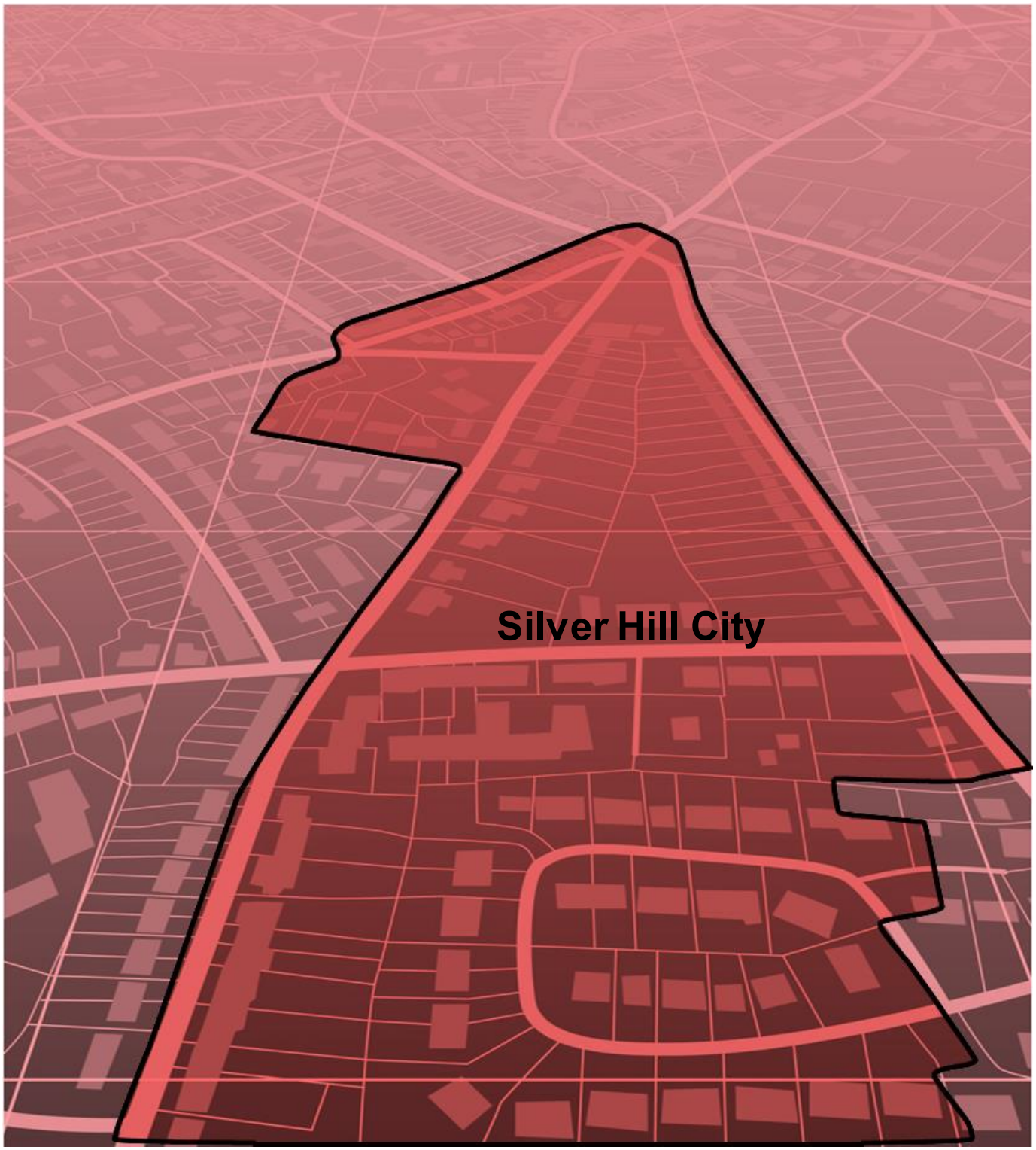
Boundary and Annexation Survey Respondent Guide: Digital

Revised as of December 15, 2015



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PAPERWORK REDUCTION ACT (PRA) STATEMENT

A federal agency may not conduct or sponsor, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB Control Number. This collection is voluntary. The authority for conducting this collection comes from Title 13 U.S.C, Section 6.

The OMB Control Number for this information collection is 0607-0151. Public reporting for this collection of information is estimated to be approximately 2 hours per response, including the time for reviewing instructions, completing and reviewing the collection of information.

Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to: Paperwork Reduction 0607-0151, United States Census Bureau, 4600 Silver Hill Road, Room 3K138, Washington, DC 20233. You may email comments to paperwork@census.gov; use “Paperwork Project 0607-0151” as the subject.

INTRODUCTION TO DIGITAL BOUNDARY AND ANNEXATION SURVEY

A. Overview of the BAS

The Census Bureau conducts an annual survey called the Boundary and Annexation Survey (BAS) to collect information about selected legally defined geographic areas, such as counties (and equivalent areas), incorporated places, minor civil divisions (MCDs), as well as federally recognized American Indian reservations (including off-reservation trust lands and tribal subdivisions). The BAS also provides an opportunity for participants to review the names and geographic relationships for these areas. Title 13, U.S.C., Section 6, authorizes this survey.

The Census Bureau uses BAS information to provide a record for reporting the results of the decennial and economic censuses, and to support the Population Estimates Program (PEP) and the American Community Survey (ACS). Maintaining correct boundaries and boundary-to-feature relationships through the BAS helps ensure that the Census Bureau assigns the appropriate population to each governmental unit (GU).

In compliance with the Office of Management and Budget Circular A-16, the BAS supports the Census Bureau's spatial data steward responsibilities for the Federal Geographic Data Committee and the Geospatial One-Stop by updating the inventory and boundaries of GUs.

In addition, the BAS is the source of up-to-date information on changes to the boundaries, codes and names of incorporated places, MCDs, counties (and equivalent areas), and federally recognized American Indian areas (AIAs), which include reservations and off-reservation trust lands used by the U.S. Geological Survey's (USGS), the National Map, and the Geographic Names Information System (GNIS).

For more information on the BAS, please view the "Introduction to BAS" video series on the Census Bureau's website at http://www.census.gov/geo/partnerships/bas/videos/introbas.html.

What's new in the 2016 BAS?

With the suspension of the 2014 BAS and the resumption of the BAS in 2015, it is important to note some key changes in the 2016 BAS cycle.

All BAS submissions must be submitted via the Secure Web Incoming Module (SWIM). No other methods or protocols (e.g., email or file transfer protocol (FTP)) are allowed because of Census IT security policy. To get a SWIM token, you must fill out the annual response form located at the following address:
http://www.census.gov/geo/partnerships/bas/bas_ar_form.html

Please note that if you received a SWIM token last year, then it will not change for 2016.

- BAS participants reporting boundary changes (annexations or deannexations) are required to include the authorization type (i.e. resolution, ordinance, local law, state level action or other) in the AUTHTYPE field. All other required data for boundary changes is unchanged.

- There is a physical mail out if you request the GUPS or paper maps. All shapefiles and paper BAS maps are available for download from the BAS website: http://www.census.gov/geo/www/bas/bashome.html for the 2016 BAS.
    - In 2016, BAS paper maps will be available. Maps can be downloaded at the following link: http://www.census.gov/geo/www/bas/bashome.html

State Specific Arrangements and Agreements

The Census Bureau has established a number of arrangements or agreements with states for reporting boundary changes. If your state is interested in establishing a BAS state agreement, please consult the BAS website at: https://www.census.gov/geo/partnerships/bas/bas_sa.html. You may also call the Census Bureau's Geographic Partnerships area at 301-763-1099 or send an email to geo.bas@census.gov. Please visit the BAS program website or call 1-800-972-5651 for information regarding state agreements.

NOTE: The Census Bureau can only establish BAS state agreements for states that require local governments to report boundary changes to a state agency.

Legal Disputes

If it comes to the Census Bureau's attention that an area of land is in dispute between two or more jurisdictions, the Census Bureau will not make either annexations or boundary corrections until the parties come to a written agreement, or there is a documented final court decision regarding the matter/dispute. If you have questions concerning this, contact the Census Bureau Legal Office at 301-763-9844.

Key Dates for Digital BAS Participants

Deadlines for the current BAS year are:

January 1 – All boundary changes must be legally in effect on or before this date to be reported under the current BAS year. Please note that the Census Bureau will accept changes legally effective after January 1 for inclusion in the shapefiles for the next BAS year. However, these changes will not appear in this year's ACS or PEP data. Any changes you submit that become effective after January 1 will be reflected in the following year's ACS and PEP data.

March 1 – You must submit changes by this date if you wish them to be included in this year's ACS and PEP data. Changes reported by March 1 will also be included in the BAS shapefiles for the next BAS year.

May 31 – This is the deadline for changes to be submitted for the current BAS year. Changes received between March 2 and May 31 will be reflected in the shapefiles for the next BAS year. However, they will not appear in this year's ACS or PEP data.

CHAPTER 1: DIGITAL BAS REQUIREMENTS

A. Digital BAS Participation Requirements:

1. All participants must have the ability to edit a Census Bureau shapefile[1]. The Census Bureau requires that entities update Census Bureau shapefiles with boundary and feature changes, rather than submitting a shapefile from a local Geographic Information System (GIS).
2. All participants must provide current information for the BAS point of contact, the person updating the shapefiles, and the highest elected official (HEO) for the entity.
3. All participants must provide legal documentation numbers and effective dates for all legal boundary changes (annexations and deannexations).
4. Each non-legal boundary correction must contain proper update documentation according to boundary correction guidelines listed below, or the Census Bureau will not make the correction for this BAS cycle.
5. All participants must use the SWIM to submit their changes to the Census Bureau. Due to security requirements, we cannot accept submissions via FTP, email or any protocol other than the SWIM site.

BAS Informational and Tutorial Videos

The Census Bureau created training videos to give BAS participants detailed instructions and information on how to report and submit BAS changes. These videos are available on the BAS website at:
http://www.census.gov/geo/partnerships/bas/bas_videos.html

If there are any questions or concerns about the participation requirements, contact the Census Bureau at 1-800-972-5651 or geo.bas@census.gov.

[1] The use of brand names does not represent an endorsement of a company or its products by the U.S. government. Due to the wide use of ESRI products by our partners in the GIS community, and the ubiquitous use of the shapefile format as a medium for GIS data exchange, the Census Bureau is providing this data in shapefile format. There should be no problem when importing these shapefiles into local GIS software. However, if the GIS software does not contain a shapefile translator, contact the Census Bureau for further instructions at 301-763-1099 or e-mail **geo.bas@census.gov**.

CHAPTER 2: TOPOLOGICAL RELATIONSHIPS AND SPATIAL ACCURACY

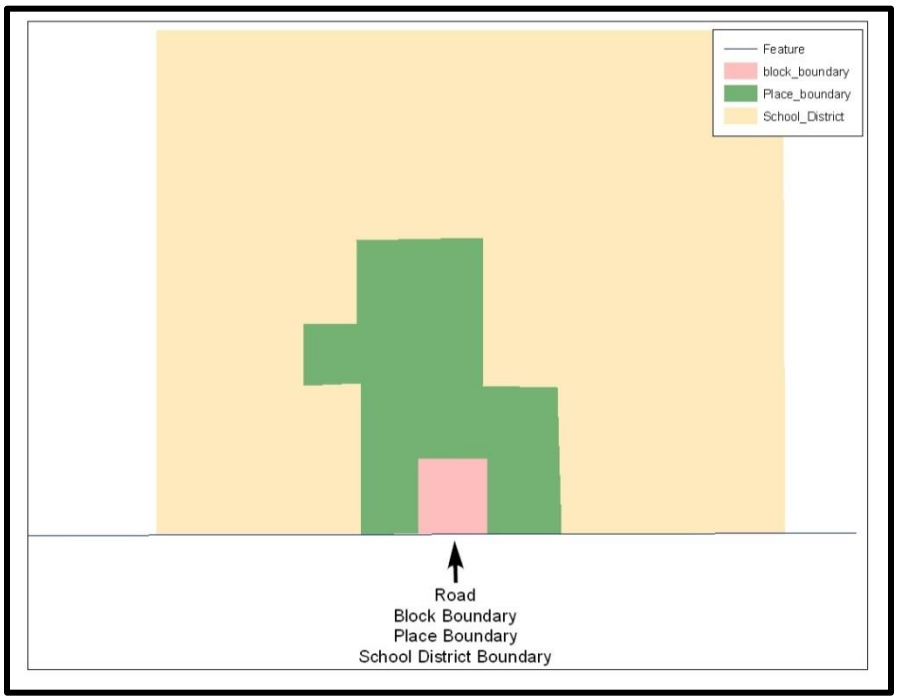
The Geography Division of the Census Bureau is responsible for developing geographic applications and executing related activities needed to support the Census Bureau in collecting and disseminating census data. For more than twenty years, the Census Bureau's Master Address File and Topologically Integrated Geographic Encoding and Reference (MAF/TIGER) System has been a critical resource for supporting the Census Bureau Geographic Partnership Programs.

The following section will describe how the Census Bureau uses a topologically integrated system and how this differs from traditional GIS systems, which use separate layers of data.

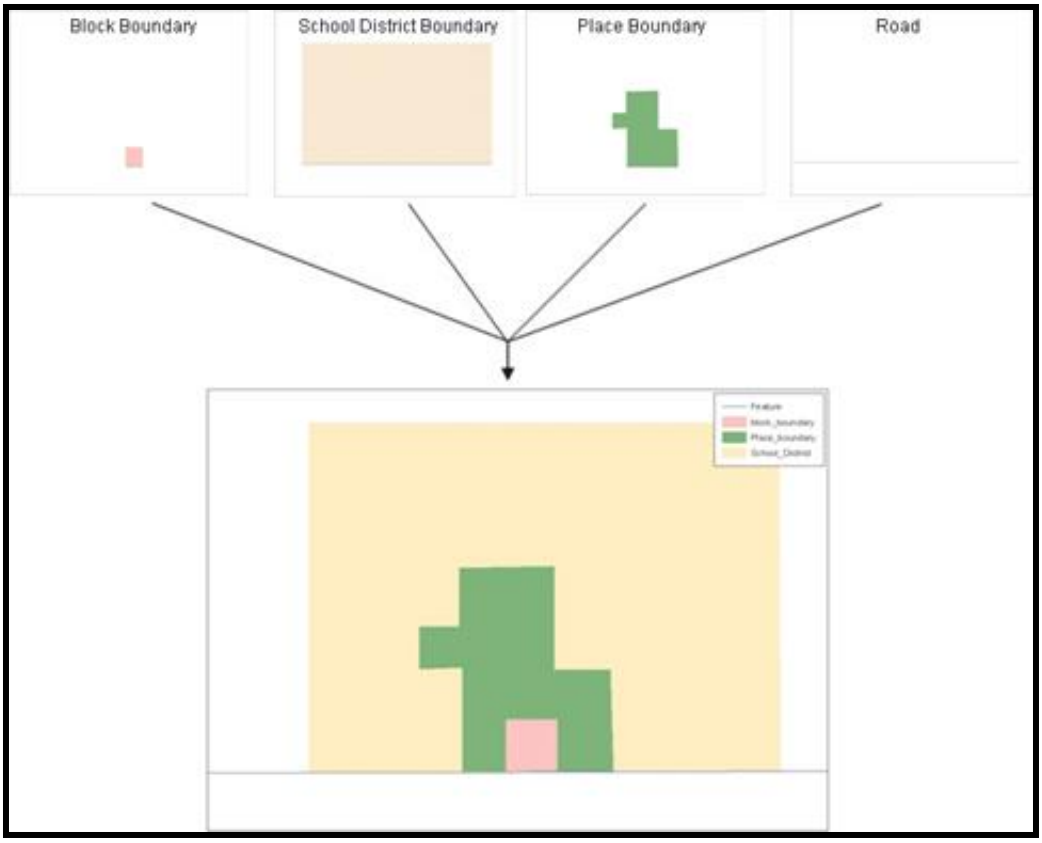
A. Topological Relationships in MAF/TIGER

At the Census Bureau, we describe topology as the relationship between different levels of geography. MAF/TIGER is a geographic database in which the topological structures define the location, connection, and relationships of streets, rivers, railroads, and other features. These topological structures help define the geographic entities for which the Census Bureau tabulates data.

Instead of having a separate layer for each feature class (roads, boundaries, etc.) all MAF/TIGER information is stored in one layer or file. See Examples 1 and 2 for samples of topologically integrated files in MAF/TIGER.



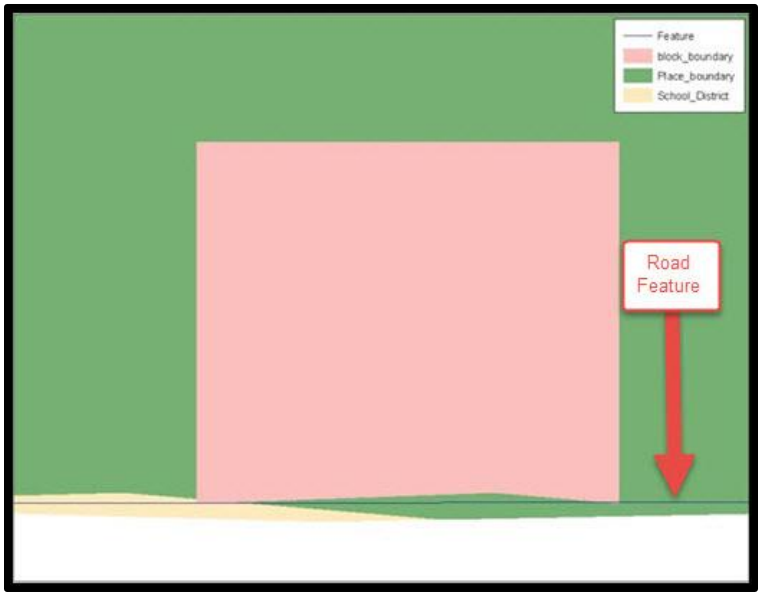
Example 1: This example shows how a road in MAF/TIGER can also represent a block boundary, place boundary and a school district boundary.



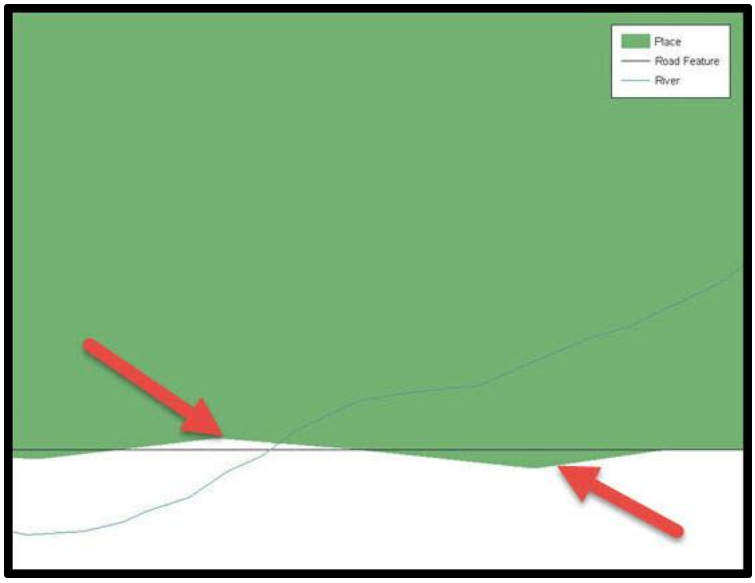
Example 2: This example shows the topological integration of four different feature classes into one layer. One road feature represents not only a road, but also a block boundary, place boundary, and a school district boundary.

GIS and Spatial Accuracy

In a GIS, feature classes are often not topologically integrated: they are separated into individual layers. When you overlay these layers in a GIS, there may be boundary misalignments due to the nature of the data. These non-topologically integrated layers could cause issues in MAF/TIGER. Examples 3 and 4 show how files that are not topologically integrated might appear in a GIS when overlaid.



Example 3: This example shows an overlay of four different feature classes. Notice how the topological relationship is compromised. The block, place, and school district boundaries, which are supposed to follow the road feature, are no longer aligned with the road in several locations.



Example 4: This example shows a situation where a local GIS place boundary does not follow a road feature. Assuming that the boundary follows the road feature, changing the Census Bureau place boundary to match the local file exactly and become misaligned (see arrows) would dissolve the topological relationship in MAF/TIGER.

The spatial differences between local GIS data and the Census Bureau's topologically integrated file are often very small (less than ten feet) and can create boundary-to-feature relationship issues for the Census Bureau. **Section 5.8** provides instructions on how to review digital submissions for small spatial boundary corrections. It also lists some of the potential consequences of making spatial boundary corrections that dissolve the topological relationships present in MAF/TIGER. You may find examples of suggested methods for correctly making boundary changes in **Appendices B** and **C**.

Census Bureau Topology Training Video

The Census Bureau created a video on the subject of topology and why topology is important to the BAS. For more information, please go to http://www.census.gov/geo/partnerships/bas/videos/digitalproctopo.html where you can watch the video.

CHAPTER 3: CENSUS BUREAU PROVIDED SHAPEFILES

Please download shapefiles from the website BAS website at: http://www.census.gov/geo/partnerships/bas.html in order to review your boundaries and submit changes.

The Census Bureau provides entity layers in ESRI shapefile format for download via the BAS website. Regardless of the number of geographic entity polygon based shapefiles each participant downloads and edits, there is only one shapefile for the linear feature network for each county. See **Table 1** for the names of the shapefiles.

BAS Shapefile Naming Conventions

Geographic Entity Type	Shapefile Naming Convention
County	PVS_15_v2_county_<ssccc>.shp
Minor Civil Division	PVS_15_v2_mcd_<ssccc>.shp
Incorporated Place	PVS_15_v2_place_<ssccc>.shp
Consolidated City	PVS_15_v2_concity_<ssccc>.shp
Edges (Roads, Rail, Hydro, etc.)	PVS_15_v2_edges_<ssccc>.shp
Area Landmarks	PVS_15_v2_arealm_<ssccc>.shp
Point Landmarks	PVS_15_v2_pointlm_<ssccc>.shp
Hydro Area	PVS_15_v2_water_<ssccc>.shp
Geographic Offsets / Corridors	PVS_15_v2_offset_<ssccc>.shp

Table 1: BAS Naming Conventions.

NOTE: <ssccc> represents the two-digit state FIPS code and three-digit county FIPS code.

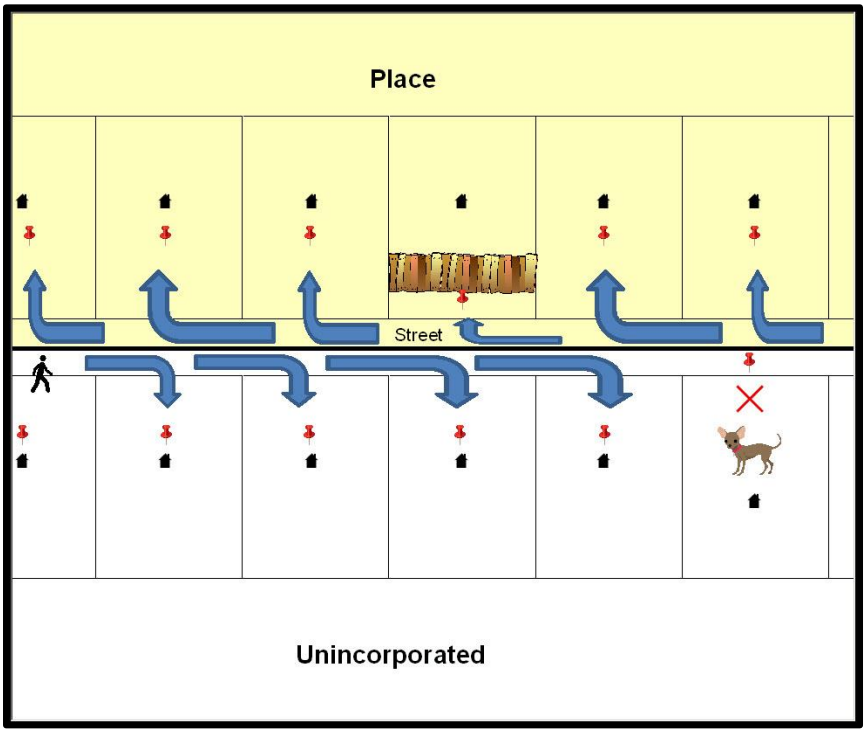
All shapefiles provided by the Census Bureau are in the following unprojected geographic-based coordinate system:

- Geographic Coordinate System – North American Datum 1983 (GCS NAD83)
- Angular Unit: Degree (0.017453292519943299)
- Prime Meridian: Greenwich (0.000000000000000000)
- Datum: D_North_American_1983
- Spheroid: GRS_1980
- Semi-major Axis: 6378137.000000000000000
- Semi-minor Axis: 6356752.314140356100000000
- Inverse Flattening: 298.257222101000020000

CHAPTER 4: CENSUS BUREAU GEOCODING

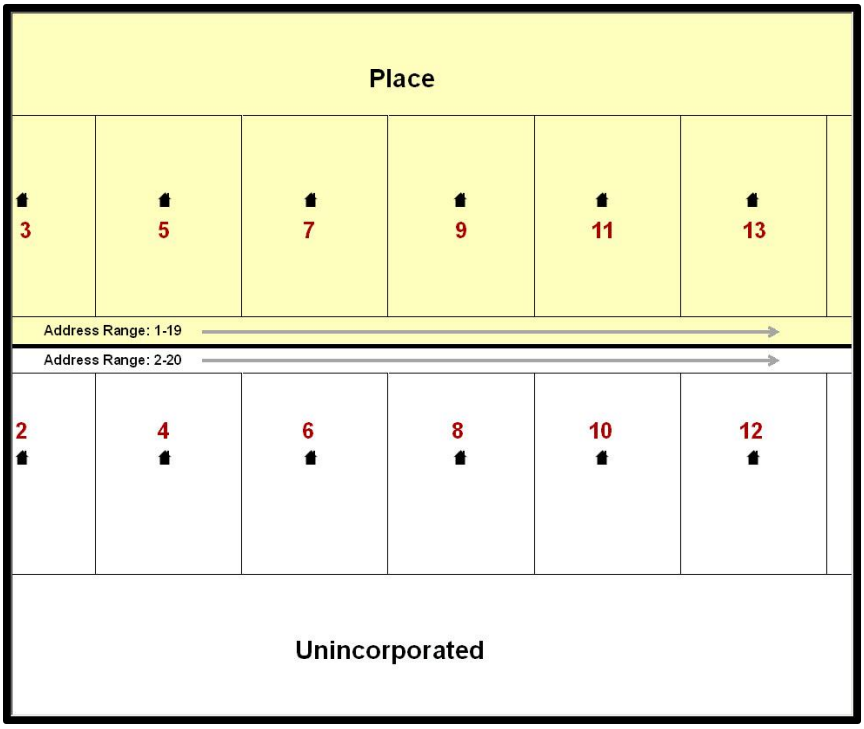
Geocoding is how the Census Bureau codes population to geographic entities. There are two primary methods of geocoding used by the Census Bureau. Both of these involve coding an address to a spatial polygon, but one uses Global Positioning System (GPS) technology, while the other uses address ranges.

