labeled "Stock Tanks" on the graphic may be Reservoirs, or Lakes or Ponds, depending on their form. As a general rule, if a body of water has a geometric shape or if other information indicates that it is contained by a constructed basin, capture it as a Reservoir. If it does not appear to be contained by a constructed basin, capture it as a Lake or Pond.

The minimum size for islands within a Lake or Pond is 0.03" (60 ft) along the shortest axis.

Graphic

N/A

Revision

If the image shows a lower than average water level,
Then capture the Lake or Pond at a normal pool or average water level by using the existing published graphic, an ancillary source, or evidence of water marks on the image.

If the image shows a lower than average water level and the average water elevation or normal pool elevation cannot be determined,
Then capture the visible edge of the Lake or Pond as it appears on the image.

If the image shows a higher than average water level,
Then capture the Lake or Pond at a normal pool or average water level by using the existing published graphic or an ancillary source.

If the image shows a higher than average water level and the average water elevation or normal pool elevation cannot be determined,
Then capture the visible edge of the Lake or Pond as it appears on the image.

050 0201 Manmade Shoreline

This code identifies a constructed shoreline built of stone, brick, concrete, or other building materials.

DELINEATION

The limit of a Manmade Shoreline is the extent of the structure that is the line of contact between water and land.

DATA EXTRACTION

Capture Conditions

- Size

If a Manmade Shoreline is $\geq 0.05''$ (100 ft) along the longest axis,
Then capture.

Attribute Information

N/A

Representation Conditions

A Manmade Shoreline is always represented as a line.

Source Interpretation Guidelines

All

If a Manmade Shoreline is captured,
Then do not capture a Shoreline or Indefinite Shoreline.

If a Manmade Shoreline meets capture conditions,
Then capture both the Manmade Shoreline and the element with which it is associated.

If a nonearthen shore does not meet the capture conditions for a Manmade Shoreline,
Then capture the shore as a Shoreline or an Indefinite Shoreline, if the capture conditions are met.

If a nonearthen dam, weir, drydock, lock, pier, breakwater, jetty, spillway, or wharf defines a shoreline that is $\geq 0.05''$ (100 ft) in length,

Then capture the shoreline as a Manmade Shoreline.

Graphic

If an element perimeter is symbolized in black,
Then collect the perimeter as a Manmade Shoreline, if the capture conditions are met.

If an element perimeter is symbolized in blue or brown,
Then collect the perimeter as a Shoreline, if the capture conditions are met.

If there is no evidence that a photorevised (purple) element perimeter is a Manmade Shoreline,
Then collect the perimeter as a Shoreline, if the capture conditions are met.

Revision

If it is not obvious that a new or modified element perimeter is a Manmade Shoreline,
Then capture the perimeter as a Shoreline, if the capture conditions are met.

050 0101 Reservoir

This code identifies a constructed basin formed to contain water.

DELINEATION

The limit of a Reservoir is the rim of the constructed basin.

DATA EXTRACTION

Capture Conditions

- Size
- Location

If a Reservoir is $\geq 0.03''$ (60 ft) along the shortest axis,
Or
If a Reservoir is in an arid region,
Then capture.

Attribute Information

N/A

Representation Conditions

If a Reservoir is $< 0.03''$ (60 ft) along the shortest axis,
Then represent the Reservoir as a degenerate line.

If a Reservoir is $\geq 0.03''$ (60 ft) along the shortest axis,
Then represent the Reservoir as an area.

Source Interpretation Guidelines

All

Refer to the element definition to decide how to categorize a given element instance. Do not use the proper name of the element as a guide. Do not use this code for an artificially impounded water body with a predominantly natural shoreline. See Lake or Pond. Many elements that are known as "Reservoirs" or labeled on the graphic as "Reservoir" may in fact be Lakes or Ponds.

As a general rule, if a water body has a regular geometric shape or other information indicates that it is contained by a constructed basin, then it is a Reservoir.

If an element is identified as an aquaculture pond (fish hatchery pond, fish farm, fish pond, minnow pond, rearing pond, and so on), industrial water impoundment, salt evaporator, settling basin, sewage disposal pond, filtration plant basin, soda evaporator, tailings pond, or water storage basin,
Then capture it as a Reservoir.

