

Boundary and Annexation Survey (BAS) Respondent Guide: Digital

Instructions for Participating in the 2018 Boundary and Annexation Survey

Revised as of December 14, 2017



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The Census Bureau issued a *Federal Register* Notice to revise its confidentiality pledge language to address the new cybersecurity screening requirements:

Per the Federal Cybersecurity Enhancement Act of 2015, your data are protected from cybersecurity risks through screening of the systems that transmit your data.

INTRODUCTION

A. The Boundary and Annexation Survey

The U.S. Census Bureau (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), federally recognized American Indian Areas (AIAs), including reservations, off-reservation trust lands and tribal subdivisions, Hawaiian Homelands, and Alaska Native Regional Corporations (ANRC). 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 the boundary information collected during the BAS to tabulate data for 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 (FGDC) 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), Hawaiian Homelands, ANRC, and federally recognized 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).

Please visit the BAS program Web site at <<https://www.census.gov/programs-surveys/bas.html>>. For more information on the BAS, please view the "Introduction to BAS" video series on the Census Bureau's BAS Web site at <<https://www.census.gov/programs-surveys/bas/library/videos/bas-intro.html>>

B. What's New for the 2018 BAS?

1. The Geographic Partnership Support Desk (GPSD) is now fully functional and available to assist with any questions respondents may have regarding BAS.
2. Redistricting data contacts participating in the Voting District Project (VTD) may submit boundary updates for reconciliation with BAS contacts.

C. Key Dates for BAS Respondents

January 1, 2018 — All boundary changes must be legally in effect on or before this date to be reported in the 2018 BAS.

March 1, 2018 — BAS submission date deadline for boundary updates to be reflected in the ACS and PEP published data. Boundary submissions received by this date are also reflected in next year's BAS materials.

May 31, 2018 — BAS boundary updates submitted by this date will be reflected in next year's BAS materials.

PART 1: DIGITAL BAS REQUIREMENTS

1.1 Digital BAS Participation Requirements

1. All participants must have the ability to edit a Census Bureau shapefile. 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.

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 (<<https://respond.census.gov/swim/>>). If you indicated on your Annual Response Form that you wished to receive the GUPS application, you will automatically receive the SWIM URL and a registration token via email. The email should arrive 5 days after the Annual Response is completed online (or 5 business days after the Census Bureau receives the paper form). To access the SWIM, enter the following URL in a new browser window: <<https://respond.census.gov/swim/>>.

1.2 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 Web site at: <<https://www.census.gov/programs-surveys/bas/library/videos/bas-intro.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.

PART 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, which use separate layers of data.

2.1 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 [Figure 1](#) and [Figure 2](#) for samples of topologically integrated files in MAF/TIGER.

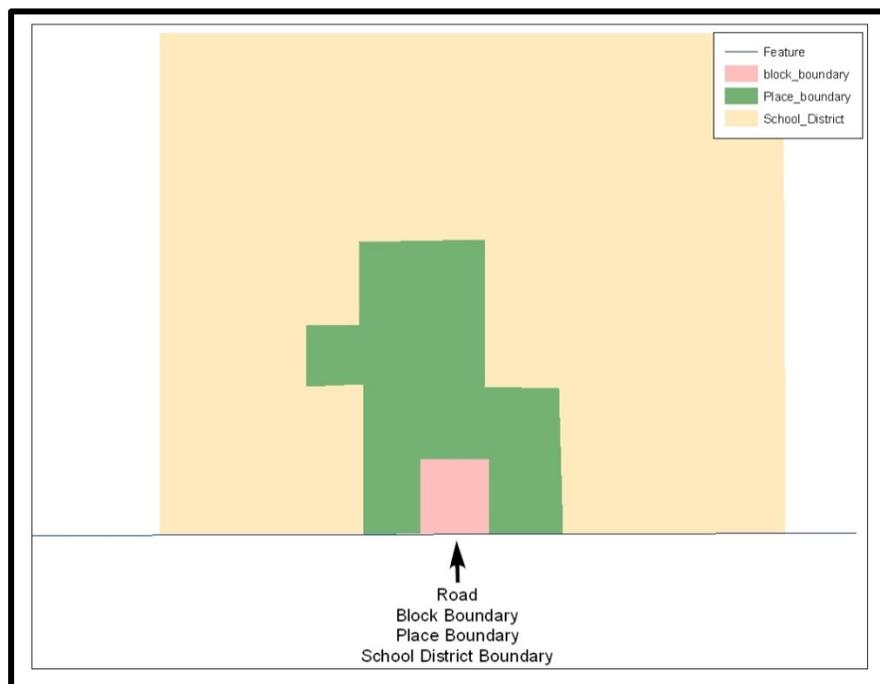


Figure 1. Road Representing 3 Types of Boundaries

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

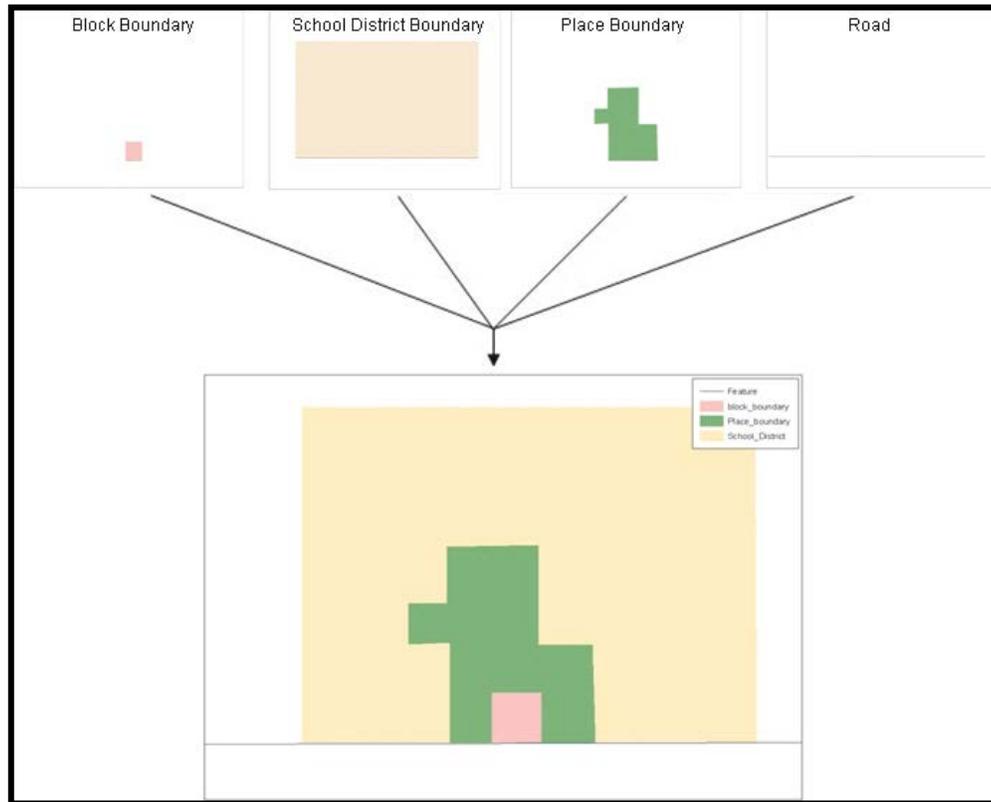


Figure 2. Topological Integration of Four Classes

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.

2.2 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. [Figure 3](#) and [Figure 4](#) show how files that are not topologically integrated might appear in a GIS when overlaid.

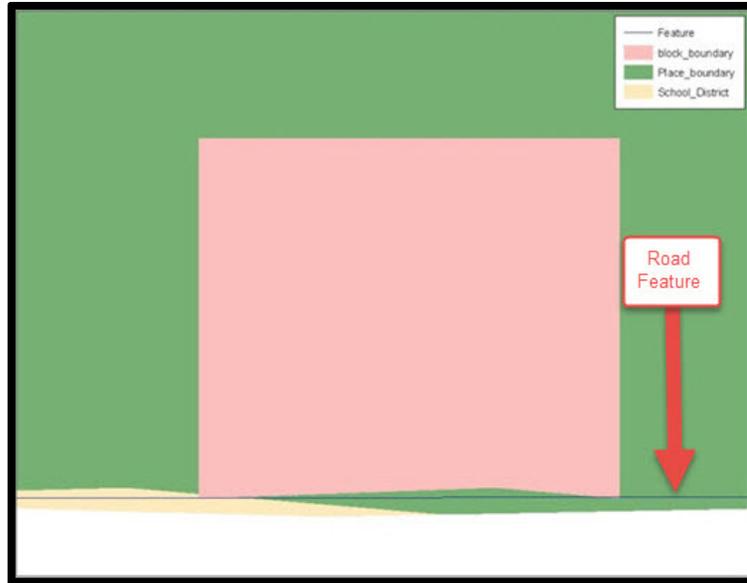


Figure 3. Overlay of Four Feature Classes

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.

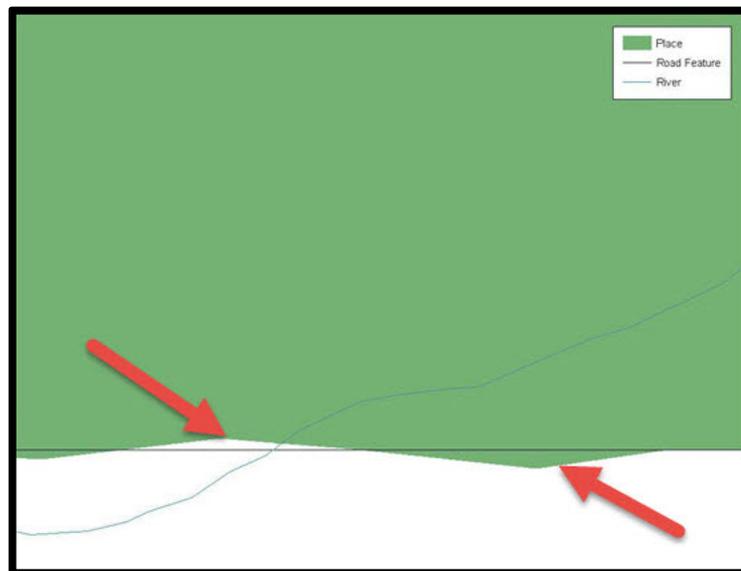


Figure 4. GIS Place Boundary Does Not Follow Road Feature

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. **Part 5: Updating the Census Bureau Shapefiles, Section 5.12** 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 **Appendix B** and **Appendix C**.

2.3 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 https://www.census.gov/library/video/intro_bas_topology.html where you can watch the video.

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PART 3: CENSUS BUREAU PROVIDED SHAPEFILES

Please download shapefiles from the BAS Web site at:

<<https://www.census.gov/geographies/mapping-files/2018/geo/bas/2018-bas-shapefiles.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 Web site. 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.

Table 1: BAS Naming Conventions.

Geographic Entity Type	Shapefile Naming Convention
County	PVS_18_v2_county_<ssccc>.shp
Minor Civil Division	PVS_18_v2_mcd_<ssccc>.shp
Incorporated Place	PVS_18_v2_place_<ssccc>.shp
Consolidated City	PVS_18_v2_concity_<ssccc>.shp
Edges (Roads, Rail, Hydro, etc.)	PVS_18_v2_edges_<ssccc>.shp
Area Landmarks	PVS_18_v2_arealm_<ssccc>.shp
Point Landmarks	PVS_18_v2_pointlm_<ssccc>.shp
Hydro Area	PVS_18_v2_water_<ssccc>.shp
Geographic Offsets / Corridors	PVS_18_v2_offset_<ssccc>.shp

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: 6378137.0000000000000000
- Semi-minor Axis: 6356752.314140356100000000
- Inverse Flattening: 298.257222101000020000

PART 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.

4.1 MAF Structure Point Geocoding

A field worker stands in front of a house or living quarters, and records the physical location with a GPS device ([Figure 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.

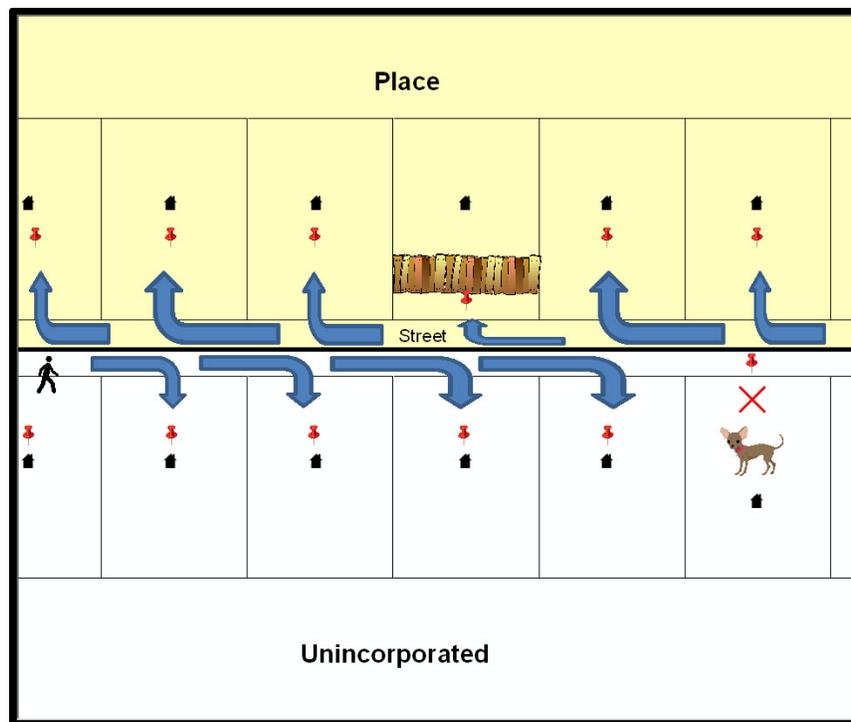


Figure 5. MSP Method of Geocoding

MAF Structure Point (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.

4.2 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 ([Figure 6](#)).

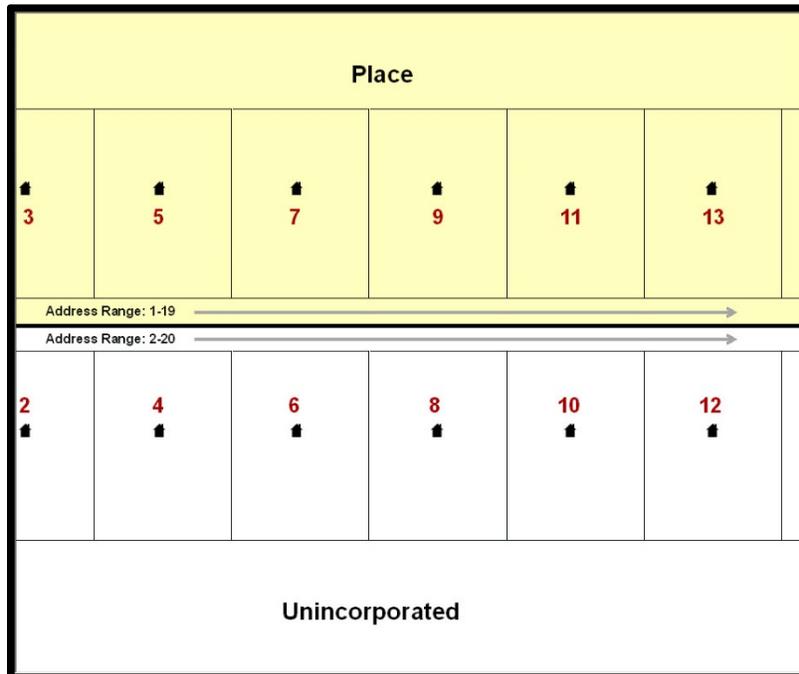


Figure 6. Address Range Method of Geocoding

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 [Section 5.5](#) of this document for more details).

PART 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 [Appendix B](#) and [Appendix C](#) and watch the Digital BAS demonstration video series at <https://www.census.gov/programs-surveys/bas/library/videos/digital-bas.html> for more examples.

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.

5.1 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.

5.2 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.

5.3 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.

[Appendix B](#) and [Appendix C](#) provide two examples for creating annexation, deannexation, boundary correction, new incorporation, 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.

5.4 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.

Table 2: 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	

(**Note:** 'X' = Required Field).

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

5.5 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.

Table 3: 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')

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; and
- 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; and
- 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.

5.6 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.

Table 4: New Incorporations

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

(**Note:** 'X' = Required Field).

5.7 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.

Table 5: Disincorporations

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

(Note: 'X' = Required Field).

5.8 Geographic Corridors

The Census Bureau geocodes 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. **Figure 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).

Figure 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.

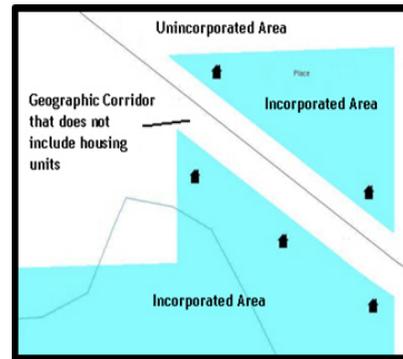
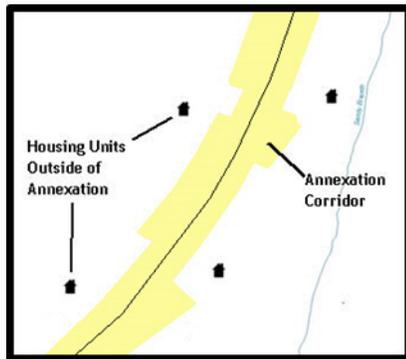


Figure 7. Geographic Corridor Created

Figure 8. Geographic Corridor Not Created

The image on the left (Figure 7) shows that a geographic corridor should be created to allow for proper geocoding of homes. The image on the right (Figure 8) shows that the geographic corridor should not be created and features should be snapped to the street centerline.

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.

Table 6: Geographic Corridors

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

(Note: 'X' = Required Field)

5.9 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. [Figure 9](#) depicts a cadastral (parcel-based) boundary map and [Figure 10](#) shows how the boundary should be reported when sent to the Census Bureau.

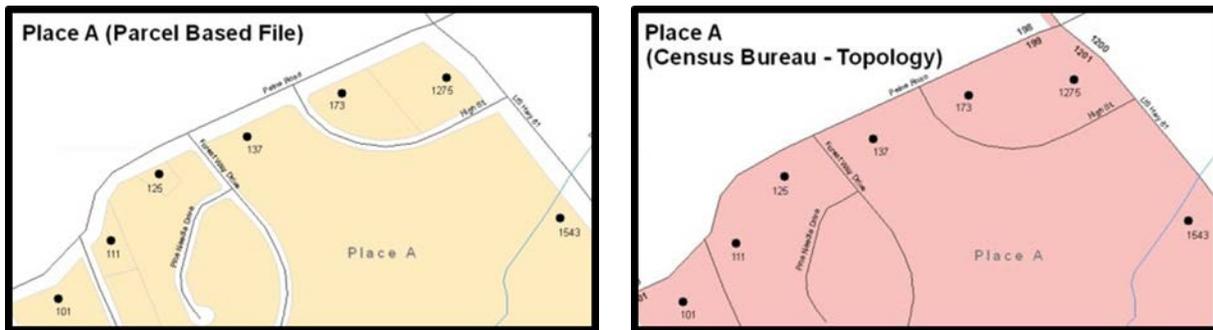


Figure 9. Cadastral Data

Figure 10. Same Data Edited to Census Requirements

On the left in Figure 9 is an example of cadastral data. Figure 10 on the right, is the same area shown edited to conform to census requirements.

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.

Table 7: Geographic Offsets

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

(Note: 'X' = Required Field).

The Census Bureau has included an “offset” shapefile in the BAS materials (**PVS_yy_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.

5.10 Linear Feature Updates

5.10.1 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.

Table 8: 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

(Note: 'X' = Required Field).

Note: A list of MTFCC codes can be found in [Appendix B](#).

5.10.2 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; and
- 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.

5.10.3 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 (see [Table 9](#)).

Table 9. Address Ranges

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

(Note: 'X' = Required Field)

5.11 Area Landmarks, Hydro Areas, and Point Landmarks

5.11.1 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; and
- Name changes.

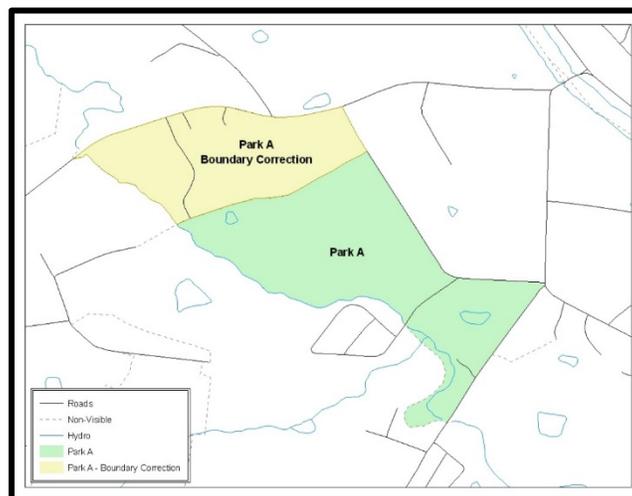


Figure 11. A Boundary Correction to Park A

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 (refer to [Table 10](#)).

Table 10: 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	

(Note: 'X' = Required Field).

The examples in [Appendix B](#) and [Appendix 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; and
- 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:

Table 11: Area Landmark MTFCC Codes

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

MTFCC	Description
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

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.

5.11.2 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; and
- 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.

Table 12: 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

(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.

Table 13: Restricted Point Landmark MTFCC Codes

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

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); and
- 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.

5.12 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 site at: <https://www.census.gov/programs-surveys/bas/library/videos/bas-intro.html>. The videos have information on many of the topics below.

5.12.1 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.

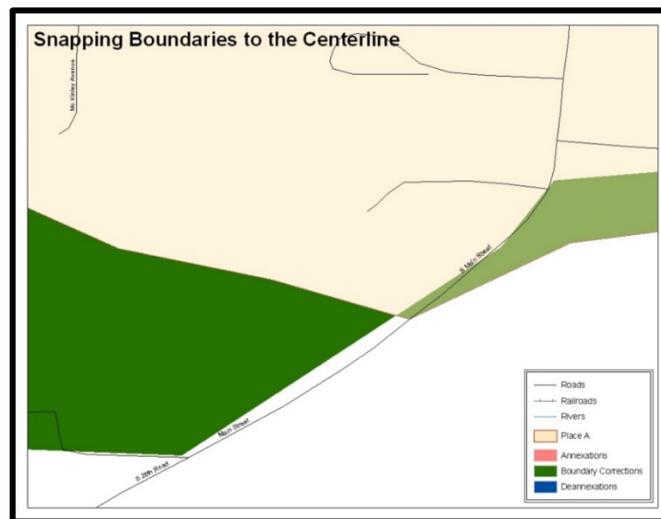


Figure 12. Boundary Corrections Not Snapped to Existing Linear Features

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.

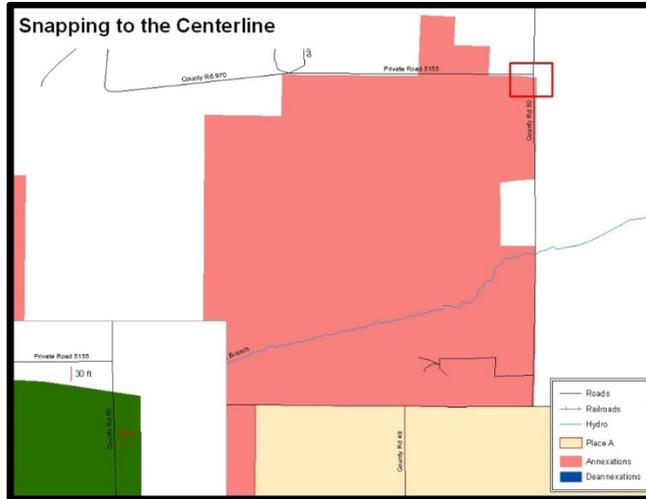


Figure 13. Annexation Created without Snapping to Centerlines

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.

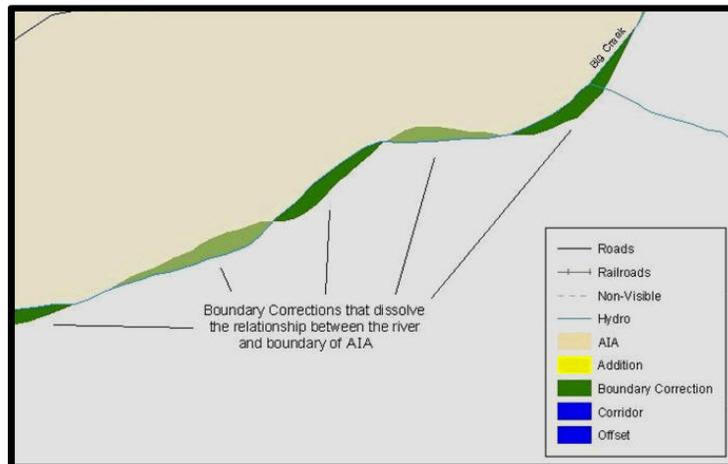


Figure 14. Small Spatial Correction Not Incorporated

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

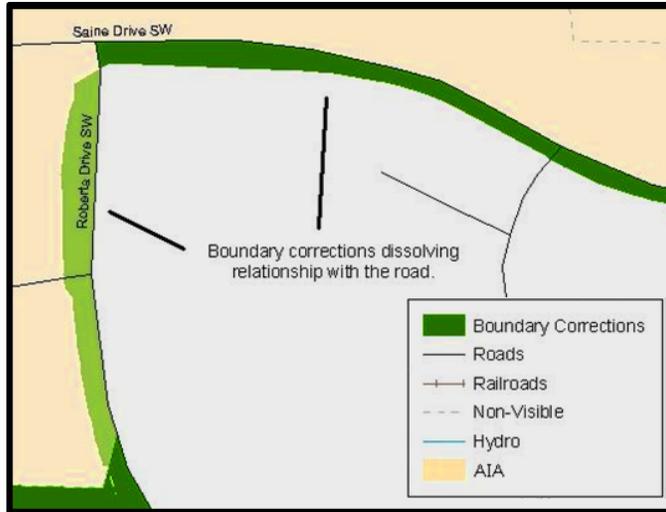


Figure 15. Small Spatial Correction Not Accepted

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.

5.12.2 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.

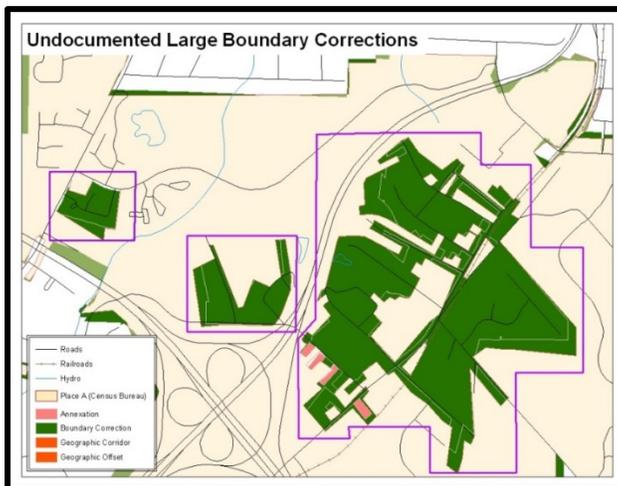


Figure 16. Large Boundary Corrections

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.

5.12.3 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 5.3](#) for the required attribute information and corresponding change type codes.

5.12.4 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.

5.12.5 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.

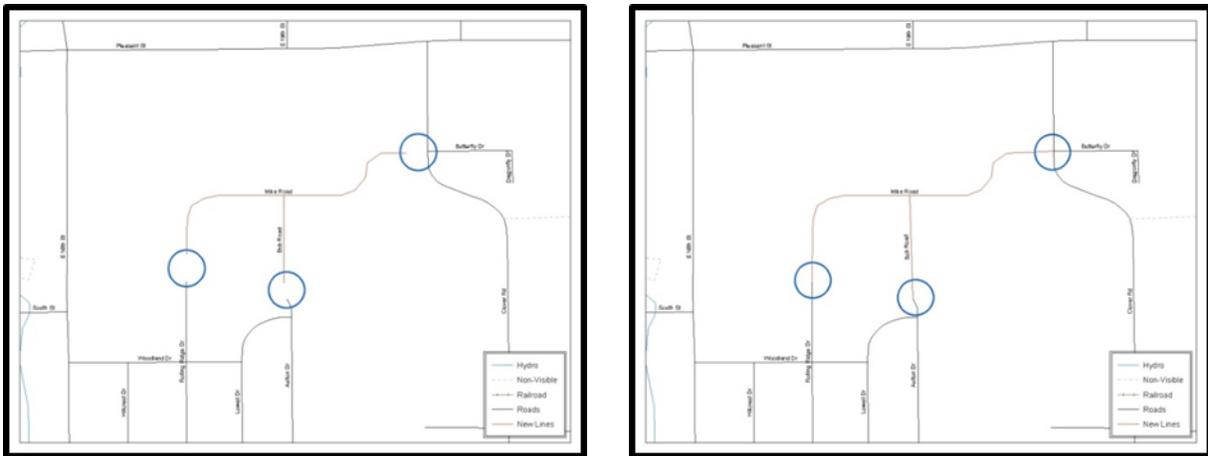


Figure 17. New Road Features, Not Added to Existing Road

Figure 18. New Road Features, Correctly Added

The image on the left (Figure 18) shows new road features added to the existing feature network, but not connected to existing road features. The image on the right (Figure 19) shows the correction connecting the new roads to the existing road features.

5.13 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.

5.13.1 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; and
 - 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; and
 - 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 Update Layer**
 - An area/hydro landmark update layer should be submitted only if there are area and/or hydro landmark updates.
6. **Point Landmark Update Layer**
 - A point area landmark update layer should be submitted only if there are point landmark updates.
7. **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>; and
 - 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; and
- HEO Term Length: x years.

5.13.2 Change Polygon Naming Conventions

The following table provides change polygon naming conventions for county submissions, county subdivisions, incorporated places, and consolidated cities. The change polygon layer naming conventions: <basID> represents your BAS entity ID, found on the BAS Annual Response email or online from this link: <<https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>>.

Table 14: Change Polygons

Participant	Changes Submitted For:	Shape file Naming Conventions
<i>County</i>	County	bas18_<basID>_changes_county
<i>County</i>	Minor Civil Division	bas18_<basID>_changes_cousub
<i>County</i>	Incorporated Place	bas18_<basID>_changes_incplace
<i>Minor Civil Division</i>	Minor Civil Division	bas18_<basID>_changes_cousub
<i>Incorporated Place</i>	Incorporated Place	bas18_<basID>_changes_incplace
<i>Consolidated City</i>	Consolidated City	bas18_<basID>_changes_concity

5.13.3 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. 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: <<https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>>.

Table 15: Whole Entity Polygons

Participant:	Changes Submitted For:	Shapefile Naming Conventions
<i>County</i>	County	bas18_<basID>_WholeEntity_county
<i>County</i>	Minor Civil Division	bas18_<basID>_WholeEntity_cousub

Participant:	Changes Submitted For:	Shapefile Naming Conventions
<i>County</i>	Incorporated Place	bas18_<basID>_WholeEntity_incplace
<i>Minor Civil Division</i>	Minor Civil Division	bas18_<basID>_WholeEntity_cousub
<i>Incorporated Place</i>	Incorporated Place	bas18_<basID>_WholeEntity_incplace
<i>Consolidated City</i>	Consolidated City	bas18_<basID>_WholeEntity_concity

5.13.4 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). 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: <https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>.

Table 16: Optional Files

Participant:	Changes Submitted For:	Shapefile Naming Conventions
<i>All Participants</i>	Edges	bas18_<basID>_LN_Changes
<i>All Participants</i>	Area / Hydro Landmarks	bas18_<basID>_AIndk_Changes
<i>All Participants</i>	Point Landmarks	bas18_<basID>_PIndk_Changes

5.13.5 Compressing the Digital Files

The SWIM requires all BAS returns to be zipped prior to submission. Please 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.

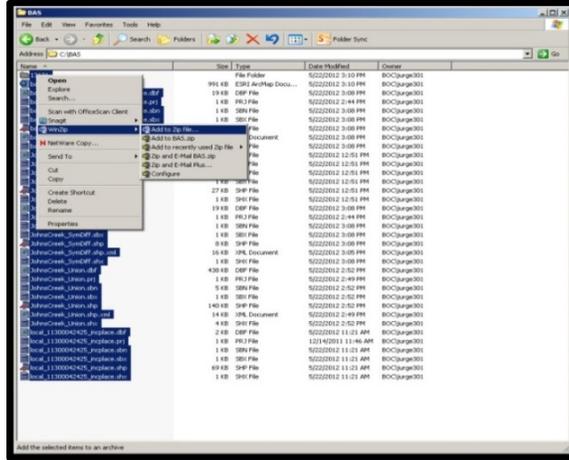


Figure 19. Selecting and Zipping Return Files

Note: Versions of WinZip may vary so the interface may be slightly different. Software other than WinZip (e.g., 7zip) may be used to zip the return files.

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 number on the BAS Annual Response email or online from this link: <<https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>>.

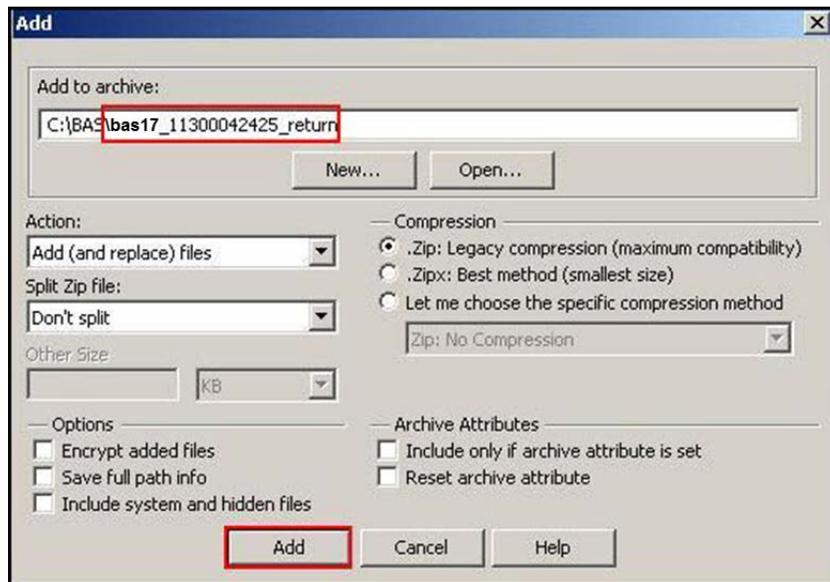


Figure 20. Naming the Zip File

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.

5.13.6 Submitting Digital Files via SWIM

The Secure Web Incoming Module (**SWIM**) is a 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.

Current SWIM Users

If you are a participant in another Census Bureau partnership program, or participated in a previous BAS year, and already have a SWIM account, you may use your current account to submit files for the BAS. You do not need to set up a new account.

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, 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.

Registration Token:

First Name:

Last Name:

Phone Number: - - #

Agency:

Email:

Confirm Email:

Password:

Confirm Password:

Security Question:

Answer:

OMB No.: 0607-0151, 0607-0795 Approval Expires: 01/31/2016, 07/31/2015 [Accessibility](#) | [Privacy](#) | [Security](#)

Figure 21. SWIM Account Registration

Please Login

Welcome to the Census Bureau's Secure Web Incoming Module (SWIM). The SWIM is the official web portal for uploading partnership materials to the Census Bureau.

Please note: sessions will expire after 15 minutes of inactivity.

Email:

Password:

[Forgot your password?](#)

**** WARNING ****

You have accessed a UNITED STATES GOVERNMENT computer. Use of this computer without authorization or for purposes for which authorization has not been extended is a violation of Federal law and can be punished with fines or imprisonment (PUBLIC LAW 99-474). System usage may be monitored, recorded, and subject to audit. Any information you enter into this system may be used by the Census Bureau for statistical purposes, including but not limited to improving the efficiency of our data collection programs. For information regarding the use of this system, and how your privacy is protected, visit our online privacy webpage at <http://www.census.gov/privacy/>. Use of this system indicates consent to the collection, monitoring, recording, and use of information provided inside this system.

Figure 22. 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.

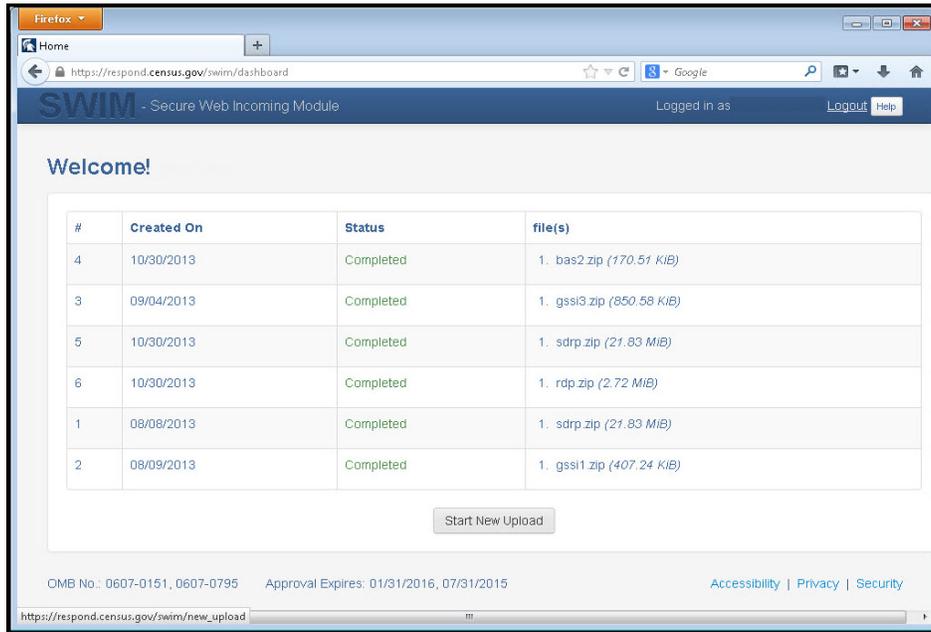


Figure 23. Welcome Screen with Upload History

4. On the next screen, select the "Boundary Annexation Survey (BAS) option as the geographic partnership program, and click 'Next' to continue.

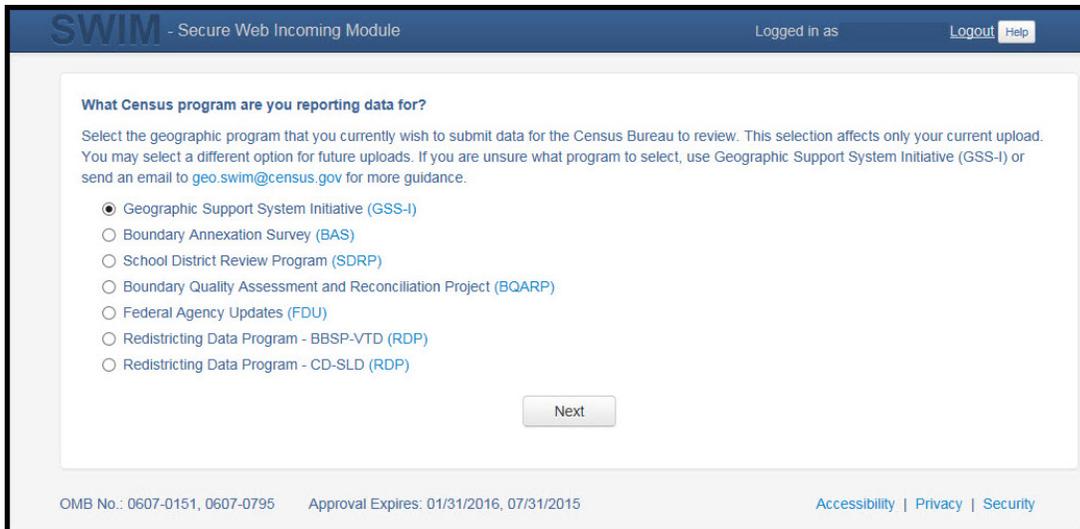


Figure 24. Geographic Partnership Program Selection Window

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.

SWIM - Secure Web Incoming Module

Logged in as [Logout](#) [Help](#)

What type of GSSI are you reporting for?

Please select the entity-type you represent, not the extent or type of data that you are submitting. For example, if you are submitting data on behalf of a "County", but the data being submitted is at the "City" level, then select "County".

State

Place

County

County Subdivision

Tribal Area

Concity

[Previous](#) [Next](#)

OMB No.: 0607-0151, 0607-0795 Approval Expires: 01/31/2016, 07/31/2015 [Accessibility](#) | [Privacy](#) | [Security](#)

Figure 25. 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.

Firefox

Area

http://respond.census.gov/swim/page/area/7

SWIM - Secure Web Incoming Module

Logged in as [Logout](#) [Help](#)

Select a State and County

State:

Michigan

County:

Ottawa County

[Previous](#) [Next](#)

OMB No.: 0607-0151, 0607-0795 Approval Expires: 01/31/2016, 07/31/2015 [Accessibility](#) | [Privacy](#) | [Security](#)

Figure 26. Geographic Entity Selection Window

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

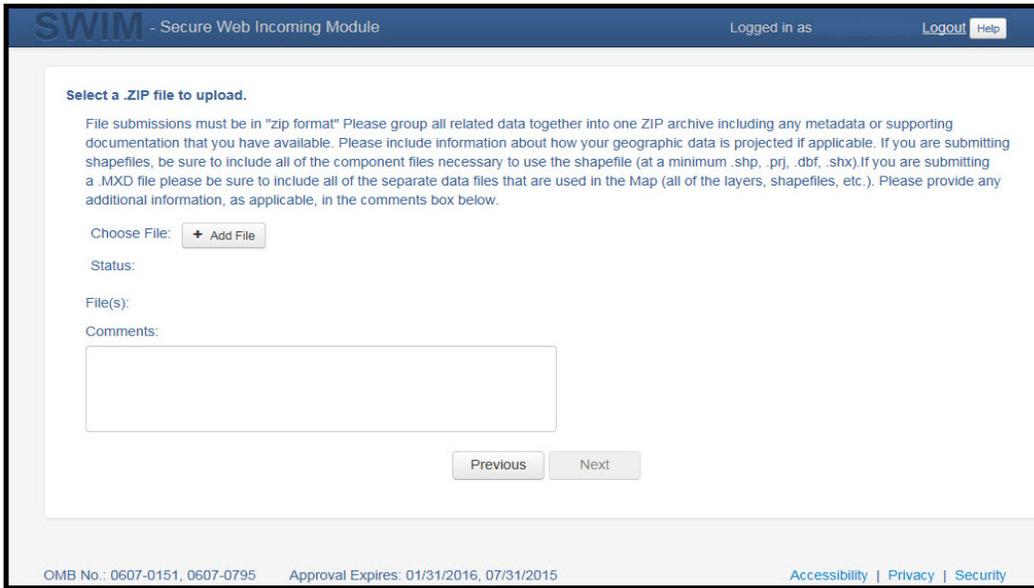


Figure 27. File Upload Screen

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

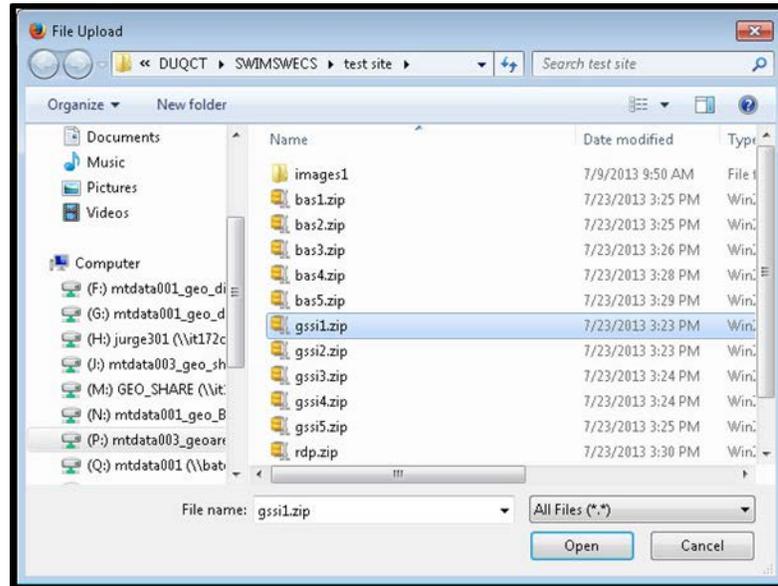


Figure 28. File Browser Dialog Box

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

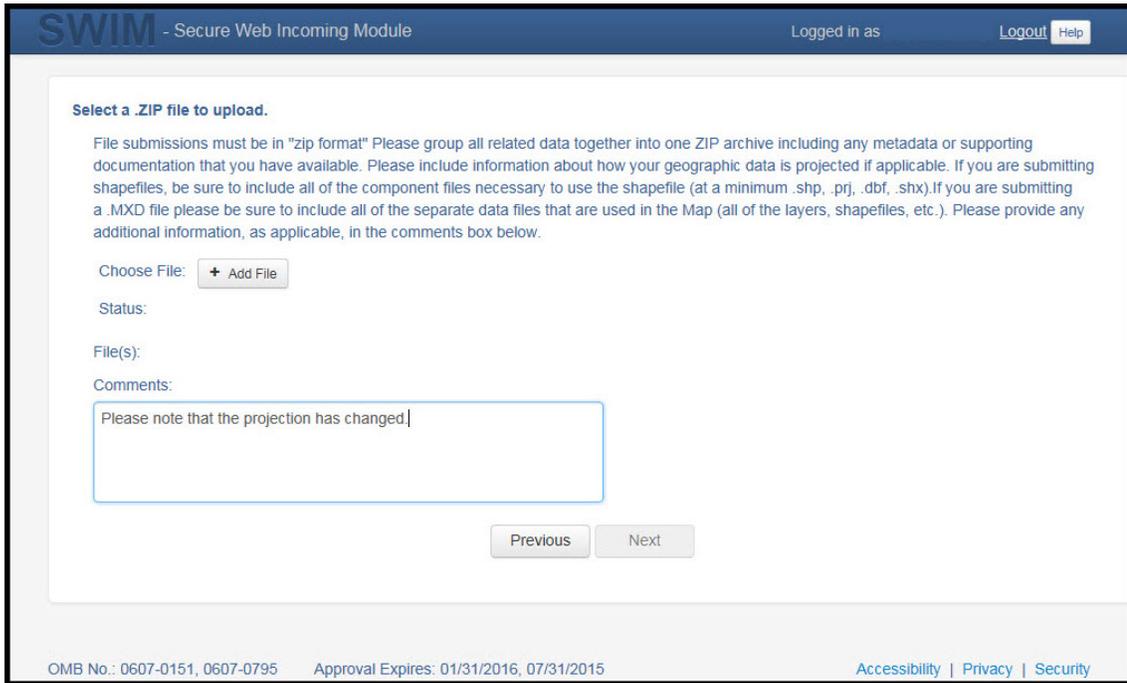


Figure 29. Entering Comments into the File Upload Window

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.

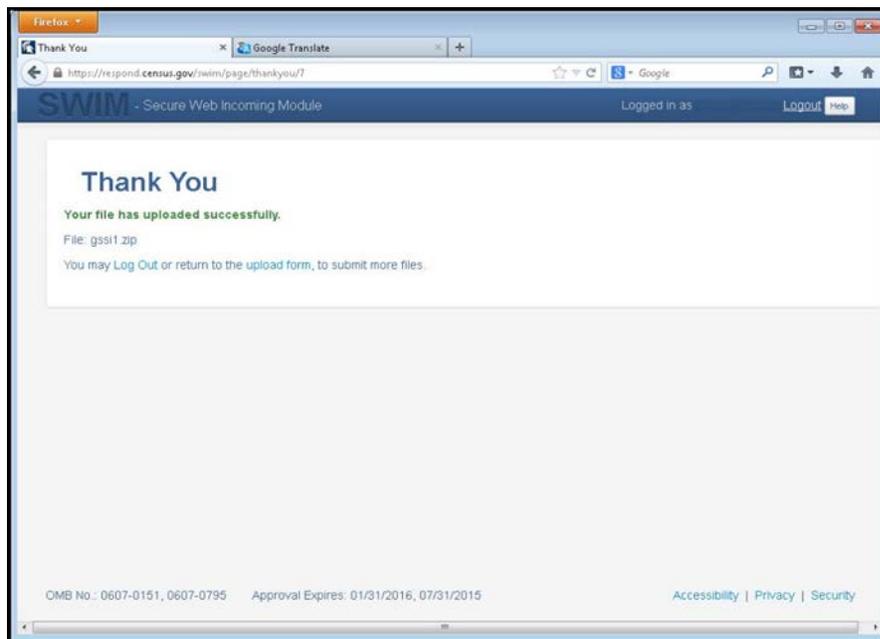


Figure 30. Thank You Screen

5.13.7 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 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.

Due to limited staff, the Census Bureau may not be able to make all updates this year. The Census Bureau will prioritize updates in the following order: legal changes, boundary corrections, linear feature changes, and landmark changes. The earlier the Census Bureau receives a submission, the greater the chance that the Census Bureau will be able to make all of the updates. Only submit changes that occurred on or before January 1, 2018. The Census Bureau will not be able to make any updates effective after this date until next year's BAS.

APPENDICES

APPENDIX A. DATA DICTIONARY

Table 17: 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 18: 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 19: 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 20: 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 21: 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 22: 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 23: 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 24: 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 25: 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

APPENDIX B. 2018 DIGITAL BAS EXAMPLE PROCESS 1

B.1 Required Census Bureau Shapefiles

When downloading shapefiles for the 2018 BAS, shapefiles will begin with the prefix (e.g., **PVS_18_v2_edges_<ssccc>.shp**). Throughout this guide, Census Bureau uses the prefix of **bas_2018**, but the **PVS** files are exactly the same.

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_18_v2_place_<ssccc>.shp
- PVS_18_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.

B.2 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.

B.3 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 26](#).

Table 26: Suggested MTFCC Symbolization

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

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.

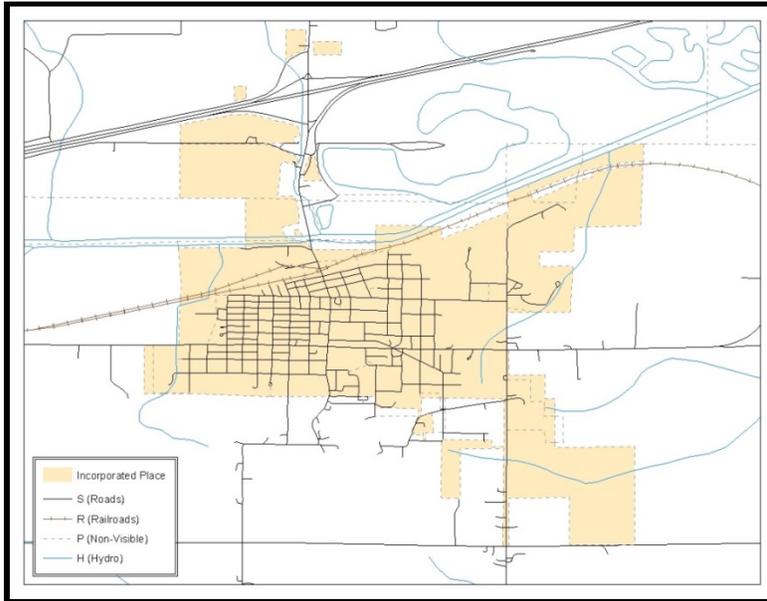


Figure 31. Suggested Map Symbolization

B.4 Extracting Incorporated Place or MCD Data from Census Shapefiles

Note: County participants submitting county boundary changes can skip this step. Use the *PVS_yy_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_yy_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**

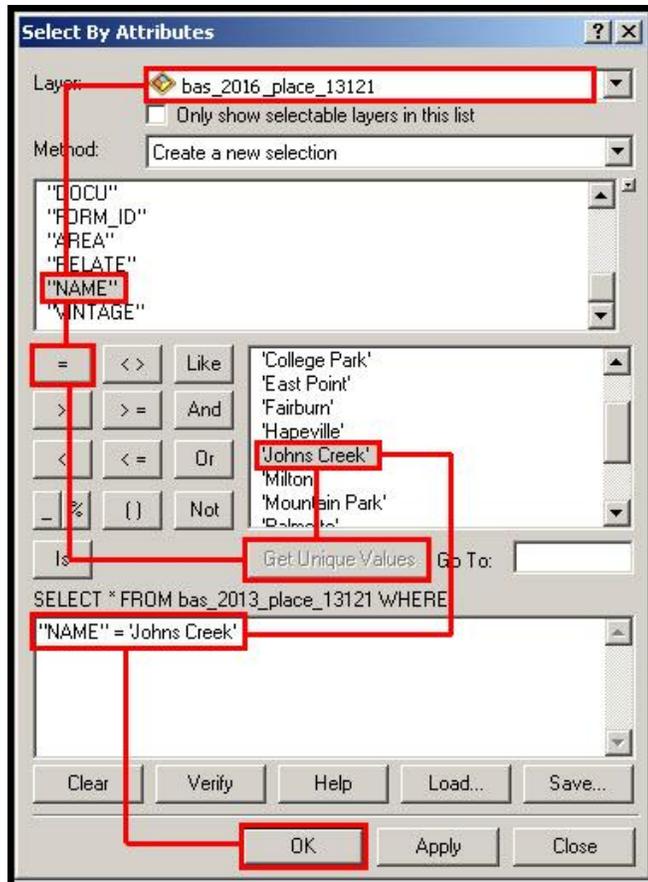


Figure 32. Filtering Data

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**.

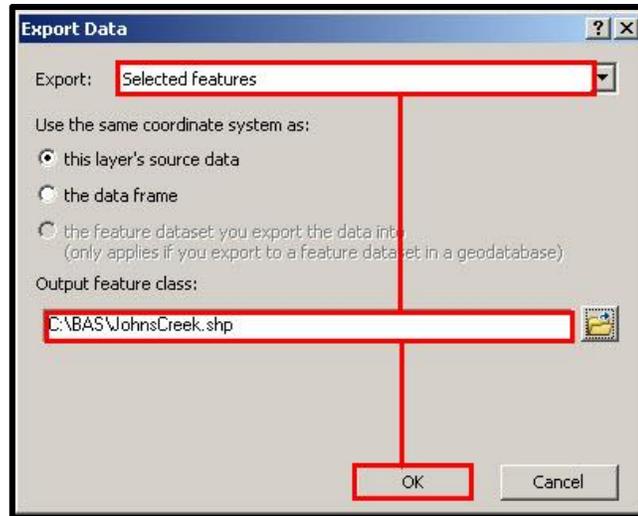


Figure 33. Export Data Window

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.4.3](#) if the incorporated place needs to merge, 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**.

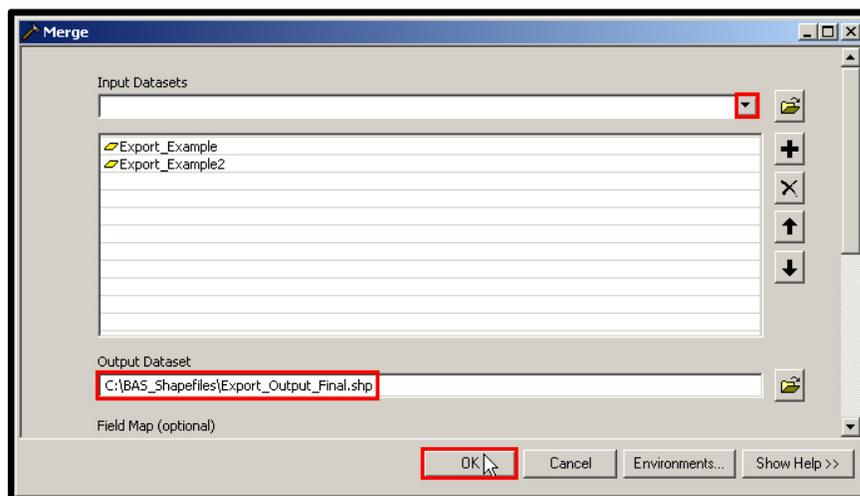


Figure 34. Finalizing the Merge Process

B.5 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 B.6](#) 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 4**.
 - 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**.

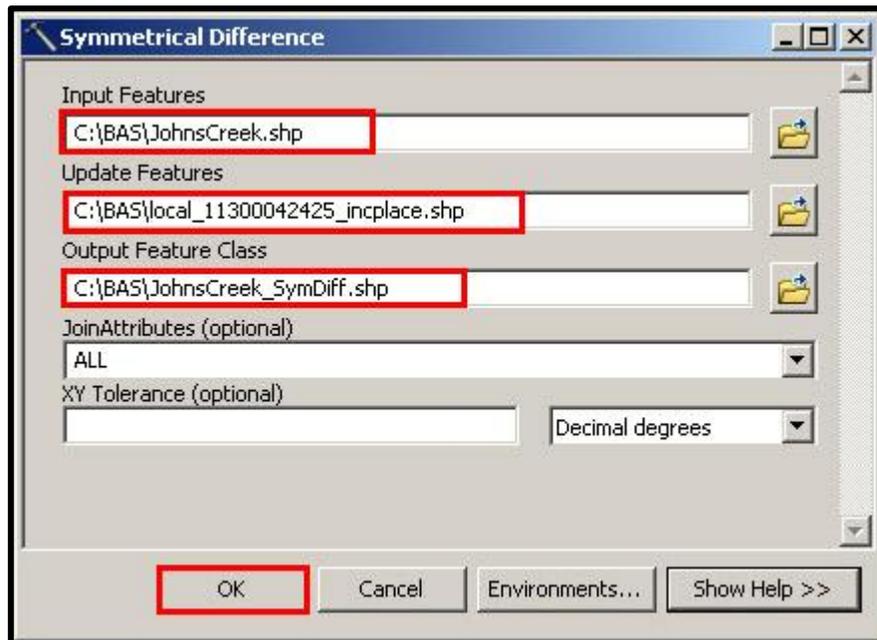


Figure 35. Finalizing the Symmetrical Difference Process

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.7, Reviewing and Attributing Change Polygons**.

B.6 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_yy_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**.

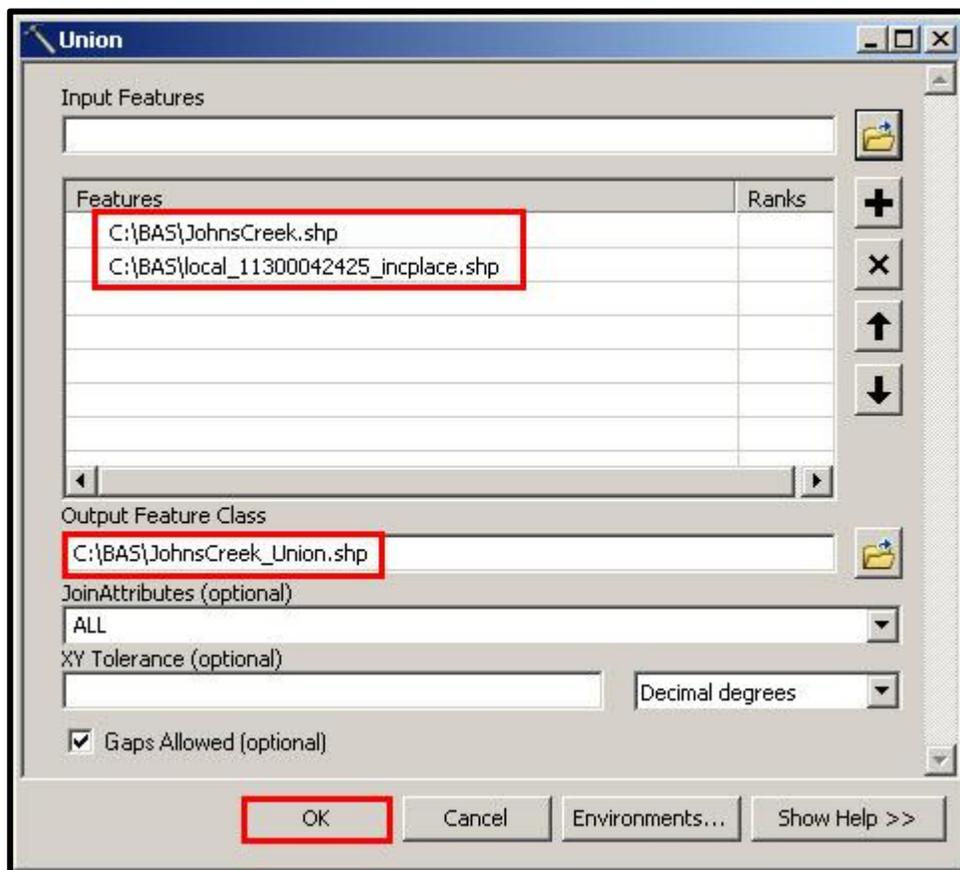


Figure 36. Finalizing the Union Process

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**.

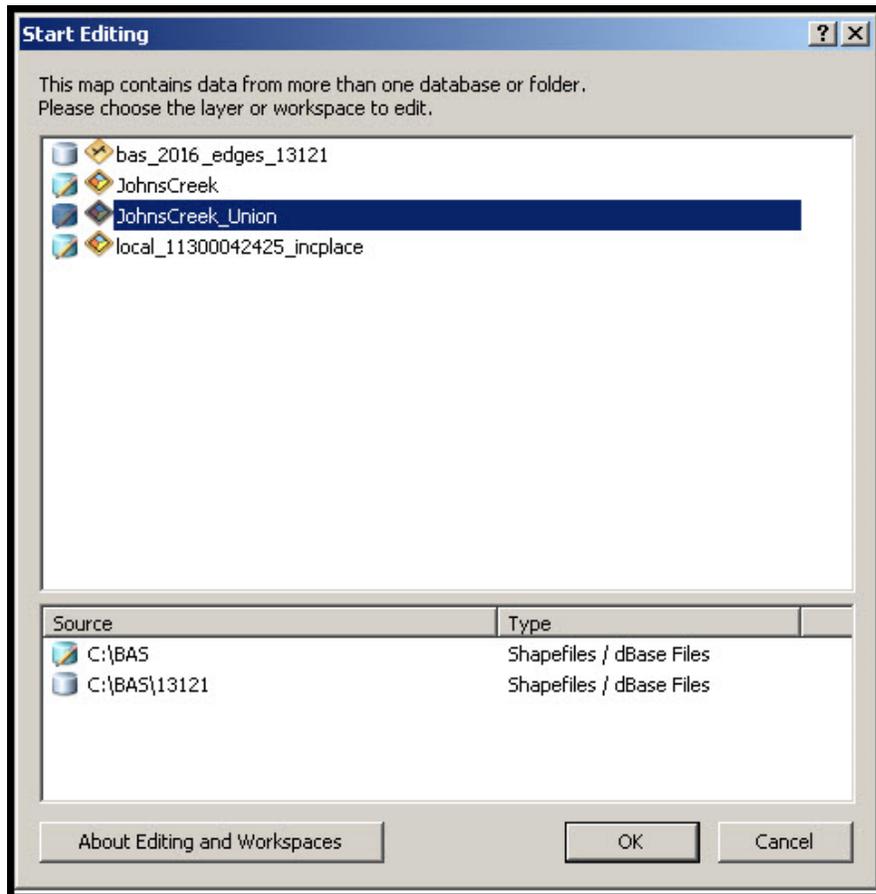


Figure 37. Locating the Union Shapefile

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.

B.7 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 5.3](#) 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.

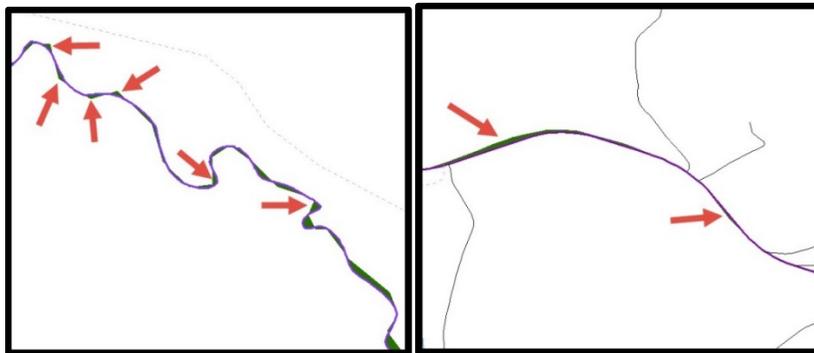


Figure 38. Small Slivers That Should Be Deleted

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

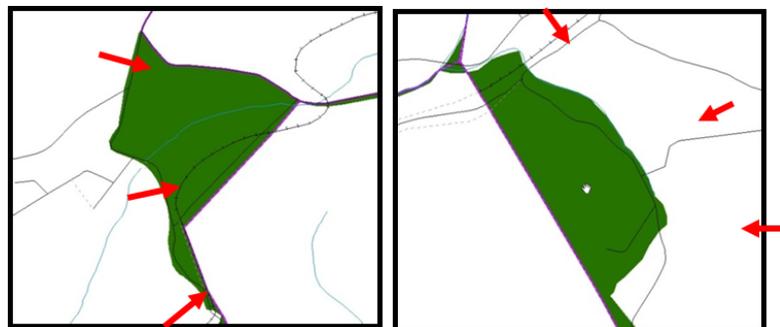


Figure 39. Polygons That Should Be Snapped to Roads or Rivers

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**.)

B.8 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:
bas18_<basID>_changes_<entity_type>.

Note: You can find the basID numbers on the BAS Annual Response Email or online from this link:
<https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>

Note: See [Section 5.13.5](#) 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 5.13.6 Submitting Digital Files via SWIM](#) of the respondent guide.

APPENDIX C. 2018 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.

C.1 Required Census Bureau Shapefiles

- When downloading shapefiles for the 2018 BAS, shapefiles will begin with the prefix **PVS** (e.g., **PVS_18_v2_edges_<ssccc>.shp**).

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_18_v2_place_<ssccc>.shp
 - PVS_18_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: The Census Bureau suggests that participants make an extra copy of the data as an emergency backup. Contact the Census Bureau at 1-800-972-5651 or geo.bas@census.gov with any questions.

C.2 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.

C.3 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 27](#).

Table 27: Suggested MTFCC Symbolization

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

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.

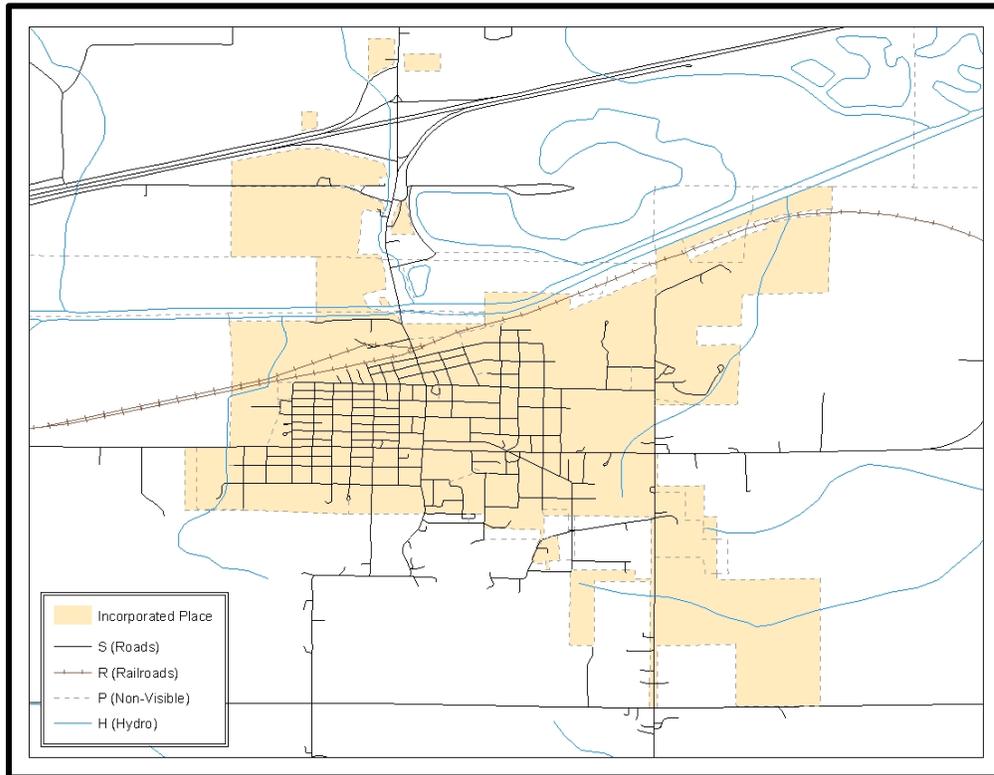


Figure 40. Suggested Map Symbolization

C.4 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_18_v2_edges_<ssccc>.



Figure 41. 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.



Figure 42. 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 [Figure 41](#)), 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.

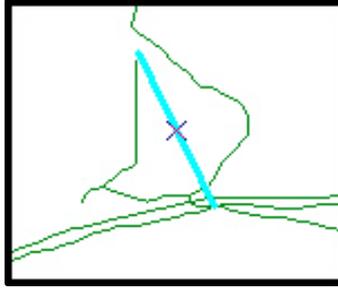


Figure 43. A Newly Created Linear Feature

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.

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).

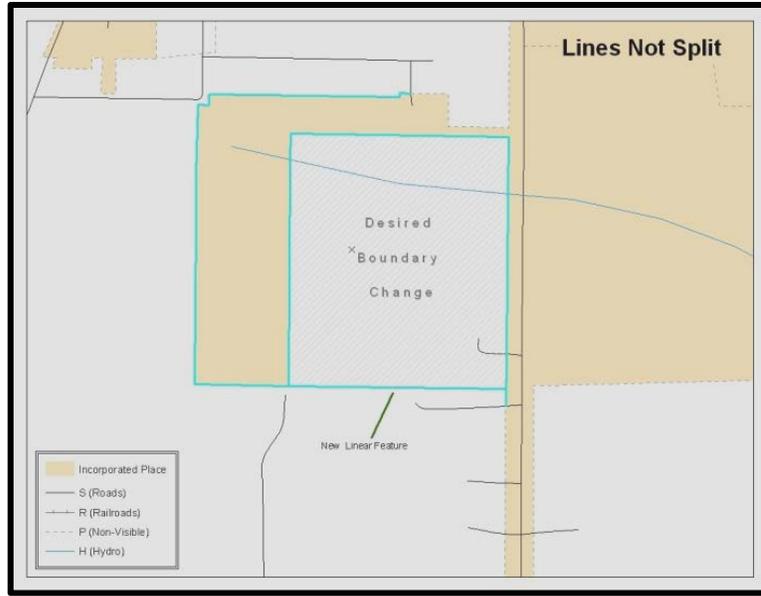


Figure 44. Linear Feature Selection Before Being Split

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

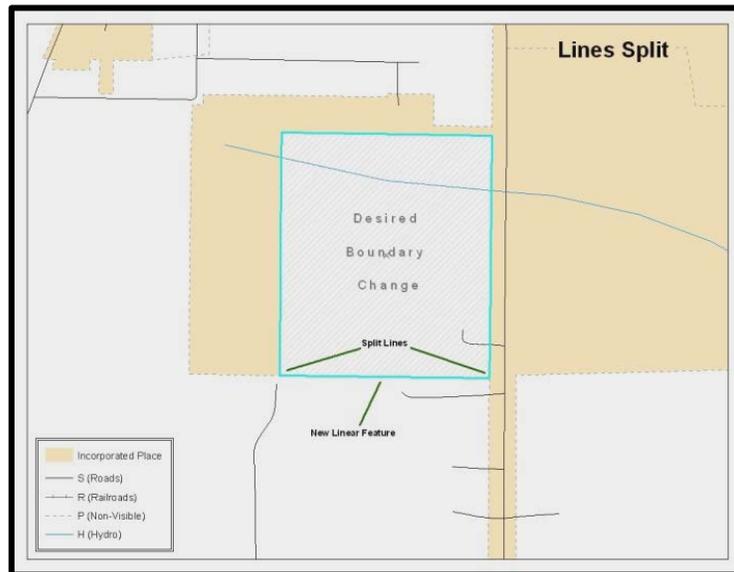


Figure 45. Linear Feature Selection After Being Split

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_yy_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.

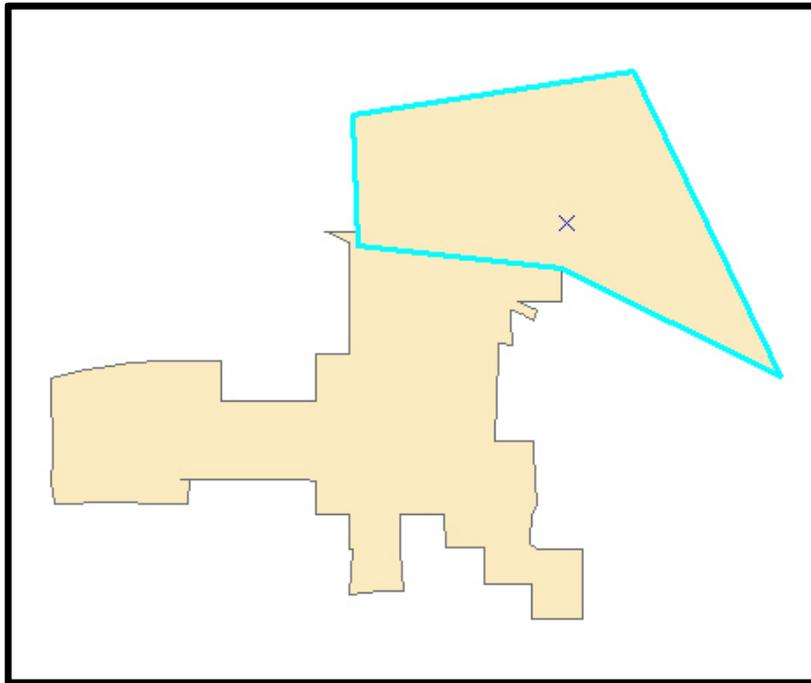


Figure 46. Selecting the Linear Features of a Change Polygon

5. On the **Topology** toolbar, click 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).

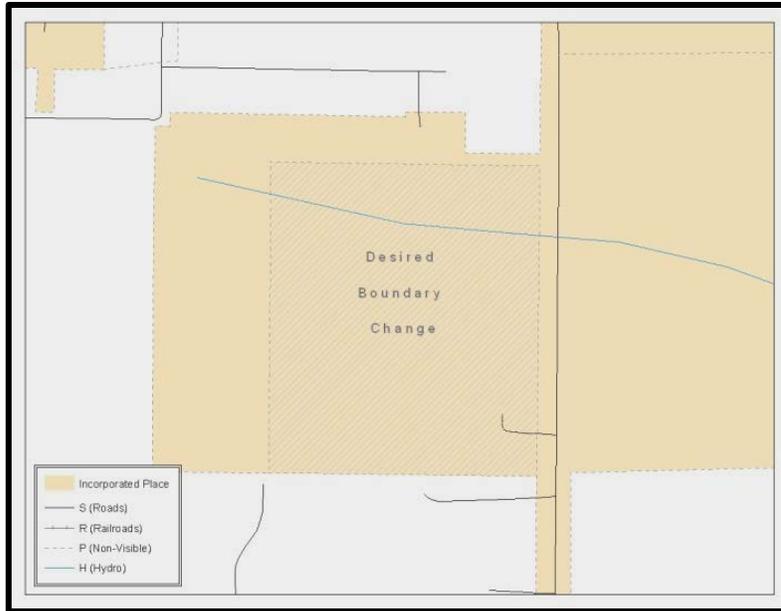


Figure 47. Newly Created Place Feature

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_yy_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**

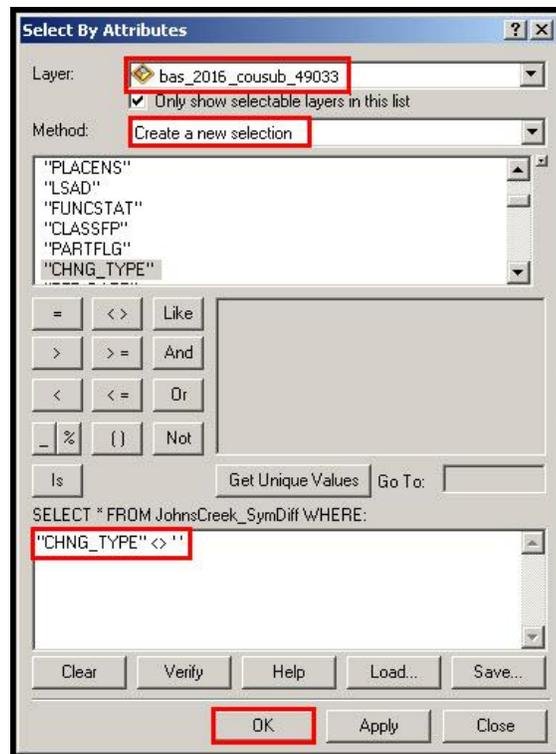


Figure 48. Select All Change Types Formula

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

1. In the ArcMap Table of Contents, right-click on the incorporated place layer (PVS_18_v2_place_<ssccc>), select Data, and then click Export Data.
2. 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 bas8_<basID>_changes_incplace.shp.
 - Click **OK**.

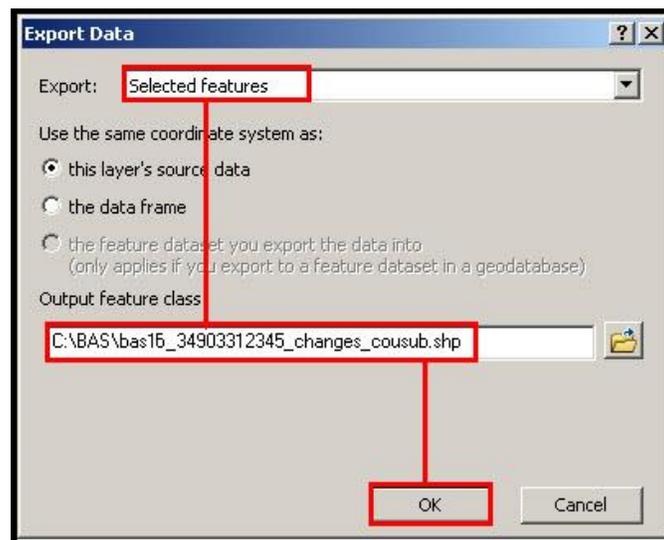


Figure 49. Exporting Data

Note: You can find the basID number on the BAS Annual Response email or online from this link: <https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>.

Note: See [Section 5.13.5](#) 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 5.13.6, Submitting Digital Files via SWIM](#).

APPENDIX D. MTFCC DESCRIPTIONS — COMPLETE LIST

The MAF/TIGER Feature Classification Code (MTFCC) is a 5-digit code assigned by the Census Bureau to classify and describe geographic objects or features in Census Bureau MAF/TIGER products.

Table 28: MTFCC List

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 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).
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.

MTFCC	Feature Class	Feature Class Description
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 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.

MTFCC	Feature Class	Feature Class Description
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.
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.

MTFCC	Feature Class	Feature Class Description
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 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. The upper chamber is the senate in a bicameral legislature, and the unicameral case is a 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.

MTFCC	Feature Class	Feature Class Description
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.
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 Census Bureau includes in the MAF/TIGER® System 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].
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.

MTFCC	Feature Class	Feature Class Description
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.
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.

MTFCC	Feature Class	Feature Class Description
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 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.

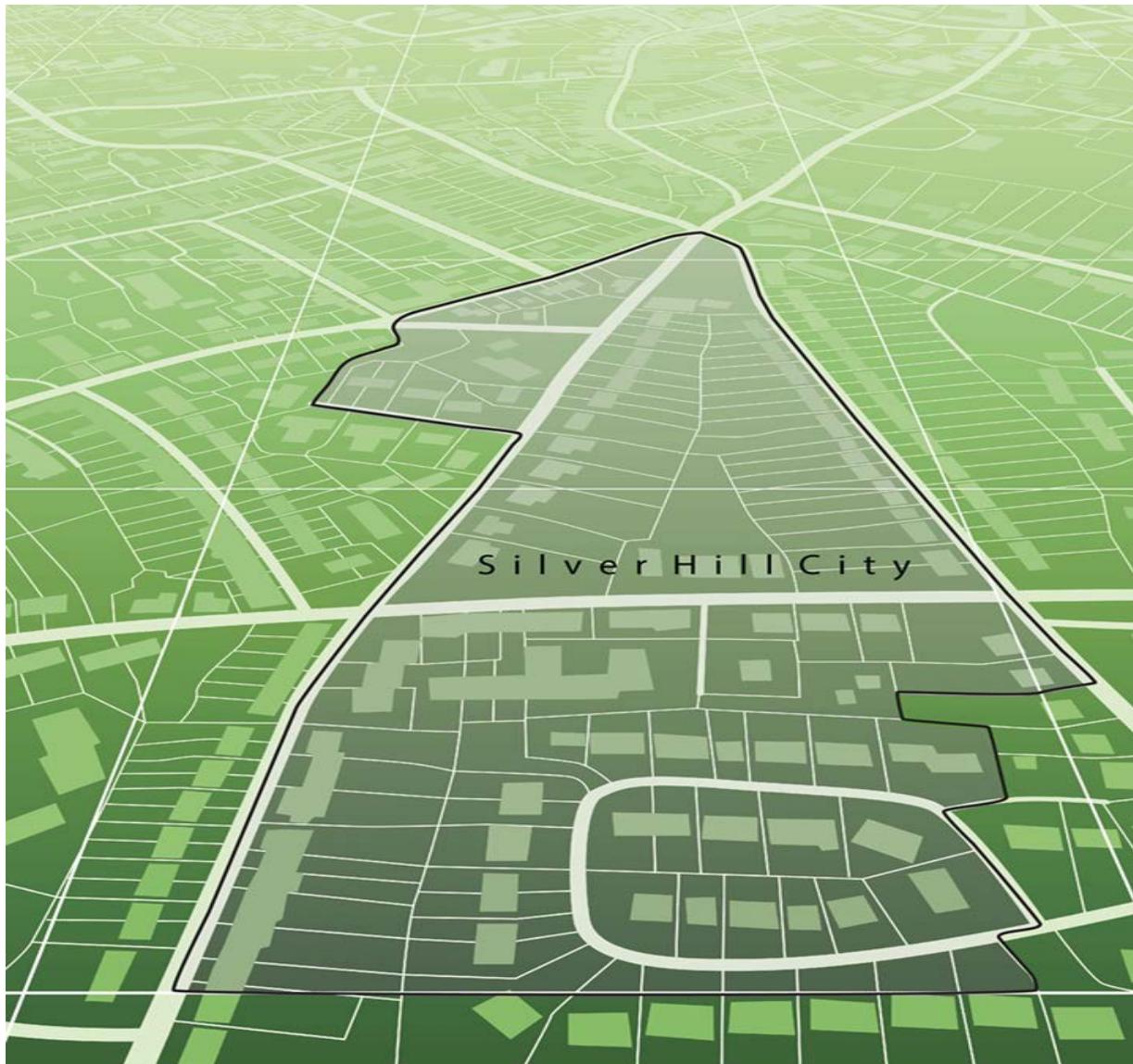
MTFCC	Feature Class	Feature Class Description
K2540	University or College	A building or group of buildings used as an institution for post-secondary study, teaching, and learning [including seminary].
K2543	School or Academy	A building or group of buildings used as an institution for preschool, elementary 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 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.

MTFCC	Feature Class	Feature Class Description
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, boundary of an areal feature)	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 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 the MAF/TIGER System.
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.
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.

MTFCC	Feature Class	Feature Class Description
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 November 2017.		

Boundary and Annexation Survey (BAS) Respondent Guide: GUPS

Instructions for Using the Geographic Update Partnership Software (GUPS)
Revised as of December 14, 2017



U.S. Department of Commerce
Economic and Statistics Administration
U.S. CENSUS BUREAU
census.gov



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PAPERWORK REDUCTION ACT 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 (PRA) unless that collection of information displays a current valid Office of Management and Budget (OMB) Control Number. This collection is voluntary. The authority for conducting this collection comes from Title 13 United States Code (U.S.C.), Section 6 Paperwork Reduction Act.

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:

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United States Census Bureau
4600 Silver Hill Road, Room 4H177
Washington, DC 20233

The Census Bureau issued a *Federal Register* Notice to revise its confidentiality pledge language to address the new cybersecurity screening requirements:

Per the Federal Cybersecurity Enhancement Act of 2015, your data are protected from cybersecurity risks through screening of the systems that transmit your data.

INTRODUCTION

A. The Boundary and Annexation Survey

The U.S. Census Bureau (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), federally recognized American Indian Areas (AIAs), including reservations, off-reservation trust lands and tribal subdivisions, Hawaiian Homelands, and Alaska Native Regional Corporations (ANRC). 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 the boundary information collected during the BAS to tabulate data for 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 (FGDC) 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), Hawaiian Homelands, ANRC, and federally recognized 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).

Please visit the BAS program Web site at <<https://www.census.gov/programs-surveys/bas.html>>.

For more information on the BAS, please view the "Introduction to BAS" video series on the Census Bureau's BAS Web site at <<https://www.census.gov/programs-surveys/bas/library/videos/bas-intro.html>>

B. What's New for the 2018 BAS?

1. The Geographic Partnership Support Desk (GPSD) is now fully functional and available to assist with any questions respondents may have regarding BAS.
2. Redistricting data contacts participating in the Voting District Project (VTDP) may submit boundary updates for reconciliation with BAS contacts.

C. Key Dates for BAS Respondents

January 1, 2018—All boundary changes must be legally in effect on or before this date to be reported in the 2018 BAS.

March 1, 2018—BAS submission date deadline for boundary updates to be reflected in the ACS and PEP published data. Boundary submissions received by this date are also reflected in next year's BAS materials.

May 31, 2018—BAS boundary updates submitted by this date will be reflected in next year’s BAS materials.

D. BAS State Agreements

The Census Bureau has established a number of agreements with states for reporting boundary changes. Please visit the BAS State Agreements webpage within the BAS program Web site at <<https://www.census.gov/programs-surveys/bas/information/state-agreements.html>> or call (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.

E. Legal Disputes

If the Census Bureau discovers that an area of land is in dispute between two or more jurisdictions, the Census Bureau will not make any boundary corrections until the parties come to a written agreement, or there is a documented final court decision regarding the dispute. If you have questions concerning this, please contact the Census Bureau Legal Office at **301-763-9844**.

For disputes involving tribal areas, the Census Bureau must defer to the Office of the Solicitor at the Department of the Interior for a legal opinion. Often complicated land issues require an extended period of time for resolution, and in those cases, the Census Bureau will retain the current boundary in the database until a legal opinion is issued by the Solicitor’s office.

F. Respondent Guide Organization

This guide has been created for those who choose to participate in the survey using GUPS. Those using their own GIS should consult the *Boundary and Annexation Survey Respondent Guide: Digital* available on the BAS Web site: <https://www.census.gov/programs-surveys/bas/information/response-methods.Digital_BAS.html>. Those using paper maps should consult the *Boundary and Annexation Survey Respondent Guide: Paper*. This guide is equipped with shortcuts to subjects that respondents may want to jump to directly. To move directly to one of these sections, click on the [linked](#) text.

This guide contains two parts:

Part 1: Provides an overview of BAS. It specifies the:

- [BAS Process and Workflow](#);
- [Receiving the GUPS Application and Shapefiles](#);
- [GUPS Help](#);
- [BAS Help](#);
- [Reviewing BAS Data](#) (Information specific to the review and update of each type of geographic entity);
- Boundary Corrections (Including Legal Boundary Changes and Reviewing Legal Boundaries);
- Reviewing Linear Features (Including Reviewing Area Landmarks and Hydrographic Areas);

- [Reviewing Point Landmarks](#);
- [Validating Updates](#); and
- [Submitting Files Through SWIM](#) and [Submitting Files on DVD](#).

Part 2: Describes GUPS and gives step-by-step instructions (Action/Result in table format) for how to:

- How To Use GUPS application;
- Requirements and installation;
- How to Access BAS Shapefiles;

- Download Shapefiles from the BAS Web site to Your Hard Drive;
- Download Shapefiles from the Census Bureau ftp2 Site;
- How to Import User-Provided Data into GUPS;
- How to Use GUPS Review and Validation Tools;
- How to Export ZIP Files to Share/Submit; and
- Submitting Your Files to the Census Bureau Through SWIM.

Note: In all the Action/*Result* tables, the action is usually a command or action you need to perform and the Result(s) of the action will be shown in italics. For example: if you click GUPS icon on your desktop, *the software should begin to run automatically.*

PART 1: BAS OVERVIEW

SECTION 1: PROCESS AND WORKFLOW

Figure 1 below illustrates the three phases of the work to be completed for the BAS. The first section in the diagram includes initial steps. The second section indicates the types of geographic data that should be reviewed and updated. The final section lists the final steps to validate and submit changes.

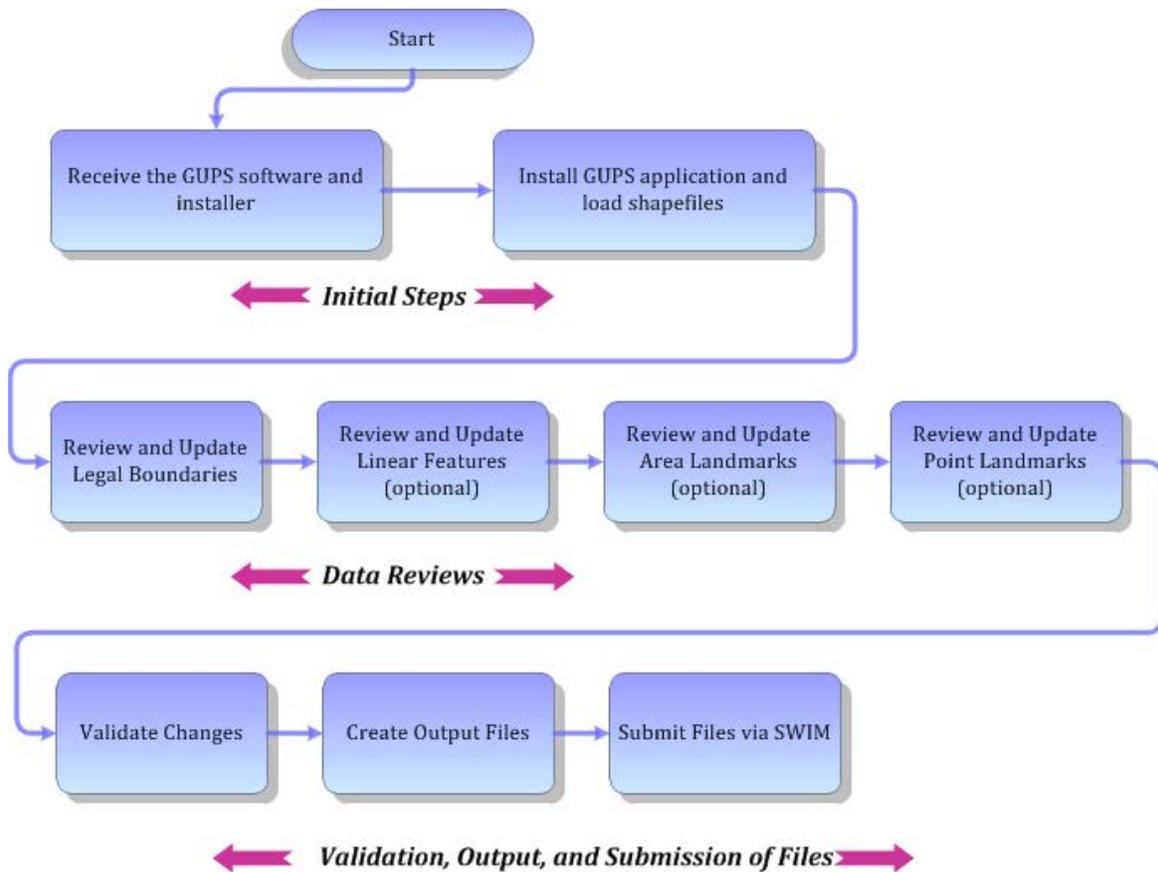


Figure 1. BAS Workflow

Sections 1, 2, and 3 of this guide are organized around the topical areas in the diagram and provide needed program information and procedures, as well as relevant deadlines.

See [Appendix A: BAS Contact Information and Resources](#) for a list of contacts and helpful program links.

1.1 Receiving the GUPS Application and Shapefiles

GUPS is available for installation two ways. GUPS software is available for download directly from the BAS Web site <<https://www.census.gov/programs-surveys/bas/technical-documentation/gups-instructions.html>>. You can also request to receive GUPS software on DVD, which will be shipped to you in a package containing the GUPS DVD, respondent guide, and a read me text file.

Once you have installed GUPS on your computer, the BAS shapefiles can be imported from the BAS Web site directly to the GUPS application. Instructions on how to load data into GUPS appears in **Section 5: Using GUPS (Basics and Map Management)**, **Error! Reference source not found.** If you do not have Internet access, you may request shapefiles on DVD. To request a data DVD, call 1-800-796-3748 or e-mail geo.bas@census.gov.

1.2 Getting Help

1.2.1 GUPS Help

Part 2: How To Use GUPS of this guide contains directions for how to use the tools available within the GUPS application, as well as step-by-step instructions for how to carry out specific shapefile updates (e.g., annexations and deannexations, adding and deleting features and landmarks, etc.).

Embedded within the GUPS application (under the **Help** tab menu) are other resources, including a short training video on how to submit a ZIP file through SWIM. Additional videos will be provided on the BAS Web site as they become available. In addition, a Section 508-compliant version of this guide is available there. The **Help** menu provides a link to both.

For supplemental information on functions within the GUPS that are specific to QGIS, a QGIS user's manual can be found at <http://docs.qgis.org/2.8/en/docs/user_manual/index.html>. The QGIS manual offers particularly helpful information on several activities that are touched on in this guide, but not described in detail, including working with user-provided data layers, creating search expressions for attribute tables, and creating customized coordinate systems. For questions concerning technical problems with the GUPS application, user support is available via telephone (1-800-972-5651) and e-mail geo.bas@census.gov.

1.3 BAS Help

BAS participants may find the *Boundary and Annexation Survey Respondent Guide: Digital* helpful. Although designed for experienced GIS users, it provides important information on geocoding, topological relationships, and spatial accuracy relevant to Census shapefiles. This guide can be downloaded at: <<https://www.census.gov/programs-surveys/bas.html>>.

The Census Bureau has also created a number of other BAS-related videos, including a helpful one on the subject of topology and why topology is important to the BAS. To view these videos, go to: <<https://www.census.gov/programs-surveys/bas/library/videos.html>>.

SECTION 2: REVIEWING BAS DATA

The Census Bureau requests that you review and update all legal entities and boundaries within your jurisdiction, including the new incorporation or disincorporation of legal entities, legal boundary changes, and boundary corrections. You may also update linear features and landmarks, including area landmarks, hydrographic areas, and point landmarks, although review of these is optional.

To help conduct your review, the GUPS application will allow you to import and overlay your own geospatial data layers with the Census Bureau shapefiles. You can import image files from web mapping services, geodatabases, and also other file types. Steps to import the most common types of user-provided data are provided in [Section 0](#):

[How to Import User-Provided Data into GUPS](#).

2.1. Boundary Corrections

A boundary correction is the adjustment of a boundary to correct an error in how the Census Bureau depicts an existing boundary. Boundary corrections should follow the general shape of the existing boundary. Legal documentation is not required when submitting a boundary correction to the Census Bureau.

2.2. Legal Boundary Changes

Legal boundary changes are the result of legal actions (e.g., annexations), and documenting such changes is the primary goal of the BAS. AIA Legal documentation (e.g., statute, federal court decision, trust deed) must accompany all AIA legal boundary changes, while legal boundary change submissions from incorporated places, MCDs, and counties must provide an authorization number, such as a resolution or ordinance number.

2.3. Reviewing Legal Boundaries

When reviewing legal boundaries, please examine the Census Bureau shapefiles for all legal entities in your jurisdiction. These includes:

- Incorporated places;
- Minor Civil Divisions (MCDs) such as towns, boroughs, and townships;
- Counties (and county equivalents); and
- Consolidated cities.

The [Table 1](#) shows the specific changes allowed for each legal entity type.

Table 1: Available Change Types by Entity Type

Entity Type	Available Change Types
Incorporated Place	<ul style="list-style-type: none">• New Entity (New incorporation)• Deleted Entity (Disincorporation)• Addition or Annexation• Deletion or Deannexation• Boundary Correction (add)• Boundary Correction (remove)• Geographic Corridor

Entity Type	Available Change Types
	<ul style="list-style-type: none"> • Geographic Offset
Minor Civil Division (MCD)	<ul style="list-style-type: none"> • New Entity • Deleted Entity • Addition or Annexation • Deletion or Deannexation • Boundary Correction (add) • Boundary Correction (remove) • Geographic Corridor • Geographic Offset
County	<ul style="list-style-type: none"> • New Entity (New incorporation of place and MCD) • Deleted Entity (Disincorporation of place and MCD) • Addition or Annexation • Deletion or Deannexation • Boundary Correction (add) • Boundary Correction (remove) • Geographic Corridor • Geographic Offset
Consolidated City	<ul style="list-style-type: none"> • New Entity (New incorporation of place and MCD) • Deleted Entity (Disincorporation of place and MCD) • Addition or Annexation • Deletion or Deannexation • Boundary Correction (add) • Boundary Correction (remove) • Geographic Corridor • Geographic Offset

2.4. Requirements for Legal Boundary Changes

2.4.1 Boundary Changes to Legal Entities

For a boundary change to an existing legal entity (or the new incorporation or disincorporation of a legal entity) to be processed as a legal change, you must provide the legal documentation number (e.g., law or ordinance number), effective date, and authorization type. You are not required to submit paperwork documenting the change.

Note: Although additional documentation is not required, we do strongly encourage you to attach supporting paperwork to your submission (you may do this directly in GUPS). The paperwork will expedite our ability to reconcile and process any legal updates.

2.4.2 Boundary Changes to Legal Entities in Georgia and Indiana

Georgia: Any legal boundary change made to an incorporated place in the state of Georgia must include: (1) the effective date, and (2) the acreage of the new entity. In addition, before entering the change, you must ensure that all annexation/deannexation information has been reported to the Department of Community Affairs (DCA). The DCA provides the Census Bureau a list of the entities that reported boundary changes each year. Any legal boundary changes to incorporated places not on this list will not be placed in the MAF/TIGER System. For additional information, see: <<https://www.census.gov/programs-surveys/bas/technical-documentation/methodology/state-agreements.html>>.

Indiana: Per Indiana state law, counties must provide the legal boundary updates for townships. For more information, refer to Indiana Code 36-6 Government of Townships at <http://iga.in.gov/legislative/laws/2017/ic/titles/001>>. If you have questions about required documentation for your particular jurisdiction, contact the Geography Division by phone at 1-800-972-5651 or by e-mail at geo.bas@census.gov.

2.5. Reviewing Linear Features

It is important that Census Bureau data reflects the most recent linear features to ensure that new or previously missed housing units located along these features are identified and located. When reviewing linear features (edges layer) on the Census Bureau shapefiles, first determine whether any features are missing or need to be deleted. Pay particular attention to areas that have experienced recent population growth or construction activities, as these are the most likely to possess new or altered linear features (e.g., new subdivisions, traffic circles converted to straight ways, or privately maintained roads that serve as public streets, but exclude private driveways).

You may also add attribute updates (e.g., name, class code, and address ranges) for selected features. For a complete list of MAF/TIGER Feature Class Codes (MTFCCs), review [Appendix C MTFCC Descriptions](#).

To aid in the review of linear features, GUPS allows you to import local street centerline files, hydrography layers, imagery, and other user-provided geospatial data for reference and comparison against the Census Bureau data.

In your review, please note:

- **S1100 and S1200**—If you add road features with an MTFCC of S1100 (Primary Road) or S1200 (Secondary Road), you must supply a feature name. As is the case for all road features, the feature name should be a proper name or route number.
- **Spatial Inaccuracies**—The Census Bureau will not process the wholesale spatial realignment of features to enhance spatial accuracy. If a feature is in the incorrect location, delete the feature and add it in the correct location. Take this action only if the feature is exceedingly spatially inaccurate and/or the current location (with respect to other features and boundaries) affects the tabulation of housing units to the correct geography, such as legal entities, census tracts, and census blocks.
- **Address Range Changes**—The Census Bureau accepts address range data as part of the linear feature update layer. As with other linear feature updates, you must supply the required attributes and corresponding change type for the update. In addition, because existing address ranges are not shown in our outgoing shapefiles, we recommend that participants only add address ranges to new features.

2.6. Reviewing Area Landmarks and Hydrographic Areas

The Census Bureau accepts updates to area landmarks and hydrographic 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.

Allowable updates for area landmarks and hydrographic areas are:

- Add new area landmark or hydrographic area;
- Remove area landmark or hydrographic area;

- Change or add landmark name; and
- Boundary corrections (add and remove area).

If you **add** a new area landmark or hydrographic area, please add only:

- Water bodies;
- Glaciers;
- Airports;
- Cemeteries;
- Golf courses; and
- Parks.

The Census Bureau cannot add other types of area landmark / hydrographic areas to the MAF/TIGER System at this time (even though others may already exist in the database).

Table 2 shows the acceptable MTFCCs for new area landmarks or hydrographic areas.

Table 2: Acceptable MTFCCs for New Area Landmarks / Hydrographic Areas

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

Note: If adding an MTFCC K2457 (Airport – Area Representation) area landmark, please limit the updates to major airports (major regional and international airports). The feature should show the full extent of the airport facility, that is, do not limit the addition to simply the landing strips.

Area Landmark / Hydro Area Changes May Be Delayed

The Census Bureau prioritizes boundary changes to legal areas to meet ACS, PEP, and BAS deadlines. Therefore, there may be delays in incorporating area landmark and hydrographic area changes to the MAF/TIGER System. 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.

2.7. Reviewing Point Landmarks

Because many of the point landmarks contained in the Census Bureau’s MAF/TIGER System originate from the U.S. Geological Survey’s Geographic Names Information System (GNIS), which is the official gazetteer of point landmark names for the Federal Government, point landmark updates are limited in the BAS. The Census Bureau cannot modify any point landmark imported from the GNIS database. Thus, be aware that name changes or deletions submitted for the following types of landmarks may be left unchanged:

- K2451 (Airport or Airfield);
- K2582 (Cemetery);
- C3022 (Summit or Pillar); and
- C3081 (Locale or Populated Place).

Also, due to Title 13 privacy concerns, any landmark with an MTFCC shown in [Table 3](#) below cannot be added to the MAF/TIGER System as a point landmark. The MAF/TIGER System no longer maintains any point landmarks with these MTFCCs. Landmarks with these codes could identify a residence or private business. Thus, it is also important *not* to add any of the point landmark types shown in the table using alternative MTFCCs.

Table 3: Restricted Point Landmark 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

MTFCC	Description
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
K2424	Marina
K2500	Other Workplace
K2564	Amusement Center

Point Landmark Changes May Be Delayed

The Census Bureau prioritizes boundary changes to legal areas to meet ACS, PEP, and BAS deadlines. Therefore, there may be delays in incorporating point landmark changes to the MAF/TIGER System. 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.

SECTION 3: QUALITY CONTROL AND FILE SUBMISSION

3.1 Validating Updates

Once you have completed your BAS updates, you must complete a review of your change polygons to ensure that:

1. The polygons have no unintended holes (e.g., you annexed several faces but missed a traffic circle or small pond).
2. All boundary corrections meet a minimum size threshold (very small corrections cannot be processed).

Validate Often

Validation tools in GUPS can be accessed at any time while you are working in the application. We suggest you utilize them as you work to identify errors early and avoid extensive rework. Steps to use the Geographic Review tool and the Review Change Polygons tool are included in **Section 6.5: How to Use GUPS Review and Validation Tools**.

3.2 Submitting Files Through SWIM

Prompt submission of updates is appreciated. It benefits the Census Bureau—allowing us to review the files early, provide feedback, and avoid backups in file processing—and you—guaranteeing your updates are recorded accurately and are reflected in the latest releases of Census Bureau data products.

For those with Internet access, all BAS submissions must be made via the Secure Web Incoming Module (SWIM). Due to security reasons, we cannot accept files sent via e-mail or through our alternate ftp sites.

If you indicated on your “*Annual Response Form*” that you wished to receive the GUPS application, you will automatically receive the SWIM URL and a registration token via e-mail. The e-mail should arrive 5 days after the Annual Response is completed online (or 5 business days after the Census Bureau receives the paper form).

The registration token allows you to establish a personal SWIM account. If you do not receive a SWIM token after the amount of time specified, e-mail geo.bas@census.gov or call 1-800-972-5651.

Once registered, you will no longer need the token to log into the system.

Current SWIM Users

If you are a participant in another Census Bureau partnership program, or participated in a previous BAS year, and already have a SWIM account, you may use your current account to submit files for the BAS. You do not need to set up a new account.

For step-by-step instructions to submit files through the SWIM, refer to **Table 49**. For those without Internet access, see **Section 3.3** below.

3.3 Submitting Files on DVD

If you do not have Internet access, you may copy your ZIP file(s) to DVD for submission. The DVD should be mailed to:

U.S. Census Bureau
National Processing Center
ATTN: BAS Returns, Bldg 63E
1201 East 10th Street
Jeffersonville, IN 47132

PART 2: HOW TO USE GUPS

SECTION 4: REQUIREMENTS AND INSTALLATION

This section includes information needed to use GUPS. It offers a description of the GUPS application and gives specific instructions (in the form of Step / *Action* tables) for how to use GUPS to make BAS updates. Reminder: this guide is equipped with shortcuts to subjects that respondents may want to jump to directly. To move directly to one of these sections, click on the [linked](#) text.

Section 4: Requirements and installation

- Getting Started - Lists the hardware and software requirements for GUPS and SWIM; and
- How to Install GUPS - Provides instructions for installing the application.

Section 5: Using GUPS (Basics and Map Management)

- How to Access BAS Shapefiles - Provides instructions to open GUPS, start a project, and load shapefiles;
- How to Start a New Project Using GUPS to Import Data from the Census Bureau's BAS Website (Recommended Method);

- Download Shapefiles from the BAS Web site to Your Hard Drive;
- Download Shapefiles from the Census Bureau ftp2 Site;
- Use GUPS Interface - Including the Menu, Toolbars, Table of Contents or Map Legend, and the Map View area;
- Menu & Toolbars - Offers instructions for using the tools available through the menu and toolbars;
-
- [How to Import User-Provided Data into GUPS](#);
- How to Upload User-Provided Data Layers; and
- How to Import a Shared ZIP Shapefile.

Section 6: Making BAS Updates in GUPS

- How to Update Legal Boundaries - Gives instructions to make required and optional updates in the application;
- Adding a New Legal Entity (New Incorporation) and Deleting an Entity (Disincorporation)
- Making a Boundary Update on a County Line
- Making a Legal Boundary Change for a Consolidated City
- Making a Boundary Correction (Add Area/Remove Area)
- Adding a Geographic Corridor and [How to Add a Geographic Offset](#)
- How to Update Linear Features;
- How to Update Area Landmarks and Hydrographic Areas;
- How to Update Point Landmarks;
- How to Use GUPS Review and Validation Tools;

[Provides instructions on How to](#)

- Export a Printable Map; and
- How to Export ZIP Files to Share/Submit.

Section 7: Submitting Your Files to the Census Bureau Through SWIM

- Provides instructions to submit files to the Census Bureau through SWIM.

4.1 Getting Started

Download GUPS from the BAS Web site at: <<https://www.census.gov/programs-surveys/bas/technical-documentation/gups-instructions.html>>. If you requested and received the GUPS package, it should include a DVD containing the GUPS software, respondent guides, and a readme text file.

Before beginning the installation, check your computer to verify that it has the capabilities need to run GUPS (using **Table 4** below).

GUPS is based on QGIS (formerly known as Quantum GIS), a free and open-source desktop geographic information system application. You can learn more about QGIS at <<http://www.qgis.org/en/site/>>. The GUPS application was developed for use in a desktop PC or a network environment.

Table 4 lists the hardware and software requirements to install and run GUPS. Also included are the software requirements to: (1) play training videos available within the application and (2) submit files through the SWIM Web site.

Table 4: GUPS Hardware and Software Requirements

Hardware	Operating System	Browser
<p>Disk Space Needed to Run GUPS: 2.0 GB</p> <p>Disk Space Needed to Store Shapefiles: Shapefile sizes vary. To view the size of your shapefiles, select a file/folder, right-click, and choose Properties in the drop-down menu. <i>The Files Properties box opens and displays the file/folder sizes.</i> Select multiple files/ folders in the list to view their properties via the same method.</p>	<p>Windows: To run GUPS, users need one of the following Windows operating systems:</p> <ul style="list-style-type: none"> • Windows XP • Windows Vista • Windows 7 • Windows 8 • Windows 10 <p>Apple Mac OS X: Mac OS X users must secure a license for Microsoft Windows and use a Windows bridge. The suggested bridge software is Boot Camp, which comes pre-installed on all Mac computers. See instructions for using Boot Camp at: <https://www.apple.com/support/bootcamp/getstarted/>.</p>	<p>Minimum Browser Versions to Play Training Videos:</p> <ul style="list-style-type: none"> • Internet Explorer 9 • Google Chrome 3 • Mozilla Firefox 3.5 • Apple Safari 4 <p>Minimum Browser Versions to Use SWIM:</p> <ul style="list-style-type: none"> • Internet Explorer 8 • Google Chrome 3 • Mozilla Firefox 3.5 • Apple Safari 4.1.3

Hardware	Operating System	Browser
RAM: <ul style="list-style-type: none"> 4 GB recommended minimum 	Important Note: Since Boot Camp requires you to restart your computer to set up the bridge, be sure to print the instructions provided at the URL above before you begin.	

Depending on the Windows OS version, the GUPS dialog boxes may have a different appearance than the screenshots contained in the user guide, although the content is the same.

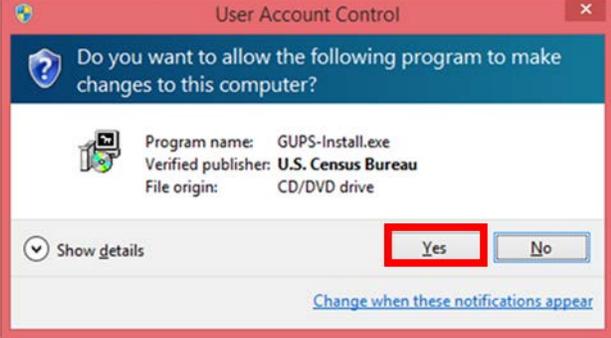
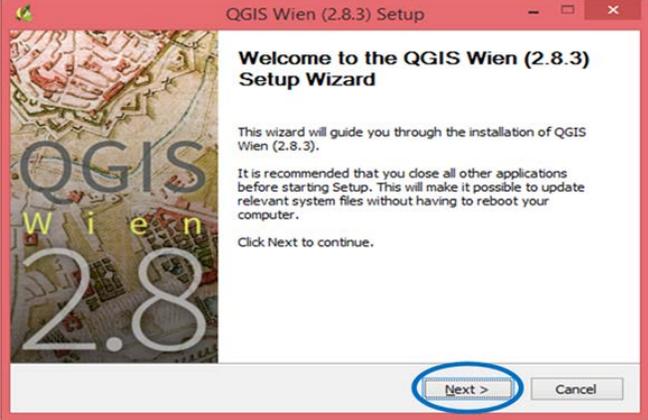
4.1 How to Install GUPS

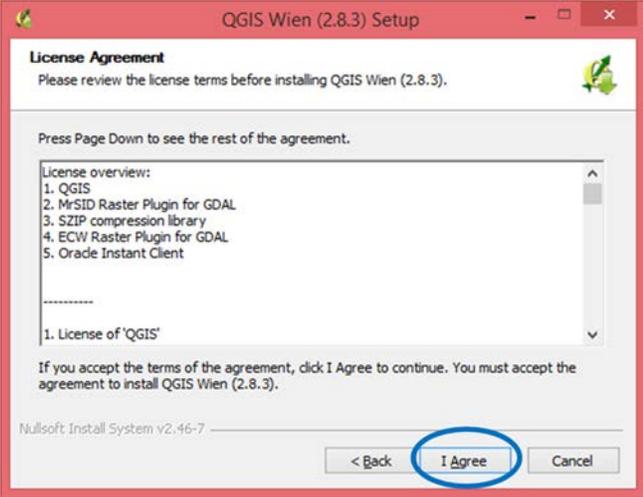
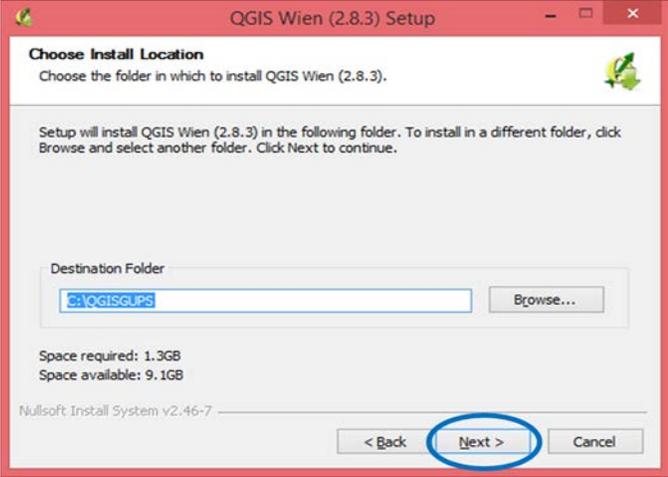
To install the GUPS application you must have Administrator privileges for your computer. If you already have GUPS downloaded, please make sure you are using the most current version. Compare the version on your computer with the one provided on the Census Bureau’s installation DVD to acquire the latest version. To complete the installation, follow the steps in [Table 5: Install the GUPS Application](#).

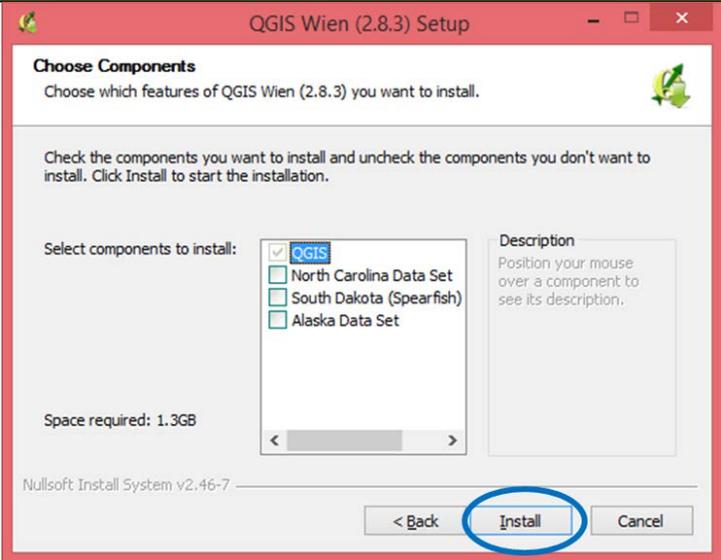
Note: If you already have a version of GUPS installed, please check to make sure you are running the latest version. Go to the **GUPS** tab and click the **About GUPS** option in the drop-down menu to find the GUPS version number. If you are not running the latest version, download and follow the setup instructions which will automatically uninstall the old version before it installs the latest GUPS version.

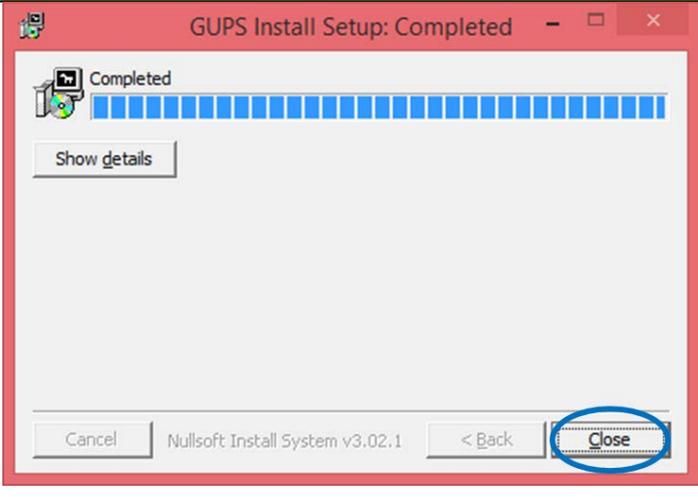
Table 5: Install the GUPS Application

Step	Action and Result
Step 1	<p>Click the direct download link <https://www2.census.gov/geo/pvs/gups/> or place the installation DVD into your computer’s DVD drive. <i>For some users, a Windows protected your PC pop-up box may appear.</i></p>  <p>To continue, click ‘More info’, then select ‘Run anyway?’.</p>
Step 2	<p>Other users may receive a user account control pop-up that asks, “Do you want to run this file?”, “Do you want to allow the following program from an unknown publisher to make changes to this computer?”, or a similar query. See an example below.</p>

Step	Action and Result
	 <p data-bbox="345 619 1357 678">If you receive such a pop-up, click 'Run', 'Yes', 'Allow', or an option that allows you to proceed. <i>The software should begin to run automatically.</i></p>
<p data-bbox="220 716 302 741">Step 3</p>	<p data-bbox="345 716 1398 774">If the software does not run automatically, open Windows Explorer, navigate to your DVD drive, and double-click on the file named Setup-7.0.0-x.bat.</p> <p data-bbox="345 791 1414 821">Note: The name of this file may vary slightly, but it will be the only setup .bat file available.</p> <p data-bbox="345 837 1414 867">If the software still does not run properly, contact your System Administrator for assistance.</p>
<p data-bbox="220 905 302 930">Step 4</p>	<p data-bbox="345 905 1341 934"><i>When the installer opens, the Welcome to the QGIS Setup Wizard screen appears.</i></p>  <p data-bbox="345 1404 1369 1463">Before proceeding, close all other programs or applications you have open. Once other programs and applications are closed, click the Next button.</p>

Step	Action and Result
<p>Step 5</p>	<p><i>The License Agreement screen appears.</i></p>  <p>Read the License Agreement and click the I Agree button to continue.</p>
<p>Step 6</p>	<p><i>The Choose Install Location screen opens. We recommend you install the application at the default location (i.e., C:\Program files\QGISGUPS).</i></p>  <p>To begin the installation, click Next to continue.</p>
<p>Step 7</p>	<p><i>The Choose Components screen opens.</i></p>

Step	Action and Result
	 <p>'<input checked="" type="checkbox"/> QGIS' in the Select components to install field is grayed out since it is the default. You do not need to select it, simply click Install to continue.</p>
	<p>If you want to review a previous screen or reread the license agreement, click the Back button (each screen contains this button). <i>This returns you to the previous screen.</i></p>
<p>Step 8</p>	<p>The software should take between 5 and 10 minutes to install. <i>When it is finished, the Completing the QGIS GUPS Setup Wizard screen opens.</i></p>  <p>Click the Finish button.</p>
<p>Step 9</p>	<p>After you click finish, the GUPS Install Setup: Completed screen opens showing the status of the installation of GUPS on your computer. When completed, you click the close button on the following screen.</p>

Step	Action and Result
	
<p>Step 10</p>	<p>To complete the installation, click the Close button at the bottom of the GUPS Install Setup: Completed Setup Wizard screen. <i>Once the application installs, a QGIS icon appears on your desktop.</i></p> 

SECTION 5: USING GUPS (BASICS AND MAP MANAGEMENT)

After successfully installing GUPS, you are ready to start your BAS updates. There are three ways to retrieve shapefiles when starting a new project:

- From the Census Web site (loads directly into GUPS);
- From DVD (if one was requested); and
- From My Computer (if you downloaded them to your harddrive).

Table 6 shows the steps to open GUPS and start a new project using the Census Web site. shows the same steps to open GUPS, but starts a new project using the Census provided DVD or My Computer (downloaded Census shapefiles saved to your hard drive).

5.1 How to Access BAS Shapefiles

BAS shapefiles from the BAS Web site can be pulled directly into the application when working in GUPS. Users can load the shapefiles as needed or load multiple county files at once. This is the preferred method for loading the Census Bureau's BAS Shapefiles into GUPS as it ensures that required files are placed in the correct location for the application to access.

Another option for loading files is to download the shapefiles to your hard drive from the BAS Web site (or from the Census Bureau ftp2 site), then import them into GUPS. BAS shapefiles are also available for download from the BAS Web site here: <https://www.census.gov/geographies/mapping-files/2018/geo/bas/2018-bas-shapefiles.html>. Instructions for how to download Census Bureau shapefiles to your hard drive appear in **Table 6** and **Error! Reference source not found.** Downloading files to your hard drive is not the preferred method when working in GUPS, and should be used only when necessary (e.g., you need additional data layers that GUPS does not automatically load and want to pull them in as user-provided data).

If you have requested to receive the shapefiles on DVD, you can also load the files directly into GUPS from the DVD. Instructions for how to load shapefiles are contained in **Table 6: Start a New Project Using Shapefiles from the BAS Web site.**

Whether the files are pulled from the BAS Web site or from the DVD, the GUPS application unzips them and places them into a pre-established folder created on your computer's home directory during the installation process (C:\GUPSGIS\gupsdata\BAS2018\shape). It then displays them in the application. GUPS then manages the files for you. You do not need to take any further action.

CAUTION!

Regardless of the source of the shapefiles, it is important that you **DO NOT CHANGE** any shapefile or folder name. The files and folders must have the *exact* names given for the GUPS application to recognize and load them.

5.2 How to Start a New Project Using GUPS to Import Data from the Census Bureau’s BAS Website (Recommended Method)

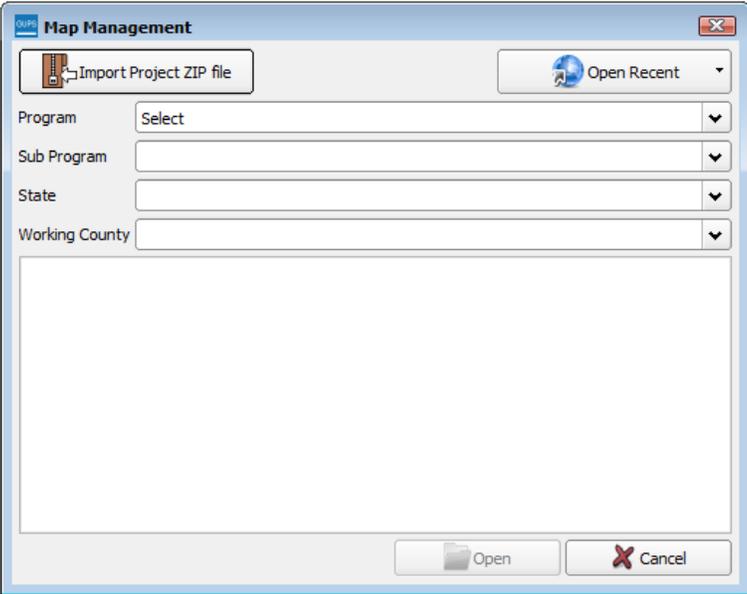
To open the GUPS application and begin your BAS updates, follow the steps in [Table 6](#) below. Before beginning, note that:

1. If you wish to practice using GUPS without committing the changes you make, simply exit the system without saving. Before the system closes, it will give you the option to discard the changes.
2. If you feel comfortable with the system, but you do not want to make all your changes in one session, simply save your changes, then close the system. When you open GUPS later, it will allow you to reopen the project and continue working.

