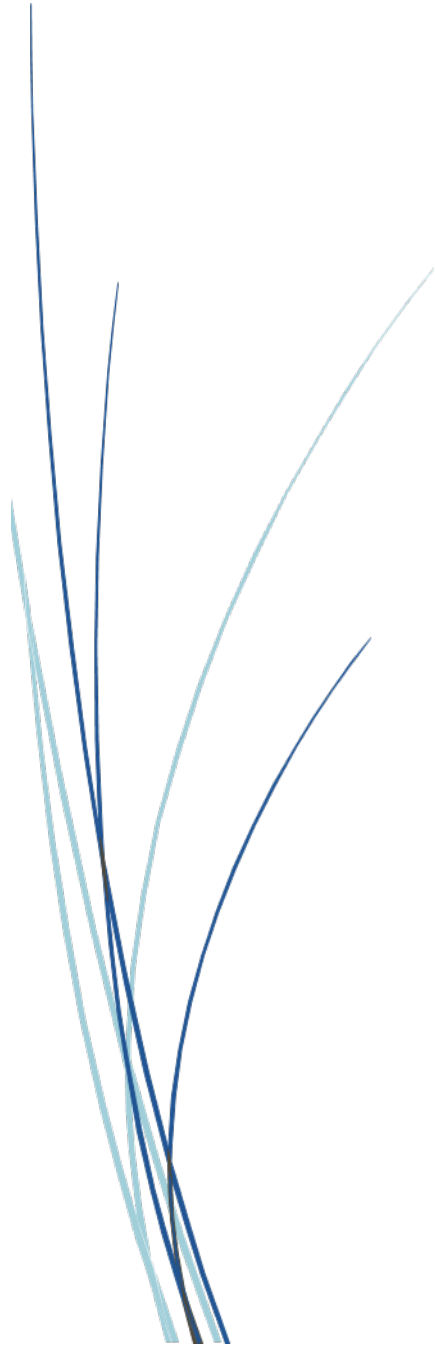


# Boundary and Annexation Survey (BAS) Partnership Toolbox How-to Guide

---

*Instructions for Participating in BAS Using the BAS Partnership Toolbox*



**This page intentionally left blank.**

# TABLE OF CONTENTS

---

<b>Introduction .....</b>	<b>vi</b>
A. The Boundary and Annexation Survey .....	vi
B. Key Dates for BAS Respondents .....	vi
C. Adjacencies and Legal Disputes.....	vi
D. Contact Us.....	vii
E. Resources.....	vii
<b>Chapter 1 Getting Started with the Partnership Toolbox.....</b>	<b>1</b>
1.1 Submission Requirements.....	1
1.2 Partnership Toolbox Requirements.....	1
<b>Chapter 2 Creating a Submission .....</b>	<b>3</b>
2.1 Toolbox Tools Setup.....	3
2.2 Census Data Download Tool.....	3
2.3 Create Changes Tool .....	5
2.4 Sliver Blaster Tool (Optional).....	8
2.5 Format Working MXD Tool (Optional).....	9
<b>Chapter 3 Reviewing and Exporting a Submission .....</b>	<b>11</b>
3.1 Required Attribute Information .....	11
3.2 Large Boundary Corrections .....	13
3.3 Boundary-to-Feature Relationships .....	14
3.4 Corridors and Offsets .....	15
3.5 CDP, Linear Feature, and Landmark Changes.....	15
3.5.1 CDP Changes.....	15
3.5.2 Linear Feature Changes .....	17
3.5.3 Area Landmark, Hydrographic Area, and Point Landmark Updates.....	19
3.6 Attribute Check Tool .....	21
3.7 Export Submission Tool.....	22
<b>Chapter 4 Submit Changes to the Census Bureau .....</b>	<b>25</b>
4.1 Troubleshooting SWIM .....	26

## LIST OF TABLES

---

Table 1: Feature class and field names to match based on geography type. ....	6
Table 2: Required attribution information for the different types of geographic change polygons.....	12
Table 3: Acceptable field inputs for changes submitted to BAS. ....	12
Table 4: Required Attribution for CDP Changes .....	15
Table 5: Required Linear Feature Update Fields .....	18
Table 6: Examples of acceptable landmark updates .....	19
Table 7: Methods for Updating Landmarks.....	19
Table 8: Point Landmark, Area Landmark, and Hydrographic Area Updates.....	20