Fish ponds in natural water bodies are not captured as Reservoirs. See Bay, Estuary, Gulf, Ocean, or Sea, or Lake or Pond.

If an element identified as a filtration pond, fish hatchery, fish pond, minnow pond, rearing pond, or industrial waste pond is $\geq 0.03''$ (60 ft) along the shortest axis,
Then capture both the Reservoir and a Manmade Shoreline.

If it is obvious that the perimeter of a Reservoir $\geq 0.03''$ (60 ft) along the shortest axis is a Manmade Shoreline,
Then capture both the Reservoir and a Manmade Shoreline.

If it is not obvious that the perimeter of a Reservoir $\geq 0.03''$ (60 ft) along the shortest axis is a Manmade Shoreline,
Then capture both the Reservoir and a Shoreline.

If a Reservoir $< 0.03''$ (60 ft) along the shortest axis is within $0.02''$ (40 ft) of another Reservoir with the same function, and the combined area is $\geq 0.03''$ (60 ft) along the shortest axis,
Then capture them as one Reservoir.

If a Reservoir $< 0.03''$ (60 ft) along the shortest axis is within $0.02''$ (40 ft) of another Reservoir with the same function, and the combined area is $< 0.03''$ (60 ft) along the shortest axis, and it is an arid region,
Then capture one Reservoir as a degenerate line, with the center of the element captured equally spaced between the two reservoirs.

Do not capture Reservoirs $< 0.03''$ (60 ft) along the shortest axis that are $< 0.02''$ (40 ft) from other Reservoirs with the same function in areas that are not arid, if the combined area is $< 0.03''$ (60 ft) along the shortest axis.

If two Reservoirs $\geq 0.03''$ (60 ft) along the shortest axis are $< 0.005''$ (10 ft) apart and have the same function,
Then capture the combined area as one Reservoir.

If two Reservoirs $\geq 0.03''$ (60 ft) along the shortest axis are $< 0.005''$ (10 ft) apart and do not have the same function,
Then capture them as two Reservoirs and displace the perimeter lines equally, so that the

perimeter lines are 0.005" (10 ft) apart.

If a Reservoir is divided by wire mesh, screens, or grates,
Then do not capture the resulting divisions as separate Reservoirs.

Graphic

If a Reservoir is $< 0.03''$ (60 ft) along the shortest axis and shares a perimeter with another Reservoir with the same function, and the combined area is $\geq 0.03''$ (60 ft) along the shortest axis,
Then capture the combined area as one Reservoir.

Revision

N/A

050 0200 Shoreline

This code identifies a definite natural line of contact between a body of water and the land.

DELINEATION

The limit of a Shoreline is the line of contact between water and land.

DATA EXTRACTION

Capture Conditions

- Relationship to other elements

If a Shoreline is associated with a Bay, Estuary, Gulf, Ocean, or Sea,

Or

If a Shoreline is associated with a Braided Stream,

Or

If a Shoreline is associated with a Ditch or Canal or a Stream $\geq 0.025''$ (50 ft) along the shortest axis,

Or

If a Shoreline is associated with a Lake or Pond $\geq 0.05''$ (100 ft) along the shortest axis,

Or

If a Shoreline is associated with a Reservoir $\geq 0.03''$ (60 ft) along the shortest axis,

Then capture.

Attribute Information

N/A

Representation Conditions

A Shoreline is always represented as a line.

Source Interpretation Guidelines

All

If a Shoreline is captured,

Then do not capture a Manmade Shoreline or an Indefinite Shoreline.

If a Shoreline meets capture conditions,

Then capture both the Shoreline and the element with which it is associated.

Graphic

If an element perimeter is symbolized in black,
Then collect the perimeter as a Manmade Shoreline, if the capture conditions are met.

If an element perimeter is symbolized in blue or brown,
Then collect the perimeter as a Shoreline, if the capture conditions are met.

If there is no evidence that a photorevised (purple) element perimeter is a Manmade Shoreline,
Then collect the perimeter as a Shoreline, if the capture conditions are met.

On topographic-bathymetric maps, an apparent shoreline will be shown with a .004" blue line along the seaward edge of marine vegetation where that limit would reasonably appear as the shoreline to the mariner. Collect these element perimeters as Shoreline, if the capture conditions are met.

Revision

Collect a new Shoreline if a new Ditch or Canal, Lake or Pond, or Reservoir is collected and represented as an area.