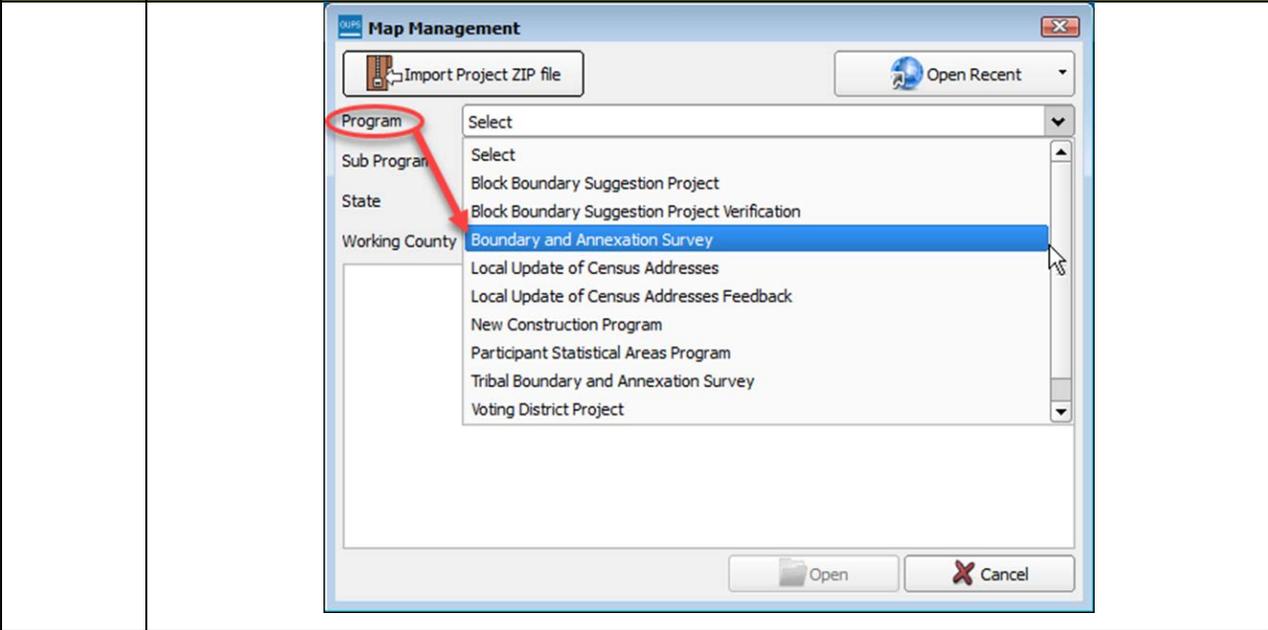
Note: In all the Action/Result tables, the action is usually a command or action you need to perform and the Result(s) of the action will be shown in italics. For example: if you click the QGIS icon on your desktop, *the software should begin to run automatically.*

Table 6: Start a New Project Using Shapefiles from the BAS Web site

Step	Action and Result
<p>Step 1</p>	<p>Double-click the QGIS icon on your desktop.</p> <div data-bbox="837 947 959 1083" data-label="Image"> </div> <p><i>The QGIS splash screen appears. (Note: QGIS is the open-source platform on which GUPS is built.)</i></p> <div data-bbox="483 1173 1317 1570" data-label="Image"> </div>
<p>Step 2</p>	<p>Wait until the application loads (If you have an older computer, this may require a few minutes). <i>When the GUPS application has loaded, the GUPS main page opens and the QGIS Tips! box appears.</i></p>

Step	Action and Result
	 <p>Note: Since GUPS was built on the QGIS open-source platform, you may see references to QGIS in several locations within the GUPS application.</p>
<p>Step 3</p>	<p>If you wish to view QGIS system tips, click the Next button to read the first tip. Thereafter use the Previous and Next buttons to navigate within tips. If you do not wish to see tips again, click the checkbox in the bottom left-hand corner that reads 'I've had enough tips, don't show this on start up any more!'</p>
<p>Step 4</p>	<p>To begin a GUPS project, close the QGIS Tips! box by clicking the OK button. <i>The box closes and the Map Management dialog box opens, as shown below.</i></p> 
<p>Step 5</p>	<p>In the Map Management dialog box, use the drop-down menu next to the Program field to select your program, 'Boundary and Annexation Survey'. '<i>Boundary and Annexation</i>' populates the field.</p>

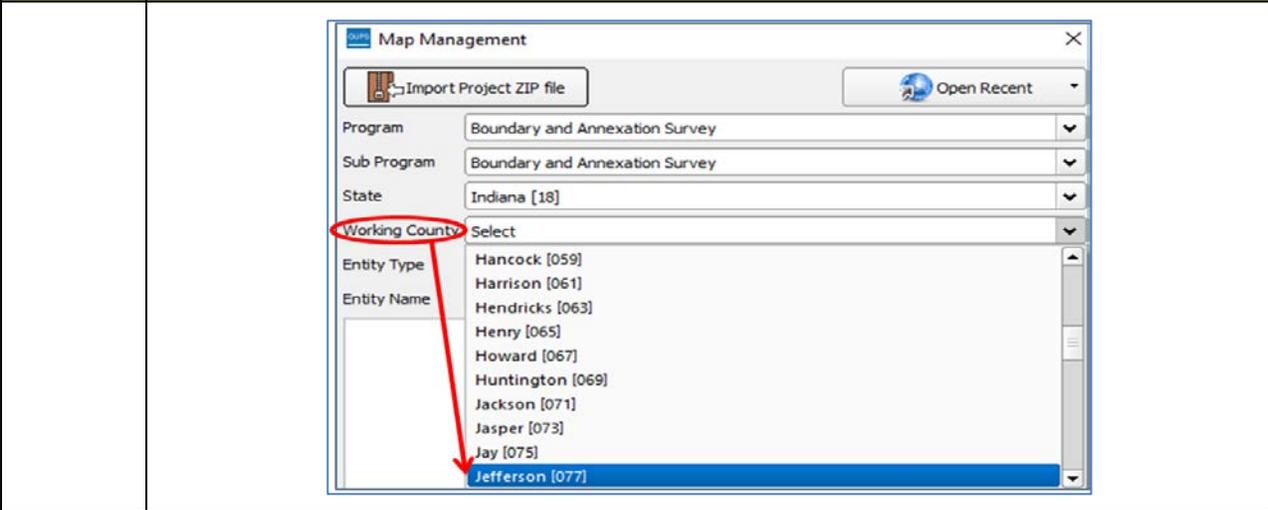
Step	Action and Result
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Step 6	<p>In the Sub Program field, select 'Boundary and Annexation Survey'.</p> <p>In the State field, use the drop-down menu to select your state. The scroll bar to the right allows you to move up and down the list of states.</p> <p>This example uses Indiana.</p>
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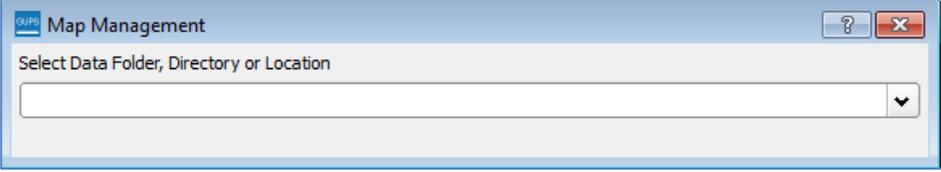
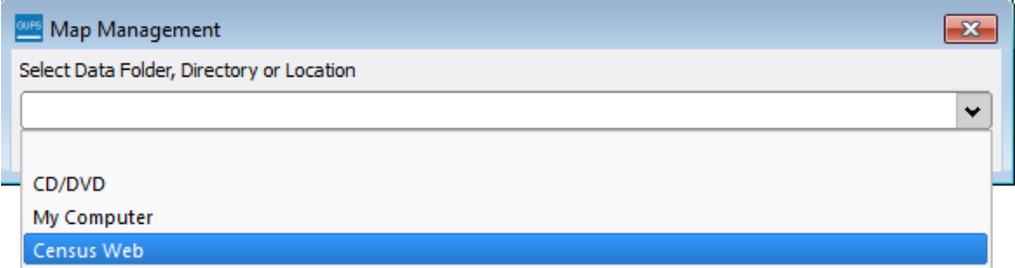
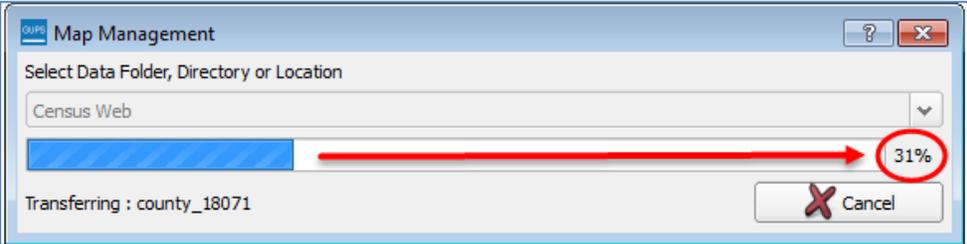
Step 7	<p>In the Working County field, use the drop-down menu to select the county for which you wish to make updates.</p> <p>This example uses Jefferson County, Indiana.</p>
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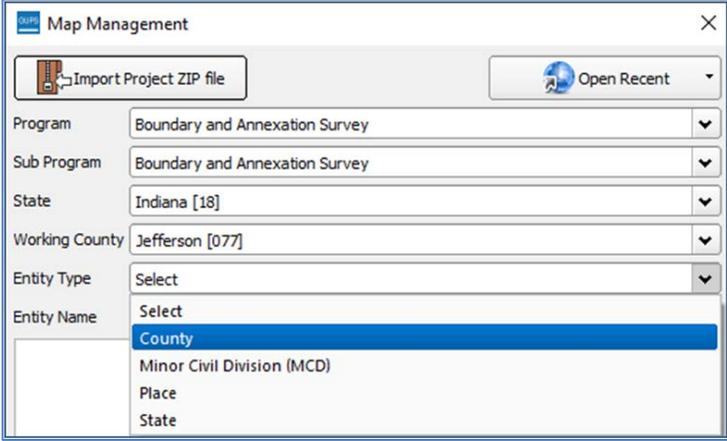
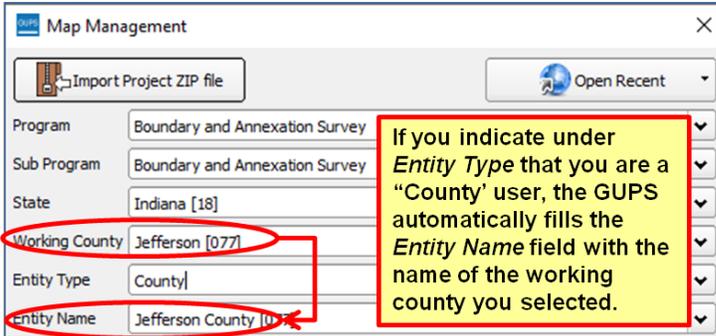
Step	Action and Result
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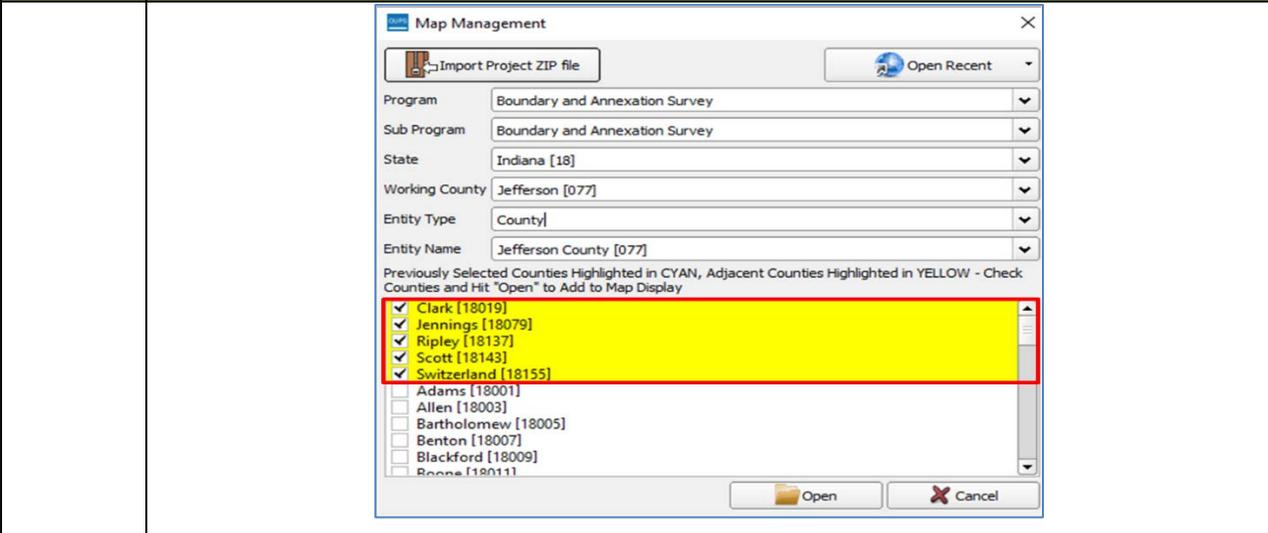
	<h3 style="color: #4F7942;">Independent City Users</h3>
	<p>Note that the Working County drop-down menu is sorted by FIPS code. Thus you must search for your city's code rather than assuming it will appear alphabetically. A portion of the Working County drop-down list (we used the <u>state-State</u> of Virginia for this example) appears below, showing independent cities near the end of the list because their FIPS codes are higher.</p>

Step 8	After you select the working county or counties, GUPS asks you to specify the location from which you want to pull the county's (or county equivalent's) shapefile. <i>The Select Data Folder, Directory or Location box opens.</i>
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Step	Action and Result
	
	<p>GUPS will only ask you to specify a location the first time you open a county's shapefile. When you come back to work on the same county again, the shapefile will automatically load, even if you made no changes in your first session.</p>
<p>Step 9</p>	<p>In the Select Data Folder, Directory or Location box drop-down menu, select the location from which you wish to pull the file. This example assumes the user is pulling the data from the BAS Web site, so click on 'Census Web' in the drop-down menu.</p> 
<p>Step 10</p>	<p>Once you click on 'Census Web', the shapefile for the county begins to load and progress is displayed by a blue striped bar (color may vary), with the percentage of the upload completed displayed to the right.</p> 
<p>Step 11</p>	<p>As GUPS loads the data, it unzips and copies the files to a folder that was created on your computer's home directory during the installation process. It then pulls the file into the GUPS application.</p>
<p>Step 12</p>	<p>Once finished loading, the Map Management screen allows you to now enter the the entity type.</p> <p>In the Entity Type field drop-down menu, select the entity type you represent. The options are 'Consolidated City', 'County', 'Minor Civil Division (MCD)', 'Place', and 'State'.</p> <p>Note: The options you see may vary, depending on the entity types your state contains. Independent city users should select 'Place'.</p> <p>This example assumes a 'County' user.</p>

Step	Action and Result
	
<p>Step 13</p>	<p>After the entity type is selected, an Entity Name field appears. Since you selected the entity type 'County', and you already named Jefferson County as your working county, GUPS automatically fills the Entity Name field with 'Jefferson County.'</p> 
	<p>If you select 'Consolidated City' as your Entity Type, the name of the consolidated city-county government automatically fills the Entity Name field.</p> <p>If you select 'Place' as your Entity Type, the Entity Name field is blank. A drop-down menu, which lists all incorporated places within the working county, allows you to select your entity.</p> <p>If you select 'State' as your entity type, the state you selected in the State field automatically fills the Entity Name field.</p>
<p>Step 14</p>	<p>In all cases, a list of the counties in the state appears at the bottom of the Map Management dialog box.</p> <p>Adjacent counties (counties whose borders touch the working county) are highlighted in yellow and checked.</p>

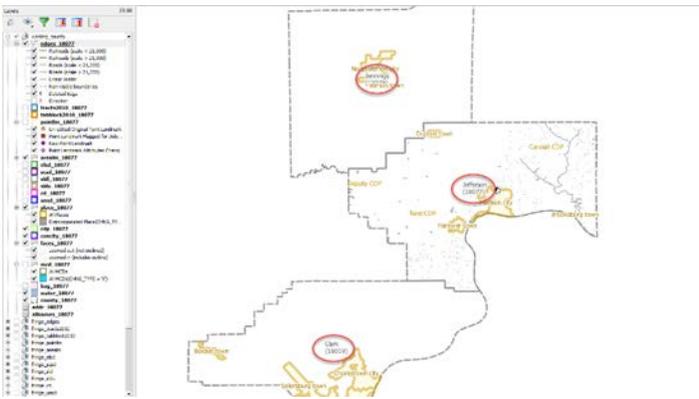
Step	Action and Result
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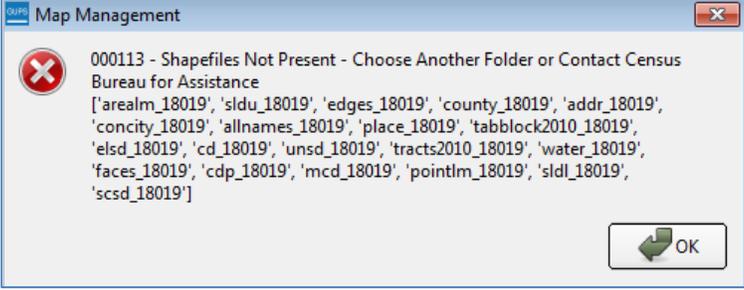
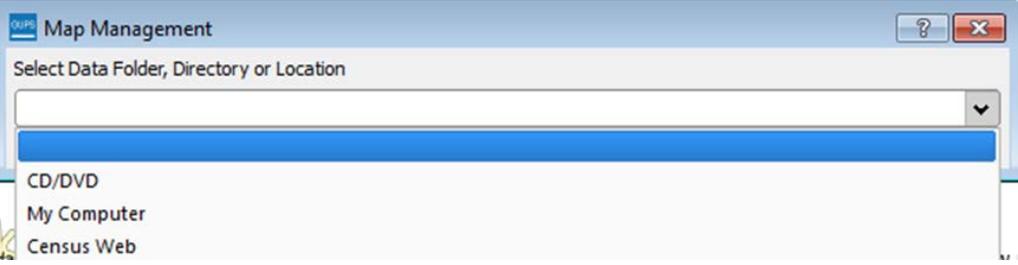


Step 15	<p>All checked counties will display in the Map View. Uncheck the box for any county you do not wish to see.</p> <p>To select additional counties to display (you may choose up to a total of 10 at once), check the checkboxes next to them. Scroll down using the scroll bar to the right to see the full list of counties.</p>
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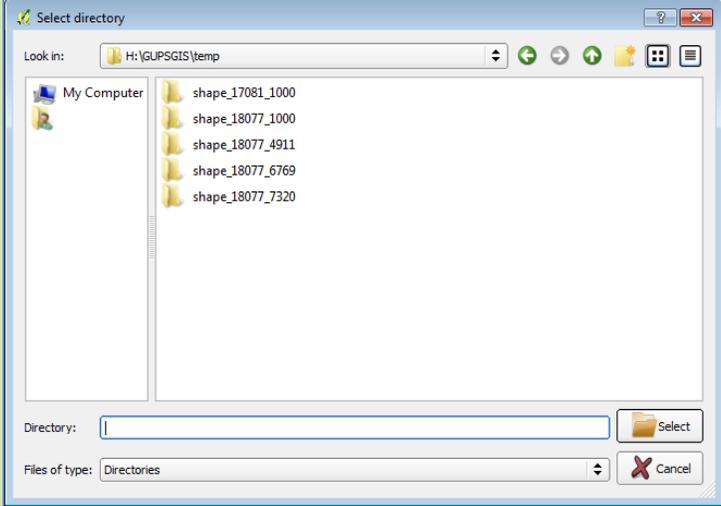
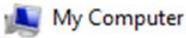
Step 16	<p>For this example, we select neighboring Clark and Jennings Counties. Check the checkboxes next to these counties, then click the Open button at the bottom of the Map Management dialog box.</p>
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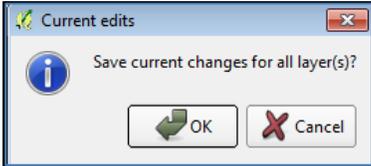
Step 18	<p>As GUPS loads the data, it unzips and copies the files to a folder that was created on your computer's home directory during the installation process. It then pulls the file into the GUPS application.</p> <p><i>The data layers for Jefferson County appear in the Table of Contents and the maps for the selected adjacent (or other selected counties) appear next to that for the working county in Map View. In our example, as shown below, Map View displays the maps for Jennings and Clark Counties next to that for Jefferson County.</i></p>
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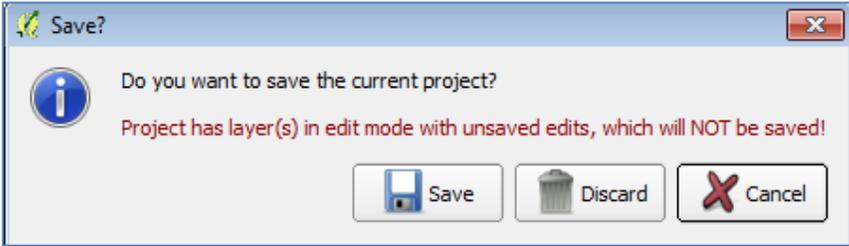


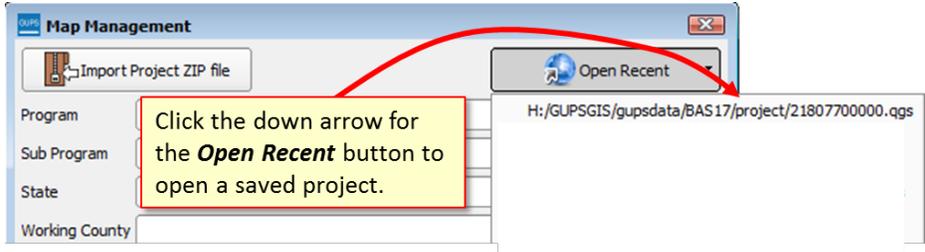
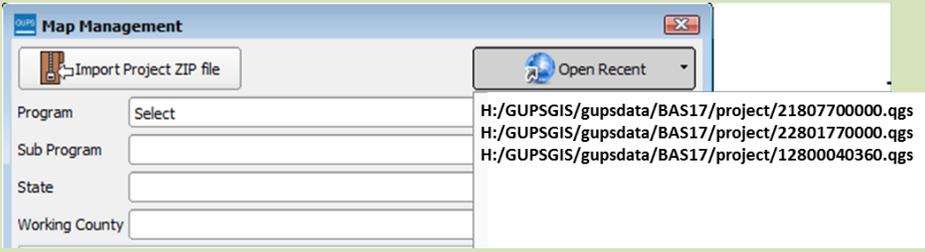
Step	Action and Result
<p>Step 20</p>	<p>If for any reason shapefiles are missing from the location you chose in the Select Data Folder, Directory or Location drop-down menu, or the files are corrupted and cannot be loaded, you will receive an error message such as the one shown below.</p> 
<p>Step 21</p>	<p>Click OK to return to the Map Management dialog box.</p>
<p>Step 22</p>	<p>You may try loading the file(s) from another location. Simply click the Open button at the bottom of the Map Management box. </p> <p><i>The Select Data Folder, Directory or Location dialog box reopens, allowing you to select another option for securing the files.</i></p> 
	<p>If you have trouble loading shapefiles using the 'Census Web' and 'CD/DVD' options, follow the instructions in Error! Reference source not found. or Table 8 to download the files to your computer from the BAS Web site or Census Bureau's ftp2 site. Then pull them into GUPS using the 'My Computer' option in the Select Data Folder, Directory or Location drop-down menu. <i>When you select 'My Computer' the Select directory screen opens.</i></p>

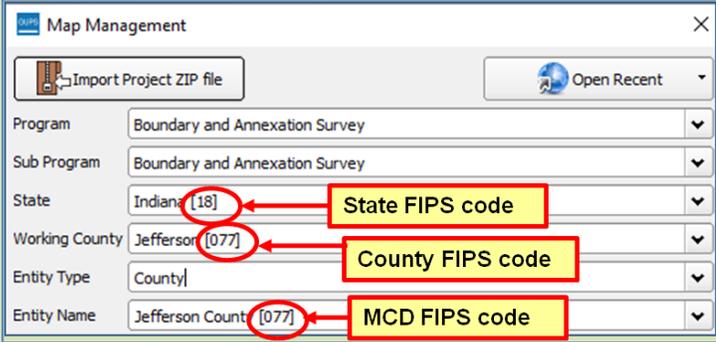
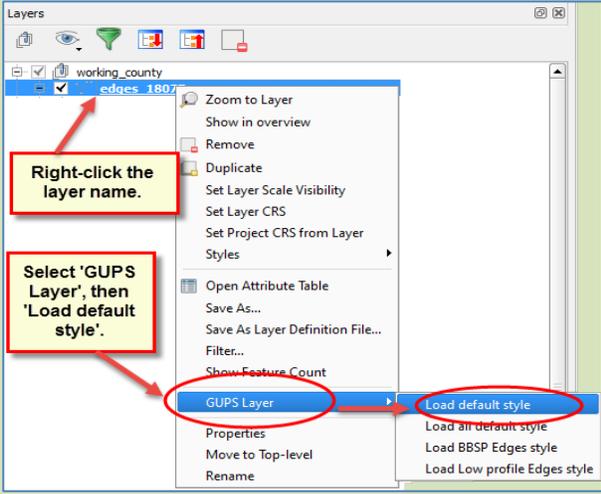
Step	Action and Result
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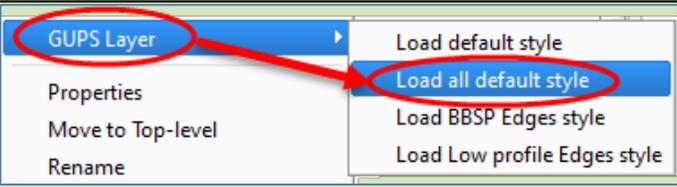
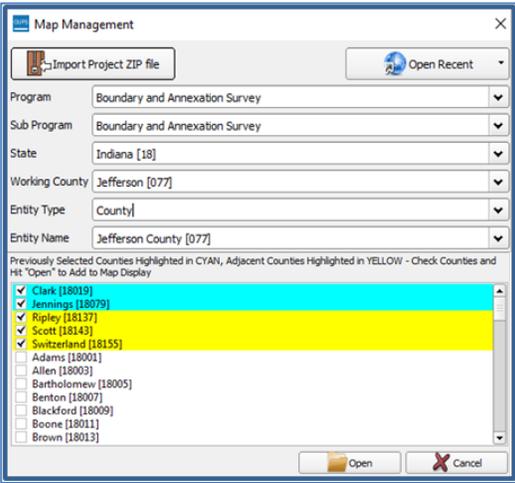
	 <p>On this screen, click on the My Computer icon in the left-hand corner. </p> <p>Navigate to the location of the files you want to load, then select the files and click on the Select button at the bottom of the Select directory screen. <i>GUPS unzips and loads the files, then moves them to the pre-established folder on your home directory.</i></p>
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<p>Step 23</p>	<p>After working on a project, be sure to save before exiting. Otherwise your edits will be lost. To save, click the Save icon on the Standard toolbar.</p>  <p>The Current edits pop-up box asks if you want to save the changes for all layers.</p>  <p>Click OK. <i>The changes are saved.</i></p>
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<p>Step 24</p>	<p>If you do not wish to save your changes, simply close the application (click the red X in the upper right-hand corner of the main GUPS page). A Save? pop-up warning asks if you want to save the project.</p>  <p>Click Discard not to save your project.</p>
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Step	Action and Result
<p>Step 25</p>	<p>To reopen a saved project, in the Map Management dialog box, click the down arrow next to the Open Recent button. <i>The drop-down menu opens with your project listed.</i></p> 
	<p>If you share a computer with other GUPS users, multiple project files may appear in the drop-down menu, as shown below. Here three separate users in Mississippi have created projects on the same computer.</p>  <p>To identify which of the entries in the list represents your project, look at its number string. This string comprises your BAS ID. Each BAS ID is 11 digits. The first digit indicates the Entity Type (i.e., the user type) (0 = consolidated city; 1 = incorporated place; 2 = county; 3 = MCD; and 7 = state). The next two digits are the state FIPS code. The following three digits are the FIPS code for the working county (these digits are '000' for incorporated places). The final five digits are the FIPS code for the specific incorporated place, consolidated city, or MCD that created the project (for counties, these digits are '00000' since the county is already identified in the string).</p> <p>The number string, 12800040360.qgs reflects a project created by a Place user (for the City of Lena) in Mississippi, where 1 = incorporated place; 28 = Mississippi FIPS code; 000 = placeholder number for non-county entities (if the user were a county user this number would be the FIPS code for Chickasaw County, or 155); and 40360 = the place FIPS code for Lena.</p> <p>If you do not know the BAS ID information for your particular geography, it is available within the Map Management dialog box. Below is an example for Hanover Township, an MCD in Jefferson County, Indiana.</p>

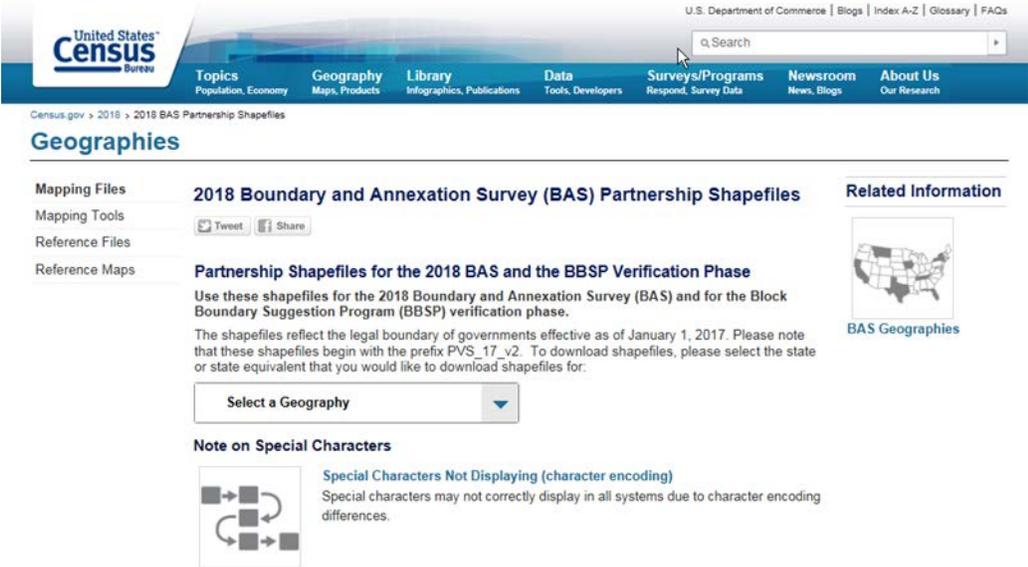
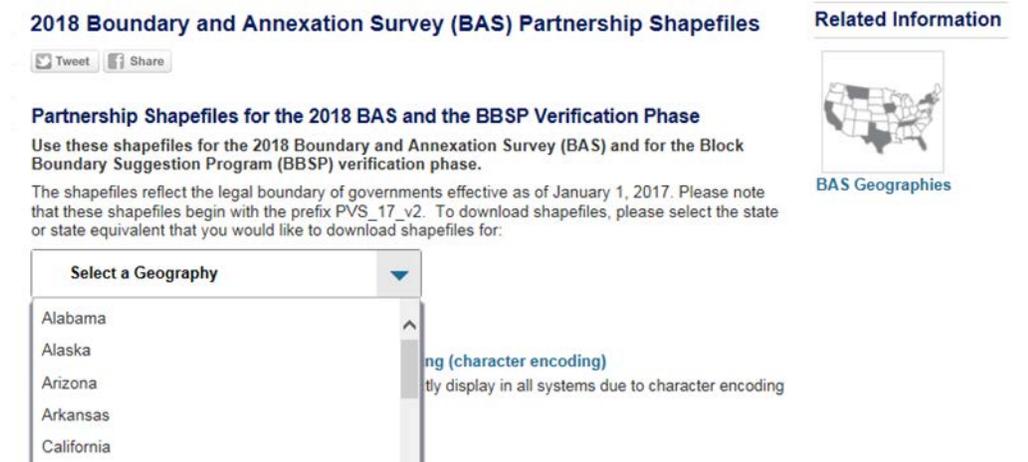
Step	Action and Result
	
<p>Step 26</p>	<p>Once you have identified the correct file to reopen, select it from the list. <i>The map for the project automatically loads and the layers show in the Table of Contents.</i></p>
	<p>Census Bureau-defined default layers and view settings are loaded each time you start a new project in GUPS.</p> <p>If you change these settings for a project, when you save the project your new settings are also saved. Thus, when you reopen the project, the Table of Contents and Map View display the layers and the map according to the settings you were last using rather than returning to the Census Bureau default settings.</p> <p>To restore the default settings for a layer:</p> <ul style="list-style-type: none"> • Click on the layer in the Table of Contents. <i>A drop-down menu opens.</i> • In the drop-down menu, select 'GUPS Layer'. <i>A submenu opens.</i> • In the submenu, select 'Load default style' (see illustration below).  <p>To reset the default settings for all layers, select 'Load all default style.'</p>

Step	Action and Result
	
<p>Step 27</p>	<p>When you reopen a project, also note that any previously selected adjacent (or other selected) counties appear in cyan blue and remain checked. Other adjacent counties that have not previously been selected appear in yellow and are also checked, as shown below.</p>  <p>You may load files for additional counties at this point if you wish.</p>
	<p style="text-align: center;">Loading Multiple Files at Once</p> <p>The limit to how many county datasets can be loaded at once is 11 (the working county plus 10 other counties). To load shapefiles for additional counties, after the first 10 are loaded:</p> <ul style="list-style-type: none"> • Leave the same working county selected in the Working County field. • Uncheck the already loaded counties in the Map Management dialog box list. • Check the checkboxes for the additional counties (up to 10) that you wish to add. Click the Open button and after the Select Data Folder, Directory or Location box opens, use the drop-down menu to select the source of the files. Repeat this process as many times as needed.

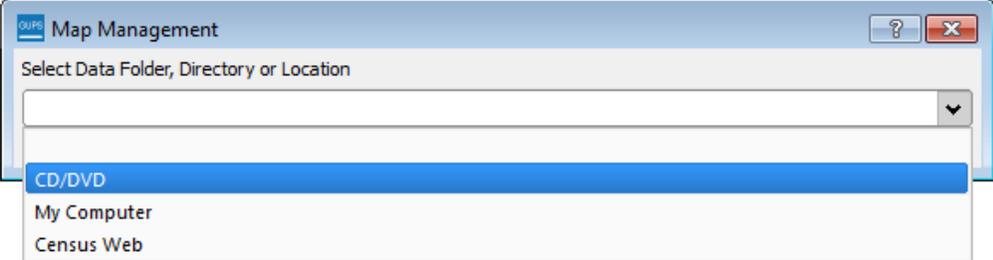
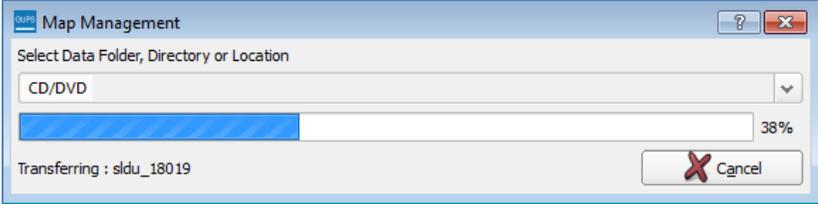
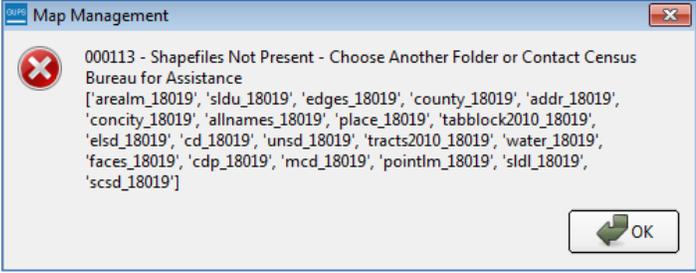
5.3 Download Shapefiles from the BAS Web site to Your Hard Drive

Follow the steps in below to download the files from the BAS Web site to your hard drive.

Table 7: Download Shapefiles from the BAS Web site to a Hard Drive

Step	Action and Result
<p>Step 1</p>	<p>Enter the URL <https://www.census.gov/geographies/mapping-files/2018/geo/bas/2018-bas-shapefiles> into your Internet browser. <i>The Boundary and Annexation Survey (BAS) Partnership Shapefiles page opens.</i></p>  <p>The screenshot shows the top of the Census.gov website. The navigation menu includes: Topics (Population, Economy), Geography (Maps, Products), Library (Infographics, Publications), Data (Tools, Developers), Surveys/Programs (Respond, Survey Data), Newsroom (News, Blogs), and About Us (Our Research). The main content area is titled 'Geographies' and features a '2018 Boundary and Annexation Survey (BAS) Partnership Shapefiles' section. This section includes a 'Select a Geography' dropdown menu, a 'Note on Special Characters' section with a diagram, and a 'Related Information' section with a map of the United States and a link to 'BAS Geographies'.</p>
<p>Step 2</p>	<p>Under '2018 Partnership Shapefiles', in the 'Select a Geography' drop-down box, select the name of state your entity is located in from the drop-down list '. <i>The [State Name] Partnership Shapefile Batch Download page opens.</i></p>  <p>The screenshot shows the same page as in Step 1, but with the 'Select a Geography' dropdown menu open. The dropdown list displays the following states: Alabama, Alaska, Arizona, Arkansas, and California. The 'Note on Special Characters' section is also visible, with a diagram showing characters being swapped. The 'Related Information' section remains on the right side of the page.</p>

Step	Action and Result																																																																																													
<p>Step 3</p>	<p>To select the county(ies) you need, click the box next to it. You may select up to five (5) counties at a time. Once you have selected the counties needed, hit the “Submit” button at the bottom left hand side of the page.</p> <div data-bbox="396 384 1373 842"> <p>Indiana Partnership Shapefile Batch Download</p> <p>Please select up to 5 individual counties to download the shapefiles for those counties.</p> <table border="0"> <tr> <td><input type="checkbox"/> Adams County (18001)</td> <td><input type="checkbox"/> Hendricks County (18063)</td> <td><input type="checkbox"/> Pike County (18125)</td> </tr> <tr> <td><input type="checkbox"/> Allen County (18003)</td> <td><input type="checkbox"/> Henry County (18065)</td> <td><input type="checkbox"/> Porter County (18127)</td> </tr> <tr> <td><input type="checkbox"/> Bartholomew County (18005)</td> <td><input type="checkbox"/> Howard County (18067)</td> <td><input type="checkbox"/> Posey County (18129)</td> </tr> <tr> <td><input type="checkbox"/> Benton County (18007)</td> <td><input type="checkbox"/> Huntington County (18069)</td> <td><input type="checkbox"/> Pulaski County (18131)</td> </tr> <tr> <td><input type="checkbox"/> Blackford County (18009)</td> <td><input type="checkbox"/> Jackson County (18071)</td> <td><input type="checkbox"/> Putnam County (18133)</td> </tr> <tr> <td><input type="checkbox"/> Boone County (18011)</td> <td><input type="checkbox"/> Jasper County (18073)</td> <td><input type="checkbox"/> Randolph County (18135)</td> </tr> <tr> <td><input type="checkbox"/> Brown County (18013)</td> <td><input type="checkbox"/> Jay County (18075)</td> <td><input type="checkbox"/> Ripley County (18137)</td> </tr> <tr> <td><input type="checkbox"/> Carroll County (18015)</td> <td><input type="checkbox"/> Jefferson County (18077)</td> <td><input type="checkbox"/> Rush County (18139)</td> </tr> <tr> <td><input type="checkbox"/> Cass County (18017)</td> <td><input type="checkbox"/> Jennings County (18079)</td> <td><input type="checkbox"/> St. Joseph County (18141)</td> </tr> <tr> <td><input type="checkbox"/> Clark County (18019)</td> <td><input type="checkbox"/> Johnson County (18081)</td> <td><input type="checkbox"/> Scott County (18143)</td> </tr> <tr> <td><input type="checkbox"/> Clay County (18021)</td> <td><input type="checkbox"/> Knox County (18083)</td> <td><input type="checkbox"/> Shelby County (18145)</td> </tr> <tr> <td><input type="checkbox"/> Clinton County (18023)</td> <td><input type="checkbox"/> Kosciusko County (18085)</td> <td><input type="checkbox"/> Spencer County (18147)</td> </tr> <tr> <td><input type="checkbox"/> Crawford County (18025)</td> <td><input type="checkbox"/> LaGrange County (18087)</td> <td><input type="checkbox"/> Stark County (18149)</td> </tr> <tr> <td><input type="checkbox"/> Daviess County (18027)</td> <td><input type="checkbox"/> Lake County (18089)</td> <td><input type="checkbox"/> Steuben County (18151)</td> </tr> <tr> <td><input type="checkbox"/> Dearborn County (18029)</td> <td><input type="checkbox"/> LaPorte County (18091)</td> <td><input type="checkbox"/> Sullivan County (18153)</td> </tr> <tr> <td><input type="checkbox"/> Decatur County (18031)</td> <td><input type="checkbox"/> Lawrence County (18093)</td> <td><input type="checkbox"/> Switzerland County (18155)</td> </tr> <tr> <td><input type="checkbox"/> DeKalb County (18033)</td> <td><input type="checkbox"/> Madison County (18095)</td> <td><input type="checkbox"/> Tippecanoe County (18157)</td> </tr> <tr> <td><input type="checkbox"/> Delaware County (18035)</td> <td><input type="checkbox"/> Martin County (18097)</td> <td><input type="checkbox"/> Tipton County (18159)</td> </tr> <tr> <td><input type="checkbox"/> Dubois County (18037)</td> <td><input type="checkbox"/> Marshall County (18099)</td> <td><input type="checkbox"/> Union County (18161)</td> </tr> <tr> <td><input type="checkbox"/> Elkhart County (18039)</td> <td><input type="checkbox"/> Martin County (18101)</td> <td><input type="checkbox"/> Vanderburgh County (18163)</td> </tr> <tr> <td><input type="checkbox"/> Fayette County 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911 1349 999"> <p>Do you want to open or save pvs_batch_from_24.zip from www2.census.gov?</p> <p>Open Save Save as Save and open</p> </div> </div>	<input type="checkbox"/> Adams County (18001)	<input type="checkbox"/> Hendricks County (18063)	<input type="checkbox"/> Pike County (18125)	<input type="checkbox"/> Allen County (18003)	<input type="checkbox"/> Henry County (18065)	<input type="checkbox"/> Porter County (18127)	<input type="checkbox"/> Bartholomew County (18005)	<input type="checkbox"/> Howard County (18067)	<input type="checkbox"/> Posey County (18129)	<input type="checkbox"/> Benton County (18007)	<input type="checkbox"/> Huntington County (18069)	<input type="checkbox"/> Pulaski County (18131)	<input type="checkbox"/> Blackford County (18009)	<input type="checkbox"/> Jackson County (18071)	<input type="checkbox"/> Putnam County (18133)	<input type="checkbox"/> Boone County (18011)	<input type="checkbox"/> Jasper County (18073)	<input type="checkbox"/> Randolph County 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<input type="checkbox"/> Dubois County (18037)	<input type="checkbox"/> Marshall County (18099)	<input type="checkbox"/> Union County (18161)																																																																																												
<input type="checkbox"/> Elkhart County (18039)	<input type="checkbox"/> Martin County (18101)	<input type="checkbox"/> Vanderburgh County (18163)																																																																																												
<input type="checkbox"/> Fayette County (18041)	<input type="checkbox"/> Miami County (18103)	<input type="checkbox"/> Vermillion County (18165)																																																																																												
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<input type="checkbox"/> Hancock County (18059)	<input type="checkbox"/> Parke County (18121)	<input type="checkbox"/> Whitley County (18183)																																																																																												
<input type="checkbox"/> Harrison County (18061)	<input type="checkbox"/> Perry County (18123)																																																																																													
<p>Step 4</p>	<p>Click the down arrow next to Save and select ‘Save As’ in the drop-down list. <i>The Save As dialog box appears, with the file appearing in the File Name field. If you selected more than one county, a single ZIP file containing the selected counties is saved.</i></p>																																																																																													
<p>Step 5</p>	<p>In the Save As dialog box, select a location on your home directory to save the files.</p>																																																																																													
<p>Step 6</p>	<p>Click the Save button. <i>The file(s) are saved in the location you selected.</i></p>																																																																																													
<p>Step 7</p>	<p>To obtain shapefiles for additional counties, repeat the download process as needed.</p>																																																																																													
<p>Step 8</p>	<p>When you select your geography in GUPS, the application asks you to specify the location (‘CD/DVD’, ‘My Computer’, or ‘Census Web’) of your files. When you select ‘My Computer’, GUPS asks you to select a directory. Navigate to the location where you saved the files and select those you wish to upload. <i>GUPS unzips and loads the files, then moves them to the pre-established folder on your home directory.</i></p>																																																																																													
<p>Step 9</p>	<p>When the Select Data Folder, Directory or Location box opens, use the drop-down menu to select the location from which to pull the shapefiles. In this instance, we will load them from a Census Bureau-provided DVD. To do so, insert the DVD into your DVD drive, then select ‘CD/DVD’, as shown below.</p>																																																																																													

Step	Action and Result
	 <p>The files for Clark and Jennings Counties begin to download and progress is displayed by the blue striped bar (color may vary), with the progress percentage noted to the right.</p> 
<p>Step 10</p>	<p>If for any reason shapefiles are missing from the location you chose in the Select Data Folder, Directory or Location drop-down menu, or the files are corrupted and cannot be loaded, you will receive an error message such as the one shown below.</p> 

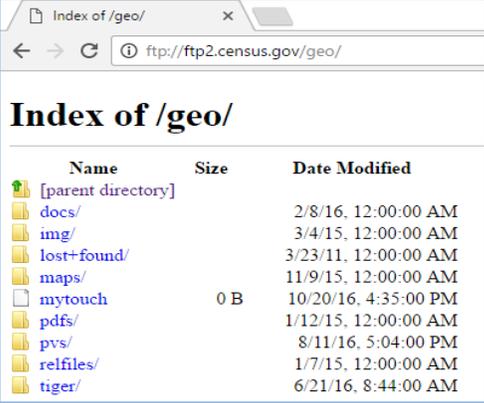
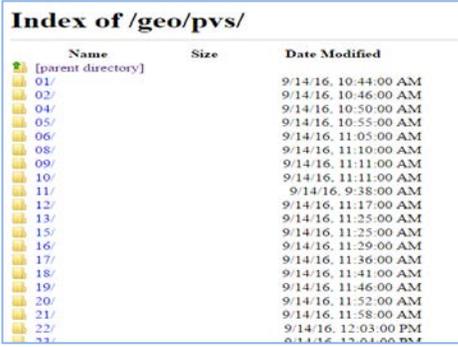
5.4 Download Shapefiles from the Census Bureau ftp2 Site

If you are a state level user, or if you would like to download shapefiles for several counties at one time to your hard drive, follow the steps in [Table 8](#).

Table 8: Download Shapefiles from ftp2 Site to a Hard Drive (State Users)

Step	Action and Result
<p>Step 1</p>	<p>Using Internet Explorer (IE) or a web browser of your choice navigate to ftp://ftp2.census.gov/. The ftp root at ftp2.census.gov main page opens.</p>

Step	Action and Result																																																																																																
	<div data-bbox="548 260 1216 674" style="border: 1px solid black; padding: 5px;"> <p>FTP root at ftp2.census.gov</p> <p>To view this FTP site in File Explorer: press Alt, click View, and then click Open FTP Site in File Explorer.</p> <p>Server: ftp2.census.gov</p> <p>Personal Identifiable Information (PII) shall not be placed on the FTP server without prior special arrangement and in conjunction with ITSO.</p> <p>NOTE: The data available for anonymous FTP download on this FTP server are also available over the Web: http://www2.census.gov</p> <table border="0"> <tr><td>01/24/2014 12:00AM</td><td>17</td><td>AOA</td></tr> <tr><td>01/24/2014 12:00AM</td><td>28</td><td>CTFP 2006 2010</td></tr> <tr><td>06/06/2015 12:00AM</td><td></td><td>Directory EEO 2006 2010</td></tr> <tr><td>06/08/2015 12:00AM</td><td></td><td>Directory EEO Disability 2008-2010</td></tr> <tr><td>04/27/2011 12:00AM</td><td></td><td>Directory Econ2001 And Earlier</td></tr> <tr><td>04/24/2014 12:00AM</td><td>17</td><td>HUD</td></tr> <tr><td>09/16/2016 01:16PM</td><td></td><td>Directory about</td></tr> <tr><td>05/24/2015 12:00AM</td><td></td><td>Directory acs</td></tr> <tr><td>09/23/2009 12:00AM</td><td></td><td>Directory acs2002</td></tr> <tr><td>10/06/2004 12:00AM</td><td></td><td>Directory acs2003</td></tr> <tr><td>02/02/2006 12:00AM</td><td></td><td>Directory acs2004</td></tr> <tr><td>08/28/2015 12:00AM</td><td></td><td>Directory acs2005</td></tr> <tr><td>01/24/2014 12:00AM</td><td>11</td><td>acs2005 2007 3yr</td></tr> <tr><td>01/24/2014 12:00AM</td><td>11</td><td>acs2005 2009 5yr</td></tr> <tr><td>08/28/2015 12:00AM</td><td></td><td>Directory acs2006</td></tr> <tr><td>01/24/2014 12:00AM</td><td>11</td><td>acs2006 2008 3yr</td></tr> <tr><td>08/28/2015 12:00AM</td><td></td><td>Directory acs2007 1yr</td></tr> <tr><td>01/24/2014 12:00AM</td><td>12</td><td>acs2007 2009 3yr</td></tr> <tr><td>08/28/2015 12:00AM</td><td></td><td>Directory acs2007 3yr</td></tr> </table> </div>	01/24/2014 12:00AM	17	AOA	01/24/2014 12:00AM	28	CTFP 2006 2010	06/06/2015 12:00AM		Directory EEO 2006 2010	06/08/2015 12:00AM		Directory EEO Disability 2008-2010	04/27/2011 12:00AM		Directory Econ2001 And Earlier	04/24/2014 12:00AM	17	HUD	09/16/2016 01:16PM		Directory about	05/24/2015 12:00AM		Directory acs	09/23/2009 12:00AM		Directory acs2002	10/06/2004 12:00AM		Directory acs2003	02/02/2006 12:00AM		Directory acs2004	08/28/2015 12:00AM		Directory acs2005	01/24/2014 12:00AM	11	acs2005 2007 3yr	01/24/2014 12:00AM	11	acs2005 2009 5yr	08/28/2015 12:00AM		Directory acs2006	01/24/2014 12:00AM	11	acs2006 2008 3yr	08/28/2015 12:00AM		Directory acs2007 1yr	01/24/2014 12:00AM	12	acs2007 2009 3yr	08/28/2015 12:00AM		Directory acs2007 3yr																																							
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<p>Step 2</p>	<p>Press 'Alt' and click the 'View' tab on the browser menu and select "Open FTP site in File Explorer" to open the Census Bureau FTP site in Windows Explorer (sometimes called file explorer). If using Windows Explorer, you do not need a username or password to access the ftp2 site.</p> <div data-bbox="581 848 1182 1251" style="border: 1px solid black; padding: 5px;"> <p>FTP root at ftp2.census.gov</p> <p>To view this FTP site in File Explorer: press Alt, click View, and then click Open FTP Site in File Explorer.</p> <p>Server: ftp2.census.gov</p> <p>Personal Identifiable Information (PII) shall not be placed on the FTP server without prior special arrangement and in conjunction with ITSO.</p> <p>NOTE: The data available for anonymous FTP download on this FTP server are also available over the Web: http://www2.census.gov</p> <table border="0"> <tr><td>06/23/2010 12:00AM</td><td>Directory</td><td>econ2008</td></tr> <tr><td>06/09/2011 12:00AM</td><td>Directory</td><td>econ2009</td></tr> <tr><td>09/25/2012 12:00AM</td><td>Directory</td><td>econ2010</td></tr> <tr><td>05/28/2013 12:00AM</td><td>Directory</td><td>econ2011</td></tr> <tr><td>09/16/2016 10:30AM</td><td>Directory</td><td>econ2012</td></tr> <tr><td>09/22/2016 03:55PM</td><td>Directory</td><td>econ2013</td></tr> <tr><td>09/22/2016 03:55PM</td><td>Directory</td><td>econ2014</td></tr> <tr><td>09/22/2016 03:54PM</td><td>Directory</td><td>econ2015</td></tr> <tr><td>01/27/2014 12:00AM</td><td>Directory</td><td>exist</td></tr> <tr><td>08/19/2001 12:00AM</td><td>318</td><td>favicon.ico</td></tr> <tr><td>02/27/2015 12:00AM</td><td>Directory</td><td>foia</td></tr> <tr><td>10/23/2015 12:00AM</td><td>Directory</td><td>geo</td></tr> <tr><td>08/23/2016 09:57AM</td><td>Directory</td><td>govs</td></tr> <tr><td>10/09/2014 12:00AM</td><td>Directory</td><td>hhes</td></tr> <tr><td>01/24/2014 12:00AM</td><td>12</td><td>inc</td></tr> <tr><td>08/28/2015 12:00AM</td><td>12</td><td>inc</td></tr> </table> </div> <div data-bbox="581 1272 1182 1640" style="border: 1px solid black; padding: 5px;"> <table border="1"> <thead> <tr> <th>Name</th> <th>Size</th> <th>Modified</th> </tr> </thead> <tbody> <tr><td>econ2008/</td><td></td><td>6/23/10, 12:00:00 AM</td></tr> <tr><td>econ2009/</td><td></td><td>6/9/11, 12:00:00 AM</td></tr> <tr><td>econ2010/</td><td></td><td>9/25/12, 12:00:00 AM</td></tr> <tr><td>econ2011/</td><td></td><td>5/28/13, 12:00:00 AM</td></tr> <tr><td>econ2012/</td><td></td><td>9/15/16, 10:30:00 AM</td></tr> <tr><td>econ2013/</td><td></td><td>9/22/16, 3:55:00 PM</td></tr> <tr><td>econ2014/</td><td></td><td>9/22/16, 3:55:00 PM</td></tr> <tr><td>econ2015/</td><td></td><td>9/22/16, 3:54:00 PM</td></tr> <tr><td>exist/</td><td></td><td>1/27/14, 12:00:00 AM</td></tr> <tr><td>favicon.ico</td><td>318 B</td><td>5/15/01, 12:00:00 AM</td></tr> <tr><td>foia/</td><td></td><td>2/27/15, 12:00:00 AM</td></tr> <tr><td>geo/</td><td></td><td>10/23/15, 12:00:00 AM</td></tr> <tr><td>govs/</td><td></td><td>8/23/16, 9:57:00 AM</td></tr> <tr><td>hhes/</td><td></td><td>10/9/14, 12:00:00 AM</td></tr> <tr><td>inc</td><td>0 B</td><td>1/24/14, 12:00:00 AM</td></tr> </tbody> </table> </div>	06/23/2010 12:00AM	Directory	econ2008	06/09/2011 12:00AM	Directory	econ2009	09/25/2012 12:00AM	Directory	econ2010	05/28/2013 12:00AM	Directory	econ2011	09/16/2016 10:30AM	Directory	econ2012	09/22/2016 03:55PM	Directory	econ2013	09/22/2016 03:55PM	Directory	econ2014	09/22/2016 03:54PM	Directory	econ2015	01/27/2014 12:00AM	Directory	exist	08/19/2001 12:00AM	318	favicon.ico	02/27/2015 12:00AM	Directory	foia	10/23/2015 12:00AM	Directory	geo	08/23/2016 09:57AM	Directory	govs	10/09/2014 12:00AM	Directory	hhes	01/24/2014 12:00AM	12	inc	08/28/2015 12:00AM	12	inc	Name	Size	Modified	econ2008/		6/23/10, 12:00:00 AM	econ2009/		6/9/11, 12:00:00 AM	econ2010/		9/25/12, 12:00:00 AM	econ2011/		5/28/13, 12:00:00 AM	econ2012/		9/15/16, 10:30:00 AM	econ2013/		9/22/16, 3:55:00 PM	econ2014/		9/22/16, 3:55:00 PM	econ2015/		9/22/16, 3:54:00 PM	exist/		1/27/14, 12:00:00 AM	favicon.ico	318 B	5/15/01, 12:00:00 AM	foia/		2/27/15, 12:00:00 AM	geo/		10/23/15, 12:00:00 AM	govs/		8/23/16, 9:57:00 AM	hhes/		10/9/14, 12:00:00 AM	inc	0 B	1/24/14, 12:00:00 AM
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<p>Step 3</p>	<p>After the Census Bureau FTP site has been opened in file explorer, click the 'geo' folder.</p>																																																																																																

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	 <p>The screenshot shows a web browser window displaying the FTP directory listing for <code>ftp://ftp2.census.gov/geo/</code>. The title is "Index of /geo/". The listing includes a parent directory and several sub-directories and files:</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Size</th> <th>Date Modified</th> </tr> </thead> <tbody> <tr> <td>[parent directory]</td> <td></td> <td></td> </tr> <tr> <td>docs/</td> <td></td> <td>2/8/16, 12:00:00 AM</td> </tr> <tr> <td>img/</td> <td></td> <td>3/4/15, 12:00:00 AM</td> </tr> <tr> <td>lost+found/</td> <td></td> <td>3/23/11, 12:00:00 AM</td> </tr> <tr> <td>maps/</td> <td></td> <td>11/9/15, 12:00:00 AM</td> </tr> <tr> <td>mytouch</td> <td>0 B</td> <td>10/20/16, 4:35:00 PM</td> </tr> <tr> <td>pdfs/</td> <td></td> <td>1/12/15, 12:00:00 AM</td> </tr> <tr> <td>pvs/</td> <td></td> <td>8/11/16, 5:04:00 PM</td> </tr> <tr> <td>relfiles/</td> <td></td> <td>1/7/15, 12:00:00 AM</td> </tr> <tr> <td>tiger/</td> <td></td> <td>6/21/16, 8:44:00 AM</td> </tr> </tbody> </table>	Name	Size	Date Modified	[parent directory]			docs/		2/8/16, 12:00:00 AM	img/		3/4/15, 12:00:00 AM	lost+found/		3/23/11, 12:00:00 AM	maps/		11/9/15, 12:00:00 AM	mytouch	0 B	10/20/16, 4:35:00 PM	pdfs/		1/12/15, 12:00:00 AM	pvs/		8/11/16, 5:04:00 PM	relfiles/		1/7/15, 12:00:00 AM	tiger/		6/21/16, 8:44:00 AM																																	
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<p>Step 4</p>	<p>Within the 'geo' folder, click the 'pvs' folder.</p>  <p>The screenshot shows the FTP directory listing for <code>ftp://ftp2.census.gov/geo/pvs/</code>. The title is "Index of /geo/pvs/". The listing includes a parent directory and numerous numbered sub-directories:</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Size</th> <th>Date Modified</th> </tr> </thead> <tbody> <tr> <td>[parent directory]</td> <td></td> <td></td> </tr> <tr> <td>01/</td> <td></td> <td>9/14/16, 10:44:00 AM</td> </tr> <tr> <td>02/</td> <td></td> <td>9/14/16, 10:46:00 AM</td> </tr> <tr> <td>04/</td> <td></td> <td>9/14/16, 10:50:00 AM</td> </tr> <tr> <td>05/</td> <td></td> <td>9/14/16, 10:55:00 AM</td> </tr> <tr> <td>06/</td> <td></td> <td>9/14/16, 11:05:00 AM</td> </tr> <tr> <td>08/</td> <td></td> <td>9/14/16, 11:10:00 AM</td> </tr> <tr> <td>09/</td> <td></td> <td>9/14/16, 11:11:00 AM</td> </tr> <tr> <td>10/</td> <td></td> <td>9/14/16, 11:11:00 AM</td> </tr> <tr> <td>11/</td> <td></td> <td>9/14/16, 9:38:00 AM</td> </tr> <tr> <td>12/</td> <td></td> <td>9/14/16, 11:17:00 AM</td> </tr> <tr> <td>13/</td> <td></td> <td>9/14/16, 11:25:00 AM</td> </tr> <tr> <td>15/</td> <td></td> <td>9/14/16, 11:25:00 AM</td> </tr> <tr> <td>16/</td> <td></td> <td>9/14/16, 11:29:00 AM</td> </tr> <tr> <td>17/</td> <td></td> <td>9/14/16, 11:36:00 AM</td> </tr> <tr> <td>18/</td> <td></td> <td>9/14/16, 11:41:00 AM</td> </tr> <tr> <td>19/</td> <td></td> <td>9/14/16, 11:46:00 AM</td> </tr> <tr> <td>20/</td> <td></td> <td>9/14/16, 11:52:00 AM</td> </tr> <tr> <td>21/</td> <td></td> <td>9/14/16, 11:58:00 AM</td> </tr> <tr> <td>22/</td> <td></td> <td>9/14/16, 12:03:00 PM</td> </tr> <tr> <td>33/</td> <td></td> <td>9/14/16, 12:03:00 PM</td> </tr> </tbody> </table>	Name	Size	Date Modified	[parent directory]			01/		9/14/16, 10:44:00 AM	02/		9/14/16, 10:46:00 AM	04/		9/14/16, 10:50:00 AM	05/		9/14/16, 10:55:00 AM	06/		9/14/16, 11:05:00 AM	08/		9/14/16, 11:10:00 AM	09/		9/14/16, 11:11:00 AM	10/		9/14/16, 11:11:00 AM	11/		9/14/16, 9:38:00 AM	12/		9/14/16, 11:17:00 AM	13/		9/14/16, 11:25:00 AM	15/		9/14/16, 11:25:00 AM	16/		9/14/16, 11:29:00 AM	17/		9/14/16, 11:36:00 AM	18/		9/14/16, 11:41:00 AM	19/		9/14/16, 11:46:00 AM	20/		9/14/16, 11:52:00 AM	21/		9/14/16, 11:58:00 AM	22/		9/14/16, 12:03:00 PM	33/		9/14/16, 12:03:00 PM
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33/		9/14/16, 12:03:00 PM																																																																	
<p>Step 5</p>	<p>Select the state folder that contains the county(ies) for which you are downloading data. The state folders are represented using two-digit state FIPS codes.</p>																																																																		
<p>Step 6</p>	<p>There are several sets of shapefiles within each state directory. You will want to download the most recent partnership shapefiles. These shapefiles are contained within a zip file with the prefix partnership_shapefiles_18v2. Each zip file ends with a five-digit state-county FIPS code (e.g., 08051) which represents the county for which you are downloading data. Make sure to choose the filename with "18v2", because the "18v1" files are sometimes also available in the folders.</p>																																																																		
<p>Step 7</p>	<p>Select the county or counties that you intend to download and copy to your local or network drive. You may copy the files to any location you wish. When you select your geography in GUPS, the application asks you to specify the location ('CD/DVD', 'My Computer', or 'Census Web') of your files. When you select 'My Computer', GUPS asks you to select a directory. Navigate to the location where you saved the files and select those you wish to upload. <i>GUPS unzips and loads the files, then moves them to the pre-established folder on your home directory.</i></p>																																																																		
	<p>If you have an ftp client software such as winscp or filezilla (or other) you may connect to <code><ftp://ftp2.census.gov/></code> without a password. Enter 'anonymous' as your user name and enter your e-mail address in place of a password.</p>																																																																		

5.5 Use GUPS Interface

5.5.1 GUPS Main Page

Figure 2 shows the layout of the main GUPS page. This page contains all the tools needed for making BAS updates. All work is completed from this page. Shown in the figure are the main page elements. These include the:

1. Menu;
2. Table of Contents;
3. Map View (where the data displays);
4. Toolbars (Standard toolbar, BAS toolbar, and Add Layers toolbar); and
5. Status Bar (at bottom of page).

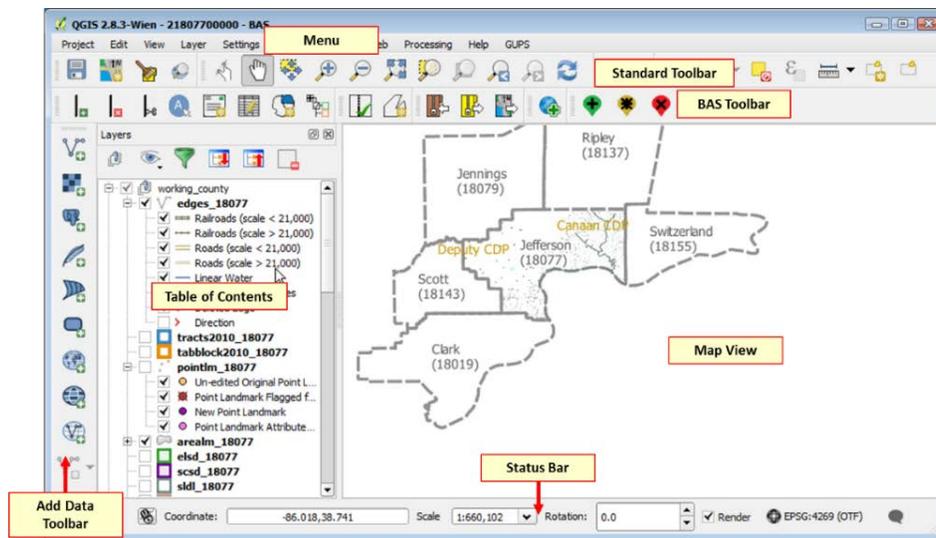


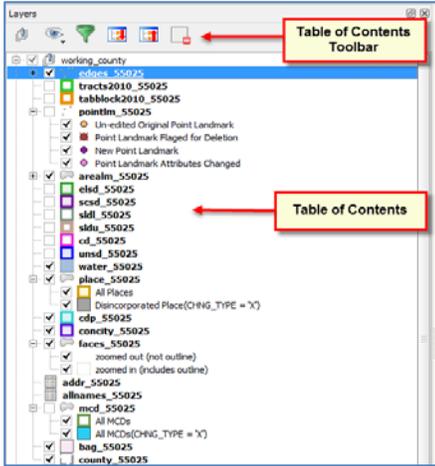
Figure 2. GUPS Main Page Layout

The purpose for each element on the main GUPS page is explained in [Section 5.5.1](#) through [Section 5.7.1](#) describes in detail the individual components and specific functions of each element.

Table 9: GUPS Main Page Elements

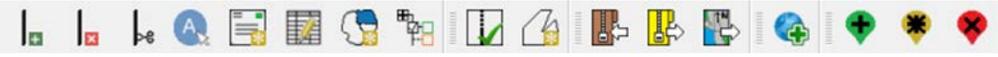
Page Element	General Function
Menu	<p>The menu offers basic features such as settings and help; tools to manage the map view and import user-provided data; important calculation, measurement, and geoprocessing tools; and tools needed to make shapefile updates. Note that almost all of the functions available from the menu are also available in the application's more conveniently located toolbars.</p> 

Page Element	General Function
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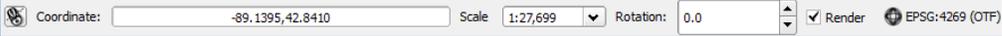
<p>Table of Contents</p>	<p>The Table of Contents shows the layers on the map for the county you selected. The Table of Contents toolbar allows you to add or remove layers (or groups), manage layer visibility, and filter the legend by map content</p> 
---------------------------------	--

<p>Map View</p>	<p>The Map View displays the data for the county you selected in the Map Management dialog box.</p> 
------------------------	---

<p>Standard Toolbar</p>	<p>Provides the navigation and other tools needed to interact with the map and layers' attribute tables.</p> 
--------------------------------	---

<p>BAS Toolbar</p>	<p>Gives the specific tools needed to make bas updates, view linear feature attributes, review and validate changes, import and export zipped files, and print.</p> 
---------------------------	--

<p>Manage Layers Toolbar</p>	<p>Offers tools to import your own data. You may superimpose map layers in GUPS to compare the features on your own maps with those on the Census shapefiles. Note: although shown horizontally here, this toolbar appears aligned vertically to the left of the Table of Contents in the GUPS application.</p>
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Page Element	General Function
	
Status Bar	<p>Displays information on the map scale, projection, and coordinates and allows you to adjust the display.</p> 

5.5.2 Table of Contents and Map View

When you choose your program and geography in the **Map Management** dialog box, GUPS automatically loads a set of default data layers (and default layer groups) defined by the Census Bureau for the program you selected. As the map opens in **Map View**, the list of the preset layers (already grouped) appears in the **Table of Contents**.

You will use the **Table of Contents** and the small **toolbar** appearing at its top to manage your map view. Note that the **Table of Contents** and the **Map View** windows are interdependent. Selections you make in the **Table of Contents** are immediately reflected on the map display.

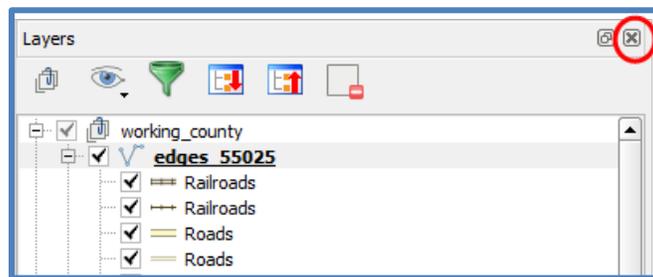


Figure 3. Close Table of Contents

You can close the Table of Contents at any time to see more of the map (just click on the small 'x' in the upper right-hand corner). To restore the Table of Contents, click the View tab on the Menu, select 'Panels' in the drop-down menu, click the arrow next to 'Panel' to open the submenu, then click on 'Layers'.

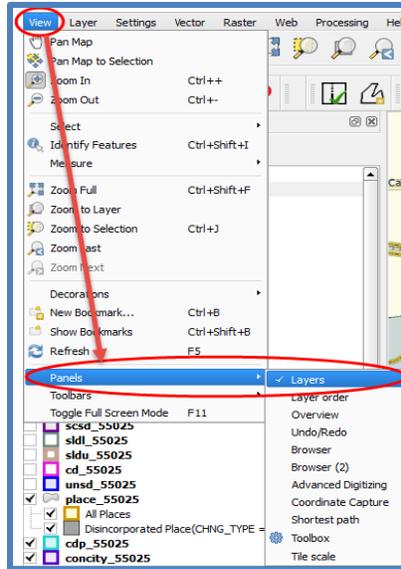


Figure 4. Restore the Table of Contents

The **Table of Contents** will then reopen and display in its default position on the page.

5.5.3 Managing the Map View from Within the Table of Contents

Within the **Table of Contents**, you can manage layer visibility (i.e., determine what layers display on the map), reorder data layers, and set new layer symbology.

5.5.3.1 Manage Layer Visibility

To add or remove layers from the map view:

- Click the checkbox next to a layer to add it to the map view.  **edges 55025**
- Uncheck the checkbox next to a layer to remove it from the view.  **edges_55025**

OR, Right-click the name of the layer and select '**Remove**' in the drop-down menu.

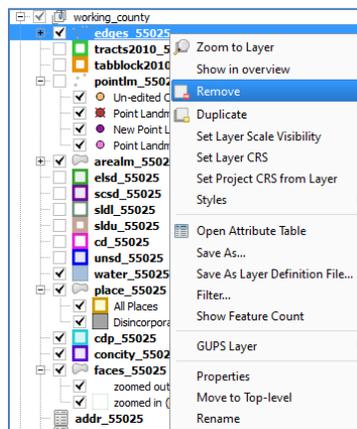


Figure 5. Managing Layer Visibility

5.5.3.2 Reorder Data Layers

In the **Table of Contents**, the order in which the layers are listed determines how the layers display on the map. The layers at the top display on top of those below them. To change the display order:

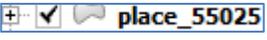
1. Left-click on the layer name.
2. Hold down the mouse button and drag the layer to the desired position in the list.
3. Release the mouse button to place the layer in its new position. The map display will then reflect the new layer order in the **Table of Contents**.

5.5.3.3 Expand/Contract Table of Contents Menus

To expand or contract the menu for a layer or layer group:

- Click on the '+' sign to expand the group. When you click the '+' sign next to the layer name , the layer's submenu opens:



- When you click the '-' sign next to the layer name, *the submenu retracts*: 

5.6 Menu & Toolbars

The main **Menu**, the **Standard toolbar**, and the **BAS toolbar** are located at the top of the GUPS page. These toolbars offer general GIS and system tools and allow you to make your BAS updates.

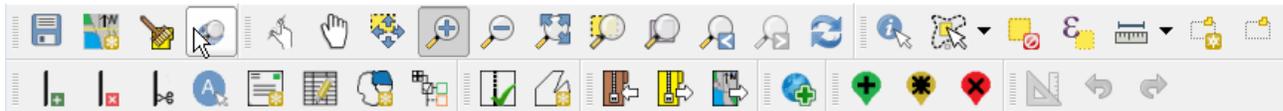


Figure 6. Menu and Toolbars

The **Manage Layer toolbar**, the vertical toolbar located to the left of the **Table of Contents** (shown here in a horizontal position) allows you to import user-provided data.



Figure 7. Manage Layer Toolbar

Note: Although the **Menu** is always located at the top of the page and cannot be moved, you may move the toolbars to the location most convenient for you. For example, if you prefer that the **Add Data toolbar** appear at the top of the page, you can drag it there. This allows you to expand the area available for the **Table of Contents** and **Map View**.

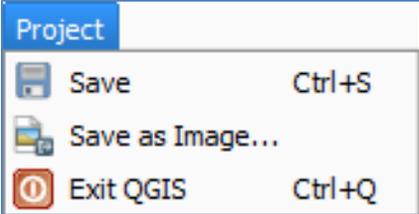
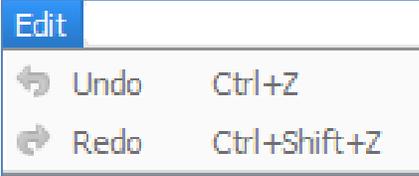
- As you work with the toolbars, hover your mouse over any toolbar button to see the name of the tool it represents. You can also resize and reposition the toolbars by dragging them.

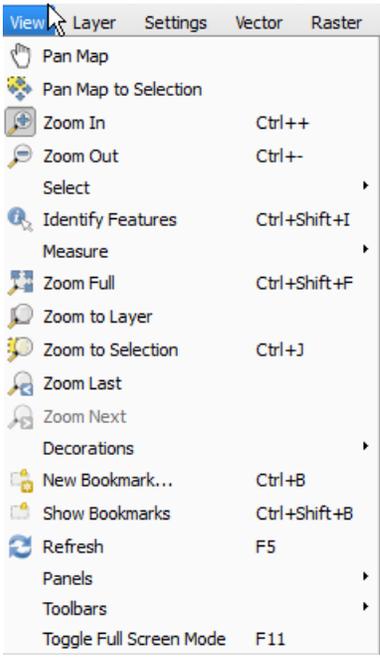
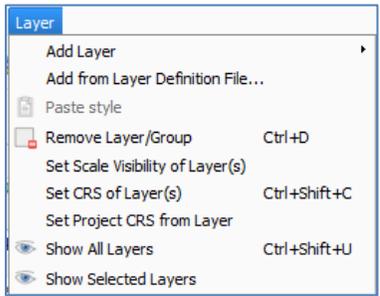
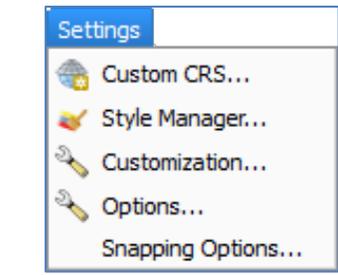
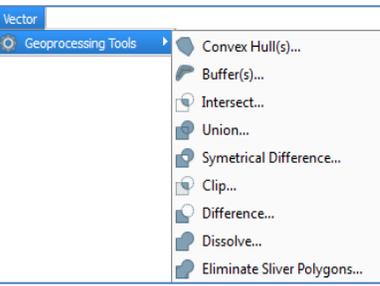
- The Menu, the Standard toolbar, and the BAS toolbar are described in the section below. The Add Data toolbar is discussed in [Section 0](#):
- [How to Import User-Provided Data into GUPS](#).

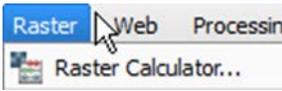
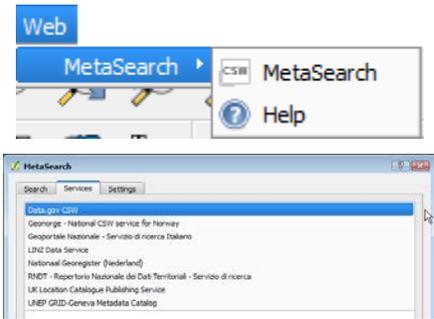
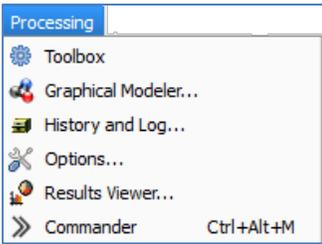
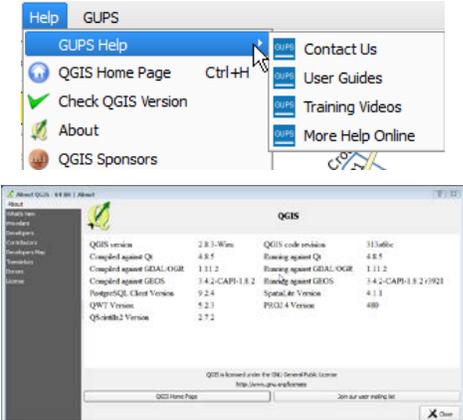
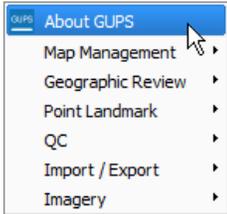
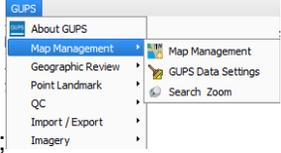
5.6.1 Menu Tabs

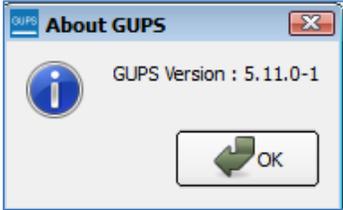
Table 10 below defines each of the tabs on the main **Menu**, provides an image of the drop-down options for each, and describes each tab’s function.

Table 10: Menu Tabs and Their Functions

Tab	Drop-down Menu	Function / Description
Project		<p>From the Project tab, you may save a project, click on ‘Save as Image’ to create an image file of the map in Map View, or exit the application.</p> <p>If you click ‘Save as Image’, GUPS allows you to select a file type for the image (.png, .jpg, .tif, etc.), name the file, and save it to any location on your computer.</p>
Edit		<p>From the Edit tab, you may ‘Undo’ your last action or ‘Redo’ the action (if you selected ‘Undo’ and then changed your mind).</p> <p>Note: For ‘Undo’ to work, the correct layer must be selected in the Table of Contents. For example, if you added a linear feature in the Edges layer, then closed the layer and opened the Area Landmarks layer, ‘Undo’ will not delete the linear feature. You must reselect the Edges layer to undo the linear feature’s addition.</p> <p>Note: You may undo multiple actions within a layer (e.g., the addition of several linear features) provided you have not yet saved. Once you save an action, ‘Undo’ is disabled.</p>

Tab	Drop-down Menu	Function / Description
<p>View</p>		<p>The View tab allows you to complete several actions also available on the Standard toolbar. Included are options for navigating the map, identifying feature attributes, measuring distance, and creating spatial bookmarks to return to the same map view at a later time.</p> <p>From this location you can also:</p> <ul style="list-style-type: none"> • Set what toolbars display. • Restore the Table of Contents if you earlier closed it (click 'Panels' in the drop-down menu, click the right arrow, click 'Layers' in the Layers down-menu). • Refresh the map to restore it to the original map extent.
<p>Layer</p>		<p>The Layer tab allows you to add and remove layers from the map, open the layer attribute table, set the map projection, or Coordinate Reference System (CRS), and display or hide layers.</p> <p>Note: Many of these same functions are more conveniently located on the Add Layers toolbar and the small toolbar that sits at the top of the Table of Contents.</p>
<p>Settings</p>		<p>The Settings tab allows you to customize the CRS and map display options and set snapping tolerances (see instructions below this table).</p>
<p>Vector</p>		<p>The Vector tab provides access to several Geoprocessing Tools, which allow you to create buffers around features, overlay areas so that you can create an intersection, union, or symmetrical difference, merge features, and perform other common geoprocessing actions.</p>

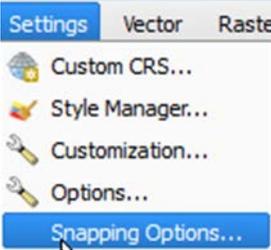
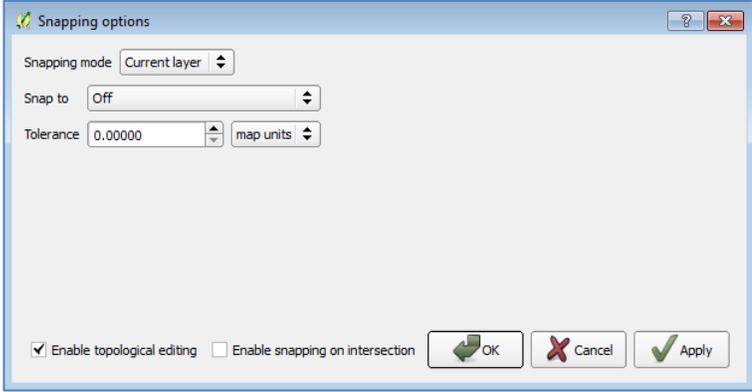
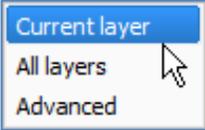
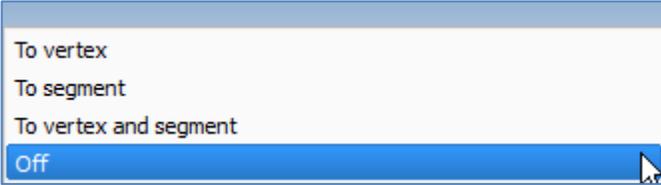
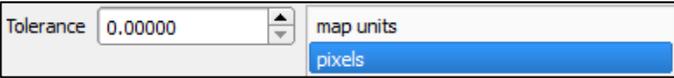
Tab	Drop-down Menu	Function / Description
Raster		<p>The Raster tab provides access to a Calculator, which allows you to perform calculations on the basis of existing raster pixel values.</p>
Web		<p>The MetaSearch option takes you to a search tool that uses another search engine's data to produce results from the Internet. You can use the default services already loaded, or add your own sites. The Help option takes you to https://issues.qgis.org/projects/MetaSearch</p>
Processing		<p>Although available to GUPS users, the options under the Processing tab are not needed for Census Bureau geographic program participation. The items under this tab pertain to algorithms, creating models, viewing the results of algorithms executed, and history.</p>
Help		<p>The Help tab provides tools for understanding QGIS (the open-source platform on which GUPS was developed) and the GUPS application itself. It also contains BAS contact information, access to the online version of this guide, training videos, and other information. Clicking the About option will bring up the latest version you have loaded on your pc.</p>
GUPS	 <p>Click the 'About GUPS' option in the drop-down menu to find the GUPS version number. If you call for technical support, you will need to supply this</p>	<p>The GUPS tab provides quick access to the key tools also available on the Standard and BAS toolbars, including those needed to manage maps;</p> 

Tab	Drop-down Menu	Function / Description
	<p>number Here the version number is 5.11.0-1. The number you see will be more recent.</p> 	<p>make linear changes;</p> <ul style="list-style-type: none">  Add Linear Feature  Delete/Restore Linear Feature  Split Linear Feature  Display All Names  User Address List  Modify Linear Feature Attributes  Modify Area Feature  Show/Hide Legend <p>area feature changes;</p> <ul style="list-style-type: none">  Add Point Landmark  Edit Point Landmark  Delete Point Landmark <p>review and validate your work;</p> <ul style="list-style-type: none">  Geography Review Tool  Review Change Polygons <p>import county ZIP files from other users, and export maps;</p> <ul style="list-style-type: none">  Import County Zip  Export to Zip  Print Map to File <p>and</p> <p>add imagery.  Add Imagery.</p>

Note on Snapping Tolerances

Snapping tolerances in GUPS are pre-defined by layer (e.g., the default tolerance for edges is set to 15 pixels). When making boundary corrections, you may want to adjust the snapping tolerances for a layer or layers. To do this, follow the steps in [Table 11](#).

Table 11: Adjust Snapping Tolerances

Step	Action and <i>Result</i>
<p>Step 1</p>	<p>In the Settings tab drop-down menu, click on 'Snapping Options'.</p>  <p><i>The Snapping options dialog box opens.</i></p> 
<p>Step 2</p>	<p>From the Snapping mode drop-down menu, select whether you want the tolerance adjustment to apply only to the current layer or to all layers.</p> 
<p>Step 3</p>	<p>From the Snap to drop-down menu, choose the snapping method.</p> 
<p>Step 4</p>	<p>From the Tolerance drop-down menu, use the up and down arrows to select the value you want and then select your units (map units or pixels) in the drop-down to the right.</p> 
<p>Step 5</p>	<p>If you want to enable topological editing and/or snapping on an intersection, use the checkboxes next to each.</p>

Step	Action and Result
	<div data-bbox="539 260 1205 317" style="border: 1px solid black; padding: 2px;"> <input checked="" type="checkbox"/> Enable topological editing <input checked="" type="checkbox"/> Enable snapping on intersection </div>
Step 6	Click OK . <i>The new snapping tolerances are set.</i> <div data-bbox="756 405 989 457" style="border: 1px solid black; padding: 2px; margin-top: 10px;"> <input type="button" value="OK"/> <input type="button" value="Cancel"/> <input type="button" value="Apply"/> </div>

5.6.2 Standard Toolbar Buttons

The **Standard toolbar** provides the navigation tools to interact with the map and layers' attribute tables.



Figure 8. Standard Toolbar

The **Standard toolbar** actually includes several smaller toolbars. Each sub-toolbar is identified by a series of small parallel lines that precede it.



Figure 9. Sub-tool Markers

The first sub-toolbar contains the **Save** button, **Map Management** button (opens the **Map Management** dialog box), and the **Search** button. The second sub-toolbar provides tools for viewing and navigating the map in **Map View**, and the third sub-toolbar allows you to identify, select, and deselect features on the map, make measurements, create spatial bookmarks, and work with the layers' attribute tables.

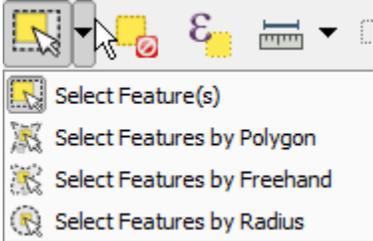
You can move the location of the sub-toolbars. Simply left-click the parallel lines preceding the sub-toolbar and while holding down the mouse, drag the sub-toolbar to the location you want.

Each button on the Standard toolbar and its purpose is defined in

Table 12: below.

Table 12: Standard Toolbar Buttons

Button	Name	Function / Description
	Save	Saves the current GUPS project, including any user changes to layer properties, projection, last viewed extent, and layers added.
	Map Management	Choose your geographic participant program in GUPS and access the automatically loaded default map display layers based on the program chosen.
	GUPS Data Settings	Warning! This tool deletes files and folders permanently! Change GUPSGIS data working directory and clean GUPS project data.
	Search	Search the map by place, landmark, or street name and zoom automatically to the feature.
	Touch Zoom and Pan	Designed for touchscreen computers. Allows you to zoom and pan the map displayed in Map View using finger gestures to increase or decrease the map scale.
	Pan Map	Shifts the map in Map View without changing the map scale. Click the button, then click a location on the map to re-center the map to the clicked location.
	Pan Map to Selection	Shifts the map in Map View to the rows selected in the attribute table for a selected feature. After selecting a feature(s), click the button to re-center the map based on the selected feature(s).
	Zoom In	Displays the map in Map View at a larger scale. Click the button, then click on the map at the location to which you want to zoom.
	Zoom Out	Displays the map in Map View at a smaller scale.
	Zoom Full	Displays the map in Map View at a smaller scale and zooms the map view to the full extent of the county.
	Zoom to Selection	Zooms the Map View to the rows selected by query in the attribute table for a feature(s). After selecting a feature(s) on the map, click the button to view the feature(s) at a greater map scale.
	Zoom to Layer	Zooms the Map View to the layer selected in the Table of Contents . After selecting the layer, click the button to zoom to the layer's extent.
	Zoom Last	Zooms the Map View to the previous map extent.
	Zoom Next	Zooms the Map View forward to the next map extent (if you viewed the previous extent).

Button	Name	Function / Description
	Refresh	Displays Map View to initial full display.
	Identify Features	Identifies geographic features. Click the button, then click on a feature on the map to identify the feature at the location.
	Select Features by Area or Single Click	Allows the user to select layer features in the map window with a single click, by dragging the cursor, or by drawing graphics on the screen. 
	Deselect Features from All Layers	Deselects selected features from all layers.
	Select Features Using an Expression	Initiates an attribute table record request by querying the table based on table fields and/or values in the fields.
	Measure	Provides options to measure linear distance, area, and angles on the map.
	New Bookmark	Creates and names a spatial bookmark of the current map view.
	Show Bookmarks	Display all bookmarks created by the user.

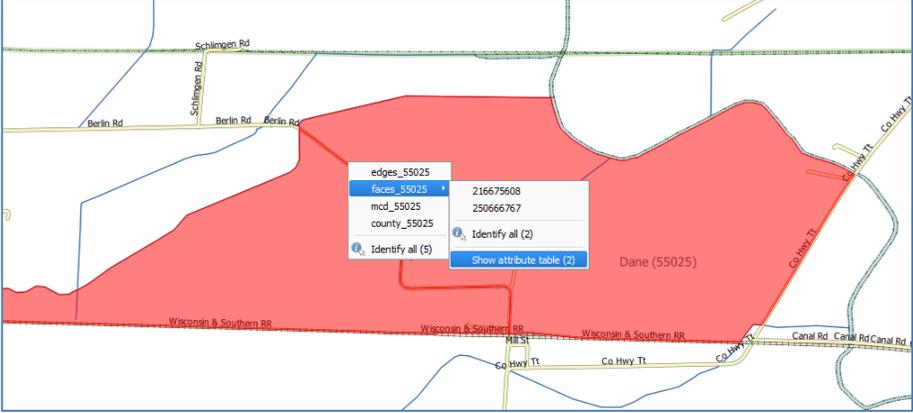
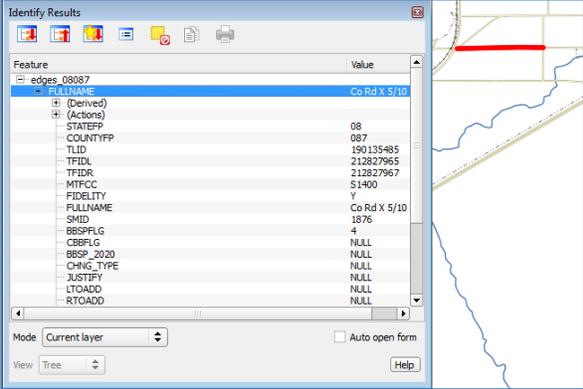
Most of the sub-toolbar buttons defined above are straight-forward. Those related to features, however, require further explanation. You will need these buttons to identify and select/deselect features on the map and to view feature attributes. You will also need them to make measurements and create spatial bookmarks.

5.6.2.1 Identify a Feature Using the Identify Features Button

To identify a feature on the map, follow the steps in [Table 13](#) below.

Table 13: Identify a Feature on the Map

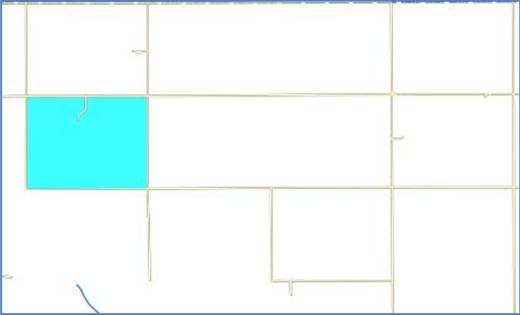
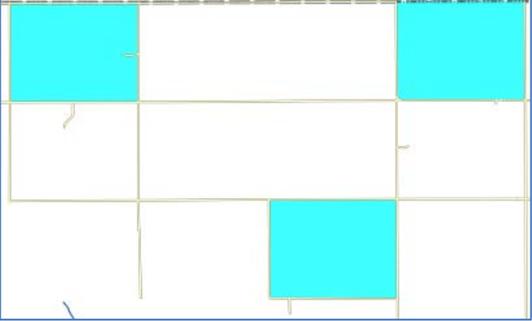
Step	Action and Result
Step 1	Click the Identify button on the Standard toolbar . 

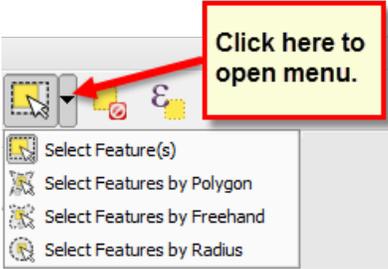
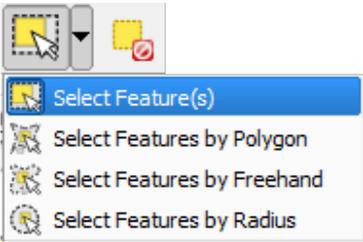
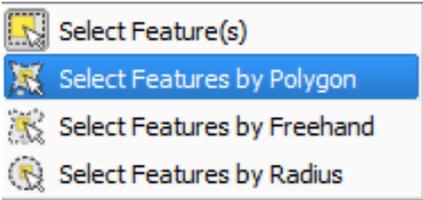
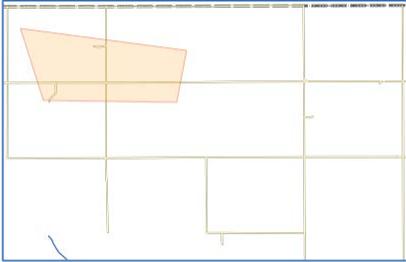
Step	Action and Result
<p>Step 2</p>	<p>Then right-click on the feature. <i>The results will display in drop-down menus on the map.</i></p>  <p>To see all attributes for the feature, select 'Show attribute table' in the faces drop-down menu.</p>
<p>Step 3</p>	<p>Alternately, click the Identify button, then left-click on the feature. <i>The feature turns red (color may vary) and the Identify Results screen opens under the Table of Contents, showing the feature attributes.</i> (Note that here we have dragged the screen from beneath the Table of Contents so that it sits over the map.)</p> 

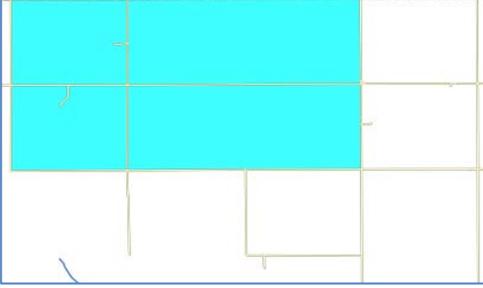
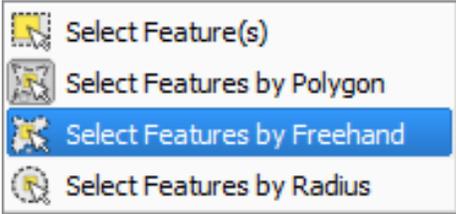
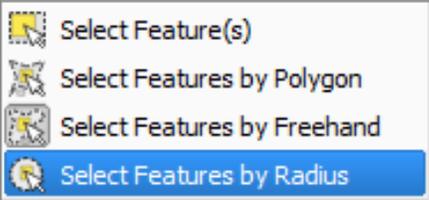
5.6.2.2 Select/Deselect Features Using the Select Features and Deselect Features Buttons

The **Select Features** button gives you several ways to select features on the map. The **Deselect Features from All Layers** button allows you to deselect features you previously selected. **Table 14** describes each of the feature selection methods, discusses when one might be preferable over another, and explains how to deselect features.

Table 14: Select-/Deselect Features on the Map

Step	Action and Result
<p>Step 1</p>	<p>To begin, click on the layer name in the Table of Contents for the layer in which you want to select a feature. For example, if you want to select linear features, click on the 'edges' layer; if you want to select faces, click on the 'faces' layer.</p>
<p>Step 2</p>	<p>Click once on the Select Features button on the Standard Toolbar.</p> 
<p>Step 3</p>	<p>To select an edge or face on the map, click on it. In this example, we have selected 'faces' in the Table of Contents and clicked on a face. <i>The face selected turns cyan blue (color may vary).</i></p> 
<p>Step 4</p>	<p>To select more than one face, hold down the CTRL key while clicking on the additional faces you wish to select. This method is suited to instances where you want to select faces that are not contiguous, as shown below.</p> 
	<p>You can also select multiple features by simply clicking the Select Feature button, then dragging your cursor over the features. This method is convenient when you want to select a large number of contiguous faces or a large number of nearby linear features without having to click each, one by one.</p>
	<p style="text-align: center;">A Note on GUPS Tools</p> <p>GUPS tools remain active until a different tool is selected. For example, if you use the Select Features tool to choose faces for a new area landmark, then decide you would rather add a new linear feature instead, you must click the Add Linear Feature tool before you click on the map again. If you do not, the Select Features tool, still active, selects a face.</p>

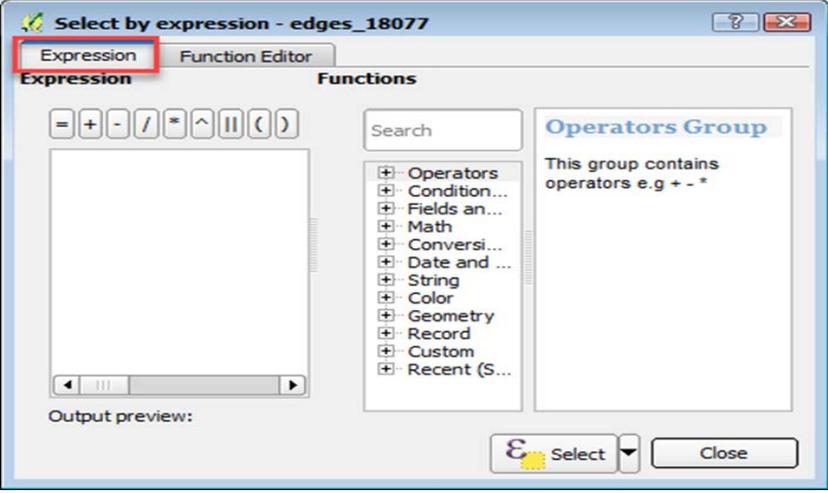
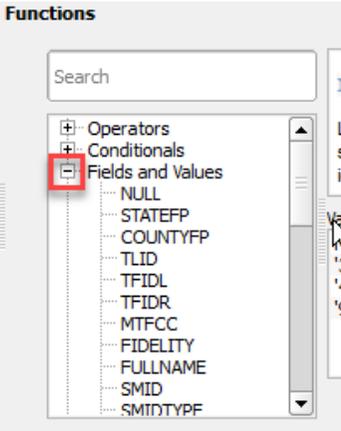
Step	Action and Result
<p>Step 5</p>	<p>To open other Select Features options, click on the down arrow to the right of the Select Features button. <i>The Select Features drop-down menu opens.</i></p> 
<p>Step 6</p>	<p>The first option in the menu, 'Select Feature(s)', duplicates the functions available when you click on the main button on the toolbar.</p> 
<p>Step 7</p>	<p>The second option, 'Select Features by Polygon', allows you to draw a polygon on the map to select features. To use this feature select it in the drop-down menu, then follow the steps below.</p> 
<p>Step 8</p>	<p>Left-click on the map where you want to begin the polygon. Drag your cursor to extend the line to the point you want, left-click, then extend the line in a new direction. Continue until you have a closed polygon, as shown below.</p> 
<p>Step 9</p>	<p>When you are done, right-click. (This tells the system you have finished drawing). <i>All faces with an edge appearing within the polygon are highlighted in cyan blue.</i></p>

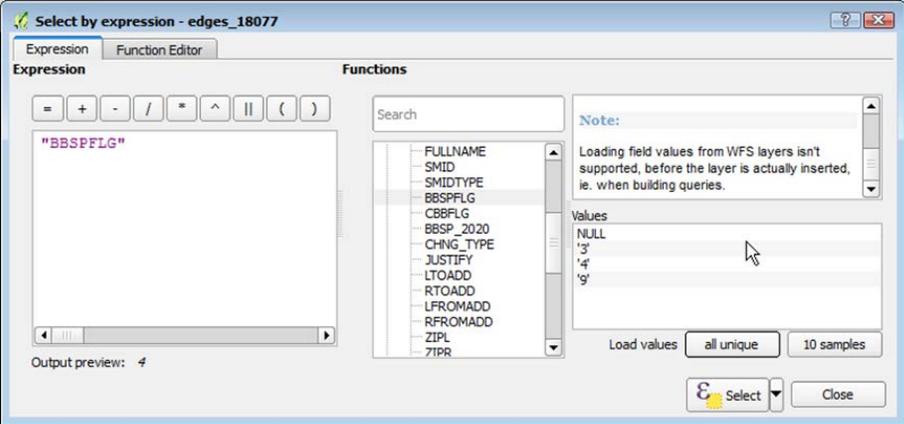
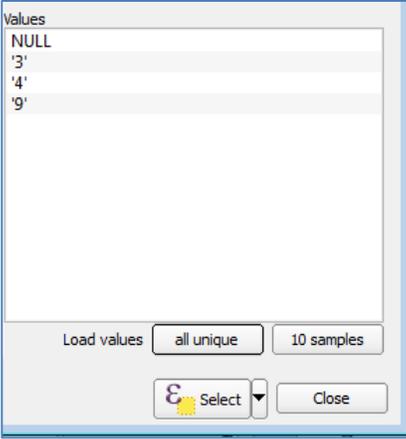
Step	Action and Result
	
<p>Step 10</p>	<p>The third option, 'Select Features by Freehand', allows you to use your cursor to draw a variety of shapes to select a face or faces.</p>  <p>To use this option, click on the map and use your cursor to draw any shape (polygon, triangle, circle, etc.). <i>If the shape does not cross any edges, the single face in which the shape is drawn is selected and turns cyan blue. If the shape crosses several faces, all faces whose edges are crossed are selected and turn cyan blue.</i></p> <p>Note: This method is particularly useful when attempting to select a very small face. You may draw a tiny triangle, for example, within a face to select it.</p>
<p>Step 11</p>	<p>The final option, 'Select Features by Radius', allows you to use your cursor to draw a circle to define the features you want to select.</p>  <p>To use this tool, left-click on the map where you want to begin, then hold down the mouse and drag the cursor outward to expand the circle. Release the mouse when you are done. <i>The feature(s) selected is(are) highlighted in cyan blue.</i></p>
<p>Step 12</p>	<p>You can either deselect polygons selected by holding and using the same selection option to deselect by holding CTRL and retracing over the polygons, or deselect a feature or features automatically by clicking the Deselect Features from All Layers button (next to the Select Features button) once.</p>  <p><i>The selected features in all layers are deselected.</i></p>

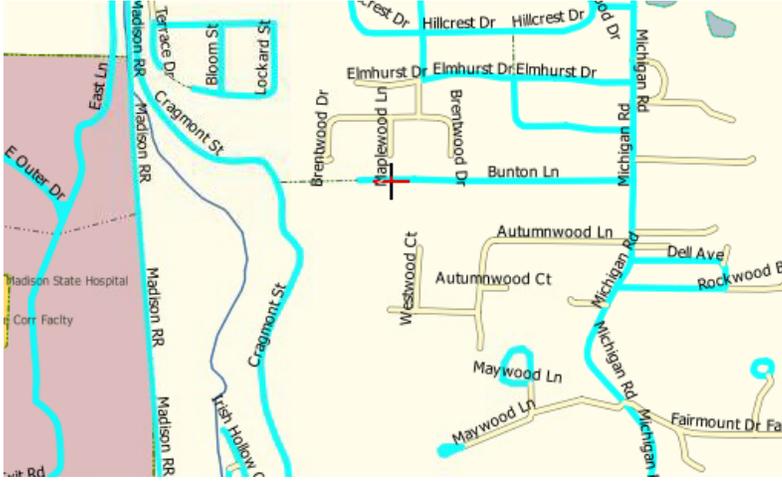
5.6.2.3 Select Features by Querying the Attribute Table

Another method to select features is by querying the attribute table. To do so, follow the steps in [Table 15](#). In this example, we are querying the attribute table for the edges layer to locate and select all linear features flagged as edges for block boundaries.

Table 15: Select Features by Querying the Attribute Table

Step	Action and <i>Result</i>
<p>Step 1</p>	<p>Click the Select Features Using an Expression button on the Standard toolbar.</p>  <p>The Select by Expression window opens. The window has two tabs: Expression and Function Editor.</p> 
<p>Step 2</p>	<p>Under the Expressions tab, click the plus ('+') signs next to the items in the Functions field to display their submenus.</p> 
<p>Step 3</p>	<p>To build a query, click the 'Fields and Values' '+' sign to open the list of choices. Then double-click on your choice. In this example, we will select 'BBSP Flag' to search for all features</p>

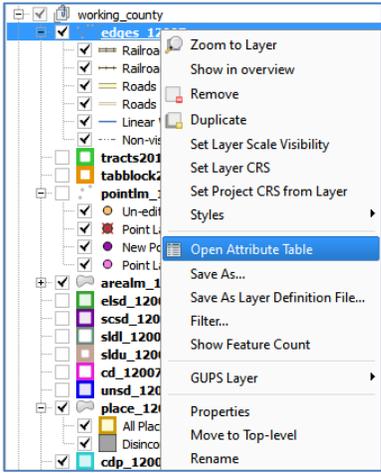
Step	Action and Result
	<p>flagged as edges for block boundaries. Once selected, “BBSP Flag” appears in the expression pane, and a Load values field is added to the Fields pane at the bottom far-right corner.</p> 
<p>Step 4</p>	<p>Select an operator from a full list by clicking the ‘+’ sign next to “Operators’ in the Functions pane. OR If you need a commonly used operator such as equals, plus, or minus, click its corresponding button in the row of buttons at the top of the Expression pane.</p> 
<p>Step 5</p>	<p>In this example, we need the operator for equals. Double-click the ‘=’ operator button. <i>The expression in the Expression pane now reads “BBSP Flag” =.</i></p>
<p>Step 6</p>	<p>To select a specific value for the field “BBSP Flag”, click either the all unique or 10 samples button in the Load values field. <i>The Values field above the buttons populates with all allowed values.</i></p> 
<p>Step 7</p>	<p>Select a value. We will select ‘4’ by double-clicking on it in the Values field list. The expression changes to “BBSP Flag” = ‘4’.</p>

Step	Action and Result
Step 8	<p>Double-click the Select by Expression  button just below the Load values field. Then click Close. All edges marked with a BBSP Flag with a value of '4' turn cyan blue (color may vary) on the map.</p> 

5.6.2.4 View an Attribute Table for a Layer on the Map

To view an attribute table for a map layer, follow the steps in the table below.

Table 16: View Layer Attributes Using the Attributes Table

Step	Action and Result
Step 1	<p>Right-click the layer in the Table of Contents. <i>The drop-down menu opens.</i></p> 
Step 2	<p>Click the 'Open Attribute Table' option in the drop-down menu. <i>The Attribute table opens showing all features in the layer and their attributes (e.g., name, MTFCCs, etc.). Each column represents a separate attribute and each row an individual feature.</i></p>

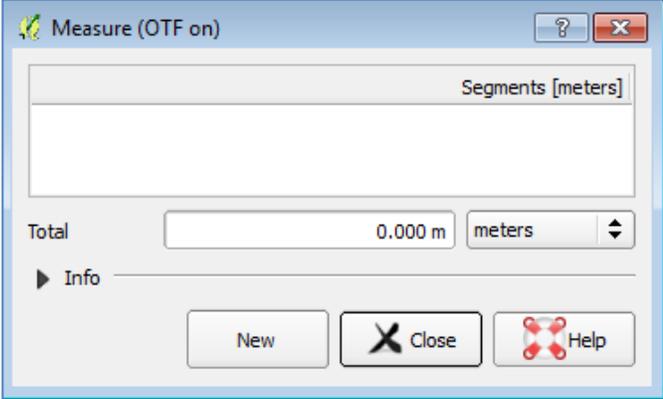
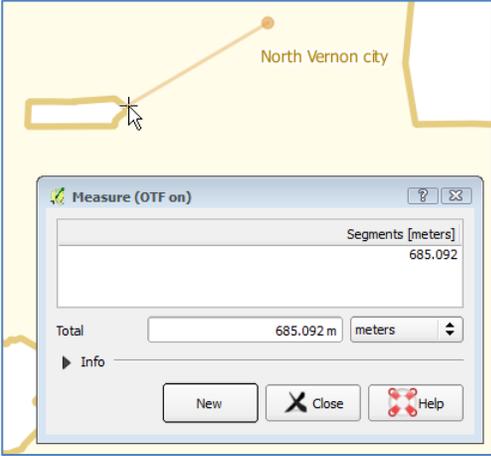
Step	Action and Result
Step 3	<p>To select a feature to view, click on the number on the far left of the row. To select multiple features, click on the number of the row for the first feature you want to select, then press the CTRL key. While holding the CTRL key down, click on the numbers for the other individual rows you want to select. To select a range of features, click on the number for the row showing the first feature you want to select, then press the SHIFT key. While holding down the SHIFT key, click on the number for the last row you want to select.</p>

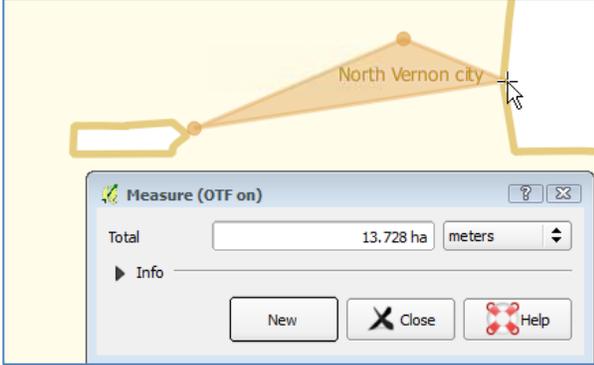
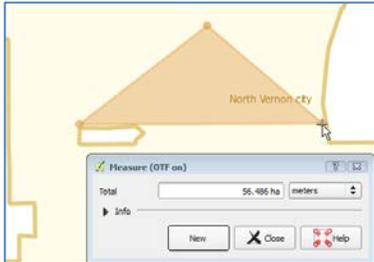
5.6.2.5 Determine Distance, Area, and Angles on the Map

To measure the distance between two or more points, area, or an angle on a map, follow the steps in [Table 17](#).

Table 17: Measure Distances, Area, and Angles on a Map

Step	Action and Result
Step 1	<p>Click the Measure button on the Standard toolbar.</p> <p>The Measure button drop-down menu opens.</p>

Step	Action and Result
<p>Step 2</p>	<p>To measure the distance between two points on the map, select 'Measure Line' in the drop-down menu. <i>The Measure box opens.</i></p> 
<p>Step 3</p>	<p>Zoom to the map location where you want to make the measurement. Then click on the beginning point on the map and continue clicking on points until you reach the final point. Right-click when you are done. <i>The length of each segment of the line you drew, as well as the total length of the line between the beginning point and the ending point, appear in the Measure box.</i></p> 
<p>Step 4</p>	<p>To measure area on the map, select 'Measure Area' in the drop-down menu. <i>The Measure box opens.</i> When the box opens, left-click on the map to begin drawing a polygon around the area you want to measure. Left-click when you reach each vertex of the polygon. When you are finished, right-click. <i>The area polygon encompasses appears in the Total field.</i> Use the drop-down to the right to see the area in other units of measure.</p>

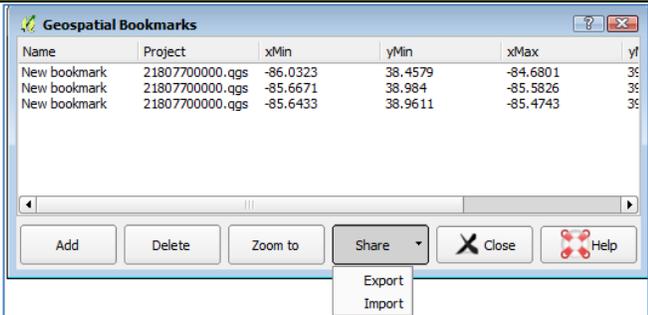
Step	Action and Result
	 <p>To begin a new measurement, click the New button.</p>
<p>Step 5</p>	<p>To measure an angle on the map, first select the 'Measure Angle' option in the drop-down menu. Then left-click on the map to begin drawing the angle. Drag the mouse (but do not hold down the mouse button) to create the first side of the angle. Then left-click. Drag the mouse again (again without holding down the mouse button) to draw the second leg. <i>The Angle box opens showing the angle measurement.</i></p> 

5.6.2.6 Save Locations on a Map Using the Bookmark Button

To save geographic locations on your map and view them later, follow the steps in [Table 18](#) below.

Table 18: Bookmark Locations on a Map

Step	Action and Result
<p>Step 1</p>	<p>Zoom to the location on the map in Map View that you wish to bookmark and click on the New Bookmark button on the Standard toolbar.</p>  <p><i>The Geospatial Bookmarks box opens.</i></p>

Step	Action and Result
	
Step 2	Click on the row named ' New Bookmark bookmark '. Then backspace over ' New Bookmark bookmark ' and type in a descriptive name for the bookmark (255-character limit). Click the Close button. <i>The bookmark is added.</i>
Step 3	To view and manage spatial bookmarks, click on the Show Bookmarks button on the Standard toolbar . <i>The Geospatial Bookmarks dialog box again opens.</i> To zoom to a bookmark, click on a bookmark name in the dialog box and then click the Zoom to button. To delete a bookmark, click on the bookmark name, then press the Delete button.
	Bookmark names and coordinates cannot be edited from the Geospatial Bookmarks dialog box.

5.6.3 BAS Toolbar Buttons

The **BAS toolbar** provides the BAS-specific functions needed to complete your review and update activities, as well as to import and export zipped shapefiles.



Figure 10. BAS Toolbar

Each toolbar button is described in [Table 19](#) below.

Table 19: BAS Toolbar Buttons

Button	Name	Function / Description
	Add Linear Feature	Add a new linear feature.
	Delete Linear feature	Delete an existing linear feature.
	Split Linear Feature	Split a linear feature. You may need to split a linear feature to accurately reflect an entity's location. This feature "splits" the original into two.

Button	Name	Function / Description
	Display All Names	Displays all names for a street with multiple names assigned in the MAF/TIGER System.
	User Address List	Import an address list (.csv, .txt, etc.) into GUPS.
	Modify Linear Feature Attributes	Edit attributes of a selected linear feature.
	Modify Area Feature	Make updates to legal area (annexations, deannexations, boundary corrections, etc.).
	Show/Hide Legend	Show <u>s</u> or hides the layer.
	Geography Review Tool	Review the attribute table for a layer.
	Review Change Polygons	Review change polygons in a layer and make corrections (reviews change polygons for holes and minimum size).
	Import County ZIP	Import zipped Census Bureau shapefiles shared by another GUPS user.
	Export to ZIP	Create the ZIP file containing all required data and shapefiles to be submitted to the Census Bureau.
	Print Map to File	Export a printable map in .pdf, .png, .tif, or jpeg format.
	Add Point Landmark	Add a new point landmark.
	Edit Point Landmark	Edit point landmark attributes.
	Delete Point Landmark	Delete an existing point landmark.

5.6.4 Status Bar

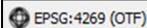
The **Status bar** at the bottom of the GUPS main page displays information about the map. It allows you to adjust the map scale and see the mouse cursor's coordinates on the map.



Figure 11. Status Bar

Table 20 describes each element of the Status bar.

Table 20: Status Bar Elements

Item	Description
	Allows you to toggle between the mouse's coordinate position or the map view extents as you pan and zoom in and out on the map.
Coordinate	Shows your current position in map coordinates (default is decimal degrees for GUPS) as your map cursor is moved across the map.
Scale	Shows the current zoom level in the Map View . Can be changed by selecting one of the predefined levels from the drop down, by typing in a new ratio, or using the scroll wheel on your mouse.
Rotation	Shows the map rotation.
Render	Allows you to temporarily prevent layers from drawing by clicking the checkbox immediately to the left of "Render."
	Clicking on the icon opens the projection properties for the current map.

5.7 How to Import User-Provided Data into GUPS

5.7.1 The Add Data Toolbar

To import your own imagery, geodatabase, shapefiles, web mapping service, or other data layers into GUPS you will use the **Add Data toolbar**.



Figure 12. Add Data Toolbar

Although shown in a horizontal position here, the **Add Data toolbar** appears arranged vertically to the left of the **Table of Contents** in GUPS. Its buttons are described in **Table 21**.

Table 21: Add Data Toolbar Buttons

Button	Name	Function / Description
	Add Vector Layer	Allows you to add shapefile and geodatabase files to your GUPS project.
	Add Raster Layer	Allows you to add raster datasets such as imagery.
	Add PostGIS Layer	Add PostGIS layer.

Button	Name	Function / Description
	Add SpatialLite Layer	Add data from a SpatialLite database.
	Add MS SQL Layer	Add MS SQL 2008 Spatial data.
	Add Oracle Spatial Layer	Add a spatial layer from an Oracle database.
	Add WMS/WM(T)S Layer	Add Web Mapping Services and Web Mapping Tile Services. Publicly accessible and secured WMS services are supported.
	Add WCS Layer	Add Web Coverage Services, which provide access to raster data useful for client-side map rendering.
	Add WFS Layer	Add Web Feature Services.
	New Shapefile Layer	 Add a new shapefile layer or new temporary scratch layer.

5.7.2 How to Upload User-Provided Data Layers

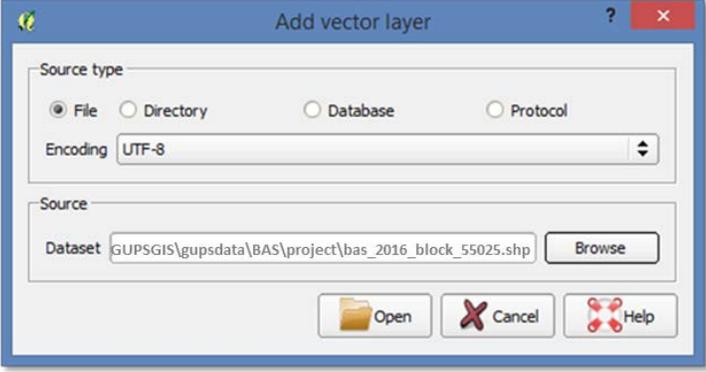
GUPS supports vector data in a number of formats, including those supported by the OGR library data provider plugin, such as ESRI shapefiles, MapInfo MIF (interchange format), and MapInfo TAB (native format). It also supports PostGIS layers in a PostgreSQL database and SpatialLite layers. Support for additional data types (e.g., delimited text) is provided by additional data provider plugins.

Below are the steps to import the most commonly used data formats. To upload shapefile or geodatabase data layers, follow the steps in the table below.

Note: You May Only Upload One User-Provided Data Layer at a Time. If you have multiple data layers that you wish to upload, note that GUPS will only allow you to upload one layer at a time.

Table 22: Load Shapefiles/Geodatabase Layers

Step	Action and Result
Step 1	Begin the upload. Click the Add Vector Layer  button on the Add Data toolbar . <i>The Add Vector Layer dialog box opens.</i>

Step	Action and Result
	
Step 2	In the Encoding drop-down menu, the default value is 'System'. If you receive an error message when opening your file, use the drop-down to select UTF-8. <i>UTF-8 populates the Encoding field.</i>
Step 3	Click the Browse button and navigate to the folder where the shapefile or geodatabase is saved on your computer.
Step 4	Left-click the file you want to upload, then click the Open button. <i>The shapefile / geodatabase is added to the Table of Contents and to the Map View window.</i>

To load data from a web mapping service, follow the steps in [Table 23](#) below.

Table 23: Load Data from a Web Mapping Service

Step	Action and Result
Step 1	Begin the upload. Click the Add WMS/WM(T)S Layer button  on the Add Data toolbar. <i>The Add Layers from a WM(T)S Server dialog box opens.</i>
Step 2	Select the web mapping service. Click the Layers tab, then click the New button under the tab. <i>The Create a new WMS Connection dialog box opens.</i>
Step 3	In the Name field, type a name for the web mapping imagery service. In the URL field, type the URL for the service. If the service requires a user name and password, type them in the fields provided. Click OK . <i>The service will be added to the drop-down menu for web mapping services appearing just below the Labels tab.</i> Note: If you are working inside a firewall, you may be prompted to enter a user name and password to obtain resources from outside the firewall.
Step 4	Select the imagery service you added in the drop-down menu. <i>The available layers appear in the ID/Name/Title/Abstract box.</i>
Step 5	Click on the layer you want to display, then click the Add button. <i>The WMS is added to the map showing in Map View and to the Table of Contents.</i>

Step	Action and Result
	When the WMS is added, it displays over the top of other layers you have selected for Map View . To make it display below these layers, click on the WMS layer and, while holding down the mouse button, drag it to the bottom of the Table of Contents .

If you do not have access to a web mapping service, have a poor Internet connection, or work under a restrictive firewall, you can still add other types of imagery files to GUPS (e.g., a county or state imagery dataset), one option for adding imagery may be the National Agricultural Imagery Service (NAIP), supplied in web mapping service format by the U.S. Geological Survey. To add imagery files, follow the steps in the [Table 24](#) below.

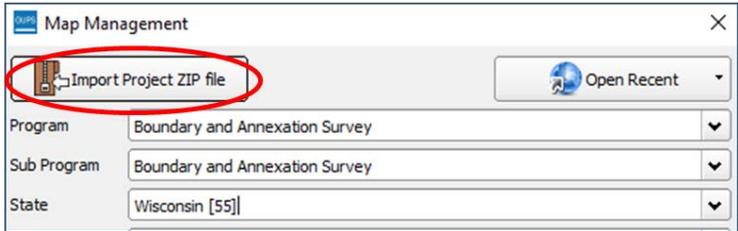
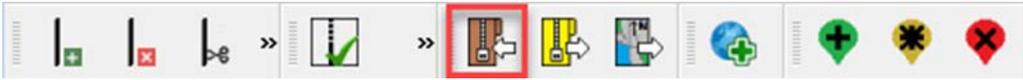
Table 24: Add Imagery Files

Step	Action and Result
Step 1	Click the Add Raster Layer  button on the Add Data toolbar . <i>The Open a GDAL Supported Raster Data Source dialog box opens.</i>
Step 2	Navigate to the folder on your computer where the imagery file is stored.
Step 3	Select the file, then click Open . <i>The file loads into GUPS.</i>

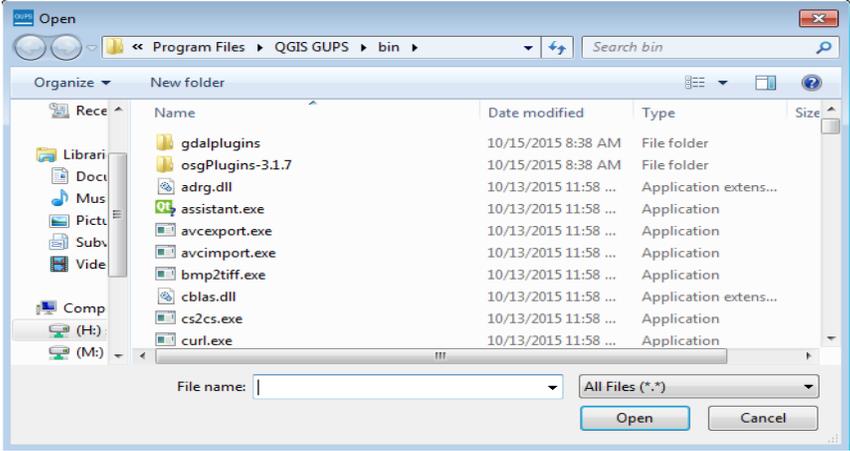
5.7.3 How to Import a Shared ZIP Shapefile

If you want to import Census Bureau shapefiles already updated by another user, you may use the **Import Project ZIP File** button (available both on the BAS toolbar and in the Map Management dialog box), then follow the steps in [Table 25](#) below.

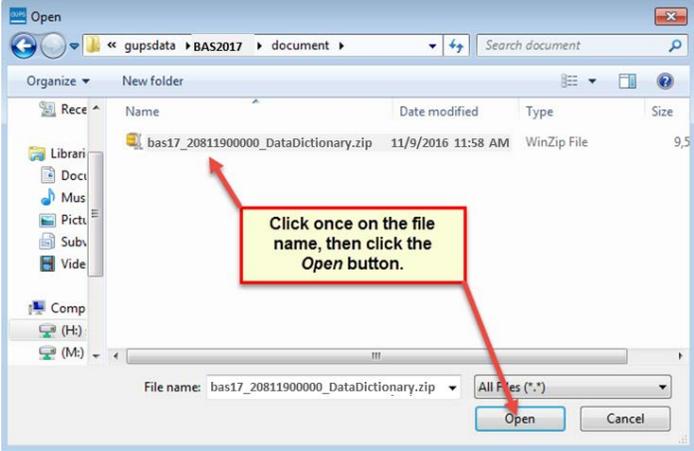
Table 25: Import a ZIP File Shared by Another User

Step	Action and Result
Step 1	<p>Click the Import Project ZIP File button in the upper left-hand corner of the Map Management dialog box:</p>  <p>OR on the BAS toolbar:</p> 

Step	Action and Result
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Step 2	<p><i>The Open window opens.</i></p> 
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Step 3	<p>From this window, click on the 'Computer' icon (called 'My Computer' in some versions of Windows) located in the far-left-hand pane. </p> <p>When the list of directories opens, navigate to the location where the shared ZIP file is located.</p>
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Step 4	<p>Once you locate the file, click once on the file, then click the Open button.</p>  <p><i>The file loads into Map View.</i></p>
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SECTION 6: MAKING BAS UPDATES IN GUPS

The tables in this section provide step-by-step instructions for making BAS updates. The examples assume you have read and understood the directions for opening GUPS and using Map Management. If you do not yet feel comfortable with Map Management, please review the contents of [Section 5: Using GUPS \(Basics and Map Management\)](#) before you begin making updates. It is highly recommended to use a source of imagery data when making any BAS updates.

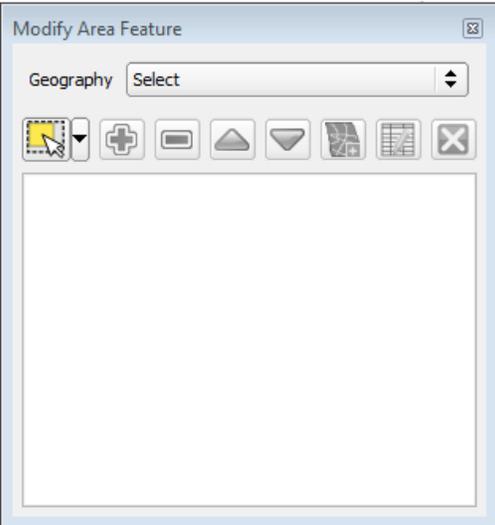
All examples shown here, although using real data, are purely fictitious. They are employed for purposes of illustration only and do not indicate any actual geographic changes.

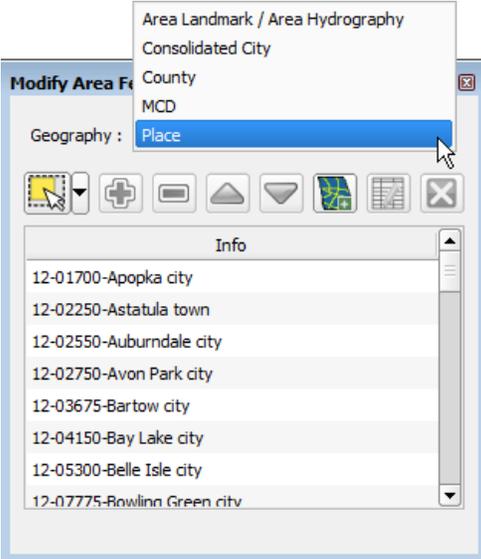
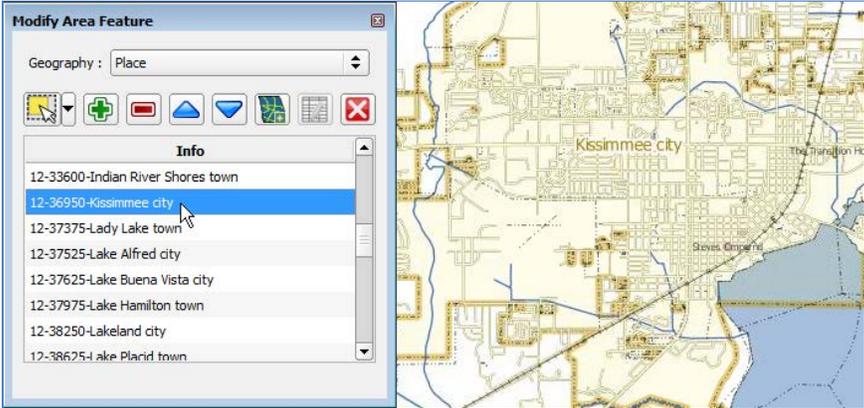
6.1 How to Update Legal Boundaries

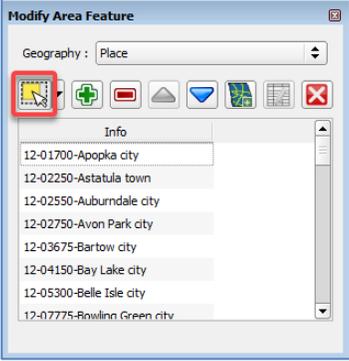
6.1.1 Recording an Annexation

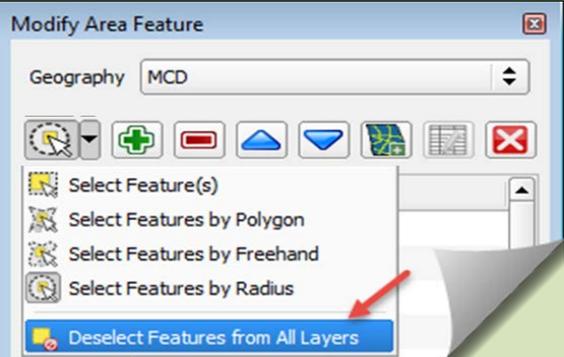
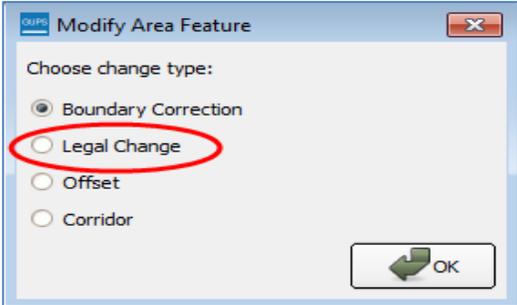
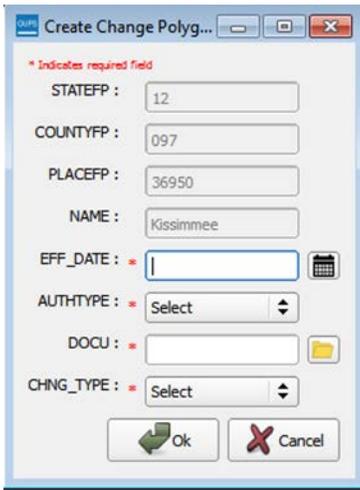
Follow the steps in [Table 26](#) to record an annexation. The fictitious example in this table looks at an incorporated place named Kissimmee, Florida. Kissimmee has annexed several parcels previously outside its city limits.

Table 26: Record an Annexation

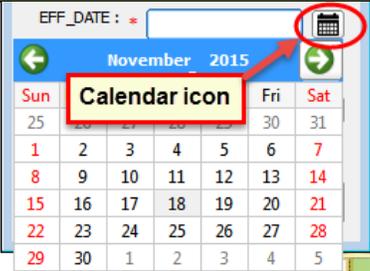
Step	Action and Result
Step 1	Open in Map View the county that contains the place (or other legal entity) that is annexing area. Be sure that you have all layers you wish to see on the map checked in the Table of Contents .
Step 2	<p>Click the Modify Area Feature button on the BAS toolbar.</p>  <p>The Modify Area Feature dialog box opens.</p> 

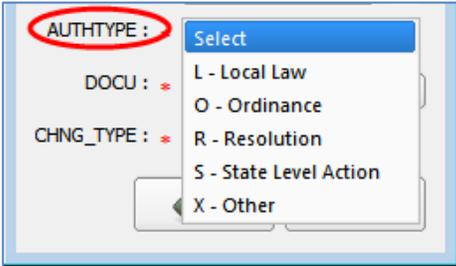
Step	Action and Result
<p>Step 3</p>	<p>Click the drop-down area next to the Geography field, and select the entity type (here 'Place'), from the drop-down menu. <i>A list of all incorporated places in the county appears in the Info list in the bottom portion of the dialog box.</i></p> 
<p>Step 4</p>	<p>Double-click on the row in the list for the place that is making the annexation (here 'Kissimmee city'). (Note: The list of places is short, but in some cases it can be long. Use the scroll bar to the right of the list to move up and down the list, if needed.) <i>Once you double-click on the row, the map zooms to the place selected.</i></p> 
<p>Step 5</p>	<p>If the map does not zoom to a scale sufficient to make your changes, click on the Zoom in button on the Standard toolbar.</p> 
<p>Step 6</p>	<p>To select the faces you want to add to the place, click on the small down arrow next to the Select Features button on the dialog box toolbar. <i>The Select Features button drop-down menu opens.</i> In this example we will use the "radius" method to select the faces we want to add to Kissimmee. Click on 'Select Features by Radius' in the menu.</p>

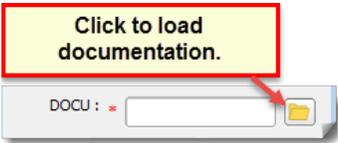
Step	Action and Result
	
<p>Step 7</p>	<p>Next, go to the map and place your cursor where you want to add the faces.</p> <p>To select a single face, simply drag the cursor outward in the center of the face. To select multiple faces, drag the cursor across the edges that separate the faces. In this example, we select seven faces. <i>The faces selected turn cyan blue (color may vary).</i></p> 
	<p>Because all geographic areas consist of faces, you may need to “split” a face to accurately reflect an entity’s boundary. To split a face, digitize a new line that represents the boundary’s location (click on Table 33 for instructions to add a linear feature) and assign it the appropriate MTFCC. This splits the original face into two faces. You can now select the face you need to add to the new entity.</p>
	<p>If you accidentally select a face you do not wish to include, you can use the Deselect Features from All Layers option in the Select Feature(s) drop-down menu to clear the selected faces from your screen and start over.</p>

Step	Action and Result
	
<p>Step 8</p>	<p>Click the Add Area button on the dialog box toolbar.</p>  <p>The Modify Area Feature Choose Change Type pop-up box appears, and asks you to choose your change type.</p> 
<p>Step 9</p>	<p>Since this is an annexation, click the 'Legal Change' radio button, then click OK. The Create Change Polygons dialog box opens, with the state and county FIPS codes, the place name, and the Legal/Statistical Area Description (LSAD) already populated.</p> 
<p>Step 10</p>	<p>Click the calendar icon next to the EFF_DATE field to open the calendar, then click on the effective date for the annexation.</p>

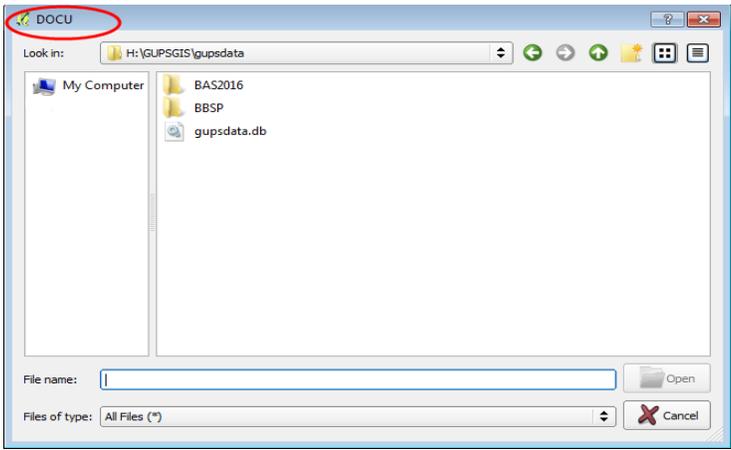
Step	Action and Result
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	<p>The selected date will populate the EFF_DATE field.</p>	

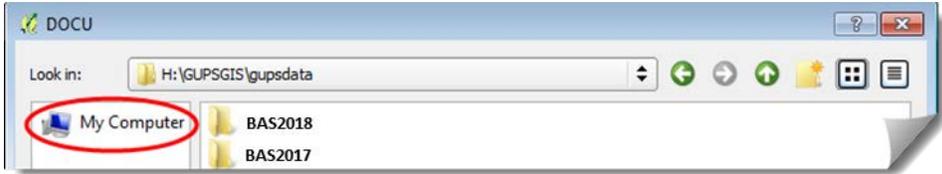
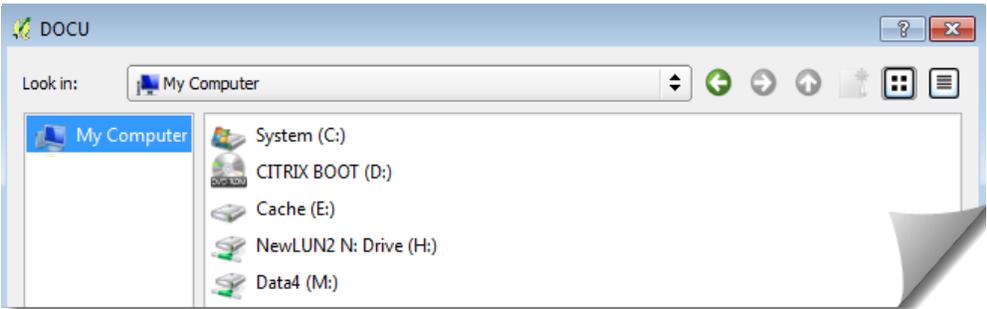
<p>Step 11</p>	<p>Select an authority type for the annexation in the AUHTYPE field drop-down menu.</p> <div style="text-align: center;">  </div>
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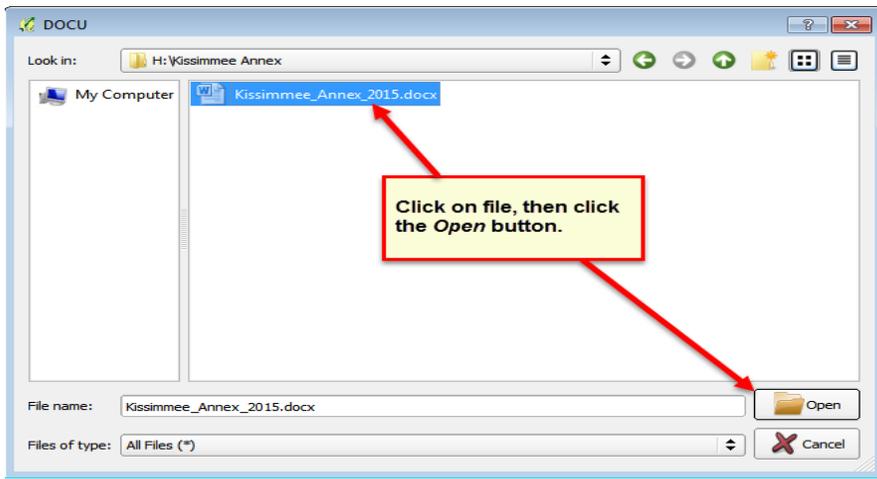
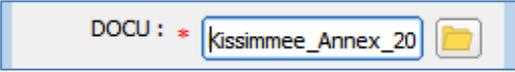
<p>Step 12</p>	<p>In the DOCU field, type in the ordinance or other legal documentation number authorizing the annexation or upload documentation for the change. To upload documentation, click the folder icon next to the DOCU field.</p> <div style="text-align: center;">  </div>
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The **DOCU** window opens.

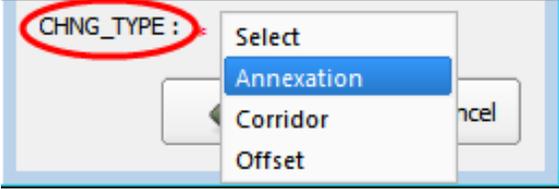


Step	Action and Result
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Step 13	<p>Click on the icon for 'My Computer' (or simply 'Computer' in some Windows versions) to open the directory where you have saved your documentation.</p>  <p>Your directories display, as shown below.</p> 
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Step 14	<p>Select the appropriate directory in the list and navigate to the file you want to upload. Click the file, then to upload it, click the Open button at the bottom of the DOCU window.</p>  <p>The name of the document populates the DOCU field on the dialog box.</p> 
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Step 15	<p>Finally, select 'Annexation' in the drop-down menu for the CHNG_TYPE field.</p>
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Step	Action and Result
	
<p>Step 16</p>	<p>When you are finished, click OK. <i>The added faces (once you save) turn tan in color on the map (color may vary).</i></p> 

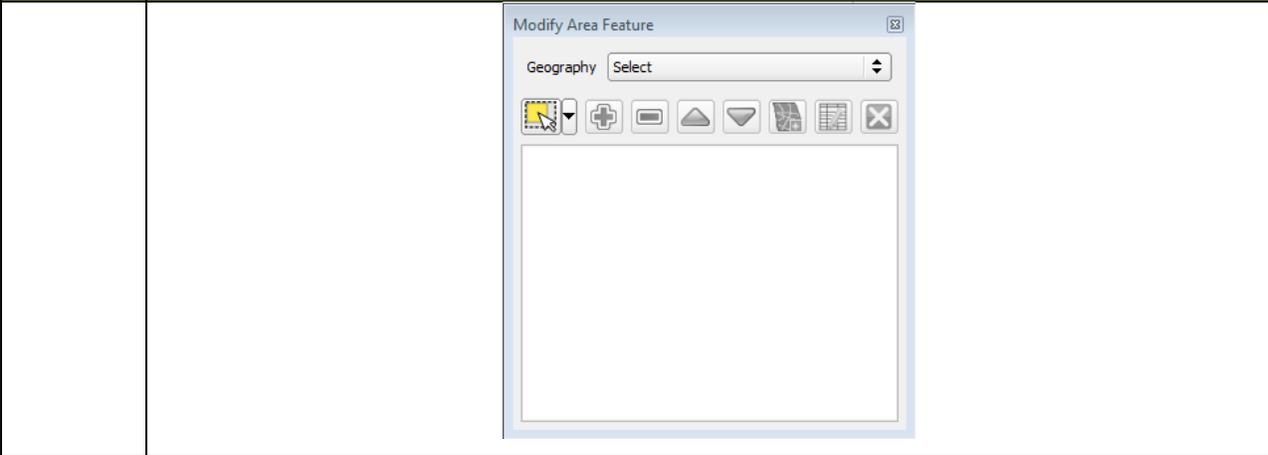
6.1.2 Recording a Deannexation

Follow the steps in [Table 27](#) to record a deannexation. The fictitious example in this table uses Sayre City, an incorporated place in Oklahoma.

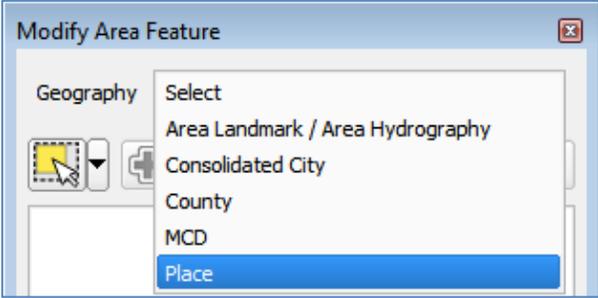
Table 27: Recording a Deannexation

Step	Action and Result
<p>Step 1</p>	<p>Open in Map View the county that contains the place (or other legal entity) that is deannexing area. Be sure that you have all layers you wish to see on the map checked in the Table of Contents.</p>
<p>Step 2</p>	<p>Click the Modify Area Feature button on the BAS toolbar.</p>  <p><i>The Modify Area Feature dialog box opens.</i></p>

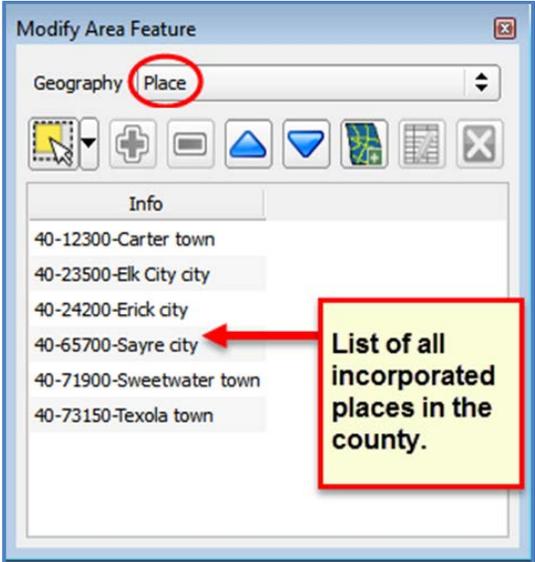
Step	Action and Result
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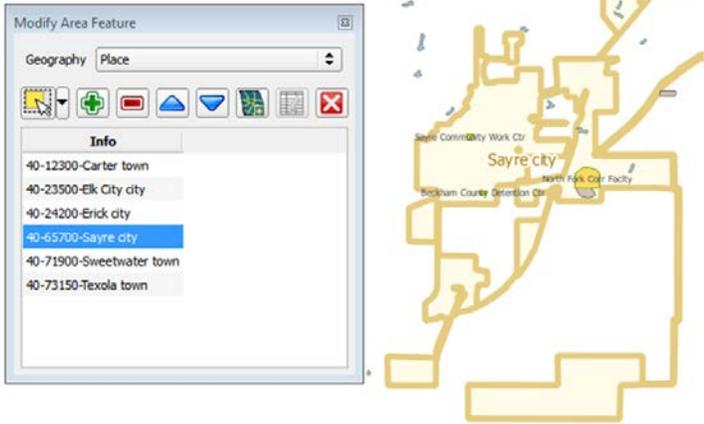
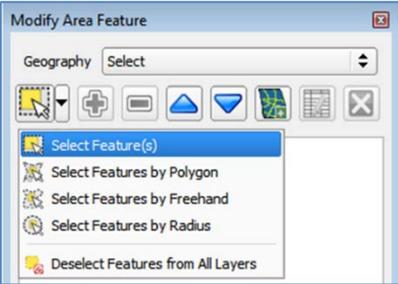
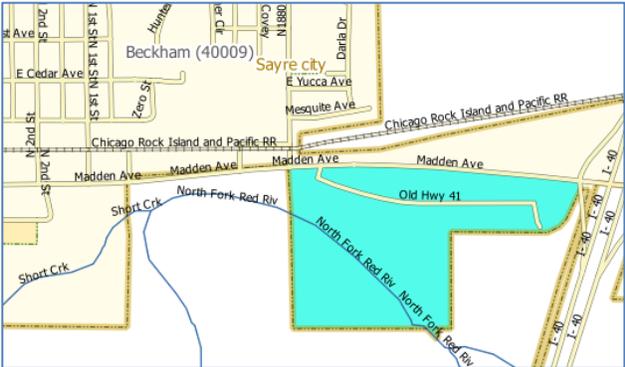


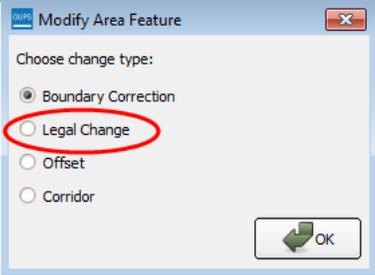
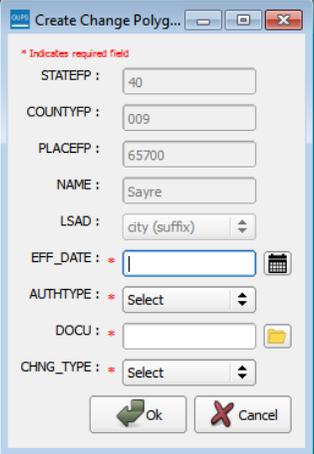
<p>Step 3</p>	<p>Click the arrow next to the Geography field, and select in the drop-down menu the entity type from which you want to deannex area. In this example we are deannexing land from an incorporated place, so we select 'Place'.</p>
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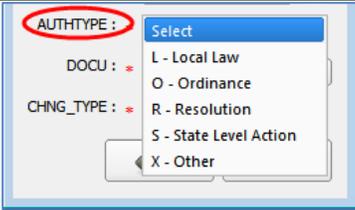
*Place appears in the **Geography** field and a list of all incorporated places in the county appears in the **Info** list in the bottom portion of the dialog box.*



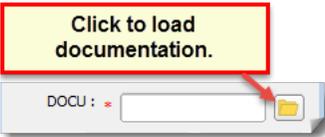
Step	Action and Result
<p>Step 4</p>	<p>Click on the place name (Sayre city) in the list. <i>The map zooms to Sayre.</i></p> 
<p>Step 5</p>	<p>Zoom on the map to the location where the deannexation occurred. Then choose a method for selecting the faces to be deannexed. In this example, in the drop-down menu for the Select Features tool, click on the 'Select Feature(s)' option.</p> 
<p>Step 6</p>	<p>Click on the face you want to select. If you want to select more than one face, depress the CTRL key, and while holding the CTRL key down, click each face to be deannexed. <i>The selected face(s) turn cyan blue (colors may vary).</i></p> 
	<p>Because all geographic areas consist of faces, you may need to “split” a face to accurately reflect an entity’s boundary. To split a face, digitize a new line that represents the boundary’s location (click on Table 33 for instructions to add a linear feature) and assign it the</p>

Step	Action and Result
	appropriate MTFCC. This splits the original face into two faces. You can now select the face you need to add to the new entity.
<p>Step 7</p> <p>Click the Remove Area button on the dialog box toolbar.</p>  <p>The Modify Area Feature Choose change type pop-up box appears, and asks you to choose your change type.</p> 	
<p>Step 8</p> <p>Since this is a legal deannexation, click the 'Legal Change' radio button, then click OK. The Create Change Polygons dialog box opens.</p> 	
<p>Step 9</p> <p>In the Create Change Polygons dialog box, click the calendar icon next to the EFF_DATE field and, when the calendar opens, click on the date which the deannexation became effective.</p>  <p>The date selected populates the EFF_DATE field.</p>	
<p>Step 10</p>	<p>Select an authority type for the deannexation in the AUTHTYPE field drop-down menu.</p>

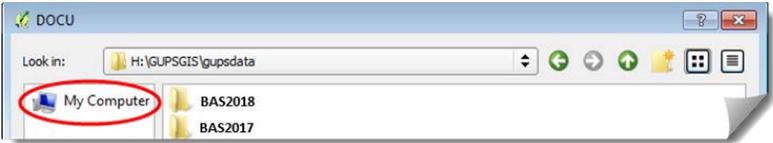
Step	Action and Result
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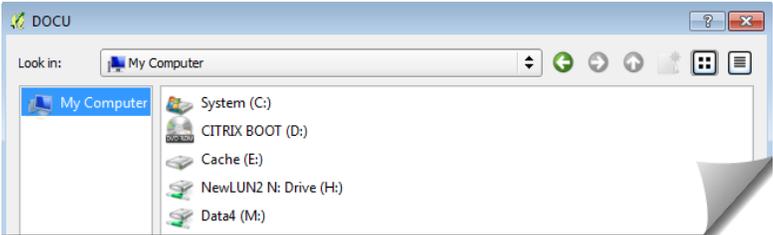
Step 11	<p>In the DOCU field, type in the ordinance or other legal documentation number authorizing the deannexation, or upload legal documentation for the change. To upload documentation, click the folder icon next to the DOCU field.</p>
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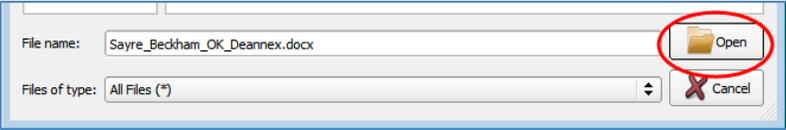
When the **DOCU** window opens, click on the icon for 'My Computer' (or simply 'Computer' in some Windows versions) to open the directory where you have saved your documentation.



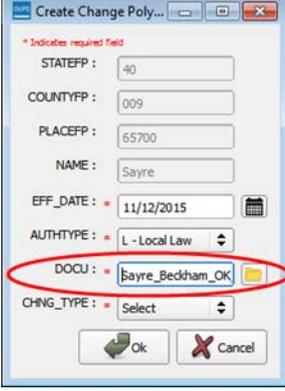
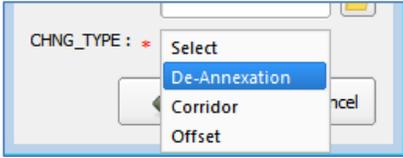
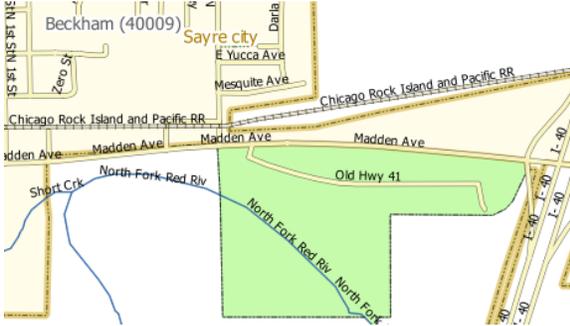
Your directories display, as shown below.



Step 12	<p>Select the appropriate directory and navigate to the file you want to upload. Click the file. Then, to upload it, click the Open button at the bottom of the DOCU window.</p>
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GUPS uploads the file and the file name appears in the **DOCU** field on the **Create Change Polygons** dialog box.

Step	Action and Result
	
Step 13	In the CHNG_TYPE field drop-down menu, select ' De-annexation '. 
Step 14	When finished, click OK . <i>The selected faces turn green on the map (color may vary).</i> 

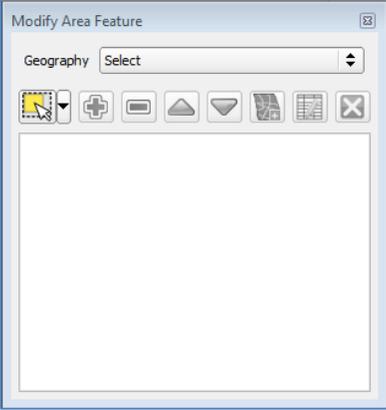
6.1.3 Adding a New Legal Entity (New Incorporation)

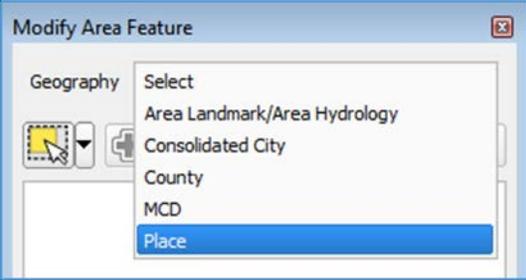
Follow the steps [Table 28](#) to add a new legal entity. In this example, we will add a fictitious newly incorporated place in Michigan.

Table 28: Adding a New Legal Entity

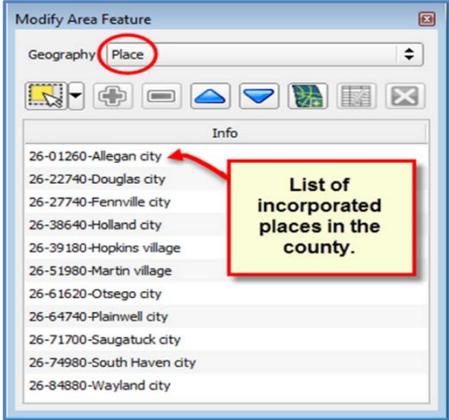
Step	Action and Result
Step 1	Open in Map View the county where you want to add a new entity. Be sure that you have all layers you wish to see checked in the Table of Contents .
Step 2	Click the Modify Area Feature button on the BAS toolbar. 