## LIST OF FIGURES

---

Figure 1. Partnership BAS Tools Menu .....	3
Figure 2. Partnership BAS Tools Menu with Census Data Download Selected .....	4
Figure 3. The Census Data Download Window with ‘Yes’ in the Use Data Downloader Field .....	5
Figure 4. The Census Data Download Window with ‘No’ in the Use Data Downloader Field .....	5
Figure 5. Partnership Tools Menu Showing a Folder for the BAS ID in the Projects Folder .....	5
Figure 6. NAME Field in Census Data vs Local Boundary Data.....	6
Figure 7. Appropriate Attribution for MCD or AIANNH Changes.....	6
Figure 8. Partnership Tools Menu with Create Changes Tool Selected .....	7
Figure 9. Create Changes Window for Legal Changes .....	7
Figure 10. Create Changes Window Non-Legal Changes.....	8
Figure 11. Partnership Tools Menu with Geodatabase .....	8
Figure 12. Partnership Tools Menu with Sliver Blaster Selected .....	9
Figure 13. Sliver Blaster Window .....	9
Figure 14. Partnership Tools Menu with Format Working MXD Selected .....	10
Figure 15. Format Working MXD Window .....	10
Figure 16. Projects Submenu with .mxd file Selected .....	10
Figure 17. Large Boundary Corrections .....	13
Figure 18. Small Spatial Correction Not Accepted.....	14
Figure 19: The Editor Toolbar with the Create Features Tool highlighted.....	16
Figure 20: The Create Features window as it appears in ArcMap .....	16
Figure 21. A Boundary Correction to CDP .....	17
Figure 22. Partnership Tools Menu with Attribute Check Selected.....	21
Figure 23. Attribute Check Window .....	22
Figure 24. Projects Submenu Showing an attribute_check Text File.....	22
Figure 25. Partnership Tools Menu with Export Submission Files Selected .....	23
Figure 26. Export Submission Files Window.....	24

**This page intentionally left blank.**

# INTRODUCTION

---

## A. The Boundary and Annexation Survey

The Boundary and Annexation Survey (BAS) provides tribal, state, and local governments an opportunity to review the Census Bureau’s legal boundary data ensuring the Census Bureau has the correct boundary, name, and status information. BAS also allows participants to review and provide updates to Census Designated Places (CDPs). Maintaining correct boundaries helps ensure that the Census Bureau assigns the appropriate housing and population counts to each government.

BAS fulfills the agency’s responsibility as part of the National Spatial Data Infrastructure, for which the Office of Management and Budget (OMB) Circular A–16 designates the Census Bureau as the lead federal agency for maintaining national data about legal government boundaries, as well as statistical and administrative boundaries. BAS supports the spatial data steward responsibilities of the OMB E-Gov, Data.gov, the National Map, Geographic Names Information System (GNIS) the Federal Geographic Data Committee (FGDC) and the Geospatial One-Stop. Title 13, Section 6, United States Code authorizes this survey.

The Census Bureau uses the boundaries collected in BAS to tabulate data for various censuses and surveys including the decennial census, American Community Survey (ACS), and Population Estimates Program (PEP). In addition, the Census Bureau uses the legal boundaries collected through BAS to support several other programs such as Redistricting Data Program, the Economic Census, the Geographic Update Population Certification Program, and the Special Census program.

## B. Key Dates for BAS Respondents

- January 1**      Boundary updates must be legally in effect on or before this date to be reported in the current survey year.
- March 1**        First BAS deadline - Boundary updates returned by this date will be reflected in the ACS and PEP data and in next year’s BAS materials.
- May 31**         Final BAS deadline - Boundary updates returned by this date will be reflected in next year’s BAS materials.

## C. Adjacencies and Legal Disputes

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

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.

To learn more, please contact the Census Bureau Legal Office at **1-301-763-2918**.

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 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.

## **D. Contact Us**

If assistance is required in preparing your BAS submission or if you are experiencing issues with the ArcGIS Partnership toolbox, please contact the Census Bureau at [geo.bas@census.gov](mailto:geo.bas@census.gov) or **1-800-972-5651**.

When emailing [geo.bas@census.gov](mailto:geo.bas@census.gov), please include the following details:

- BAS ID and Government Name,
- Level of geography for which you are submitting,
- Contact information such as a phone number or email address,
- Version of ArcGIS you are using,
- Full text of the error message received as a screenshot or text (if applicable), and
- Screenshots of discrepancies (if applicable).

## **E. Resources**

Additional resources are available on our website. Technical documentation and helpful videos are also available to walk through the BAS submission process.

### **Technical Documentation**

For more technical information about Census Bureau Geography, BAS Submission information, change types, and shapefiles, see the BAS Technical Guide at <https://www.census.gov/programs-surveys/bas/information/respondent-guides.html>.

### **Videos**

The Census Bureau created training videos to give BAS participants detailed instructions and information for reporting and submitting BAS changes. These videos are available on the BAS website at: <https://www.census.gov/programs-surveys/bas/library/bas-videos.html>.