Modify existing Shorelines on inland water bodies (including Streams) represented as areas only if there are obvious changes to the element perimeters.

Modify existing coastal Shorelines only if there are obvious manmade changes. Modify existing coastal Shorelines where there are obvious natural changes only if the new shoreline can be verified as representing approximate mean high water, by using recent information furnished by the National Ocean Service (NOS), or by determining that the image was taken during mean high water.

If it is not obvious that a new or modified element perimeter is a Manmade Shoreline,
Then capture the perimeter as a Shoreline, if the capture conditions are met.

050 0412 Stream

This code identifies all naturally flowing water.

DELINEATION

The limit of a Stream is the position of the shoreline when the water is at the stage that prevails when the element is at or near capacity for the greater part of the year, or, if this limit cannot be determined, the visible edge of the water body.

The upper limit of a Stream is where the element first becomes evident as a channel.

The limit of a Stream where it enters or leaves a Lake or Pond is determined by the conformation of the land.

The limit of a Stream where it enters a Bay, Gulf, Ocean, or Sea is where the conformation of the land make the division obvious, or, if the land and water do not suggest an obvious limit, the limit is where the stream reaches a width of 1 nautical mile (6,076.1 feet or 1.15 statute miles) with no further constrictions.

The limit of a Stream where it enters an Estuary is where the Estuary ends, as defined by the National Wetlands Inventory.

DATA EXTRACTION

Capture Conditions

- Relationship to other elements
- Size
- Type/category of element
- Location

If Stream flows from a Lake or Pond,

Or

If Stream is ≥ 1.25 " (2,500 ft) in length,

Or

If Stream contains water throughout the year, except for infrequent periods of severe drought, and is in an arid region,

Then capture.

Attribute Information

N/A

Representation Conditions

If a Stream is $< 0.025''$ (50 ft) along the shortest axis,
Then represent the Stream as a line.

If a Stream is $\geq 0.025''$ (50 ft) along the shortest axis,
Then represent the Stream as an area.

To accommodate variations in the shortest axis of a Stream:

If shortest axis of the Stream is:

$< 0.025''$ (50 ft) and $\geq 0.01''$ (20 ft) for a distance $< 2.64''$ (5,280 ft), and is connected at both ends to a Stream represented as an area,
Then represent the Stream as an area,

$< 0.025''$ (50 ft) and $\geq 0.01''$ (20 ft) for a distance $\geq 2.64''$ (5,280 ft), or $< 0.01''$ (20 ft) regardless of distance, and is connected at both ends to a Stream represented as an area,
Then represent the Stream as a line,

$\geq 0.025''$ (50 ft) and $< 0.04''$ (80 ft) for a distance $< 2.64''$ (5,280 ft), and is connected at both ends to a Stream represented as a line,
Then represent the Stream as a line,

$\geq 0.025''$ (50 ft) and $< 0.04''$ (80 ft) for a distance $\geq 2.64''$ (5,280 ft), or $\geq 0.04''$ (80 ft) regardless of distance, and is connected at both ends to a Stream represented as a line,
Then represent the Stream as an area.

Source Interpretation Guidelines

All

If a Stream meets the capture conditions and is represented as an area,
Then capture both the Stream and either a Shoreline or Manmade Shoreline.

If a Stream meets the capture conditions and is represented as an area, the perimeter of the area where it enters or leaves a Lake or Pond or enters a Bay, Estuary, Gulf, Ocean, or Sea is collected as a Closure Line.

Do not distinguish between Streams that contain water for only part of the year and Streams that contain water just after rainstorms and at snowmelt in arid or semiarid regions. Collect all drainage $< 0.025''$ (50 ft) along the shortest axis as Streams, if the capture conditions are met.

If it is not obvious that an element is a Ditch or Canal,
Then capture it as a Stream, if the capture conditions are met.

Do not capture dry washes, arroyos, dry gulches, and ephemeral streams ≥ 0.025 " (50 ft) along the shortest axis as Streams. See Wash.

If a Stream intersects a quadrangle boundary and an overedge source is not available to aid in determining length,
Then capture the Stream, regardless of length.

Do not capture old river courses inundated by an impounded water body.

The minimum size for islands within Streams is 0.03" (60 ft) along the shortest axis.