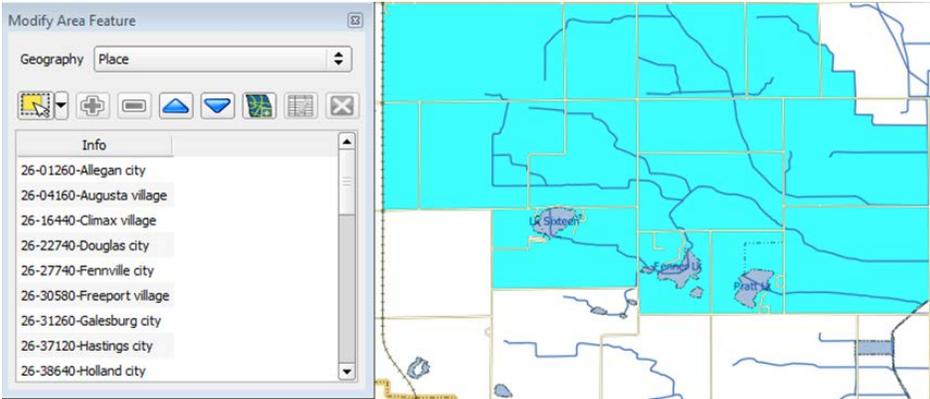
Step	Action and Result
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	<p>The Modify Area Feature dialog box opens.</p> 
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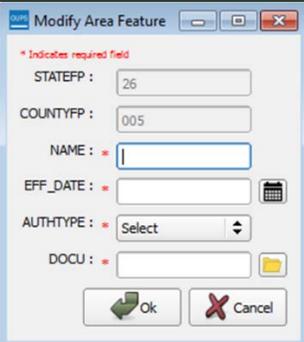
<p>Step 3</p>	<p>Click the drop-down arrow next to the Geography field, and select the entity type you want to add from the drop-down menu. In this example we are adding a newly incorporated city, so we select 'Place'.</p> 
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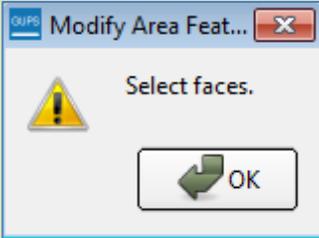
Place appears in the **Geography** field and a list of all incorporated places in the county appears in the **Info** list.



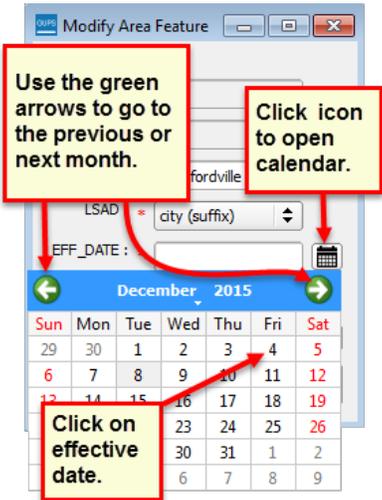
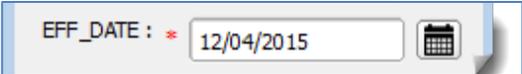
Step	Action and Result
<p>Step 4</p>	<p>Zoom to the location where the new entity is located. To select the faces for the entity, left-click <i>once</i> on the Select Features button on the dialog box toolbar.</p> 
<p>Step 5</p>	<p>Then click on the map to select the face or faces.</p> <p>If the entity includes only a single face, you may simply click once on the face to select it. If the entity includes several contiguous faces, after clicking on the first face, depress the CTRL key and while holding it down, left-click on each additional face to be added. <i>The selected faces turn cyan blue (colors may vary).</i></p>  <p>Note: You may also select faces (after clicking the Select Features button) by simply dragging your cursor over the edges that mark their boundaries. Additional means of selecting faces (by polygon, by freehand, and by radius) are discussed Table 14: Select/Deselect Features on the Map.</p>
	<p>Because all geographic areas consist of faces, you may need to “split” a face to accurately reflect an entity’s boundary.</p> <p>To split a face, digitize a new line that represents the boundary’s location (click on Table 33 for instructions to add a linear feature) and assign it the appropriate MTFCC. This splits the original face into two faces. You can now select the face you need to add to the new entity.</p>
<p>Step 6</p>	<p>To record the new entity, click the Add Entity button on the dialog box toolbar.</p>  <p><i>The Modify Area Feature new entity dialog box opens.</i></p>

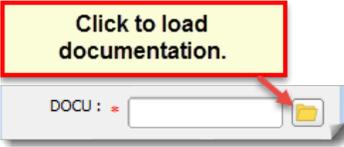
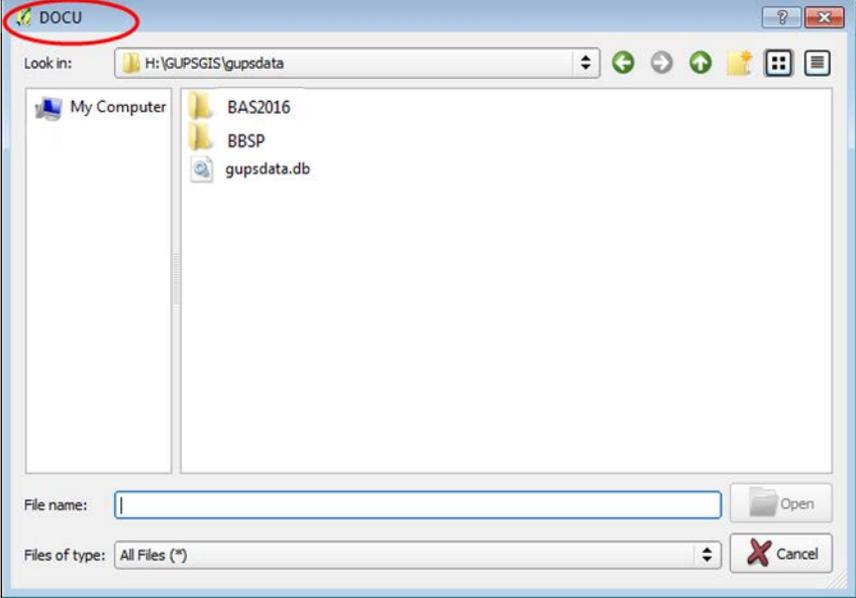
Step	Action and Result
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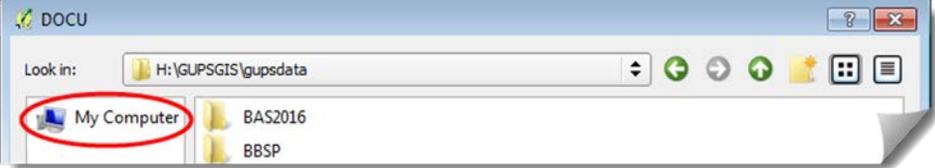
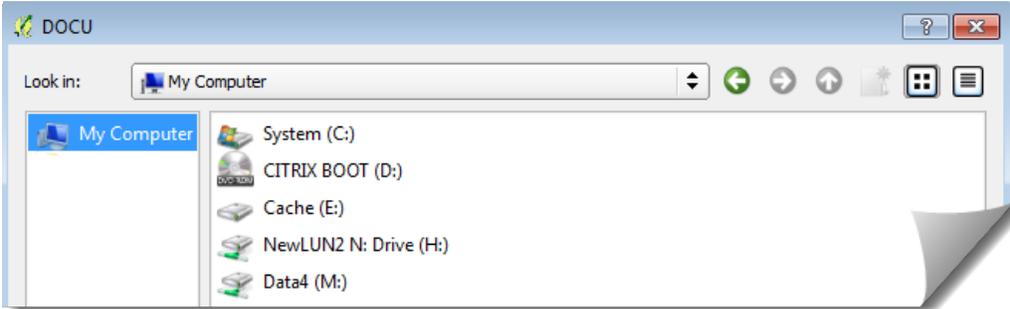
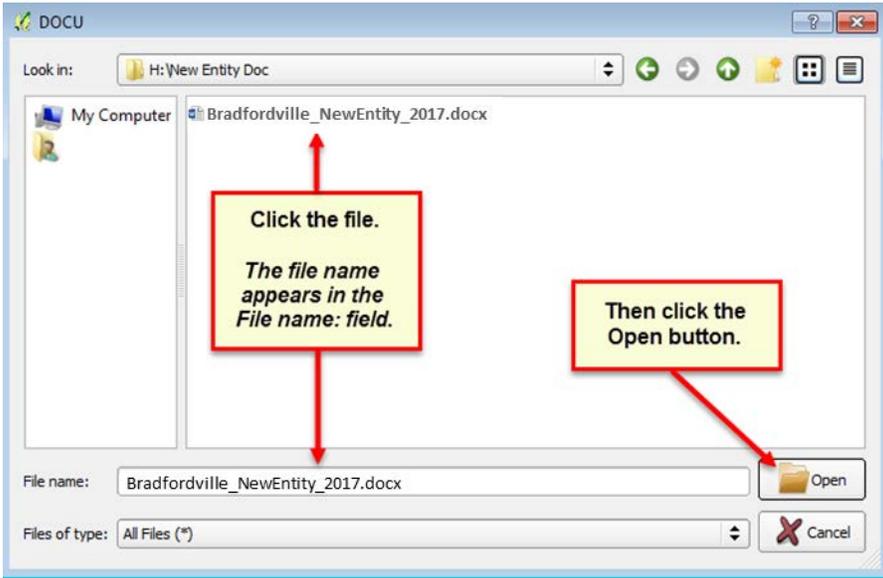
	
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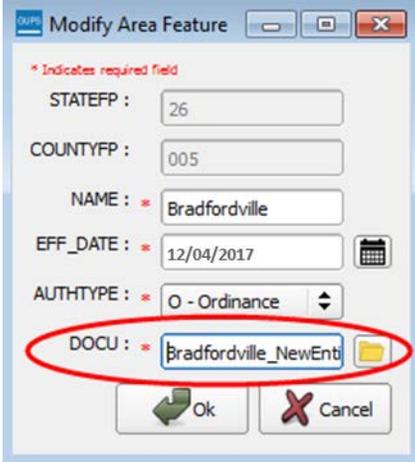
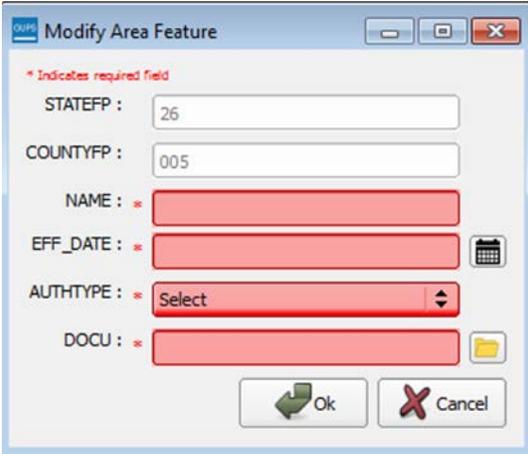
	<p>Note: If you click the Add Entity button before selecting the faces, you will see a pop-up box warning. Simply click OK and add the faces.</p>  <p>Since we have already selected faces, we do not see the pop-up warning.</p>
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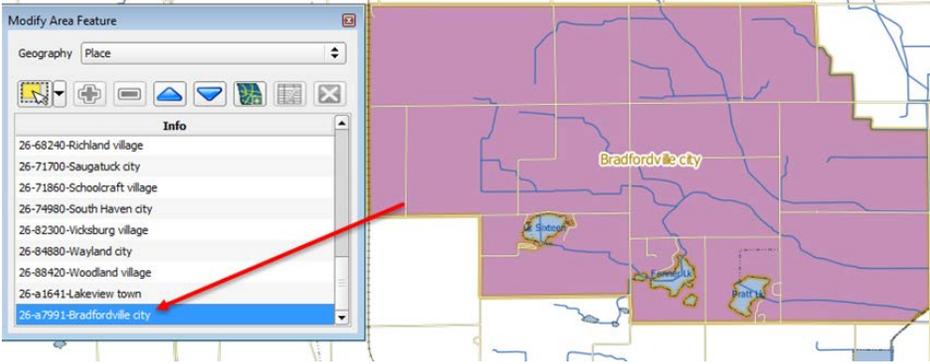
Step 7	In the new entity dialog box, type the new legal entity name in the Name field.
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Step 8	<p>Next add the effective date for the legal change. Click on the calendar icon next to the EFF_DATE field and, when the calendar opens, click on the effective date.</p>  <p>The date selected populates the EFF_DATE field.</p> 
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Step	Action and <i>Result</i>
<p>Step 9</p>	<p>Next, add the authority type using the AUTHTYPE drop-down menu.</p> 
<p>Step 10</p>	<p>Finally, either type in the ordinance or other legal documentation number authorizing the new entity in the DOCU field, or upload documentation for the change. To upload documentation, click the folder icon next to the DOCU field.</p>  <p>The DOCU window opens.</p> 
<p>Step 11</p>	<p>Click on the icon for 'My Computer' (or simply 'Computer' in some Windows versions) to open the directory where you have saved your documentation.</p>

Step	Action and Result
	 <p>Your directories display, as shown below.</p> 
<p>Step 12</p>	<p>Select the appropriate directory in the list and navigate to the file you want to upload as documentation, then click the file. <i>The file name appears in the File name: field.</i></p> <p>To upload the file, click the Open button.</p> 

Step	Action and Result
<p>Step 13</p>	<p>Once you have clicked the Open button, the name of the document appears in the DOCU field.</p> 
<p>Step 14</p>	<p>Click the OK button.</p> <p>Note: Red asterisks indicate required fields. You must complete required fields to move forward. If you click OK and have not completed one or more required fields, GUPS will prompt you to do so. Any required field not completed will highlight in red, as shown below.</p>  <p>If you have completed all required fields, when you click OK, the faces for the new entity turn purple on the map (colors may vary) and the name of the new entity appears in the list of incorporated places in the Modify Area Feature dialog box.</p>

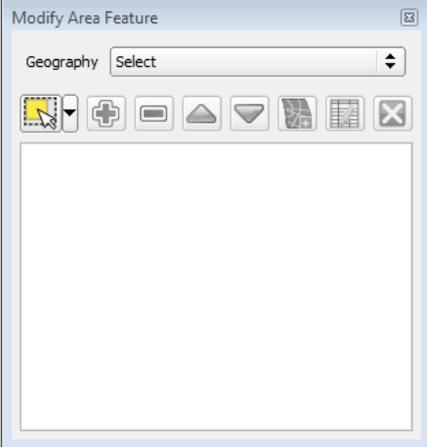
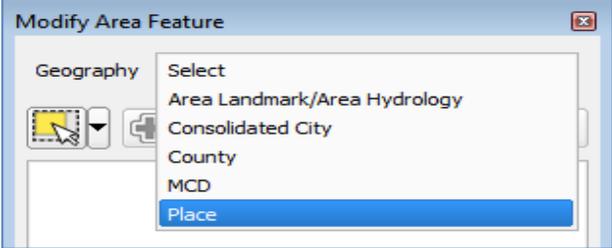
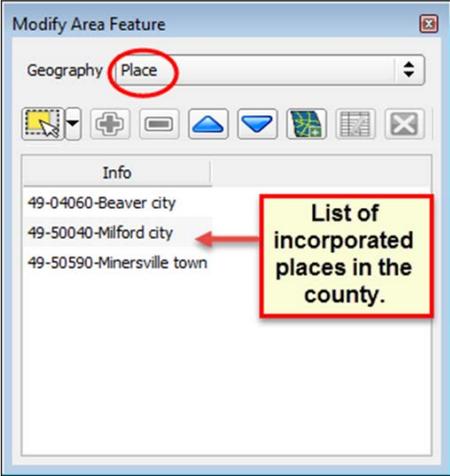
Step	Action and Result
	
	<p>Once the Census Bureau verifies the new entity, it will assign it a FIPS code. The code preceding the new entity name in the list is not a FIPS code, and should not be used for any official purpose. It is only a placeholder until the official FIPS code can be assigned.</p>
Step 15	<p>To make additional changes to the map, simply make a new selection in the Modify Area Feature dialog box Geography field and continue work. You may save your changes as you go or wait until you have finished all work on the map. Saving as changes are completed, however, is recommended to avoid losing work in the event of a power outage or system interruption.</p>
	<p style="text-align: center;">New Entity that Crosses a County Boundary</p> <p>If the new entity crosses a county boundary, you must add the new entity in both counties separately. After making the change in your working county, return to Map Management, select the other county as the working county, and proceed to add the new entity in this county as well. If the added entity crosses more than one county boundary, complete the addition in each county affected.</p>

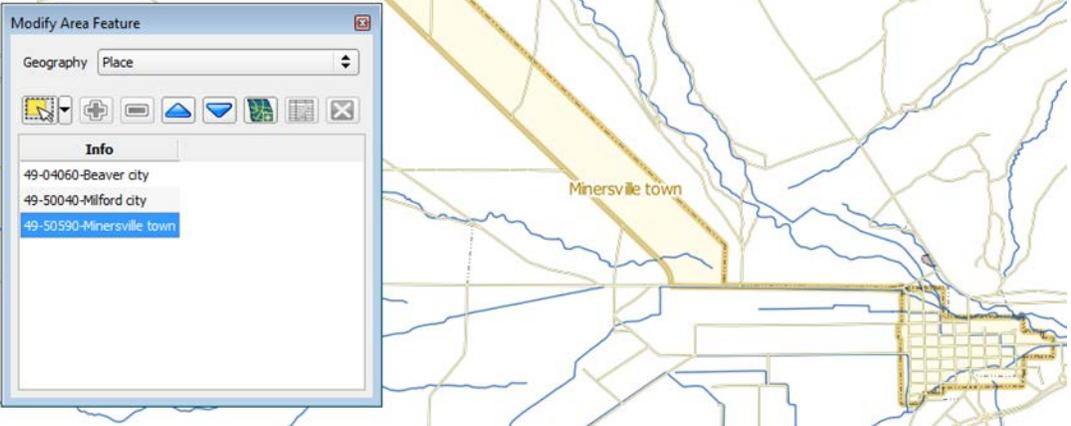
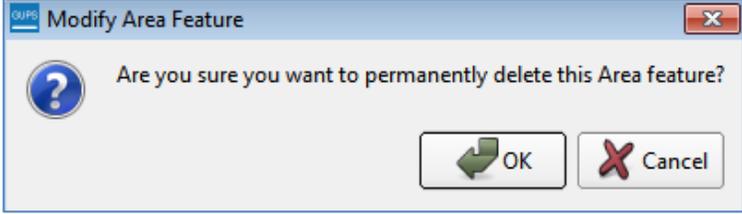
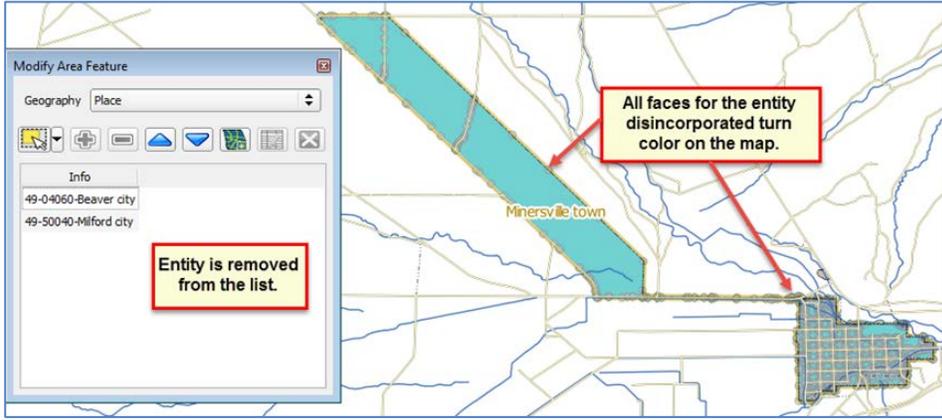
6.1.4 Deleting an Entity (Disincorporation)

Follow the steps in [Table 29](#) to record a disincorporation. In this example, we will show a fictitious disincorporation for Minersville, Utah.

Table 29: Record a Disincorporation

Step	Action and Result
Step 1	<p>Open in Map View the county that contains the entity you wish to delete. Be sure that you have all layers you wish to see checked in the Table of Contents.</p>
Step 2	<p>Click the Modify Area Feature button on the BAS toolbar.</p>  <p><i>The Modify Area Feature dialog box opens.</i></p>

Step	Action and Result
	
<p>Step 3</p>	<p>Click the drop-down arrow next to the Geography field, and select 'Place' in the drop-down menu.</p>  <p><i>Place appears in the Geography field and a list of all incorporated places in the county appears in the Info list.</i></p> 
<p>Step 4</p>	<p>Click the entity in the list for which you want to show the disincorporation (here Minersville). <i>The map zooms to Minersville.</i></p>

Step	Action and Result
	
<p>Step 5</p>	<p>Click the Delete button on the toolbar inside the Modify Area Feature dialog box.</p>  <p>A pop-up asks you 'Are you sure you want to permanently delete this Area feature?'</p> 
<p>Step 6</p>	<p>Click OK. The disincorporated entity turns green on the map (color may vary), and it is removed from the list of incorporated places in the county.</p> 
<p>Step 7</p>	<p>To make additional changes to the map, simply make a new selection in the Modify Area Feature dialog box Geography field and continue work.</p>

Step	Action and Result
	<p style="text-align: center;">Deleted Entity that Crosses a County Boundary</p> <p>If the deleted entity crosses a county boundary, you must delete the entity in both counties separately. After making the change in your working county, return to Map Management, select the other county as the working county, and proceed to delete the entity in this county as well. If the deleted entity crosses more than one county boundary, complete the deletion in each county affected.</p>

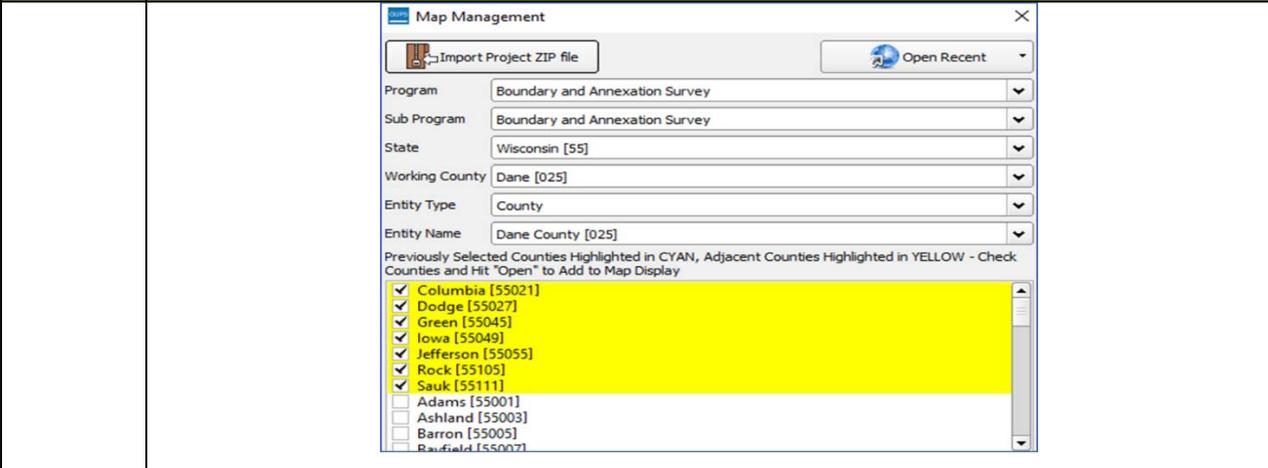
6.1.5 Making a Boundary Update on a County Line

Users reporting on behalf of an incorporated place may make changes across county boundaries for their place. The steps in [Table 30](#) below provide an example for an annexation by a place across a county boundary. The fictitious example uses Brooklyn Village, in Dane County, Wisconsin. It has annexed land in adjacent Rock County.

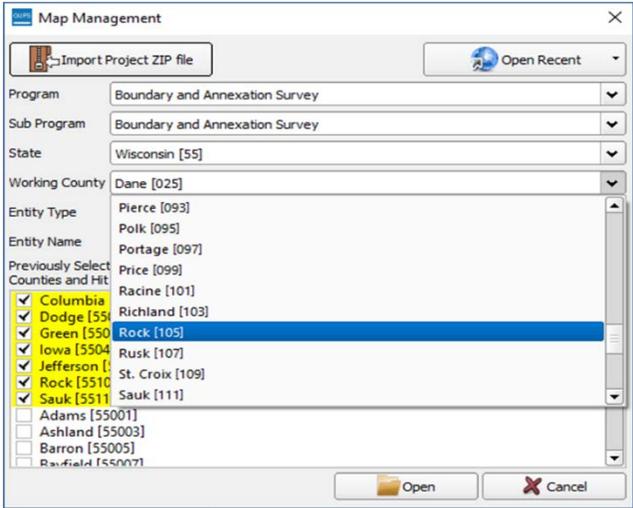
Table 30: Record an Annexation in an Adjacent County

Step	Action and Result
	<p>Independent City Users: Users reporting for independent cities (cities independent of any county and treated by the Census Bureau as county equivalents) should follow the steps described below to show annexations-/deannexations between the city and surrounding counties. County Users: When updating a county boundary, you must switch the working county to add-/remove area located in the other county. To update a boundary, use the instructions below, but in Step 6, select County instead of Place in the Geography drop-down menu, and in Step 7, click in the Info list on the name of the county to which you want add or remove the area.</p>
<p>Step 1</p>	<p>To show a boundary change that crosses a county boundary, you must change your working county to the county in which the added faces are located. This example assumes that Dane County is your working county and is already displayed in Map View. To switch the working county:</p> <p>Click the Map Management button on the Standard toolbar.</p>  <p>The Map Management dialog box opens showing the program, state, working county, entity type, and entity name you earlier selected. A list of adjacent counties, highlighted in yellow, displays near the bottom of the dialog box.</p>

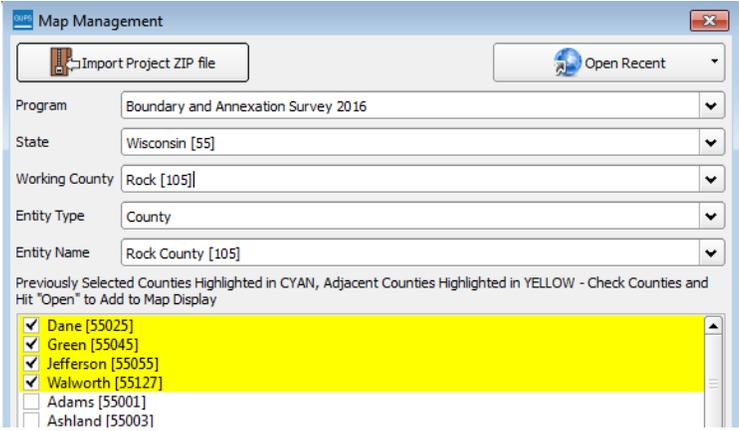
Step	Action and Result
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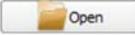
Step 2	To change the working county, click the down arrow for the Working County field to open the drop-down menu and select Rock County from the list. Select County from the Entity Type field.
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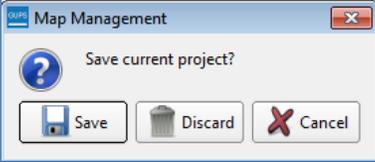


The list of adjacent counties repopulates to show the counties adjacent to Rock County.

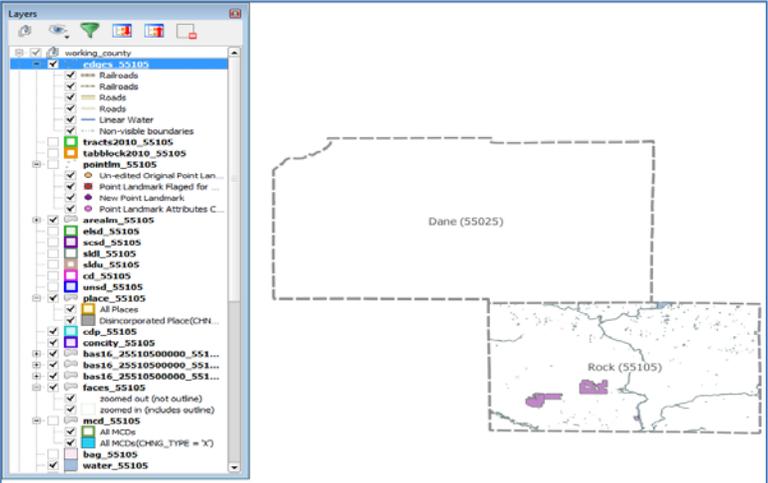


Step	Action and Result
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<p>Step 3</p>	<p>Unclick the checkbox for all counties except Dane. Then click the Open  button at the bottom of the Map Management dialog box. A Save current project pop-up box asks if you would like to save your current project.</p>
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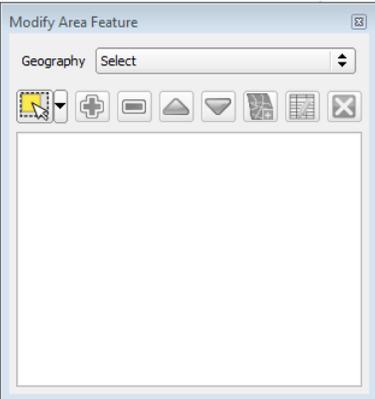
<p>Step 4</p>	<p>Click the Save button in order not to lose any changes you previously made to the Dane County shapefile. The Map View displays both Dane and Rock Counties and the Table of Contents displays the layers for the new working county (Rock County).</p>
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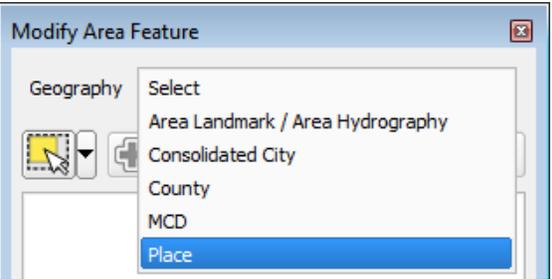
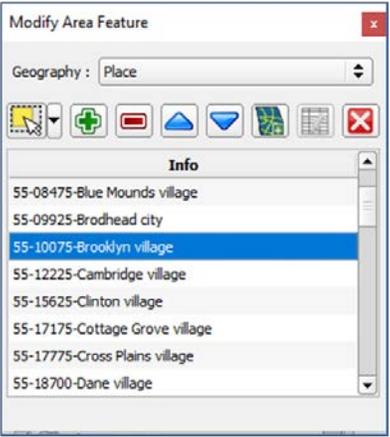
<p>Step 5</p>	<p>To select the entity within Dane County to which you want to add the area that is within Rock County, click the Modify Area Feature button on the BAS toolbar.</p>
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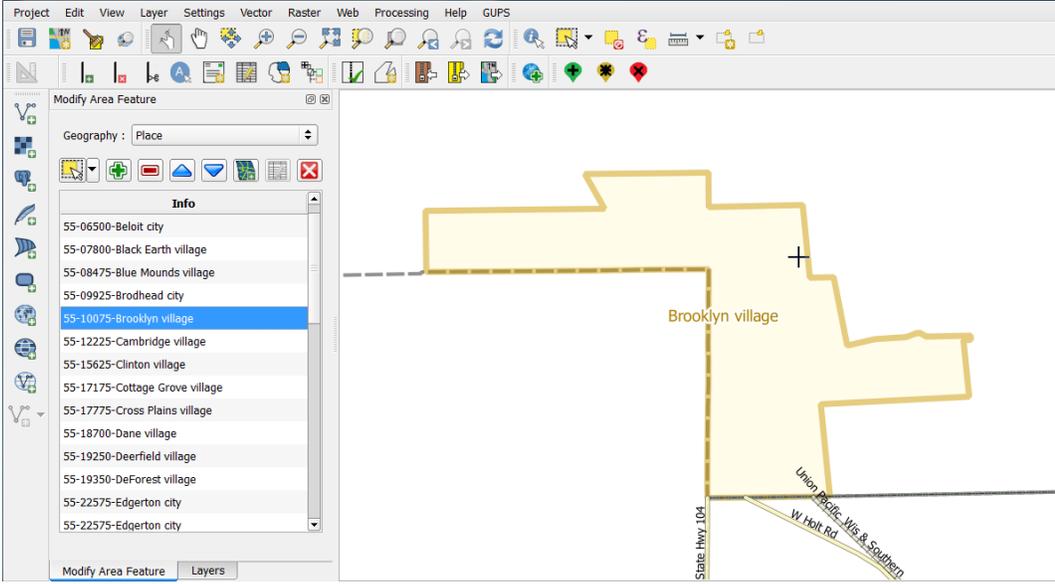


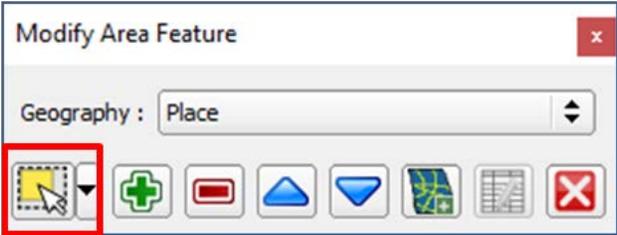
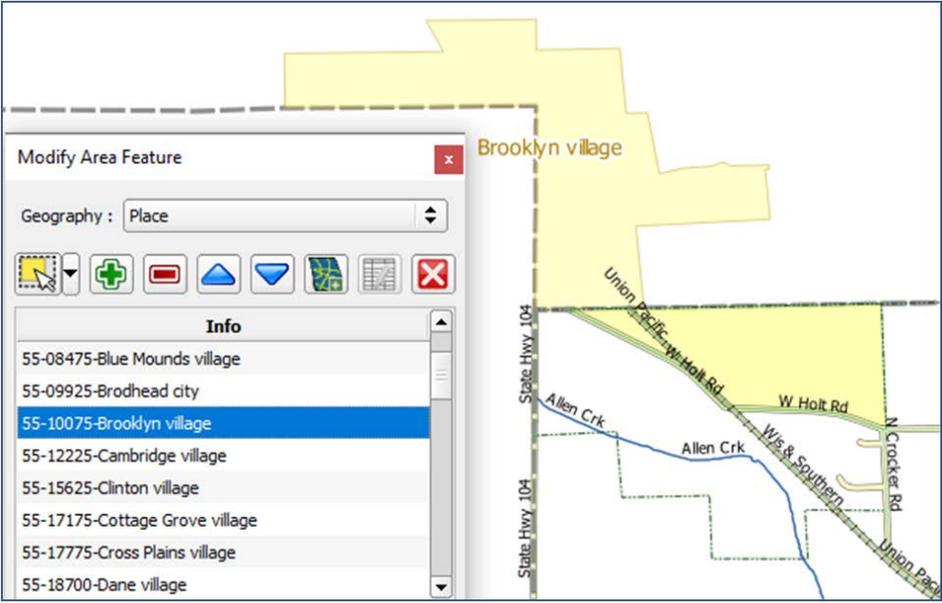
The **Modify Area Feature** dialog box opens.



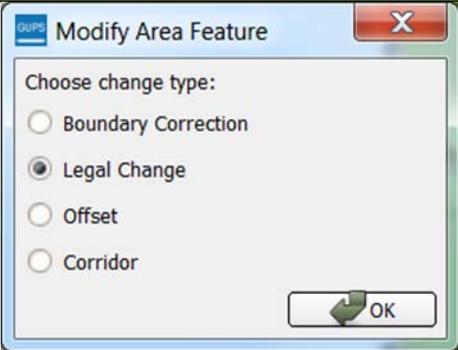
Step	Action and Result
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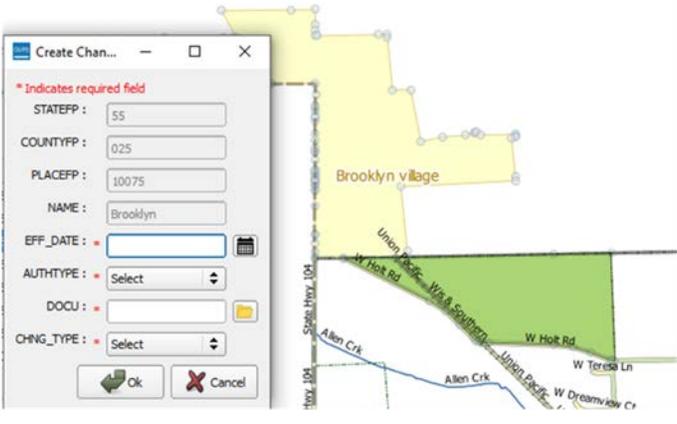
<p>Step 6</p>	<p>In the Geography field drop-down menu, select the entity type to which the annexed land should be assigned. Because Brooklyn Village is an incorporated place, select 'Place'.</p>  <p>A list of all incorporated places in both Rock and Dane Counties appears in the Info list at the bottom of the dialog box. The list includes Brooklyn Village.</p> 
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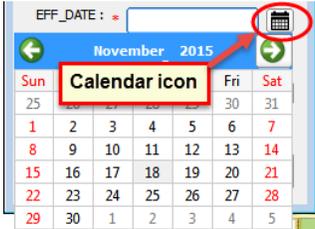
<p>Step 7</p>	<p>Scroll down the list and click the row for 'Brooklyn village'. The map zooms to the portion of the county boundary where Brooklyn Village is located.</p> 
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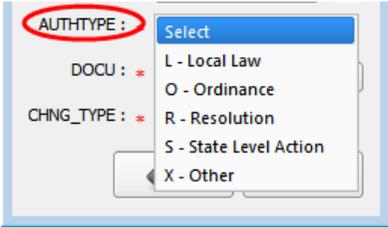
Step	Action and Result
<p>Step 8</p>	<p>Zoom in to the faces to be annexed, then click the Select Features button on the dialog box toolbar once.</p> 
<p>Step 9</p>	<p>Click the face on the map to be added, if there is only one. If you want to add additional faces, hold down the CRTL key and continue to click on faces until you are done. <i>The selected faces turn a more vibrant yellow (color may vary).</i></p> 
	<p>Because all geographic areas consist of faces, you may need to “split” a face to accurately reflect an entity’s boundary. To split a face, digitize a new line that represents the boundary’s location (click on Table 33 for instructions to add a linear feature) and assign it the appropriate MTFCC. This splits the original face into two faces. You can now select the face you need to add to the new entity.</p>
<p>Step 10</p>	<p>To add the faces selected within Rock County to the incorporated place Brooklyn Village, click the Add Area button on the dialog box toolbar.</p>  <p><i>The Modify Area Feature Choose change type dialog box opens.</i></p>

Step	Action and Result
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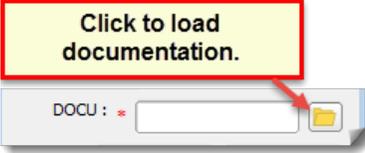
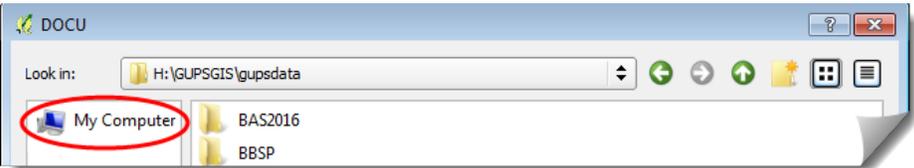
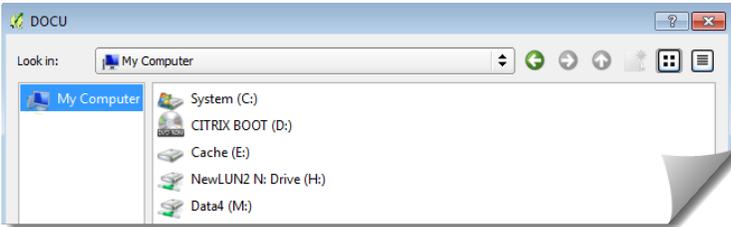
	 <p>Click the radio button next to 'Legal Change' to indicate that this is a legal boundary change. Then click OK.</p>
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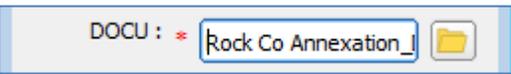
Step 11	<p>The selected faces turn green (colors may vary) and the Create Change Polygons dialog box opens. GUPS automatically fills the FIPS codes, name, and LSAD fields for Brooklyn Village.</p> 
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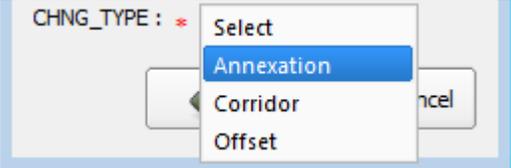
Step 12	<p>Click the calendar icon next to the EFF_DATE field to select an effective date for the annexation.</p> 
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Step 13	<p>Select an authority type for the annexation in the AUTHTYPE field drop-down menu.</p> 
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Step	Action and Result
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<p>Step 14</p>	<p>Type in the ordinance or other legal documentation number authorizing the change, or upload legal documentation. To upload a document, click on the folder icon to the right of the DOCU field.</p> <div data-bbox="716 380 1081 533" style="text-align: center;">  </div> <p>When the DOCU window opens, click on the icon for 'My Computer' (or simply 'Computer' in some Windows versions) to open the directory where you have saved your documentation.</p> <div data-bbox="435 653 1349 821" style="text-align: center;">  </div> <p>Your directories display, as shown below.</p> <div data-bbox="532 919 1263 1146" style="text-align: center;">  </div>
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<p>Step 15</p>	<p>Select the appropriate directory and navigate to the file you want to upload. Click the file. Then, to upload it, click the Open button at the bottom of the DOCU window.</p> <div data-bbox="375 1255 1425 1423" style="text-align: center;">  </div> <p>The file name appears in the DOCU field in the Create Change Polygons box.</p> <div data-bbox="643 1486 1154 1560" style="text-align: center;">  </div>
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<p>Step 16</p>	<p>Finally, use the CHNG_TYPE drop-down menu to select the type of legal change being made, here an annexation.</p> <div data-bbox="643 1671 1154 1839" style="text-align: center;">  </div> <p>Then click OK.</p>
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Step	Action and Result
<p>Step 17</p>	<p>Click the Save button on the Standard toolbar. The Current edits pop-up box asks if you would like to save the changes to all layers.</p> <div data-bbox="711 352 1084 520" style="text-align: center;"> </div> <p>Click OK. The changes are saved and the selected faces turn brown, as shown below. (Note: If you now reopen the Dane County map, the faces will appear as part of Brooklyn Village.)</p> <div data-bbox="522 642 1253 1163" style="text-align: center;"> </div>

6.1.6 Making a Legal Boundary Change for a Consolidated City

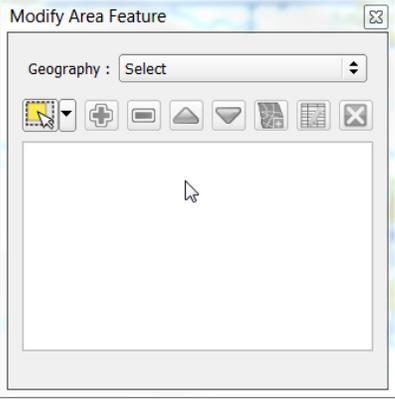
Users who represent consolidated cities (i.e., cities that share a consolidated government with a county or minor civil division) should follow the steps described in [Table 30](#) in [Section 6.1.5: Making a Boundary Update on a County Line](#) to show boundary changes between the city and any county adjacent to it. To show boundary changes between the consolidated city itself and the entity or entities with which it shares a government, proceed as any incorporated place user would. That is, if you wish to annex land from another entity within the consolidated government area, treat it as you would any annexation within a county.

6.1.7 Making a Boundary Correction (Add Area/Remove Area)

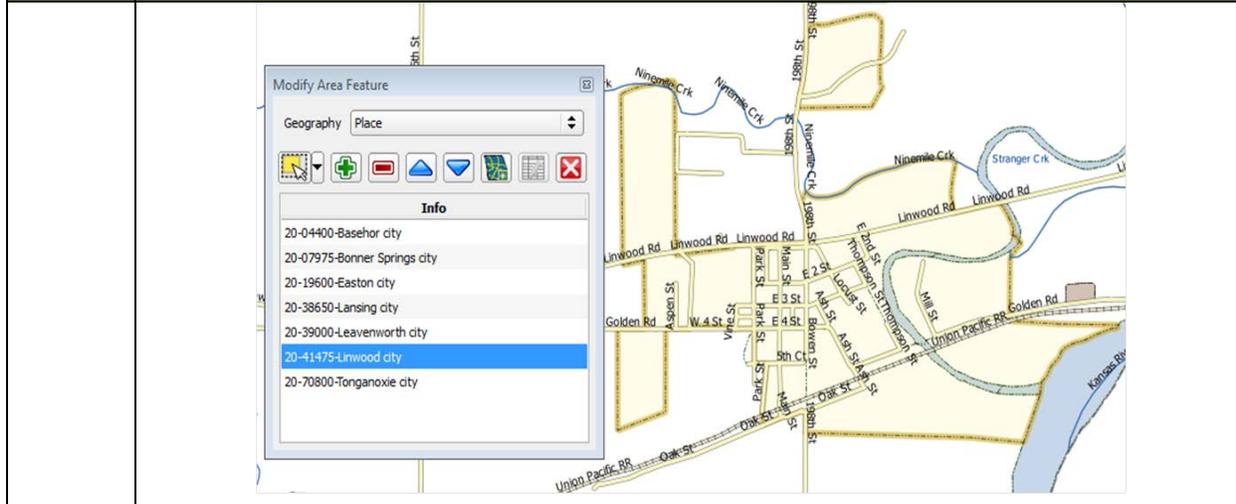
To make a boundary correction that adds or removes area from an entity, follow the steps in

Table 31. In this fictitious example, a boundary correction is made to the city limits of Linwood, Kansas.

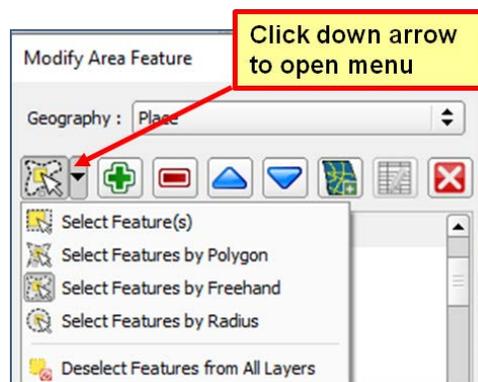
Table 31: Making a Boundary Correction

Step	Action and <i>Result</i>
<p>Step 1</p>	<p>Open in Map View the county that contains the legal entity for which you want to add or remove area. Be sure you have all layers you wish to see on the map checked in the Table of Contents.</p>
<p>Step 2</p>	<p>Click the Modify Area Feature button on the BAS toolbar.</p>  <p><i>The Modify Area Feature dialog box opens.</i></p> 
<p>Step 3</p>	<p>Click the arrow next to the Geography field, and select in the drop-down menu the entity type for which you want to add or remove area. In this example, we select 'Place'. <i>The Info list populates with all incorporated places in the county for the geography chosen.</i></p> 
<p>Step 4</p>	<p>Click on the row in the list for the place that is adding/removing area (here Linwood). <i>The map zooms to the place selected.</i></p>

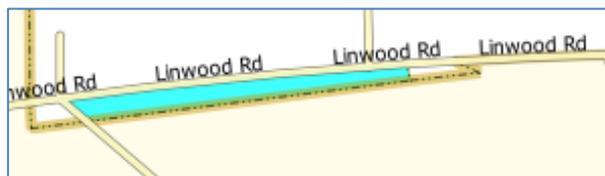
Step	Action and Result
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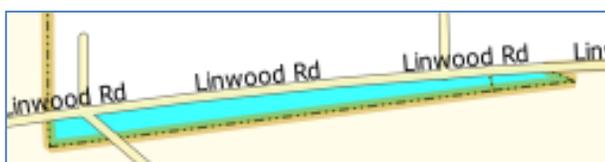
Step 5	Click the down arrow next to the Select Features button to select the face(s) to add or remove for the boundary correction. <i>The Select Features drop-down menu opens.</i>
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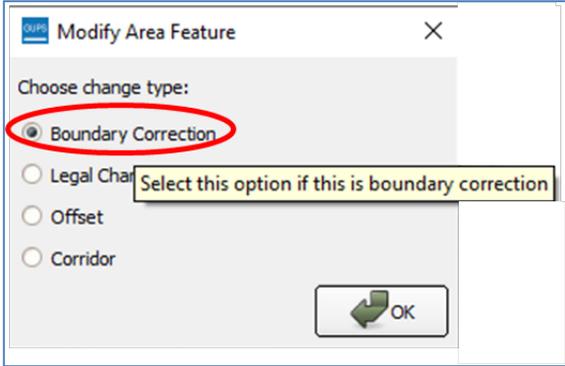


In this example, we are adding three small faces that are difficult to select, so we opt for **'Select Features by Freehand'**. This method allows us to place our cursor inside the first face and draw a tiny line. *The selected face turns cyan blue (colors may vary).*



To select the other faces, press the **CTRL** key, and while holding it down, repeat the action for the two remaining faces. *All three faces turn color.*

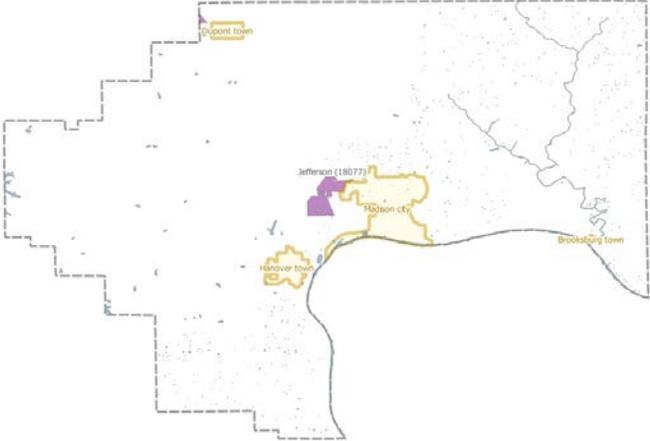


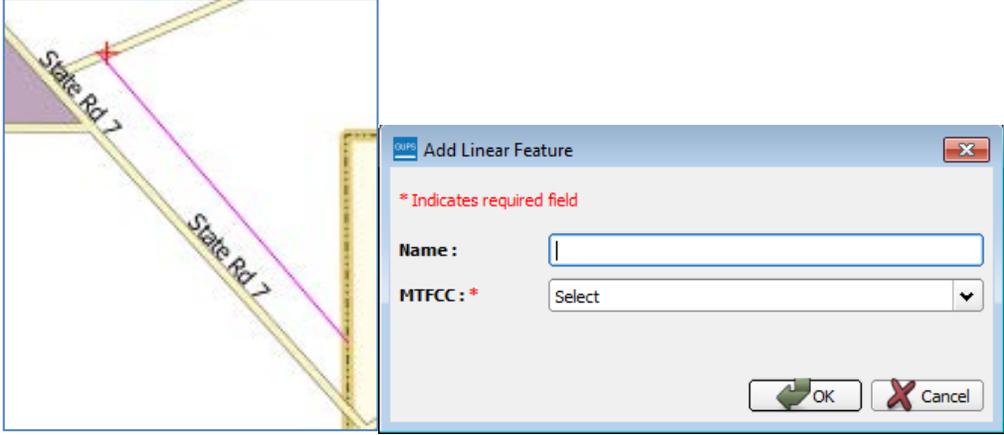
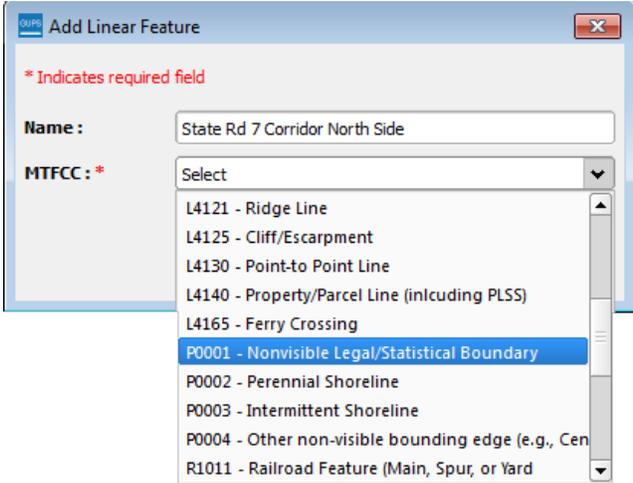
Step	Action and Result
	<p>Note: To add area, the area must be outside the selected place. To remove area, the area must be within the selected place.</p>
<p>Step 6</p>	<p>On the Modify Area Feature toolbar, click on the Add button (to add area to the entity) or on the Remove button (to remove area from the entity).</p>  <p>The Modify Area Feature Choose change type pop-up box opens, and asks you to choose your change type.</p> 
<p>Step 7</p>	<p>Since we are not making a legal boundary change, but rather a boundary correction, click the radio button next to 'Boundary Correction'. Then click OK. <i>The added faces turn green on the map (color may vary) and are added to the legal entity boundary.</i></p> 
	<p>Removing area from a boundary is conducted following the same steps, the only difference being that you click the Remove button on the Modify Area Feature toolbar. Once you select the faces and click the Remove button, you see the same Modify Area Feature Choose change type pop-up box, select 'Boundary Correction', and see the faces turn green.</p>

6.1.8 Adding a Geographic Corridor

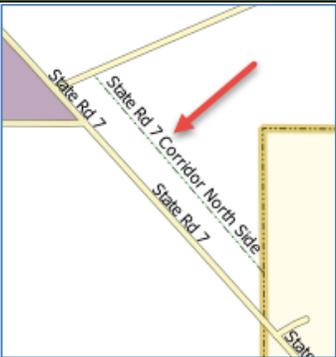
The steps to add a geographic corridor are shown in [Table 32](#). The fictitious example provided uses Dupont, Indiana. The steps in this table show how the city would mark the annexation of a geographic corridor along State Road 7, which in the example leads to a newly built golf course that is part of the town.

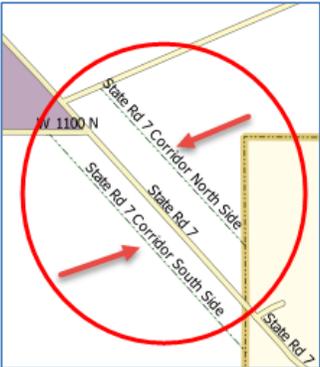
Table 32: Adding a Geographic Corridor

Step	Action and Result
	<p>Creating a geographic corridor requires two actions: first you must split the faces on either side of the road (if edges do not already exist), then you must add the area.</p>
<p>Step 1</p>	<p>Load the data for the county (in this example, Jefferson County, Indiana).</p> 
<p>Step 2</p>	<p>Pan to the location of the geographic corridor (here State Road 7).</p> 
<p>Step 3</p>	<p>Click the Add Linear Feature button on the BAS toolbar.</p> 
<p>Step 4</p>	<p>Left-click on the map at the beginning point of the first line and drag the cursor to create the line marking the first half of the corridor. Left-click at the end of the line, then right-click to tell GUPS you have finished drawing. <i>The line appears on the map, and the Add Linear Feature dialog box opens.</i></p>

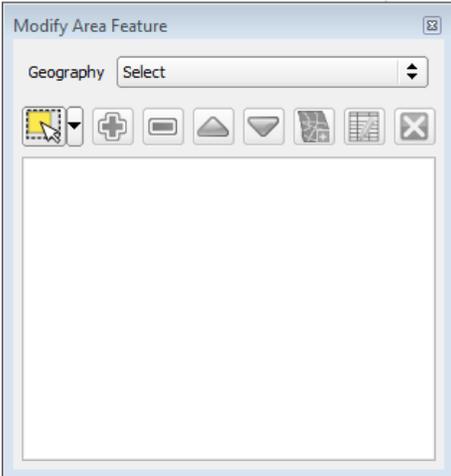
Step	Action and Result
	
<p>Step 5</p>	<p>A name is not required, but if you wish, type a name in the Name field, then select the appropriate MTFCC code in the MTFCC drop-down list. In this example, we select 'P0001 – Nonvisible Legal/Statistical Boundary'.</p>  <p>The MTFCC field populates with your selection.</p>
<p>Step 6</p>	<p>Click the OK button.</p>  <p>The line turns from purple to dark green (colors may vary) and the name, if you provided one, is added to the map.</p>

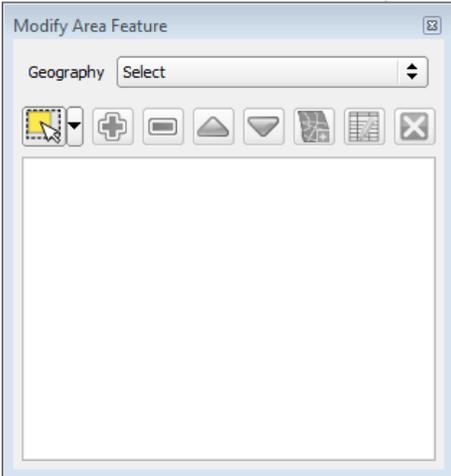
Step	Action and Result
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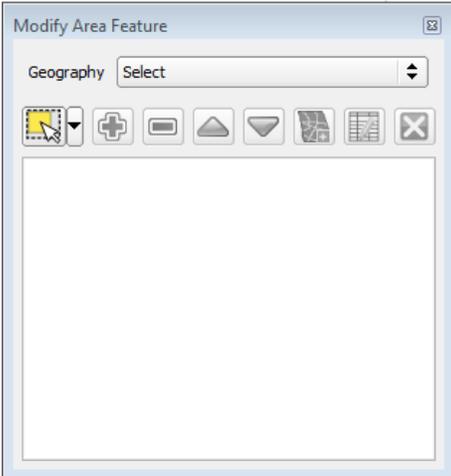
	
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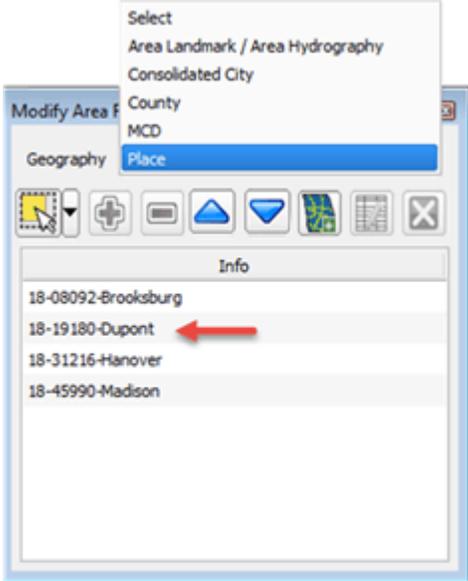
<p>Step 7</p>	<p>Add a line on the opposite side of the road using the same instructions provided in Steps 4 through 6. (Note: You do not need to click the Add Linear Feature button again; it is still active.) <i>When you are finished, the map should display the two corridor faces you created, as shown below.</i></p>
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<p>To add the area: click the Modify Area Feature button on the BAS toolbar.</p>  <p><i>The Modify Area Feature dialog box opens.</i></p> 

<p>Step 8</p>	<p>To add the area: click the Modify Area Feature button on the BAS toolbar.</p>  <p><i>The Modify Area Feature dialog box opens.</i></p> 
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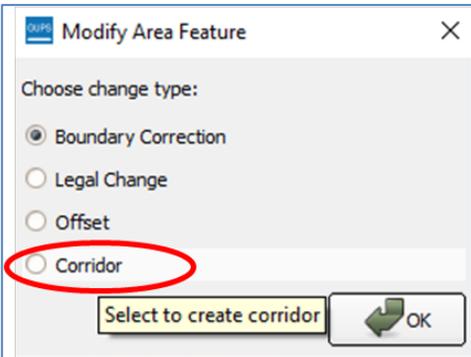
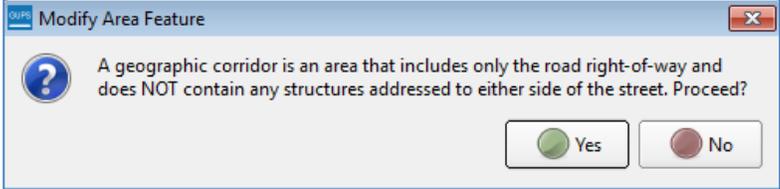
<p>To add the area: click the Modify Area Feature button on the BAS toolbar.</p>  <p><i>The Modify Area Feature dialog box opens.</i></p> 

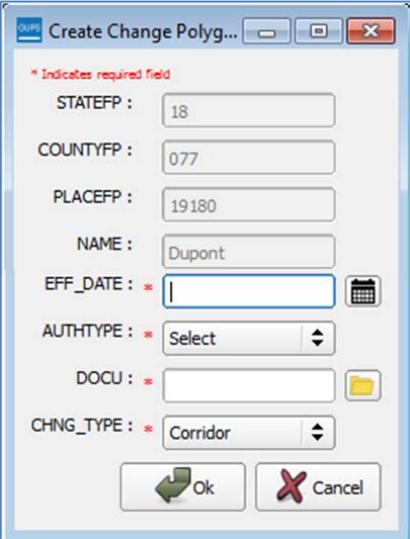
Step	Action and Result
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<p>Step 9</p>	<p>In the Geography field drop-down menu, select the entity type (in this case, 'Place'). A list of all incorporated places in Jefferson County (including Dupont) populates the Info list at the bottom of the dialog box.</p> 
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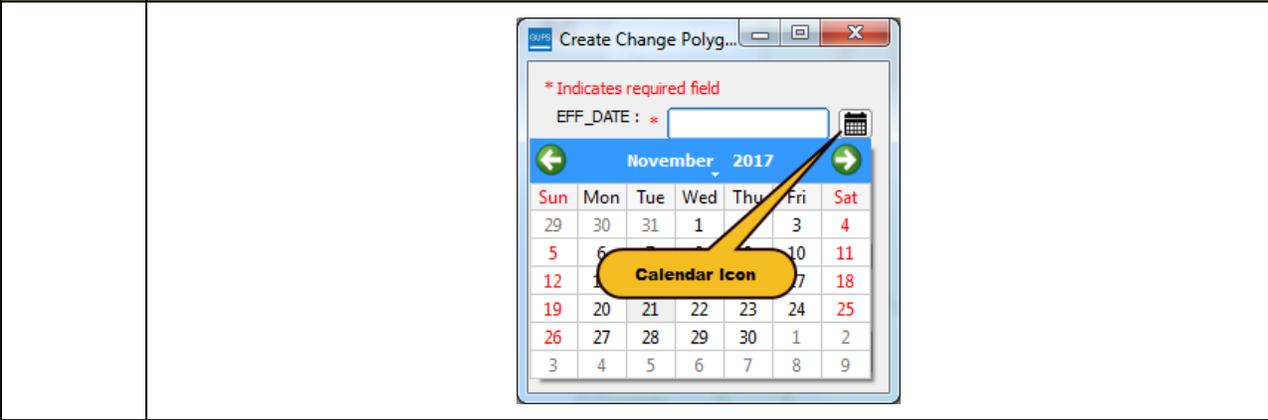
<p>Step 10</p>	<p>Click on the row for Dupont in the list. The map zooms to the Town of Dupont.</p> 
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<p>Step 11</p>	<p>Pan to the location of the new corridor you drew on the map. Then click the Select Feature(s) button on the small toolbar near the top of the Modify Area Feature dialog box.</p> 
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Step	Action and Result
<p>Step 12</p>	<p>Left-click inside one of the corridor faces, then drag your cursor across the road. <i>When you release the cursor the faces on either side of the road have been selected and turn cyan blue.</i></p> 
<p>Step 13</p>	<p>To record the corridor, click the Add button on the Modify Area Feature dialog box toolbar.</p>  <p><i>The Modify Area Feature Choose change type dialog box opens.</i></p> 
<p>Step 14</p>	<p>Click the radio button next to Corridor. <i>A box opens giving an explanation of what a geographic corridor is and asking if you want to proceed.</i></p> <p>Click Yes. <i>You are returned to the Modify Area Feature Choose change type box.</i></p> 
<p>Step 15</p>	<p>Click the OK button at the bottom of the box.</p>

Step	Action and Result
	
<p>Step 16</p>	<p><i>The Review Change Polygons pop-up box opens and asks whether this is a legal change.</i></p> 
<p>Step 17</p>	<p>If the geographic corridor is not part of a legal change, click No. <i>The change is automatically added as a boundary correction.</i></p> <p>If the geographic corridor is a legal change, click Yes. <i>The Create Change Polygons dialog box opens.</i></p> 
<p>Step 18</p>	<p>Click on the calendar icon next to the EFF_DATE field to select an effective date for the change.</p>

Step	Action and Result
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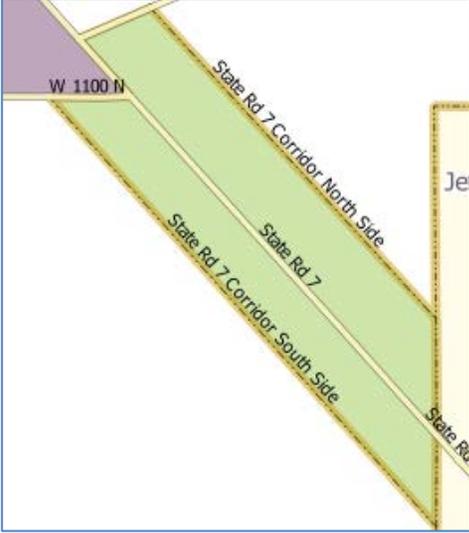


Step 19	<p>Use the AUHTYPE drop-down menu to select an authority type.</p>
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Step 20	<p>In the DOCU field, either type in the documentation number, or upload legal documentation of the change. To upload a document, click on the folder icon, navigate to the directory where the document is stored, and double-click the file. <i>The file uploads to GUPS and the name of the file appears in the DOCU field.</i></p>
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Step 21	<p>In the CHNG_TYPE field, select 'Corridor' in the drop-down list. <i>Corridor fills the CHNG_TYPE field as shown in the screenshot above.</i></p>
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Step 22	<p>Click OK. <i>The faces marking the corridor turn green on the map (color may vary). The corridor has been added.</i></p>
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Step	Action and Result
	

6.1.9 Add a Geographic Offset

To create a geographic offset, follow the same steps as for a corridor, [Table 32: Adding a Geographic Corridor](#). The only difference is that geographic offsets are only on one side of the road.

6.2 How to Update Linear Features

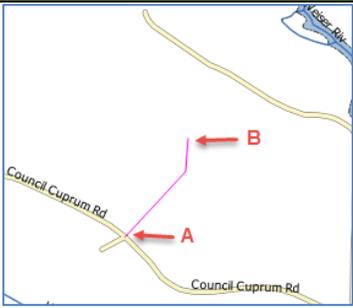
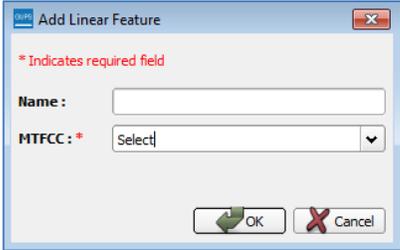
6.2.1 Adding a Linear Feature

Follow the steps in [Table 33](#) to add a linear feature.

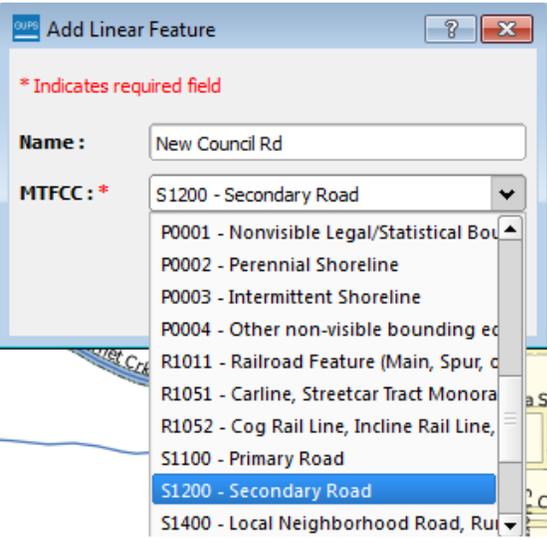
Table 33: Adding a Linear Feature

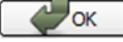
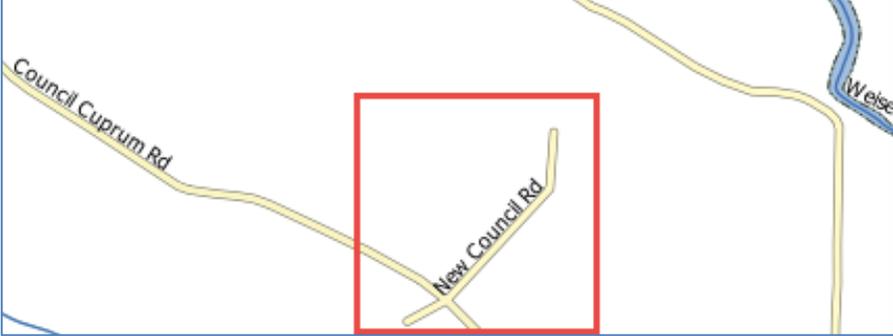
Step	Action and Result
Step 1	Open in Map View the county that contains the entity where you want to add a linear feature. Be sure the edges layer is checked in the Table of Contents . Then zoom to the location on the map where you want to add the feature.
Step 2	Click on the Add Linear Feature button on the BAS toolbar. 
Step 3	Left-click the mouse at the starting point of the line (A) and continue to left-click the mouse at each vertex (shape) point of the line. When you have completed the new line, right-click the mouse (B). The right-click tells GUPS you are finished drawing.

Step	Action and Result
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	 <p>The Add Linear Feature dialog box opens.</p> 
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<p>Step 4</p>	<p>Type the name of the new linear feature in the Name field if the feature is named; otherwise, leave blank. Be sure when entering the feature name either to spell out the feature type (e.g., street, road, avenue), or to select an approved abbreviation from the list provided in Appendix D.</p> 
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<p>Step 5</p>	<p>In the MTFCC field drop-down menu, choose the appropriate code for the feature.</p> 
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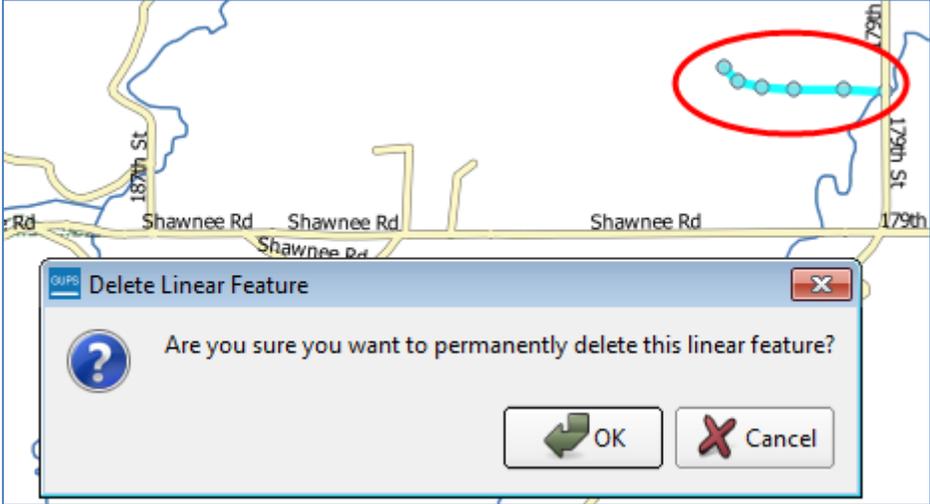
Step	Action and Result
Step 6	<p>Click the OK button  at the bottom of the Add Linear Feature dialog box. <i>The added linear feature and the name you assigned appear on the map.</i></p> 
	<p>Adding a linear feature coincident with a boundary – The GUPS will not allow one linear feature to be placed over another. For example, if you attempt to add a road overlaying a legal boundary line, a pop-up box will warn you ‘Added Line Overlays an Existing line’. If you are adding a linear feature coincident with a boundary, follow the instructions for updating linear feature attributes instead (for instructions click on Table 36). Once you select the boundary edge that you want to add a street on top of, update the MTFCC in the Update Attributes pop-up to one of the "S" class feature codes (e.g., S1400) and add a name in the FULLNAME field.</p>

6.2.2 Deleting a Linear Feature

To delete a linear feature, follow the steps in [Table 34](#).

Table 34: Deleting a Linear Feature

Step	Action and <i>Result</i>
Step 1	<p>Open in Map View the county that contains the entity where you want to delete a linear feature. Be sure the edges layer is checked in the Table of Contents. Then zoom to the location on the map where you want to delete the feature.</p>
Step 2	<p>Click on the Delete Linear Feature button on the BAS toolbar.</p> 
Step 3	<p>Left-click the linear feature that you want to delete. In the example below, we clicked on an unnamed road. <i>The clicked linear feature turns cyan blue (color may vary) and the Delete Linear Feature pop-up box appears, asking if you are sure you want to delete the feature.</i></p>

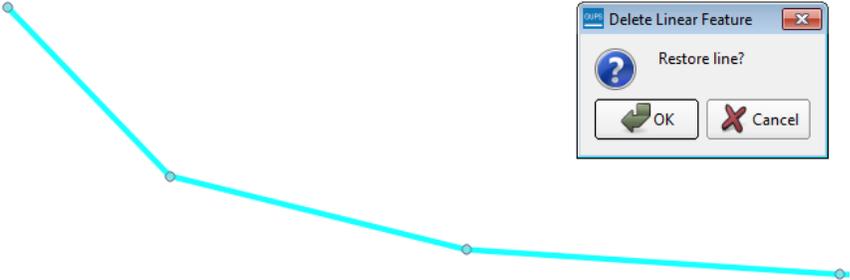
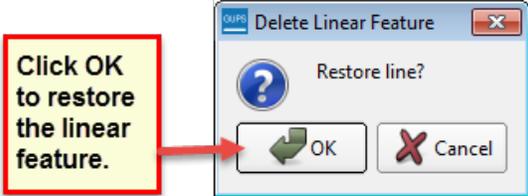
Step	Action and <i>Result</i>
	
Step 4	Click OK . <i>The line is deleted in the attribute table. The cyan blue color is removed from the line and the line now looks as it did originally.</i>
	<p>When you delete a linear feature, it is not actually removed from the Census shapefile. GUPS assigns a Delete Line flag to the feature in the attribute table, and the feature is later processed for deletion when the Census Bureau receives the BAS file.</p> <p>Note: If you have multiple linear features to delete, you may click the Delete Linear Feature button on the toolbar once, then press CTRL and click each of the features you want to delete. GUPS will delete all of the linear features selected. You may also drag your cursor over multiple linear features to select them.</p>

6.2.3 Restoring a Deleted Linear Feature

To restore a deleted linear feature, follow the steps in [Table 35](#).

Table 35: Restoring a Deleted Linear Feature

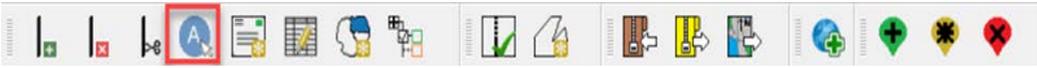
Step	Action and <i>Result</i>
Step 1	Open in Map View the county that contains the deleted linear feature. Be sure the edges layer is checked in the Table of Contents . Then zoom to the location on the map where the deleted feature is located.
Step 2	Left-click on the deleted feature. <i>The deleted feature turns cyan blue (color may vary) and the Delete Linear Feature dialog box opens. The box asks you to confirm that you want to restore the line.</i>

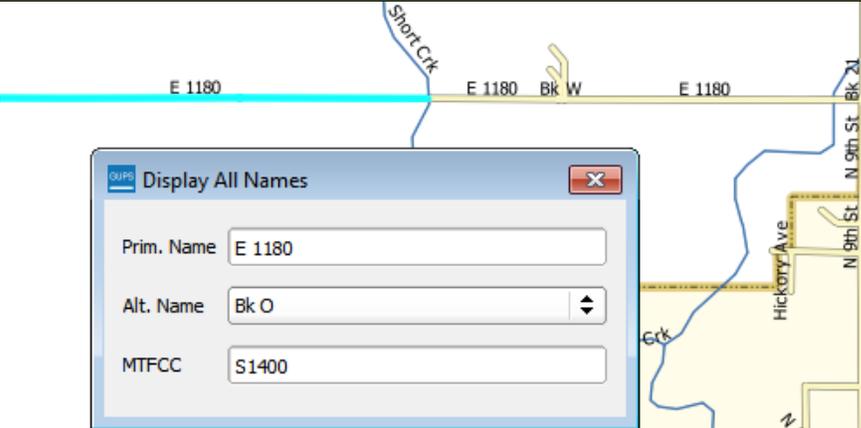
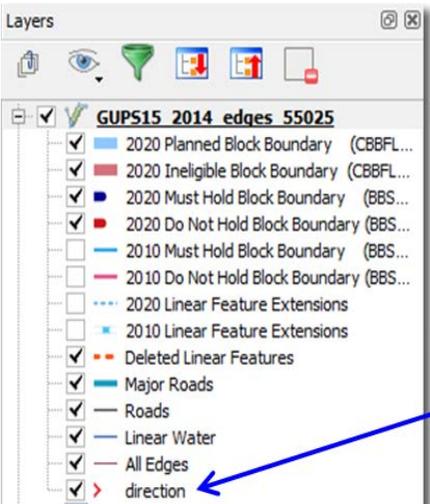
Step	Action and <i>Result</i>
	
Step 3	<p data-bbox="326 663 899 695">To restore the linear feature, click the OK button.</p> <div data-bbox="634 709 1162 905">  </div> <p data-bbox="326 926 1268 957"><i>The Delete Line flag is removed from the attribute table and the line is restored.</i></p>

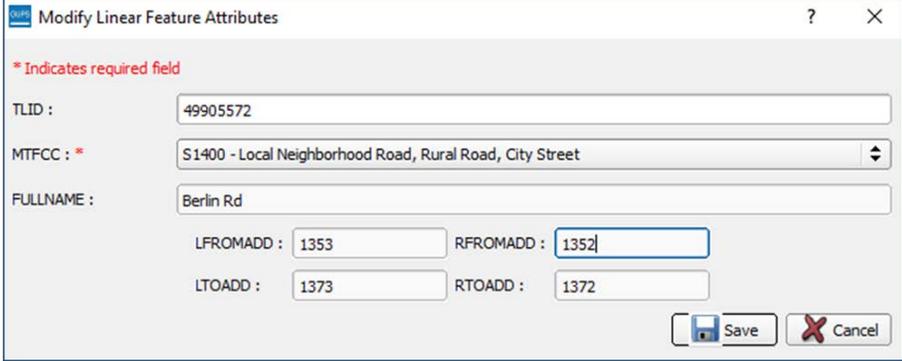
6.2.4 Changing the Attributes of a Linear Feature

Follow the steps in [Table 36](#) to change the attributes (e.g., the name, MTFCC, or address range) of a linear feature.

Table 36: Changing the Attributes of a Linear Feature

Step	Action and <i>Result</i>
Step 1	<p data-bbox="334 1310 1370 1373">If you plan to change the name of a linear feature, check first to see if it has an alternate name. To do this, click the Display All Names button on the BAS toolbar.</p> <div data-bbox="358 1383 1395 1451">  </div> <p data-bbox="334 1472 1419 1556">Then click on the linear feature on the map. <i>The selected feature turns cyan blue (color may vary) and the Display All Names dialog box opens, showing the primary name in the Prim. Name field and the alternate name, if one is present, in the Alt. Name field.</i></p>

Step	Action and <i>Result</i>
	 <p>To see any additional alternate names, click the drop-down arrow to the right of the Alt. Name field. If no alternate name exists, 'NULL' appears in the Alt. name field.</p>
<p>Step 2</p>	<p>If you plan to provide an address range for a linear feature, check the checkbox next to direction in the Edges field in the Table of Contents. <i>This activates the arrows that indicate the FROM and TO nodes for line segments.</i></p>  <p>Be sure this checkbox is clicked if you plan to add address ranges.</p>
<p>Step 3</p>	<p>Click on the Modify Linear Feature Attributes button on the BAS toolbar.</p> 
<p>Step 4</p>	<p>Click the linear feature on the map with attributes you want to edit. <i>The Modify Linear Feature Attributes dialog box opens with the TIGER Line Feature ID (TLID) of the feature selected. The FULLNAME field populates if the feature is named. If the feature is not named, the field is blank. The MTFCC, LTOADD, RTOADD, LFROMADD, and RFROMADD fields show the assigned values for each.</i></p>

Step	Action and Result
	
Step 5	Update the FULLNAME field. If the field is blank, type in the new name. If the field is already populated, highlight the existing name and hit the Delete key on your keyboard. You may also backspace over the name to clear the field. Then type in the new name.
Step 6	If you need to correct the MTFCC code, click on the down arrow to the right of the field to open the drop-down menu and select the correct MTFCC from the menu.
Step 7	Change the address range for the linear feature, if necessary. Type in potential address ranges in the LTOADD (left to address); RTOADD (right to address); LFROMADD (left from address); RFROMADD (right from address) fields based on the directional arrows. The directional arrows show the origin node (FROM) and the end node (TO).
Step 8	Click Save button at the bottom of the Modify Linear Feature Attributes dialog box.
	<p>The address ranges for all features are blank in the geographic partnership shapefiles because the ranges are stored in tables separate from the shapefiles. You can provide address ranges in these fields, but be aware that we may already have address ranges.</p> <p>It is important to note which node is the FROM node and which is the TO node (based on the red directional arrows) so that the address ranges are associated with the correct side of the street and the correct census block.</p> <p>Note: Provide potential address ranges for blocksides, such as 0-98, 100-198, etc., for even parity and 1-99, 101-199, etc., for odd parity address ranges. Do not provide actual address ranges.</p>

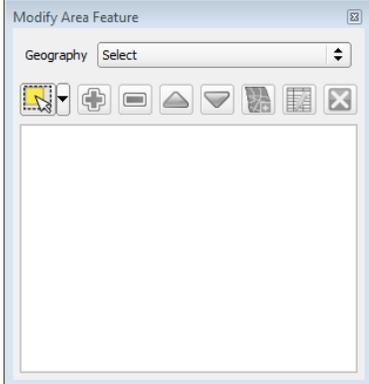
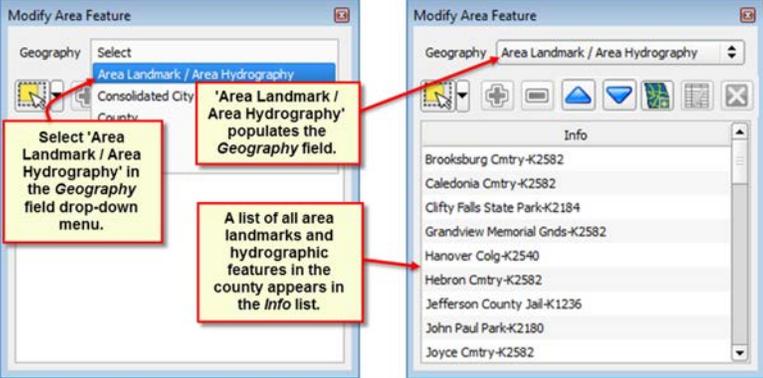
6.3 How to Update Area Landmarks and Hydrographic Areas

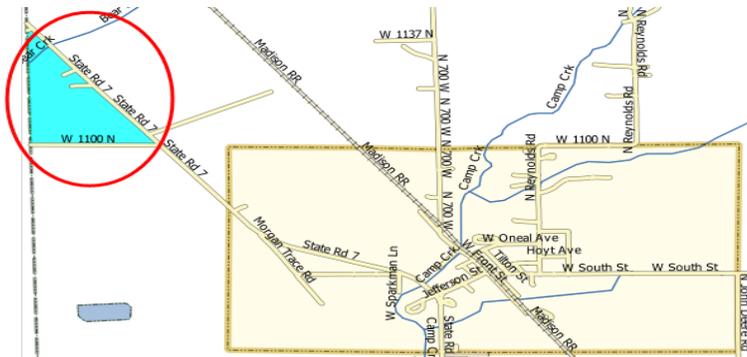
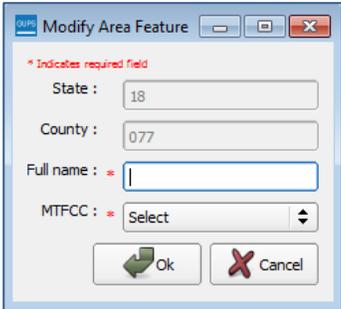
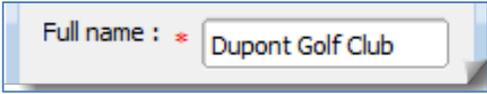
6.3.1 Adding a New Area Landmark/Hydrographic Area

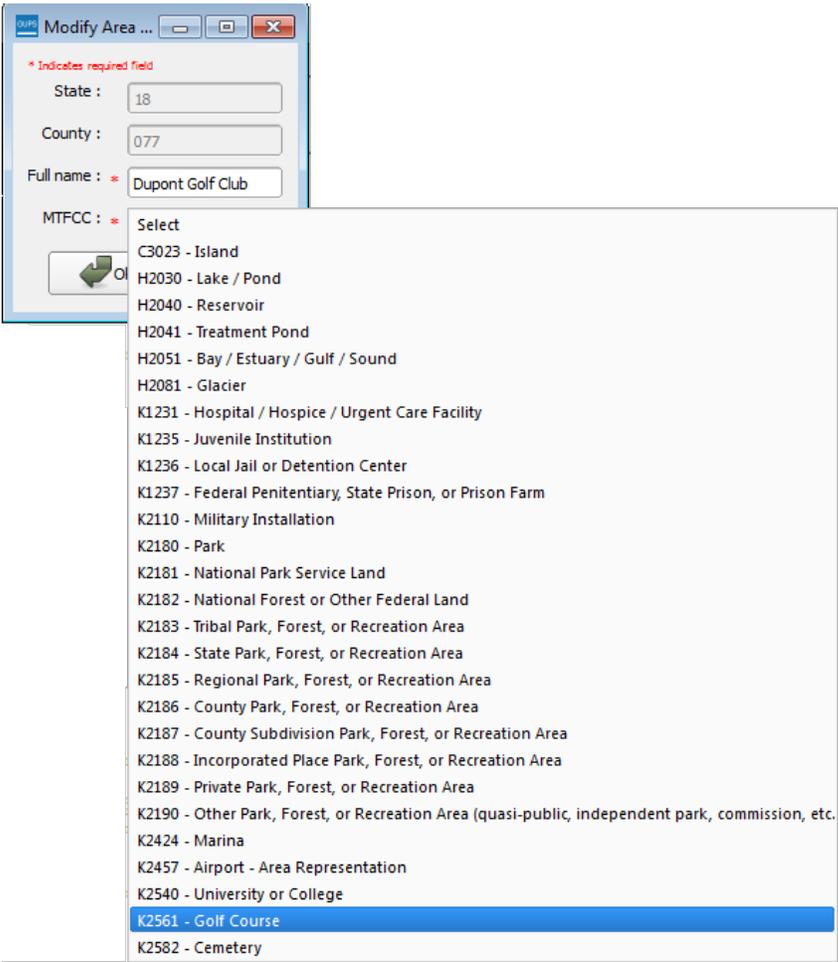
To create a new landmark or hydrographic area, follow the steps in

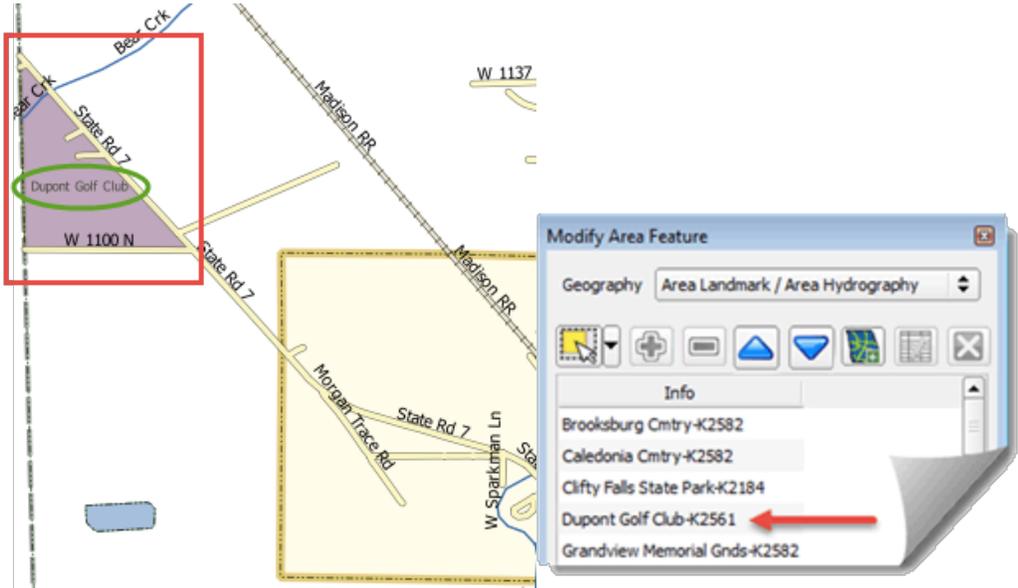
Table 37. In this fictitious example, we will add a golf course in Jefferson County, Indiana, located northwest of Dupont Town.

Table 37: Creating a New Area Landmark/Hydrographic Area

Step	Action and Result
<p>Step 1</p>	<p>Open in Map View the county in which you want to add the new area landmark or hydrographic area. Be sure the 'Area_Landmarks' layer is checked in the Table of Contents. Then zoom to the location on the map where you want to add the landmark or hydrographic area.</p>
<p>Step 2</p>	<p>Click the Modify Area Feature button on the BAS toolbar.</p>  <p>The Modify Area Feature dialog box opens.</p> 
<p>Step 3</p>	<p>In the Geography field drop-down menu, select 'Area Landmark/Area Hydrology'. 'Area Landmark/Area Hydrology' populates the Geography field and a list of area landmarks and hydrological features in the county appears in the Info list.</p>  <p>Select 'Area Landmark / Area Hydrography' in the Geography field drop-down menu.</p> <p>'Area Landmark / Area Hydrography' populates the Geography field.</p> <p>A list of all area landmarks and hydrographic features in the county appears in the Info list.</p>
<p>Step 4</p>	<p>Click on the yellow Select Feature(s) button on the Modify Area Feature toolbar.</p> 
<p>Step 5</p>	<p>Then click on the first face on the map you wish to select. To select more than one face, depress the CTRL key, and while holding it down, click on the additional faces. In this</p>

Step	Action and Result
	<p>example, we are selecting two faces, one on either side of Bear Creek. <i>The selected faces turn cyan blue (color may vary).</i></p>  <p>The image shows a map with a yellow highlighted area. A red circle highlights a specific triangular area bounded by 'State Rd 7' and 'W 1100 N'. This area is filled with a cyan blue color. Other roads and features like 'Morgantown Trace Rd', 'Camp Crk', and 'N Reynolds Rd' are also visible on the map.</p>
<p>Step 6</p>	<p>Click on the Add Entity button on the Modify Area Feature toolbar.</p>  <p>The image shows a toolbar with several icons. The icon representing an area feature (a green square with a white outline) is highlighted with a red box.</p> <p><i>The Modify Area Feature box opens.</i></p>  <p>The image shows a dialog box titled 'Modify Area Feature'. It contains the following fields: <ul style="list-style-type: none"> State : 18 County : 077 Full name : * MTFCC : * There are 'Ok' and 'Cancel' buttons at the bottom.</p>
<p>Step 7</p>	<p>In the Modify Area Feature box, type in the name of the new area landmark in the Full name field.</p>  <p>The image shows a close-up of the 'Full name : *' field in the dialog box. The text 'Dupont Golf Club' has been entered into the text box.</p> <p>Then select the appropriate code in the MTFCC field drop-down list, as shown below.</p>

Step	Action and Result
	 <p>The screenshot shows a 'Modify Area' dialog box with the following fields: State (18), County (077), Full name (Dupont Golf Club), and MT FCC (Select). A dropdown menu is open, displaying a list of MT FCC codes and their corresponding descriptions. The code 'K2561 - Golf Course' is highlighted in blue.</p>
Step 8	<p>Click OK. <i>The faces selected for the new entity now display in purple (color may vary). The name of the added landmark also appears within the change polygon on the map (see green circle), and the name of the new entity appears in the Info list.</i></p>

Step	Action and Result
	
	<p>Because all geographic areas consist of faces, you may need to “split” a face to accurately reflect an entity’s boundary. To split a face, digitize a new line that represents the boundary’s location (click on Table 33 for instructions to add a linear feature) and assign it the appropriate MTFCC. This splits the original face into two faces. You can now select the face you need to add to the new entity.</p>

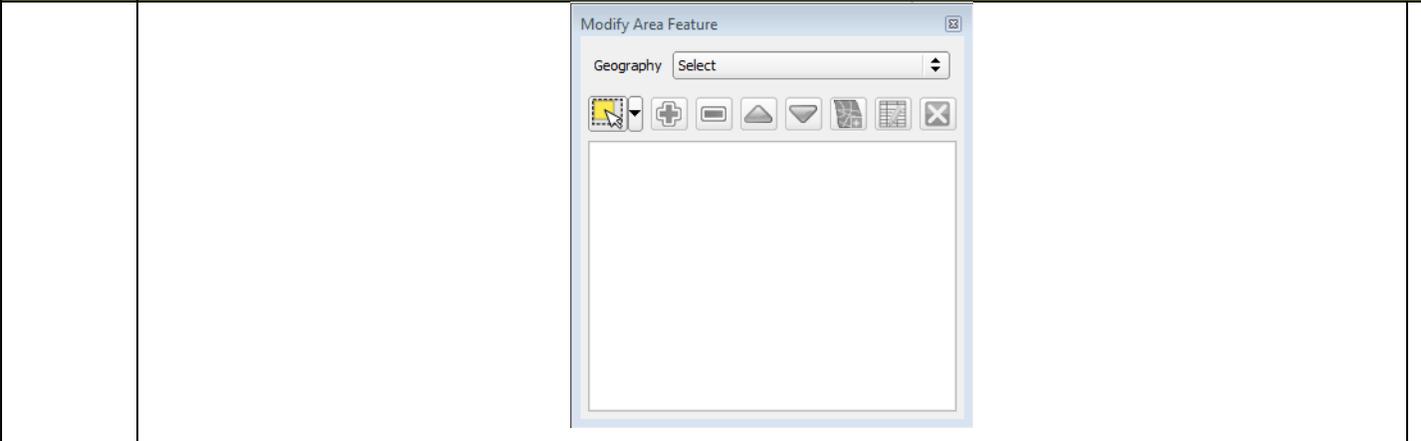
6.3.2 Deleting an Area Landmark/Hydrographic Area

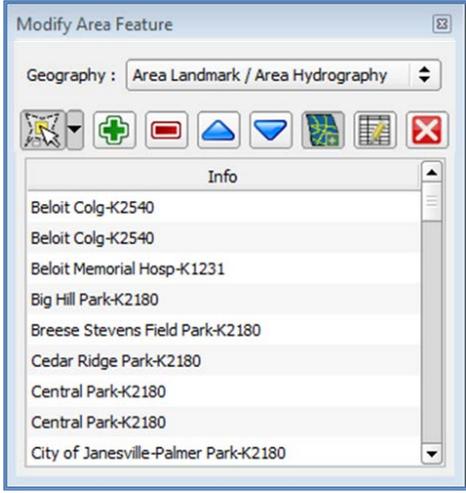
To delete an area landmark or hydrographic area, follow the steps in [Table 38](#).

Table 38: Deleting an Area Landmark/Hydrographic Area

Step	Action and Result
Step 1	Open in Map View the county in which you want to delete an area landmark or hydrographic area. Be sure the ‘ Area_Landmarks ’ layer is checked in the Table of Contents .
Step 2	Click the Modify Area Feature button on the BAS toolbar.  <i>The Modify Area Feature dialog box opens.</i>

Step	Action and Result
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<p>Step 3</p>	<p>In the Geography field drop-down menu, select 'Area Landmark/Area Hydrography'. 'Area Landmark/Area Hydrography' populates the Geography field and a list of area landmarks and hydrological features in the county appears in the Info list.</p> 
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<p>Hint</p>	<p>To view all the area landmarks and hydrographic areas in the Info list, you may use the scroll bar located to the far right-hand side of the Modify Area Feature dialog box.</p> <p>To move up and down within the list, use the blue navigation arrows located on the small toolbar near the top of the dialog box.</p> 
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<p>Step 4</p>	<p>In the Info list, click on the area landmark/hydrographic area you want to delete. <i>The selected entry is highlighted in the Info list and the map zooms directly to the selected feature.</i></p>
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Step	Action and Result
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Step 5	<p>Click the Delete Area Feature button on the Modify Area Feature dialog toolbar.</p> <p>A pop-up box opens and asks you to confirm that you want to delete the feature.</p>
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Step 6	To delete the area landmark/hydro area, click OK . The linear feature turns gray (color may vary) on the map, and its name disappears from the Info list.
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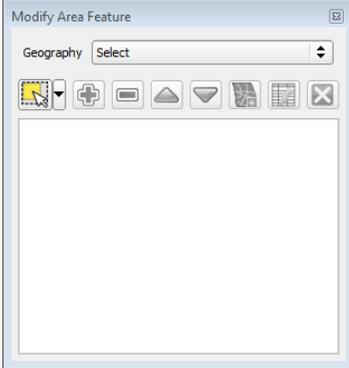
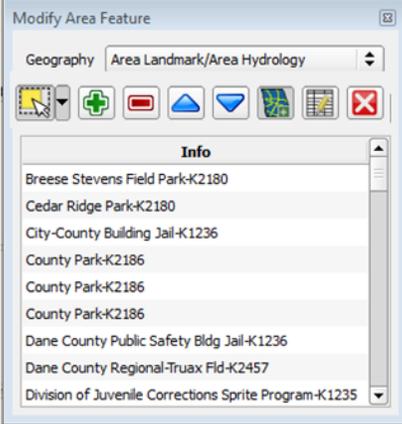
Step 7	<p>Not ready to delete? If you change your mind about deleting the area landmark/hydro area, click Cancel. You will be returned to the Modify Area Feature dialog.</p>
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Step 8	If you now decide to delete the area landmark/hydro feature, click on the feature name in the Info list. The buttons will reactivate and you may click the Delete Area Feature button again.
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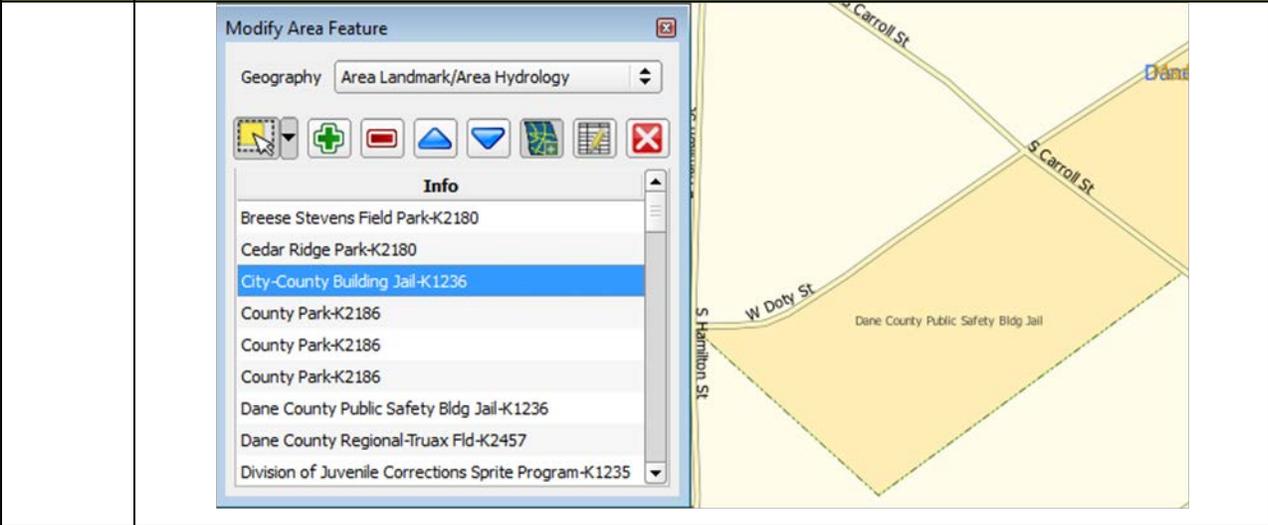
6.3.3 Adding Area to an Area Landmark or Hydrographic Area

Follow the steps in [Table 39](#) to add area to an area landmark or hydrographic area.

Table 39: Adding Area to an Area Landmark/Hydrographic Area

Step	Action and <i>Result</i>
<p>Step 1</p>	<p>Open in Map View the county that contains the area landmark or hydrographic area to which you wish to add area. Be sure the 'Area_Landmarks' layer is checked in the Table of Contents.</p>
<p>Step 2</p>	<p>Click the Modify Area Feature button on the BAS toolbar.</p>  <p>The Modify Area Feature dialog box opens.</p> 
<p>Step 3</p>	<p>Click the down arrow next to the Geography field and select 'Area Landmark/Area Hydrography' in the drop-down menu. <i>The selection populates the Geography field and a list of area landmarks-/hydro features in the county appears in the Info list.</i></p> 
<p>Step 4</p>	<p>Click the row in the list for the area landmark/hydro area to which you want to add area. <i>The selected entity is highlighted in the Info list and the map zooms to its location.</i></p>

Step	Action and Result
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<p>Step 5</p>	<p>To select the face(s) you want to add to the area landmark, click the Select Feature button on the Modify Area Feature toolbar.</p>
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Then click the face you want to add to the area feature. *The added face turns cyan blue (color may vary).* (**Note:** To select more than one face, depress the CTRL key, and while holding it down, click the other faces.)



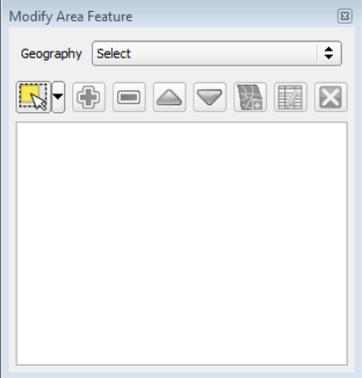
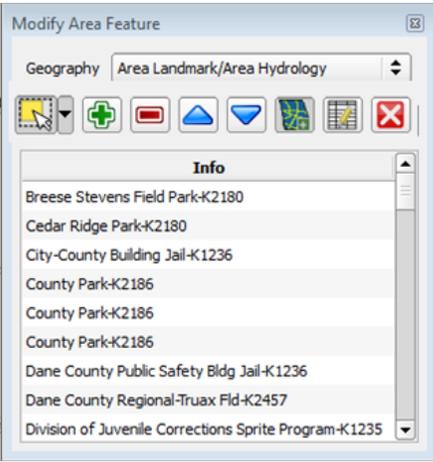
Step	Action and Result
<p>Step 6</p>	<p>To add the face(s) selected, click the Add Area button on the Modify Area Feature dialog box toolbar.</p>  <p>The selected face is added to the area landmark and turns the same color as the other face(s) that make up the area landmark. The map also now shows the full extent of the area landmark.</p> 
	<p>Because all geographic areas consist of faces, you may need to “split” a face to accurately reflect an entity’s boundary. To split a face, digitize a new line that represents the boundary’s location (click on Table 33 for instructions to add a linear feature) and assign it the appropriate MTFCC. This splits the original face into two faces. You can now select the face you need to add to the new entity.</p>

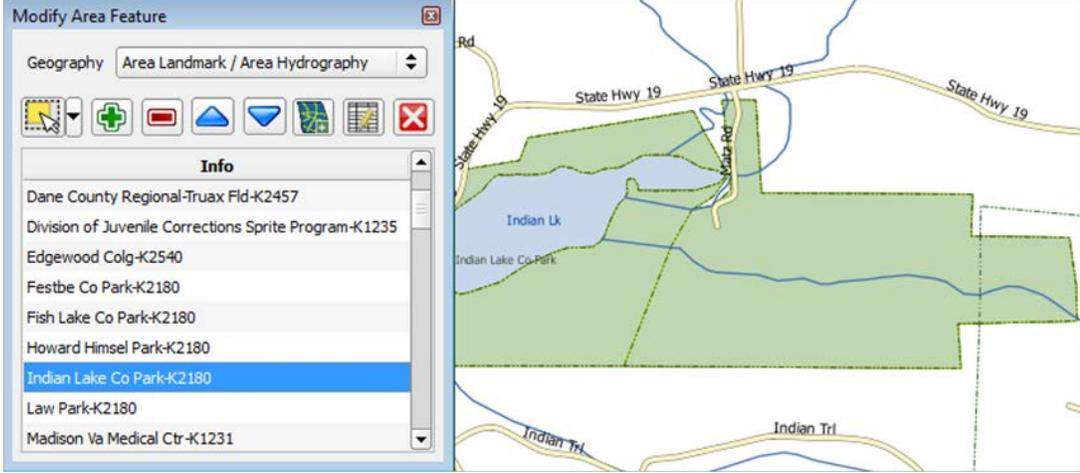
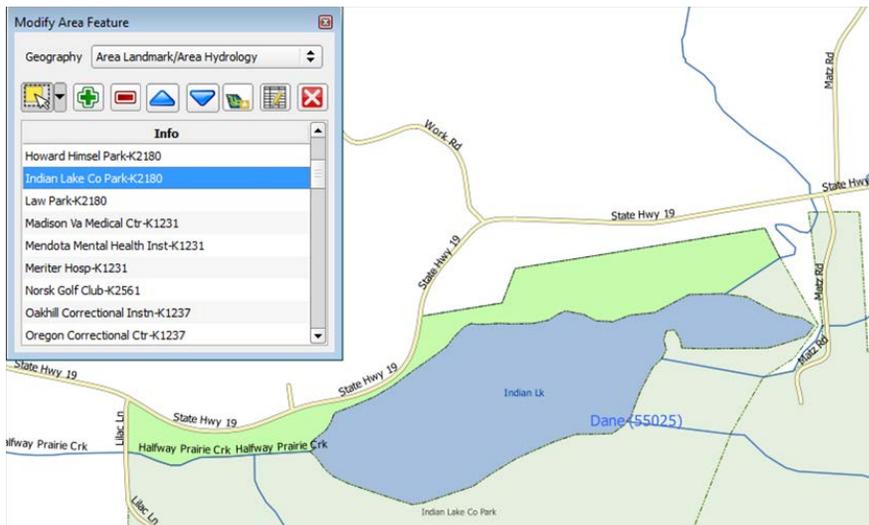
6.3.4 Removing Area from an Area Landmark/Hydrographic Area

Follow the steps in [Table 40](#) to remove area from an area landmark or hydrographic area.

Table 40: Removing Area from an Area Landmark/Hydrographic Area

Step	Action and Result
<p>Step 1</p>	<p>Open in Map View the county that contains the area landmark or hydrographic area from which you wish to remove area. Be sure the ‘Area_Landmarks’ layer is checked in the Table of Contents.</p>
<p>Step 2</p>	<p>Click the Modify Area Feature button on the BAS toolbar.</p>

Step	Action and <i>Result</i>
	<p data-bbox="337 327 865 359">The Modify Area Feature dialog box opens.</p> 
<p data-bbox="212 793 298 825">Step 3</p>	<p data-bbox="337 793 1357 884">In the Geography field drop-down menu, select 'Area Landmark/Area Hydrography'. 'Area Landmark/Area Hydrography' populates the Geography field and a list of area landmarks and hydrological features in the county appears in the Info list.</p> 
<p data-bbox="212 1398 298 1430">Step 4</p>	<p data-bbox="337 1398 1373 1488">Select the area landmark/hydro area from which you want to remove area. <i>The selected entity is highlighted in the Info list and the map zooms to its location.</i> In this example, we have chosen Indian Lake County Park.</p>

Step	Action and <i>Result</i>
	
<p>Step 5</p>	<p>To select the face(s) you want to remove from the area landmark, click the Select Feature button on the Modify Area Feature dialog box toolbar.</p>  <p>Then click on the first face you want to remove. To select additional faces, depress the CTRL key, and while holding it down, click the additional faces.</p>
<p>Step 6</p>	<p>To remove the face(s) selected, click the Remove Area button on the Modify Area Feature dialog box's internal toolbar.</p>  <p><i>The selected face turns light green (color may vary) on the map and is removed from the area landmark.</i></p> 

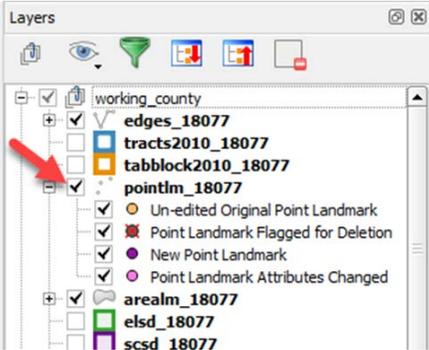
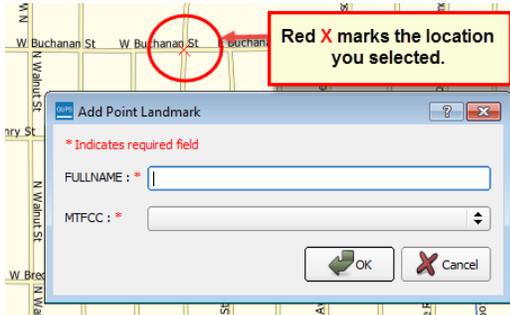
Step	Action and <i>Result</i>
	Because all geographic areas consist of faces, you may need to “split” a face to accurately reflect an entity’s boundary. To split a face, digitize a new line that represents the boundary’s location (click on Table 33 for instructions to add a linear feature) and assign it the appropriate MTFCC. This splits the original face into two faces. You can now select the face you need to add to the new entity.

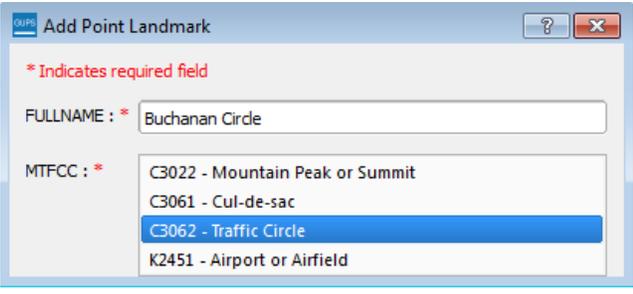
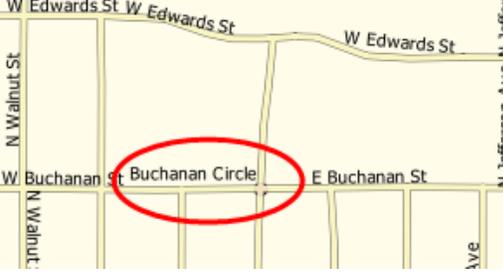
6.4 How to Update Point Landmarks

6.4.1 Adding a Point Landmark

To add a point landmark, follow the steps in [Table 41](#).

Table 41: Adding a Point Landmark

Step	Action and <i>Result</i>
Step 1	<p>Open in Map View the county that contains the entity where you want to add the point landmark. Be sure the point landmarks layer (pointlm_18077 in this example) is checked in the Table of Contents. Then zoom to the location where you want to add the landmark.</p> 
Step 2	<p>Click the Add Point Landmark button on the BAS toolbar.</p> 
Step 3	<p>Click on the map where you want to add the point landmark. <i>The Add Point Landmark dialog box opens and a red X marks the location you selected.</i></p> 

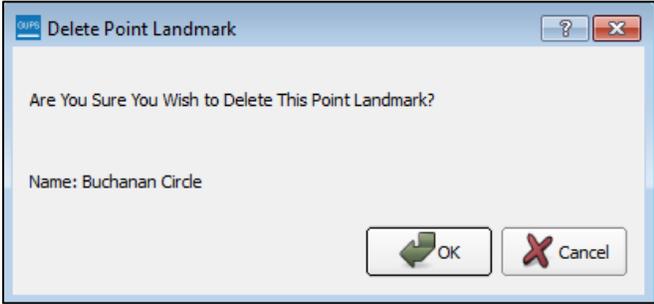
Step	Action and Result
Step 4	<p>Type in the name for the new point landmark in the FULLNAME: field. Then click the down arrow next to the MTFCC: field to open the drop-down menu.</p> 
Step 5	<p>Select the MTFCC, then click the OK  button at the bottom of the box.</p> <p><i>The map updates to show the added point landmark.</i> In this case we added a traffic circle and named it Buchanan Circle.</p> 

6.4.2 Deleting a Point Landmark

To delete a point landmark, follow the steps in **Table 42**.

Table 42: Deleting a Point Landmark

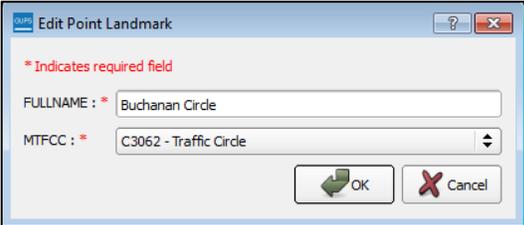
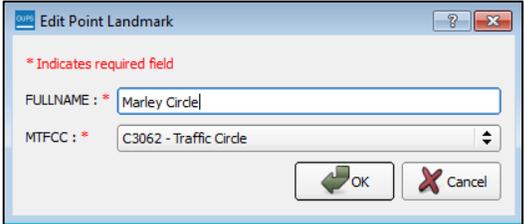
Step	Action and Result
Step 1	Zoom to the area on the map where you want to delete a point landmark. In this example, we will delete the traffic circle named Buchanan Circle.
Step 2	<p>Click the Delete Point Landmark button on the BAS toolbar.</p> 
Step 3	On the map, click on the point landmark you want to delete (Buchanan Circle). The Delete Point Landmark dialog box opens, and asks if you are sure you want to delete the point landmark.

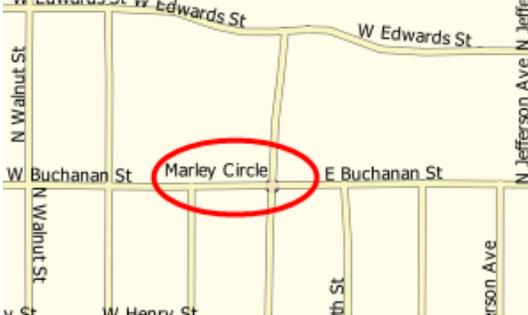
Step	Action and Result
	
Step 4	Click OK . <i>The point landmark disappears from the map and from the attribute table.</i>

6.4.3 Changing the Attributes of a Point Landmark

To change the attributes of a point landmark (e.g., its name, MTFCC), follow the steps in [Table 43](#).

Table 43: Changing the Attributes of a Point Landmark

Step	Action and Result
Step 1	Zoom to the area on the map where the point landmark is located and click on the landmark. In this example, we will change the name of Buchanan Traffic Circle.
Step 2	Click on the Edit Point Landmark button on the BAS toolbar. 
Step 3	On the map, click on Buchanan Circle. <i>The Edit Point Landmark dialog box opens.</i> 
Step 4	To change the name, backspace over the name appearing in the FULLNAME : field, then type in the new name. In this example, we will change the name to Marley Circle. 

Step	Action and <i>Result</i>
Step 5	<p>Click OK. The new name of the point landmark appears on the map.</p> 

6.5 How to Use GUPS Review and Validation Tools

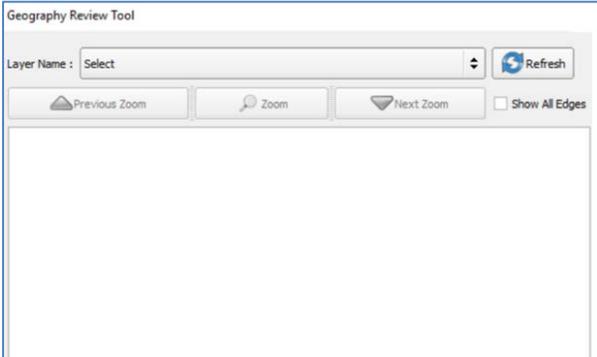
GUPS provides two tools—the **Geography Review** tool and the **Review Change Polygons** tool to help you review and validate the updates you have made in the system.

6.5.1 Geography Review Tool

The **Geography Review** tool filters the map layers based on various fields in the attribute table. You can use this tool to check the changes you made to linear features, area landmarks, point landmarks, and legal boundaries anywhere within a county (you may also view the attributes of entities, features, landmarks, and boundaries you did not change). **Note:** *Although this tool allows you to review your changes, you cannot use it to edit them.*

Instructions for how to use the **Geography Review** tool information appear in [Table 44](#) below.

Table 44: Using the Geography Review Tool

Step	Action and <i>Result</i>
Step 1	<p>Click on the Geography Review button on the BAS toolbar.</p>  <p><i>The Geography Review Tool dialog box opens.</i></p> 

Step	Action and Result
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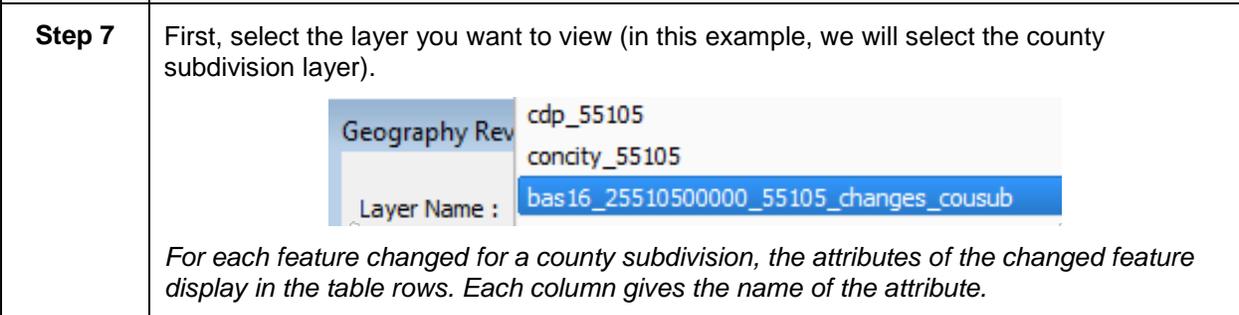
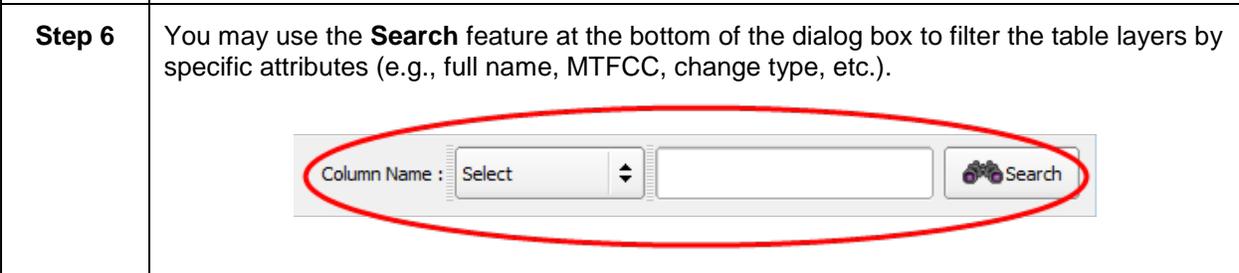
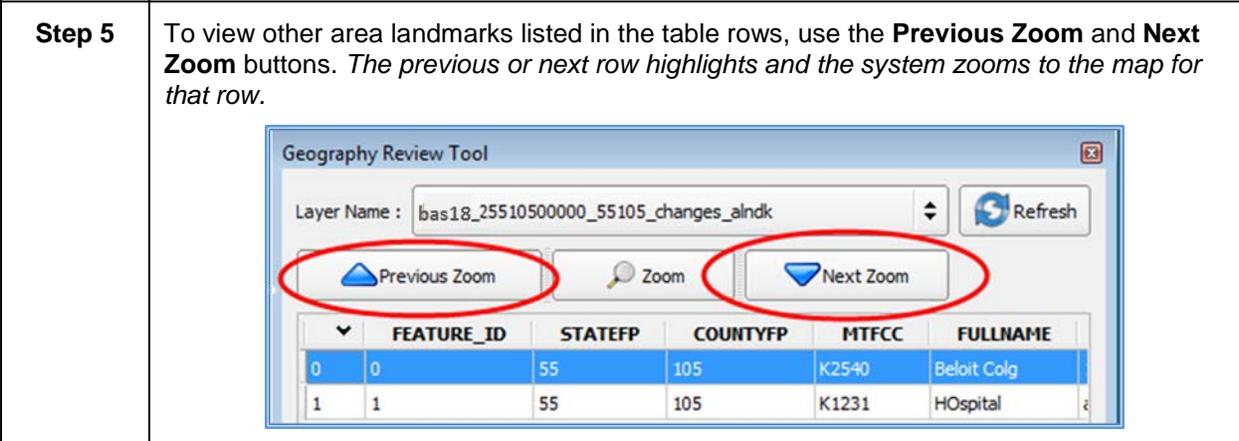
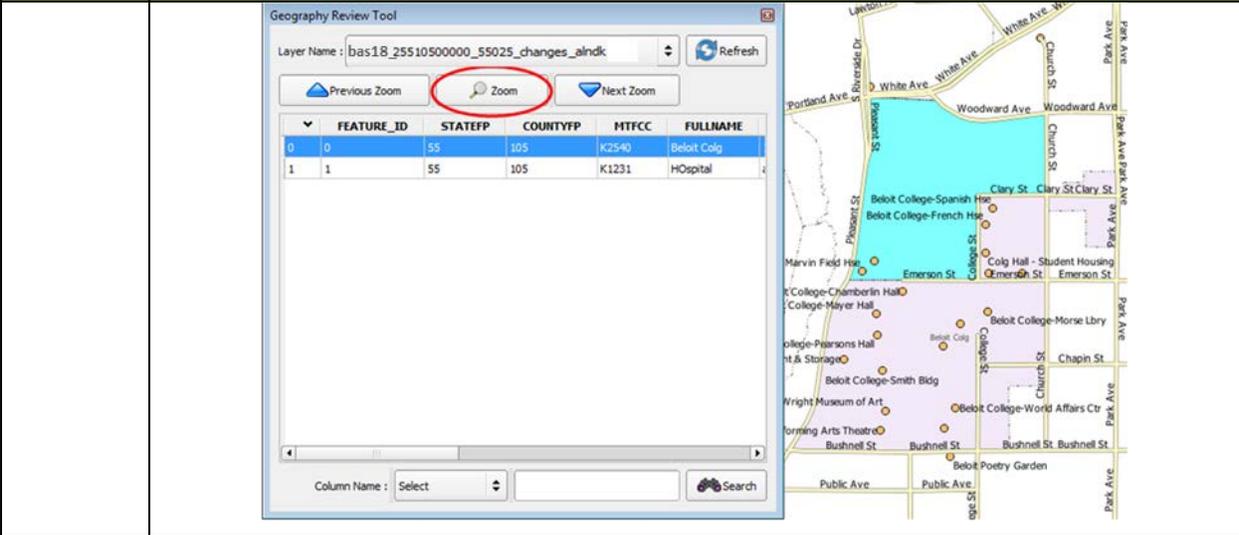
Step 2	<p>In the Layer Name: field drop-down menu, select the data layer you want to view:</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> </div> <p>In this example, we selected the file “bas18_25510500000_55105_changes_alndk.” This is the transaction data output file for the area landmark layer (note the word “changes” in the file name to indicate the layer has been updated).</p>
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Step 3	<p>Once you make your selection, the attribute table for the layer opens, with the attributes for each area landmark you changed displayed in a separate row.</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 15%;">FEATURE_ID</th> <th style="width: 15%;">STATEFP</th> <th style="width: 15%;">COUNTYFP</th> <th style="width: 15%;">MTFCC</th> <th style="width: 30%;">NAME/SAD</th> </tr> </thead> <tbody> <tr style="background-color: #e6f2ff;"> <td>0</td> <td>0</td> <td>55</td> <td>105</td> <td>K2540</td> <td>Beloit Colg</td> </tr> <tr> <td>1</td> <td>1</td> <td>55</td> <td>105</td> <td>K1231</td> <td>HOspital</td> </tr> </tbody> </table> </div>		FEATURE_ID	STATEFP	COUNTYFP	MTFCC	NAME/SAD	0	0	55	105	K2540	Beloit Colg	1	1	55	105	K1231	HOspital
	FEATURE_ID	STATEFP	COUNTYFP	MTFCC	NAME/SAD														
0	0	55	105	K2540	Beloit Colg														
1	1	55	105	K1231	HOspital														

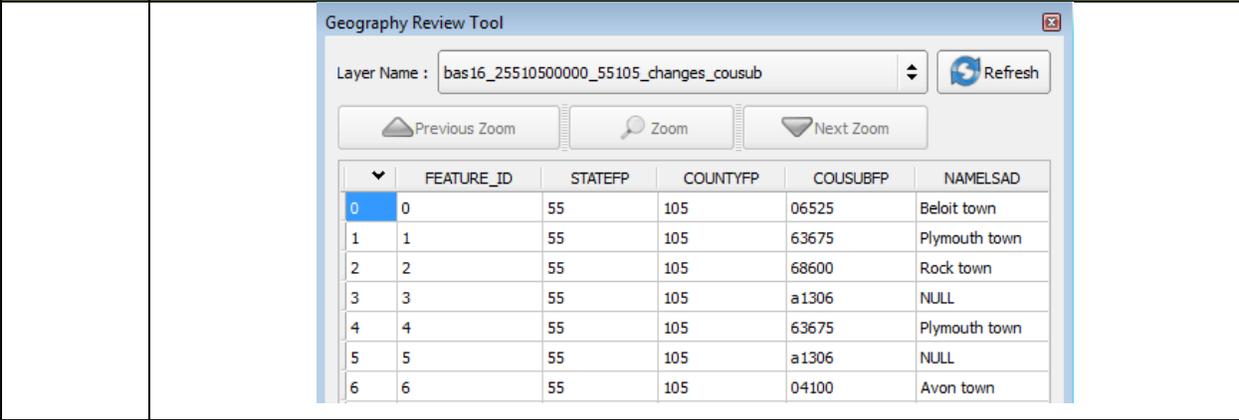
	<p>If you cannot see all the columns in the attribute data table, drag the edge of the dialog box outward to widen the view. You may also move the dialog box to another location by clicking inside the box and dragging it.</p>
--	---

Step 4	<p>To see an area landmark on the map, click its row in the attribute table, then click the Zoom button (<i>the row is highlighted and the map automatically zooms to the landmark selected, which is highlighted and shows changes made in cyan blue – colors may vary</i>).</p>
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Step	Action and Result
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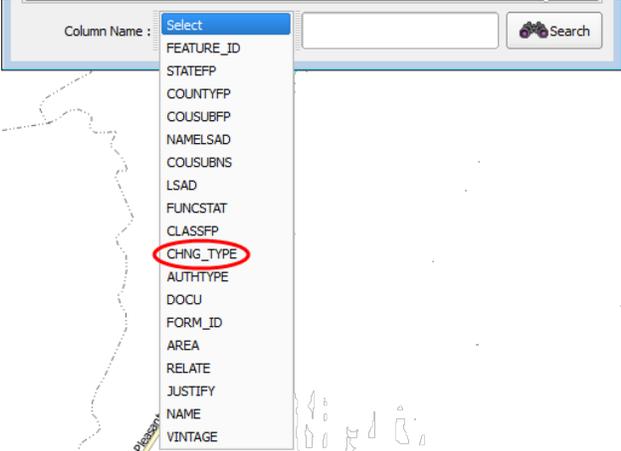


Step	Action and Result
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Step 8	Action and Result
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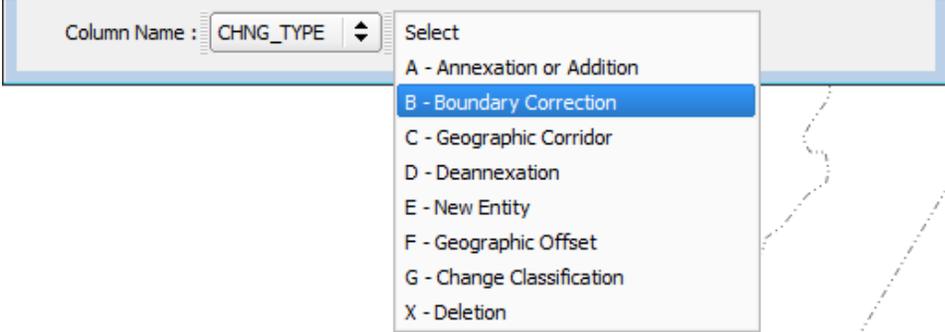
In the **Column Name** drop-down menu, select the attribute by which you want to filter.



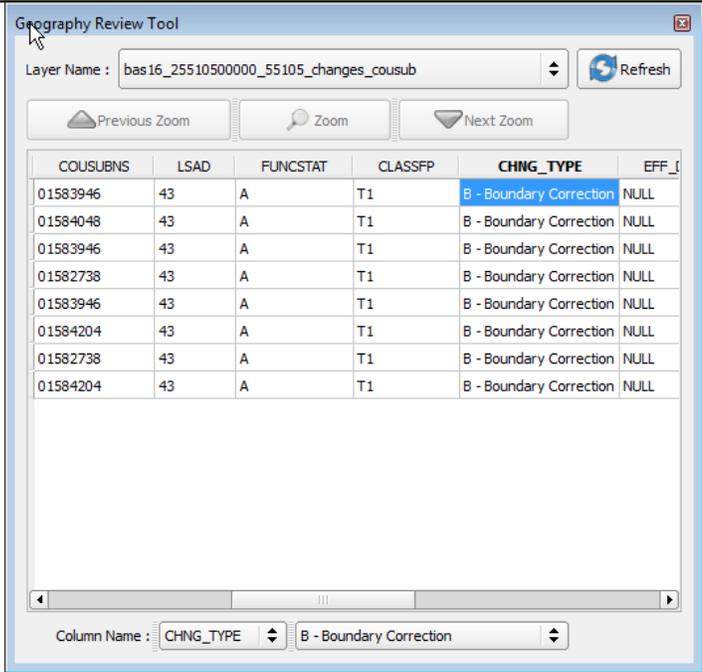
In this example, we will select change type (**CHNG_TYPE**).

Step 9	Action and Result
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Finally, in the *Select* drop-down, select the attribute value by which you want to filter, then click the **Search** button. In this example, we will select 'Boundary Correction'.



After you click **Search**, the attribute table is filtered to show the rows for all boundary corrections made in the county subdivision layer.

Step	Action and Result																																																						
	 <table border="1" data-bbox="560 405 1214 653"> <thead> <tr> <th>COUSUBNS</th> <th>LSAD</th> <th>FUNCSTAT</th> <th>CLASSFP</th> <th>CHNG_TYPE</th> <th>EFF_1</th> </tr> </thead> <tbody> <tr> <td>01583946</td> <td>43</td> <td>A</td> <td>T1</td> <td>B - Boundary Correction</td> <td>NULL</td> </tr> <tr> <td>01584048</td> <td>43</td> <td>A</td> <td>T1</td> <td>B - Boundary Correction</td> <td>NULL</td> </tr> <tr> <td>01583946</td> <td>43</td> <td>A</td> <td>T1</td> <td>B - Boundary Correction</td> <td>NULL</td> </tr> <tr> <td>01582738</td> <td>43</td> <td>A</td> <td>T1</td> <td>B - Boundary Correction</td> <td>NULL</td> </tr> <tr> <td>01583946</td> <td>43</td> <td>A</td> <td>T1</td> <td>B - Boundary Correction</td> <td>NULL</td> </tr> <tr> <td>01584204</td> <td>43</td> <td>A</td> <td>T1</td> <td>B - Boundary Correction</td> <td>NULL</td> </tr> <tr> <td>01582738</td> <td>43</td> <td>A</td> <td>T1</td> <td>B - Boundary Correction</td> <td>NULL</td> </tr> <tr> <td>01584204</td> <td>43</td> <td>A</td> <td>T1</td> <td>B - Boundary Correction</td> <td>NULL</td> </tr> </tbody> </table>	COUSUBNS	LSAD	FUNCSTAT	CLASSFP	CHNG_TYPE	EFF_1	01583946	43	A	T1	B - Boundary Correction	NULL	01584048	43	A	T1	B - Boundary Correction	NULL	01583946	43	A	T1	B - Boundary Correction	NULL	01582738	43	A	T1	B - Boundary Correction	NULL	01583946	43	A	T1	B - Boundary Correction	NULL	01584204	43	A	T1	B - Boundary Correction	NULL	01582738	43	A	T1	B - Boundary Correction	NULL	01584204	43	A	T1	B - Boundary Correction	NULL
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01582738	43	A	T1	B - Boundary Correction	NULL																																																		
01584204	43	A	T1	B - Boundary Correction	NULL																																																		
Step 10	To view an individual boundary correction, click on its row and click the Zoom button.																																																						
Step 11	To return to the attribute table to see the full (<i>unfiltered</i>) county subdivision layer, click the Refresh  button in the upper right-hand corner of the dialog box.																																																						
	<p>Note that when filtering the table by some attributes (e.g., state and county FIPS code or MTFCC), no drop-down list appears from which to make a selection. This is because some attribute codes are too numerous to make scrolling through a list practicable. Instead you will receive a blank box in which you may type the search value. For example, if you are filtering the area landmarks layer by MTFCC and want to see hospitals in the layer, type in the MTFCC for hospitals (K1231), as shown below, then click Search.</p> 																																																						

6.5.2 Reviewing Change Polygons Tool

The **Review Change Polygons** tool allows you to view the transactions created from the edits you made to legal entities, as well as to area landmarks and hydrographic areas. You can review the transaction polygons that represent boundary changes, as well as new incorporations and disincorporations. The tool also allows you to make corrections to change polygons.

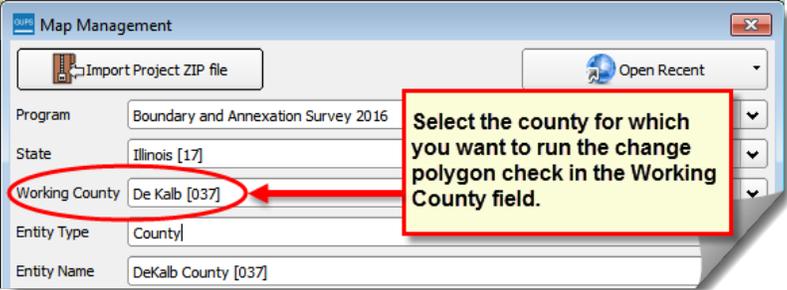
Notes on Reviewing Change Polygons

You must run the **Review Change Polygons** tool before GUPS will export a file.

You must run the **Review Change Polygons** tool for each county in which you worked. For example, if you made changes to your working county, but also made changes to an adjacent county when annexing land for your county, you must run the change polygon check on **both** counties.

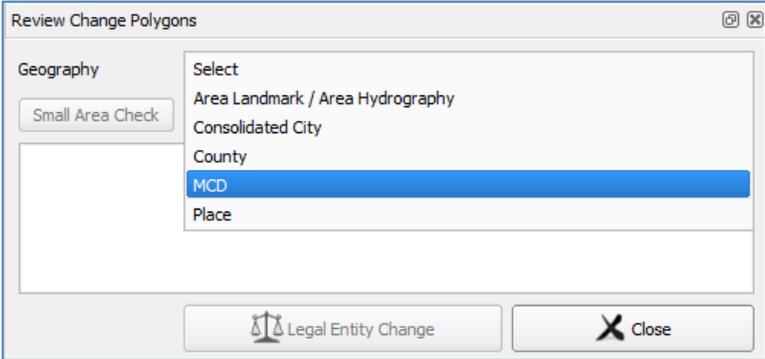
To use the **Review Change Polygons** tool, follow the steps in [Table 45](#).