MAF structure point (MSP) geocoding: a field worker stands in front of a house or living quarters, and records the physical location with a GPS device (Example 5). Usually, the GPS point should fall very close to the front door of the house. However, since GPS points were collected in the field, real-world obstacles like locked fences, poor satellite reception, or even aggressive dogs might sometimes prevent the worker from gaining access to the front door. In these circumstances, the worker may have to take the GPS coordinate from the sidewalk or side of the road.



Example 5: MSP method of geocoding. Notice that it is occasionally not possible for the field worker to go all the way to the front door, due to unforeseen circumstances, like the fence or the dog shown above. Thus, the MSP (represented here by the red pins) can sometimes fall within the road or the road right-of-way.

Address Range geocoding: when no MSP is available, the Census Bureau codes houses and living quarters according to a potential range of addresses associated with the adjacent stretch of road (Example 6).



Example 6: Address Range method of geocoding. When it is not possible to collect an MSP, houses are geocoded according to their placement along a range of potential addresses along that road. Since the address has a relationship with the road, boundaries placed on front lot lines will lead to mis-geocoding unless an offset flag is used.

While the two methods of geocoding differ greatly, both rely heavily on the integrated nature of MAF/TIGER. These geocoding methods are affected by the way streets and boundaries are represented in relation to one another. This interdependence between streets, boundaries, and geocoding means that Census Bureau representations of legal boundaries may sometimes differ from other representations (e.g., in local or state GIS). This is especially true regarding geographic corridors and offsets that follow road right of ways (or the front lot lines of parcels). In both of the examples above, delineating a boundary along the front lot line will tend to increase the risk of incorrect geocoding. As a result, using the road centerline as a boundary is the safer method.

When completing a BAS submission in which a road or road right-of-way is owned or maintained by a place but the adjacent housing is not, the respondent should use the centerline of the road (not the front lot-line) as the boundary whenever possible. If local or state law requires the use of the front lot line boundary, the respondent must explicitly designate the polygon(s) between the road centerline and the front-lot boundary as a corridor or an offset (see **Section 5.4** and **5.5** of this document for more details).

CHAPTER 5: UPDATING THE CENSUS BUREAU SHAPEFILES

Census Bureau shapefiles can be updated to reflect boundary and/or linear feature changes that have occurred since the last BAS update. Please go to **Appendices B** and **C** and watch the Digital BAS demonstration video series at http://www.census.gov/geo/partnerships/bas/videos/digitalbasdemo.html for more examples and sample demonstrations.

NOTE: If there are problems with the processing of returned files, the Census Bureau will email a feedback document requesting clarification of any issues. If the problem cannot be resolved before the project deadline, the changes in question will not be made during the current BAS.

A. General File Setup Guidelines

After downloading the shapefiles from the PVS download page, follow these procedures before beginning actual updates:

- Open the downloaded .ZIP file to verify its contents.
- Copy the shapefiles into a directory on a server/hard drive.
- Open the shapefiles with GIS software.

Changing the Map Projection

Census Bureau files are in GCS NAD83 format and can be projected into any local coordinate system/projection. Most GIS software packages will allow users to transform file coordinate systems and projections. For example, if using ArcView to update files, activate and utilize ArcView's **Projection Utility Wizard** extension. If using ArcGIS, use its **Project tool** in **ArcToolbox**. MAF/TIGER shapefile extracts contain defined projection information in the *.prj file. ArcView and ArcGIS access the *.prj file for projection information so there is no need to define these parameters before changing the file coordinate systems.

When updates are complete, participants may submit the boundary shapefile using any local coordinate system/projection if the shapefile contains a .prj file or spatial reference materials such as metadata.

Boundary Changes

In order to update MAF/TIGER, participants must create a separate change polygon layer for each updated entity type (county, MCD, place). Please create change polygons in relation to the current MAF/TIGER boundary.

Appendices B and **C** provide two examples for creating annexation, deannexation, boundary correction, new entity, geographic corridor, and geographic offset change polygons. Review any boundary change polygons before submitting them (**Section 5.8**).

If you need additional shapefiles, please contact the Census Bureau at 1-800-972-5651 or geo.bas@census.gov.

5.1 Annexations and Deannexations

The Census Bureau will accept annexations and deannexations from counties, MCDs, and incorporated places. Each annexation or deannexation change polygon must have the required attributes and corresponding change type populated, as seen in **Table 2**. The Census Bureau will snap any annexation or deannexation to a MAF/TIGER feature when it exists within **thirty** feet of that feature.

NOTE: Enter the name of the jurisdiction annexing or deannexing the area in the NAME field.

Annexations and Deannexations

	NAME	CHNG_TYPE	EFF_DATE	AUTHTYPE	DOCU (Not Required in GA)	AREA (Required in GA)	RELATE
Annexation	X	X('A')	X	X	X	* See Note	
Deannexation	X	X('D')	X	X	X	* See Note	

Table 2: Annexations and Deannexations (Note: 'X' = Required Field).

NOTE: Area in acres is required for Georgia, and requested for all other areas.

5.2 Boundary Corrections

The Census Bureau will also accept specific boundary corrections from counties, MCDs, and incorporated places. As with annexations and deannexations, the participant must create individual change polygons for each boundary correction. Each boundary correction must also have the required attributes and corresponding change type populated, as seen in **Table 3**, or the Census Bureau will reject them.

NOTE: Enter the name of the jurisdiction the boundary correction is for in the NAME field.

Boundary Corrections

	NAME	CHNG_TYPE	EFF_DATE	AUTHTYPE	DOCU	AREA	RELATE
Boundary Correction (Add Area)	X	X('B')					X('IN')
Boundary Correction (Remove Area)	X	X('B')					X('OUT')

Table 3: Boundary Corrections (Note: 'X' = Required Field).

The Census Bureau uses a topologically integrated database. As a result, the Census Bureau cannot process all types of boundary corrections for inclusion in MAF/TIGER. The following are types of boundary corrections that the Census Bureau will accept, process, and update or reject during the current BAS.

The Census Bureau **will** accept and process properly documented boundary corrections during the current BAS cycle that spatially interact with (abut) other BAS legal changes (annexation, deannexation, corridor, offset) and meet both of the following two conditions:

- In situations where the existing boundary has been digitized incorrectly or appears in the incorrect location due to Census Bureau activities.
- where the overall shape of the geographic entity is maintained and no feature-to-boundary relationships are dissolved.

The Census Bureau **will reject** boundary corrections:

- along county boundaries unless there is a written agreement between the two counties that documents the correct location of the boundary.
- between adjacent incorporated places or adjacent MCDs unless the county submitting the changes is part of a consolidated county agreement or there is a written agreement between the two incorporated places or MCDs.
- that dissolves boundary-to-feature relationships (roads, rivers, railroads, etc.) if the difference is less than thirty feet.
- which are greater than one square mile, or not contiguous with the rest of the entity boundary. These boundary corrections may be part of annexations that were never reported to the Census Bureau. If they are previously unreported boundary changes, please include effective dates and legal documentation numbers for these changes.
- that have a width of less than thirty feet over the entire polygon.

NOTE: Remember that the Census Bureau will snap any entity boundary correction to a MAF/TIGER feature when it exists within thirty feet of that feature.

5.3 New Incorporations

County participants may submit new incorporations for incorporated places and MCDs through Digital BAS. As with other change types, an individual change polygon must be created for each new incorporation and possess the required attributes and the corresponding change type field must be populated (see **Table 4**).

NOTE: Enter the name of the new jurisdiction in the NAME field. For required documentation for new incorporations, contact the Census Bureau at 1-800-972-5651 or geo.bas@census.gov.

New Incorporations

	NAME	CHNG_TYPE	EFF_DATE	AUTHTYPE	DOCU	AREA	RELATE
New Incorporation	X	X('E')	X	X	X		

Table 4: New Incorporations (Note: 'X' = Required Field).

5.4 Disincorporations

County participants may submit disincorporations through Digital BAS. As with other change types, an individual change polygon for each disincorporation and must possess the required attributes and the corresponding change type must be populated.

Disincorporations

	NAME	CHNG_TYPE	EFF_DATE	AUTHTYPE	DOCU	AREA	RELATE
Disincorporation	X	X('X')	X	X	X		

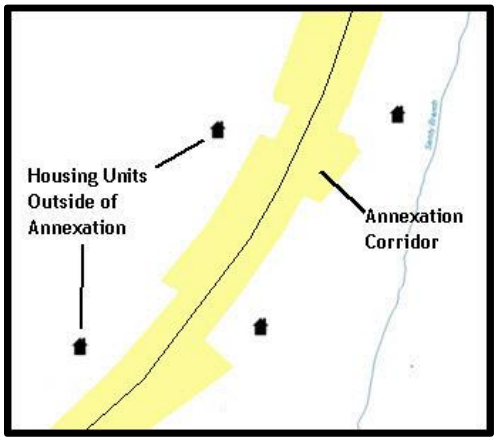
Table 5: Disincorporations (Note: 'X' = Required Field).

5.5 Geographic Corridors

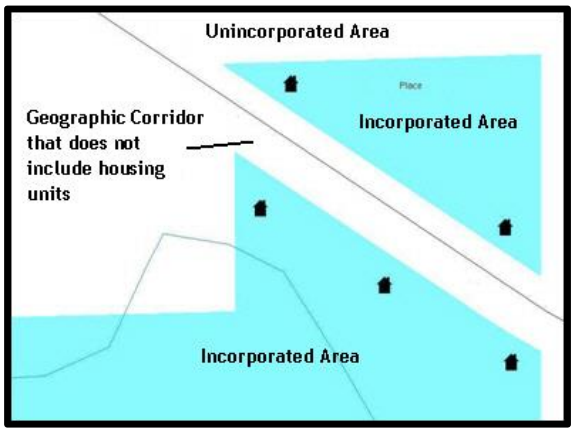
The Census Bureau sometimes geocode addresses based on the street centerline. If the geocoding of these addresses would result in the assignment of population to the incorrect geographic entity, participants should create a geographic corridor.

A **geographic corridor** is an area that includes only the road right-of-way and does not contain any structures addressed to either side of the street. **Example 7** shows a corridor created where the incorporated place owns the right-of-way but the housing units are not included in the incorporated place (shown in color).

Example 8 shows that the right-of-way belongs in the unincorporated area, while the housing units are included in the incorporated place (shown in color). This is important for some cities because they are portraying that the city is not responsible for road maintenance. This is not relevant for Census Bureau tabulations and is not easy to depict in the MAF/TIGER. This type of corridor should not be included in a BAS response.



Example 7



Example 8

The Census Bureau will accept new geographic corridors. Please create individual change polygons for each new geographic corridor. Each change polygon must have the required attributes and corresponding change type populated, as seen in **Table 6**. In the **NAME** field, enter the name of the jurisdiction. In the **RELATE** field, indicate whether the change is adding IN or taking OUT (removing) the corridor.

Geographic Corridors

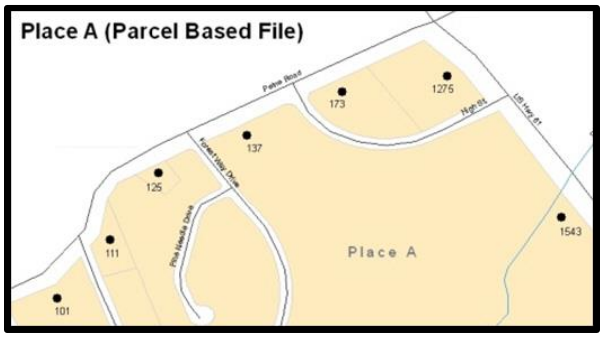
	NAME	CHNG_TYPE	EFF_DATE	AUTHTYPE	DOCU	AREA	RELATE
Geographic Corridor	X	X('C')					X('IN', 'OUT')

Table 6: Geographic Corridors (Note: 'X' = Required Field).

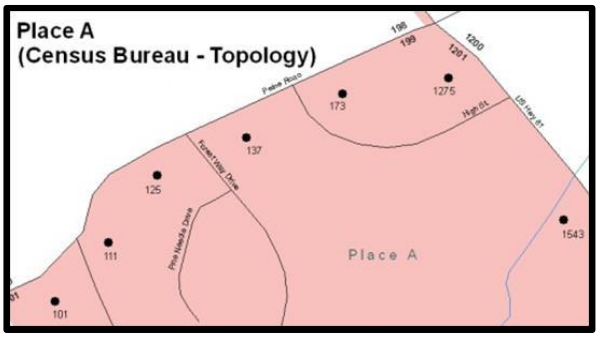
5.6 Geographic Offsets

A **geographic offset** is an area claimed by a geographic entity that is only on one side of a road and does not include structures addressed to that side of the road.

The Census Bureau is aware that many governments base their legal boundaries on cadastral (parcel-based) right-of-way mapping. The Census Bureau bases their maps on spatial data that is topologically integrated. This makes the maintenance of geographic offsets inefficient. Snapping an entity boundary to the centerline wherever applicable will help to establish more accurate population counts. If a boundary is the front lot line, the Census Bureau strongly prefers that the boundary be snapped to the road. If a boundary is at the rear of a lot, then please depict it as such. **Example 9** depicts a cadastral (parcel-based) boundary map and **Example 10** shows how the boundary should be reported when sent to the Census Bureau.



Example 9



Example 10

The Census Bureau will accept new geographic offsets. Please create individual change polygons for each new geographic offset. Each change polygon must have the required attributes and corresponding change type populated, as seen in **Table 7**. In the **NAME** field, enter the name of the jurisdiction. In the **RELATE** field, indicate whether the change is adding IN or taking OUT (removing) the area represented as an offset.

Geographic Offsets

	NAME	CHNG_TYPE	EFF_DATE	AUTHTYPE	DOCU	AREA	RELATE
Geographic Offset	X	X('F')					X('IN', 'OUT')

Table 7: Geographic Offsets (Note: 'X' = Required Field)

The Census Bureau has included an "offset" shapefile in the BAS materials (PVS_15_v2_offset_<ssccc>.shp), so that your jurisdiction can be checked for any

existing corridors or offsets. While the Census Bureau prefers that you do not create new offsets, (see above), this information can be helpful in determining if current boundaries are correct.

Linear Feature Updates

5.7 Adding, Deleting, Renaming, and Recoding Linear Features

The Census Bureau will accept linear feature modifications when needed. Please submit linear feature updates in a separate linear feature update layer. Each linear feature update must have the required attributes and corresponding change type populated, as seen in **Table 8**. In the TLID field, preserve the existing TLID for the feature.

Linear Feature Updates

	CHNG_TYPE	TLID	FULLNAME	MTFCC
Add Feature	X('AL')		X	X
Delete Feature	X('DL')	X		
Rename Feature	X('CA')	X	X	
Recode Feature	X('CA')	X		X

Table 8: Linear Feature Updates (Note: 'X' = Required Field).

NOTE: A list of MTFCC codes can be found in **Appendix D.**

5.8 Linear Feature Update Guidelines

- If a road, subdivision, etc. is missing from the Census Bureau's feature network, add the feature(s) and provide the name and MTFCC.
- If a feature that does not exist is in the Census Bureau's feature network, delete the feature.
- If a feature is in the incorrect location in the Census Bureau's feature network, delete the feature and re-add it in the correct location. Only do this if the feature is very far off or in the wrong position relative to boundaries or other features.

5.9 Address Range Updates

The Census Bureau accepts address range data as part of the linear feature update layer. As with other linear feature updates, address ranges must have the required attributes and corresponding change type populated. As existing address ranges cannot be shown in our outgoing shapefiles, we recommend that participants generally only add address ranges to new features.

Address Ranges

	CHNG_TYPE	FULLNAME	MTFCC	LTOADD	RTOADD	LFROMADD	RFROMADD
Address Ranges	X('CA')			X	X	X	X

Table 9: Address Ranges (Note: 'X' = Required Field)

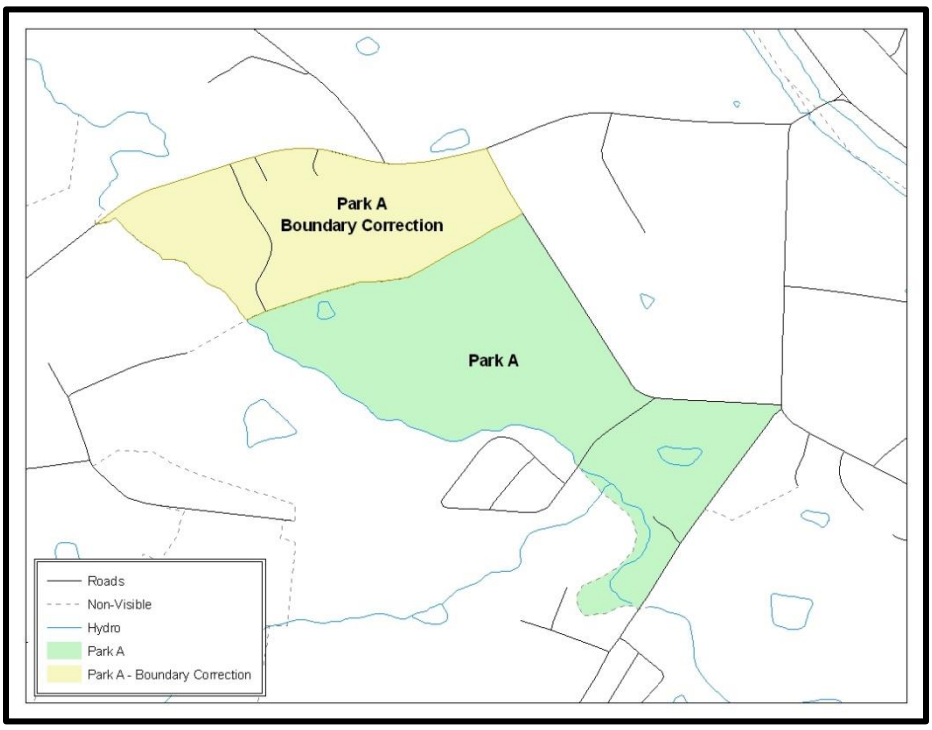
5.10 Area Landmarks, Hydro Areas, and Point Landmarks

1. Area Landmark / Hydro Area Updates

   The Census Bureau accepts updates to area landmarks and hydro areas in a similar manner to legal boundary changes. However, area landmarks and hydro areas are not legal entities, so no documentation or effective dates are required.

   In order to submit area landmark and hydro area updates, create a separate change polygon layer. Updates to area landmarks and hydro areas include:

   - boundary corrections (adding and removing area)
   - creating a new area landmark or hydro area
   - removing an area landmark or hydro area
   - name changes



Example 11: This example shows a boundary correction to Park A.

Each area landmark or hydro area update must have the required attributes and corresponding change type populated. In the AREAID field, preserve the existing AREAID for the feature.

Landmarks and Hydro Areas

	FULLNAME	CHNG_TYPE	RELATE	MTFCC	AREAID
Boundary Correction (Add Area)	X	X('B')	X('IN')		X
Boundary Correction (Remove Area)	X	X('B')	X('OUT')		X
Delete Landmark		X('D')			X
Change Landmark Name	X	X('G')			X
New Landmark	X	X('E')		X	

Table 10: Landmarks and Hydro Areas (Note: 'X' = Required Field).

The examples in **Appendices B** and **C** provide information on how to create change polygons. While the sample processes are written for legal boundary changes, the same methods apply for creating change polygons for area landmarks and hydro areas. When adding new area landmarks or hydro areas, only add the following types of areas:

- water bodies
- glaciers
- airports
- cemeteries
- golf courses
- parks

The Census Bureau cannot add other types of areas at this time (although some may already exist in MAF/TIGER). The following are acceptable MTFCC codes for new area landmarks or hydro areas:

Area Landmark MTFCC Codes

MTFCC	Description
H2030	Lake/Pond
H2040	Reservoir
H2041	Treatment Pond
H2051	Bay/Estuary/Gulf/Sound
H2081	Glacier
C3023	Island

MTFCC	Description
K1231	Hospital/Hospice/Urgent Care Facility
K1235	Juvenile Institution
K1236	Local Jail or Detention Center
K1237	Federal Penitentiary, State Prison, or Prison Farm
K2110	Military Installation
K2180	Park
K2181	National Park Service Land
K2182	National Forest or Other Federal Land
K2183	Tribal Park, Forest, or Recreation Area
K2184	State Park, Forest, or Recreation Area
K2185	Regional Park, Forest, or Recreation Area
K2186	County Park, Forest, or Recreation Area
K2187	County Subdivision Park, Forest, or Recreation Area
K2188	Incorporated Place Park, Forest, or Recreation Area
K2189	Private Park, Forest, or Recreation Area
K2190	Other Park, Forest, or Recreation Area (quasi-public, independent park, commission, etc.)
K2424	Marina
K2540	University or College
K2457	Airport – Area Representation
K2561	Golf Course
K2582	Cemetery

Table 11: Landmark Area MTFCC Codes.

The Census Bureau prioritizes boundary changes to legal areas in order to meet ACS, PEP, and BAS deadlines. Therefore, there may be delays in incorporating area landmark and hydrographic area changes to MAF/TIGER. Please do not resubmit any changes that were sent during the previous year's BAS. We are working on incorporating those changes, and they will be reflected in the next year's BAS materials.

2. Point Landmark Updates

The Census Bureau accepts updates to point landmarks. Please submit point landmark updates as a separate point landmark update layer. Updates to point landmarks include:

- adding a new point landmark
- deleting an existing point landmark
- renaming a point landmark

Each point landmark update must have the required attributes and corresponding change type populated. In the POINTID field, preserve the existing POINTID for the feature.

Point Landmarks

	FULLNAME	CHNG_TYPE	MTFCC	POINTID
New Point Landmark	X	X('E')	X	
Delete Point Landmark		X('D')		X
Change Name	X	X('G')		X

Table 12: Point Landmarks (Note: 'X' = Required Field).

The Census Bureau cannot make the following point landmark changes due to Title 13 privacy concerns. Do not include any of the following types of landmarks in the point landmark changes file.

Restricted MTFCCs

MTFCC	Description
K1100	Housing Unit Location
K1121	Apartment Building or Complex
K1122	Rooming or Boarding House
K1223	Trailer Court or Mobile Home Park
K1226	Housing Facility/Dormitory for Workers
K1227	Hotel, Motel, Resort, Spa, Hostel, YMCA, or YWCA
K1228	Campground
K1229	Shelter or Mission
K1232	Halfway House/Group Home
K1233	Nursing Home, Retirement Home, or Home for the Aged
K1234	County Home or Poor Farm
K1235	Juvenile Institution
K1241	Sorority, Fraternity, or College Dormitory
K1251	Military Group Quarters
K1299	Other Group Quarters Location
K2100	Governmental

K2197	Mixed Use/Other Non-residential
K2300	Commercial Workplace
K2361	Shopping Center or Major Retail Center
K2362	Industrial Building or Industrial Park
K2363	Office Building or Office Park
K2364	Farm/Vineyard/Winery/Orchard
K2366	Other Employment Center
K2464	Marina
K2500	Other Workplace
K2564	Amusement Center

Table 13: Restricted MTFCCs.

The Census Bureau also cannot delete or modify any point landmarks imported from the USGS GNIS database. Changes submitted for the following types of landmarks may be left unchanged:

- K2451 (Airport)
- K2582 (Cemetery)
- C3022 (Summit or Pillar)
- C3081 (Locale or Populated Place)
- C3061 (Cul-de-sacs)

The Census Bureau prioritizes boundary changes to legal areas in order to meet ACS, PEP, and BAS deadlines. Therefore, there may be delays in incorporating point landmark changes to MAF/TIGER. Please do not resubmit any changes that were sent during the previous year's BAS. We are working on incorporating those changes, and they will be reflected in the next year's BAS materials.