# CHAPTER 1 GETTING STARTED WITH THE PARTNERSHIP TOOLBOX

---

The Digital BAS Partnership Toolbox was created to ease the burden of creating change files on BAS and Tribal BAS participants. This toolbox simplifies the update process by automating the download of data, change creation, sliver removal, attribution formatting and checks, and exporting files for submission. This allows the Census Bureau to easily process returned BAS files. New tools have been added as of the 2022 BAS to facilitate the update of linear features, landmarks, and Census Designated Places (CDPs). This how-to guide will walk participants through creating their digital submission with this toolbox.

## 1.1 Submission Requirements

Participation in the current BAS cycle means that participants will provide the following:

1. A shapefile of boundary change polygons based-off the current Census Bureau boundary. Submissions containing only a whole entity boundary shapefile of the current local data will not be accepted.
2. Legal documentation numbers, authorization types, and effective dates for all legal boundary changes (annexations and deannexations).
3. For tribal submissions, digital copies of the legal documentation to submit with the change polygons. Acceptable documents include but are not limited to a federal register notice, acceptance of conveyance and warranty deed, title status report, BIA certification, or letter.
4. Each non-legal boundary correction with proper attribution according to boundary corrections guidelines laid out in [Chapter 3](#), or the Census Bureau will not make the correction for this BAS cycle.
5. Current information for the BAS point of contact, the person updating the shapefiles, and the Highest Elected Official (HEO) for the government.

The BAS Partnership Toolbox will simplify the process for all the above requirements.

## 1.2 Partnership Toolbox Requirements

Before running these tools, users will need the following:

- **ArcGIS Desktop** 10.0 or higher (not ArcGIS Pro).
- The **BAS Partnership Toolbox zip**, which can be downloaded at: <https://www.census.gov/programs-surveys/bas/geographies/map-tools/arcmap-tools.html>.
- The **BAS ID** for the government being processed. This can be found on the BAS Annual Response email, letter, or online at: <https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>.
- **A shapefile or feature class showing the legal boundary of the government.**
  - Data in this layer should include the name of the government being processed formatted to agree with the Census Bureau's naming convention for the same

government as found in the NAME field or the NAMELSAD field for Minor Civil Division (MCD) and American Indian / Alaska Native / Native Hawaiian (AIANNH).

- **Digital copies of the legal documentation** to be submitted with the change polygons. This is required for tribal submissions and requested for all other submissions.
  - For tribal changes: acceptable documents include, but are not limited to, a federal register notice, acceptance of conveyance and warranty deed, title status report, BIA certification or letter.
  - For all other changes (optional): acceptable documents include, but are not limited to, ordinances, resolutions, changes to a local or state law, or court rulings.
- **(Optional) The 2022 BAS Partnership Shapefiles**, which may be downloaded manually from the Census Bureau website. These files are located at:  
<<https://www.census.gov/geographies/mapping-files/2022/geo/bas/2022-bas-shapefiles.html>>.
- The shapefile download is automated in the Partnership Toolbox. However, in instances where downloads are restricted or internet connectivity is limited, participants may find that pre-downloading these files is simpler and faster.

## CHAPTER 2 CREATING A SUBMISSION

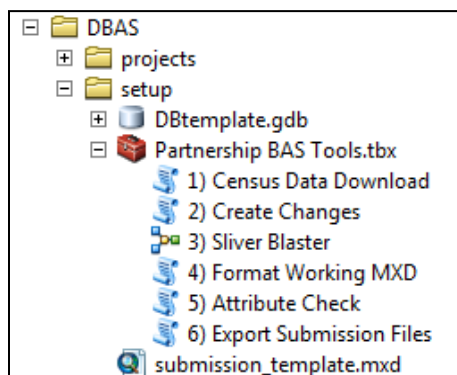
---

This chapter provides step-by-step instructions for using the BAS Partnership Toolbox to setup your workspace and create change polygons. For best results, use the toolbox in ArcGIS 10.0 and higher (not including ArcGIS Pro). These toolbox tools were designed primarily for use in ArcCatalog though they run in ArcMap as well. The instructions for most steps assume use in ArcCatalog.

### 2.1 Toolbox Tools Setup

After downloading the toolbox from the BAS website, locate the zip file in your File Explorer.

1. Unzip the **Digital BAS Partnership Tools.zip** to the C: drive or other preferred working folder. The folder location does not matter as long as it can be accessed from ArcCatalog. Inside there will be a folder called DBAS. It contains all the files to work for your government.
2. Open ArcCatalog and connect to the DBAS folder. When it is expanded, the following should be visible:



**Figure 1. Partnership BAS Tools Menu**

3. Do not attempt to change the file structure inside the DBAS folder. Moving folders or files from where they are located may cause issues later in the process.

