

precisely

Centrus Desktop

User Guide for Windows

Version 6.09.00.N



Information in this document is subject to change without notice and does not represent a commitment on the part of the vendor or its representatives. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, without the written permission of Precisely, 1700 District Ave Ste 300, Burlington, MA 01803-5231.

© 1994, 2021 Precisely. All rights reserved.

Precisely is a wholly-owned subsidiary of Syncsort Incorporated. See www.precisely.com for information about our valuable trademarks.

The following trademarks are owned by the United States Postal Service®: CASS, CASS Certified, DPV, eLOT, FASTforward, First-Class Mail, Intelligent Mail, LACSLink, NCOALink, PAVE, PLANET Code, Postal Service, POSTNET, Post Office, RDI, SuiteLink, United States Postal Service, Standard Mail, United States Post Office, USPS, ZIP Code, and ZIP+4. This list is not exhaustive of the trademarks belonging to the Postal Service.

USPS Notice: Precisely holds a nonexclusive license to publish and sell ZIP+4 databases on optical and magnetic media. The price of the Precisely product is neither established, controlled, nor approved by the U.S. Postal Service.

Precisely is a non-exclusive licensee of USPS® for NCOALink® processing. Prices for the Precisely products, options and services are not established, controlled or approved by USPS® or United States Government. When utilizing RDI™ data to determine parcel-shipping costs, the business decision on which parcel delivery company to use is not made by the USPS® or United States Government.

Spectrum Geocoding Datasets used within Precisely applications are protected by various trademarks and by one or more of the following copyrights:

Copyright © United States Postal Service. All rights reserved.

© 2021 TomTom. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to TomTom or its suppliers. The use of this material is subject to the terms of a license agreement. Any unauthorized copying or disclosure of this material will lead to criminal and civil liabilities.

© 2021 HERE

Copyright © United States Census Bureau

© Copyright Canada Post Corporation

The delivered database contains data from a compilation in which Canada Post Corporation is the copyright owner.

The Master Location Data (MLD) product is a produced work that referenced the Microsoft US Building Footprints dataset. This dataset is available at <https://github.com/Microsoft/USBuildingFootprints> and is licensed under the Open Database License (ODbL). The license is available at <https://opendatacommons.org/licenses/odbl/>.

1 – Before You Begin

In this chapter

Purpose of this guide	6
If you need more help	6
The Website	6
Related publications	6
To obtain additional user guides	6



Purpose of this guide

Welcome to Centrus Desktop. This User's Guide is intended to provide you with the information you need to effectively use Centrus Desktop. The information contained in this guide include name-and-address matching concepts, defining and running batch jobs, and using the interactive Centrus Desktop functions.

If you need more help

If you are unable to resolve a problem, a Precisely Technical Support Representative can help guide you to a solution. To open a Support case, go to <https://support.precisely.com/casemanagement/>. When you contact Precisely Technical Support, please have the following information ready:

- A description of the task you were performing.
- The resulting reports (specifically, the Execution Log and Parameter Record Listing).

Reporting complete details to Technical Support will help you and the technical support representative resolve the problem quickly .

The Website

You can also find out about Precisely software products and services on our website: <https://www.precisely.com>.

Related publications

The following publications may provide useful information for working with Centrus Desktop:

- *GeoStan Geocoding Suite Utilities Reference Manual*
- *Centrus Desktop Release Notes*

To obtain additional user guides

To obtain electronic copies of our product manuals, go to :<https://support.precisely.com>.

2 – Getting started

In this chapter

Starting Centrus Desktop	8
Understanding the Centrus Desktop window	8
Licensing	11

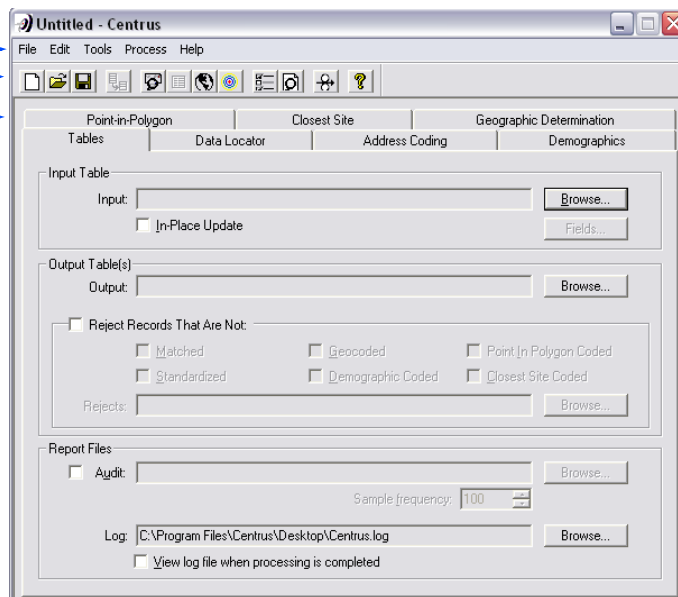
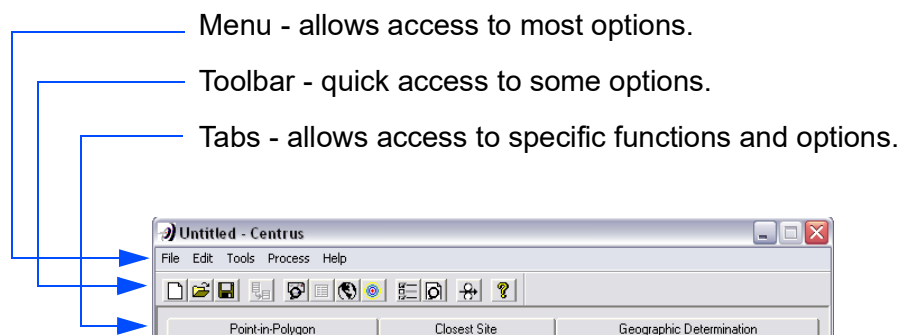


Starting Centrus Desktop



To open or start Centrus Desktop, click **Start > All Programs > Centrus > Centrus Desktop > Desktop**. By right clicking on **Desktop**, you can create a shortcut to your desktop for ease of use later.






Understanding the Centrus Desktop window






The window that opens after launching Centrus Desktop allows you to access all the options and tabs.



From the menu and toolbar you have the following options listed in the table below:

Option	Description
New Task	From the menu, click File and select New Task , or select the  icon from the toolbar. This option clears the current task and creates a new task. For more information see Creating an Address Coding task or Creating a Closest Site and Point-in-Polygon task for more information on tasks.
Open Task	From the menu, click File and select Open Task , or select the  icon from the toolbar. This option opens a previous task.

Option	Description
Save Task / Save Task As	<p>From the menu, click File and select Save Task or Save Task As, or select the  icon from the toolbar.</p> <p>This option saves your task. For an example of saving a task, see Creating an Address Coding task.</p>
Configuration	<p>From the menu, click File and select Configuration. This option allows you to specify the location of the necessary data files to run Desktop. For more information see "Changing the location of Centrus data files" on page 85,</p>
Recent File	<p>From the menu, click File and select Recent File. If this option is not available, the most recent file is listed from the File menu.</p>
Exit	<p>From the menu, click File and select Exit, or select the  icon from the top right of the Centrus Desktop window. This option closes Centrus Desktop.</p>
Clear Outputs/ Clear All Outputs	<p>From the menu, click Edit and select Clear Output or Clear All Outputs. If you wish to reuse a task, you can change its settings to suit any new requirements.</p> <ul style="list-style-type: none"> • Clear output fields within the current module. • Clear outputs fields in all modules. • Clear outputs fields in all modules except the current module. • Clear previously defined outputs within the current module (Clear Current Outputs).
Clear All Except	<p>From the menu, click Edit and select Clear All Except. This option clears all other tabs, but the one specified from the menu.</p>
Standardization Defaults	<p>From the menu, click Edit and select Standardization Defaults. There are two fields from which to chose, Existing Fields and New Fields. For more information on this option see Common elements in standardization.</p>
Geocode Defaults	<p>From the menu, click Edit and select Geocode Defaults. There are two fields from which to chose, Existing Fields and New Fields. For more information on this option, see Common elements in geocode data.</p>
Quick Find	<p>From the menu, click Tools and select Quick Find, or select the  icon from the toolbar.</p> <p>This option opens the Quick Find window for a faster address lookup. You can access a variety of information about a particular address: match codes, demographics, and geographic data. For more information see Using Quick Find.</p>
Data Viewer	<p>From the menu, click Tools and select Data Viewer, or select the  icon from the toolbar.</p> <p>This option allows you to examine the contents of the output file one record at a time. For more information see Data Viewer.</p>
Map Viewer	<p>From the menu, click Tools and select Map Viewer, or select the  icon from the toolbar.</p> <p>This option allows you to see streets and county boundaries for the city currently entered. A map displays the currently geocoded point, and you can manually move that point to retrieve information on another location. For more information see Using Map Viewer.</p>

Option	Description
Shape Layers	<p>From the menu, click Tools and select Shape Layers, then Import, Export or Generate PMA. You can also select the Generate PMA  icon from the toolbar.</p> <p>This option allows you to create and export geography files based on your address data. You can also generate Primary Market Areas (PMAs). If you have a location-dependent business, a PMA can help you identify market overlap and pockets of untapped opportunity. You can use your existing database with a PMA to create a precise polygonal boundary file using the outermost address points of customers or prospects surrounding your store or office location. For more information see Shape Layers.</p>
Options	<p>From the menu, click Process and select Options, or select the  icon from the toolbar.</p> <p>The Options window contains the options for the tabs below.</p>
Verify Tables	<p>From the menu, click Process and select Verify Tables. After creating a task, by selecting Verify Tables, Centrus Desktop verifies that all pertinent information was entered.</p>
Verify All	<p>From the menu, click Process and select Verify All. You can verify the settings for all modules, or you can verify the settings for the currently-active module (tab). This enables you to verify that you have correctly specified your tasks.</p>
Verify Current	<p>From the toolbar, select the  icon. This option verifies the outputs for the selected tab.</p>
Process Task	<p>From the menu, click Process and select Process Task, or select the  icon from the toolbar.</p> <p>For more information see, Creating an Address Coding task or Creating a Closest Site and Point-in-Polygon task.</p>
Batch Process Task	<p>From the menu, click Process and select Batch Process Task. For more information see, Creating an Address Coding task or Creating a Closest Site and Point-in-Polygon task.</p>
Help	<p>From the menu, click Help, or select the  icon from the toolbar.</p> <p>This option opens the Help Topics window or the About Centrus information window.</p>

The tab options are as follows:

- **Tables** - Creates Input and Output tables as well as Report Files. For more information see [Creating an Address Coding task](#) or [Creating a Closest Site and Point-in-Polygon task](#).
- **Address Coding** - Corrects, standardizes and geocodes your address data. You must use this module if you wish to ensure that your addresses comply with USPS and CPC standards. Refer to [Using Address Coding](#) for more information.
- **Demographics** - Applies United States Census demographic data to your addresses. Refer to [Using Demographics and Geographic Determination](#) for more information.
- **Point-in-Polygon** - Determines whether an address falls within a particular area. Refer to [Using Closest Site and Point-in-Polygon](#) for more information.
- **Closest Site** - Evaluates the relationship between two geocoded points. Closest Site can help you calculate the distance between points or boundaries. Refer to [Using Closest Site and Point-in-Polygon](#) for more information.

- **Geographic Determination** - Describes the spatial relationship between two entities, along with the degree of confidence in that description. Geographic Determination allows you to determine the likelihood that a given address falls within a targeted area. Refer to [Using Demographics and Geographic Determination](#) for more information.

Note: Depending on your license, your Centrus Desktop installation may not include every option listed here. Contact your Precisely sales representative for information on adding a module.

Licensing

Note: This is not a complete guide to your license terms! Please review your license carefully for more information.

Centrus Desktop uses several data files, which are available for download from the Precisely Data Experience site. How many of these data files you can use depends upon your license agreement. The data files you are licensed to use are installed during the data installation process.

Note: Refer to the *Installation Notes for the Centrus Data Products Suite* for data installation instructions.

Your contract with Precisely determines the license and security files you need. The **centrus.lic** file is the licensing file for Centrus Desktop and its associated modules.

Note: License renewal is automatic; you do not need to take any action to renew your license. You must, however, provide written notice to Precisely if you do not wish to renew.

To see version, license expiration, copyright details, and data file library information, click **Help > About Centrus** from the main Centrus Desktop menu. Click **Library Information** to see additional information about the currently loaded data files.

3 – Finding and mapping an address

In this chapter

The following information details how to quickly look up an address using the Quick Find option. For more in-depth address searches, see [Using Address Coding](#).


Using Quick Find	13
Navigating the Query directory	15
Specifying the Search Filter	16
Map Viewer	17
Using Map Viewer	17
Using Layers	20
Geocoding manually with the Map Viewer	22
Spatial attributes	22



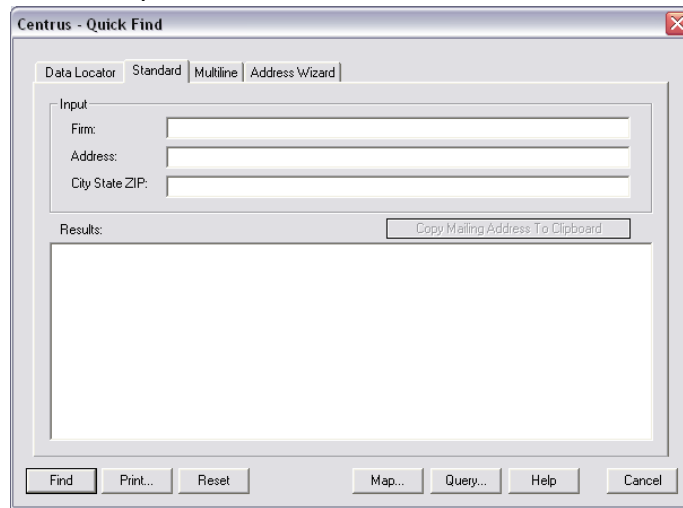
Using Quick Find

The Quick Find option is usable after launching Centrus Desktop. The Quick Find option is the easiest and fastest way in which to perform an address search.

To use Quick Find:

1. From the menu, click **Tools** and select **Quick Find**, or select the  icon from the toolbar.

The Quick Find window opens.



Listed below are the options available from this window:

Option	Description
Standard	<p>This is the default tab when the Quick Find window opens.</p> <p>Enter a standard three-part address into the text boxes, and click Find to process the address.</p> <ul style="list-style-type: none"> • If a match is made, use the Map function to map the current address. If a match is not made, click Query to access the Query function, which can help resolve the address. • The Copy Mailing Address To Clipboard button copies the Firm Name (if available), Address Line, Address Line 2 (if available), and Last Line to the Clipboard. • The Print button displays the output in Notepad. <p>NOTE: The information copied to the Clipboard is from the results tree, rather than the input boxes. Hence, the information is only available after Centrus Desktop finds a successful match.</p>
Multiline	<p>Enter a free-form address into a single text box, and click Find to process the address. This option is for addresses that are more than one line long. For example:</p> <p>Attn. Product Management Precisely 4750 Walnut St. Ste 200 Boulder, CO 80301</p> <ul style="list-style-type: none"> • If a match is made, use the Map function to map the current address. • The Private Mail Box Designator and Private Mail Box Number output address elements are not available. • The Query function is unavailable in Multiline mode. <p>NOTE: This option does not affect Canadian processing.</p>
Address Wizard	<p>Verifies that you have supplied correct and complete information. Address Wizard mode corrects all elements of an address.</p> <ul style="list-style-type: none"> • If you enter an address that is known to have apartments or multiple units, a dialog box displays with the possible unit numbers. Enter the unit number and click OK. • If the address has more than one possible match, a dialog appears with the possible matches. Select the appropriate street name and click OK. <p>NOTE: This option does not affect Canadian processing.</p> <ul style="list-style-type: none"> • The Auto Search option at the bottom of the window tells Address Wizard to begin searching after a few seconds of keyboard inactivity. Address Wizard also attempts a match on partial addresses. • If Auto Search is not checked, you must click Find or press Enter to perform the address lookup.
Find	Click Find , after entering an address, to run the address search.
Print	Click Print to print out address results.
Reset	Click Reset to clear entered address information.
Map	Click Map to view address results in a map.
Query	<p>By clicking Query, the Resolve the Address window opens. Available only with the Standard and Address Wizard tabs. See Navigating the Query directory for more information on the Query directory, and see Specifying the Search Filter for more information on the Search Filter section of the Resolve the Address window.</p>

Option	Description
Help	Click Help to open the Help Topics window.
Cancel	Click Cancel to end address search and close the Quick Find window.

- To search for a standard address, enter the known address information in the fields given in the **Standard** tab.
 - If you have a multiline address as explained above for the **Multiline** tab, enter that address in the field provided.

- Click **Find**.

- For more information on the results in the Results screen, see [Status codes](#).
- If applicable, complete the information in the USPS Mailer Information dialog box.

The USPS Mailer Information dialog box only appears if you select address elements that contain DPV, LACSLink, or SuiteLink information. The USPS requires this information for processing of false-positive matches that may occur when processing records for DPV or LACSLink data. Note the path to the false-positive report file in case GeoStan™ encounters a false-positive address while processing. Select the **Save values as Centrus Desktop defaults** checkbox, and Centrus automatically populates the fields the next time the window appears.

Navigating the Query directory

Note: Double-click any entry in the query directory to expand or contract it. Double-click a house-range entry to accept it as the correct record and paste it into the Results section of the Process window.

When a query result first displays, the Records section displays Country and State. Queries display in a hierarchical nature in the Records section of the Query window. Each level of the hierarchical directory is indented below its parent level. All entries are sorted alphabetically, including Street Block and House Range.

The following table describes the levels of the directory:

Level	Description
Country	Always USA. The Centrus Desktop area is the 50 states and Washington, D.C., plus Puerto Rico and other U.S. Protectorates.
State	Displays the two letter state abbreviations that match the search filter criteria. If the ZIP Code is for a different state, two state abbreviations display.
City	Displays the city names that match the search filter. If the City entry in the filter is "C", then all city names beginning with "C" display. Some city names are displayed with a different name in parentheses. The name in parentheses is the city name the USPS wants you to use when mailing to that location. The name outside of the parentheses is a name that the USPS recognizes and may not be a city name at all. These names might be buildings, military installations, or even large corporations.

Level	Description
Street Name	Contains the full street name including directionals and street type. For example, there are separate entries for "N Main St" and "S Main St". A street may also appear with (Alias) next to the street name, which indicates Centrus Desktop used a different name to match the street name with the search filter.
Street Block	Contains one block of house ranges. A Street Block often is the same as an actual city block, but not always. In some instances, a Street Block may represent a partial city block. Less frequently, a Street Block represents several city blocks. Street blocks list a range of all house numbers that might appear on that block.
House Range	Displays the actual range information contained in the USPS files. For example, 1000-1098 Kearney St NE, 20017-4526 (S,E). The first part of this line is the house range and full street name. The next entry is the 9-digit ZIP Code for that house range. In parentheses are displayed the Record Type and Record Parity.

Any adjustment of the **Search Filter** collapses the Query directory to the proper point. For example, if you modify the House, Street, or Unit, the directory collapses to the City level.

Specifying the Search Filter

The **Search Filter** section of Query allows you to specify the limits of your query. In general, the more information you enter into the search filter, the more refined the search results, which means that fewer possible matches display in the **Records** section.

At a minimum, the **Search Filter** requires you to enter a city and state, or a ZIP Code. If the entered city and state are for one state but the ZIP Code is for a different state, the two states display in the **Records** section, and you must choose which state to search.

The **Search Filter** section contains the following fields:

- The **House** entry optionally specifies a house number. You can use this to limit the search to only those streets that have a block on which that house number would fall. If you enter 1000, a house range of 200-300 does not match. If this entry is blank, all ranges match.
- The **Street** entry may contain zero or more characters. If this entry is blank, all streets are displayed. If the Street entry was "APPLEW", streets with the name of "Applewood" or "Appleworm" would both match, but "Apple" would not.

Note: The **Street** entry should be a base street name only; it should not contain pre-directionals, post-directionals, or street types. For example, "Vine" is a valid entry for Boulder, CO, but "Vine PL" is invalid due to the additional street type ("PL").

- The **Unit** entry is similar to the House entry, except that it contains the unit number, such as "12" or "E". House ranges that do not contain the given unit number do not display. Because the USPS does not list separate unit numbers for all buildings, house range entries that do not have any unit numbers match any unit number entered. This is consistent with USPS CASS requirements.
- The **City** entry takes at least the first letter of the cities to be displayed. Centrus Desktop displays all the cities within the given state which match the letters in the City entry. The state abbreviation, however, must be a recognized state abbreviation or Centrus Desktop ignores the entries for both City and State.

- The **ZIP** entry generates the list of possible cities. It does not determine which entries Centrus Desktop displays in the Records section. The Zip entry must be a valid five-digit or three-digit ZIP Code. Three-digit ZIP Codes are commonly referred to as Sectional Centers. A Sectional Center is comprised of all five-digit ZIP Codes that begin with those three digits.


Map Viewer

The Map Viewer displays a geocoded point, with additional information such as streets and county boundaries. You can manually move the point to retrieve information about a different location, or to allow users with local knowledge to place points for locations that Centrus Desktop did not match.

Note: There are no street segments available for mapping when using USPS-only data because USPS-only data does not contain Street data, only Postal information. There are also no street segments available for mapping for Canada.

Using Map Viewer

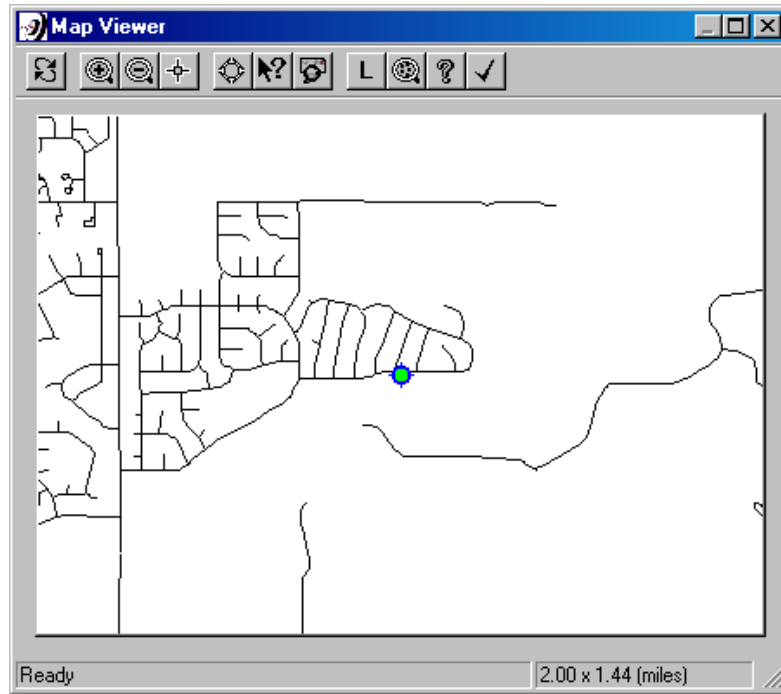
To use the Map Viewer:

1. Select **Tools > Map Viewer** from the menu or click the icon  from the toolbar.












Note: You can also click **Map** within Quick Find or Process dialog boxes to display the Map Viewer.

2. When the Locator window opens, enter the address.
3. Click either **Zoom Street** or **Zoom City**.
 - Zoom Street - Shows the street entered with the address.
 - Zoom City - Shows the city entered with the address.