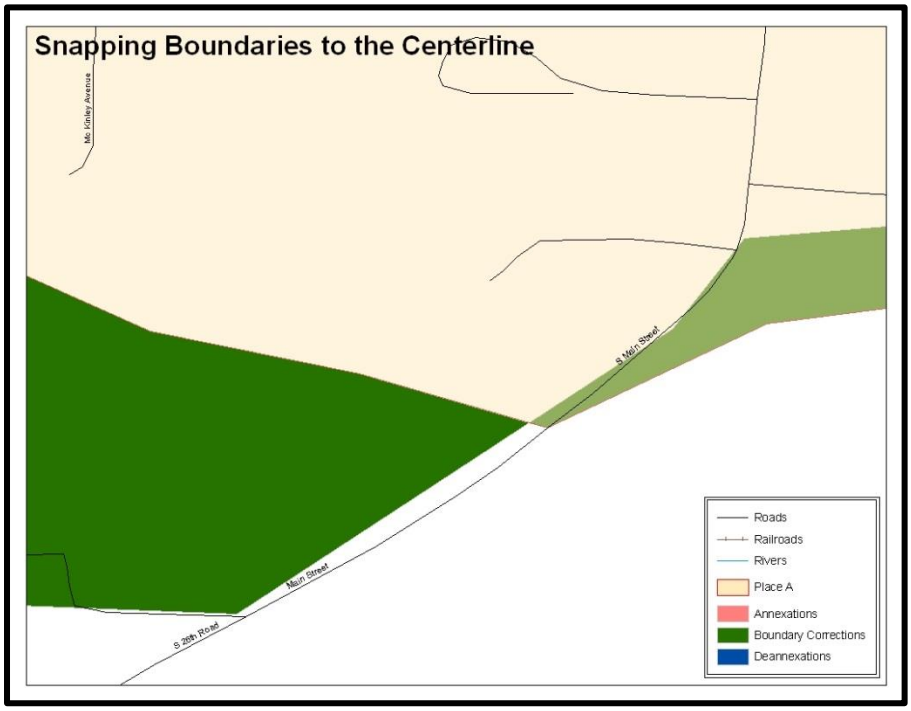
Reviewing Changes to the Census Bureau Shapefiles

Please review all changes to ensure that they are intentional and correct. The video series "Introduction to the Digital BAS" can be found on the web at: http://www.census.gov/geo/partnerships/bas/videos/introdigitalbas.html. The videos have information on many of the topics below.

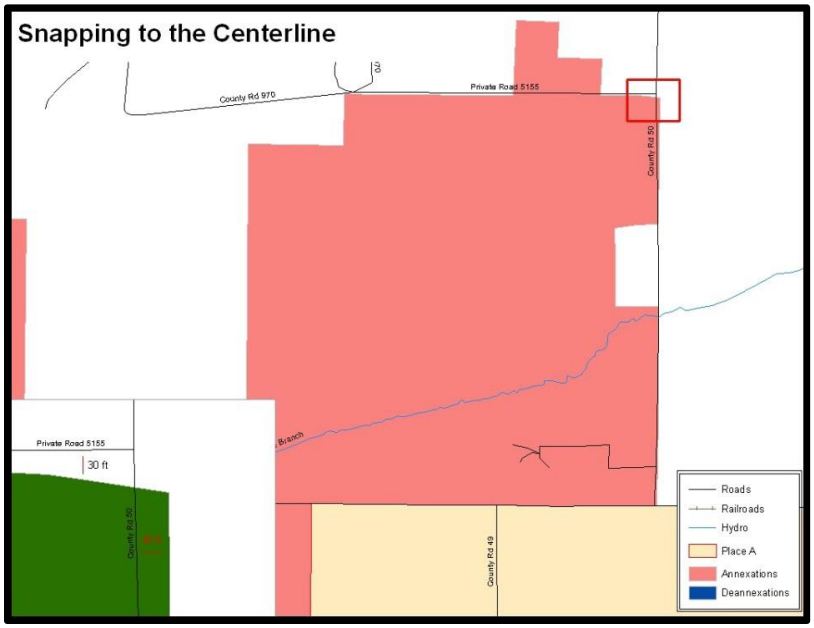
5.11 Boundary-to-Feature Relationships

Please review all changes to ensure that the correct boundary-to-feature relationships are being created or maintained. The Census Bureau is aware that many governments base their legal boundaries on cadastral (parcel-based) right-of-way mapping; however, the Census Bureau bases maps on spatial data that is topologically integrated. Therefore, snap boundaries to street centerlines (or rivers, railroads, etc.) wherever applicable. This will help establish a more accurate population count for entities.

The following examples show situations where boundary changes should be snapped to existing linear features. The Census Bureau will snap boundary changes to any linear feature within **thirty** feet.

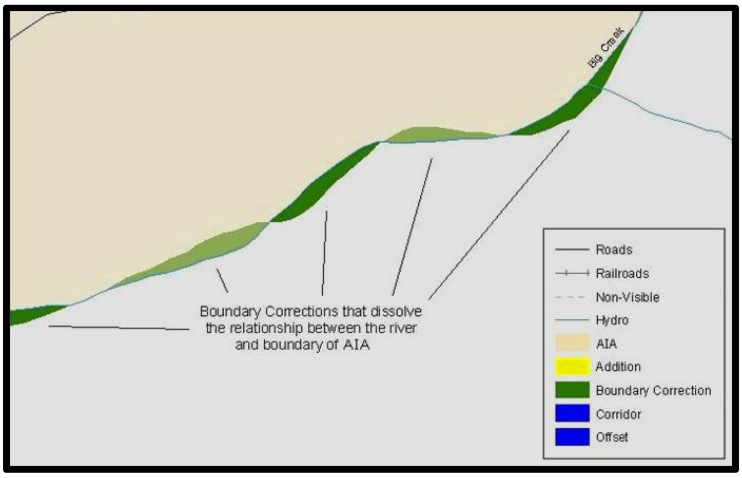


Example 12: These boundary corrections are not snapped to existing linear features in MAF/TIGER. Both boundary corrections should be snapped to centerlines or population may be assigned to incorrect entities.

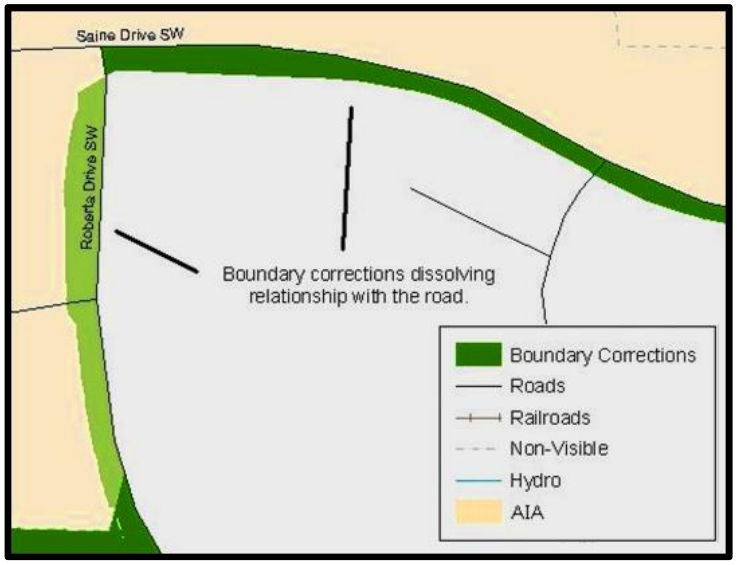


Example 13: This is an example of an annexation created without snapping to existing centerlines in MAF/TIGER. Unless the boundary is snapped to centerlines, some of the population may be assigned to an incorrect entity.

The Census Bureau will not accept boundary corrections that dissolve the current relationship between an existing boundary and linear feature, without specific instruction that the relationship is incorrect. The Census Bureau will not incorporate any boundary corrections that create thirty feet or less of gap or overlap between the existing linear feature and boundary into MAF/TIGER. See below for examples of changes that will not be accepted.



Example 14: Small spatial boundary corrections would dissolve the relationship with the river. These boundary corrections will not be incorporated into MAF/TIGER.

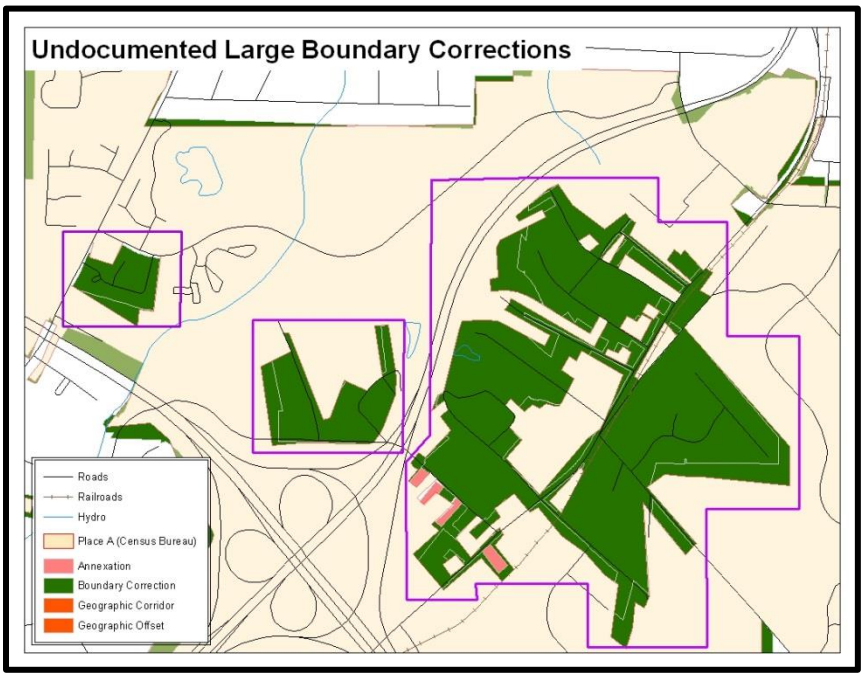


Example 15: Small spatial boundary corrections would dissolve the boundary-to-feature relationship with multiple streets. Incorporating these changes would affect the population counts for the area. Therefore, the Census Bureau will not accept these small boundary corrections.

5.12 Large Boundary Corrections

The Census Bureau will not accept large boundary corrections to an entity without the appropriate legal documentation numbers and effective dates. These large boundary corrections may be legal boundary changes that occurred in the past and were never

reported to the Census Bureau. Please submit the appropriate legal documentation number and effective date so that the changes may be incorporated into MAF/TIGER.



Example 16: Without the appropriate documentation, the Census Bureau will not accept large boundary corrections.

NOTE: There may be a few instances when large boundary corrections need to be made because of incorrect digitizing or where the boundary appears in the incorrect location due to other Census Bureau activities.

5.13 Including Required Attribute Information

It is important to review each change polygon and confirm that the correct attribute information is included. Without the correct attribute information, the Census Bureau will be unable to process and incorporate the changes into MAF/TIGER. See **Section 5.7** for the required attribute information and corresponding change type codes.

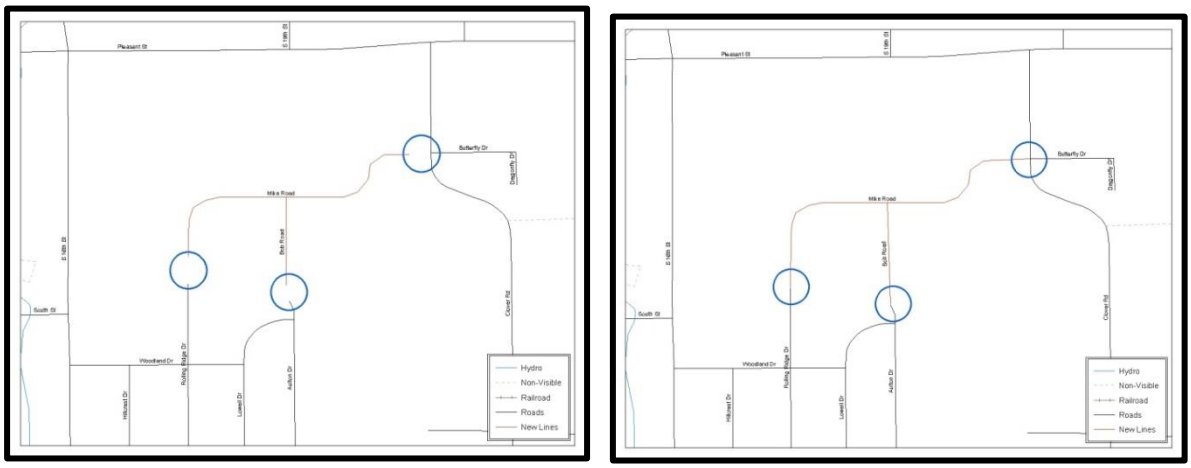
5.14 Including Appropriate Metadata (Projection Information)

It is important that the appropriate projection information is included. Each update layer submitted should contain a *.prj file so that the Census Bureau can convert the projection back to GCS_NAD83. If the GIS being used cannot create a *.prj file, include the projection information in metadata. This is critical for the Census Bureau to be able to process the file and incorporate the updates into MAF/TIGER.

5.15 Linear Feature Updates

Please review linear feature changes to ensure that they align with the features currently in MAF/TIGER.

If linear feature changes do not align with current MAF/TIGER linear features, the Census Bureau may not incorporate the submitted updates.



Example 17: The image on the left shows new road features added to the existing feature network, but not connected to existing road features. The image on the right shows the correction connecting the new roads to the existing road features.

Additional Review Information

The Census Bureau will not make any boundary change that affects adjacent legal entities without the appropriate documentation. Please review any change polygons that affect adjacent entities to determine if they are intentional, legal changes.

NOTE: Census Bureau will snap any annexation, deannexation, or boundary correction to a MAF/TIGER feature when it exists within thirty feet of that feature. This helps maintain the boundary-to-feature relationships in MAF/TIGER and will ensure correct housing tabulation counts for entities.

5.16 Submitting Digital Data

If a participant is reporting changes to the BAS, the Census Bureau requires that each participant submit at least one shapefile (change polygons). The total number of layers submitted depends on what types of changes are reported. The following is a list of change files that *may* need to be submitted:

1. **Change Polygon Layers** (County, Minor Civil Division, Incorporated Place, and Consolidated City)
   - These layers consist of the changes that the Census Bureau needs to make to entities.
   - A layer of change polygons should be created for each level of geography (county, MCD, place, etc.) that changes are being submitted for.
2. **Whole Modified Entity Layer** (County, Minor Civil Division, Incorporated Place, and Consolidated City)
   - These layers should only contain the complete and current boundary for the entity being updated.

- A whole entity layer should be created for each level of geography that change polygons are being created for.

3. Local government feature network and boundary layers *(optional)*

   - These layers will help the Census Bureau resolve any questionable change polygons and establish the correct boundary-to-feature relationships.

4. **Feature Update Layer** (only if there are feature (road, river, railroad, etc.) additions, deletions, name changes, recodes, or address range updates)

      - Include a linear feature update layer with only feature segments requiring a correction.

5. Area / Hydro Landmark Layer

   - Only if there are area and/or hydro landmark updates.

6. Point Landmark Layer

   - Only if there is point landmark updates.
     - **BAS Contact Text File** *(if the BAS point of contact (the person that receives the BAS Annual Response Email) has changed)*
     - **This can be updated online at:** http://www.census.gov/geo/partnerships/bas/bas_ar_form.html
     - This update should include this information:
       - First Name:
       - Last Name:
       - Department:
       - Position:
       - Shipping Address:
       - City:
       - State:
       - ZIP Code:
       - Phone: xxx-xxx-xxxx
       - FAX: xxx-xxx-xxxx
       - Email:
       - HEO Term Expires: xx/xxxx
       - HEO Term Length: x years

7. Change Polygon Naming Conventions

The following table provides change polygon naming conventions for county submissions, county subdivisions, incorporated places, and consolidated cities.

Change Polygons

Participant	Changes Submitted For:	Shape file Naming Conventions
County	County	bas16_<basID>_changes_county
County	Minor Civil Division	bas16_<basID>_changes_cousub
County	Incorporated Place	bas16_<basID>_changes_incplace
Minor Civil Division	Minor Civil Division	bas16_<basID>_changes_cousub
Incorporated Place	Incorporated Place	bas16_<basID>_changes_incplace
Consolidated City	Consolidated City	bas16_<basID>_changes_concity

Table 14: The change polygon layer naming conventions: <basID> represents your BAS entity ID, found on the BAS Annual Response Email or online from this link: http://www.census.gov/geo/partnerships/bas/bas_codes.html**.**

8. Whole Entity Polygon Naming Conventions

The following table provides the whole entity polygon naming conventions for consolidated county submissions, county subdivisions, incorporated places, and consolidated cities.

Whole Entity Polygons

Participant:	Changes Submitted For:	Shapefile Naming Conventions
County	County	bas16_<basID>_WholeEntity_county
County	Minor Civil Division	bas16_<basID>_WholeEntity_cousub
County	Incorporated Place	bas16_<basID>_WholeEntity_incplace
Minor Civil Division	Minor Civil Division	bas16_<basID>_WholeEntity_cousub
Incorporated Place	Incorporated Place	bas16_<basID>_WholeEntity_incplace
Consolidated City	Consolidated City	bas16_<basID>_WholeEntity_concity

Table 15: The whole entity polygon layer naming conventions: <basID> represents your BAS entity ID, found on the BAS Annual Response Email or online from this link: http://www.census.gov/geo/partnerships/bas/bas_codes.html**.**

9. Linear Feature, Area Landmark/Hydro Area, and Point Landmark Updates

The following table provides the update layer naming conventions for the edges, area landmark, and point landmark update layers (not required).

Optional Files

Participant:	Changes Submitted For:	Shapefile Naming Conventions
All Participants	Edges	bas16_<basID>_LN_Changes
All Participants	Area / Hydro Landmarks	bas16_<basID>_Alndk_Changes
All Participants	Point Landmarks	bas16_<basID>_Plndk_Changes

Table 16: The naming conventions for the edges, area landmark, and point landmark update layers: <basID> represents your BAS entity ID found on the BAS Annual Response Email or online from this link: http://www.census.gov/geo/partnerships/bas/bas_codes.htm.l

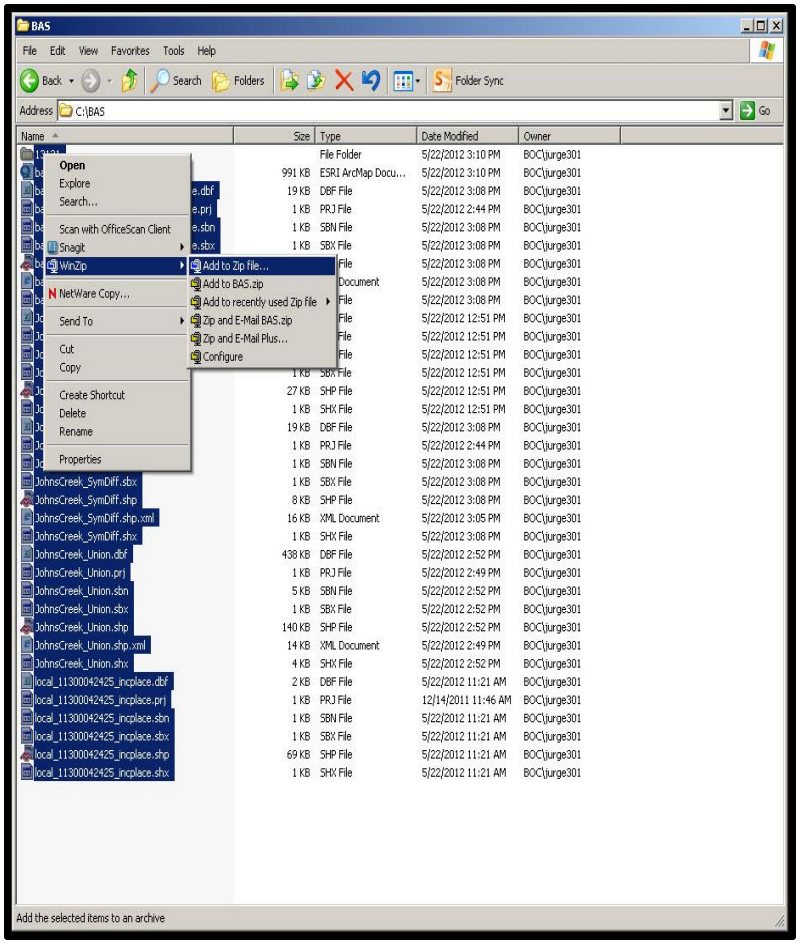
5.17 Compressing the Digital Files

Compress ALL update materials (including change polygon shapefiles, whole entity shapefiles, linear feature updates, landmark updates, local government feature network and boundary layers, and the text or other file with your updated BAS contact information).

1. Navigate to the directory with the shapefiles.

NOTE: Centerline files or any additional information that may be helpful for Census to process your file is optional. One example where this would be helpful is if a particular polygon was not snapped to a river or road because the boundary does not follow the river or road.

2. Select all files and right click on the selection.
3. Select WinZip, and then Add to Zip file.

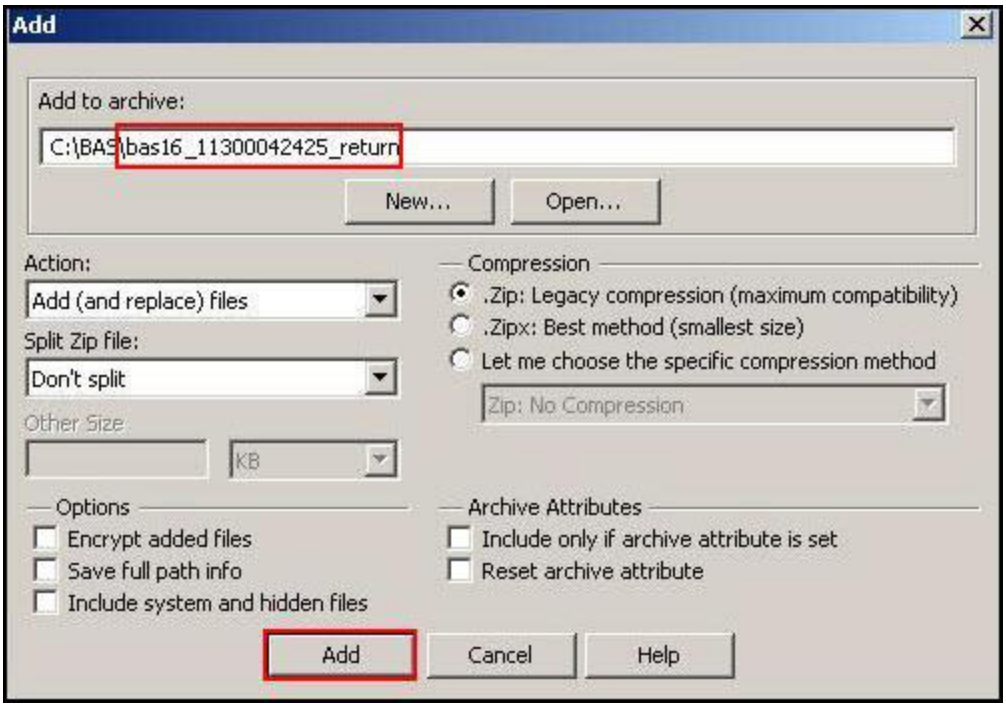


Example 18: Selecting and zipping return files.

NOTE: Versions of WinZip may vary so the interface may be slightly different. Software other than WinZip may be used to zip the return files.

a) In the Add window, in the Add to archive field, type the filename in the proper naming convention: bas<yy>_<basID>_return and then click Add.

NOTE: Look for the basID numbers on the BAS Annual Response Email or online from this link: http://www.census.gov/geo/partnerships/bas/bas_codes.html.



Example 19: Naming the Zip File.

b) Check the folder where the zip file was saved to verify that it was created properly. If the zip file is correct, then the return file is ready for submission.

NOTE: If you require assistance in preparing or zipping the BAS return files, please call the Census Bureau at 1-800-972-5651.

5.18 Submitting Digital Files via SWIM

The **SWIM** is a new one-stop location for submitting your geographic program files to the Census Bureau. The Census Bureau now requires that all BAS participants use the Census Bureau's SWIM for submitting update materials.

Do not send your submission as an email attachment, as we cannot accept them due to the security policy at the Census Bureau.

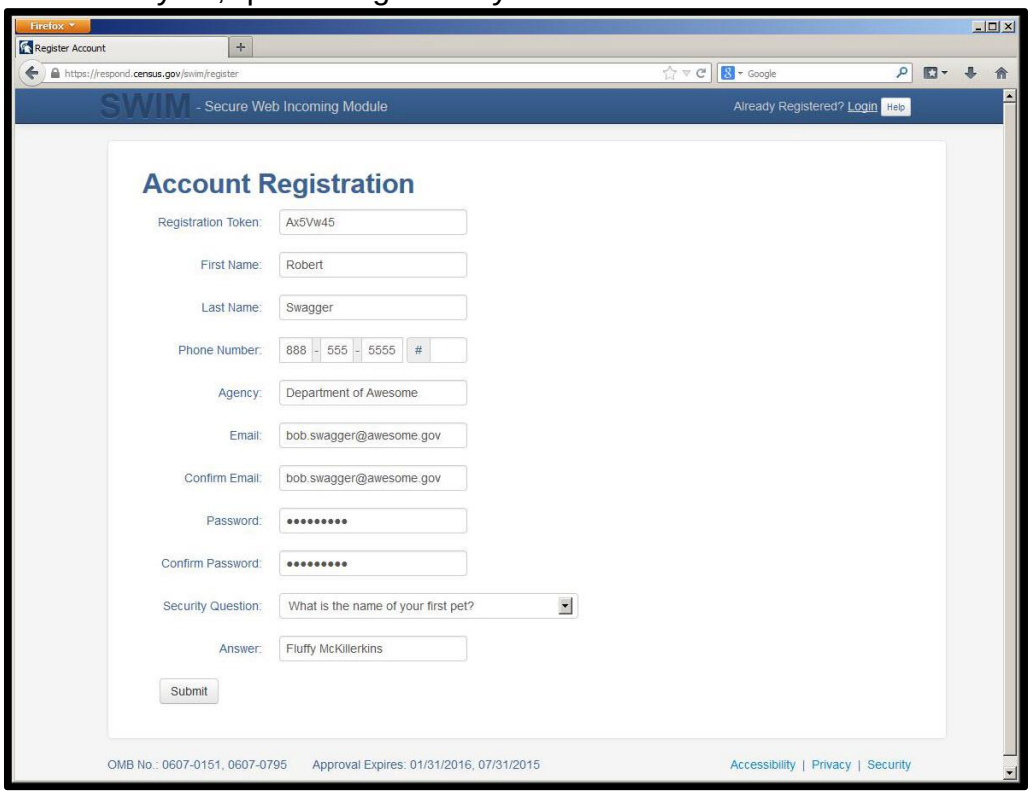
The Census Bureau will email the BAS contact a SWIM registration token and digital submission instructions five days after the BAS contact responds to the BAS Annual Response indicating that they have changes to report. To respond online, please fill out the online form at http://www.census.gov/geo/partnerships/bas/bas_ar_form.html. The five-day waiting period will give the Census Bureau staff time to update the BAS contact record if necessary so that the email reaches the right person.