---

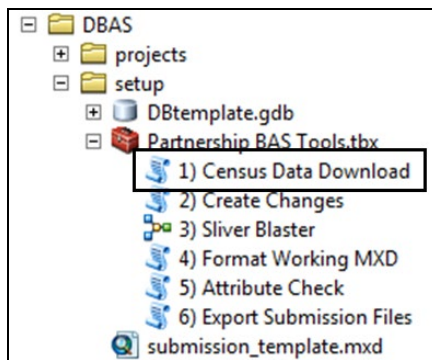
**Note:** To connect to a folder in ArcCatalog, click on the *Connect to Folder* button on the **Standard Toolbar**, find the **DBAS folder**, and then click the *OK* button.

---

### 2.2 Census Data Download Tool

The Census Data Download tool gathers all the partnership shapefile data needed to create changes from the Census Bureau website. If the data is on a Census Bureau provided CD/DVD, this tool will also work but only if the data is loaded to the computer before running the tool. This tool can also use the zip files downloaded from the 2022 BAS Partnership Shapefiles site: <https://www.census.gov/geographies/mapping-files/2022/geo/bas/2022-bas-shapefiles.html>. Please follow the steps below to run the Census Data Download tool.

1. Expand the **DBAS folder** and the **setup subfolder**. In the setup subfolder, find the **Partnership BAS Tools Toolbox**. Expand the toolbox and double click on the **1) Census Data Download tool**.



**Figure 2. Partnership BAS Tools Menu with Census Data Download Selected**

2. There are two ways to use this tool: one that downloads the data from the Census Bureau for the user and one that takes in a folder with the Census Bureau data already downloaded.
  - To have the data downloaded for you, proceed to step 3.
  - If you want to use data you already downloaded, proceed to step 4.
    - If you have already downloaded the data, you must unzip the downloaded pvs batch zip file (e.g. pvs\_batch\_from\_<st>) to display the partnership shapefiles zip files (e.g. partnership\_shapefiles\_21v2\_<st> and partnership\_shapefiles\_21v2\_<stcou>). The tool will look for these partnership\_shapefiles zip files when it runs.

---

**Note:** If you get an error message when trying to use the automatic download, please manually download the partnership files and try the tool that way. If an error still occurs, please contact the Census Bureau using the format laid out in the [Contact Us](#) section.

---

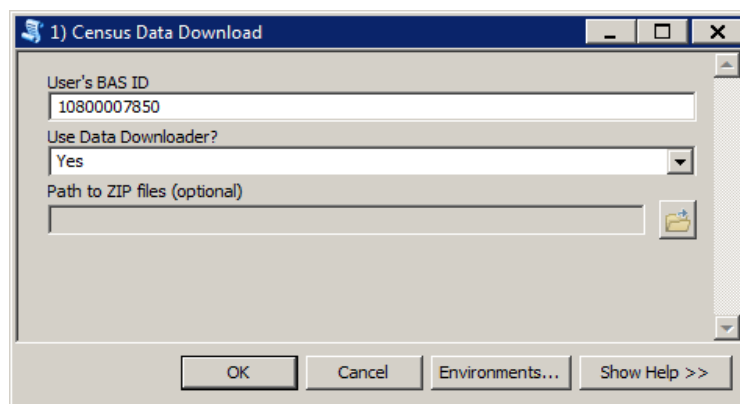
3. To have the Census Bureau data downloaded automatically, populate the fields in the dialog box as follows:
  - Enter the 11-digit BAS ID in the **User's BAS ID** field. If you are a county participant responding for the governments within your jurisdiction, you will enter the County BAS ID.
  - Select Yes under the **Use Data Downloader?** field.

---

**Note:** Each government BAS ID can be found on the BAS Annual Response email sent at the start of each BAS year, or online at <https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>.

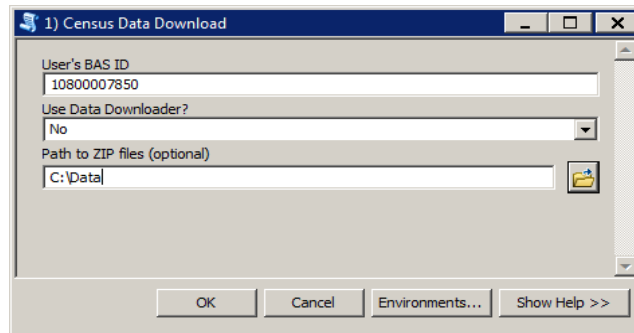
---

4. Click OK and proceed to step 5. **Figure 3** shows how a user would complete the fields to have data downloaded for them.