4. When the Map Viewer window opens, your entered address is mapped. As seen below:

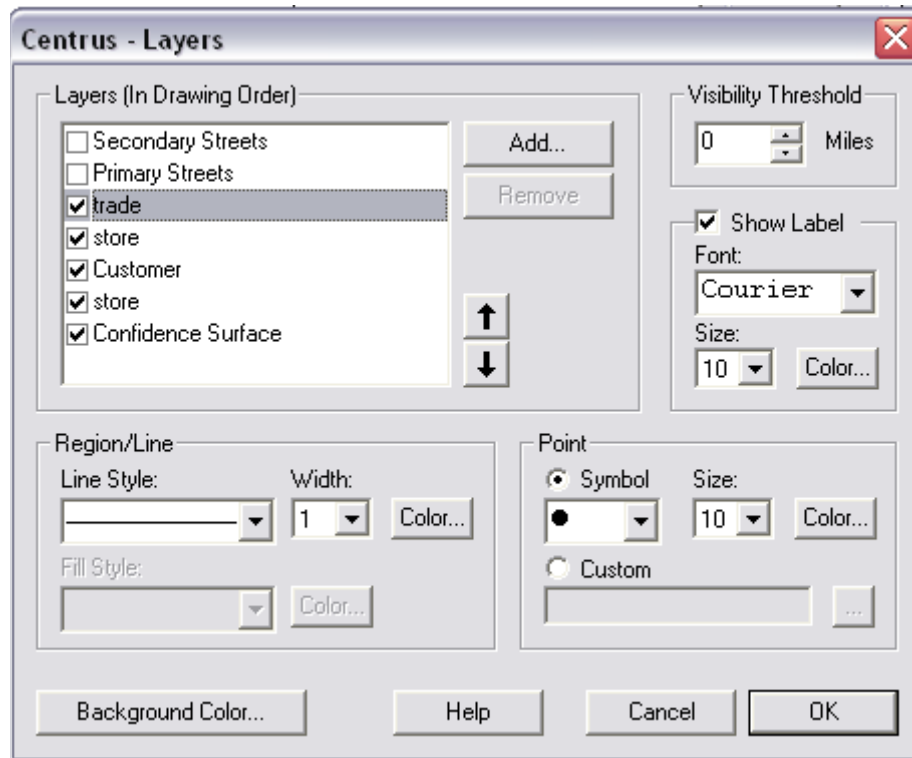


The map view can be customized using the following options in the Map Viewer window:

Option	Description
Redraw 	Redraws the map at the same scale.
Zoom In 	Increases the magnification. To zoom in, click the button, then click the map. You can also define an area to be magnified. Click the Zoom In button, then click and drag the pointer over the map window to define the area to be zoomed.
Zoom Out 	Decreases the magnification. To zoom out, click the button, then click the map.
Center 	Redraws the map with the selected point at the center of the map window. To center the map on a point, click the button, then click the map at the new point.
Select 	Allows you to manually place a point on the map. See “Geocoding manually with the Map Viewer” on page 22 for more information.
Info 	Displays information on a street segment. Position the square cursor over a mapped street and click to view information about the street segment.
Locate 	<p>Opens the Locator dialog box, where you can enter an address or city to locate on the map.</p> <p>To locate a street, enter the street address, city, state, and ZIP Code (if known). Click Zoom Street to display all street segments in the specified city with a matching street name.</p> <p>To locate a city, type either the city name and the state abbreviation, or a ZIP Code. Click Zoom City to display the streets in the city or ZIP Code within the map window.</p> <p>The Zoom Street function does not work correctly if street input includes street type or pre-/post-directionals, such as WEST or PLACE. Enter only the street name in the Street box.</p>
Layers 	Opens the Layers dialog box. See Using Layers for more information.
Zoom Extent 	Allows you to specify one or more spatial layers and zooms the map window to show all features within the specified layers.
Help 	Displays the Centrus Desktop online help.
OK 	Displays the most recently geocoded location and closes the Map Viewer. If you manually geocoded a point, the Census ID, latitude, and longitude appear in the Results section of the QuickFind or Process dialog box.

Using Layers

To modify layers, from the Map Viewer, click  to open the Centrus - Layers window...



This window allows customization of the layers drawn on the map. By selecting a layer, as in the example above, trade is highlighted. The trade lines, points, labels, and thresholds are available for specification.

Select the desired layer by entering a check mark in the box.

The following options are available in the Centrus - Layers window:

Option	Description
Layers (In Drawing Order)	
Primary Streets	This category includes nationally and regionally important highways. It consists mainly of US highways, but may include some state highways and county highways that connect cities and larger towns. A road in this category must be hard-surface (concrete or asphalt). It has intersections with other roads, may be divided or undivided, and have multi-lane or single-lane characteristics.
Secondary Streets	This category includes mostly state highways, but may include some county highways that connect smaller towns, subdivisions, and neighborhoods. The roads in this category generally are smaller than roads considered Primary, and must be hard-surface (concrete or asphalt), and are usually undivided with single-lane characteristics. These roads usually have a local name along with a route number and intersect with many other roads and driveways.

Option	Description
Confidence Surface	This displays when using Geographic Determination. This category produces a confidence surface around a geocode, segment(s), or area.
NOTE: Additional layers listed are from user imported information.	
Up and down arrows	The arrows to the right of the Layers window allow the priority of the drawing order to change. By selecting a layer, click up or down to move the layer closer to the beginning or the end of the map drawing.
Visibility Threshold	Enter mileage limits using the arrows or enter desired number directly into the field.
Show Label	
Font	Select the desired font.
Size	Select the font size.
Color	Select the color of the displayed label.
Region/Line	
Line Style	Select line type.
Width	Select line width.
Color	Select line color.
Fill Style	Select line fill.
Color	Select line fill color.
Point	
Symbol	Select the point indicator.
Size	Select the point indicator size.
Color	Select the point indicator color.
Custom	Select alternative point indicator.
...	Click to browse for alternative point indicator.
Background Color	Changes the background color for the map.
Help	Opens the Centrus Desktop User Guide.
Cancel	Closes the window.
OK	Accepts changes to the layers.

Geocoding manually with the Map Viewer

If Centrus Desktop is unable to match an address, you can assign information to the point manually. This is most useful if you have knowledge of the area or other maps to which you can refer.

To manually geocode addresses with the Map Viewer:

1. Locate the spot to place the point using the **Zoom** and **Info** buttons, as well as a nearby street whose Census ID and coordinates you wish to assign to the new location.
2. Click **Select**, then click and hold on the site to geocode. This anchors the point.
3. Drag the pointer to the street segment whose Census ID you wish to assign to the new location, creating an attach line between the point to be geocoded and the existing street segment.

Centrus Desktop assigns the Census ID and coordinates of the selected street segment to the new location. In the message area at the bottom of the screen, the Census ID displays, as well as the side of the street associated with the ID.

An address that has been manually geocoded displays a location code of **M**.

Spatial attributes

After you import a shape file into a Spatial attribute layer, you can use QuickFind to view the information, including all potential output fields. You can then decide which fields to use in your processing run.

Spatial attributes do not process special characters. All characters between 31 and 127 on the ASCII standard code page are valid. Other characters are not supported and causes unpredictable behavior for attribute (GSA) data. Examples are:

- Spanish n with tilde: ñ
- Long Dash: -
- Reverse Quote: '
- Copyright: ©

4 – Using Address Coding

In this chapter

Address Coding	24
U.S. address processing	24
Canadian address processing	25
Z4 Change Processing	25
Address line two preferences	25
City-only lastline matching	25
Creating an Address Coding task	26
Understanding the Address Coding tab	27
Common elements in standardization	29
Common elements in geocode data	30
Available elements	30
Setting Address Coding options	38
Data Viewer	42



Address Coding

Your Address Coding license covers a state, a region, or whole country. The license file that ships with Centrus Desktop informs the system which areas are available for coding. If there are addresses outside of the coverage area in a file being processed, Centrus Desktop flags these addresses with a match code indicating an out-of-coverage address.

Note: For best results, Precisely recommends that you enter addresses into address files following the USPS guidelines outlined in *Publication 28, Postal Addressing Standards*, which is available free of charge from the USPS.

When Centrus Desktop processes an address file, it standardizes each address to USPS or CPC standards. To cleanse your addresses and help ensure deliverability, you may choose to have the standardized output returned. The differences between USPS and CPC processing are:

- Centrus Desktop geocodes U.S. addresses to either the address or ZIP + 4 level.
 - If the address is in the USPS files, the address is standardized with a ZIP + 4 (and all other USPS information). If the address is also in the street network files, Centrus Desktop determines an accurate latitude and longitude for the location.
 - If the address is not in the enhanced street network files, location and census information is then taken from the ZIP + 4, ZIP + 2, or ZIP Code centroid.
- To standardize Canadian addresses, Address Coding compares street addresses from the address file to records in the CPC data files. Address-level geocoding is not available for Canadian addresses.

Standardization and geocoding success rates depend upon the quality of the addresses in your file. Centrus Desktop can correct minor misspellings, and missing or incorrect directionals, street types, and ZIP Codes. If an address has an incorrect street number, or if the address contains a number of errors, Centrus Desktop may not be able to make a successful match.

See the following sections for more information on processing:

- [U.S. address processing](#)
- [Canadian address processing](#)
- [Z4 Change Processing](#)
- [Address line two preferences](#)

U.S. address processing

When you select United States on the Process Options dialog box, the Address Coding module:

- Standardizes, corrects, and appends information about your addresses.
- Standardizes addresses to USPS standards, which reduces mailing costs and increases delivery speed by supplying correct USPS information. The Address Coding Module also identifies poorly formed or undeliverable addresses.
- Produces a USPS CASS report, for greater postage savings.

- Assigns Latitude, Longitude, and Census ID information to the block level.
- Assigns a geocode when address geocoding is unavailable. ZIP + 4 centroids return Census ID information to the Block Group level using ZIP + 4 centroid geocoding.

Canadian address processing

When you select Canada on the Process Options dialog box, the Address Coding module:

- Standardizes, corrects, and appends information about your addresses
- Produces a Canadian Post Corporation (CPC) SERP report
- Performs Postal Code-level geocoding

Z4 Change Processing

Z4 Change Processing greatly enhances processing speed when you are using large databases that require frequent reprocessing. Z4 Change Processing uses USPS data that details which records have changed in the past 12 months. Centrus Desktop looks at the last date on which a particular list was processed, and compares each address to a Z4 Change Directory to see if it has changed in any way. Then, it reprocesses only those addresses which have changed, rather than the entire database—making processing speed significantly faster than using Address Coding alone.

The Us.gsl file contains the data required for Z4 Change Processing. This file must be located in the default search path.

Note: This option does not affect Canadian processing.

Address line two preferences

Address line two allows you to pass two different address lines to Centrus Desktop. The software then scans the two lines, and extracts and standardizes a two-line address, if possible. You can set Centrus Desktop to accept a P.O. Box or a street address as the preferred address. If you do not specify an option, or the two lines contain similar information, Centrus Desktop prefers line one.

Note: This option does not affect Canadian processing.

City-only lastline matching

City-only lastline matching permits address matching with only a city in the input lastline. The input address should be provided using the Standard rather than the Multiline input fields.

With city-only lastline input, the search engine will search all of the states in which the input city exists. Therefore, there is the possibility of an increase in multi-matches (E023 and E030) when matching with city-only input instead of city+state lastline input.

Restrictions:

- City-only lastline input matching is not supported in CASS mode.
- City-only lastline is not supported when matching to User Dictionaries.
- When matching using city-only lastline, the 'Prefer Input ZIP over Input city' US Address Coding setting is ignored.
- It is strongly recommended to not use city-only lastline matching in Relaxed mode to avoid the return of false-positive matches.



Creating an Address Coding task

Once you have configured Centrus Desktop for your system, you can set up your tasks. The tabs on the Centrus Desktop main window represent each Centrus Desktop component, as well as a Tables tab for specifying input and output files and tables. Each component's tab allows you to define how you want that module to process your data. Collectively, these settings constitute a task. Tasks are to Centrus Desktop what documents are to your word processing software. You can create them, save them, edit them, and rename them.

Note: By default, Centrus Desktop stores your tasks stored in the Centrus Desktop program directory. Task files must have the extension **.qmi**. If you wish to overwrite the default settings, overwrite the file **Centrus Desktop.qmi**, located in your Windows directory, with your own task file.

To create an Address Coding task:

1. From the **Tables** tab, click **Browse** from the Input field.
2. When the **Select a file** window opens, select a file to process and click **Open**.
Note: The **In-Place Update** option allows you to write your output directly to your input file. This is not recommended.
3. Click **Browse** from the **Output** field.
4. When the **Select Output File** window opens, select a file and click **Save**.
5. Decide whether to use the **Reject Records That Are Not:** section. If selected, chose any of the options below and click **Browse** from the **Rejects** field.
6. When the **Select Output File** window opens, select a file and click **Save**.
7. Decide whether to use the **Report Files** section. If selected, click **Browse** from the **Audit** field.
8. Change the **Frequency** if necessary.
9. Change the **Log Output** if necessary by clicking **Browse**.
 - When the **Select Log Destination File** window opens, select a file and click **Save**.
10. You can also select whether to **View log file when processing is complete**.

11. **Save** task by either selecting **File > Save Task** or **Save Task As** from the menu, or the  icon from the toolbar.
 - The **Address Coding** tab is now populated, see Understanding the Address Coding tab for more information.
12. You now need to edit the Address Coding options, see Setting Address Coding options for more information.
13. You can now process the task by selecting **Process > Process Task** or **Batch Process Task** from the menu, or by clicking the  icon from the toolbar.
14. When the **Process** window opens, click **Next Error** or **Batch**.
15. Click **Done**.
16. You can now view the output log, if selected.

Understanding the Address Coding tab

To better understand the Address Coding tab see the following table which describes the options available.

Option	Description
Define Input Fields	
Standard	<p>Once you have selected a file to process, Centrus Desktop populates the input fields based on the input file's field names. If Centrus Desktop did not populate an input field, or did not populate it with the correct field, click the drop-down arrows to select from the available address file fields.</p> <p>To remove a field, select the special field <none> at the top of the list box of input field names.</p> <p>NOTE: If you are using Z4 Change Processing, you must select address file fields for ZIP Code and ZIP + 4.</p> <p>Using different input formats</p> <p>In many files, the address information is contained in discrete fields that correspond to Firm, Address, City, State, ZIP Code, and possibly ZIP + 4 or Country.</p> <p>Some files, however, do not have discrete fields for last line information (City, State, and ZIP). You can assign the field containing the Last Line information to the City input field.</p>

Option	Description
Multiline	<p>Select the Multiline Input check box and the field identifiers for the input Fields change to Line 1 through Line 6, and the Optimization Sort check box disappears. When using this option, you may specify any six fields that Centrus Desktop should search through in order to find an address. Centrus Desktop can determine, for each record, which fields contain address information, and which fields do not. Fields containing no address information are ignored.</p> <p>You should specify fields in logical address order. You should list fields that could contain the street address information before fields that could contain last-line information (city, state, and ZIP).</p> <p>For example, Centrus Desktop can handle the following address: Attn. Product Management Precisely 4750 Walnut St. Ste 200 Boulder, CO 80301</p> <p>but not the following address: The Private Mail Box Designator and Private Mail Box Number output address elements are not available when using the Multiline Input option.</p> <p>NOTE: This option does not affect Canadian processing.</p> <p>The following are guidelines for using multiline mode:</p> <ul style="list-style-type: none"> • You can specify from two to six input fields. Note that the Address Coding module cannot detect the address and last line information when all of the information is in one field. • Firm names should appear before the street address line. • You can list suite or apartment numbers on, above, or below the street address line. However, they must appear before the last line information. • Last line information must come after the street address information. You can specify different input fields for City, State, and ZIP Code, but you must list them in that order.
Processing Parameters	
Process if Unmatched or Field is Blank	<p>Allows you to process only those records with missing data in a particular field, which you specify using the drop-down list. This is useful for cleaning up a previously processed database.</p> <p>This option is ignored, and the record is processed if any of the following critical match fields are missing or empty:</p> <ul style="list-style-type: none"> • Latitude • Longitude • Location Code • Match Code <p>This option is ignored and the record is processed if any of the following critical match fields begins with an "E".</p> <ul style="list-style-type: none"> • Location Code • Match Code <p>NOTE: This option is disabled when producing a CASS report—Centrus Desktop must process all records for CASS compliance.</p>
Optimization Sort	<p>Causes Centrus Desktop to process the file in ZIP Code sequence. In most cases, this significantly speeds processing. Optimization Sort requires a ZIP input field, and is limited to processing non-text files.</p>
Assign Outputs	

Option	Description
Output Assignment	<p>Associates address data elements with output field names. By default, the list of field names is the same as the input fields in the Define Input Fields section of the dialog box. You can assign address data elements to existing field names, or create new fields to receive the data.</p> <p>NOTE: If you are using Z4 Change Processing, be sure to select the Z4ChangeResult address element in this dialog box.</p> <p>By default, outputs are ordered alphabetically by field name. Click Output Assignment to view outputs ordered alphabetically by output assignment.</p>
Address Elements	<p>To associate a data element with an output field:</p> <ol style="list-style-type: none"> 1. Select a field name. 2. Select the desired data element. 3. Click Assign. <p>The selected element appears in the Output Assignment column next to the field name to which it is assigned. An A icon appears before the element, signifying that the data is assigned to an output field.</p> <p>To create a new field:</p> <ol style="list-style-type: none"> 1. Click the data element you wish to assign. 2. Click New. The <i>New Field</i> dialog box appears. 3. Specify the name, type, width, and (if numeric) decimal places desired, or click OK to accept the default values. <p>The selected element appears in the Output Assignment column next to the field name to which it is assigned. An "A" icon appears before the address element, signifying that the data is assigned to your new output field.</p> <p>If the currently selected field is an input field, click Unassign to remove its output assignment. If the currently selected field is a new field, click Unassign to delete it.</p> <p>You may unassign an output assignment from any tab.</p>
Blank if Unmatched	<p>Clears all output fields defined within the module if Centrus Desktop cannot match the record.</p>

Common elements in standardization

Centrus Desktop can automatically assign the most commonly-used address standardization data elements to their corresponding field names, or create new fields for these data elements. From the main menu, select **Edit**, then **Standardization Defaults**. Select **Existing Fields** to have Centrus Desktop attempt to assign the standardization defaults to your existing fields. Select **New Fields** to create new fields for any standardization defaults you have not yet assigned. The standardization default data elements are as follows:

- Firm Name
- Address Line
- Last Line
- Delivery Point Barcode
- Check Digit
- Carrier Route

- Urbanization (Puerto Rico)
- Match Code

Common elements in geocode data

Centrus Desktop can automatically assign the most commonly used geocode data elements to their corresponding field names, or create new fields for these data elements. From the main menu, select **Edit**, then **Geocode Defaults**. Select **Existing Fields** to have Centrus Desktop attempt to assign the standardization defaults to your existing fields. Select **New Fields** to create new fields for any geocode defaults you have not yet assigned. The geocode default data elements are:

- Latitude
- Longitude
- Match Code
- Location Code
- Census Block Group (12 Digits)

Note: This option does not affect Canadian processing.

Available elements

This section details all information about the address data available within Address Coding. The following table lists each address element with the maximum length of the information returned, as well as a description of the element.

The following table describes the available output elements.

Address element	Size	Description
Address Line	255	Full address line (e.g., 1920 MAIN ST W APT 12).
Address Line 2	60	Second address line (e.g., Suite 200).
Address Type	2	Address Type regarding number of units: <ul style="list-style-type: none"> • S – Single unit • M – Multiple units • P – Post Office box • X –Unknown <p>NOTE: This field is only available with the MLD Extended Attributes Dataset</p>
APN ID	45	Assessor's Parcel Number.
Aux User Data	300	User data from the auxiliary file. Blank if no file.
Carrier Route Sortation	1	Indicates whether a discount is provided for letter-sized carrier route sorted mail in current ZIP Code.
Carrier Route	4	Carrier Route ID number.
CBSA Division Name	127	CBSA division name.

Address element	Size	Description
CBSA Division Number	5	CBSA division number.
CBSA Name	127	CBSA name.
CBSA Number	5	CBSA number.
CSA Name	127	CSA name.
CSA Number	3	CSA number.
Census Block	15	Full block code.
Census Block	3	Block code only.
Census Block Group	1	Block Group code only.
Census Block Group	12	Full Block Group code.
Census Block Suffix	1	Centrus Block Suffix.
Census Tract	11	Full Census Tract code.
Census Tract	6	Census Tract code only.
Check Digit	1	Used with the DPBC to ensure that the bar code printed on the mailing piece is correct.
City Delivery	1	Indicates whether a Post Office has city-delivery carrier routes.
City Name	28	Valid USPS city name (such as BOULDER).
City State Record Name	28	City name for the matched address from the City State record.
CMSA Name	80	Consolidated Metropolitan Statistical Area name.
CMSA Number	4	Consolidated Metropolitan Statistical Area number.
Country	128	Country name.
County FIPS Code	3	County code only (e.g., 013).
County FIPS Code	5	Full state and county code (e.g., 08013).
County Name	128	County name.

Address element	Size	Description
Data Type	3	The type of data used to make the match: <ul style="list-style-type: none"> • 0 - USPS data. • 1 - TIGER data. • 2 - TomTom data. • 3 - Sanborn point-level data. • 4 - Deprecated • 5 - Deprecated • 6 - NAVTEQ data. • 7 - TomTom point-level data. • 8 - Centrus point-level data • 9 - Auxiliary file data • 10 - User dictionary • 11 - NAVTEQ point-level data • 12 - Master Location Data
Default Match	1	Contains one of the following values: <ul style="list-style-type: none"> • Y - Either High-Rise Default or Rural Route Default returned Y. • Blank - Both High-Rise Default and Rural Route Default returned N or Blank.
Delivery Point Barcode	2	A two-digit field that, when appended to the end of the 9-digit ZIP + 4 Code, creates the Delivery Point Bar Code, which is then printed in the address section on the mailing piece to assist with automated sorting.
DPV Confirmation Indicator	1	DPV confirmation indicator.
DPV CMRA Indicator	1	DPV CMRA indicator.
DPV False Positive Indicator	1	Indicates if Centrus Desktop found a false-positive match.
DPV Footnote 1	2	Contains information about matched DPV records: <ul style="list-style-type: none"> • AA - ZIP + 4 matched record • A1 - For failure to match a ZIP + 4 record. • Blank - Address not presented to hash table or DPV data not loaded.
DPV Footnote 2	2	Contains information about matched DPV records: <ul style="list-style-type: none"> • BB - All DPV categories matched. • CC - Matched primary/house number, but secondary/unit number did not match. • M1 - Missing primary/house number. • M3 - Invalid primary/house number. • N1 - Matched primary/house number, but missing high rise secondary number. • P1 - Missing PS, RR, or HC Box number. • P3 - Invalid PS, RR or HC Box number. • F1 - All military addresses. • G1 - All general delivery addresses. • U1 - All unique ZIP Code addresses. • Blank - Address not presented to hash table or DPV data not loaded.

Address element	Size	Description
DPV Footnote 3	2	Contains information about matched DPV records: <ul style="list-style-type: none"> • R1 - Matched CMRA, without a present secondary/unit number. • RR - Matched CMRA blank for address not presented to hash table or DPV data not loaded.
DPV No Stat	1	CDS pre-processing.
DPV Vacant	1	The DPV Vacant Table contains delivery points that were active in the past but are currently vacant and in the majority of cases unoccupied for over 90 days and not receiving mail delivery.
EWS Match	1	Contains a letter indicating whether the record matched to EWS data: <ul style="list-style-type: none"> • Y - match denied because it matched to EWS data. • Blank - input record did not match to EWS data.
Extra Line 1-6	103	Used to capture data contained in unassigned address lines
Extra/Mail Stop	60	Contains address information appearing after mail stop designator words: MSC, MS, MAILSTOP, MAIL STOP, ATTN, ATTENTION
Firm Name	40	Firm name, as known by the USPS or CPC, or as entered; blank if the USPS or CPC does not know what firm is at that location
High Rise Default	1	Contains information on high-rise records: <ul style="list-style-type: none"> • N - Matched to an exact high rise record or a street record. • Y - Exact record not found. Matched to the USPS default high rise record or a street record. The input address should be checked for accuracy and completeness. • Blank - Flag does not apply to the input address (e.g., P.O. Boxes and General Delivery addresses) or no match was found.
Incorporated Place Indicator	2	Incorporated Place Indicator: <ul style="list-style-type: none"> • I - Incorporated place • N - Not an incorporated place • X - Unknown <p>NOTE: This field is only available with the MLD Extended Attributes Dataset</p>
Intersection Flag	1	T if an intersection match was made, or F if a normal address match was made.
LACSLink Indicator	1	LACSLink indicator.
LACSLink Return Code	2	LACSLink return code.
LACS Status	1	Locatable Address Conversion Service Status Indicator: <ul style="list-style-type: none"> • L - old (usually rural route) address converted for the LACS system • Blank - Not applicable
Last Line	60	Full last line (e.g., BOULDER CO 80301-1234).
Latitude	10	Latitude coordinate in decimal degrees to 6 decimal places (such as 123.234234). <p>NOTE: Latitude and Longitude must be used together, or not at all.</p>

Address element	Size	Description
Location Code	4	Locational accuracy of the match. See “Location codes” on page 75 for details. NOTE: This field is only available with the MLD Extended Attributes Dataset
Longitude	11	Longitude coordinate in decimal degrees to 6 decimal places (such as 123.234234). The number is positive or negative depending on the setting of the Negate Longitudes check box in the Options dialog box. NOTE: Latitude and Longitude must be used together, or not at all.
LOT (Line of Travel) Number	4	Numeric LOT code used for presort.
LOT Direction Flag	4	LOT direction: <ul style="list-style-type: none"> • A - Ascending • D - Descending
Lot Size of Parcel	11	Lot size of the parcel expressed in square meters; 0 if none. NOTE: This field is only available with the MLD Extended Attributes Dataset.
Match Code	4	Components of an address that were modified for a successful match. If a match was not successful, explains why the match could not be made. See “Match codes” on page 65 for details. This field is only available with the MLD Extended Attributes Dataset.
MCD Name	40	Minor Civil Division name from the auxiliary file. Blank if no auxiliary file match.
MCD Number	5	Minor Civil Division number form the auxiliary file. Blank if no auxiliary file match.
MEC Latitude	13	Latitude of Minimum Enclosing Circle (MEC) expressed with an implied 6 digits of decimal precision; 0 if none. For example: 34809676 means 34.809676. NOTE: This field is only available with the MLD Extended Attributes Dataset.
MEC Longitude	13	Longitude of Minimum Enclosing Circle expressed with an implied 6 digits of decimal precision; 0 if none. For example: -92447089 means -92.447089. NOTE: This field is only available with the MLD Extended Attributes Dataset.
MEC Radius	12	Radius of Minimum Enclosing Circle (in square feet) expressed as a whole number. For example: 1234 means 1,234 square feet. NOTE: This field is only available with the MLD Extended Attributes Dataset.
Metro/Micropolitan Flag	1	Metropolitan or micropolitan flag.
MSA Name	65	Metropolitan Statistical Area name.
MSA Number	4	Metropolitan Statistical Area FIPS number.
Parcel Centroid Elevation	7	Parcel centroid elevation.