This token is good for one personal account within the SWIM. Once you have registered for an account in SWIM, you will no longer need the token to login into the system. If you require additional individual SWIM accounts within your organization, please contact the Census Bureau at 1-800-972-5651 or email geo.bas@census.gov.

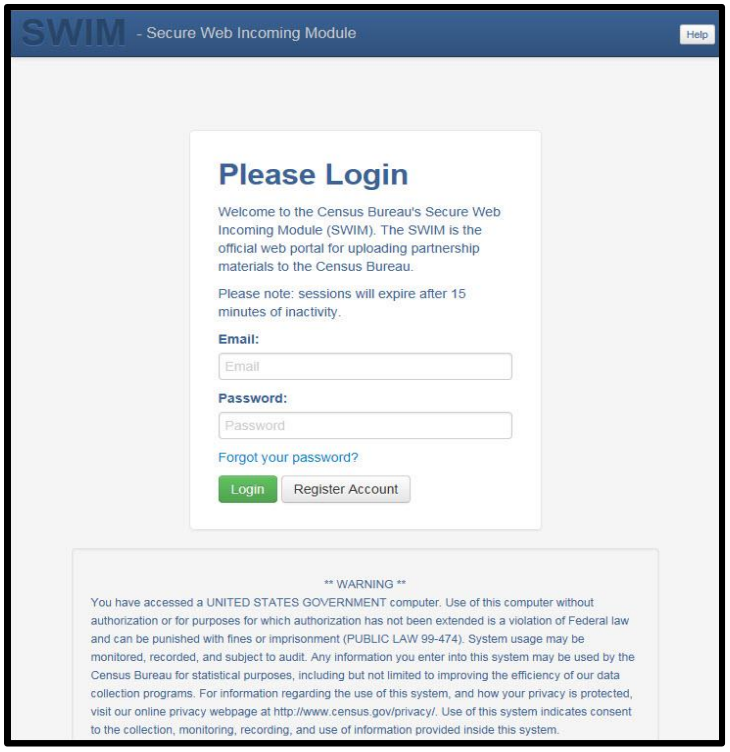
Moreover, if you are a participant for other Census Bureau geographic programs, you only need one SWIM account to submit files for all geographic programs.

At this time, the SWIM only accepts ZIP files. Please zip all your update materials (e.g., spatial updates and other relevant update documents) into one ZIP file for your entity's submission, and follow the instructions listed below:

1. In a web browser, go to https://respond.census.gov/swim.
2. Login:
    a. **New Users:** You must have a registration token to create a new account. (Please see above.) Once you have your token, please sign-up by clicking the 'Register Account' button. Registration is self-serve, but does require the new user to enter a registration token to validate their rights to the system
    b. **Existing Users:** If you already have a registered account from a previous BAS year, please login with your user credentials.

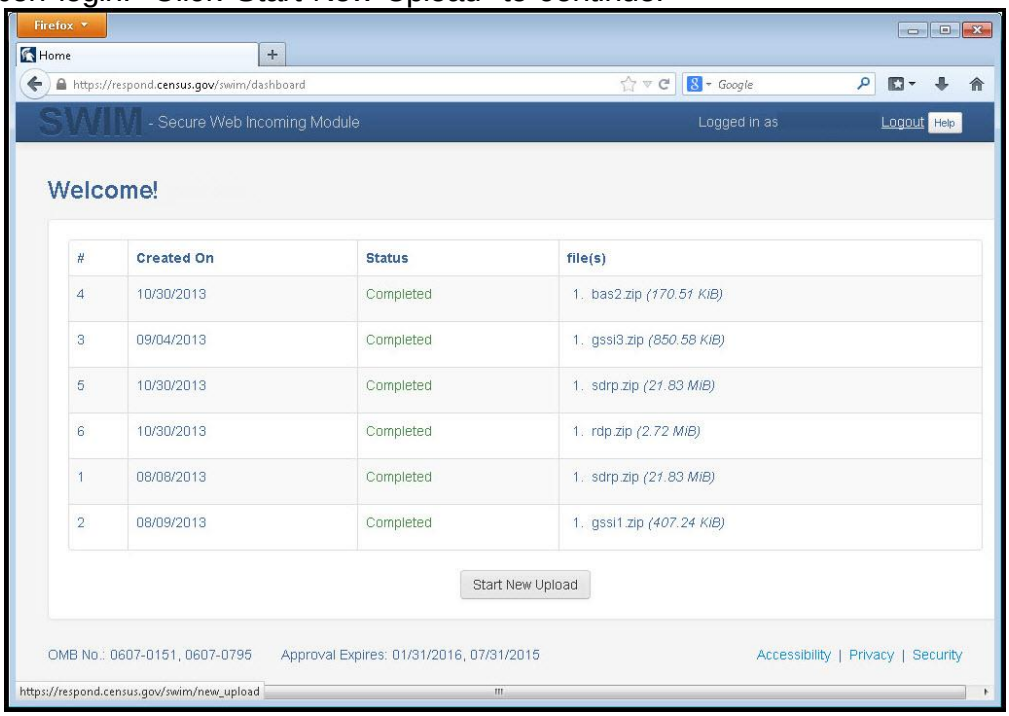


Example 20: SWIM Account Registration



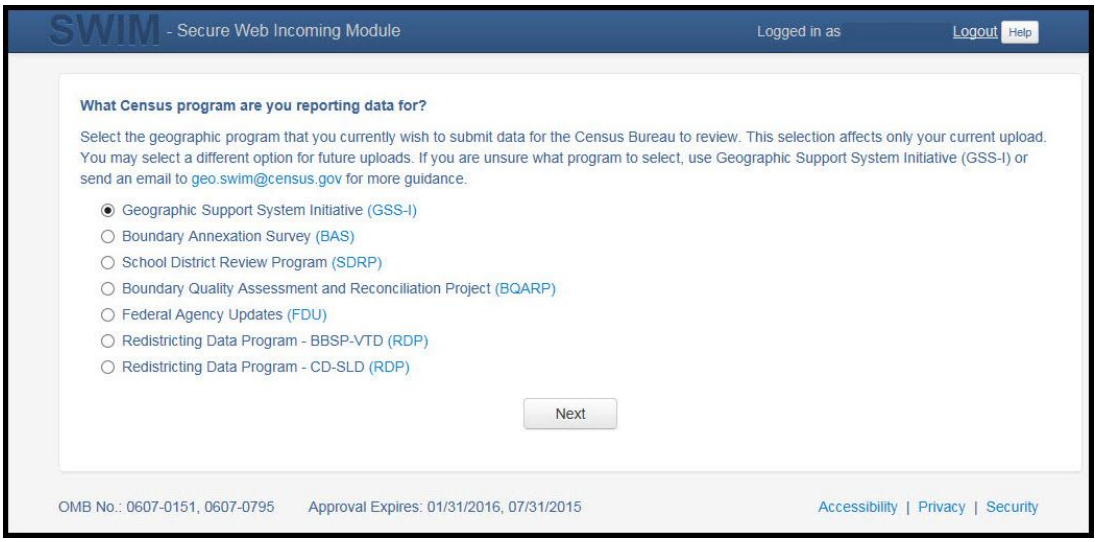
Example 21: SWIM Login Window

3. If you have submitted files before, the SWIM lists them on the startup screen upon login. Click 'Start New Upload' to continue.



Example 22: Welcome Screen with Upload History.

4. On the next screen, select the BAS option as the geographic partnership program, and click 'Next' to continue.

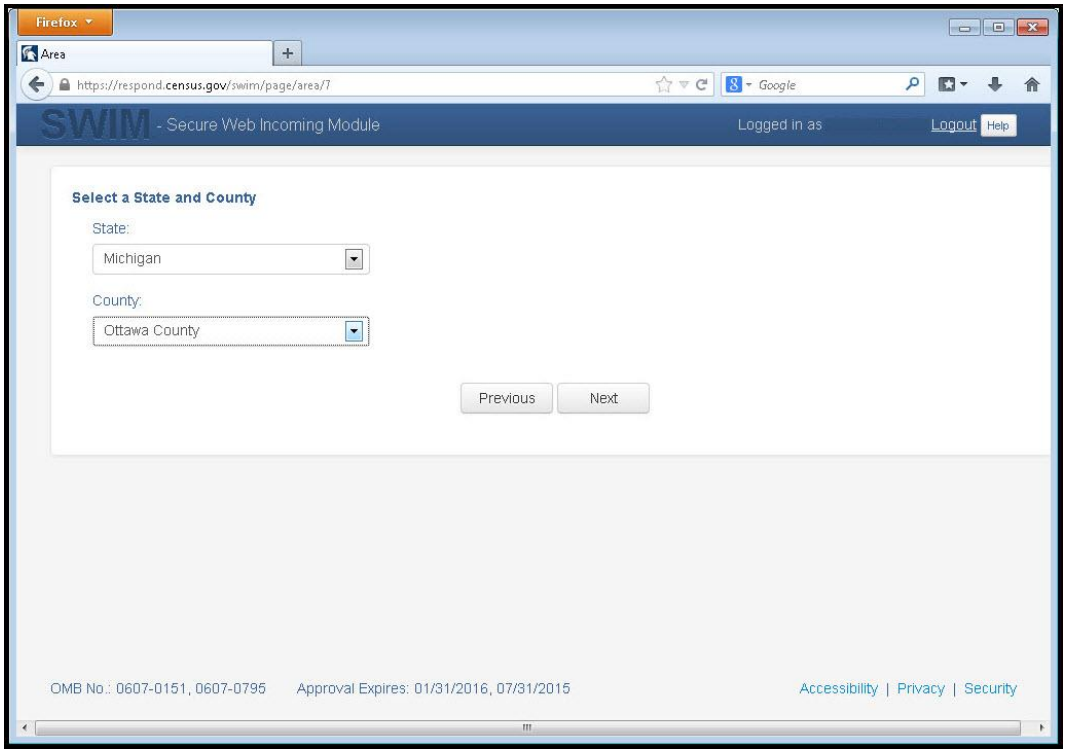


Example 23: Geographic Partnership Program Selection Window.

5. On this screen, you will select a geographic level. This is the geography type of your agency (e.g., if you are a county government submitting data, select county. If an incorporated place, then select place...etc.). Click 'Next' to continue.

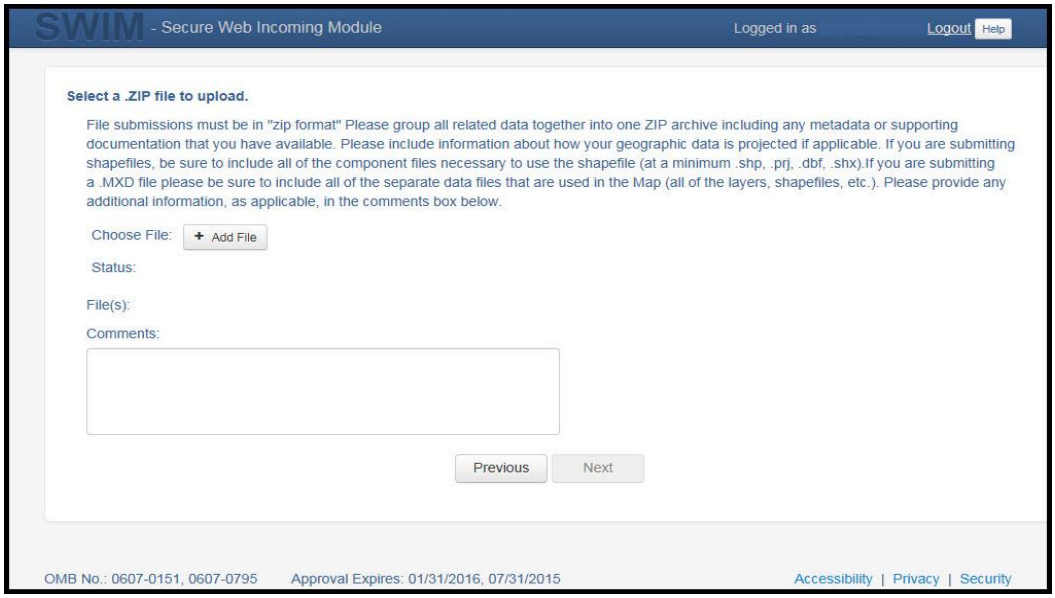
Example 24: Geographic Level Selection Window

6. Use the drop-down selectors to find the name of your geographic entity. These options dynamically update based on the geography type selected from the previous screen. Click 'Next' to continue.



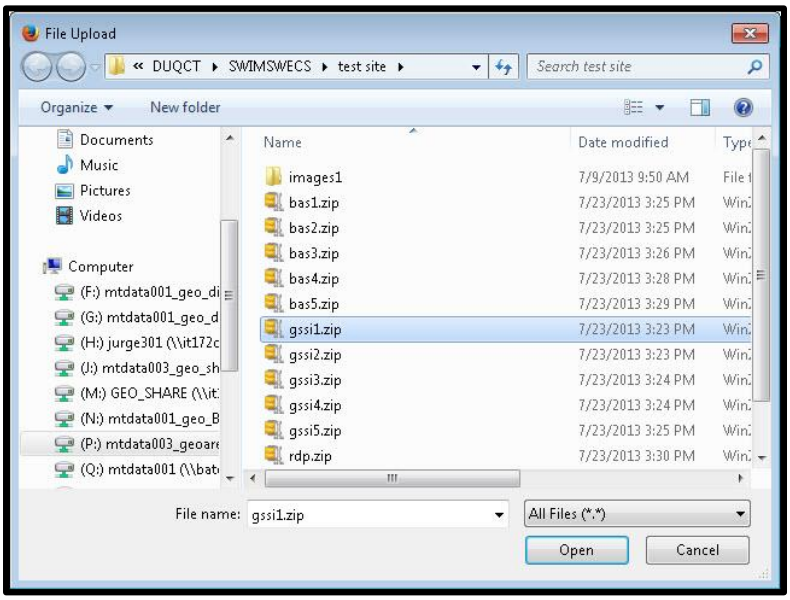
Example 25: Geographic Entity Selection Window.

7. On the file upload screen, please click on the '+ Add file', and a file browser dialog will appear.



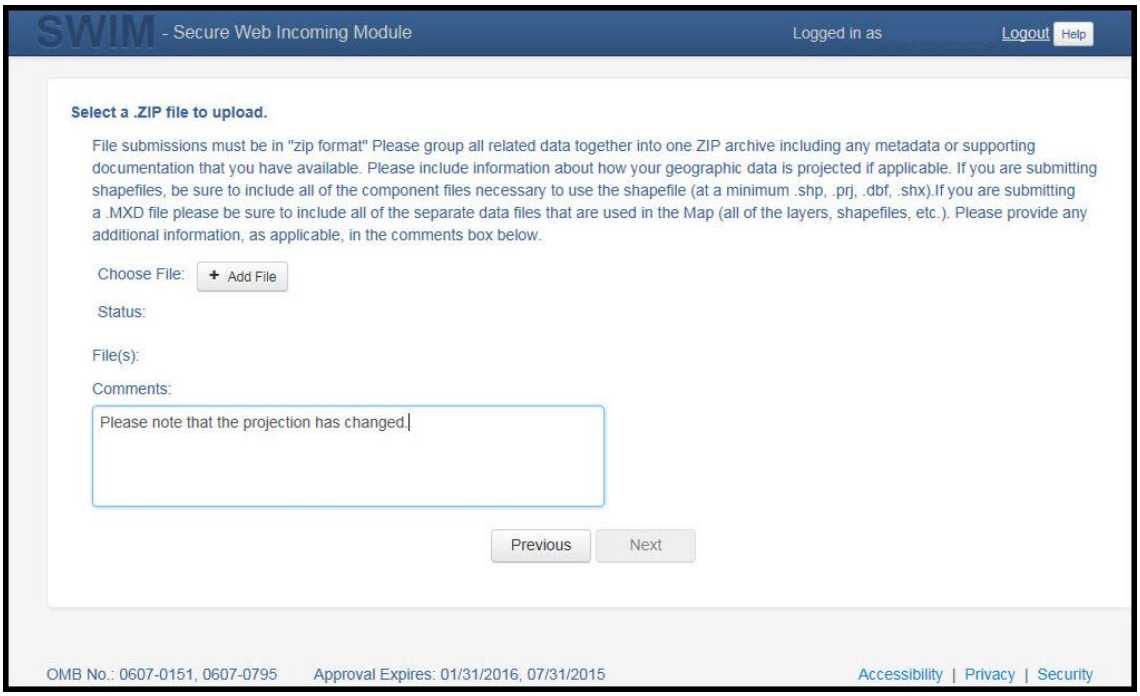
Example 26: File Upload Screen.

8. In the file browser dialog box, select the ZIP file you would like to upload. Please be aware that the SWIM website only accepts ZIP files. Click 'Open' to continue.



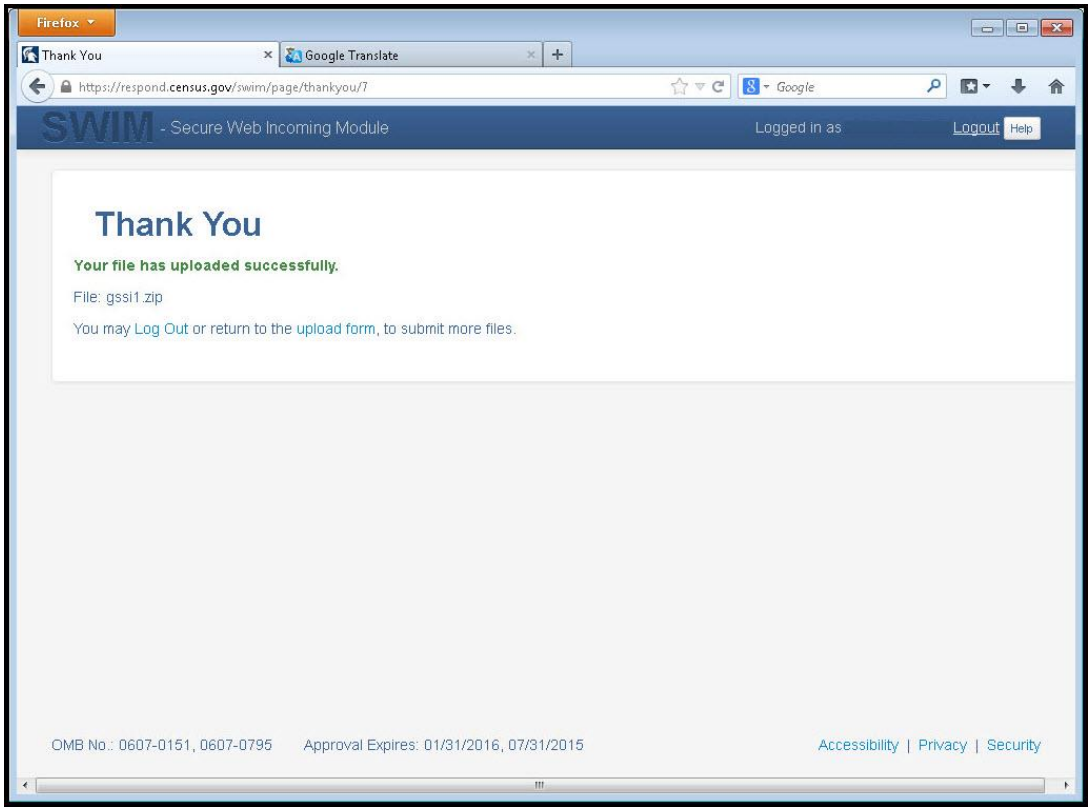
Example 27: File Browser Dialog Box.

9. At this time, you may enter any comments that you wish to include with your file. Click 'Next' to upload your submission.



Example 28: Entering Comments into the File Upload Window.

10. The final screen will be a 'thank you' screen confirming receipt of your file submission. If you do not see this screen, or you encounter any issues during this upload process, please contact the Census Bureau.



Example 29: Thank You Screen.

5.19 Additional Information

The Census Bureau recommends using Federal Information Processing Standards (FIPS) codes to identify entities such as counties, minor civil divisions, and incorporated places. Using a standard coding scheme facilitates the digital exchange of data.

The Census Bureau includes these codes are in the BAS shapefiles. Online, you can find the codes at http://geonames.usgs.gov/domestic/download_data.htm. If there are any questions or problems, contact the Census Bureau at 1-800-972-5651 or geo.bas@census.gov.

APPENDICES

APPENDIX A Data Dictionary

County and Equivalent Areas Shapefile

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
STATEFP	2	String	FIPS state code
COUNTYFP	3	String	FIPS county code
COUNTYNS	8	String	ANSI feature code for the county or equivalent feature
NAMELSAD	100	String	Name with translated LSAD code
LSAD	2	String	Legal/Statistical Area Description code
FUNCSTAT	1	String	Functional status
CLASSFP	2	String	FIPS 55 class code describing an entity
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	String	Authorization type (O – Ordinance, R – Resolution, L – Local Law, S – State Level Action, X – Other)
DOCU	120	String	Supporting documentation
FORM_ID	4	String	Record ID (GUPS only)
AREA	10	Double	Area of update
RELATE	120	String	Relationship description
JUSTIFY	150	String	Justification of change
NAME	100	String	Entity name
VINTAGE	2	String	Vintage of the data

Table A-1: County and Equivalent Areas Shapefile.

County Subdivisions Shapefile

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
STATEFP	2	String	FIPS state code
COUNTYFP	3	String	FIPS county code
COUSUBFP	5	String	FIPS 55 county subdivision code
NAMELSAD	100	String	Name with translated LSAD
COUSUBNS	8	String	ANSI feature code for the county subdivision
LSAD	2	String	Legal/Statistical Area Description
FUNCSTAT	1	String	Functional status
CLASSFP	2	String	FIPS 55 class code describing an entity
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	String	Authorization type (O – Ordinance, R – Resolution, L – Local Law, S – State Level Action, X – Other)
DOCU	120	String	Supporting documentation
FORM_ID	4	String	Record ID (GUPS only)
AREA	10	Double	Area of update
RELATE	120	String	Relationship description
JUSTIFY	150	String	Justification of change
NAME	100	String	Entity name
VINTAGE	2	String	Vintage of the data

Table A-2: County Subdivision Shapefile.

Incorporated Place Shapefile

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
STATEFP	2	String	FIPS state code
COUNTYFP	3	String	FIPS county code
PLACEFP	5	String	FIPS 55 place code
NAMELSAD	100	String	Name with translated LSAD
PLACENS	8	String	ANSI feature code for the place
LSAD	2	String	Legal / Statistical Area Description
FUNCSTAT	1	String	Functional status
CLASSFP	2	String	FIPS 55 class code describing and entity
PARTFLG	1	String	Indicates if only part of a feature is represented
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	String	Authorization type (O – Ordinance, R – Resolution, L – Local Law, S – State Level Action, X – Other)
DOCU	120	String	Supporting documentation
FORM_ID	4	String	Record ID (GUPS only)
AREA	10	Double	Area of update
RELATE	120	String	Relationship description
JUSTIFY	150	String	Justification of change
NAME	100	String	Entity name
VINTAGE	2	String	Vintage of the data

Table A-3: Incorporated Place Shapefile.

Consolidated City Shapefile

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
STATEFP	2	String	FIPS state code
COUNTYFP	3	String	FIPS county code
CONCITYFP	5	String	FIPS 55 place code
NAMELSAD	100	String	Name with translated LSAD
PLACENS	8	String	ANSI feature code for the place
LSAD	2	String	Legal/Statistical Area Description
FUNCSTAT	1	String	Functional status
CLASSFP	2	String	FIPS 55 class code describing an entity
PARTFLG	1	String	Indicates if only part of a feature is represented
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	String	Authorization type (O – Ordinance, R – Resolution, L – Local Law, S – State Level Action, X – Other)
DOCU	120	String	Supporting documentation
FORM_ID	4	String	Record ID (GUPS only)
AREA	10	Double	Acreage of update
RELATE	120	String	Relationship description
JUSTIFY	150	String	Justification of change
NAME	100	String	Entity name
VINTAGE	2	String	Vintage of the data

Table A-4: Consolidated City Shapefile.

Edges Shapefile

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
STATEFP	2	String	FIPS state code
COUNTYFP	3	String	FIPS county code
TLID	10	Double	Permanent edge ID
TFIDL	10	Double	Permanent face ID (left)
TFIDR	10	Double	Permanent face ID (right)
MTFCC	5	String	MAF/TIGER Feature Class Code
FIDELITY	1	String	Indication to a respondent when their entity boundary has changed through spatial enhancement
FULLNAME	40	String	Decoded feature name with abbreviated qualifier, direction, and feature type
SMID	22	String	Spatial Theta ID
SMIDTYPE	1	String	SMIDTYPE code
BBSPFLG	1	String	Redistricting data project participant's submitted request of an EDGE for selection as a block boundary
CBBFLG	1	String	Indicates the status of an EDGE for a selection as a block boundary
BBSP_2020	1	String	New BBSP flag
CHNG_TYPE	4	String	Type of linear feature update
JUSTIFY	150	String	Justification of change
LTOADD	10	String	Left To address
RTOADD	10	String	Right To address
LFROMADD	10	String	Left From address
RFROMADD	10	String	Right From address
ZIPL	5	String	Left zip code
ZIPR	5	String	Right zip code
EXTTYP	1	Char	Extension type
MTUPDATE	10	Date	Date of last update to the edge

Table A-5: Edges Shapefile.