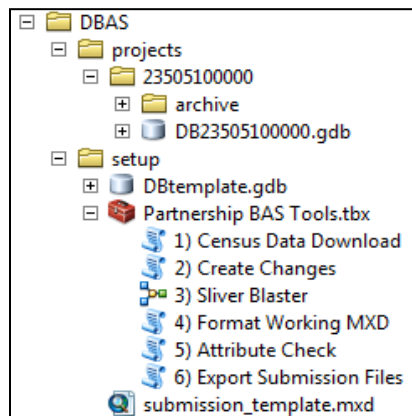
**Figure 3. The Census Data Download Window with 'Yes' in the Use Data Downloader Field**

- To use previously downloaded Census Bureau data, populate the fields in the dialog box as follows:
    - Enter the 11-digit BAS ID in the User's BAS ID field. If you are a county participant responding for the governments within your jurisdiction, you will enter the County BAS ID.
    - Select No under the Use Data Downloader? field.
    - Navigate or drag the folder into Path to zip files field. Make sure the folder only contains the Census Bureau zip files to ensure there are no future data issues.
- Click **OK** to run the tool. **Figure 4** shows how a user will complete the fields if they already have the partnership shapefiles downloaded and saved on their computer.



**Figure 4. The Census Data Download Window with 'No' in the Use Data Downloader Field**

- When this tool is complete, there should now be a folder for the BAS ID in the projects folder. Inside that folder, there will be a geodatabase with reference data in it and an archive folder.



**Figure 5. Partnership Tools Menu Showing a Folder for the BAS ID in the Projects Folder**

---

**Note:** The archive folder contains other Census Bureau data that may be useful as well.

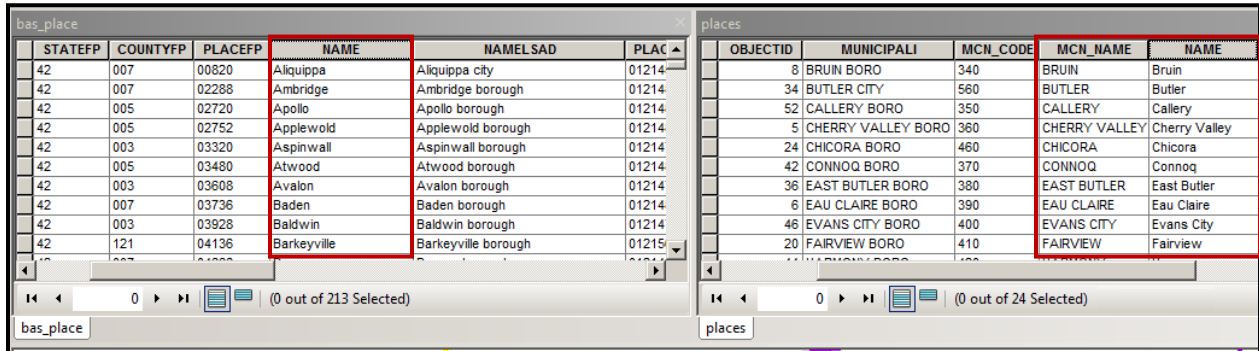
---

## 2.3 Create Changes Tool

At this point, the necessary Census Bureau data is organized into your project geodatabase (gdb). Now you can run the **2) Create Changes** tool to create the change files.

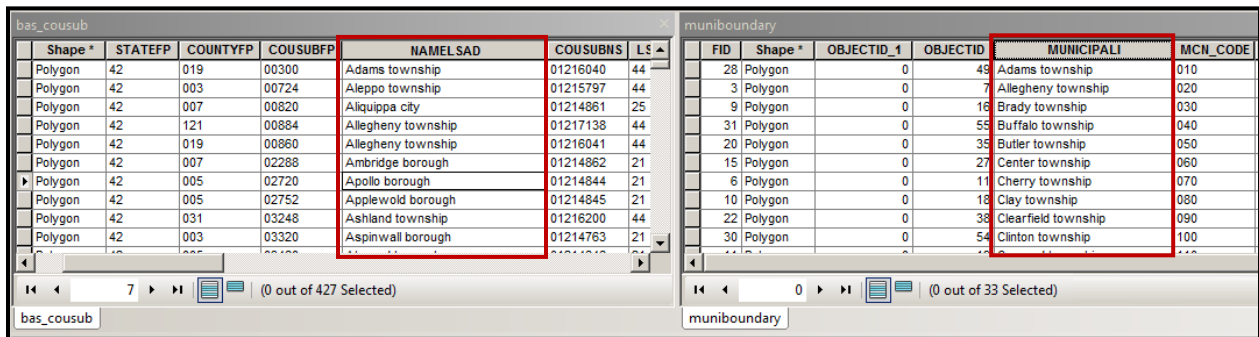
- When running this tool to create changes for a legal government, there must be an attribute field in the local boundary shapefile that contains the name of the government(s) as they appear in Census Bureau records (**Figure 6** and **Figure 7**). This includes matching capitalization, spacing, and in the case of MCDs and AIA's a descriptor of the geography (e.g. township, village,

borough, etc.). If it is a new government or the legal name is changing, it does not need to agree though other attribution must be updated to reflect this change. Please refer to [Table 1](#) to see which feature class and field to use for each geography type.