Address element	Size	Description
pbKey	13	A unique address identifier returned when an address match is returned from the Master Location Dataset. The leading character is a 'P'. For example: P00001XSF1IF
Postal Code	10	Canadian postal code.
Preferred City Name	28	Preferred city name for the output ZIP Code of the matched address.
Primary Post-Directional	2	Post-directional (such as E).
Primary Pre-Directional	2	Pre-directional (such as NW).
Primary Short Post-Directional	2	Shortest possible post-directional determined by CASS rules.
Primary Short Pre-Directional	2	Shortest possible pre-directional determined by CASS rules.
Primary Short Street Name	2	Shortest possible street name determined by CASS rules.
Primary Short Street Suffix	2	Shortest possible street suffix determined by CASS rules.
Primary Street Name	40	Street name (such as MAIN).
Primary Street Suffix	4	Street suffix, or type (such as ST).
Private Mail Box (PMB) Designator	4	Private mail box designator.
Private Mail Box (PMB) Number	8	Private mail box number.
Point ID	10	Unique point ID of the matched record when matched to point-level data. Blank if the matched record is not from point-level data.
Range Record Type	1	For non-intersection matches, a letter denoting the USPS Range type, where: <ul style="list-style-type: none"> • G - General delivery record • H - High-rise record • F - Firm record • S - Street record • P - P.O. Box record • R - Rural route/highway contract record
RDI Return Code	1	Residential Delivery Indicator (RDI): <ul style="list-style-type: none"> • Y = Residence • N = Business • Blank = Not processed through RDI
Residential or Business Indicator	2	Usage indicator: <ul style="list-style-type: none"> • R - Residential use • B - Business use • M - Mixed use – residential and business • X - Unknown use <p>NOTE: This field is only available with the MLD Extended Attributes Dataset.</p>



Address element	Size	Description
Rural Route Default	1	Contains one of the following values: <ul style="list-style-type: none"> • N - Matched to an exact rural route record. • Y - Exact record not found. Matched to USPS default rural route record. The input address should be checked for accuracy and completeness. • Blank - Does not apply to the input address (for example, PO Boxes and General Delivery addresses) or no match was found.
Secondary Post-Directional	2	Second post directional.
Secondary Pre-Directional	2	Second pre-directional.
Secondary Short Street Name	2	Second shortest possible street name determined by CASS rules.
Secondary Short Street Suffix	2	Second shortest possible street suffix determined by CASS rules.
Secondary Short Post-Directional	2	Second shortest possible post-directional determined by CASS rules.
Secondary Short Pre-Directional	2	Second shortest possible pre-directional determined by CASS rules.
Secondary Street Name	40	Second street name.
Secondary Street Suffix	4	Second street suffix or type.
Segment ID	10	Segment ID.
Short Address Line	60	Shortest possible address determined by CASS rules.
Short Last Line	60	Short city name, state, and 10-digit zip determined by CASS rules.
Short City Name	28	City name, 13 characters or less whenever possible determined by CASS rules.
SuiteLink Return Code	2	Suite ^{Link} return code.
State Abbreviation	2	2-letter state (or Province) abbreviation.
State FIPS Code	2	State code.
TIGER Face ID		TIGER Face Identifier (TFID). This field can be used to match to all Census geocodes using external data; 0 if none. NOTE: This field is only available with the MLD Extended Attributes Dataset.
TIGER Place Code	8	TIGER Place code; 0 if none. NOTE: This field is only available with the MLD Extended Attributes Dataset.
TIGER Urban Area ID (UACE)	6	TIGER Urban Area Identifier. Defines the urban area if any; 0,if none. NOTE: This field is only available with the MLD Extended Attributes Dataset.
Unit Designator	4	Unit designator (such as STE).
Unit Designator 2	4	Second unit designator parsed from the address line, supported only in CASS mode.

Address element	Size	Description
Unit Number	11	Unit or apartment number (such as 2A).
Unit Number 2	11	Second unit number parsed from the address line, supported only in CASS mode.
Urban Area Population	11	Census population of the urban area; 0 if none.
Urbanicity Indicator	2	<p>Defines, per the Census, the Urbanicity of the address using TIGER UACE codes for categorization.</p> <ul style="list-style-type: none"> • L – Large Urban Area (50,000 or greater population) • S – Small Urban Area (2,500-50,000 population) • R – Rural • X – Unknown <p>NOTE: This field is only available with the MLD Extended Attributes Dataset.</p>
Urbanization	30	Urbanization code for the address, used for Puerto Rican addresses only.
Z4ChangeResult	2	<p>One of the following values:</p> <ul style="list-style-type: none"> • N - No changes. Your address records match the current USPS Z4 data. • Y - Changes to current USPS Z4 data. Re-standardize your address records.
ZIP Classification	1	<p>Describes the type of area that a 5-digit ZIP Code serves:</p> <ul style="list-style-type: none"> • M - Military ZIP Code. • P - P.O. Boxes only. • U - Unique ZIP Code (single organization). • Blank - standard ZIP Code.
ZIP Code	5	ZIP Code (e.g., 80301) address elements for U.S. and Canadian addresses.
ZIP Facility	1	<p>USPS City State Name Facility Code:</p> <ul style="list-style-type: none"> • A - Airport Mail Facility (AMF). • B - Branch. • C - Community Post Office (CPO). • D - Area Distribution Center (ADC). • E - Sectional Center Facility (SCF). • F - Delivery Distribution Center (DDC). • G - General Mail Facility (GMF). • K - Bulk Mail Center (BMC). • M - Money Order Unit. • N - Non-postal community name. • P - Post Office. • S - Station. • U - Urbanization.
ZIP+4 Extension	4	ZIP + 4 trailing code (in the case of 80301-1234, the extension is 1234).
ZIP10	10	Complete ZIP + 4 with hyphen (such as 80301-1234).
ZIP9	9	Complete ZIP + 4 (such as 803011234).

Latitude and Longitude must be used together, or not at all.

In an xBASE file, if the fields for Latitude and Longitude are numeric and have 0 decimal places, Latitude and Longitude are returned in millionths of degrees. ASCII files always receive decimal degrees.

Setting Address Coding options

1. To set the options for an existing task, open the task, if not already open. Do this by either selecting **File > Open Task** from the menu or by clicking the  icon from the toolbar.
2. Open the **Option** window by either selecting **Process > Options** from the menu, or the  icon from the toolbar.
3. When the **Options** window opens, from the **Address Coding Options** tab, select the appropriate options as detailed below:

Option	Description
Country	
United States	Performs standard or multiline processing using selected U.S. Geocoding and U.S. Address Coding options.
Canada	Performs standard processing only.
Automatic	Determines if the address is U.S. or Canadian and processes it accordingly.
US Geocoding Options	
Address Matching/ Matching Tolerance	<ul style="list-style-type: none">• Tight - Requires that you have already standardized your addresses to USPS standards. This is the fastest option.• Close (default) - Recommended for most uses. It allows minor misspellings, as well as incorrect or missing directionals or street types in the input addresses.• Extended - Is similar to Close, except that the street name search looks at all streets that have the same first letter, rather than using pattern matching. This setting also performs the widest search possible, using the USPS Finance Area. You should review all matches made by this setting where Centrus Desktop modified the street name. You can identify these matches using the Match Code. (For more information, see "Match codes" on page 65.) This is the slowest setting.• CASS - Uses the USPS rules to obtain a match and produces a CASS report. With this setting, some addresses that could be successfully coded using the Close or Extended settings may not be successfully matched.• GeoStan™ Close Mode - Corresponds to GeoStan Close mode.• Interactive - For single-line address matching only. Permits more flexible matching patterns and may, in some cases, return additional possible matches than the other modes.
NOTE: Matching Tolerance does not affect Canadian processing.	

Option	Description
ZIP Centroid Matching/ Minimum Quality	<ul style="list-style-type: none"> • 9 Digit Best Location - Uses the most positionally accurate 9-digit centroids. These centroids are almost as accurate as an address geocode, in that they are usually accurate to a single block face. Census accuracy varies, but most centroids in this class are accurate to the Block Group level. • 9 Digit Good Location - Uses 9-digit centroids with very good positional accuracy. These centroids are usually accurate to a single block face. Census accuracy varies, but most centroids in this class are accurate to the Block Group or Census Tract level. • 9 or 7 Digit Location - Uses all 9- or 7-digit centroids. A 7-digit centroid is positionally accurate to within several blocks in most areas. Census accuracy varies. This setting yields all but 5-digit centroids. • Block Group Accuracy - Uses centroids that are accurate to the Block Group level. Positional accuracy varies, but is normally accurate to the city block on which the address is located. • Census Tract Accuracy - Uses centroids that are accurate to the Census Tract level or better. Positional accuracy varies, but is normally accurate to within several city blocks of the address. • 5 Digit Only - Uses only 5-digit centroids. This is the least accurate geocode, but it is the fastest to assign. • Best Centroid (default) - Uses the best centroid, but all centroids are available. <p>See Location codes for a complete listing of the location codes and settings assigned to each centroid type.</p> <p>NOTE: This option does not affect Canadian processing.</p>
Street Centroid Matching	<p>When you select the Street Centroid Matching checkbox, if a street name is encountered while geocoding, and there is no matching address range, Centrus Desktop will attempt to locate the street within the input ZIP Code or city if there is no input ZIP Code. If Centrus Desktop is able to locate the street, it will return a geocode along the matched street segment rather than the geocode for the entered ZIP Code or ZIP + 4.</p> <p>If a street number is entered, Centrus Desktop will return the coordinates of the end point of the closest numeric street segment within the input ZIP Code. When there is no input Zip Code, the closest numeric street segment of all the Zip Codes within the input city will be returned.</p> <p>If no street number is entered, the centroid of a street segment within the input Zip Code will be returned. The centroid of a street segment for all the Zip Codes within the input city will be returned when there is no input Zip Code.</p> <p>See Location codes for a complete listing of the location codes and settings assigned to each centroid type.</p> <p>NOTE: This option is not available in the CASS Address Matching processing mode, and it does not affect Canadian processing.</p>
City Centroid Fallback	<p>Allows for an automatic fallback to a city centroid geocode if no match is found and the input ZIP Code is missing or incorrect. Although geographic centroid geocoding is less precise than street or postal geocoding, it may be suitable for certain applications.</p>
Census ID Format	<ul style="list-style-type: none"> • Delimited - 08 013 0002.01-1 • Census - 080130002.011 • Digits only - 080130002011 <p>NOTE: This option does not affect Canadian processing.</p>
Finance Area Search	<p>A search within a finance area, which is a collection of ZIP Codes within a contiguous geographic region.</p>

Option	Description
Negate Longitudes	<p>When you select the Negate Longitudes checkbox (the default), Centrus Desktop returns longitudes as negative numbers for Western hemisphere locations. When you clear the checkbox, Centrus Desktop returns longitudes as positive numbers. Latitudes are always returned as positive numbers.</p> <p>This option is available for those applications that require positive longitudes. Most mapping and GIS applications today use negative longitudes for western hemisphere locations.</p> <p>NOTE: This option does not affect Canadian processing.</p>
Allow 5-Digit ZIP Code Census Centroid ID	<p>When selected, this checkbox permits the assignment of the Census FIPS Code even when only 5-digit ZIP Code centroids are available. The default setting for this checkbox is cleared (not selected).</p> <p>NOTE: This option does not affect Canadian processing.</p>
Use Address Point Interpolation	<p>Address point interpolation uses a patented process that improves upon regular street segment interpolation by inserting point data into the interpolation process.</p>
Return coordinates in...	<ul style="list-style-type: none"> • NAD 27 - This has its origin at Meades Ranch, Kansas. NAD27 does not include the Alaskan islands and Hawaii. Latitudes and longitudes that are surveyed in the NAD27 system are valid only in reference to NAD27 and do not tie to any maps outside the U.S. • NAD 83 - This is earth-centered and defined with satellite and terrestrial data. NAD83 is compatible with the World Geodetic System 1984 (WGS84), the terrestrial reference frame associated with the NAVSTAR Global Positioning System (GPS) now used extensively for navigation and surveying. • Offset/Backset - This option moves the geocoded address in the desired number of feet off the center of the street. The default is 50 feet for the best visual representation for mapping.
US Address Coding Options	
Address Line Two Preference	<p>Two-line addressing allows your input addresses to have two address lines. Centrus Desktop scans these two lines and extracts and standardizes a two-line address, if possible. You can set Centrus Desktop to accept a P.O. Box or a street address as the preferred returned address. If you do not specify an option, or if the two lines contain similar information, Centrus Desktop uses line one of the input.</p> <p>If a unit designator is present on one address line and a valid address appears on the other line, the unit information is appended to the address.</p> <p>NOTE: This option does not affect Canadian processing.</p>
Firm Name Lookup	<p>You can match to the input firm name, or business name, rather than an address. Firm or business name must be in the Firm name input field.</p> <p>Preferences:</p> <ul style="list-style-type: none"> • Disabled - This feature is off. • Prefer Street Name - Matches to the address line, if a match is not made, then a match is attempted to the Firm name line. • Prefer Firm Name - Matches to the Firm name line, if a match is not made, then a match is attempted to the address line. • Street Lookup Only - Matches to the address line.
Enhanced Building Search	<p>When selected, the Enhanced Building Search checkbox enables you to match to the default range record for a building name entered in the input address line rather than an address. An input unit number for the building is not required. The default setting for this checkbox is cleared (not selected). This option does not function in CASS mode.</p> <p>NOTE: This option does not affect Canadian processing.</p>

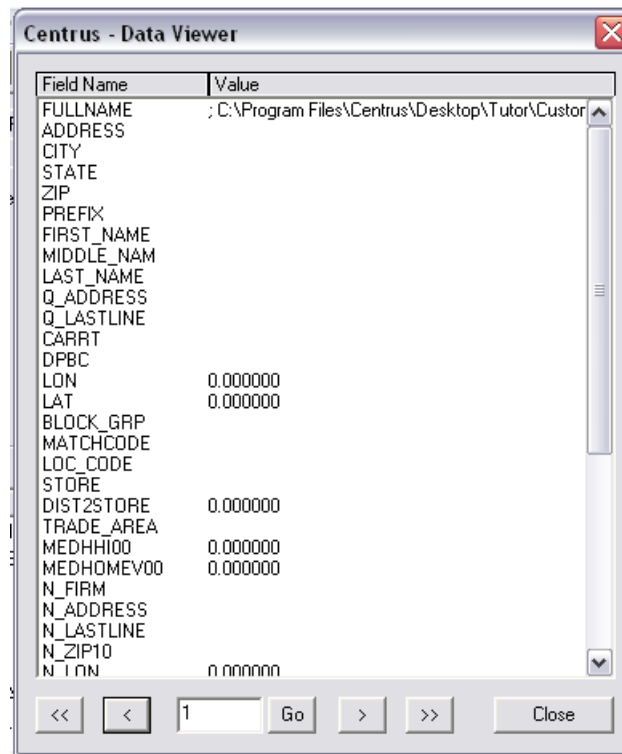
Option	Description
Prefer Input ZIP over Input city	This setting allows a user to prefer a match based on the input ZIP Code rather than the input city. In the case where the input ZIP Code and city do not agree, the city name will be changed if a match is made to the input ZIP Code. If no match is made to the input ZIP Code, a match can still be made to the input city if one exists.
Check for First Letter Missing/Wrong	The first letter missing/ wrong feature enables Desktop to look for the correct first letter of a street address if the first letter is missing or incorrect. Desktop searches through the alphabet looking for possible, correct first letters to complete the street address.
Allow Ranged Address Numbers	This feature allows a search for address ranges. Some business locations are identified by address ranges. For example, a shopping plaza could be addressed as 10-12 Front St. This is how business mail is typically addressed to such a business location. These address ranges can be geocoded to the presumed mid-point of the range.
Mixed Case Output Addresses	If you select the Mixed Case Output Addresses checkbox, Centrus Desktop returns addresses with the first letter of each word capitalized. Normally, Centrus Desktop returns addresses in uppercase letters, according to USPS and Canada Post Corporation (CPC) recommendations.
Output Corrected Last Line	This feature, when enabled, corrects elements of the output last line, providing a good ZIP Code or close match on the soundex even if the address would not match or was non-existent.
Z4 Change Processing	Controls ZIP + 4 change processing, enabling you to update addresses whose ZIP + 4 codes have changed. Enter the date (such as 12/2006) that the list records were last processed in the "Last Process Month/Year" text box. Once Z4 Change Processing is activated, only records that have changed since the last time the list was processed are re-processed. See "Z4 Change Processing" on page 25 for an explanation of this feature. NOTE: This option does not affect Canadian processing.
Postal Reports	
Produce Canada Post SERP Report	When the selected, Centrus Desktop produces a text file containing the report information. Specify the name and location of this file by clicking Browse and entering the path and name in the file selection dialog box. The View checkbox allows you to display the SERP report in a text editor when processing is complete. If not selected, the SERP report does not display. This is a useful option for processing in batch mode.

Data Viewer

The **Data Viewer** enables you to view the contents of the current input file, one record at a time.

To use Data Viewer:

1. Click **Data Viewer** or select **Tools > Data Viewer**.



Field names are shown in the left column of the *Data Viewer* dialog box; field values appear in the right column.

2. Click the arrow buttons to navigate forwards and backwards through the file.
3. You can also type a record number into the text box and click **Go** to view a particular record.

5 – Using Closest Site and Point-in-Polygon

In this chapter

Understanding Closest Site	45
Understanding Point-in-Polygon	45
Creating a Closest Site and Point-in-Polygon task	45
Importing Closest Site or Point-in-Polygon layers	47
Removing Closest Site or Point-in-Polygon layers	48
Adding a Closest Site or Point-in-Polygon layer	48
Understanding the Closest Site and Point-in-Polygon tabs	48
TObject files and layers	50
Point-in-Polygon analysis	50
Shape Layers	51
Creating store-based PMAs	52
Creating customer-based PMAs	53



Understanding Closest Site

Closest Site analysis is a distance test between two sets of points. Closest Site calculations return the distance from the address to the site point, as well as the name of that site point.

Closest Site requires geocoded addresses with Latitude/Longitude coordinates as input. To geocode the addresses in your files, we recommend that you use Address Coding, for the quickest, most accurate geocode assignments. You can even geocode and perform spatial analyses in the same task.

The available spatial outputs are determined by the contents of the object files or layers you have specified in the *Process Options* dialog box. Geographic features (points, lines, or polygons) are imported into the native Centrus Desktop format. To import your data into the .gsb format, Centrus Desktop is able to import most popular third-party data formats.

GIS applications separate the different types of information into data “layers.” For example, store locations might be defined in on one layer and main roads on another.

Use the Closest Site tab to determine which data layers are available to the Closest Site module. You can add data layers that are already in .gsb format, such as the States.gsb and Counties.gsb files. You can also import layers from third-party data providers.

Understanding Point-in-Polygon

Point-in-Polygon allows you to determine whether or not a given geocoded point lies inside a polygon drawn on a map.

The buffer zone around the polygon is defined, allowing you to determine if the point lies well within the boundary, near to the boundary but inside it, near to the boundary but outside it, or well outside the boundary.

GIS applications separate the different types of information into data “layers.” For example, store locations might be defined in on one layer and main roads on another.


Use the Point-in-Polygon tab to determine which data layers are available to the Point-in-Polygon module. You can add data layers that are already in .gsb format, such as the States.gsb and Counties.gsb files. You can also import layers from third-party data providers.

Note: You can only use data layers built with buffers enabled for use with the Point-in-Polygon function.

Creating a Closest Site and Point-in-Polygon task

Closest Site analysis compares the geocoded addresses (or other points) in your input file to a geocoded site layer you specify in the Closest Site options tab. Centrus Desktop can identify the closest sites for each point in the input file, and return the site’s identifier and the straight-line distance to the site for each site found.

To create a new task:

1. Select the Closest Site tab, and click **Configure**.
2. Select **Process > Options > Closest Site** tab from the menu, or the  icon from the toolbar.
3. When the **Process Options** window opens, click **Add GSB**.
4. When the **Select Layers** window opens, select the appropriate file and click **Open**.
5. From the **Process Options** window, select the **Point-in-Polygon** tab.
6. When the **Select Layers** window opens, select the appropriate file and click **Open**.
7. Select the appropriate input options for Latitude and Longitude.


The options for Latitude and Longitude are the same as the Field Name under Assign Outputs.

The options under Field Name correspond to your input data when creating the task.

8. Select the necessary outputs from the **Available Outputs** field, and click **Assign** or **New**. See the following table for more information on the output options.

Available outputs	Description
Closest Site	
Name	Name of the feature as it is defined in the layer.
Distance	Distance from the address to the closest site in the layer. The GSB file must be built with buffering enabled to return a distance value.
Direction	Direction from the address to the closest site in the layer, measured in degrees, with north at 0/360 degrees.
Point-in-Polygon	
Status	Defines where an address lies in relation to the polygon. Status codes are: <ul style="list-style-type: none">• P in polygon• E Edge; in buffer, inside polygon• B In buffer, outside polygon• N Not found Refer to " Point-in-Polygon analysis " on page 50 for an illustration of the status codes.
Distance	The distance from the address to the edge of the polygon. The GSB file must be built with buffering enabled to return a distance value.
Name	The name of the feature as it is defined in the layer.


Note: For more information on inputs and outputs, see [Data file reference](#).

9. You can now process the task by selecting **Process > Process Task** or **Batch Process Task** from the menu, or by clicking the  icon from the toolbar.

10. When the **Process** window opens, click **Next Error** or **Batch**.
11. Click **Done**.

Importing Closest Site or Point-in-Polygon layers

To import third-party layer files:

1. Select **Process > Options** from the menu or the  icon from the toolbar.
2. Select either the **Closest Site** or the **Point-in-Polygon** tab.

The following steps apply to either chosen tab.

3. Click **Import**.
4. When the **Importer** window opens, click **Browse** to select the path and name of the file to import.

To determine which field is used as the object's identifier, click the **Identifier Field** drop-down list box.

5. Click **Browse** on the *Output* area of the dialog box to select the object file (.gsb) to create.
6. Verify that the **Enable Buffering** checkbox is selected. If this checkbox is not selected, you do not receive in-border or in-buffer polygon locations and distance-to-border values.

To create attributes to receive more information about the points, select the **Create Spatial Attributes** checkbox. If the input file is a proprietary shape file, the file must be a .shp or .tab file. If the input is a table file, the type must be delimited, text, .dbf, or .mdb.

Note: For more information on Spatial attributes, see [Spatial attributes](#).


7. Click **Import**.
8. Click **OK**.

The **Available Outputs** selection box is populated with the standard Name, Distance, and Direction attributes, as well as the fields contained in your import file (if you imported Spatial attributes). You can now assign any of these fields as output fields.

Note: While Western-hemisphere locations are correctly expressed as negative longitudes, some mapping and GIS applications still return longitudes as positive numbers. Be sure that the longitude data in your imported layer is consistent with that of your address file.


Removing Closest Site or Point-in-Polygon layers

To remove layers:

1. Select Process > Options from the menu or the  icon from the toolbar.
2. Select either the **Closest Site** or the **Point-in-Polygon** tab.
3. Select the file you want to remove from the **Closest Site** or **Point-in-Polygon Layers** lists and click **Remove**.

Adding a Closest Site or Point-in-Polygon layer

To add a layer from a geocoded database table:

1. Select **Process > Options** from the menu or the  icon from the toolbar.
2. Select either the **Closest Site** or the **Point-in-Polygon** tab.

The following steps apply to either chosen tab.