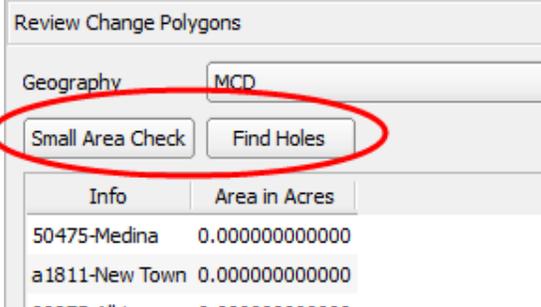
Table 45: Reviewing Change Polygons

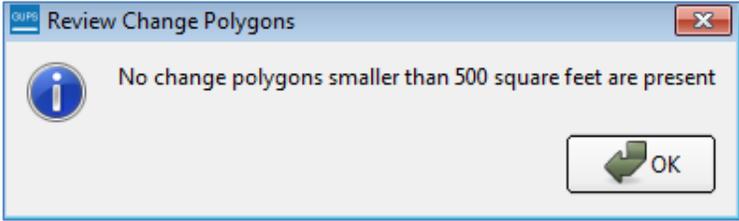
Step	Action and Result
<p>Step 1</p>	<p>In the Map Management dialog box, make sure the county for which you want to run the check appears in the Working County field.</p>  <p>Once you click the Open button at the bottom of the dialog box and the map opens in Map View, you are ready to run the Review Change Polygons check.</p>
	<p>If you made changes in more than one county, you must run the check for each county in which you worked. This means that after completing the check for one county you must return to Map Management and select the additional county in which you worked as the working county. Then run the check on it. Repeat this process until you have run the check for all counties in which you made changes.</p> <p>If you did not make any changes in another county, you need only run the check for your county.</p>
<p>Step 2</p>	<p>Once you have loaded the working county, you are ready to begin the change polygons review.</p> <p>Click on the Review Change Polygons button on the BAS toolbar.</p>  <p><i>The Review Change Polygons dialog box opens just below the Table of Contents.</i></p>

Step	Action and Result
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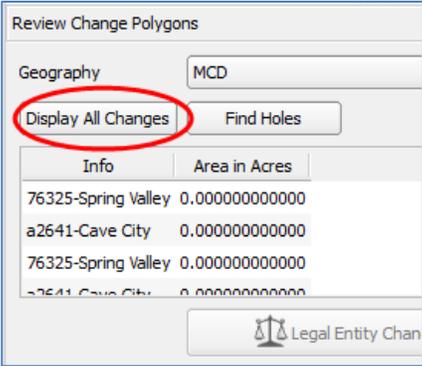
	 <p>Note: This box can be dragged anywhere on your screen and docked.</p>
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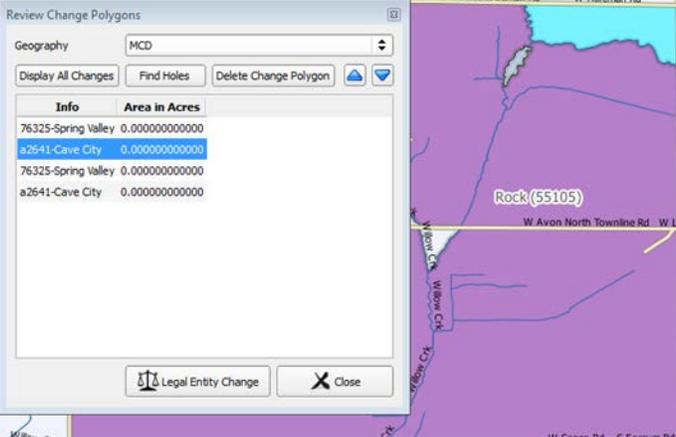
Step 3	<p>Use the Geography drop-down menu shown below to select the geography you want to review. In this example, we have selected 'MCD'.</p> 
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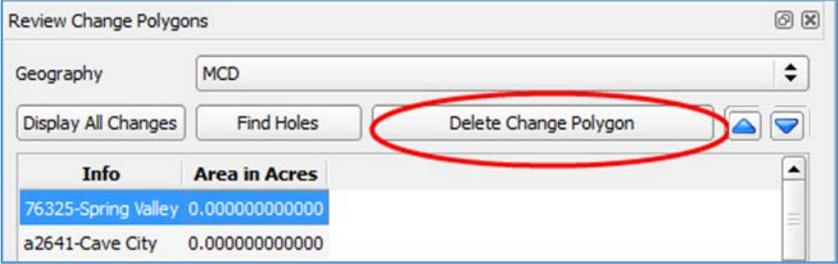
Step 4	<p>After you select an entity type, the Small Area Check and Find Holes buttons become active and all change polygons for the entity type you selected appear in the Info list at the bottom of the box.</p> 
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Step 5	<p>To check for small area change polygons, click the Small Area Check button. If all your change polygons are of sufficient size, a pop-up box informs you of this.</p> 
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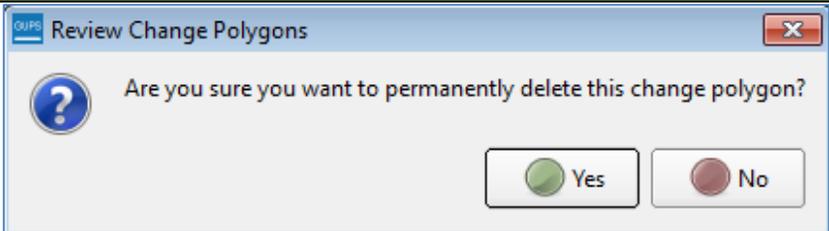
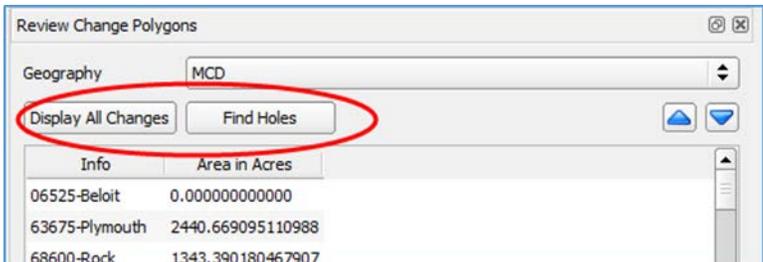
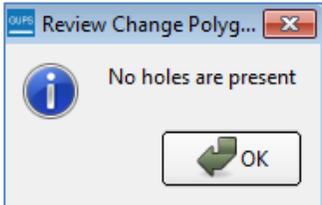
Step	Action and Result
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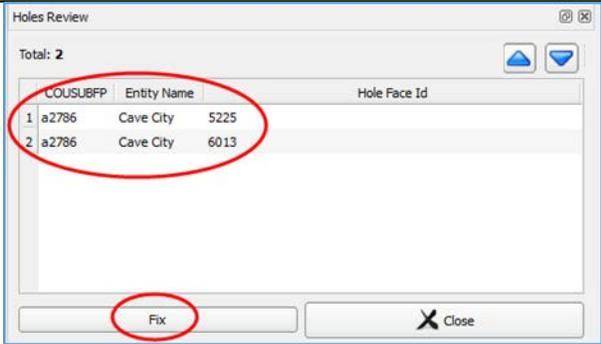
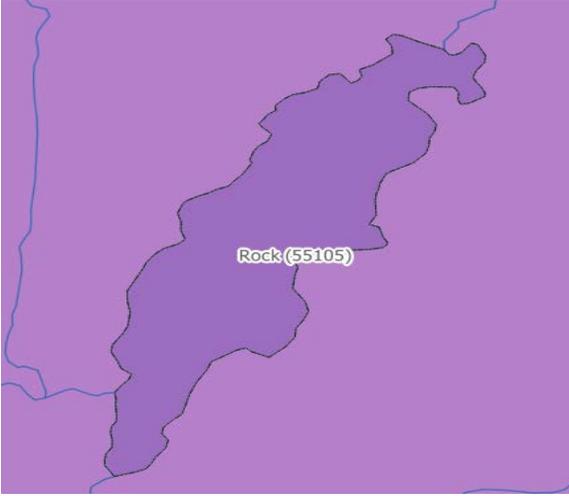
<p>Step 6</p>	<p>If you have small area polygons within an MCD in the working county, they appear in the Info list with their acreage noted in the Area in Acres column. The Display All Changes button also becomes active (this button allows you to toggle back to see all change polygons in the list).</p> 
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<p>Step 7</p>	<p>To view a polygon on the map, click the row for the polygon in the Info list. The polygon is highlighted and the map zooms to the location of the polygon.</p>  <p>Note in the illustration above, we moved the Review Change Polygons box to sit over the map. As stated earlier, you may move the box anywhere on the page and dock it.</p>
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<p>Step 8</p>	<p>To delete polygons that are too small (less than 500 square feet), click on the row for the change polygon in the Info list. The Delete Change Polygon button appears.</p> 
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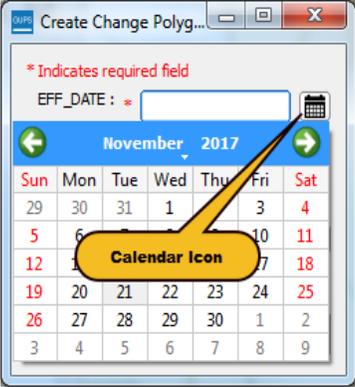
<p>Step 9</p>	<p>To delete the polygon, click the Delete Change Polygon button. A pop-up box asks if you are sure you want to delete.</p>
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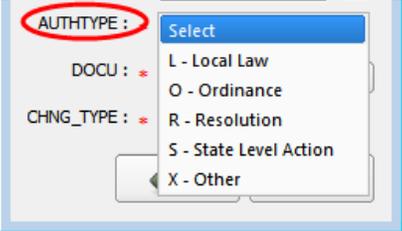
Step	Action and Result								
									
Step 10	Click the Yes button. <i>The polygon is removed from the list, from the map, and from the attribute table.</i>								
Step 11	Before the Small Area check is complete, you must repeat the steps above for each geography type for which you created change polygons.								
Step 12	<p>Next, review your polygons for holes (that is, two or fewer small faces missed when creating a change polygon). While still in the Review Change Polygons dialog box, select a geography type from the Geography drop-down menu. For this example, we again selected 'MCD'. A list of change polygons for MCDs in the county populates the Info list and the Display All Changes button replaces the Small Area button (since you've already run this check). The Find Holes buttons remains in its original location.</p>  <table border="1" data-bbox="537 1052 1263 1167"> <thead> <tr> <th>Info</th> <th>Area in Acres</th> </tr> </thead> <tbody> <tr> <td>06525-Beloit</td> <td>0.000000000000</td> </tr> <tr> <td>63675-Plymouth</td> <td>2440.669095110988</td> </tr> <tr> <td>68600-Rock</td> <td>1343.390180467907</td> </tr> </tbody> </table>	Info	Area in Acres	06525-Beloit	0.000000000000	63675-Plymouth	2440.669095110988	68600-Rock	1343.390180467907
Info	Area in Acres								
06525-Beloit	0.000000000000								
63675-Plymouth	2440.669095110988								
68600-Rock	1343.390180467907								
Step 13	<p>Click on the row for the polygon in the Info list to see it on the map, then click the Find Holes button. <i>If no holes are present, a pop-up box informs you of this.</i></p> 								
Step 14	<i>If holes are found, a list of polygons with holes appears in the Holes Review box and the Fix button activates at the bottom of the box.</i>								

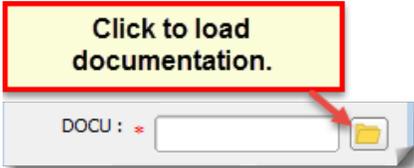
Step	Action and <i>Result</i>
	
<p>Step 15</p>	<p>To correct a change polygon, click on its row to highlight it. <i>The map zooms to its location and displays all holes in cyan blue (color may vary).</i></p> 
<p>Step 16</p>	<p>Click the Fix button to repair the hole. <i>The change polygon is corrected and the correction displays on the map (i.e., the hole is changed to the same color as the remainder of the polygon).</i></p> 
<p>Step 17</p>	<p>Before the Find Holes check is complete, you must repeat the steps above <i>for each</i> geography type for which you created change polygons.</p>

Step	Action and Result
Step 18	After you review for small areas and holes, you may also use the Review Change Polygons tool to check the general accuracy of your change polygons. To do so, select your entity type in the Geography drop-down menu. A full list of change polygons for the geography type selected displays in the Info list.
Step 19	Click on the row for each polygon to see it on the map and review your changes. If you notice a mistake on the map (e.g., you created a new incorporated place that was supposed to have six faces, but you selected only five), click on the Modify Area Feature button on the BAS toolbar and make the correction.
Step 20	<p>To review boundary changes, select the entity type you want to review in the Geography drop-down menu at the top of the Review Change Polygons dialog box. In this example, we select 'Place'. All boundary change polygons for the entity type selected populate the Info list.</p> <p>To review a boundary change, click on the change polygon in the list, then click the Legal Entity Change button at the bottom of the Review Change Polygons dialog box, shown below.</p> <div data-bbox="574 856 1224 1178" data-label="Image"> </div> <p>The map zooms to where the change was made and a box opens displaying the information that you entered when you coded the change. Here, because the change was a boundary correction, the effective date, authority type, and documentation fields are not filled.</p> <div data-bbox="727 1335 1068 1759" data-label="Image"> </div> <p>If this change was mistakenly coded as a boundary correction, and should have been a legal change instead, you may correct the error here. In this example we correct a change polygon mistakenly coded as a boundary correction rather than an annexation.</p>

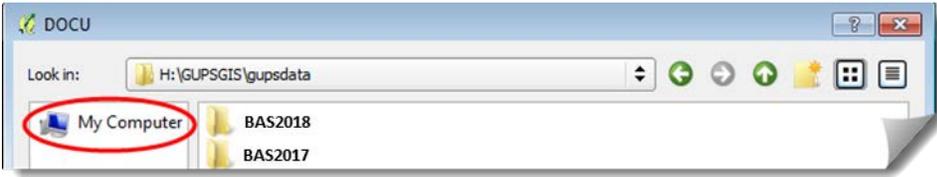
Step	Action and <i>Result</i>
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Step 21	<p>Click the calendar icon next to the EFF_DATE field to select an effective date for the annexation.</p> 
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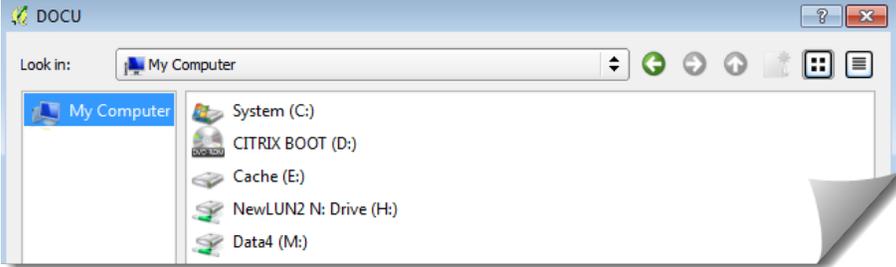
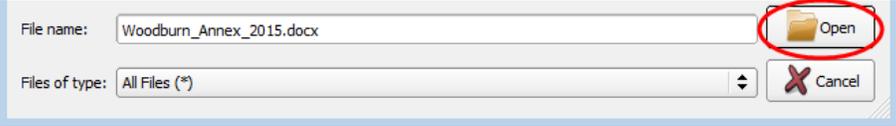
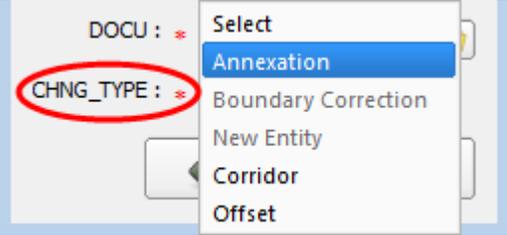
Step 22	<p>Use the drop-down menu for the AUTHTYPE field to select the authority type for the change.</p> 
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Step 23	<p>In the DOCU field, type in the ordinance or other legal documentation number authorizing the annexation, or upload legal documentation for the change. To upload documentation, click the folder icon next to the DOCU field.</p> 
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When the **DOCU** window opens, click on the icon for 'My Computer' (or simply 'Computer' in some Windows versions) to open the directory where you have saved your documentation.



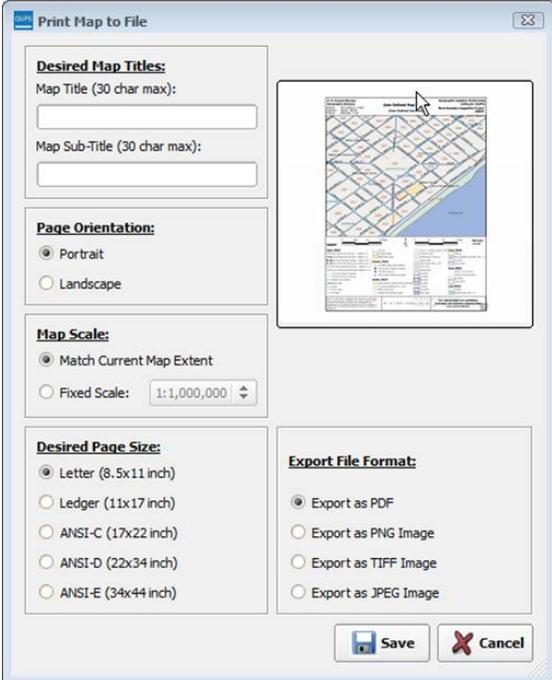
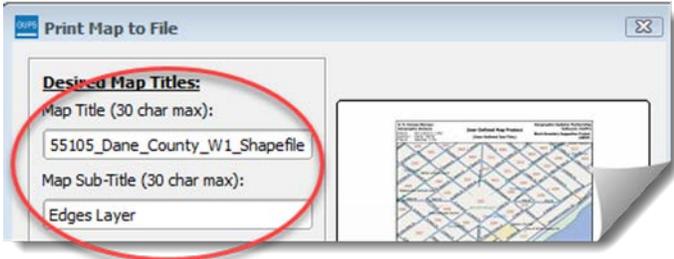
Your directories display, as shown below.

Step	Action and Result
	 <p>Select the appropriate directory and navigate to the file you want to upload. Click the file. Then, to upload it, click the Open button at the bottom of the DOCU window.</p>  <p><i>GUPS uploads the file and the file name appears in the DOCU field.</i></p>
Step 24	<p>Finally, in the CHNG_TYPE field drop-down menu, change 'Boundary Correction' to the correct change type ('Annexation', 'Corridor', or 'Offset'). Here we select 'Annexation'.</p> 
Step 25	<p>Click the OK  button. <i>The correction is made.</i></p>
Step 26	<p>When you have completed <i>all your reviews</i> (for small areas, holes, and boundary changes) for <i>all entity types</i>, and have made any corrections needed, click the Save  button on the BAS toolbar. <i>All corrections are saved. Your Review Change Polygons check is complete.</i></p>
Step 27	<p>If you made changes in more than one working county, return to Map Management, select the additional county as your working county, and repeat the steps above. Repeat this process as many times as needed until you have run the Review Change Polygons check on all the counties in which you made changes.</p>

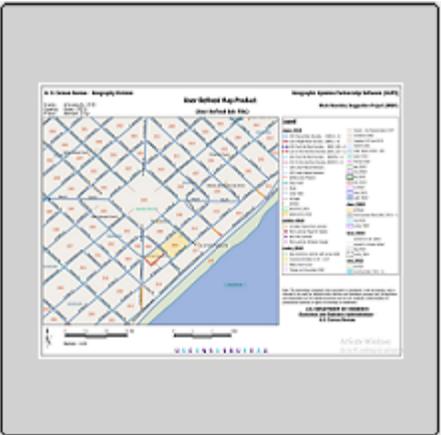
6.6 Export a Printable Map

GUPS allows you to generate printable maps in four formats (.pdf, .png., .tiff, and .jpeg). The maps can be created in portrait or landscape view, on letter or ledger (legal) size paper, and at various scales. To export a printable map from GUPS, follow the steps in [Table 46](#).

Table 46: Export a Printable Map

Step	Action and <i>Result</i>
<p>Step 1</p>	<p>Click on the Export to ZIP button on the BAS toolbar.</p>  <p>The Print Map to File dialog box opens.</p> 
<p>Step 2</p>	<p>In the Desired Map Titles section, type in a map title and sub-title.</p> 
<p>Step 3</p>	<p>Under Page Orientation, click the radio button next to 'Portrait' or 'Landscape' to select the map's orientation on the page when printed.</p>

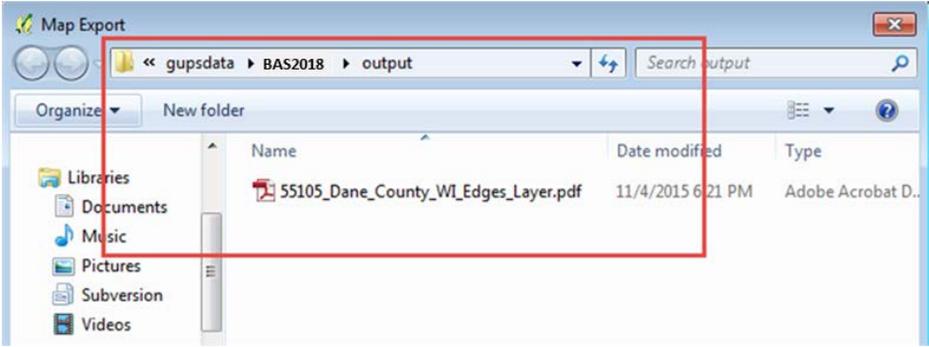
Step	Action and <i>Result</i>
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	<div style="border: 1px solid #ccc; padding: 10px; margin-bottom: 10px;"> <p>Page Orientation:</p> <p><input checked="" type="radio"/> Portrait</p> <p><input type="radio"/> Landscape</p> </div> <p>The map orientation in the preview pane to the right changes to reflect your selection.</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p style="text-align: center;"><i>Portrait View (left) and Landscape View (right)</i></p>
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Step 4	<p>Under Map Scale, click the appropriate radio button to select the map scale (you may use your current map extent or set a fixed scale). To select a fixed scale, click the radio button next to 'Fixed Scale', then click the down arrow to open the drop-down menu. In the drop-down list, click on the scale that you want.</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px auto; width: fit-content;"> <p>Map Scale:</p> <p><input type="radio"/> Match Current Map Extent</p> <p><input checked="" type="radio"/> Fixed Scale: 1:1,000,000</p> <p>Desired Page Size:</p> <p><input checked="" type="radio"/> Letter (8.5x11)</p> <p><input type="radio"/> Ledger (11x17)</p> <ul style="list-style-type: none"> 1:500,000 1:250,000 1:100,000 1:50,000 1:25,000 1:10,000 1:5,000 1:2,000 1:1,000 1:500 </div>
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Step 5	<p>Under Desired Paper Size, click the radio button next to 'Letter' for 8½ by 11-inch paper or the 'Ledger' button for 11 by 17-inch paper.</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px auto; width: fit-content;"> <p>Desired Page Size:</p> <p><input checked="" type="radio"/> Letter (8.5x11)</p> <p><input type="radio"/> Ledger (11x17)</p> </div>
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Step	Action and <i>Result</i>
<p>Step 6</p>	<p>When you are ready to export the file, under Export File Format, click the radio button next to the desired format. You may export the file in .pdf, .png, .tiff, or .jpeg format.</p> <div data-bbox="781 352 1036 558" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>Export File Format:</p> <p><input checked="" type="radio"/> Export as PDF</p> <p><input type="radio"/> Export as PNG Image</p> <p><input type="radio"/> Export as TIFF Image</p> <p><input type="radio"/> Export as JPEG Image</p> </div>
<p>Step 7</p>	<p>Click the Save button. <i>The Map Export – Save Map As... window opens.</i></p> <div data-bbox="483 638 1333 932" style="border: 1px solid gray; padding: 5px; margin: 10px auto; width: fit-content;"> </div> <p>Note: GUPS automatically selected the “output” folder for BAS2018 as the save location. This folder was created on your computer by the GUPS installer. If you want to save the file to a different location, navigate to the location first before saving.</p>
<p>Step 8</p>	<p>After you have selected the location, type in the name you want to give the file, then click Save.</p> <div data-bbox="505 1152 1310 1604" style="border: 1px solid gray; padding: 5px; margin: 10px auto; width: fit-content;"> </div>
<p>Step 9</p>	<p><i>The file is saved and you receive a pop-up message confirming that the export is complete.</i></p> <div data-bbox="781 1686 1036 1860" style="border: 1px solid gray; padding: 5px; margin: 10px auto; width: fit-content;"> </div>

Step	Action and Result
Step 10	<p>To save the file, click OK. Your file is saved either in the default BAS2018 output location or in the alternate location you specified. Here we saved the file in the default location.</p> 

6.7 How to Export ZIP Files to Share/Submit

When creating ZIP files to export, you have two options—you may export the file to share with another user or you may export the file for submission to the Census Bureau. In either case, GUPS automatically names the output ZIP file for you. It packages all the files required by the Census Bureau (including any documentation you uploaded) into the ZIP file and saves it in a preset location created on your computer by during the installation process.

Important Note

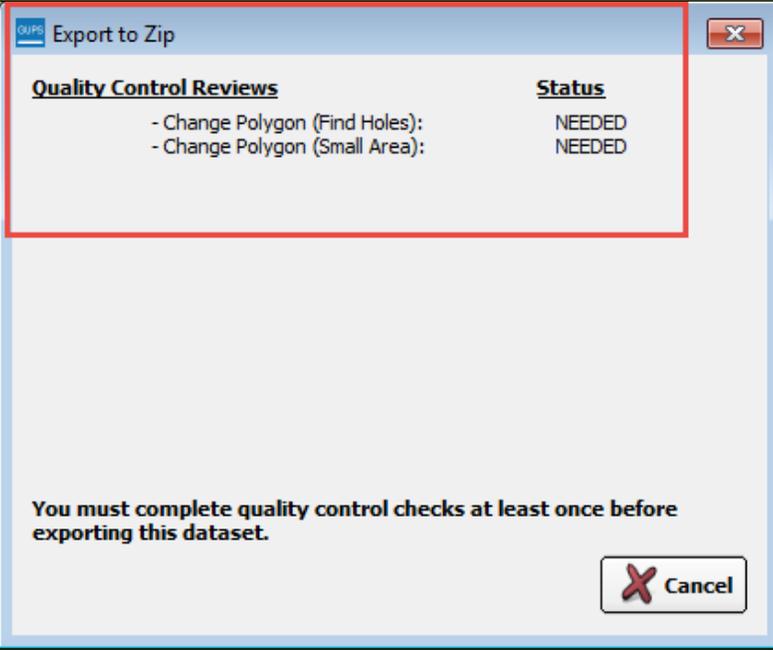
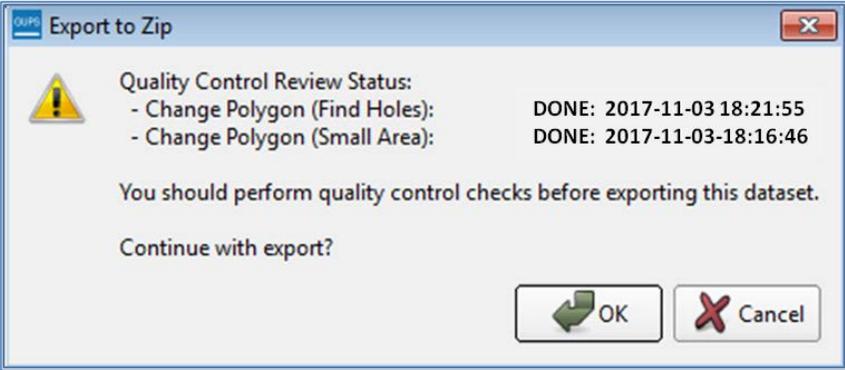
If you make changes to more than one working county, you must export a separate ZIP file for each.

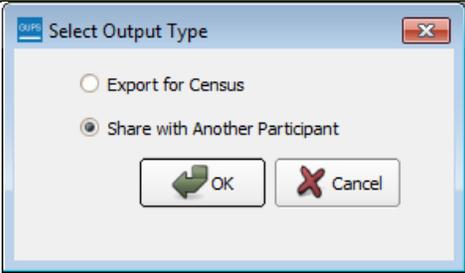
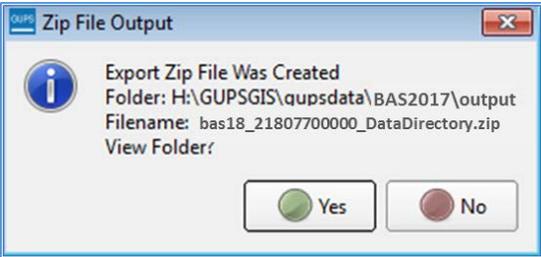
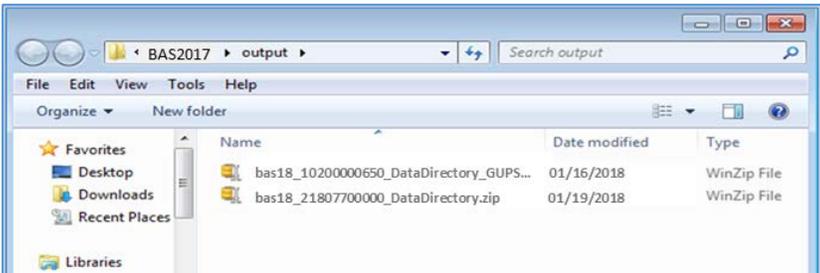
6.7.1 Exporting a File to Share

To export a file to share with another user, follow the steps in [Table 47](#).

Table 47: Exporting Files to Share with Another User

Step	Action and Result
Step 1	<p>Click on the Export to ZIP button on the BAS toolbar.</p> 
Step 2	<p>After you click Export to Zip button, you may receive one of two results, depending on whether you have validated your changes using the Review Change Polygons tool. If you have not used the tool to check your work, the Export to ZIP pop-up box appears and lists the specific checks that need to be run before you can export the file.</p>

Step	Action and <i>Result</i>
	 <p>If you see this message, click the Cancel button and run the Review Change Polygons check. Then repeat the initial export steps again.</p>
<p>Step 3</p>	<p>If you <i>have already run</i> the Review Change Polygon check, the Export to ZIP pop-up box displays the status of the checks and the date and time they were made, as shown below.</p> 
<p>Step 4</p>	<p>Look carefully at the run times listed. If you have made any additional changes after these times, click Cancel and run the Review Change Polygons check again. Then repeat the export steps.</p>
<p>Step 5</p>	<p>The Select Output Type dialog box opens.</p>

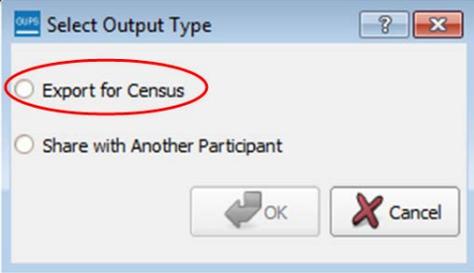
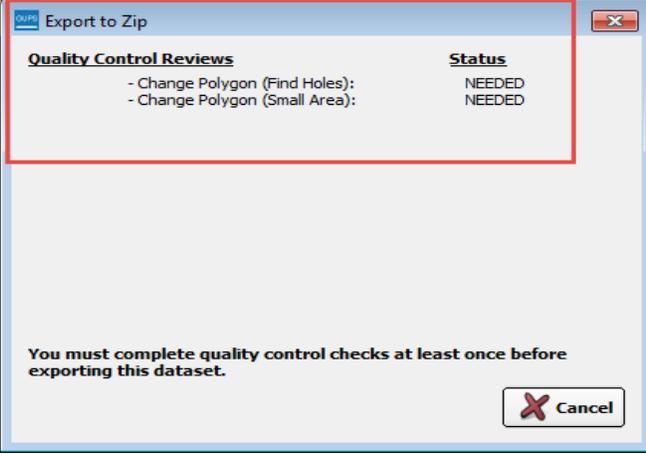
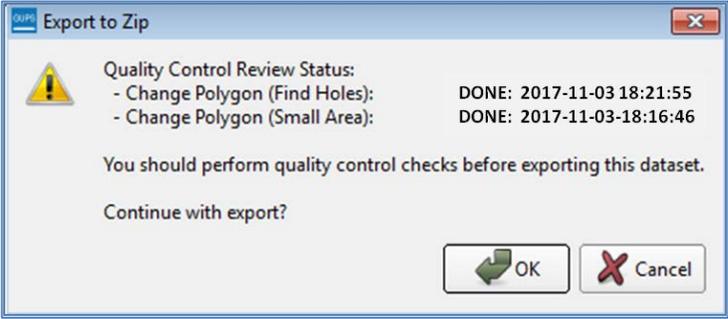
Step	Action and Result
	 <p>To prepare ZIP file to be shared with another user, select the “Share with Another Participant” radio button. Click OK.</p>
Step 6	<p>The ZIP File Output dialog box opens. It informs you that the ZIP file was created and asks if you want to view the folder.</p> 
Step 7	<p>If you click Yes, the directory opens and displays the folder location where GUPS placed the file. Note: GUPS automatically saves the file to an output folder that the GUPS installer placed on your computer during the installation process.)</p> 
Step 8	You may now share the file with another user.

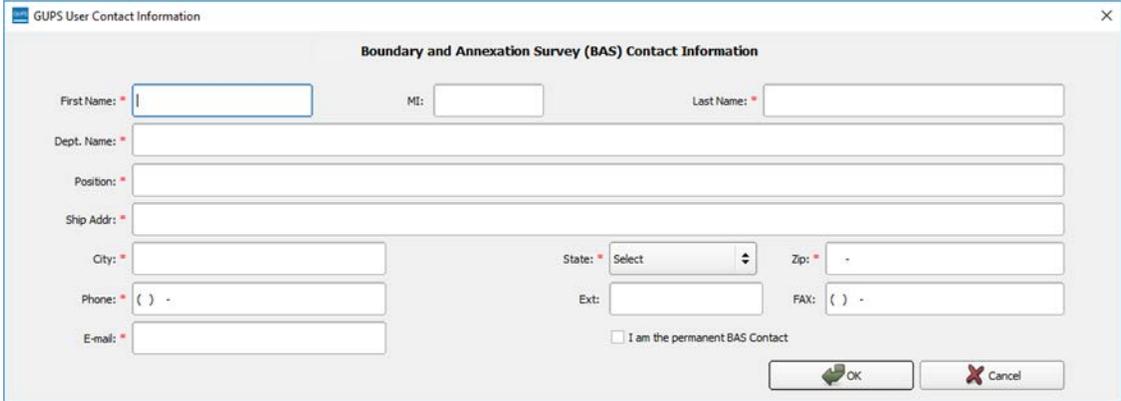
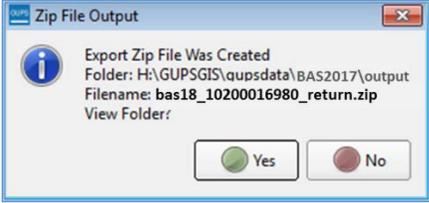
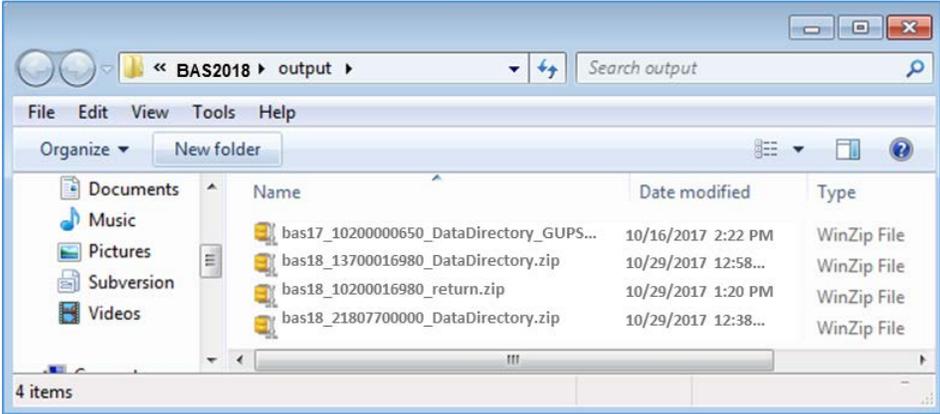
6.7.2 Exporting a File to Submit to the Census Bureau

To export a file to submit to the Census Bureau, follow the steps in [Table 48](#).

Table 48: Exporting Files for Submission to the Census Bureau

Step	Action and Result
Step 1	<p>Click on the Export to ZIP button on the BAS toolbar.</p> 

Step	Action and Result						
	<p>The Select Output Type dialog box opens.</p>  <p>Click the Export for Census radio button. Then click OK.</p>						
<p>Step 2</p>	<p>After you click OK, you may receive one of two results, depending on whether you have validated your changes using the Review Change Polygons tool. If you have not used the tool to check your work, the Export to ZIP pop-up box appears and lists the specific checks that need to be run before you can export the file.</p>  <table border="1" data-bbox="586 793 1154 957"> <thead> <tr> <th>Quality Control Reviews</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>- Change Polygon (Find Holes):</td> <td>NEEDED</td> </tr> <tr> <td>- Change Polygon (Small Area):</td> <td>NEEDED</td> </tr> </tbody> </table> <p>You must complete quality control checks at least once before exporting this dataset.</p>	Quality Control Reviews	Status	- Change Polygon (Find Holes):	NEEDED	- Change Polygon (Small Area):	NEEDED
Quality Control Reviews	Status						
- Change Polygon (Find Holes):	NEEDED						
- Change Polygon (Small Area):	NEEDED						
<p>Step 3</p>	<p>If you see this message, click the Cancel button and run the Review Change Polygons check. Then repeat the initial export steps again.</p>						
<p>Step 4</p>	<p>If you have already run the Review Change Polygon check, the Export to ZIP pop-up box displays the status of the checks and the date and time they were made, as shown below.</p>  <table border="1" data-bbox="540 1451 1268 1583"> <thead> <tr> <th>Quality Control Review Status:</th> <th></th> </tr> </thead> <tbody> <tr> <td>- Change Polygon (Find Holes):</td> <td>DONE: 2017-11-03 18:21:55</td> </tr> <tr> <td>- Change Polygon (Small Area):</td> <td>DONE: 2017-11-03-18:16:46</td> </tr> </tbody> </table> <p>You should perform quality control checks before exporting this dataset.</p> <p>Continue with export?</p>	Quality Control Review Status:		- Change Polygon (Find Holes):	DONE: 2017-11-03 18:21:55	- Change Polygon (Small Area):	DONE: 2017-11-03-18:16:46
Quality Control Review Status:							
- Change Polygon (Find Holes):	DONE: 2017-11-03 18:21:55						
- Change Polygon (Small Area):	DONE: 2017-11-03-18:16:46						

Step	Action and <i>Result</i>
Step 5	Look carefully at the run times listed. If you have made any additional changes after these times, click Cancel and run the Review Change Polygons check again. Then repeat the export steps.
Step 6	<p>Otherwise, click OK. The GUPS User Contact Information dialog box opens up. Complete the required fields and click OK.</p>  <p>The ZIP File Output dialog box opens. It informs you that the ZIP file was created and asks if you want to view the folder.</p> 
Step 7	<p>If you click Yes, the directory opens and displays the folder location where GUPS placed the file. Note: GUPS automatically saves the file to an output folder that the GUPS installer placed on your computer during the installation process.</p> 
Step 8	You are now ready to upload your file to the Census Bureau through the SWIM. See Section 7: on the next page.

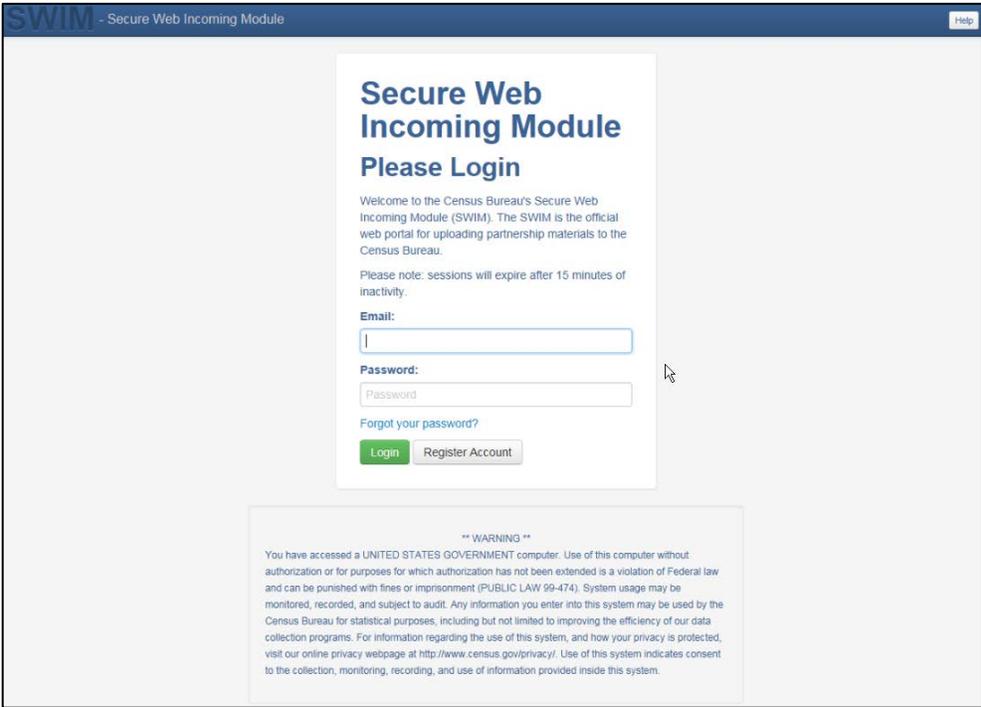
SECTION 7: SUBMITTING YOUR FILES TO THE CENSUS BUREAU THROUGH SWIM

To upload and transmit your update files to the Census Bureau, you must access your account in the Secure Web Incoming Module (SWIM), as shown in

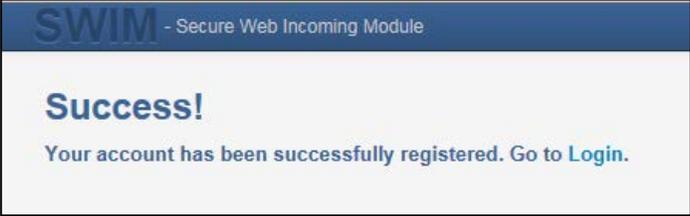
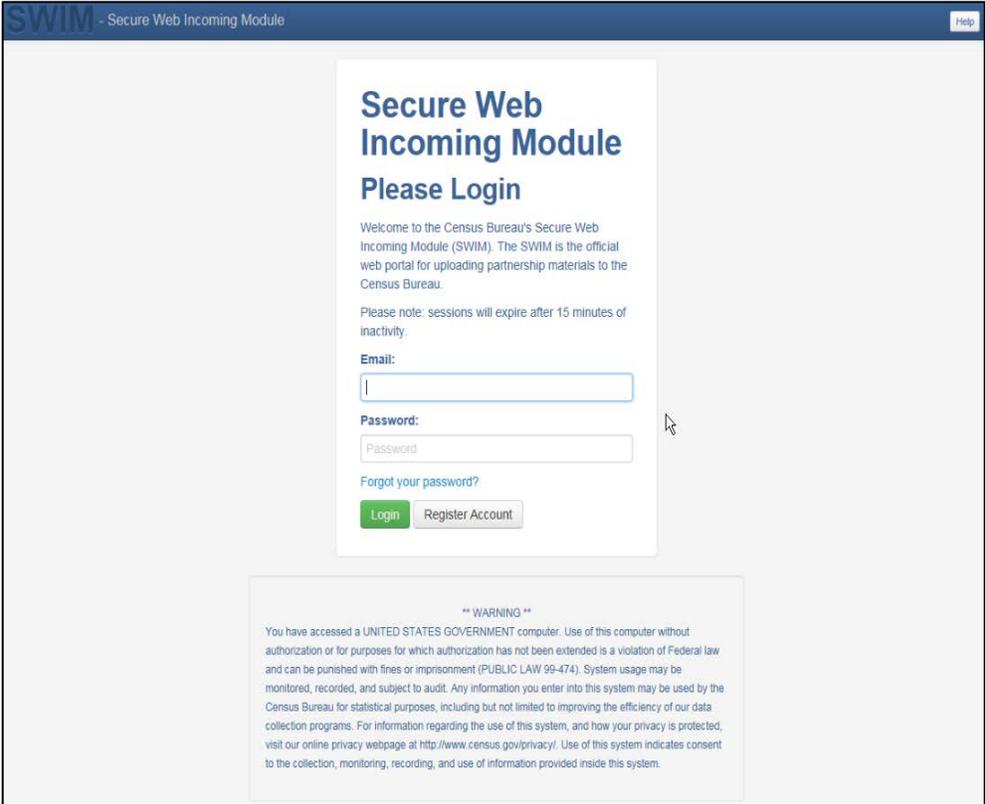
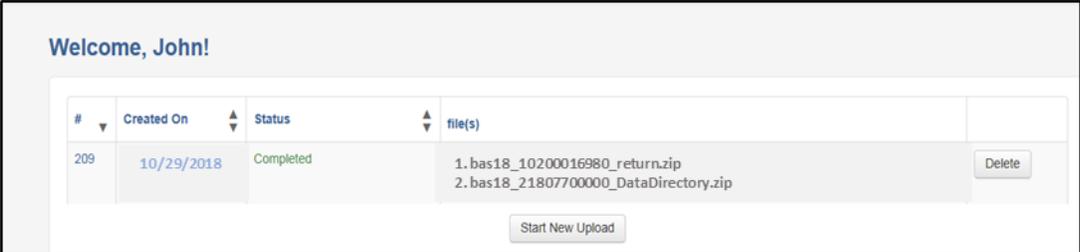
Table 49 below.

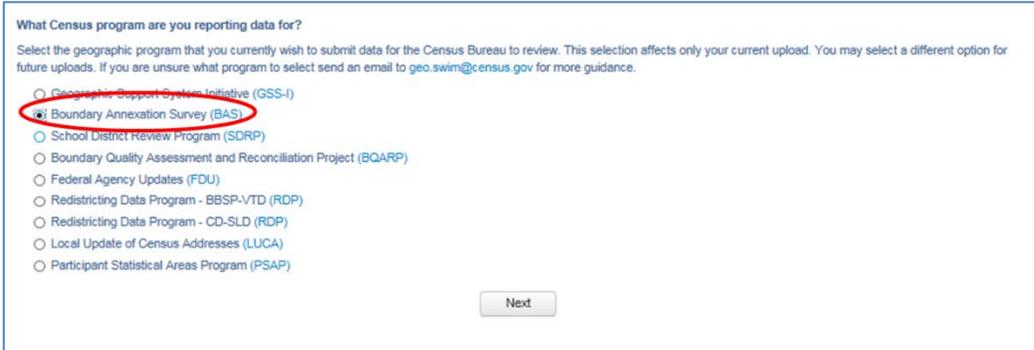
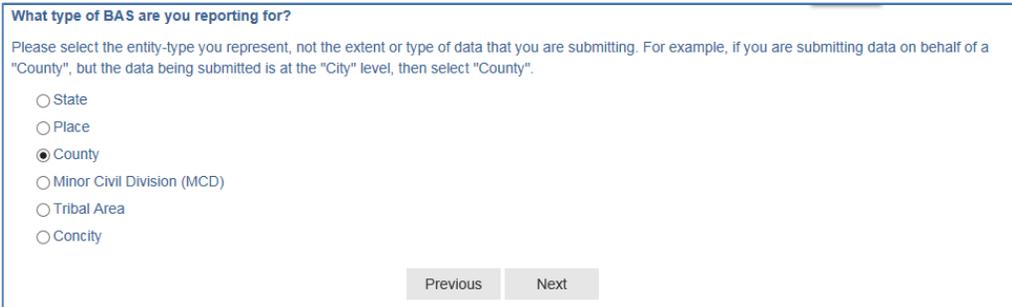
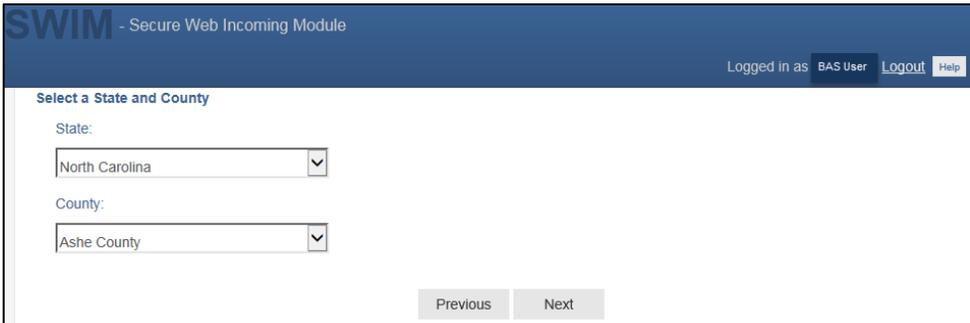
Note: If you **already have a SWIM account**, have your user name (e-mail address) and password ready. If you **do not have a SWIM account**, have the 12-digit registration token provided by the Census Bureau ready.

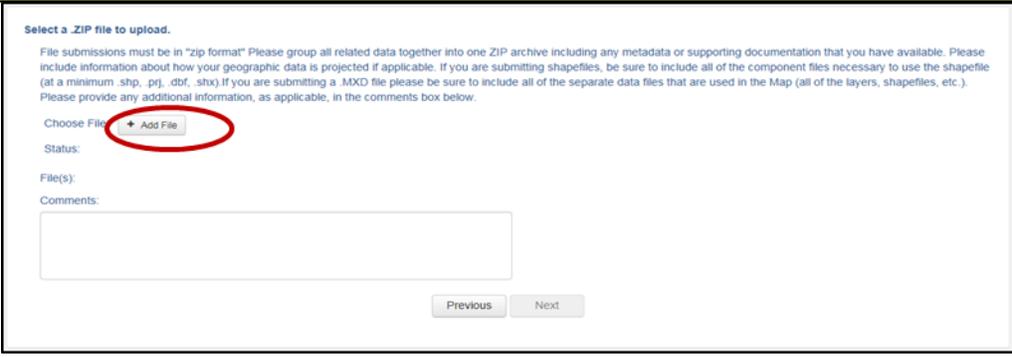
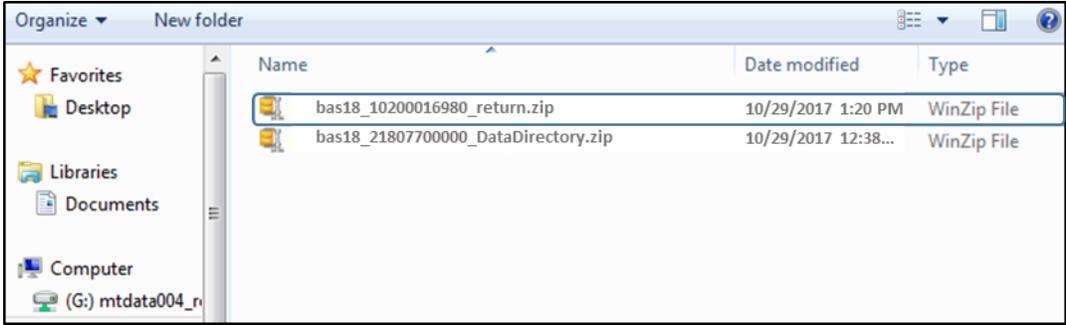
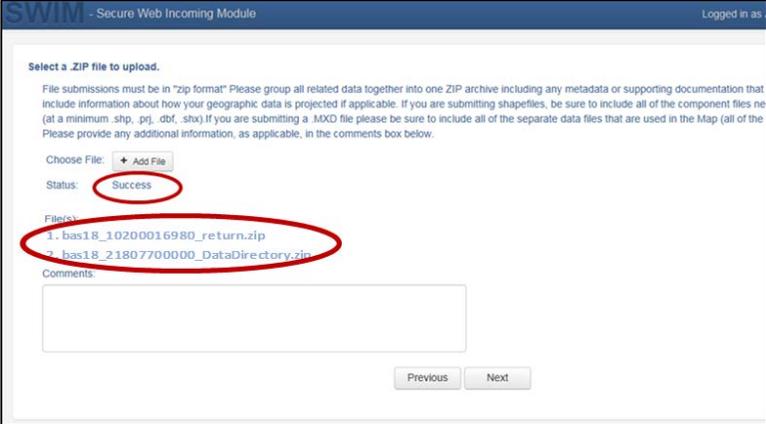
Table 49: Transmitting Files to the Census Bureau Using SWIM

Step	Action and Result
<p>Step 1</p>	<p>If you are a participant in another Census Bureau partnership program and already have a SWIM Account, access <https://respond.census.gov/swim/> and enter your E-mail address and Password. Then click the Login button. The Welcome screen opens. Go to Step 7.</p> 
<p>Step 2</p>	<p>If you do not yet have a SWIM Account, have the 12-digit registration token provided to you by the Census Bureau ready for your registration. You can register at <https://respond.census.gov/swim/>. Once the login screen opens, click the Register Account button. The Account Registration screen opens.</p>

Step	Action and Result
	<div data-bbox="565 254 1252 1083" style="border: 1px solid black; padding: 10px;"> <h3 style="text-align: center;">Account Registration</h3> <p>Registration Token: <input type="text"/></p> <p>First Name: <input type="text"/></p> <p>Last Name: <input type="text"/></p> <p>Phone Number: <input type="text"/> - <input type="text"/> - <input type="text"/> # <input type="text"/></p> <p>Agency: <input type="text"/></p> <p>Email: <input type="text"/></p> <p>Confirm Email: <input type="text"/></p> <p>Password: <input type="text"/></p> <p>Confirm Password: <input type="text"/></p> <p>Security Question: <input type="text" value="Please select a verification question."/> <input type="button" value="v"/></p> <p>Answer: <input type="text"/></p> <p style="text-align: center;"><input type="button" value="Submit"/></p> </div>
	<p>All fields on the Account Registration screen are required. You will not be able to move to the next screen until you have completed all fields.</p>
<p>Step 3</p>	<p>On the Account Registration screen, first, enter the 12-digit token provided by the Census Bureau. Then enter your name, agency, and e-mail in the appropriate fields.</p>
<p>Step 4</p>	<p>Next, create a password. The passwords must meet the five criteria below:</p> <ol style="list-style-type: none"> 1. It must be 8 characters in length 2. It must have at least one upper case character 3. It must have at least one lower case character 4. It must have at least one number 5. It must have at least one special character (valid special characters are: #, !, \$, *, &, ?, ~). <p>Note: Commas in the special characters list are for spacing purposes only; the comma is not a valid character for the password.</p>
<p>Step 5</p>	<p>Set up a security question (click the arrow on the right of the Security Question box and select a question in the drop-down list, then enter an answer in the Answer box). When you have finished, click the Submit button. A screen opens to confirm that you have successfully registered.</p>

Step	Action and Result
	
<p>Step 6</p>	<p>On the Confirmation screen, click Login. You will return to the Login screen.</p> 
<p>Step 7</p>	<p>On the Login screen, enter your e-mail and password then click the green Login button. The Welcome screen opens. You will see the list of files you have previously uploaded, the creation date of the file, the name of the file, and its corresponding zip size. If you need to make modifications, click on the file you want to edit then select the Start Now Upload button.</p> 

Step	Action and Result
<p>Step 8</p>	<p>To begin an upload, click the Start New Upload button. A screen opens asking which program for which you are reporting data. On this screen, click the Boundary Annexation Survey (BAS) radio button, then click Next at the bottom of the screen.</p> 
<p>Step 9</p>	<p>A screen opens asking “What type of BAS you are reporting for?” Click the radio button next to the governmental unit for which you are reporting data, then click the Next button. In this example, we will select County.</p> 
<p>Step 10</p>	<p>A screen opens that allows you to select your state and the entity (in this case county) for which you are reporting data. For the example, select North Carolina in the State field drop-down menu and the county in the County field drop-down menu. Then click the Next button.</p> 
<p>Step 11</p>	<p>The Select a .ZIP file to upload screen opens. Choose a zip file to upload. Note: All files must be a zip file. To upload a file, click the + Add File button on the screen.</p>

Step	Action and Result
	 <p>Select a .ZIP file to upload.</p> <p>File submissions must be in "zip format" Please group all related data together into one ZIP archive including any metadata or supporting documentation that you have available. Please include information about how your geographic data is projected if applicable. If you are submitting shapefiles, be sure to include all of the component files necessary to use the shapefile (at a minimum shp, prj, dbf, shx) If you are submitting a .MXD file please be sure to include all of the separate data files that are used in the Map (all of the layers, shapefiles, etc.). Please provide any additional information, as applicable, in the comments box below.</p> <p>Choose File: + Add File</p> <p>Status:</p> <p>File(s):</p> <p>Comments:</p> <p>Previous Next</p>
<p>Step 12</p>	<p>The Choose File to Upload window opens and allows you to navigate on your computer to the ZIP file's location.</p>  <p>Locate the ZIP file you want to upload then double-click it. Note: You can only add one file at a time.</p>
<p>Step 13</p>	<p>Once the file upload is complete, the Status field shows Success. The name of the file appears in the File(s) field. To add another file, click the + Add File and the upload process will repeat.</p> <p>In this example, there are two files uploaded. One for an updated digital address list and one for an updated shapefile.</p>  <p>Previous Next</p>
<p>Step 14</p>	<p>After you have uploaded the file(s), type any comments (including pertinent information about data projection or supporting documentation for shapefiles) in the Comments field. Click Next.</p>

Step	Action and Result
Step 15	<p>The Thank You screen appears and confirms the receipt of your submission.</p> <div data-bbox="597 317 1219 619" style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Thank You</p> <p>Your files have uploaded successfully.</p> <p>File(s):</p> <ol style="list-style-type: none"> 1. bas18_10200016980_return.zip 2. bas18_21807700000_DataDirectory.zip <p>You may Log Out or return to the upload form, to submit more files.</p> </div>
Step 16	<p>To submit files for a different entity, click on the 'Upload Form' link in the phrase "You may Log Out or return to the upload form, to submit more files." This choice returns you to the Welcome screen.</p> <p>To log out, click on Log Out. The Census Bureau will acknowledge the receipt of the uploaded file.</p>
	<p>SWIM sessions deactivate after 15 minutes of inactivity.</p> <p>Note: While working in SWIM, you may obtain help by clicking on the Help button on any screen. When you click the button, a screen opens with links to help resources.</p> <div data-bbox="423 982 1398 1465" style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <div style="background-color: #4a7ebb; color: white; padding: 5px;"> SWIM - Secure Web Incoming Module Already Registered? Login Help </div> <div style="padding: 10px;"> <h2 style="margin: 0;">Help</h2> <p>The Secure Web Incoming Module (SWIM) is a single upload page for submitting all local geographic partnership data to the U.S. Census Bureau's Geography Division. Because of the wide variety of geographic partnership programs, the SWIM requires users to answer some basic questions about their data before submitting. These questions direct the incoming data to the right partnership program.</p> <p>The general flow of questions is as follows:</p> <ol style="list-style-type: none"> 1. What geographic partnership program you are submitting data for? 2. What level of government or organization is submitting the data? Many of our geographic programs allow partners from various levels of governments to submit data, which is represented as a geographic entity in the menu selection. For example, when submitting data on behalf of a state government, the submitting entity is the state, even if the data submitted pertains to some other entity within the state, such as a county. 3. What is the name of your entity? A user can select an entity's name from pre-populated drop-down boxes. <p>After completing the above questions, the user must select a ZIP file to upload. Using a ZIP archive ensures an efficient upload of all submitted files. There are many compression software options where one can do this with relative ease.</p> <p>For more information about the Census Bureau's Geography Division, please visit our Geography Homepage.</p> <p>For more information about our geographic partnership programs at the Census, please visit our Partnerships Homepage.</p> <p>For a glossary of common Census Geography Terms and Concepts, please visit our Terms and Concepts page.</p> </div> </div>

APPENDICES

APPENDIX A. BAS CONTACT INFORMATION AND RESOURCES

Action/Question	Resource	Contact
Request shapefiles on DVD	Geography Division	Call: 1-800-972-5651 E-mail: geo.bas@census.gov
BAS materials questions	Geography Division	Call: 1-800-972-5651 E-mail: geo.bas@census.gov
Legal boundary questions	Geography Division	Call: 1-301-763-1099 E-mail: geo.bas@census.gov Fax: 1-800-972-5652
Ask guidance on areas under legal dispute	Census Bureau Legal Office	Call: 1-301-763-9844
GUPS technical support	Geography Division	Call: 1-800-972-5651 E-mail: geo.bas@census.gov Be sure to have the number for the version of GUPS you are running ready. To find this number, go to the Help tab on the main Menu in GUPS and click 'About GUPS' in the drop-down menu. A pop-up box will provide you the number.
SWIM token questions	Geography Division	Call: 1-800-972-5651 E-mail: geo.bas@census.gov
SWIM technical support	Geography Division	geo.swim@census.gov
Submit output files on DVD (if you do not have Internet access)	National Processing Center	Send to: US Census Bureau National Processing Center ATTN: BAS Returns, Bldg 63E 1201 East 10th Street Jeffersonville, IN 47132

APPENDIX B. TERMS

Areal Feature - is a prominent and identifying feature of a landscape significant enough to warrant name recognition, such as a lake, park, school, military base, or cemetery, etc. This type of feature class is only assigned to a face geometry. Any face can be assigned to multiple features. For example, a water body can also be part of a park.

Edge - is a one-dimensional object (legacy 1-cell), bounded by two nodes: a start node and an end node. Its geometry is distinguished by the coordinates of the start and end nodes, and additional coordinates that are ordered and serve as vertices (or shape points) between the two nodes. An edge is a primitive feature in the Oracle database.

Effects of having **Edge** features in the MAF/TIGER Database(MTDB):

- Represents an invisible boundary line for various geometry, geographic and statistical data. and can stand alone.
- A linear feature always occupies the same space as an edge and there are attributes on an edge that are only relevant when a linear feature exists.

Face - is a two-dimensional object (legacy 2-cell) bounded by two or more edges. Its boundary includes not only the edges that separate it from other faces, but also any interior edges (two-dimensional topological primitives) contained within the area of the face.

Geographic Area - is a demarcated area used for the collection and/or tabulation of Census Bureau data.

Geographic Corridors - is an area that includes only a road (or other feature's) right-of-way and does not contain any structures. **Figure 13. Annexed Area Corridor and Unincorporated** shows a corridor that has been created where an incorporated place annexed the road right-of-way, but not the housing units assigned to either side of the road (these belong instead to an unincorporated area). If it is important to the incorporated place that its ownership and/or maintenance of the road and/or its right-of-way be displayed on Census Bureau's maps, a geographic corridor should be created. However, the Census Bureau does not require places to report rights-of-way: maintaining geographic corridors in a nationwide database is difficult and impractical, and the right-of-way should only be included if it is crucial to the place, or if state or local laws require it. The Census Bureau would actually prefer that the area simply not be assigned to the place at all.

Figure 14. shows an example where the right-of-way belongs in an unincorporated area, while the housing units along it are included in an incorporated place (shown in color). While depicting this corridor may be important for local purposes, it is not relevant for Census Bureau tabulations and is not easy to depict in the Census nationwide database. This type of corridor should not be included in a BAS response.

Please note that the Census Bureau does not require places to display rights-of-way or road maintenance corridors that do not contain or potentially contain housing or population. If local or state law does not require depiction of these geographic features, the Census Bureau prefers that they be left off BAS submissions. However, if it is necessary for the place to depict them, then they must be submitted as a geographic corridor.

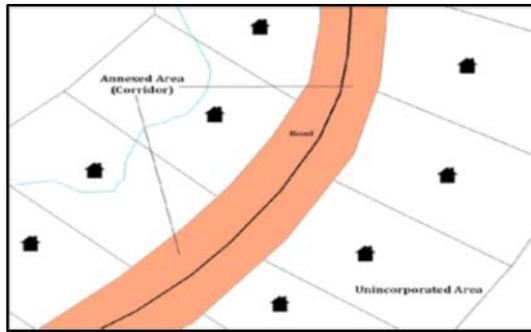


Figure 13. Annexed Area Corridor and Unincorporated Area

Figure 13 - A corridor that has been created where an incorporated place annexed the road right-of-way, but not the housing units assigned to either side of the road.

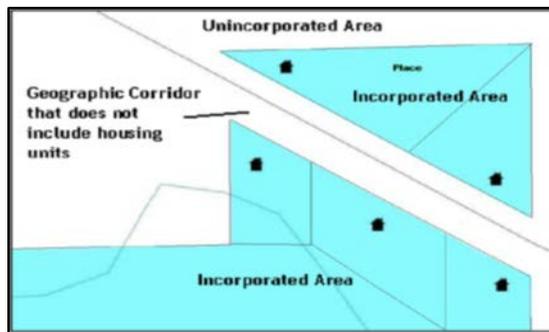


Figure 14. Incorporated Area and Unincorporated Area

Figure 14 - The right-of-way belongs in an unincorporated area, while the housing units along it are included in an incorporated place.

To recap, when a participant has a case where a road right-of-way is legally included in the boundary, but the adjacent parcels/houses are not, there are two options. You should either not include the area in the place at all (Scenario A in [Figure 15. Participant Responses](#)), or include it in the place and flag it as a corridor (Scenario C in [Figure 15. Participant Responses](#)). What you should never do is include such areas within the place boundary without flagging them as corridors (Scenario B in [Figure 15. Participant Responses](#)).

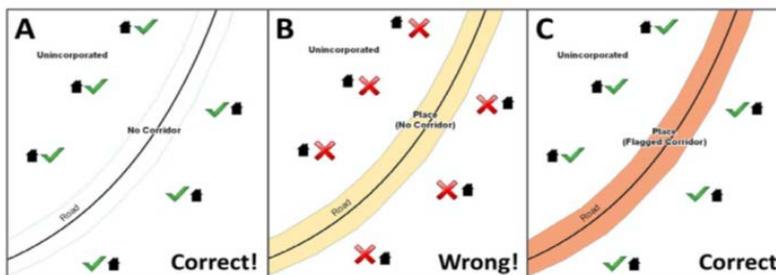


Figure 15. Participant Responses

Figure 15 – (A): The respondent did not include place ownership of the road or the right-of-way, allowing houses along the road to be geocoded correctly. (B): The respondent chose to show

place ownership of the road, but did not flag it as a corridor, causing houses along the road to be incorrectly geocoded.(C): The respondent chose to show place ownership of the road, and flagged that ownership as a corridor, allowing the houses to be geocoded correctly. Both A and C are acceptable.

Geographic Offsets

A geographic offset is an area (either within or outside of a geographic entity) that is only on one side of a road (unlike corridors, which involve both sides of the road) and does not include structures addressed to that side of the road. Much of the same guidelines regarding corridors also holds true for offsets.

The Census Bureau is aware that many governments base their legal boundaries on cadastral (parcel-based) right-of-way mapping. Census Bureau maps are based on spatial data that is topologically integrated which makes maintenance of geographic offsets inefficient. Using the road centerline wherever possible will help to establish more accurate population counts. If a boundary follows a front lot line, the Census Bureau strongly prefers that the road centerline be used as the boundary. If a boundary is at the rear of a lot, then it should be depicted as such. If it is unclear whether a particular line is a front lot line or something else, please contact the BAS team for assistance. As a rule, if a house or building could not conceivably be built in the area between the potential line and the centerline of the road, then the line can be considered a front lot line. **Figure 16. A Cadastral (Parcel-Based) Boundary Map** depicts a cadastral (parcel-based) boundary map and **Figure 17. How a Boundary Should be Represented When Sent to the Census Bureau** shows how the boundary should be represented when it is sent to the Census Bureau.

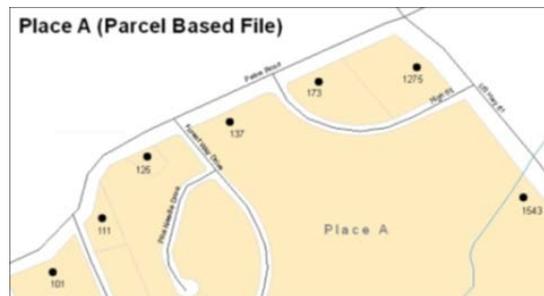


Figure 16. A Cadastral (Parcel-Based) Boundary Map

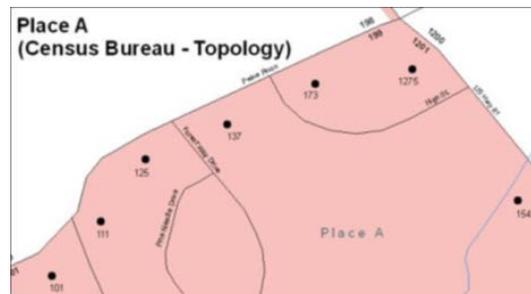


Figure 17. How a Boundary Should be Represented When Sent to the Census Bureau

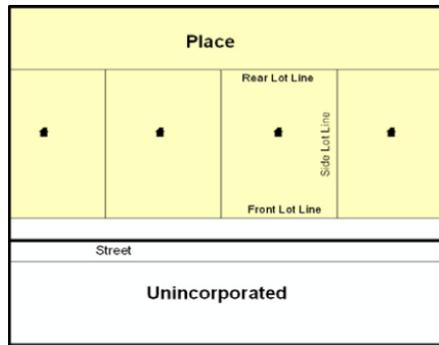


Figure 18. Place Boundary – Front Lot Line

Figure 18 - Shows a situation in which the place boundary is along the front lot line. In this example, the respondent must either use the road centerline as the boundary (preferred), or create an offset.

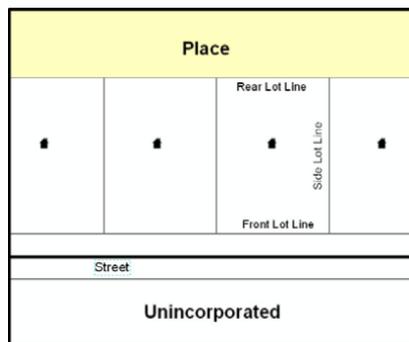


Figure 19. Place Boundary – Rear Lot Line

Figure 19 - The place boundary is on the rear lot line, so the respondent should of course not use the road centerline or create an offset, but should rather digitize in a new boundary following the rear lot line.

The Census Bureau has included an “offset” shapefile in the BAS materials (bas_2018_offset_<ssccc>.shp), so that your jurisdiction can be checked for any existing corridors or offsets. While the Census Bureau prefers that new offsets are not created (see above), this information can be helpful in determining if current boundaries are correct.

Linear Feature - is a single dimension feature (Road/Path, Hydro, Rail, or Miscellaneous) along one or more edges.

Point Feature - is an isolated node not connected to an edge. The XY coordinate point is where a structure resides. Point Feature structures include housing units and legacy point landmark of public facilities such as libraries, police stations, schools, churches, malls, and some monuments.

APPENDIX C. MTFCC DESCRIPTIONS

The MAF/TIGER Feature Classification Code (MTFCC) is a 5-digit code assigned by the Census Bureau to classify and describe geographic objects or features in Census Bureau MAF/TIGER products.

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 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).
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.

MTFCC	Feature Class	Feature Class Description
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 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.

MTFCC	Feature Class	Feature Class Description
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.
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.

MTFCC	Feature Class	Feature Class Description
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 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. The upper chamber is the senate in a bicameral legislature, and the unicameral case is a 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.

MTFCC	Feature Class	Feature Class Description
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.
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 Census Bureau includes in the MAF/TIGER® System 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].
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].

MTFCC	Feature Class	Feature Class Description
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.
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.

MTFCC	Feature Class	Feature Class Description
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 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.

MTFCC	Feature Class	Feature Class Description
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 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.

MTFCC	Feature Class	Feature Class Description
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, boundary of an areal feature)	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 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 the MAF/TIGER System.
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.
S1710	Walkway/Pedestrian Trail	A path that is used for walking, being either too narrow for or legally restricted from vehicular traffic.

MTFCC	Feature Class	Feature Class Description
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 November 2017.		

APPENDIX D. STANDARD STREET TYPE ABBREVIATIONS

Street Name Type	Standard Abbreviation
ALLEY	ALY
ANEX	ANX
ARCADE	ARC
AVENUE	AVE
BAYOU	BYU
BEACH	BCH
BEND	BND
BLUFF	BLF
BLUFFS	BLFS
BOTTOM	BTM
BOULEVARD	BLVD
BRANCH	BR
BRIDGE	BRG
BROOK	BRK
BROOKS	BRKS
BURG	BG
BURGS	BGS
BYPASS	BYP
CAMP	CP
CANYON	CYN
CAPE	CPE
CAUSEWAY	CSWY
CENTER	CTR
CENTERS	CTRS
CIRCLE	CIR
CIRCLES	CIRS
CLIFF	CLF
CLIFFS	CLFS
CLUB	CLB
COMMON	CMN
COMMONS	CMNS
CORNER	COR
CORNERS	CORS
COURSE	CRSE
COURT	CT
COURTS	CTS
COVE	CV
COVES	CVS
CREEK	CRK
CRESCENT	CRES
CREST	CRST
CROSSING	XING
CROSSROAD	XRD
CROSSROADS	XRDS
CURVE	CURV
DALE	DL
DAM	DM
DIVIDE	DV

Street Name Type	Standard Abbreviation
DRIVE	DR
DRIVES	DRS
ESTATE	EST
ESTATES	ESTS
EXPRESSWAY	EXPY
EXTENSION	EXT
EXTENSIONS	EXTS
FALL	FALL
FALLS	FLS
FERRY	FRY
FIELD	FLD
FIELDS	FLDS
FLAT	FLT
FLATS	FLTS
FORD	FRD
FORDS	FRDS
FOREST	FRST
FORGE	FRG
FORGES	FRGS
FORK	FRK
FORKS	FRKS
FORT	FT
FREEWAY	FWY
GARDEN	GDN
GARDENS	GDNS
GATEWAY	GTWY
GLEN	GLN
GLENS	GLNS
GREEN	GRN
GREENS	GRNS
GROVE	GRV
GROVES	GRVS
HARBOR	HBR
HARBORS	HBRs
HAVEN	HVN
HEIGHTS	HTS
HIGHWAY	HWY
HILL	HL
HILLS	HLS
HOLLOW	HOLW
INLET	INLT
ISLAND	IS
ISLANDS	ISS
ISLE	ISLE
JUNCTION	JCT
JUNCTIONS	JCTS
KEY	KY
KEYS	KYS
KNOLL	KNL
KNOLLS	KNLS
LAKE	LK

Street Name Type	Standard Abbreviation
LAKES	LKS
LAND	LAND
LANDING	LNDG
LANE	LN
LIGHT	LGT
LIGHTS	LGTS
LOAF	LF
LOCK	LCK
LOCKS	LCKS
LODGE	LDG
LOOP	LOOP
MALL	MALL
MANOR	MNR
MANORS	MNRS
MEADOW	MDW
MEADOWS	MDWS
MEWS	MEWS
MILL	ML
MILLS	MLS
MISSION	MSN
MOTORWAY	MTWY
MOUNT	MT
MOUNTAIN	MTN
MOUNTAINS	MTNS
NECK	NCK
ORCHARD	ORCH
OVAL	OVAL
OVERPASS	OPAS
PARK	PARK
PARKS	PARK
PARKWAY	PKWY
PARKWAYS	PKWY
PASS	PASS
PASSAGE	PSGE
PATH	PATH
PIKE	PIKE
PINE	PNE
PINES	PNES
PLACE	PL
PLAIN	PLN
PLAINS	PLNS
PLAZA	PLZ
POINT	PT
POINTS	PTS
PORT	PRT
PORTS	PRTS
PRAIRIE	PR
RADIAL	RADL
RAMP	RAMP
RANCH	RNCH
RAPID	RPD

Street Name Type	Standard Abbreviation
RAPIDS	RPDS
REST	RST
RIDGE	RDG
RIDGES	RDGS
RIVER	RIV
ROAD	RD
ROADS	RDS
ROUTE	RTE
ROW	ROW
RUE	RUE
RUN	RUN
SHOAL	SHL
SHOALS	SHLS
SHORE	SHR
SHORES	SHRS
SKYWAY	SKWY
SPRING	SPG
SPRINGS	SPGS
SPUR	SPUR
SPURS	SPUR
SQUARE	SQ
SQUARES	SQS
STATION	STA
STRAVENUE	STRA
STREAM	STRM
STREET	ST
STREETS	STS
SUMMIT	SMT
TERRACE	TER
THROUGHWAY	TRWY
TRACE	TRCE
TRACK	TRAK
TRAFFICWAY	TRFY
TRAIL	TRL
TRAILER	TRLR
TUNNEL	TUNL
TURNPIKE	TPKE
UNDERPASS	UPAS
UNION	UN
UNIONS	UNS
VALLEY	VLV
VALLEYS	VLVS
VIADUCT	VIA
VIEW	VW
VIEWS	VWS
VILLAGE	VLG
VILLAGES	VLGS
VILLE	VL
VISTA	VIS
WALK	WALK
WALKS	WALK

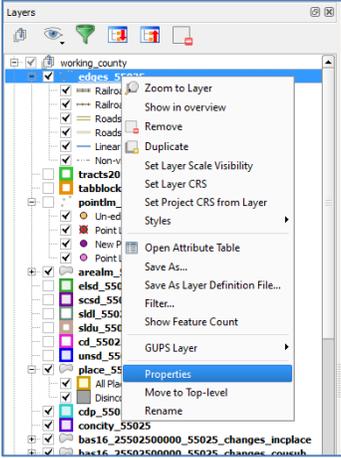
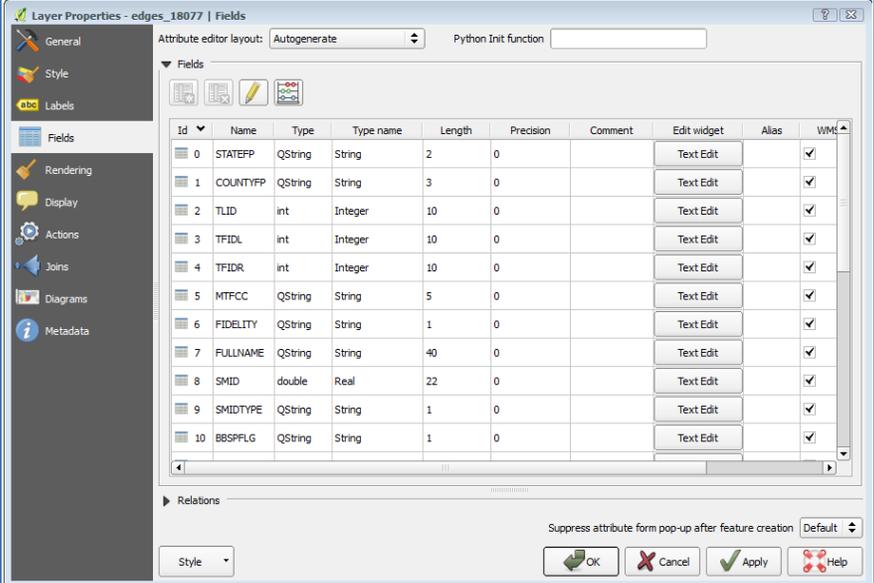
Street Name Type	Standard Abbreviation
WALL	WALL
WAY	WAY
WAYS	WAYS
WELL	WL
WELLS	WLS

APPENDIX E. GUPS TOOLS

E.1 Set Layer Symbology

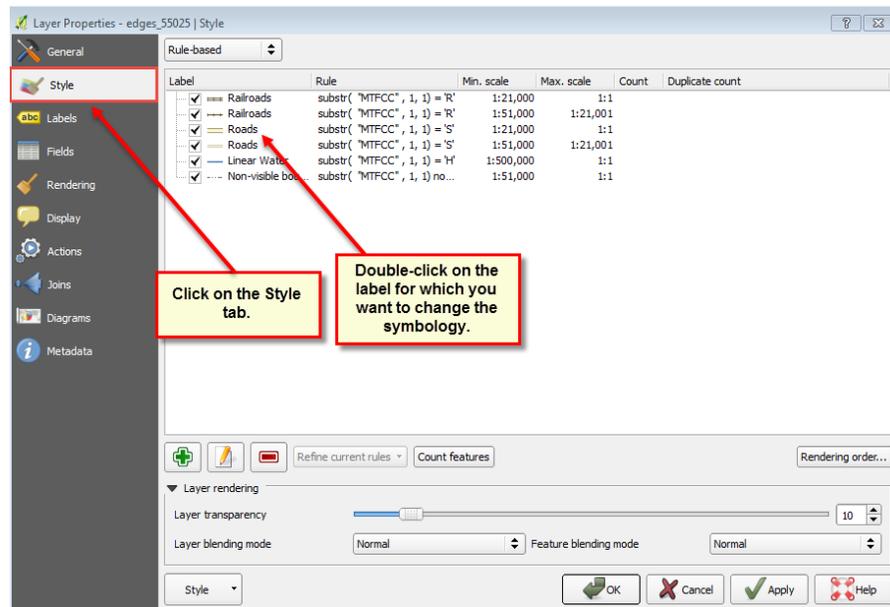
GUPS loads a default layer symbology established for each Census Bureau geographic partnership program. You can change the default symbology to suit your preferences. To change the default symbology for a layer in GUPS, follow the instructions in [Table 50](#).

Table 50: Reset Layer Symbology

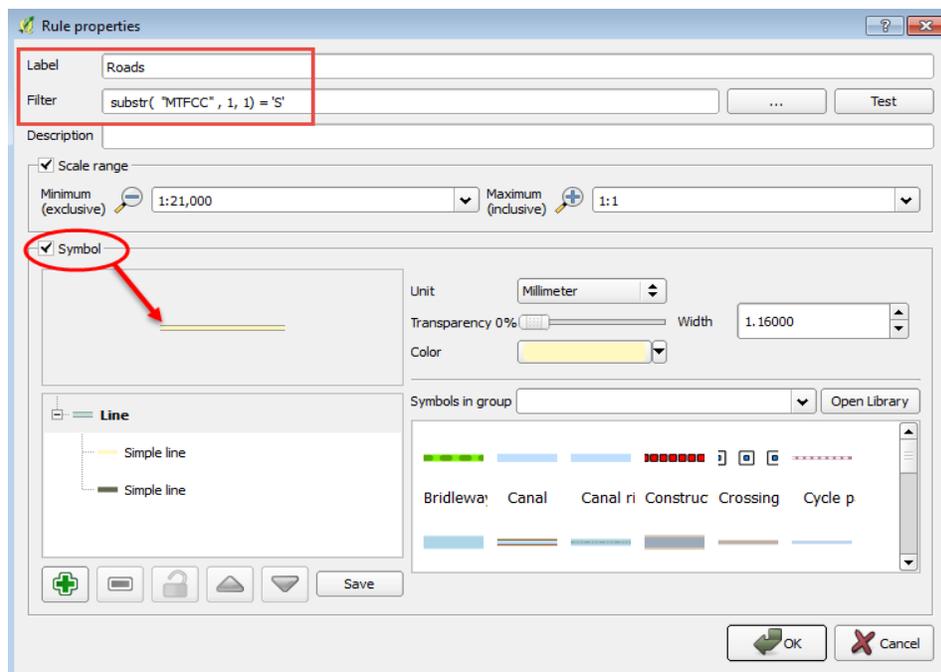
Step	Action and Result
<p>Step 1</p>	<p>Right-click on the layer in the Table of Contents (in this example, we selected the Edges layer). <i>The Layers drop-down menu opens.</i></p> 
<p>Step 2</p>	<p>In the drop-down menu, choose 'Properties'. <i>The Layer Properties screen opens.</i></p> 

Step	Action and Result
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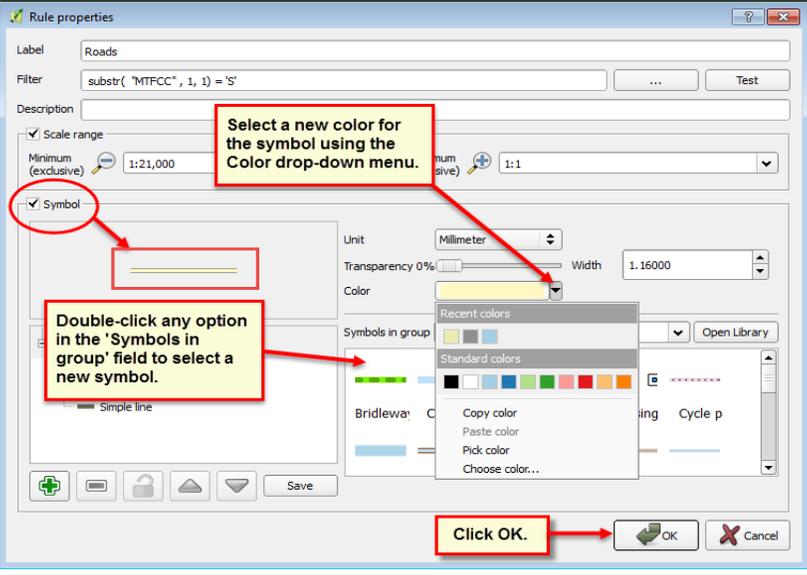
Step 3	In the left-hand pane, click on Style , then double-click the symbol you want to edit in the layers list. In this example, we will double-click on 'Roads, substr ("MTFCC", 1,1) = S1100' to select it.
---------------	--



The **Rule Properties** dialog box opens and the **Label** and **Filter** fields display the item chosen. The **Symbol** pane shows the current symbology (yellow line).



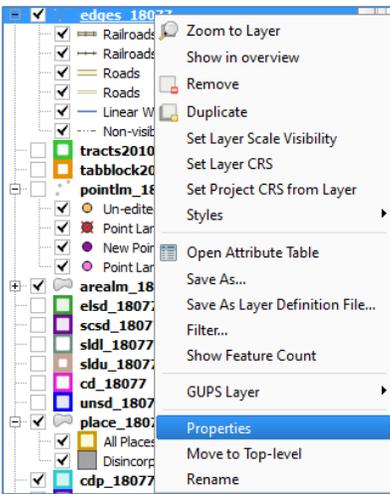
Step 4	Choose a new color from the Color drop-down menu, or select a different symbol for the layer altogether by double-clicking any symbol in the Symbols in Group field. Click OK . The new symbology will display in the Table of Contents and in Map View .
---------------	--

Step	Action and Result
	

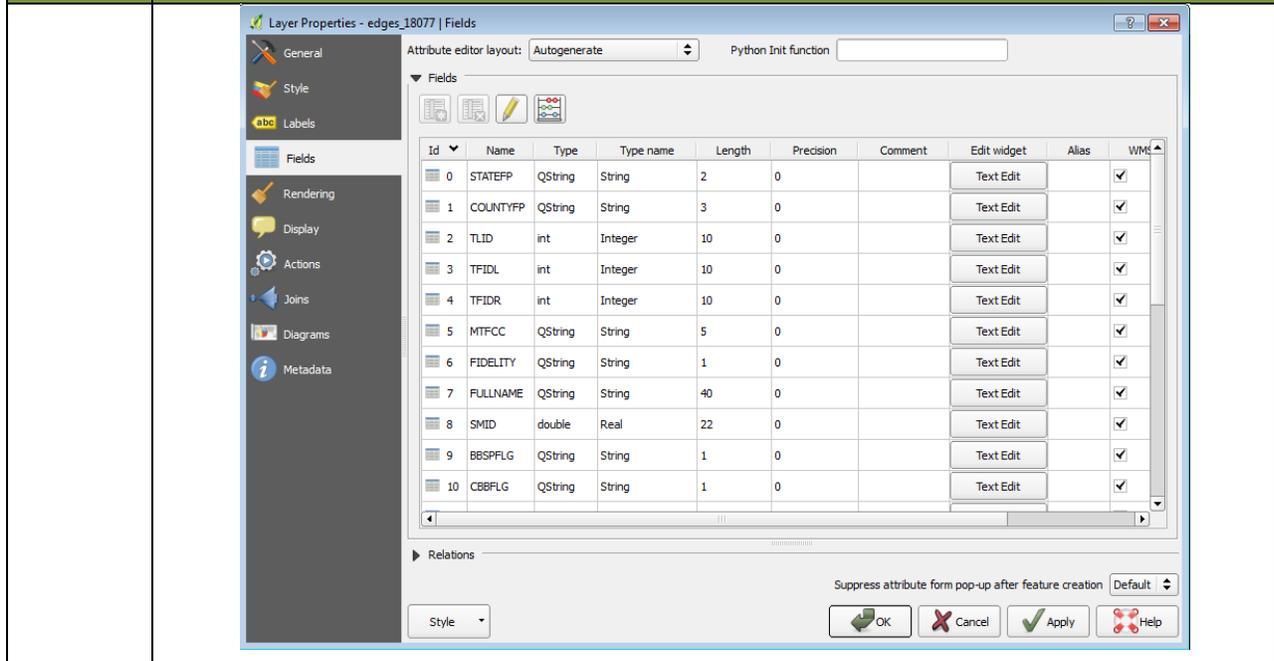
E.2 Change Label Display

You can change the default GUPS labeling display and also restore it to the original setting. To change the default labeling for a layer, follow the steps in [Table 51](#).

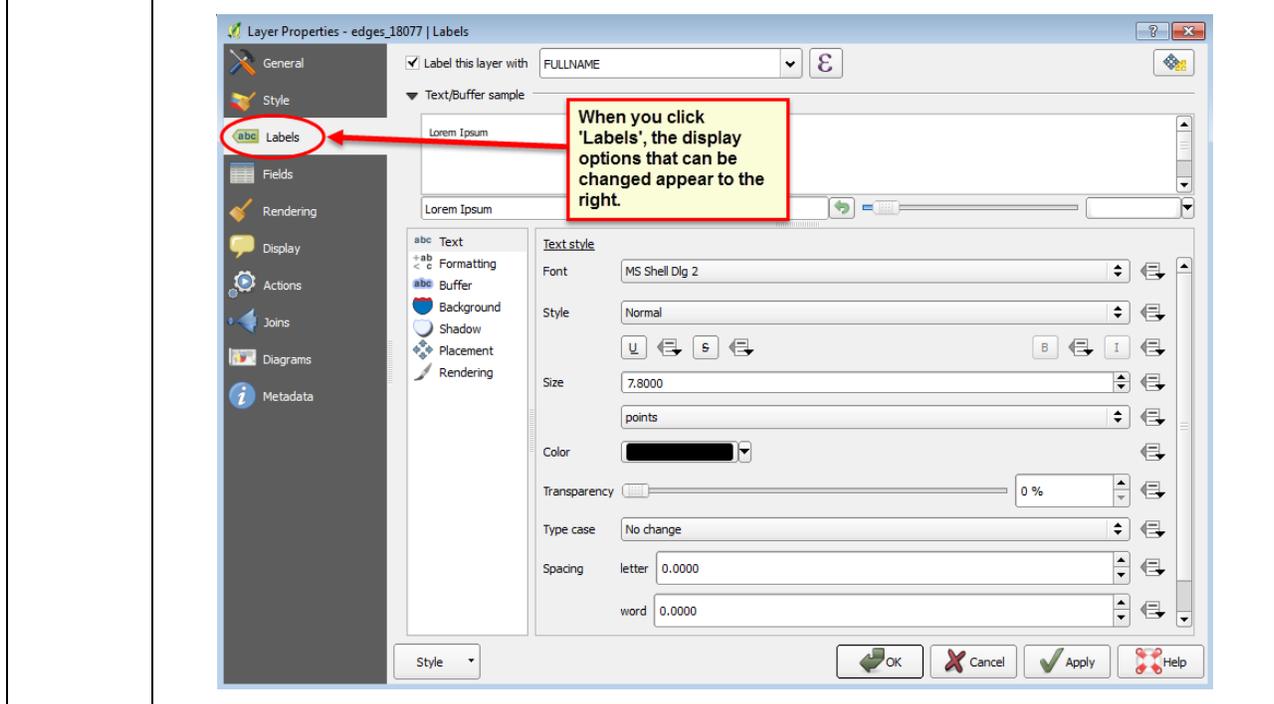
Table 51: Change Default Labeling

Step	Action and Result
<p>Step 1</p>	<p>Right click on the layer (we have selected the edges layer) in the Table of Contents. <i>The Layers drop-down menu opens.</i></p> 
<p>Step 2</p>	<p>In the drop-down menu, choose 'Properties'. <i>The Layer Properties dialog box opens.</i></p>

Step	Action and Result
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Step 3	In the far left-hand pane, click Labels . The options to change the label display properties open in the main window.
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Step 4	To change the attribute field, click on the drop-down menu for 'Label this layer with' at the top of the screen, and select the desired option.
---------------	---

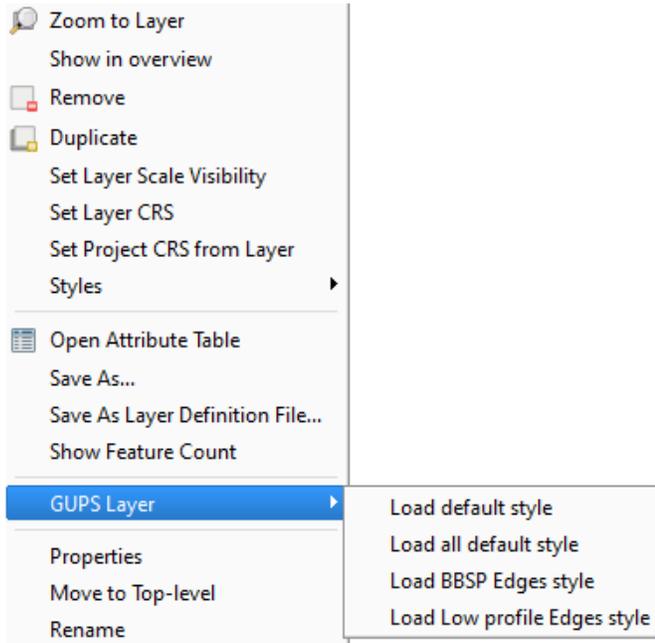
Step	Action and Result
	<div data-bbox="625 262 1177 577" style="border: 1px solid gray; padding: 5px;"> <input checked="" type="checkbox"/> Label this layer with FULLNAME <ul style="list-style-type: none"> STATEFP COUNTYFP TLID TFIDL TFIDR MTFCC FIDELITY <li style="background-color: #0070C0; color: white;">FULLNAME SMID BBSPFLG </div> <p>Text style options allow you to change the font, style, size, color, transparency, type case, and spacing of layer labels. Shown below are the drop-down options for style.</p> <div data-bbox="483 676 1315 1066" style="border: 1px solid gray; padding: 5px;"> <p>Text style</p> <p>Font: MS Shell Dlg 2</p> <p>Style: Normal, Bold, Italic, Bold Italic</p> <p>Size: points</p> <p>Color: [Color Picker]</p> <p>Transparency: 0%</p> </div>

E.3 Restoring Default Label Display Settings

To restore the default labeling for a layer, follow the steps in [Table 52](#).

Table 52: Restoring Default Labeling

Step	Action and Result
Step 1	Right-click on the layer you changed in the Table of Contents . <i>The layer's drop-down menu opens.</i>
Step 2	In this example, we have selected the Edges layer. In the drop-down menu, click on the arrow to the right of 'GUPS Layer'. Four options appear: 'Load default style', 'Load all default style', 'Load BBSP Edges style', and 'Load Low profile Edges style'.

Step	Action and Result
	
Step 3	Select 'Load default style' to restore the selected layer's original properties OR select 'Load all default style' to reset ALL the layers to their original settings.

E.4 Using the Table of Contents Toolbar to Manage Layers

Using the buttons on the toolbar located at the top of the Table of Contents, you can add and remove layers or groups, manage layer visibility, filter the legend by map content, expand or contract all sections of the Table of Contents list at once, and group layers.

The Table of Contents Layers toolbar contains the items shown below in [Figure 20](#).

[Table 53: Table of Contents Layers Toolbar Buttons](#) describes the function of each of the buttons on the toolbar.



Figure 20. Table of Contents Layers Toolbar

Table 53: Table of Contents Layers Toolbar Buttons

Button	Name	Function / Description
	Add Group	Allows you to organize layers in the Table of Contents into groups.
	Manage Layer Visibility	Allows you to preset views in the Table of Contents .
	Filter Legend by Map Content	Removes from the Table of Contents display any layers that are not currently in the Map View extent. This feature ensures that the Table of Contents does not contain entries for items not currently in the map view.
	Expand All	Expands the Table of Contents menus (+) to display all layers under each group's menu.
	Collapse All	Collapses the Table of Contents menus (-) to show only groups.
	Remove Layer/Group	Allows you to remove a layer or group from the Table of Contents .

E.5 Preset Views in the Manage Layer Visibility Table of Contents

You can add preset views  in the Table of Contents by clicking on the Manage Layer Visibility button on the Table of Contents toolbar. You can choose to display a layer with specific categorization and add this view to the Presets list.

To add a preset view click on the Manage Layer Visibility button and choose 'Add Preset...' from the drop-down menu.

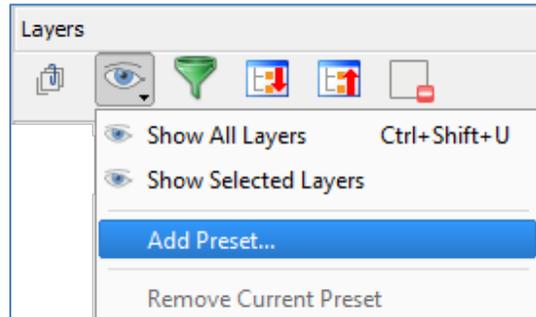


Figure 21. Add Preset Layer

When the **Visibility Presets** pop-up appears, enter the name of the new preset and click **OK**.

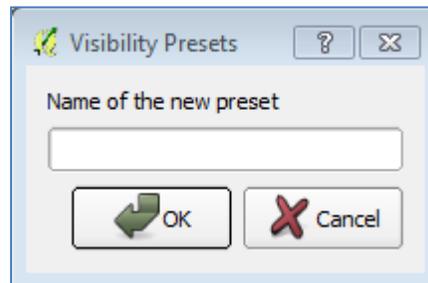


Figure 22. Visibility Presets Dialog Box

Note: By clicking on the **Manage Layer Visibility** button, you can view the list of all preset views that you have established and from which you can choose.



Add a Layer

Clicking on the Add Vector Layer button on the Add Data toolbar allows you to add shapefile and geodatabase feature classes to your GUPS project. Instructions and accompanying graphics are included in [Section 5.7.1: The Add Data Toolbar](#).



Remove a Layer or Group

To remove a layer or group in the Table of Contents:

Left-click on the layer/group you want to remove, hold down the CTRL key, and click the Remove a Layer or Group button. The layer/group is removed; or

APPENDIX F. MAF/TIGER FEATURE CLASSIFICATION

Table 54: MAF/TIGER Feature Classification

MTFCC	FEATURE NAME
S1100	Interstate Highway or Primary Road with limited access
S1200	Primary Road without limited access, US Highway, State Highway, or County Highway, Secondary and connecting roads
S1400	Local Neighborhood Road, Rural Road, City Street
S1500	Vehicular Trail (4WD)
S1630	Ramp
S1640	Service Drive usually along a limited access highway
S1710	Walkway/Pedestrian Trail
S1720	Stairway
S1730	Alley
S1740	Private Road for service vehicles (logging, oil fields, ranches, etc.)
S1750	Private Driveway
H3010	Stream/River
H3013	Braided Stream
H3020	Canal, Ditch or Aqueduct
R1011	Railroad Feature (Main, Spur, or Yard)
R1051	Carline, Streetcar Track, Monorail, Other Mass Transit Rail
R1052	Cog Rail Line, Incline Rail Line, Tram
P0001	Nonvisible Legal/Statistical Boundary
L4010	Pipeline
L4020	Power Transmission Line
L4110	Fence Line
L4121	Ridge Line
L4031	Aerial Tramway/Ski Lift
K2451	Airport or Airfield
L4140	Property/Parcel Line
L4165	Ferry Crossing

APPENDIX G. SHAPEFILE NAMES

State Shapefile Names

PVS_18_v2_<layername>_<SS>.shp, where <SS> is the number corresponding to the state, for example, “24” and <layername> is the abbreviation for the shapefile layer, describe in detail below.

Table 55: State Shapefiles Names

Shapefile Layer	<layername>
American Indian Areas (AIA) – Legal	aial
2010 American Indian Areas (AIA) – Legal	aial2010
American Indian Areas (AIA) – Statistical	aias
American Indian Tribal Subdivisions (AITS) - Legal	aitsl
American Indian Tribal Subdivisions (AITS) - Statistical	aitss
Block Area Group	bag
Metropolitan Statistical Area/Metropolitan Statistical Area	cbsa
Congressional Districts	cd
Census Designated Place	cdp
Counties and Equivalent Areas	county
2010 Counties and Equivalent Areas	county2010
Elementary School Districts	elsd
County Subdivisions - Legal	mcd
New England City and Town Areas	necta
Incorporated Places	place
2010 Public Use Microdata Areas	puma2010
Secondary School Districts	scsd
State Legislative Districts Lower	sldl
State Legislative District Upper Chambers	sldu
State	state
Tribal Block Groups	tbg
Tribal Census Tracts	tct
2010 Census Tracts	tracts2010
Urban Area	uac
Unified School District State-Based	unsd

County Shapefile Names

PVS_18_v2_<layername>_<SSCCC>.shp, where <SSCCC> is the number corresponding to the state and county, for example, “24001” and <layername> is the abbreviation for the shapefile layer, describe in detail below.

Table 56: County Shapefiles Names

Shapefile Layer	<layername>
American Indian Areas (AIA) – Legal	aial
American Indian Areas (AIA) – Statistical	aias
American Indian Tribal Subdivisions (AITS) - Legal	aitsl
American Indian Tribal Subdivisions (AITS) - Statistical	aitss
Alaska Native Regional Corporations (ANRC)	anrc
Area Landmark	arealm
Block Area Groups	bag
Block Groups	bg
Metropolitan Statistical Area/Metropolitan Statistical Area	cbsa
Census County Division	ccd
Congressional Districts	cd
Census Designated Place	cdp
Consolidated Cities	concity
Counties and Equivalent Areas	county
Census Tracts - Current	curtracts
All Lines	edges
Elementary School Districts	elsd
Hawaiian Home Lands (HHL)	hhl
County Subdivisions - Legal	mcd
New England City and Town Areas	necta
Offsets	offset
Incorporated Places	place
Point Landmarks	pointlm
2010 Public Use Microdata Areas	puma2010
Secondary School Districts	scsd
State Legislative Districts Lower	sldl
State Legislative Districts Upper	sldu
Subbarrios	submcd

Shapefile Layer	<layername>
Census Blocks - Current	tabblock
2010 Census Blocks	tabblock2010
2010 Traffic Analysis Delineation	tad2010
2010 Traffic Analysis Zones	taz2010
Tribal Block Groups	tbg
Tribal Census Tracts	tct
2010 Census Tracts	tracts2010
Census Urban Areas	uac
Urban Growth Area	uga
Hydrography - Area	water
Unified School Districts	unsd
Relationship Tables	
Address Ranges	addr
Topological Faces (2-cells with all geocodes)	faces
Topological Faces - Area Landmark Relationship	areafaces
Topological Faces - Area Hydrography Relationship	hydrofaces
Linear Feature Names - Fielded	allnames

APPENDIX H. SHAPEFILE LAYOUTS

Table 57: Edges Shapefile (PVS_18_v2_edges)

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 58: Address Ranges Attribute File (PVS_18_v2_addr)

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
OID	8	STRING	Object ID
TLID	22	INTEGER	TIGER Line ID
STATEFP	2	STRING	FIPS State Code
COUNTYFP	3	STRING	FIPS County Code
FROMHN	12	STRING	From House Number
TOHN	12	STRING	To House Number
SIDE	1	STRING	Side Indicator Flag
ZIP	5	STRING	5-digit ZIP Code
PLUS4	4	STRING	ZIP+4 Code
LFROMADD	10	STRING	Left From Address
LTOADD	10	STRING	Left To Address
RFROMADD	10	STRING	Right From Address
RTOADD	10	STRING	Right To Address
ZIPL	5	STRING	Left 5-digit ZIP Code
ZIPR	5	STRING	Right 5-digit ZIP Code
ZIP4L	4	STRING	Left ZIP+4 Code
ZIP4R	4	STRING	Right ZIP+4 Code

Table 59: Census Block Shapefile (PVS_18_v2_tabblock2010)

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
BLKSZIND	1	String	Block Size Indicator
BLOCK	4	String	Block Number
BLOCKCE	4	String	Tabulation Block Number
BLOCKID	15	String	FIPS State Code, FIPS County Code, Census Tract Code, Block Number
COUNTYFP	3	String	Census County FIPS code
COUNTYFP10	3	String	FIPS County Code
FID	10	Integer	Permanent Face ID
NCELIGBLE	1	String	New Construction Program eligible
PARTFLG	1	String	Part Flag Indicator
Shape	7	String	Type of shape
STATEFP	2	String	Census state FIPS code
STATEFP10	2	String	FIPS State Code
SUFFIX1CE	2	String	Census Block Suffix 1
SUFFIX2CE	2	String	Census Block Suffix 2
TRACTCE10	6	String	Census tract code

Table 60: Census Tract Shapefile (PVS_18_v2_curtracts)

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
CHNG_TYPE	2	String	Type of area update
COUNTYFP	3	String	FIPS County Code
EFF_DATE	8	String	Effective Date or Vintage
FID	10	Integer	Permanent Face ID
JUSTIFY	150	Char	Justification
NAME	100	String	Name
NEW_CODE	2	String	New Congressional District Code
RELATE	120	String	Relationship Description
Shape	7	String	Type of shape
STATEFP	2	String	FIPS State Code
TRACTCE	6	String	Census Tract Code
TRACTID	11	String	FIPS State Code, FIPS County Code, Census Tract Code
TRACTLABEL	7	String	Tract number used for LUCA geocoding
TRACTTYP	1	String	Tract Characteristic Flag
VINTAGE	2	String	Vintage updated with returned data

Table 61: American Indian Areas Shapefile (PVS_18_v2_aial)

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
AIANNHCE	4	String	Census AIANNH Code
AIANNHFSR	1	String	Flag Indicating Level of Recognition of an AIA
AIANNHNS	8	String	ANSI numeric identifier for AIA areas
AREA	10	Double	Acreage of Area Update
AUTHTYPE	1	String	Authorization Type (O – Ordinance, R – Resolution, L – Local Law, S – State Level Action, X – Other)
CHNG_TYPE	2	String	Type of Area Update
CLASSFP	2	String	FIPS 55 Class Code Describing an Entity
COMPTYP	1	String	Indicates if Reservation, Trust Land, or both are Present
COUNTYFP	3	String	FIPS County Code
DOCU	120	String	Supporting Documentation
EFF_DATE	8	Date	Effective Date
FID	10	Integer	Permanent Face ID
FORM_ID	4	String	(MTPS and Web BAS Only)
FUNCSTAT	1	String	Functional Status
JUSTIFY	150	Char	Justification
LSAD	2	String	Legal / Statistical Area Description
NAME	100	String	AIA name
NAMELSAD	100	String	Name with Translated LSAD
PARTFLG	1	String	Part Flag Indicator
RELATE	120	String	Relationship description
SHAPE	7	String	Type of shape
STATEFP	2	String	FIPS State Code
VINTAGE	2	String	Vintage of the Data

Table 62: County and Equivalent Areas Shapefile (PVS_18_v2_county)

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 63: County Subdivisions Shapefile (PVS_18_v2_mcd)

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 64: Incorporated Place Shapefile (PVS_18_v2_place)

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

Digital - Quick Start - Boundary and Annexation Survey Respondent Guide

Initial Steps

- Report that you are making updates by one of the following methods:
 - Completing the Annual Response Form on the BAS Web site <https://www.census.gov/programs-surveys/bas.html>
 - Call (800) 972-5651
 - Email geo.bas@census.gov
- Obtain the following materials from the BAS Web site or DVD (if requested):
 - Digital BAS Respondent Guide
 - Digital BAS Quick Reference Guide
 - BAS Partnership Shapefiles: <https://www.census.gov/geographies/mapping-files/2018/geo/bas/2018-bas-shapefiles.html>
- Review respondent guides and training videos
 - Review the Digital BAS Respondent Guide, Quick Start Guide, and training videos on the BAS website before beginning any boundary or linear feature updates.

Boundary Review

- Compare the Census Bureau’s representation of your government’s boundary with the local representation of your boundary, and extract the differences (change polygons). The differences can be extracted using one of the sample methods in the Digital BAS Respondent Guide, or using another method of your choosing.
- Populate the applicable mandatory fields for each change polygon. The Census Bureau may not be able to accept changes without the appropriate attribution or documentation.
 - NAME: Entity name (all changes)
 - CHNG_TYPE: Type of area update; see tables (all changes)
 - AUTHTYPE: Authorization type; see tables (all legal changes – annexations, deannexations, new incorporations, disincorporations)
 - DOCU: Supporting documentation (all legal changes)
 - EFF_DATE: Effective date; if after Jan 1, changes will not be included in this year’s ACS or PEP data (all legal changes)
 - RELATE: Relationship description; IN or OUT (all boundary corrections)
- BAS participants have the option, if they choose, to return linear feature (road, railroad, hydro) and landmark updates. Review Digital BAS Respondent Guide for more information on these types of changes.

Boundary Review – Quality Control

- Verify that all mandatory fields are populated.
- Verify that all legal changes (annexations, deannexations, new incorporations, and disincorporations) have appropriate legal documentation, authorization types, and effective dates.
- Verify that all boundary corrections less than thirty feet are not dissolving boundary to feature relationships (with roads, railroads, hydrography, etc.)
- Verify that all boundary changes are greater than thirty feet, unless they include housing units.

File Naming Conventions and Submission Prep

- Name all return files (change polygons, linear feature updates, whole entity files, etc.) using the file naming conventions outlined in the Digital BAS Respondent Guide. The table below contains examples of the file naming conventions.
- Include important metadata information. It is critical that all return files have *.prj files
- Include a text file with the BAS and HEO contact information, or update the contact information using the online Annual Response Form.
- Zip all return files together and name the file bas18_<BASID>_return.zip. <BASID> should be replaced with your eleven digit BAS ID code (e.g. bas18_20100100000_return.zip)

Linear Feature Changes	CHNG_TYPE
Add Feature	AL
Delete Feature	DL
Rename/Recode Feature	CA
Point Landmark Changes	CHNG_TYPE
New Landmark	E
Change Landmark Name	G
Delete Landmark	D
Geographic Area Changes	CHNG_TYPE
Annexation	A
Boundary Correction	B
Geographic Corridor	C
Deannexation	D
New Incorporation	E
Geographic Offset	F
Disincorporation	X
Authorization Types	AUTHTYPE
Ordinance	O
Resolution	R
Local Law	L
State Level Action	S
Other	X

Changes Submitted For	Change Shapefile Naming Conventions	Whole Entity Shapefile Naming Conventions
County	bas18_<basID>_changes_county	bas18_<basID>_WholeEntity_county
Minor Civil Division	bas18_<basID>_changes_cousub	bas18_<basID>_WholeEntity_cousub
Incorporated Place	bas18_<basID>_changes_incplace	bas18_<basID>_WholeEntity_incplace
Consolidated City	bas18_<basID>_changes_concity	bas18_<basID>_WholeEntity_concity
Edges	bas18_<basID>_LN_Changes	N/A
Area/Hydro Landmarks	bas18_<basID>_Alndk_Changes	N/A
Point Landmarks	bas18_<basID>_Plndk_Changes	N/A

[Return](#)

Updates Using the Secure Web Incoming Module (SWIM)

- 1) Open a browser window and enter the SWIM URL: (<https://respond.census.gov/swim/>)
- 2) If you already have a SWIM account enter your Email address and Password - Skip to Step 4)
- 3) If you do not have a SWIM account click 'Register Account'
 - Enter the 12 digit token provided by Census
 - Create a password following the five criteria below:
 - It must be 8 characters in length
 - It must have at least one upper case character
 - It must have at least one lower case character
 - It must have at least one number
 - It must have at least one special character (valid characters are: #, !, \$, &, ?, ~). Do not use commas since they are for spacing purposes only
 - Complete the registration information form
- 4) Login to SWIM
 - Select Start New Upload button
 - Select BAS radio Button
 - Select your entity type (State, Place, County, County Subdivision, Tribal Area, or Concity)
 - Select your state and county
 - Select the Zip file to upload
 - Click the + Add File button
 - Double-click on the file you want to upload
 - *[Add additional files in the same manner]*
 - Add any additional information to the Comments field
 - Logout

BAS Schedule and Deadlines

- **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 American Community Survey (ACS) or Population Estimates Program (PEP) data. Any change 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.

Contact Information

If you have questions, please contact the U.S. Census Bureau:

- Email: geo.bas@census.gov,
- Phone: 1-800-972-5651
- FAX: 1-800-972-5652

GUPS - Quick Start - Boundary and Annexation Survey Respondent Guide

Initial Steps

- 1) Report that you are making updates by one of the following methods:
 - Completing the Annual Response Form on the BAS Web site: <https://www.census.gov/programs-surveys/bas.html>
 - Call (800) 972-5651
 - Email: geo.bas@census.gov
- 2) Obtain the following materials from the BAS Web site or DVD (if requested):
 - GUPS – BAS Respondent Guide
 - GUPS Quick Start – BAS Respondent Guide
 - GUPS Software: www2.census.gov/geo/pvs/gups/.

Note: Those requesting the GUPS tool and data on DVD will receive a software and data disc in the mail.
- 3) Review respondent guides and training videos
 - Review the GUPS – BAS Respondent Guide and Quick Start guide on the BAS Web site before beginning any boundary or linear feature updates. Training videos can be found in the 'Help' menu within the GUPS tool.

Download and Install GUPS

- 1) Download the GUPS tool from the BAS Web site to your computer.
 - 2) Unzip the file and extract all contents of the unzipped package to a folder on your computer.
 - 3) Click the **Setup-7.0.0-X.bat** to start the installation.
 - 4) When the installer opens, the **Welcome to the QGIS GUPS Setup Wizard** screen will appear. Follow the instructions on the Wizard and click the *Next* button.
 - 5) The **License Agreement** screen will appear. Review the License Agreement and click *I Agree* button to continue the install process.
 - 6) The **Choose Install Location** screen will appear. The *Browse* button will allow you to choose the location where GUPS will be installed. It is recommended that you install the application at the default location shown (C:\Program Files\QGIS GUPS). Click *Next* to continue the install process.
 - 7) The **Choose Components** screen will appear. The Select Components to Install box will be greyed out as it is the default. Click *Install* to continue.
 - 8) The software should take 5 to 10 minutes to complete the install. When the install is complete the **Completing the QGIS GUPS Setup Wizard** screen will appear. To complete the install, click the *Finish* button at the bottom of the screen.
- Note:** The software should run automatically for those requesting a DVD. If it does not, please navigate to your DVD drive and begin with Step 3, above).

Start New BAS Project

- 1) Double-click the QGIS icon on your desktop [GUPS splash screen appears].
- 2) Click Close (X) on QGIS Tips screen.
- 3) [Map Management dialog page opens].
- 4) Use dropdown box for Program to select Boundary and Annexation Survey 2018.
- 5) Use State dropdown box to select your state.
- 6) Use Working County dropdown box to select the county you wish to update.
- 7) Use the Select Data Folder, Directory or Location dropdown box to select the location from which you want to pull the county's shapefiles (Options: Census-provided DVD, My Computer or the Census Partnership website).
- 8) From the Entity Type dropdown box select the entity you represent (County, MCD, Place or State).
- 9) Once selected, a list of adjacent counties will appear highlighted (Uncheck any counties you do not want to appear on the Map View)
 - If adjacent counties are selected, load their shapefiles from the Select Data Folder, Directory or Location dropdown box.
 - Files load and you are ready to make updates.

Perform Geographic Review/Updates

- 1) Use the BAS Module in GUPS for the following updates:
 - Add, delete, and modify legal entities (Counties [and equivalent areas], Minor Civil Divisions, Incorporated Places, and Consolidated Cities).
 - Add, delete, and modify linear features (Roads, Railroads, and Hydrology).
 - Add, delete, and modify area landmarks and hydrographic areas.
 - Add, delete, and modify point landmarks.
 - Provide address data for newly annexed areas.

Perform Quality Control

- 1) Use the validation tools provided in GUPS to review your changes before returning updates to the Census Bureau:
 - Review Change Polygon Tool.
 - Geography Review Tool.

Create Return Zip Files

- 1) Select Export to Zip icon on the BAS Toolbar.
- 2) From the Select Output Type dialog box select Export for Census button to create a file to return to the Census Bureau. Click the Share with Another Participant button if you would prefer.
- 3) Click OK.
- 4) A window opens showing the location of the of the output file on your local system. This is the file that you will return to the Census Bureau in the next steps.

Return Updates Using the Secure Web Incoming Module (SWIM)

- 1) Open a browser window and enter the SWIM URL: (<https://respond.census.gov/swim/>).
- 2) If you already have a SWIM account enter your Email address and Password - Skip to Step 4).
- 3) If you do not have a SWIM account click 'Register Account'.
 - Enter the 12 digit token provided by Census.
 - Create a password following the five criteria below:
 - It must be 8 characters in length.
 - It must have at least one upper case character.
 - It must have at least one lower case character.
 - It must have at least one number.
 - It must have at least one special character (valid characters are: #, !, \$, &, ?, ~). Do not use commas since they are for spacing purposes only.
 - Complete the registration information form.
- 4) Login to SWIM
 - Select Start New Upload button.
 - Select Bounday and Annexation Survey (BAS) radio Button.
 - Select your entity type (State, Place, County, County Subdivision, Tribal Area, or Concity).
 - Select your state and county.
 - Select the Zip file to upload.
 - Click the + Add File button.
 - Double-click on the file you want to upload.
 - [Add additional files in the same manner].
 - Add any additional information to the Comments field.
 - Logout.

BAS Schedule and Deadlines

- **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 shapefile s for the next BAS year. However, these changes will not appear in this year's American Community Survey (ACS) or Population Estimates Program (PEP) data. Any change 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.

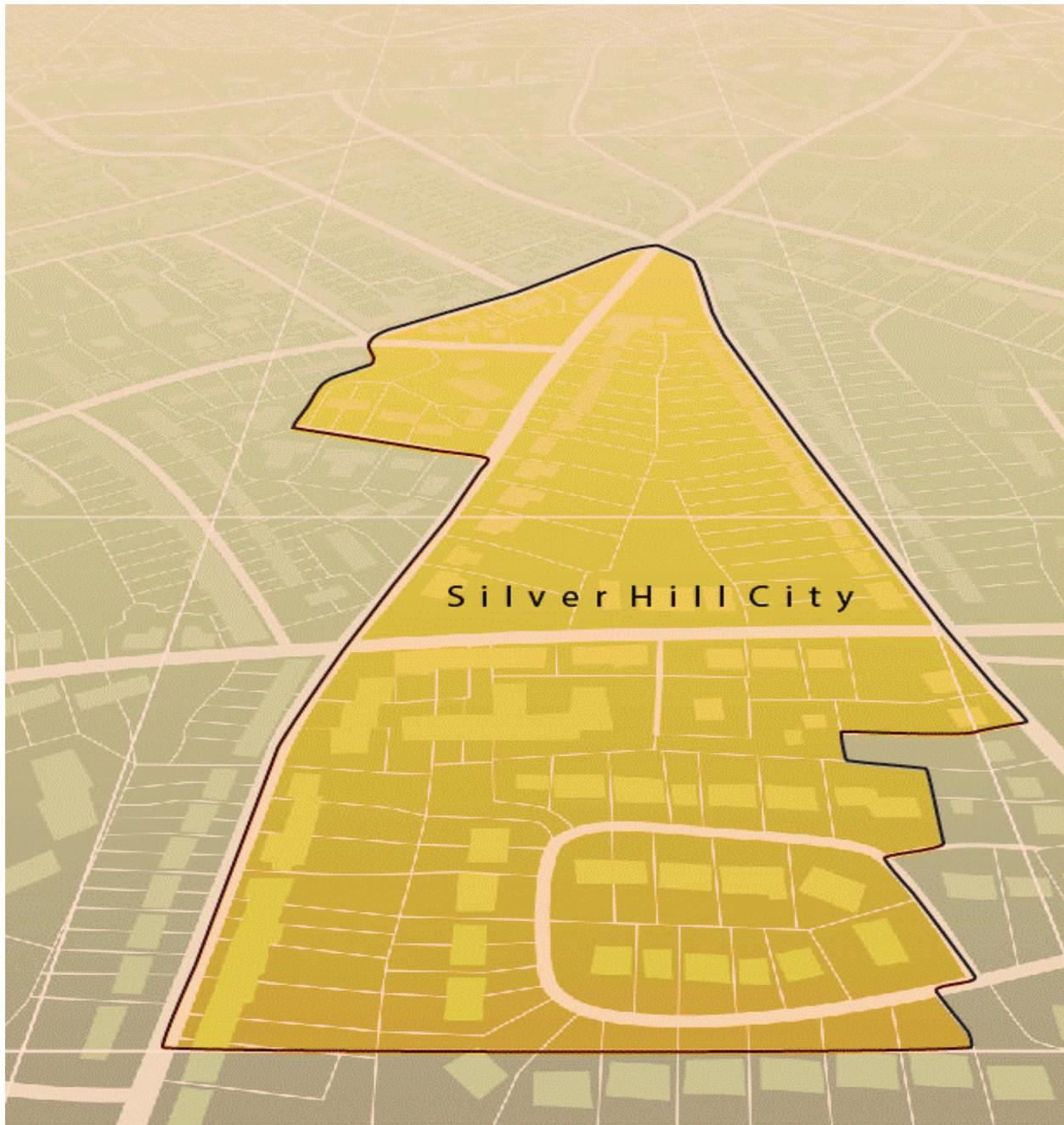
Contact Information

If you have questions, please contact the U.S. Census Bureau:

- Email: geo.bas@census.gov,
- Phone: 1-800-972-5651
- FAX: 1-800-972-5652

Boundary and Annexation Survey (BAS) Respondent Guide: Paper

Instructions for Participating in the 2018 Boundary and Annexation Survey
Revised as of November 30, 2017



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PAPERWORK REDUCTION ACT 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 (PRA) unless that collection of information displays a current valid Office of Management and Budget (OMB) Control Number. This collection is voluntary. The authority for conducting this collection comes from Title 13 United States Code (U.S.C.), Section 6 Paperwork Reduction Act.

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 4H177
Washington, DC 20233

The Census Bureau issued a Federal Register Notice to revise its confidentiality pledge language to address the new cybersecurity screening requirements:

Per the Federal Cybersecurity Enhancement Act of 2015, your data are protected from cybersecurity risks through screening of the systems that transmit your data.

INTRODUCTION

A. The Boundary and Annexation Survey

The U.S. Census Bureau (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), federally recognized American Indian Areas (AIAs) — including reservations, off-reservation trust lands and tribal subdivisions, Hawaiian Homelands, and Alaska Native Regional Corporations (ANRC). 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 the boundary information collected during the BAS to tabulate data for 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 (FGDC) 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), Hawaiian Homelands, ANRC, and federally recognized 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).

Please visit the BAS program Web site at <<https://www.census.gov/programs-surveys/bas.html>>.

For more information on the BAS, please view the "Introduction to BAS" video series on the Census Bureau's BAS Web site at <<https://www.census.gov/programs-surveys/bas/library/videos/bas-intro.html>>

B. What's New for the 2018 BAS?

1. The Geographic Partnership Support Desk (GPSD) is now fully functional and available to assist with any questions respondents may have regarding BAS.
2. Redistricting data contacts participating in the Voting District Project (VTD) may submit boundary updates for reconciliation with BAS contacts.

C. Key Dates for BAS Respondents

January 1, 2018 — All boundary changes must be legally in effect on or before this date to be reported in the 2018 BAS.

March 1, 2018 — BAS submission date deadline for boundary updates to be reflected in the ACS and PEP published data. Boundary submissions received by this date are also reflected in next year's BAS materials.

May 31, 2018 — BAS boundary updates submitted by this date will be reflected in next year's BAS materials.

D. BAS State Agreements

The Census Bureau has established a number of agreements with states for reporting boundary changes. Please visit the BAS State Agreements webpage within the BAS program Web site at <https://www.census.gov/programs-surveys/bas/information/state-agreements.html> or call (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.

E. Legal Disputes

If the Census Bureau discovers that an area of land is in dispute between two or more jurisdictions, the Census Bureau will not make any boundary corrections until the parties come to a written agreement, or there is a documented final court decision regarding the dispute. If you have questions concerning this, please contact the Census Bureau Legal Office at **301-763-9844**.

For disputes involving tribal areas, the Census Bureau must defer to the Office of the Solicitor at the Department of the Interior for a legal opinion. Often complicated land issues require an extended period of time for resolution, and in those cases, the Census Bureau will retain the current boundary in the database until a legal opinion is issued by the Solicitor's office.

F. Respondent Guide Organization

This guide has been created for those who choose to participate in the survey using paper maps.

This guide contains four parts:

Part 1: Provides an Overview of BAS. It specifies the:

- Forms used to verify legal names, status, contact information, and previous legal boundary changes for BAS;
- BAS-1 for Incorporated Places
- BAS-2 for Counties and Equivalent Areas
- BAS-3 for Minor Civil Divisions (MCD)
- BAS-5 for American Indian Reservations and Off-Reservation Trust Land

Part 2: Provides Information on Reviewing and Updating BAS Maps:

- Request Additional Maps
- Guidelines for Reviewing and Updating BAS Maps;
- Census Bureau Geocoding;
- Legal Boundary Changes (How to Draw, Changes Involving Coincident Features, Boundary Corrections; Tribal Subdivisions)

Part 3: Describes the Procedures for Delineating New Tribal Subdivisions:

- Tribal Subdivision Program Procedures;
- Updating Existing Tribal Subdivisions;
- Tribal Subdivision Documentation;
- Feature Modifications;
- Modify Locations of Streets (Adding, Deleting, Naming);
- Correcting Street Names;
- Annotating Address Range (Adding Address Ranges);
- Point Landmarks and Area Landmarks;
- Geographic Corridors and Offsets;
- County Review and Consolidations;
- Public Land Survey System;
- New Incorporations; and
- Disincorporations

Part 4: Describes the Procedures for Returning BAS Materials

PART 1: COMPLETING THE BAS FORMS

1.1 Forms Included in the BAS Package

The forms in the BAS package should be used to verify legal names, legal status, contact information, previous legal boundary changes submitted to the Census Bureau, and to document any recent or missing legal boundary changes. There are four types of forms:

1. BAS-1 for Incorporated Places
2. BAS-2 for Counties and Equivalent Areas
3. BAS-3 for Minor Civil Divisions (MCD)
4. BAS-5 for American Indian Reservations and Off-Reservation Trust Land

1.2 Name or Type Changes

Please verify that the legal names and legal status of the GU or AIA are accurate. Make any necessary corrections by crossing out the error and clearly printing the correct information. Provide an effective date for name, type, or status changes. County participants should verify the list of active and inactive entities within their counties.

1.3 Contact Information

Please verify that the Census Bureau has the most recent BAS, HEO, or TC contact information for the GU or AIA. Fill in any missing or incorrect information, especially blank e-mails. If the primary address of the BAS contact, HEO, or TC is a PO Box, provide the Census Bureau with a physical address that can be used for the delivery of maps. Contact changes or updates may also be provided to the Census Bureau throughout the year by e-mail to geo.bas@census.gov.

1.4 Legal Boundary Changes

Please record all legal boundary changes in the Documentation of Changes section of the BAS form. Include legal boundary changes that occurred prior to **January 1** of the current survey year if they do not appear on the current BAS maps. Please include legal authorization, such as a local ordinance or resolution number, and the effective date of the legal action. If additional pages are needed to record legal changes, a copy of the Documentation of Changes is provided in the appendix.

1.5 Other Changes

Please indicate if there are any boundary corrections or feature updates that need to be made on the BAS maps. This will assist the Census Bureau in identifying and accounting for any updates made to the maps.

PART 2: REVIEWING AND UPDATING THE BAS MAPS

2.1 Maps Included in the BAS package

The Census Bureau mails an index map showing the entire GU or AIA, along with more detailed individual map sheets. Index maps are provided as a reference to help locate a map sheet. GUs and AIAs with more than 30 map sheets receive only an index map and the map sheets that show the legal boundary. Entities that require more than 30 boundary ring map sheets receive only the index map.

2.2 Requesting Additional Maps

If you only received an index map for a county, incorporated place, MCD, or AIA where boundary changes or feature updates need to be made, call (800) 972-5651 or e-mail geo.bas@census.gov to request an individual map sheet or a full set of maps. **Do not make updates on the index map.**

2.3 General Guidelines for Reviewing and Updating BAS Maps

1. Colored pencils are provided in the package. The red pencil should be used to indicate legal boundary changes and non-legal boundary corrections for all counties, places, MCDs, and AIAs. The purple pencil should be used to indicate feature changes or corrections. The blue pencil should be used by AIAs to add or modify tribal subdivisions.
2. Compare the BAS maps to a local source for an entity (e.g., a local plat map, or a county assessor's dataset). Update the map(s) if the boundaries shown do not correctly depict the boundaries in effect as of **January 1st** of the survey year.
3. You may also provide annexations and deannexations from previous years in addition to providing updates as of **January 1st**. However, the Census Bureau does require legal documentation when submitting these vintage legal updates.
4. The maps show boundaries for multiple legal and statistical boundaries. If an entity's legal boundaries are coextensive with another boundary, the symbols on the map will alternate. In the figure below, the county shares a boundary with an incorporated place and Census Designated Place (CDP); therefore, the symbols on the map alternate between county, incorporated place, and CDP.

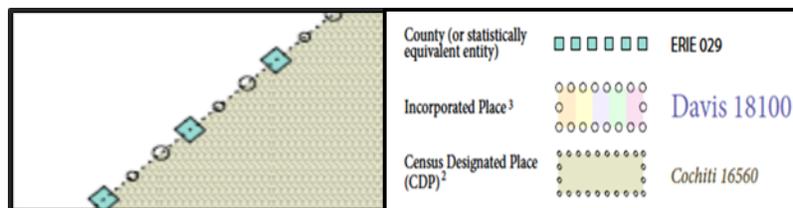


Figure 1. Shared Boundary

The combined line represents a county, incorporated place and CDP boundary.

2.4 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.

2.4.1 GPS Physical Location Geocoding

A field worker stands in front of a house or living quarters, and records the physical location with a GPS device (**Figure 2**). Usually, the GPS point should fall very close to the front door of the house. However, since this is a field operation, 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.

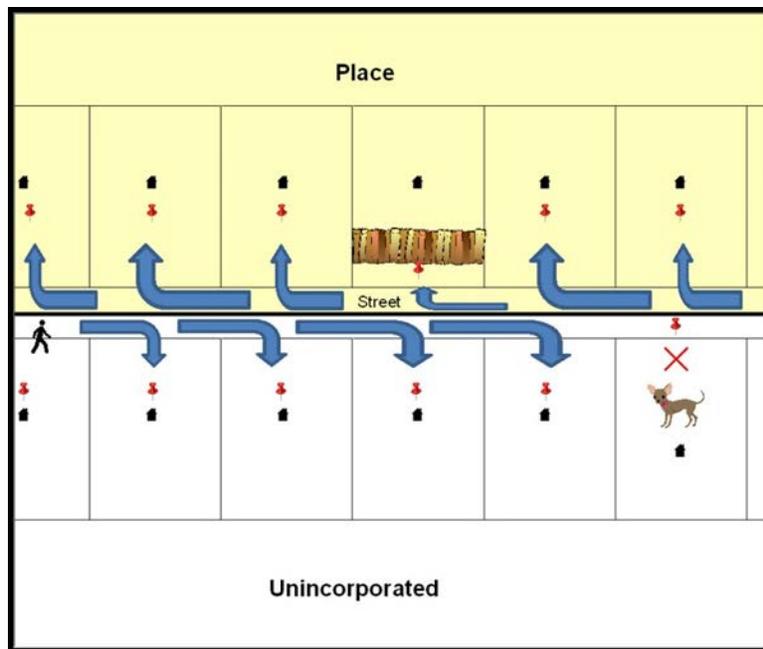


Figure 2. MSP Method of Geocoding

Notice in **Figure 2. MSP Method of Geocoding** 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 in **Figure 2** by the red pins) can sometimes fall within the road or the road right-of-way.

2.4.2 Address Range Geocoding

When no Master Address File (MAF) structure point (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 (**Figure 3**).

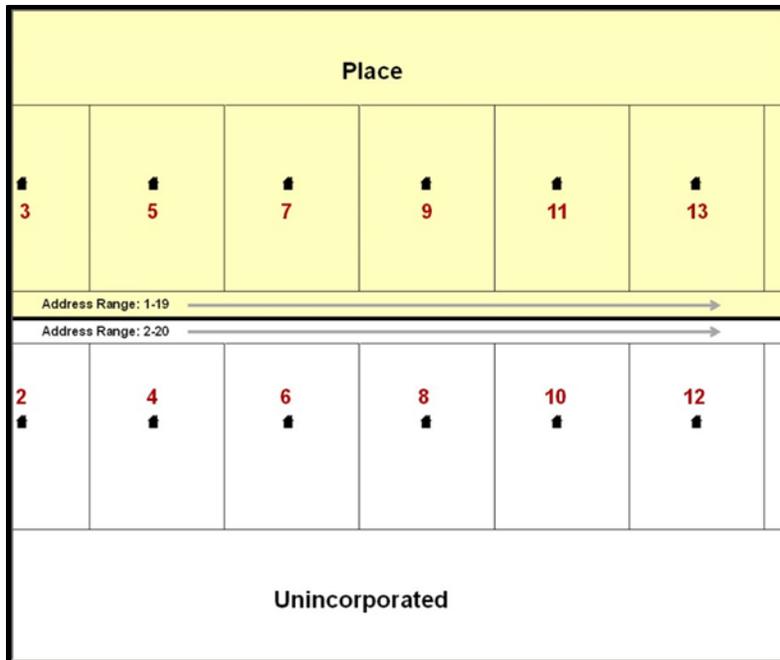


Figure 3. Address Range Method of Geocoding

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 the MAF/Topologically Integrated Geographic encoding and Referencing (TIGER) System. The representation of streets and boundaries relative to one another impacts these geocoding methods. This interdependence between streets, boundaries, and geocoding means that Census Bureau representations of legal boundaries occasionally 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. Using the road centerline as a boundary eliminates these potential errors, improving accuracy.

2.4.3 Completing a BAS Submission Using the Centerline of the Road

When completing a BAS submission in which a road or road right-of-way is owned or maintained by a place or AIA 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 3.9** of this document for more details).

2.5 Legal Boundary Changes

Legal boundary changes are the result of legal actions (e.g., annexations), and documenting such changes is the primary goal of the BAS. AIA legal documentation (e.g., statute, federal court decision, trust deed) must accompany all AIA legal boundary changes, while legal boundary change submissions from incorporated places, MCDs, and counties must provide an authorization number, such as a resolution or ordinance number¹.

2.5.1 How to Draw Legal Boundary Changes

The following figures illustrate the correct way to draw legal boundary changes on BAS maps.

- Using the red pencil provided, cross out the portion of the boundary that is no longer current with a string of "Xs".
- Draw the new boundary line(s) ensuring the boundary is closed.
- Add the ordinance number or other legal identifier of the action authorizing the change, along with the effective date of each annexation or de-annexation that is drawn on the map.
- Record all legal changes in the **Documentation of Changes** section of the BAS form.

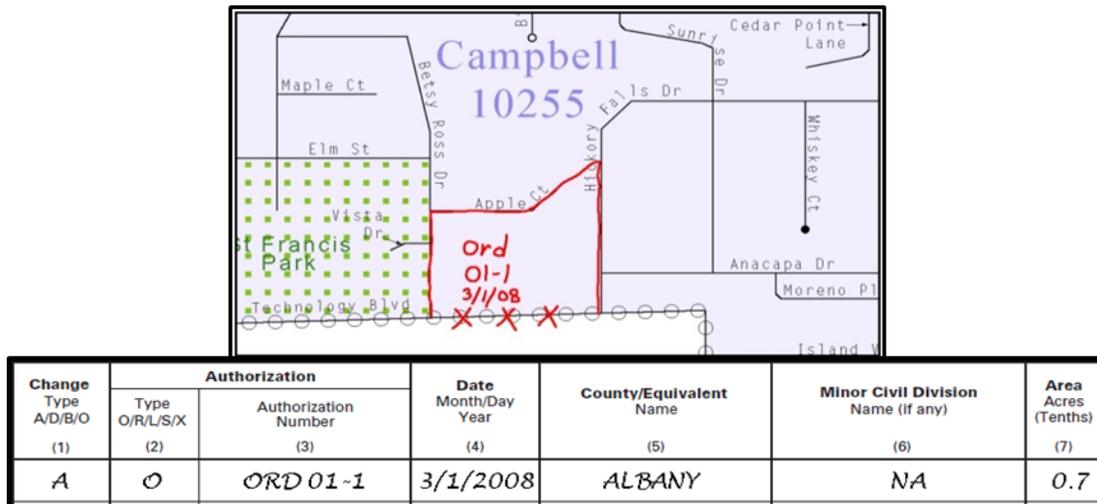


Figure 4. Correctly Annotating a Legal Boundary Change

With the red pencil and record the changes in the Documentation of Changes section of the BAS form.

¹ Legal boundary changes from the State of Georgia are the exception: a state statute requires participants to include acreage, and the Census requests that the respondent includes an authorization number.

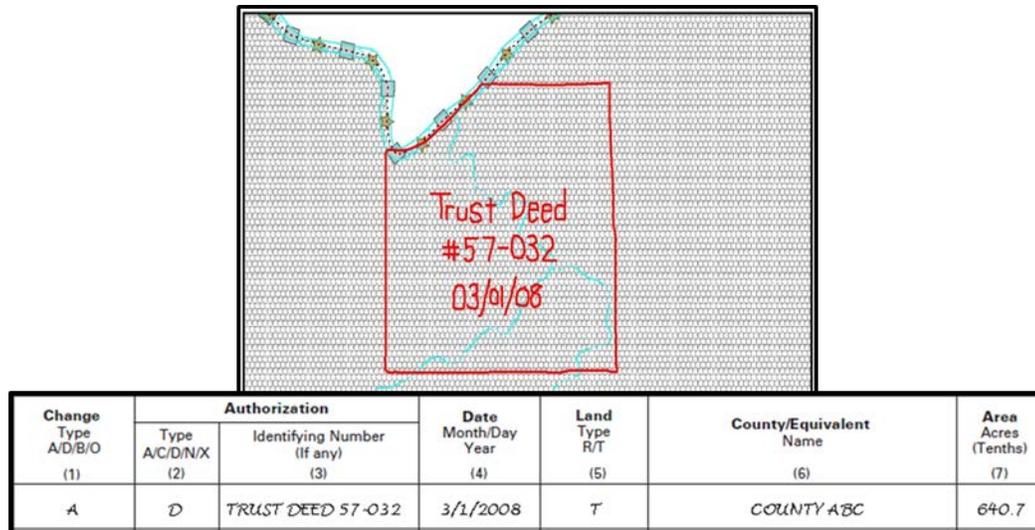


Figure 5. Correctly Annotating an AIA Trust Land

Correctly annotate an AIA trust land and record the change in the Documentation of Changes section of the BAS form. The original reservation is not deleted and therefore does not require a string of X's.

2.5.2 Boundary Changes Involving Coincident Features

The following figures illustrate how to adjust a boundary that is coincident with (i.e., follows exactly) a feature, such as a river or street. In this case, the feature location is correct, but the *boundary location* is incorrect.

- Using the red pencil, cross out the portion of the boundary that is no longer current using a string of "Xs" inside circles.
- Draw the updated boundary.
- Add the authorization number or other identifier of the action authorizing the change along with the effective date of each addition or deletion.
- Record all legal changes in the **Documentation of Changes** section of the BAS form.

If both the boundary and feature need to be moved, cross out the incorrect boundary with a string of red "Xs" and then draw a red line representing the new location of the boundary and road.

Figure 6, Figure 7, and Figure 8 below illustrate how to make a correction to the boundary where an associated feature moves along with the boundary. If these changes are the result of an annexation or deannexation, include the authorization number and effective date.

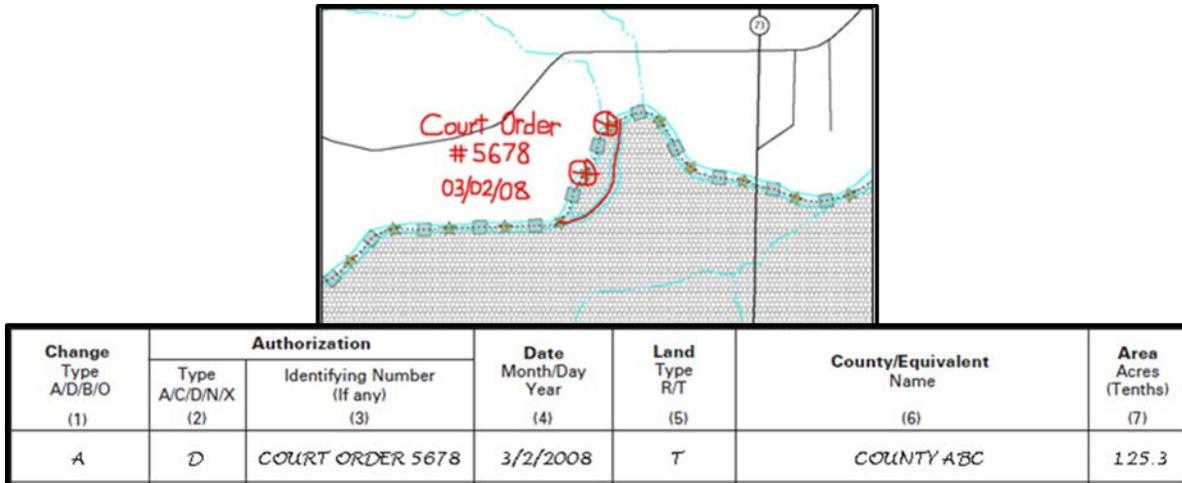


Figure 6. Annotating a Legal Boundary Change

Annotating a legal boundary change coincident with a river feature, where the river location does not change, but the boundary does. The legal change is also recorded in the Documentation of Changes.

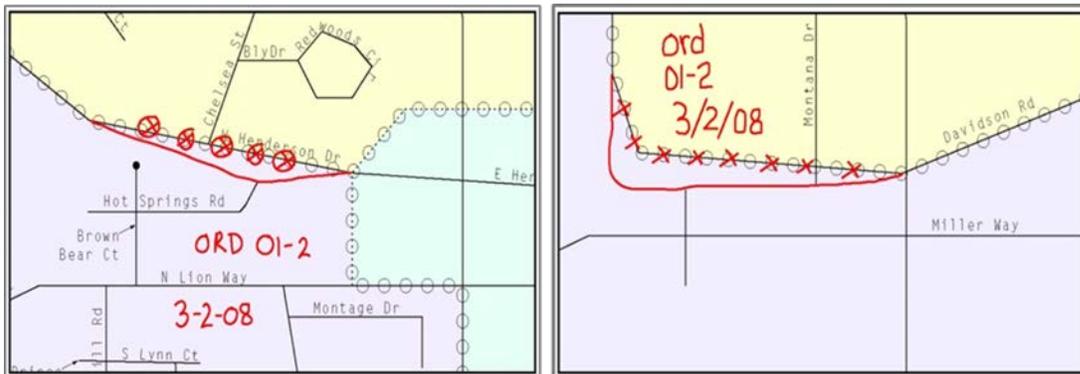


Figure 7. Annotating a Legal Change to an Incorporated Place

Annotating a legal change to an incorporated place boundary coincident with a road feature, where only the boundary moves to the new location. The street feature location is correct, but the boundary location is incorrect.

2.5.3 Boundary Corrections

A boundary correction is the adjustment of a boundary to correct an error in how the Census Bureau depicts an existing boundary. Boundary corrections should follow the general shape of the existing boundary. Legal documentation is not required when submitting a boundary correction to the Census Bureau. Boundary corrections also do not need to be reported on the BAS form.

Figure 8 illustrates how to complete a boundary correction.

- Using the red pencil, cross out the incorrect boundary with a string of “X”s.
- Add a line showing the correct boundary.
- Print the letters **BC** inside the change to identify the update as a boundary correction rather than a legal change.

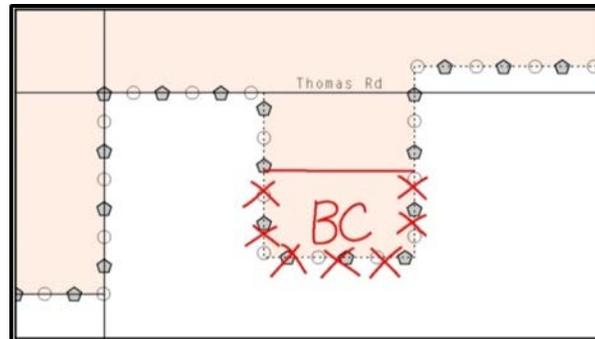


Figure 8. Annotating a Boundary Correction to an Incorporated Place Boundary

2.5.4 Tribal Subdivisions

The Census Bureau considers any type of unit of self-government or administration in tribal areas as a **tribal subdivision**. A tribe may submit only one type of subdivision, even if it has more than one type of distinct administrative area that could qualify as a tribal subdivision (e.g., tribal election districts, tribal water districts, or health service areas with different boundaries). The Census Bureau recognizes two types of tribal subdivisions, active (A) or inactive (I):

- Active subdivisions are defined as having a functioning government, with elected officials, that provides programs and services.
 - Inactive subdivisions have no functioning government or elected officials and receive services solely from the tribe.
- a) Some examples of areas submitted as tribal subdivisions are:**
- Areas used by a tribe for the election of tribal government officials (e.g., districts or precincts used for the election of tribal council members).
 - Areas used by a tribal government for tax purposes.
 - Areas used by a tribal government for the provision of general services or specified services, such as:
 - Water districts;
 - Health service areas;
 - Emergency service delivery areas (911, fire, and/or police); or
 - Grazing districts or range units.
 - Historical or traditional areas recognized by a tribal government.
 - Sub-reservation tribal community governments.
- b) Keep the following criteria in mind when defining tribal subdivisions:**
- Tribal subdivisions should cover all, or most, of a tribe's land base.
 - The delineation of tribal subdivisions is restricted to the area contained within reservations and/or associated off-reservation trust lands.