Area Landmark Shapefile

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
MTFCC	5	String	MAF/TIGER Feature Class Code
FULLNAME	120	String	Area landmark name
PARTFLG	1	String	Indicates if only part of a feature is represented
AREAID	22	String	Object ID
ANSICODE	8	String	ANSI code for area landmarks
CHNG_TYPE	2	String	Type of area landmark update
EFF_DATE	8	Date	Effective date or vintage
RELATE	120	String	Relationship description
JUSTIFY	150	String	Justification of change
BAG	3	String	Block area grouping

Table A-6: Area Landmark Shapefile.

Hydro Area Shapefile

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
STATEFP	2	String	FIPS state code
COUNTYFP	3	String	FIPS county code
ANSICODE	8	String	ANSI code for hydrography area
MTFCC	5	String	MAF/TIGER Feature Class Code
FULLNAME	120	String	Hydro landmark name
CHNG_TYPE	2	String	Type of hydro area update
HYDROID	22	String	Object ID
RELATE	120	String	Relationship description
JUSTIFY	150	String	Justification of change

Table A-7: Hydro Area Shapefile.

Point Landmark Shapefile

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
STATEFP	2	String	FIPS state code
COUNTYFP	3	String	FIPS county code
POINTID	22	String	Object ID
ANSICODE	8	String	ANSI code for point landmarks
MTFCC	5	String	MAF/TIGER Feature Class Code
FULLNAME	120	String	Point landmark name
CHNG_TYPE	2	String	Type of point landmark update
JUSTIFY	150	String	Justification of change

Table A-8: Point Landmark Shapefile.

Geographic Offset Shapefile

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
TFID	20	Integer	Permanent Face ID
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
OFFSET	1	String	Geographic Offset / Corridor Flag
ADDEXCLUDE	1	String	Address Exclusion Indicator
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
RELATE	120	String	Relationship description
JUSTIFY	150	String	Justification of change

Table A-9: Geographic Offset Shapefile.

APPENDIX B 2016 Digital Example Process 1

B1. Required Census Bureau Shapefiles

- When downloading shapefiles for the 2016 BAS, shapefiles will begin with the prefix **PVS** (e.g., **PVS_15_v2_edges_<ssccc>.shp**).

NOTE: Contact the Census Bureau at 1-800-972-5651 or geo.bas@census.gov with any questions.

Copy the data to a hard drive/server, and unzip the data to ensure that the correct data was downloaded. For an incorporated place, these layers are critical:

- **PVS_15_v2_place_<ssccc>.shp**
- **PVS_15_v2_edges_<ssccc>.shp**

NOTE: <ssccc> represents the two-digit state code and three-digit county code.

The shapefiles should include the home county/counties as well as all adjacent counties (if necessary).

NOTE: The Census Bureau suggests that participants make an extra copy of the data as an emergency backup.

B2. Local Data

The minimum data necessary is a jurisdiction polygon shapefile showing only the outer boundary or boundaries. Local parcel files are not acceptable for this method. If each jurisdiction's boundaries are contiguous, the file should contain only one polygon for each entity; if some of the entities within the jurisdiction are non-contiguous, they may be saved as a multi-part polygon or consist of one polygon for each disjointed part. Other local data layers that may be helpful if available include centerline data, hydrological, railroad, or other linear feature data, and imagery.

B3. Symbolizing Layers in ArcGIS

The following are suggestions for symbolizing Census data in ArcGIS.

For the Edges layer, symbolize the linear features by grouping like MTFCC codes (codes sharing the same first character). See **Table B-1**:

Suggested MTFCC Symbolization

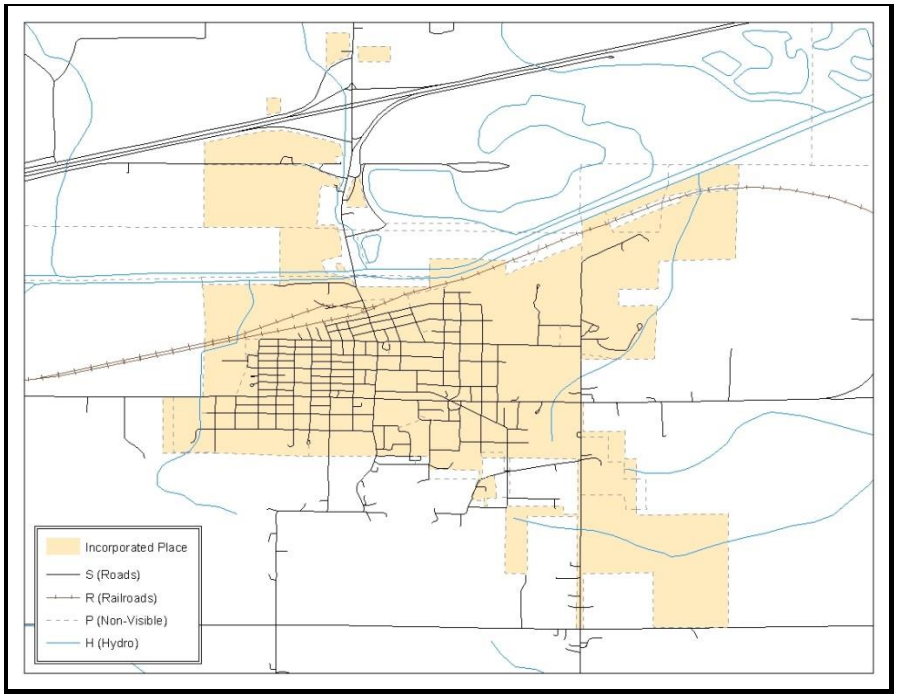
MTFCC 1st Character	Linear Feature Type	Symbol
H	Hydrology	
P	Non-Visible Feature (boundary)	
R	Railroad	
S	Road	

Table B-1: MTFCC Types and Suggested Symbolization.

B.3.1 Symbolizing Geographic Areas

Symbolize the place layer using Fill Color of RGB (255,235,190) with no outline.

NOTE: County participants with many adjacent incorporated places may want to use different colors to distinguish one place from another.



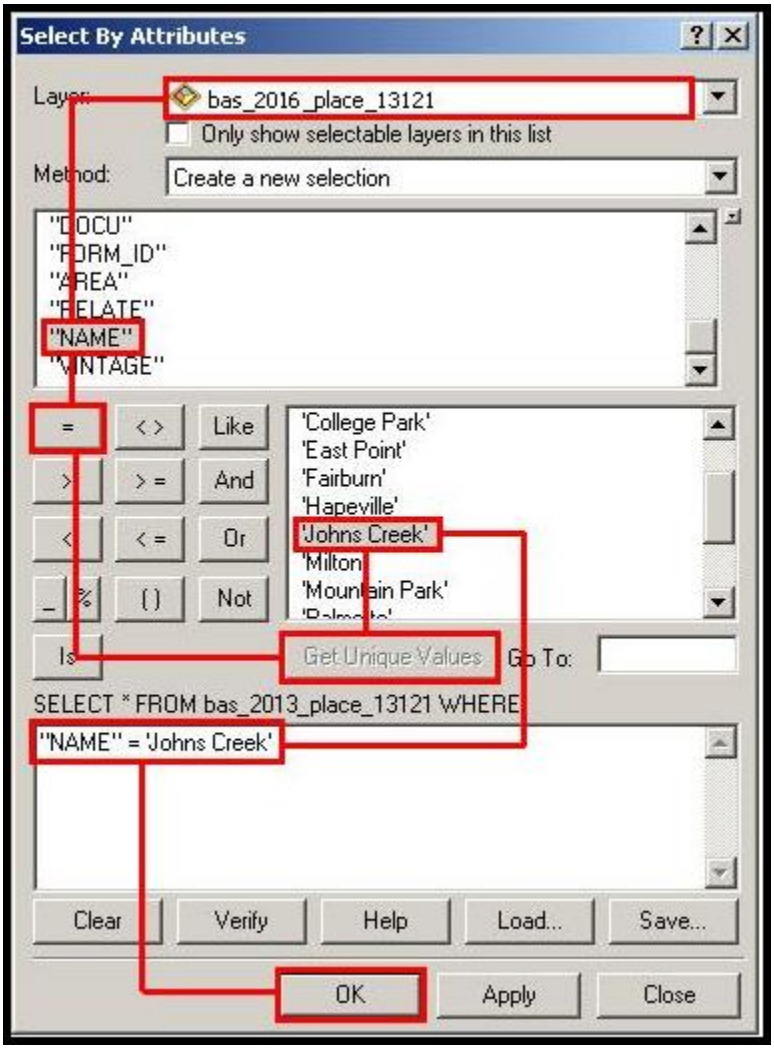
Example B-1: Suggested Map Symbolization.

B4. Extracting Incorporated Place or MCD Data from Census Shapefiles

NOTE: County participants submitting county boundary changes can skip this step. Use the *PVS_15_v2_county_<ssccc>* shapefile which only contains the county boundary. Counties submitting for multiple incorporated places or MCDs skip ahead to Section **B.4.3**.

B.4.1 Filtering the Data

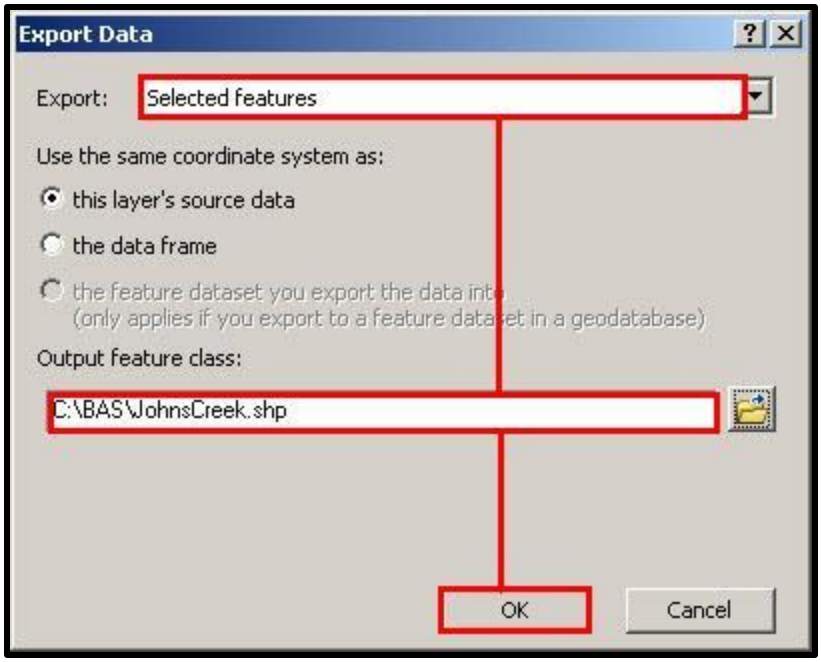
1. In ArcMap, click **Selection** and then click **Select by Attributes**.
2. In the **Select By Attributes** window:
   - From the **Layer** dropdown, select **PVS_15_v2_{place|mcd}_<ssccc>**.
   - Double click **"NAME"**
   - Left click the **=** button
   - Click the **Get Unique Values** button
   - In the list, locate and double click the name of the entity. (It will appear in the formula).
   - Click **OK**



Example B-2: Filtering Data.

B.4.2 Exporting the Data to a New Shapefile

1. In the **Table of Contents**, right click the **Incorporated Place or MCD layer**, select **Data,** and then click **Export Data**.
2. In the **Export Data** window:
   - From the **Export** dropdown, choose **Selected Features**.
   - In the **Output feature class** field, enter a location to save the shapefile.
   - Click **OK**.

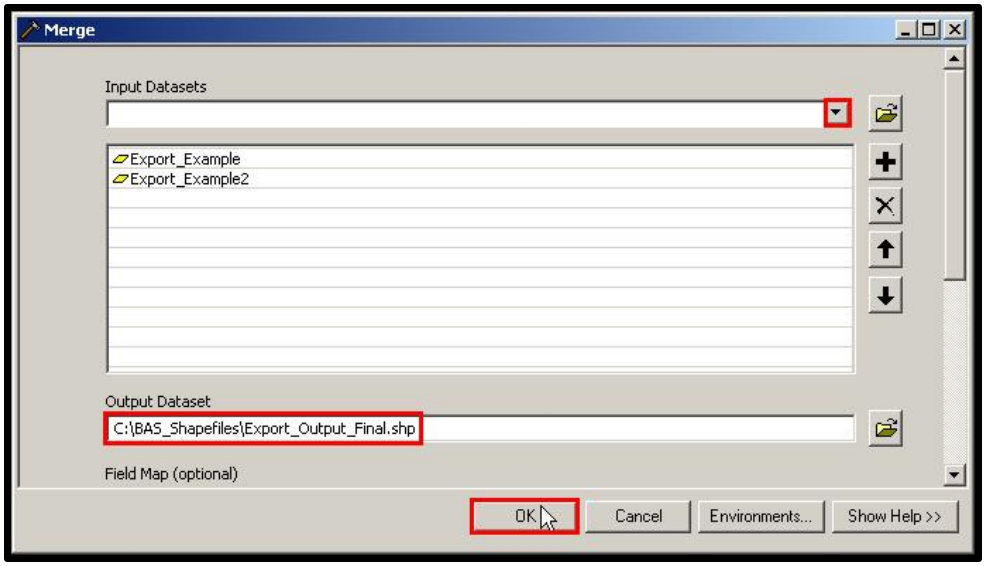


Example B-3: Export Data Window.

NOTE: If the incorporated place spans more than one county, it will need to be exported from each county's place shapefile and merged. Follow the instructions in **Section B.5** if the incorporated place needs to be merged, otherwise skip to **Section B.6**.

B.4.3 Merging Multipart Place Data

1. In **ArcToolbox**, double-click **Data Management Tools**, then double-click **General**, and then double-click **Merge**.
2. In the **Merge** window:
   - Next to the **Input Datasets** field, click the arrow and select each layer. (Or use the Browse button to the right of the field to find the layers.)
   - In the **Output Dataset** field, browse to and select a location to save the shapefile.
     - Name the shapefile **Export_Output_Final** or **Merged**, or anything easy to find/remember.
   - Click **OK**.

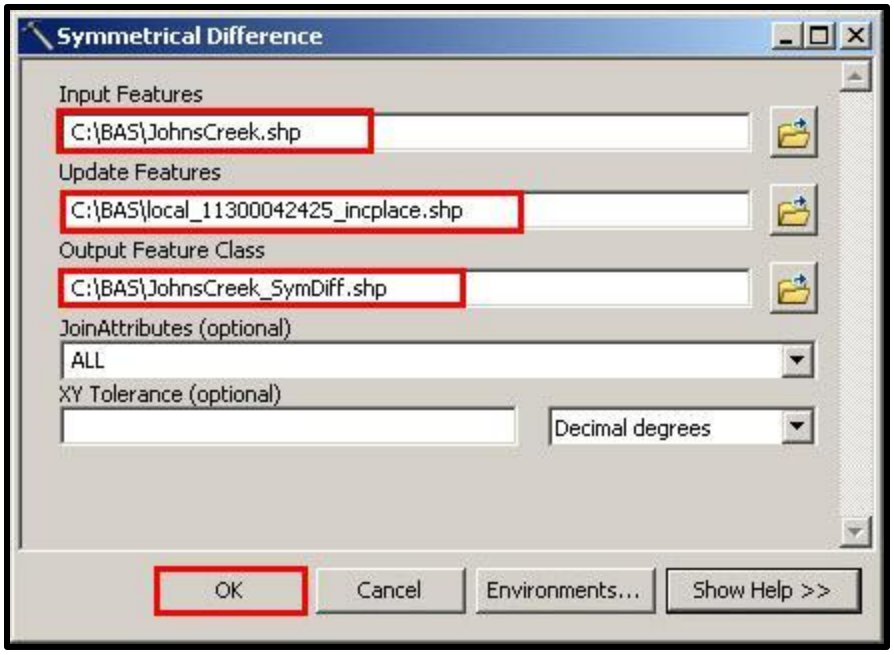


Example B-4: Finalizing the Merge Process.

B5. Creating Change Polygons Using Symmetrical Difference

NOTE: If you do not have an ArcInfo license, you may have to use the Union operation rather than the Symmetrical Difference operation. See **Section 5** if this is the case.

1. In **ArcToolbox**, double-click **Analysis Tools**, then double-click **Overlay**, and then double-click **Symmetrical Difference.**
2. In the **Symmetrical Difference** window:
   - In the **Input Features** field, click the arrow (or browse) and select the layer created in **Section 3**.
   - In the **Update Features** field, click the arrow (or browse) and select the local government boundary layer (your data).
   - In the **Output Feature Class** field, browse to and select a location to save the shapefile.
     - Name the shapefile **Differences_between_BAS_local**, **Differences1**, or anything easy to find/remember.
   - Click **OK**.



Example B-5: Finalizing the Symmetrical Difference Process.

NOTE: This process creates a layer that contains all of the differences between Census Bureau and local boundaries. However, the Symmetrical Difference tool creates multipart polygons that need to be broken up and individually coded.

3. Turn on Editing (using the **Editing** dropdown in the **Editor** toolbar). Select all of the records in the layer that was created in the Symmetrical Difference step.

4. On the **Advanced Editing** toolbar, click the **Explode** tool . The layer will now contain a separate record for each change.

The created layer shows individual change polygons representing the differences between the Census Bureau and local government entity boundaries. Please review these differences and code them appropriately.

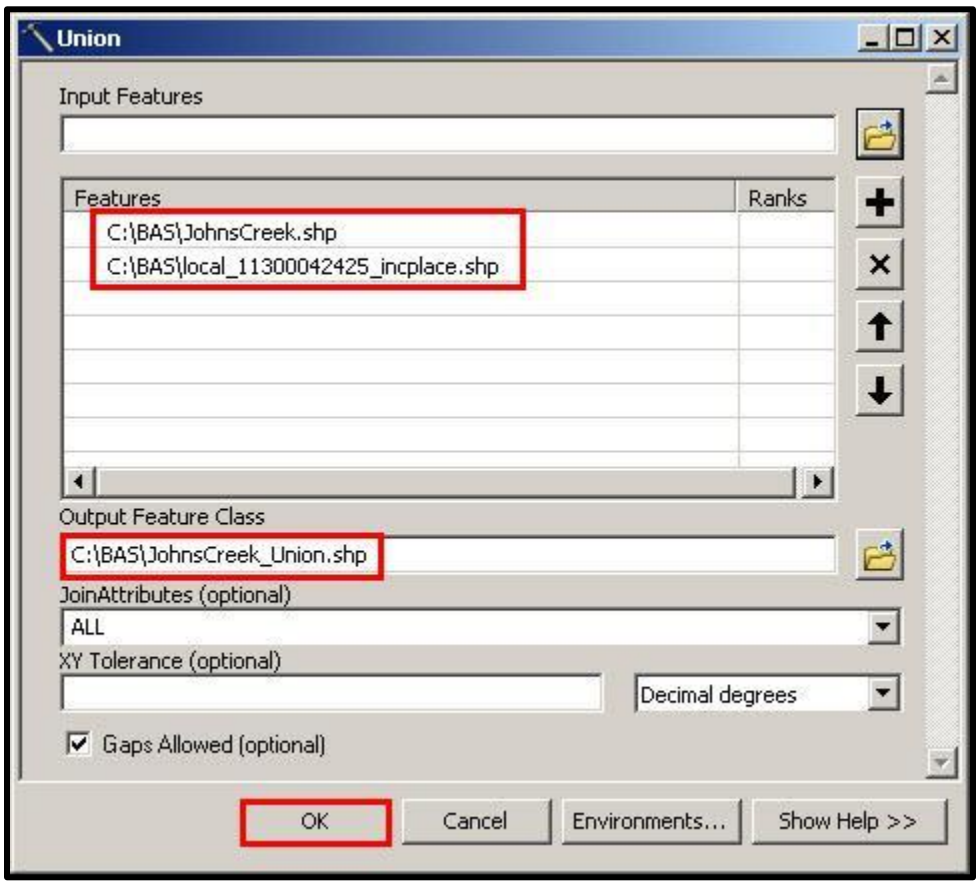
Skip to **Section B.2.6**, **Reviewing and Attributing Change Polygons**.

B6. Creating Change Polygons Using Union

NOTE: Use this method if you are a county reporting for incorporated places or MCDs. Also, use this method if you do not have an ArcInfo license.

1. In **ArcToolbox**, double-click **Analysis Tools**, then double-click **Overlay,** and then double-click **Union**.
2. In the **Union** window:
   - In the **Input Features** field, click the arrow (or browse) and select **PVS_15_v2_{place|mcd}_<ssccc>**, and the local incorporated place or MCD layer.

- In the **Output Feature Class**, browse to and select a location to save the shapefile.
    - Name the shapefile **Export_Output_union**, or **Union**, or anything easy to find/remember.
- Click **OK**.

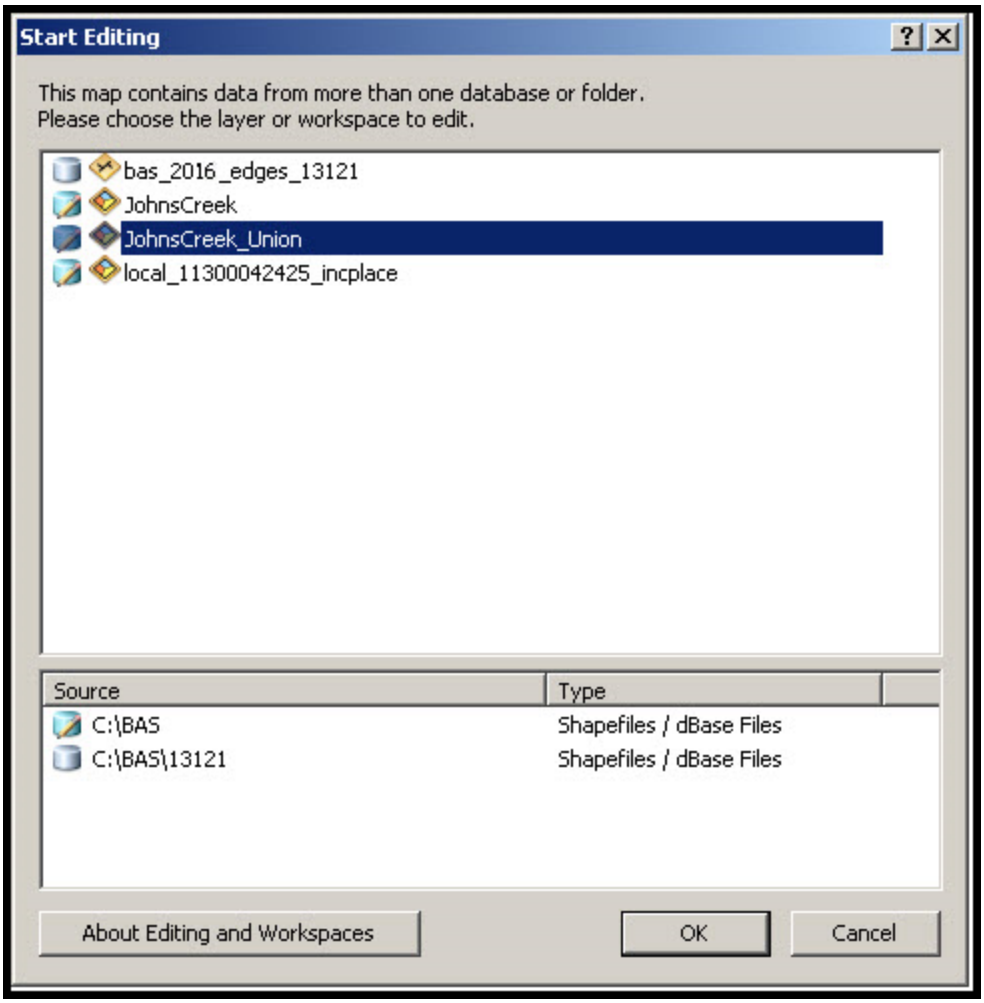


Example B-6: Finalizing the Union Process.

The union operation will create records that contain differences as well as areas that are in common between the Census Bureau and local government boundary layers.

The next step is selecting and deleting the areas in common between the Census Bureau and local government boundary layers.

3. On the **Editor** toolbar, click **Editor,** and then click **Start Editing**.
4. If a **Start Editing** window opens, in the top pane, click to highlight the union shapefile, and then click **OK**.



Example B-7: Locating the Union Shapefile.

5. In **ArcMap**, in the **Tools** toolbar, click the **Select Features** button.
   - Locate features on the map that the Census Bureau and the local government layers have in common.
   - Select each feature individually, or click and hold the left mouse button and drag a box to highlight the common features.
   - Press **Delete**.
   - Repeat these steps until only the features that have changed are left in the map.
6. Once all of the areas in common have been removed from the union shapefile, on the **Editor** toolbar, click **Editor,** and then click **Save Edits**.
7. Select all of the remaining records in the layer that was created in the Union step.
8. On the **Advanced Editing** toolbar, click the **Explode** tool . The layer will now contain a separate record for each change.