3. Click **Add Table**. A file selection dialog box appears.
4. Select the desired file and click **Open**. The *Closest Site Table Import Settings* dialog box appears.
5. Verify that the **Latitude** and **Longitude** fields are correct.
6. Select the field you want to use as Site Name from the drop-down list, and click **OK**.

Understanding the Closest Site and Point-in-Polygon tabs

To better understand the Closest Site and Point-in-Polygon tabs see the following table which describes the options available.

Option	Description
Define Input Fields	
Longitude	Allows you to select the appropriate options for Longitude. The options for Latitude and Longitude are the same as the Field Name under Assign Outputs.
Latitude	Allows you to select the appropriate options for Latitude. The options for Latitude and Longitude are the same as the Field Name under Assign Outputs.
Processing Parameters	

Option	Description
Process if Field is Blank	<p>Allows you to process only those records with missing data in a particular field, which you specify using the drop-down list. This is useful for cleaning up a previously processed database.</p> <p>This option is ignored, and the record is processed if any of the following critical match fields are missing or empty:</p> <ul style="list-style-type: none"> • Latitude • Longitude • Location Code • Match Code <p>This option is ignored and the record is processed if any of the following critical match fields begins with an "E".</p> <ul style="list-style-type: none"> • Location Code • Match Code <p>NOTE: This option is disabled when producing a CASS report—Centrus Desktop must process all records for CASS compliance.</p>
Max Distance (Miles)	<p>Informs Centrus Desktop how far to look for a site. For example, if you are interested only in those sites within 50 miles of an address, enter 50 in the Max Distance (Miles) box.</p>
Assign Outputs	
Output Assignment	<p>Associates address data elements with output field names. By default, the list of field names is the same as the input fields in the Define Input Fields section of the dialog box. You can assign address data elements to existing field names, or create new fields to receive the data.</p> <p>NOTE: If you are using Z4 Change Processing, be sure to select the Z4ChangeResult address element in this dialog box.</p> <p>By default, outputs are ordered alphabetically by field name. Click Output Assignment to view outputs ordered alphabetically by output assignment.</p>
Available Outputs	<p>To associate a data output with an output field:</p> <ol style="list-style-type: none"> 1. Select a field name. 2. Select the desired data output. 3. Click Assign. <p>The selected element appears in the Output Assignment column next to the field name to which it is assigned. An A icon appears before the output, signifying that the data is assigned to an output field.</p> <p>To create a new field:</p> <ol style="list-style-type: none"> 1. Click the data output you wish to assign. 2. Click New. 3. When the New Field window opens, specify the name, type, width, and (if numeric) decimal places desired, or click OK to accept the default values. <p>The selected output appears in the Output Assignment column next to the field name to which it is assigned. A P or a C icon appears before the address element, signifying that the data is assigned to your new output field.</p> <p>If the currently selected field is an input field, click Unassign to remove its output assignment. If the currently selected field is a new field, click Unassign to delete it.</p> <p>You may unassign an output assignment from any tab.</p>
Blank if Unmatched	<p>Clears all output fields defined within the module if Centrus Desktop cannot match the record.</p>

Object files and layers

The Point-in-Polygon module requires geocoded addresses with Latitude/Longitude coordinates as input. To geocode the addresses in your files, we recommend that you use the Centrus Desktop Address Coding module, for the quickest, most accurate geocode assignments. You can even geocode and perform spatial analyses in the same task.

The available outputs are determined by the contents of the object files or layers you have specified in the *Process Options* dialog box. Geographic features (points, lines, or polygons) are imported into the native Centrus Desktop format. To import your data into the .gsb format, Centrus Desktop is able to import most popular third-party data formats.

The Point-in-Polygon tab displays only a **Configure** button until a .gsb file is specified in the Point-in-Polygon page of the *Process Options* dialog box.

For more information about specifying or importing layers, see [Shape Layers](#).

Point-in-Polygon analysis

Point-in-Polygon (or PiP) analysis determines in which object, or objects, a point falls. This analysis requires a buffered object file, as well as a geocoded address file containing latitude and longitude fields. The Point-in-Polygon module can perform analyses on polygons, as well as buffered lines, buffered points, and buffered polygons. Centrus Desktop can process an entire file of points against an object file very rapidly.

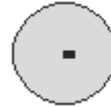
The following diagram illustrates the different types of buffering.



Buffered polygon



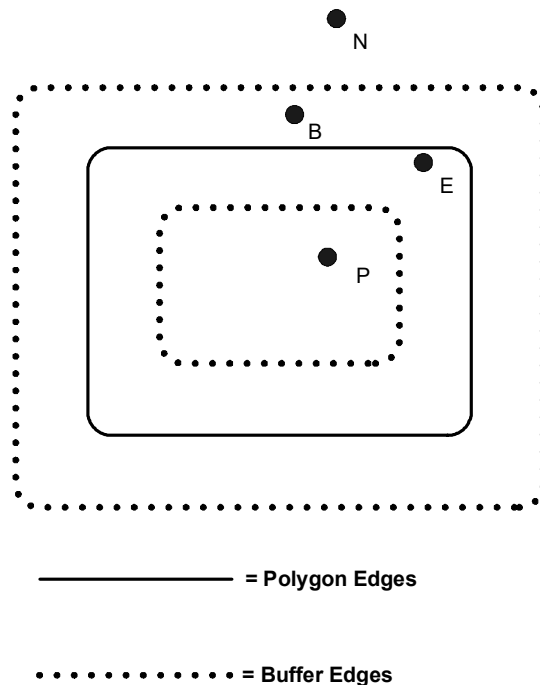
Buffered line



Buffered point

Buffered objects allow you to determine if, for example, a point is within 500 feet of a shoreline, or within 2 miles of a store, or within 1.3 miles of a sales territory. Centrus Desktop performs buffering automatically; the only requirement is that the object file (.gsb) be built with buffering enabled.

A point can be located in four areas relative to a polygon. These areas are illustrated in the following diagram, along with the status codes which represent the areas. The status codes are defined in [Status codes](#).



Shape Layers

Geographic Information System (GIS) applications separate information into data layers. For example, store locations might be defined on one layer, with main roads on another. This allows for separate display and processing when necessary, but also for cross-referencing between layers during query and analysis.

Layers are referenced to a common spatial domain so that they can be scaled and overlaid in such a way that any given reference point can be located on any layer and its data value extracted. The Primary Market Area (PMA) function generates geographic market areas based on store locations, customer addresses, and other values. For example:

- You can use your existing database with the PMA function to create a precise polygonal boundary file using the outermost address points of customers or prospects surrounding your store or office location.
- If you have a location-dependent business, PMAs can help you identify market overlap and pockets of untapped opportunity.
- To ensure that you are working with the most compact trade area possible, you can specify parameters that tighten the size of the boundary. For instance, you can set parameters to include only the closest group of customers representing 80 percent of your sales.

Even if you do not have any customer data, you can use the PMA function to create trade areas based on simple or non-overlapping rings. You can also export geography files created in Centrus Desktop (GSB files) to third-party file formats.

Creating store-based PMAs

Store-based PMAs consist of one or more simple or non-overlapping rings drawn at distances that you specify from a store location. Both simple and non-overlapping rings may be inclusive (concentric circles) or exclusive (“donuts”). The resulting PMAs are saved as data layers in Centrus Desktop’s GSB format.

To create store-based PMAs, you must have a data file containing geocoded store locations with Latitude and Longitude fields and unique store identifiers. If you need to geocode the addresses in your files, you can use the Centrus Desktop Address Coding module. For more details on geocoding, see [“Using Address Coding” on page 23](#).

To generate store-based PMAs:

1. Select **Tools > Shape Layers > Generate PMA**. The *PMA Generation - Specify Store Table* dialog box appears.
2. Specify the name of the geocoded Store Table you wish to use to generate PMAs.
Note: You cannot type file names directly into the text boxes. Instead, click the **Browse** button to select the path and filenames in file selection dialog boxes.
3. Specify the **Store Input Fields**. Centrus Desktop automatically fills in Latitude and Longitude, if possible. Check that these field names are correct.
4. Select an ID field from the drop-down list box. The ID field must contain unique values.
5. Click **Next** to continue. The *PMA Generation - Define Output Files* dialog box appears.
6. Specify the type of PMAs to generate:
 - In the **Type** section, select **Simple Rings** or **Non-Overlapping Rings**, and **Inclusive** or **Exclusive**.
 - In the **Outputs** section, specify the radius for each ring and a file name for the layer. You can specify up to three layers.
7. Click **Browse** to select the path and file names in file selection dialog boxes.
8. Click **Next** to continue. The *PMA Generation - Layer Options* dialog box appears.
9. Specify what you want to do with the resulting PMA layers:
 - **Add to PIP Layer** adds the PMA output files to the current list of data layers available to the Point-in-Polygon module.
 - **Show In Map** starts the Map Viewer and displays the PMAs after they are created. You can optionally show stores, labels, and roads in the map display.
10. Click Finish.

Creating customer-based PMAs

Customer-based PMAs are polygonal boundary files which are defined by the outermost address points of customers or prospects that surround one or more points—typically stores or office locations. The boundaries can reflect the distribution of customers, or be weighted to reflect some other variable, such as sales. The resulting PMAs are saved as data layers in Centrus Desktop's GSB format.

To create customer-based PMAs, you must have data files containing geocoded store and customer locations with Latitude and Longitude fields and unique store identifiers, with common values in each table. If you need to geocode the addresses in your files, you can use the Centrus Desktop Address Coding module. For more details on geocoding, see ["Using Address Coding" on page 23](#).

To generate customer-based PMAs:

1. Select **Tools > Shape Layers > Generate PMA**. The *PMA Generation - Specify Store Table* dialog box appears.
2. Select the **Use Customer Points** check box.
3. Specify the name of the geocoded Store Table you wish to use to generate PMAs.
Note: You cannot type file names directly into the file name boxes. Instead, click the **Browse** button to select the path and filenames in file selection dialog boxes.
4. Specify the **Store Input Fields**. Centrus Desktop automatically fills in Latitude and Longitude, if possible. Check that these field names are correct.
5. Select an ID field from the drop-down list box. The ID field must contain unique values, and should correspond to values in the customer input table.
6. Click **Next** to continue. The *PMA Generation - Specify Customer Table* dialog box appears.
7. Specify the name of the geocoded Customer Table you wish to use to generate PMAs.
8. Specify the **Customer Input Fields**. Centrus Desktop automatically fills in Latitude and Longitude, if possible. Check that these field names are correct.
9. Select an **ID** field from the drop-down list. The ID field must contain values that correspond to the ID field in the store input table.
10. Select a **Weight** field from the drop-down list, if desired.
11. Click **Next** to continue. The *PMA Generation - Define Output Files* dialog box appears.
12. Specify the type of PMAs to generate:
 - In the **Type** section, select **Inclusive** or **Exclusive**.
 - In the **Outputs** section, specify the percentage of the value you would like to include for each PMA (for example, percentage of customers, sales, and so on).
 - Specify a file name for each layer. You can specify up to three layers.
13. Click **Next** to continue. The *PMA Generation - Layer Options* dialog box appears.

14. Specify what you wish to do with the resulting PMA layers:

- **Add to PIP Layer** adds the PMA output files to the current list of data layers available to the Point-in-Polygon module.
- **Show In Map** starts the Map Viewer and displays the PMAs after the PMAs are created. You can optionally show stores, labels, customers, and roads in the map display.

15. Click Finish.

6 – Using Demographics and Geographic Determination

In this chapter

Understanding the Demographics tab	56
Using Geographic Determination	59
Available outputs	60
Geographic Determination tab	61
Adding a Geographic Determination Point file	61
Adding a Geographic Determination Line file	62
Adding a Geographic Determination Polygon file	62
Importing a Geographic Determination file	62
Removing files	63



Understanding the Demographics tab

Demographics allows you to append valuable demographics to your own databases.

To use Demographics, you must either verify the populated fields, or populate them. See the following table for more information on the Demographics options.

Option	Description
Define Input Fields	
County	Depending on your input data, this field auto populates and can be changed as needed.
Census Tract	Depending on your input data, this field auto populates and can be changed as needed.
Block Group	Depending on your input data, this field auto populates and can be changed as needed.
Block	Depending on your input data, this field auto populates and can be changed as needed.
ZIP	Depending on your input data, this field auto populates and can be changed as needed.
ZIP + 4	Depending on your input data, this field auto populates and can be changed as needed.
Processing Parameters	
Process if Field is Blank	<p>Allows you to process only those records with missing data in a particular field, which you specify using the drop-down list. This is useful for cleaning up a previously processed database.</p> <p>This option is ignored, and the record is processed if any of the following critical match fields are missing or empty:</p> <ul style="list-style-type: none">• Latitude• Longitude• Location Code• Match Code <p>This option is ignored and the record is processed if any of the following critical match fields begins with an "E".</p> <ul style="list-style-type: none">• Location Code• Match Code <p>NOTE: This option is disabled when producing a CASS report—Centrus Desktop must process all records for CASS compliance.</p>
Assign Outputs	

Option	Description
Output Assignment	<p>Associates address data elements with output field names. By default, the list of field names is the same as the input fields in the Define Input Fields section of the dialog box. You can assign address data elements to existing field names, or create new fields to receive the data.</p> <p>NOTE: If you are using Z4 Change Processing, be sure to select the Z4ChangeResult address element in this dialog box.</p> <p>By default, outputs are ordered alphabetically by field name. Click Output Assignment to view outputs ordered alphabetically by output assignment.</p>
Available Demographics	<p>To associate a data output with an output field:</p> <ol style="list-style-type: none"> 1. Select a field name. 2. Select the desired data output. 3. Click Assign. <p>The selected element appears in the Output Assignment column next to the field name to which it is assigned. An A icon appears before the output, signifying that the data is assigned to an output field.</p> <p>To create a new field:</p> <ol style="list-style-type: none"> 1. Click the data output you wish to assign. 2. Click New. 3. When the New Field window opens, specify the name, type, width, and (if numeric) decimal places desired, or click OK to accept the default values. <p>The selected output appears in the Output Assignment column next to the field name to which it is assigned. A P or a C icon appears before the address element, signifying that the data is assigned to your new output field.</p> <p>If the currently selected field is an input field, click Unassign to remove its output assignment. If the currently selected field is a new field, click Unassign to delete it.</p> <p>You may unassign an output assignment from any tab.</p> <p>Listed below are the Available Demographics:</p> <ul style="list-style-type: none"> 2010 Total Female Population 2010 Total Population 2010 Households 2010 Median Age 2010 Median Age Female 2010 Median Age Male 2010 Total Housing Units 2010 Families 2010 Average Household Size 2010 Aggregate Household (\$000s) 2010 Owner Occupied Housing Units 2010 Median Household Income

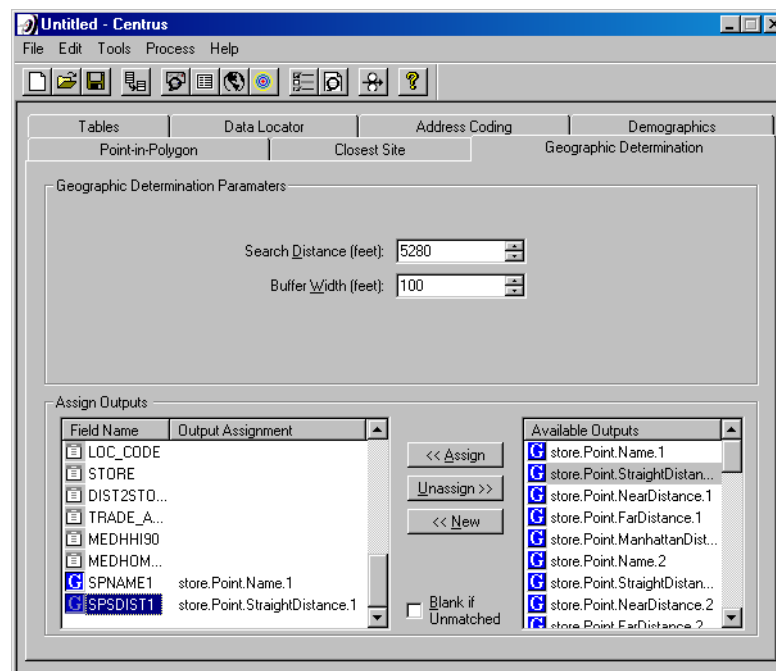
Option	Description
	2010 Median Family Income
	2010 Median Housing Value
	2010 Population in Group Quarters
	2010 % White Population
	2010 % Black Population
	2010 % Asian/Pacific Islander Population
	2010 % American Indian/Eskimo Population
	2010 Total Households with Children under 18
	2010 Total Households with Adults over 60
	2010 Householder Age 15-24
	2010 Householder Age 25-34
	2010 Householder Age 35-44
	2010 Householder Age 45-54
	2010 Householder Age 55-64
	2010 Householder Age 65-74
	2010 Householder Age 75-84
	2010 Householder Age 85+
	Census 2010 Block Group
	Census County Subdivision FIPS 55 Code
	Place FIPS 55 Code
	Census 2010 Block Group
	NECTA
	NECTA Name
	Division
	Division Name
Blank if Unmatched	Clears all output fields defined within the module if Centrus Desktop cannot match the record.

Using Geographic Determination

Geographic determination describes both the spatial relationship between two entities and the degree of confidence in that description. High confidence determinations, based on any level of geocoding (address, ZIP + 4, ZIP + 2, or ZIP Code), are critical for many geographically-sensitive business decisions.

Given a geocoded address, the Geographic Determination module provides a confidence factor and associates it with the geocode so that additional rules may be applied. This confidence factor is either a distance value (between two points or lines), or a percentage representing the amount of overlap between two polygons.

“[Changing the location of Centrus data files](#)” on page 85 explains how to select a file for processing. Once you have performed these steps, you can specify the search distance and buffer width, assign outputs, and then click **Process** on the task bar to process the file or configure a different module.



Note: Until you specify a .gsb file on the **Geographic Determination** tab of the *Process Options* dialog box, the Geographic Determination tab displays only a **Configure** button.

There are two parameters that you can use to enhance your Geographic Determination processing.

Option	Description
Search Distance	Distance, in feet, that Centrus Desktop looks for a site. The default search distance is 5280. For example, Centrus Desktop finds the distance within 5280 feet of the point and assigns a confidence level.
Buffer Width	Distance, in feet, that Centrus Desktop maps the polygon. The default is 100 feet. For example, Centrus Desktop finds the distance within 100 feet of the boundary and creates a polygon around it.

Note: Refer to for details on setting input and output fields.

Available outputs

The outputs available for the Geographic Determination module vary according to the type of file (point, line, or polygon) you specify in the *Process Options* dialog box. The name of each available output consists of the name of the GSB file, the type of file, the data element, and a number indicating a distance ranking from closest (1) to farthest (8).

For example, **store.Line.Name.1** is the Name data element associated with the closest object in the .gsb file, and the data element exists in a line file called store.gsb. The number of distance rankings for each element is specified in the input file. The following table lists the Geographic Determination elements available for use with each type of file.

Field Name	Explanation	Available With
Name	Name of the object in the file.	Point, Line, Polygon
Straight Distance	Straight line distance between two points.	Point
Near Distance	Minimum distance that exists between an error surface or a geocoded point and another point or line.	Point, Line
Far Distance	Distance between the farthest point of the error surface and the nearest point of the feature (point, line or polygon).	Point, Line
Manhattan Distance	Manhattan distance between two points. This is the distance between the points, zig-zagging along the streets, as opposed to the straight-line distance.	Point

Field Name	Explanation	Available With
Overlap	Percentage of overlap between the error surface and the input polygon.	Polygon
ConfSurfType	<p>The error (or confidence) surface type indicates the type of location that the surface encloses.</p> <p>0 - Nothing has been searched yet. 1 - The search failed - address was not found. 2 - Intersection level 3 - Address-level 4 - Point-level 5 - State level 6 - County level 7 - City level 8 - Not used in USA 9 - ZIP Code level 10 - ZIPCode+2 level 11 - ZIP Code+4 level 12 - Not used in USA</p> <p>In general, the better the location code from GeoStan™, the higher quality the surface type.</p>	Polygon

Geographic Determination tab

Use the Geographic Determination tab to determine which data layers are available to the Geographic Determination module. You can add data layers that are already in .gsb format, such as the States.gsb and Counties.gsb files. You can also import geocoded tables from database files, and import third-party layer files.

The Geographic Determination tab displays only a **Configure** button until you specify a file in the **Geographic Determination** page of the *Process Options* dialog box.

Adding a Geographic Determination Point file

To add a layer:

1. Click **Process** on the menu bar from the main Centrus Desktop screen, then select **Options**.
2. Click the **Geographic Determination** tab.
3. Click **Add Point File**. A file selection dialog box appears.
4. Select the file to add and click **Open**. The added file appears on the **Spatial Files for Geographic Determination** list.

Adding a Geographic Determination Line file

To add a layer:

1. Click **Process** on the menu bar from the main Centrus Desktop screen, then select **Options**.
2. Click the **Geographic Determination** tab.
3. Click **Add Line File**. A file selection dialog box appears.
4. Select the file to add and click **Open**. The added file appears on the **Spatial Files for Geographic Determination** list.

Note: Selecting files from the list that do not have objects for their specified type generates an error. Either change the object type, or browse to a different .gsb file.

Adding a Geographic Determination Polygon file

To add a layer:

1. Click **Process** on the menu bar from the main Centrus Desktop screen, then select **Options**.
2. Click the **Geographic Determination** tab.
3. Click **Add Polygon File**. A file selection dialog box appears.
4. Select the file to add and click **Open**. The added file appears on the **Spatial Files for Geographic Determination** list.

Note: Selecting files from the list that do not have objects for their specified type generates an error. Either change the object type, or browse to a different .gsb file.

Importing a Geographic Determination file

To import a file:

1. Click **Process** on the menu bar from the main Centrus Desktop screen, then select **Options**.
2. Click the **Geographic Determination** tab.
3. Click **Import**. The *Import File Type* dialog box appears.

Note: Geographic Determination requires that all objects in the file be of the same type.

4. Select the corresponding radio button of the file type you want to import. The *Importer* dialog box appears.
5. Select the radio button corresponding to the file type (shape files or tables files) you want to import.

6. Click the appropriate **Browse** buttons to select the file to import, and the object file (.gsb) to create.
7. Click the **Identifier Field** drop-down list to select which field to use as identifier.
8. Click **Browse** on the **Output** dialog box to select the object file (.gsb) to create.
9. Select the **Enable Buffering** checkbox to return any distance values.
10. Select the **Create Spatial Attributes** checkbox to create attributes with more information about the objects.

For more information about Spatial attributes, see [Spatial attributes](#).

Note: If the input file is a proprietary shape file, the file must be a .shp or .tab file. If the input is a table file, the type must be delimited, text, .dbf, or .mdb.

11. Click **Import**.
12. Click **OK**. The **Available Outputs** selection box is populated with the standard Name, Distance, and Direction attributes, as well as the fields contained in your import file (if you imported Spatial attributes). You can now assign any of these fields as output fields.

Note: While Western hemisphere locations are correctly expressed as negative longitudes, some mapping and GIS applications still return longitudes as positive numbers. Be sure that the longitude data in your imported layer is consistent with that of your address file.

Removing files

To remove files:

1. Select **Process > Options** from the main Centrus Desktop menu.
2. Click the **Geographic Determination** tab.
3. Select the file you want to remove from the **Spatial Files for Geographic Determination** list and click **Remove**.

A – Status codes

In this appendix

This appendix contains definitions of the match and location codes used throughout Centrus Desktop.

Match codes	65
United States	65
Definitions for 1st-3rd hex digit match code values	66
Definitions for Extended Match Code (3rd hex digit) values	67
Definitions for “Ennn” return code values	70
Correct last line match codes	71
Canada	73
Location codes	75
Address location codes	75
Street centroid location codes	79
ZIP + 4 centroid location codes	80
Geographic centroid location codes	82
ZIP Centroid Matches	83
GeoStan Canada location codes	83



Match codes

When you use Centrus Desktop to perform address standardization, it returns a match code in the **MatchCode** output field. The match code is an alpha-numeric code that encapsulates information about the address standardization process—including whether or not a match was found, the type of match found, and why no match was found (where applicable).

Note: Not all location and match codes detailed in this appendix may be available in this release of Centrus Desktop.

United States

Centrus Desktop returns match codes that indicate the portions of the address that matched or did not match. If Centrus Desktop could not make a match, the match code begins with E and the remaining digits indicate why the address did not match. The digits do not specifically refer to which address elements did not match, but rather why the address did not match.

The following table contains the match code values. You can find a description of the hex digits for the different match codes in the table following the match code table.