- There is no minimum population threshold for a tribal subdivision.
- A tribal subdivision may be noncontiguous.
- Tribes may designate only **one** type of tribal subdivision. If a tribe has more than one level of tribal subdivision within its land base, the Census Bureau recommends delineating subdivisions corresponding to the lowest geographic level (those geographic areas containing the smallest area) of the tribe's administrative hierarchy.
- Tribal subdivisions should not be based solely on land ownership or other cadastral areas, nor should they consist of divisions based on the U.S. public land survey system of townships, ranges, and sections, if these areas have no governmental or administrative function for a tribe.
- The following descriptions can be appended to chosen subdivision names (e.g., Red Rock Community):
 - District.
 - Community.
 - Area.
 - Chapter.
 - Segment.
 - Administrative Area.
 - Addition.
 - County District.

PART 3: DELINEATING NEW TRIBAL SUBDIVISIONS

3.1 Tribal Subdivision Program Procedures

If this is the first time that tribal subdivisions are being provided to Census:

- Using the blue pencil, please add the boundaries on the BAS map(s).

Note: If a full set of BAS maps has not been sent, please request them by calling the Census Bureau's BAS team at (800) 972-5651.

- Please note: each tribal subdivision must be labeled on each map sheet with its name (e.g., "District 3," "Arlee District," "White Rock Chapter," "Parmelee Community").
- Record the names, type, and status of each subdivision in the **Tribal Names and Status Documentation** section of the BAS-5 form.
- If a tribal subdivision boundary follows a visible feature such as a stream, road, or fence line, please be sure to indicate that on the BAS map. Add the visible feature the boundary follows if it is not already shown on the map.

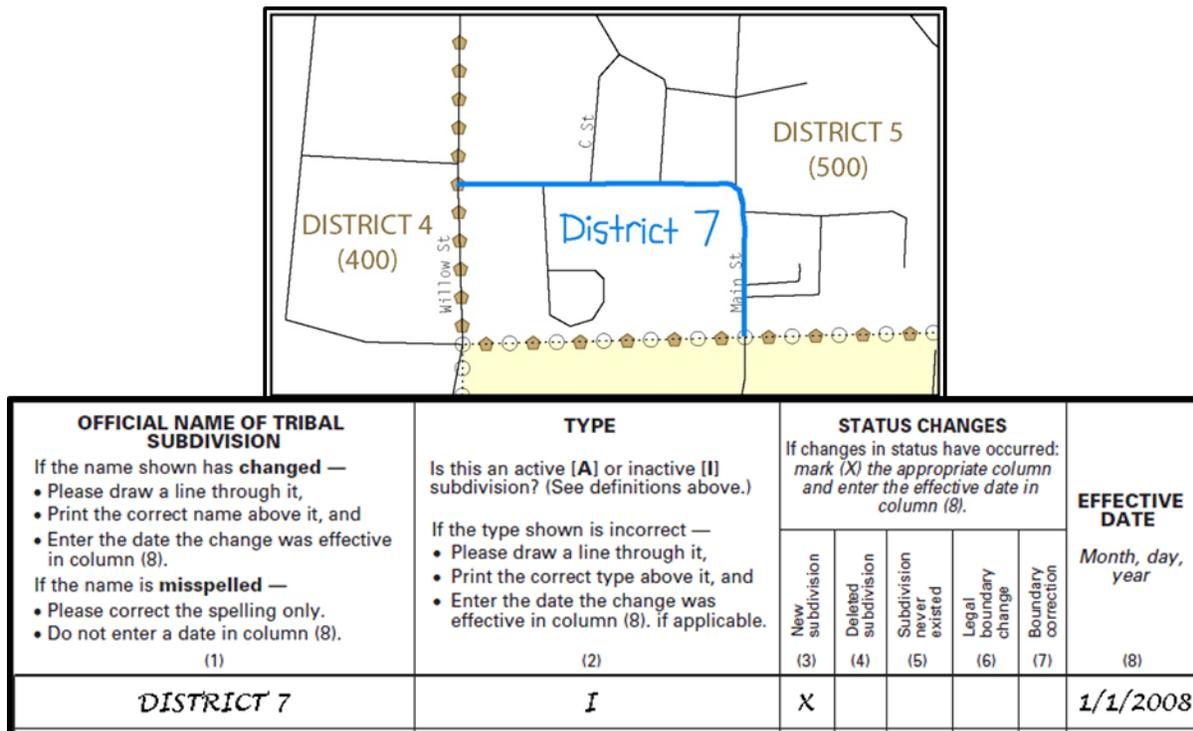


Figure 9. Recording New Tribal Subdivision Information

Depicting a new tribal subdivision and recording the information in the Tribal Names and Status Documentation section of the BAS form.

3.2 Updating Existing Tribal Subdivisions

If tribal subdivisions were delineated during a prior survey, they are symbolized on the enclosed BAS maps by a dashed pentagon-shaped gold line.

Before adding/or revising tribal subdivision boundaries on the enclosed map(s):

- Using the red pencil, please note any changes to the boundary of the land base on the map(s).
- Using the blue pencil, please add and/or revise the boundaries of the tribal subdivisions on the enclosed BAS map(s).

Note: The names and types (active or inactive) of tribal subdivisions are listed in the Tribal Names and Status Documentation section of the BAS-5 form. This information should be reviewed and updated.

3.3 Tribal Subdivision Documentation

New tribal subdivisions and name changes to existing tribal subdivisions require documentation, regardless of whether they are being delineated for the first time, or being added to those previously reported. This documentation should be in the form of a tribal resolution or a tribal constitution. Include a copy of this documentation with your BAS maps and BAS-5 form when returning these materials to the Census Bureau.

Corrections to the Census Bureau's depiction of tribal subdivision boundaries or names do not require documentation.

If there are any questions or if additional maps are needed, please contact the Census Bureau's BAS team at the telephone number shown on the enclosed BAS-5 form.

3.4 Feature Modifications

The primary purpose of the BAS is to collect legal boundary information. However, please also submit feature (e.g. streets, rivers) updates and modifications occurring near or coincident with a legal boundary through the BAS. Feature modifications that are internal to the boundary of an incorporated place, county or MCD will be accepted, but are not required as part of the BAS.

3.5 Modifying Locations of Streets

The following figures illustrate how to correct the location of a street feature:

- Using the purple pencil, please cross out the incorrect feature location with "Xs".
- Please draw the feature in the correct location.
- Please print the name of the feature along the length of the feature (as shown in the **Figure 10** and **Figure 11**).

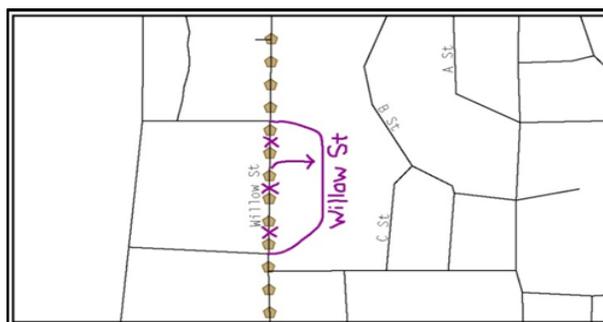


Figure 10. Modifying a Street Feature No Boundary Movement

In this example the street location moves, but the boundary does not.

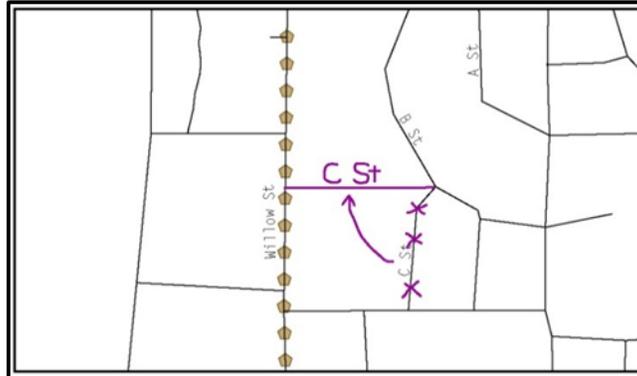


Figure 11. Modifying a Street Feature with Boundary Movement

In this example both the street location and the boundary move.

The Census Bureau recently completed a nationwide program to improve the positional accuracy of all streets and other features that appear in the Census Bureau's MAF/TIGER System. It is not necessary to make small positional corrections on the BAS maps; correct only those streets that are incorrectly located, mislabeled or distorted. Additionally, new streets may be added, and nonexistent streets may be deleted.

3.5.1 Adding, Deleting, and Naming Streets

When adding missing streets, new streets, and alternate street names:

- Please use the purple pencil to draw the feature and its name on the map.
- Where possible, please provide the address range for any new streets.
- Please provide the MAF/TIGER Feature Class Code (MTFCC) (**Appendix B**) for all new streets (**Figure 12**).
- Alternate street names may be written in parentheses below the primary street name.

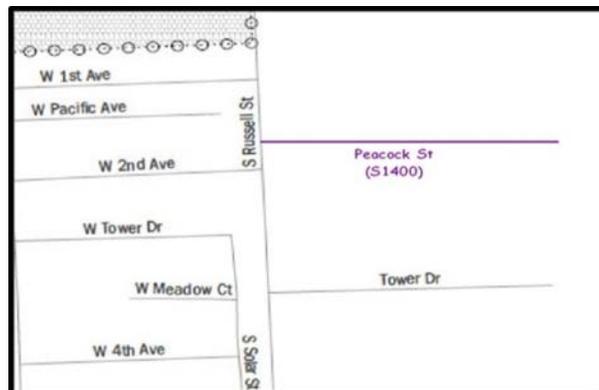


Figure 12. Adding an MTFCC Code When Adding a New Street

Note: Due to the difficulty of showing multiple names for the same street, only the primary street name is shown on BAS maps. Please note that, even though alternate street names are not shown on the maps, they do exist in our database. For example, US Hwy 30 may be locally known as Main St., but on the BAS map, only US Hwy 30 will be displayed; however, within our MAF/TIGER System, both names are listed. If you have reported an alternate street name in the past, you do not have to report it to us again.

3.5.2 When Correcting Street Names:

- Using the purple pencil, please draw a line through the incorrect street name.
- Please print the correct street name along the feature.

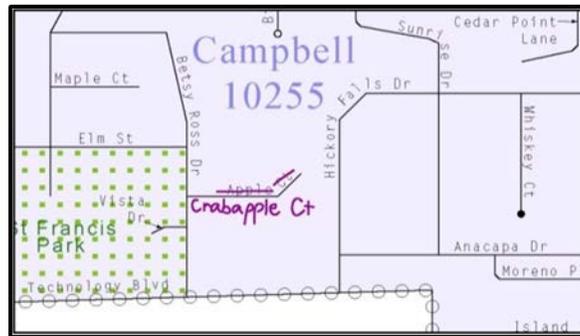


Figure 13. Correcting a Street Name.

Note: If an area of the map is too congested to add all feature names, please number each feature and list this number and the corresponding feature name in the map margin or in an uncongested spot close to the feature's actual location (Figure 14). Do not repeat numbers on a map sheet.

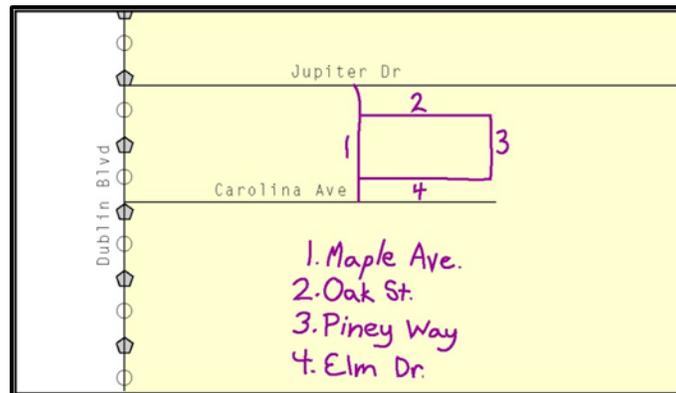


Figure 14. Adding Street Name Features in a Congested Area When Deleting Streets

Note: Delete street features only if they are nonexistent, or impassable. Do not delete a street because the local jurisdiction is not responsible for maintaining it.

- Using the purple pencil, please mark the beginning and end of the base feature to be deleted with hatch (//) marks perpendicular to the feature as shown below.
- Cross-out what is to be removed using a string of "Xs".

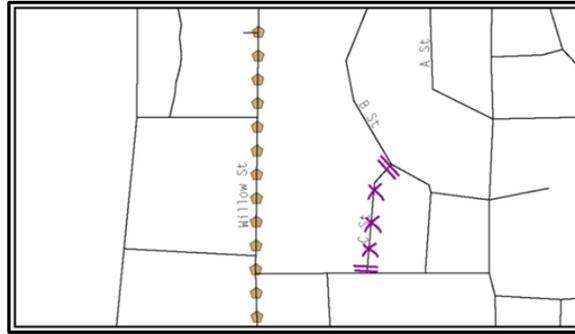


Figure 15. Deleting a Street Feature

3.5.3 When Naming Streets:

- Using the purple pencil, please label any unnamed streets on the maps.
 - Label any unnamed private roads with **PR**; and
 - Examples of private roads are driveways and unnamed roads in commercial or industrial parks.

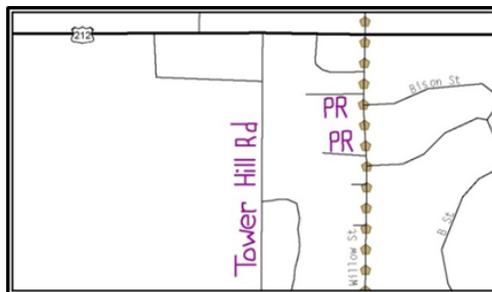


Figure 16. Adding Unnamed Road Features

3.5.4 Adding a Cul-De-Sac or Circle

When adding a cul-de-sac or circle:

- Using the purple pencil, please draw the feature.
 - Cul-de-sacs are entirely paved, and should be drawn as a solid dot; and
 - Circles have an area of unpaved ground within them, and should be drawn as an unfilled circle.
- Print the name of the associated street leading to the cul-de-sac or circle.



Figure 17. Adding Cul-de-sac and Circle Features

3.6 Annotating Address Range

Addresses are stored in the Census Bureau spatial database as potential address ranges. The BAS maps show the break in the potential address range created where a street is bisected by a boundary. These address range breaks are shown because it is important that the Census Bureau assign the correct addresses to each governmental unit.

Note: Some streets on the BAS maps do not display address breaks due to space considerations.

Add address ranges on both ends of the street **only** if one of the following circumstances exists:

1. A road where house numbers, street names and/or addresses were added or deleted;
2. A street was added that crosses a boundary; or
3. The address ranges created by a boundary are incorrect on the map.

3.6.1 When Adding Address Ranges:

Using the purple pencil, please add in the address ranges, providing the lowest and/or highest possible addresses where the road intersects a boundary (**Figure 18**).

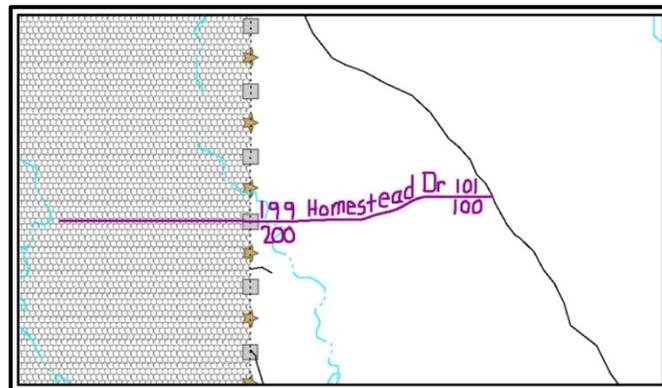


Figure 18. Adding Street Feature/Annotating with Name and Address Breaks

3.7 Point Landmarks

BAS maps display a select number of point landmarks (e.g., mountain peaks). Point landmarks can be updated through the BAS, but are not required.

Acceptable point landmark feature updates include mountain peaks or summits, libraries, city halls, community centers and police stations. Airports, parks, schools, golf courses, museums, and cemeteries may be submitted as point landmarks or area landmarks.

Features that contain residences or private business should not be added as point landmarks or area features (e.g. hotels, campgrounds, retirement homes, farms).

The BAS maps also include select point landmarks (e.g. airports, cemeteries, summits) taken from USGS topography maps and the USGS Geographic Names Information System. These landmarks represent the official federally recognized name and will not be removed or updated without USGS verification.

When adding a point landmark:

- Using the purple pencil, place a solid dot at the location of the point landmark.
- Print the name of the landmark next to the dot.

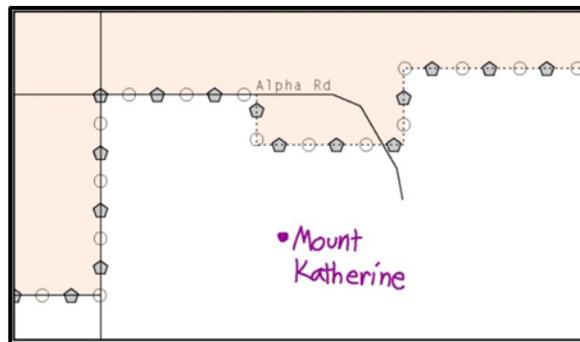


Figure 19. Adding a Point Landmark

3.8 Area Landmarks

The BAS maps display a select number of area landmarks (e.g., lakes). Like point landmarks, area features can be updated through the BAS, but are not required.

Acceptable area landmark updates include water bodies, swamps, quarries, national parks or forests. Airports, parks, schools, golf courses, museums, and cemeteries may be submitted as area landmarks or point landmarks.

Features that contain residences or private business should not be added as point landmarks or area features (e.g. hotels, campgrounds, retirement homes, farms).

When adding an area landmark:

- Using the purple pencil, draw the area landmark boundary in the correct location.
- Print the name of the landmark inside or next to the feature.



Figure 20. Adding an Area Landmark

3.9 Geographic Corridors and Offsets

A **geographic corridor** is an area that only includes road surface and right-of-way and does not contain any structures addressed to either side of the street. 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.

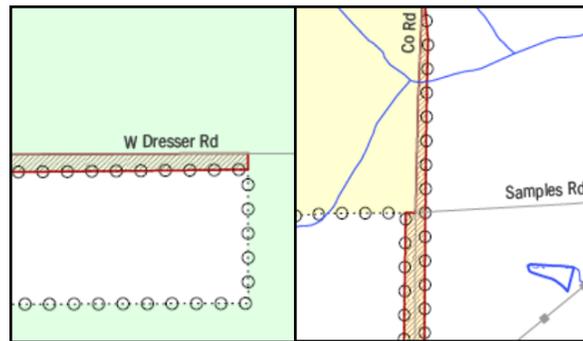


Figure 21. Geographic Offset and Geographic Corridor

The image on the left illustrates a geographic offset, designated by red diagonal lines. The offset is part of the incorporated place (green area). However, the dwelling units are counted outside of the incorporated place. The image on the right illustrates a geographic corridor (Co Rd, south of Samples Rd) and a geographic offset (Co Rd, north of Samples Rd). The geographic corridor and offset are both part of the incorporated place (yellow area), but dwelling units are not.

3.9.1 Geographic Corridors

Figure 21 shows a corridor that has been created where the incorporated place or AIA owns the right-of-way, and wishes for that ownership to be displayed on the Census Bureau's maps, but the housing units are not included in the incorporated place or AIA (shown in color). Without a corridor, the housing units along this road would be incorrectly geocoded into the incorporated place or AIA. Thus, if it is important to the place or AIA that its ownership and/or maintenance of the road and/or its rights-of-way be displayed on Census' maps, a geographic corridor should be created. However, the Census does not require places and AIAs to report rights-of-way:

maintaining geographic corridors in a nationwide database is not essential to the mission of the Census Bureau and the right-of-way should only be included if it is crucial to the place or AIA, or if state or local laws require it.

Figure 22 below shows a case where the right-of-way belongs in the unincorporated area, while the housing units in **Figure 23** are included in the incorporated place (shown in color). While depicting this corridor may be important for local purposes, it is not relevant for Census Bureau tabulations because no house can be built in a road right-of-way. This type of corridor should not be included in a BAS response.

Please note that the Census Bureau does not require places or AIAs to display rights-of-way or road maintenance corridors that do not contain or potentially contain housing or population. If local or state law does not require depiction of these geographic features, the Census Bureau prefers that they be left off BAS submissions. If it is necessary for the place or AIA to depict them, they must be submitted as a geographic corridor.

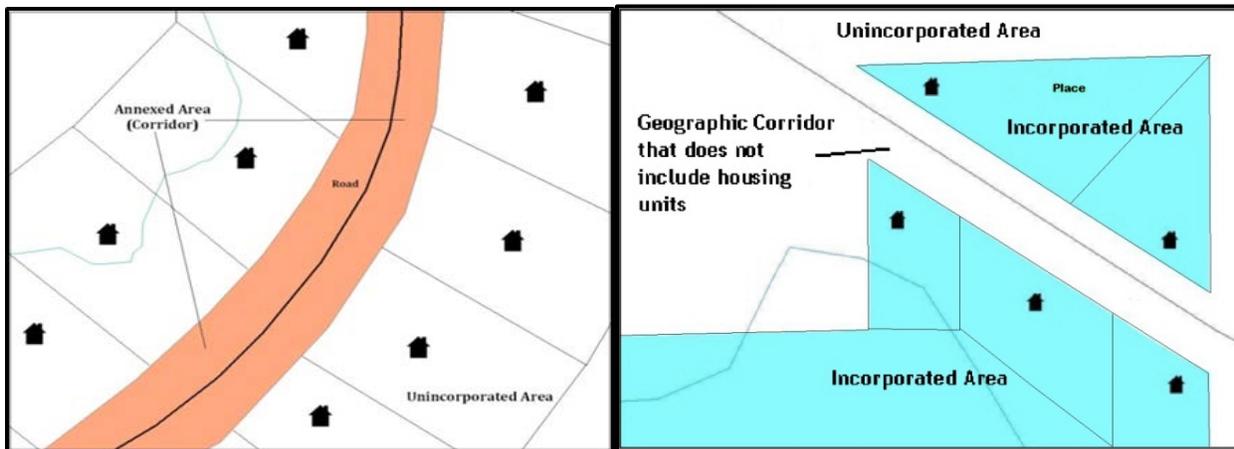


Figure 22. Where the Right-of-way Belongs in the Unincorporated Area

Figure 23. Housing Units in the Unincorporated Area

Geographic corridors can be provided to the Census Bureau if the centerline representation results in addresses being assigned to the wrong entity. However, geographic corridors should only be created if the addresses along the street do not belong to your governmental unit. To indicate a geographic corridor on your map, use the red pencil to draw a line on each side of the road. Mark the beginning and end of each line with perpendicular hatch marks. Write the letters "GC" beside each line (**Figure 24**). To remove a geographic corridor or offset, use the red pencil to mark the beginning and end of the corridor or offset with perpendicular hatch marks and write "remove GC."



Figure 24. Indicating a Geographic Corridor by Using a Red Pencil

To indicate a geographic corridor on your BAS return, use the red pencil to draw a line on each side of the road. Mark the beginning and end of each line with perpendicular hatch marks. Write the letters “GC” beside each line.

3.9.2 Geographic Offsets

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. Delineating an entity boundary on the centerline wherever applicable will help to establish more accurate population counts. If a boundary is on the front lot line adjacent to a road on the map, the Census Bureau strongly prefers that the boundary be delineated on the road centerline already shown on the map. If a boundary is on the rear or side lot line, then it should be depicted as such. If it is unclear whether a particular line is a front lot line or something else, please contact the BAS team for assistance. Generally, if a house or other building could not conceivably be built in the area between the potential line and the centerline of the road, then the line can be considered a front lot line.

Figure 25 shows a situation in which the place boundary is along the **front lot line**. In this example, the respondent must either delineate the boundary on the road centerline, or create an offset. In **Figure 26**, the place boundary is on the **rear lot line**, so the respondent should not delineate it on the road centerline or create an offset; instead, the respondent should delineate a new edge that actually follows the rear lot line.

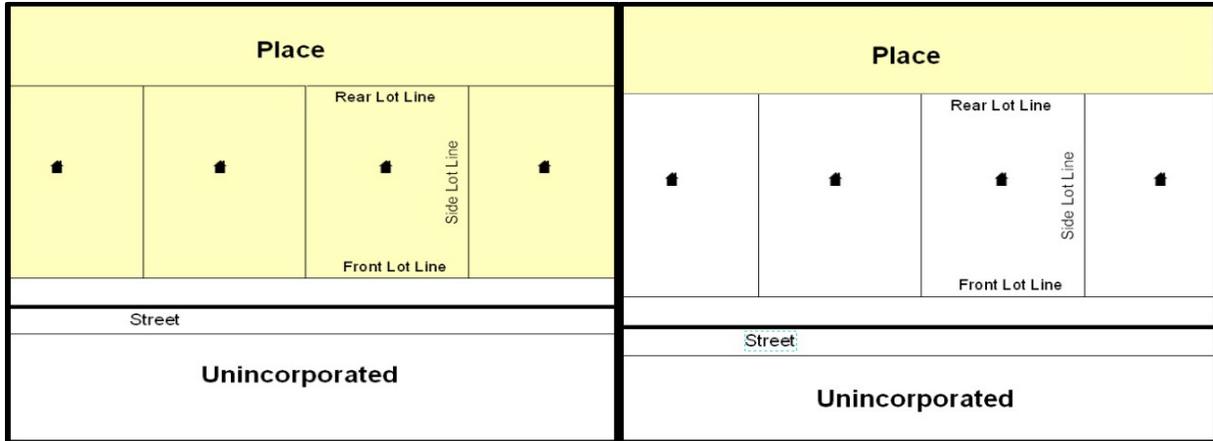


Figure 25. The Place Boundary is Along the Front Lot Line

Figure 26. The Place Boundary is on the Rear Lot Line

To indicate a geographic offset on your map, use the red pencil to draw a line parallel to the road, along which you want the offset to be created. Mark the beginning and end of the line with perpendicular hatch marks. Write the letters “OFF” on the side of the road where the geographic offset exists (**Figure 27**).

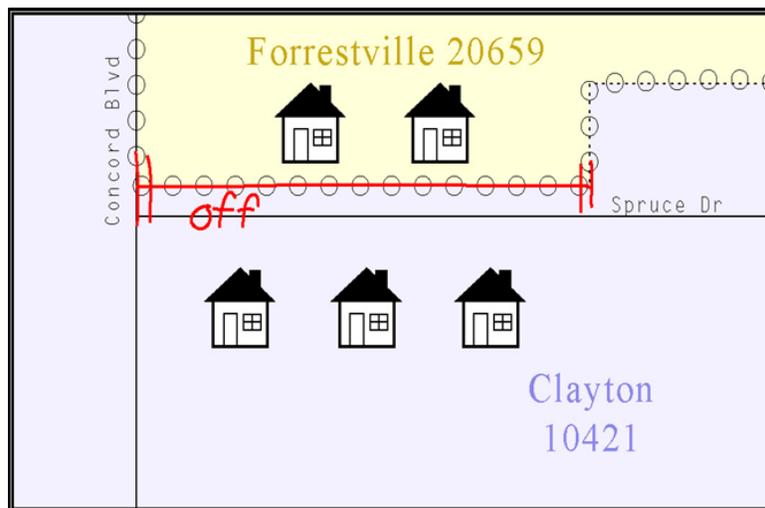


Figure 27. Depicting a Geographic Offset on a Paper Submission

3.10 County Review and Consolidations

Counties receive boundary information from the Census Bureau for all governmental units within their county boundary. Counties should review the names and legal status of active and inactive incorporated places and MCDs found on page 3 of the BAS-2 form.

- Active entities are defined as having a functioning government, with elected officials, that provides programs and services.
- Inactive entities have no functioning government or elected officials, receive services solely from the county, and should be reviewed by the county during BAS.

Although it is not required, counties may update boundaries for incorporated places and MCDs on the county BAS maps. The Census Bureau encourages counties to establish Consolidated BAS agreements with local governments in order to consolidate resources, reduce the burden on local governments, and avoid duplication of work. Under a Consolidated BAS agreement, the county is responsible for reporting boundary changes to the Census Bureau. Participating local governments would no longer receive an annual BAS package. One hundred percent participation is not required and governments may opt out of the agreement at any time. Contact the Census Bureau at [<geo.bas@census.gov>](mailto:geo.bas@census.gov) for more information on participating in a Consolidated BAS (CBAS) agreement or visit the Consolidated BAS website at [<https://www.census.gov/programs-surveys/bas/information/consolidated-bas.html>](https://www.census.gov/programs-surveys/bas/information/consolidated-bas.html)

3.11 Public Land Survey System

Boundaries are often based on nonvisible features, such as Public Land Survey System (PLSS) lines (i.e. township, section, range lines, etc.). The Census Bureau is currently working on a program through which PLSS lines can be incorporated into the MAF/TIGER System. If any of your entity's existing or new boundaries are known to follow PLSS lines, you should designate that on your BAS submission by writing "PLSS" in red pencil next to (and parallel to) the appropriate boundary segments. In areas where the Census Bureau has obtained accurate PLSS shapefiles, we will then be able to compare these lines to those shapefiles and ensure accurate placement of the boundary.

3.12 New Incorporations

Newly incorporated places should provide the Census Bureau with:

- A copy of the official new incorporation papers, including date of incorporation;
- A map indicating the boundaries of the new incorporation; and
- Contact information for the highest elected official and a contact for the BAS.

3.13 Disincorporations

Disincorporated entities should provide the Census Bureau with a copy of the official papers of disincorporation, including the effective date.

PART 4: SIGNING UPDATED MAPS AND RETURNING BAS MATERIALS

For each map sheet that has changes, fill in the Signature Box on one copy of the map:

- Print your name, your position, your telephone number, and the date; and
- Sign your name in the **Signature** area.

BAS SIGNATURE BOX	
THE CORRECTED BOUNDARIES SHOWN ON THE MAP ARE ACCURATE AS OF JANUARY 1, 2018.	
PRINT NAME	
POSITION	
SIGNATURE	
TELEPHONE	DATE

Figure 28. BAS Paper Map Signature Box

Use the postage-paid envelope to return the set of signed maps and the BAS form to the Census Bureau. You may also send an e-mail to geo.bas@census.gov or fill out the Annual Response form located at the following address http://www.census.gov/geo/partnership/bas/bas_ar_form.html.

APPENDICES

APPENDIX B. MTFCC DESCRIPTIONS

The MAF/TIGER Feature Classification Code (MTFCC) is a 5-digit code assigned by the Census Bureau to classify and describe geographic objects or features in Census Bureau MAF/TIGER products.

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 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).
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.

MTFCC	Feature Class	Feature Class Description
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 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.

MTFCC	Feature Class	Feature Class Description
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.
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.

MTFCC	Feature Class	Feature Class Description
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 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. The upper chamber is the senate in a bicameral legislature, and the unicameral case is a 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.

MTFCC	Feature Class	Feature Class Description
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.
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 Census Bureau includes in the MAF/TIGER® System 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].
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.

MTFCC	Feature Class	Feature Class Description
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.
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.

MTFCC	Feature Class	Feature Class Description
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 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.

MTFCC	Feature Class	Feature Class Description
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 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.

MTFCC	Feature Class	Feature Class Description
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, boundary of an areal feature)	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 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 the MAF/TIGER System.
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.
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.

MTFCC	Feature Class	Feature Class Description
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 November 2016.		

APPENDIX C. READING A MAP

C1 Scales

A map is a paper or digital representation of an area. Naturally, the map is always smaller than the area it represents, so nearly all maps are equipped with a scale, which depicts the ratio of distance on the map to the actual distance on land. The scale can be designed any number of ways, but two of the most common scales are ratio scales (Figure C1), which describe a ratio between the map and the real world (e.g., 1: 24,000), and bar scales, which depict that relationship graphically by displaying how much a certain distance on the map represents in the real world (Figure C1). In other words, if a map has a ratio scale of 1: 24,000, it means that one inch on the map represents 24,000 inches on the ground. (This works with any unit of measurement, so long as the unit being used on the map is the same as – or properly converted from – the unit being depicted on the ground.) Often a map will have both types of scale.

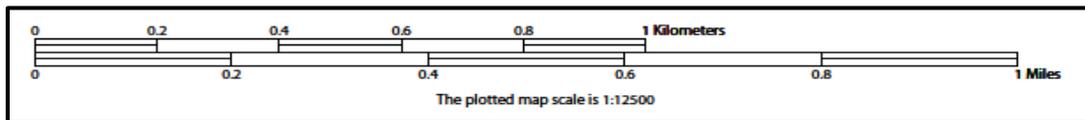


Figure 29. Bar Scale

The map from which this scale was taken has a ratio scale of 1:15,000. The bar scale shows distances in kilometers and miles.

A bar scale will often be a set length (e.g., one inch), and/or represent a set distance (e.g., one mile). You can use the bar scale to determine distance on your map by using a ruler. Simply place the ruler on the map to determine the distance on the map; then place the ruler along the bar scale, which will show how much that distance represents on the ground.

Maps that display a small area, but with a relatively large amount of detail, are considered large-scale maps (see Figure C2). A map that displays a large area, but shows less detail, is called a small-scale map (see Figure C3). This is because the representative fraction of a large-scale map (e.g., 1/7,500 or 1:7,500) is a larger fraction than that of a small-scale map (e.g., 1/250,000 or 1:250,000).

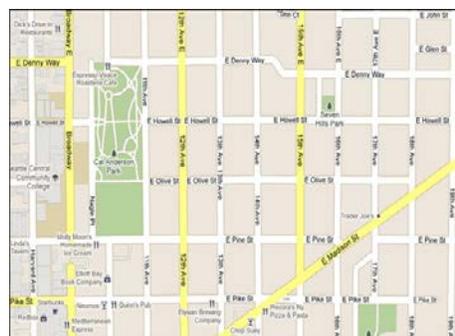


Figure 30. Large Scale Map

A large-scale map shows a greater amount of detail; this example displays streets, parks, churches and restaurants.

C2 Compass Rose

All maps should have some sort of diagram depicting at least one – but sometimes all – of the cardinal directions (north, south, east, and west) that the map reader can use to orient the map. This diagram is sometimes called a compass rose (see Figure C4). A compass rose can have any number of designs, and north can be shown in any direction on the map, but most maps are oriented with north at the top of the map. It is important to check the compass rose when beginning to read a map, in order to determine the direction in which the map is oriented (i.e., which direction is at the top of the map).



Figure 31. Compass Rose

C3 Legend

Because a map is a graphic representation of a real-world area, naturally, it is necessary, and convenient, to symbolize real world features with representative symbols. These symbols can take any form, so long as they are consistent within any individual map. In order to describe what each symbol means, most maps have a legend (see Figure C5). The legend is typically located on the side or bottom of the map – they can be anywhere, so long as they do not obstruct the integral parts of the map. Typically, the legend will have a small example of each symbol (e.g. a line, or a picture of a tent), and next to the symbol, in text, a brief description of what is being depicted (e.g. “road”, or “campground”).

<u>DESCRIPTION</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>SYMBOL</u>
Interstate		Water Body	
U.S. Highway		Swamp or Marsh	
State Highway		Glacier	
Other Road		Airport	
Cul-de-sac		College or University	
Circle		Military	
Geographic Offset or Corridor ⁴			
4WD Trail, Stairway,			

Figure 32. Legend Describing What Each Symbol Means

Sometimes a map needs to depict multiple features concurrently. This is because some lines are the boundaries of multiple geographies at the same time (i.e. a county boundary can also be a city boundary, a voting district boundary, and even a highway or river). Such instances can be depicted in various ways, but Census Bureau maps depict coincident lines by alternating the symbols for each type of line as shown in Figure C6 below. In other words, if a line is both a county boundary (symbolized by a series of squares) and a city boundary (a series of circles),

that boundary will be depicted as a series of alternating squares and circles for the length of the concurrency.

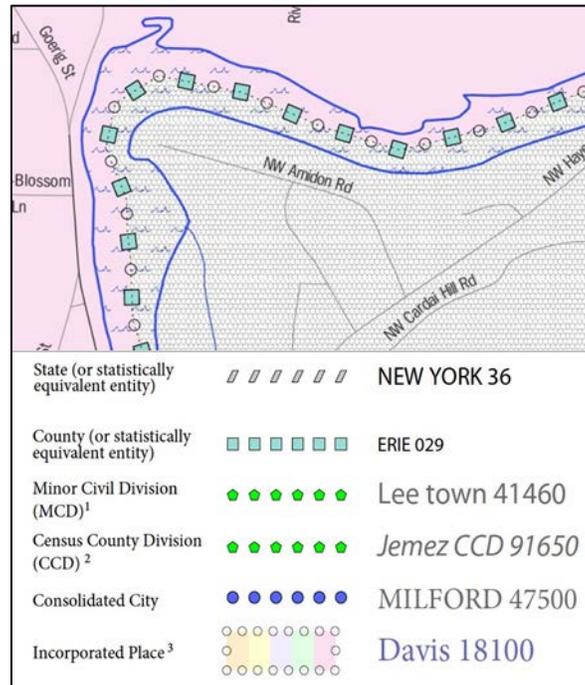


Figure 33. Map Depicting Multiple Features Concurrently

In this case, the city and the county boundaries are coincident, and run through the middle of the river.

In situations where higher-level geographies (e.g. national, state, county, or county subdivisions) coincide, the Census Bureau’s maps display only the symbol of the highest-ranking of these boundaries. In other words, if a particular boundary is shared by both a state and county, only the symbol representing the state boundary will be displayed.

C4 Index Maps

In order to decide which map you need to use for your BAS submission, it is necessary to view the entity as a whole, and choose the correct parent map sheet based on its location within the entity. You can do this by referring to the index map (**Figure 34**), a relatively small-scale map that shows the entire entity, and the location and number of all parent map sheets within that entity. Each parent map sheet has a numerical locator which differentiates it from the other parent map sheets associated with that entity. The numbering begins with the northern and western-most parent map sheets, and continues left-to-right, in much the same pattern as words in a book. By referring to the index map, you can then determine which parent map sheet(s) you need to use for your BAS submission, and then access it based on its number on the index map.

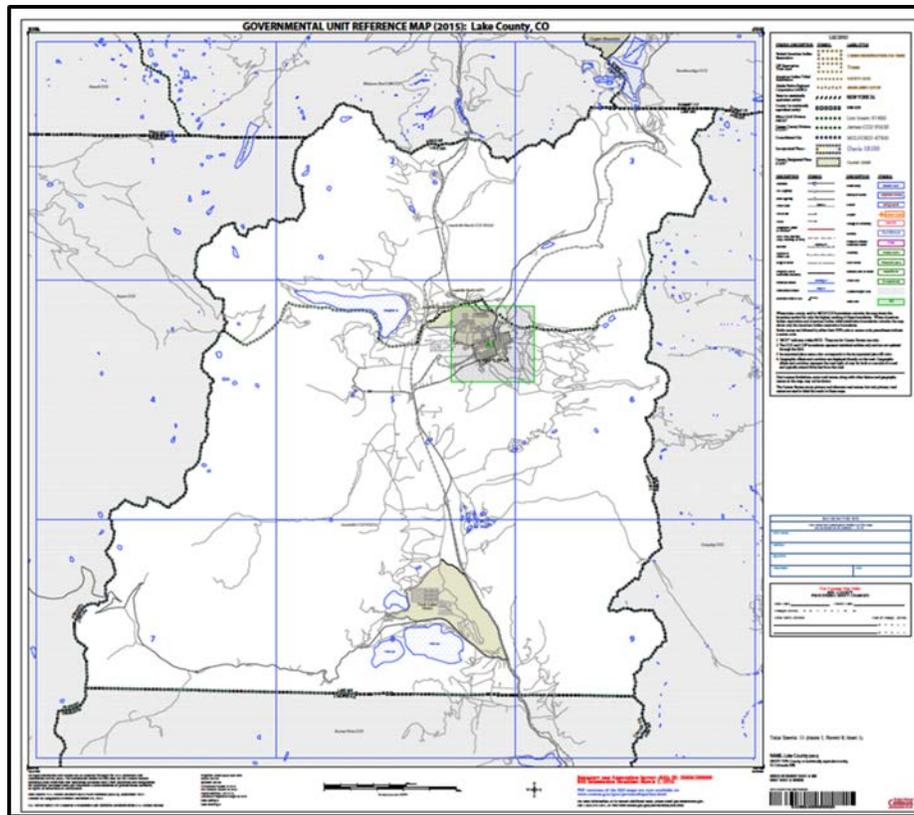


Figure 34. Index Map

The Index Map sheet shows the location of all parent map sheets and inset map sheets within an entity.

The index map is not appropriate for BAS submissions. Its purpose is as a reference or index of parent maps, and it will not be accepted as a BAS submission.

C5 Inset Maps

In some instances, in highly congested areas, even a parent map sheet provides insufficient detail for BAS purposes. In such cases, rather than using a parent map, the area is depicted within an inset map (**Figure 36**). This refers to a map with a very large scale, so that it displays a smaller area than the parent map sheet, but with greater detail. On the index map, an inset map is represented by a green outline, and is assigned a number preceded by a letter (i.e. A1, A2, B1, etc.), as shown in **Figure 35** on the next page. Inset maps are only found in areas with a large number of features, and as such are used less often than parent maps.

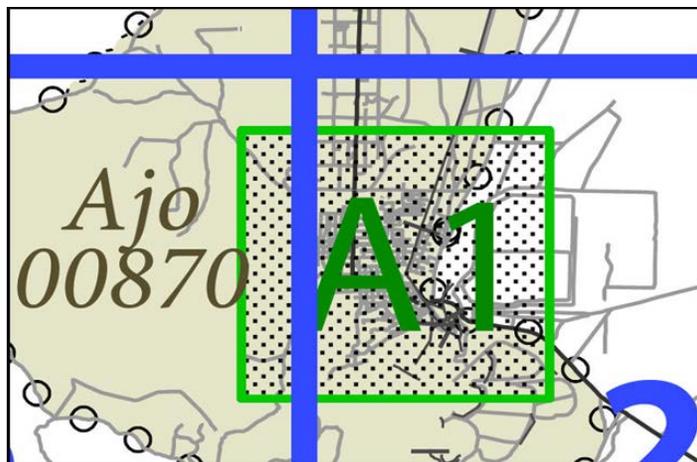


Figure 35. An Inset Map as it is Displayed on the Index Map

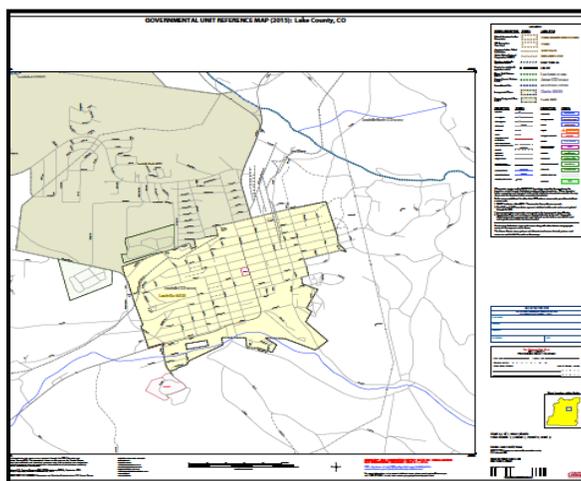


Figure 36. Inset Maps

Inset maps show areas of relative congestion at a large scale, allowing a greater amount of detail.

C6 Parent Maps

Many entities², such as incorporated places and counties, are too large to be shown on a single map; that is, the scale is too small to allow the necessary details for BAS updates. Thus, it is necessary to separate the entity into sections, each of which has its own map, called the parent map sheet³ (Figure 37). Thus, a single entity is often represented with numerous map sheets, with each parent map sheet showing a small section of the entity. Each parent map is assigned

² Entity refers to any local governmental unit, e.g. a county, incorporated place, or minor civil division.

³ Within the scope of BAS, the terms 'map' and 'map sheet' have the same meaning, and they are used interchangeably throughout this document.

a number, beginning with the number one and increasing progressively for each additional parent map sheet (i.e. 1, 2, 3, 4, etc.). In this way, viewing and editing map sheets becomes more manageable, and it becomes possible to depict an area with the level of detail necessary to make changes or challenges. In most instances, the parent map is the one that should be used for BAS submissions.

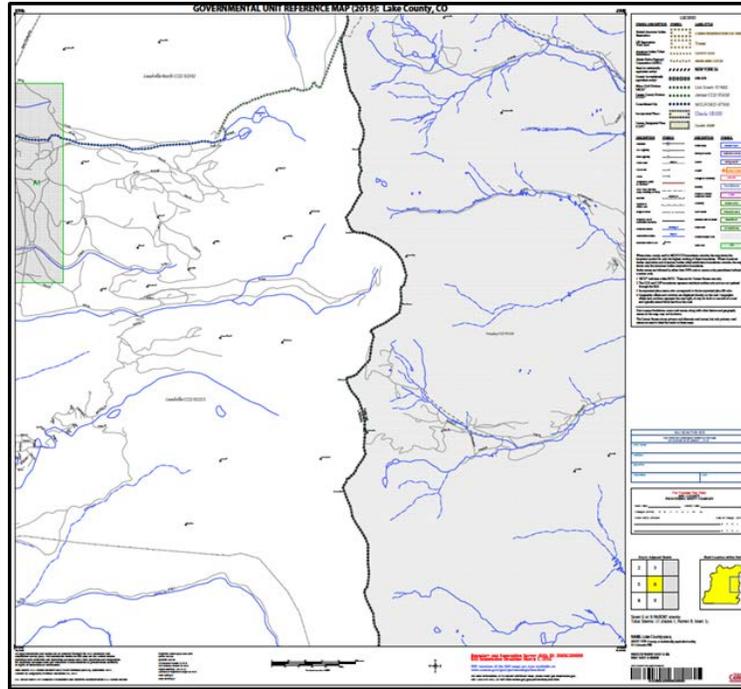


Figure 37. The Parent Map

The parent map sheet shows a section of an entity at a relatively large scale.

In the bottom right-hand corner of the parent map sheet, there is a key to the parent map sheet's location in relation to adjacent map sheets as shown in **Figure 37** above. A larger example of this key is shown in **Figure 39**. This way, if you need to refer to an adjacent map sheet, you can quickly determine which one you will need.

2	3	
5	6	
8	9	

Figure 38. The Key to Adjacent Sheets

The key to adjacent sheets shows where the parent map sheet lies in relation to adjacent sheets.

Next to the key to adjacent sheets, there is a small outline of the entire entity (the inside of which is colored yellow), and a blue outline of the parent map sheet. This key displays the location of the map sheet in relation to the entity as a whole as is shown in **Figure 39** below.

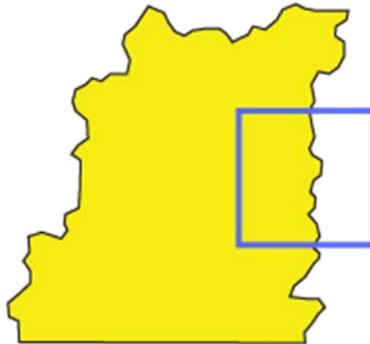


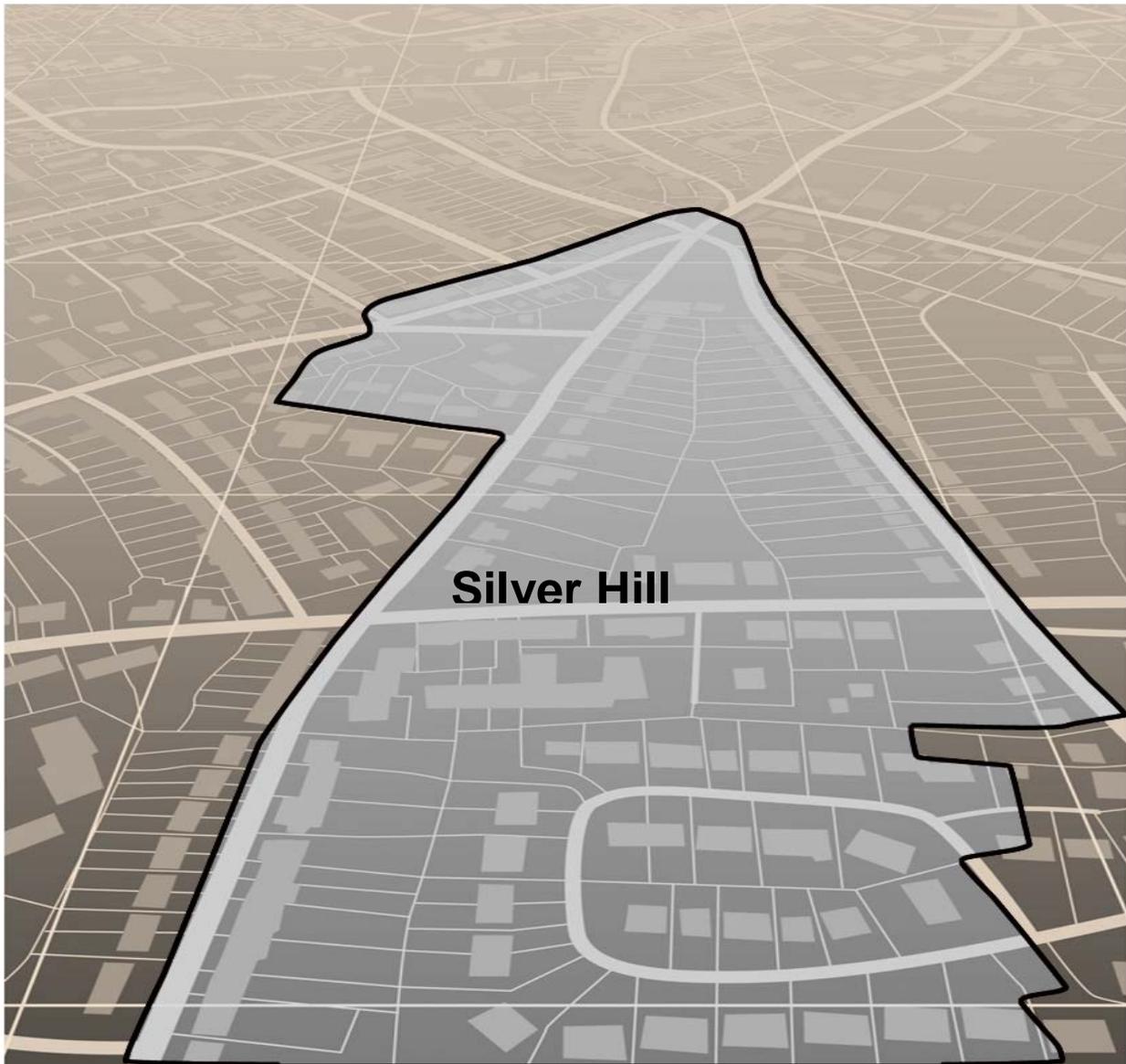
Figure 39. The Sheet Location within Entity key

The sheet location with entity key shows where the parent map sheet is located within the entity to which it belongs.

Boundary and Annexation Survey (BAS) Tribal Respondent Guide: GUPS

Instructions for Using the Geographic Update Partnership Software (GUPS)

Revised as of December 14, 2017



U.S. Department of Commerce
Economic and Statistics Administration
U.S. CENSUS BUREAU
census.gov

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Bureau

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PAPERWORK REDUCTION ACT 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 (PRA) unless that collection of information displays a current valid Office of Management and Budget (OMB) Control Number. This collection is voluntary. The authority for conducting this collection comes from Title 13 United States Code (U.S.C.), Section 6 Paperwork Reduction Act.

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 4H177
Washington, DC 20233

The Census Bureau issued a *Federal Register* Notice to revise its confidentiality pledge language to address the new cybersecurity screening requirements:

Per the Federal Cybersecurity Enhancement Act of 2015, your data are protected from cybersecurity risks through screening of the systems that transmit your data.

INTRODUCTION

A. The Boundary and Annexation Survey

The U.S. Census Bureau (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), federally recognized American Indian Areas (AIAs), including reservations, off-reservation trust lands and tribal subdivisions, Hawaiian Homelands, and Alaska Native Regional Corporations (ANRC). 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 the boundary information collected during the BAS to tabulate data for 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 (FGDC) 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), Hawaiian Homelands, ANRC, and federally recognized 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).

Please visit the BAS program Web site at <<https://www.census.gov/programs-surveys/bas.html>>.

For more information on the BAS, please view the "Introduction to BAS" video series on the Census Bureau's BAS Web site at <<https://www.census.gov/programs-surveys/bas/library/videos/bas-intro.html>>.

B. What's New for the 2018 BAS?

1. The Geographic Partnership Support Desk (GPSD) is now fully functional and available to assist with any questions respondents may have regarding BAS.
2. Redistricting data contacts participating in the Voting District Project (VTDP) may submit boundary updates for reconciliation with BAS contacts.

C. Key Dates for BAS Respondents

January 1, 2018 — All boundary changes must be legally in effect on or before this date to be reported in the 2018 BAS.

March 1, 2018 — BAS submission date deadline for boundary updates to be reflected in the ACS and PEP published data. Boundary submissions received by this date are also reflected in next year's BAS materials.

May 31, 2018 — BAS boundary updates submitted by this date will be reflected in next year's BAS materials.

D. BAS State Agreements

The Census Bureau has established a number of agreements with states for reporting boundary changes. Please visit the BAS State Agreements webpage within the BAS program Web site at <<https://www.census.gov/programs-surveys/bas/information/state-agreements.html>> or call (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.

E. Legal Disputes

If the Census Bureau discovers that an area of land is in dispute between two or more jurisdictions, the Census Bureau will not make any boundary corrections until the parties come to a written agreement, or there is a documented final court decision regarding the dispute. If you have questions concerning this, please contact the Census Bureau Legal Office at **301-763-9844**.

For disputes involving tribal areas, the Census Bureau must defer to the Office of the Solicitor at the Department of the Interior for a legal opinion. Often complicated land issues require an extended period of time for resolution, and in those cases, the Census Bureau will retain the current boundary in the database until a legal opinion is issued by the Solicitor's office.

F. Respondent Guide Organization

This guide has been created for those who choose to participate in the survey using GUPS. Those using their own GIS should consult the *Boundary and Annexation Survey Respondent Guide: Digital* available on the BAS Web site: <https://www.census.gov/programs-surveys/bas/information/response-methods.Digital_BAS.html>. Those using paper maps should consult the *Boundary and Annexation Survey Respondent Guide: Paper*. This guide is equipped with shortcuts to subjects that respondents may want to jump to directly. To move directly to one of these sections, click on the [linked](#) text.

This guide contains two parts:

Part 1: Provides an overview of BAS. It specifies the:

- [BAS Process and Workflow](#);
- [Receiving the GUPS Application and Shapefiles](#);
- [GUPS Help](#);
- [BAS Help](#);
- [Reviewing BAS Data](#) (Information specific to the review and update of each type of geographic entity);
- [Boundary Corrections](#) (Including [Legal Boundary Changes](#) and [Reviewing Legal Boundaries](#));
- [Submitting Acceptable Documentation](#);

- [Reviewing Linear Features](#) ([Reviewing Area Landmarks and Hydrographic Areas](#) and [Reviewing Point Landmarks](#));
- [Validating Updates](#); and
- [Submitting Files Through SWIM](#) and [Submitting Files on DVD](#).

Part 2: Describes GUPS and gives step-by-step instructions (Action/Result in table format) for how to:

- [How to Use GUPS](#) application;
- [Requirements and installation](#);
- [How to Access BAS Shapefiles](#);
- [Download Shapefiles from the BAS Web site to Your Hard Drive](#);
- [Download Shapefiles from the Census Bureau ftp2 Site](#);
- [How to Import User-Provided Data into GUPS](#);
- [How to Use GUPS Review and Validation Tools](#);
- [How to Export ZIP Files to Share/Submit](#); and
- [Submitting Your Files to the Census Bureau Through SWIM](#).

Note: In all the Action/Result tables, the action is usually a command or action you need to perform and the Result(s) of the action will be shown in italics. For example: if you click GUPS icon on your desktop, *the software should begin to run automatically*.

PART 1. BAS OVERVIEW

SECTION 1. PROCESS AND WORKFLOW

Figure 1 below displays the three phases of the work to be completed for the Tribal BAS. The first section in the diagram includes initial steps. The second section indicates the types of geographic data that should be reviewed and updated. The final section lists the final steps to validate and submit changes.

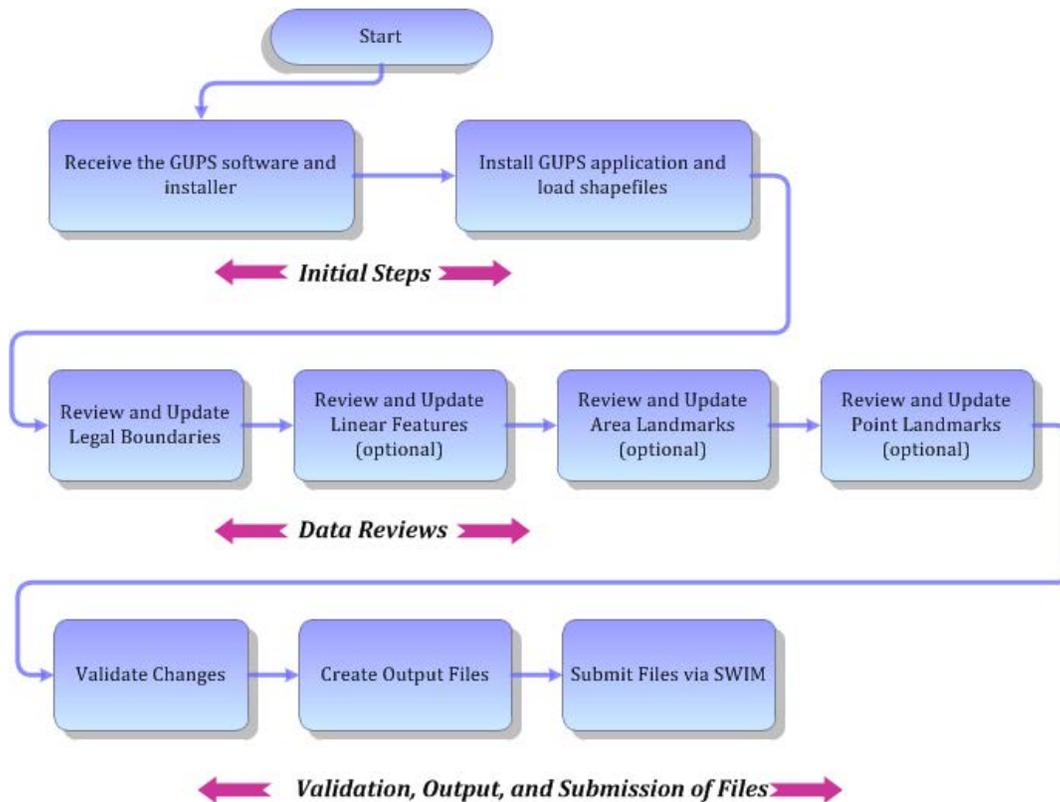


Figure 1. Tribal BAS Workflow

Sections 1, 2, and 3 of this guide are organized around the topical areas in the diagram and provide needed program information and procedures, as well as relevant deadlines.

See **Appendix A: BAS Contact Information and Resources** for a list of contacts and helpful program links.

1.1 Receiving the GUPS Application and Shapefiles

GUPS is available for installation two ways. GUPS is available for download directly from the BAS Web site <<https://www.census.gov/programs-surveys/bas/technical-documentation/gups-instructions.html>>. You can also request to receive GUPS on DVD, which will be shipped to you in a package containing the GUPS DVD, respondent guide, and a read me text file.

Once you have installed GUPS on your computer, the BAS shapefiles can be imported from the BAS Web site directly to the GUPS application. Instructions on how to load data into GUPS

appears in **Section 5: Using GUPS (Basics and Map Management), Table 7: Download Shapefiles from the BAS Web site to a Hard Drive**. If you do not have Internet access, you may request shapefiles on DVD. To request a data DVD, call 1-800-796-3748 or e-mail geo.bas@census.gov.

1.2 Getting Help

1.2.1 GUPS Help

Part 2: How to Use GUPS of this guide contains directions for how to use the tools available within the GUPS application, as well as step-by-step instructions for how to carry out specific shapefile updates (e.g., annexations and deannexations, adding and deleting features and landmarks, etc.).

Embedded within the GUPS application (under the **Help** tab menu) are other resources, including a short training video on how to submit a ZIP file through SWIM. Additional videos will be provided on the BAS Web site as they become available. In addition, a Section 508-compliant version of this guide is available there. The **Help** menu provides a link to both.

For supplemental information on functions within GUPS that are specific to QGIS, a QGIS user's manual can be found at <http://docs.qgis.org/2.8/en/docs/user_manual/index.html>. The QGIS manual offers particularly helpful information on several activities that are touched on in this guide, but not described in detail, including working with user-provided data layers, creating search expressions for attribute tables, and creating customized coordinate systems. For questions concerning technical problems with the GUPS application, user support is available via telephone (1-800-972-5651) and e-mail geo.bas@census.gov.

1.3 BAS Help

BAS participants may find the *Boundary and Annexation Survey Respondent Guide: Digital* helpful. Although designed for experienced GIS users, it provides important information on geocoding, topological relationships, and spatial accuracy relevant to Census shapefiles. This guide can be downloaded at: <<https://www.census.gov/programs-surveys/bas.html>>.

The Census Bureau has also created a number of other BAS-related videos, including a helpful one on the subject of topology and why topology is important to the BAS. To view these videos, go to: <<https://www.census.gov/programs-surveys/bas/library/videos.html>>.

SECTION 2. REVIEWING BAS DATA

The Census Bureau requests that you review and update all legal entities and boundaries within your reservation/trust lands/tribal subdivisions, including the additions and deletions of land area and boundary corrections. You may also update linear features and landmarks, including area landmarks, hydrographic areas, and point landmarks, although review of these is optional.

To help conduct your review, the GUPS application will allow you to import and overlay your own geospatial data layers with the Census Bureau shapefiles. You can import image files from web mapping services, geodatabases, and also other file types. Steps to import the most common types of user-provided data are provided in [Section 5.7: How to Import User-Provided Data into GUPS](#).

2.1 Boundary Corrections

A boundary correction is the adjustment of a boundary to correct an error in how the Census Bureau depicts an existing boundary. Boundary corrections should follow the general shape of the existing boundary. Legal documentation is not required when submitting a boundary correction to the Census Bureau.

2.2 Legal Boundary Changes

Legal boundary changes are the result of legal actions (e.g., annexations), and documenting such changes is the primary goal of the BAS. AIA Legal documentation (e.g., statute, federal court decision, trust deed) must accompany all AIA legal boundary changes, while legal boundary change submissions from incorporated places, MCDs, and counties must provide an authorization number, such as a resolution or ordinance number.

2.3 Reviewing Legal Boundaries

The following can be updated through Tribal BAS:

- **Federal American Indian Reservations** are areas that have been set aside by the United States for the use of tribes, the exterior boundaries of which are more particularly defined in the final tribal treaties, agreements, executive orders, federal statutes, secretarial orders, or judicial determinations.

Trust lands may be located on or off a reservation; however, the Census Bureau tabulates data only for off-reservation trust lands. Please do not submit on-reservation trust land because the Census Bureau can only show the exterior reservation boundary.

- **Federal Off-Reservation Trust Lands** are areas for which the United States holds title in trust for the benefit of a tribe (tribal trust land) or for an individual American Indian (individual trust land).

The Census Bureau does not identify fee land (or land in fee simple status) or restricted fee lands as specific geographic areas.

- **Tribal Subdivisions** are legal administrative subdivisions of federally recognized American Indian reservations and off-reservation trust lands and are described as additions, administrative areas, areas, chapters, county districts, communities, districts, or segments. 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 and off-reservation trust lands.

- **Hawaiian Homelands** are areas held in trust for Native Hawaiians by the state of Hawaii, pursuant to the Hawaiian Homes Commission Act of 1920, as amended.
- **Alaska Native Regional Corporation (ANRCs)** were created pursuant to the Alaska Native Claims Settlement Act (ANCSA) enacted in 1971 as a "Regional Corporation" and organized under the laws of the state of Alaska to conduct both the for-profit and non-profit affairs of Alaska Natives within a defined region of Alaska.

Table 1 below shows the specific changes allowed for each legal entity type.

Table 1: Available Change Types by Entity Type

Entity Type	Available Change Types
Alaska Native Regional Corporation (ANRC)	<ul style="list-style-type: none"> • Boundary Correction (add) • Boundary Correction (remove)
Hawaiian Home Land (HHL)	<ul style="list-style-type: none"> • New Entity • Deleted Entity • Addition • Deletion • Boundary Correction (add) • Boundary Correction (remove) • Geographic Corridor • Geographic Offset
Reservation / Trust Land	<ul style="list-style-type: none"> • New Entity (No Land previously; Have Reservation land and adding Trust Lands for first time, or Have Trust land and are adding reservation for first time) • Deleted Entity (changing from reservation to trust land or trust land to reservation) • Addition (adding to type of geography that already exists) • Deletion (Deleting a portion of reservation or trust land) • Boundary Correction (add) • Boundary Correction (remove) • Geographic Offset
Tribal Subdivision	<ul style="list-style-type: none"> • Adding tribal subdivisions for first time • Deleting tribal subdivisions all together • Addition • Deletion • Boundary Correction (add) • Boundary Correction (remove)

2.4 Submitting Acceptable Documentation

The Census Bureau is responsible for depicting reservation and off-reservation trust land boundaries but because the Census Bureau is not the authority on the boundaries, we require documentation to update reservation and off-reservation trust land boundaries.

The following changes require documentation:

- New off-reservation trust land;
- New reservation land;
- Changes from off-reservation trust land to reservation land and changes from reservation land to off-reservation trust land;
- Large changes to existing off-reservation trust land;
- Large changes to existing reservation land; and
- Boundary corrections to off-reservation trust land or reservation land that do not follow the general shape of the boundary.

For off-reservation trust land, the most common documentation is a trust deed or a letter from the BIA. Documents should state that the land is “in trust” for your tribe.

For reservation land, documentation examples include (but are not limited to) federal register notice, Act of Congress, Executive Order, or a new legal opinion issued by the BIA. When submitting large boundary corrections to an existing reservation, please submit your reservation document.

If you cannot locate your documentation, you can contact your regional BIA office to obtain documentation. The Census Bureau will treat legal opinions issued in writing from the BIA as documentation since the BIA is the authority on reservation and off-reservation trust land boundaries. If the Census Bureau cannot interpret a document, such as a treaty, the Census Bureau will contact the BIA for assistance.

If you have questions about documentation, please call the Census Bureau at 1-800-972-5651 or e-mail geo.bas@census.gov. If you need to contact the BIA, please see <http://www.bia.gov/WhoWeAre/RegionalOffices/index.htm> for contact information for your regional office.

2.5 Legal Disputes

If the Census Bureau discovers that an area of tribal 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, please contact the Census Bureau Legal Office at 301-763-9844.

For disputes involving tribal areas, the Census Bureau must defer to the Office of the Solicitor at the Department of the Interior for a legal opinion. Often complicated land issues require an extended period of time for resolution, and in those cases, the Census Bureau will retain the current boundary in the database until a legal opinion is issued by the Solicitor’s office.

2.6 Reviewing Linear Features

It is important that Census Bureau data reflects the most recent linear features to ensure that new or previously missed housing units located along these features are identified and located. When reviewing linear features (edges layer) on the Census Bureau shapefiles, first determine whether any features are missing or need to be deleted. Pay particular attention to areas that have experienced recent population growth or construction activities, as these are the most

likely to possess new or altered linear features (e.g., new subdivisions, traffic circles converted to straight ways, or privately maintained roads that serve as public streets, but exclude private driveways).

You may also add attribute updates (e.g., name, class code, and address ranges) for selected features. For a complete list of MAF/TIGER Feature Class Codes (MTFCCs), review

Appendix C: MTFCC Descriptions.

To aid in the review of linear features, GUPS allows you to import local street centerline files, hydrography layers, imagery, and other user-provided geospatial data for reference and comparison against the Census Bureau data.

In your review, please note:

- **S1100 and S1200** – If you add road features with an MTFCC of S1100 (Primary Road) or S1200 (Secondary Road), you must supply a feature name. As is the case for all road features, the feature name should be a proper name or route number.
- **Spatial Inaccuracies** – The Census Bureau will not process the wholesale spatial realignment of features to enhance spatial accuracy. If a feature is in the incorrect location, delete the feature and add it in the correct location. Take this action only if the feature is exceedingly spatially inaccurate and/or the current location (with respect to other features and boundaries) affects the tabulation of housing units to the correct geography, such as legal entities, census tracts, and census blocks.
- **Address Range Changes** – The Census Bureau accepts address range data as part of the linear feature update layer. As with other linear feature updates, you must supply the required attributes and corresponding change type for the update. In addition, because existing address ranges are not shown in our outgoing shapefiles, we recommend that participants only add address ranges to new features.

2.7 Reviewing Area Landmarks and Hydrographic Areas

The Census Bureau accepts updates to area landmarks and hydrographic 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.

Allowable updates for area landmarks and hydrographic areas are:

- Add new area landmark or hydrographic area;
- Remove area landmark or hydrographic area;
- Change or add landmark name; and
- Boundary corrections (add and remove area).

If you **add** a new area landmark or hydrographic area, please add only:

- Water bodies;
- Glaciers;
- Airports;
- Cemeteries;

- Golf courses; and
- Parks.

The Census Bureau cannot add other types of area landmark / hydrographic areas to the MAF/TIGER System at this time (even though others may already exist in the database). **Table 2** shows the acceptable MTFCCs for new area landmarks or hydrographic areas.

Table 2: Acceptable MTFCCs for New Area Landmarks / Hydrographic Areas

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

Note: If adding an MTFCC K2457 (Airport – Area Representation) area landmark, please limit the updates to major airports (major regional and international airports). The feature should show the full extent of the airport facility, that is, do not limit the addition to simply the landing strips.

Area Landmark / Hydro Area Changes May Be Delayed

The Census Bureau prioritizes boundary changes to legal areas to meet ACS, PEP, and BAS deadlines. Therefore, there may be delays in incorporating area landmark and hydrographic area changes to the MAF/TIGER System. 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.

2.8 Reviewing Point Landmarks

Because many of the point landmarks contained in the Census Bureau's MAF/TIGER System originate from the U.S. Geological Survey's Geographic Names Information System (GNIS), which is the official gazetteer of point landmark names for the Federal Government, point landmark updates are limited in the BAS. The Census Bureau cannot modify any point landmark imported from the GNIS database. Thus, be aware that name changes or deletions submitted for the following types of landmarks may be left unchanged:

- K2451 (Airport or Airfield);
- K2582 (Cemetery);
- C3022 (Summit or Pillar); and
- C3081 (Locale or Populated Place).

Also, due to Title 13 privacy concerns, any landmark with an MTFCC shown in **Table 3** below cannot be added to the MAF/TIGER System as a point landmark. The MAF/TIGER System no longer maintains any point landmarks with these MTFCCs. Landmarks with these codes could identify a residence or private business. Thus, it is also important *not* to add any of the point landmark types shown in the table using alternative MTFCCs.

Table 3: Restricted Point Landmark 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

MTFCC	Description
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
K2424	Marina
K2500	Other Workplace
K2564	Amusement Center

Point Landmark Changes May Be Delayed

The Census Bureau prioritizes boundary changes to legal areas to meet ACS, PEP, and BAS deadlines. Therefore, there may be delays in incorporating point landmark changes to the MAF/TIGER System. 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.

SECTION 3. QUALITY CONTROL AND FILE SUBMISSION

3.1 Validating Updates

Once you have completed your BAS updates, you must complete a review of your change polygons to ensure that:

1. The polygons have no unintended holes (e.g., you annexed several faces but missed a traffic circle or small pond).
2. All boundary corrections meet a minimum size threshold (very small corrections cannot be processed).

Validate Often

Validation tools in GUPS can be accessed at any time while you are working in the application. We suggest you utilize them as you work to identify errors early and avoid extensive rework. Steps to use the Geographic Review tool and the Review Change Polygons tool are included in **Section 6.5: How to Use GUPS Review and Validation Tools**.

3.2 Submitting Files Through SWIM

Prompt submission of updates is appreciated. It benefits the Census Bureau—allowing us to review the files early, provide feedback, and avoid backups in file processing—and you—guaranteeing your updates are recorded accurately and are reflected in the latest releases of Census Bureau data products.

For those with Internet access, all BAS submissions must be made via the Secure Web Incoming Module (SWIM). Due to security reasons, we cannot accept files sent via e-mail or through our alternate ftp sites.

If you indicated on your “*Annual Response Form*” that you wished to receive the GUPS application, you will automatically receive the SWIM URL and a registration token via e-mail. The e-mail should arrive 5 days after the Annual Response is completed online (or 5 business days after the Census Bureau receives the paper form).

The registration token allows you to establish a personal SWIM account. If you do not receive a SWIM token after the amount of time specified, e-mail geo.bas@census.gov or call 1-800-972-5651.

Once registered, you will no longer need the token to log into the system.

Current SWIM Users

If you are a participant in another Census Bureau partnership program, or participated in a previous BAS year, and already have a SWIM account, you may use your current account to submit files for the BAS. You do not need to set up a new account.

For step-by-step instructions to submit files through the SWIM, see **Table 45**. For those without Internet access, see **Section 3.3** below.

3.3 Submitting Files on DVD

If you do not have Internet access, you may copy your ZIP file(s) to DVD for submission. The DVD should be mailed to:

U.S. Census Bureau
National Processing Center
ATTN: BAS Returns, Bldg 63E
1201 East 10th Street
Jeffersonville, IN 47132

PART 2. HOW TO USE GUPS

SECTION 4. REQUIREMENTS AND INSTALLATION

This section includes information needed to use GUPS. It offers a description of the GUPS application and gives specific instructions (in the form of step-action tables) for how to use GUPS to make BAS updates. Reminder: this guide is equipped with shortcuts to subjects that respondents may want to jump to directly. To move directly to one of these sections, click on the [linked](#) text.

Section 4: Requirements and installation

- [Getting Started](#) - Lists the hardware and software requirements for GUPS and SWIM; and
- [How to Install GUPS](#) - Provides instructions for installing the application.

Section 5: Using GUPS (Basics and Map Management)

- [How to Access BAS Shapefiles](#) - Provides instructions to open GUPS, start a project, and load shapefiles;
- [How to Start a New Project Using GUPS to Import Data from the Census Bureau's BAS Web site \(Recommended Method\)](#);
- [Download Shapefiles from the BAS Web site to Your Hard Drive](#);
- [Download Shapefiles from the Census Bureau ftp2 Site](#);
- [Use GUPS Interface](#) - Including the Menu, Toolbars, Table of Contents or Map Legend, and the Map View area;
- [Menu & Toolbars](#) - Offers instructions for using the tools available through the menu and toolbars;
- [How to Import User-Provided Data into GUPS](#);
- [How to Upload User-Provided Data Layers](#); and
- [How to Import a Shared ZIP Shapefile](#).

Section 6: Making BAS Updates in the GUPS

- [How to Update Legal Boundaries](#) - Gives instructions on [Adding Land Area as Reservation or Trust Lands for the First Time](#);
- [Adding \(or Deleting\) Land Area to an Existing Reservation or Existing Off-Reservation Trust Land](#), and
- [Make a Boundary Correction \(Add Area/Remove Area\)](#);
- [How to Update Linear Features](#);
- [How to Update Area Landmarks and Hydrographic Areas](#);
- [How to Update Point Landmarks](#);
- [How to Use GUPS Review and Validation Tools](#);

- Provides instructions on [How to Export a Printable Map](#); and
- [How to Export ZIP Files to Share/Submit](#).

Section 7: Submitting Your Files to the Census Bureau Through SWIM

- Provides instructions to submit files to the Census Bureau through SWIM.

4.1 Getting Started

Download GUPS from the BAS Web site at: <<https://www.census.gov/programs-surveys/bas/technical-documentation/gups-instructions.html>>. If you requested and received the GUPS package, it should include a DVD containing GUPS, respondent guides, and a readme text file.

Before beginning the installation, check your computer to verify that it has the capabilities need to run GUPS, (using [Table 4](#) below)

GUPS is based on QGIS (formerly known as Quantum GIS), a free and open-source desktop geographic information system application. You can learn more about QGIS at <<http://www.qgis.org/en/site/>>. The GUPS application was developed for use in a desktop PC or a network environment.

[Table 4](#) lists the hardware and software requirements to install and run GUPS. Also included are the software requirements to: (1) play training videos available within the application and (2) submit files through the SWIM Web site.

Table 4: GUPS Hardware and Software Requirements

Hardware	Operating System	Browser
<p>Disk Space Needed to Run GUPS: 2.0 GB</p> <p>Disk Space Needed to Store Shapefiles: Shapefile sizes vary. To view the size of your shapefiles, select a file/folder, right-click, and choose Properties in the drop-down menu. <i>The Files Properties box opens and displays the file/folder sizes.</i> Select multiple files/ folders in the list to view their properties via the same method.</p> <p>RAM:</p>	<p>Windows: To run GUPS, users need one of the following Windows operating systems:</p> <ul style="list-style-type: none"> • Windows XP • Windows Vista • Windows 7 • Windows 8 • Windows 10 <p>Apple Mac OS X: Mac OS X users must secure a license for Microsoft Windows and use a Windows bridge. The suggested bridge software is Boot Camp, which comes pre-installed on all Mac computers. See instructions for using Boot Camp at: <https://www.apple.com/support/bootcamp/getstarted/></p> <p>Important Note: Since Boot Camp requires you to restart your computer to set up the</p>	<p>Minimum Browser Versions to Play Training Videos:</p> <ul style="list-style-type: none"> • Internet Explorer 9 • Google Chrome 3 • Mozilla Firefox 3.5 • Apple Safari 4 <p>Minimum Browser Versions to Use SWIM:</p> <ul style="list-style-type: none"> • Internet Explorer 8 • Google Chrome 3 • Mozilla Firefox 3.5 • Apple Safari 4.1.3

Hardware	Operating System	Browser
<ul style="list-style-type: none"> 4 GB recommended minimum 	bridge, be sure to print the instructions provided at the URL above before you begin.	

Depending on the Windows OS version, GUPS dialog boxes may have a different appearance than the screenshots contained in the user guide, although the content is the same.

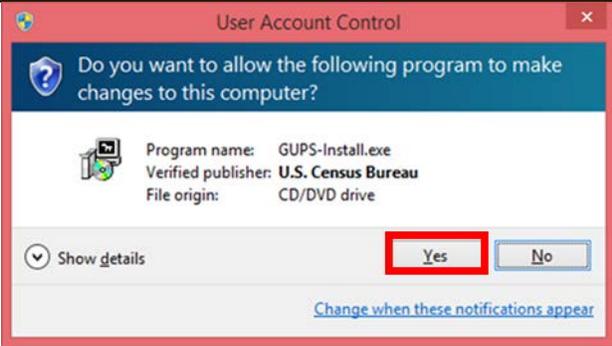
4.2 How to Install GUPS

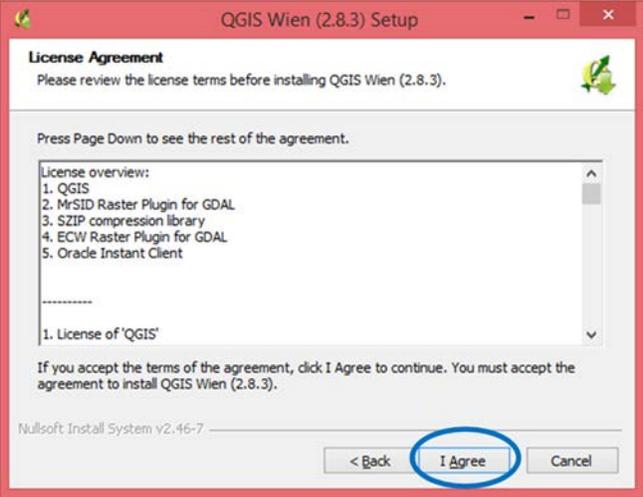
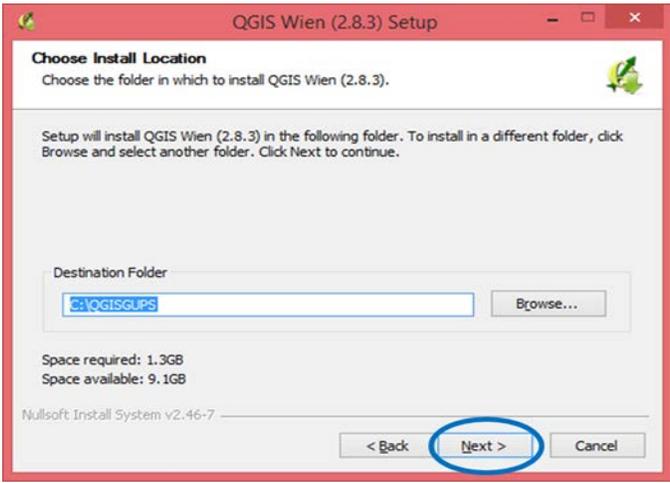
To install the GUPS application you must have Administrator privileges for your computer. If you already have GUPS downloaded, please make sure you are using the most current version. Compare the version on your computer with the one provided on the Census Bureau's installation DVD to acquire the latest version. To complete the installation, follow the steps in [Table 5: Install the GUPS Application](#).

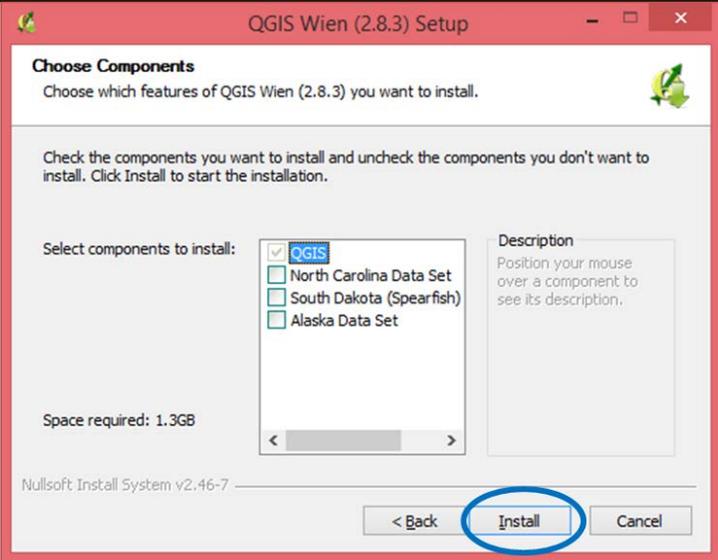
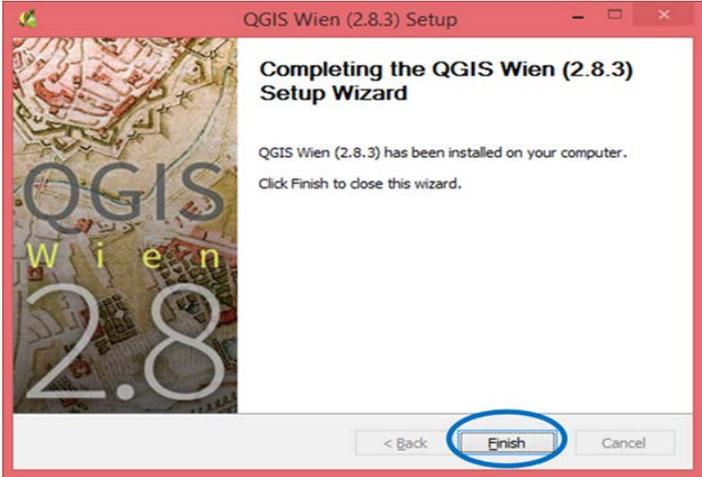
Note: If you already have a version of GUPS installed, please check to make sure you are running the latest version. Go to the **GUPS** tab and click the **About GUPS** option in the drop-down menu to find the GUPS version number. If you are not running the latest version, download and follow the setup instructions which will automatically uninstall the old version before it installs the latest GUPS version.

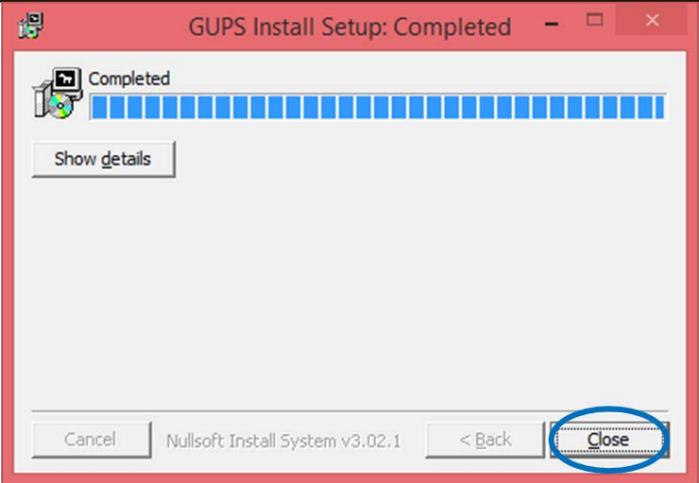
Table 5: Install the GUPS Application

Step	Action and Result
Step 1	<p>Click the direct download link <https://www2.census.gov/geo/pvs/gups/> or place the installation DVD into your computer's DVD drive. <i>For some users, a Windows protected your PC pop-up box may appear.</i></p>  <p>To continue, click 'More info', then select 'Run anyway?'.</p>
Step 2	<p>Other users may receive a user account control pop-up that asks, "Do you want to run this file?", "Do you want to allow the following program from an unknown publisher to make changes to this computer?", or a similar query. See an example below.</p>

Step	Action and Result
	 <p data-bbox="386 621 1398 678">If you receive such a pop-up, click 'Run', 'Yes', 'Allow', or an option that allows you to proceed. <i>The software should begin to run automatically.</i></p>
<p data-bbox="240 716 321 741">Step 3</p>	<p data-bbox="386 716 1373 772">If the software does not run automatically, open Windows Explorer, navigate to your DVD drive, and double-click on the file named Setup-7.0.0-x.bat.</p> <p data-bbox="386 793 1336 850">Note: The name of this file may vary slightly, but it will be the only setup .bat file available.</p> <p data-bbox="386 871 1317 928">If the software still does not run properly, contact your System Administrator for assistance</p>
<p data-bbox="240 961 321 987">Step 4</p>	<p data-bbox="386 961 1382 987"><i>When the installer opens, the Welcome to the QGIS Setup Wizard screen appears.</i></p>  <p data-bbox="386 1461 1409 1518">Before proceeding, close all other programs or applications you have open. Once other programs and applications are closed, click the Next button.</p>

Step	Action and Result
<p>Step 5</p>	<p>The License Agreement screen appears.</p>  <p>Read the License Agreement and click the I Agree button to continue.</p>
<p>Step 6</p>	<p>The Choose Install Location screen opens. We recommend you install the application at the default location (i.e., C:\Program files\QGISGUPS).</p>  <p>To begin the installation, click Next to continue.</p>
<p>Step 7</p>	<p>The Choose Components screen opens.</p>

Step	Action and Result
	 <p>'QGIS' in the Select components to install field is grayed out since it is the default. You do not need to select it, simply click Install to continue.</p>
	<p>If you want to review a previous screen or reread the license agreement, click the Back button (each screen contains this button). <i>This returns you to the previous screen.</i></p>
<p>Step 8</p>	<p>The software should take between 5 and 10 minutes to install. <i>When it is finished, the Completing the QGIS Setup Wizard screen opens.</i></p>  <p>Click the Finish button.</p>
<p>Step 9</p>	<p>After you click finish, the GUPS Install Setup: Completed screen opens showing the status of the installation of GUPS on your computer. When completed, you click the close button on the following screen.</p>

Step	Action and Result
	
<p>Step 10</p>	<p>To complete the installation, click the Close button at the bottom of the GUPS Install Setup: Completed Setup Wizard screen. <i>Once the application installs, a QGIS icon appears on your desktop.</i></p> 

SECTION 5. USING GUPS (BASICS AND MAP MANAGEMENT)

After successfully installing GUPS, you are ready to start your BAS updates. There are three ways to retrieve shapefiles when starting a new project:

- From the Census Web site (loads directly into GUPS);
- From DVD (if one was requested); and
- From My Computer (if you downloaded them to your harddrive)

Table 6 shows the steps to open GUPS and start a new project using the Census Web site. **Table 7** shows the same steps to open GUPS, but starts a new project using the Census provided DVD or My Computer (downloaded Census shapefiles saved to your hard drive).

5.1 How to Access BAS Shapefiles

BAS shapefiles from the BAS Web site can be pulled directly into the application when working in GUPS. Users can load the shapefiles as needed or load multiple county files at once. This is the preferred method for loading the Census Bureau's BAS Shapefiles into GUPS as it ensures that required files are placed in the correct location for the application to access.

Another option for loading files is to download the shapefiles to your hard drive from the BAS Web site (or from the Census Bureau ftp2 site), then import them into GUPS. BAS shapefiles are also available for download from the BAS Web site here:

<<https://www.census.gov/geographies/mapping-files/2018/geo/bas/2018-bas-shapefiles.html>>.

Instructions for how to download Census Bureau shapefiles to your hard drive appear in **Table 6** and **Table 7**. Downloading files to your hard drive is not the preferred method when working in GUPS, and should be used only when necessary (e.g., you need additional data layers that GUPS does not automatically load and want to pull them in as user-provided data).

If you have requested to receive the shapefiles on DVD, you can also load the files directly into GUPS from the DVD. Instructions for how to load shapefiles are contained in **Table 6: Start a New Project Using Shapefiles from the BAS Web site**.

Whether the files are pulled from the BAS Web site or from the DVD, the GUPS application unzips them and places them into a pre-established folder created on your computer's home directory during the installation process (C:\GUPSGIS\gupsdata\BAS2018\shape). It then displays them in the application. GUPS then manages the files for you. You do not need to take any further action.

CAUTION!

Regardless of the source of the shapefiles, it is important that you **DO NOT CHANGE** any shapefile or folder name. The files and folders must have the *exact* names given for the GUPS application to recognize and load them.

5.2 How to Start a New Project Using GUPS to Import Data from the Census Bureau’s BAS Web site (Recommended Method)

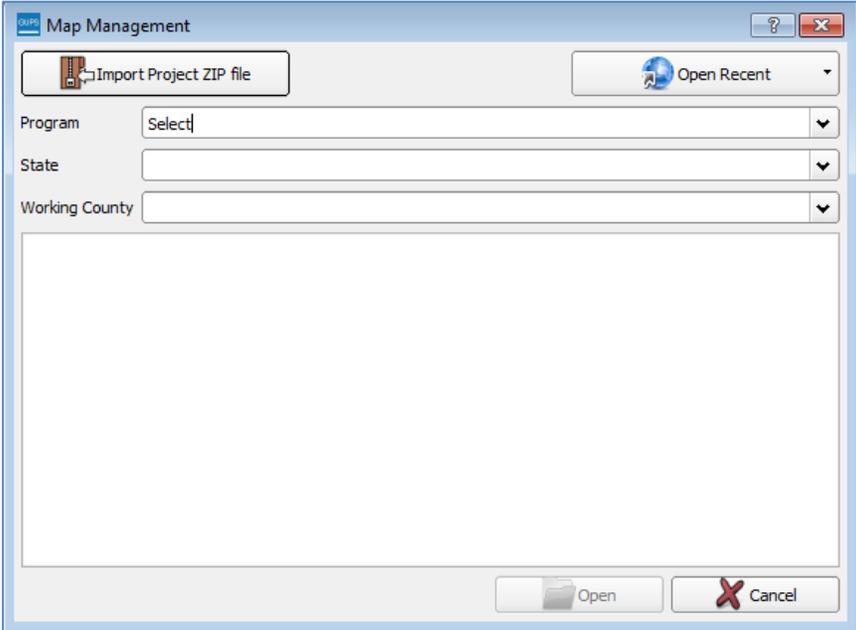
To open the GUPS application and begin your BAS updates, follow the steps in [Table 6](#) below. Before beginning, note that:

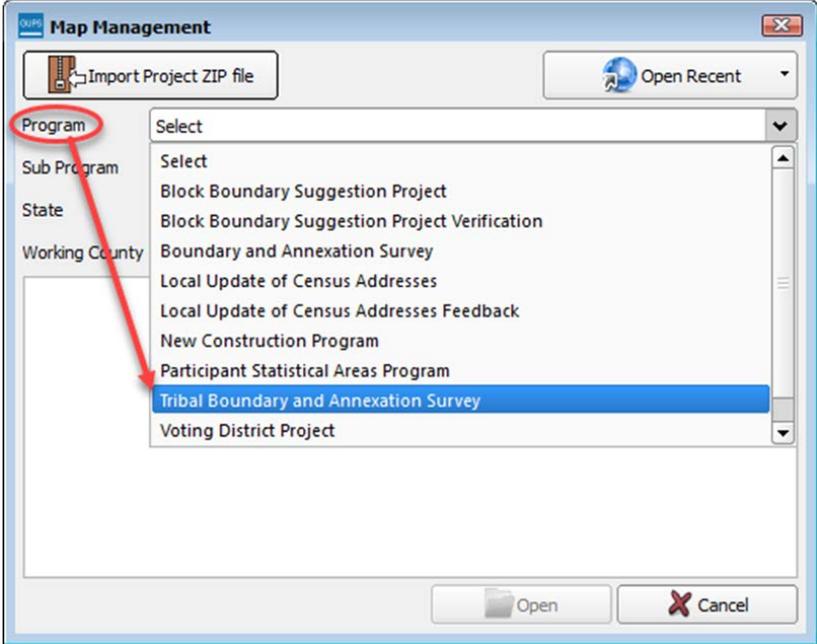
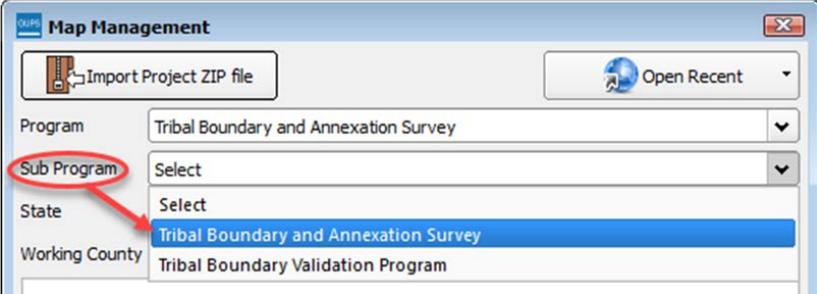
1. If you wish to practice using GUPS without committing the changes you make, simply exit the system without saving. Before the system closes, it will give you the option to discard the changes.
2. If you feel comfortable with the system, but you do not want to make all your changes in one session, simply save your changes, then close the system. When you open GUPS later, it will allow you to reopen the project and continue working.

Note: In all the Action/Result tables, the action is usually a command or action you need to perform and the Result(s) of the action will be shown in italics. For example: if you click the QGIS icon on your desktop, *the software should begin to run automatically.*

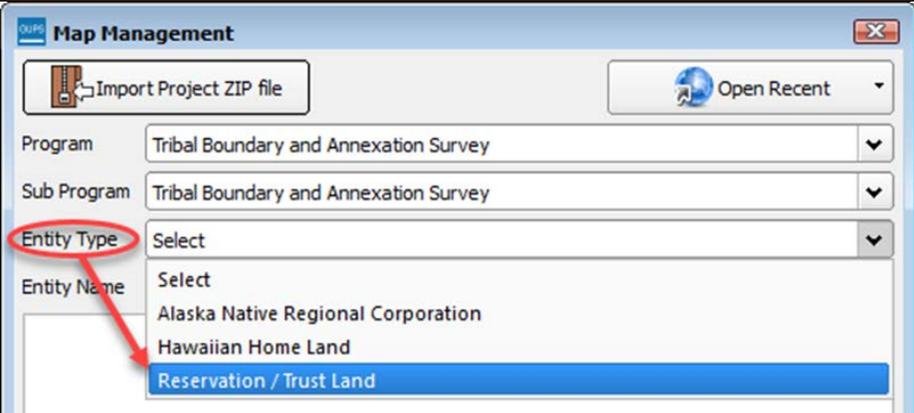
Table 6: Start a New Project Using Shapefiles from the BAS Web site

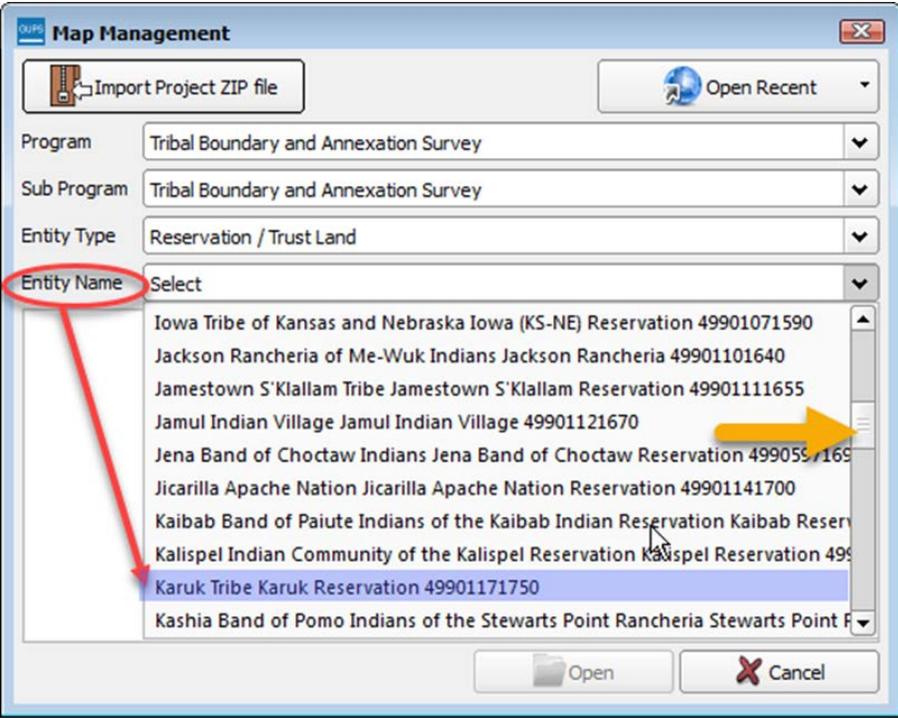
Step	Action and <i>Result</i>
<p>Step 1</p>	<p>Double-click the QGIS icon on your desktop.</p> <div data-bbox="831 961 954 1096" style="text-align: center;">  </div> <p><i>The QGIS splash screen appears. (Note: QGIS is the open-source platform on which GUPS is built.)</i></p> <div data-bbox="418 1192 1367 1642" style="text-align: center;">  </div>
<p>Step 2</p>	<p>Wait until the application loads (If you have an older computer, this may require a few minutes). <i>When the GUPS application has loaded, the GUPS main page opens and the QGIS Tips! box appears.</i></p>

Step	Action and Result
	 <p>Note: Since GUPS was built on the QGIS open-source platform, you may see references to QGIS in several locations within the GUPS application.</p>
Step 3	<p>If you wish to view QGIS system tips, click the Next button to read the first tip. Thereafter use the Previous and Next buttons to navigate within tips. If you do not wish to see tips again, click the checkbox in the bottom left-hand corner that reads ‘I’ve had enough tips, don’t show this on start up any more!’</p>
Step 4	<p>To begin a GUPS project, close the QGIS Tips! Box by clicking the OK button. <i>The box closes and the Map Management dialog box opens, as shown below.</i></p> 

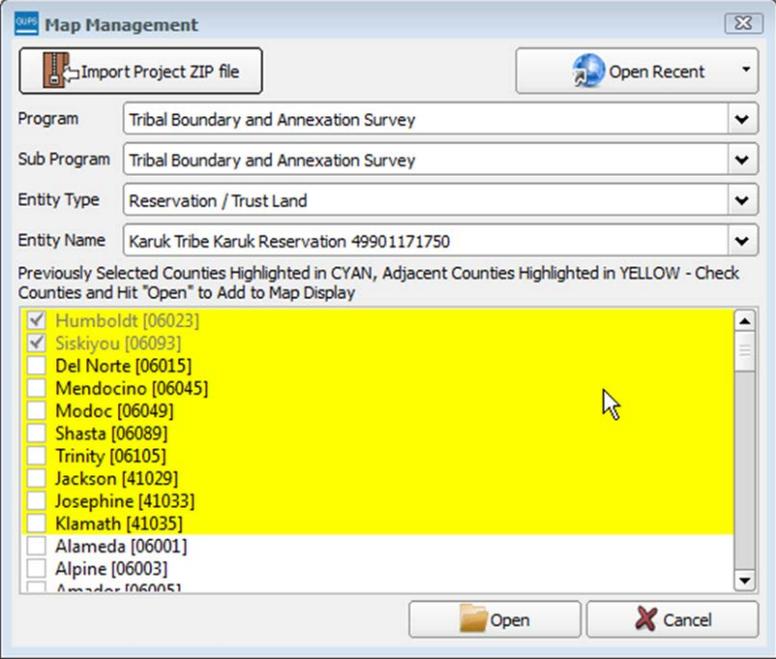
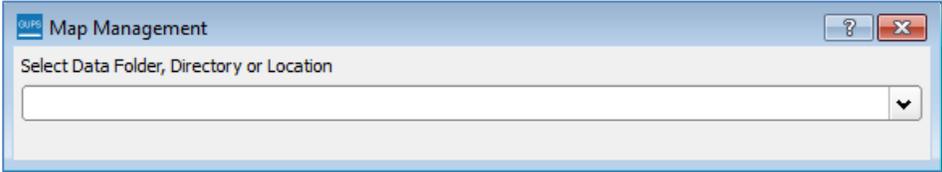
Step	Action and Result
<p>Step 5</p>	<p>In the Map Management dialog box, use the drop-down menu next to the Program field to select your program, 'Tribal Boundary and Annexation Survey'. '<i>Tribal Boundary and Annexation</i>' populates the field.</p> 
<p>Step 6</p>	<p>In the Sub Program field, select 'Tribal Boundary and Annexation Survey'.</p> 
<p>Step 7</p>	<p>In the Entity Type field drop-down menu, select the entity type you represent. The options are '<i>Alaska Native Regional Corporation</i>', '<i>Hawaiian Homeland</i>', and '<i>Reservation/Trust Land</i>'.</p>

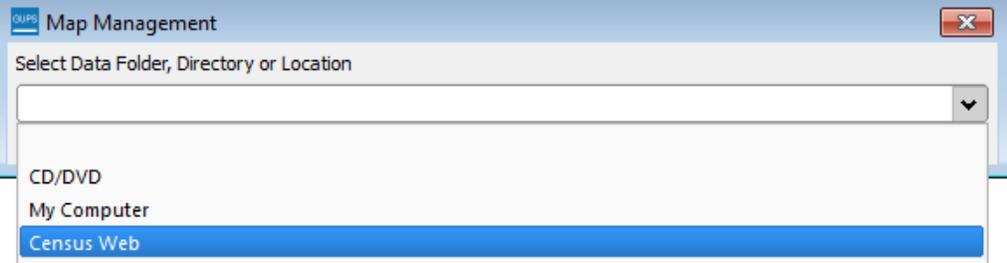
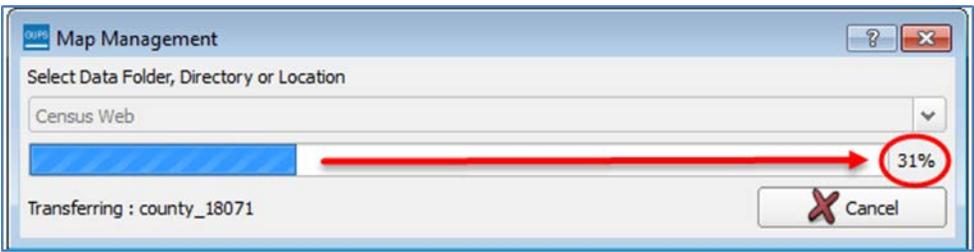
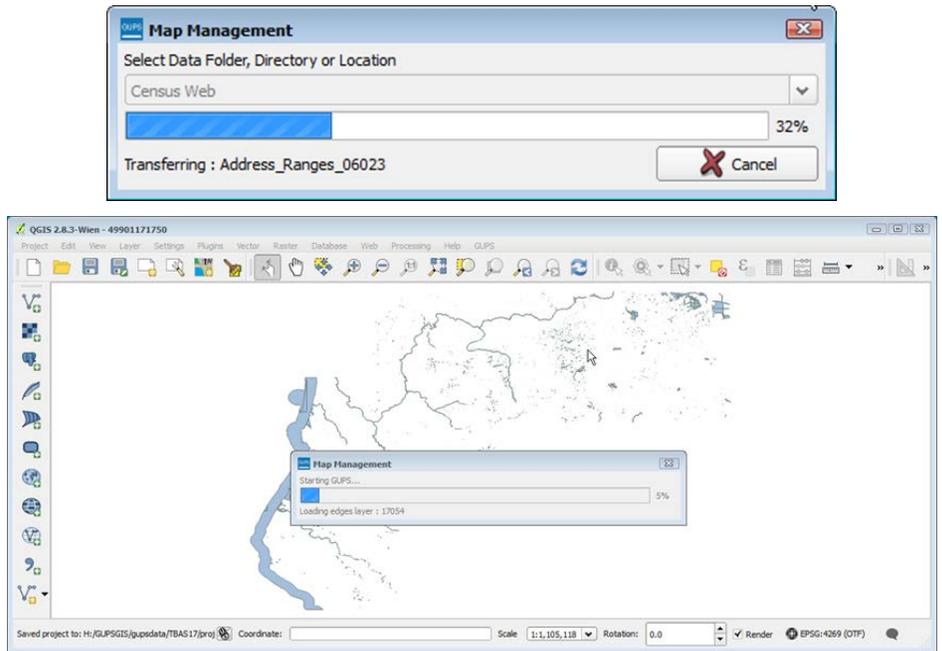
Step	Action and Result
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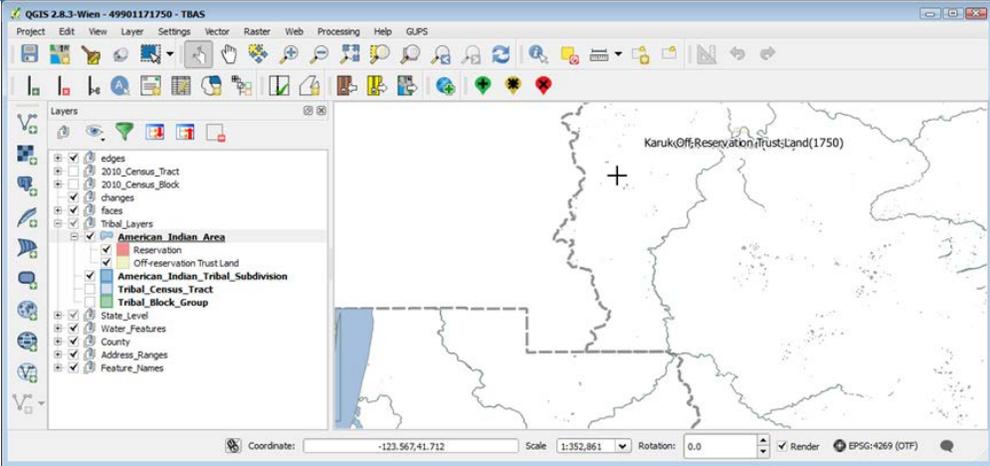
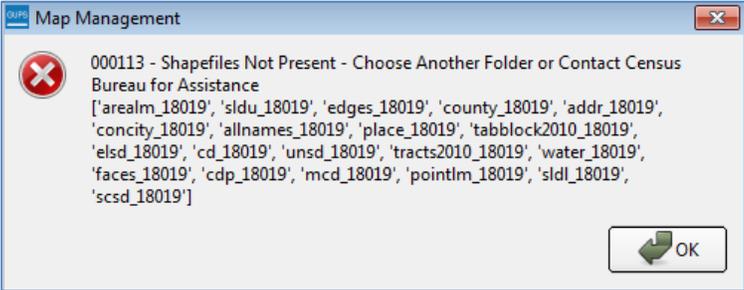
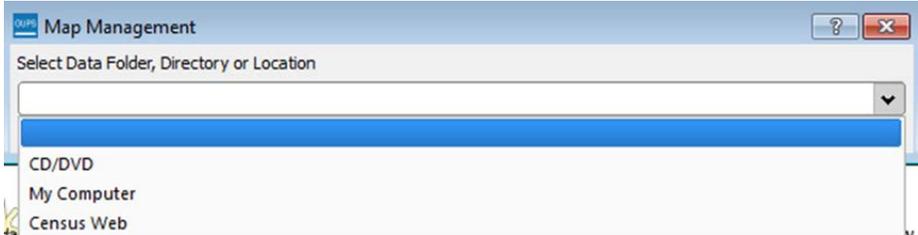
	 <p>This example uses Reservation/Trust Land.</p>
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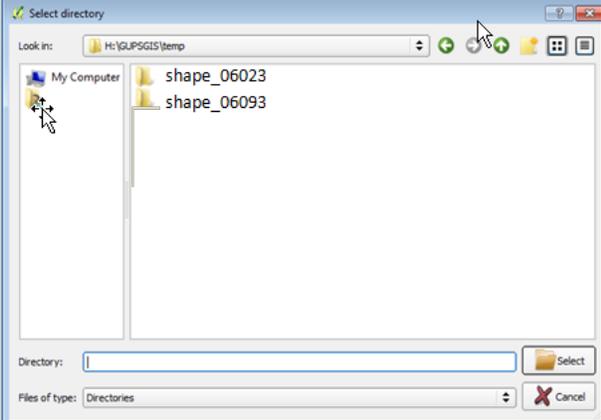
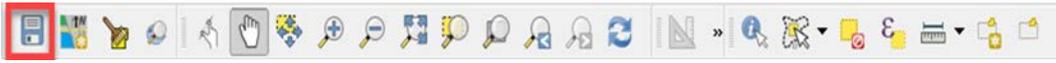
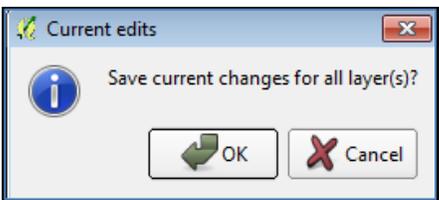
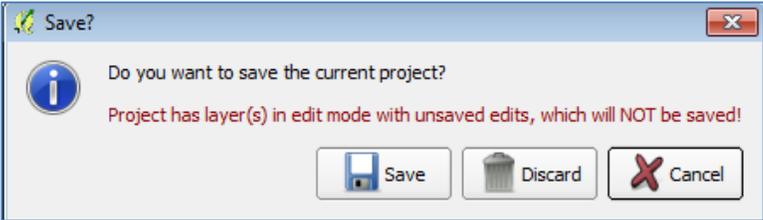
Step 8	<p>Next select the Entity Name field drop-down. Since you selected the entity type 'Reservation/Trust Land' GUPS automatically provides a list of the Reservations and Off-Reservation Trust Lands. The scroll bar to the right allows you to move up and down the list of reservations/trust lands.</p> 
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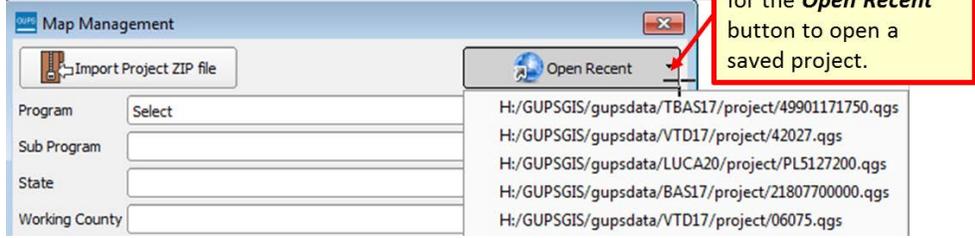
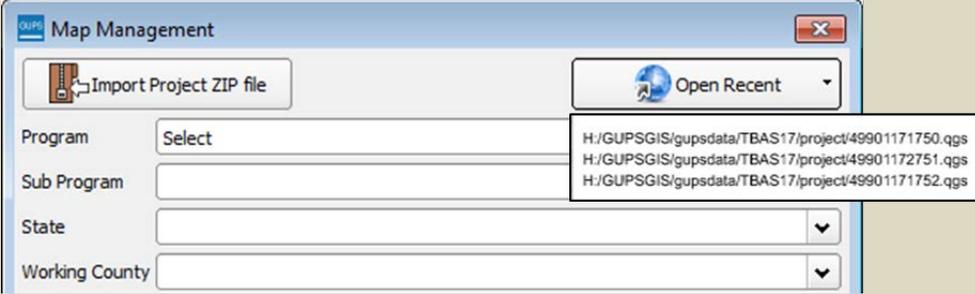
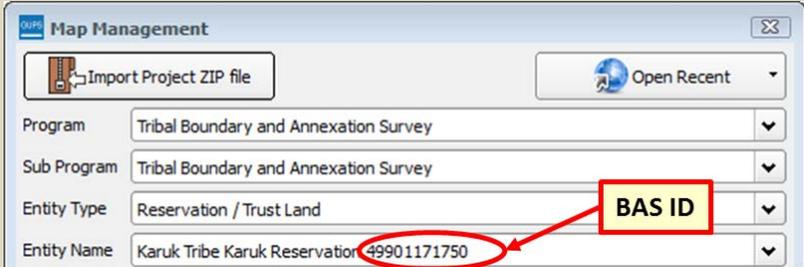
Step 9	<p>Once you have selected your entity from the drop-down menu, the Map Management screen will provide you with a list of counties. The counties in which the selected entity already exists will be at the top of the list and their corresponding check boxes will be 'checked'. Adjacent counties (counties whose borders touch the automatically selected county or counties) are highlighted in YELLOW. Any previously selected counties will be highlighted in CYAN.</p> <p>All checked counties will display in the Map View. Uncheck the box for any county you do not wish to see.</p>
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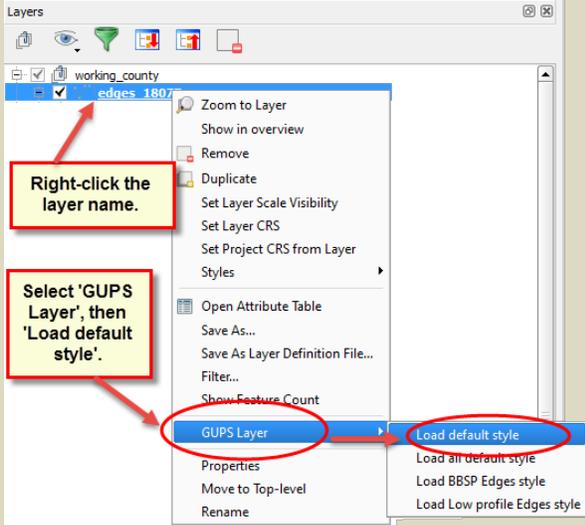
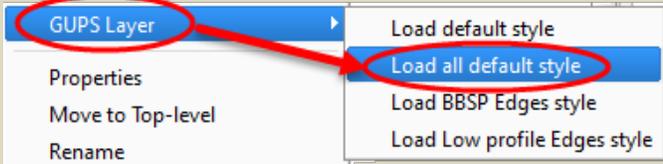
Step	Action and Result
	<p>To select additional counties to display (you may choose up to a total of 10 at once), check the checkboxes next to them. Scroll down using the scroll bar to the right to see the full list of counties.</p>  <ol style="list-style-type: none"> 1. Choose 'Tribal Boundary and Annexation Survey' from the Program drop-down menu. 2. Choose your Entity Type from the drop-down menu. <p>Choose the Entity Name you want to update from the drop-down menu.</p>
<p>Step 10</p>	<p>After you select the working county or counties, GUPS asks you to specify the location from which you want to pull the county's (or county equivalent's) shapefile. <i>The Select Data Folder, Directory or Location box opens.</i></p> 
<p>Step 11</p>	<p>In the Select Data Folder, Directory or Location box drop-down menu, select the location from which you wish to pull the file. This example assumes the user is pulling the data from the BAS Web site, so click on 'Census Web' in the drop-down menu.</p>

Step	Action and Result
	
<p>Step 12</p>	<p>Once you click on 'Census Web', the shapefile for the county begins to load and progress is displayed by a blue striped bar (color may vary), with the percentage of the upload completed displayed to the right.</p> 
<p>Step 13</p>	<p>As GUPS loads the data, it unzips and copies the files to a folder that was created on your computer's home directory during the installation process.</p> 
<p>Step 14</p>	<p>It then pulls the file into the GUPS application.</p>

Step	Action and Result
	
<p>Step 15</p>	<p>If for any reason shapefiles are missing from the location you chose in the Select Data Folder, Directory or Location drop-down menu, or the files are corrupted and cannot be loaded, you will receive an error message such as the one shown below.</p> 
<p>Step 16</p>	<p>Click OK to return to the Map Management dialog box.</p>
<p>Step 17</p>	<p>You may try loading the file(s) from another location. Simply click the Open button at the bottom of the Map Management box. </p> <p><i>The Select Data Folder, Directory or Location dialog box reopens, allowing you to select another option for securing the files.</i></p> 
	<p>If you have trouble loading shapefiles using the 'Census Web' and 'CD/DVD' options, follow the instructions in Table 7 or Table 8 to download the files to your computer from the BAS Web site or Census Bureau's ftp2 site. Then pull them into GUPS using the 'My Computer' option in the Select Data Folder, Directory or Location drop-down menu. <i>When you select 'My Computer' the Select directory screen opens.</i></p>

Step	Action and Result
	 <p>On this screen, click on the My Computer icon in the left-hand corner. </p> <p>Navigate to the location of the files you want to load, then select the files and click on the Select button at the bottom of the Select directory screen. <i>GUPS unzips and loads the files, then moves them to the pre-established folder on your home directory.</i></p>
<p>Step 18</p>	<p>After working on a project, be sure to save before exiting. Otherwise your edits will be lost. To save, click the Save icon on the Standard toolbar.</p>  <p>The Current edits pop-up box asks if you want to save the changes for all layers.</p>  <p>Click OK. <i>The changes are saved.</i></p>
<p>Step 18</p>	<p>If you do not wish to save your changes, simply close the application (click the red X in the upper right-hand corner of the main GUPS page). A Save? pop-up warning asks if you want to save the project.</p>  <p>Click Discard not to save your project.</p>
<p>Step 19</p>	<p>To reopen a saved project, in the Map Management dialog box, click the down arrow next to the Open Recent button. <i>The drop-down menu opens with your project listed.</i></p>

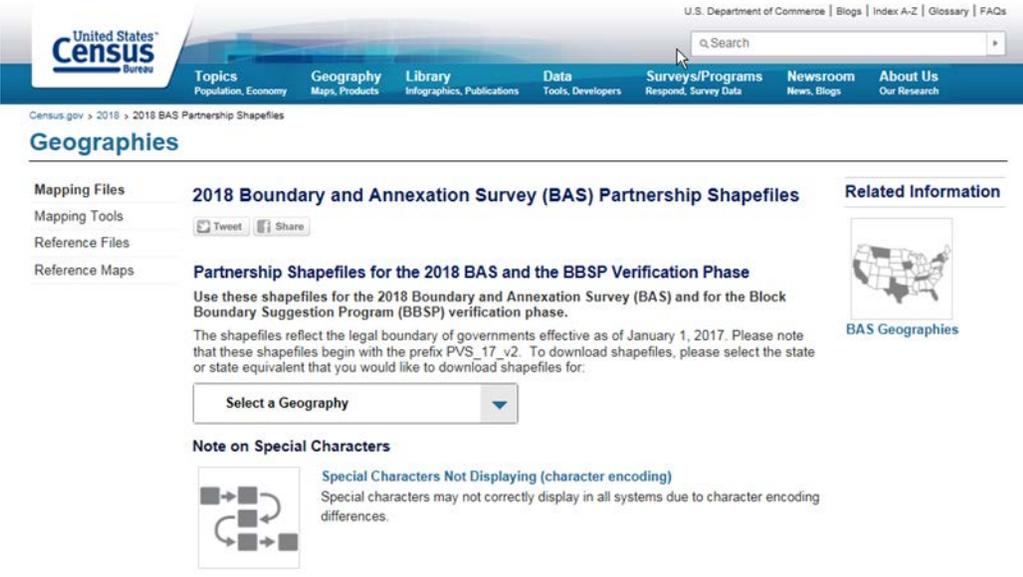
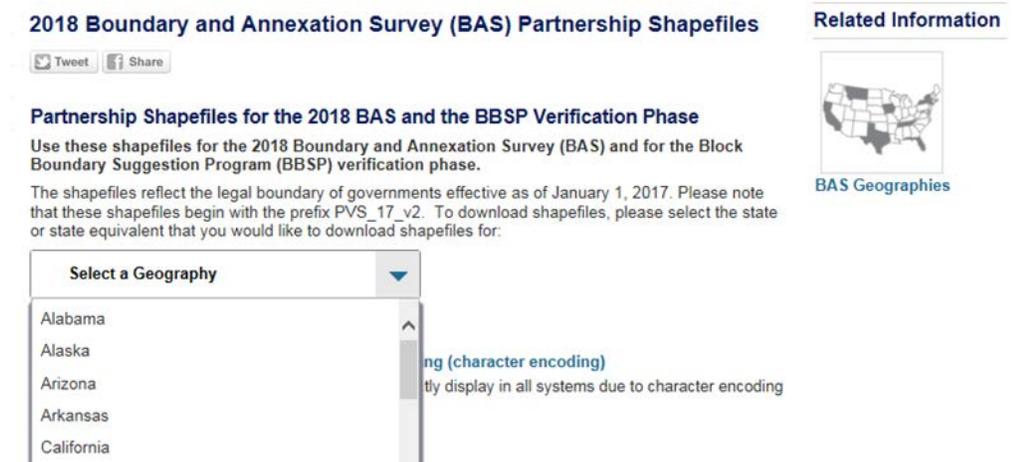
Step	Action and Result
	
	<p>If you share a computer with other GUPS users, multiple project files may appear in the drop-down menu, as shown below. Here three separate users in Karuk Reservation have created projects on the same computer.</p>  <p>To identify which of the entries in the list represents your project, look at its number string. This string comprises your BAS ID. Each BAS ID is 11 digits. The first digit indicates the Entity Type (i.e., the user type) (4 = American Indian Area). The next two digits are the state FIPS code and 99 is what BAS uses for all AIAs since they can cross state lines. The following four digits are the TR code (the tribe code). The final four digits are the AIANNHCE/TA Code (the tribal area code).</p> <p>The number string, 49901171750.qgs reflects a project created by the Karuk Tribal participant, where 4 = American Indian Area; 99 = state FIPS code used for tribal areas; 0117 = code for Karuk Tribe; and 1760 = Karuk Reservation/Trust Land.</p> <p>If you do not know the BAS ID information for your particular geography, it is available within the Map Management dialog box. Below is an example for Karuk Tribe Karuk Reservation.</p> 
Step 20	<p>Once you have identified the correct file to reopen, select it from the list. <i>The map for the project automatically loads and the layers show in the Table of Contents.</i></p>
	<p>Census Bureau-defined default layers and view settings are loaded each time you start a new project in GUPS.</p>

Step	Action and Result
	<p>If you change these settings for a project, when you save the project your new settings are also saved. Thus, when you reopen the project, the Table of Contents and Map View display the layers and the map according to the settings you were last using rather than returning to the Census Bureau default settings.</p> <p>To restore the default settings for a layer:</p> <ul style="list-style-type: none"> • Click on the layer in the Table of Contents. A drop-down menu opens. • In the drop-down menu, select 'GUPS Layer'. A submenu opens. • In the submenu, select 'Load default style' (see illustration below).  <p>The screenshot shows the 'Layers' panel with 'working_county' selected. A right-click context menu is open over the 'edges_1807' layer. A red arrow points to the layer name with the text 'Right-click the layer name.' Another red arrow points to the 'GUPS Layer' option in the menu with the text 'Select 'GUPS Layer', then 'Load default style''. The 'GUPS Layer' option is highlighted, and its submenu is open, showing 'Load default style' as the selected option.</p> <p>To reset the default settings for all layers, select 'Load all default style.'</p>  <p>The close-up shows the 'GUPS Layer' option selected in the main menu. The submenu is open, and 'Load all default style' is highlighted with a red circle and arrow.</p>
	<p style="text-align: center;">Loading Multiple Files at Once</p> <p>The limit to how many county datasets can be loaded at once is 11 (the working county plus 10 other counties). To load shapefiles for additional counties, after the first 10 are loaded:</p> <ul style="list-style-type: none"> • Leave the same working county selected in the Working County field. • Uncheck the already loaded counties in the Map Management dialog box list. • Check the checkboxes for the additional counties (up to 10) that you wish to add. Click the Open button and after the Select Data Folder, Directory or Location box opens, use the drop-down menu to select the source of the files. Repeat this process as many times as needed.

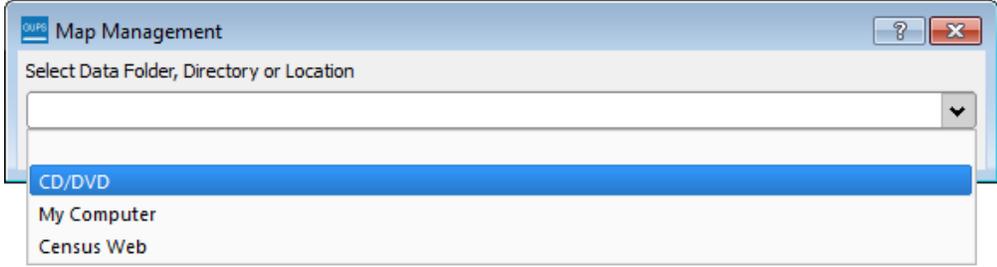
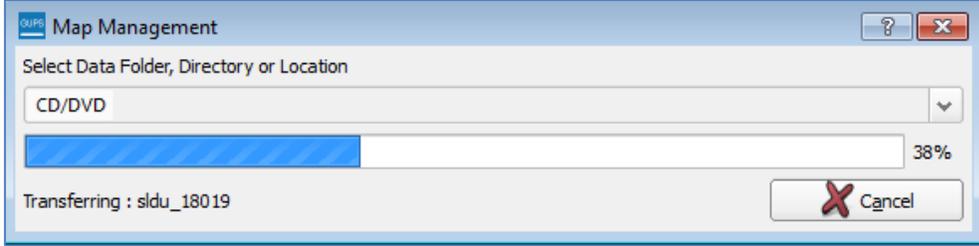
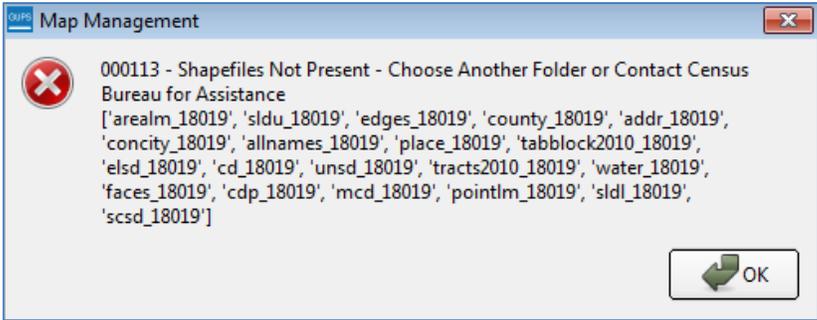
5.3 Download Shapefiles from the BAS Web site to Your Hard Drive

Follow the steps in [Table 7](#) below to download the files from the BAS Web site to your hard drive.

Table 7: Download Shapefiles from the BAS Web site to a Hard Drive

Step	Action and <i>Result</i>
<p>Step 1</p>	<p>Enter the URL <https://www.census.gov/geographies/mapping-files/2018/geo/bas/2018-bas-shapefiles> into your Internet browser. <i>The Boundary and Annexation Survey (BAS) Partnership Shapefiles page opens.</i></p> 
<p>Step 2</p>	<p>Under '2018 Partnership Shapefiles', in the 'Select a Geography' drop-down box, select the name of state your entity is located in from the drop-down list '. <i>The [State Name] Partnership Shapefile Batch Download page opens.</i></p> 

Step	Action and Result																																																																																													
<p>Step 3</p>	<p>To select the county(ies) you need, click the box next to it. You may select up to five (5) counties at a time. Once you have selected the counties needed, hit the “Submit” button at the bottom left hand side of the page.</p> <p>Indiana Partnership Shapefile Batch Download</p> <p>Please select up to 5 individual counties to download the shapefiles for those counties.</p> <div data-bbox="391 422 1372 779"> <table border="0"> <tr> <td><input type="checkbox"/> Adams County (18001)</td> <td><input type="checkbox"/> Hendricks County (18003)</td> <td><input type="checkbox"/> Pike County (18125)</td> </tr> <tr> <td><input type="checkbox"/> Allen County (18002)</td> <td><input type="checkbox"/> Henry County (18005)</td> <td><input type="checkbox"/> Porter County (18127)</td> </tr> <tr> <td><input type="checkbox"/> Bartholomew County (18005)</td> <td><input type="checkbox"/> Howard County (18007)</td> <td><input type="checkbox"/> Posey County (18129)</td> </tr> <tr> <td><input type="checkbox"/> Benton County (18007)</td> <td><input type="checkbox"/> Huntington County (18009)</td> <td><input type="checkbox"/> Pulaski County (18131)</td> </tr> <tr> <td><input type="checkbox"/> Bradford County (18009)</td> <td><input type="checkbox"/> Jackson County (18071)</td> <td><input type="checkbox"/> Putnam County (18133)</td> </tr> <tr> <td><input type="checkbox"/> Boone County (18011)</td> <td><input type="checkbox"/> Jasper County (18073)</td> <td><input type="checkbox"/> Randolph County (18135)</td> </tr> <tr> <td><input type="checkbox"/> Brown County (18013)</td> <td><input type="checkbox"/> Jay County (18075)</td> <td><input type="checkbox"/> Ripley County (18137)</td> </tr> <tr> <td><input type="checkbox"/> Carroll County (18015)</td> <td><input type="checkbox"/> Jefferson County (18077)</td> <td><input type="checkbox"/> Rush County (18139)</td> </tr> <tr> <td><input type="checkbox"/> Cass County (18017)</td> <td><input type="checkbox"/> Jennings County (18079)</td> <td><input type="checkbox"/> St. Joseph County (18141)</td> </tr> <tr> <td><input type="checkbox"/> Clark County (18019)</td> <td><input type="checkbox"/> Johnson County (18081)</td> <td><input type="checkbox"/> Scott County (18143)</td> </tr> <tr> <td><input type="checkbox"/> Clay County (18021)</td> <td><input type="checkbox"/> Knox County (18083)</td> <td><input type="checkbox"/> Shelby County (18145)</td> </tr> <tr> <td><input type="checkbox"/> Clinton County (18023)</td> <td><input type="checkbox"/> Kosciusko County (18085)</td> <td><input type="checkbox"/> Spencer County (18147)</td> </tr> <tr> <td><input type="checkbox"/> Crawford County (18025)</td> <td><input type="checkbox"/> LaGrange County (18087)</td> <td><input type="checkbox"/> Starke County (18149)</td> </tr> <tr> <td><input type="checkbox"/> Daviess County (18027)</td> <td><input type="checkbox"/> Lake County (18089)</td> <td><input type="checkbox"/> Steuben County (18151)</td> </tr> <tr> <td><input type="checkbox"/> Dearborn County (18029)</td> <td><input type="checkbox"/> LaPorte County (18091)</td> <td><input type="checkbox"/> Sullivan County (18153)</td> </tr> <tr> <td><input type="checkbox"/> Decatur County (18031)</td> <td><input type="checkbox"/> Lawrence County (18093)</td> <td><input type="checkbox"/> Switzerland County (18155)</td> </tr> <tr> <td><input type="checkbox"/> DeKalb County (18033)</td> <td><input type="checkbox"/> Madison County (18095)</td> <td><input type="checkbox"/> Tippecanoe County (18157)</td> </tr> <tr> <td><input type="checkbox"/> Delaware County (18035)</td> <td><input type="checkbox"/> Marion County (18097)</td> <td><input type="checkbox"/> Tipton County (18159)</td> </tr> <tr> <td><input type="checkbox"/> Dubois County (18037)</td> <td><input type="checkbox"/> Marshall County (18099)</td> <td><input type="checkbox"/> Union County (18161)</td> </tr> <tr> <td><input type="checkbox"/> Elkhart County (18039)</td> <td><input type="checkbox"/> Martin County (18101)</td> <td><input type="checkbox"/> Vanderburgh County (18163)</td> </tr> <tr> <td><input type="checkbox"/> Fayette County (18041)</td> <td><input type="checkbox"/> Miami County (18103)</td> <td><input type="checkbox"/> Vermillion County (18165)</td> </tr> <tr> <td><input type="checkbox"/> Floyd County (18043)</td> <td><input type="checkbox"/> Monroe County (18105)</td> <td><input type="checkbox"/> Vigo County (18167)</td> </tr> <tr> <td><input type="checkbox"/> Fountain County (18045)</td> <td><input type="checkbox"/> Montgomery County (18107)</td> <td><input type="checkbox"/> Wabash County (18169)</td> </tr> <tr> <td><input type="checkbox"/> Franklin County (18047)</td> <td><input type="checkbox"/> Morgan County (18109)</td> <td><input type="checkbox"/> Warren County (18171)</td> </tr> <tr> <td><input type="checkbox"/> Fulton County (18049)</td> <td><input type="checkbox"/> Newton County (18111)</td> <td><input type="checkbox"/> Warrick County (18173)</td> </tr> <tr> <td><input type="checkbox"/> Gibson County (18051)</td> <td><input type="checkbox"/> Noble County (18113)</td> <td><input type="checkbox"/> 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save the file(s) appears.</i></p> <div data-bbox="407 856 1349 951"> </div>	<input type="checkbox"/> Adams County (18001)	<input type="checkbox"/> Hendricks County (18003)	<input type="checkbox"/> Pike County (18125)	<input type="checkbox"/> Allen County (18002)	<input type="checkbox"/> Henry County (18005)	<input type="checkbox"/> Porter County (18127)	<input type="checkbox"/> Bartholomew County (18005)	<input type="checkbox"/> Howard County (18007)	<input type="checkbox"/> Posey County (18129)	<input type="checkbox"/> Benton County (18007)	<input type="checkbox"/> Huntington County (18009)	<input type="checkbox"/> Pulaski County (18131)	<input type="checkbox"/> Bradford County (18009)	<input type="checkbox"/> Jackson County (18071)	<input type="checkbox"/> Putnam County (18133)	<input type="checkbox"/> Boone County (18011)	<input type="checkbox"/> Jasper County (18073)	<input type="checkbox"/> Randolph County (18135)	<input type="checkbox"/> Brown County (18013)	<input type="checkbox"/> Jay County (18075)	<input type="checkbox"/> Ripley County (18137)	<input type="checkbox"/> Carroll County (18015)	<input type="checkbox"/> Jefferson County (18077)	<input type="checkbox"/> Rush County (18139)	<input type="checkbox"/> Cass County (18017)	<input type="checkbox"/> Jennings County (18079)	<input type="checkbox"/> St. Joseph County (18141)	<input type="checkbox"/> Clark County (18019)	<input type="checkbox"/> Johnson County (18081)	<input type="checkbox"/> Scott County (18143)	<input type="checkbox"/> Clay County (18021)	<input type="checkbox"/> Knox County (18083)	<input type="checkbox"/> Shelby County (18145)	<input type="checkbox"/> Clinton County (18023)	<input type="checkbox"/> Kosciusko County (18085)	<input type="checkbox"/> Spencer County (18147)	<input type="checkbox"/> Crawford County (18025)	<input type="checkbox"/> LaGrange County (18087)	<input type="checkbox"/> Starke County (18149)	<input type="checkbox"/> Daviess County (18027)	<input 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(18041)	<input type="checkbox"/> Miami County (18103)	<input type="checkbox"/> Vermillion County (18165)	<input type="checkbox"/> Floyd County (18043)	<input type="checkbox"/> Monroe County (18105)	<input type="checkbox"/> Vigo County (18167)	<input type="checkbox"/> Fountain County (18045)	<input type="checkbox"/> Montgomery County (18107)	<input type="checkbox"/> Wabash County (18169)	<input type="checkbox"/> Franklin County (18047)	<input type="checkbox"/> Morgan County (18109)	<input type="checkbox"/> Warren County (18171)	<input type="checkbox"/> Fulton County (18049)	<input type="checkbox"/> Newton County (18111)	<input type="checkbox"/> Warrick County (18173)	<input type="checkbox"/> Gibson County (18051)	<input type="checkbox"/> Noble County (18113)	<input type="checkbox"/> Washington County (18175)	<input type="checkbox"/> Grant County (18053)	<input type="checkbox"/> Ohio County (18115)	<input type="checkbox"/> Wayne County (18177)	<input type="checkbox"/> Greene County (18055)	<input type="checkbox"/> Orange County (18117)	<input type="checkbox"/> Wells County (18179)	<input type="checkbox"/> Hamilton County (18057)	<input type="checkbox"/> Owen County (18119)	<input type="checkbox"/> White County (18181)	<input type="checkbox"/> Hancock County (18059)	<input type="checkbox"/> Parke County (18121)	<input type="checkbox"/> Whitley County (18183)	<input type="checkbox"/> Harrison County (18061)	<input type="checkbox"/> Perry County (18123)	
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<input type="checkbox"/> Benton County (18007)	<input type="checkbox"/> Huntington County (18009)	<input type="checkbox"/> Pulaski County (18131)																																																																																												
<input type="checkbox"/> Bradford County (18009)	<input type="checkbox"/> Jackson County (18071)	<input type="checkbox"/> Putnam County (18133)																																																																																												
<input type="checkbox"/> Boone County (18011)	<input type="checkbox"/> Jasper County (18073)	<input type="checkbox"/> Randolph County (18135)																																																																																												
<input type="checkbox"/> Brown County (18013)	<input type="checkbox"/> Jay County (18075)	<input type="checkbox"/> Ripley County (18137)																																																																																												
<input type="checkbox"/> Carroll County (18015)	<input type="checkbox"/> Jefferson County (18077)	<input type="checkbox"/> Rush County (18139)																																																																																												
<input type="checkbox"/> Cass County (18017)	<input type="checkbox"/> Jennings County (18079)	<input type="checkbox"/> St. Joseph County (18141)																																																																																												
<input type="checkbox"/> Clark County (18019)	<input type="checkbox"/> Johnson County (18081)	<input type="checkbox"/> Scott County (18143)																																																																																												
<input type="checkbox"/> Clay County (18021)	<input type="checkbox"/> Knox County (18083)	<input type="checkbox"/> Shelby County (18145)																																																																																												
<input type="checkbox"/> Clinton County (18023)	<input type="checkbox"/> Kosciusko County (18085)	<input type="checkbox"/> Spencer County (18147)																																																																																												
<input type="checkbox"/> Crawford County (18025)	<input type="checkbox"/> LaGrange County (18087)	<input type="checkbox"/> Starke County (18149)																																																																																												
<input type="checkbox"/> Daviess County (18027)	<input type="checkbox"/> Lake County (18089)	<input type="checkbox"/> Steuben County (18151)																																																																																												
<input type="checkbox"/> Dearborn County (18029)	<input type="checkbox"/> LaPorte County (18091)	<input type="checkbox"/> Sullivan County (18153)																																																																																												
<input type="checkbox"/> Decatur County (18031)	<input type="checkbox"/> Lawrence County (18093)	<input type="checkbox"/> Switzerland County (18155)																																																																																												
<input type="checkbox"/> DeKalb County (18033)	<input type="checkbox"/> Madison County (18095)	<input type="checkbox"/> Tippecanoe County (18157)																																																																																												
<input type="checkbox"/> Delaware County (18035)	<input type="checkbox"/> Marion County (18097)	<input type="checkbox"/> Tipton County (18159)																																																																																												
<input type="checkbox"/> Dubois County (18037)	<input type="checkbox"/> Marshall County (18099)	<input type="checkbox"/> Union County (18161)																																																																																												
<input type="checkbox"/> Elkhart County (18039)	<input type="checkbox"/> Martin County (18101)	<input type="checkbox"/> Vanderburgh County (18163)																																																																																												
<input type="checkbox"/> Fayette County (18041)	<input type="checkbox"/> Miami County (18103)	<input type="checkbox"/> Vermillion County (18165)																																																																																												
<input type="checkbox"/> Floyd County (18043)	<input type="checkbox"/> Monroe County (18105)	<input type="checkbox"/> Vigo County (18167)																																																																																												
<input type="checkbox"/> Fountain County (18045)	<input type="checkbox"/> Montgomery County (18107)	<input type="checkbox"/> Wabash County (18169)																																																																																												
<input type="checkbox"/> Franklin County (18047)	<input type="checkbox"/> Morgan County (18109)	<input type="checkbox"/> Warren County (18171)																																																																																												
<input type="checkbox"/> Fulton County (18049)	<input type="checkbox"/> Newton County (18111)	<input type="checkbox"/> Warrick County (18173)																																																																																												
<input type="checkbox"/> Gibson County (18051)	<input type="checkbox"/> Noble County (18113)	<input type="checkbox"/> Washington County (18175)																																																																																												
<input type="checkbox"/> Grant County (18053)	<input type="checkbox"/> Ohio County (18115)	<input type="checkbox"/> Wayne County (18177)																																																																																												
<input type="checkbox"/> Greene County (18055)	<input type="checkbox"/> Orange County (18117)	<input type="checkbox"/> Wells County (18179)																																																																																												
<input type="checkbox"/> Hamilton County (18057)	<input type="checkbox"/> Owen County (18119)	<input type="checkbox"/> White County (18181)																																																																																												
<input type="checkbox"/> Hancock County (18059)	<input type="checkbox"/> Parke County (18121)	<input type="checkbox"/> Whitley County (18183)																																																																																												
<input type="checkbox"/> Harrison County (18061)	<input type="checkbox"/> Perry County (18123)																																																																																													
<p>Step 4</p>	<p>Click the down arrow next to Save and select ‘Save As’ in the drop-down list. <i>The Save As dialog box appears, with the file appearing in the File Name field. If you selected more than one county, a single ZIP file containing the selected counties is saved.</i></p>																																																																																													
<p>Step 5</p>	<p>In the Save As dialog box, select a location on your home directory to save the files.</p>																																																																																													
<p>Step 6</p>	<p>Click the Save button. <i>The file(s) are saved in the location you selected.</i></p>																																																																																													
<p>Step 7</p>	<p>To obtain shapefiles for additional counties, repeat the download process as needed.</p>																																																																																													
<p>Step 8</p>	<p>When you select your geography in GUPS, the application asks you to specify the location (‘CD/DVD’, ‘My Computer’, or ‘Census Web’) of your files. When you select ‘My Computer’, GUPS asks you to select a directory. Navigate to the location where you saved the files and select those you wish to upload. <i>GUPS unzips and loads the files, then moves them to the pre-established folder on your home directory.</i></p>																																																																																													
<p>Step 9</p>	<p>When the Select Data Folder, Directory or Location box opens, use the drop-down menu to select the location from which to pull the shapefiles. In this instance, we will load them from a Census Bureau-provided DVD. To do so, insert the DVD into your DVD drive, then select ‘CD/DVD’, as shown below.</p>																																																																																													

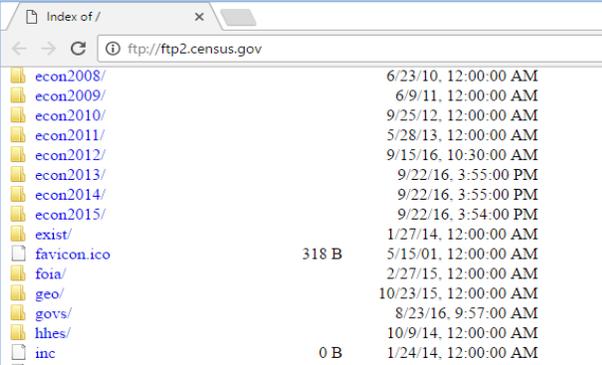
Step	Action and Result
	 <p>The files for Clark and Jennings Counties begin to download and progress is displayed by the blue striped bar (color may vary), with the progress percentage noted to the right.</p> 
<p>Step 10</p>	<p>If for any reason shapefiles are missing from the location you chose in the Select Data Folder, Directory or Location drop-down menu, or the files are corrupted and cannot be loaded, you will receive an error message such as the one shown below.</p> 

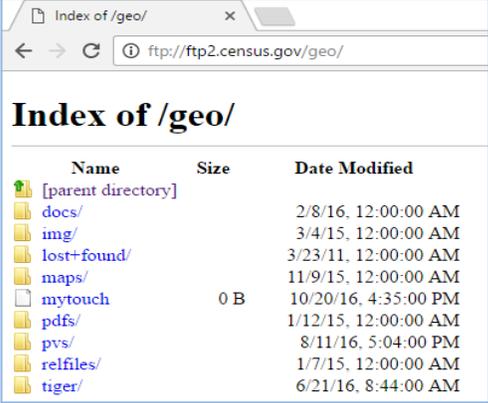
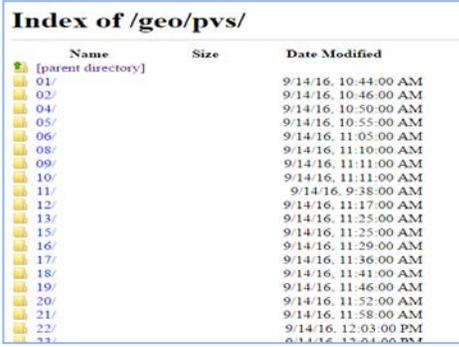
5.4 Download Shapefiles from the Census Bureau ftp2 Site

If you are a state level user, or if you would like to download shapefiles for several counties at one time to your hard drive, follow the steps in [Table 8](#).