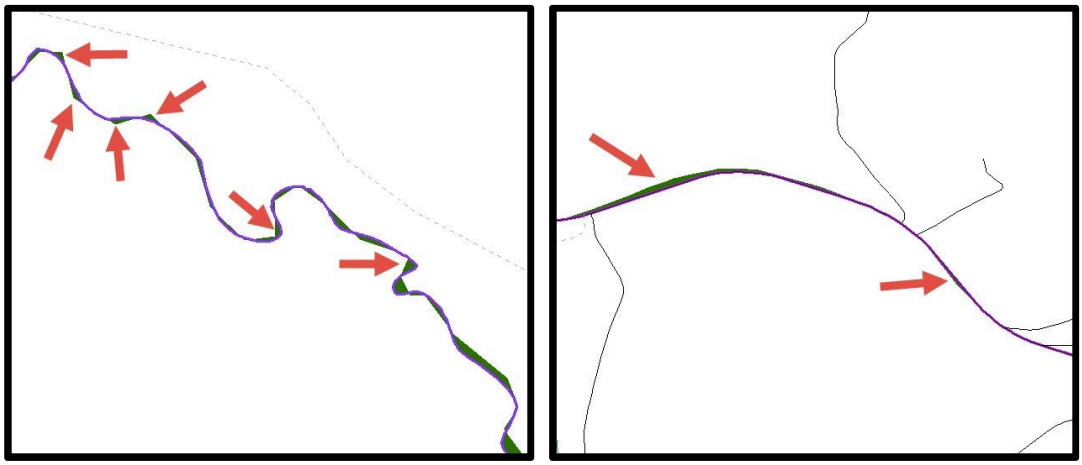
The new layer shows individual change polygons representing the differences between the Census Bureau and the local government's representation of the boundaries. Please review these differences make sure they are coded appropriately. Continue to the next section for instructions on reviewing and coding change polygons.

B7. Reviewing and Attributing Change Polygons

After the individual change polygons have been created, each must be reviewed and appropriately coded. When reviewing the polygons, please refer to Section 5.6 in the main part of this guide to look for polygons that should be deleted from your submission, as well as those that should be snapped to nearby visible features to maintain boundary-to-feature relationships.

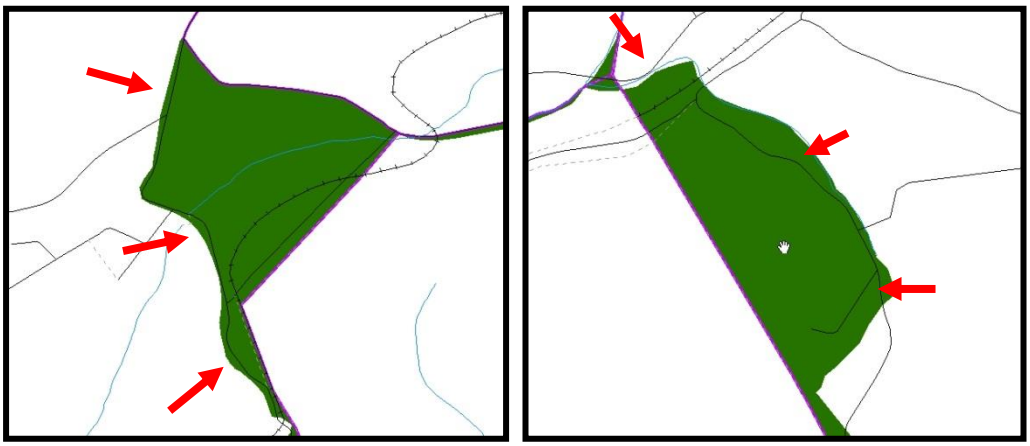
B.7.1 Examples

- These examples show very small sliver polygons that should be deleted during review as they eliminate boundary-to-feature relationships with a river (left) and a road (right). Furthermore, these boundary corrections also are not located near legal changes or corridor/offset changes (type 'A', 'D', 'C', 'F'), so they should be removed from consideration.



Example B-8: Small Slivers That Should Be Deleted.

- These examples show polygons that should be snapped to roads (left) or rivers (right)



Example B-9: Polygons That Should Be Snapped to Roads or Rivers.

B.7.2 Attribute Information

NOTE: All updates MUST be attributed.

To begin updating attributes

- On the **Editor Toolbar**, click **Editor,** and then click **Start Editing**.

Annexations

- On the **Editor Toolbar**, click the **Edit Tool** button and select the annexation polygon.
- On the **Editor Toolbar**, click the **Attributes** button.
- In the **Attributes** window, fill out the mandatory fields required for an annexation.
  - **NAME**, **CHNG_TYPE**, **AUTHTYPE, DOCU** and **EFF_DATE**.
  - The **CHNG_TYPE** for an annexation is **A**.

Deannexations

- On the **Editor Toolbar**, click the **Edit Tool** button and select the deannexation polygon.
- On the **Editor Toolbar**, click the **Attributes** button.
- In the **Attributes** window, fill out the mandatory fields required for a deannexation.
  - **NAME**, **CHNG_TYPE**, **AUTHTYPE, DOCU** and **EFF_DATE**.
  - The **CHNG_TYPE** for an annexation is **D**.

Corridors

- On the **Editor Toolbar**, click the **Edit Tool** button and select the corridor polygon.
- On the **Editor Toolbar**, click the **Attributes** button.
- In the **Attributes** window, fill out the mandatory fields required for a corridor.
  - **NAME**, **CHNG_TYPE**, **RELATE**.
  - The **CHNG_TYPE** for a corridor changes is **C**.
  - In the **RELATE** field, enter **IN** if the change is adding corridor area to the place or **OUT** if the change is removing corridor area.

Offsets

- On the **Editor Toolbar**, click the **Edit Tool** button and select the offset polygon.
- On the **Editor Toolbar**, click the **Attributes** button.
- In the **Attributes** window, fill out the mandatory fields required for an offset.
  - **NAME**, **CHNG_TYPE**, **RELATE**.
  - The **CHNG_TYPE** for an offset change is **F**.
  - In the **RELATE** field, enter **IN** if the change is adding offset area to the place or **OUT** if the change is removing offset area.

- **Boundary Corrections**
  - On the **Editor Toolbar**, click the **Edit Tool** button and select the boundary correction polygon.
  - On the **Editor Toolbar**, click the **Attributes** button.
  - In the **Attributes** window, fill out the mandatory fields required for a boundary correction:
    - **NAME**, **CHNG_TYPE**, **RELATE**.
    - The **CHNG_TYPE** for a boundary correction is **B**.
    - In the **RELATE** field, enter **IN** if the boundary correction is adding area or **OUT** if the boundary correction is removing area.

NOTE: If a county is reporting for adjacent incorporated places or MCDs, and a boundary correction to one entity affects another, use RELATE = IN and NAME = <entity being added to>. This is due to the fact that RELATE = OUT leaves a question as to whether or not there should be a gap between the two entities.

To finish updating attributes

- Once all of the attribute changes have been made, in the **ArcMap** menu, click **Editor,** and then click **Stop Editing**. (In the **Save** window, click **Yes**.)

B8. Renaming and Finalizing Change Polygons

Renaming the shapefile

After creating and coding all change polygons, please rename the change polygon layer prior to its submission to the Census Bureau. You must complete this process for each level of geography (county, place, MCD) that has changes.

1. In **ArcMap**, open the **ArcCatalog**

tab.
2. In **ArcCatalog**, navigate to shapefile, right-click and select **Rename**.
3. Save the output shapefile in the proper naming convention: **bas16_<basID>_changes_<entity_type>.**

NOTE: You can find the basID numbers on the BAS Annual Response Email or online from this link: http://www.census.gov/geo/partnerships/bas/bas_codes.html.

NOTE: See **Section 5.7.4** for instructions on zipping updates.

Submitting the shapefile

The Census Bureau requires participants submit BAS return zip files using the Census Bureau's **SWIM** site. Please submit only the zip file. The **SWIM** is located at https://respond.census.gov/swim. For instructions on how to use SWIM, you can find them in **Section 5.7.5** Submitting Digital Files via SWIM of the respondent guide.

APPENDIX C 2016 Digital Example Process 2

NOTE: This example uses an incorporated place. An MCD, county, or county reporting for incorporated places and MCDs may use the same process.

C1. Required Census Bureau Shapefiles

- When downloading shapefiles for the 2016 BAS, shapefiles will begin with the prefix **PVS** (e.g., **PVS_15_v2_edges_<ssccc>.shp**).

NOTE: Contact the Census Bureau at 1-800-972-5651 or geo.bas@census.gov with any questions.

Copy the data to a hard drive/server, and unzip the data to ensure that the correct data was downloaded. For an incorporated place, these layers are critical:

- **PVS_15_v2_place_<ssccc>.shp**
- **PVS_15_v2_edges_<ssccc>.shp**

NOTE: <ssccc> represents the two-digit state code and three-digit county code.

The shapefiles should include the home county/counties as well as all adjacent counties.

NOTE: Census suggests that participants make an extra copy of the data as an emergency backup.

C2. Local Data

The minimum data necessary is a shapefile showing your jurisdiction boundary or annexations and deannexations. Other local data layers that may be helpful (if available) include centerline data, hydrological, railroad, or other linear feature data, and imagery.

C3. Symbolizing Layers in ArcGIS

The following are suggestions for symbolizing Census Bureau data in ArcGIS.

For the Edges layer, symbolize the linear features by grouping like MTFCC codes (codes sharing the same first character). See **Table C-1**:

Suggested MTFCC Symbolization

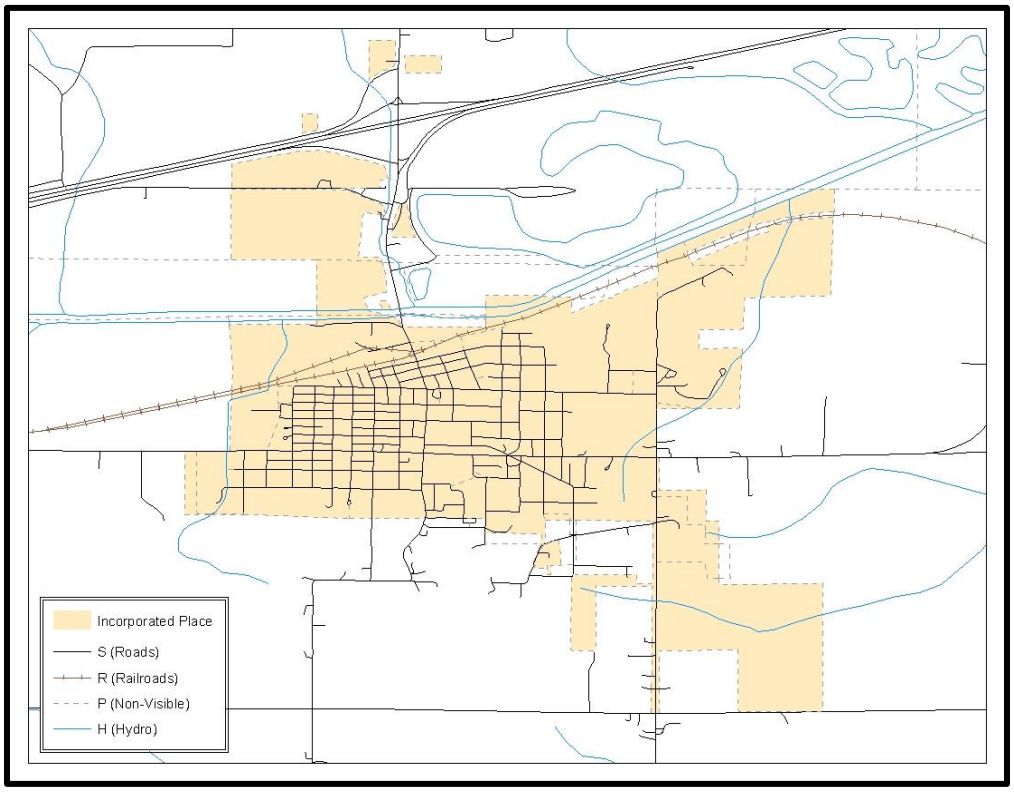
MTFCC 1st Character…	Linear Feature Type	Symbol
H	Hydrology	
P	Non-Visible Feature (boundary)	
R	Railroad	
S	Road	

Table C-1: MTFCC Types and Suggested Symbolization.

C.3.1 Symbolizing Geographic Areas

Symbolize the place layer using Fill Color of RGB (255,235,190) with no outline.

NOTE: County participants with many adjacent incorporated places may want to use different colors to distinguish one place from another.



Example C-1: Suggested Map Symbolization.

C4. Creating and Splitting Linear Features

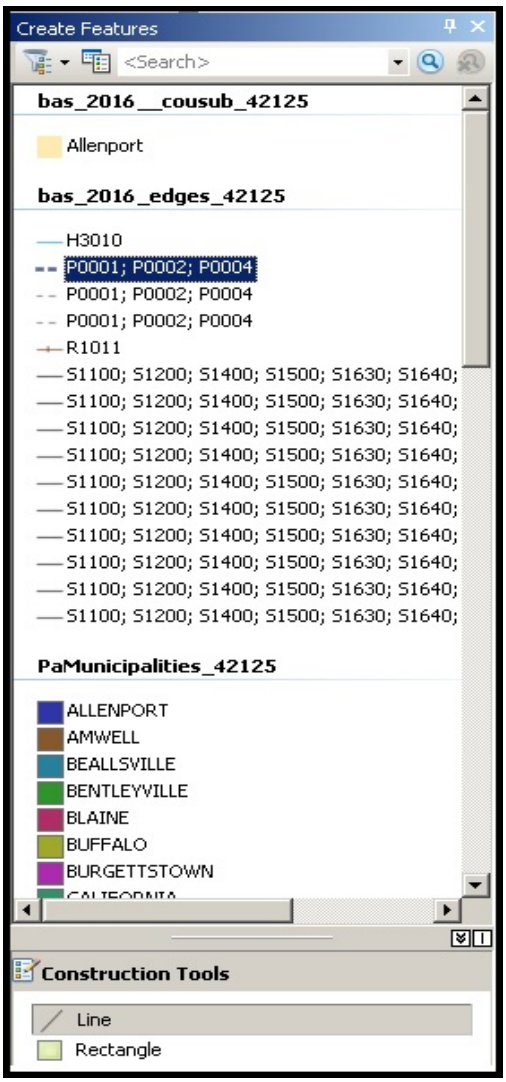
C.4.1 Creating new linear features

Some of the linear features needed to create change polygons may not exist in MAF/TIGER. It may be necessary to create and split lines when forming changes. The existing and newly created linear features will then be selected to define the boundary changes.

1. In **ArcMap**, right click the edges layer in the **Table of Contents**, click **Selection**, and then click **Make This The Only Selectable Layer**, so that the edges layer is the only layer that can be selected while editing.

2. In the **Editor** toolbar, click **Editor** and then click **Start Editing**.

3. In the Create Features window, highlight a non-visible boundary symbolization under the edges layer: PVS_15_v2_edges_<ssccc>.



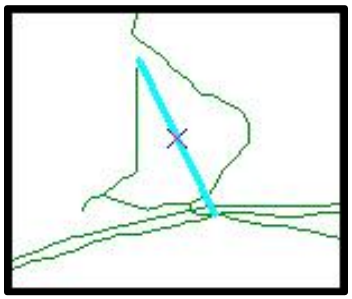
Example C-2: Create Features Window.

4. In the **Editor** toolbar, click **Editor** and then click **Snapping**, then **Snapping Toolbar**.

5. On the snapping toolbar, ensure that **Point, Vertex, Edge,** and **End Snapping** are all enabled. Drop down the Snapping menu, and ensure that **Use Snapping** is checked. Snapping will ensure that newly created lines will follow existing MAF/TIGER linear features.

Example C-3: Snapping Toolbar.

6. For any new boundary lines that do not follow existing edges, ensure that **Line** is suggested in the **Construction Tools** pane (see Example A3B.3.1.1), and in the **Editor** toolbar, click the **Straight Segment Tool** button and draw new features on the map by clicking to create a line. Single clicking will add vertexes to the line, and double-clicking will end the line and create the new feature. Any new feature(s) will be highlighted.



Example C-4: A Newly Created Linear Feature.

C.4.2 Adding Attribute Data To New Linear Features

After creating new linear features:

1. In the **Editor** toolbar, click the **Attributes** button.

2. In the **Attributes** window, in the **MTFCC** field, add the appropriate MTFCC code (it should default to **P0001**, but can be changed if necessary).

   - Use **P0001** if the feature is a non-visible political boundary.

   - If the feature is visible, see **Appendix D** for the appropriate codes.

NOTE: Each new feature must have an MTFCC code. If larger scale linear feature changes are going to be submitted, it is best to create those in a separate layer. It is not necessary to submit linear feature changes for non-visible boundaries.

NOTE: Click on Editor and then click Save Edits often so that work is not lost.

3. Once all lines are added, in the **Editor** toolbar, click **Editor** and then click **Stop Editing** (In the **Save** window, click **Yes**.)

C.4.3 Splitting Linear Features

1. In the **Editor** toolbar, click **Editor** and then click **Start Editing**.

2. In the **Editor** toolbar, click the **Edit Tool** button and select a linear feature that needs to be split. The line will be highlighted when it is selected.

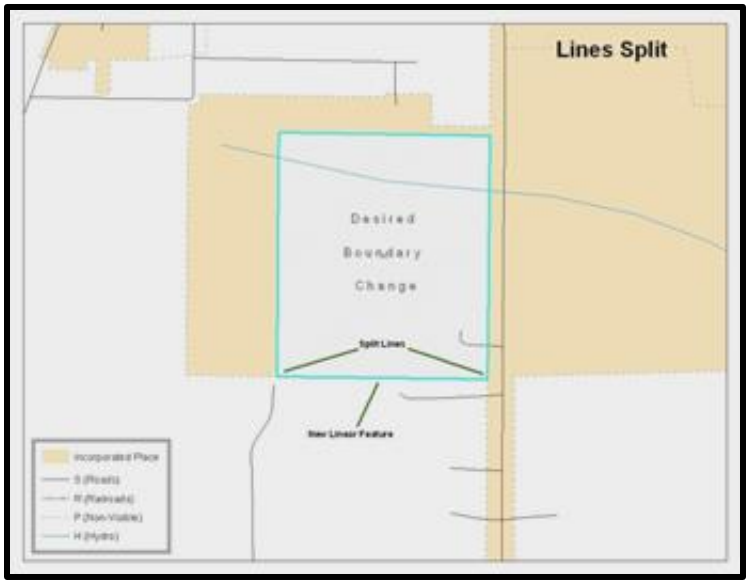
3. In the **Editor** toolbar, click the **Split Tool** button. Click the line where it needs to be split.

   The following examples display why it may be necessary to split lines when creating change polygons.

   The desired boundary change is indicated below. When selecting the lines to form the boundary change, sections of the linear features that are not a part of the boundary update are included (highlighted in blue).

Example C-5: Linear Feature Selection Before Being Split.

The existing linear features can be split to prevent unwanted line segments from being selected as part of the boundary update.



Example C-6: Linear Feature Selection After Being Split.

4. Once all necessary splits are made, in the **Editor** toolbar, click **Editor** and then click **Save Edits**.

C.4.4 Selecting Lines and Creating Change Polygons

After creating and/ or splitting any necessary linear features, select those that will be used to form change polygons. Each change polygon must be created and coded separately.

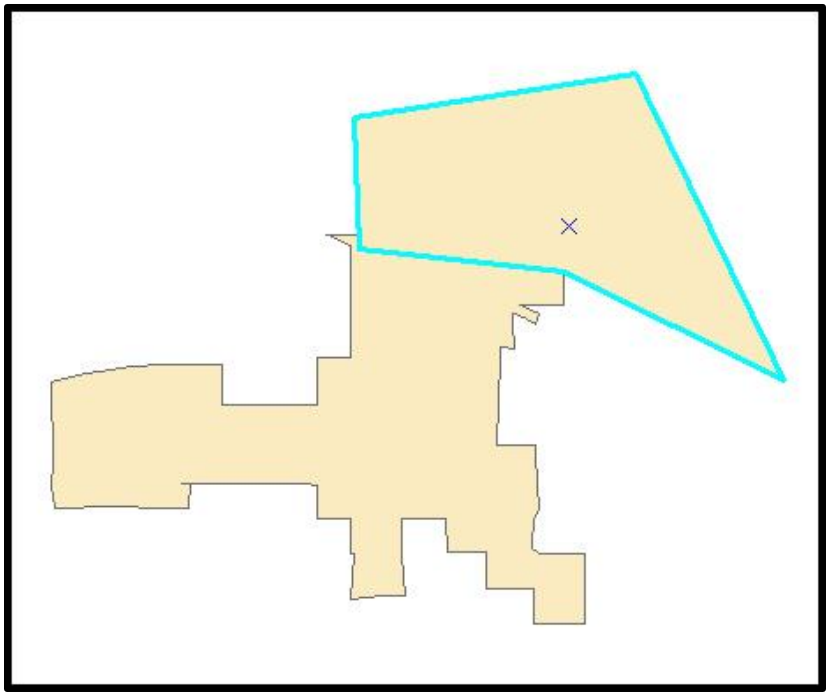
Creating change polygons

1. If the **Topology** toolbar is not active, click the **Customize** menu, select **Toolbars**, and then select **Topology** to activate it.

2. In the **Editor** toolbar, click **Editor** and then click **Start Editing**.

3. In the **Create Features** window, switch the highlighted feature to the **place** layer: **PVS_15_v2_place_<ssccc>**.

4. In the **Editor** toolbar, click the **Edit Tool** button and select the linear features that comprise the boundary of a change polygon (i.e. an annexation, deannexation, or incorrect area) by holding the **Shift** key while clicking each linear feature segment.



Example C-7: Selecting the Linear Features of a Change Polygon.

5. On the **Topology** toolbar, **c**lick the **Construct Features** button.

   - In the **Construct Features** dialog box, click **OK**. (The default **Cluster Tolerance** is acceptable.)

The polygon is now part of the incorporated place layer; however, it will not have any associated attribute values (see the next section).

Example C-8: Newly Created Place Feature.

C.4.5 Attributing Change Polygons

After creating the change polygons, each must be correctly attributed so that the boundaries can be appropriately updated in MAF/TIGER. Another option is to update the attributes for each change polygon after creating all boundary changes. The following steps explain which attributes are mandated for each type of boundary change.

NOTE: All updates MUST be attributed.

To begin updating attributes

- In **ArcMap**, right click the place layer in the **Table of Contents**, click **Selection**, and then click **Make This The Only Selectable Layer**, so that the place layer is the only layer that can be selected while editing.
- On the **Editor Toolbar**, click **Editor,** and then click **Start Editing**.

Annexations

- On the **Editor Toolbar**, click the **Edit Tool** button and select the annexation polygon.
- On the **Editor Toolbar**, click the **Attributes** button.
- In the **Attributes** window, fill out the mandatory fields required for an annexation.
  - **NAME**, **CHNG_TYPE**, **AUTHTYPE, DOCU** and **EFF_DATE**.
  - The **CHNG_TYPE** for an annexation is **A**.

Deannexations

- On the **Editor Toolbar**, click the **Edit Tool** button and select the deannexation polygon.
- On the **Editor Toolbar**, click the **Attributes** button.
- In the **Attributes** window, fill out the mandatory fields required for a deannexation.
  - **NAME**, **CHNG_TYPE**, **AUTHTYPE, DOCU** and **EFF_DATE**.
  - The **CHNG_TYPE** for an annexation is **D**.

Corridors

- On the **Editor Toolbar**, click the **Edit Tool** button and select the corridor polygon.
- On the **Editor Toolbar**, click the **Attributes** button.
- In the **Attributes** window, fill out the mandatory fields required for a corridor.
  - **NAME**, **CHNG_TYPE**, **RELATE**.

- The **CHNG_TYPE** for a corridor changes is **C**.
- In the **RELATE** field, enter **IN** if the change is adding corridor area to the place or **OUT** if the change is removing corridor area.

Offsets

- On the **Editor Toolbar**, click the **Edit Tool** button and select the offset polygon.
- On the **Editor Toolbar**, click the **Attributes** button.
- In the **Attributes** window, fill out the mandatory fields required for an offset.
  - **NAME**, **CHNG_TYPE**, **RELATE**.
  - The **CHNG_TYPE** for an offset change is **F**.
  - In the **RELATE** field, enter **IN** if the change is adding offset area to the place or **OUT** if the change is removing offset area.

Boundary Corrections

- On the **Editor Toolbar**, click the **Edit Tool** button and select the boundary correction polygon.
- On the **Editor Toolbar**, click the **Attributes** button.
- In the **Attributes** window, fill out the mandatory fields required for a boundary correction:
  - **NAME**, **CHNG_TYPE**, **RELATE**.
  - The **CHNG_TYPE** for a boundary correction is **B**.
  - In the **RELATE** field, enter **IN** if the boundary correction is adding area or **OUT** if the boundary correction is removing area.

NOTE: If a county is reporting for adjacent incorporated places or MCDs, and a boundary correction to one entity affects another, use RELATE = IN and NAME = <entity being added to>. This is due to the fact that RELATE = OUT leaves a question as to whether or not there should be a gap between the two entities.