Code	Description
Ahhh	Same as Shhh, but indicates match to an alias name record or an alternate record.
Chh	Street address did not match, but located a street segment based on the input ZIP Code or city.
D00	Matched to a small town with P.O. Box or General Delivery only.
Ghhh	Matched to an auxiliary file.
Hhhh	House number was changed.
Jhhh	Matched to a User Dictionary.
P	Successful Reverse APN lookup match.
Qhhh	Matched to USPS range records with unique ZIP Codes. CASS rules prohibit altering an input ZIP if it matches a unique ZIP Code value.
Rhhh	Matched to a ranged address.
Shhh	Matched to USPS data. This is considered the best address match, because it matched directly against the USPS list of addresses. S is returned for a small number of addresses when the matched address has a blank ZIP + 4.
Thhh	Matched to a street segment record. Street segment records do not contain ZIP Code information. If you enter a ZIP Code, the application returns the ZIP Code you entered. If the input city and state has only one ZIP Code, the application returns that ZIP Code.
Uhhh	Matched to USPS data but cannot resolve the ZIP + 4 code without the firm name or other information. CASS mode returns an E023 (multiple match) error code.
Xhhh	Matched to an intersection of two streets, for example, "Clay St & Michigan Ave." The first hex digit refers to the last line information, the second hex digit refers to the first street in the intersection, and the third hex digit refers to the second street in the intersection. The USPS does not allow intersections as a valid deliverable address.

Code	Description
Yhhh	Same as Xhhh, but an alias name record was used for one or both streets.
Z ^a	No address given, but verified the provided ZIP Code.

a Zh may be returned if Correct Last Line is set to True. For more information see [Correct last line match codes](#) and Using correct last line.

Definitions for 1st-3rd hex digit match code values

The following table contains the description of the hex digits for the match code values.

Note: The third hex digit is only populated for intersection matches or as part of the Extended Match Code.

- For intersection matches, use the table below for the 3rd hex digit definition.
- For Extended Match Code, see [Definitions for Extended Match Code \(3rd hex digit\) values](#) in the next section.

Code	In first hex position means:	In second and third hex position means:
0	No change in last line.	No change in address line.
1	ZIP Code changed.	Street type changed.
2	City changed.	Predirectional changed.
3	City and ZIP Code changed.	Street type and predirectional changed.
4	State changed.	Postdirectional changed.
5	State and ZIP Code changed.	Street type and postdirectional changed.
6	State and City changed.	Predirectional and postdirectional changed.
7	State, City, and ZIP Code changed.	Street type, predirectional, and postdirectional changed.
8	ZIP + 4 changed.	Street name changed.
9	ZIP and ZIP + 4 changed.	Street name and street type changed.
A	City and ZIP + 4 changed.	Street name and predirectional changed.
B	City, ZIP, and ZIP + 4 changed.	Street name, street type, and predirectional changed.
C	State and ZIP + 4 changed.	Street name and postdirectional changed.
D	State, ZIP, and ZIP + 4 changed.	Street name, street type, and postdirectional changed.
E	State, City, and ZIP + 4 changed.	Street name, predirectional, and postdirectional changed.
F	State, City, ZIP, and ZIP + 4 changed.	Street name, street type, predirectional, and postdirectional changed.

Definitions for Extended Match Code (3rd hex digit) values

The Extended Match Code returns additional information about any changes in the house number, unit number and unit type fields in the matched address, as well as whether there was address information that was ignored. This additional information is provided in a 3rd hex digit that is appended to match codes for address-level matches only - A, G, H, J, Q, R, S, T or U (see [Match codes](#)).

Note: A typical match code contains up to 4 characters: a beginning alpha character followed by 2 or 3 hex digits. The third hex digit is only populated for intersection matches or as part of the Extended Match Code.

For information about the 3rd hex digit values for:

- Intersection matches, see [“Definitions for 1st-3rd hex digit match code values”](#) on page 66.
- Extended Match Codes, see the following tables.

“Address information ignored” is specified when any of the following conditions apply:

- The output address has a mail stop (GS_MAIL_STOP).
- The output address has a second address line (GS_ADDR2).
- The input address is a dual address (two complete addresses in the input address). For example, “4750 Walnut St. P.O Box 50”.
- The input last line has extra information that is not a city, state or ZIP Code, and is ignored. For example, “Boulder, CO 80301 USA”, where “USA” is ignored when matching.

The following table shows examples of the Extended Match Code 3rd hex digit return values:

Input Addressline	Output Addressline	Extended Code	Description
4750 WALNUT ST STE 200	4750 WALNUT ST STE 200	0	Matched on all address information on line, including Unit Number and Unit Type if included.
4750 WALNUT ST C/O JOE SMITH	4750 WALNUT ST	1	Matched on Unit Number and Unit Type if included. Extra information on address line ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.
4750 WALNUT ST UNIT 200	4750 WALNUT ST STE 200	2	Matched on Unit Number. Unit Type changed.
4750 WALNUT ST UNIT 200 C/O JOE SMITH	4750 WALNUT ST STE 200	3	Matched on Unit Number. Unit Type changed. Extra information on address line ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.
4750 WALNUT ST STE 2-00	4750 WALNUT ST STE 200	4	Unit Number changed or ignored.

Input Addressline	Output Addressline	Extended Code	Description
4750 WALNUT ST STE 2-00 C/O JOE SMITH	4750 WALNUT ST STE 200	5	Unit Number changed or ignored. Extra information on address line ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.
4750 WALNUT ST STE 400	4750 WALNUT ST STE 400	6	Unit Number changed or ignored. Unit Type changed or ignored. In this example, Suite 400 is not valid for the input address, but the address match is not prevented because of an invalid unit number.
4750 WALNUT ST UNIT 2-00 C/O JOE SMITH	4750 WALNUT ST STE 200	7	Unit Number changed or ignored. Unit Type changed or ignored. Extra information on address line ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.
47-50 WALNUT ST STE 200	4750 WALNUT ST STE 200	8	Matched on Unit Number and Unit Type if included. House number changed or ignored.
47-50 WALNUT ST STE 200 C/O JOE SMITH	4750 WALNUT ST STE 200	9	Matched on Unit Number and Unit Type if included. House number changed or ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.
47-50 WALNUT ST UNIT 200	4750 WALNUT ST STE 200	A	Matched on Unit Number. Unit Type changed. House Number changed or ignored.
47-50 WALNUT ST UNIT 200 C/O JOE SMITH	4750 WALNUT ST STE 200	B	Matched on Unit Number. Unit Type changed. House Number changed or ignored. Extra information on address line ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.
47-50 WALNUT ST STE 20-0	4750 WALNUT ST STE 200	C	House Number changed or ignored. Unit Number changed or ignored.
47-50 WALNUT ST STE 20-0 C/O JOE SMITH	4750 WALNUT ST STE 200	D	House Number changed or ignored. Unit Number changed or ignored. Extra information on address line ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.
47-50 WALNUT ST UNIT 20-0	4750 WALNUT ST STE 200	E	House Number changed or ignored. Unit Number changed or ignored. Unit Type changed or ignored.
47-50 WALNUT ST UNIT 2-00 C/O JOE SMITH	4750 WALNUT ST STE 200	F	House Number changed or ignored. Unit Number changed or ignored. Unit Type changed or ignored. Extra information on address line ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.

The following table contains the description of the Extended Match Code 3rd hex digit return values:

Note: For Auxiliary file matches, the 3rd hex digit is always “0”.

Code	In 3rd hex position means:
0	Matched on all address information on line, including Unit Number and Unit Type if included.
1	Matched on Unit Number and Unit Type if included. Extra information on address line ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.
2	Matched on Unit Number. Unit Type changed.
3	Matched on Unit Number. Unit Type changed. Extra information on address line ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.
4	Unit Number changed or ignored.
5	Unit Number changed or ignored. Extra information on address line ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.
6	Unit Number changed or ignored. Unit Type changed or ignored.
7	Unit Number changed or ignored. Unit Type changed or ignored. Extra information on address line ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.
8	Matched on Unit Number and Unit Type if included. House Number changed or ignored.
9	Matched on Unit Number and Unit Type if included. House Number changed or ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.
A	Matched on Unit Number. Unit Type changed. House Number changed or ignored.
B	Matched on Unit Number. Unit Type changed. House Number changed or ignored. Extra information on address line ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.
C	House Number changed or ignored. Unit Number changed or ignored.
D	House Number changed or ignored. Unit Number changed or ignored. Extra information on address line ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.
E	House Number changed or ignored. Unit Number changed or ignored. Unit Type changed or ignored.
F	House Number changed or ignored. Unit Number changed or ignored. Unit Type changed or ignored. Extra information on address line ignored. Extra information not considered for matching moved to GS_ADDR2 or GS_MAIL_STOP field.

Definitions for “Ennn” return code values

The following table describes the values returned when the application cannot find a match code

Code	Description
Ennn ^a	Indicates an error, or no match. This can occur when the address entered does not exist in the database, or the address is badly formed and cannot be parsed correctly. The last three digits of an error code indicate which parts of an address the application could not match to the database.
nnn = 000	No match made.
nnn = 001	Low level error.
nnn = 002	Could not find data file.
nnn = 003	Incorrect GSD file signature or version ID.
nnn = 004	GSD file out of date. Only occurs in CASS mode.
nnn = 010	No city and state or ZIP Code found.
nnn = 011	Input ZIP not in the directory.
nnn = 012	Input city not in the directory.
nnn = 013	Input city not unique in the directory.
nnn = 014	Out of licensed area. Only occurs if using Group 1 licensing technology.
nnn = 015	Record count is depleted and license has expired.
nnn = 020	No matching streets found in directory.
nnn = 021	No matching cross streets for an intersection match.
nnn = 022	No matching segments.
nnn = 023	Unresolved match.
nnn = 024	No matching segments. (Same as 022.)
nnn = 025	Too many possible cross streets for intersection matching.
nnn = 026	No address found when attempting a multiline match.
nnn = 027	Invalid directional attempted.
nnn = 028	Record also matched EWS data, therefore the application denied the match.
nnn = 029	No matching range, single street segment found
nnn = 030	No matching range, multiple street segments found

- a Ennn may be returned if Correct Last Line is set to True. For more information see [Correct last line match codes](#) and Using correct last line.

Correct last line match codes

As mentioned in Using correct last line, when set to True, `GS_FIND_CORRECT_LASTLINE` corrects elements of the output last line, providing a good ZIP Code or close match on the soundex even if the address would not match or was non-existent.

The feature works when `GS_FIND_ADDRCODE` is True and the address does not match a candidate or when `GS_FIND_Z_CODE` is True and only last line information is input. The match codes returned are similar to **Z** and **E_{nnn}** in that the first letter remains the same with the second digit changing.

Code	Description
Zh	No address given, but verified the provided ZIP Code .
h = 0	No change in last line.
h = 1	ZIP Code changed.
h = 2	City changed.
h = 3	City and ZIP Code changed.
h = 4	State changed.
h = 5	State and ZIP Code changed.
h = 6	State and City changed.
h = 7	State, City, and ZIP Code changed.
h = 8	ZIP + 4 changed.
h = 9	ZIP and ZIP + 4 changed.
h = A	City and ZIP + 4 changed.
h = B	City, ZIP, and ZIP + 4 changed.
h = C	State and ZIP + 4 changed.
h = D	State, ZIP, and ZIP + 4 changed.
h = E	State, City, and ZIP + 4 changed.

Code	Description
Ehnn	Indicates an error, or no match. This can occur when the address entered does not exist in the database, or the address is badly formed and cannot be parsed correctly. The second digit of the error code is a hex digit which details the changes that were made to the last line information to correct the last line. The last two digits of an error code indicate which parts of an address the application could not match to the database.
h = 0	No change in last line.
h = 1	ZIP Code changed.
h = 2	City changed.
h = 3	City and ZIP Code changed.
h = 4	State changed.
h = 5	State and ZIP Code changed.
h = 6	State and City changed.
h = 7	State, City, and ZIP Code changed.
h = 8	ZIP + 4 changed.
h = 9	ZIP and ZIP + 4 changed.
h = A	City and ZIP + 4 changed.
h = B	City, ZIP, and ZIP + 4 changed.
h = C	State and ZIP + 4 changed.
h = D	State, ZIP, and ZIP + 4 changed.
h = E	State, City, and ZIP + 4 changed.
nn = 00	No match made.
nn = 01	Low level error.
nn = 02	Could not find data file.
nn = 03	Incorrect GSD file signature or version ID.
nn = 04	GSD file out of date. Only occurs in CASS mode.
nn = 10	No city and state or ZIP Code found.
nn = 11	Input ZIP not in the directory.
nn = 12	Input city not in the directory.
nn = 13	Input city not unique in the directory.
nn = 14	Out of licensed area. Only occurs if using Group 1 licensing technology.
nn = 15	Record count is depleted and license has expired.
nn = 20	No matching streets found in directory.
nn = 21	No matching cross streets for an intersection match.

Canada

The following tables describe the codes returned in **MatchCode** when a match is found. The first character, an alphabetic element, describes the type of match found. The two- or three-digit numeric (or hexadecimal) element of the code provides detailed information about the match.

The following table describes the return code

Return Code	Description
Chhh	Indicates a match found in CPC data; changes were made to the address to make it deliverable.
Vhhh	Indicates a match found in CPC data; the input address is valid and no changes were made.

The returned address is the best address because it was matched directly against the CPC list of deliverable addresses. See the following table for the interpretation of the hex digits

Return Code	First Hex Position:	Second And Third Hex Position:
0	No change in last line.	No change in street type, direction, number, or name.
1	Postal Code was changed.	Street type was changed.
2	Municipality was changed.	Postfix direction was changed.
3	Municipality and Postal Code were changed.	Street type and Postfix direction were changed.
4	Province was changed.	House number was changed.
5	Province and Postal Code were changed.	Street type and House number were changed.
6	Province and Municipality were changed.	House number and Postfix direction were changed.
7	Province, Municipality, and Postal Code were changed.	Street type, Postfix direction, and House number were changed.
8	Reserved for future use.	Street name was changed.
9	Reserved for future use.	Street name and type were changed.
A	Reserved for future use.	Street name and Postfix direction were changed.
B	Reserved for future use.	Street name, Street type, and Postfix direction were changed.
C	Reserved for future use.	Street name and House number were changed.
D	Reserved for future use.	Street name, Street type, and House number were changed.
E	Reserved for future use.	Street name, House number and Postfix direction were changed.
F	Reserved for future use.	Street name, Street type, House number and Postfix direction were changed.

The following table describes the codes returned when the application cannot find a match.

Return Code	Description
Ecn	Indicates an error or no match. This can occur when the address entered either did not exist in the GeoStan™ Canada Directory, or the address was badly malformed and could not be passed correctly.
nn = 01	Internal error.
nn = 10	No Municipality+Province or Postal Code found.
nn = 20	No matching addresses.
nn = 22	Missing or wrong street name.
nn = 23	Could not resolve address.
nn = 25	Inconsistent address.
nn = 26	Missing or wrong box range.
nn = 27	Missing or wrong unit range.
nn = 40	Address vs. Postal Code conflict, SERP rule prevents correction.
nn = 41	Postal Code has multiple street names, SERP rule prevents correction.
nn = 42	Change of delivery mode attempted, SERP rule prevents correction.
nn = 43	Total number of changed address elements exceeds maximum.
nn = 44	Change of address type is not allowed for current setting.
nn = 50	Minor error.

Location codes

Location codes indicate the accuracy of the assigned geocode. There are three types of geocodes, Address, ZIP+4 centroids, and Street centroids.

- Address geocodes are simple to interpret because they indicate a geocode made directly to a matched street segment (or two segments in the case of an intersection). Address geocodes are returned when the input street address was matched, or when an intersection match was obtained.
- Street centroid geocodes indicate that no match was made to the input address number, or that no address number was included on the input. A match was made to a street segment within the search area. The search area is based on the input ZIP code. If there is no input ZIP code, the search area is based on the finance area or input city, depending on your address match settings. Street centroids have a range of *confidence* depending on the search area used to obtain the matching street segment.
- ZIP+4 centroids have a range of *confidence* depending upon how the ZIP+4 centroid was determined.

A Location Code of E indicates a location code is not available. This usually occurs when you have requested ZIP Code centroids of a high quality, and one is not available for that match. It can occur infrequently when GeoStan does not have a 5-digit centroid location. GeoStan can also return an E location code type when it cannot standardize an input address and there is no input ZIP Code. In this case, do not assume the ZIP Code returned with the nonstandardized address is the correct ZIP Code because GeoStan did not standardize the address; therefore, GeoStan does not return geocoding or Census Block information.

Address location codes

Address location codes detail the known qualities about the geocode. An address location code has the following characters.

1 st character	Always an A indicating an address location.	
2 nd character	May be one of the following	
	C	Interpolated address point location.
	G	Auxiliary file data location.
	I	Application infers the correct segment from the candidate records.
	P	Point-level data location.
	R	Location represents a ranged address.
	S	Location on a street range.
	X	Location on an intersection of two streets.
3 rd and 4 th characters	Digit indicating other qualities about the location.	

The following table contains the address codes.

Code	Description
AGn	Indicates an auxiliary file for a geocode match where n is one of the following values:
n=0	The geocode represents the center of a parcel or building.
n=1	The geocode is an interpolated address along a segment.
n=2	The geocode is an interpolated address along a segment, and the side of the street cannot be determined from the data provided in the auxiliary file record.
n=3	The geocode is the midpoint of the street segment.
APnn	Indicates a point-level geocode match representing the center of a parcel or building, where nn is one of the following values:
nn=00	User Dictionary centroid. Geocode returned by a User Dictionary.
nn=02	Parcel centroid Indicates the center of an assessor's parcel (tract or lot) polygon. When the center of an irregularly shaped parcel falls outside of its polygon, the centroid is manually repositioned to fall inside the polygon as closely as possible to the actual center.
nn=04	Address point Represents field-collected GPS points with field-collected address data.
nn=05	Structure point Indicates a location within a building footprint polygon that is associated with the matched address. Usually, residential addresses consist of a single building. For houses with outbuildings (detached garages, sheds, barns, etc.), the structure point will typically fall on the primary structure. Condominiums and duplexes have multiple, individual addresses and may have multiple structure points for each building. Multi-unit buildings are typically represented by a single structure point associated with the primary/base address, rather than discrete structure points for each unit. Shopping malls, industrial complexes, and academic or medical center campuses are commonly represented by a single structure point associated with the primary/base address for the entire complex. When multiple addresses are assigned to multiple buildings within one complex, multiple structure points may be represented within the same complex.
nn=07	Manually placed Address points are manually placed to coincide with the midpoint of an assessor's parcel's street frontage at a distance from the center line.
nn=08	Front door point Represents the designated primary entrance to a building. If a building has multiple entrances and there is no designated primary entrance or the primary entrance cannot readily be determined, the primary entrance is chosen based on proximity to the main access street and availability of parking.
nn=09	Driveway offset point Represents a point located on the primary access road (most commonly a driveway) at a perpendicular distance of between 33-98 feet (10-30 meters) from the main roadway.

Code	Description
nn=10	Street access point Represents the primary point of access from the street network. This address point type is located where the driveway or other access road intersects the main roadway.
nn=21	Base parcel point The Centrus point data includes individual parcels that may be "stacked". These stacked parcels are individually identified by their unit or suite number, and GeoStan is able to match to this unit number and return the correct APN. If an input address is for a building or complex, without a unit number, the "base" parcel information returns and will not standardize to a unit number or return additional information such as an APN.
nn=22	Backfill address point The precise parcel centroid is unknown. The address location assigned is based on two known parcel centroids.
nn=23	Virtual address point The precise parcel centroid is unknown. The address location assigned is relative to a known parcel centroid and a street segment end point.
nn=24	Interpolated address point The precise parcel centroid is unknown. The address location assigned is based on street segment end points.
AIn	The correct segment is inferred from the candidate records at match time.
ASn	House range address geocode. This is the most accurate street interpolated geocode available.
AIn, ASn, and ACnh share the same values for the 3rd character "n" as follows:	
n=0	Best location.
n=1	Street side is unknown. The Census FIPS Block ID is assigned from the left side; however, there is no assigned offset and the point is placed directly on the street.
n=2	Indicates one or both of the following: <ul style="list-style-type: none"> The address is interpolated onto a TIGER segment that did not initially contain address ranges. The original segment name changed to match the USPS spelling. This specifically refers to street type, predirectional, and postdirectional. <p>NOTE: Only the second case is valid for non-TIGER data because segment range interpolation is only completed for TIGER data.</p>
n=3	Both 1 and 2.
n=7	Placeholder. Used when starting and ending points of segments contain the same value and shape data is not available.
ACnh	Indicates a point-level geocode that is interpolated between 2 parcel centroids (points), a parcel centroid and a street segment endpoint, or 2 street segment endpoints.
The ACnh 4th character "h" values are as follows:	
h=0	Represents the interpolation between 2 points, both coming from User Dictionaries.

Code	Description
h=1	Represents the interpolation between 2 points. The low boundary came from a User Dictionary and the high boundary, from a non-User Dictionary.
h=2	Represents the interpolation between 1 point and 1 street segment end point, both coming from User Dictionaries.
h=3	Represents the interpolation between 1 point (low boundary) and 1 street segment end point (high boundary). The low boundary came from a User Dictionary and the high boundary from a non-User Dictionary.
h=4	Represents the interpolation between 2 points. The low boundary came from a non-User Dictionary and the high boundary from a User Dictionary.
h=5	Represents the interpolation between 2 points, both coming from non-User Dictionaries.
h=6	Represents the interpolation between 1 point (low boundary) and 1 street segment end point (high boundary). The low boundary came from a non-User Dictionary and the high boundary from a User Dictionary.
h=7	Represents the interpolation between 1 point and 1 street segment end point and both came from non-User Dictionaries.
h=8	Represents the interpolation between 1 street segment end point and 1 point, both coming from User Dictionaries.
h=9	Represents the interpolation between 1 street segment end point (low boundary) and 1 point (high boundary). The low boundary came from a User Dictionary and the high boundary from a non-User Dictionary.
h=A	Represents the interpolation between 2 street segment end points, both coming from User Dictionaries.
h=B	Represents the interpolation between 2 street segment end points. The low boundary came from a User Dictionary and the high boundary from a non-User Dictionary.
h=C	Represents the interpolation between 1 street segment end point (low boundary) and 1 point (high boundary). The low boundary came from a non-User Dictionary and the high boundary from a User Dictionary.
h=D	Represents the interpolation between 1 street segment end point and 1 point, both coming from non-User Dictionary.
h=E	Represents the interpolation between 2 street segment end points. The low boundary came from a non-User Dictionary and the high boundary from a User Dictionary.
h=F	Represents the interpolation between 2 street segment end points, both coming from non-User Dictionaries.
ARn	Ranged address geocode, where "n" is one of the following:
n=1	The geocode is placed along a single street segment, midway between the interpolated location of the first and second input house numbers in the range.
n=2	The geocode is placed along a single street segment, midway between the interpolated location of the first and second input house numbers in the range, and the side of the street is unknown. The Census FIPS Block ID is assigned from the left side; however, there is no assigned offset and the point is placed directly on the street.

Code	Description
n=4	The input range spans multiple USPS segments. The geocode is placed on the endpoint of the segment which corresponds to the first input house number, closest to the end nearest the second input house number.
n=7	Placeholder. Used when the starting and ending points of the matched segment contain the same value and shape data is not available.
AXn	Intersection geocode, where "n" is one of the following:
n=3	Standard single-point intersection computed from the center lines of street segments.
n=8	Interpolated (divided-road) intersection geocode. Attempts to return a centroid for the intersection.

Street centroid location codes

Street centroid location codes indicate the Census ID accuracy and the position of the geocode on the returned street segment. A street centroid location code has the following characters.

1 st character	Always "C" indicating a location derived from a street segment.
2 nd character	Census ID accuracy based on the search area used to obtain matching Street Segment.
3 rd character	Location of geocode on the returned street segment.

The following table contains the values and descriptions for the location codes.

Character position	Code	Description
2 nd Character		
	B	Block Group accuracy (most accurate). Based on input ZIP Code.
	T	Census Tract accuracy. Based on input ZIP Code.
	C	Unclassified Census accuracy. Normally accurate to at least the County level. Based on input ZIP Code.
	F	Unknown Census accuracy. Based on Finance area.
	P	Unknown Census accuracy. Based on input City.
3 rd Character		
	C	Segment Centroid.
	L	Segment low-range end point.
	H	Segment high-range end point.

ZIP + 4 centroid location codes

ZIP + 4[®] centroid location codes indicate the quality of two location attributes: Census ID accuracy and positional accuracy. A ZIP + 4 centroid location code has the following characters.

1 st character	Always "Z" indicating a location derived from a ZIP centroid.
2 nd character	Census ID accuracy.
3 rd character	Location type.
4 th character	How the location and Census ID was defined. Provided for completeness, but may not be useful for most applications.

The following table contains the values and descriptions for the location codes.