Graphic

On 1:24,000-scale maps compiled using older Part 6 symbology, intermittent drainage is shown with dot-dash symbology. Intermittent drains were sometimes indicated with an "I" next to the drain on provisional maps, while other times they were shown with the newer Part 5 reduced lineweight symbol. Collect all drainage as Streams, with no other descriptive code, regardless of how they were classified on the published map, if the capture conditions are met.

Streams that were shown with the dashed unsurveyed symbol on the published map are collected as Streams, if the capture conditions are met.

Revision

Do not add new elements. Modify existing elements only if there are obvious changes in the stream channel on the image.

If the headwaters of a Stream are within 0.5" (1,000 ft) of a saddle or divide,
Then capture the Stream starting 0.5" (1,000 ft) from the saddle or divide.

If the image shows a lower than average water level,
Then capture the Stream at the average water level by using the existing published graphic, an ancillary source, or the evidence of water marks on the image.

If the image shows a lower than average water level and the average water level cannot be determined,
Then capture the Stream at the visible edge of the water body as it appears on the image.

If the image shows a higher than average water level,
Then capture the Stream at the average water level by using the existing published graphic, or an ancillary source.

If the image shows a higher than average water level and the average water level cannot be determined,
Then capture the Stream at the visible edge of the water body as it appears on the image.

050 0420 Wash

This code identifies a part of a streambed that is usually dry and contains water only during or after a rainstorm or snowmelt.

DELINEATION

The limit of a Wash is the cut banks of the dry channel.

DATA EXTRACTION

Capture Conditions

- Size
- Relationship to other elements

If a Wash is $\geq 0.025''$ (50 ft) along the shortest axis, and is $\geq 1.25''$ (2,500 ft) along the longest axis, and is greater than or equal to twice the width of any Stream within the Wash,
Then capture.

Attribute Information

N/A

Representation Conditions

A Wash is always represented as an area.

Source Interpretation Guidelines

All

If a Wash meets the capture conditions,
Then capture the Wash and an unattributed perimeter line.

Capture the streambed part of the channel that contains water more than just during or after local rainstorms or heavy snowmelt as a Stream.

If a Wash contains a Stream,
Then capture both.

If a Wash is $< 0.025''$ (50 ft) along the shortest axis,
Then capture it as a Stream, if the capture conditions for a Stream are met.

Graphic

If a wash is represented as a single brown line,
Then capture it as a Stream, if the capture conditions for a Stream are met.

If a wash is represented as a single brown line through an areal wash,
Then do not capture the single brown line wash.

If a named wash is represented as a perennial or intermittent stream,
Then capture it as a Stream.

Revision

N/A

APPENDIX 2.A

Attribution of Outlines of Hydrographic Areas

Standards for 1:24,000-Scale Digital Line Graphs-3 Core
Part 2: Hydrography
Appendix 2.A - Attributions of Outlines of Hydrographic Areas

The following list provides unambiguous information on the attribution of the outlines of hydrographic elements collected as areas.

This list, which is arranged alphabetically, includes elements from the list of area attribute codes and those elements from the list of general purpose attribute codes that can be collected as areas.

In general, if the outline of the element is always shown on the map with the same symbology, the line is unattributed because it is in essence a symbol.

Follow these guidelines even if an individual element on a map is outlined using a nonstandard symbol. In some cases, the outlines of two hydrographic elements may coincide, so the instructions for coding of the outlines of both elements must be considered. Also, if part of the outline of an area is formed by another hydrographic element, that part of the outline is collected as that element.

Standards for 1:24,000-Scale Digital Line Graphs-3 Core
 Part 2: Hydrography
 Appendix 2.A - Attributions of Outlines of Hydrographic Areas

Area	Outline of area
Bay, Estuary, Gulf, Ocean, or Sea	Shoreline, Manmade Shoreline, Closure Line
Braided Stream	Shoreline, Closure Line
Channel	Unattributed Line, Closure Line
Ditch or Canal	Shoreline, Manmade Shoreline, Indefinite Shoreline, Closure Line
Lake or Pond	Shoreline, Manmade Shoreline, Indefinite Shoreline, Closure Line
Reservoir	Shoreline, Manmade Shoreline
Stream	Shoreline, Manmade Shoreline, Indefinite Shoreline, Closure Line
Void Area	Unattributed Line
Wash	Unattributed Line