Table 8: Download Shapefiles from ftp2 Site to a Hard Drive (State Users)

Step	Action and Result
<p>Step 1</p>	<p>Using Internet Explorer (IE) or a web browser of your choice navigate to <ftp://ftp2.census.gov/>. The ftp root at ftp2.census.gov main page opens.</p>

Step	Action and Result
	<p>FTP root at ftp2.census.gov</p> <p>To view this FTP site in File Explorer: press Alt, click View, and then click Open FTP Site in File Explorer.</p> <p>Server: ftp2.census.gov</p> <p>Personal Identifiable Information (PII) shall not be placed on the FTP server without prior special arrangement and in conjunction with ITSD.</p> <p>NOTE: The data available for anonymous FTP download on this FTP server are also available over the Web: http://www2.census.gov</p> <pre> 01/24/2014 12:00AM 17 ACA 01/24/2014 12:00AM 28 CTFP 2006 2010 06/06/2015 12:00AM Directory EEO 2006 2010 06/08/2015 12:00AM Directory EEO Disability 2008-2010 04/27/2011 12:00AM Directory Econ2001 And Earlier 01/24/2014 12:00AM 17 HUD 09/15/2016 01:16PM Directory about 05/24/2015 12:00AM Directory acs 09/23/2008 12:00AM Directory acs2002 10/06/2004 12:00AM Directory acs2003 02/02/2006 12:00AM Directory acs2004 08/25/2015 12:00AM Directory acs2005 01/24/2014 12:00AM 11 acs2005 2007 3yr 01/24/2014 12:00AM 11 acs2005 2009 3yr 08/25/2015 12:00AM Directory acs2006 01/24/2014 12:00AM 11 acs2006 2009 3yr 08/25/2015 12:00AM Directory acs2007 1yr 01/24/2014 12:00AM 12 acs2007 2009 3yr 08/25/2015 12:00AM Directory acs2007 3yr 08/25/2015 12:00AM Directory acs2008 1yr 08/25/2015 12:00AM Directory acs2008 3yr 08/25/2015 12:00AM Directory acs2009 1yr 08/25/2015 12:00AM Directory acs2009 3yr 08/25/2015 12:00AM Directory acs2009 5yr 08/23/2015 12:00AM Directory acs2010 1yr 08/23/2015 12:00AM Directory acs2010 3yr 08/23/2015 12:00AM Directory acs2010 5yr 04/04/2012 12:00AM Directory acs2010 SPT ATAM 08/24/2015 12:00AM Directory acs2011 1yr 08/24/2015 12:00AM Directory acs2011 3yr 08/24/2015 12:00AM Directory acs2011 5yr </pre>
<p>Step 2</p>	<p>Press 'Alt' and click the 'View' tab on the browser menu and select "Open FTP site in File Explorer" to open the Census Bureau FTP site in Windows Explorer (sometimes called file explorer). If using Windows Explorer, you do not need a username or password to access the ftp2 site.</p> <p>FTP root at ftp2.census.gov</p> <p>To view this FTP site in File Explorer: press Alt, click View, and then click Open FTP Site in File Explorer.</p> <p>Server: ftp2.census.gov</p> <p>Personal Identifiable Information (PII) shall not be placed on the FTP server without prior special arrangement and in conjunction with ITSD.</p> <p>NOTE: The data available for anonymous FTP download on this FTP server are also available over the Web: http://www2.census.gov</p> <pre> 06/23/2010 12:00AM Directory econ2008 06/09/2011 12:00AM Directory econ2009 09/25/2012 12:00AM Directory econ2010 05/28/2013 12:00AM Directory econ2011 09/15/2016 10:30AM Directory econ2012 09/22/2016 03:55PM Directory econ2013 09/22/2016 03:55PM Directory econ2014 09/22/2016 03:54PM Directory econ2015 01/27/2014 12:00AM Directory exist 08/19/2001 12:00AM 318 favicon.ico 02/27/2015 12:00AM Directory foia 10/23/2015 12:00AM Directory geo 08/23/2016 09:57AM Directory govts 10/09/2014 12:00AM Directory hhes 01/24/2014 12:00AM 12 inc 01/24/2014 12:00AM 0 inc </pre> 
<p>Step 3</p>	<p>After the Census Bureau FTP site has been opened in file explorer, click the 'geo' folder.</p>

Step	Action and Result
	 <p>The screenshot shows a web browser window displaying the 'Index of /geo/' page. The address bar shows 'ftp://ftp2.census.gov/geo/'. The page title is 'Index of /geo/'. Below the title is a table with columns 'Name', 'Size', and 'Date Modified'. The table lists several folders: [parent directory], docs/ (2/8/16, 12:00:00 AM), img/ (3/4/15, 12:00:00 AM), lost+found/ (3/23/11, 12:00:00 AM), maps/ (11/9/15, 12:00:00 AM), mytouch (0 B, 10/20/16, 4:35:00 PM), pdfs/ (1/12/15, 12:00:00 AM), pvs/ (8/11/16, 5:04:00 PM), relfiles/ (1/7/15, 12:00:00 AM), and tiger/ (6/21/16, 8:44:00 AM).</p>
<p>Step 4</p>	<p>Within the 'geo' folder, click the 'pvs' folder.</p>  <p>The screenshot shows a web browser window displaying the 'Index of /geo/pvs/' page. The page title is 'Index of /geo/pvs/'. Below the title is a table with columns 'Name', 'Size', and 'Date Modified'. The table lists subfolders numbered 01 through 33, each with a date and time stamp from 9/14/16.</p>
<p>Step 5</p>	<p>Select the state folder that contains the county(ies) for which you are downloading data. The state folders are represented using two-digit state FIPS codes.</p>
<p>Step 6</p>	<p>There are several sets of shapefiles within each state directory. You will want to download the most recent partnership shapefiles. These shapefiles are contained within a zip file with the prefix partnership_shapefiles_18v2. Each zip file ends with a five-digit state-county FIPS code (e.g., 08051) which represents the county for which you are downloading data. Make sure to choose the filename with "18v2", because the "18v1" files are sometimes also available in the folders.</p>
<p>Step 7</p>	<p>Select the county or counties that you intend to download and copy to your local or network drive. You may copy the files to any location you wish. When you select your geography in GUPS, the application asks you to specify the location ('CD/DVD', 'My Computer', or 'Census Web') of your files. When you select 'My Computer', GUPS asks you to select a directory. Navigate to the location where you saved the files and select those you wish to upload. <i>GUPS unzips and loads the files, then moves them to the pre-established folder on your home directory.</i></p>
	<p>If you have an ftp client software such as winscp or filezilla (or other) you may connect to <ftp://ftp2.census.gov/> without a password. Enter 'anonymous' as your user name and enter your e-mail address in place of a password.</p>

5.5 Use GUPS Interface

5.5.1 GUPS Main Page

Figure 2 shows the layout of the main GUPS page. This page contains all the tools needed for making BAS updates. All work is completed from this page. Shown in the figure are the main page elements. These include the:

1. Menu;
2. Table of Contents;
3. Map View (where the data displays);
4. Toolbars (Standard toolbar, BAS toolbar, and Add Layers toolbar); and
5. Status Bar (at bottom of page).

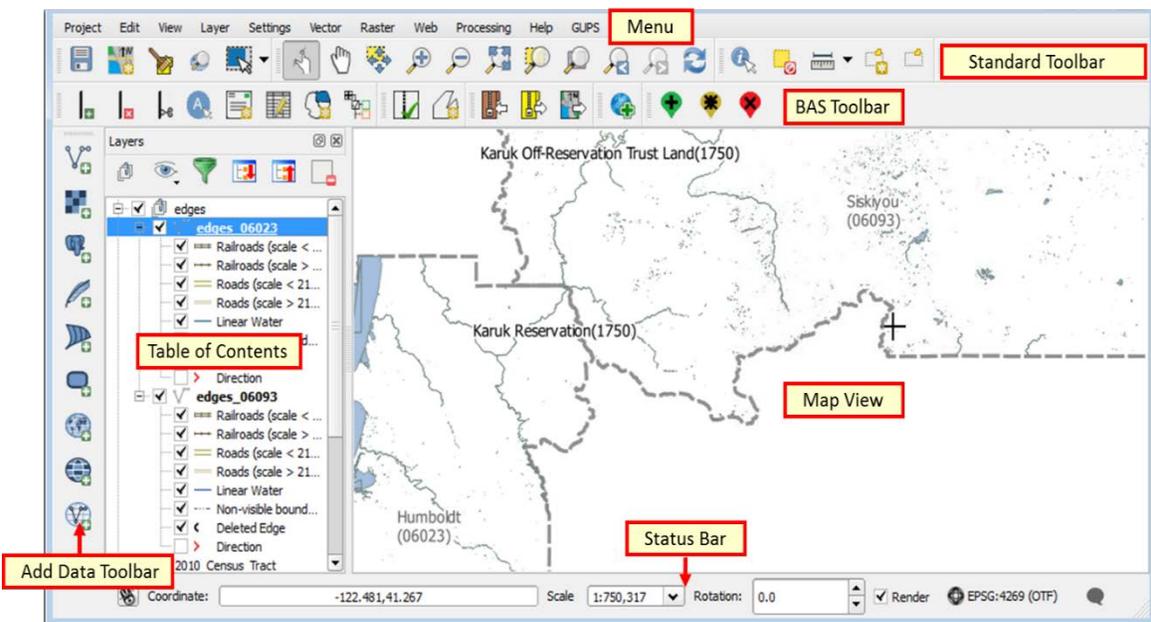


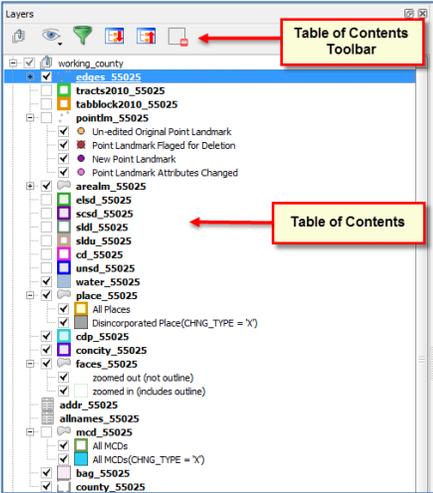
Figure 2. GUPS Main Page Layout

The purpose for each element on the main GUPS page is explained in [Section 5.5.1](#) through [Section 5.6.4](#) describes in detail the individual components and specific functions of each element.

Table 9: GUPS Main Page Elements

Page Element	General Function
Menu	The menu offers basic features such as settings and help ; tools to manage the map view and import user-provided data; important calculation, measurement, and geoprocessing tools; and tools needed to make shapefile updates. Note that almost all of the functions available from the menu are also available in the application's more conveniently located toolbars.

Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Help

Page Element	General Function
<p>Table of Contents</p>	<p>The Table of Contents shows the layers on the map for the county you selected. The Table of Contents toolbar allows you to add or remove layers (or groups), manage layer visibility, and filter the legend by map content</p> 
<p>Map View</p>	<p>The Map View displays the data for the county you selected in the Map Management dialog box.</p> 
<p>Standard Toolbar</p>	<p>Provides the navigation and other tools needed to interact with the map and layers' attribute tables.</p> 
<p>BAS Toolbar</p>	<p>Gives the specific tools needed to make BAS updates, view linear feature attributes, review and validate changes, import and export zipped files, and print.</p> 
<p>Manage Layers Toolbar</p>	<p>Offers tools to import your own data. You may superimpose map layers in GUPS to compare the features on your own maps with those on the Census shapefiles. Note: although shown horizontally here, this toolbar appears aligned vertically to the left of the Table of Contents in the GUPS application.</p>

Page Element	General Function
	
Status Bar	Displays information on the map scale, projection, and coordinates and allows you to adjust the display. 

5.5.2 Table of Contents and Map View

When you choose your program and geography in the **Map Management** dialog box, GUPS automatically loads a set of default data layers (and default layer groups) defined by the Census Bureau for the program you selected. As the map opens in **Map View**, the list of the preset layers (already grouped) appears in the **Table of Contents**.

You will use the **Table of Contents** and the small **toolbar** appearing at its top to manage your map view. Note that the **Table of Contents** and the **Map View** windows are interdependent. Selections you make in the **Table of Contents** are immediately reflected on the map display.

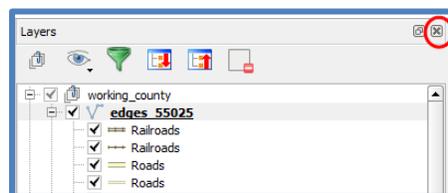


Figure 3. Close Table of Contents

You can close the Table of Contents at any time to see more of the map (just click on the small 'x' in the upper right-hand corner). To restore the Table of Contents, click the View tab on the Menu, select 'Panels' in the drop-down menu, click the arrow next to 'Panel' to open the submenu, then click on 'Layers'.

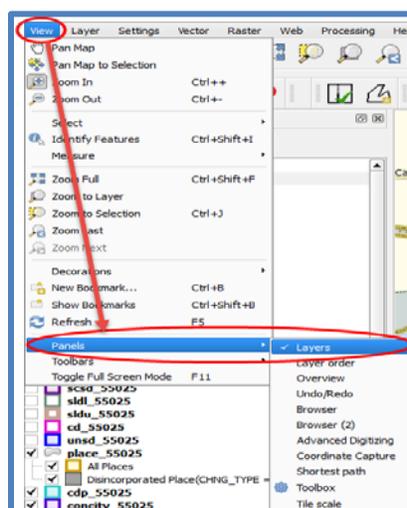


Figure 4. Restore the Table of Contents

The **Table of Contents** will then reopen and display in its default position on the page.

5.5.3 Managing the Map View from Within the Table of Contents

Within the **Table of Contents**, you can manage layer visibility (i.e., determine what layers display on the map), reorder data layers, and set new layer symbology.

5.5.3.1 Manage Layer Visibility

To add or remove layers from the map view:

- Click the checkbox next to a layer to add it to the map view.   **edges 55025**
- Uncheck the checkbox next to a layer to remove it from the view.   **edges_55025**

OR, Right-click the name of the layer and select '**Remove**' in the drop-down menu.

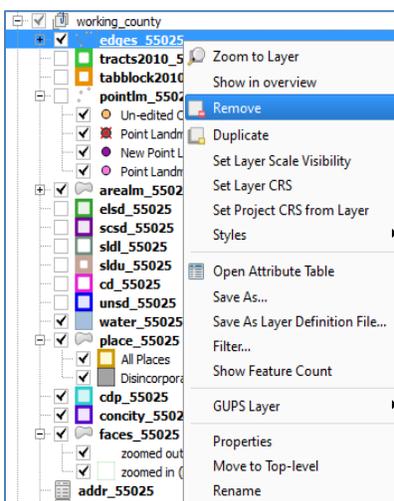


Figure 5. Managing Layer Visibility

5.5.3.2 Reorder Data Layers

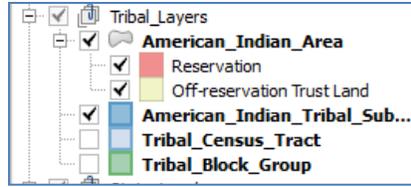
In the **Table of Contents**, the order in which the layers are listed determines how the layers display on the map. The layers at the top display on top of those below them. To change the display order:

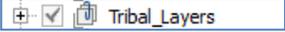
1. Left-click on the layer name.
2. Hold down the mouse button and drag the layer to the desired position in the list.
3. Release the mouse button to place the layer in its new position. The map display will then reflect the new layer order in the **Table of Contents**.

5.5.3.3 Expand/Contract Table of Contents Menu

To expand or contract the menu for a layer or layer group:

- Click on the '+' sign to expand the group. When you click the '+' sign next to the layer name    **Tribal_Layers**, the layer's submenu opens:



- When you click the '-' sign next to the layer name, *the submenu retracts*: 

5.6 Menu & Toolbars

The main **Menu**, the **Standard toolbar**, and the **BAS toolbar** are located at the top of the GUPS page. These toolbars offer general GIS and system tools and allow you to make your BAS updates.



Figure 6. Menu and Toolbars

The **Manage Layer toolbar**, the vertical toolbar located to the left of the **Table of Contents** (shown here in a horizontal position) allows you to import user-provided data.



Figure 7. Manage Layer Toolbar

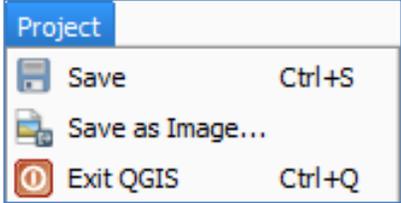
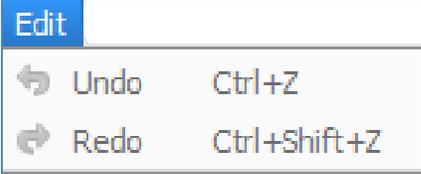
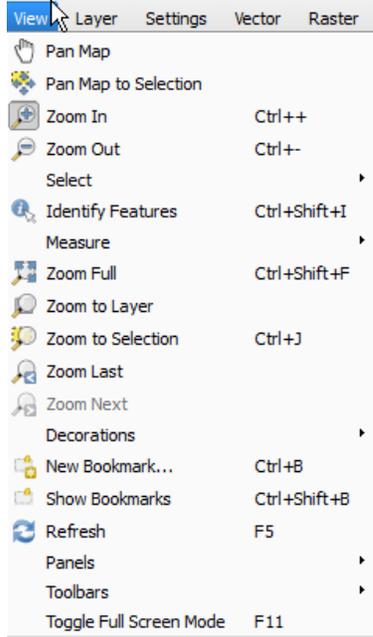
Note: Although the **Menu** is always located at the top of the page and cannot be moved, you may move the toolbars to the location most convenient for you. For example, if you prefer that the **Add Data toolbar** appear at the top of the page, you can drag it there. This allows you to expand the area available for the **Table of Contents** and **Map View**.

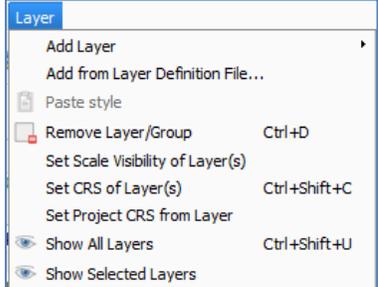
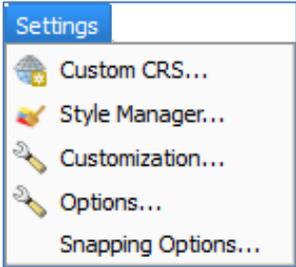
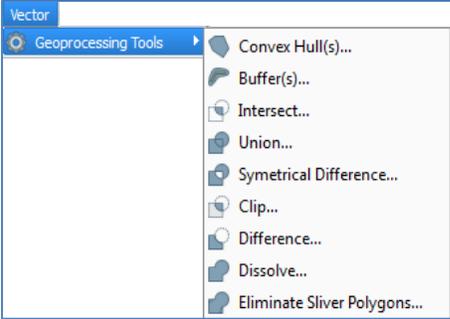
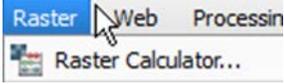
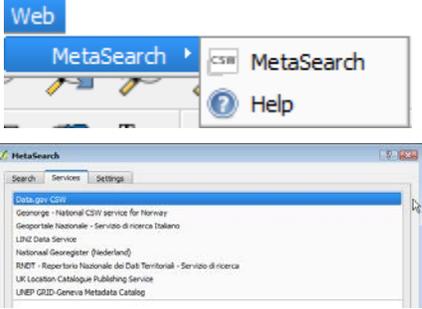
- As you work with the toolbars, hover your mouse over any toolbar button to see the name of the tool it represents. You can also resize and reposition the toolbars by dragging them.
- The Menu, the Standard toolbar, and the BAS toolbar are described in the section below. The Add Data toolbar is discussed in [Section 5.7: How to Import User-Provided Data into GUPS](#).

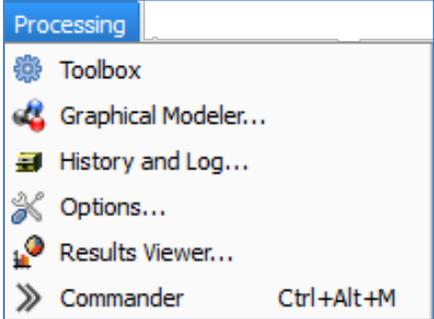
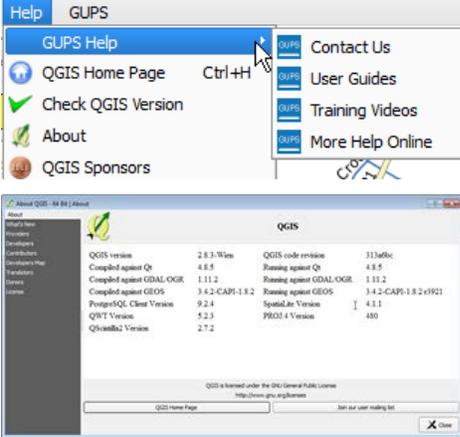
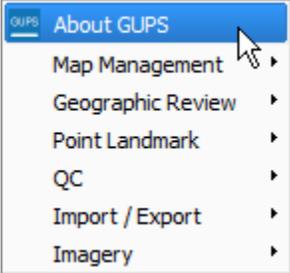
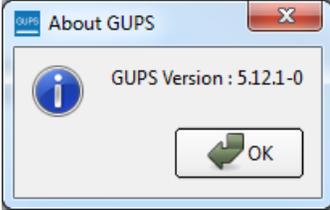
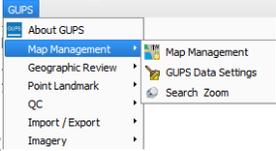
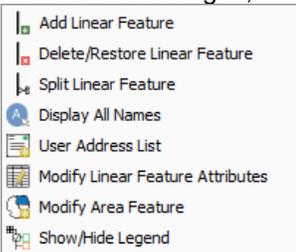
5.6.1 Menu Tabs

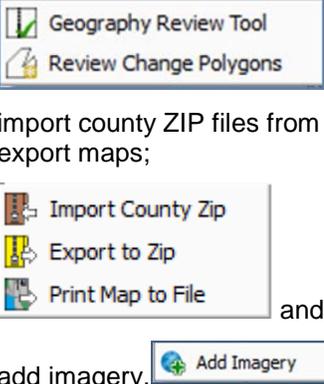
[Table 10](#) below defines each of the tabs on the main **Menu**, provides an image of the drop-down options for each, and describes each tab's function.

Table 10: Menu Tabs and Their Functions

Tab	Drop-down Menu	Function / Description
Project		<p>From the Project tab, you may save a project, click on 'Save as Image' to create an image file of the map in Map View, or exit the application.</p> <p>If you click 'Save as Image', GUPS allows you to select a file type for the image (.png, .jpg, .tif, etc.), name the file, and save it to any location on your computer.</p>
Edit		<p>From the Edit tab, you may 'Undo' your last action or 'Redo' the action (if you selected 'Undo' and then changed your mind).</p> <p>Note: For 'Undo' to work, the correct layer must be selected in the Table of Contents. For example, if you added a linear feature in the Edges layer, then closed the layer and opened the Area Landmarks layer, 'Undo' will not delete the linear feature. You must reselect the Edges layer to undo the linear feature's addition.</p> <p>Note: You may undo multiple actions within a layer (e.g., the addition of several linear features) provided you have not yet saved. Once you save an action, 'Undo' is disabled.</p>
View		<p>The View tab allows you to complete several actions also available on the Standard toolbar. Included are options for navigating the map, identifying feature attributes, measuring distance, and creating spatial bookmarks to return to the same map view at a later time.</p> <p>From this location you can also:</p> <ul style="list-style-type: none"> • Set what toolbars display. • Restore the Table of Contents if you earlier closed it (click 'Panels' in the drop-down menu, click the right arrow, click 'Layers' in the Layers down-menu). • Refresh the map to restore it to the original map extent.

Tab	Drop-down Menu	Function / Description
Layer		<p>The Layer tab allows you to add and remove layers from the map, open the layer attribute table, set the map projection, or Coordinate Reference System (CRS), and display or hide layers.</p> <p>Note: Many of these same functions are more conveniently located on the Add Layers toolbar and the small toolbar that sits at the top of the Table of Contents.</p>
Settings		<p>The Settings tab allows you to customize the CRS and map display options and set snapping tolerances (see instructions below this table).</p>
Vector		<p>The Vector tab provides access to several Geoprocessing Tools, which allow you to create buffers around features, overlay areas so that you can create an intersection, union, or symmetrical difference, merge features, and perform other common geoprocessing actions.</p>
Raster		<p>The Raster tab provides access to a Calculator, which allows you to perform calculations on the basis of existing raster pixel values.</p>
Web		<p>The MetaSearch option takes you to a search tool that uses another search engine's data to produce results from the Internet. You can use the default services already loaded, or add your own sites. The Help option takes you to https://issues.qgis.org/projects/MetaSerach</p>

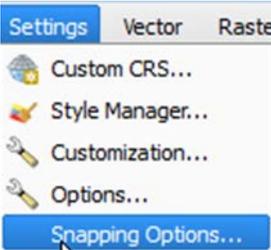
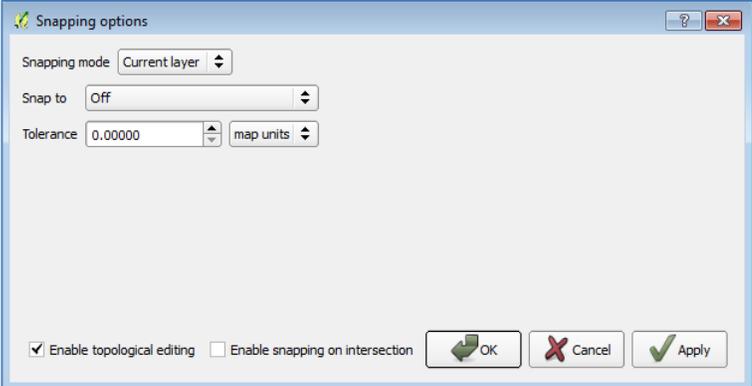
Tab	Drop-down Menu	Function / Description
<p>Processing</p>		<p>Although available to GUPS users, the options under the Processing tab are not needed for Census Bureau geographic program participation. The items under this tab pertain to algorithms, creating models, viewing the results of algorithms executed, and history.</p>
<p>Help</p>		<p>The Help tab provides tools for understanding QGIS (the open-source platform on which GUPS was developed) and the GUPS application itself. It also contains BAS contact information, access to the online version of this guide, training videos, and other information. Clicking the About option will bring up the latest version you have loaded on your pc.</p>
<p>GUPS</p>	 <p>Click the 'About GUPS' option in the drop-down menu to find the GUPS version number. If you call for technical support, you will need to supply this number Here the version number is 5.12.1-0. The number you see will be more recent.</p> 	<p>The GUPS tab provides quick access to the key tools also available on the Standard and BAS toolbars, including those needed to</p>  <p>manage maps;</p> <p>make linear changes;</p>  <p>area feature changes;</p>  <p>review and validate your work;</p>

Tab	Drop-down Menu	Function / Description
		 <p>import county ZIP files from other users, and export maps;</p> <p>and</p> <p>add imagery.</p>

Note on Snapping Tolerances

Snapping tolerances in GUPS are pre-defined by layer (e.g., the default tolerance for edges is set to 15 pixels). When making boundary corrections, you may want to adjust the snapping tolerances for a layer or layers. To do this, follow the steps in [Table 11](#).

Table 11: Adjust Snapping Tolerances

Step	Action and Result
<p>Step 1</p>	<p>In the Settings tab drop-down menu, click on 'Snapping Options'.</p>  <p><i>The Snapping options dialog box opens.</i></p> 

Step	Action and Result
Step 2	From the Snapping mode drop-down menu, select whether you want the tolerance adjustment to apply only to the current layer or to all layers. <div data-bbox="771 352 976 485" style="border: 1px solid gray; padding: 5px; margin: 10px auto; width: fit-content;"> Current layer All layers Advanced </div>
Step 3	From the Snap to drop-down menu, choose the snapping method. <div data-bbox="542 569 1206 751" style="border: 1px solid gray; padding: 5px; margin: 10px auto; width: fit-content;"> To vertex To segment To vertex and segment Off </div>
Step 4	From the Tolerance drop-down menu, use the up and down arrows to select the value you want and then select your units (map units or pixels) in the drop-down to the right. <div data-bbox="537 863 1213 940" style="border: 1px solid gray; padding: 5px; margin: 10px auto; width: fit-content;"> Tolerance 0.00000 map units pixels </div>
Step 5	If you want to enable topological editing and/or snapping on an intersection, use the checkboxes next to each. <div data-bbox="540 1052 1206 1115" style="border: 1px solid gray; padding: 5px; margin: 10px auto; width: fit-content;"> <input checked="" type="checkbox"/> Enable topological editing <input checked="" type="checkbox"/> Enable snapping on intersection </div>
Step 6	Click OK . <i>The new snapping tolerances are set.</i> <div data-bbox="756 1199 992 1255" style="border: 1px solid gray; padding: 5px; margin: 10px auto; width: fit-content;"> <input type="button" value="OK"/> <input type="button" value="Cancel"/> <input type="button" value="Apply"/> </div>

5.6.2 Standard Toolbar Buttons

The **Standard toolbar** provides the navigation tools to interact with the map and layers' attribute tables.



Figure 8. Standard Toolbar

The **Standard toolbar** actually includes several smaller toolbars. Each sub-toolbar is identified by a series of small parallel lines that precede it.

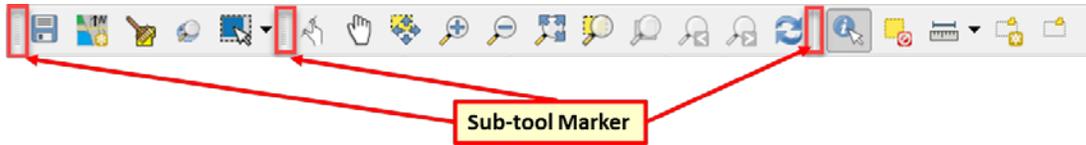


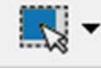
Figure 9. Sub-tool Markers

The first sub-toolbar contains the **Save** button, **Map Management** button (opens the **Map Management** dialog box), and the **Search** button. The second sub-toolbar provides tools for viewing and navigating the map in **Map View**, and the third sub-toolbar allows you to identify, select, and deselect features on the map, make measurements, create spatial bookmarks, and work with the layers' attribute tables.

You can move the location of the sub-toolbars. Simply left-click the parallel lines preceding the sub-toolbar and while holding down the mouse, drag the sub-toolbar to the location you want.

Each button on the Standard toolbar and its purpose is defined in **Table 12** below.

Table 12: Standard Toolbar Buttons

Button	Name	Function / Description
	Save	Saves the current GUPS project, including any user changes to layer properties, projection, last viewed extent, and layers added.
	Map Management	Choose your geographic participant program in GUPS and access the automatically loaded default map display layers based on the program chosen.
	GUPS Data Settings	Warning! This tool deletes files and folders permanently! Change GUPSGIS data working directory and clean GUPS project data.
	Select Features by Area or Single Click	Allows the user to select layer features in the map window with a single click, by dragging the cursor, or by drawing graphics on the screen. 
	Search	Search the map by place, landmark, or street name and zoom automatically to the feature.
	Touch Zoom and Pan	Designed for touchscreen computers. Allows you to zoom and pan the map displayed in Map View using finger gestures to increase or decrease the map scale.

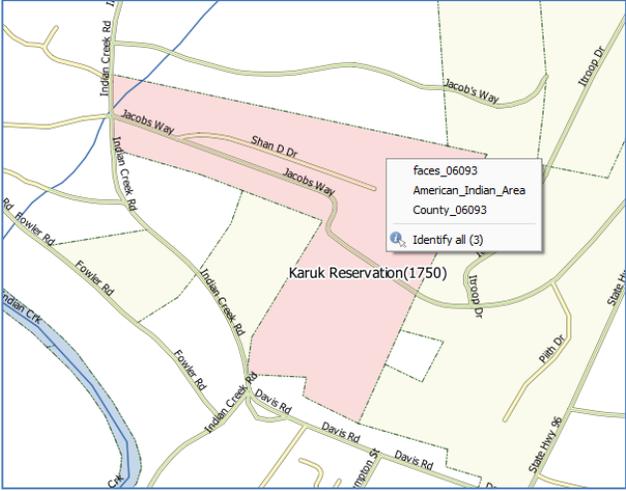
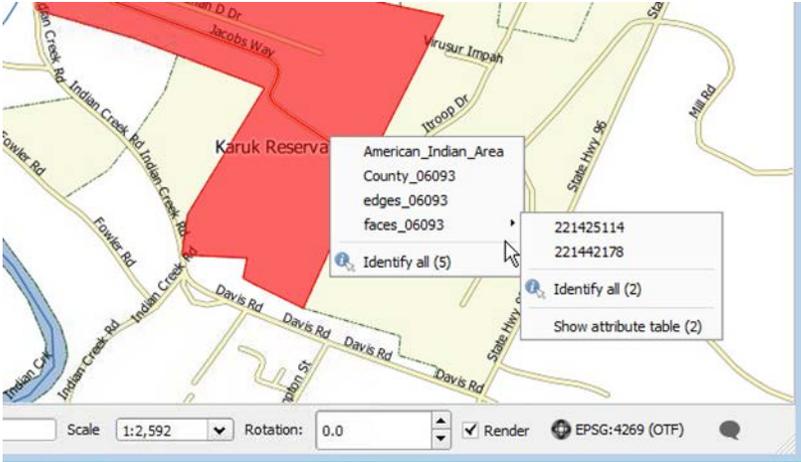
Button	Name	Function / Description
	Pan Map	Shifts the map in Map View without changing the map scale. Click the button, then click a location on the map to re-center the map to the clicked location.
	Pan Map to Selection	Shifts the map in Map View to the rows selected in the attribute table for a selected feature. After selecting a feature(s), click the button to re-center the map based on the selected feature(s).
	Zoom In	Displays the map in Map View at a larger scale. Click the button, then click on the map at the location to which you want to zoom.
	Zoom Out	Displays the map in Map View at a smaller scale.
	Zoom Full	Displays the map in Map View at a smaller scale and zooms the map view to the full extent of the county.
	Zoom to Selection	Zooms the Map View to the rows selected by query in the attribute table for a feature(s). After selecting a feature(s) on the map, click the button to view the feature(s) at a greater map scale.
	Zoom to Layer	Zooms the Map View to the layer selected in the Table of Contents . After selecting the layer, click the button to zoom to the layer's extent.
	Zoom Last	Zooms the Map View to the previous map extent.
	Zoom Next	Zooms the Map View forward to the next map extent (if you viewed the previous extent).
	Refresh	Displays Map View to initial full display.
	Identify Features	Identifies geographic features. Click the button, then click on a feature on the map to identify the feature at the location.
	Deselect Features from All Layers	Deselects selected features from all layers.
	Measure	Provides options to measure linear distance, area, and angles on the map.
	New Bookmark	Creates and names a spatial bookmark of the current map view.
	Show Bookmarks	Display all bookmarks created by the user.

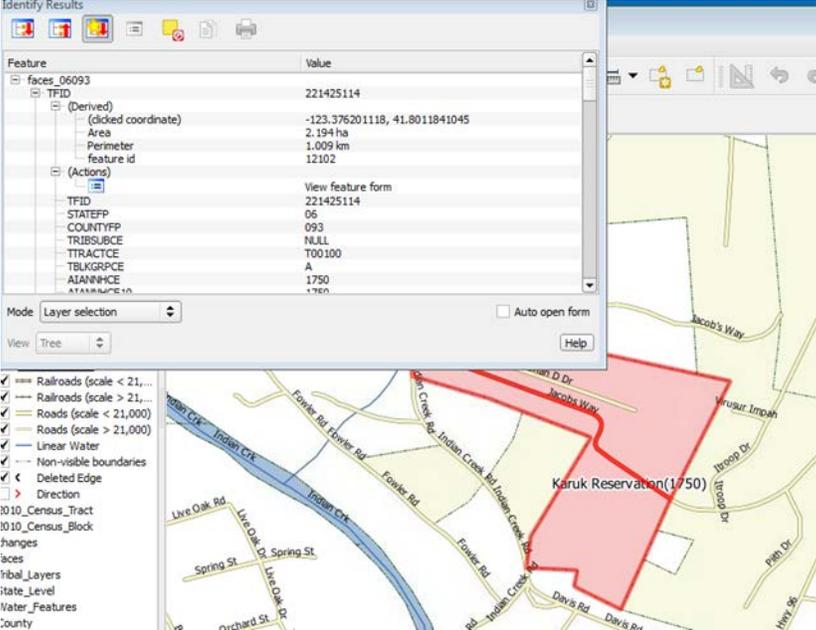
Most of the sub-toolbar buttons defined above are straight-forward. Those related to features, however, require further explanation. You will need these buttons to identify and select/deselect features on the map and to view feature attributes. You will also need them to make measurements and create spatial bookmarks.

5.6.2.1 Identify a Feature Using the Identify Features Button

To identify a feature on the map, follow the steps in [Table 13](#).

Table 13: Identify a Feature on the Map

Step	Action and Result
Step 1	Click the Identify button on the Standard toolbar . 
Step 2	Then right-click on the feature. <i>The results will display in drop-down menu on the map.</i>  <p>To see all attributes for the feature, select 'Show attribute table' in the faces drop-down menu.</p> 

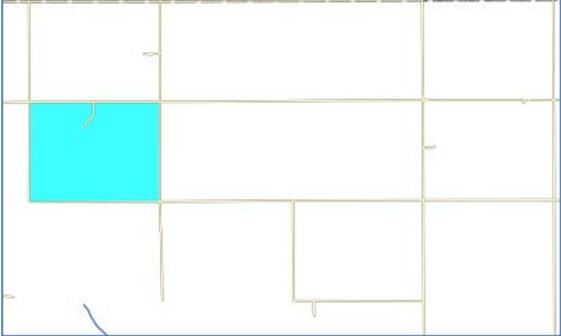
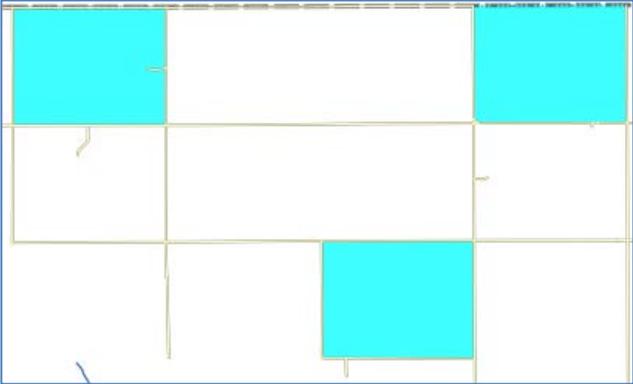
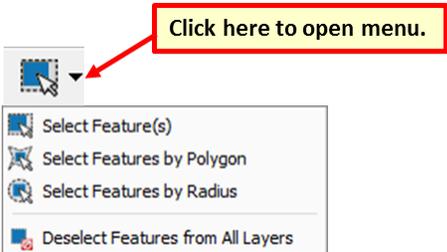
Step	Action and Result
<p>Step 3</p>	<p>Alternately, click the Identify button, then left-click on the feature. <i>The feature turns red (color may vary) and the Identify Results screen opens under the Table of Contents, showing the feature attributes.</i> (Note that here we have dragged the screen from beneath the Table of Contents so that it sits over the map.)</p> 

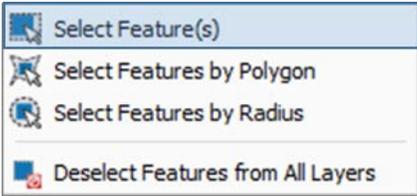
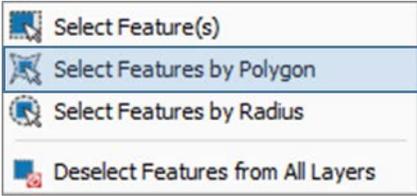
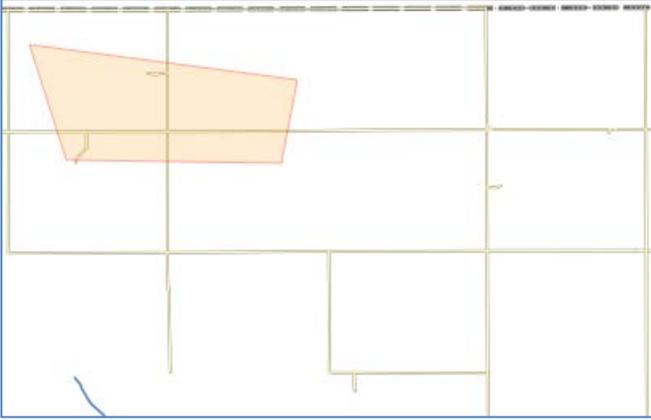
5.6.2.2 Select/Deselect Features Using the Select Features and Deselect Features Buttons

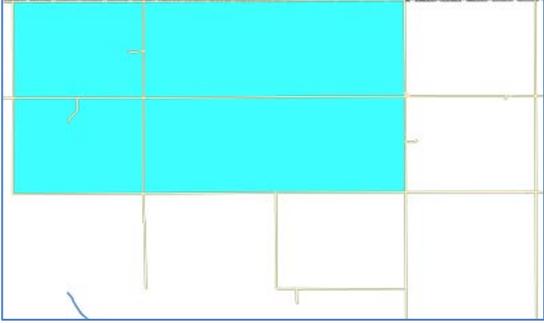
The **Select Features** button gives you several ways to select features on the map. The **Deselect Features from All Layers** button allows you to deselect features you previously selected. [Table 14](#) describes each of the feature selection methods, discusses when one might be preferable over another, and explains how to deselect features.

Table 14: Select/Deselect Features on the Map

Step	Action and Result
<p>Step 1</p>	<p>To begin, click on the layer name in the Table of Contents for the layer in which you want to select a feature. For example, if you want to select linear features, click on the 'edges' layer; if you want to select faces, click on the 'faces' layer.</p>
<p>Step 2</p>	<p>Then click once on the Select Features button on the Standard Toolbar.</p> 
<p>Step 3</p>	<p>To select an edge or face on the map, click on it. In this example, we have selected 'faces' in the Table of Contents and clicked on a face. <i>The face selected turns cyan (color may vary).</i></p>

Step	Action and Result
	
<p>Step 4</p>	<p>To select more than one face, hold down the CTRL key while clicking on the additional faces you wish to select. This method is suited to instances where you want to select faces that are not contiguous, as shown below.</p> 
	<p>You can also select multiple features by simply clicking the Select Feature button, then dragging your cursor over the features. This method is convenient when you want to select a large number of contiguous faces or a large number of nearby linear features without having to click each, one by one.</p>
	<p style="text-align: center;">A Note on GUPS Tools</p> <p>GUPS tools remain active until a different tool is selected. For example, if you use the Select Features tool to choose faces for a new area landmark, then decide you would rather add a new linear feature instead, you must click the Add Linear Feature tool before you click on the map again. If you do not, the Select Features tool, still active, selects a face.</p>
<p>Step 5</p>	<p>To open other Select Features options, click on the down arrow to the right of the Select Features button. <i>The Select Features drop-down menu opens.</i></p> 

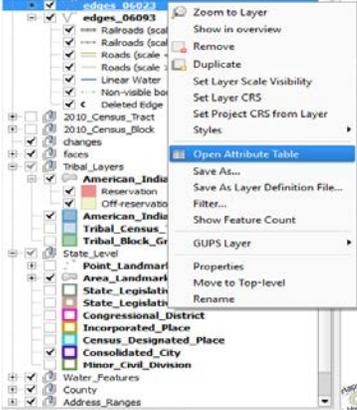
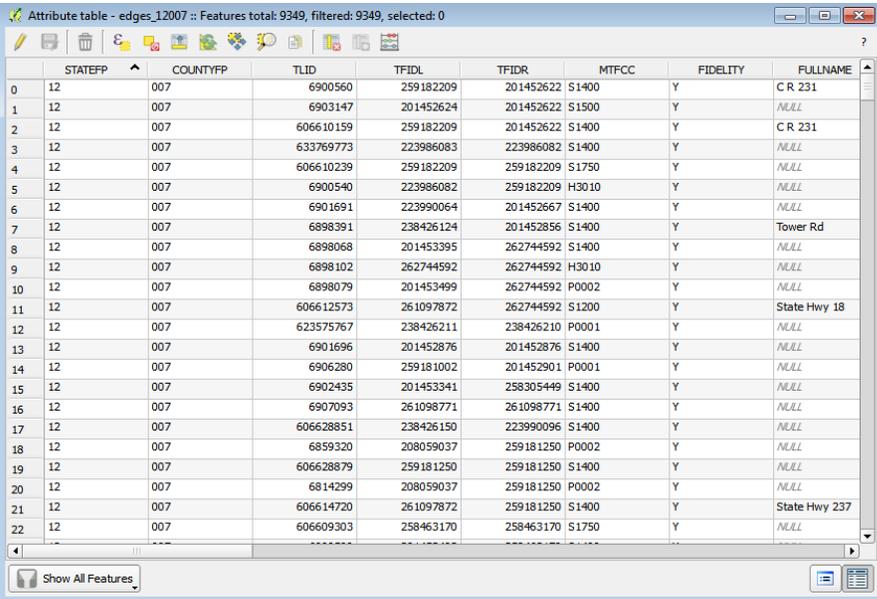
Step	Action and Result
	Note that when a menu option is selected, the button's appearance changes.
<p>Step 6</p>	<p>The first option in the menu, 'Select Feature(s)', duplicates the functions available when you click on the main button on the toolbar.</p> 
<p>Step 7</p>	<p>The second option, 'Select Features by Polygon', allows you to draw a polygon on the map to select features. To use this feature select it in the drop-down menu, then follow the steps below.</p> 
<p>Step 8</p>	<p>Left-click on the map where you want to begin the polygon. Drag your cursor to extend the line to the point you want, left-click, then extend the line in a new direction. Continue until you have a closed polygon, as shown below.</p> 
<p>Step 9</p>	<p>When you are done, right-click. (This tells the system you have finished drawing). <i>All faces with an edge appearing within the polygon are highlighted in cyan blue.</i></p>

Step	Action and Result
	
<p>Step 10</p>	<p>The final option, 'Select Features by Radius', allows you to use your cursor to draw a circle to define the features you want to select.</p> <div data-bbox="688 709 1105 900" data-label="Image"> </div> <p>To use this tool, left-click on the map where you want to begin, then hold down the mouse and drag the cursor outward to expand the circle. Release the mouse when you are done. <i>The feature(s) selected is(are) highlighted in cyan blue.</i></p>
<p>Step 11</p>	<p>You can either deselect polygons selected by holding and using the same selection option to deselect by holding CTRL and retracing over the polygons, or deselect a feature or features automatically by clicking the Deselect Features from All Layers.</p> <div data-bbox="688 1167 1105 1358" data-label="Image"> </div>

5.6.2.3 View an Attribute Table for a Layer on the Map

To view an attribute table for a map layer, follow the steps in [Table 15](#).

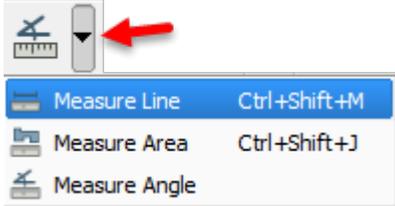
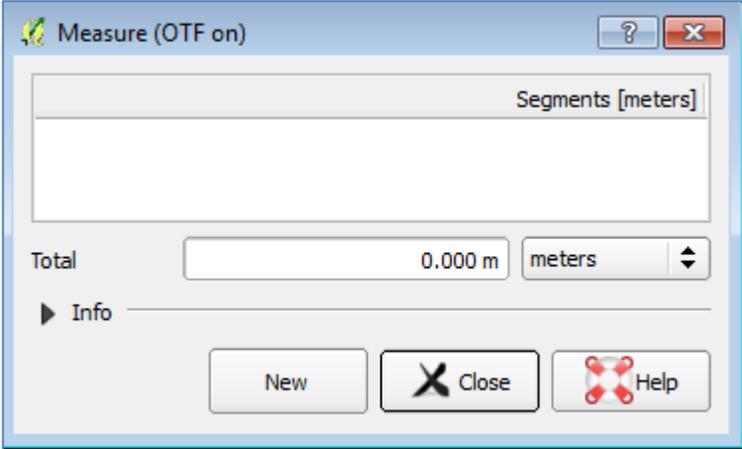
Table 15: View Layer Attributes Using the Attributes Table

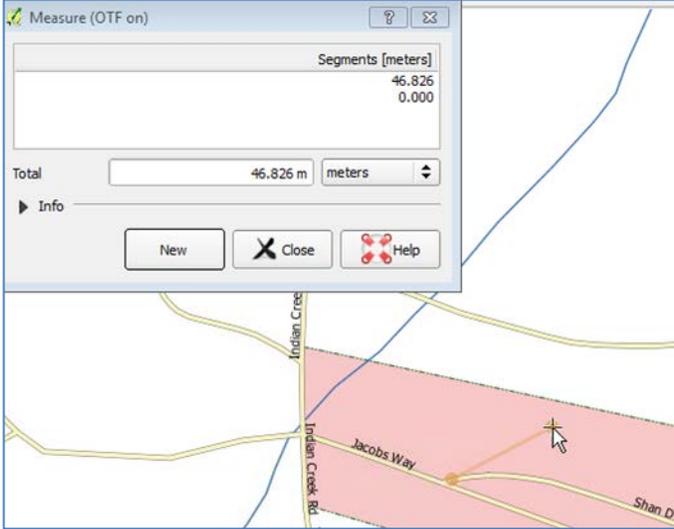
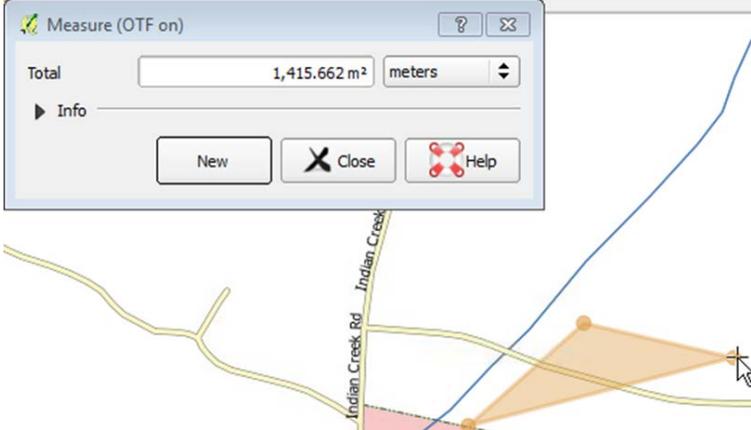
Step	Action and Result																																																																																																																																																																																																																								
<p>Step 1</p>	<p>Right-click the layer in the Table of Contents. <i>The layer drop-down menu opens.</i></p> 																																																																																																																																																																																																																								
<p>Step 2</p>	<p>Click the 'Open Attribute Table' option in the drop-down menu. <i>The Attribute table opens showing all features in the layer and their attributes (e.g., name, MTFCCs, etc.). Each column represents a separate attribute and each row an individual feature.</i></p>  <table border="1" data-bbox="430 1113 1307 1617"> <thead> <tr> <th></th> <th>STATEFP</th> <th>COUNTYFP</th> <th>TLID</th> <th>TFIDL</th> <th>TFIDR</th> <th>MTFCC</th> <th>FIDELITY</th> <th>FULLNAME</th> </tr> </thead> <tbody> <tr><td>0</td><td>12</td><td>007</td><td>6900560</td><td>259182209</td><td>201452622</td><td>S1400</td><td>Y</td><td>C R 231</td></tr> <tr><td>1</td><td>12</td><td>007</td><td>6903147</td><td>201452624</td><td>201452622</td><td>S1500</td><td>Y</td><td>NULL</td></tr> <tr><td>2</td><td>12</td><td>007</td><td>606610159</td><td>259182209</td><td>201452622</td><td>S1400</td><td>Y</td><td>C R 231</td></tr> <tr><td>3</td><td>12</td><td>007</td><td>633769773</td><td>223986083</td><td>223986082</td><td>S1400</td><td>Y</td><td>NULL</td></tr> <tr><td>4</td><td>12</td><td>007</td><td>606610239</td><td>259182209</td><td>259182209</td><td>S1750</td><td>Y</td><td>NULL</td></tr> <tr><td>5</td><td>12</td><td>007</td><td>6900540</td><td>223986082</td><td>259182209</td><td>H3010</td><td>Y</td><td>NULL</td></tr> <tr><td>6</td><td>12</td><td>007</td><td>6901691</td><td>223990064</td><td>201452667</td><td>S1400</td><td>Y</td><td>NULL</td></tr> <tr><td>7</td><td>12</td><td>007</td><td>6898391</td><td>238426124</td><td>201452856</td><td>S1400</td><td>Y</td><td>Tower Rd</td></tr> <tr><td>8</td><td>12</td><td>007</td><td>6898068</td><td>201453395</td><td>262744592</td><td>S1400</td><td>Y</td><td>NULL</td></tr> <tr><td>9</td><td>12</td><td>007</td><td>6898102</td><td>262744592</td><td>262744592</td><td>H3010</td><td>Y</td><td>NULL</td></tr> <tr><td>10</td><td>12</td><td>007</td><td>6898079</td><td>201453499</td><td>262744592</td><td>P0002</td><td>Y</td><td>NULL</td></tr> <tr><td>11</td><td>12</td><td>007</td><td>606612573</td><td>261097872</td><td>262744592</td><td>S1200</td><td>Y</td><td>State Hwy 18</td></tr> <tr><td>12</td><td>12</td><td>007</td><td>623575767</td><td>238426211</td><td>238426210</td><td>P0001</td><td>Y</td><td>NULL</td></tr> <tr><td>13</td><td>12</td><td>007</td><td>6901696</td><td>201452876</td><td>201452876</td><td>S1400</td><td>Y</td><td>NULL</td></tr> <tr><td>14</td><td>12</td><td>007</td><td>6906280</td><td>259181002</td><td>201452901</td><td>P0001</td><td>Y</td><td>NULL</td></tr> <tr><td>15</td><td>12</td><td>007</td><td>6902435</td><td>201453341</td><td>258305449</td><td>S1400</td><td>Y</td><td>NULL</td></tr> <tr><td>16</td><td>12</td><td>007</td><td>6907093</td><td>261098771</td><td>261098771</td><td>S1400</td><td>Y</td><td>NULL</td></tr> <tr><td>17</td><td>12</td><td>007</td><td>606628851</td><td>238426150</td><td>223990096</td><td>S1400</td><td>Y</td><td>NULL</td></tr> <tr><td>18</td><td>12</td><td>007</td><td>6859320</td><td>208059037</td><td>259181250</td><td>P0002</td><td>Y</td><td>NULL</td></tr> <tr><td>19</td><td>12</td><td>007</td><td>606628879</td><td>259181250</td><td>259181250</td><td>S1400</td><td>Y</td><td>NULL</td></tr> <tr><td>20</td><td>12</td><td>007</td><td>6814299</td><td>208059037</td><td>259181250</td><td>P0002</td><td>Y</td><td>NULL</td></tr> <tr><td>21</td><td>12</td><td>007</td><td>606614720</td><td>261097872</td><td>259181250</td><td>S1400</td><td>Y</td><td>State Hwy 237</td></tr> <tr><td>22</td><td>12</td><td>007</td><td>606609303</td><td>258463170</td><td>258463170</td><td>S1750</td><td>Y</td><td>NULL</td></tr> </tbody> </table>		STATEFP	COUNTYFP	TLID	TFIDL	TFIDR	MTFCC	FIDELITY	FULLNAME	0	12	007	6900560	259182209	201452622	S1400	Y	C R 231	1	12	007	6903147	201452624	201452622	S1500	Y	NULL	2	12	007	606610159	259182209	201452622	S1400	Y	C R 231	3	12	007	633769773	223986083	223986082	S1400	Y	NULL	4	12	007	606610239	259182209	259182209	S1750	Y	NULL	5	12	007	6900540	223986082	259182209	H3010	Y	NULL	6	12	007	6901691	223990064	201452667	S1400	Y	NULL	7	12	007	6898391	238426124	201452856	S1400	Y	Tower Rd	8	12	007	6898068	201453395	262744592	S1400	Y	NULL	9	12	007	6898102	262744592	262744592	H3010	Y	NULL	10	12	007	6898079	201453499	262744592	P0002	Y	NULL	11	12	007	606612573	261097872	262744592	S1200	Y	State Hwy 18	12	12	007	623575767	238426211	238426210	P0001	Y	NULL	13	12	007	6901696	201452876	201452876	S1400	Y	NULL	14	12	007	6906280	259181002	201452901	P0001	Y	NULL	15	12	007	6902435	201453341	258305449	S1400	Y	NULL	16	12	007	6907093	261098771	261098771	S1400	Y	NULL	17	12	007	606628851	238426150	223990096	S1400	Y	NULL	18	12	007	6859320	208059037	259181250	P0002	Y	NULL	19	12	007	606628879	259181250	259181250	S1400	Y	NULL	20	12	007	6814299	208059037	259181250	P0002	Y	NULL	21	12	007	606614720	261097872	259181250	S1400	Y	State Hwy 237	22	12	007	606609303	258463170	258463170	S1750	Y	NULL
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<p>Step 3</p>	<p>To select a feature to view, click on the number on the far left of the row. To select multiple features, click on the number of the row for the first feature you want to select, then press the CTRL key. While holding the CTRL key down, click on the numbers for the other individual rows you want to select. To select a range of features, click on the number for the row showing the first feature you want to select, then press the SHIFT key. While holding down the SHIFT key, click on the number for the last row you want to select.</p>																																																																																																																																																																																																																								

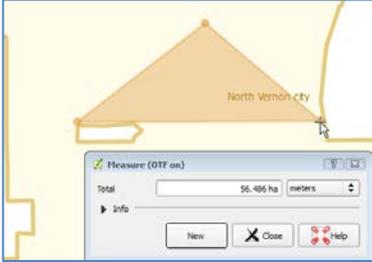
5.6.2.4 Determine Distance, Area, and Angles on the Map

To measure the distance between two or more points, area, or an angle on a map, follow the steps in [Table 16](#).

Table 16: Measure Distances, Area, and Angles on a Map

Step	Action and Result
<p>Step 1</p>	<p>Click the Measure button on the Standard toolbar.</p>  <p>The Measure button drop-down menu opens.</p> 
<p>Step 2</p>	<p>To measure the distance between two points on the map, select 'Measure Line' in the drop-down menu. The Measure box opens.</p> 
<p>Step 3</p>	<p>Zoom to the map location where you want to make the measurement. Then click on the beginning point on the map and continue clicking on points until you reach the final point. Right-click when you are done. The length of each segment of the line you drew, as well as the total length of the line between the beginning point and the ending point, appear in the Measure box.</p>

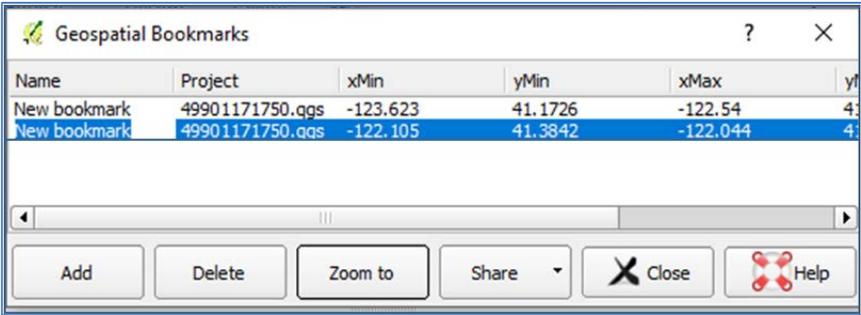
Step	Action and Result
	
<p>Step 4</p>	<p>To measure area on the map, select 'Measure Area' in the drop-down menu. <i>The Measure box opens.</i> When the box opens, left-click on the map to begin drawing a polygon around the area you want to measure. Left-click when you reach each vertex of the polygon. When you are finished, right-click. <i>The area polygon encompasses appears in the Total field.</i> Use the drop-down to the right to see the area in other units of measure.</p>  <p>To begin a new measurement, click the New button.</p>
<p>Step 5</p>	<p>To measure an angle on the map, first select the 'Measure Angle' option in the drop-down menu. Then left-click on the map to begin drawing the angle. Drag the mouse (but do not hold down the mouse button) to create the first side of the angle. Then left-click. Drag the mouse again (again without holding down the mouse button) to draw the second leg. <i>The Angle box opens showing the angle measurement.</i></p>

Step	Action and Result
	

5.6.2.5 Save Locations on a Map Using the Bookmark Button

To save geographic locations on your map and view them later, follow the steps in [Table 17](#).

Table 17: Bookmark Locations on a Map

Step	Action and Result																		
<p>Step 1</p>	<p>Zoom to the location on the map in Map View that you wish to bookmark and click on the New Bookmark button on the Standard toolbar.</p>  <p>The Geospatial Bookmarks box opens.</p>  <table border="1" data-bbox="446 1087 1307 1402"> <thead> <tr> <th>Name</th> <th>Project</th> <th>xMin</th> <th>yMin</th> <th>xMax</th> <th>yMax</th> </tr> </thead> <tbody> <tr> <td>New bookmark</td> <td>49901171750.qgs</td> <td>-123.623</td> <td>41.1726</td> <td>-122.54</td> <td>41.1726</td> </tr> <tr> <td>New bookmark</td> <td>49901171750.qgs</td> <td>-122.105</td> <td>41.3842</td> <td>-122.044</td> <td>41.3842</td> </tr> </tbody> </table>	Name	Project	xMin	yMin	xMax	yMax	New bookmark	49901171750.qgs	-123.623	41.1726	-122.54	41.1726	New bookmark	49901171750.qgs	-122.105	41.3842	-122.044	41.3842
Name	Project	xMin	yMin	xMax	yMax														
New bookmark	49901171750.qgs	-123.623	41.1726	-122.54	41.1726														
New bookmark	49901171750.qgs	-122.105	41.3842	-122.044	41.3842														
<p>Step 2</p>	<p>Click on the row named 'New bookmark'. Then backspace over 'New bookmark' and type in a descriptive name for the bookmark (255-character limit). Click the Close button. <i>The bookmark is added.</i></p>																		
<p>Step 3</p>	<p>To view and manage spatial bookmarks, click on the Show Bookmarks button on the Standard toolbar. <i>The Geospatial Bookmarks dialog box again opens.</i></p> <p>To zoom to a bookmark, click on a bookmark name in the dialog box and then click the Zoom to button.</p> <p>To delete a bookmark, click on the bookmark name, then press the Delete button.</p>																		
	<p>Bookmark names and coordinates cannot be edited from the Geospatial Bookmarks dialog box.</p>																		

5.6.3 BAS Toolbar Buttons

The **BAS toolbar** provides the BAS-specific functions needed to complete your review and update activities, as well as to import and export zipped shapefiles.



Figure 10. BAS Toolbar

Each toolbar button is described in [Table 18](#) below.

Table 18: BAS Toolbar Buttons

Button	Name	Function/Description
	Add Linear Feature	Add a new linear feature.
	Delete Linear feature	Delete an existing linear feature.
	Split Linear Feature	Split a linear feature. You may need to split a linear feature to accurately reflect an entity's location. This feature "splits" the original into two.
	Display All Names	Displays all names for a street with multiple names assigned in the MAF/TIGER System.
	User Address List	Import an address list (.csv, .txt, etc.) into GUPS.
	Modify Linear Feature Attributes	Edit attributes of a selected linear feature.
	Modify Area Feature	Make updates to legal area (annexations, deannexations, boundary corrections, etc.).
	Show/Hide Legend	Shows or hides the layer.
	Geography Review Tool	Review the attribute table for a layer.
	Review Change Polygons	Review change polygons in a layer and make corrections (reviews change polygons for holes and minimum size).
	Import County ZIP	Import zipped Census Bureau shapefiles shared by another GUPS user.
	Export to ZIP	Create the ZIP file containing all required data and shapefiles to be submitted to the Census Bureau.

Button	Name	Function/Description
	Print Map to File	Export a printable map in .pdf, .png, .tif, or jpeg format.
	Add Point Landmark	Add a new point landmark.
	Edit Point Landmark	Edit point landmark attributes.
	Delete Point Landmark	Delete an existing point landmark.

5.6.4 Status Bar

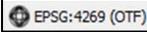
The **Status bar** at the bottom of the GUPS main page displays information about the map. It allows you to adjust the map scale and see the mouse cursor's coordinates on the map.



Figure 11. Status Bar

Table 19 below describes each element of the Status bar.

Table 19: Status Bar Elements

Item	Description
	Allows you to toggle between the mouse's coordinate position or the map view extents as you pan and zoom in and out on the map.
Coordinate	Shows your current position in map coordinates (default is decimal degrees for GUPS) as your map cursor is moved across the map.
Scale	Shows your current position in map coordinates (default is decimal degrees for GUPS) as your map cursor is moved across the map.
Rotation	Shows the map rotation.
Render	Allows you to temporarily prevent layers from drawing by clicking the checkbox immediately to the left of "Render."
	Clicking on the icon opens the projection properties for the current map.

5.7 How to Import User-Provided Data into GUPS

5.7.1 The Add Data Toolbar

To import your own imagery, geodatabase, web mapping service, or other data layers into GUPS you will use the **Add Data toolbar**.



Figure 12. Add Data Toolbar

Although shown in a horizontal position here, the **Add Data toolbar** appears arranged vertically to the left of the **Table of Contents** in GUPS. Its buttons are described in [Table 20](#).

Table 20: Add Data Toolbar Buttons

Button	Name	Function/Description
	Add Vector Layer	Allows you to add shapefile and geodatabase files to your GUPS project.
	Add Raster Layer	Allows you to add raster datasets such as imagery.
	Add PostGIS Layer	Add PostGIS layer.
	Add SpatialLite Layer	Add data from a SpatialLite database.
	Add MS SQL Layer	Add MS SQL 2008 Spatial data.
	Add Oracle Spatial Layer	Add a spatial layer from an Oracle database.
	Add WMS/WMT Layer	Add Web Mapping Services and Web Mapping Tile Services. Publicly accessible and secured WMS services are supported.
	Add WCS Layer	Add Web Coverage Services, which provide access to raster data useful for client-side map rendering.
	Add WFS Layer	Add Web Feature Services.
	New Shapefile Layer	

Button	Name	Function/Description
		Add a new shapefile layer or new temporary scratch layer.

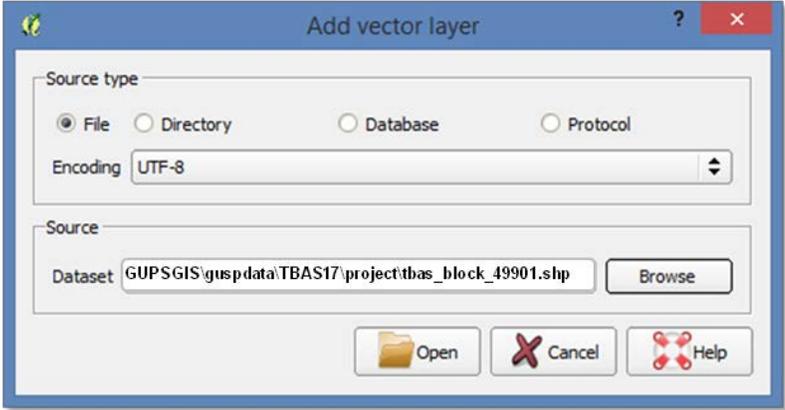
5.7.2 How to Upload User-Provided Data Layers

GUPS supports vector data in a number of formats, including those supported by the OGR library data provider plugin, such as ESRI shapefiles, MapInfo MIF (interchange format), and MapInfo TAB (native format). It also supports PostGIS layers in a PostgreSQL database and SpatiaLite layers. Support for additional data types (e.g., delimited text) is provided by additional data provider plugins.

Below are the steps to import the most commonly used data formats. To upload shapefile or geodatabase data layers, follow the steps in [Table 21](#).

Note: You May Only Upload One User-Provided Data Layer at a Time. If you have multiple data layers that you wish to upload, note that GUPS will only allow you to upload one layer at a time.

Table 21: Load Shapefiles/Geodatabase Layers

Step	Action and Result
Step 1	<p>Begin the upload. Click the Add Vector Layer  button on the Add Data toolbar. <i>The Add Vector Layer dialog box opens.</i></p> 
Step 2	<p>In the Encoding drop-down menu, the default value is 'System'. If you receive an error message when opening your file, use the drop-down to select UTF-8. <i>UTF-8 populates the Encoding field.</i></p>
Step 3	<p>Click the Browse button and navigate to the folder where the shapefile or geodatabase is saved on your computer.</p>
Step 4	<p>Left-click the file you want to upload, then click the Open button. <i>The shapefile / geodatabase is added to the Table of Contents and to the Map View window.</i></p>

To load data from a web mapping service, follow the steps in [Table 22](#).

Table 22: Load Data from a Web Mapping Service

Step	Action and Result
Step 1	Begin the upload. Click the Add WMS/WM(T)S Layer button  on the Add Data toolbar . <i>The Add Layers from a WM(T)S Server dialog box opens.</i>
Step 2	Select the web mapping service. Click the Layers tab, then click the New button under the tab. <i>The Create a new WMS Connection dialog box opens.</i>
Step 3	In the Name field, type a name for the web mapping imagery service. In the URL field, type the URL for the service. If the service requires a user name and password, type them in the fields provided. Click OK . <i>The service will be added to the drop-down menu for web mapping services appearing just below the Labels tab.</i> Note: If you are working inside a firewall, you may be prompted to enter a user name and password to obtain resources from outside the firewall.
Step 4	Select the imagery service you added in the drop-down menu. <i>The available layers appear in the ID/Name/Title/Abstract box.</i>
Step 5	Click on the layer you want to display, then click the Add button. <i>The WMS is added to the map showing in Map View and to the Table of Contents.</i>
	When the WMS is added, it displays over the top of other layers you have selected for Map View . To make it display below these layers, click on the WMS layer and, while holding down the mouse button, drag it to the bottom of the Table of Contents .

If you do not have access to a web mapping service, have a poor Internet connection, or work under a restrictive firewall, you can still add other types of imagery files to GUPS (e.g., a county or state imagery dataset), one option for adding imagery may be the National Agricultural Imagery Service (NAIP), supplied in web mapping service format by the U.S. Geological Survey. To add imagery files, follow the steps in [Table 23](#).

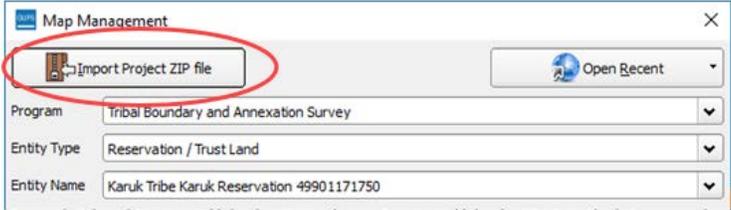
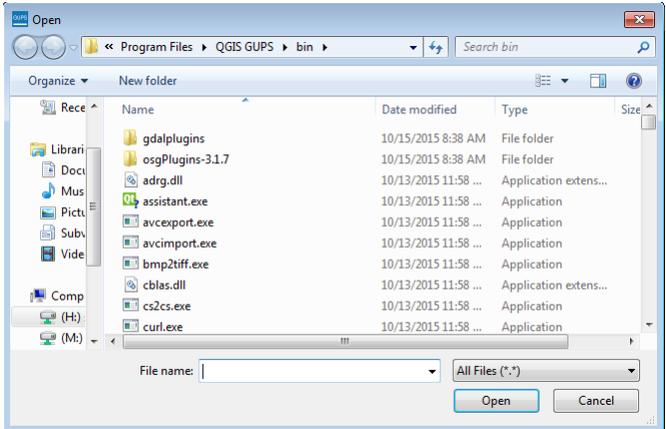
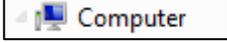
Table 23: Add Imagery Files

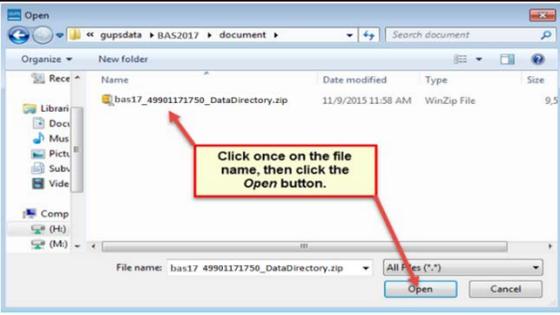
Step	Action and Result
Step 1	Click the Add Raster Layer  button on the Add Data toolbar . <i>The Open a GDAL Supported Raster Data Source dialog box opens.</i>
Step 2	Navigate to the folder on your computer where the imagery file is stored.
Step 3	Select the file, then click Open . <i>The file loads into GUPS.</i>

5.7.3 How to Import a Shared ZIP Shapefile

If you want to import Census Bureau shapefiles already updated by another user, you may use the **Import Project ZIP File** button (available both on the BAS toolbar and in the Map Management dialog box), then follow the steps in [Table 24](#).

Table 24: Import a ZIP File Shared by Another User

Step	Action and Result
<p>Step 1</p>	<p>Click the Import Project ZIP File button in the upper left-hand corner of the Map Management dialog box:</p>  <p>OR on the BAS toolbar:</p> 
<p>Step 2</p>	<p><i>The Open window opens.</i></p> 
<p>Step 3</p>	<p>From this window, click on the 'Computer' icon (called 'My Computer' in some versions of Windows) located in the far-left-hand pane.  When the list of directories opens, navigate to the location where the shared ZIP file is located.</p>
<p>Step 4</p>	<p>Once you locate the file, click once on the file, then click the Open button.</p>

Step	Action and <i>Result</i>
	 <p data-bbox="337 583 683 617"><i>The file loads into Map View.</i></p>

SECTION 6. MAKING BAS UPDATES IN GUPS

The tables in this section provide step-by-step instructions for making BAS updates. The examples assume you have read and understood the directions for opening GUPS and using Map Management. If you do not yet feel comfortable with Map Management, please review the contents of [Section 5: Using GUPS \(Basics and Map Management\)](#) before you begin making updates. It is highly recommended to use a source of imagery data when making any BAS updates.

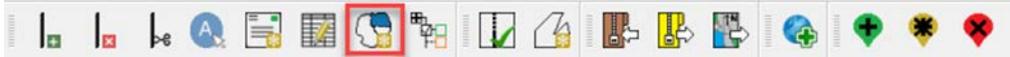
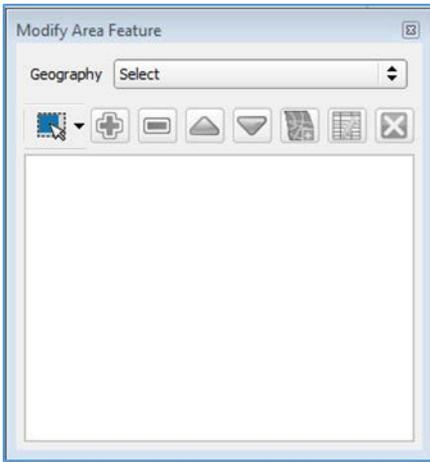
All examples shown here, although using real data, are purely fictitious. They are employed for purposes of illustration only and do not indicate any actual geographic changes.

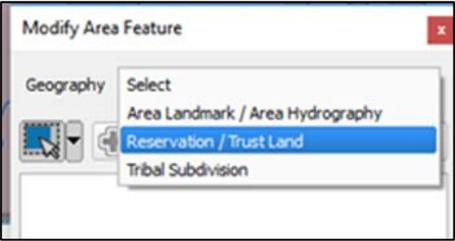
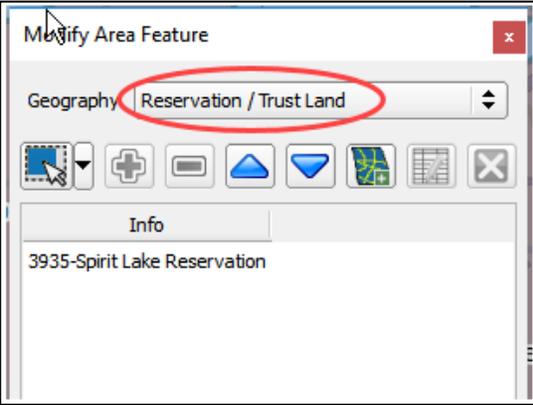
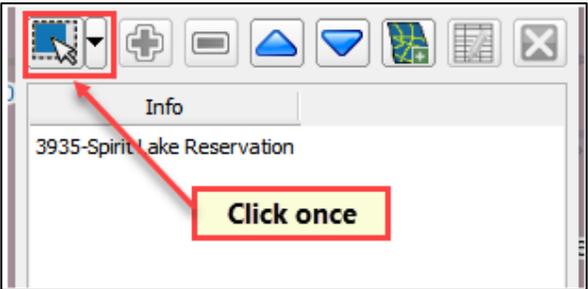
6.1 How to Update Legal Boundaries

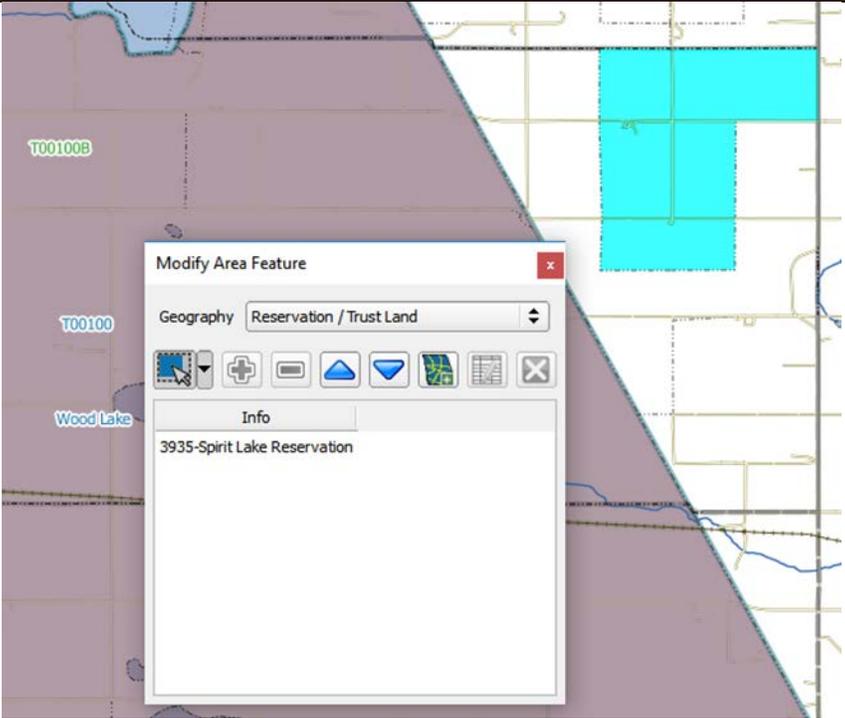
6.1.1 Adding Land Area as Reservation or Trust Lands for the First Time

Follow the steps in [Table 25](#) to add land as reservation or off-reservation trust land(s). In this example, we will add a parcel of land as a fictitious newly acquired 'off-reservation' trust land for the Spirit Lake Reservation (3935).

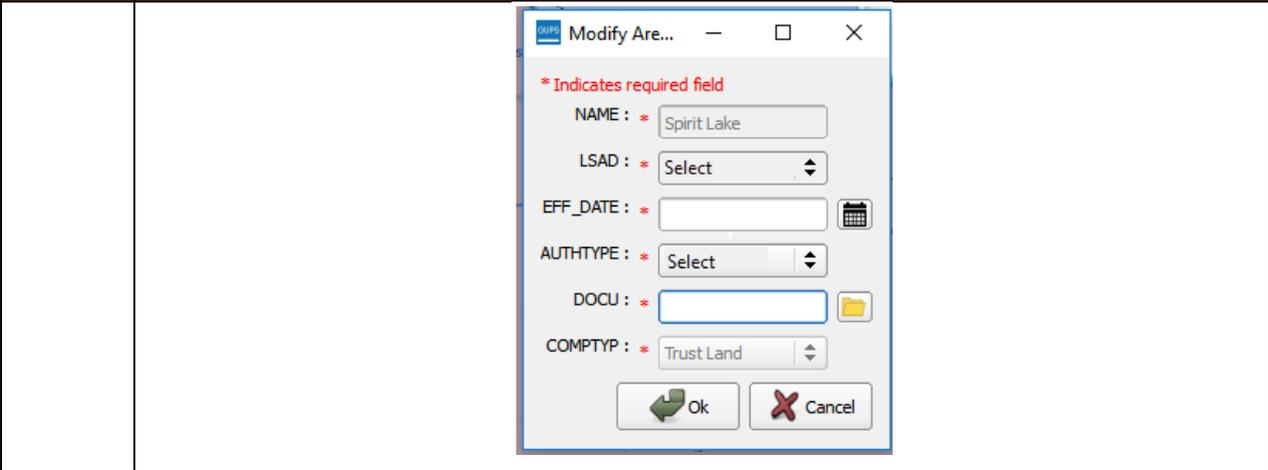
Table 25: Add Land Area as Reservation or Off-reservation Trust Land

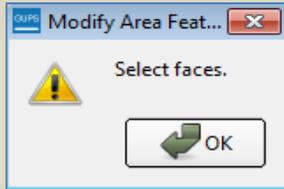
Step	Action and Result
Step 1	Open in Map View the entity where you want to add the new trust land(s). Be sure that you have all layers you wish to see checked in the Table of Contents . It is recommended that you check (turn on) all Tribal Layers .
Step 2	<p>Click the Modify Area Feature button on the BAS toolbar.</p>  <p>The Modify Area Feature dialog box opens.</p> 

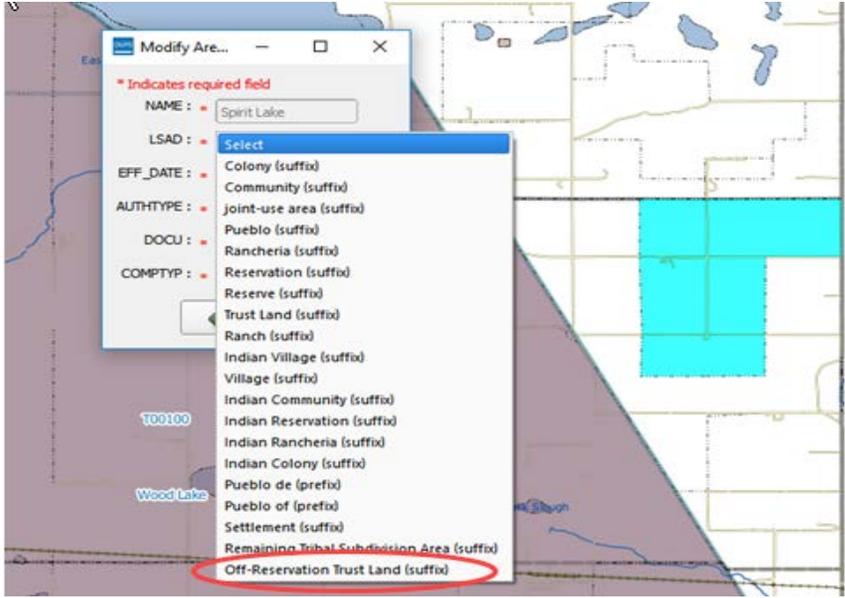
Step	Action and Result
<p>Step 3</p>	<p>Click the drop-down arrow next to the Geography field, and select the entity type you want to add from the drop-down menu. In this example we are adding a Off-Reservation trust land, so we select 'Reservation/Trust Land'.</p>  <p><i>Reservation/Trust Land appears in the Geography field and prior to any changes, Spirit Lake Reservation will be the only file that becomes available.</i></p> 
<p>Step 4</p>	
<p>Step 5</p>	<p>Then click on the map to select the face or faces.</p> <p>If the entity includes only a single face, you may simply click once on the face to select it. If the entity includes several contiguous faces, after clicking on the first face, depress the CTRL key and while holding it down, left-click on each additional face to be added. <i>The selected faces turn cyan (colors may vary).</i></p>

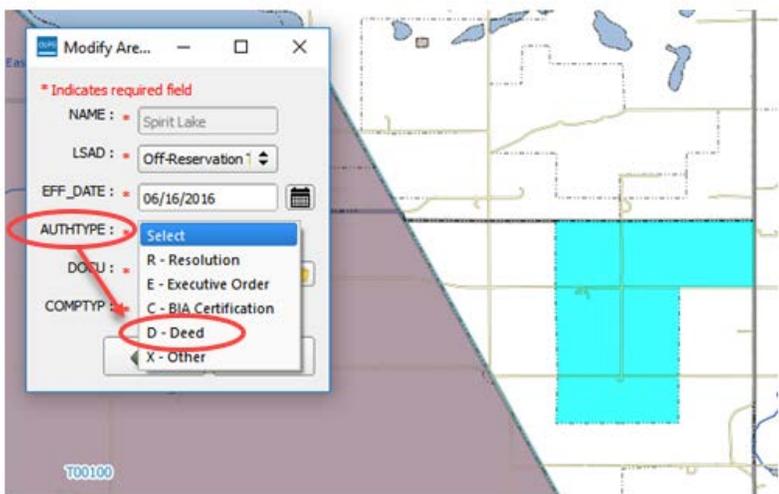
Step	Action and Result
	 <p>Note: You may also select faces (after clicking the Select Features button) by simply dragging your cursor over the edges that mark their boundaries. Additional means of selecting faces (by polygon and by radius) are discussed in Table 14 in Section 5.</p>
	<p>Because all geographic areas consist of faces, you may need to “split” a face to accurately reflect an entity’s boundary.</p> <p>To split a face, digitize a new line that represents the boundary’s location (see Table 29 for instructions to add a linear feature) and assign it the appropriate MTFCC. This splits the original face into two faces. You can now select the face you need to add to the new entity.</p>
<p>Step 6</p>	<p>To record a new entity, click the Add Entity button on the dialog box toolbar.</p>  <p><i>The Modify Area Feature new entity dialog box opens.</i></p>

Step	Action and Result
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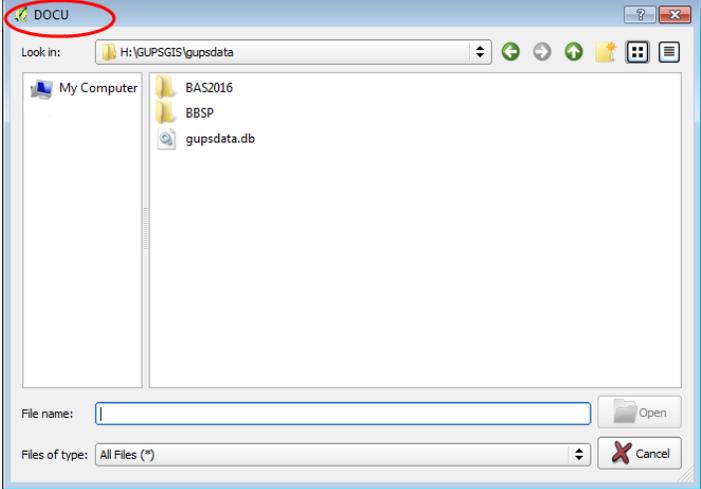


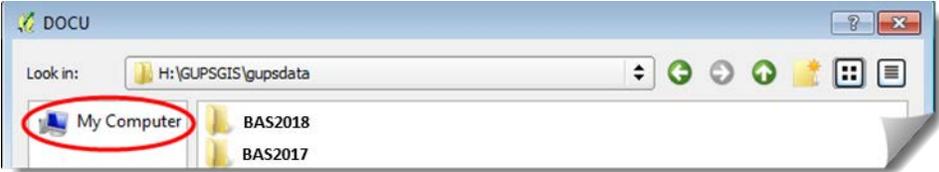
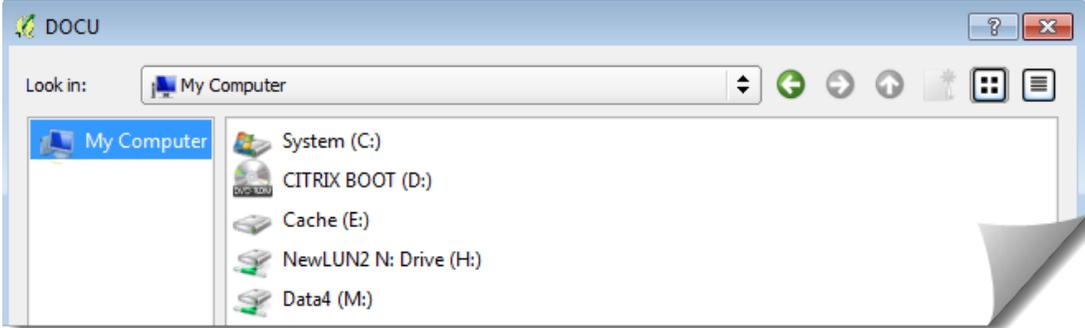
	<p>If you click the Add Entity button before selecting the faces, you will see a pop-up box warning. Simply click OK and add the faces.</p>  <p>Since we have already selected faces, we do not see the pop-up warning.</p>
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<p>Step 7</p>	<p>In the new entity dialog box, select the LSAD (Legal/Statistical Area Description) from the drop-down list available. In this example, we will indicate that it is an 'Off-Reservation Trust Land (suffix)' since a reservation already exists. If a reservation didn't already exist, then the LSAD should be 'Trust Land (suffix)'. The term 'Off-Reservation Trust Land' or 'Trust Land' will be added to the Entity Name, in this example, will be added to Spirit Lake Reservation.</p> 
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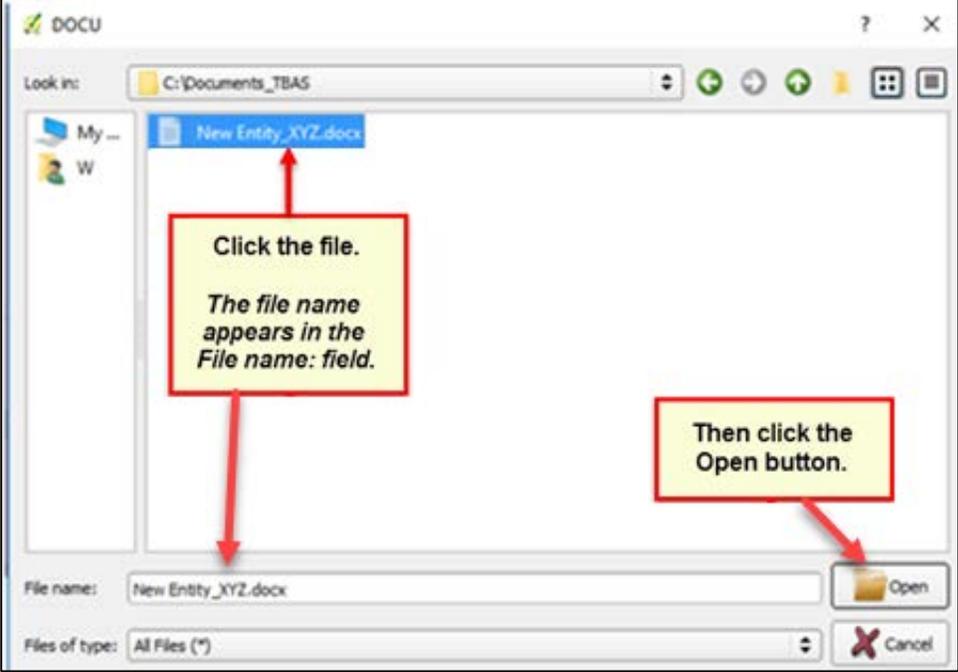
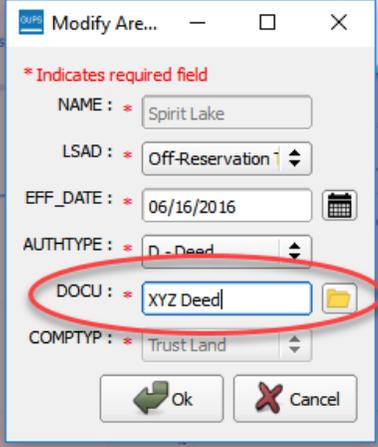
Step	Action and Result
<p>Step 8</p>	<p>Next add the effective date for the legal change. Click on the calendar icon next to the EFF_DATE field and, when the calendar opens, click on the effective date.</p>  <p>The date selected populates the EFF_DATE field.</p>
<p>Step 9</p>	<p>Next, add the authority type using the AUTHTYPE drop-down menu. In this example we have indicated the AUTHTYPE as a D-Deed.</p> 
<p>Step 10</p>	<p>Finally, upload documentation for the change. For all changes that are more than cartographic boundary corrections, documentation will need to be provided. To upload documentation, click the folder icon next to the DOCU field.</p>

Step	Action and Result
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	<div data-bbox="719 254 1065 401" style="border: 1px solid red; padding: 5px; text-align: center;"> <p>Click to load documentation.</p> </div> <div data-bbox="719 338 1065 401" style="border: 1px solid gray; padding: 5px; margin-top: 10px;"> <p>DOCU : * <input type="text"/> </p> </div> <p data-bbox="337 415 651 447"><i>The DOCU window opens.</i></p> 
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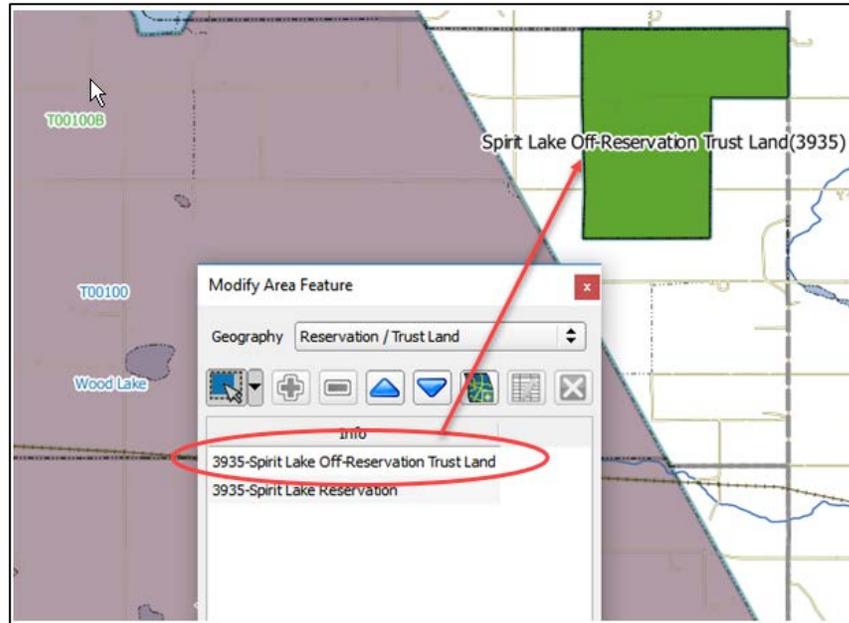
<p>Step 11</p>	<p>Click on the icon for ‘My Computer’ (or simply ‘Computer’ in some Windows versions) to open the directory where you have saved your documentation.</p>  <p><i>Your directories display, as shown below.</i></p> 
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<p>Step 12</p>	<p>Select the appropriate directory in the list and navigate to the file you want to upload as documentation, then click the file. <i>The file name appears in the File name: field.</i></p> <p>To upload the file, click the Open button.</p>
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Step	Action and Result
	
<p>Step 13</p>	<p>Once you have clicked the Open button, the name of the document appears in the DOCU field</p> 
<p>Step 14</p>	<p>Click the OK button.</p> <p>Note: Red asterisks indicate required fields. You must complete required fields to move forward. If you click OK and have not completed one or more required fields, GUPS will prompt you to do so. Any required field not completed will highlight in red</p> <p>If your reservation and/or trust lands contain more than 1 census tract, or more than 1 block group or more than one Tribal Subdivision – there are a few additional steps – continue on to Step 15 below.</p>

Step	Action and Result
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If not, and you have completed all required fields, when you click OK, the faces for the new entity turn green on the map (colors may vary) and the name of the new entity appears on the list in the **Modify Area Feature** dialog box. Skip to **Step 16**.

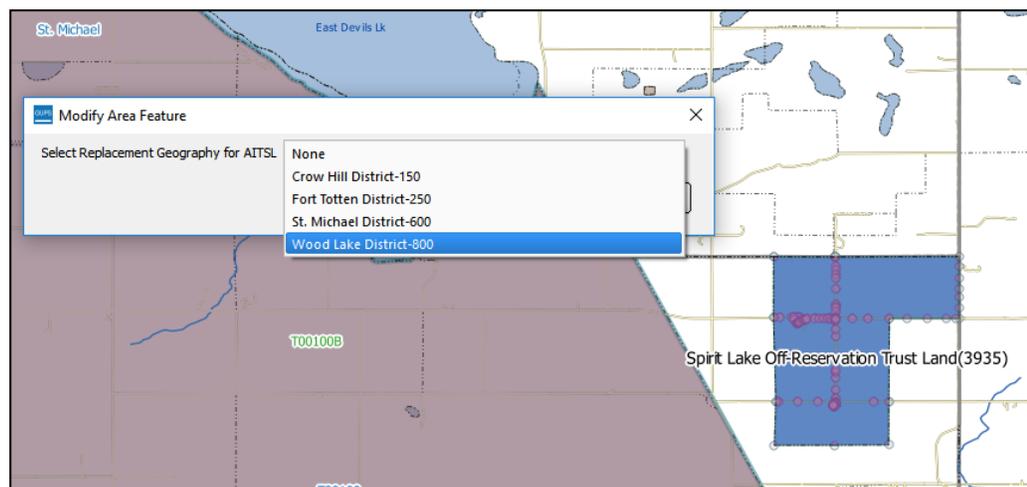


Once the Census Bureau verifies the new Trust Lands, it will assign it the same FIPS code as the Reservation.

Step 15

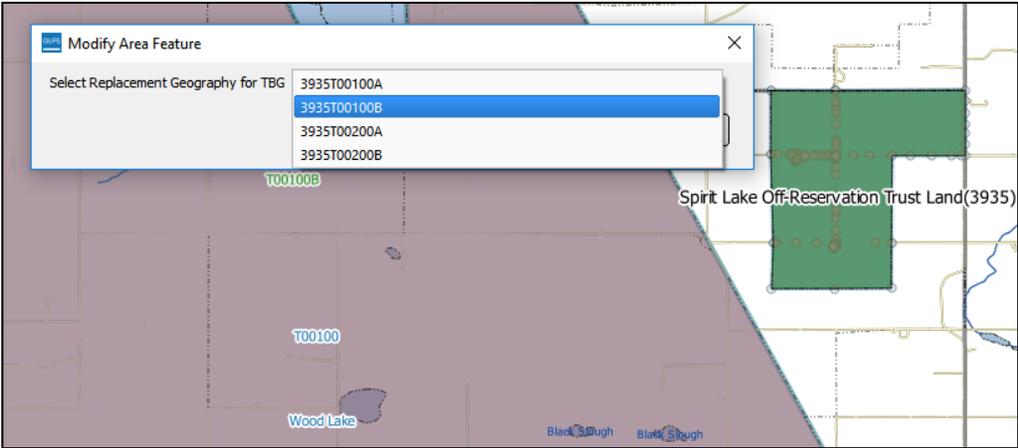
If you have more than 1 census tract, block group or tribal subdivision, there are additional steps to follow when adding area either as 'reservation' or 'trust land'.

After clicking **OK** (in **Step 14**) if there is currently more than 1 tribal subdivision defined for the Entity, a pop-up window will appear with a drop down menu to select which Tribal subdivision (AITSL) the new area should be assigned too. In this example, the new Off-Reservation Trust Land is being assigned to Wood Lake District (80).

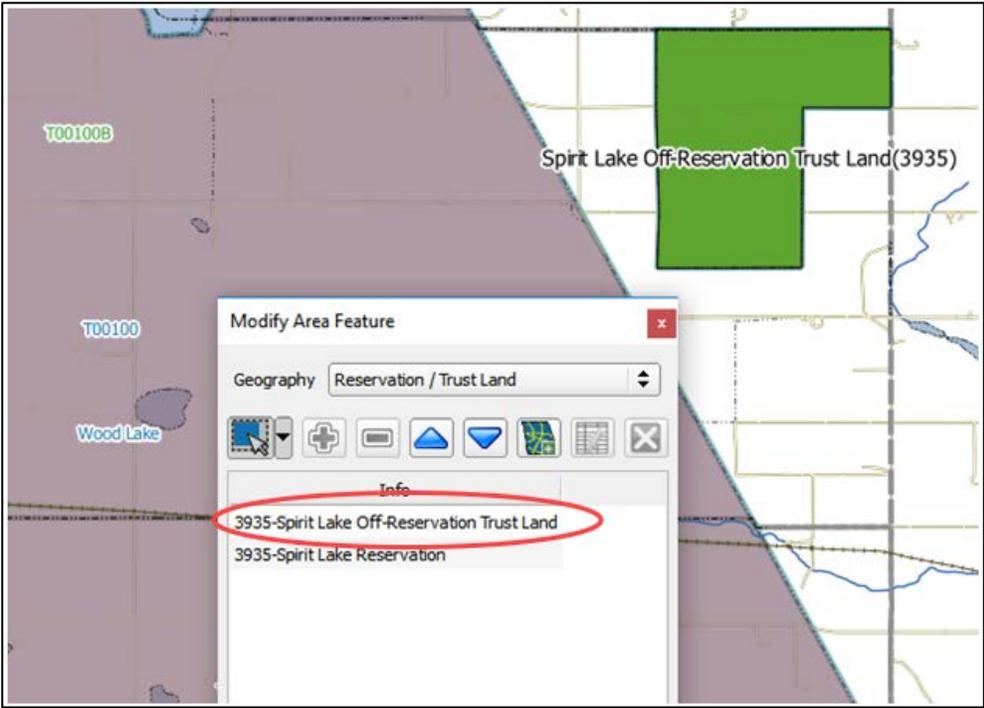


Step	Action and Result
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Once a selection is made, if there is more than 1 Tribal Block Group (TBG), a new pop-up window will appear with a drop-down menu to select which Tribal Census Tract/Tribal Block Group to which the new area should be assigned. In this example, it is being assigned to the adjacent area labeled 3935T00100B.



Once the selection is made, you are returned to the Modify Area Feature menu and can continue with additional changes to the boundaries. (**Step 16**)

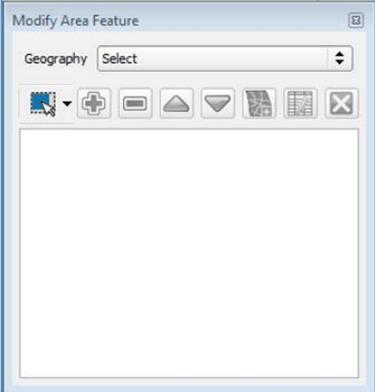
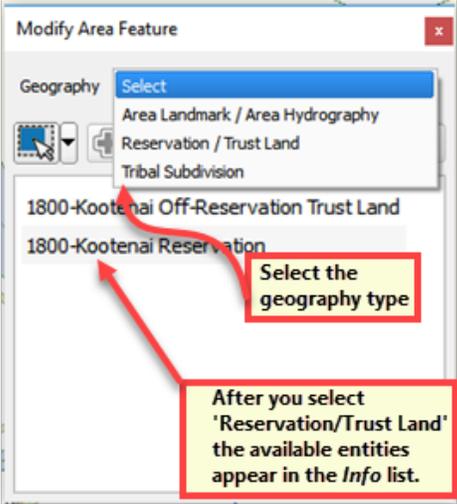


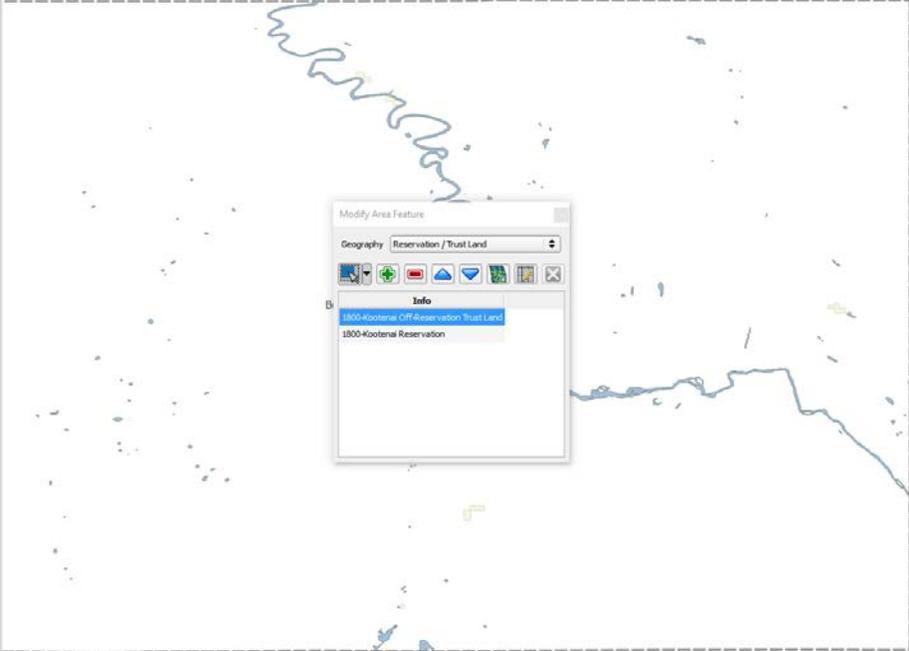
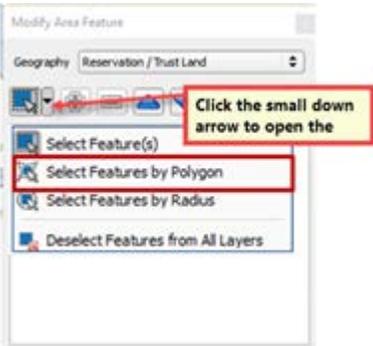
Step 16	<p>To make additional changes to the map, simply make a new selection in the Modify Area Feature dialog box Geography field and continue work (refer back to Step 3 above). You may save your changes as you go or wait until you have finished all work on the map. Saving as changes are completed, however, is recommended to avoid losing work in the event of a power outage or system interruption. Changes can be made to the reservation boundary, trust land boundaries and tribal subdivision boundaries.</p>
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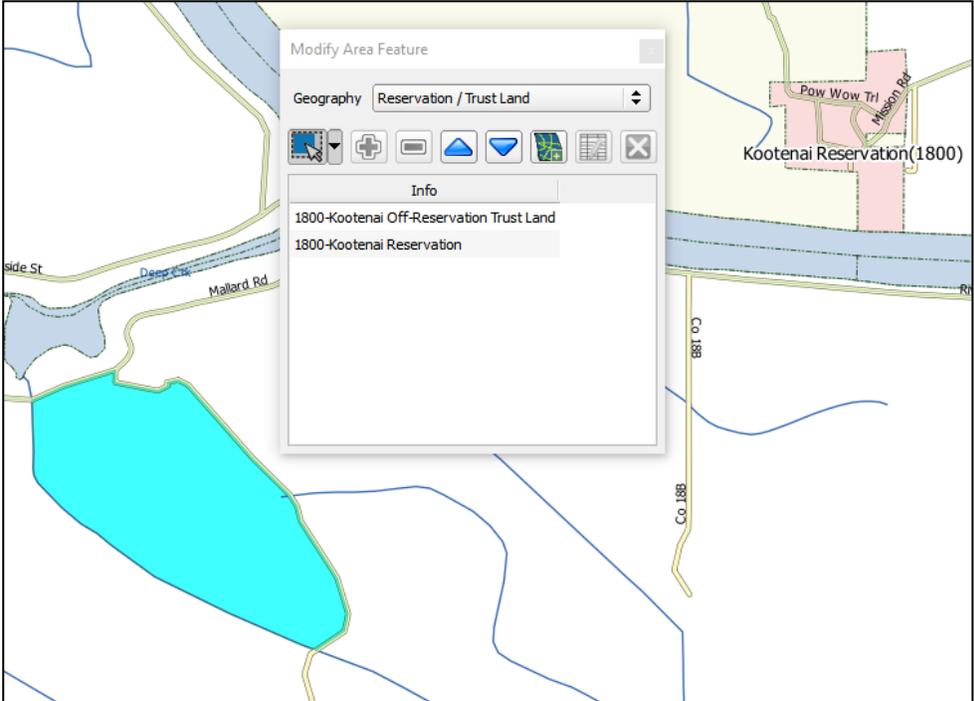
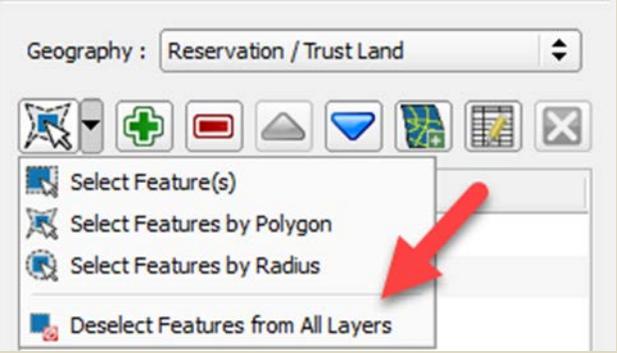
6.1.2 Adding (or Deleting) Land Area to an Existing Reservation or Existing Off-Reservation Trust Land

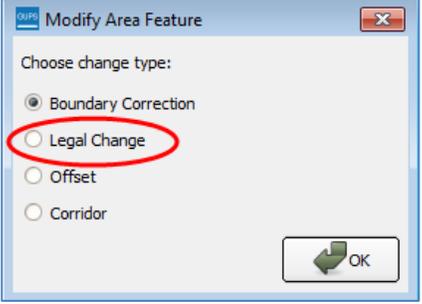
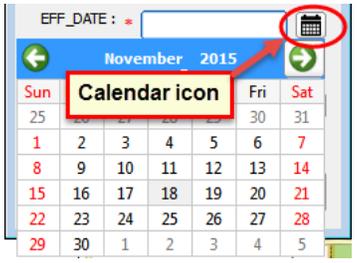
Follow the steps in [Table 26](#) to record land being added to an existing reservation or existing off-reservation trust lands. The fictitious example in the table looks at Kootenai Off-Reservation Trust Lands.

Table 26: Record an Addition

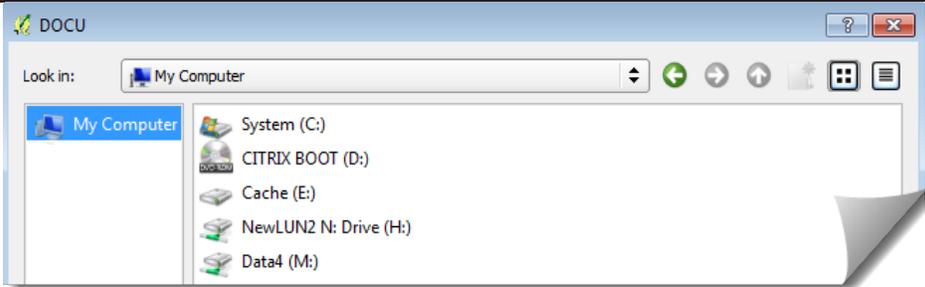
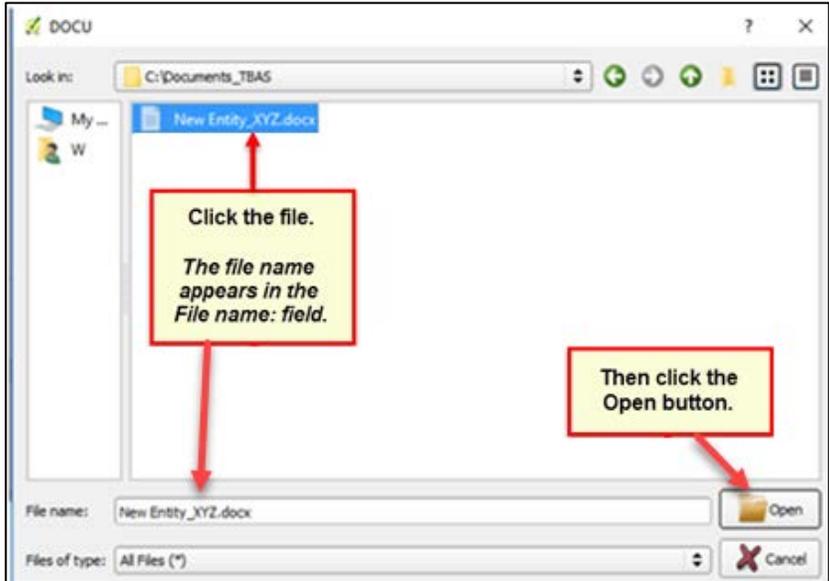
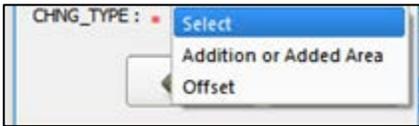
Step	Action and Result
<p>Step 1</p>	<p>Open in Map View the entity. Be sure that you have all layers you wish to see on the map checked in the Table of Contents.</p>
<p>Step 2</p>	<p>Click the Modify Area Feature button on the BAS toolbar.</p>  <p>The <i>Modify Area Feature</i> dialog box opens.</p> 
<p>Step 3</p>	<p>Click the drop-down area next to the Geography field, and select the entity type (here 'Reservation/Trust Land'), from the drop-down menu. <i>A list of available entities appears in the Info list in the bottom portion of the dialog box.</i></p>  <p>Select the geography type</p> <p>After you select 'Reservation/Trust Land' the available entities appear in the <i>Info</i> list.</p>

Step	Action and Result
<p>Step 4</p>	<p>Click on the row in the list for the entity that is making the addition (here 'Kootenai Off-Reservation Trust Land'). (Note: Once you click on the row, the map zooms to the full extent of the entity selected.)</p> 
<p>Step 5</p>	<p>Click on the Zoom in button on the Standard toolbar to zoom into the area where the addition is to be made.</p> 
<p>Step 6</p>	<p>To select the faces you want to add to the off-reservation trust lands, click on the small down arrow next to the Select Features button on the dialog box toolbar. <i>The Select Features button drop-down menu opens.</i></p> <p>In this example we will use the “polygon” method to select the faces we want to add to Kootenai Off-Reservation Trust Lands. Click on 'Select Features by Polygon' in the menu.</p> 
<p>Step 7</p>	<p>Next, go to the map and place your cursor where you want to add the faces.</p>

Step	Action and Result
	<p>To select a single face, simply drag the cursor outward in the center of the face. To select multiple faces, drag the cursor across the edges that separate the faces. In this example, we select seven faces. <i>The faces selected turn cyan (color may vary).</i></p> 
	<p>Because all geographic areas consist of faces, you may need to “split” a face to accurately reflect an entity’s boundary. To split a face, digitize a new line that represents the boundary’s location (see Table 29 for instructions to add a linear feature) and assign it the appropriate MTFCC. This splits the original face into two faces. You can now select the face you need to add to the new entity.</p>
	<p>If you accidentally select a face you do not wish to include, you can use the Deselect Features from All Layers option in the Select Feature(s) drop-down menu to clear the selected faces from your screen and start over.</p> 
<p>Step 8</p>	<p>Click the Add Area button on the dialog box toolbar.</p>

Step	Action and Result
	 <p>The Modify Area Feature Choose change type pop-up box appears, and asks you to choose your change type.</p> 
Step 9	<p>Since this is an addition (not a boundary correction), click the 'Legal Change' radio button, then click OK. The Create Change Polygons dialog box opens.</p> 
Step 10	<p>Click the calendar icon next to the EFF_DATE field to open the calendar, then click on the effective date for the annexation.</p>  <p>The selected date will populate the EFF_DATE field.</p>
Step 11	<p>Select an authority type for the addition in the AUTHTYPE field drop-down menu.</p>

Step	Action and Result
<p>Step 12</p>	<p>In the DOCU field, type in the ordinance or other legal documentation number authorizing the addition of the Off-Reservation Trust Lands or upload documentation for the change. To upload documentation, click the folder icon next to the DOCU field.</p> <div style="text-align: center;"> </div> <p>The DOCU window opens.</p>
<p>Step 13</p>	<p>Click on the icon for 'My Computer' (or simply 'Computer' in some Windows versions) to open the directory where you have saved your documentation.</p> <p>Your directories display, as shown below.</p>

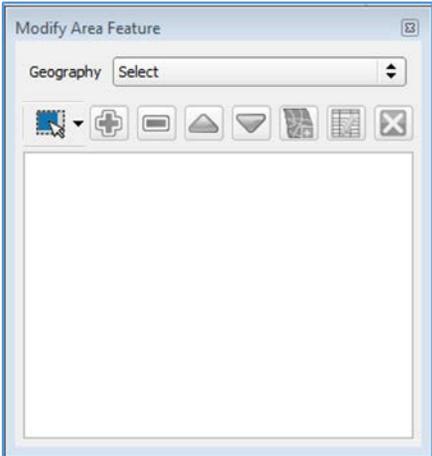
Step	Action and Result
	
<p>Step 14</p>	<p>Select the appropriate directory in the list and navigate to the file you want to upload. Click the file, then to upload it, click the Open button at the bottom of the DOCU window.</p>  <p>The name of the document populates the DOCU field on the dialog box.</p> 
<p>Step 15</p>	<p>Finally, select 'Addition or Added Area' in the drop-down menu for the CHNG_TYPE field.</p> 
<p>Step 16</p>	<p>When you are finished, click OK. <i>The added faces (once you save) turn green in color on the map (color may vary).</i></p> <p>If you have more than 1 census tract, block group or tribal subdivision, there are additional steps to follow when adding area either as 'reservation' or 'trust land'.</p> <p>Instructions can be found beginning in Table 25, Step 15.</p>

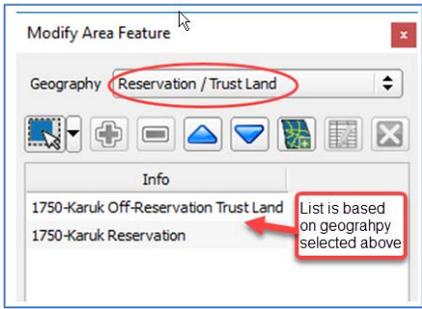
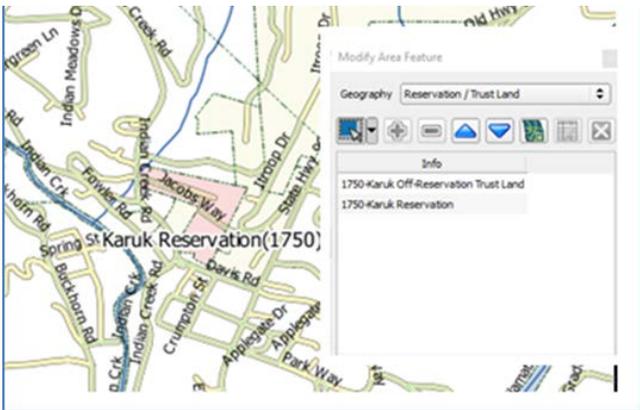
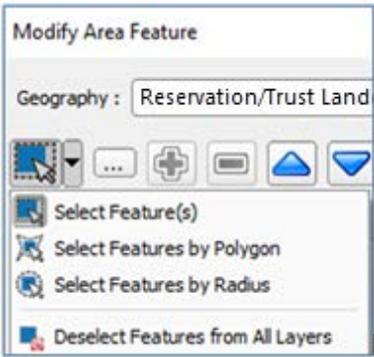
Step	Action and Result
	

6.1.3 Make a Boundary Correction (Add Area / Remove Area)

To make a boundary correction that adds or removes area from an entity, follow the steps in [Table 27](#). In this fictitious example, a boundary correction is made to the Karuk Off-Reservation Trust land.

Table 27: Make a Boundary Correction

Step	Action and Result
Step 1	Open your entity in Map View . Be sure you have all layers you wish to see on the map checked in the Table of Contents .
Step 2	Click the Modify Area Feature button on the BAS toolbar .  <i>The Modify Area Feature dialog box opens.</i> 
Step 3	Click the arrow next to the Geography field, and select in the drop-down menu the entity type for which you want to add or remove area. In this example, we select

Step	Action and Result
	<p>'Reservation/Trust Land'. The Info list populates with the entities for the geography that was chosen at the beginning of the project.</p> 
<p>Step 4</p>	<p>Click on the row in the list for the area for which area is being added/removed (here Karuk off-Reservation trust land). The map zooms to the area selected.</p> 
<p>Step 5</p>	<p>Click the down arrow next to the Select Features button to select the face(s) to add or remove for the boundary correction. The Select Features drop-down menu opens.</p>  <p>In this example, we are adding two small faces that are difficult to select, so we opt for 'Select Features by Freehand'. This method allows us to place our cursor inside the first face and draw a tiny line. The selected face turns cyan (colors may vary).</p>

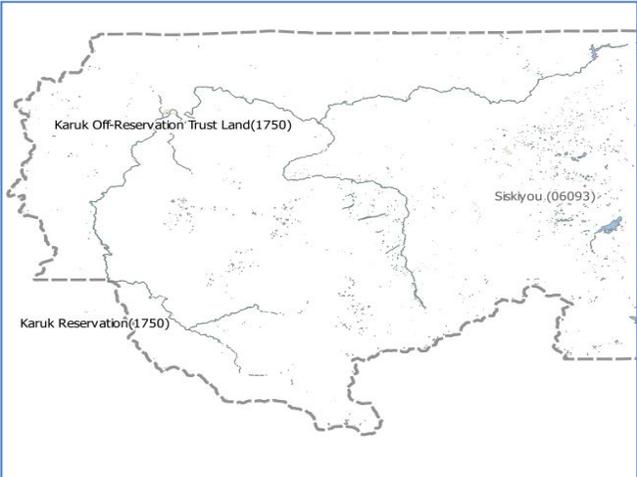
Step	Action and Result
	<div data-bbox="667 260 1076 533" data-label="Image"> </div> <p data-bbox="331 558 1386 617">To select the other face, press the CTRL key, and while holding it down, repeat the action for the remaining face. Both faces turn color.</p> <div data-bbox="711 634 1036 884" data-label="Image"> </div>
	<p data-bbox="331 919 1386 978">To add area, the area must be outside the selected entity. To remove area, the area must be within the selected entity.</p>
<p data-bbox="212 1020 298 1052">Step 6</p>	<p data-bbox="331 1020 1386 1079">On the Modify Area Feature toolbar, click on the Add button (to add area to the entity) or on the Remove button (to remove area from the entity).</p> <div data-bbox="651 1100 1097 1213" data-label="Image"> </div> <p data-bbox="331 1247 1333 1306"><i>The Modify Area Feature Choose change type pop-up box opens, and asks you to choose your change type.</i></p> <div data-bbox="651 1339 1101 1675" data-label="Image"> </div>
<p data-bbox="212 1713 298 1745">Step 7</p>	<p data-bbox="331 1713 1414 1808">Since we are not making a legal boundary change, but rather a boundary correction, click the radio button next to 'Boundary Correction'. Then click OK. <i>The added faces turn green on the map (color may vary) and are added to the legal entity boundary.</i></p>

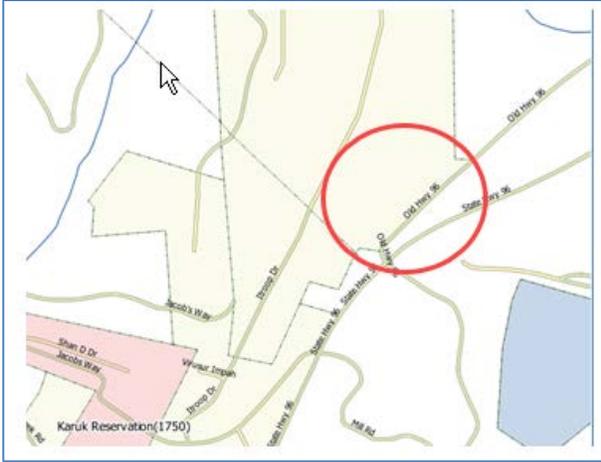
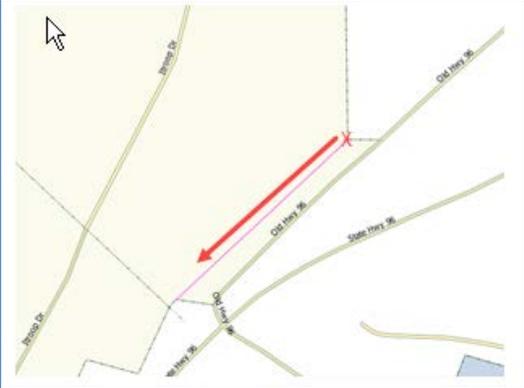
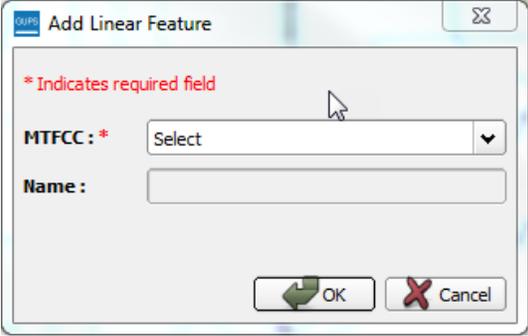
Step	Action and Result
	
	<p>Removing area from a boundary is conducted following the same steps, the only difference being that you click the Remove button on the Modify Area Feature toolbar. Once you select the faces and click the Remove button, you see the same Modify Area Feature Choose change type pop-up box, select 'Boundary Correction', and see the faces turn green.</p>

6.1.4 Add a Geographic Offset

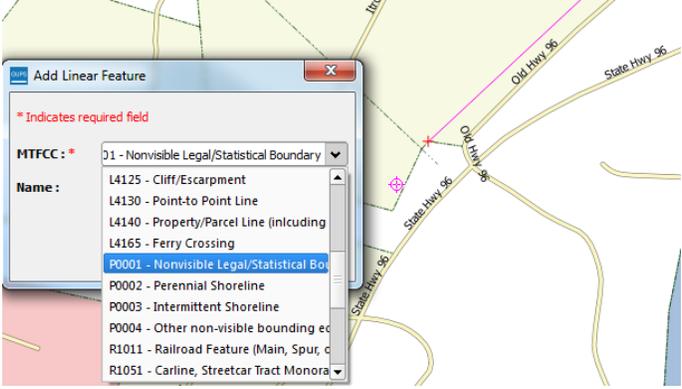
The steps to add a geographic offset are shown in [Table 28](#). The fictitious example provided uses Karuk Reservation and Off-Reservation Trust Land. The steps in the table show how the tribe would mark the addition of a geographic offset along Old Hwy 96 in order to ensure that the houses that are addressed to the north side of that stretch of highway are not included within the reservation/trust land boundary.

Table 28: Add a Geographic Offset

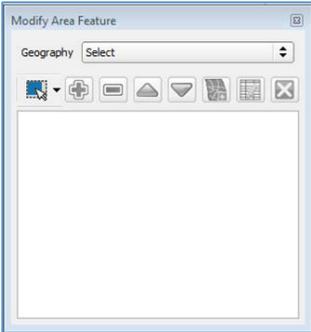
Step	Action and Result
	<p>To create a geographic offset requires two actions: first you must split the face (if an edge does not already exist), then you must add the area.</p>
<p>Step 1</p>	<p>Load the data for the reservation (in this example, Karuk Reservation/Trust Land).</p> 

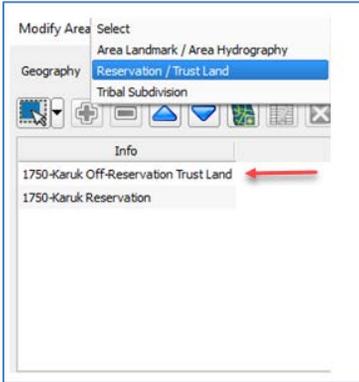
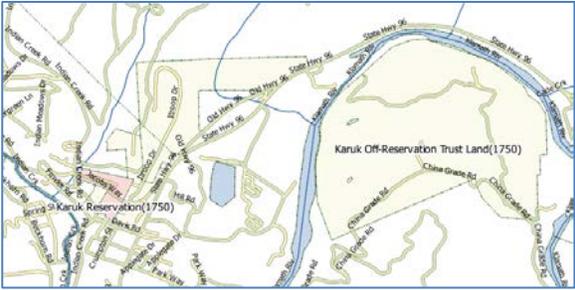
Step	Action and Result
<p>Step 2</p>	<p>Pan to the location of the geographic offset (here Old Hwy 96).</p> 
<p>Step 3</p>	<p>Click the Add Linear Feature button on the BAS toolbar.</p> 
<p>Step 4</p>	<p>Left-click on the map at the beginning point of the first line and drag the cursor to create the line marking the offset distance from the highway. Left-click at the end of the line, then right-click to tell GUPS you have finished drawing. <i>The line appears on the map, and the Add Linear Feature dialog box opens.</i></p>  

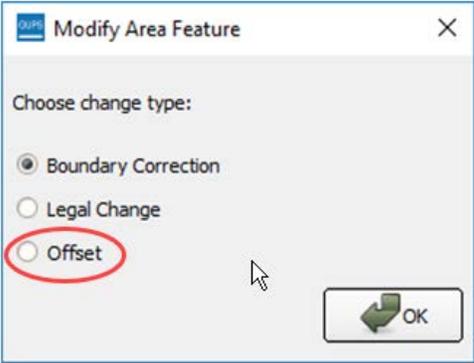
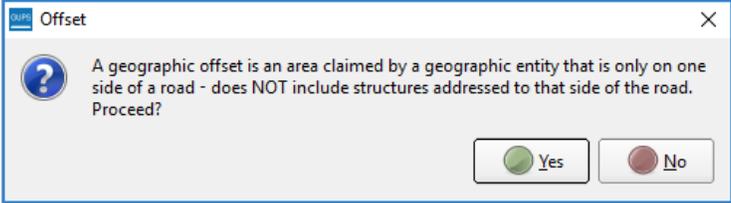
Step	Action and Result
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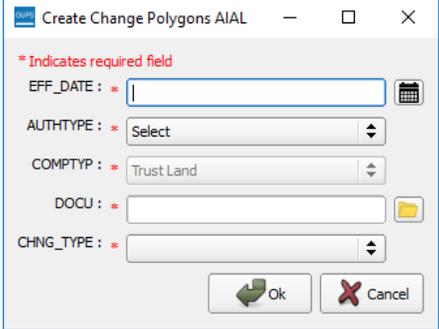
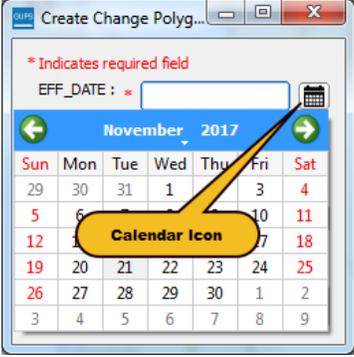
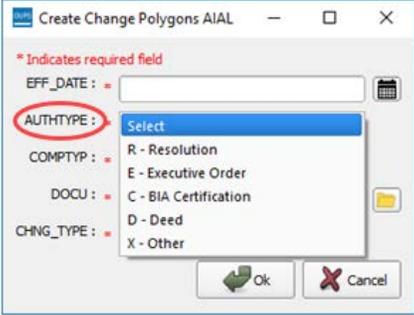
<p>Step 5</p>	<p>Select the appropriate MTFCC code in the MTFCC drop-down list. In this example, we select 'P0001 – Nonvisible Legal/Statistical Boundary'.</p>  <p>The MTFCC field populates with your selection.</p>
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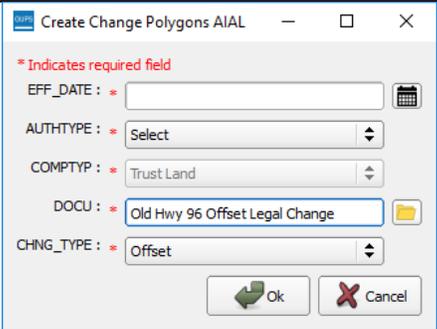
<p>Step 6</p>	<p>Click the OK button.</p> <p>The line turns from purple to dark green (colors may vary) and the name, if you provided one, is added to the map.</p> 
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<p>Step 7</p>	<p>To add the area: click the Modify Area Feature button on the BAS toolbar.</p>  <p>The Modify Area Feature dialog box opens.</p> 
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Step	Action and Result
<p>Step 8</p>	<p>In the Geography field drop-down menu, select the entity type (in this case, 'Reservation/Trust Land'). A list of the available options populates the Info list at the bottom of the dialog box.</p> 
<p>Step 9</p>	<p>Click on the row for Karuk Off-Reservation Trust Land in the list. The map zooms to the Karuk Off-Reservation Trust Land.</p> 
<p>Step 10</p>	<p>Pan to the location of the new offset you drew on the map. Then click the Select Feature(s) button on the small toolbar near the top of the Modify Area Feature dialog box.</p> 
<p>Step 11</p>	<p>Left-click inside the offset face, then drag your cursor across the road. When you release the cursor the face on the north side of the road has been selected and turn cyan or yellow (color may vary) to highlight.</p> 

Step	Action and Result
<p>Step 12</p>	<p>To record the offset, click the Add button on the Modify Area Feature dialog box toolbar.</p>  <p>The Modify Area Feature Choose change type dialog box opens.</p> 
<p>Step 13</p>	<p>Click the radio button next to Offset. A box opens giving an explanation of what a geographic offset is and asking if you want to proceed.</p>  <p>Click Yes. You are returned to the Modify Area Feature Choose change type box.</p>
<p>Step 14</p>	<p>Click the OK button at the bottom of the box.</p> 
<p>Step 15</p>	<p>The Review Change Polygons pop-up box opens and asks whether this is a legal change.</p> 

Step	Action and Result
<p>Step 16</p>	<p>If the geographic offset is not part of a legal change, click No. <i>The change is automatically added as a boundary correction.</i></p> <p>If the geographic offset is a legal change, click Yes. <i>The Create Change Polygons dialog box opens.</i></p> 
<p>Step 17</p>	<p>Click on the calendar icon next to the EFF_DATE field to select an effective date for the change.</p> 
<p>Step 18</p>	<p>Use the AUTHTYPE drop-down menu to select an authority type.</p> 
<p>Step 19</p>	<p>In the DOCU field, either type in the documentation number, or upload legal documentation of the change. To upload a document, click on the folder icon, navigate to the directory where the document is stored, and double-click the file. <i>The file uploads to GUPS and the name of the file appears in the DOCU field.</i></p>

Step	Action and Result
	
Step 20	In the CHNG_TYPE field, select ' Offset ' in the drop-down list. <i>offset fills the CHNG_TYPE field as shown in the screenshot above.</i>
Step 21	Click OK . <i>The face marking the offset turns green on the map (color may vary). The offset has been added.</i> 

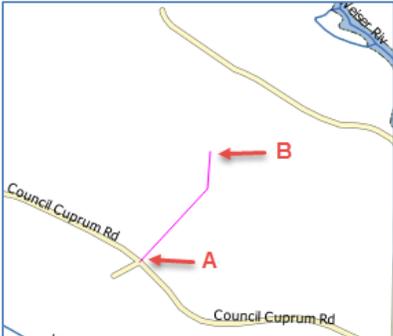
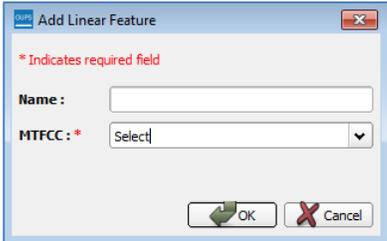
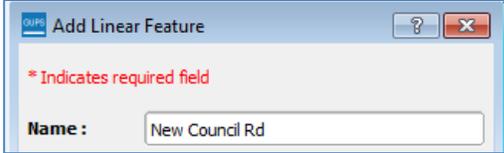
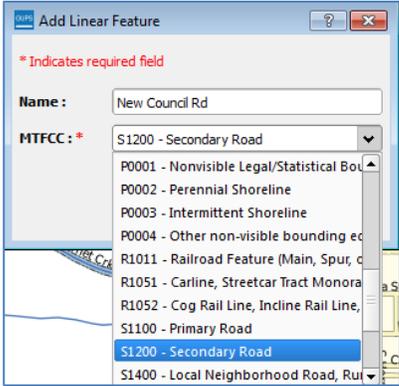
6.2 How to Update Linear Features

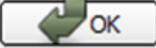
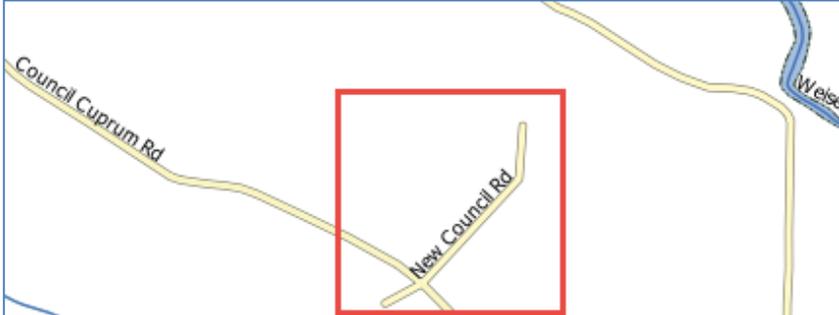
6.2.1 Add a Linear Feature

Follow the steps in [Table 29](#) to add a linear feature.