Character position	Code	Description
2nd Character		
	B	Block Group accuracy (most accurate).
	T	Census Tract accuracy.
	C	Unclassified Census accuracy. Normally accurate to at least the County level.
3rd Character		
	5	Location of the Post Office that delivers mail to the address, a 5-digit ZIP Code centroid, or a location based upon locale (city). See the 4th character for a precise indication of locational accuracy.
	7	Location based upon a ZIP + 2 centroid. These locations can represent a multiple block area in urban locations, or a slightly larger area in rural settings.
	9	Location based upon a ZIP + 4 centroid. These are the most accurate centroids and normally place the location on the correct block face. For a small number of records, the location may be the middle of the entire street on which the ZIP + 4 falls. See the 4th character for a precise indication of locational accuracy.
4th Character		
	A	Address matched to a single segment. Location assigned in the middle of the matched street segment, offset to the proper side of the street.
	a	Address matched to a single segment, but the correct side of the street is unknown. Location assigned in the middle of the matched street segment, offset to the left side of the street, as address ranges increase.
	B	Address matched to multiple segments, all segments have the same Block Group. Location assigned to the middle of the matched street segment with the most house number ranges within this ZIP + 4. Location offset to the proper side of the street.

Character position	Code	Description
	b	Same as methodology B except the correct side of the street is unknown. Location assigned in the middle of the matched street segment, offset to the left side of the street, as address ranges increase.
	C	Address matched to multiple segments, with all segments having the same Census Tract. Returns the Block Group representing the most households in this ZIP + 4. Location assigned to the middle of the matched street segment with the most house number ranges within this ZIP + 4. Location offset to the proper side of the street.
	c	Same as methodology C except the correct side of the street is unknown. Location assigned in the middle of the matched street segment, offset to the left side of the street, as address ranges increase.
	D	Address matched to multiple segments, with all segments having the same County. Returns the Block Group representing the most households in this ZIP + 4. Location assigned to the middle of the matched street segment with the most house number ranges within this ZIP + 4. Location offset to the proper side of the street.
	d	Same as methodology D except the correct side of the street is unknown. Location assigned in the middle of the matched street segment, offset to the left side of the street, as address ranges increase.
	E	Street name matched; no house ranges available. All matched segments have the same Block Group. Location placed on the segment closest to the center of the matched segments. In most cases, this is on the mid-point of the entire street.
	F	Street name matched; no house ranges available. All matched segments have the same Census Tract. Location placed on the segment closest to the center of the matched segments. In most cases, this is on the mid-point of the entire street.
	G	Street name matched (no house ranges available). All matched segments have the same County. Location placed on the segment closest to the center of the matched segments. In most cases, this is on the mid-point of the entire street.
	H	Same as methodology G, but some segments are not in the same County. Used for less than .05% of the centroids.
	I	Created ZIP + 2 cluster centroid as defined by methodologies A, a, B, and b. All centroids in this ZIP + 2 cluster have the same Block Group. Location assigned to the ZIP + 2 centroid.
	J	Created ZIP + 2 cluster centroid as defined by methodologies A, a, B, b, C, and c. All centroids in this ZIP + 2 cluster have the same Census Tract. Location assigned to the ZIP + 2 centroid.
	K	Created ZIP + 2 cluster centroid as defined by methodologies A, a, B, b, C, c, D, and d. Location assigned to the ZIP + 2 centroid.
	L	Created ZIP + 2 cluster centroid as defined by methodology E. All centroids in this ZIP + 2 cluster have the same Block Group. Location assigned to the ZIP + 2 centroid.
	M	Created ZIP+2 cluster centroid as defined by methodology E and F. All centroids in this ZIP + 2 cluster have the same Census Tract. Location assigned to the ZIP + 2 centroid.

Character position	Code	Description
	N	Created ZIP + 2 cluster centroid as defined by methodology E, F, G, and H. Location assigned to the ZIP + 2 centroid.
	O	ZIP Code is obsolete and currently not used by the USPS. Historic location assigned.
	V	Over 95% of addresses in this ZIP Code are in a single Census Tract. Location assigned to the ZIP Code centroid.
	W	Over 80% of addresses in this ZIP Code are in a single Census Tract. Reasonable Census Tract accuracy. Location assigned to the ZIP Code centroid.
	X	Less than 80% of addresses in this ZIP Code are in a single Census Tract. Census ID is uncertain. Location assigned to the ZIP Code centroid.
	Y	Rural or sparsely populated area. Census code is uncertain. Location based upon the USGS places file.
	Z	P.O. Box or General Delivery addresses. Census code is uncertain. Location based upon the Post Office location that delivers the mail to that address

Geographic centroid location codes

Geographic centroid location codes indicate the quality of two location attributes: the geographic location and area type

1 st character	Always "G" indicating a location derived from a geographic centroid.
2 nd character	Geographic area type.

The following table contains the values and descriptions for the location codes.

Character position	Code	Description
2nd Character		
	M	Municipality (city).
	C	County.
	S	State.

Note: The offset distance is 50 feet (default), or the value specified in the Address Coding tab of the Process Options dialog box (for more information about setting the offset distance, see [Offset/Backset](#)).

ZIP Centroid Matches

In the Options dialog box, there are several choices for Minimum Quality when selecting ZIP Centroid Matching. The following indicates which methodologies (the fourth character in the location code) are used for each Quality selection.

Minimum Quality Selection	Methodology
9-Digit Best Location	A, a, B, b, C, c, D, d
9-Digit Good Location	A, a, B, b, C, c, D, d, E, F, G, H
9- or 7-Digit Location	A, a, B, b, C, c, D, d, E, F, G, H, I, J, K, L, M, N
Block Group Accuracy	A, a, B, b, E, I, L
Census Tract Accuracy	A, a, B, b, E, I, L, C, c, F, J, M, V
5-Digit Only	V, W, X, Y, Z
All Centroids	Can return all Methodology codes.

Note: This option does not affect Canadian processing.

GeoStan Canada location codes

If Centrus Desktop finds a valid Postal Code centroid, it returns one of the following location codes:

GeoStan Location Code	Description
CAN6	Postal Code level geocode
EC	Geocode unavailable

B – Advanced concepts

In this appendix

This appendix contains the information about specifying Centrus Desktop data files and using USPS Links products:

Changing the location of Centrus data files	85
Understanding User Dictionaries	87
Processing a task from the command line	87
Using USPS Link Products	88
DPV overview	88
LACS ^{Link} overview	89
False positive addresses overview	89
Data expiration	91
RDI overview	91



Changing the location of Centrus data files

This section will help you set up Centrus Desktop so you can use it more effectively.

Centrus Desktop requires specific data files for different types of processing. You must define the path to these files must be defined in the *Configuration* dialog box, which you can access from the *File* menu.

Note: To change the search path, enter the new (semicolon-separated) path into the text field.

If you wish to specify a location for some of the data files, click **Advanced**. Data files include ZIP Code centroid, ZIP Code boundary, Delivery Point Validation (DPV), LACSLink, SuiteLink, and Residential Delivery Indicator (RDI) data paths.

To access all Centrus Desktop data files from the Centrus Desktop program directory, you may use the default search paths as configured during installation. The search path can contain up to 256 characters.

The following table lists the Centrus Desktop data files by module:

Module	Data Files	Notes
Address Coding	<ul style="list-style-type: none">ctyst.dircbsac.dir (optional)parse.dirus.z9us.gsdpoint-level data sets (optional)	To change the search path to the us.z9 or the Custom.isd files, click Advanced .
Demographic Coding	<ul style="list-style-type: none">census2k.dld	Contains information from the US Census.
Geographic Determination	<ul style="list-style-type: none">zip5.gsb	To change the search path to the Zip5.gsb , click Advanced . This file is only available if you are licensed for GDL and if you specified that it be installed during the data installation process.

The following table lists other Centrus Desktop files.

Function	Data Files	Notes
CASS Compliance	<ul style="list-style-type: none"> • us.gsz • use.gsd • usw.gsd • zip9e.gsu • zip9w.gsu • ctyst.dir • parse.dir 	Required for CASS compliance and to generate a CASS report. They are not, however, required for processing in CASS mode.
Extended Alias Information Processing	<ul style="list-style-type: none"> • us_p.gsi (use with us.gsd) • us_ps.gsi (use with us.gsd & ust.gsd) • usca.gsi (Centrus Alias Data Set - use with us.gsd & ust.gsd) 	
Canadian Address Processing	<ul style="list-style-type: none"> • ncoderef.dat • gscgcodes.cp9 	These files are installed in the executable directory.
Intersection Matching	<ul style="list-style-type: none"> • ust.gsd • us.gsi (state-wide intersection) 	Used for manual geocoding and mapping. The optional files allow intersection matching without a complete last line.
NAD Conversion	<ul style="list-style-type: none"> • alaska.las • alaska.los • conus.las • conus.los • prvi.las • prvi.los 	For more information on NAD conversion, see “Return coordinates in...” on page 40.
User Dictionary	<ul style="list-style-type: none"> • postinfo.jdr • postinfo.jdx • lastline.jdr • post2sac.mmj • geo2sac.mmj • sac2fn_ud.mmj • ud1.jdr • ud1.jdx • ud1.bdx <p>If your data includes place names, the dictionary contains the following files:</p> <ul style="list-style-type: none"> • ud1.pdx • ud1.pbx <p>The dictionary also contains these log files:</p> <ul style="list-style-type: none"> • ud1.log • ud1.err 	For more information see Understanding User Dictionaries .

Understanding User Dictionaries

A User Dictionary is a table of streets and address ranges that you use as a source for geocoding. If you have newer or more precise data than what is available in GSD files, creating a dictionary with this data can help you obtain more accurate geocoding results. For example, if you have address point data you can create a User Dictionary that enables you to take advantage of the GeoStan™ address point interpolation capabilities.

A User Dictionary can be used by itself to geocode records, or can be used in combination with the supplied GSD.

You can also specify the search priority for matching against GSD records and User Dictionary records. This option allows greater control over which candidates are returned; in particular, it enables selection of User Dictionary candidates over GSD candidates.

For more information see [User Dictionary](#).

Note: The USPS does not consider matches to data that they did not create and these are not considered valid addresses for postal delivery. Therefore, Desktop does not match to User Dictionaries when processing in CASS mode.

Processing a task from the command line

You can also run Centrus Desktop from the command line. Several command-line options are available. The syntax is:

```
Centrus FileName.qmi /q /b /d /n /e /h
```

The following table outlines each of these options.

Command Line Option	Description
FileName.qmi	Specifies a saved task to load immediately.
/q	Starts Centrus Desktop in QuickFind, suppressing the splash screen.
/b	Starts Centrus Desktop in batch mode, bypassing the splash screen. Use this switch with a FileName.qmi argument to open the task file and immediately begin batch processing.
/n	Starts Centrus Desktop with no splash screen.
/e	Causes the application to exit upon completion of processing. Typically used in conjunction with the /b option and qmi function. If you open Centrus Desktop with the /e option only, and then define a new task to process, Centrus Desktop closes once the task completes.
/h	Displays descriptions for each of the command-line options.

Using USPS Link Products

This section highlights Delivery Point Validation (DPV), Locatable Address Conversion System process (LACS^{Link}), and Residential Delivery Indicator (RDI) available with this Centrus product.

DPV overview

Delivery Point Validation (DPV™) is a United States Postal Service (USPS®) technology that validates the accuracy of address information down to the physical delivery point. DPV is only available through a CASS-certified vendor, such as Precisely.

Previous address-matching software could only validate that an address fell within the low-to-high address range for the named street. By incorporating the DPV technology, you can resolve multiple matches and determine if the actual address exists. Using DPV reduces undeliverable-as-addressed (UAA) mail that results from inaccurate addresses, reducing postage costs and other business costs associated with inaccurate address information.

DPV also provides unique address attributes to help produce more targeted mailing lists. For example, DPV can indicate if a location is vacant and can identify commercial mail receiving agencies (CMRAs) and private mail boxes.

Although DPV can validate the accuracy of an existing address, you cannot use DPV to create address lists. DPV is a secure dataset of USPS addresses. For example, you can validate that 123 Elm Street Apartment 6 exists, but you cannot ask who lives in Apartment 6 or if there is an Apartment 7 at the same street address.

With DPV, your application automatically processes *every* ZIP+4 coded record against the DPV files. Using DPV may increase your ZIP+4 match rate, but may also increase processing time. Therefore, you may not wish to use DPV if you are not CASS certifying.

LACSLink overview

The Locatable Address Conversion System (LACS) converts rural addresses to city-style addressees. LACSLink is a USPS technology that provides mailers with an automated process to correct address lists for areas that have undergone LACS processing. Address list conversions occur when the LACS process modifies, changes, or replaces an address. This usually occurs due to one of the following: the conversion of rural routes and box numbers to city-style addresses, the renaming or renumbering of existing city-style addresses to avoid duplication, or the establishment of new delivery addresses.

LACSLink is a secure dataset of USPS addresses. Although LACSLink can validate the accuracy of an existing address, you cannot use LACSLink to create address lists.

Note: LACSLink is not run in multiple match searches.

False positive addresses overview

False positive addresses, also known as seed records, are addressees the USPS monitors to ensure users are not attempting to create a mailing list from the DPV or LACSLink data.

Note: Per the USPS regulations, Precisely must contact the USPS with the name and address of the organization for every false positive address encountered. If multiple incidents of artificial address detection occurs, the USPS may ask Precisely to suspend a customer's DPV or LACSLink processing capability.

If you encounter a false positive, you will receive a message. Processing continues to the end of your job, but further DPV or LACSLink processing is disabled. DPV or LACSLink processing is not available for subsequent jobs until you have reported the false-positive address encounter to Precisely and have received a new security key.

A message similar to the following appears when you encounter a false positive address:

DPV	DPV processing was terminated due to the detection of what is determined to be an artificially created address. No address beyond this point has been DPV validated. In Accordance with the License Agreement between USPS and Precisely, DPV shall be used to validate legitimately obtained addresses only, and shall not be used for the purpose of artificially creating address lists. The written Agreement between Precisely and the Precisely customer shall also include the same restriction against using DPV to artificially create address lists. Continuing use of DPV requires compliance with all terms of the License Agreement. If you believe this address was identified in error, please contact Precisely.
LACS/Link	LACS/Link processing was terminated due to the LACS/Link DEVELOPER LICENSEE PERFORMANCE REQUIREMENTS detection of what is determined to be an artificially created address. No address beyond this point has been LACS/Link processed. In accordance with the License Agreement between USPS and Precisely, LACS/Link shall be used to convert legitimately obtained addresses only, and shall not be used for the purpose of artificially creating address lists. The written Agreement between Precisely and the Precisely customer shall also include this same restriction against using LACS/Link to artificially create address lists. Continuing use of LACS/Link requires compliance with all terms of the License Agreement. If you believe this address was identified in error, please contact Precisely.

When implementing DPV and LACS^{Link} you need to create a false positive file that contains the Header Record and Detail Record information. You must provide this file to obtain a new security file from Precisely Technical Support.

For information purposes, the following tables contain the layout of the header and detail records of the false positive files for DPV and LACS^{Link}. The header record contains the mailer information from the Mailer Parameter Record and statistics gathered by the application.

Position	Length	Description	Format
1-40	40	Company name	alphanumeric
41-98	58	Address line	alphanumeric
99-126	28	City name	alphanumeric
127-128	2	State abbreviation	alphabetical
129-137	9	9-digit ZIP code	numeric
138-146	9	Total records DPV/LACS ^{Link} processed	numeric
147-155	9	Total records DPV/LACS ^{Link} matched	numeric
156-164	9	% match rate to DPV	numeric
165-173	9	% match rate to ZIP+4	numeric
174-178	5	Number of ZIP codes on file	numeric
179-180	2	Number of false-positives	numeric

Note: Positions 156-180 in the previous table do not exist in the LACS^{Link} false-positive header record.

The detail record contains false positive record information.

Position	Length	Description	Format
1-2	2	Street pre-directional	alphanumeric
3-30	28	Street name	alphanumeric
31-34	4	Street suffix abbreviation	alphanumeric
35-36	2	Street post-directional	alphanumeric
37-46	10	Address primary number	alphanumeric
47-50	4	Address secondary abbreviation	alphanumeric
51-58	8	Address secondary number	numeric
59-63	5	Matched ZIP code	numeric

Position	Length	Description	Format
64-67	4	Matched ZIP+4	numeric
68-180	113	Filler	

Data expiration

The USPS has determined that the ZIP+4 Directory data, DPV data, and LACS^{Link} data expire in 105 days for CASS processing. The date is measured from the release of the Postal database, which is the 15th of the month indicated on the Precisely data CD. For example, the June data release is good for 105 days from the 15th of June. However, in non-CASS processing modes, ZIP+4 data expires in 135 days.

RDI overview

The Residential Delivery Indicator (RDI™) is a United States Postal Service (USPS®) data product that identifies whether a delivery type is classified as residential or business. If you are shipping to residences, you may lower costs by shipping with the Postal Service™ and avoid residential delivery surcharges typically charged by other shipping companies.

Note: To use RDI, DPV must also be initialized.

C – Data file reference

In this appendix

This appendix contains the information on Early Warning System data, the different types of Centrus data that is available for use in Centrus Desktop, and data file preparation:

Input table	93
Output table	93
Report Files	94
Audit report example	94
Log report example	95
Preparing data files	97
Defining input text file properties	97
Defining output text file properties	98
Early Warning System data	99



Input table

By default, the file selection dialog box for input files shows files with the **.mdb** extension. To view other file types, select the appropriate option from the **Files of Type** list box in the file selection dialog box.

The **Files of Type** list box contains the type **All Text Files (*.*)**. Select this type to show all files of all types. However, any file you select opens as an ASCII text file. Do not use this option to open binary files.

Once you select your input file, Centrus Desktop determines the assignment of the fields in that file. The following table describes how Centrus Desktop handles typical input file fields.

Input Table Field	Assignment
<ul style="list-style-type: none">• Boolean• Date• Date Time• Floating Point• Integer• Long Integer• Short Integer• String• Unsigned Long• Unsigned Integer• Unsigned Short	Placed in the output table.
<ul style="list-style-type: none">• Currency• Decimal• Numeric (unlimited precision)• Time	Generates a warning that they will be converted to string.
All other fields	Generates a warning that the data is not placed in the output table (no string conversion available).

Output table

Use the *Output Tables* area to tell Centrus Desktop where you want to direct the output. Centrus Desktop can either write updated data back to the input file (not recommended), or create a new output file.

To create an output file, enter the name of the output file to create. If the Output Tables section is dimmed, be sure the **In-Place Update** option is not checked—Precisely recommends that you do not use this option.

Note: If a file already exists with the same name as the specified output file, Centrus Desktop overwrites that file.

When you use an output file, you can set which records Centrus Desktop writes to the output file using the radio buttons listed below the output file name.

The output file has the same field names as the input file, along with any fields added during processing.

If an existing output table is being modified with unsupported data types (Update in Place is specified), processing halts.

The following options control how Centrus Desktop writes records:

- **All** – This selection writes every record from the input file to the output file, even records that are not processed, standardized, or geocoded.
- **Reject Records That Are Not** – This selection lets you specify the conditions that a record must meet before being written to an output file.

You can specify a reject file to contain all the records that did not meet specified conditions. To use a reject file, make sure to select the **Reject Records That Are Not** check box, and specify any or all of the following conditions:

- Matched
- Standardized (requires you to set **ZIP4**, **ZIP9**, or **ZIP10** as an output field)
- Geocoded
- Demographic Coded
- Point-in-Polygon Coded
- Closest Site Coded

Then, click **Browse** and specify the path and file name of the reject file in the file selection dialog box. The reject file has the same fields as the input and output files, along with any fields added during processing.

Centrus Desktop uses the input or output file type as the default. Centrus Desktop chooses the output file type when you have specified both input and output file types.

Report Files

The *Report Files* area of the **Tables** tab allows you to create two different reports: an Audit Report and a Log Report.

To specify an audit report, be sure to select the check box next to the **Audit** text box, then click **Browse** and specify the path and file name in the file selection dialog box.

To specify a log report, click **Browse** next to the **Log** text box, and specify the path and file name in the file selection dialog box.

Audit report example

The Audit report provides a snapshot of the processing performed by Centrus Desktop. The report lists each record as it was input, and as it was processed by Centrus Desktop, along with the Match and Location codes. This presents a quick view of what Centrus Desktop accomplished on a certain set of records.

You select the frequency of the snapshot. For example, if you have a 50,000 record file, and choose a sample frequency of 1,000, you get 50 records in your Audit report.

Note: If you select a frequency of 1, every record in the input file is sent to the Audit file. This results in a large file, and is not recommended.

The following is a sample Audit report:

```
*****
Record Number: 1000
Input Address
  443 ROBIN
  WAVERLY OH
Output Results
  443 Robin Rd
  Waverly, OH 45690-1557
Match Code: S91 ZIP and ZIP+4 were changed.
              Street type was changed.
Location Code: AS0 Exact Address Match.
*****
Record Number: 2000
Input Address
  360 TOWN AND COUNTRY VLG
  PALO ALTO CA 94301
Output Results
  855 El Camino Real Ste 360
  Palo Alto, CA 94301-2326
Match Code: A89 ZIP+4 was changed.
              Street name and Street type were changed.
Location Code: AS0 Exact Address Match.
```

Log report example

The Log report provides extensive detail regarding the file and options used to geocode, as well as the processing results. You can display this report in Windows Notepad by checking the **View log file when processing is completed** check box.

The following is an extract from a Log report:

Unmatched.....	21 (0.34%)
E001: Low level error.....	0
E002: State file not found.....	0
E003: Invalid file.....	0
E004: File is out of date.....	0
E010: Unrecognized last line.....	0
E011: ZIP not found.....	10
E012: City not found.....	0
E013: City not unique.....	5
E014: Out of licensed area.....	0
E020: No matching streets.....	0
E021: No cross streets.....	5
E022: No matching ranges.....	0
E023: Match is unresolved.....	1
E025: Too many cross streets.....	0
Standardized Address Quality:	
Original Address Unchanged.....	92.23%
Original Last Line Unchanged.....	70.95%
Corrected prefix direction.....	4
Corrected street name.....	2
Corrected street suffix.....	16
Corrected postfix direction.....	1
Corrected city name.....	5
Corrected state abbreviation.....	0
Corrected ZIP Code.....	8
Corrected ZIP+4 add on.....	73
Geocodes Assigned.....	78 (1.27%)
Address.....	59 (0.96%)
ZIP Centroids.....	19 (0.31%)
Location Accuracy:	
ZIP+4.....	5
ZIP+2.....	1
ZIP Code.....	13
Census Accuracy:	
Block Group.....	6
Census Tract.....	2
County.....	11
Note: All percentages are based on records processed.	
CANADIAN ADDRESS STATISTICS:	
Addresses Matched.....	4378 (71.15%)
Standardized.....	4378
Unmatched.....	1680 (27.30%)
EC01: Internal error.....	0
EC10: No Lastline info found.....	0
EC20: No matching addresses.....	1
EC22: Missing or wrong street range..	0
EC23: Could not resolve address.....	501
EC25: Inconsistent address.....	64
EC26: Missing or wrong box range....	508
EC27: Missing or wrong unit range...	286
EC40: Address/Postal Code conflict...	6
EC41: Multiple street ranges.....	193
EC42: Change of delivery mode.....	0
EC43: Exceeded address changes.....	0
EC44: Address type change not allowed	3
EC50: Minor error.....	0
Standardized Address Quality:	
Original Address Unchanged.....	379 (6.16%)
Corrected Postal Code.....	454
Corrected Municipality.....	3478
Corrected Province.....	3391
Corrected street type.....	476
Corrected street postfix.....	444
Corrected house number,,,,,.....	0
Corrected street name.....	829
Corrected for unit, PO Box, General Delivery or Route	
Corrected Keyword.....	954
Corrected Number.....	1161
Corrected Station Type.....	24
Corrected Station Name.....	0
Geocodes Assigned.....	4062 (66.02%)
Note: All percentages are based on records processed.	

Preparing data files

This section provides detailed information on defining input and output text files for use with Centrus Desktop.

Defining input text file properties

You must define the properties of a text file that you wish to use as input to Centrus Desktop. When you select a *.txt file from the Select File to Process dialog box, Centrus Desktop launches a series of dialog boxes that provide the options for defining your file.

To define the properties of your input text file:

1. Select a text file for input from the *Select File to process* dialog box. The *Step 1 of 3* dialog box appears.
2. Choose a file type:
 - **Delimited** — you must select a delimiter character on the *Step 2 of 3* dialog box.
 - **Fixed width** — Centrus Desktop examines the file for the longest field width and uses that value.
3. Choose a method for dealing with the first line:
 - **First line has field names** — indicates that the first line contains header information for the fields.
 - **Ignore first line** — Centrus Desktop ignores the first line in processing.
4. Set the record length using the up and down arrows.
5. Click **Next**.