To finish updating attributes

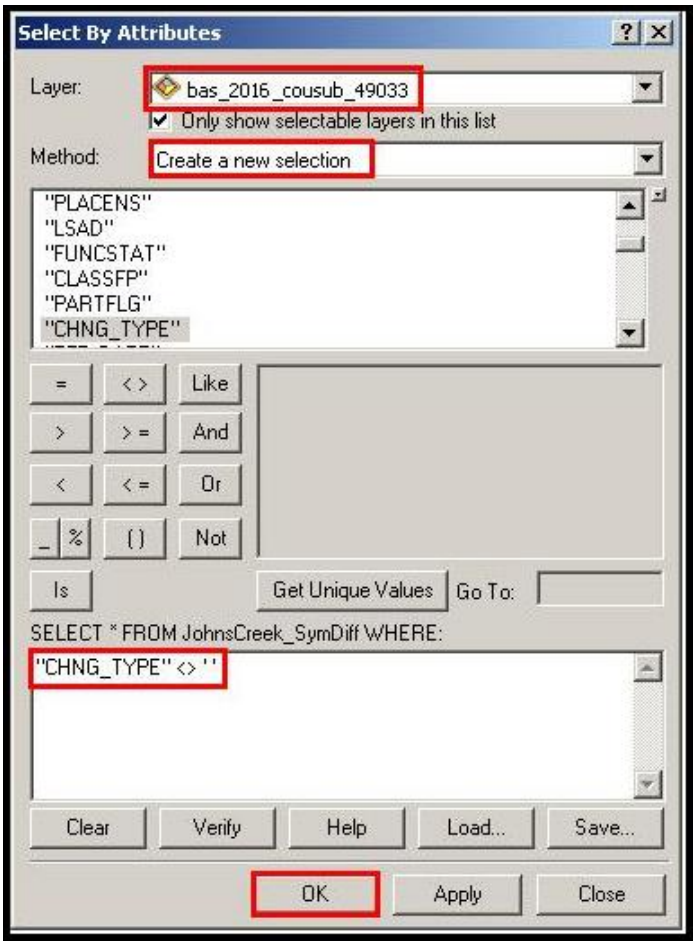
- Once all of the attribute changes have been made, on the **Editor** toolbar, click **Editor,** and then click **Stop Editing**. (In the **Save** window, click **Yes**.)

C.4.6 Exporting Change Polygons

After creating and coding the change polygons, each level of geography (county, place, MCD) that has changes must be exported to a separate change polygon layer.

1. In ArcMap, click **Selection** and then click **Select by Attributes**.
2. In the **Select By Attributes** window:

- Set the **Layer** dropdown to the incorporated place layer: **PVS_15_v2_place_<ssccc>**.
- Set the **Method** dropdown to **Create a new selection**.
- In the **Select * FROM** box, type one of the following formulas:
    - **"CHNG_TYPE" < > ' '** This equation would select all change polygons that have any change type which have been created and coded.
    - **"CHNG_TYPE" = 'A' OR "CHNG_TYPE" = 'B' OR**… (etc.) This equation can be written to select each change type for polygons that were created and coded.
- Click **OK**



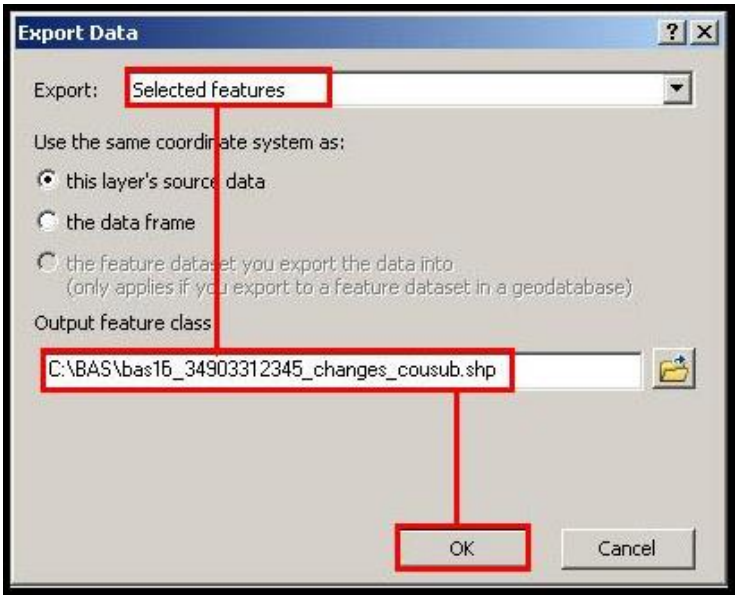
Example C-9: Select All Change Types Formula.

After clicking **OK**, each change polygon that that has been created and coded should be highlighted on the map and in the attribute table.

OPTIONAL: Open the attribute table and sort to verify that all change polygons with a change type code were selected.

Exporting the selected change polygons

4. In the **ArcMap Table of Contents**, right-click on the incorporated place layer **(PVS_15_v2_place_<ssccc>)**, select **Data**, and then click **Export Data**.
5. In the **Export Data** window:
    - From the **Export** dropdown, choose **Selected Features**.
    - In the **Output shapefile or feature class:** field, browse to and select a location to save the shapefile.
        - Name the shapefile **bas16_<basID>_changes_incplace.shp**.
    - Click **OK**.



Example C-10: Exporting Data.

NOTE: You can find the basID numbers on the BAS Annual Response Email or online from this link: http://www.census.gov/geo/partnerships/bas/bas_codes.html.

NOTE: See **Section 5.9.4** for instruction on zipping updates.

Submitting the shapefile

The Census Bureau requires participants submit BAS return zip files using the Census Bureau's **SWIM** site. Please submit only the zip file. The **SWIM** is located at https://respond.census.gov/swim. For instructions on how to use **SWIM**, you can find them in Section 5.7.5 Submitting Digital Files via SWIM.

APPENDIX D MTFCC Codes

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
C3022	MOUNTAIN PEAK OR SUMMIT	A PROMINENT ELEVATION RISING ABOVE THE SURROUNDING LEVEL OF THE EARTH'S SURFACE.
C3023	ISLAND	AN AREA OF DRY OR RELATIVELY DRY LAND SURROUNDED BY WATER OR LOW WETLAND. [INCLUDING ARCHIPELAGO, ATOLL, CAY, HAMMOCK, HUMMOCK, ISLA, ISLE, KEY, MOKU AND ROCK]
C3024	LEVEE	AN EMBANKMENT FLANKING A STREAM OR OTHER FLOWING WATER FEATURE TO PREVENT OVERFLOW.
C3026	QUARRY (NOT WATER-FILLED), OPEN PIT MINE OR MINE	AN AREA FROM WHICH COMMERCIAL MINERALS ARE OR WERE REMOVED FROM THE EARTH; NOT INCLUDING AN OILFIELD OR GAS FIELD.
C3027	DAM	A BARRIER BUILT ACROSS THE COURSE OF A STREAM TO IMPOUND WATER AND/OR CONTROL WATER FLOW.
C3061	CUL-DE-SAC	AN EXPANDED PAVED AREA AT THE END OF A STREET USED BY VEHICLES FOR TURNING AROUND. FOR MAPPING PURPOSES, THE U.S. CENSUS BUREAU MAPS IT ONLY AS A POINT FEATURE.
C3062	TRAFFIC CIRCLE	A CIRCULAR INTERSECTION ALLOWING FOR CONTINUOUS MOVEMENT OF TRAFFIC AT THE MEETING OF ROADWAYS.
C3066	GATE	A MOVABLE BARRIER ACROSS A ROAD.
C3067	TOLL BOOTH	A STRUCTURE OR BARRIER WHERE A FEE IS COLLECTED FOR USING A ROAD.
C3071	LOOKOUT TOWER	A MANMADE STRUCTURE, HIGHER THAN ITS DIAMETER, USED FOR OBSERVATION.
C3074	LIGHTHOUSE BEACON	A MANMADE STRUCTURE, HIGHER THAN ITS DIAMETER, USED FOR TRANSMISSION OF LIGHT AND POSSIBLY SOUND GENERALLY TO AID IN NAVIGATION.
C3075	TANK/TANK FARM	ONE OR MORE MANMADE STRUCTURES, EACH HIGHER THAN ITS DIAMETER, USED FOR LIQUID (OTHER THAN WATER) OR GAS STORAGE OR FOR DISTRIBUTION ACTIVITIES.
C3076	WINDMILL FARM	ONE OR MORE MANMADE STRUCTURES USED TO GENERATE POWER FROM THE WIND.
C3077	SOLAR FARM	ONE OR MORE MANMADE STRUCTURES USED TO GENERATE POWER FROM THE SUN.
C3078	MONUMENT OR MEMORIAL	A MANMADE STRUCTURE TO EDUCATE, COMMEMORATE, OR MEMORIALIZE AN EVENT, PERSON, OR FEATURE.
C3079	BOUNDARY MONUMENT POINT	A MATERIAL OBJECT PLACED ON OR NEAR A BOUNDARY LINE TO PRESERVE AND IDENTIFY THE LOCATION OF THE BOUNDARY LINE ON THE GROUND.
C3080	SURVEY CONTROL POINT	A POINT ON THE GROUND WHOSE POSITION (HORIZONTAL OR VERTICAL) IS KNOWN AND CAN BE USED AS A BASE FOR ADDITIONAL SURVEY WORK.
C3081	LOCALITY POINT	A POINT THAT IDENTIFIES THE LOCATION AND NAME OF AN UNBOUNDED LOCALITY (E.G., CROSSROAD, COMMUNITY, POPULATED PLACE OR LOCALE).

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
C3085	ALASKA NATIVE VILLAGE OFFICIAL POINT	A POINT THAT SERVES AS THE CORE OF AN ALASKA NATIVE VILLAGE AND IS USED IN DEFINING ALASKA NATIVE VILLAGE STATISTICAL AREAS.
G2100	AMERICAN INDIAN AREA	A LEGALLY DEFINED STATE- OR FEDERALLY RECOGNIZED RESERVATION AND/OR OFF-RESERVATION TRUST LAND (EXCLUDES STATISTICAL AMERICAN INDIAN AREAS).
G2120	HAWAIIAN HOME LAND	A LEGAL AREA HELD IN TRUST FOR THE BENEFIT OF NATIVE HAWAIIANS.
G2130	ALASKA NATIVE VILLAGE STATISTICAL AREA	A STATISTICAL GEOGRAPHIC ENTITY THAT REPRESENTS THE RESIDENCES, PERMANENT AND/OR SEASONAL, FOR ALASKA NATIVES WHO ARE MEMBERS OF OR RECEIVING GOVERNMENTAL SERVICES FROM THE DEFINING LEGAL ALASKA NATIVE VILLAGE CORPORATION.
G2140	OKLAHOMA TRIBAL STATISTICAL AREA	A STATISTICAL ENTITY IDENTIFIED AND DELINEATED BY THE CENSUS BUREAU IN CONSULTATION WITH FEDERALLY RECOGNIZED AMERICAN INDIAN TRIBES THAT HAVE NO CURRENT RESERVATION, BUT HAD A FORMER RESERVATION IN OKLAHOMA.
G2150	STATE-DESIGNATED TRIBAL STATISTICAL AREA	A STATISTICAL GEOGRAPHIC ENTITY IDENTIFIED AND DELINEATED FOR THE CENSUS BUREAU BY A STATE-APPOINTED LIAISON FOR A STATE-RECOGNIZED AMERICAN INDIAN TRIBE THAT DOES NOT CURRENTLY HAVE A RESERVATION AND/OR LANDS IN TRUST.
G2160	TRIBAL DESIGNATED STATISTICAL AREA	A STATISTICAL GEOGRAPHIC ENTITY IDENTIFIED AND DELINEATED FOR THE CENSUS BUREAU BY A FEDERALLY RECOGNIZED AMERICAN INDIAN TRIBE THAT DOES NOT CURRENTLY HAVE A RESERVATION AND/OR OFF-RESERVATION TRUST LAND.
G2170	AMERICAN INDIAN JOINT USE AREA	AN AREA ADMINISTERED JOINTLY AND/OR CLAIMED BY TWO OR MORE AMERICAN INDIAN TRIBES.
G2200	ALASKA NATIVE REGIONAL CORPORATION	CORPORATE ENTITIES ESTABLISHED TO CONDUCT BOTH BUSINESS AND NONPROFIT AFFAIRS OF ALASKA NATIVES PURSUANT TO THE ALASKA NATIVE CLAIMS SETTLEMENT ACT OF 1972 (PUBLIC LAW 92-203). THERE ARE TWELVE GEOGRAPHICALLY DEFINED ANRCS AND THEY ARE ALL WITHIN AND COVER MOST OF THE STATE OF ALASKA (THE ANNETTE ISLAND RESERVE-AN AMERICAN INDIAN RESERVATION-IS EXCLUDED FROM ANY ANRC). THE BOUNDARIES OF ANRCS HAVE BEEN LEGALLY ESTABLISHED.
G2300	TRIBAL SUBDIVISION	ADMINISTRATIVE SUBDIVISIONS OF FEDERALLY RECOGNIZED AMERICAN INDIAN RESERVATIONS, OFF-RESERVATION TRUST LANDS, OR OKLAHOMA TRIBAL STATISTICAL AREAS (OTSAS). THESE ENTITIES ARE INTERNAL UNITS OF SELF-GOVERNMENT OR ADMINISTRATION THAT SERVE SOCIAL, CULTURAL, AND/OR ECONOMIC PURPOSES FOR THE AMERICAN INDIANS ON THE RESERVATIONS, OFF-RESERVATION TRUST LANDS, OR OTSAS.
G2400	TRIBAL CENSUS TRACT	A RELATIVELY SMALL AND PERMANENT STATISTICAL SUBDIVISION OF A FEDERALLY RECOGNIZED AMERICAN

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
		INDIAN RESERVATION AND/OR OFF-RESERVATION TRUST LAND, DELINEATED BY AMERICAN INDIAN TRIBAL PARTICIPANTS OR THE CENSUS BUREAU FOR THE PURPOSE OF PRESENTING DEMOGRAPHIC DATA.
G2410	TRIBAL BLOCK GROUP	A CLUSTER OF CENSUS BLOCKS WITHIN A SINGLE TRIBAL CENSUS TRACT DELINEATED BY AMERICAN INDIAN TRIBAL PARTICIPANTS OR THE CENSUS BUREAU FOR THE PURPOSE OF PRESENTING DEMOGRAPHIC DATA
G3100	COMBINED STATISTICAL AREA	A GROUPING OF ADJACENT METROPOLITAN AND/OR MICROPOLITAN STATISTICAL AREAS THAT HAVE A DEGREE OF ECONOMIC AND SOCIAL INTEGRATION, AS MEASURED BY COMMUTING.
G3110	METROPOLITAN AND MICROPOLITAN STATISTICAL AREA	AN AREA CONTAINING A SUBSTANTIAL POPULATION NUCLEUS TOGETHER WITH ADJACENT COMMUNITIES HAVING A HIGH DEGREE OF ECONOMIC AND SOCIAL INTEGRATION WITH THAT CORE, AS MEASURED BY COMMUTING. DEFINED USING WHOLE COUNTIES AND EQUIVALENTS.
G3120	METROPOLITAN DIVISION	A COUNTY OR GROUPING OF COUNTIES THAT IS A SUBDIVISION OF A METROPOLITAN STATISTICAL AREA CONTAINING AN URBANIZED AREA WITH A POPULATION OF 2.5 MILLION OR MORE.
G3200	COMBINED NEW ENGLAND CITY AND TOWN AREA	A GROUPING OF ADJACENT NEW ENGLAND CITY AND TOWN AREAS THAT HAVE A DEGREE OF ECONOMIC AND SOCIAL INTEGRATION, AS MEASURED BY COMMUTING.
G3210	NEW ENGLAND CITY AND TOWN METROPOLITAN AND MICROPOLITAN STATISTICAL AREA	AN AREA CONTAINING A SUBSTANTIAL POPULATION NUCLEUS TOGETHER WITH ADJACENT COMMUNITIES HAVING A HIGH DEGREE OF ECONOMIC AND SOCIAL INTEGRATION WITH THAT CORE, AS MEASURED BY COMMUTING. DEFINED USING MINOR CIVIL DIVISIONS (MCDS) IN NEW ENGLAND.
G3220	NEW ENGLAND CITY AND TOWN DIVISION	A GROUPING OF CITIES AND TOWNS IN NEW ENGLAND THAT IS A SUBDIVISION OF A NEW ENGLAND CITY AND TOWN AREA CONTAINING AN URBANIZED AREA WITH A POPULATION OF 2.5 MILLION OR MORE.
G3500	URBAN AREA	DENSELY SETTLED TERRITORY THAT CONTAINS AT LEAST 2,500 PEOPLE. THE SUBTYPES OF THIS FEATURE ARE URBANIZED AREA (UA), WHICH CONSISTS OF 50,000 + PEOPLE AND URBAN CLUSTER, WHICH RANGES BETWEEN 2,500 AND 49,999 PEOPLE.
G4000	STATE OR EQUIVALENT FEATURE	THE PRIMARY GOVERNMENTAL DIVISIONS OF THE UNITED STATES. THE DISTRICT OF COLUMBIA IS TREATED AS A STATISTICAL EQUIVALENT OF A STATE FOR CENSUS PURPOSES, AS IS PUERTO RICO.
G4020	COUNTY OR EQUIVALENT FEATURE	THE PRIMARY DIVISION OF A STATE OR STATE EQUIVALENT AREA. THE PRIMARY DIVISIONS OF 48 STATES ARE TERMED COUNTY, BUT OTHER TERMS ARE USED SUCH AS BOROUGH IN ALASKA, PARISH IN LOUISIANA, AND MUNICIPIO IN PUERTO RICO. THIS FEATURE INCLUDES INDEPENDENT CITIES, WHICH ARE INCORPORATED PLACES THAT ARE NOT PART OF ANY COUNTY.

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
G4040	COUNTY SUBDIVISION	THE PRIMARY DIVISIONS OF COUNTIES AND EQUIVALENT FEATURES FOR THE REPORTING OF CENSUS BUREAU DATA. THE SUBTYPES OF THIS FEATURE ARE MINOR CIVIL DIVISION, CENSUS COUNTY DIVISION/CENSUS SUBAREA, AND UNORGANIZED TERRITORY. THIS FEATURE INCLUDES INDEPENDENT PLACES, WHICH ARE INCORPORATED PLACES THAT ARE NOT PART OF ANY COUNTY SUBDIVISION.
G4050	ESTATE	ESTATES ARE SUBDIVISIONS OF THE THREE MAJOR ISLANDS IN THE UNITED STATES VIRGIN ISLANDS (USVI).
G4060	SUBBARRIO (SUBMINOR CIVIL DIVISION)	LEGALLY DEFINED DIVISIONS (SUBBARRIOS) OF MINOR CIVIL DIVISIONS (BARRIOS-PUEBLO AND BARRIOS) IN PUERTO RICO.
G4110	INCORPORATED PLACE	A LEGAL ENTITY INCORPORATED UNDER STATE LAW TO PROVIDE GENERAL-PURPOSE GOVERNMENTAL SERVICES TO A CONCENTRATION OF POPULATION. INCORPORATED PLACES ARE GENERALLY DESIGNATED AS A CITY, BOROUGH, MUNICIPALITY, TOWN, VILLAGE, OR, IN A FEW INSTANCES, HAVE NO LEGAL DESCRIPTION.
G4120	CONSOLIDATED CITY	AN INCORPORATED PLACE THAT HAS MERGED GOVERNMENTALLY WITH A COUNTY OR MINOR CIVIL DIVISION, BUT ONE OR MORE OF THE INCORPORATED PLACES CONTINUES TO FUNCTION WITHIN THE CONSOLIDATION. IT IS A PLACE THAT CONTAINS ADDITIONAL SEPARATELY INCORPORATED PLACES.
G4210	CENSUS DESIGNATED PLACE	A STATISTICAL AREA DEFINED FOR A NAMED CONCENTRATION OF POPULATION AND THE STATISTICAL COUNTERPART OF AN INCORPORATED PLACE.
G4300	ECONOMIC CENSUS PLACE	THE LOWEST LEVEL OF GEOGRAPHIC AREA FOR PRESENTATION OF SOME TYPES OF ECONOMIC CENSUS DATA. IT INCLUDES INCORPORATED PLACES, CONSOLIDATED CITIES, CENSUS DESIGNATED PLACES (CDPS), MINOR CIVIL DIVISIONS (MCDS) IN SELECTED STATES, AND BALANCES OF MCDS OR COUNTIES. AN INCORPORATED PLACE, CDP, MCD, OR BALANCE OF MCD QUALIFIES AS AN ECONOMIC CENSUS PLACE IF IT CONTAINS 5,000 OR MORE RESIDENTS, OR 5,000 OR MORE JOBS, ACCORDING TO THE MOST CURRENT DATA AVAILABLE.
G5020	CENSUS TRACT	RELATIVELY PERMANENT STATISTICAL SUBDIVISIONS OF A COUNTY OR EQUIVALENT FEATURE DELINEATED BY LOCAL PARTICIPANTS AS PART OF THE CENSUS BUREAU'S PARTICIPANT STATISTICAL AREAS PROGRAM.
G5030	BLOCK GROUP	A CLUSTER OF CENSUS BLOCKS HAVING THE SAME FIRST DIGIT OF THEIR FOUR-DIGIT IDENTIFYING NUMBERS WITHIN A CENSUS TRACT. FOR EXAMPLE, BLOCK GROUP 3 (BG 3) WITHIN A CENSUS TRACT INCLUDES ALL BLOCKS NUMBERED FROM 3000 TO 3999.
G5035	BLOCK AREA GROUPING	A USER-DEFINED GROUP OF ISLANDS FORMING A SINGLE CENSUS TABULATION BLOCK. A BAG MUST: (1) CONSIST OF TWO OR MORE ISLANDS, (2) HAVE A PERIMETER ENTIRELY OVER WATER, (3) NOT OVERLAP, AND (4) NOT CROSS THE BOUNDARY OF OTHER TABULATION GEOGRAPHIES, SUCH AS

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
		COUNTY OR INCORPORATED PLACE BOUNDARIES.
G5040	TABULATION BLOCK	THE LOWEST-ORDER CENSUS DEFINED STATISTICAL AREA. IT IS AN AREA, SUCH AS A CITY BLOCK, BOUNDED PRIMARILY BY PHYSICAL FEATURES BUT SOMETIMES BY INVISIBLE CITY OR PROPERTY BOUNDARIES. A TABULATION BLOCK BOUNDARY DOES NOT CROSS THE BOUNDARY OF ANY OTHER GEOGRAPHIC AREA FOR WHICH THE CENSUS BUREAU TABULATES DATA. THE SUBTYPES OF THIS FEATURE ARE COUNT QUESTION RESOLUTION (CQR), CURRENT, AND CENSUS.
G5200	CONGRESSIONAL DISTRICT	THE 435 AREAS FROM WHICH PEOPLE ARE ELECTED TO THE U.S. HOUSE OF REPRESENTATIVES. ADDITIONAL EQUIVALENT FEATURES EXIST FOR STATE EQUIVALENTS WITH NONVOTING DELEGATES OR NO REPRESENTATIVE. THE SUBTYPES OF THIS FEATURE ARE 106TH, 107TH, 108TH, 109TH, AND 111TH CONGRESSIONAL DISTRICTS, PLUS SUBSEQUENT CONGRESSES.
G5210	STATE LEGISLATIVE DISTRICT (UPPER CHAMBER	AREAS ESTABLISHED BY A STATE OR EQUIVALENT GOVERNMENT FROM WHICH MEMBERS ARE ELECTED TO THE UPPER OR UNICAMERAL CHAMBER OF A STATE GOVERNING BODY. UPPER CHAMBER IS THE SENATE IN A BICAMERAL LEGISLATURE; UNICAMERAL CASE IS SINGLE HOUSE LEGISLATURE (NEBRASKA).
G5220	STATE LEGISLATIVE DISTRICT (LOWER CHAMBER)	AREAS ESTABLISHED BY A STATE OR EQUIVALENT GOVERNMENT FROM WHICH MEMBERS ARE ELECTED TO THE LOWER CHAMBER OF A STATE GOVERNING BODY. THE LOWER CHAMBER IS THE HOUSE OF REPRESENTATIVES IN A BICAMERAL LEGISLATURE.
G5240	VOTING DISTRICT	THE GENERIC NAME FOR THE GEOGRAPHIC FEATURES, SUCH AS PRECINCTS, WARDS, AND ELECTION DISTRICTS, ESTABLISHED BY STATE, LOCAL, AND TRIBAL GOVERNMENTS FOR THE PURPOSE OF CONDUCTING ELECTIONS.
G5400	ELEMENTARY SCHOOL DISTRICT	A GEOGRAPHIC AREA WITHIN WHICH OFFICIALS PROVIDE PUBLIC ELEMENTARY GRADE-LEVEL EDUCATIONAL SERVICES FOR RESIDENTS.
G5410	SECONDARY SCHOOL DISTRICT	A GEOGRAPHIC AREA WITHIN WHICH OFFICIALS PROVIDE PUBLIC SECONDARY GRADE-LEVEL EDUCATIONAL SERVICES FOR RESIDENTS.
G5420	UNIFIED SCHOOL DISTRICT	A GEOGRAPHIC AREA WITHIN WHICH OFFICIALS PROVIDE PUBLIC EDUCATIONAL SERVICES FOR ALL GRADE LEVELS FOR RESIDENTS.
G6120	PUBLIC-USE MICRODATA AREA	A DECENNIAL CENSUS AREA WITH A POPULATION OF AT LEAST 100,000 OR MORE PERSONS FOR WHICH THE CENSUS BUREAU PROVIDES SELECTED EXTRACTS OF HOUSEHOLD-LEVEL DATA THAT ARE SCREENED TO PROTECT CONFIDENTIALITY