**Figure 6. NAME Field in Census Data vs Local Boundary Data**

The bas place layer on the left shows how the Census Bureau NAME field is populated for all the places in Butler County, PA while the local places data shows how local data may need to be manipulated to agree with the Census Bureau NAME field.



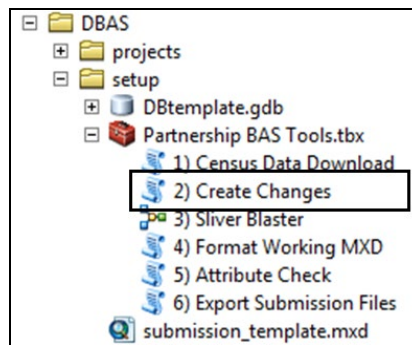
**Figure 7. Appropriate Attribution for MCD or AIANNH Changes**

The bas\_cousub attribution on the left in the NAME\_SAD field shows how the local MUNICIPAL field on the right should be formatted to ensure that the Create Changes tool works for the MCD changes in Butler County, PA. The bas\_aial attribution appears in a similar way.

**Table 1: Feature class and field names to match based on geography type.**

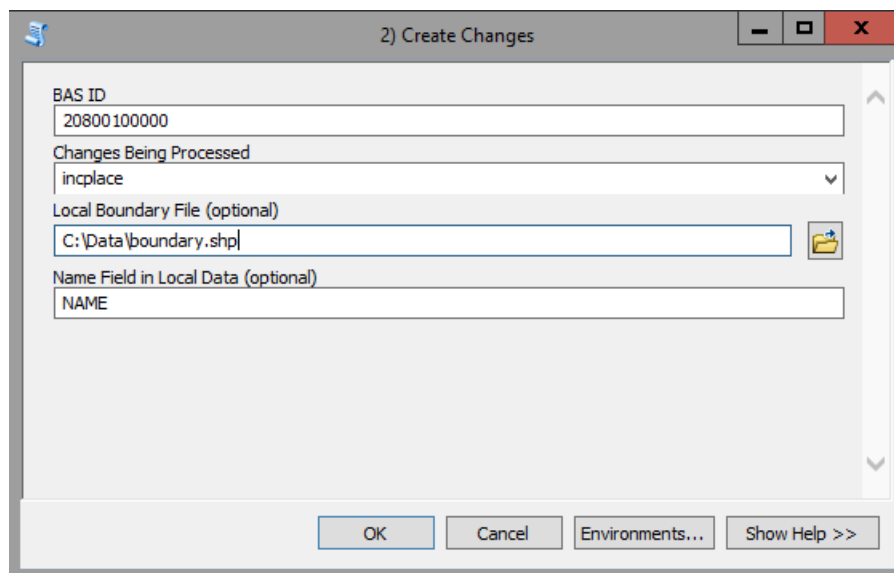
GEOGRAPHY TYPE	FEATURE CLASS	FIELD
Incorporated Place	bas_place	NAME
MCDs	bas_cousub	NAME_SAD
County	bas_county	NAME
Tribal	bas_aial	NAME_SAD
Consolidated City	bas_concity	NAME