If you selected **Fixed Width** on the first dialog box, the *Step 2 of 3* dialog box for the fixed-width option appears. Follow the directions on the dialog box to create, move, or delete a line break.

If you selected **Delimited** on the first dialog box, the *Step 2 of 3* dialog box for the delimited option appears. Select a **Delimiter Type** from the following options: Comma, Semicolon, Tab, Slash, or you may enter the character of your choice in the **Other** field.

6. Click **Next**. The *Step 3 of 3* dialog box appears.

Note: If you selected **Fixed width** on the *Step 1 of 3* dialog box, the **Width** field is grayed out.

7. Enter a name for this field in the **Name** field.
8. Choose a type from the **Type:** list box. There is no additional definition needed for the **Character** option.
 - If you select **Number**, then you must select the number of decimal places you want to use to represent that number. Use the up and down arrows in the **Decimals** field.
 - If you select **Date**, then you must enter the date format in the **Date Picture** field.

9. Click **Finish** when you are done.

Defining output text file properties

Centrus Desktop allows you to control the format of output text files.

To define text file properties:

1. Select **Text Files** from the *Select Output File* dialog box.

After you select the text file, the Text File Properties dialog box appears.

2. Select the **Fixed Width** option for fixed-width file types. This option disables the Delimiter Type and Qualifier controls on the dialog box.

—or—

Select the **Delimited** option for delimited file types. This option activates the Delimiter Type and Qualifier controls on the dialog box.

After you click either the **Fixed Width** or **Delimited** radio button, the **OK** button becomes active.

3. Select a delimiter type from the options available, or select **Other** to specify any other legal character.

Note: Some delimiters are: space, quotation marks, period, minus, plus, and underscore.

As you select options in the dialog box, the sample text changes.

4. Select a Text Qualifier from the drop-down menu. Choices for the Text Qualifier include: none, double quote, and single quote.
5. Check the **First line has field names** check box and Centrus Desktop performs an additional error check.

Note: Precisely recommends that you do not select **Fixed Width** as the file type with the **First line has field names** option. A list of field names which exceed the field width generally occurs.

As this process of validation occurs, Centrus Desktop compares each field name to the field width, then displays a list of field names which exceed the field width in an error dialog box and halts processing.

Early Warning System data

The Early Warning System (EWS) provides up-to-date address information for new and recently changed addresses that have not yet been updated in the monthly USPS data updates. EWS prevents address records from miscoding due to a delay in postal data reaching the USPS address matching files.

The older the U.S. Postal Databases, the higher potential you have for miscoding addresses. When a valid address is miscoded because the address it matches to in the U.S. Postal Database is inexact, it will result in a broken address.

EWS data consists of records containing partial address information limited to the zip code, street name, predirectional, postdirectional, and a suffix. For an address record to be EWS-eligible, it must be an address not present on the most recent monthly production U.S. Postal Database.

The USPS refreshes the EWS file on a weekly basis. You can download the EWS file from the USPS Web site at <https://postalpro.usps.com/cass/EWS>.

Note: In order to use the USPS-supplied EWS file, GeoStan requires that the EWS file be named `ews.txt` and be located in the GeoStan data search path. The date of the EWS file must be the same month or newer than your GeoStan data files.

D – User-defined data files

In this appendix

This chapter includes information on both auxiliary files and using User Dictionaries.

User Dictionary	101
Understanding capabilities and requirements	101
Source data requirements	101
Required input fields	102
Optional (recommended) input fields	102
User Dictionary file names and formats	103
Additional User Dictionary considerations	104
Using User Dictionaries with address point interpolation	105
Auxiliary files	107
Auxiliary file matching overview	107
Creating auxiliary files	107
Matching to auxiliary files	109
Auxiliary file layout	111



User Dictionary

This chapter includes information on creating User Dictionaries, source data requirements and required fields, and other information specific to working with User Dictionaries.

Note: User Dictionaries are not for use with CASS geocoding.

- [Understanding capabilities and requirements](#)
- [Source data requirements](#)
- [Required input fields](#)
- [Optional \(recommended\) input fields](#)
- [User Dictionary file names and formats](#)
- [Additional User Dictionary considerations](#)
 - [Data access license](#)
 - [Use without GSD data files](#)
 - [CASS standards](#)
 - [Address range order](#)
 - [Street intersections and User Dictionaries](#)
- [Using User Dictionaries with address point interpolation](#)

Understanding capabilities and requirements

The capabilities of User Dictionaries and the basic requirements for creating them are as follows.

- All fields supported by normal street geocoding can be included in User Dictionaries.
- Landmarks and place names are supported in User Dictionaries. Postal or geographic centroid geocoding are not supported in User Dictionaries.
- User Dictionaries support address browsing using partial street names or landmarks and place names.
- GSDs are necessary to create the User Dictionary. This is because the GSDs have some internal structure that must be available when creating a User Dictionary.

The results from a User Dictionary are similar to that from the GSD. For address matches where the first letter of the match code would be 'S', a User Dictionary match has the letter 'J'. For example: SE9 is a match code for a match that comes from a GSD, while JE9 is for a match that comes from a User Dictionary. See [Status codes](#) for a complete description of match codes.

Source data requirements

The source data for User Dictionaries includes street data but can also include place names and intersections.

To create a User Dictionary, your source data must conform to the following requirements:

- Source records must include required fields, and these fields are mapped during the User Dictionary creation process. If a value of a required field is empty for a particular record, then that record will not be imported into the User Dictionary. Required fields may vary for different countries. The MapInfo® table must contain specific fields, which GeoStan™ then uses to convert the table into the dictionary format. These input fields are described in Required Input Fields on page.
- Source records must be in a MapInfo table (TAB file). The TAB file requirements vary for different countries.
- Segments must have two or more defined endpoints to be loaded into a User Dictionary. Segments without endpoints are ignored.
- Segments that make up intersections must have one or more end points in the intersection for GeoStan to recognize it as an intersection. Source records can be either point objects or segments.
- Each row in the table is equivalent to a street segment.

Required input fields

You must specify the field names in the MapInfo table (TAB file) in order for the table to be translated into a User Dictionary. Certain fields are required and must be present in the MapInfo table. Other fields are optional, but are strongly recommended because there may be negative consequences if they are omitted. This is described in [Optional \(Recommended\) Input Fields](#) on page [Optional \(recommended\) input fields](#). If any of the required fields are missing, a missing field error code is returned.

The following table describes the required input fields.

Required fields	Description	Maximum field length
Left start address	Start of address range on left side of street.	10
Right start address	Start of address range on right side of street.	10
Left end address	End of address range on left side of street.	10
Right end address	End of address range on right side of street.	10
Street name	Name of street.	30
State abbreviation	Two-character state abbreviation.	2
Left ZIP Code	ZIP Code for left side of street.	5
Right ZIP Code	ZIP Code for the right side of the street.	5

Optional (recommended) input fields

The Left and Right Odd/Even Indicator fields are used to specify whether the sides of the street segment contain odd or even address ranges. Although these indicators are not required for creating a User Dictionary, it is important to use the Odd/Even Indicators when your data contains odd/even address numbers.

When the Odd/Even Indicator is specified, but is inconsistent with address numbers, the indicator is set to Both.

When the Odd/Even Indicator is not specified and both Start Address and End Address have values, the indicator is set to Both, unless the start and end address numbers are the same number. In that case, the indicator is set to Odd if the address numbers are odd, and set to Even if the address numbers are even.

When the Odd/Even Indicator is not specified and both Start Address and End Address have values, the indicator is set to Both (odd and even).

Note: If your table contains Odd/Even indicator information, we strongly recommend that you use the Odd/Even indicator fields. These fields ensure that your geocoded addresses are located on the correct side of the street. Omitting the fields when your data contains Odd/Even information may produce incorrect results.

The following table describes the optional input fields.

Optional fields	Description	Maximum field length
Left Odd/Even indicator*	Left side of the street contains only odd or even address ranges (O=odd, E=even, B=both)	1
Right Odd/Even indicator*	Right side of the street contains only odd or even address ranges (O=odd, E=even, B=both)	1
City*	City name	28
Left ZIP + 4 Code	4-digit ZIP + 4 add-on for left side of street.	4
Right ZIP + 4 Code	4-digit ZIP + 4 add-on for right side of street.	4
Left Census Block	Census Block ID for left side of street	15
Right Census Block	Census Block ID for right side of street	15
Place Name	Place name	40

* These fields are highly recommended.

User Dictionary file names and formats

GeoStan has some requirements for User Dictionary files that you must be aware of before you create a User Dictionary:

- Each User Dictionary has a base name of eight characters or fewer.
- Each User Dictionary resides in its own directory.
- The maximum length of a path to a User Dictionary is 1024 characters.
- The ZIP Code range in the MapInfo table for a User Dictionary is unlimited.

Because each User Dictionary resides in its own directory, User Dictionaries may share the same name. However, it is generally good practice to use a unique name for each User Dictionary.

Some of the output files are tied to the base name. The other output files have constant names. For example, the output files for a dictionary called ud1 are the following:

```
postinfo.jdr
postinfo.jdx
lastline.jdr
post2sac.mmj
geo2sac.mmj
sac2fn_ud.mmj
ud1.jdr
ud1.jdx
ud1.bdx
```

If your data includes place names, the dictionary contains the following files:

```
ud1.pdx
ud1.pbx
```

The dictionary also contains these log files:

```
ud1.log
ud1.err
```

Additional User Dictionary considerations

See the following topics for more information when working with User Dictionaries.

Data access license

You must still have a valid access license to the data contained in the GSD when you are geocoding against your User Dictionary. For example, if you create a dictionary of New York streets and addresses, you must purchase the New York or entire U.S. GSD.

Use without GSD data files

To utilize a User Dictionary without the use of GSDs, the files listed below are required:

- ctyst.dir - The USPS City State table.
- parse.dir - The GeoStan dictionary

To perform postal centroid geocoding, in addition to a GSD or a User Dictionary and the files listed above, the following files are necessary:

- us.z9 - Postal centroid information.
- cbsac.dir - Required only if county names or CBSA/CSA data are needed.

CASS standards

You cannot geocode to CASS standards using a User Dictionary. This also means that the ParcelPrecision Dictionary cannot be used during CASS geocoding.

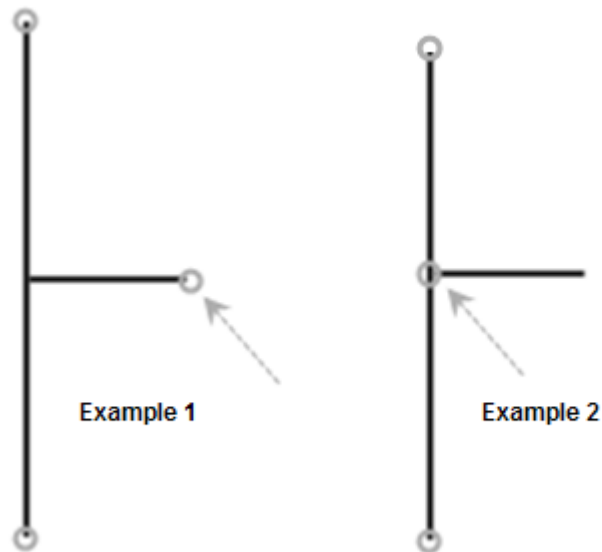
Address range order

GeoStan determines the order of the address range based on a comparison of the start and end addresses. The comparison produces the following results:

- If the end is greater than the start, the range is ascending.
- If the start is greater than the end, the range is descending.
- If the start is equal to the end, the range is ascending.

Street intersections and User Dictionaries

When geocoding to street intersections with a User Dictionary, GeoStan cannot recognize the intersections if one or more of the segments that make up the intersection does not have an end point at the intersection. This can happen when you create the User Dictionary from a customized street table in which some segments that terminate at intersections do not have end points (Example 1).



Example 1: Intersection in User Dictionary does not have end points for all segments. GeoStan does not recognize this as an intersection.

Example 2: Intersection in TIGER-based GSD includes end points for all segments. GeoStan geocodes to this intersection.

Using User Dictionaries with address point interpolation

An important part of the process of creating a User Dictionary is to specify a mapping of fields from your source data. See the *MapInfo User Dictionary Utility Product Guide*, for a complete discussion. There are two main categories of data fields: required and optional.

Of the optional fields, there are two that have an impact on the address point interpolation feature. These are the "Left Odd/Even" and "Right Odd/Even" fields. If these are not populated, the results from address point interpolation is less accurate.

Please be aware that aforementioned fields are not populated by source data obtained via MapInfo StreetPro. You must modify the source TAB file by adding the "Left Odd/Even" and "Right Odd/Even" indicator fields, and create queries to populate them. Source data obtained from other products, or your own data, may have similar issues.

To add the "Left Odd/Even" and "Right Odd/Even" indicator fields to a source TAB file, you must add them and then run a series of SQL update queries to populate them. The fields should be filled in with "O" (odd), "E" (even), or "B" (both). Below are the steps for adding these fields:

1. Add two 1-char columns to your TAB file.

Naming each column, for example, Ind_Right and Ind_Left.

2. Perform the following updates to populate these fields:

- Update <tablename>
Set Ind_Left="E", Ind_Right="O"
Where From_Left mod 2=0 AND To_Left mod 2=0
- Update <tablename>
Set Ind_Left="O", Ind_Right="E"
Where From_Left mod 2=1 AND To_Left mod 2=1
- Update <tablename>
Set Ind_Left="B", Ind_Right="B"
Where From_Left="" AND To_Left=""

Note: These example queries are simplified for illustrative purposes. Your actual queries may need to be more complex.

Auxiliary files

This section contains information on using auxiliary files for matching address lists.

- [Auxiliary file matching overview](#)
 - [Creating auxiliary files](#)
 - [Matching to auxiliary files](#)
- [Auxiliary file layout](#)

Auxiliary file matching overview

Although Precisely provides robust data for you to match your input address lists against, in some cases you may want to match your address lists against special data. Centrus Desktop provides you with the ability to create auxiliary files to match against special data.

Creating auxiliary files

You can create customized auxiliary files that contain records that meet your particular needs to use in Centrus Desktop when matching address lists. This section contains information on creating auxiliary files, and contains the following topics:

- [Auxiliary file requirements](#)
- [Record types](#)
- [Auxiliary file organization](#)
- [Default values](#)

Auxiliary file requirements

Centrus Desktop requires that the auxiliary file comply with the following:

- File must be a fixed-width ASCII text file
- File must have a .gax extension
- File must have less than 500,000 records
- File must follow the column field order and lengths specified in [“Auxiliary file layout” on page 111](#).

Record types

There are two types of auxiliary file records:

- *Street Records* – A street record contains a range of one or more addresses on a street. To be a valid street record the record must have the following fields:
 - ZIP Code
 - Street name
 - Street type abbreviation, if part of the address
 - Pre-directional abbreviation, if part of the address
 - Post-directional abbreviation, if part of the address

- Low house number within the street segment
- High house number within the street segment
- Beginning longitude of the street segment
- Beginning latitude of the street segment

In addition, a street record may NOT have:

- Secondary address information, such as unit numbers
 - Mailstops
 - Private mail boxes (PMBs)
- *Landmark Records* – A landmark record represents a single site. To be a valid landmark record the record must have the following fields:
 - ZIP Code
 - Name of the landmark – placed in the street name field
 - Beginning latitude of the landmark
 - Beginning longitude of the landmark

In addition, a landmark record must NOT have the following fields:

- Street type abbreviation
- Pre-directional abbreviation
- Post-directional abbreviation
- Low house number
- High house number

Centrus Desktop ignores any record that does not comply with the preceding requirements.

Auxiliary file organization

You must comply with the following organizational rules when creating your auxiliary file.

- Use semicolons in the first column to indicate a row is a comment, not a data record; Centrus Desktop ignores rows that begin with a semicolon.
- Order the records within the file by descending ZIP Code then descending street name for optimal performance.
- All records must represent only one side of a street. To represent both sides of a street, you must create a record for each side of the street.
- All records must represent segments that are straight lines. Records cannot represent a non-straight segment.
- If house numbers are present in the record, the house number range must be valid according to USPS rules documented in Publication 28, Appendix E.
- The numeric fields, such as ZIP Codes, must contain all numbers.
- Latitude and Longitude values must be in millionths of decimal degrees.
- Records cannot contain PO Box addresses.

Default values

Centrus Desktop uses the following defaults if you do not include the values in the auxiliary file:

- House number parity = B (both odds and evens)
- Segment direction = A (ascending)
- Side of street = U (unknown)

Matching to auxiliary files

This section provides information on the matching performed by Centrus Desktop to auxiliary files, and contains the following topics:

- [Matching overview](#)
- [Record type matching rules](#)
- [Unavailable Centrus Desktop features](#)
- [Auxiliary match output](#)

Matching overview

Centrus Desktop performs the following steps when matching an input address to an auxiliary file:

1. Centrus Desktop determines if there is an auxiliary file present.

Centrus Desktop only accepts one auxiliary file. If more than one auxiliary files is present, Centrus Desktop attempts to match against the first file. Centrus Desktop ignores any additional auxiliary files for matching, regardless if Centrus Desktop found a match to the first auxiliary file.

If a record within the auxiliary files is invalid, Centrus Desktop returns a message indicating the auxiliary file has an invalid record. Centrus Desktop continues to process input addresses against the auxiliary file, but will not match to the invalid auxiliary file record.

2. If an auxiliary file is present, Centrus Desktop first attempts to match to the auxiliary file.

Centrus Desktop assumes that the auxiliary file is the most accurate data set and first attempts to find a match to the input address in the auxiliary file. If Centrus Desktop cannot find a match in the auxiliary file, it continues to process as normal against the traditional Centrus Desktop datasets.

Note: Centrus Desktop only matches your input address lists to your auxiliary file if there is an exact match. Therefore, your input address list should be as clean as possible; free of misspellings and incomplete addresses.

3. If Centrus Desktop finds an exact record match to the auxiliary file, it standardizes the match to USPS regulations and returns the output of the auxiliary file match.

Note: You cannot update the auxiliary file while Centrus Desktop is running. If you want to update the auxiliary file, you need to terminate Centrus Desktop before attempting to replace or edit the file.

Record type matching rules

When attempting a match against an auxiliary file, Centrus Desktop abides by the rules outlined here.

Street record match:

- The input house number must fall within or be equal to the low and high house number values of the auxiliary record.
- The input house number must agree with the parity of the auxiliary record.
- The input ZIP Code must exactly match the ZIP Code of the auxiliary record.

Landmark record match:

- The input data must contain both a ZIP Code and address line, and they must exactly match the values on the auxiliary record.
- The input address cannot have any other data, such as a house number, unit number, or Private Mail Box (PMB).

Note: Centrus Desktop only matches the ZIP Code against the auxiliary file. Centrus Desktop does not verify that the ZIP Code of the input address record is correct for the city and state. You should validate this information in your input lists before processing against the auxiliary file.

Unavailable Centrus Desktop features

The following list outlines the features that do not apply when Centrus Desktop makes an auxiliary file match:

- Centrus Desktop does not match to
 - two-line addresses
 - multi-line addresses
 - intersection addresses
 - dual addresses
- You cannot use auxiliary file matching when processing in CASS mode.
- Centrus Desktop does not perform EWS, ZIPMove, LACS/Link, or DPV processing on auxiliary matches.

Auxiliary match output

Several standard Centrus Desktop outputs do not apply to an auxiliary match since Centrus Desktop matches to an exact auxiliary match and does not perform any additional validation for the match. For example, Centrus Desktop does not return the block suffix, the check digit, or any DPV enum.

Centrus Desktop provides special data type, match codes, and location code values for auxiliary matches.

When Centrus Desktop finds a match to an auxiliary file, the default output is follows the following conventions:

- Centrus Desktop formats the auxiliary file match as a street-style address for output. This excludes PO Boxes, Rural Routes, General Delivery, etc.
- Centrus Desktop follows the casing setting you indicate (by default, upper case) by the casing function. Centrus Desktop does not maintain the casing in the auxiliary file for mixed casing values. For example, Centrus Desktop returns O'Donnell as O'DONNELL or Odonnell depending on the setting of the casing function.

Note: Centrus Desktop does not change the casing for the User Data field.

- Centrus Desktop removes spaces at the beginning and ending of fields in the auxiliary file.

Note: Centrus Desktop does not remove spaces for the User Data field.

Auxiliary file layout

For an example of an auxiliary file, see Program Files\Centrus\Geolib\Common.

Field	Description	Required	Required for Street Segment Match	Required for Landmark Match	Exact Match Required if Present	Length	Position
ZIP Code	5-digit ZIP Code.	X	X	X	X	5	1-5
Street name	Name of the street or landmark.	X	X	X	X	30	6-35
Street type abbreviation	Street type. Also called street suffix. See the USPS Publication 28, Appendix C for a complete list of supported street types.				X	4	36-39
Pre-directional	USPS street name pre-directional abbreviation. Supported values are N, E, S, W, NE, NW, SE, and SW.				X	2	40-41
Post-directional	USPS street name post-directional abbreviations. Supported values are N, E, S, W, NE, NW, SE, and SW.				X	2	42-43
RESERVED	RESERVED					4	44-47
Low house number	Low house number of the address range.	X	X			11	48-58

Field	Description	Required	Required for Street Segment Match	Required for Landmark Match	Exact Match Required if Present	Length	Position
High house number	High house number of the address range.	X	X			11	59-69
House number parity	Indicates the parity of the house number in the range. <ul style="list-style-type: none"> • E – Even • O – Odd • B – Both 					1	70
Segment direction	Direction the house numbers progress along the segment: <ul style="list-style-type: none"> • F – Forward (<i>default</i>) • R – Reverse 					1	71
RESERVED	RESERVED					1	72
FIPS state	US government FIPS state code.					2	73-74
FIPS county	US government FIPS county code.					3	75-77
Census tract	US Census tract number.					6	78-83
Census block group	US Census block group number.					1	84
Census block ID	US Census block ID number.					3	85-87
RESERVED	RESERVED					5	88-92
State abbreviation	USPS state abbreviation.					2	93-94
County name	Name of the county.					25	95-119
MCD code	Minor Civil Division code.					5	120-124
MCD name	Minor Civil Division name.					40	125-164
CBSA code	Core Based Statistical Area code.					5	165-169
CBSA name	Core Based Statistical Area name.					49	170-218
RESERVED	RESERVED					5	219-223
City Name	City name. Overrides the city/state preferred city name upon a return.					40	224-263
RESERVED	RESERVED					237	264-500
User-defined data	User-defined data.					300	501-800
Record ID Number	User-defined unique record identifier.					10	801-810

Field	Description	Required	Required for Street Segment Match	Required for Landmark Match	Exact Match Required if Present	Length	Position
Side of street	Side of the street for the address: <ul style="list-style-type: none"> • <i>L</i> – Left side • <i>R</i> – Right side • <i>B</i> – Both sides • <i>U</i> – Unknown side (<i>default</i>) This is relative to the segment endpoints and the segment direction.					1	811
Beginning longitude	Beginning longitude of the street segment in millionths of degrees.	X	X	X		11	812-822
Beginning latitude	Beginning latitude of the street segment in millionths of degrees.	X	X	X		10	823-832
Ending longitude	Ending longitude of the street segment in millionths of degrees.					11	833-843
Ending latitude	Ending latitude of the street segment in millionths of degrees.					10	844-853

Glossary

A

address elements

The components of a street address, including house number, prefix direction, street name, street type, and postfix direction. These elements are parsed by GeoStan and should not be entered separately.

address geocoding

See geocode, geocoding.

address standardization

Address standardization is the process of taking an address and verifying that each component meets U.S. Postal Service guidelines for addresses. For example, when properly abbreviated, "123 Main Avenue" appears as "123 Main Ave." During standardization, minor misspellings, dropped address elements, and abbreviations are corrected and the correct city, state, and ZIP Code are provided.

alias

A recognized alternate for a street name maintained by association in the database.

alias information

Data returned with certain enums when it exists. Not returned by all enums even if specifically requested.

alternate record

Additional or differing information that may be available about a specific address but that differs from the base record. See the enums table for necessary flag settings.

B

base record

The principle, rather than an alternate, record within the database.

block assignments (or blockface)

For the assignment of ZIP + 4 codes, one side of a street, from one intersection to the next.

C

carrier route

The addresses to which a carrier delivers mail. In common usage, a carrier route includes city routes, rural routes, highway contract routes, post office box sections, and general delivery units.

CASS

Coding Accuracy Support System. A service offered to mailers, service bureaus, and software vendors that improves the accuracy of delivery point codes, ZIP + 4 codes, 5-digit ZIP Codes, and carrier route information on mail. CASS provides a common platform to measure the quality of address matching software and useful diagnostics to correct software problems.