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
G6300	TRAFFIC ANALYSIS DISTRICT	AN AREA DELINEATED BY METROPOLITAN PLANNING ORGANIZATIONS (MPOS) AND STATE DEPARTMENTS OF TRANSPORTATION (DOTS) FOR TABULATING JOURNEY-TO-WORK AND PLACE-OF-WORK DATA. A TRAFFIC ANALYSIS DISTRICT (TAD) CONSISTS OF ONE OR MORE TRAFFIC ANALYSIS ZONES (TAZS).
G6320	TRAFFIC ANALYSIS ZONE	AN AREA DELINEATED BY METROPOLITAN PLANNING ORGANIZATIONS (MPOS) AND STATE DEPARTMENTS OF TRANSPORTATION (DOTS) FOR TABULATING JOURNEY-TO-WORK AND PLACE-OF-WORK DATA.
G6330	URBAN GROWTH AREA	AN AREA DEFINED UNDER STATE AUTHORITY TO MANAGE URBANIZATION THAT THE U.S. CENSUS BUREAU INCLUDES IN THE MAF/TIGER® DATABASE IN AGREEMENT WITH THE STATE.
G6350	ZIP CODE TABULATION AREA (FIVE-DIGIT)	AN APPROXIMATE STATISTICAL-AREA REPRESENTATION OF A U.S. POSTAL SERVICE (USPS) 5-DIGIT ZIP CODE SERVICE AREA.
G6400	COMMERCIAL REGION	FOR THE PURPOSE OF PRESENTING ECONOMIC STATISTICAL DATA, MUNICIPIOS IN PUERTO RICO ARE GROUPED INTO COMMERCIAL REGIONS.
H1100	CONNECTOR	A KNOWN, BUT NONSPECIFIC, HYDROGRAPHIC CONNECTION BETWEEN TWO NONADJACENT WATER FEATURES.
H2025	SWAMP/MARSH	A POORLY DRAINED WETLAND, FRESH OR SALTWATER, WOODED OR GRASSY, POSSIBLY COVERED WITH OPEN WATER. [INCLUDES BOG, CIENEGA, MARAIS AND POCOSIN]
H2030	LAKE/POND	A STANDING BODY OF WATER THAT IS SURROUNDED BY LAND.
H2040	RESERVOIR	AN ARTIFICIALLY IMPOUNDED BODY OF WATER.
H2041	TREATMENT POND	AN ARTIFICIAL BODY OF WATER BUILT TO TREAT FOULED WATER.
H2051	BAY/ESTUARY/GULF/SOUND	A BODY OF WATER PARTLY SURROUNDED BY LAND. [INCLUDES ARM, BIGHT, COVE AND INLET]
H2053	OCEAN/SEA	THE GREAT BODY OF SALT WATER THAT COVERS MUCH OF THE EARTH.
H2060	GRAVEL PIT/QUARRY FILLED WITH WATER	A BODY OF WATER IN A PLACE OR AREA FROM WHICH COMMERCIAL MINERALS WERE REMOVED FROM THE EARTH.
H2081	GLACIER	A BODY OF ICE MOVING OUTWARD AND DOWN SLOPE FROM AN AREA OF ACCUMULATION; AN AREA OF RELATIVELY PERMANENT SNOW OR ICE ON THE TOP OR SIDE OF A MOUNTAIN OR MOUNTAINOUS AREA. [INCLUDES ICE FIELD AND ICE PATCH]
H3010	STREAM/RIVER	A NATURAL FLOWING WATERWAY. [INCLUDES ANABRANCH, AWAWA, BRANCH, BROOK, CREEK, DISTRIBUTARY, FORK, KILL, PUP, RIO, AND RUN]
H3013	BRAIDED STREAM	A NATURAL FLOWING WATERWAY WITH AN INTRICATE NETWORK OF INTERLACING CHANNELS.
H3020	CANAL, DITCH OR AQUEDUCT	AN ARTIFICIAL WATERWAY CONSTRUCTED TO TRANSPORT WATER, TO IRRIGATE OR DRAIN LAND, TO CONNECT TWO OR MORE BODIES OF WATER, OR TO SERVE AS A WATERWAY FOR WATERCRAFT. [INCLUDES LATERAL]

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
K1225	CREW-OF-VESSEL LOCATION	A POINT OR AREA IN WHICH THE POPULATION OF MILITARY OR MERCHANT MARINE VESSELS AT SEA ARE ASSIGNED, USUALLY BEING AT OR NEAR THE HOME PORT PIER.
K1231	HOSPITAL/HOSPICE/URGENT CARE FACILITY	ONE OR MORE STRUCTURES WHERE THE SICK OR INJURED MAY RECEIVE MEDICAL OR SURGICAL ATTENTION. [INCLUDING INFIRMARY]
K1235	JUVENILE INSTITUTION	A FACILITY (CORRECTIONAL AND NON-CORRECTIONAL) WHERE GROUPS OF JUVENILES RESIDE; THIS INCLUDES TRAINING SCHOOLS, DETENTION CENTERS, RESIDENTIAL TREATMENT CENTERS AND ORPHANAGES.
K1236	LOCAL JAIL OR DETENTION CENTER	ONE OR MORE STRUCTURES THAT SERVE AS A PLACE FOR THE CONFINEMENT OF ADULT PERSONS IN LAWFUL DETENTION, ADMINISTERED BY A LOCAL (COUNTY, MUNICIPAL, ETC.) GOVERNMENT.
K1237	FEDERAL PENITENTIARY, STATE PRISON, OR PRISON FARM	AN INSTITUTION THAT SERVES AS A PLACE FOR THE CONFINEMENT OF ADULT PERSONS IN LAWFUL DETENTION, ADMINISTERED BY THE FEDERAL GOVERNMENT OR A STATE GOVERNMENT.
K1238	OTHER CORRECTIONAL INSTITUTION	ONE OR MORE STRUCTURES THAT SERVE AS A PLACE FOR THE CONFINEMENT OF ADULT PERSONS IN LAWFUL DETENTION, NOT ELSEWHERE CLASSIFIED OR ADMINISTERED BY A GOVERNMENT OF UNKNOWN JURISDICTION.
K1239	CONVENT, MONASTERY, RECTORY, OTHER RELIGIOUS GROUP QUARTERS	ONE OR MORE STRUCTURES INTENDED FOR USE AS A RESIDENCE FOR THOSE HAVING A RELIGIOUS VOCATION.
K1246	COMMUNITY CENTER	COMMUNITY CENTER.
K2110	MILITARY INSTALLATION	AN AREA OWNED AND/OR OCCUPIED BY THE DEPARTMENT OF DEFENSE FOR USE BY A BRANCH OF THE ARMED FORCES (SUCH AS THE ARMY, NAVY, AIR FORCE, MARINES, OR COAST GUARD), OR A STATE OWNED AREA FOR THE USE OF THE NATIONAL GUARD.
K2165	GOVERNMENT CENTER	A PLACE USED BY MEMBERS OF GOVERNMENT (EITHER FEDERAL, STATE, LOCAL, OR TRIBAL) FOR ADMINISTRATION AND PUBLIC BUSINESS.
K2167	CONVENTION CENTER	AN EXHIBITION HALL OR CONFERENCE CENTER WITH ENOUGH OPEN SPACE TO HOST PUBLIC AND PRIVATE BUSINESS AND SOCIAL EVENTS.
K2180	PARK	PARKLAND DEFINED AND ADMINISTERED BY FEDERAL, STATE, AND LOCAL GOVERNMENTS.
K2181	NATIONAL PARK SERVICE LAND	AREA—NATIONAL PARKS, NATIONAL MONUMENTS, AND SO FORTH—UNDER THE JURISDICTION OF THE NATIONAL PARK SERVICE.
K2182	NATIONAL FOREST OR OTHER FEDERAL LAND	LAND UNDER THE MANAGEMENT AND JURISDICTION OF THE FEDERAL GOVERNMENT, SPECIFICALLY INCLUDING AREAS DESIGNATED AS NATIONAL FOREST, AND EXCLUDING AREAS UNDER THE JURISDICTION OF THE NATIONAL PARK SERVICE.

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
K2183	TRIBAL PARK, FOREST, OR RECREATION AREA	A PLACE OR AREA SET ASIDE FOR RECREATION OR PRESERVATION OF A CULTURAL OR NATURAL RESOURCE AND UNDER THE ADMINISTRATION OF AN AMERICAN INDIAN TRIBE.
K2184	STATE PARK, FOREST, OR RECREATION AREA	A PLACE OR AREA SET ASIDE FOR RECREATION OR PRESERVATION OF A CULTURAL OR NATURAL RESOURCE AND UNDER THE ADMINISTRATION OF A STATE GOVERNMENT.
K2185	REGIONAL PARK, FOREST, OR RECREATION AREA	A PLACE OR AREA SET ASIDE FOR RECREATION OR PRESERVATION OF A CULTURAL OR NATURAL RESOURCE AND UNDER THE ADMINISTRATION OF A REGIONAL GOVERNMENT.
K2186	COUNTY PARK, FOREST, OR RECREATION AREA	A PLACE OR AREA SET ASIDE FOR RECREATION OR PRESERVATION OF A CULTURAL OR NATURAL RESOURCE AND UNDER THE ADMINISTRATION OF A COUNTY GOVERNMENT.
K2187	COUNTY SUBDIVISION PARK, FOREST, OR RECREATION AREA	A PLACE OR AREA SET ASIDE FOR RECREATION OR PRESERVATION OF A CULTURAL OR NATURAL RESOURCE AND UNDER THE ADMINISTRATION OF A MINOR CIVIL DIVISION (TOWN/TOWNSHIP) GOVERNMENT.
K2188	INCORPORATED PLACE PARK, FOREST, OR RECREATION AREA	A PLACE OR AREA SET ASIDE FOR RECREATION OR PRESERVATION OF A CULTURAL OR NATURAL RESOURCE AND UNDER THE ADMINISTRATION OF A MUNICIPAL GOVERNMENT.
K2189	PRIVATE PARK, FOREST, OR RECREATION AREA	A PRIVATELY OWNED PLACE OR AREA SET ASIDE FOR RECREATION OR PRESERVATION OF A CULTURAL OR NATURAL RESOURCE.
K2190	OTHER PARK, FOREST, OR RECREATION AREA (QUASI-PUBLIC, INDEPENDENT PARK, COMMISSION, ETC.)	A PLACE OR AREA SET ASIDE FOR RECREATION OR PRESERVATION OF A CULTURAL OR NATURAL RESOURCE AND UNDER THE ADMINISTRATION OF SOME OTHER TYPE OF GOVERNMENT OR AGENCY SUCH AS AN INDEPENDENT PARK AUTHORITY OR COMMISSION.
K2191	POST OFFICE	AN OFFICIAL FACILITY OF THE U.S. POSTAL SERVICE USED FOR PROCESSING AND DISTRIBUTING MAIL AND OTHER POSTAL MATERIAL.
K2193	FIRE DEPARTMENT	FIRE DEPARTMENT.
K2194	POLICE STATION	POLICE STATION.
K2195	LIBRARY	LIBRARY.
K2196	CITY/TOWN HALL	CITY/TOWN HALL.
K2400	TRANSPORTATION TERMINAL	A FACILITY WHERE ONE OR MORE MODES OF TRANSPORTATION CAN BE ACCESSED BY PEOPLE OR FOR THE SHIPMENT OF GOODS; EXAMPLES OF SUCH A FACILITY INCLUDE MARINE TERMINAL, BUS STATION, TRAIN STATION, AIRPORT AND TRUCK WAREHOUSE.
K2424	MARINA	A PLACE WHERE PRIVATELY OWNED, LIGHT-CRAFT ARE MOORED.
K2432	PIER/DOCK	A PLATFORM BUILT OUT FROM THE SHORE INTO THE WATER AND SUPPORTED BY PILES. THIS PLATFORM MAY PROVIDE ACCESS TO SHIPS AND BOATS, OR IT MAY BE USED FOR

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
		RECREATIONAL PURPOSES.
K2451	AIRPORT OR AIRFIELD	A MANMADE FACILITY MAINTAINED FOR THE USE OF AIRCRAFT. [INCLUDING AIRSTRIP, LANDING FIELD AND LANDING STRIP]
K2452	TRAIN STATION, TROLLEY OR MASS TRANSIT RAIL STATION	A PLACE WHERE TRAVELERS CAN BOARD AND EXIT RAIL TRANSIT LINES, INCLUDING ASSOCIATED TICKETING, FREIGHT, AND OTHER COMMERCIAL OFFICES.
K2453	BUS TERMINAL	A PLACE WHERE TRAVELERS CAN BOARD AND EXIT MASS MOTOR VEHICLE TRANSIT, INCLUDING ASSOCIATED TICKETING, FREIGHT, AND OTHER COMMERCIAL OFFICES.
K2454	MARINE TERMINAL	A PLACE WHERE TRAVELERS CAN BOARD AND EXIT WATER TRANSIT OR WHERE CARGO IS HANDLED, INCLUDING ASSOCIATED TICKETING, FREIGHT, AND OTHER COMMERCIAL OFFICES.
K2455	SEAPLANE ANCHORAGE	A PLACE WHERE AN AIRPLANE EQUIPPED WITH FLOATS FOR LANDING ON OR TAKING OFF FROM A BODY OF WATER CAN DEBARK AND LOAD.
K2456	AIRPORT—INTERMODAL TRANSPORTATION HUB/TERMINAL	A MAJOR AIR TRANSPORTATION FACILITY WHERE TRAVELERS CAN BOARD AND EXIT AIRPLANES AND CONNECT WITH OTHER (I.E. NON-AIR) MODES OF TRANSPORTATION.
K2457	AIRPORT—STATISTICAL REPRESENTATION	THE AREA OF AN AIRPORT ADJUSTED TO INCLUDE WHOLE 2000 CENSUS BLOCKS USED FOR THE DELINEATION OF URBAN AREAS
K2458	PARK AND RIDE FACILITY/PARKING LOT	A PLACE WHERE MOTORISTS CAN PARK THEIR CARS AND TRANSFER TO OTHER MODES OF TRANSPORTATION.
K2459	RUNWAY/TAXIWAY	A FAIRLY LEVEL AND USUALLY PAVED EXPANSE USED BY AIRPLANES FOR TAKING OFF AND LANDING AT AN AIRPORT.
K2460	HELICOPTER LANDING PAD	A FAIRLY LEVEL AND USUALLY PAVED EXPANSE USED BY HELICOPTERS FOR TAKING OFF AND LANDING.
K2540	UNIVERSITY OR COLLEGE	A BUILDING OR GROUP OF BUILDINGS USED AS AN INSTITUTION FOR POST-SECONDARY STUDY, TEACHING, AND LEARNING. [INCLUDING SEMINARY]
K2543	SCHOOL OR ACADEMY	A BUILDING OR GROUP OF BUILDINGS USED AS AN INSTITUTION FOR PRESCHOOL, ELEMENTARY OR SECONDARY STUDY, TEACHING, AND LEARNING. [INCLUDING ELEMENTARY SCHOOL AND HIGH SCHOOL]
K2545	MUSEUM, VISITOR CENTER, CULTURAL CENTER, OR TOURIST ATTRACTION	AN ATTRACTION OF HISTORICAL, CULTURAL, EDUCATIONAL OR OTHER INTEREST THAT PROVIDES INFORMATION OR DISPLAYS ARTIFACTS.
K2561	GOLF COURSE	A PLACE DESIGNED FOR PLAYING GOLF.
K2582	CEMETERY	A PLACE OR AREA FOR BURYING THE DEAD. [INCLUDING BURYING GROUND AND MEMORIAL GARDEN]
K2586	ZOO	A FACILITY IN WHICH TERRESTRIAL AND/OR MARINE ANIMALS ARE CONFINED WITHIN ENCLOSURES AND DISPLAYED TO THE PUBLIC FOR EDUCATIONAL, PRESERVATION, AND RESEARCH PURPOSES.
K3544	PLACE OF WORSHIP	A SANCTIFIED PLACE OR STRUCTURE WHERE PEOPLE

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
		GATHER FOR RELIGIOUS WORSHIP; EXAMPLES INCLUDE CHURCH, SYNAGOGUE, TEMPLE, AND MOSQUE.
L4010	PIPELINE	A LONG TUBULAR CONDUIT OR SERIES OF PIPES, OFTEN UNDERGROUND, WITH PUMPS AND VALVES FOR FLOW CONTROL, USED TO TRANSPORT FLUID (E.G., CRUDE OIL, NATURAL GAS), ESPECIALLY OVER GREAT DISTANCES.
L4020	POWERLINE	ONE OR MORE WIRES, OFTEN ON ELEVATED TOWERS, USED FOR CONDUCTING HIGH-VOLTAGE ELECTRIC POWER.
L4031	AERIAL TRAMWAY/SKI LIFT	A CONVEYANCE THAT TRANSPORTS PASSENGERS OR FREIGHT IN CARRIERS SUSPENDED FROM CABLES AND SUPPORTED BY A SERIES OF TOWERS.
L4110	FENCE LINE	A MAN-MADE BARRIER ENCLOSING OR BORDERING A FIELD, YARD, ETC., USUALLY MADE OF POSTS AND WIRE OR WOOD, USED TO PREVENT ENTRANCE, TO CONFINE, OR TO MARK A BOUNDARY.
L4121	RIDGE LINE	THE LINE OF HIGHEST ELEVATION ALONG A RIDGE.
L4125	CLIFF/ESCARPMENT	A VERY STEEP OR VERTICAL SLOPE. [INCLUDING BLUFF, CRAG, HEAD, HEADLAND, NOSE, PALISADES, PRECIPICE, PROMONTORY, RIM AND RIMROCK]
L4130	POINT-TO-POINT LINE	A LINE DEFINED AS BEGINNING AT ONE LOCATION POINT AND ENDING AT ANOTHER, BOTH OF WHICH ARE IN SIGHT.
L4140	PROPERTY/PARCEL LINE (INCLUDING PLSS)	THIS FEATURE CLASS MAY DENOTE A NONVISIBLE BOUNDARY OF EITHER PUBLIC OR PRIVATE LANDS (E.G., A PARK BOUNDARY) OR IT MAY DENOTE A PUBLIC LAND SURVEY SYSTEM OR EQUIVALENT SURVEY LINE.
L4150	COASTLINE	THE LINE THAT SEPARATES EITHER LAND OR INLAND WATER FROM COASTAL, TERRITORIAL OR GREAT LAKES WATER. WHERE LAND DIRECTLY BORDERS COASTAL, TERRITORIAL OR GREAT LAKES WATER, THE SHORELINE REPRESENTS THE COASTLINE. WHERE INLAND WATER (SUCH AS A RIVER) FLOWS INTO COASTAL, TERRITORIAL OR GREAT LAKES WATER, THE CLOSURE LINE SEPARATING THE INLAND WATER FROM THE OTHER CLASS OF WATER REPRESENTS THE COASTLINE.
L4165	FERRY CROSSING	THE ROUTE USED TO CARRY OR CONVEY PEOPLE OR CARGO BACK AND FORTH OVER A WATERBODY IN A BOAT.
P0001	NONVISIBLE LINEAR LEGAL/STATISTICAL BOUNDARY	A LEGAL/STATISTICAL BOUNDARY LINE THAT DOES NOT CORRESPOND TO A SHORELINE OR OTHER VISIBLE FEATURE ON THE GROUND.
P0002	PERENNIAL SHORELINE	THE MORE-OR-LESS PERMANENT BOUNDARY BETWEEN LAND AND WATER FOR A WATER FEATURE THAT EXISTS YEAR-ROUND.
P0003	INTERMITTENT SHORELINE	THE BOUNDARY BETWEEN LAND AND WATER (WHEN WATER IS PRESENT) FOR A WATER FEATURE THAT DOES NOT EXIST YEAR-ROUND.
P0004	OTHER NON-VISIBLE BOUNDING EDGE (E.G., CENSUS WATER BOUNDARY,	A BOUNDING EDGE THAT DOES NOT REPRESENT A LEGAL/STATISTICAL BOUNDARY, AND DOES NOT CORRESPOND TO A SHORELINE OR OTHER VISIBLE FEATURE ON THE GROUND. MANY SUCH EDGES BOUND AREA

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
	BOUNDARY OF AN AREAL FEATURE)	LANDMARKS, WHILE MANY OTHERS SEPARATE WATER FEATURES FROM EACH OTHER (E.G., WHERE A BAY MEETS THE OCEAN).
R1011	RAILROAD FEATURE (MAIN, SPUR, OR YARD)	A LINE OF FIXED RAILS OR TRACKS THAT CARRIES MAINSTREAM RAILROAD TRAFFIC. SUCH A RAIL LINE CAN BE A MAIN LINE OR SPUR LINE, OR PART OF A RAIL YARD.
R1051	CARLINE, STREETCAR TRACK, MONORAIL, OTHER MASS TRANSIT	MASS TRANSIT RAIL LINES (INCLUDING LINES FOR RAPID TRANSIT, MONORAILS, STREETCARS, LIGHT RAIL, ETC.) THAT ARE TYPICALLY INACCESSIBLE TO MAINSTREAM RAILROAD TRAFFIC AND WHOSE TRACKS ARE NOT PART OF A ROAD RIGHT-OF-WAY.
R1052	COG RAIL LINE, INCLINE RAIL LINE, TRAM	A SPECIAL PURPOSE RAIL LINE FOR CLIMBING STEEP GRADES THAT IS TYPICALLY INACCESSIBLE TO MAINSTREAM RAILROAD TRAFFIC. NOTE THAT AERIAL TRAMWAYS AND STREETCARS (WHICH MAY ALSO BE CALLED “TRAMS”) ARE ACCOUNTED FOR BY OTHER MTFCCS AND DO NOT BELONG IN R1052
S1100	PRIMARY ROAD	PRIMARY ROADS ARE GENERALLY DIVIDED, LIMITED-ACCESS HIGHWAYS WITHIN THE INTERSTATE HIGHWAY SYSTEM OR UNDER STATE MANAGEMENT, AND ARE DISTINGUISHED BY THE PRESENCE OF INTERCHANGES. THESE HIGHWAYS ARE ACCESSIBLE BY RAMPS AND MAY INCLUDE SOME TOLL HIGHWAYS.
S1200	SECONDARY ROAD	SECONDARY ROADS ARE MAIN ARTERIES, USUALLY IN THE U.S. HIGHWAY, STATE HIGHWAY OR COUNTY HIGHWAY SYSTEM. THESE ROADS HAVE ONE OR MORE LANES OF TRAFFIC IN EACH DIRECTION, MAY OR MAY NOT BE DIVIDED, AND USUALLY HAVE AT-GRADE INTERSECTIONS WITH MANY OTHER ROADS AND DRIVEWAYS. THEY OFTEN HAVE BOTH A LOCAL NAME AND A ROUTE NUMBER.
S1400	LOCAL NEIGHBORHOOD ROAD, RURAL ROAD, CITY STREET	GENERALLY A PAVED NON-ARTERIAL STREET, ROAD, OR BYWAY THAT USUALLY HAS A SINGLE LANE OF TRAFFIC IN EACH DIRECTION. ROADS IN THIS FEATURE CLASS MAY BE PRIVATELY OR PUBLICLY MAINTAINED. SCENIC PARK ROADS WOULD BE INCLUDED IN THIS FEATURE CLASS, AS WOULD (DEPENDING ON THE REGION OF THE COUNTRY) SOME UNPAVED ROADS.
S1500	VEHICULAR TRAIL (4WD)	AN UNPAVED DIRT TRAIL WHERE A FOUR-WHEEL DRIVE VEHICLE IS REQUIRED. THESE VEHICULAR TRAILS ARE FOUND ALMOST EXCLUSIVELY IN VERY RURAL AREAS. MINOR, UNPAVED ROADS USABLE BY ORDINARY CARS AND TRUCKS BELONG IN THE S1400 CATEGORY.
S1630	RAMP	A ROAD THAT ALLOWS CONTROLLED ACCESS FROM ADJACENT ROADS ONTO A LIMITED ACCESS HIGHWAY, OFTEN IN THE FORM OF A CLOVERLEAF INTERCHANGE. THESE ROADS ARE UNADDRESSABLE AND DO NOT CARRY A NAME IN MAF/TIGER.
S1640	SERVICE DRIVE USUALLY ALONG A LIMITED ACCESS HIGHWAY	A ROAD, USUALLY PARALLELING A LIMITED ACCESS HIGHWAY, THAT PROVIDES ACCESS TO STRUCTURES ALONG THE HIGHWAY. THESE ROADS CAN BE NAMED AND MAY INTERSECT WITH OTHER ROADS.

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
S1710	WALKWAY/PEDESTRIAN TRAIL	A PATH THAT IS USED FOR WALKING, BEING EITHER TOO NARROW FOR OR LEGALLY RESTRICTED FROM VEHICULAR TRAFFIC.
S1720	STAIRWAY	A PEDESTRIAN PASSAGEWAY FROM ONE LEVEL TO ANOTHER BY A SERIES OF STEPS.
S1730	ALLEY	A SERVICE ROAD THAT DOES NOT GENERALLY HAVE ASSOCIATED ADDRESSED STRUCTURES AND IS USUALLY UNNAMED. IT IS LOCATED AT THE REAR OF BUILDINGS AND PROPERTIES AND IS USED FOR DELIVERIES.
S1740	PRIVATE ROAD FOR SERVICE VEHICLES (LOGGING, OIL FIELDS, RANCHES, ETC.)	A ROAD WITHIN PRIVATE PROPERTY THAT IS PRIVATELY MAINTAINED FOR SERVICE, EXTRACTIVE, OR OTHER PURPOSES. THESE ROADS ARE OFTEN UNNAMED.
S1750	INTERNAL U.S. CENSUS BUREAU USE	INTERNAL U.S. CENSUS BUREAU USE.
S1780	PARKING LOT ROAD	THE MAIN TRAVEL ROUTE FOR VEHICLES THROUGH A PAVED PARKING AREA.
S1820	BIKE PATH OR TRAIL	A PATH THAT IS USED FOR MANUAL OR SMALL, MOTORIZED BICYCLES, BEING EITHER TOO NARROW FOR OR LEGALLY RESTRICTED FROM VEHICULAR TRAFFIC.
S1830	BRIDLE PATH	A PATH THAT IS USED FOR HORSES, BEING EITHER TOO NARROW FOR OR LEGALLY RESTRICTED FROM VEHICULAR TRAFFIC.
S2000	ROAD MEDIAN	THE UNPAVED AREA OR BARRIER BETWEEN THE CARRIAGEWAYS OF A DIVIDED ROAD.

Note: **The information in this table was last updated in** December 2015**.**