2. Double-click on the **2) Create Changes** tool.



**Figure 8. Partnership Tools Menu with Create Changes Tool Selected**

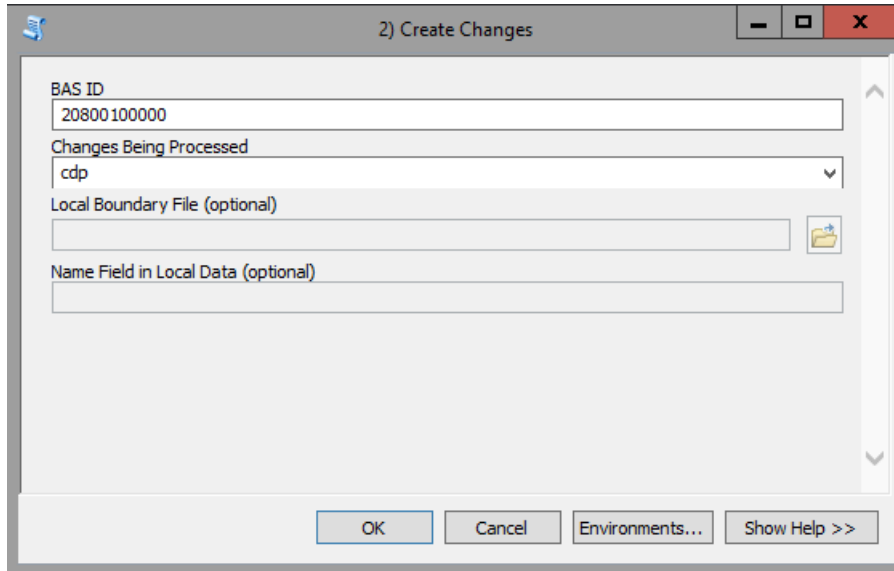
3. To create changes for legal geographies, in the **Create Changes** window:
  - Enter the 11-digit BAS ID in the **BAS ID** field.
  - Under **Changes Being Processed**, choose the type of changes to create from the dropdown options:
    - Incplace (incorporated place).
    - Cousub (MCDs).
    - County.
    - AIANNH (Tribal areas).
    - Concity (Consolidated City).
  - In the **Local Boundary File** field, enter the path or navigate to the full boundary polygon.
  - For the **Name Field in Local Data**, type the name of the field (as it appears in ArcCatalog) containing the information matching the Census Bureau’s NAME or NAMELSAD field as appropriate from Step 1.



**Figure 9. Create Changes Window for Legal Changes**

4. To create changes for any other geography, in the **Create Changes** window:
  - Enter the 11-digit BAS ID in the **BAS ID** field.
  - Under **Changes Being Processed**, choose the type of changes to create from the dropdown options:
    - a. CDP.

- a. Ln (Linear Features).
- b. Alndk (Area Landmarks).
- c. Plndk (Point Landmarks).



**Figure 10. Create Changes Window Non-Legal Changes**

4. Click **OK** to run the tool.
5. Once the tool is complete, the output will be placed in the geodatabase under the submission feature dataset.



**Figure 11. Partnership Tools Menu with Geodatabase**

6. Repeat steps for any other levels of geography that need changes created.

---

**Note:** The BAS year used in screenshots throughout this document may vary, however, functionality remains the same.

---

## 2.4 Sliver Blaster Tool (Optional)

The Sliver Blaster tool is useful for governments that have numerous very small change polygons that are time consuming to manually parse through for deletion. Since the Census Bureau cannot guarantee inclusion of changes under 30 feet wide, use this tool to remove changes that are lower than that threshold. Participants can also change the tolerance for slivers if they know there are small changes that need to be included. This automated tool will vary in processing time depending on the number of features in the entity.

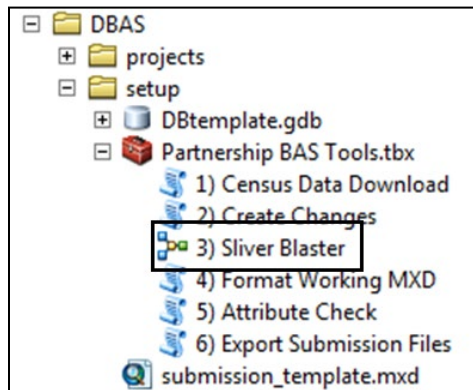


---

**Note:** This tool should only be used on legal geographies. Do not use this on CDPs, linear features, or landmarks of any kind.

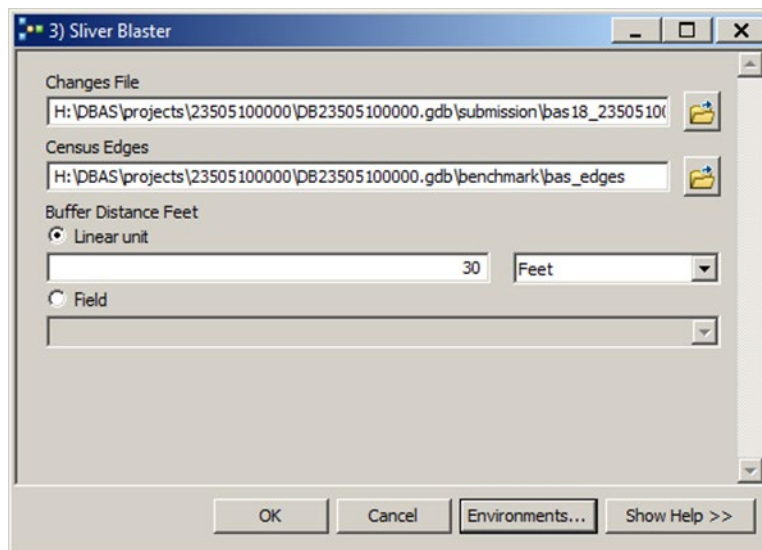
---

1. Double click on the **3) Sliver Blaster** tool.



**Figure 12. Partnership Tools Menu with Sliver Blaster Selected**

2. In the **Sliver Blaster** tool window:
  - The **Changes File** refers to the legal changes file(s) created in the previous step, found in the submission feature dataset.
  - The **Census Edges** feature class is found in the reference feature dataset and is called `bas_edges`.
  - The **Buffer Distance** field is set to 30 feet by default, but this can be adjusted to accommodate smaller changes.
3. Click **OK** to run.