CBSA

A statistical geographic entity consisting of the county or counties associated with at least one core (urbanized area or urban cluster) of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration with the core as measured through commuting ties with the counties containing the core. Metropolitan and Micropolitan Statistical Areas are the two categories of Core Based Statistical Areas.

CBSA Division

A subdivision of CBSA.

Census block ID

The 15-digit identification number used to specify a particular aggregate or block of addresses associated through census processes.

Census FIPS Code/Census ID

See FIPS code.

centroid

The calculated center of an area. The coordinates that define a centroid are the average of the sets of coordinates that describe the area.

centroid match

An address that has, through geocoding, been found to match a defined geocentroid.

city state key

A six-character USPS key that uniquely identifies a city name in the city/state file. Each city has a unique city state key.

CMSA name, CMSA number

Consolidated Metropolitan Statistical Area. The name represents the largest city in a statistical area. The number represents a 4-digit FIPS code.

County

The primary legal division of every state except Alaska and Louisiana. A number of geographic entities are not legally designated as a county, but are recognized by the U.S. Census Bureau as equivalent to a county for data presentation purposes. These include the boroughs, city and boroughs, municipality, and census areas in Alaska; parishes in Louisiana; and cities that

are independent of any county in Maryland, Missouri, Nevada, and Virginia. They also include the municipios in Puerto Rico, districts and islands in American Samoa, municipalities in the Northern Mariana Islands, and islands in the Virgin Islands of the United States. Because they contain no primary legal divisions, the Census Bureau treats the District of Columbia and Guam each as equivalent to a county (as well as equivalent to a state) for data presentation purposes. In American Samoa, a county is a minor civil division.

coordinates

See latitude/longitude coordinates.

CPO

Community Post Office. A contract postal unit that provides service in small communities where independent post offices have been discontinued. A CPO bears its community's name and ZIP Code as part of a recognized address.

CSA

A geographic entity consisting of two or more adjacent Core Based Statistical Areas (CBSAs) with employment interchange measures of at least 15. Pairs of CBSAs with employment interchange measures of at least 25 combine automatically. Pairs of CBSAs with employment interchange measures of at least 15, but less than 25, may combine if local opinion in both areas favors combination.

D

datum

A mathematical model of the Earth used to calculate the coordinates on any map, chart, or survey system. Surveyors take an ellipsoid model of the Earth and fix it to a base point. The North American Datum (NAD) is the official reference ellipsoid used for the primary geodetic network in North America.

directionals

A geographic address line component that precedes (predirectional) or follows (postdirectional) the street name.

DPBC

The Delivery Point Bar Code is a POSTNET barcode that consists of 62 bars with beginning and ending frame bars and 5 bars each for the 9 digits of the ZIP + 4 code, the last 2 digits of the primary street address number (or post office box, and so on), and a correction digit. The DPBC allows automated sorting of mail to the carrier level in walk sequence.

DPC certified

Delivery point code certified. A software or hardware device that meets U.S.P.S. standards for evaluating a properly standardized ZIP + 4 code address and determines the correct 2-digit DPC and checkdigit.

E

eLOT

The Enhanced Line of Travel (eLOT) Product was developed to provide mailers the ability to sort their mailings in approximate carrier-casing sequence. To aid in mail sorting, eLOT contains an eLOT sequence number field and an ascending/descending code. The eLOT sequence number indicates the first occurrence of delivery made to the add-on range within the carrier route, and the ascending/descending code indicates the approximate delivery order within the sequence number. Mailers can use eLOT processing to qualify for enhanced carrier route presort discounts.

F

Finance Area

A Finance Area is an area defined by the U.S. Postal Service from which it collects cost and statistical data. A Finance Area is frequently used for area searches, since it covers some or all of the ZIP Code areas in a town or city.

finance number

An assigned six-digit number that identifies and installation for processing it's financial data. The first two digits are the state code and the next four are uniquely assigned from 0001 through 9999 to each installation in alphabetical order.

FIPS code

Federal Information Processing Standards code. A FIPS Code, also called a Census ID, uniquely identifies each piece of Census geography. The syntax of the FIPS code is as follows:

ssccctttt.ttgbbb where:

ss = the two-digit State Census FIPS Code

ccc = the three-digit County Census FIPS Code

tttt.tt = the 6-digit Census Tract Census FIPS Code

g = the single-digit Block Group Census FIPS Code

bbb = the Block Census FIPS Code

G

GDT

Geographic Data Technology data. Produced by TomTom, a premium vendor of street segment files.

geocode, geocoding

A geocode is the geographic information associated with a unique address or centroid, such as longitude and latitude. Geocoding is the process of assigning data based upon location information. GeoStan uses an address or ZIP Code to assign latitude, longitude, and Census FIPS information.

GIS

Geographic Information System. A computer-based tool for enhancing geographic data by analyzing both the physical location in space and the set of characteristics associated with a location.

GSD files

GeoStan directory files.

GsEnums

Enumerated types in the GeoStan API. These enums are prefixed with "GS_" and are defined in the geostan.h file.

GSL file

USPS eLOT and Z4Change data. This file is used to assign line of travel (LOT) codes to addresses.

GSU files

GSU files contain information to match addresses based on unique ZIP Code and additional highrise unit information.

GSX files

Geographic spatial index. These files are used by spatial functions and reverse geocoding in GeoStan.

GSZ file

GeoStan ZIPMove file contains USPS ZIPMove data.

H

handle

A reference to an object that is required by the Library and is not to be manipulated directly by the developer. The handle is generated when the library is initialized and is required for many library functions.

HERE

A premium vendor of street segment and point-level data, formerly known as "NAVTEQ".

intersection matches

Intersections matches are indicated by an x___ match code. For example, 28th Street and Valmont intersections may be standardized and geocoded and return demographic information. Intersections do not represent a valid address for mailings.

LACS

Locatable Address Conversion System. This system corrects addresses electronically for areas that have undergone permanent address conversions. The address conversion occurred as a result of the 911 system implementation and involves renumbering and renaming rural route and highway contract route information as city-style addresses with street number and name.

lat/lon; latitude/longitude coordinates

Longitude and latitude coordinates are always in degrees, and are always represented as 64-bit doubles. Positive numbers represent the Eastern and Northern hemispheres, respectively, and negative numbers represent the Western and Southern hemispheres. For example, the point 140W by 30N would be represented as -140.0,30.0. The library always assumes that the longitude coordinate is the horizontal direction and the latitude coordinate is the vertical direction. Support is not provided for user coordinates.

location code

Location codes indicate the accuracy of the assigned geocode.

M

mail stop designator

This designator indicates a routing code used by a company for internal mail delivery.

MASS

Multiline (OCR) Accuracy Support System. A tool similar to Coding Accuracy Support System (CASS) that accesses and checks the address matching software used by customers' multiline optical character readers (OCRs).

match code

Indicates the portions of the address that matched or did not match with the address information in the GeoStan data files.

match mode

The algorithm used by GeoStan to match an input address to an address in the data files.

match rates

The number of input addresses that correspond (can be matched) to address information in data files.

MBR

Minimum bounding rectangle. A geographic region defined by and minimum and maximum latitude and longitude.

Metropolitan Statistical Area

A Core Based Statistical Area associated with at least one urbanized area that has a population of at least 50,000. The Metropolitan Statistical Area comprises the central county or counties containing the core, plus adjacent outlying counties having a high degree of social and economic integration with the central county as measured through commuting.

Micropolitan Statistical Area

A Core Based Statistical Area associated with at least one urban cluster that has a population of at least 10,000, but less than 50,000. The Micropolitan Statistical Area comprises the central county or counties containing the core, plus adjacent outlying counties having a high degree of social and economic integration with the central county as measured through commuting.

MSA name/number

Metropolitan Statistical Area. The name represents the name of the largest central city and the number is the 4-digit FIPS code.

match candidate resolution

The process of resolving an address match when more than one street segment has been identified as corresponding to the input address.

N

NAD

The North American Datum (NAD) is the official reference ellipsoid used for the primary geodetic network in North America.

NAD27

NAD27 has its origin at Meades Ranch, Kansas. NAD27 does not include the Alaskan islands and Hawaii. Latitudes and longitudes that are surveyed in the NAD27 system are valid only in reference to NAD27 and do not tie to any maps outside the U.S.

NAD83

NAD83 is earth-centered and defined with satellite and terrestrial data. NAD83 is compatible with the World Geodetic System 1984 (WGS84), the terrestrial reference frame associated with the NAVSTAR Global Positioning System (GPS) now used extensively for navigation and surveying. Note that TomTom uses WGS84 instead of NAD83. These two coordinate systems are compatible.

NCSC

National Customer Support Center. The U.S.P.S. CASS support center can be reached at www.usps.gov/ncsc.

O

object

A basic functional unit of a library. A library contains functions that allow the user to create, manipulate, and destroy objects. C programmers access objects through handles that are provided through object creation functions.

P

postdirectional (postdir)

See directionals.

predirectional (predir)

See directionals.

R

record matching algorithm

Programmed logic that allows evaluation of the results of all field matching algorithms to determine whether two records match (i.e., are duplicates).

road class code

A key in the street segment file that identifies a road as major or minor according to the Census Feature Classification Code.

RR

Rural Route. A delivery route served by a rural carrier.

S

soundex algorithm

A type of field matching algorithm that compares two fields based on their pronunciation.

soundex key

Generated by the GsSoundex function. Used to search the database by employing a soundex algorithm.

spatial query functions

Used to extract data from the GSD files. These functions specify the area to be searched through a minimum bounding rectangle rather than through city/state/ZIP or finance area.

stage 1 file

A sample address file provided by the U.S.P.S to determine if software/hardware meets postal requirements for CASS.

stage 2 file

An address file provided by the U.S.P.S. that is used to grade software/hardware to determine if it meets postal requirements for CASS.

street network files

Files provided by vendors (other than U.S.P.S.) the contain address and geocode information.

T

TomTom

A premium data vendor of street segment files (previously known as TeleAtlas).

TIGER files

Topographically Integrated Geographic Encoding and Referencing. A digital database of geographic features created by the US Geological Survey (USGS), covering the entire United States.

TLID

TIGER/Line® Identification Number.

The TIGER/Line® files use a permanent 10-digit TLID to uniquely identify a complete chain for the Nation. The 10-digit TLID will not exceed the value 231-1 (2,147,483,647) and represents the same complete chain in all versions of this file, beginning with the TIGER/Line® Precensus Files, 1990. The minimum value is 100,001. Topological changes to the complete chain causes the TLIDs to change. For instance, when updates split an existing complete chain, each of the new parts receives a new TLID; the old TLID is not reused.

As distributed, TIGER/Line® files are grouped by county (or statistically equivalent entity). A complete chain representing a segment of the boundary between two neighboring counties may have the same TLID code in both counties or it may have different TLID codes even though the complete chain represents the exact same feature on the ground.

U

unit designator

Indicates the type of unit (e.g., apartment, unit).

USPS data files

Files provided by the post office containing address and ZIP Code information.

Z

ZIP + 4 directory file

Address records that contain the ZIP + 4 codes for all delivery points, in an electronic form.

ZIP + 4 centroid geocoding

See geocoding.

ZIP Code

Zone Improvement Plan Code. Established in 1963 the five-digit numeric code of which the first three digits identify the delivery area of a sectional center facility or a major-city post office serving the delivery address area. The next two (the fourth and fifth) digits identify the delivery area of an associate post office, post office branch, or post office station. All post offices are assigned at least one unique 5-digit code. ZIP Code is a USPS trademark.

ZIP + 4 is an enhanced code consisting of the 5-digit ZIP Code and four additional digits that identify a specific range of delivery addresses. The nine-digit numeric code, established in 1981, composed of two parts: (a) The initial code: the first five digits that identify the sectional center facility and delivery area associated with the address, followed by a hyphen; and (b) the four-digit expanded code: the first two additional digits designate the sector and the last two digits designate the segment. ZIP + 4 is also a USPS trademark.

Index

Numerics

5 Digit Only [39](#)
9 Digit Best Location [39](#)
9 Digit Good Location [39](#)
9 or 7 Digit Location [39](#)

A

Add GSB [46](#)
Add Table [48](#)
Add to PIP Layer [52](#)
Address Coding [10](#)

- input fields [27](#)
- input formats [27](#)
- multiline input [28](#)
- output fields [29](#)
 - standardization elements [29](#)

Address Coding Module

- address line two preferences [25](#)
- available elements [30](#)
- Canadian address processing [25](#)
- output fields [57](#)
 - address elements [29](#), [49](#), [57](#)
 - creating new fields [29](#), [49](#), [57](#)
 - geocode elements [30](#)
- U.S. address processing [24](#)
- Z4 change processing [25](#)

Address Elements [29](#)
Address Line [29](#), [30](#)

- Short [36](#)

Address Line 2 [30](#)
Address Line Two Preference [40](#)
Address location codes [75](#)
Address Matching [38](#)

- Matching Tolerance [38](#)
 - CASS [38](#)
 - Close [38](#)
 - Extended [38](#)
 - GeoStan™ Close Mode [38](#)
 - Interactive [38](#)
 - Tight [38](#)

Address Point Interpolation [40](#)
Address Type [30](#)
Address Wizard [14](#)
Allow 5-Digit ZIP Code Census Centroid ID [40](#)
Allow Ranged Address Numbers [41](#)
APN ID [30](#)
Assign Outputs [28](#), [49](#)
Auto Search [14](#)
Aux User Data [30](#)
Available Outputs [46](#), [49](#)

B

Backset [40](#)
Batch [27](#), [47](#)

Batch Process Task [10](#), [27](#), [46](#)
Best Centroid [39](#)
Blank if Unmatched [29](#), [49](#)
Block Group Accuracy [39](#)

C

Cancel [15](#)
Carrier Route [29](#), [30](#)
Carrier Route Sortation [30](#)
CASS [38](#)
CBSA Division Name [30](#)
CBSA Division Number [31](#)
CBSA Name [31](#)
CBSA Number [31](#)
Census Block [31](#)
Census Block Group [30](#), [31](#)
Census Block Suffix [31](#)
Census ID Format [39](#)
Census Tract [31](#)
Census Tract Accuracy [39](#)
Center [19](#)
Centrus Data Files

- Early Warning System Data [99](#)
 - input table [93](#)
 - output table [93](#)
 - preparing [97](#)
 - input text file properties [97](#)
 - output text file properties [98](#)
- report files [94](#)
 - audit report [94](#)
 - log report [95](#)

Centrus Desktop Tools

- Data Viewer [43](#)
- Map Viewer [17](#)
- Shape Layers [51](#)

Centrus Utilities Manual [6](#)
Check Digit [29](#), [31](#)
Check for First Letter Missing/Wrong [41](#)
City [15](#), [16](#)
City Delivery [31](#)
City Name [31](#)
City State Record Name [31](#)
Clear All Except [9](#)
Clear All Outputs [9](#)
Clear Current Outputs [9](#)
Clear Outputs [9](#)
Close [38](#)
Closest Site [10](#)

- output fields [49](#)

Closest Site tab

- adding layers from database table [48](#)

CMSA Name [31](#)
CMSA Number [31](#)
Codes

- Address location [75](#)
- Street centroid location [79](#)
- ZIP+4 centroid location [80](#)

Configuration [9](#)
Coordinates [40](#)
Copy Mailing Address To Clipboard [14](#)
Country [15](#), [31](#), [38](#)
County FIPS Code [31](#)
County Name [31](#)
Create Spatial Attributes [47](#)
CSA Name [31](#)
CSA Number [31](#)

D

Data expiration [91](#)
Data Type [32](#)
Data Viewer [9](#), [43](#)
 using [43](#)
Database
 EWS [99](#)
Default Match [32](#)
Define Input Fields [27](#), [48](#)
Delivery Point Barcode [29](#), [32](#)
Demographic Coding Module
 using [56](#)
Demographics [10](#)
Direction [46](#)
Distance [46](#)
DPV [15](#)
 Data expiration [91](#)
 Overview [88](#)
DPV CMRA Indicator [32](#)
DPV Confirmation Indicator [32](#)
DPV False Positive Indicator [32](#)
DPV Footnote 1 [32](#)
DPV Footnote 2 [32](#)
DPV Footnote 3 [33](#)
DPV No Stat [33](#)
DPV Vacant [33](#)

E

Early Warning System Data [99](#)
Enable Buffering [47](#)
Enhanced Building Search [40](#)
EWS
 Description of [99](#)
 USPS Web site [99](#)
EWS data [99](#)
EWS download address
 USPS Web site [99](#)
EWS Match [33](#)
Exit [9](#)
Extended [38](#)
Extended Match Code [67](#)
Extra Line 1-6 [33](#)
Extra/Mail Stop [33](#)

F

False-positive address
 Creating report [90](#)
 Detail record [90](#)
False-positives
 Overview [89](#)
Finance area [39](#)
Finance Area Search [39](#)
Find [14](#)
Firm Name [14](#), [29](#), [33](#)
Firm Name Lookup [40](#)
First hex position [66](#)
First Letter Missing/Wrong [41](#)
Frequency [26](#)

G

Generate PMA [52](#)
Geocode Defaults [9](#), [30](#)
Geographic Determination [11](#)
Geographic Determination Module
 about [59](#)
 available elements [60](#)
 using [59](#)
Geographic Determination tab [61](#)
 adding a line file [62](#)
 adding a polygon file [62](#)
 adding point file [61](#)
 importing a Geographic Determination file [62](#)
 removing files [63](#)
Geographic Information System (GIS) [51](#)
GeoStan Close Mode [38](#)
GeoStan™ Close Mode [38](#)
GIS [51](#)

H

Help [10](#), [15](#), [19](#)
Help Topics [15](#)
High Rise Default [33](#)
House [16](#)
House Range [16](#)

I

Incorporated Place Indicator [33](#)
Info [19](#)
In-Place Update [26](#)
Installation
 licensing [11](#)
Interactive [38](#)
Intersection Flag [33](#)

L

- LACS Status [33](#)
- LACSLink [15](#)
- LACSLink
 - Data expiration [91](#)
 - Overview [89](#)
- LACSLink Indicator [33](#)
- LACSLink Return Code [33](#)
- Last Line [14](#), [29](#), [33](#)
- Latitude [30](#), [33](#), [45](#), [48](#)
- Layers [19](#)
- Locate [19](#)
- Location Code [30](#), [34](#)
- Location Codes [75](#)
 - GeoStan Canada [83](#)
 - ZIP+4 Centroid
 - matches [83](#)
- Location codes
 - Address [75](#)
 - Street centroid [79](#)
 - ZIP+4 centroid [80](#)
- Log Output [26](#)
- Longitude [30](#), [34](#), [45](#), [48](#)
- LOT (Line of Travel) Number [34](#)
- LOT Direction Flag [34](#)
- Lot Size of Parcel [34](#)

M

- Map [14](#)
- Map Viewer [9](#), [17](#)
 - manual geocoding [22](#)
 - Map [14](#)
 - using [17](#)
- Match Code [30](#), [34](#)
- Match Codes [65](#)
 - "Ennn" [70](#)
 - 1st-3rd hex digit values [66](#)
 - Canada [73](#)
 - Extended Match Code (3rd hex digit) values [67](#)
 - United States [65](#)
- Max Distance (Miles) [49](#)
- MCD Name [34](#)
- MCD Number [34](#)
- MEC Latitude [34](#)
- MEC Longitude [34](#)
- MEC Radius [34](#)
- menu [8](#)
- Metro/Micropolitan Flag [34](#)
- Minimum Quality [39](#)
- Mixed Case Output Addresses [41](#)
- MSA Name [34](#)
- MSA Number [34](#)
- Multiline [14](#), [28](#)

N

- NAD 27 [40](#)
- NAD 83 [40](#)
- Negate Longitudes [40](#)
- New Task [8](#)
- Next Error [27](#), [47](#)

O

- Offset [40](#)
- Offset/Backset [40](#)
- Open Task [8](#)
- Optimization Sort [28](#)
- Options [10](#)
- Output Assignment [29](#), [49](#)
- Output Corrected Last Line [41](#)

P

- Parcel Centroid Elevation [34](#)
- pbKey [35](#)
- PMA [51](#), [52](#)
- Point ID [35](#)
- Point-in-Polygon [10](#)
 - output fields [49](#)
- Point-in-Polygon Module
 - object files and layers [50](#)
 - point-in-polygon analysis [50](#)
- Point-in-Polygon tab
 - importing layers [47](#)
 - removing layers [48](#)
- Postal Code [35](#)
- Postal Reports [41](#)
 - Canada Post SERP Report
 - description [42](#)
 - USPS 3553 (CASS) Report
 - description [42](#)
- Prefer Input ZIP over Input city [41](#)
- Preferred City Name [35](#)
- Primary Market Area (PMA) [51](#)
- Primary Post-Directional [35](#)
- Primary Pre-Directional [35](#)
- Primary Short Post-Directional [35](#)
- Primary Short Pre-Directional [35](#)
- Primary Short Street Name [35](#)
- Primary Short Street Suffix [35](#)
- Primary Street Name [35](#)
- Primary Street Suffix [35](#)
- Print [14](#)
- Private Mail Box (PMB) Designator [35](#)
- Private Mail Box (PMB) Number [35](#)
- Private Mail Box Designator [14](#)
- Private Mail Box Number [14](#)
- Process [27](#), [46](#)
- Process if Field is Blank [49](#)
- Process if Unmatched or Field is Blank [28](#)

Process Task [10, 27, 46](#)
Processing Parameters [28, 48](#)

Q

Query [14](#)
Quick Find [9, 13](#)
QuickFind
 query directory navigation [15](#)
 search filter [16](#)

R

Range Record Type [35](#)
Ranged Address [41](#)
RDI Return Code [35](#)
RDI
 Overview [91](#)
Recent File [9](#)
Records [16](#)
Redraw [19](#)
Reject Records That Are Not [26](#)
Release Notes [6](#)
Report Files [10, 26](#)
Reset [14](#)
Residential or Business Indicator [35](#)
Resolve the Address [14](#)
Return coordinates in... [40](#)
Rural Route Default [36](#)

S

Save Task [9, 27](#)
Save Task As [9, 27](#)
Save values as Centrus Desktop defaults [15](#)
Search Filter [14, 16](#)
Second hex position [66](#)
Secondary Post-Directional [36](#)
Secondary Pre-Directional [36](#)
Secondary Short Post-Directional [36](#)
Secondary Short Pre-Directional [36](#)
Secondary Short Street Name [36](#)
Secondary Short Street Suffix [36](#)
Secondary Street Name [36](#)
Secondary Street Suffix [36](#)
Segment ID [36](#)
Select [19](#)
Select Output File [26](#)
Shape Layers [10, 51, 52](#)
Short Address Line [36](#)
Short City Name [36](#)
Short Last Line [36](#)
shortcut [8](#)
Show In Map [52](#)
Specifying data files [85](#)
Standard [14, 27](#)
Standardization Defaults [9, 29](#)

State [15](#)
State Abbreviation [36](#)
State FIPS Code [36](#)
Status [46](#)
Street [16](#)
Street Block [16](#)
Street centroid location codes [79](#)
Street Centroid Matching [39](#)
Street Name [16](#)
SuiteLink [15](#)
SuiteLink Return Code [36](#)

T

tab [10](#)
Tables [10, 26](#)
Task
 Batch Process Task [10, 27, 46](#)
 New [8](#)
 Open [8](#)
 Process Task [10, 27, 46](#)
 Save [9](#)
 Save Task [27](#)
 Save Task As [9, 27](#)
task
 running tasks from the command line [87](#)
Technical Support [6](#)
Third hex position [66](#)
TIGER Face ID [36](#)
TIGER Place Code [36](#)
TIGER Urban Area ID (UACE) [36](#)
Tight [38](#)
toolbar [8](#)

U

Unit [16](#)
Unit Designator [36](#)
Unit Designator 2 [36](#)
Unit Number [37](#)
Unit Number 2 [37](#)
Urban Area Population [37](#)
Urbanicity Indicator [37](#)
Urbanization [37](#)
Urbanization (Puerto Rico) [30](#)
US Address Coding Options [40](#)
US Geocoding Options [38](#)
Use Address Point Interpolation [40](#)
User Dictionary
 Understanding [87](#)
USPS Web site
 EWS download address [99](#)

V

Verify All [10](#)
Verify Current [10](#)

Verify Tables [10](#)

Z

Z4 Change Processing [41](#)

Z4ChangeResult [37](#)

ZIP [17](#)

ZIP Centroid Matching [39](#)

ZIP Classification [37](#)

ZIP Code [37](#)

ZIP Facility [37](#)

ZIP+4 Extension [37](#)

ZIP10 [37](#)

ZIP9 [37](#)

Zoom City [17](#)

Zoom Extent [19](#)

Zoom In [19](#)

Zoom Out [19](#)

Zoom Street [17](#)



1700 District Ave Ste 300
Burlington MA 01803-5231

[precisely.com](https://www.precisely.com)

© 1994, 2021 Precisely. All rights reserved.