Table 29: Add a Linear Feature

Step	Action and Result
Step 1	Open in Map View the county that contains the entity where you want to add a linear feature. Be sure the edges layer is checked in the Table of Contents . Then zoom to the location on the map where you want to add the feature.
Step 2	Click on the Add Linear Feature button on the BAS toolbar. 

Step	Action and Result
<p>Step 3</p>	<p>Left-click the mouse at the starting point of the line (A) and continue to left-click the mouse at each vertex (shape) point of the line. When you have completed the new line, right-click the mouse (B). The right-click tells GUPS you are finished drawing.</p>  <p>The Add Linear Feature dialog box opens.</p> 
<p>Step 4</p>	<p>Type the name of the new linear feature in the Name field if the feature is named; otherwise, leave blank. Be sure when entering the feature name either to spell out the feature type (e.g., street, road, avenue), or to select an approved abbreviation from the list provided in Appendix D.</p> 
<p>Step 5</p>	<p>In the MTFCC field drop-down menu, choose the appropriate code for the feature.</p> 

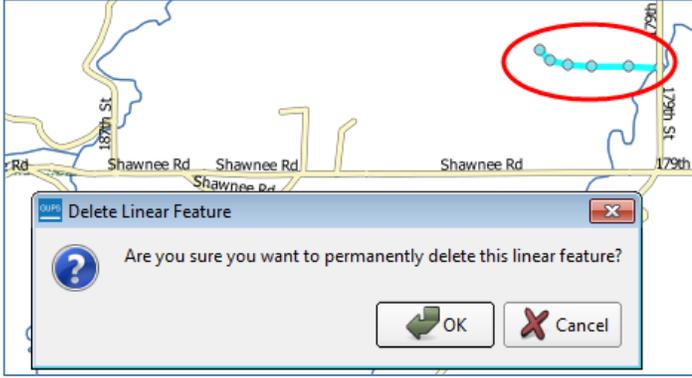
Step	Action and Result
Step 6	<p>Click the OK button  at the bottom of the Add Linear Feature dialog box. The added linear feature and the name you assigned appear on the map.</p> 
	<p>Adding a linear feature coincident with a boundary – GUPS will not allow one linear feature to be placed over another. For example, if you attempt to add a road overlaying a legal boundary line, a pop-up box will warn you ‘Added Line Overlays an Existing line’. If you are adding a linear feature coincident with a boundary, follow the instructions for updating linear feature attributes instead (for instructions see Table 32). Once you select the boundary edge that you want to add a street on top of, update the MTFCC in the Update Attributes pop-up to one of the "S" class feature codes (e.g., S1400) and add a name in the FULLNAME field.</p>

6.2.2 Delete a Linear Feature

To delete a linear feature, follow the steps in [Table 30](#).

Table 30: Delete a Linear Feature

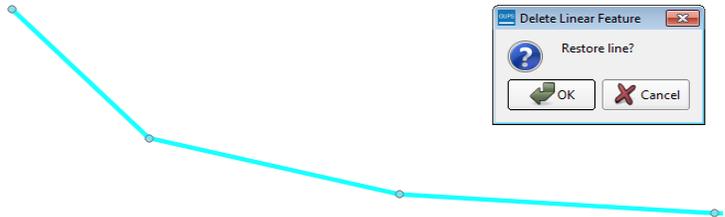
Step	Action and Result
Step 1	<p>Open in Map View the county that contains the entity where you want to delete a linear feature. Be sure the edges layer is checked in the Table of Contents. Then zoom to the location on the map where you want to delete the feature.</p>
Step 2	<p>Click on the Delete Linear Feature button on the BAS toolbar.</p> 
Step 3	<p>Left-click the linear feature that you want to delete. In the example below, we clicked on an unnamed road. The clicked linear feature turns cyan (color may vary) and the Delete Linear Feature pop-up box appears, asking if you are sure you want to delete the feature.</p>

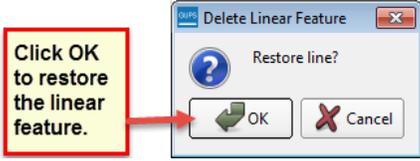
Step	Action and Result
	
Step 4	Click OK . The line is deleted in the attribute table. The cyan color is removed from the line and the line now looks as it did originally.
	<p>When you delete a linear feature, it is not actually removed from the Census shapefile. GUPS assigns a Delete Line flag to the feature in the attribute table, and the feature is later processed for deletion when the Census Bureau receives the BAS file.</p> <p>Note: If you have multiple linear features to delete, you may click the Delete Linear Feature button on the toolbar once, then press CTRL and click each of the features you want to delete. GUPS will delete all of the linear features selected. You may also drag your cursor over multiple linear features to select them.</p>

6.2.3 Restore a Deleted Linear Feature

To restore a deleted linear feature, follow the steps in [Table 31](#).

Table 31: Restore a Deleted Linear Feature

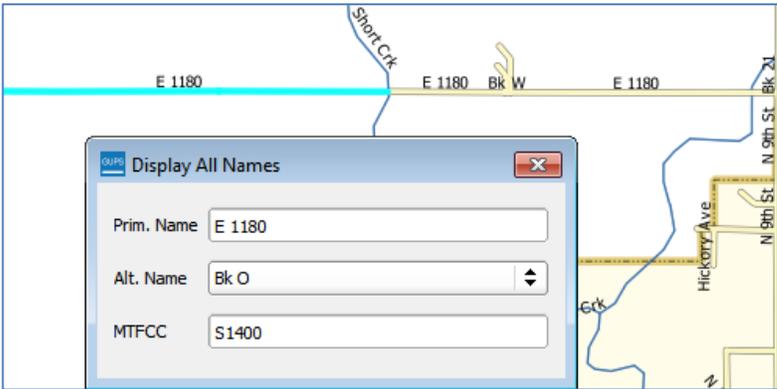
Step	Action and Result
Step 1	Open in Map View the county that contains the deleted linear feature. Be sure the edges layer is checked in the Table of Contents . Then zoom to the location on the map where the deleted feature is located.
Step 2	<p>Left-click on the deleted feature. <i>The deleted feature turns cyan (color may vary) and the Delete Linear Feature dialog box opens. The box asks you to confirm that you want to restore the line.</i></p> 

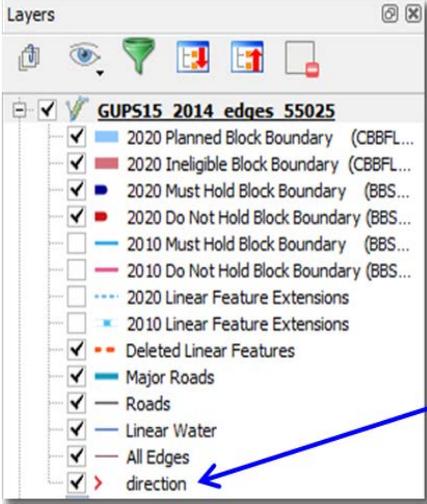
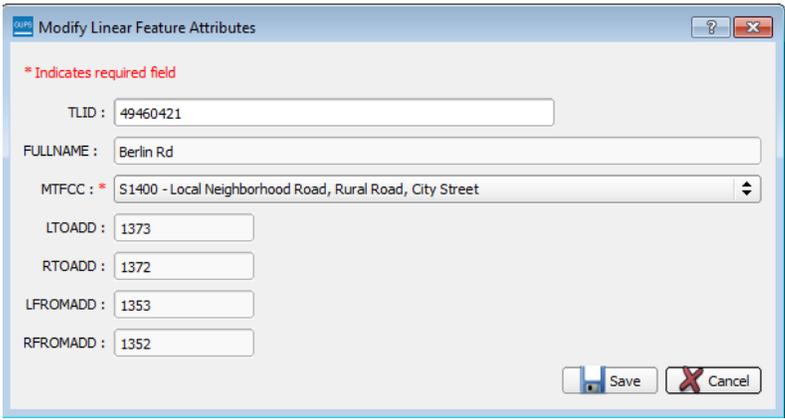
Step	Action and Result
Step 3	<p>To restore the linear feature, click the OK button.</p> <div style="text-align: center;">  </div> <p>The Delete Line flag is removed from the attribute table and the line is restored.</p>

6.2.4 Change the Attributes of a Linear Feature

Follow the steps in [Table 32](#) to change the attributes (e.g., the name, MTFCC, or address range) of a linear feature.

Table 32: Changing the Attributes of a Linear Feature

Step	Action and Result
Step 1	<p>If you plan to change the name of a linear feature, check first to see if it has an alternate name. To do this, click the Display All Names button on the BAS toolbar.</p> <div style="text-align: center;">  </div> <p>Then click on the linear feature on the map. <i>The selected feature turns cyan (color may vary) and the Display All Names dialog box opens, showing the primary name in the Prim. Name field and the alternate name, if one is present, in the Alt. Name field.</i></p> <div style="text-align: center;">  </div> <p>To see any additional alternate names, click the drop-down arrow to the right of the Alt. Name field. If no alternate name exists, 'NULL' appears in the Alt. name field.</p>
Step 2	<p>If you plan to provide an address range for a linear feature, check the checkbox next to direction in the Edges field in the Table of Contents. <i>This activates the arrows that indicate the FROM and TO nodes for line segments.</i></p>

Step	Action and Result
	
<p>Step 3</p>	<p>Click on the Modify Linear Feature Attributes button on the BAS toolbar.</p> 
<p>Step 4</p>	<p>Click the linear feature on the map with attributes you want to edit. <i>The Modify Linear Feature Attributes dialog box opens with the TIGER Line Feature ID (TLID) of the feature selected. The FULLNAME field populates if the feature is named. If the feature is not named, the field is blank. The MTFCC, LTOADD, RTOADD, LFROMADD, and RFROMADD fields show the assigned values for each.</i></p> 
<p>Step 5</p>	<p>Update the FULLNAME field. If the field is blank, type in the new name. If the field is already populated, highlight the existing name and hit the Delete key on your keyboard. You may also backspace over the name to clear the field. Then type in the new name.</p>
<p>Step 6</p>	<p>If you need to correct the MTFCC code, click on the down arrow to the right of the field to open the drop-down menu and select the correct MTFCC from the menu.</p>
<p>Step 7</p>	<p>Change the address range for the linear feature, if necessary. Type in potential address ranges in the LTOADD (left to address); RTOADD (right to address); LFROMADD (left from</p>

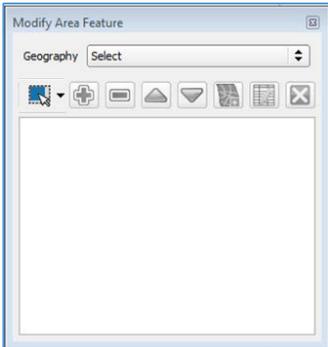
Step	Action and Result
	address); RFROMADD (right from address) fields based on the directional arrows. The directional arrows show the origin node (FROM) and the end node (TO).
Step 8	Click Save button at the bottom of the Modify Linear Feature Attributes dialog box.
	<p>The address ranges for all features are blank in the geographic partnership shapefiles because the ranges are stored in tables separate from the shapefiles. You can provide address ranges in these fields, but be aware that we may already have address ranges.</p> <p>It is important to note which node is the FROM node and which is the TO node (based on the red directional arrows) so that the address ranges are associated with the correct side of the street and the correct census block.</p> <p>Note: Provide potential address ranges for blocksides, such as 0-98, 100-198, etc., for even parity and 1-99, 101-199, etc., for odd parity address ranges. Do not provide actual address ranges.</p>

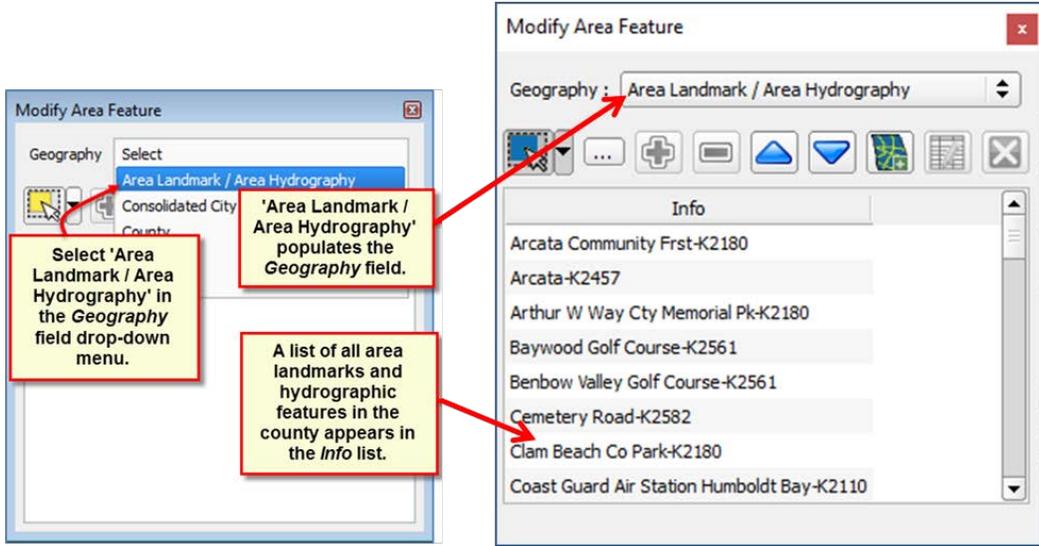
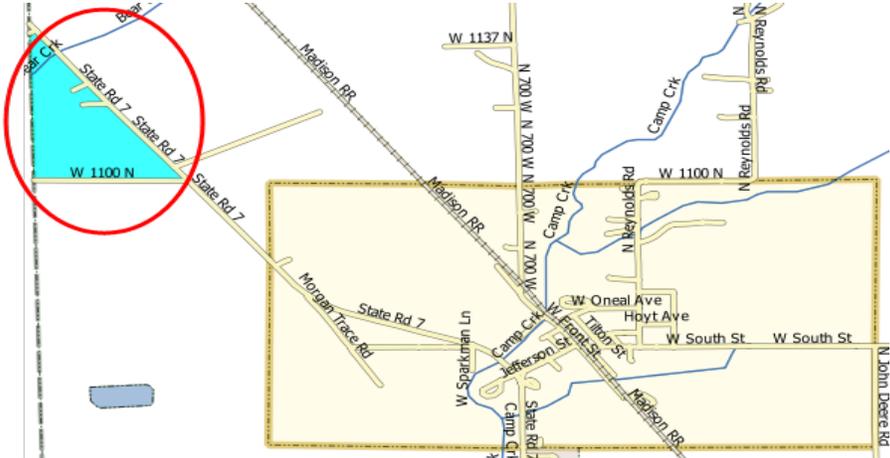
6.3 How to Update Area Landmarks and Hydrographic Areas

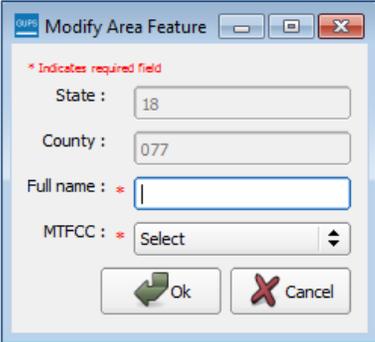
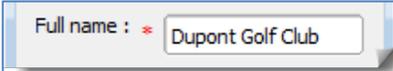
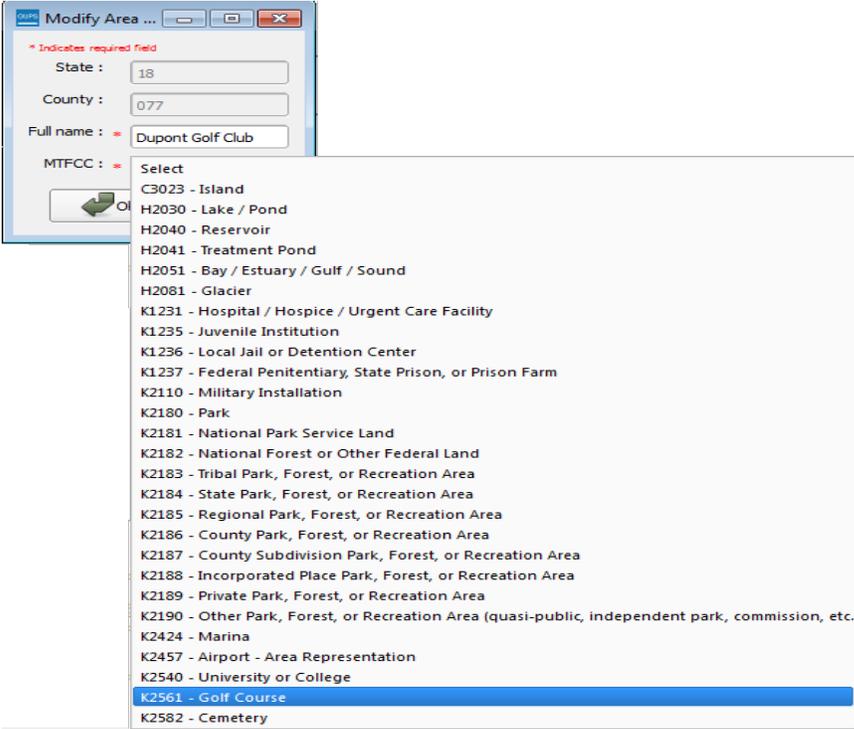
6.3.1 Add a New Area Landmark/Hydrographic Area

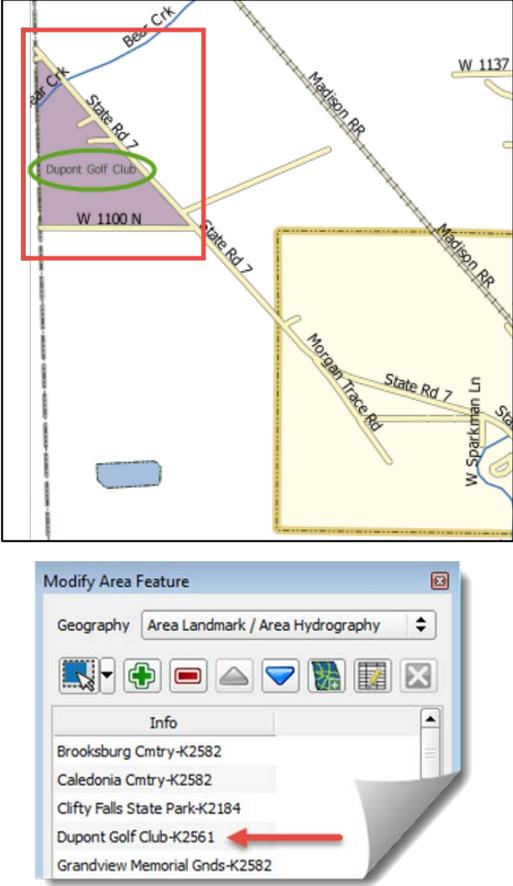
To create a new landmark or hydrographic area, follow the steps in [Table 33](#). In this fictitious example, we will add a golf course in Jefferson County, Indiana, located northwest of Dupont Town.

Table 33: Create a New Area Landmark/Hydrographic Area

Step	Action and Result
Step 1	Open your project in Map View . Be sure the ' Area_Landmarks ' layer is checked in the Table of Contents (found under the ' State_Level ' layer). Then zoom to the location on the map where you want to add the landmark or hydrographic area.
Step 2	<p>Click the Modify Area Feature button on the BAS toolbar.</p>  <p><i>The Modify Area Feature dialog box opens.</i></p> 

Step	Action and Result
<p>Step 3</p>	<p>In the Geography field drop-down menu, select 'Area Landmark/Area Hydrology'. 'Area Landmark/Area Hydrology' populates the Geography field and a list of area landmarks and hydrological features in the county appears in the Info list.</p> 
<p>Step 4</p>	<p>Click on the yellow Select Feature(s) button on the Modify Area Feature toolbar.</p> 
<p>Step 5</p>	<p>Then click on the first face on the map you wish to select. To select more than one face, depress the CTRL key, and while holding it down, click on the additional faces. In this example, we are selecting two faces, one on either side of Bear Creek. <i>The selected faces turn cyan (color may vary).</i></p> 
<p>Step 6</p>	<p>Click on the Add Entity button on the Modify Area Feature toolbar.</p> 

Step	Action and Result
	<p>The Modify Area Feature box opens.</p> 
<p>Step 7</p>	<p>In the Modify Area Feature box, type in the name of the new area landmark in the Full name field.</p>  <p>Then select the appropriate code in the MTFCC field drop-down list, as shown below.</p> 
<p>Step 8</p>	<p>Click OK. The faces selected for the new entity now display in purple (color may vary). The name of the added landmark also appears within the change polygon on the map (see green circle), and the name of the new entity appears in the Info list.</p>

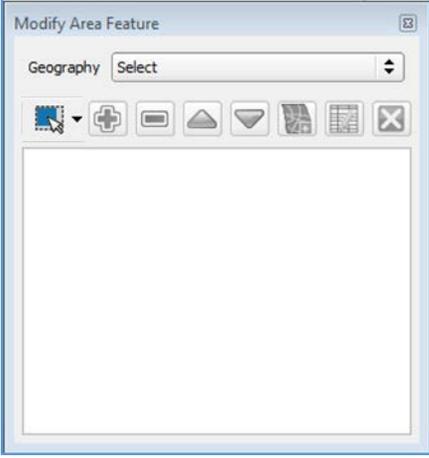
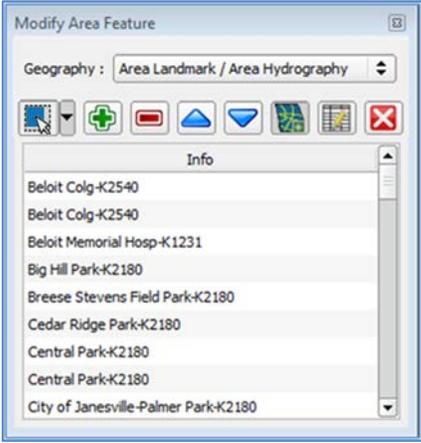
Step	Action and Result
	
	<p>Because all geographic areas consist of faces, you may need to “split” a face to accurately reflect an entity’s boundary. To split a face, digitize a new line that represents the boundary’s location (see Table 29 for instructions to add a linear feature) and assign it the appropriate MTFCC. This splits the original face into two faces. You can now select the face you need to add to the new entity.</p>

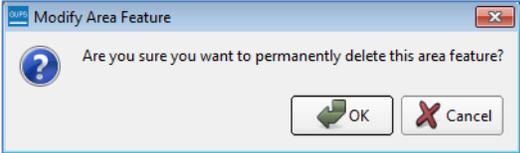
6.3.2 Delete an Area Landmark/Hydrographic Area

To delete an area landmark or hydrographic area, follow the steps in [Table 34](#).

Table 34: Delete an Area Landmark/Hydrographic Area

Step	Action and Result
Step 1	Open your project in Map View . Be sure the ‘ Area_Landmarks ’ layer is checked in the Table of Contents (found under the ‘ State_Level ’ layer).
Step 2	Click the Modify Area Feature button on the BAS toolbar.

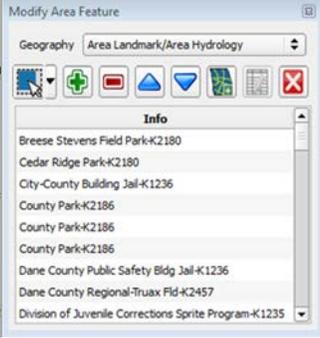
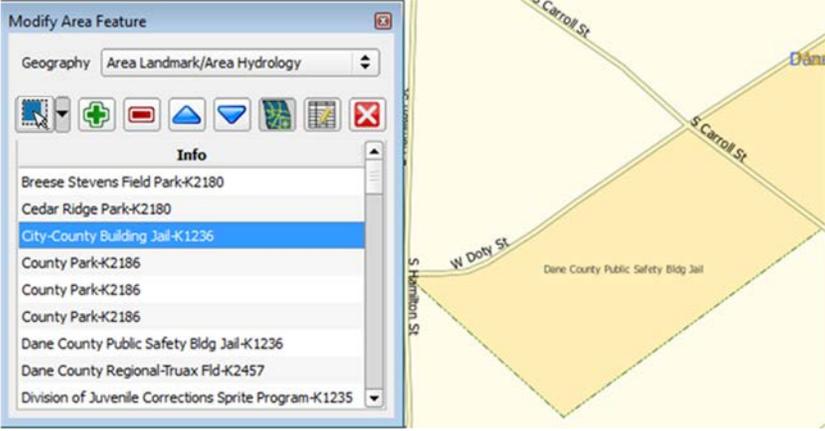
Step	Action and Result
	 <p>The Modify Area Feature dialog box opens.</p> 
<p>Step 3</p>	<p>In the Geography field drop-down menu, select 'Area Landmark/Area Hydrography'. 'Area Landmark/Area Hydrography' populates the Geography field and a list of area landmarks and hydrological features in the county appears in the Info list.</p> 
<p>Hint</p>	<p>To view all the area landmarks and hydrographic areas in the Info list, you may use the scroll bar located to the far right-hand side of the Modify Area Feature dialog box.</p> <p>To move up and down within the list, use the blue navigation arrows located on the small toolbar near the top of the dialog box.</p> 
<p>Step 4</p>	<p>In the Info list, click on the area landmark/hydrographic area you want to delete. <i>The selected entry is highlighted in the Info list and the map zooms directly to the selected feature.</i></p>

Step	Action and Result
	
<p>Step 5</p>	<p>Click the Delete Area Feature button on the Modify Area Feature dialog toolbar.</p>  <p>A pop-up box opens and asks you to confirm that you want to delete the feature.</p> 
<p>Step 6</p>	<p>To delete the area landmark/hydro area, click OK. <i>The linear feature turns gray (color may vary) on the map, and its name disappears from the Info list.</i></p>
<p>Step 7</p>	<p>Not ready to delete? If you change your mind about deleting the area landmark/hydro area, click Cancel. <i>You will be returned to the Modify Area Feature dialog box with the Delete Area Feature button grayed out.</i></p> 
<p>Step 8</p>	<p>If you now decide to delete the area landmark/hydro feature, click on the feature name in the Info list. The buttons will reactivate and you may click the Delete Area Feature button again.</p>

6.3.3 Add Area to an Area Landmark or Hydrographic Area

Follow the steps in [Table 35](#) to add area to an area landmark or hydrographic area.

Table 35: Add Area to an Area Landmark/Hydrographic Area

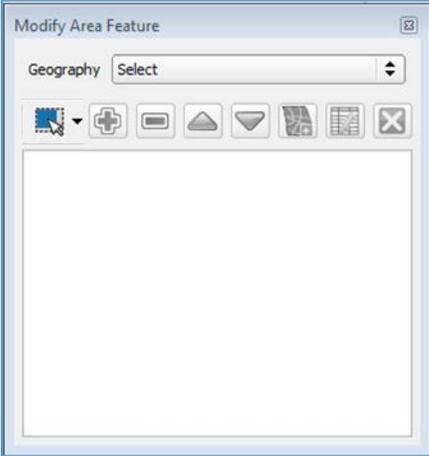
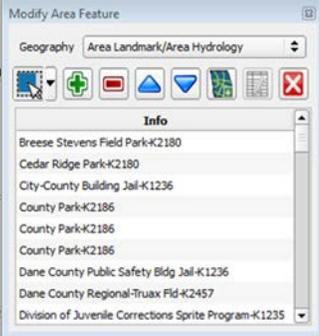
Step	Action and <i>Result</i>
Step 1	Open your project in Map View . Be sure the ' Area_Landmarks ' layer is checked in the Table of Contents (found under the ' State_Level ' layer).
Step 2	Click the Modify Area Feature button on the BAS toolbar.  <i>The Modify Area Feature dialog box opens.</i>
Step 3	Click the down arrow next to the Geography field and select ' Area Landmark/Area Hydrography ' in the drop-down menu. <i>The selection populates the Geography field and a list of area landmarks/hydro features in the county appears in the Info list.</i> 
Step 4	Click the row in the list for the area landmark/hydro area to which you want to add area. <i>The selected entity is highlighted in the Info list and the map zooms to its location.</i> 
Step 5	To select the face(s) you want to add to the area landmark, click the Select Feature button on the Modify Area Feature toolbar. 

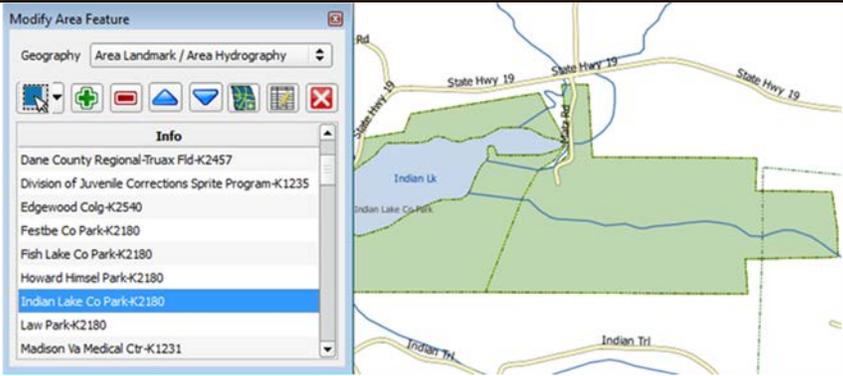
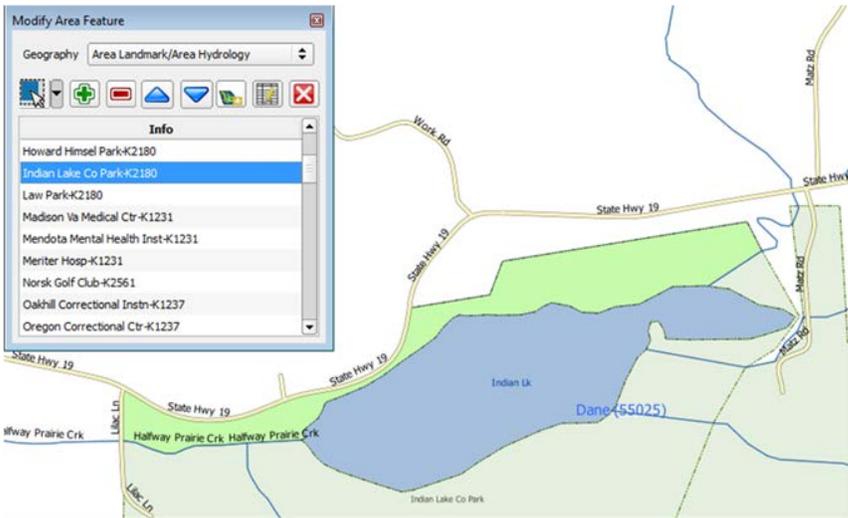
Step	Action and Result
	<p>Then click the face you want to add to the area feature. <i>The added face turns cyan (color may vary).</i> (Note: To select more than one face, depress the CTRL key, and while holding it down, click the other faces.)</p>  <p>The map shows a yellow area landmark consisting of two adjacent faces. The left face is highlighted in cyan, indicating it has been selected. The right face remains yellow. The area is bounded by streets including S Hamilton St, S Carroll St, W Doby St, S Carroll St, W Doby St, W Wilson St, and Martin Luther King Jr Blvd. Labels for 'Dare County Public Safety Bldg Jail' and 'City-County Building Jail' are also present.</p>
<p>Step 6</p>	<p>To add the face(s) selected, click the Add Area button on the Modify Area Feature dialog box toolbar.</p>  <p>The selected face is added to the area landmark and turns the same color as the other face(s) that make up the area landmark. The map also now shows the full extent of the area landmark.</p>  <p>The map now shows the entire area landmark highlighted in yellow, indicating that the selected face has been successfully added to the existing area.</p>
	<p>Because all geographic areas consist of faces, you may need to “split” a face to accurately reflect an entity’s boundary. To split a face, digitize a new line that represents the boundary’s location (see Table 29 for instructions to add a linear feature) and assign it the appropriate MTFCC. This splits the original face into two faces. You can now select the face you need to add to the new entity.</p>

6.3.4 Remove Area from an Area Landmark/Hydrographic Area

Follow the steps in [Table 36](#) to remove area from an area landmark or hydrographic area.

Table 36: Remove Area from an Area Landmark/Hydrographic Area

Step	Action and <i>Result</i>
Step 1	Open your project in Map View . Be sure the ' Area_Landmarks ' layer is checked in the Table of Contents (found under the ' State_Level ' layer).
Step 2	<p>Click the Modify Area Feature button on the BAS toolbar.</p>  <p><i>The Modify Area Feature dialog box opens.</i></p> 
Step 3	<p>In the Geography field drop-down menu, select 'Area Landmark/Area Hydrography'. 'Area Landmark/Area Hydrography' populates the Geography field and a list of area landmarks and hydrological features in the county appears in the Info list.</p> 
Step 4	<p>Select the area landmark/hydro area from which you want to remove area. <i>The selected entity is highlighted in the Info list and the map zooms to its location.</i> In this example, we have chosen Indian Lake County Park.</p>

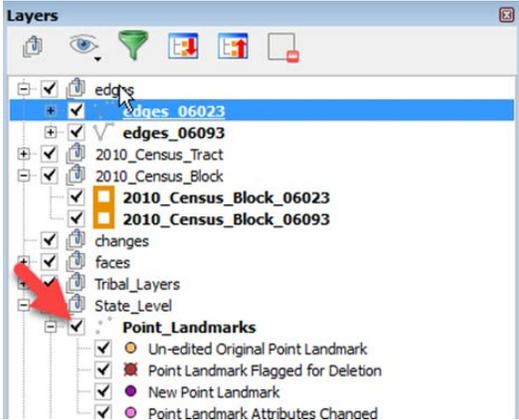
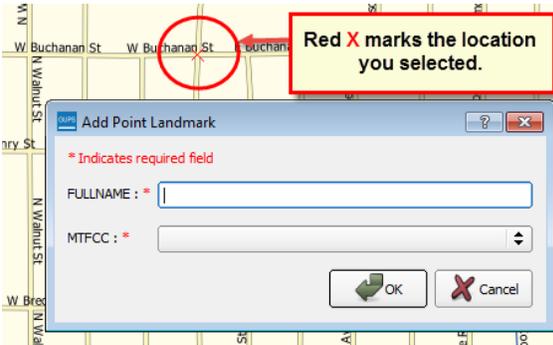
Step	Action and Result
	
<p>Step 5</p>	<p>To select the face(s) you want to remove from the area landmark, click the Select Feature button on the Modify Area Feature dialog box toolbar.</p>  <p>Then click on the first face you want to remove. To select additional faces, depress the CTRL key, and while holding it down, click the additional faces.</p>
<p>Step 6</p>	<p>To remove the face(s) selected, click the Remove Area button on the Modify Area Feature dialog box's internal toolbar.</p>  <p><i>The selected face turns light green (color may vary) on the map and is removed from the area landmark.</i></p> 
	<p>Because all geographic areas consist of faces, you may need to “split” a face to accurately reflect an entity’s boundary. To split a face, digitize a new line that represents the boundary’s location (see Table 29 for instructions to add a linear feature) and assign it the appropriate MTFCC. This splits the original face into two faces. You can now select the face you need to add to the new entity.</p>

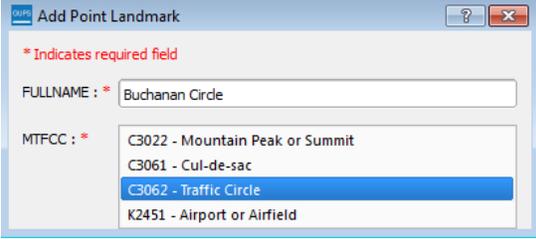
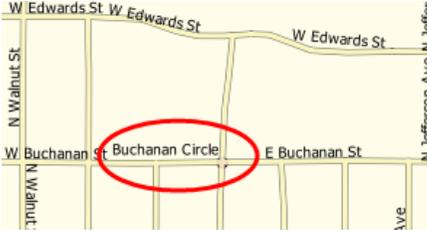
6.4 How to Update Point Landmarks

6.4.1 Add a Point Landmark

To add a point landmark, follow the steps in [Table 37](#).

Table 37: Add a Point Landmark

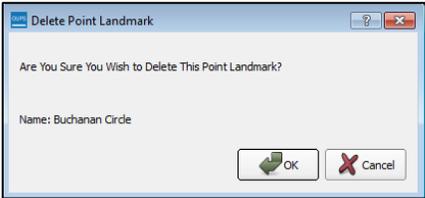
Step	Action and Result
<p>Step 1</p>	<p>Open your project in Map View. Be sure the 'Point Landmark' layer is checked in the Table of Contents (found under the 'State_Level' layer).</p> 
<p>Step 2</p>	<p>Click the Add Point Landmark button on the BAS toolbar.</p> 
<p>Step 3</p>	<p>Click on the map where you want to add the point landmark. <i>The Add Point Landmark dialog box opens and a red X marks the location you selected.</i></p> 
<p>Step 4</p>	<p>Type in the name for the new point landmark in the FULLNAME: field. Then click the down arrow next to the MTFCC: field to open the drop-down menu.</p>

Step	Action and Result
	
Step 5	<p>Select the MTFCC, then click the OK  button at the bottom of the box.</p> <p><i>The map updates to show the added point landmark. In this case we added a traffic circle and named it Buchanan Circle.</i></p> 

6.4.2 Delete a Point Landmark

To delete a point landmark, follow the steps in [Table 38](#).

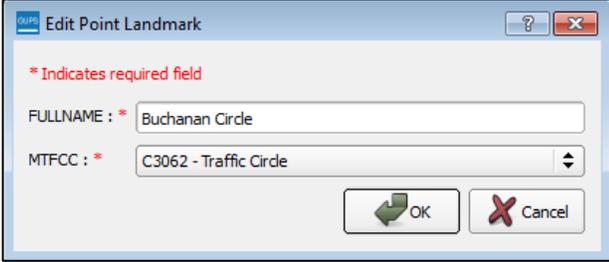
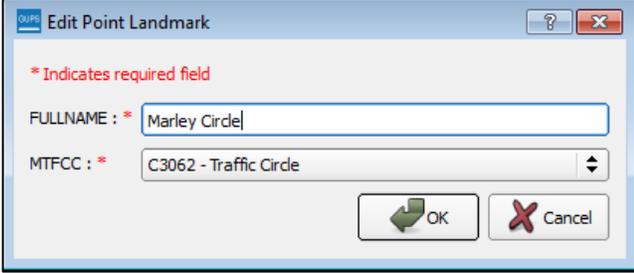
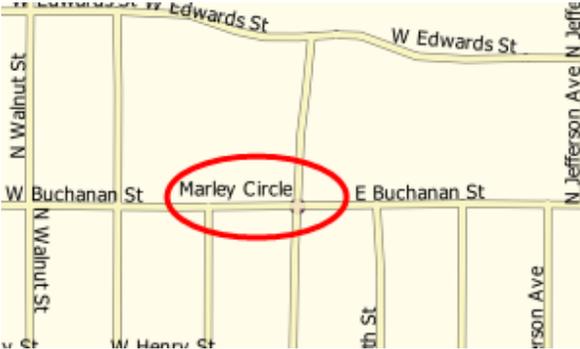
Table 38: Delete a Point Landmark

Step	Action and Result
Step 1	Zoom to the area on the map where you want to delete a point landmark. In this example, we will delete the traffic circle named Buchanan Circle.
Step 2	Click the Delete Point Landmark button on the BAS toolbar. 
Step 3	On the map, click on the point landmark you want to delete (Buchanan Circle). The Delete Point Landmark dialog box opens, and asks if you are sure you want to delete the point landmark. 
Step 4	Click OK . <i>The point landmark disappears from the map and from the attribute table.</i>

6.4.3 Change the Attributes of a Point Landmark

To change the attributes of a point landmark (e.g., its name, MTFCC), follow the steps in [Table 39](#).

Table 39: Change the Attributes of a Point Landmark

Step	Action and Result
Step 1	Zoom to the area on the map where the point landmark is located and click on the landmark. In this example, we will change the name of Buchanan Traffic Circle.
Step 2	Click on the Edit Point Landmark button on the BAS toolbar . 
Step 3	On the map, click on Buchanan Circle. The Edit Point Landmark dialog box opens. 
Step 4	To change the name, backspace over the name appearing in the FULLNAME: field, then type in the new name. In this example, we will change the name to Marley Circle. 
Step 5	Click OK . The new name of the point landmark appears on the map. 

6.5 How to Use GUPS Review and Validation Tools

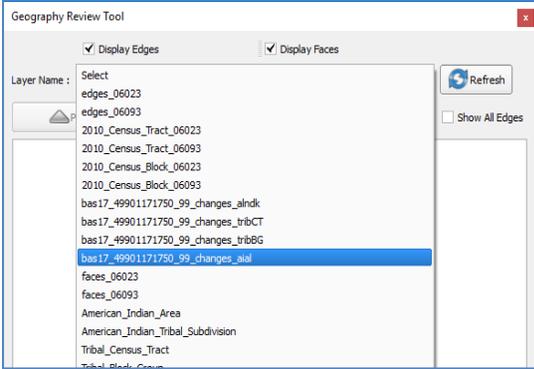
GUPS provides two tools—the **Geography Review** tool and the **Review Change Polygons** tool to help you review and validate the updates you have made in the system.

6.5.1 Geography Review Tool

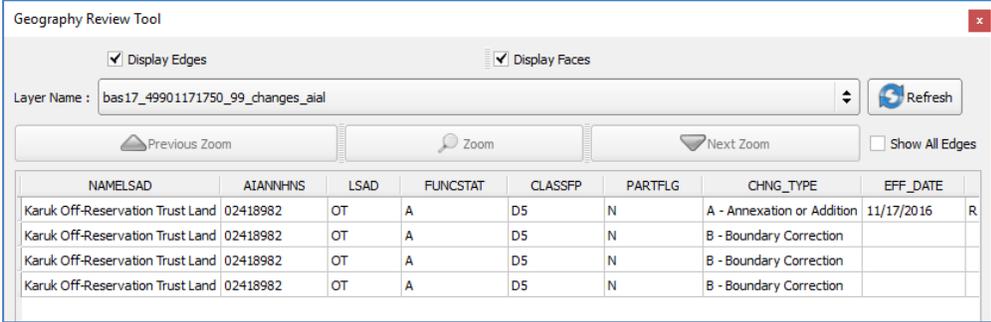
The **Geography Review** tool filters the map layers based on various fields in the attribute table. You can use this tool to check the changes you made to linear features, area landmarks, point landmarks, and legal boundaries anywhere within your project area (you may also view the attributes of entities, features, landmarks, and boundaries you did not change). **Note:** *Although this tool allows you to review your changes, you cannot use it to edit them.*

Instructions for how to use the **Geography Review** tool information appear in [Table 40](#) below.

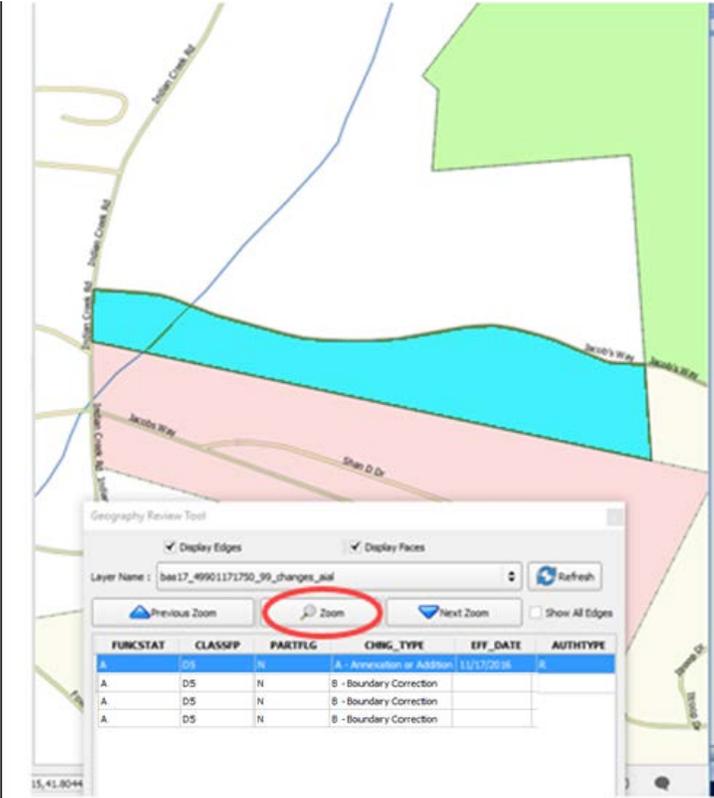
Table 40: Use the Geography Review Tool

Step	Action and Result
<p>Step 1</p>	<p>Click on the Geography Review button on the BAS toolbar.</p>  <p><i>The Geography Review Tool dialog box opens.</i></p> 
<p>Step 2</p>	<p>In the Layer Name: field drop-down menu, select the data layer you want to view:</p>  <p>In this example, we selected the file “bas17_49901171750_99_changes_aial.” This is the transaction data output file for the tribal areas layer (note the word “changes” in the file name to indicate the layer has been updated).</p>

Step	Action and Result
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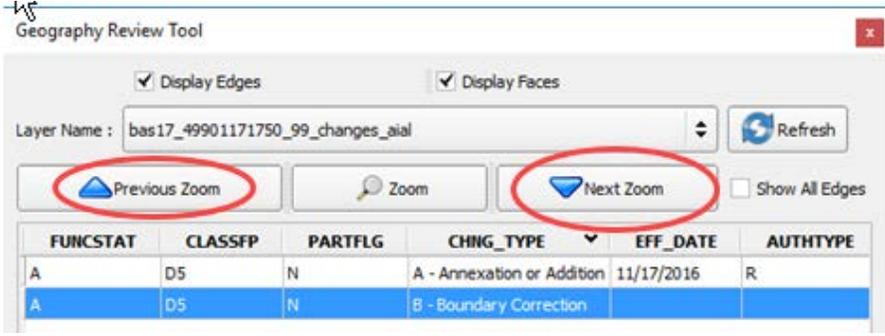
Step 3	<p>Once you make your selection, the attribute table for the layer opens, with the attributes for each tribal area you changed displayed in a separate row.</p> 
---------------	--

	<p>If you cannot see all the columns in the attribute data table, drag the edge of the dialog box outward to widen the view. You may also move the dialog box to another location by clicking inside the box and dragging it. For example, this particular table consists of 24 fields (columns). You can expand the table or use the scroll bar at the bottom of the screen to scroll right and left.</p>
---	--

Step 4	<p>To see a tribal area on the map, click its row in the attribute table, then click the Zoom button (the row is highlighted and the map automatically zooms to the area selected, which is highlighted and shows changes made in cyan – colors may vary).</p> 
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Step	Action and Result
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Step 5 To view other Tribal Areas listed in the table rows, use the **Previous Zoom** and **Next Zoom** buttons. *The previous or next row highlights and the system zooms to the map for that row.*

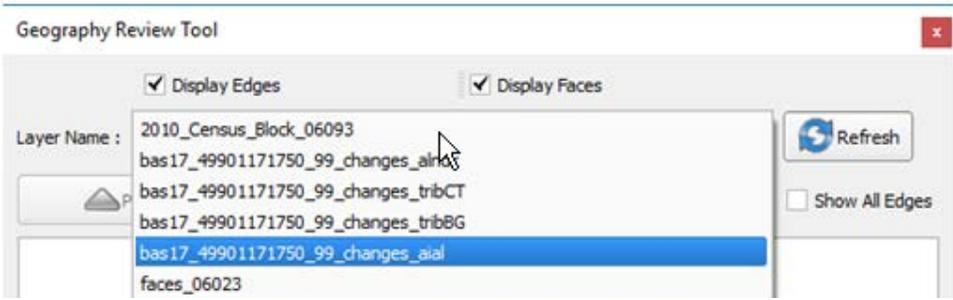


FUNCSTAT	CLASSFP	PARTFLG	CHNG_TYPE	EFF_DATE	AUTHTYPE
A	D5	N	A - Annexation or Addition	11/17/2016	R
A	D5	N	B - Boundary Correction		

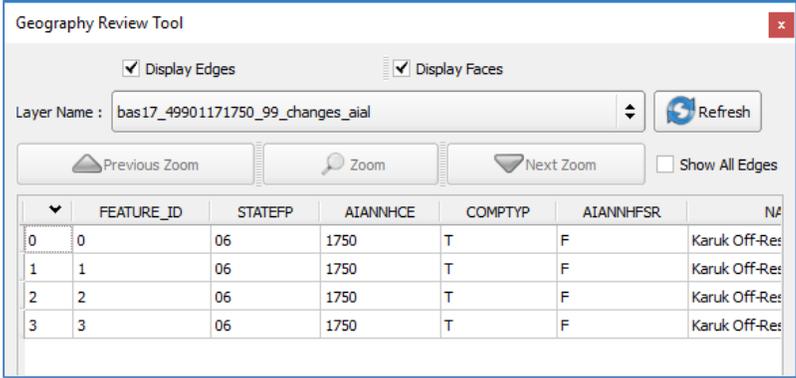
Step 6 You may use the **Search** feature at the bottom of the dialog box to filter the table layers by specific attributes (e.g., full name, MTFCC, change type, etc.).



Step 7 First, select the layer you want to view (in this example, we will select the AIAL (Tribal Area) layer).



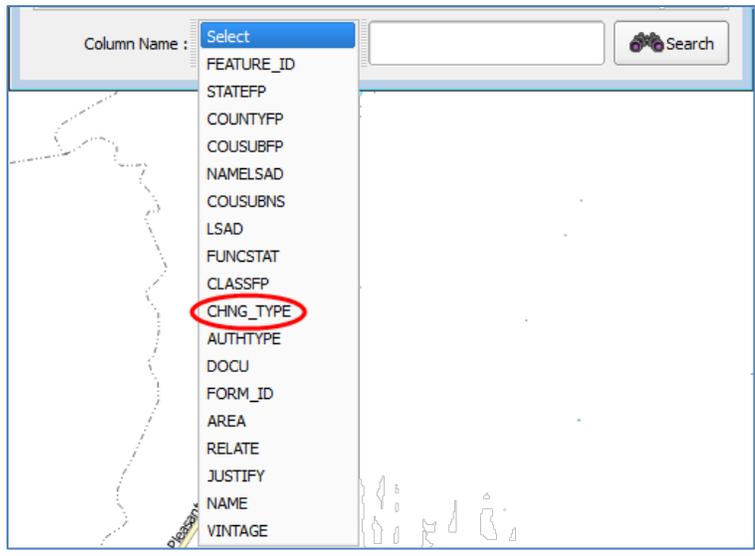
For each feature changed for a Tribal area, the attributes of the changed feature display in the table rows. Each column gives the name of the attribute.



▼	FEATURE_ID	STATEFP	AIANNHCE	COMPTYP	AIANNHFSR	NA
0	0	06	1750	T	F	Karuk Off-Res
1	1	06	1750	T	F	Karuk Off-Res
2	2	06	1750	T	F	Karuk Off-Res
3	3	06	1750	T	F	Karuk Off-Res

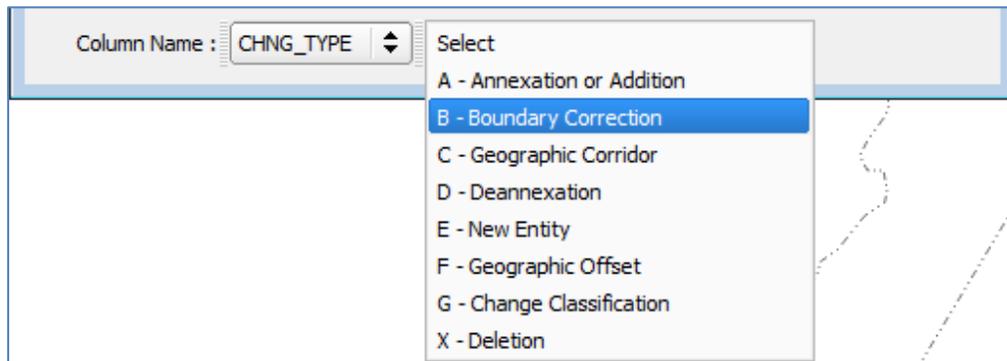
Step	Action and Result
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Step 8 In the **Column Name** drop-down menu, select the attribute by which you want to filter.



In this example, we will select change type (**CHNG_TYPE**).

Step 9 Finally, in the *Select* drop-down, select the attribute value by which you want to filter, then click the **Search** button. In this example, we will select 'Boundary Correction'.



After you click **Search**, the attribute table is filtered to show the rows for all boundary corrections made in the AIAL (Tribal Area) layer.

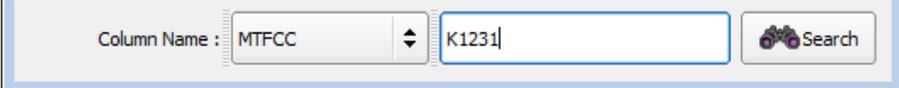
Geography Review Tool

Display Edges Display Faces

Layer Name : bas17_49901171750_99_changes_aial Refresh

Previous Zoom Zoom Next Zoom Show All Edges

NAMELSAD	AIANNHNS	LSAD	FUNCSTAT	CLASSFP	PARTFLG	CHNG_TYPE	EFF_DATE
Karuk Off-Reservation Trust Land	02418982	OT	A	D5	N	B - Boundary Correction	
Karuk Off-Reservation Trust Land	02418982	OT	A	D5	N	B - Boundary Correction	
Karuk Off-Reservation Trust Land	02418982	OT	A	D5	N	B - Boundary Correction	

Step	Action and Result
	To view an individual boundary correction, click on its row and click the Zoom button. To return to the attribute table to see the full (unfiltered) county subdivision layer, click the Refresh button  in the upper right-hand corner of the dialog box.
	<p>Note that when filtering the table by some attributes (e.g., state and county FIPS code or MTFCC), no drop-down list appears from which to make a selection. This is because some attribute codes are too numerous to make scrolling through a list practicable. Instead you will receive a blank box in which you may type the search value. For example, if you are filtering the area landmarks layer by MTFCC and want to see hospitals in the layer, type in the MTFCC for hospitals (K1231), as shown below, then click Search.</p> 

6.5.2 Review Change Polygons Tool

The **Review Change Polygons** tool allows you to view the transactions created from the edits you made to legal entities, as well as to area landmarks and hydrographic areas. You can review the transaction polygons that represent boundary changes, as well as new incorporations and disincorporations. The tool also allows you to make corrections to change polygons.

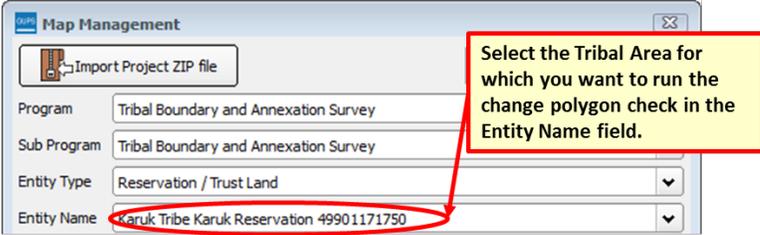
Notes on Reviewing Change Polygons

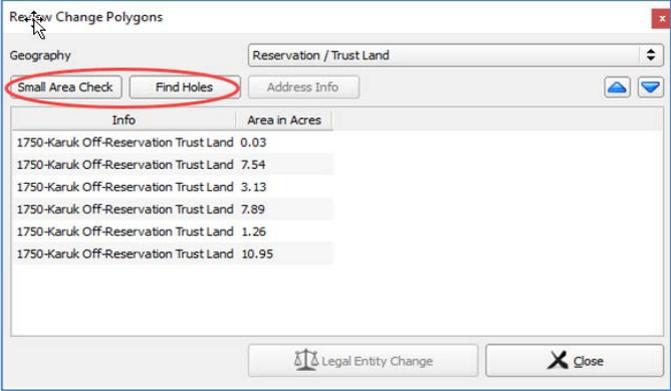
You must run the **Review Change Polygons** tool before GUPS will export a file.

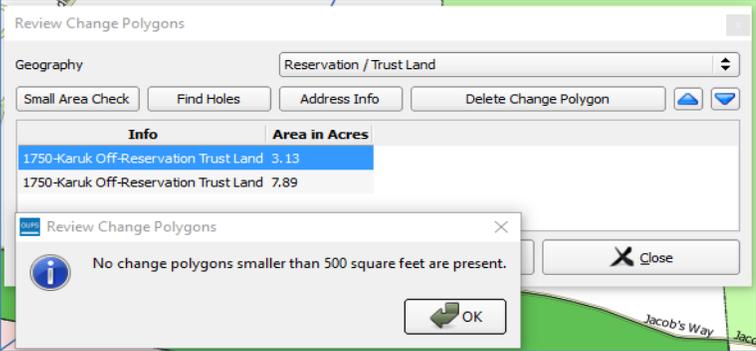
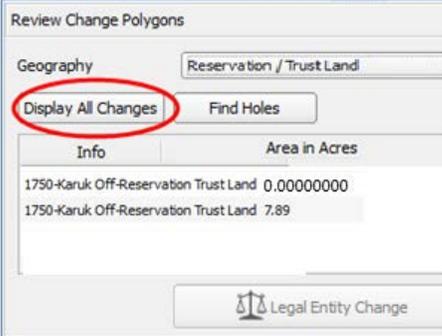
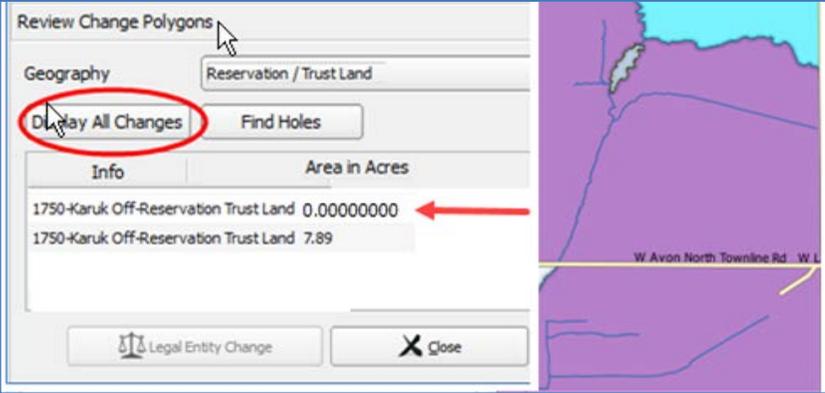
You must run the **Review Change Polygons** tool for each county in which you worked. For example, if you made changes to your working county, but also made changes to an adjacent county when annexing land for your county, you must run the change polygon check on **both** counties.

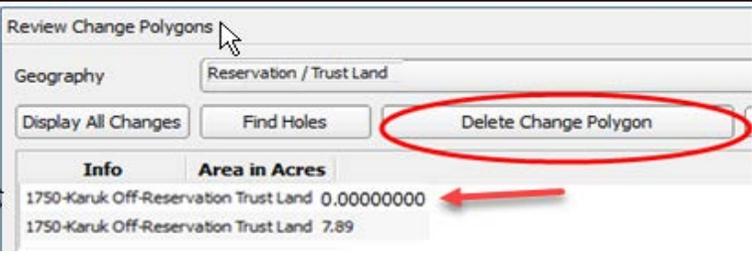
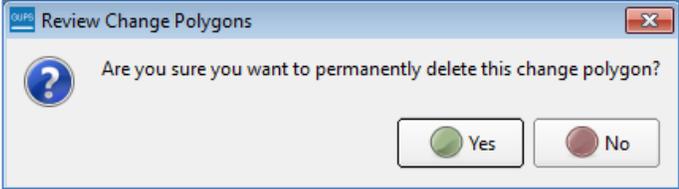
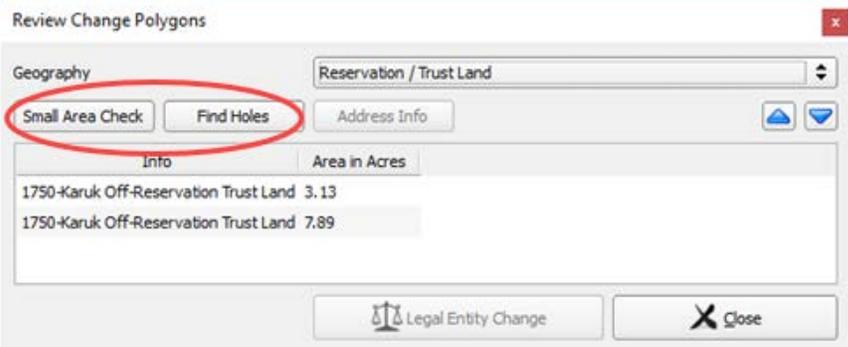
To use the **Review Change Polygons** tool, follow the steps in [Table 41](#).

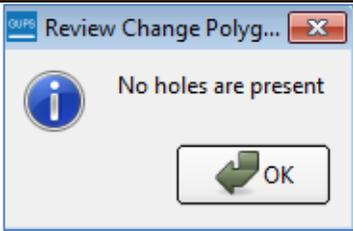
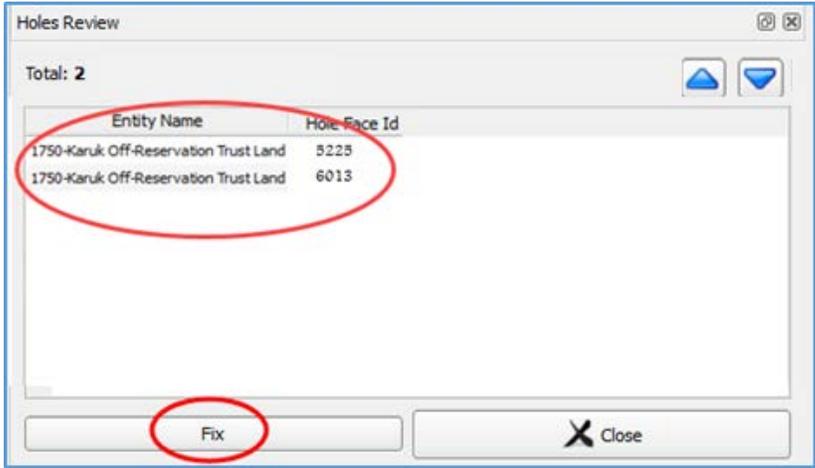
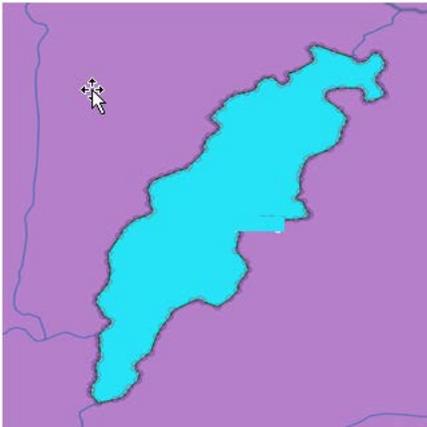
Table 41: Reviewing Change Polygons

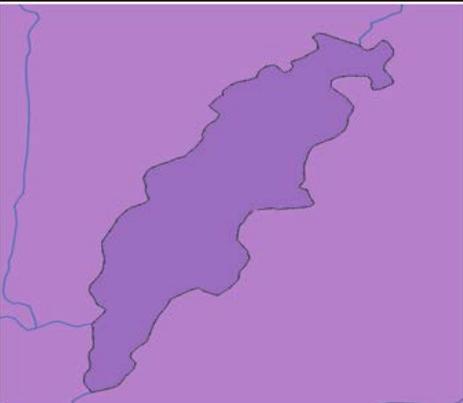
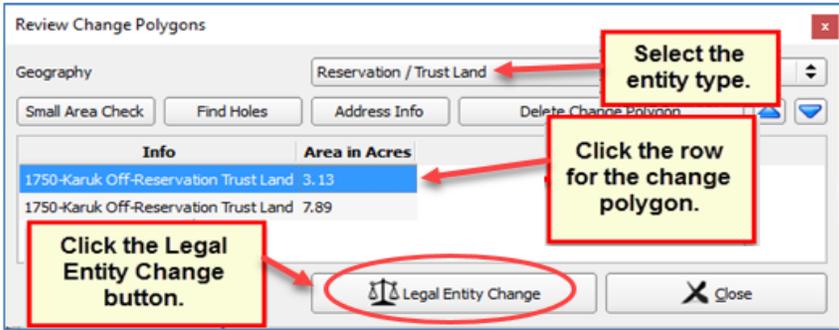
Step	Action and Result
<p>Step 1</p>	<p>In the Map Management dialog box, make sure the Tribal Area for which you want to run the check appears in the Entity field.</p>  <p>Once you click the Open button at the bottom of the dialog box and the map opens in Map View, you are ready to run the Review Change Polygons check.</p>

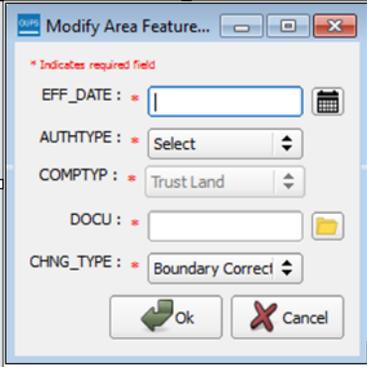
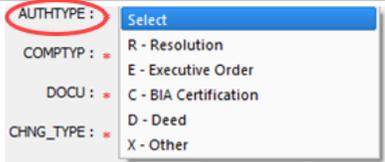
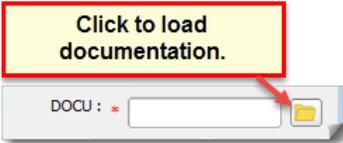
Step	Action and Result														
<p>Step 2</p>	<p>Once you have loaded the entity, you are ready to begin the change polygons review. Click on the Review Change Polygons button on the BAS toolbar.</p>  <p>The Review Change Polygons dialog box opens just below the Table of Contents.</p>  <p>Note: This box can be dragged anywhere on your screen and docked.</p>														
<p>Step 3</p>	<p>Use the Geography drop-down menu shown below to select the geography you want to review.</p> 														
<p>Step 4</p>	<p>After you select an entity type, the Small Area Check and Find Holes buttons become active and all change polygons for the entity type you selected appear in the Info list at the bottom of the box.</p>  <table border="1" data-bbox="553 1514 1203 1745"> <thead> <tr> <th>Info</th> <th>Area in Acres</th> </tr> </thead> <tbody> <tr> <td>1750-Karuk Off-Reservation Trust Land</td> <td>0.03</td> </tr> <tr> <td>1750-Karuk Off-Reservation Trust Land</td> <td>7.54</td> </tr> <tr> <td>1750-Karuk Off-Reservation Trust Land</td> <td>3.13</td> </tr> <tr> <td>1750-Karuk Off-Reservation Trust Land</td> <td>7.89</td> </tr> <tr> <td>1750-Karuk Off-Reservation Trust Land</td> <td>1.26</td> </tr> <tr> <td>1750-Karuk Off-Reservation Trust Land</td> <td>10.95</td> </tr> </tbody> </table>	Info	Area in Acres	1750-Karuk Off-Reservation Trust Land	0.03	1750-Karuk Off-Reservation Trust Land	7.54	1750-Karuk Off-Reservation Trust Land	3.13	1750-Karuk Off-Reservation Trust Land	7.89	1750-Karuk Off-Reservation Trust Land	1.26	1750-Karuk Off-Reservation Trust Land	10.95
Info	Area in Acres														
1750-Karuk Off-Reservation Trust Land	0.03														
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1750-Karuk Off-Reservation Trust Land	7.89														
1750-Karuk Off-Reservation Trust Land	1.26														
1750-Karuk Off-Reservation Trust Land	10.95														
<p>Step 5</p>	<p>To check for small area change polygons, click the Small Area Check button. <i>If all your change polygons are of sufficient size, a pop-up box informs you of this.</i></p>														

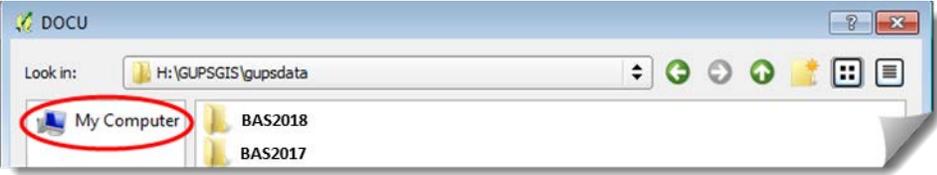
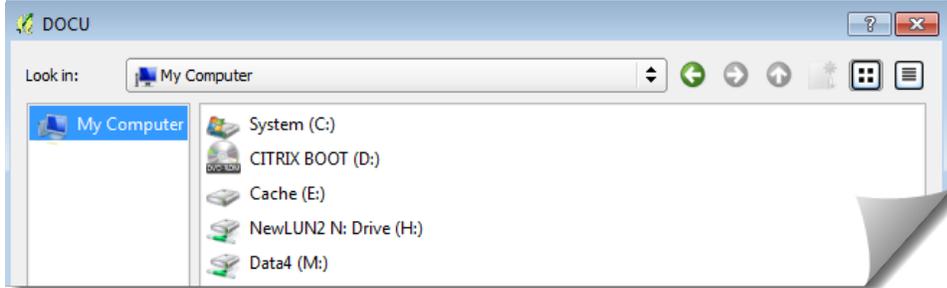
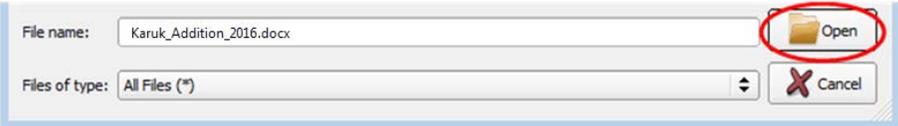
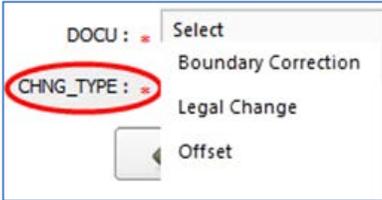
Step	Action and Result
	
<p>Step 6</p>	<p><i>If you have small area polygons within the Reservation/Trust Land, they appear in the Info list with their acreage noted in the Area in Acres column. The Display All Changes button also becomes active (this button allows you to toggle back to see all change polygons in the list).</i></p> 
<p>Step 7</p>	<p>To view a polygon on the map, click the row for the polygon in the Info list. <i>The polygon is highlighted and the map zooms to the location of the polygon.</i></p>  <p>Note in the illustration above, we moved the Review Change Polygons box to sit over the map. As stated earlier, you may move the box anywhere on the page and dock it.</p>
<p>Step 8</p>	<p>To delete polygons that are too small (less than 500 square feet), click on the row for the change polygon in the Info list. <i>The Delete Change Polygon button appears.</i></p>

Step	Action and Result
	
<p>Step 9</p>	<p>To delete the polygon, click the Delete Change Polygon button. A pop-up box asks if you are sure you want to delete.</p> 
<p>Step 10</p>	<p>Click the Yes button. The polygon is removed from the list, from the map, and from the attribute table.</p>
<p>Step 11</p>	<p>Before the Small Area check is complete, you must repeat the steps above for each geography type for which you created change polygons.</p>
<p>Step 12</p>	<p>Next, review your polygons for holes (that is, two or fewer small faces missed when creating a change polygon). While still in the Review Change Polygons dialog box, select a geography type from the Geography drop-down menu. For this example, we again selected 'Reservation/Trust Lands'. A list of change polygons for Reservations/Trust Lands populates the Info list and the Display All Changes button replaces the Small Area button (since you've already run this check). The Find Holes buttons remains in its original location.</p> 
<p>Step 13</p>	<p>Click on the row for the polygon in the Info list to see it on the map, then click the Find Holes button. If no holes are present, a pop-up box informs you of this.</p>

Step	Action and Result						
							
<p>Step 14</p>	<p><i>If holes are found, a list of polygons with holes appears in the Holes Review box and the Fix button activates at the bottom of the box.</i></p>  <table border="1" data-bbox="488 699 1256 989"> <thead> <tr> <th>Entity Name</th> <th>Hole Face Id</th> </tr> </thead> <tbody> <tr> <td>1750-Karuk Off-Reservation Trust Land</td> <td>5225</td> </tr> <tr> <td>1750-Karuk Off-Reservation Trust Land</td> <td>6013</td> </tr> </tbody> </table>	Entity Name	Hole Face Id	1750-Karuk Off-Reservation Trust Land	5225	1750-Karuk Off-Reservation Trust Land	6013
Entity Name	Hole Face Id						
1750-Karuk Off-Reservation Trust Land	5225						
1750-Karuk Off-Reservation Trust Land	6013						
<p>Step 15</p>	<p><i>To correct a change polygon, click on its row to highlight it. The map zooms to its location and displays all holes in cyan (color may vary).</i></p> 						
<p>Step 16</p>	<p><i>Click the Fix button to repair the hole. The change polygon is corrected and the correction displays on the map (i.e., the hole is changed to the same color as the remainder of the polygon).</i></p>						

Step	Action and Result
	
<p>Step 17</p>	<p>Before the Find Holes check is complete, you must repeat the steps above <i>for each</i> geography type for which you created change polygons.</p>
<p>Step 18</p>	<p>After you review for small areas and holes, you may also use the Review Change Polygons tool to check the general accuracy of your change polygons. To do so, select your entity type in the Geography drop-down menu. <i>A full list of change polygons for the geography type selected displays in the Info list.</i></p>
<p>Step 19</p>	<p>Click on the row for each polygon to see it on the map and review your changes.</p> <p>If you notice a mistake on the map (e.g., you created a new incorporated place that was supposed to have six faces, but you selected only five), click on the Modify Area Feature button on the BAS toolbar and make the correction.</p>
<p>Step 20</p>	<p>To review boundary changes, select the entity type you want to review in the Geography drop-down menu at the top of the Review Change Polygons dialog box. In this example, we select 'Reservation-/Trust Land'. <i>All boundary change polygons for the entity type selected populate the Info list.</i></p> <p>To review a boundary change, click on the change polygon in the list, then click the Legal Entity Change button at the bottom of the Review Change Polygons dialog box, shown below.</p>  <p><i>The map zooms to where the change was made and a box opens displaying the information that you entered when you coded the change. Here, because the change was</i></p>

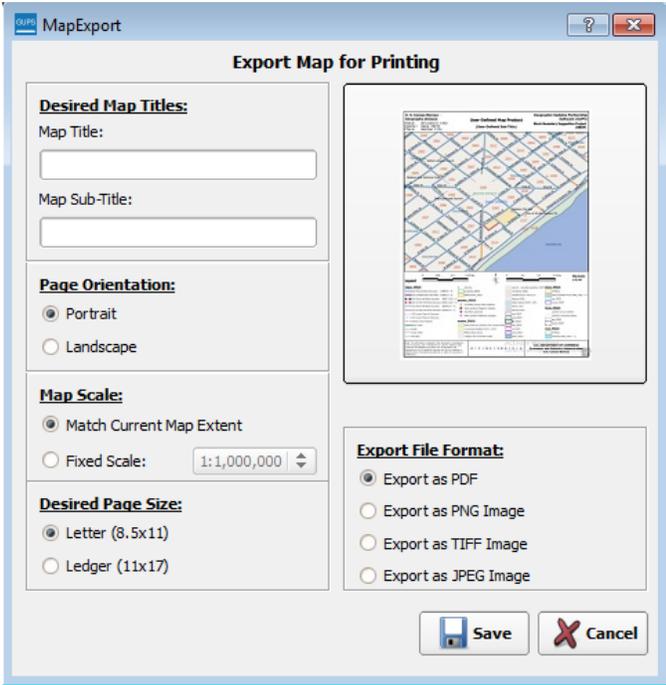
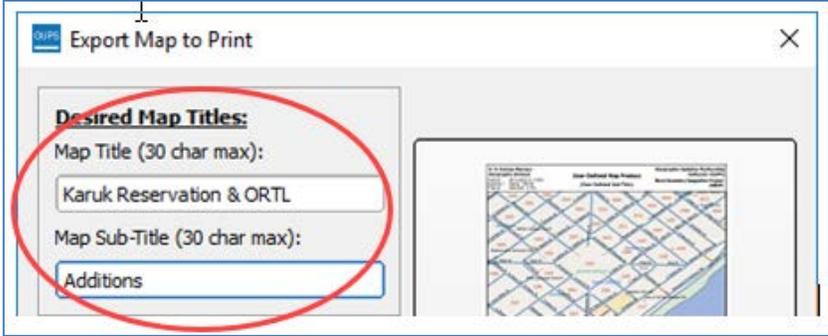
Step	Action and Result
	<p><i>a boundary correction, the effective date, authority type, and documentation fields are not filled.</i></p>  <p>If this change was mistakenly coded as a boundary correction, and should have been a legal change instead, you may correct the error here. In this example we correct a change polygon mistakenly coded as a boundary correction rather than an addition.</p>
<p>Step 21</p>	<p>Click the calendar icon next to the EFF_DATE field to select an effective date for the addition.</p> 
<p>Step 22</p>	<p>Use the drop-down menu for the AUTHTYPE field to select the authority type for the change.</p> 
<p>Step 23</p>	<p>In the DOCU field, type in the ordinance or other legal documentation number authorizing the Addition, or upload legal documentation for the change. To upload documentation, click the folder icon next to the DOCU field.</p> 

Step	Action and Result
	<p>When the DOCU window opens, click on the icon for 'My Computer' (or simply 'Computer' in some Windows versions) to open the directory where you have saved your documentation.</p>  <p>Your directories display, as shown below.</p>  <p>Select the appropriate directory and navigate to the file you want to upload. Click the file. Then, to upload it, click the Open button at the bottom of the DOCU window.</p>  <p><i>GUPS uploads the file and the file name appears in the DOCU field.</i></p>
<p>Step 24</p>	<p>Finally, in the CHNG_TYPE field drop-down menu, change 'Boundary Correction' to the correct change type ('Annexation', 'Corridor', or 'Offset'). Here we select 'Annexation'.</p> 
<p>Step 25</p>	<p>Click the OK button.  <i>The correction is made.</i></p>
<p>Step 26</p>	<p>When you have completed <i>all your reviews</i> (for small areas, holes, and boundary changes) for <i>all entity types</i>, and have made any corrections needed, click the Save button  on the BAS toolbar. <i>All corrections are saved. Your Review Change Polygons check is complete.</i></p>

6.6 How to Export a Printable Map

GUPS allows you to generate printable maps in four formats (.pdf, .png., .tiff, and .jpeg). The maps can be created in portrait or landscape view, on letter or ledger (legal) size paper, and at various scales. To export a printable map from GUPS, follow the steps in [Table 42](#).

Table 42: Export a Printable Map

Step	Action and Result
<p>Step 1</p>	<p>Click on the Export to ZIP button on the BAS toolbar.</p>  <p>The MapExport dialog box opens.</p> 
<p>Step 2</p>	<p>In the Desired Map Titles section, type in a map title and sub-title.</p> 
<p>Step 3</p>	<p>Under Page Orientation, click the radio button next to 'Portrait' or 'Landscape' to select the map's orientation on the page when printed.</p>

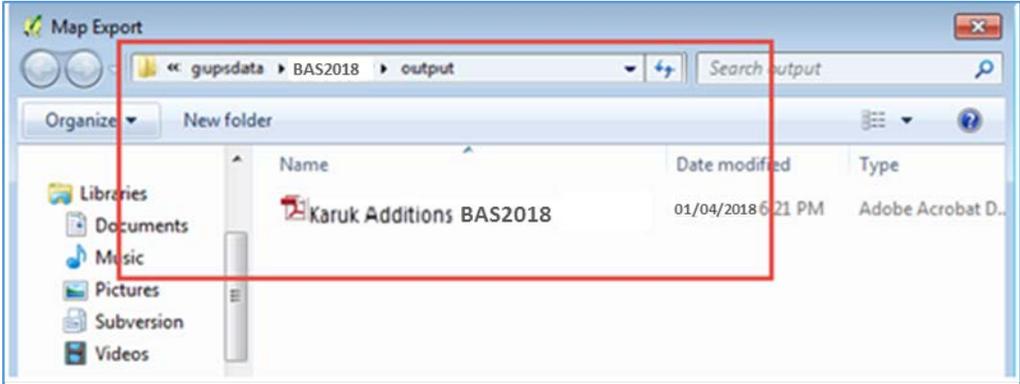
Step	Action and Result
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	<div data-bbox="641 262 1125 445" data-label="Image"> <p>Page Orientation:</p> <p><input checked="" type="radio"/> Portrait</p> <p><input type="radio"/> Landscape</p> </div> <p data-bbox="337 464 1339 495">The map orientation in the preview pane to the right changes to reflect your selection.</p> <div data-bbox="431 514 1339 953" data-label="Image"> </div> <p data-bbox="337 972 878 1003">Portrait View (left) and Landscape View (right)</p>
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<p>Step 4</p>	<p>Under Map Scale, click the appropriate radio button to select the map scale (you may use your current map extent or set a fixed scale). To select a fixed scale, click the radio button next to 'Fixed Scale', then click the down arrow to open the drop-down menu. In the drop-down list, click on the scale that you want.</p> <div data-bbox="708 1178 1060 1602" data-label="Image"> <p>Map Scale:</p> <p><input type="radio"/> Match Current Map Extent</p> <p><input checked="" type="radio"/> Fixed Scale: 1:1,000,000</p> <p>Desired Page Size:</p> <p><input checked="" type="radio"/> Letter (8.5x11)</p> <p><input type="radio"/> Ledger (11x17)</p> <p>1:500,000</p> <p>1:250,000</p> <p>1:100,000</p> <p>1:50,000</p> <p>1:25,000</p> <p>1:10,000</p> <p>1:5,000</p> <p>1:2,000</p> <p>1:1,000</p> <p>1:500</p> </div>
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<p>Step 5</p>	<p>Under Desired Paper Size, click the radio button next to 'Letter' for 8½ by 11-inch paper or the 'Ledger' button for 11 by 17-inch paper.</p> <div data-bbox="675 1717 1092 1877" data-label="Image"> <p>Desired Page Size:</p> <p><input checked="" type="radio"/> Letter (8.5x11)</p> <p><input type="radio"/> Ledger (11x17)</p> </div>
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Step	Action and Result
<p>Step 6</p>	<p>When you are ready to export the file, under Export File Format, click the radio button next to the desired format. You may export the file in .pdf, .png, .tiff, or .jpeg format.</p> <div data-bbox="760 352 1008 556" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>Export File Format:</p> <p><input checked="" type="radio"/> Export as PDF</p> <p><input type="radio"/> Export as PNG Image</p> <p><input type="radio"/> Export as TIFF Image</p> <p><input type="radio"/> Export as JPEG Image</p> </div>
<p>Step 7</p>	<p>Click the Save button. <i>The Map Export – Save Map As... window opens.</i></p> <div data-bbox="456 638 1312 909" style="border: 1px solid gray; padding: 5px; margin: 10px auto; width: fit-content;"> </div> <p>Note: GUPS automatically selected the “output” folder for BAS2018 as the save location. This folder was created on your computer by the GUPS installer. If you want to save the file to a different location, navigate to the location first before saving.</p>
<p>Step 8</p>	<p>After you have selected the location, type in the name you want to give the file, then click Save.</p> <div data-bbox="456 1125 1312 1745" style="border: 1px solid gray; padding: 5px; margin: 10px auto; width: fit-content;"> </div>
<p>Step 9</p>	<p><i>The file is saved and you receive a pop-up message confirming that the export is complete.</i></p>

Step	Action and Result
	
Step 10	<p>To save the file, click OK. Your file is saved either in the default BAS2018 output location or in the alternate location you specified. Here we saved the file in the default location.</p> 

6.7 How to Export ZIP Files to Share/Submit

When creating export ZIP files, you have two options—you may export the file to share with another user or you may export the file for submission to the Census Bureau. In either case, GUPS automatically names the output ZIP file for you. It packages all the files required by the Census Bureau (including any documentation you uploaded) into the ZIP file and saves it in a preset location created on your computer by during the installation process.

Important Note

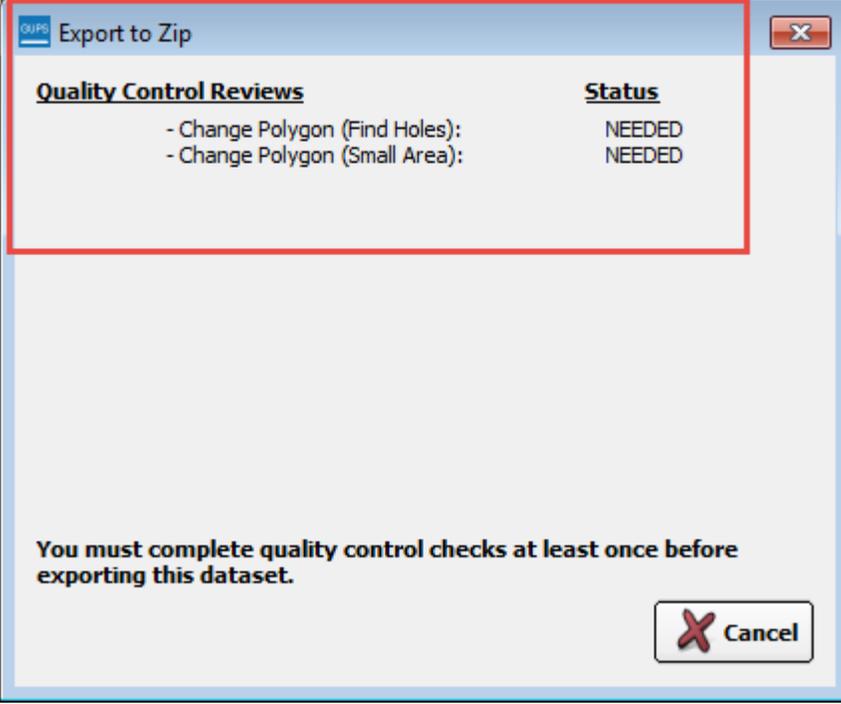
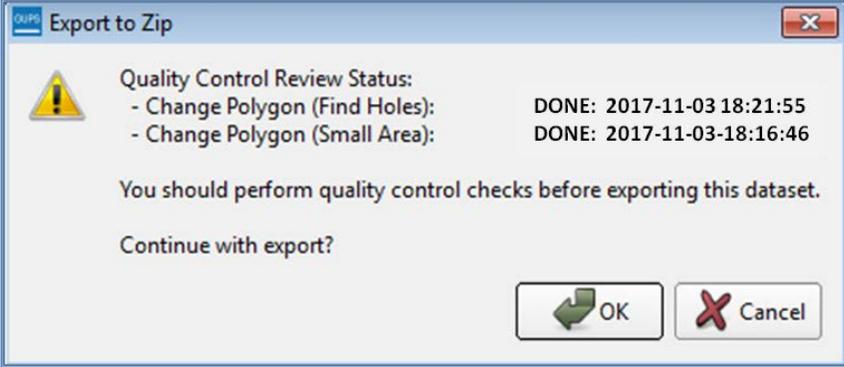
If you make changes to more than one working county, you must export a separate ZIP file for each.

6.7.1 Export a File to Share

To export a file to share with another user, follow the steps in [Table 43](#).

Table 43: Export Files to Share with Another User

Step	Action and Result
Step 1	<p>Click on the Export to ZIP button on the BAS toolbar.</p> 

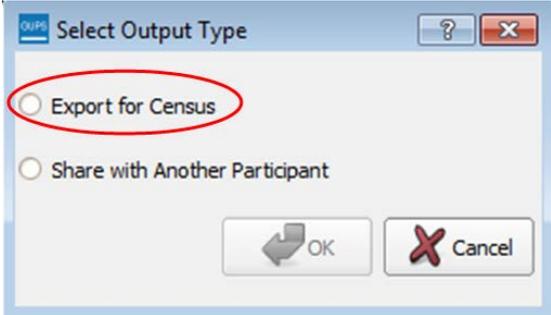
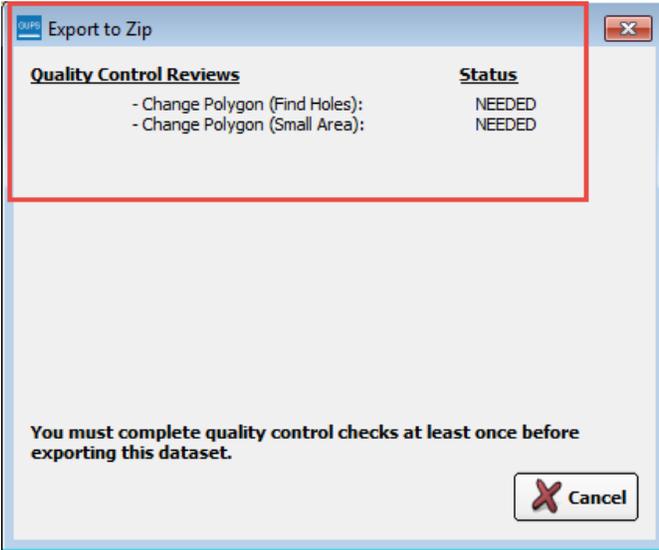
Step	Action and Result
<p>Step 2</p>	<p>After you click Export to Zip button, you may receive one of two results, depending on whether you have validated your changes using the Review Change Polygons tool. If you have not used the tool to check your work, the Export to ZIP pop-up box appears and lists the specific checks that need to be run before you can export the file.</p>  <p>If you see this message, click the Cancel button and run the Review Change Polygons check. Then repeat the initial export steps again.</p>
<p>Step 3</p>	<p>If you have already run the Review Change Polygon check, the Export to ZIP pop-up box displays the status of the checks and the date and time they were made, as shown below.</p> 
<p>Step 4</p>	<p>Look carefully at the run times listed. If you have made any additional changes after these times, click Cancel and run the Review Change Polygons check again. Then repeat the export steps.</p>
<p>Step 5</p>	<p>The Select Output Type dialog box opens.</p>

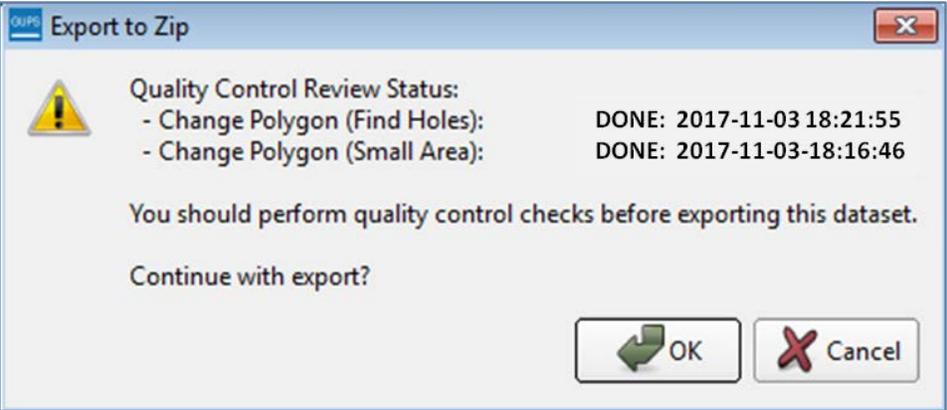
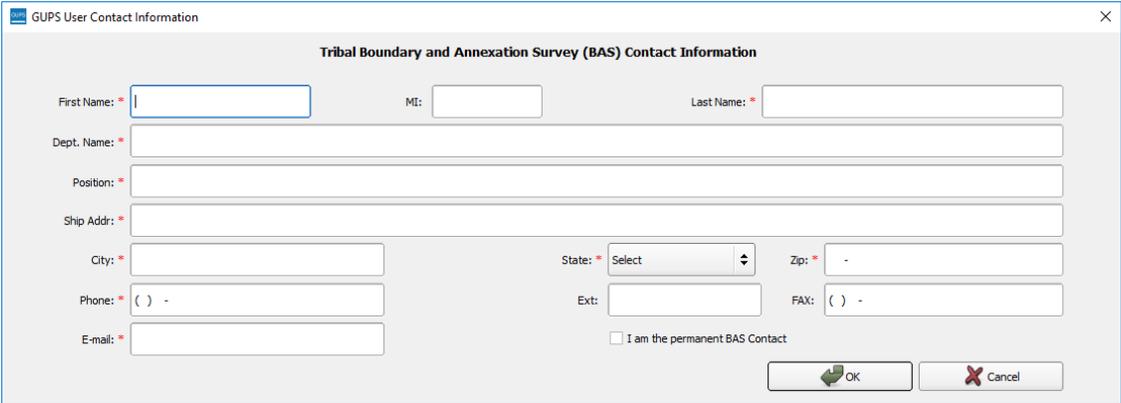
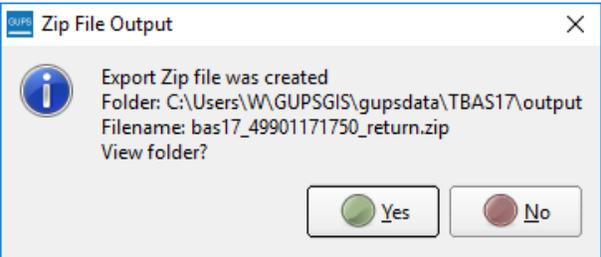
Step	Action and Result
	<div data-bbox="656 254 1118 527" data-label="Image"> </div> <p data-bbox="334 541 1435 604">To prepare ZIP file to be shared with another user, select the “Share with Another Participant” radio button. Click OK.</p>
<p data-bbox="215 636 297 667">Step 6</p>	<p data-bbox="334 636 1435 699"><i>The ZIP File Output dialog box opens. It informs you that the ZIP file was created and asks if you want to view the folder.</i></p> <div data-bbox="553 716 1219 995" data-label="Image"> </div>
<p data-bbox="215 1024 297 1056">Step 7</p>	<p data-bbox="334 1024 1419 1119"><i>If you click Yes, the directory opens and displays the folder location where GUPS placed the file. Note: GUPS automatically saves the file to an output folder that the GUPS installer placed on your computer during the installation process.</i></p> <div data-bbox="378 1150 1398 1539" data-label="Image"> </div>
<p data-bbox="215 1575 297 1606">Step 8</p>	<p data-bbox="334 1575 873 1606">You may now share the file with another user.</p>

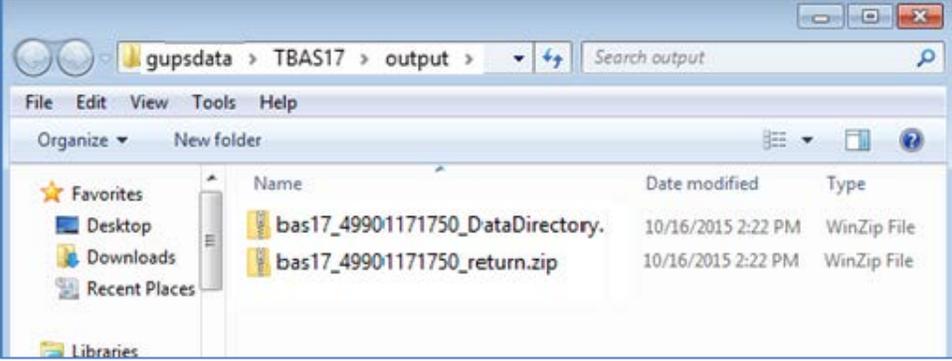
6.7.2 Export a File to Submit to the Census Bureau

To export a file to submit to the Census Bureau, follow the steps in [Table 44](#).

Table 44: Export Files for Submission to the Census Bureau

Step	Action and Result
<p>Step 1</p>	<p>Click on the Export to ZIP button on the BAS toolbar.</p>  <p>The Select Output Type dialog box opens.</p>  <p>Click the Export for Census radio button. Then click OK.</p>
<p>Step 2</p>	<p>After you click OK, you may receive one of two results, depending on whether you have validated your changes using the Review Change Polygons tool. If you have not used the tool to check your work, the Export to ZIP pop-up box appears and lists the specific checks that need to be run before you can export the file.</p> 
<p>Step 3</p>	<p>If you see this message, click the Cancel button and run the Review Change Polygons check. Then repeat the initial export steps again.</p>

Step	Action and Result
<p>Step 4</p>	<p>If you have already run the Review Change Polygon check, the Export to ZIP pop-up box displays the status of the checks and the date and time they were made, as shown below.</p> 
<p>Step 5</p>	<p>Look carefully at the run times listed. If you have made any additional changes after these times, click Cancel and run the Review Change Polygons check again. Then repeat the export steps.</p>
<p>Step 6</p>	<p>Otherwise, click OK. The GUPS User Contact Information dialog box opens up. Complete the required fields and click OK.</p>  <p>The ZIP File Output dialog box opens. It informs you that the ZIP file was created and asks if you want to view the folder.</p> 
<p>Step 7</p>	<p>If you click Yes, the directory opens and displays the folder location where GUPS placed the file. Note: GUPS automatically saves the file to an output folder that the GUPS installer placed on your computer during the installation process.</p>

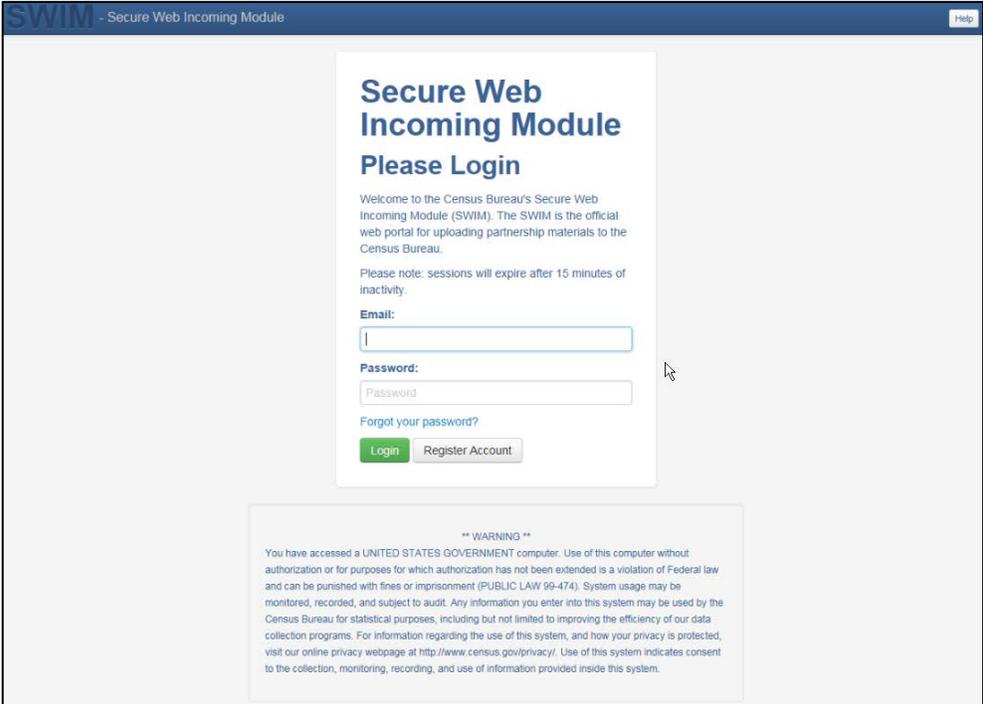
Step	Action and Result
	
Step 8	<p>You are now ready to upload your file to the Census Bureau through the SWIM. See Section 7 on the next page.</p>

SECTION 7. SUBMITTING YOUR FILES TO THE CENSUS BUREAU THROUGH SWIM

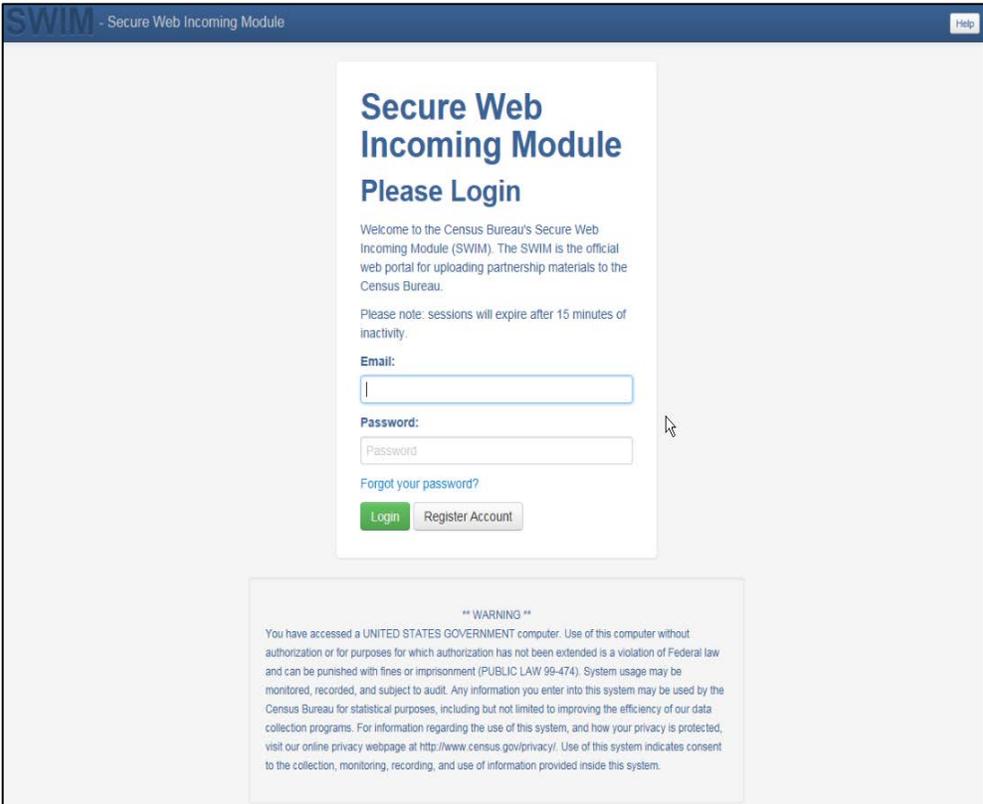
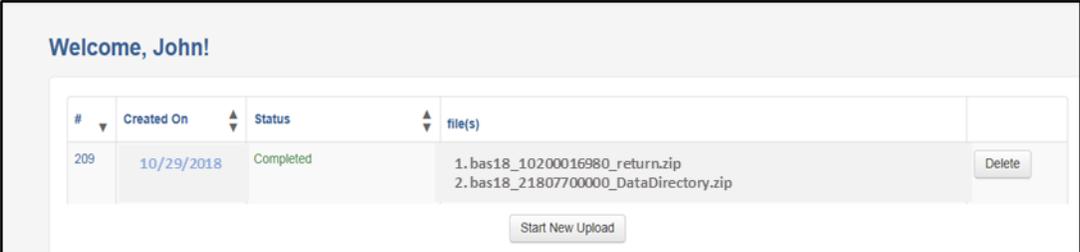
To upload and transmit your update files to the Census Bureau, you must access your account in the SWIM, as shown in [Table 45](#) below.

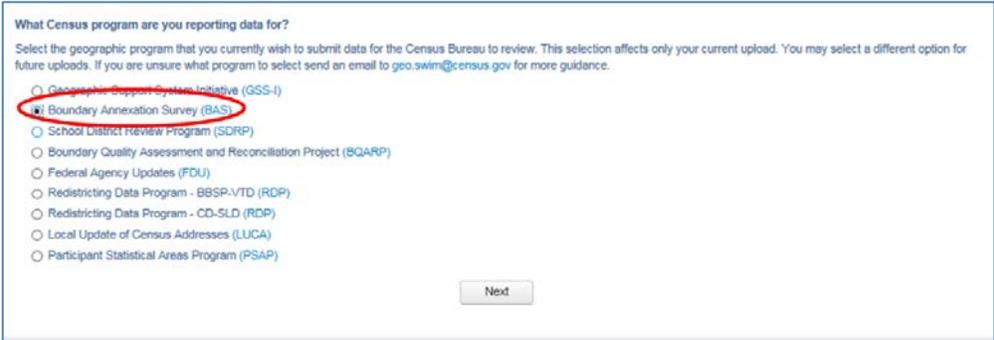
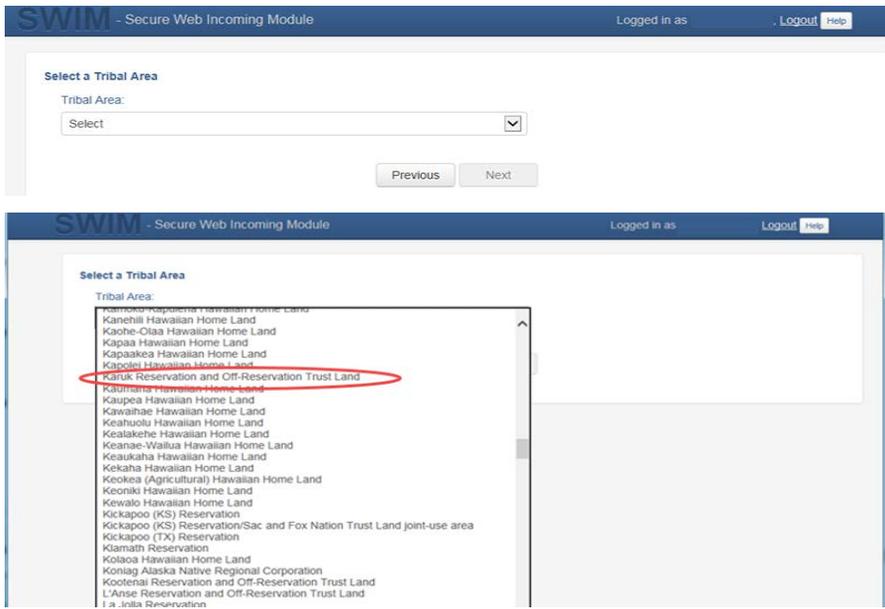
Note: If you **already have a SWIM account**, have your user name (e-mail address) and password ready. If you **do not have a SWIM account**, have the 12-digit registration token provided by the Census Bureau ready.

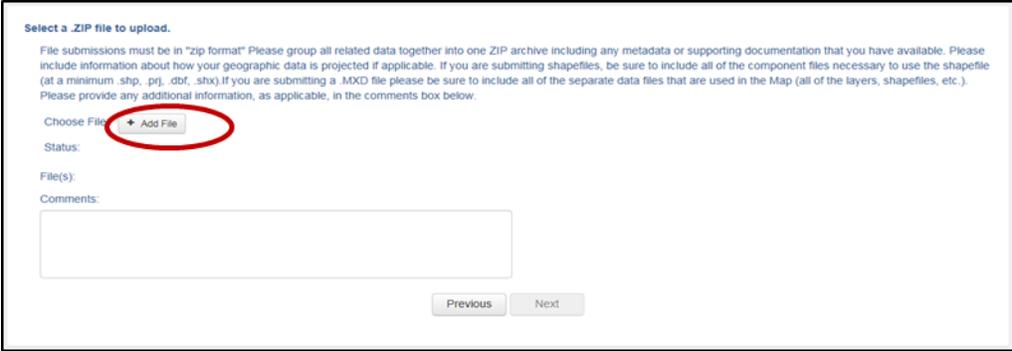
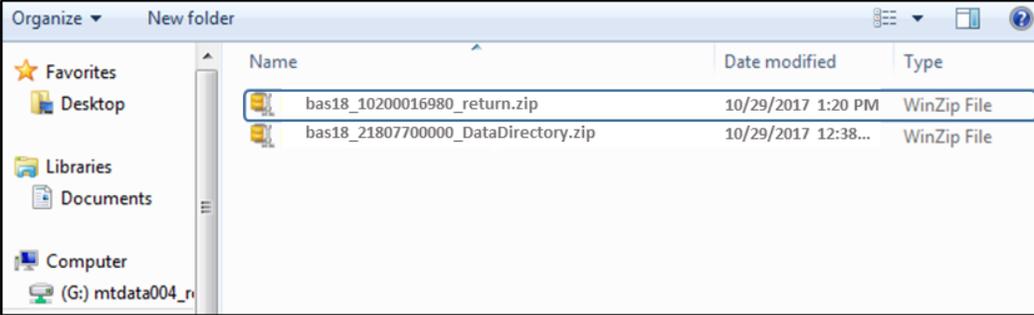
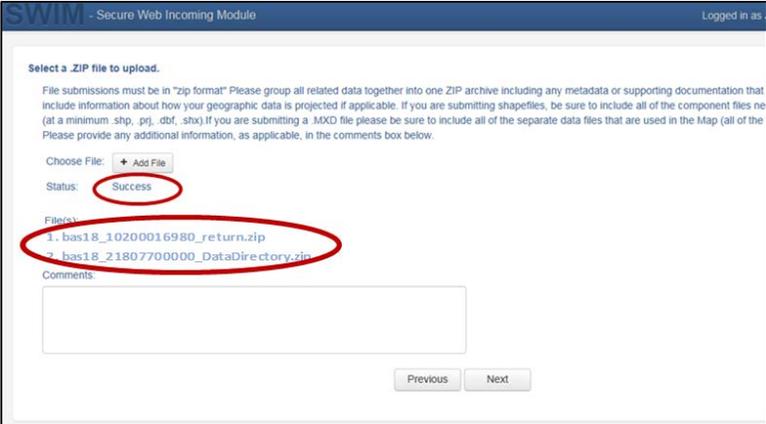
Table 45: Transmit Files to the Census Bureau Using SWIM

Step	Action and Result
<p>Step 1</p>	<p>If you are a participant in another Census Bureau partnership program and already have a SWIM Account, access https://respond.census.gov/swim/ and enter your E-mail address and Password. Then click the Login button. The Welcome screen opens. Go to Step 7.</p> 
<p>Step 2</p>	<p>If you do not yet have a SWIM Account, have the 12-digit registration token provided to you by the Census Bureau ready for your registration. You can register at https://respond.census.gov/swim/. Once the login screen opens, click the Register Account button. The Account Registration screen opens.</p>

Step	Action and Result
	<div data-bbox="565 254 1252 1083" style="border: 1px solid black; padding: 10px;"> <h3 style="text-align: center; margin: 0;">Account Registration</h3> <p>Registration Token: <input type="text"/></p> <p>First Name: <input type="text"/></p> <p>Last Name: <input type="text"/></p> <p>Phone Number: <input type="text"/> - <input type="text"/> - <input type="text"/> # <input type="text"/></p> <p>Agency: <input type="text"/></p> <p>Email: <input type="text"/></p> <p>Confirm Email: <input type="text"/></p> <p>Password: <input type="text"/></p> <p>Confirm Password: <input type="text"/></p> <p>Security Question: <input type="text" value="Please select a verification question."/> <input type="button" value="v"/></p> <p>Answer: <input type="text"/></p> <p style="text-align: center;"><input type="button" value="Submit"/></p> </div>
	<p>All fields on the Account Registration screen are required. You will not be able to move to the next screen until you have completed all fields.</p>
<p>Step 3</p>	<p>On the Account Registration screen, first, enter the 12-digit token provided by the Census Bureau. Then enter your name, agency, and e-mail in the appropriate fields.</p>
<p>Step 4</p>	<p>Next, create a password. The passwords must meet the five criteria below:</p> <ol style="list-style-type: none"> 1. It must be 8 characters in length 2. It must have at least one upper case character 3. It must have at least one lower case character 4. It must have at least one number 5. It must have at least one special character (valid special characters are: #, !, \$, *, &, ?, ~). <p>Note: Commas in the special characters list are for spacing purposes only; the comma is not a valid character for the password.</p>
<p>Step 5</p>	<p>Set up a security question (click the arrow on the right of the Security Question box and select a question in the drop-down list, then enter an answer in the Answer box). When you have finished, click the Submit button. A screen opens to confirm that you have successfully registered.</p>

Step	Action and Result										
	 <p>A screenshot of the SWIM (Secure Web Incoming Module) interface. At the top, it says "SWIM - Secure Web Incoming Module". Below that, in a large blue font, it says "Success!". Underneath, in a smaller blue font, it says "Your account has been successfully registered. Go to Login." There is a "Login" link in blue text.</p>										
<p>Step 6</p>	<p>On the Confirmation screen, click Login. You will return to the Login screen.</p>  <p>A screenshot of the SWIM login page. At the top, it says "SWIM - Secure Web Incoming Module". The main heading is "Secure Web Incoming Module Please Login". Below this, there is a welcome message: "Welcome to the Census Bureau's Secure Web Incoming Module (SWIM). The SWIM is the official web portal for uploading partnership materials to the Census Bureau." A note says "Please note: sessions will expire after 15 minutes of inactivity." There are two input fields: "Email:" and "Password:". Below the password field is a "Forgot your password?" link. At the bottom of the form are two buttons: "Login" (green) and "Register Account" (grey). Below the form is a "WARNING" section with a disclaimer about using a UNITED STATES GOVERNMENT computer.</p>										
<p>Step 7</p>	<p>On the Login screen, enter your e-mail and password then click the green Login button. The Welcome screen opens. You will see the list of files you have previously uploaded, the creation date of the file, the name of the file, and its corresponding zip size. If you need to make modifications, click on the file you want to edit then select the Start Now Upload button.</p>  <p>A screenshot of the SWIM welcome screen. It says "Welcome, John!". Below this is a table of uploaded files. The table has columns for "#", "Created On", "Status", and "file(s)". There is one row of data. Below the table is a "Start New Upload" button.</p> <table border="1" data-bbox="435 1640 1442 1759"> <thead> <tr> <th>#</th> <th>Created On</th> <th>Status</th> <th>file(s)</th> <th></th> </tr> </thead> <tbody> <tr> <td>209</td> <td>10/29/2018</td> <td>Completed</td> <td>1. bas18_10200016980_return.zip 2. bas18_21807700000_DataDirectory.zip</td> <td>Delete</td> </tr> </tbody> </table>	#	Created On	Status	file(s)		209	10/29/2018	Completed	1. bas18_10200016980_return.zip 2. bas18_21807700000_DataDirectory.zip	Delete
#	Created On	Status	file(s)								
209	10/29/2018	Completed	1. bas18_10200016980_return.zip 2. bas18_21807700000_DataDirectory.zip	Delete							

Step	Action and Result
<p>Step 8</p>	<p>To begin an upload, click the Start New Upload button. A screen opens asking which program for which you are reporting data. On this screen, click the Boundary Annexation Survey (BAS) radio button, then click Next at the bottom of the screen.</p> 
<p>Step 9</p>	<p>A screen opens asking “What type of BAS you are reporting for?” Click the radio button next to the governmental unit for which you are reporting data, then click the Next button. In this example, we will select Tribal Area.</p> 
<p>Step 10</p>	<p>A screen opens that allows you to select your Tribal Area for which you are reporting data. scroll through the drop-down menu and select the Tribal Area. Then click the Next button.</p> 

Step	Action and Result
<p>Step 11</p>	<p>The Select a .ZIP file to upload screen opens. Choose a zip file to upload. Note: All files must be a zip file. To upload a file, click the + Add File button on the screen.</p>  <p>The screenshot shows a web form titled "Select a .ZIP file to upload." with instructions on file format and submission. Below the instructions, there is a "Choose File:" label and a button labeled "+ Add File" which is circled in red. There are also fields for "Status:", "File(s):", and "Comments:" with a text area. At the bottom are "Previous" and "Next" buttons.</p>
<p>Step 12</p>	<p>The Choose File to Upload window opens and allows you to navigate on your computer to the ZIP file's location.</p>  <p>The screenshot shows a Windows File Explorer window titled "Organize" and "New folder". The left sidebar shows "Favorites" and "Libraries". The main pane shows a list of files with columns for "Name", "Date modified", and "Type". Two files are listed: "bas18_10200016980_return.zip" (10/29/2017 1:20 PM, WinZip File) and "bas18_21807700000_DataDirectory.zip" (10/29/2017 12:38..., WinZip File). The first file is selected.</p> <p>Locate the ZIP file you want to upload then double-click it. Note: You can only add one file at a time.</p>
<p>Step 13</p>	<p>Once the file upload is complete, the Status field shows Success. The name of the file appears in the File(s) field. To add another file, click the + Add File and the upload process will repeat.</p> <p>In this example, there are two files uploaded. One for an updated digital address list and one for an updated shapefile.</p>  <p>The screenshot shows the same web form as in Step 11, but now the "Status:" field contains the word "Success" and is circled in red. The "File(s):" field contains a list of two files: "1. bas18_10200016980_return.zip" and "2. bas18_21807700000_DataDirectory.zip", which is also circled in red. The "Add File" button is still present.</p>

Step	Action and Result
Step 14	After you have uploaded the file(s), type any comments (including pertinent information about data projection or supporting documentation for shapefiles) in the Comments field. Click Next .
Step 15	The Thank You screen appears and confirms the receipt of your submission. <div data-bbox="597 443 1219 743" style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Thank You</p> <p>Your files have uploaded successfully.</p> <p>File(s):</p> <ol style="list-style-type: none"> 1. bas18_10200016980_return.zip 2. bas18_21807700000_DataDirectory.zip <p>You may Log Out or return to the upload form, to submit more files.</p> </div>
Step 16	To submit files for a different entity, click on the 'Upload Form' link in the phrase "You may Log Out or return to the upload form, to submit more files." This choice returns you to the Welcome screen. To log out, click on Log Out . The Census Bureau will acknowledge the receipt of the uploaded file.
	SWIM sessions deactivate after 15 minutes of inactivity. Note: While working in SWIM, you may obtain help by clicking on the Help button on any screen. When you click the button, a screen opens with links to help resources. <div data-bbox="423 1104 1398 1591" style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <div style="background-color: #4a7ebb; color: white; padding: 5px;"> SWIM - Secure Web Incoming Module Already Registered? Login Help </div> <div style="padding: 10px;"> <h2 style="margin: 0;">Help</h2> <p>The Secure Web Incoming Module (SWIM) is a single upload page for submitting all local geographic partnership data to the U.S. Census Bureau's Geography Division. Because of the wide variety of geographic partnership programs, the SWIM requires users to answer some basic questions about their data before submitting. These questions direct the incoming data to the right partnership program.</p> <p>The general flow of questions is as follows:</p> <ol style="list-style-type: none"> 1. What geographic partnership program you are submitting data for? 2. What level of government or organization is submitting the data? Many of our geographic programs allow partners from various levels of governments to submit data, which is represented as a geographic entity in the menu selection. For example, when submitting data on behalf of a state government, the submitting entity is the state, even if the data submitted pertains to some other entity within the state, such as a county. 3. What is the name of your entity? A user can select an entity's name from pre-populated drop-down boxes. <p>After completing the above questions, the user must select a ZIP file to upload. Using a ZIP archive ensures an efficient upload of all submitted files. There are many compression software options where one can do this with relative ease.</p> <p>For more information about the Census Bureau's Geography Division, please visit our Geography Homepage.</p> <p>For more information about our geographic partnership programs at the Census, please visit our Partnerships Homepage.</p> <p>For a glossary of common Census Geography Terms and Concepts, please visit our Terms and Concepts page.</p> </div> </div>

APPENDICES

APPENDIX A. BAS CONTACT INFORMATION AND RESOURCES

Action/Question	Resource	Contact
Request shapefiles on DVD	Geography Division	Call: 1-800-972-5651 E-mail: geo.bas@census.gov
BAS materials questions	Geography Division	Call: 1-800-972-5651 E-mail: geo.bas@census.gov
Legal boundary questions	Geography Division	Call: 1-301-763-1099 E-mail: geo.bas@census.gov Fax: 1-800-972-5652
Ask guidance on areas under legal dispute	Census Bureau Legal Office	Call: 1-301-763-9844
GUPS technical support	Geography Division	Call: 1-800-972-5651 E-mail: geo.bas@census.gov Be sure to have the number for the version of GUPS you are running ready. To find this number, go to the Help tab on the main Menu in GUPS and click 'About GUPS' in the drop-down menu. A pop-up box will provide you the number.
SWIM token questions	Geography Division	Call: 1-800-972-5651 E-mail: geo.bas@census.gov
SWIM technical support	Geography Division	geo.swim@census.gov
Submit output files on DVD (if you do not have Internet access)	National Processing Center	Send to: US Census Bureau National Processing Center ATTN: BAS Returns, Bldg 63E 1201 East 10th Street Jeffersonville, IN 47132

APPENDIX B. GEOGRAPHIC OFFSETS

Geographic Offsets

A geographic offset is an area (either within or outside of a geographic entity) that is only on one side of a road (unlike corridors, which involve both sides of the road) and does not include structures addressed to that side of the road. Much of the same guidelines regarding corridors also holds true for offsets.

The Census Bureau is aware that many governments base their legal boundaries on cadastral (parcel-based) right-of-way mapping. Census Bureau maps are based on spatial data that is topologically integrated which makes maintenance of geographic offsets inefficient. Using the road centerline wherever possible will help to establish more accurate population counts. If a boundary follows a front lot line, the Census Bureau strongly prefers that the road centerline be used as the boundary. If a boundary is at the rear of a lot, then it should be depicted as such. If it is unclear whether a particular line is a front lot line or something else, please contact the BAS team for assistance. As a rule, if a house or building could not conceivably be built in the area between the potential line and the centerline of the road, then the line can be considered a front lot line [Figure 13. A Cadastral \(Parcel-Based\) Boundary Map](#) depicts a cadastral (parcel-based) boundary map and [Figure 14. How a Boundary Should be Represented When Sent to the Census Bureau](#) shows how the boundary should be represented when it is sent to the Census Bureau.



Figure 13. A Cadastral (Parcel-Based) Boundary Map

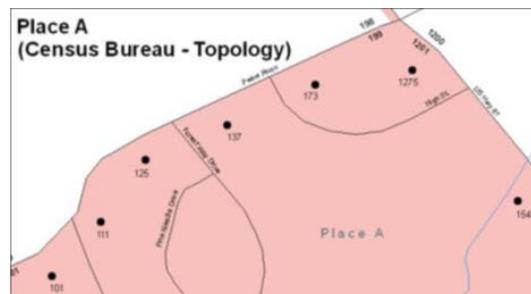


Figure 14. How a Boundary Should be Represented When Sent to the Census Bureau

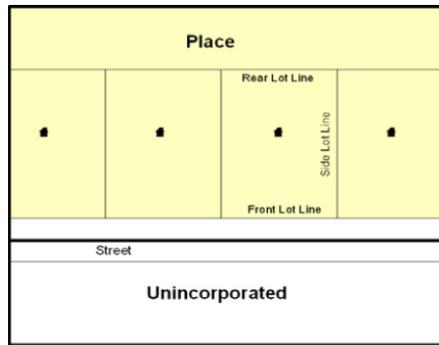


Figure 15. Place Boundary – Front Lot Line

Figure 15 - Shows a situation in which the place boundary is along the front lot line. In this example, the respondent must either use the road centerline as the boundary (preferred), or create an offset.

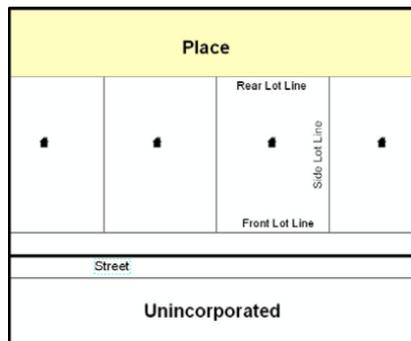


Figure 16. Place Boundary – Rear Lot Line

Figure 16 - The place boundary is on the rear lot line, so the respondent should of course not use the road centerline or create an offset, but should rather digitize in a new boundary following the rear lot line.

The Census Bureau has included an “offset” shapefile in the BAS materials (bas_2018_offset_<ssccc>.shp), so that your jurisdiction can be checked for any existing corridors or offsets. While the Census Bureau prefers that new offsets are not created (see above), this information can be helpful in determining if current boundaries are correct..

APPENDIX C. MTFCC DESCRIPTIONS

The MAF/TIGER Feature Classification Code (MTFCC) is a 5-digit code assigned by the Census Bureau to classify and describe geographic objects or features in Census Bureau MAF/TIGER products.

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 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).
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.

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
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 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.

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
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.
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

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
		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 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. The upper chamber is the senate in a bicameral legislature, and the unicameral case is a 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
G6300	Traffic Analysis District	An area delineated by Metropolitan Planning Organizations (MPOs) and state Departments of Transportation (DOTs) for

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
		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 Census Bureau includes in the MAF/TIGER® System 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]
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.

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
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.
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-	A place or area set aside for recreation or preservation of a cultural or natural resource and under the administration of some

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
	public, independent park, commission, etc.)	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 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.

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
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 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, boundary of an areal feature)	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 landmarks, while many others separate water features from each other (e.g., where a bay meets the ocean).

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
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 the MAF/TIGER System.
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.
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.

MTFCC	FEATURE CLASS	FEATURE CLASS DESCRIPTION
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 November 2017.		

APPENDIX D. STANDARD STREET TYPE ABBREVIATIONS

STREET NAME TYPE	STANDARD ABBREVIATION
ALLEY	ALY
ANEX	ANX
ARCADE	ARC
AVENUE	AVE
BAYOU	BYU
BEACH	BCH
BEND	BND
BLUFF	BLF
BLUFFS	BLFS
BOTTOM	BTM
BOULEVARD	BLVD
BRANCH	BR
BRIDGE	BRG
BROOK	BRK
BROOKS	BRKS
BURG	BG
BURGS	BGS
BYPASS	BYP
CAMP	CP
CANYON	CYN
CAPE	CPE
CAUSEWAY	CSWY
CENTER	CTR
CENTERS	CTRS
CIRCLE	CIR
CIRCLES	CIRS
CLIFF	CLF
CLIFFS	CLFS
CLUB	CLB
COMMON	CMN
COMMONS	CMNS
CORNER	COR
CORNERS	CORS
COURSE	CRSE
COURT	CT
COURTS	CTS
COVE	CV
COVES	CVS
CREEK	CRK
CRESCENT	CRES
CREST	CRST
CROSSING	XING
CROSSROAD	XRD
CROSSROADS	XRDS
CURVE	CURV
DALE	DL

STREET NAME TYPE	STANDARD ABBREVIATION
DAM	DM
DIVIDE	DV
DRIVE	DR
DRIVES	DRS
ESTATE	EST
ESTATES	ESTS
EXPRESSWAY	EXPY
EXTENSION	EXT
EXTENSIONS	EXTS
FALL	FALL
FALLS	FLS
FERRY	FRY
FIELD	FLD
FIELDS	FLDS
FLAT	FLT
FLATS	FLTS
FORD	FRD
FORDS	FRDS
FOREST	FRST
FORGE	FRG
FORGES	FRGS
FORK	FRK
FORKS	FRKS
FORT	FT
FREEWAY	FWY
GARDEN	GDN
GARDENS	GDNS
GATEWAY	GTWY
GLEN	GLN
GLENS	GLNS
GREEN	GRN
GREENS	GRNS
GROVE	GRV
GROVES	GRVS
HARBOR	HBR
HARBORS	HBRs
HAVEN	HVN
HEIGHTS	HTS
HIGHWAY	HWY
HILL	HL
HILLS	HLS
HOLLOW	HOLW
INLET	INLT
ISLAND	IS
ISLANDS	ISS
ISLE	ISLE
JUNCTION	JCT
JUNCTIONS	JCTS
KEY	KY
KEYS	KYS
KNOLL	KNL

STREET NAME TYPE	STANDARD ABBREVIATION
KNOLLS	KNLS
LAKE	LK
LAKES	LKS
LAND	LAND
LANDING	LNDG
LANE	LN
LIGHT	LGT
LIGHTS	LGTS
LOAF	LF
LOCK	LCK
LOCKS	LCKS
LODGE	LDG
LOOP	LOOP
MALL	MALL
MANOR	MNR
MANORS	MNRS
MEADOW	MDW
MEADOWS	MDWS
MEWS	MEWS
MILL	ML
MILLS	MLS
MISSION	MSN
MOTORWAY	MTWY
MOUNT	MT
MOUNTAIN	MTN
MOUNTAINS	MTNS
NECK	NCK
ORCHARD	ORCH
OVAL	OVAL
OVERPASS	OPAS
PARK	PARK
PARKS	PARK
PARKWAY	PKWY
PARKWAYS	PKWY
PASS	PASS
PASSAGE	PSGE
PATH	PATH
PIKE	PIKE
PINE	PNE
PINES	PNES
PLACE	PL
PLAIN	PLN
PLAINS	PLNS
PLAZA	PLZ
POINT	PT
POINTS	PTS
PORT	PRT
PORTS	PRTS
PRAIRIE	PR
RADIAL	RADL
RAMP	RAMP

STREET NAME TYPE	STANDARD ABBREVIATION
RANCH	RNCH
RAPID	RPD
RAPIDS	RPDS
REST	RST
RIDGE	RDG
RIDGES	RDGS
RIVER	RIV
ROAD	RD
ROADS	RDS
ROUTE	RTE
ROW	ROW
RUE	RUE
RUN	RUN
SHOAL	SHL
SHOALS	SHLS
SHORE	SHR
SHORES	SHRS
SKYWAY	SKWY
SPRING	SPG
SPRINGS	SPGS
SPUR	SPUR
SPURS	SPUR
SQUARE	SQ
SQUARES	SQS
STATION	STA
STRAVENUE	STRA
STREAM	STRM
STREET	ST
STREETS	STS
SUMMIT	SMT
TERRACE	TER
THROUGHWAY	TRWY
TRACE	TRCE
TRACK	TRAK
TRAFFICWAY	TRFY
TRAIL	TRL
TRAILER	TRLR
TUNNEL	TUNL
TURNPIKE	TPKE
UNDERPASS	UPAS
UNION	UN
UNIONS	UNS
VALLEY	VLV
VALLEYS	VLVS
VIADUCT	VIA
VIEW	VW
VIEWS	VWS
VILLAGE	VLG
VILLAGES	VLGS
VILLE	VL
VISTA	VIS

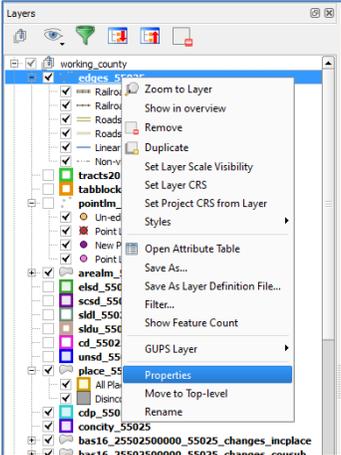
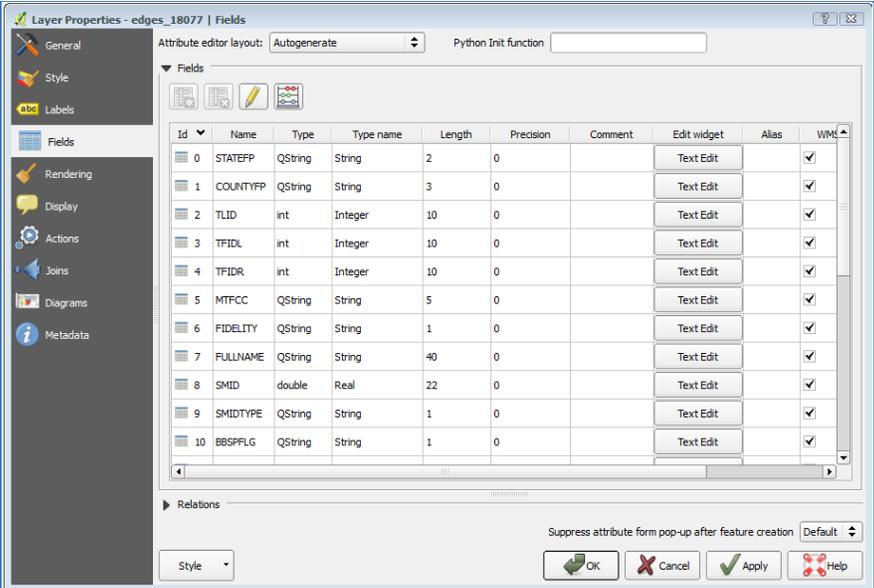
STREET NAME TYPE	STANDARD ABBREVIATION
WALK	WALK
WALKS	WALK
WALL	WALL
WAY	WAY
WAYS	WAYS
WELL	WL
WELLS	WLS

APPENDIX E. GUPS TOOLS

E.1 Set Layer Symbology

GUPS loads a default layer symbology established for each Census Bureau geographic partnership program. You can change the default symbology to suit your preferences. To change the default symbology for a layer in GUPS, follow the instructions in [Table 46](#).

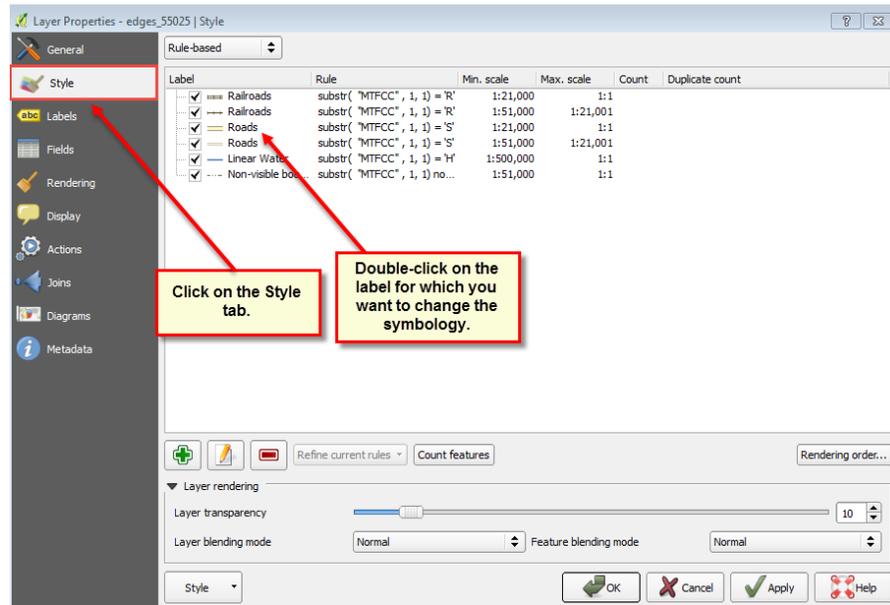
Table 46: Reset Layer Symbology

Step	Action and Result
<p>Step 1</p>	<p>Right-click on the layer in the Table of Contents (in this example, we selected the Edges layer). <i>The Layers drop-down menu opens.</i></p> 
<p>Step 2</p>	<p>In the drop-down menu, choose 'Properties'. <i>The Layer Properties screen opens.</i></p> 

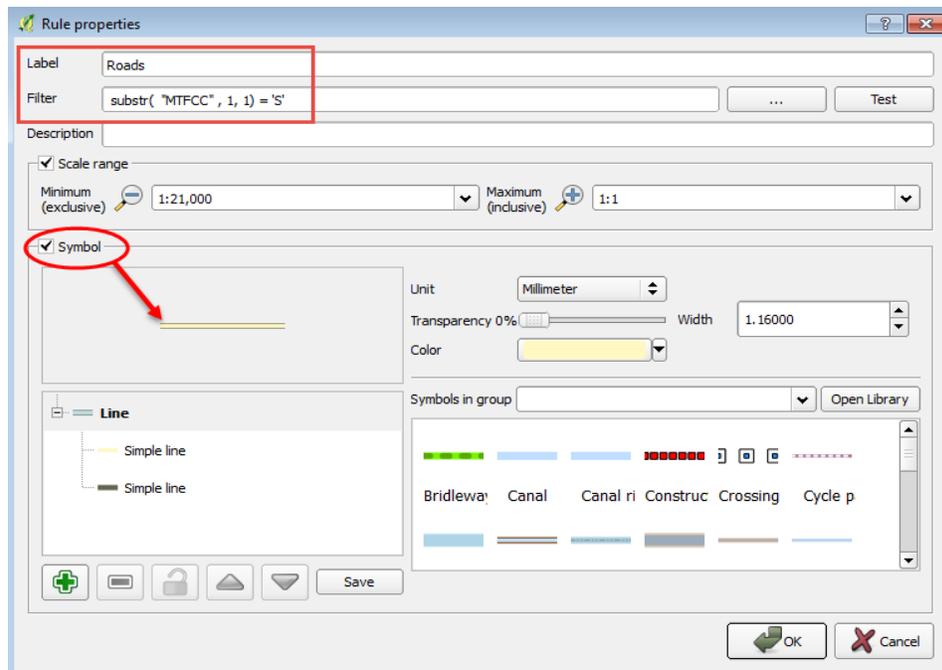
Step	Action and Result
------	-------------------

Step 3

In the left-hand pane, click on **Style**, then double-click the symbol you want to edit in the layers list. In this example, we will double-click on 'Roads, substr ("MTFCC", 1,1) = S1100' to select it.

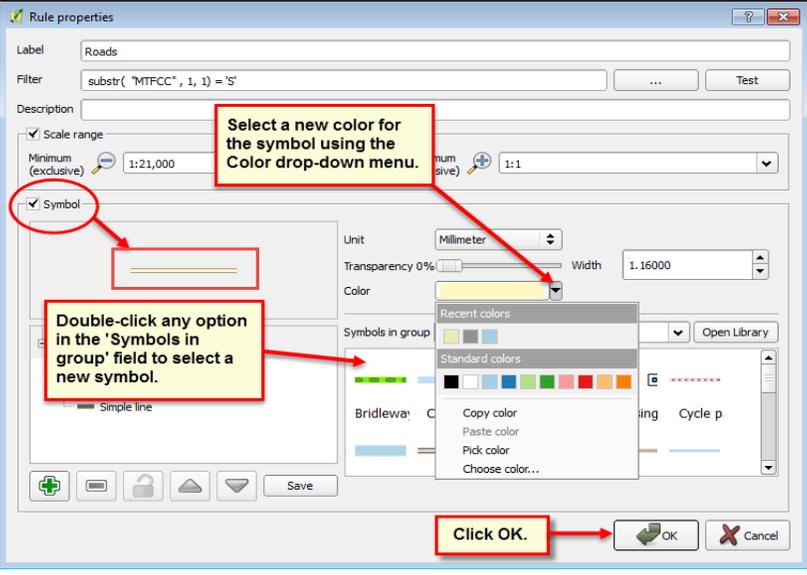


The **Rule Properties** dialog box opens and the **Label** and **Filter** fields display the item chosen. The **Symbol** pane shows the current symbology (yellow line).



Step 4

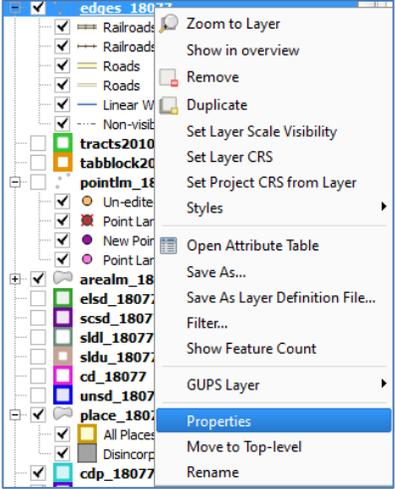
Choose a new color from the **Color** drop-down menu, or select a different symbol for the layer altogether by double-clicking any symbol in the **Symbols in Group** field. Click **OK**. The new symbology will display in the **Table of Contents** and in **Map View**.

Step	Action and Result
	

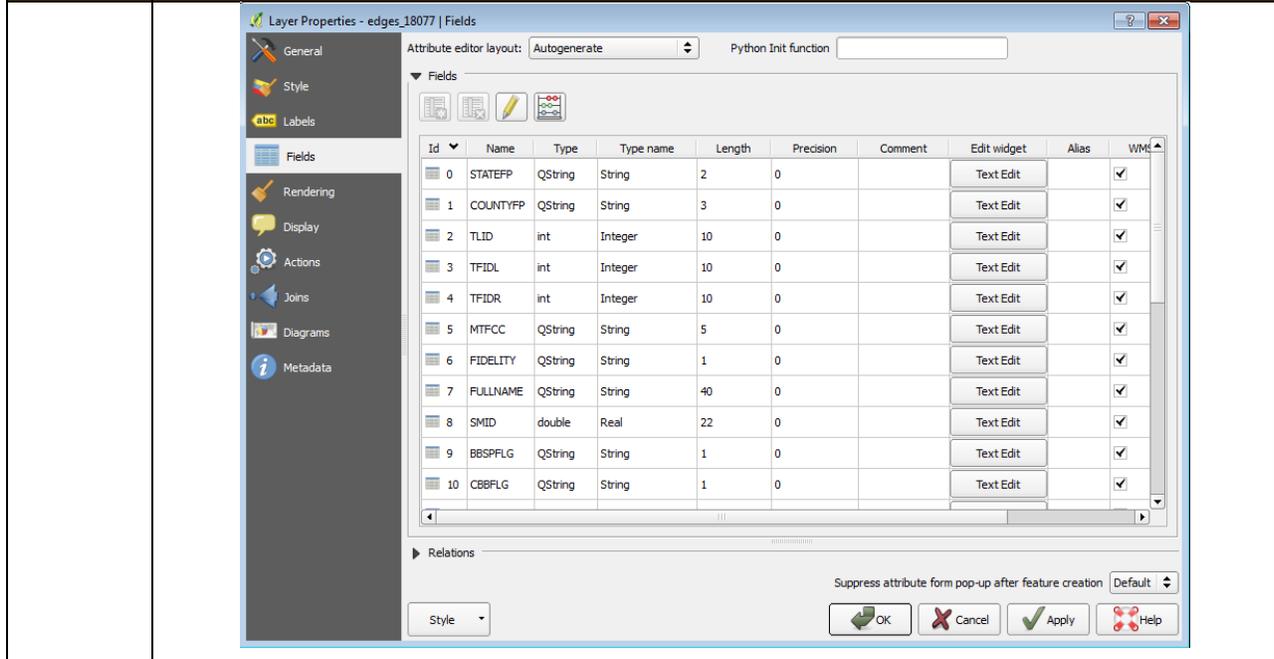
E.2 Change Label Display

You can change the default GUPS labeling display and also restore it to the original setting. To change the default labeling for a layer, follow the steps in [Table 47](#).

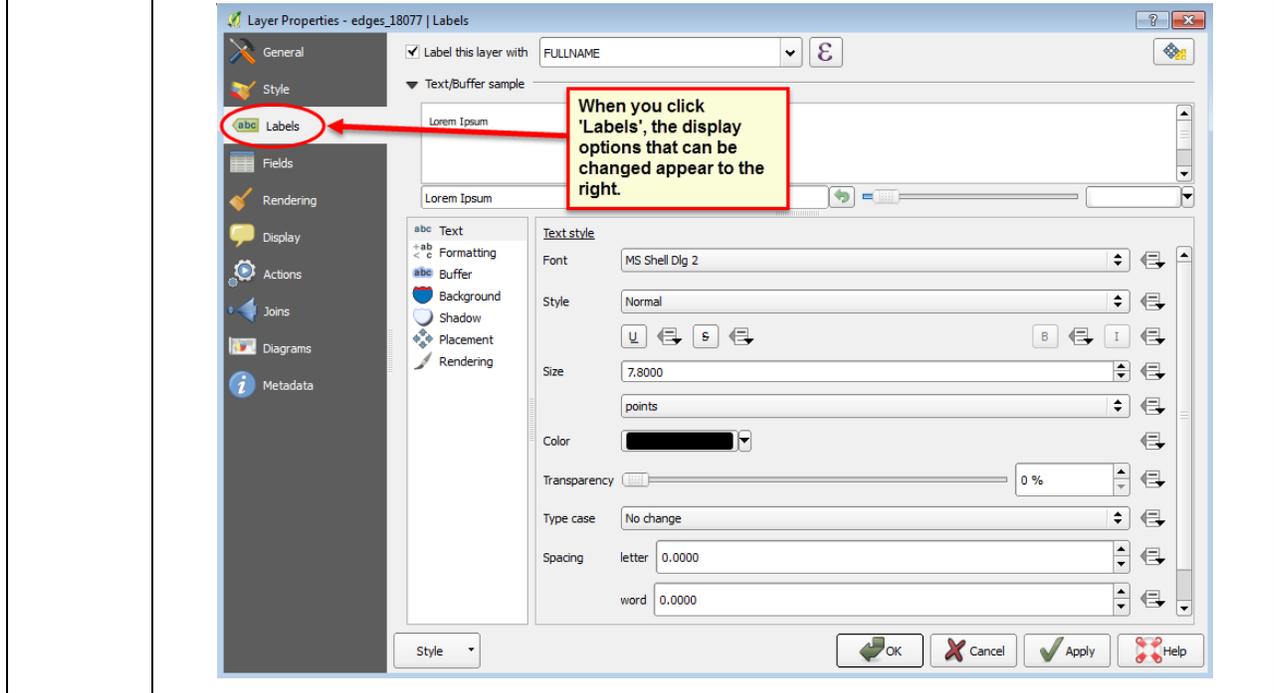
Table 47: Change Default Labeling

Step	Action and Result
<p>Step 1</p>	<p>Right click on the layer (we have selected the edges layer) in the Table of Contents. <i>The Layers drop-down menu opens.</i></p> 
<p>Step 2</p>	<p>In the drop-down menu, choose 'Properties'. <i>The Layer Properties dialog box opens.</i></p>

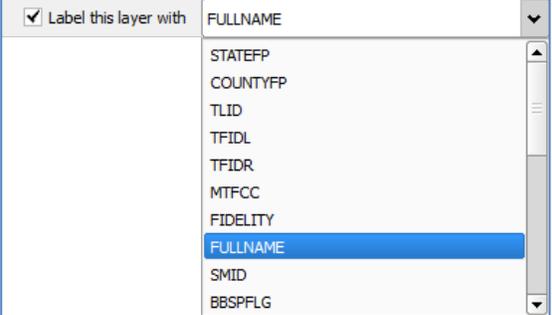
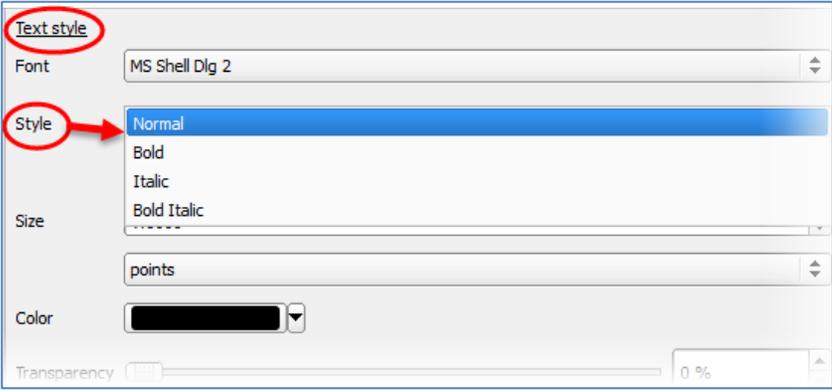
Step	Action and Result
------	-------------------



Step 3	In the far left-hand pane, click Labels . The options to change the label display properties open in the main window.
---------------	--



Step 4	To change the attribute field, click on the drop-down menu for 'Label this layer with' at the top of the screen, and select the desired option.
---------------	---

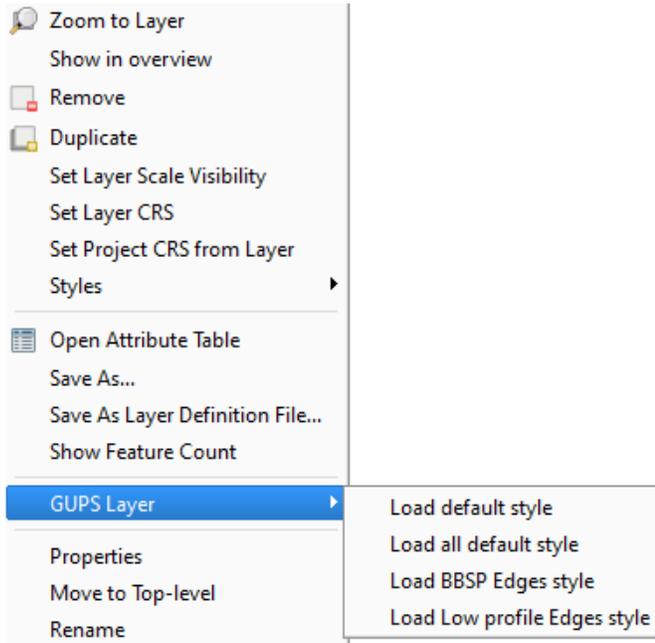
Step	Action and Result
	 <p>Text style options allow you to change the font, style, size, color, transparency, type case, and spacing of layer labels. Shown below are the drop-down options for style.</p> 

E.3 Restoring Default Label Display Settings

To restore the default labeling for a layer, follow the steps in [Table 48](#).

Table 48: Restoring Default Labeling

Step	Action and Result
Step 1	Right-click on the layer you changed in the Table of Contents . <i>The layer's drop-down menu opens.</i>
Step 2	In this example, we have selected the Edges layer. In the drop-down menu, click on the arrow to the right of 'GUPS Layer'. Four options appear: 'Load default style', 'Load all default style', 'Load BBSP Edges style', and 'Load Low profile Edges style'.

Step	Action and Result
	
Step 3	Select 'Load default style' to restore the selected layer's original properties OR select 'Load all default style' to reset ALL the layers to their original settings.

E.4 Using the Table of Contents Toolbar to Manage Layers

Using the buttons on the toolbar located at the top of the Table of Contents, you can add and remove layers or groups, manage layer visibility, filter the legend by map content, expand or contract all sections of the Table of Contents list at once, and group layers.

The Table of Contents Layers toolbar contains the items shown below in [Figure 17](#). [Table 49](#) describes the function of each of the buttons on the toolbar.



Figure 17. Table of Contents Layers Toolbar

Table 49: Table of Contents Layers Toolbar Buttons

Button	Name	Function / Description
	Add Group	Allows you to organize layers in the Table of Contents into groups.
	Manage Layer Visibility	Allows you to preset views in the Table of Contents .
	Filter Legend by Map Content	Removes from the Table of Contents display any layers that are not currently in the Map View extent. This feature ensures that the Table of Contents does not contain entries for items not currently in the map view.
	Expand All	Expands the Table of Contents menus (+) to display all layers under each group's menu.
	Collapse All	Collapses the Table of Contents menus (-) to show only groups.
	Remove Layer/Group	Allows you to remove a layer or group from the Table of Contents .

E.5 Preset Views in the Manage Layer Visibility Table of Contents

You can add preset views  in the Table of Contents by clicking on the Manage Layer Visibility button on the Table of Contents toolbar. You can choose to display a layer with specific categorization and add this view to the Presets list. To add a preset view click on the Manage Layer Visibility button and choose '**Add Preset...**' from the drop-down menu.

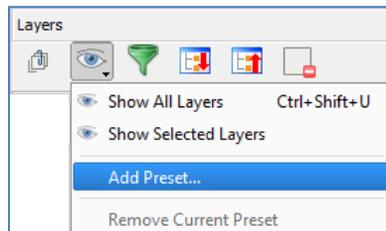


Figure 18. Add Preset Layer

When the **Visibility Presets** pop-up appears, enter the name of the new preset and click **OK**.



Figure 19. Visibility Presets Dialog Box

Note: By clicking on the **Manage Layer Visibility** button, you can view the list of all preset views that you have established and from which you can choose.



Add a Layer

Clicking on the Add Vector Layer button on the Add Data toolbar allows you to add shapefile and geodatabase feature classes to your GUPS project. Instructions and accompanying graphics are included in [Section 5.7.1: The Add Data Toolbar](#).



Remove a Layer or Group

To remove a layer or group in the Table of Contents:

Left-click on the layer/group you want to remove, hold down the CTRL key, and click the Remove a Layer or Group button. The layer/group is removed; or

APPENDIX F. MAF/TIGER FEATURE CLASSIFICATION

Table 50: MAF/TIGER Feature Classification

MTFCC	FEATURE NAME
S1100	Interstate Highway or Primary Road with limited access
S1200	Primary Road without limited access, US Highway, State Highway, or County Highway, Secondary and connecting roads
S1400	Local Neighborhood Road, Rural Road, City Street
S1500	Vehicular Trail (4WD)
S1630	Ramp
S1640	Service Drive usually along a limited access highway
S1710	Walkway/Pedestrian Trail
S1720	Stairway
S1730	Alley
S1740	Private Road for service vehicles (logging, oil fields, ranches, etc.)
S1750	Private Driveway
H3010	Stream/River
H3013	Braided Stream
H3020	Canal, Ditch or Aqueduct
R1011	Railroad Feature (Main, Spur, or Yard)
R1051	Carline, Streetcar Track, Monorail, Other Mass Transit Rail
R1052	Cog Rail Line, Incline Rail Line, Tram
P0001	Nonvisible Legal/Statistical Boundary
L4010	Pipeline
L4020	Power Transmission Line
L4110	Fence Line
L4121	Ridge Line
L4031	Aerial Tramway/Ski Lift
K2451	Airport or Airfield
L4140	Property/Parcel Line
L4165	Ferry Crossing

APPENDIX G. SHAPEFILE NAMES

State Shapefile Names

PVS_18_v2_<layername>_<SS>.shp, where <SS> is the number corresponding to the state, for example, “24” and <layername> is the abbreviation for the shapefile layer, describe in detail below.

Table 51: State Shapefiles Names

Shapefile Layer	<layername>
American Indian Areas (AIA) – Legal	aial
2010 American Indian Areas (AIA) – Legal	aial2010
American Indian Areas (AIA) – Statistical	aias
American Indian Tribal Subdivisions (AITS) - Legal	aitsl
American Indian Tribal Subdivisions (AITS) - Statistical	aitss
Block Area Group	bag
Metropolitan Statistical Area/Metropolitan Statistical Area	cbsa
Congressional Districts	cd
Census Designated Place	cdp
Counties and Equivalent Areas	county
2010 Counties and Equivalent Areas	county2010
Elementary School Districts	elsd
County Subdivisions - Legal	mcd
New England City and Town Areas	necta
Incorporated Places	place
2010 Public Use Microdata Areas	puma2010
Secondary School Districts	scsd
State Legislative Districts Lower	sldl
State Legislative District Upper Chambers	sldu
State	state
Tribal Block Groups	tbg
Tribal Census Tracts	tct
2010 Census Tracts	tracts2010
Urban Area	uac
Unified School District State-Based	unsd

County Shapefile Names

PVS_18_v2_<layername>_<SSCCC>.shp, where <SSCCC> is the number corresponding to the state and county, for example, “24001” and <layername> is the abbreviation for the shapefile layer, describe in detail below.

Table 52: County Shapefiles Names

Shapefile Layer	<layername>
American Indian Areas (AIA) – Legal	aial
American Indian Areas (AIA) – Statistical	aias
American Indian Tribal Subdivisions (AITS) - Legal	aitsl
American Indian Tribal Subdivisions (AITS) - Statistical	aitss
Alaska Native Regional Corporations (ANRC)	anrc
Area Landmark	arealm
Block Area Groups	bag
Block Groups	bg
Metropolitan Statistical Area/Metropolitan Statistical Area	cbsa
Census County Division	ccd
Congressional Districts	cd
Census Designated Place	cdp
Consolidated Cities	concity
Counties and Equivalent Areas	county
Census Tracts - Current	curtracts
All Lines	edges
Elementary School Districts	elsd
Hawaiian Home Lands (HHL)	hhl
County Subdivisions - Legal	mcd
New England City and Town Areas	necta
Offsets	offset
Incorporated Places	place
Point Landmarks	pointlm
2010 Public Use Microdata Areas	puma2010
Secondary School Districts	scsd
State Legislative Districts Lower	sldl
State Legislative Districts Upper	sldu
Subbarrios	submcd

Shapefile Layer	<layername>
Census Blocks - Current	tabblock
2010 Census Blocks	tabblock2010
2010 Traffic Analysis Delineation	tad2010
2010 Traffic Analysis Zones	taz2010
Tribal Block Groups	tbg
Tribal Census Tracts	tct
2010 Census Tracts	tracts2010
Census Urban Areas	uac
Urban Growth Area	uga
Hydrography - Area	water
Unified School Districts	unsd
Relationship Tables	
Address Ranges	addr
Topological Faces (2-cells with all geocodes)	faces
Topological Faces - Area Landmark Relationship	areafaces
Topological Faces - Area Hydrography Relationship	hydrofaces
Linear Feature Names - Fielded	allnames

APPENDIX H. SHAPEFILE LAYOUTS

Table 53: Edges Shapefile (PVS_18_v2_edges)

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 54: Address Ranges Attribute File (PVS_18_v2_addr)

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
OID	8	STRING	Object ID
TLID	22	INTEGER	TIGER Line ID
STATEFP	2	STRING	FIPS State Code
COUNTYFP	3	STRING	FIPS County Code
FROMHN	12	STRING	From House Number
TOHN	12	STRING	To House Number
SIDE	1	STRING	Side Indicator Flag
ZIP	5	STRING	5-digit ZIP Code
PLUS4	4	STRING	ZIP+4 Code
LFROMADD	10	STRING	Left From Address
LTOADD	10	STRING	Left To Address
RFROMADD	10	STRING	Right From Address
RTOADD	10	STRING	Right To Address
ZIPL	5	STRING	Left 5-digit ZIP Code
ZIPR	5	STRING	Right 5-digit ZIP Code
ZIP4L	4	STRING	Left ZIP+4 Code
ZIP4R	4	STRING	Right ZIP+4 Code

Table 55: Census Block Shapefile (PVS_18_v2_tabblock2010)

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
BLKSZIND	1	String	Block Size Indicator
BLOCK	4	String	Block Number
BLOCKCE	4	String	Tabulation Block Number
BLOCKID	15	String	FIPS State Code, FIPS County Code, Census Tract Code, Block Number
COUNTYFP	3	String	Census County FIPS code
COUNTYFP10	3	String	FIPS County Code
FID	10	Integer	Permanent Face ID
NCELIGBLE	1	String	New Construction Program eligible
PARTFLG	1	String	Part Flag Indicator
Shape	7	String	Type of shape
STATEFP	2	String	Census state FIPS code
STATEFP10	2	String	FIPS State Code
SUFFIX1CE	2	String	Census Block Suffix 1
SUFFIX2CE	2	String	Census Block Suffix 2
TRACTCE10	6	String	Census tract code

Table 56: Census Tract Shapefile (PVS_18_v2_curtracts)

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
CHNG_TYPE	2	String	Type of area update
COUNTYFP	3	String	FIPS County Code
EFF_DATE	8	String	Effective Date or Vintage
FID	10	Integer	Permanent Face ID
JUSTIFY	150	Char	Justification
NAME	100	String	Name
NEW_CODE	2	String	New Congressional District Code
RELATE	120	String	Relationship Description
Shape	7	String	Type of shape
STATEFP	2	String	FIPS State Code
TRACTCE	6	String	Census Tract Code
TRACTID	11	String	FIPS State Code, FIPS County Code, Census Tract Code
TRACTLABEL	7	String	Tract number used for LUCA geocoding
TRACTTYP	1	String	Tract Characteristic Flag
VINTAGE	2	String	Vintage updated with returned data

Table 57: American Indian Areas Shapefile (PVS_18_v2_aial)

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
AIANNHCE	4	String	Census AIANNH Code
AIANNHFSR	1	String	Flag Indicating Level of Recognition of an AIA
AIANNHNS	8	String	ANSI numeric identifier for AIA areas
AREA	10	Double	Acreage of Area Update
AUTHTYPE	1	String	Authorization Type (O – Ordinance, R – Resolution, L – Local Law, S – State Level Action, X – Other)
CHNG_TYPE	2	String	Type of Area Update
CLASSFP	2	String	FIPS 55 Class Code Describing an Entity
COMPTYP	1	String	Indicates if Reservation, Trust Land, or both are Present
COUNTYFP	3	String	FIPS County Code
DOCU	120	String	Supporting Documentation
EFF_DATE	8	Date	Effective Date
FID	10	Integer	Permanent Face ID
FORM_ID	4	String	(MTPS and Web BAS Only)
FUNCSTAT	1	String	Functional Status
JUSTIFY	150	Char	Justification
LSAD	2	String	Legal / Statistical Area Description
NAME	100	String	AIA name
NAMELSAD	100	String	Name with Translated LSAD
PARTFLG	1	String	Part Flag Indicator
RELATE	120	String	Relationship description
SHAPE	7	String	Type of shape
STATEFP	2	String	FIPS State Code
VINTAGE	2	String	Vintage of the Data

Table 58: County and Equivalent Areas Shapefile (PVS_18_v2_county)

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 59: County Subdivisions Shapefile (PVS_18_v2_mcd)

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

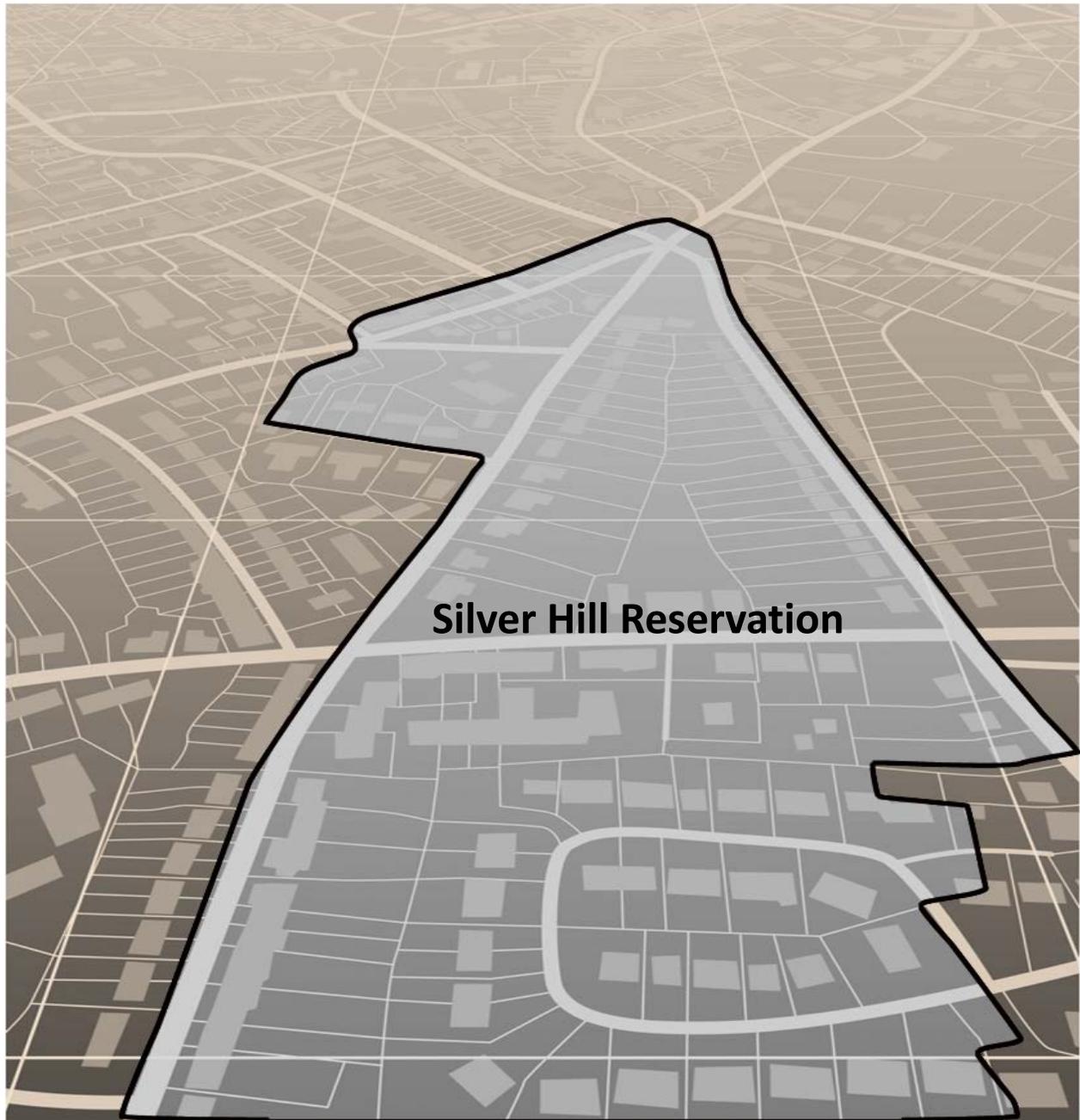
Table 60: Incorporated Place Shapefile (PVS_18_v2_place)

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

Boundary and Annexation Survey (BAS) Tribal Respondent Guide: Digital

Instructions for Participating in the 2018 Boundary and Annexation Survey

Revised as of December 14, 2017



U.S. Department of Commerce
Economic and Statistics Administration

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PAPERWORK REDUCTION ACT 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 (PRA) unless that collection of information displays a current valid Office of Management and Budget (OMB) Control Number. This collection is voluntary. The authority for conducting this collection comes from Title 13 United States Code (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 4H177
Washington, DC 20233

The Census Bureau issued a *Federal Register* Notice to revise its confidentiality pledge language to address the new cybersecurity screening requirements:

Per the Federal Cybersecurity Enhancement Act of 2015, your data are protected from cybersecurity risks through screening of the systems that transmit your data.

INTRODUCTION

A. The Boundary and Annexation Survey

The U.S. Census Bureau (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), federally recognized American Indian Areas (AIAs), including reservations, off-reservation trust lands and tribal subdivisions, Hawaiian Homelands, and Alaska Native Regional Corporations (ANRC). 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 the boundary information collected during the BAS to tabulate data for the decennial and economic censuses, and to support the 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 (FGDC) 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), Hawaiian Homelands, ANRC, and federally recognized 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).

Please visit the BAS program Web site at <<https://www.census.gov/programs-surveys/bas.html>>. For more information on the BAS, please view the “Introduction to BAS” video series on the Census Bureau’s BAS Web site at <<https://www.census.gov/programs-surveys/bas/library/videos/bas-intro.html>>.

B. What’s New for the 2018 BAS?

1. The Geographic Partnership Support Desk (GPSD) is now fully functional and available to assist with any questions respondents may have regarding BAS.
2. Redistricting data contacts participating in the Voting District Project (VTD) may submit boundary updates for reconciliation with BAS contacts.

C. Key Dates for BAS Respondents

January 1, 2018 — All boundary changes must be legally in effect on or before this date to be reported in the 2018 BAS.

March 1, 2018 — BAS submission date deadline for boundary updates to be reflected in the ACS and PEP published data. Boundary submissions received by this date are also reflected in next year’s BAS materials.

May 31, 2018 — BAS boundary updates submitted by this date will be reflected in next year's BAS materials.

D. BAS State Agreements

The Census Bureau has established a number of arrangements with states for reporting boundary changes. Please visit the BAS State Agreements webpage within the BAS program Web site at <https://www.census.gov/programs-surveys/bas/information/state-agreements.html> or call (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.

E. Legal Disputes

If the Census Bureau discovers that an area of land is in dispute between two or more jurisdictions, the Census Bureau will not make any boundary corrections until the parties come to a written agreement, or there is a documented final court decision regarding the dispute. If you have questions concerning this, please contact the Census Bureau Legal Office at **301-763-9844**.

For disputes involving tribal areas, the Census Bureau must defer to the Office of the Solicitor at the Department of the Interior for a legal opinion. Often complicated land issues require an extended period of time for resolution, and in those cases, the Census Bureau will retain the current boundary in the database until a legal opinion is issued by the Solicitor's office.

PART 1: DIGITAL BAS REQUIREMENTS

1.1 Digital BAS Participation Requirements

1. All participants must have the ability to edit a Census Bureau shapefile. 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 contact information for the tribal BAS point of contact, the person updating the shapefiles, and the tribal chair;
3. All participants must provide legal documentation (such as trust deeds and Federal Register Notice) and effective dates for all legal boundary changes (new reservation land and/or off-reservation trust lands);
4. Each non-legal boundary correction must contain proper update documentation; and

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 (<<https://respond.census.gov/swim/>>). If you indicated on your Annual Response Form that you wished to receive the GUPS application, you will automatically receive the SWIM URL and a registration token via email. The email should arrive 5 days after the Annual Response is completed online (or 5 business days after the Census Bureau receives the paper form). To access the SWIM, enter the following URL in a new browser window: <<https://respond.census.gov/swim/>>.

1.2 Tribal Areas that can be Submitted through BAS

The following can be updated through Tribal BAS:

- **Federal American Indian Reservations** are areas that have been set aside by the United States for the use of tribes, the exterior boundaries of which are more particularly defined in the final tribal treaties, agreements, executive orders, federal statutes, secretarial orders, or judicial determinations.

Trust lands may be located on or off a reservation; however, the Census Bureau tabulates data only for off-reservation trust lands. Please do not submit on-reservation trust land because the Census Bureau can only show the exterior reservation boundary.

- **Federal Off-Reservation Trust Lands** are areas for which the United States holds title in trust for the benefit of a tribe (tribal trust land) or for an individual American Indian (individual trust land).

The Census Bureau does not identify fee land (or land in fee simple status) or restricted fee lands as specific geographic areas.

- **Tribal Subdivisions** are legal administrative subdivisions of federally recognized American Indian reservations and off-reservation trust lands and are described as additions, administrative areas, areas, chapters, county districts, communities, districts, or segments. 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 and off-reservation trust lands.
- **Hawaiian Homelands** are areas held in trust for Native Hawaiians by the state of Hawaii, pursuant to the Hawaiian Homes Commission Act of 1920, as amended.

- **Alaska Native Regional Corporation** (ANRCs) were created pursuant to the Alaska Native Claims Settlement Act (ANCSA) enacted in 1971 as a "Regional Corporation" and organized under the laws of the state of Alaska to conduct both the for-profit and non-profit affairs of Alaska Natives within a defined region of Alaska.

1.3 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 Web site at: <https://www.census.gov/programs-surveys/bas/library/videos/bas-intro.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

PART 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/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) System has become critical resources for supporting the Census Bureau in its geographic activities.

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.

2.1. 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 [Figure 1](#) and [Figure 2](#) for samples of topologically integrated files in MAF/TIGER.

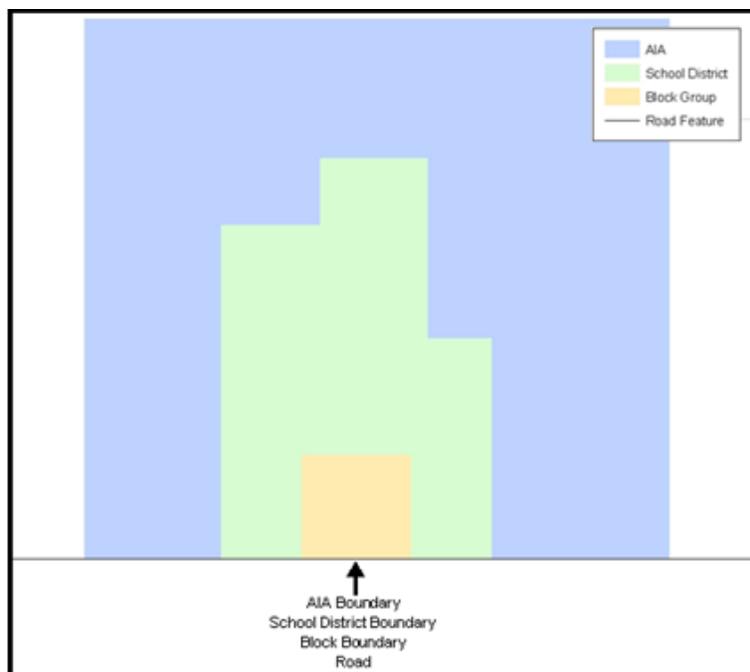


Figure 1. Road Representing 3 Types of Boundaries

This example shows how a road in MAF/TIGER can also represent a block boundary, American Indian Areas (AIAs) boundary and a school district boundary.

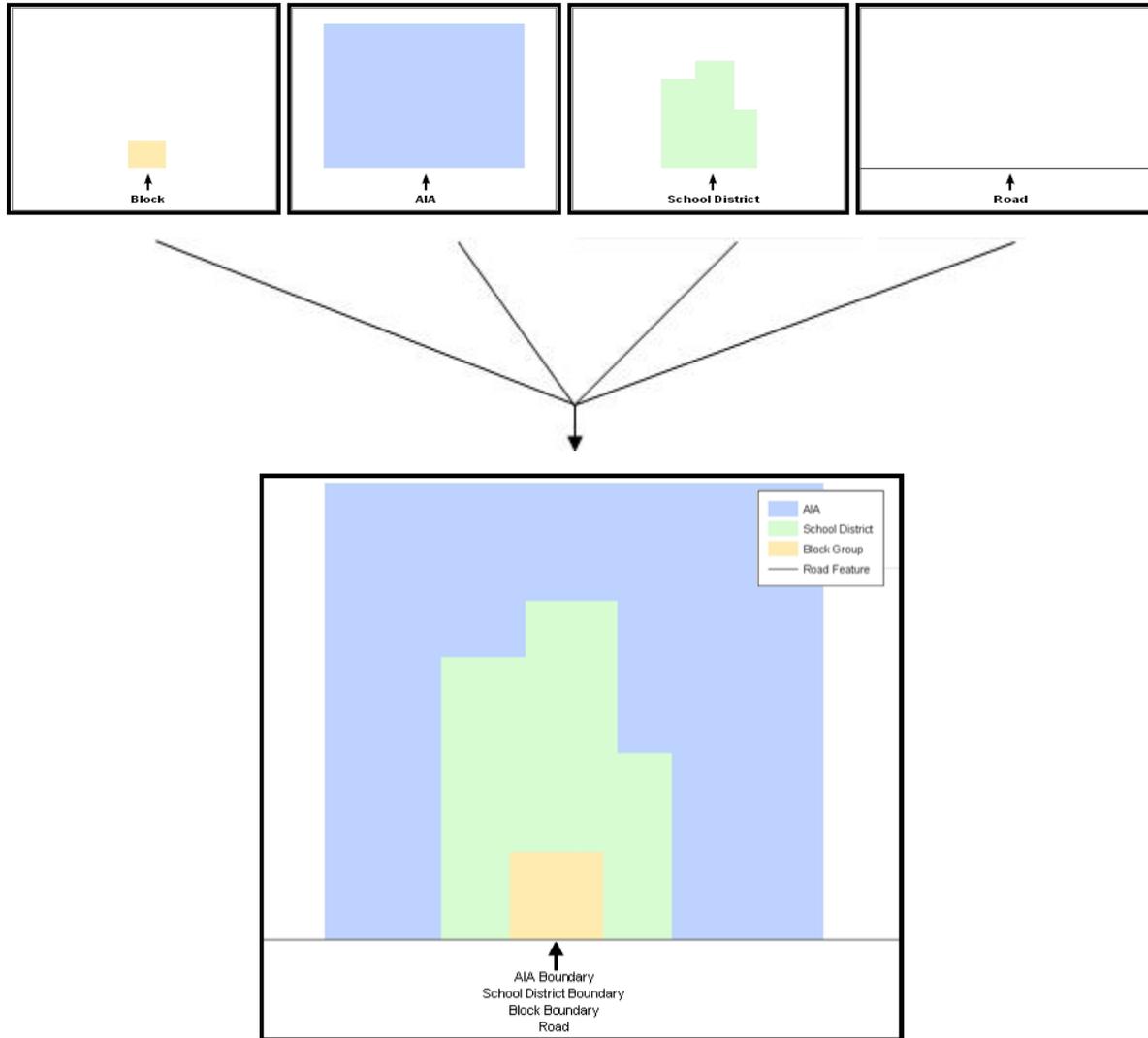


Figure 2. Typological Integration of Four Classes

This example shows how four different feature classes are topologically integrated into one layer. One road feature represents not only a road, but also a block boundary, AIA boundary, and a school district boundary.

2.2. GIS and Spatial Accuracy

In a GIS, feature classes are usually not topologically integrated: they are separated into 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. [Figure 3](#) and [Figure 4](#) show how files that are not topologically integrated might appear in a GIS when overlaid.

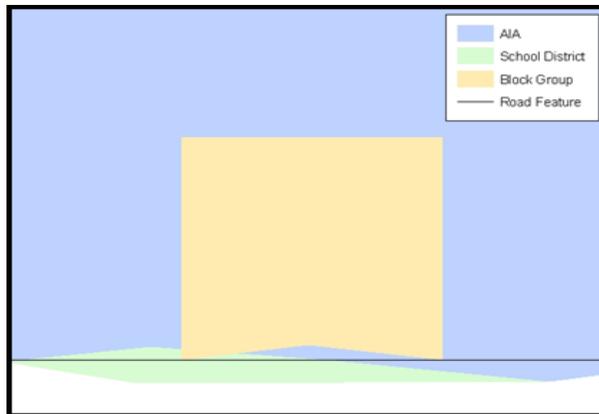


Figure 3. Overlay of Four Feature Classes

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

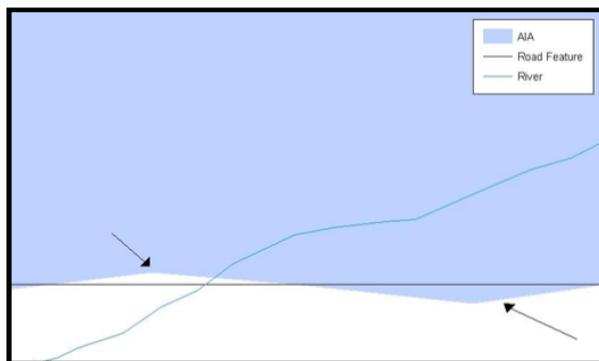


Figure 4. GIS Place Boundary Does Not Follow Road Feature

This example shows a situation where a local GIS AIA boundary does not follow a road feature. Assuming that the boundary follows the road feature, changing the AIA 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. [Part 5: Updating the Census Bureau Shapefiles, Section 5.6](#) 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 [Appendix B](#) and [Appendix C](#).

2.3. Census Bureau Topology Training Video

The Census Bureau created a video on topology and why topology is important to the BAS. For more information, please go to <https://www.census.gov/library/video/intro_bas_topology.html> where you can watch the video.

PART 3: CENSUS BUREAU PROVIDED SHAPEFILES

Please download shapefiles from the Web site <<https://www.census.gov/geographies/mapping-files/2018/geo/bas/2018-bas-shapefiles.html>> in order to review your boundaries and submit changes. Please review and edit all applicable shapefiles. For example, if your tribe has new off-reservation trust land to report, you would use the “aial” shapefile. If your tribe also had tribal subdivision updates, you would use the “aial” shapefile and the “aitsl” shapefile. See **Table 1** for the names of the shapefiles. The Census Bureau provides entity layers in ESRI shapefile format for download via the Web site.

Note: Shapefiles are ‘county’ based so you will need to download all the counties in which the tribe has reservation and/or ORLTs.

Table 1: BAS Shapefile Naming Conventions

Geographic Entity Type	Shapefile Naming Convention
Federal Reservations and Off-Reservation Trust Lands	PVS_18_v2_aial_<ssccc>.shp
Tribal Subdivision	PVS_18_v2_aitsl_<ssccc>.shp
ANRC	PVS_18_v2_anrc_<ssccc>.shp
Hawaiian Homeland	PVS_18_v2_hhl_<ssccc>.shp
Edges (Roads, Rail, Hydro, etc.)	PVS_18_v2_edges_<ssccc>.shp
Area Landmarks	PVS_18_v2_arealm_<ssccc>.shp
Point Landmarks	PVS_18_v2_pointlm_<ssccc>.shp
Hydro Area	PVS_18_v2_water_<ssccc>.shp
Geographic Offsets / Corridors	PVS_18_v2_offset_<ssccc>.shp

Note: <ssccc> represents the two-digit state code and three-digit county 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: 6378137.0000000000000000
- Semi-minor Axis: 6356752.314140356100000000
- Inverse Flattening: 298.25722210100002000

PART 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.

4.1 MAF Structure Point Geocoding

A field worker stands in front of a house or living quarters, and records the physical location with a GPS device (Figure 5). Usually, the GPS point should fall very close to the front door of the house. However, since this is a field operation, 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.

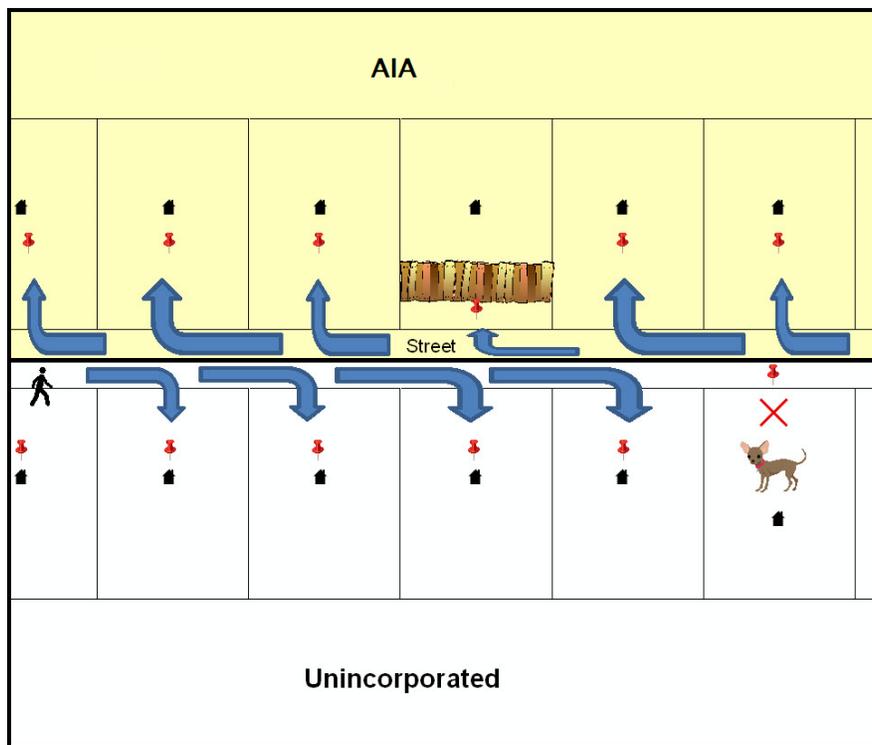


Figure 5. MSP Method of Geocoding

MAF Structure Point (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.

4.2 Address Range Geocoding

When no MSP Geocoding is available, the Census Bureau codes houses and living quarters according to a potential range of addresses associated with the adjacent stretch of road ([Figure 6](#)).

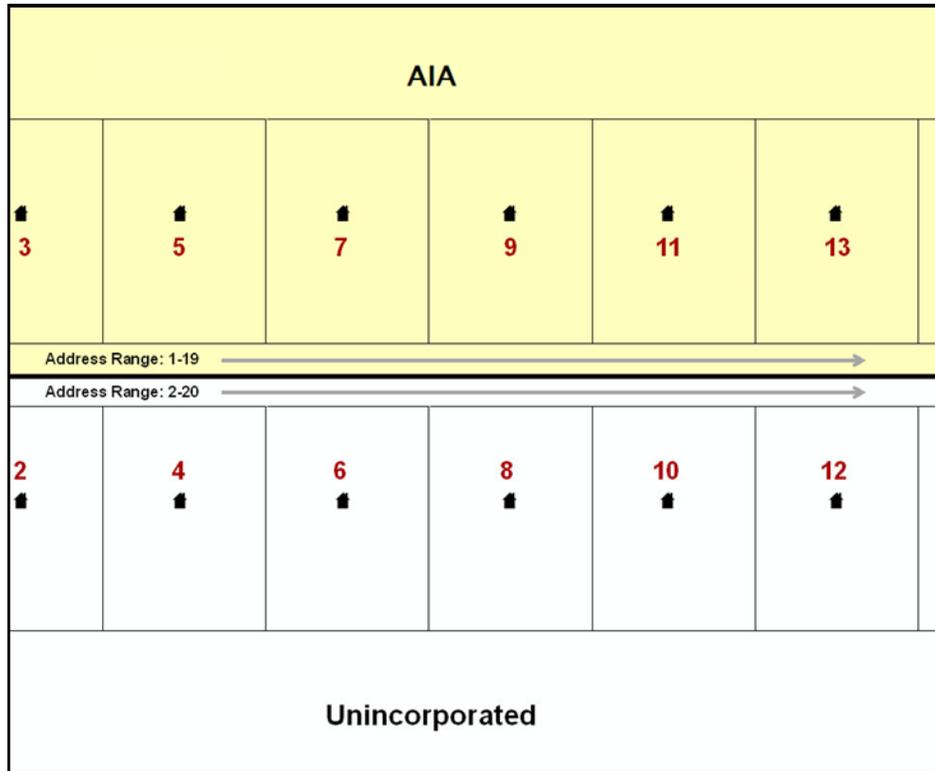


Figure 6. Address Range Method of Geocoding

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 is being related to 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 or AIA 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.

PART 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 Tribal BAS survey. Examples of these procedures can be found in **Appendices B and C** and in the Digital BAS demonstration video series at <<https://www.census.gov/programs-surveys/bas/library/videos/digital-bas.html>>

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.

5.1 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.

5.2 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.

5.3 Boundary Changes

In order to update MAF/TIGER, participants must create a separate change polygon layer for each updated entity type (AIA, ANRC, tribal subdivision, or Hawaiian Homeland). Please create change polygons in relation to the current MAF/TIGER boundary.

Appendix B and **Appendix C** provide two examples for creating annexation, deannexation, boundary correction, new incorporation, geographic corridor, and geographic offset change polygons. Review any boundary change polygons before submitting them (**Section 5.7**).

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

5.3.1 Additions and Deletions

The Census Bureau will accept additions and deletions from AIAs, ANRCs, and Hawaiian Homelands, such as new reservation lands and off-reservation trust lands. Each addition or deletion change polygon must have the required attributes and corresponding change type populated, as seen in [Table 2](#). The Census Bureau will snap any addition or deletion to a MAF/TIGER feature when it exists within thirty feet of that feature.

Note: Enter the name of the jurisdiction (AIA, ANRC or Hawaiian Homeland) adding or deleting the area in the NAME field.

Table 2: Additions and Deletions

	NAME	CHNG_TYPE	EFF_DATE	AUTHTYPE	DOCU	RELATE
Addition	X	X('A')	X	X	X	
Deletion	X	X('D')	X	X	X	

(Note: 'X' = Required Field)

5.3.2 Boundary Corrections

The Census Bureau will also accept specific boundary corrections from AIAs, ANRCs, and Hawaiian Homelands. As with new reservation lands and off-reservation trust lands, 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 that the boundary correction is for in the NAME field.

Table 3: Boundary Corrections

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

(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 into 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 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; and
- 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:

- That dissolve 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 additions which were never reported to the Census Bureau. If so, legal documentation should be provided; and
- 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.

5.3.3 New Tribal Subdivisions

AIA participants may submit new entities (tribal subdivisions) through Tribal Digital BAS. As with other change types, an individual change polygon must be created for each new entity and possess the required attributes and the corresponding change type field must be populated (see [Table 4](#)). Please see [Section 5.4](#) for more information about tribal subdivisions.

Note: Enter the name of the new jurisdiction in the NAME field.

Table 4: New Entities

	NAME	CHNG_TYPE	EFF_DATE	AUTHTYPE	DOC	RELATE
New Entity	X (subdivision name)	X (‘E’)	X (date of tribal resolution)	X (‘R’)	X (tribal resolution number)	

(**Note:** ‘X’ = Required Field)

5.3.4 Geographic Corridors

The Census Bureau geocodes 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. **Figure 7** shows a corridor created where the AIA owns the right-of-way but the housing units are not included within the AIA (shown in color). Without a corridor, the housing units along this road would be included in the AIA.

Figure 8 shows that the right-of-way belongs in the unincorporated area, while the housing units are included in the AIA (shown in color). This is important for some entities because they are portraying that the entity is not responsible for road maintenance. This is not relevant for Census Bureau tabulations and is not easy to depict in the Census Bureau’s nationwide database. This type of corridor should not be included in a BAS response.

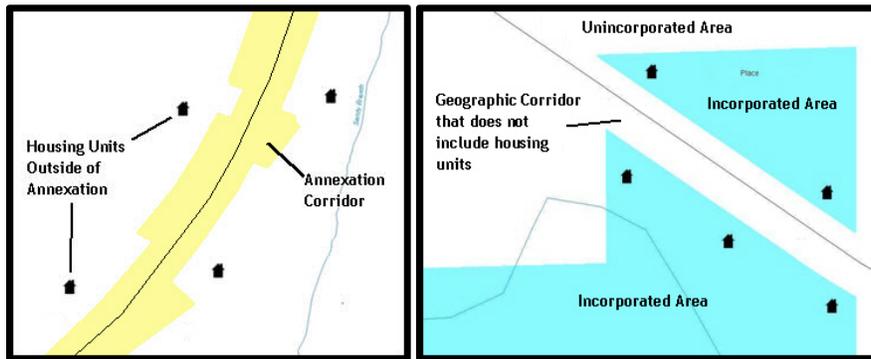


Figure 7. Geographic Corridor Created

Figure 8. Geographic Corridor Not Created

The image on the left (Figure 7) shows that a geographic corridor should be created to allow for proper geocoding of homes. The image on the right (Figure 8) shows that the geographic corridor should not be created and features should be snapped to the street centerline.

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 5**. 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.

Table 5: Geographic Corridors

	NAME	CHNG_TYPE	EFF_DATE	AUTHTYPE	DOC	AREA	RELATE
--	------	-----------	----------	----------	-----	------	--------

Geographic Corridor	X	X('C')					X('IN', 'OUT')
---------------------	---	--------	--	--	--	--	----------------

(Note: 'X' = Required Field)

5.3.5 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, 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. **Figure 9** depicts a cadastral (parcel-based) boundary map and **Figure 10** shows how the boundary should be reported when sent to the Census Bureau.

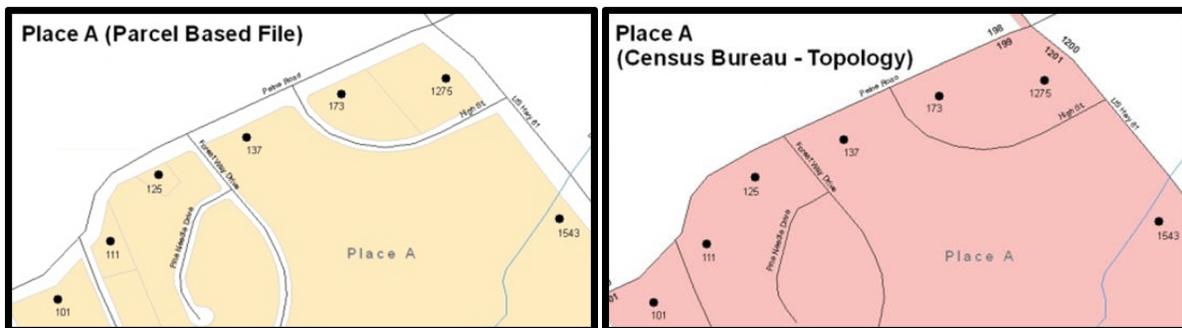


Figure 9. Cadastral Data

Figure 10. Same Data Edited to Census Requirements

On the left in Figure 9 is an example of cadastral data. Figure 10 on the right, is the same area shown edited to conform to census requirements.

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 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 area represented as an offset.

Table 6: Geographic Offsets

	NAME	CHNG_TYPE	EFF_DATE	AUTHTYPE	DOCU	AREA	RELATE
--	------	-----------	----------	----------	------	------	--------

Geographic Offset	X	X('F')					X('IN', 'OUT')
-------------------	---	--------	--	--	--	--	----------------

(Note: 'X' = Required Field)

Census Bureau has included an “offset” shapefile in the BAS materials (**PVS_18_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.

5.4 Tribal Subdivisions

Tribes may submit the boundaries for one type of administrative area within their reservation(s) and/or off-reservation trust lands (land base) for inclusion in MAF/TIGER. The Census Bureau will consider any type of unit of self-government or administration as a “tribal subdivision.” Tribal subdivisions should cover all, or most, of the tribe’s land base. If a tribe has more than one type of distinct administrative area that could qualify as a tribal subdivision (such as tribal election districts, tribal water districts, or health service areas with different boundaries), the tribe may submit only one type of subdivision. Tribal subdivisions can be considered either active (**A**) or inactive (**I**). Active subdivisions are defined as having a functioning government with elected officials that provide programs and services. Inactive subdivisions have no functioning government or elected officials and receive services solely from the tribe. Some examples of areas submitted as tribal subdivisions are:

- Areas used by a tribe for the election of tribal government officials (such as districts or precincts used for the election of tribal council members).
- Areas used by a tribal government for tax purposes.
- Areas used by a tribal government for the provision of general services or specified services, such as:
 - Water districts;
 - Health service areas;
 - Emergency service delivery areas (such as 911, fire, and/or police); or
 - Grazing districts or range units.
- Historical or traditional areas recognized by a tribal government.
- Local tribal community governments.

5.4.1 Criteria for Defining Tribal Subdivisions

- The delineation of tribal subdivisions is restricted to the area contained within reservation(s) and/or associated off-reservation trust lands (land base).
- There is no minimum population threshold for a tribal subdivision.
- Tribal subdivisions should cover all, or most, of the tribe’s land base.
- A tribal subdivision may be discontinuous.
- A tribe may designate only ONE type of tribal subdivision. If a tribe has more than one level of tribal subdivisions within its land base, the Census Bureau recommends delineating subdivisions corresponding

to the lowest geographic level (those geographic areas containing the smallest area) of the tribe’s administrative hierarchy.

- Tribal subdivisions should not be based solely on land ownership or other cadastral areas, nor should they consist of divisions based on the U.S. Public Land Survey System (PLSS) of townships, ranges, and sections, if these areas have no governmental or administrative function for your tribe.
- Some examples of descriptors for tribal subdivisions are:
 - District;
 - Community;
 - Area;
 - Chapter;
 - Segment;
 - Administrative Area;
 - Addition; and
 - County District.

5.4.2 Updating Tribal Subdivisions

Tribal Subdivisions are updated in a similar manner to boundary changes (such as additions or deletions). In order to submit tribal subdivision updates, please create a separate tribal subdivision change polygon layer. Updates that can be made to tribal subdivisions include additions, deletions, boundary corrections (adding and removing area), and creating new tribal subdivisions. Please note that all tribal subdivision updates (additions, deletions, name changes, and new entities), with the exception of boundary corrections, require a tribal resolution. [Table 7](#), [Table 8](#), and [Table 9](#) displays the required attributes for each of the change types. Review the example processes in [Appendix B](#) and [Appendix C](#) for information on how to create change polygons. Change polygons for tribal subdivisions may be created in the same manner as for reservations and off-reservation trust lands.

5.5 Linear Feature Updates

5.5.1 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 7](#). In the TLID field, preserve the existing TLID for the feature.

Table 7: Linear Feature Updates

Ysn;r 7u	CHNG_TYPE	TLID	FULLNAME	MTFCC
Add Feature	X('AL')		X	X
Delete Feature	X('DL')	X		

Ysn;r 7u	CHNG_TYPE	TLID	FULLNAME	MTFCC
Rename Feature	X('CA')	X	X	
Recode Feature	X('CA')	X		X

(Note: 'X' = Required Field)

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

5.5.2 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 does not exist and 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.

5.5.3 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.

Table 8: Address Range Updates

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

(Note: 'X' = Required Field)

5.6 Area Landmarks, Hydro Areas, and Point Landmarks

5.6.1 Area Landmark/Hydro Area Updates

The Census Bureau accepts updates to area landmarks and hydrographic 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; and/or
- Changing the name.

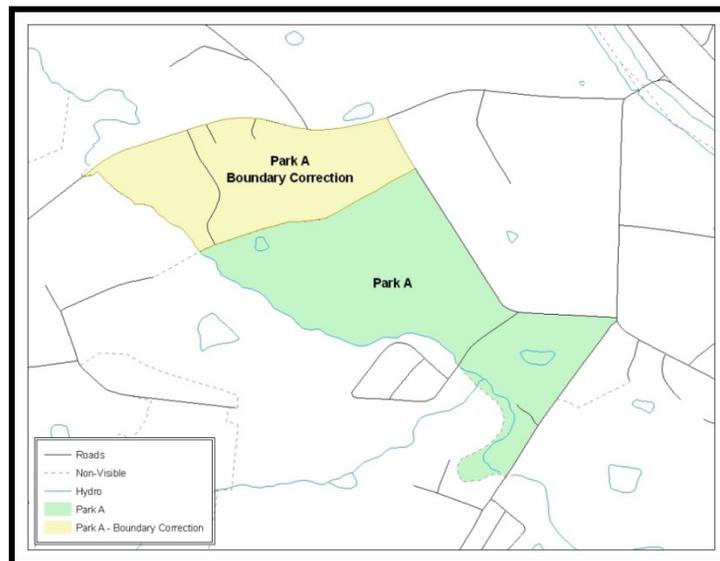


Figure 11. A Boundary Correction to Park A

This Example Shows a Boundary Correction to Park A. See Appendices B and C for more information on creating change polygons for area landmark and hydro areas.

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.

Table 9: Area Landmark/Hydro Area Updates

	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	

(Note: 'X' = Required Field).

The examples in [Appendix B](#) and [Appendix 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; and
- Parks.

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

Table 10: New Landmark/Hydro Area 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

***May not be edited.**

Due to heavy workloads for boundary changes to legal areas, changes to area landmarks and hydrographic areas may not be added to the database until after the next year's BAS materials are created. It may take two BAS cycles in order to see these changes reflected in the materials.

5.6.2 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; and
- 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.

Table 11: Point Landmark Updates

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

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.

Table 12: Restricted Point Landmark MTFCC Codes

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

MTFCC	Description
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

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); and
- C3061 (Cul-de-sacs).

Due to heavy workloads for boundary changes to legal areas, changes to point landmarks may not be added to the database until after the next year’s BAS materials are created. It may take two BAS cycles in order to see these changes reflected in local materials.

5.7 Reviewing Changes to the Census Bureau Shapefiles

Please review all changes to ensure that they are intentional and correct. The Census Bureau has created videos with information on many of the topics below. The video series, “Introduction to the Digital BAS” can be found on the web at: <<https://www.census.gov/programs-surveys/bas/library/videos/bas-intro.html>>.

5.7.1 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 tribal 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.

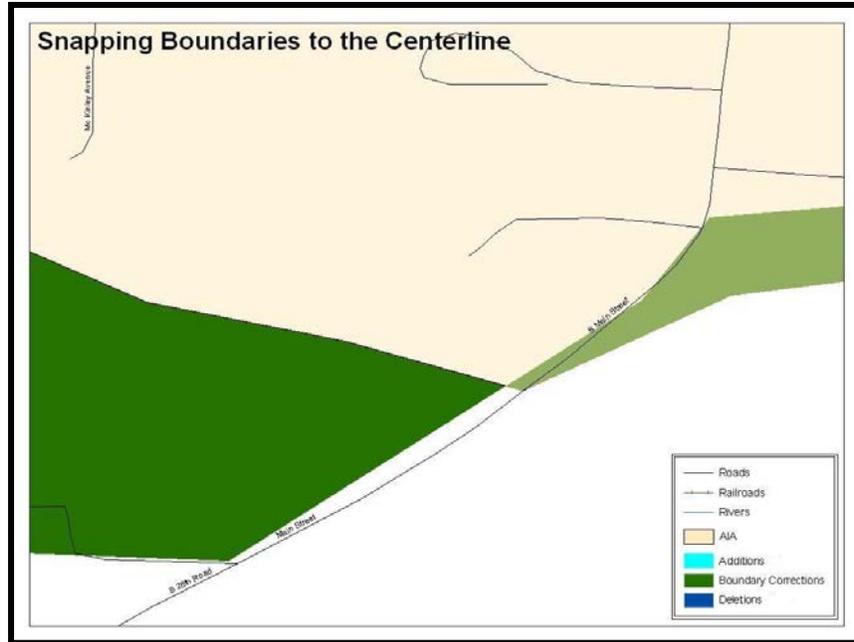


Figure 12. Boundary Correction Not Snapped to Existion Linear Features

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.

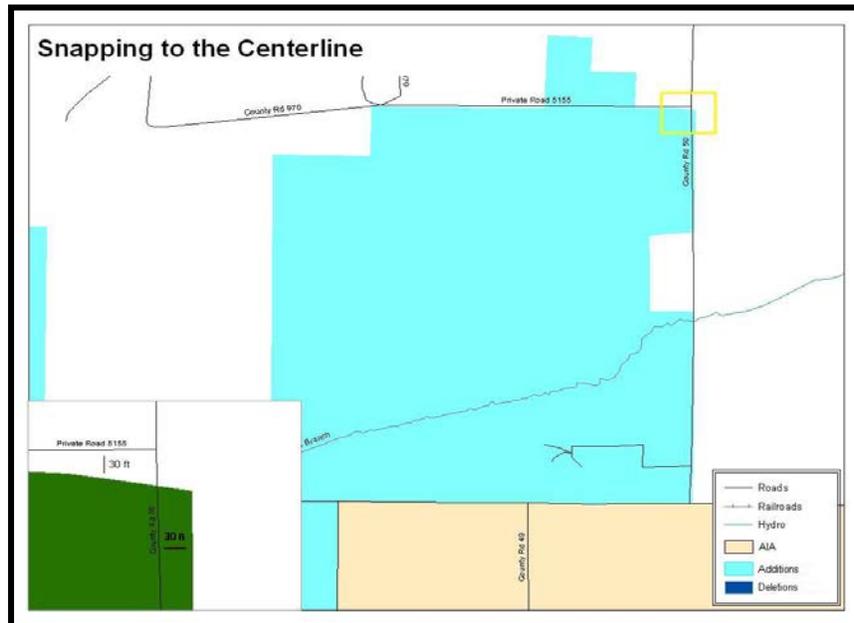


Figure 13. Annexation Created without Snapping to Centerlines

This is an example of an addition that has been 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. Any boundary corrections that create thirty feet or less of gap or overlap between the existing linear feature and boundary will not be incorporated into MAF/TIGER. See below for examples of changes that will not be accepted.

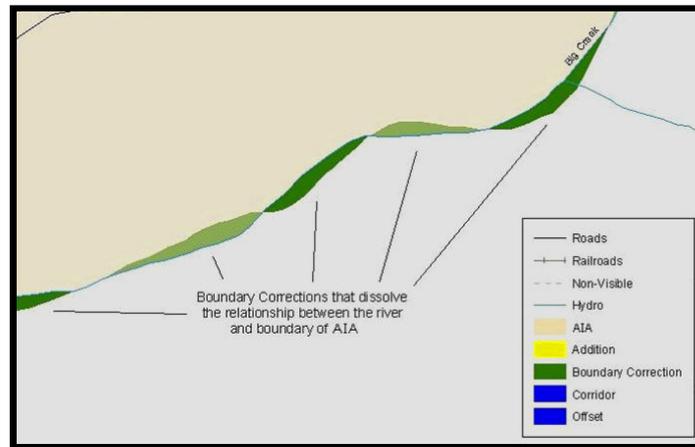


Figure 14. Small Spatial Correction Not Incorporated

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

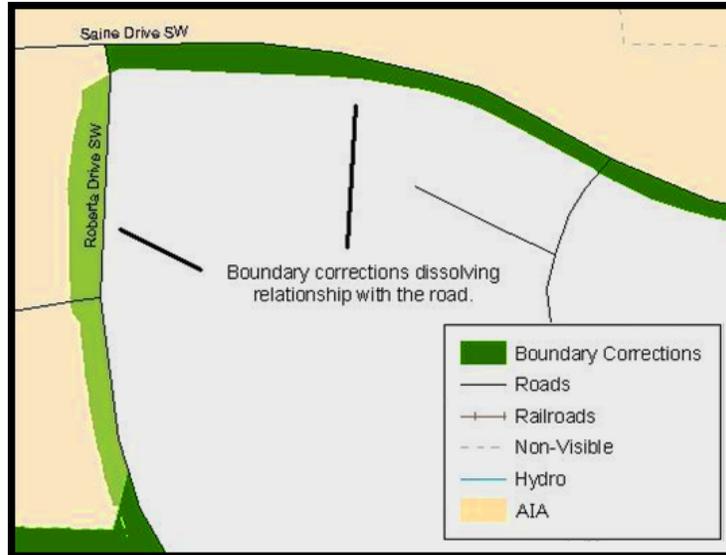


Figure 15. Small Spatial Correction Not Accepted

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

5.7.2 Large Boundary Corrections

The Census Bureau will not accept large boundary corrections to an AIA without the appropriate legal documentation (such as Trust Deed, Executive Order, new legal opinion, Act of Congress, or Federal Register Notice). 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 and effective date so that changes may be incorporated into MAF/TIGER.

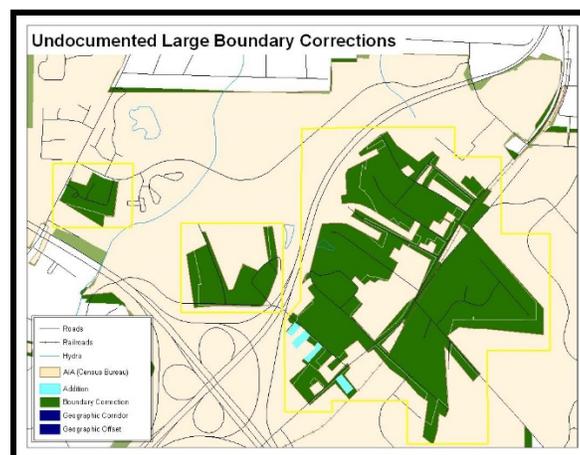


Figure 16. Large Boundary Corrections

Without the appropriate documentation, 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.

5.7.1 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 5.3](#) for the required attribute information and corresponding change type codes.

5.7.2 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.

5.7.3 Linear Feature Update

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.

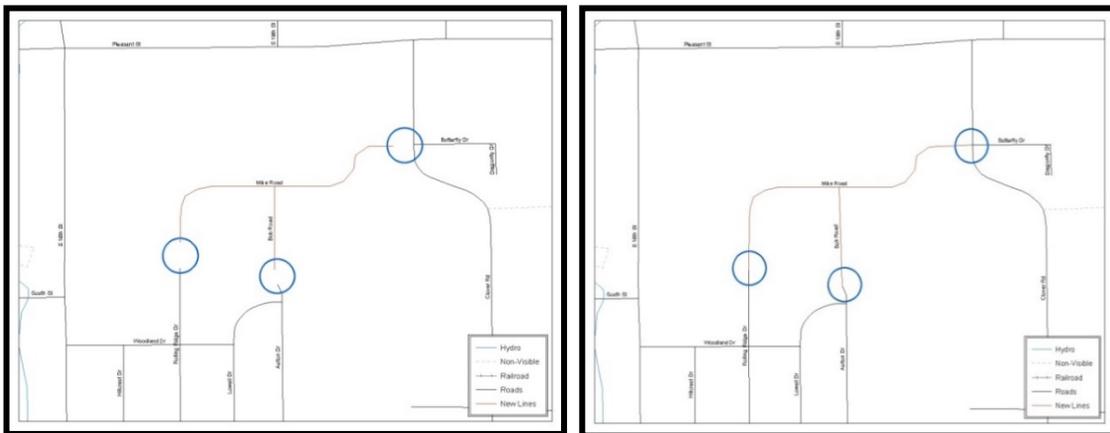


Figure 17. New Road Features, Not Added to Existing Road

Figure 18. New Road Features, Correctly Added

The image on the left (Figure 18) shows new road features added to the existing feature network, but do not connect to existing road features. The image on the right (Figure 19) shows the correction; connecting the new roads to the existing road features.

5.8 Additional Review Information

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

Note: The Census Bureau will snap any addition, deletion, 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.

5.8.1 Submitting Acceptable Documentation

The Census Bureau is responsible for depicting reservation and off-reservation trust land boundaries but because the Census Bureau is not the authority on the boundaries, we require documentation to update reservation and off-reservation trust land boundaries.

The following changes require documentation:

- New off-reservation trust land;
- New reservation land;
- Changes from off-reservation trust land to reservation land and changes from reservation land to off-reservation trust land;
- Large changes to existing off-reservation trust land;
- Large changes to existing reservation land; and
- Boundary corrections to off-reservation trust land or reservation land that do not follow the general shape of the boundary.

For off-reservation trust land, the most common documentation is a trust deed or a letter from the BIA. Documents should state that the land is “in trust” for your tribe.

For reservation land, documentation examples include (but are not limited to) federal register notice, Act of Congress, Executive Order, or a new legal opinion issued by the BIA. When submitting large boundary corrections to an existing reservation, please submit your reservation document.

If you cannot locate your documentation, you can contact your regional BIA office to obtain documentation. The Census Bureau will treat legal opinions issued in writing from the BIA as documentation since the BIA is the authority on reservation and off-reservation trust land boundaries. If the Census Bureau cannot interpret a document, such as a treaty, the Census Bureau will contact the BIA for assistance.

If you have questions about documentation, please call the Census Bureau at 1-800-972-5651 or email geo.bas@census.gov. If you need to contact the BIA, please see <http://www.bia.gov/WhoWeAre/RegionalOffices/index.htm> for contact information for your regional office.

5.8.2 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 layers that *may* need to be submitted:

1. Change Polygon Layers (ANRC, AIA, Tribal Subdivisions, Hawaiian Homelands)
 - These layers consist of the changes that the Census Bureau needs to make to entities; and
 - A layer of change polygons should be created for each level of geography (ANRC, AIA, Tribal Subdivisions, etc.) that changes are being submitted for.
2. Whole Modified Entity Layer (ANRC, AIA, Tribal Subdivisions, and Hawaiian Homelands)
 - These layers should only contain the complete and current boundary for the entity being updated; and
 - 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 that need to be corrected.
5. Area/Hydro Landmark Layer
 - Only if there are area and/or hydro landmark updates.
6. Point Landmark Layer
 - Only if there are point landmark updates.
7. 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 BAS Contact 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;
- Tribal Chair Term Expires: xx/xxxx; and
- Tribal Chair Term Length: x years.

5.8.3 Change Polygon Naming Conventions

The following table provides change polygon naming conventions for ANRCs, AIAs and Hawaiian Homelands. The change polygon layer naming conventions: <basID> represents your BAS entity ID, found in the BAS Annual Response email or online from this link: <<https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>>.

Table 13: Change Polygon Naming Conventions

Participant	Changes Submitted For	Shapefile Naming Conventions
AIA	AIA	bas18_<basID>_changes_aiannh
AIA	Tribal Subdivisions	bas18_<basID>_changes_tribalsub
ANRC	ANRC	bas18_<basID>_changes_anrc
Hawaiian Homelands	Hawaiian Homelands	bas18_<basID>_changes_hhl

5.8.4 Whole Entity Polygon Naming Conventions

The following table provides the whole entity polygon naming conventions for ANRCs, AIAs and Hawaiian Homelands. 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: <<https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>>.

Table 14: Whole Entity Polygon Naming Conventions.

Participant:	Changes Submitted For	Shapefile Naming Conventions
AIA	AIA	bas18_<basID>_WholeEntity_aiannh
AIA	Tribal Subdivision	bas18_<basID>_WholeEntity_trialsb
ANRC	ANRC	bas18_<basID>_WholeEntity_anrc
Hawaiian Homelands	Hawaiian Homelands	bas18_<basID>_WholeEntity_hhl

5.8.5 Linear Feature, Area Landmark/Hydro Area, and Point Landmark Updates (Not Required).

The following table provides the update layer naming conventions for the edges, area landmark, and point landmark update layers. 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: <<https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>>.

Table 15: Optional Files

Participant:	Changes Submitted For	Shapefile Naming Conventions
All Participants	Edges	bas18_<basID>_LN_Changes
All Participants	Area / Hydro Landmarks	bas18_<basID>_Alndk_Changes
All Participants	Point Landmarks	bas18_<basID>_Plndk_Changes

5.8.6 Compressing the Digital Files

The SWIM requires all BAS returns to be zipped prior to submission. Please compress ALL update materials (including change polygon shapefiles, whole entity shapefiles, linear feature updates, landmark updates, local government feature network and boundary layers, any necessary supporting documentation (e.g., trust deeds), 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 the Census Bureau 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.

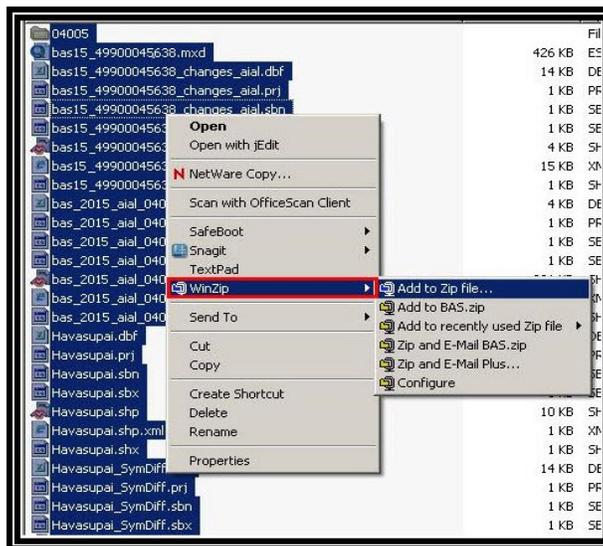


Figure 19. Selecting and Zipping Return Files

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.

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 number on the BAS Annual Response email or online from this link: <https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>.

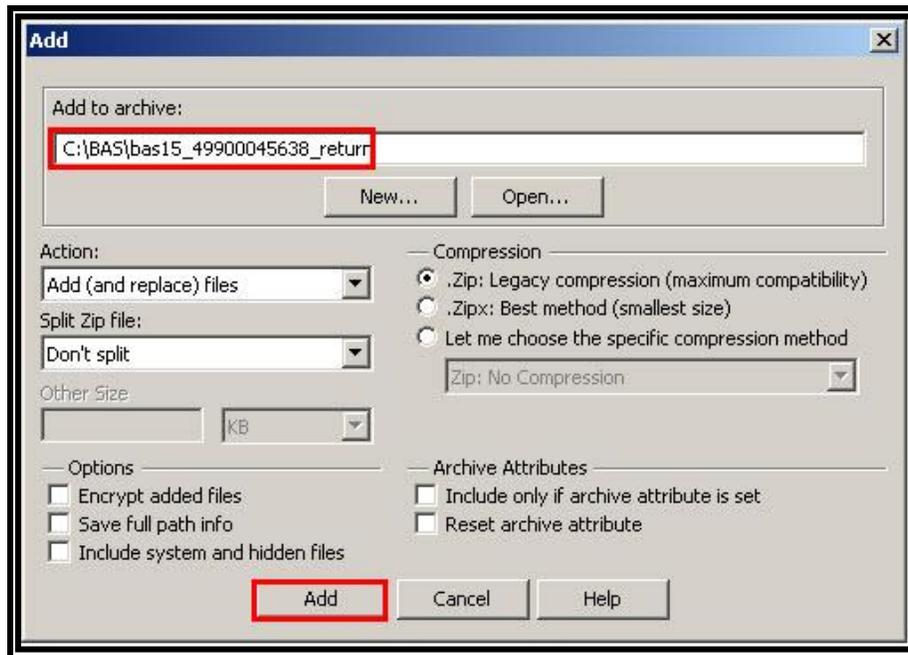


Figure 20. Naming the Zip File

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

Note: If assistance is needed with preparing or zipping the BAS return files, contact the Census Bureau at 1-800-972-5651 or geo.bas@census.gov.

5.7.3 Submitting Digital Files via SWIM

The Secure Web Incoming Module (**SWIM**) is a 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.

Current SWIM Users

If you are a participant in another Census Bureau partnership program, or participated in a previous BAS year, and already have a SWIM account, you may use your current account to submit files for the BAS. You do not need to set up a new account.

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 SWIM account, please login with your user credentials.

The screenshot shows a web browser window displaying the 'Account Registration' form. The form is titled 'Account Registration' and is part of the 'Secure Web Incoming Module'. It includes the following fields: 'Registration Token' (value: Au5Vnk45), 'First Name' (value: Robert), 'Last Name' (value: Swagger), 'Phone Number' (value: 888 555 5555), 'Agency' (value: Department of Awesome), 'Email' (value: bob.swagger@awesome.gov), 'Confirm Email' (value: bob.swagger@awesome.gov), 'Password' (masked with asterisks), 'Confirm Password' (masked with asterisks), 'Security Question' (value: What is the name of your first pet?), and 'Answer' (value: Fluffy McChicken). A 'Submit' button is located at the bottom of the form. The browser address bar shows the URL 'https://respond.census.gov/swim/register'. The footer of the page contains the text 'OMB No.: 0607-0151, 0607-0705 Approval Expires: 31/01/2016, 07/01/2015' and 'Accessibility | Privacy | Security'.

Figure 21. SWIM Account Registration

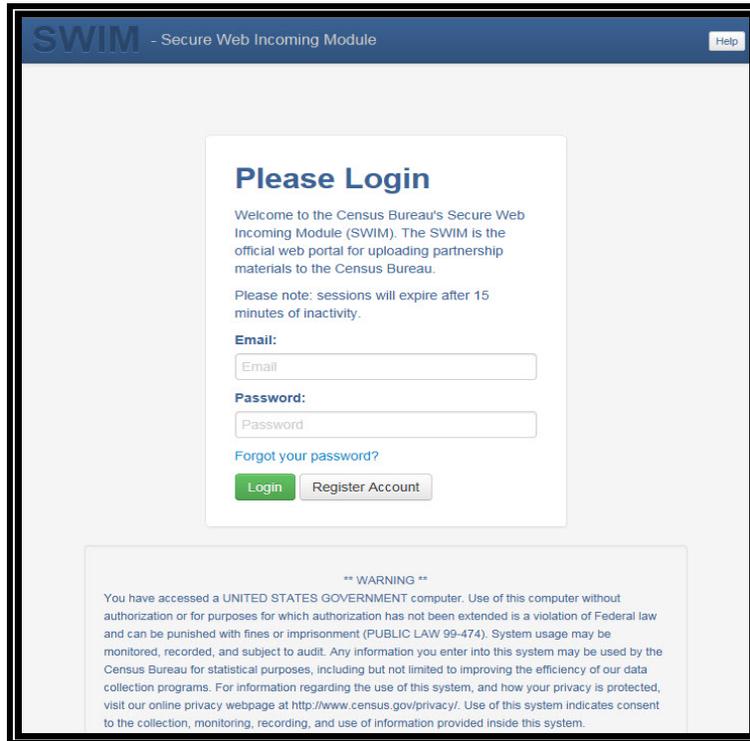


Figure 22. SWIM Login Window.

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

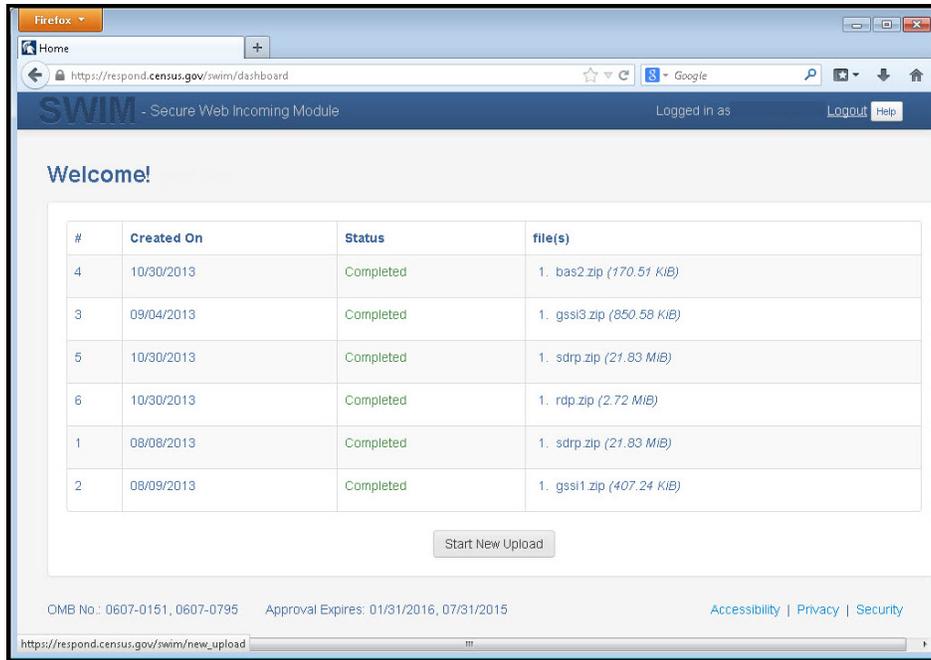


Figure 23. Welcome Screen with Upload History

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

The screenshot shows the 'SWIM - Secure Web Incoming Module' interface. At the top, it says 'Logged in as' with 'Logout' and 'Help' links. The main heading is 'What Census program are you reporting data for?'. Below this is a paragraph of instructions: 'Select the geographic program that you currently wish to submit data for the Census Bureau to review. This selection affects only your current upload. You may select a different option for future uploads. If you are unsure what program to select, use Geographic Support System Initiative (GSS-I) or send an email to geo.swim@census.gov for more guidance.' There are seven radio button options: 'Geographic Support System Initiative (GSS-I)' (selected), 'Boundary Annexation Survey (BAS)', 'School District Review Program (SDRP)', 'Boundary Quality Assessment and Reconciliation Project (BQARP)', 'Federal Agency Updates (FDU)', 'Redistricting Data Program - BBSP-VTD (RDP)', and 'Redistricting Data Program - CD-SLD (RDP)'. A 'Next' button is centered below the options. At the bottom, it displays 'OMB No.: 0607-0151, 0607-0795', 'Approval Expires: 01/31/2016, 07/31/2015', and links for 'Accessibility | Privacy | Security'.

Figure 24. Geographic Partnership Program Selection Window

5. On this screen, you will select a geographic level. This is the geography type of your agency. Select 'Tribal Area'. Click 'Next' to continue.

The screenshot shows the 'SWIM - Secure Web Incoming Module' interface. At the top, it says 'Logged in as' with 'Logout' and 'Help' links. The main heading is 'What type of GSSI are you reporting for?'. Below this is a paragraph of instructions: 'Please select the entity-type you represent, not the extent or type of data that you are submitting. For example, if you are submitting data on behalf of a "County", but the data being submitted is at the "City" level, then select "County".' There are six radio button options: 'State', 'Place', 'County', 'County Subdivision', 'Tribal Area', and 'Concity'. 'Previous' and 'Next' buttons are centered below the options. At the bottom, it displays 'OMB No.: 0607-0151, 0607-0795', 'Approval Expires: 01/31/2016, 07/31/2015', and links for 'Accessibility | Privacy | Security'.

Figure 25. 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.

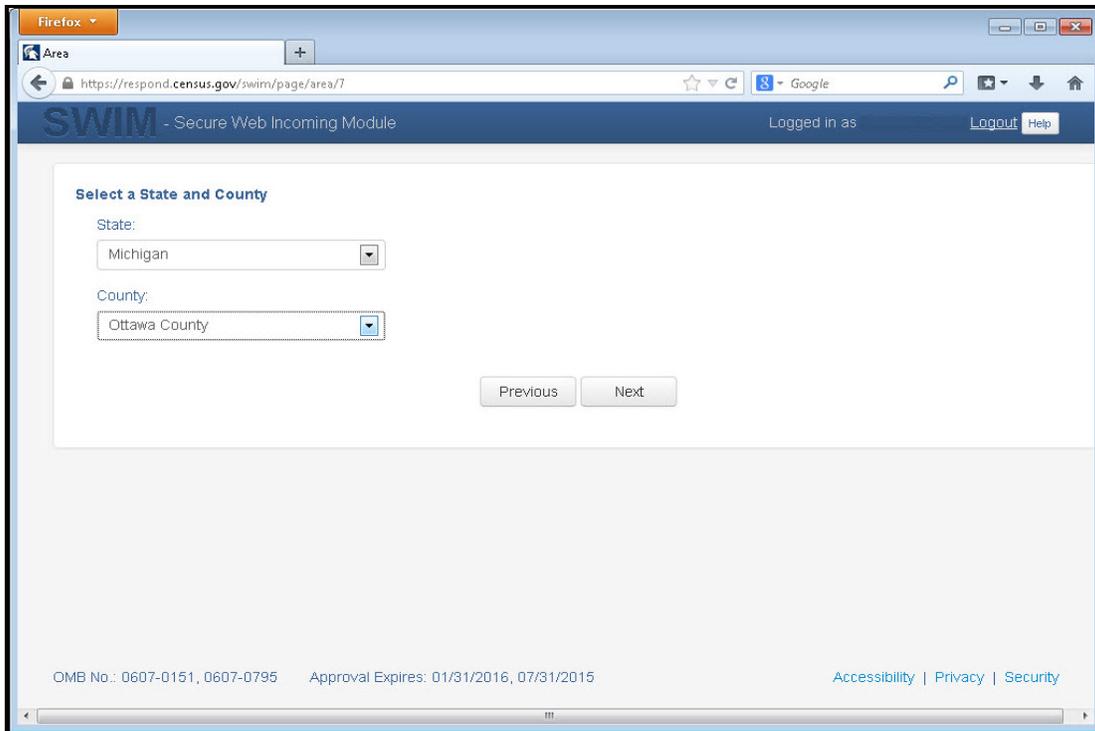


Figure 26. Geographic Entity Selection Window

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

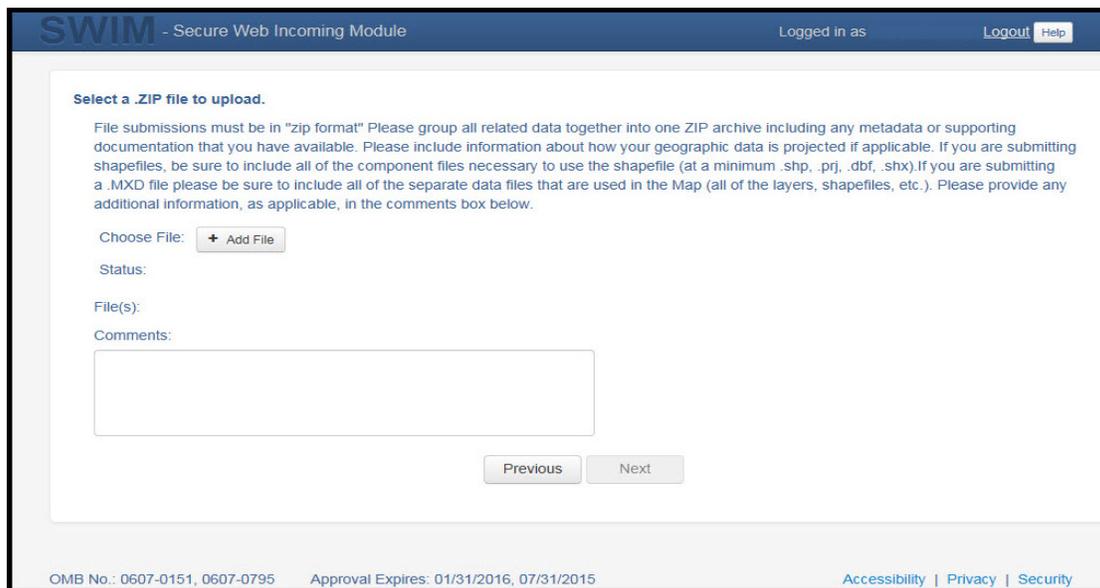


Figure 27. File Upload Screen

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

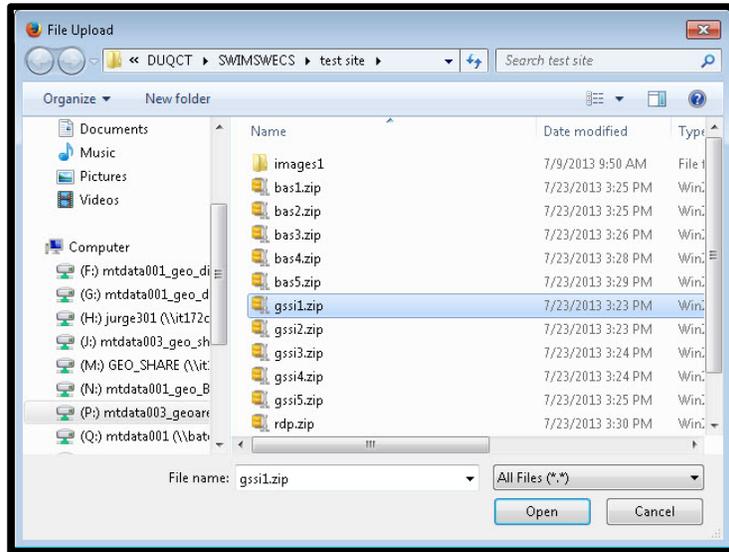


Figure 28. File Browser Dialog Box

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

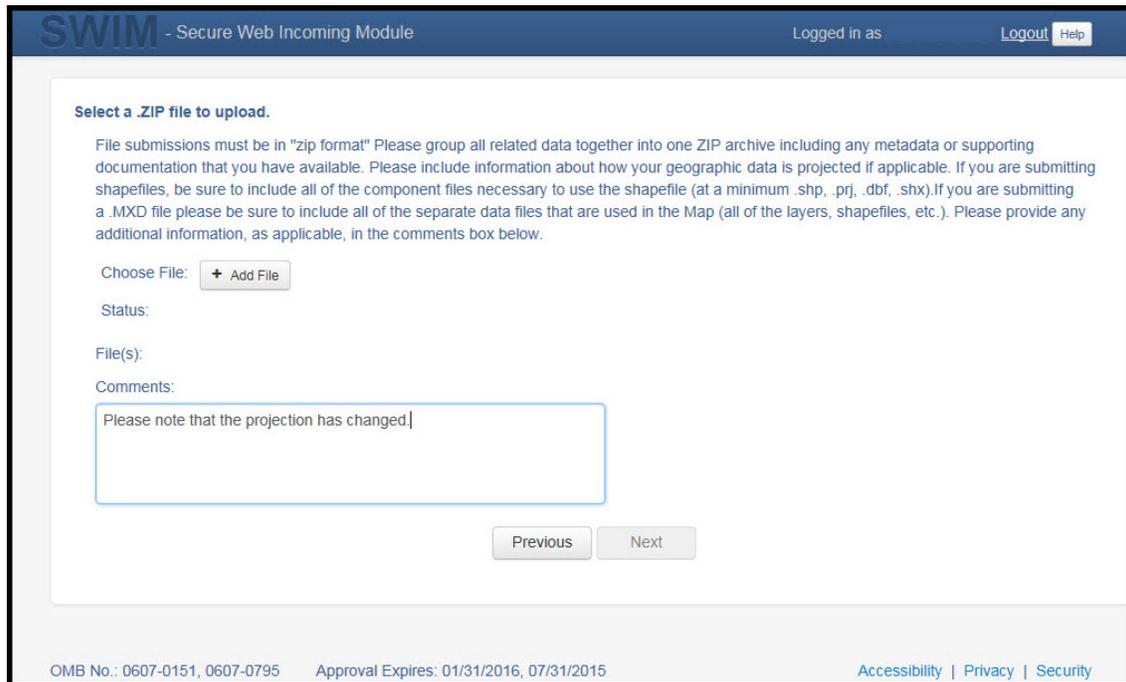


Figure 29. Entering Comments into the File Upload Window

- 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.

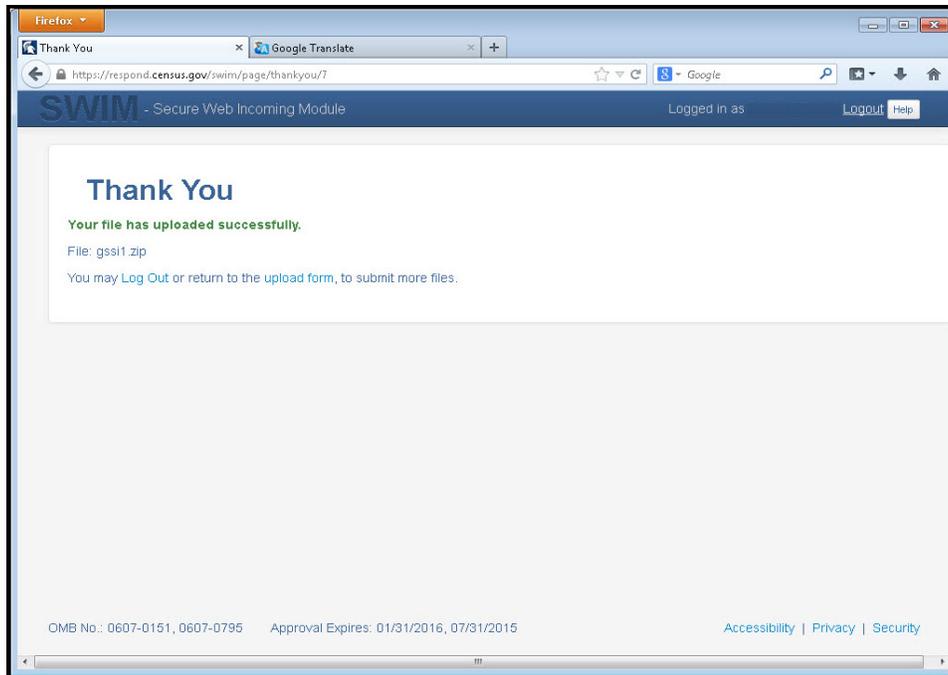


Figure 30. Thank You Screen

5.9 Additional Information

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

The Census Bureau includes these codes 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.

Due to limited staff, the Census Bureau may not be able to make all updates this year. The Census Bureau will prioritize updates in the following order: legal changes, boundary corrections, linear feature changes, and landmark changes. The earlier the Census Bureau receives a submission, the greater the chance that the Census Bureau will be able to make all of the updates. Only submit changes that occurred on or before January 1, 2018. The Census Bureau will not be able to make any updates effective after this date until next year's BAS.

APPENDICES

APPENDIX A Data Dictionary

Table 16: Alaska Native Regional Corporation (ANRC) Shapefile

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
ANRCFP	5	String	FIPS ANRC Code
ANRCCE	2	String	Current Census ANRC Code
NAMELSAD	100	String	Name with Translated LSAD
LSAD	2	String	Legal / Statistical Area Description
AIANNHNS	8	String	ANSI Numeric Identifier for AIANNH Areas
FUNCSTAT	1	String	Functional Status
CLASSFP	2	String	FIPS 55 Class Code Describing an Entity
PARTFLG	1	String	Part Flag Indicator
CHNG_TYPE	2	String	Type of Area Update
EFF_DATE	8	Date	Effective Date
AUTHTYPE	1	String	Authorization Type (O – Ordinance, R – Resolution, L – Local Law, S – State Level Action, X – Other)
DOCU	120	String	Supporting Documentation
RECORD_ID	4	String	(GUPS Only)
AREA	10	Double	Acreage of Area Update
RELATE	120	String	Relationship Description
JUSTIFY	150	String	Justification of Change
NAME	100	String	ANRC name
VINTAGE	2	String	Vintage of the Data

Table 17: American Indian Areas - Legal (AIAL) Shapefile

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
AIANNHCE	4	String	Census AIANNH Code
COMPTYP	1	String	Indicates if Reservation, Trust Land, or both are Present
AIANNHFSR	1	String	Flag Indicating Level of Recognition of an AIA
NAMELSAD	100	String	Name with Translated LSAD
AIANNHNS	8	String	ANSI numeric identifier for AIA areas
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	Part Flag Indicator
CHNG_TYPE	2	String	Type of Area Update
AUTHTYPE	1	String	Authorization Type (O – Ordinance, R – Resolution, L – Local Law, S – State Level Action, X – Other)
EFF_DATE	8	Date	Effective Date
DOCU	120	String	Supporting Documentation
RECORD_ID	4	String	(GUPS Only)
AREA	10	Double	Acreage of Area Update
RELATE	120	String	Relationship Description
JUSTIFY	150	String	Justification of Change
NAME	100	String	AIA name
VINTAGE	2	String	Vintage of the Data

Table 18: American Indian Tribal Subdivisions (AITS) Shapefile

ATTRIBUTE FIELD	LENGTH	TYPE	DESCRIPTION
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
AIANNHCE	4	String	Census AIANNH Code
TRIBALSUBCE	3	String	Census Tribal Subdivision Code
NAMELSAD	100	String	Name with translated LSAD
AIANNHNS	8	String	ANSI Numeric Identifier for AIANNH Areas
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	Part Flag Indicator
CHNG_TYPE	2	String	Type of Area Update
EFF_DATE	8	Date	Effective Date
AUTHTYPE	1	String	Authorization Type (O – Ordinance, R – Resolution, L – Local Law, S – State Level Action, X – Other)
DOCU	120	String	Supporting Documentation
RECORD_ID	4	String	(GUPS Only)
AREA	10	Double	Acreage of Area Update
RELATE	120	String	Relationship Description
JUSTIFY	150	String	Justification of Change
NAME	100	String	Tribal subdivision name
VINTAGE	2	String	Vintage of the Data
AIANNHFSR	1	String	Flag Indicating Level of Recognition of an AIA

Table 19: 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 20: 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 21: 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 22: 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 23: 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

APPENDIX B 2018 Digital BAS – Example Process 1

B.1 Required Census Bureau Shapefiles

When downloading shapefiles for the 2018 BAS, shapefiles will begin with the prefix **PVS** (e.g., **PVS_18_v2_edges_<ssccc>.shp**). Throughout this guide, Census Bureau uses the prefix of **bas_2018**, but the **PVS** files are exactly the same.

Note: Contact the Census Bureau at 1-800-972-5651 or geo.aiana@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 AIA, these layers are critical:

- **PVS_18_v2_aial_<ssccc>.shp**
- **PVS_18_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 for all reservations and off-reservation trust lands as well as all adjacent counties.

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

B.2 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 24](#).

Table 24: Suggested MTFCC Symbolization

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

S	Road	—
---	------	---

B.2.1 Symbolizing Geographic Areas

Symbolize the AIAL layer by “COMPTYP” field to show reservation and off-reservation trust land.

Note: AIA participants working on changes for tribal subdivisions may want to use different colors to distinguish one from another.

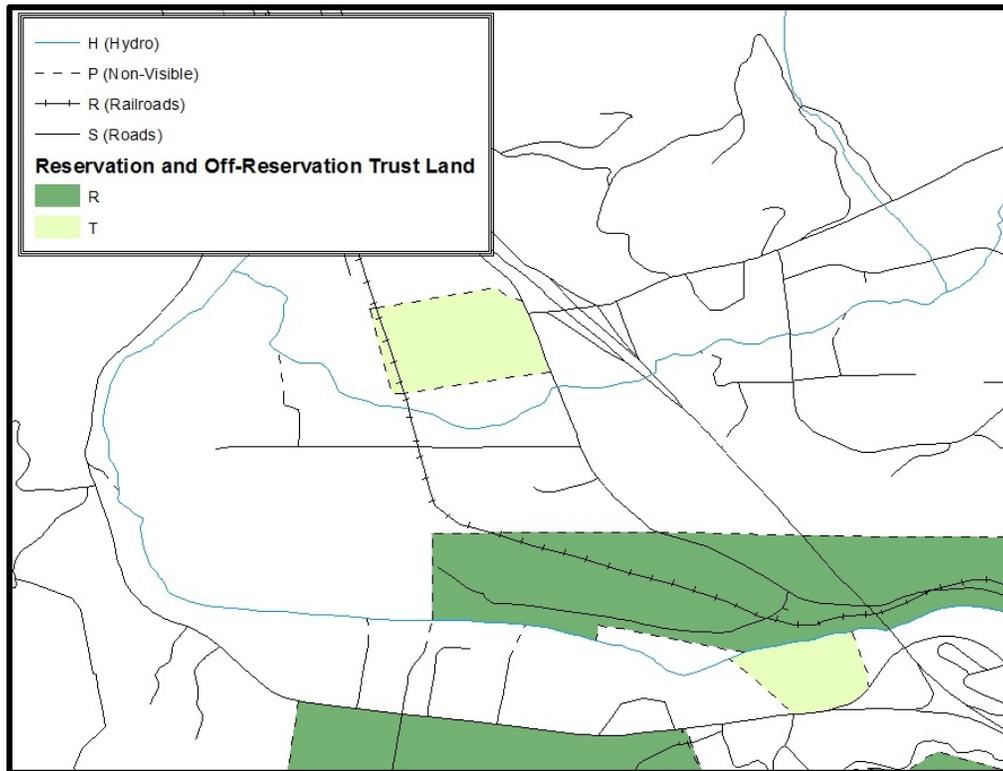


Figure 31. Suggested Map Symbolization

B.3 Extracting AIA Data from Census Bureau Shapefiles

Note: If you do not have ArcGIS Advanced, skip ahead to [Section B.5](#).

B.3.1 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_2018_v2_aial_<ssccc>.shp.
 - 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**

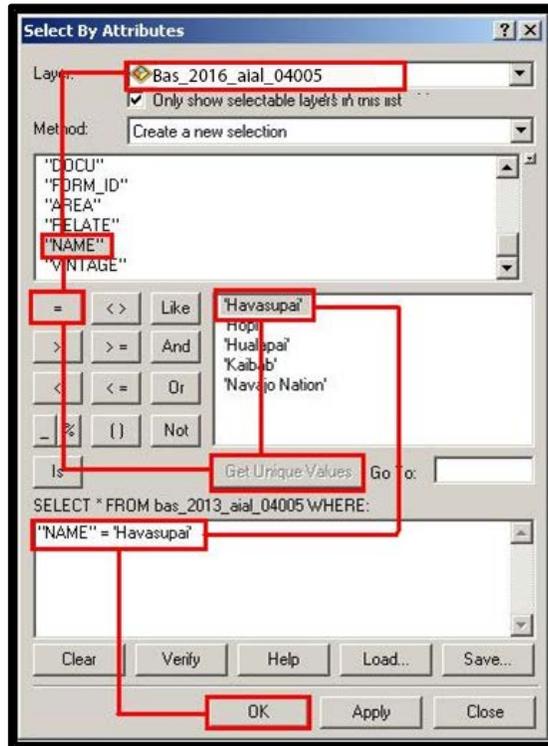


Figure 32. Filtering Data

B.3.2 Exporting the Data to a New Shapefile

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

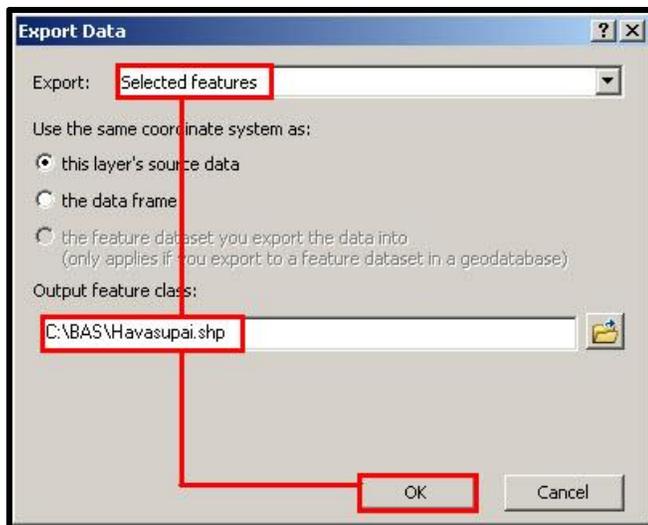


Figure 33. Export Data Window

Note: If the AIA spans more than one county, it will need to be exported from each county's AIA shapefile and merged. Follow the instructions in [Section B.4](#) if the AIA needs to be merged, otherwise skip to [Section B.5](#).

B.4 Merging Multipart AIA 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 Input** 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.
3. Click OK.

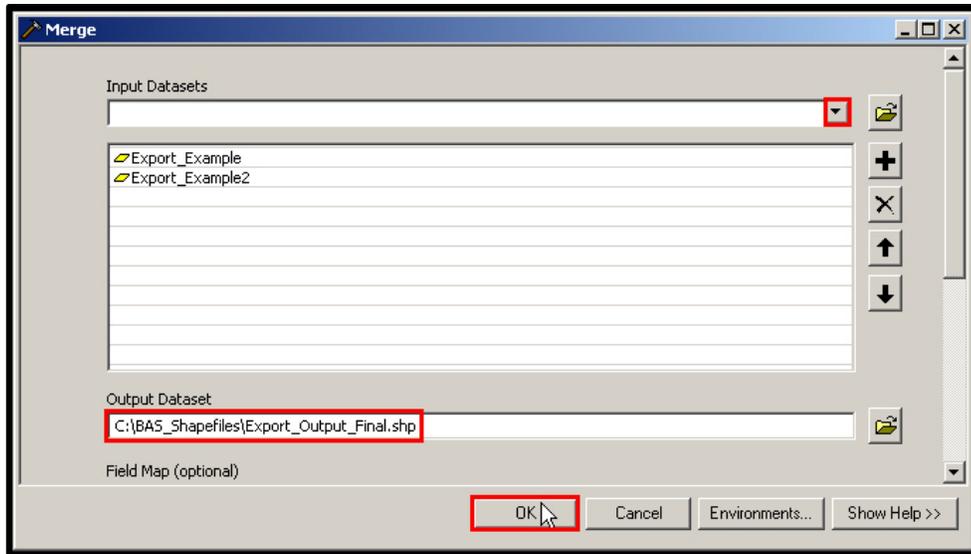


Figure 34. Finalizing the Merge Process

B.5 Creating Change Polygons Using Symmetrical Difference

Note: If you do not have an ArcInfo license, you will have to use the Union operation rather than the Symmetrical Difference operation. See [Section B.6](#) 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 that was created in **Section 3**.
 - In the **Update Features** field, click the arrow (or browse) and select the tribal 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_tribal**, **Differences1**, or anything easy to find/remember.
3. Click OK.

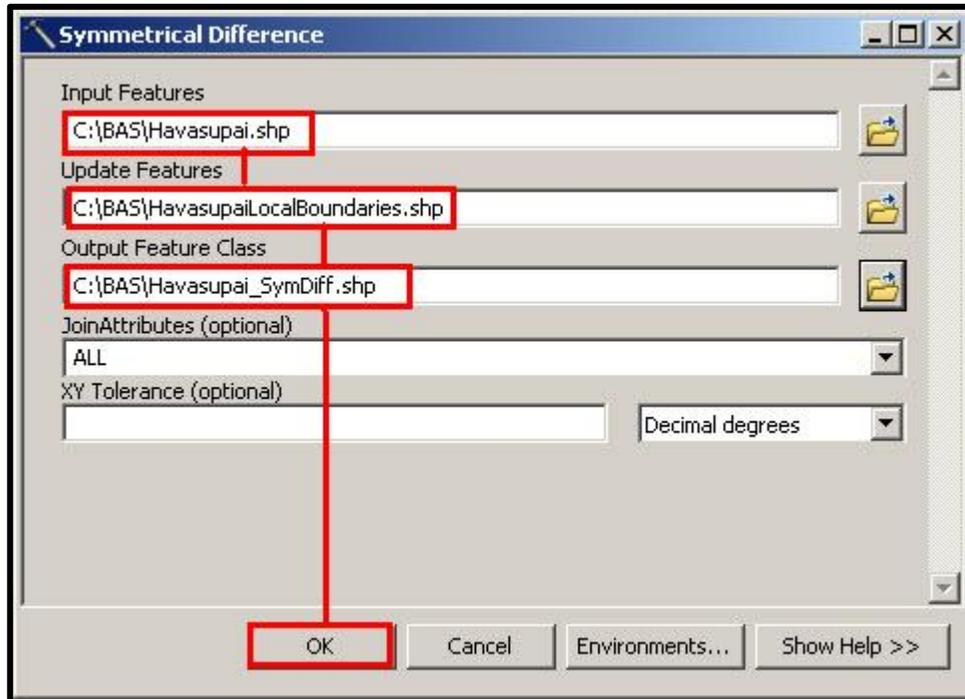


Figure 35. Finalizing the Symmetrical Difference Process

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.

4. 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.
5. 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 tribal entity boundaries. These differences need to be reviewed and coded appropriately.

Skip to [Section B.7, Reviewing and Attributing Change Polygons](#).

B.6 Creating Change Polygons Using Union

Note: 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_18_v2_aial_<ssccc>**, and the tribe's own 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**.

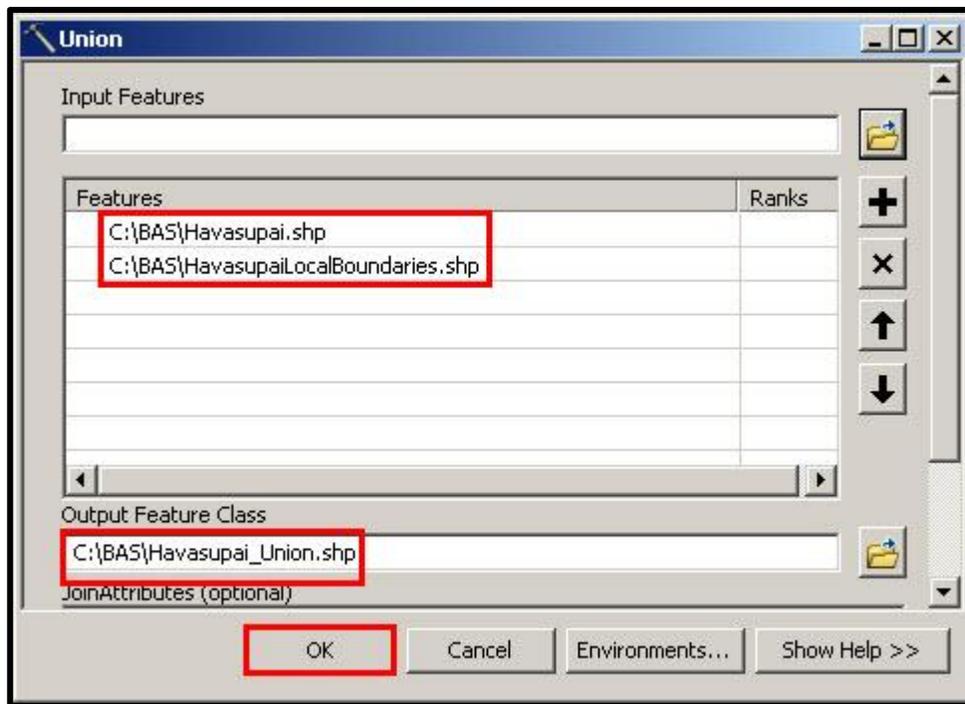


Figure 36. Finalizing the Union Process

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

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

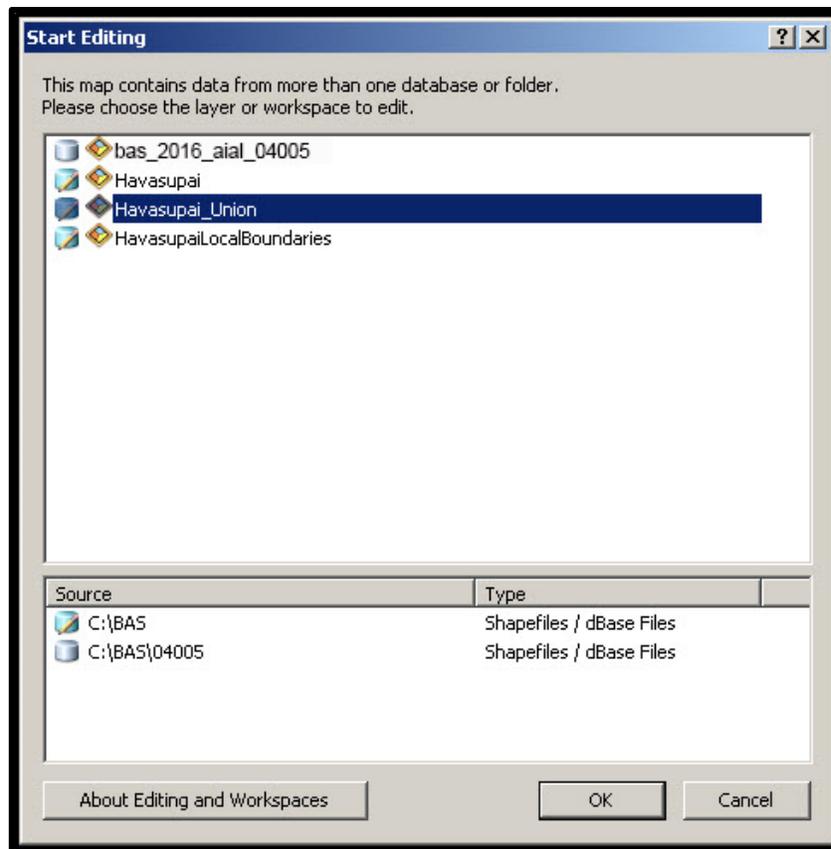


Figure 37. Locating the Union Shapefile

5. In ArcMap, in the Tools toolbar, click the Select Features  button.
 - Locate features on the map that the Census Bureau and the local tribal 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 tribal government's representation of the boundaries. Please review these differences and make sure they are coded appropriately. Continue to the next section for instructions on reviewing and coding change polygons.

B.7 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 5.3](#) 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.

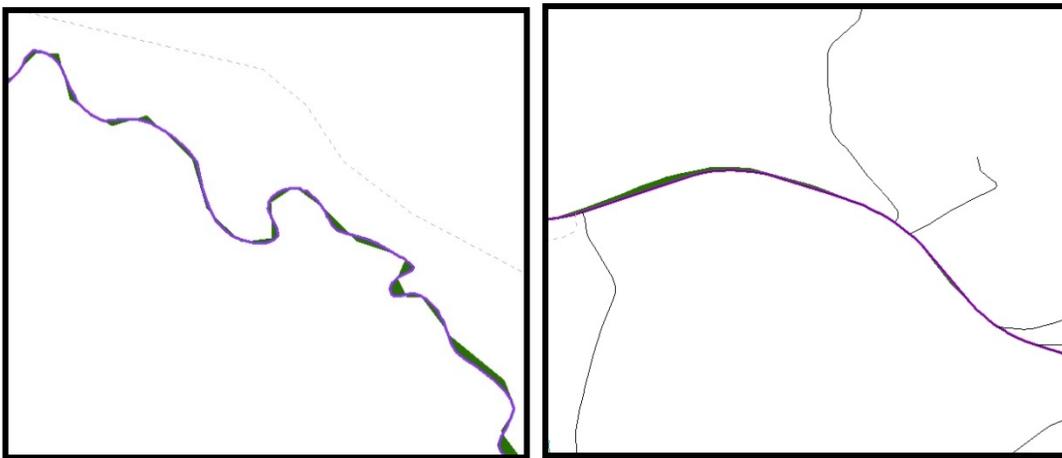


Figure 38. Small Slivers That Should Be Deleted

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

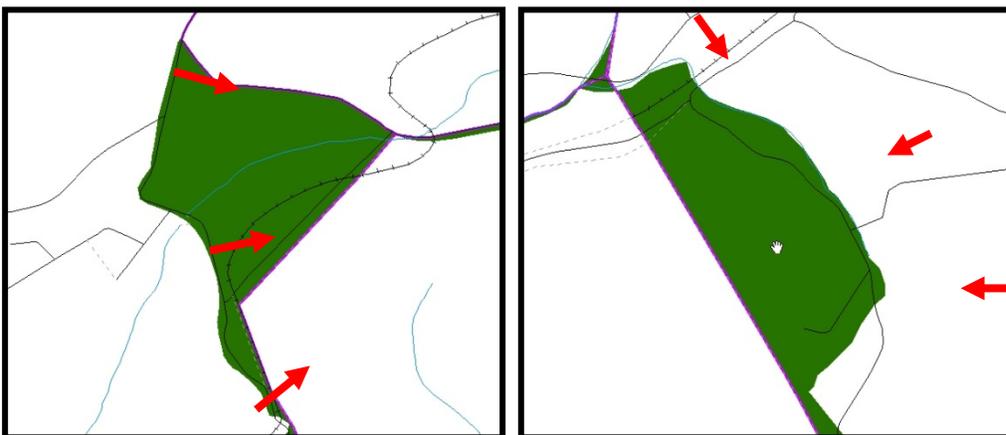


Figure 39. Polygons That Should Be Snapped to Roads or Rivers

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.

Additions

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

Deletions

- On the **Editor Toolbar**, click the **Edit Tool**  button and select the deletion polygon.
- On the **Editor Toolbar**, click the **Attributes**  button.
- In the **Attributes** window, fill out the mandatory fields required for a deletion.
 - NAME, CHNG_TYPE, AUTHTYPE, DOCU and EFF_DATE.
 - The **CHNG_TYPE** for a deletion 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 boundary correction to one tribal subdivision 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**.)

B.8 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 (AIA, tribal subdivision) 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: bas18_<basID>_changes_aiannh.

Note: You can find the basID numbers in the BAS Annual Response Email or online from this link:
<<https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>>.

Note: See [Section 5.8.6](#) 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, refer to [Section 5.7.3 Submitting Digital Files via the Secure Web Incoming Module \(SWIM\)](#).

APPENDIX C 2018 Digital BAS Example Process 2

C.1 Required Census Bureau Shapefiles

- When downloading shapefiles for the 2018 BAS, shapefiles will begin with the prefix **PVS** (e.g., **PVS_18_v2_edges_<ssccc>.shp**).
- Throughout this guide, Census Bureau uses the prefix of **bas_2018**, but the **PVS files** are exactly the same.

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 AIA, these layers are critical:

- PVS_18_v2_aial_<ssccc>.shp
- PVS_18_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 for all of your reservation and off-reservation trust lands as well as all adjacent counties.

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

C.2 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 A2B.2.1:

Table 25: Edges MTFCC Suggested Symbolization

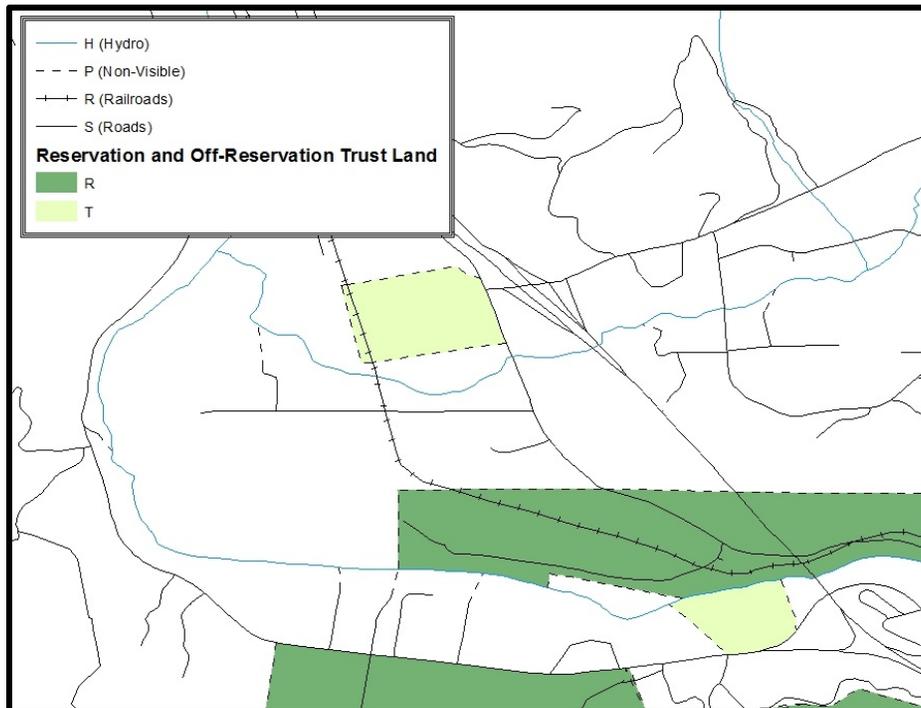
MTFCC 1 st Character	Linear Feature Type	Symbol
H	Hydrology	
P	Non-Visible Feature (boundary)	
R	Railroad	



C.3.1 Symbolizing Geographic Areas

Symbolize the AIAL layer by “COMPTYP” field to show reservation and off-reservation trust land.

Note: AIA participants reporting tribal subdivisions may want to use different colors to distinguish one from another.



Suggested Map Symbolization.

C.3 Creating and Splitting Linear Features

C.3.2 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 one which 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_18_v2_edges_<ssccc>.

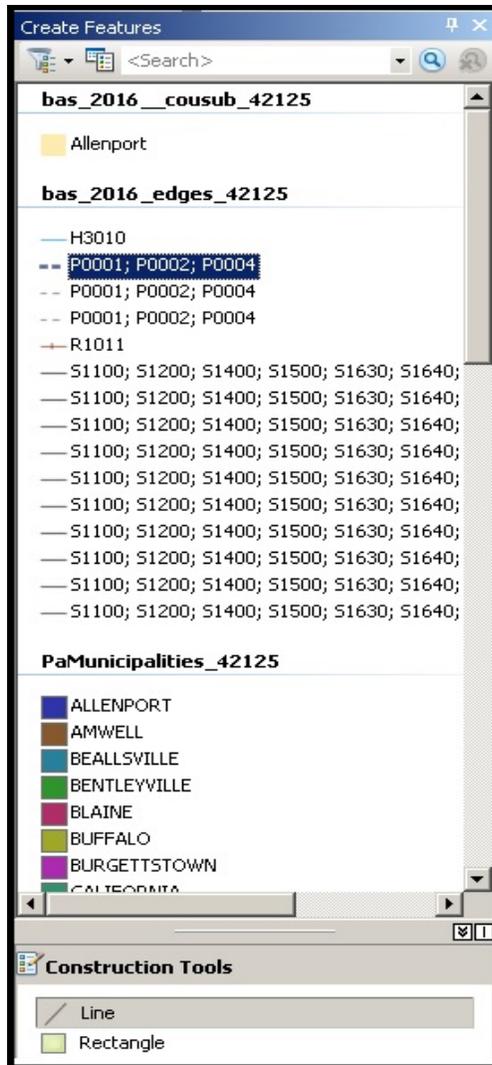


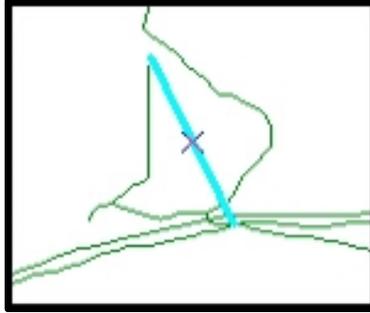
Figure 40. Create Features Window.

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.



Snapping Toolbar.

6. For any new boundary lines that do not follow existing edges, ensure that Line is selected in the Construction Tools pane (see Figure 40), 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 vertices to the line, and double-clicking will end the line and create the new feature. Any new feature(s) will be highlighted.



A Newly Created Linear Feature.

C.3.3 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.3.4 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).

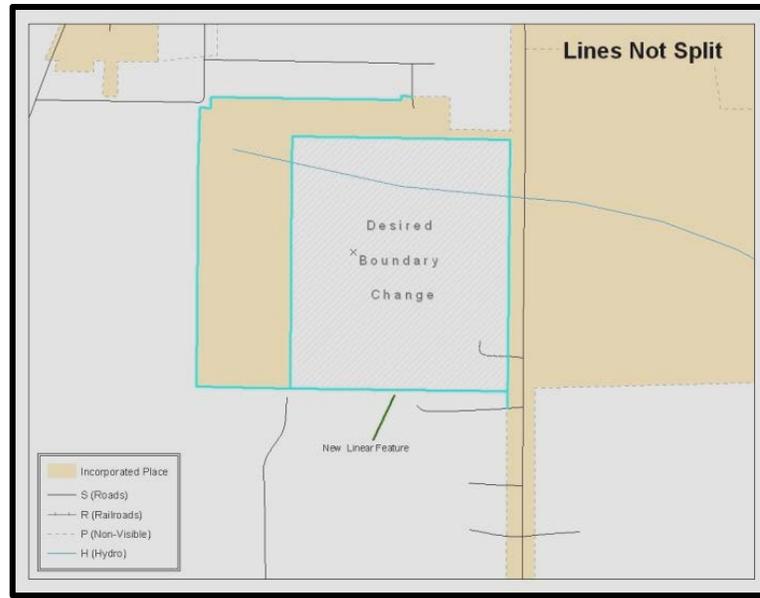


Figure 41. Linear Feature Selection Before Being Split

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

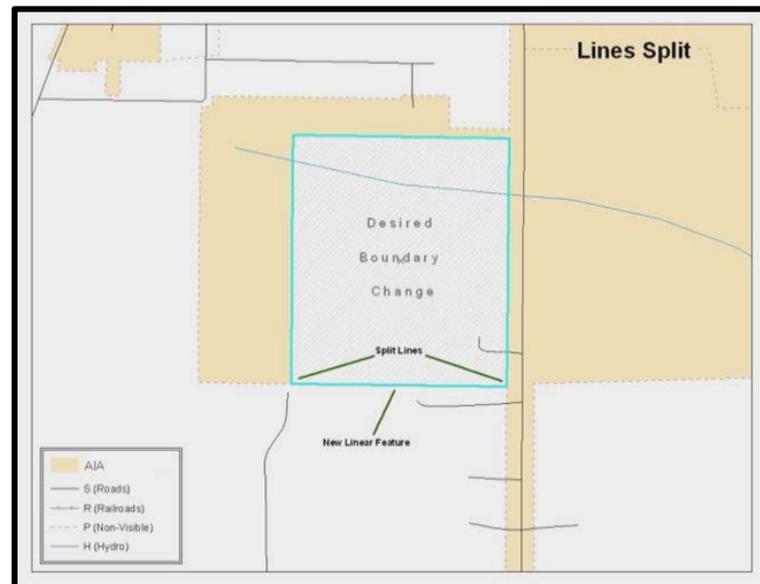


Figure 42. Linear Feature Selection After Being Split

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

C.3.5 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 aia layer: PVS_18_v2_aial_<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 addition, deletion, or incorrect area) by holding the Shift key while clicking each linear feature segment.

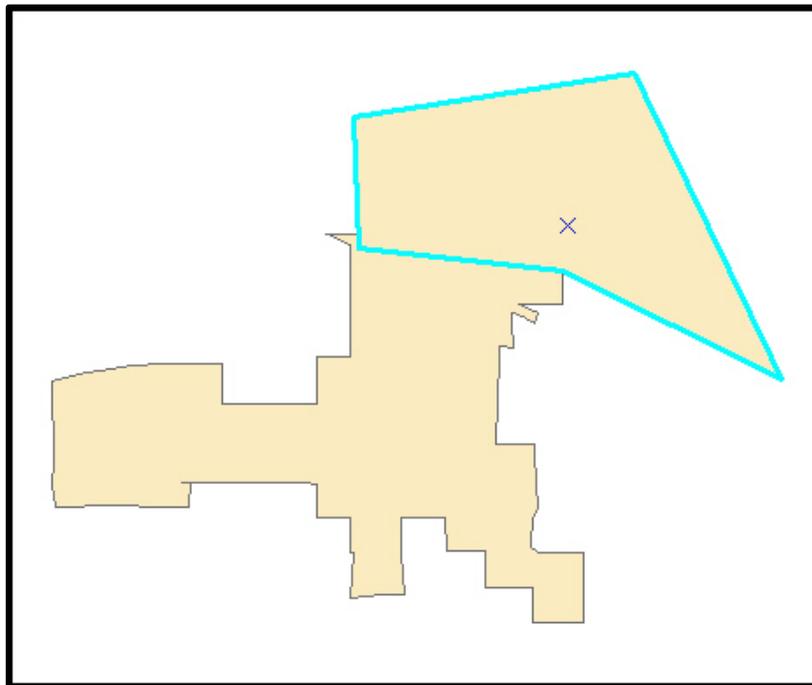


Figure 43. Selecting the Linear Features of a Change Polygon

5. On the Topology toolbar, click 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 AIA layer; however, it will not have any associated attribute values (see the next section).



Figure 44. Newly Created AIA Feature

C.4 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 will 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 AIA layer in the **Table of Contents**, click **Selection**, and then click **Make This The Only Selectable Layer**, so that the AIA layer is the only one which can be selected while editing
- On the Editor Toolbar, click Editor, and then click Start Editing.

Additions

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

Deletions

- On the **Editor Toolbar**, click the **Edit Tool**  button and select the deletion polygon.
- On the **Editor Toolbar**, click the **Attributes**  button.
- In the **Attributes** window, fill out the mandatory fields required for a deletion.
 - NAME, CHNG_TYPE, AUTHTYPE, DOCU and EFF_DATE.
 - The **CHNG_TYPE** for an addition 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 boundary correction to one tribal subdivision 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.4.1 Exporting Change Polygons

After creating and coding the change polygons, each level of geography (AIA, tribal subdivision) 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 AIA layer: **bas_2018_aial_<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 a specific change type for polygons that were created and coded.
 - Click **OK**.

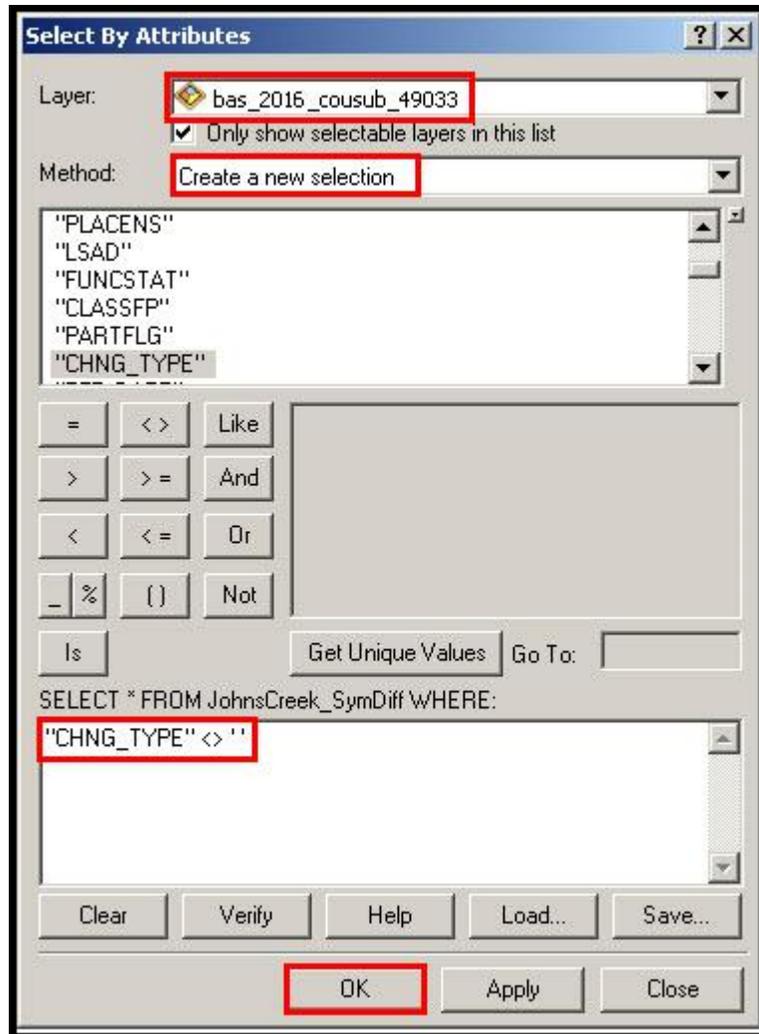


Figure 45. Select All Change Types Formula

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

1. In the ArcMap Table of Contents, right-click on the AIA layer (PVS_18_v2_aial_<ssccc>), select Data, and then click Export Data.
2. 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 bas18_<basID>_changes_aiannh.shp.

- Click **OK**.

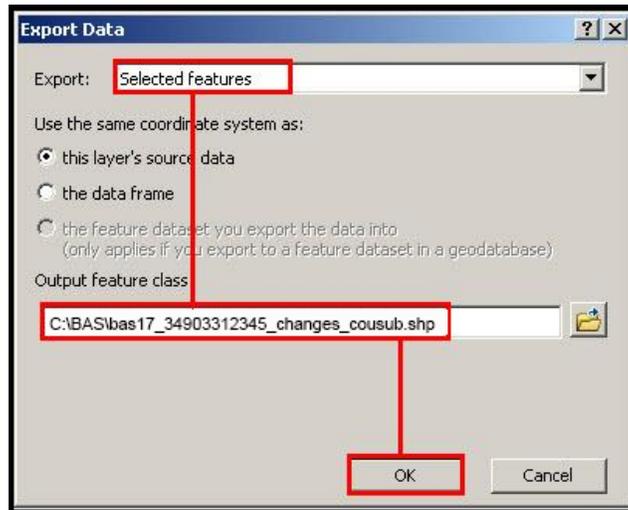


Figure 46. Exporting Data.

Note: The basID number can be found on the BAS Annual Response email or online from this link: <https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>.

Note: See [Section 5.8.6](#) 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 5.7.2](#) and [Section 5.7.4](#) Submitting Digital Files via the Secure Web Incoming Module (SWIM).

APPENDIX D MTFCC Descriptions–Complete List

The MAF/TIGER Feature Classification Code (MTFCC) is a 5-digit code assigned by the Census Bureau to classify and describe geographic objects or features in Census Bureau MAF/TIGER products.

Table 26: MTFCC List

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 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).
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.

MTFCC	Feature Class	Feature Class Description
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 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 +

MTFCC	Feature Class	Feature Class Description
		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.
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 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

MTFCC	Feature Class	Feature Class Description
		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. The upper chamber is the senate in a bicameral legislature, and the unicameral case is a 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
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 Census Bureau includes in the MAF/TIGER® System 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.

MTFCC	Feature Class	Feature Class Description
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].
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.
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.

MTFCC	Feature Class	Feature Class Description
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 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.

MTFCC	Feature Class	Feature Class Description
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 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.

MTFCC	Feature Class	Feature Class Description
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, boundary of an areal feature)	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 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 the MAF/TIGER System.
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.
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.

MTFCC	Feature Class	Feature Class Description
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 November 2016.		

APPENDIX E Standard Street Type Abbreviations

STREET NAME TYPE	STANDARD ABBREVIATION
ALLEY	ALY
ANEX	ANX
ARCADE	ARC
AVENUE	AVE
BAYOU	BYU
BEACH	BCH
BEND	BND
BLUFF	BLF
BLUFFS	BLFS
BOTTOM	BTM
BOULEVARD	BLVD
BRANCH	BR
BRIDGE	BRG
BROOK	BRK
BROOKS	BRKS
BURG	BG
BURGS	BGS
BYPASS	BYP
CAMP	CP
CANYON	CYN
CAPE	CPE
CAUSEWAY	CSWY
CENTER	CTR
CENTERS	CTRS
CIRCLE	CIR
CIRCLES	CIRS
CLIFF	CLF
CLIFFS	CLFS

STREET NAME TYPE	STANDARD ABBREVIATION
CLUB	CLB
COMMON	CMN
COMMONS	CMNS
CORNER	COR
CORNERS	CORS
COURSE	CRSE
COURT	CT
COURTS	CTS
COVE	CV
COVES	CVS
CREEK	CRK
CRESCENT	CRES
CREST	CRST
CROSSING	XING
CROSSROAD	XRD
CROSSROADS	XRDS
CURVE	CURV
DALE	DL
DAM	DM
DIVIDE	DV
DRIVE	DR
DRIVES	DRS
ESTATE	EST
ESTATES	ESTS
EXPRESSWAY	EXPY
EXTENSION	EXT
EXTENSIONS	EXTS
FALL	FALL
FALLS	FLS
FERRY	FRY
FIELD	FLD

STREET NAME TYPE	STANDARD ABBREVIATION
FIELDS	FLDS
FLAT	FLT
FLATS	FLTS
FORD	FRD
FORDS	FRDS
FOREST	FRST
FORGE	FRG
FORGES	FRGS
FORK	FRK
FORKS	FRKS
FORT	FT
FREEWAY	FWY
GARDEN	GDN
GARDENS	GDNS
GATEWAY	GTWY
GLEN	GLN
GLENS	GLNS
GREEN	GRN
GREENS	GRNS
GROVE	GRV
GROVES	GRVS
HARBOR	HBR
HARBORS	HBRs
HAVEN	HVN
HEIGHTS	HTS
HIGHWAY	HWY
HILL	HL
HILLS	HLS
HOLLOW	HOLW
INLET	INLT
ISLAND	IS

STREET NAME TYPE	STANDARD ABBREVIATION
ISLANDS	ISS
ISLE	ISLE
JUNCTION	JCT
JUNCTIONS	JCTS
KEY	KY
KEYS	KYS
KNOLL	KNL
KNOLLS	KNLS
LAKE	LK
LAKES	LKS
LAND	LAND
LANDING	LNDG
LANE	LN
LIGHT	LGT
LIGHTS	LGTS
LOAF	LF
LOCK	LCK
LOCKS	LCKS
LODGE	LDG
LOOP	LOOP
MALL	MALL
MANOR	MNR
MANORS	MNRS
MEADOW	MDW
MEADOWS	MDWS
MEWS	MEWS
MILL	ML
MILLS	MLS
MISSION	MSN
MOTORWAY	MTWY
MOUNT	MT

STREET NAME TYPE	STANDARD ABBREVIATION
MOUNTAIN	MTN
MOUNTAINS	MTNS
NECK	NCK
ORCHARD	ORCH
OVAL	OVAL
OVERPASS	OPAS
PARK	PARK
PARKS	PARK
PARKWAY	PKWY
PARKWAYS	PKWY
PASS	PASS
PASSAGE	PSGE
PATH	PATH
PIKE	PIKE
PINE	PNE
PINES	PNES
PLACE	PL
PLAIN	PLN
PLAINS	PLNS
PLAZA	PLZ
POINT	PT
POINTS	PTS
PORT	PRT
PORTS	PRTS
PRAIRIE	PR
RADIAL	RADL
RAMP	RAMP
RANCH	RNCH
RAPID	RPD
RAPIDS	RPDS
REST	RST

STREET NAME TYPE	STANDARD ABBREVIATION
RIDGE	RDG
RIDGES	RDGS
RIVER	RIV
ROAD	RD
ROADS	RDS
ROUTE	RTE
ROW	ROW
RUE	RUE
RUN	RUN
SHOAL	SHL
SHOALS	SHLS
SHORE	SHR
SHORES	SHRS
SKYWAY	SKWY
SPRING	SPG
SPRINGS	SPGS
SPUR	SPUR
SPURS	SPUR
SQUARE	SQ
SQUARES	SQS
STATION	STA
STRAVENUE	STRA
STREAM	STRM
STREET	ST
STREETS	STS
SUMMIT	SMT
TERRACE	TER
THROUGHWAY	TRWY
TRACE	TRCE
TRACK	TRAK
TRAFFICWAY	TRFY

STREET NAME TYPE	STANDARD ABBREVIATION
TRAIL	TRL
TRAILER	TRLR
TUNNEL	TUNL
TURNPIKE	TPKE
UNDERPASS	UPAS
UNION	UN
UNIONS	UNS
VALLEY	VLV
VALLEYS	VLVS
VIADUCT	VIA
VIEW	VW
VIEWS	VWS
VILLAGE	VLG
VILLAGES	VLGS
VILLE	VL
VISTA	VIS
WALK	WALK
WALKS	WALK
WALL	WALL
WAY	WAY
WAYS	WAYS
WELL	WL
WELLS	WLS