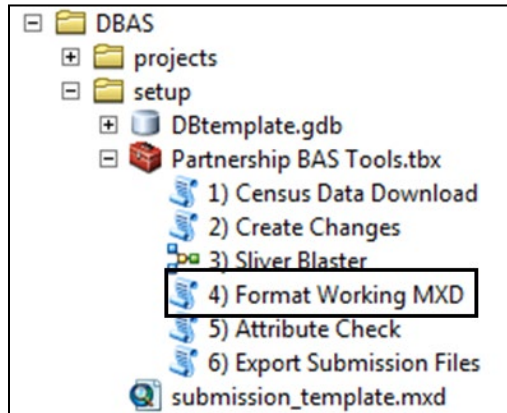
**Figure 13. Sliver Blaster Window**

## 2.5 Format Working MXD Tool (Optional)

The intent of this tool is to create a map document (.mxd) for users containing their change file and the reference layers they will need to finalize a submission. If users would prefer to use their own .mxd, this step is not required. The rest of this guide assumes the user is working

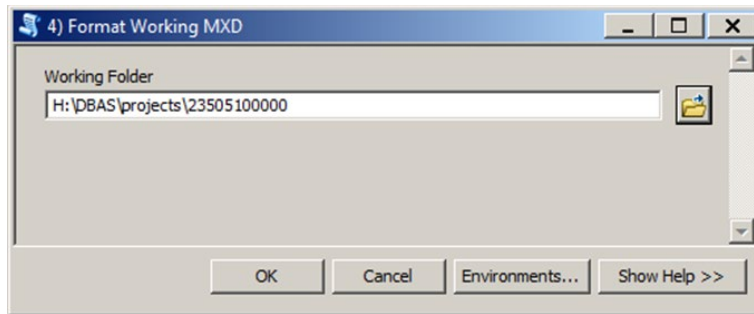
from the .mxd created by this tool.

1. Double click on the **4) Format Working MXD** tool.



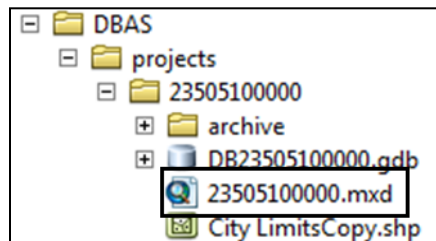
**Figure 14. Partnership Tools Menu with Format Working MXD Selected**

2. The only input for this tool is the **Working Folder**, which is the folder with the government's BAS ID as its name.



**Figure 15. Format Working MXD Window**

3. Click **OK** to run the tool.
4. Open the new .mxd and begin working with the change polygons.



**Figure 16. Projects Submenu with .mxd file Selected**

## CHAPTER 3 REVIEWING AND EXPORTING A SUBMISSION

---

At this point in the process, a review of the created changes is necessary to ensure proper attribution is contained within each record. This chapter will discuss the types of changes you may want to update or remove from your submission based on current relationships within the Census Bureau data.

1. Please open the <BASID>.mxd created in the previous chapter and start an editing session. Open the attribute table for your changes layer(s), so you can go line by line through the requested changes.
2. Review each change polygon for any of the following potential issues:
  - Required attribution information ([Section 3.1](#))
  - Large boundary corrections ([Section 3.2](#))
  - Boundary-to-Feature Relationships ([Section 3.3](#))
  - Corridors and Offsets ([Section 3.4](#))

As a reminder, the Census Bureau will snap boundary changes to any linear feature that is correctly located within 30 feet of the change. Additionally, changes that are less than 30 feet at their widest point may not be incorporated into MAF/TIGER due to system constraints. Please refer to the BAS Technical Guide <<https://www.census.gov/programs-surveys/bas/information/respondent-guides.html>> for more information.

3. Edit landmark, feature, and CDP changes as necessary.
4. Save your edits to your change feature classes.
5. Export submission and proceed to [Chapter 4: Submit Changes to the Census Bureau](#).

### 3.1 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.

1. All changes are coded as a “B” for Boundary Correction by the Create Changes tool. If you know there are legal changes in your file, navigate to the area the legal change is in and select the change polygon.
2. Update the required fields for the selected change polygon. Refer to [Table 2](#) for the required attributes that will need to be manually updated. [Table 3](#) lists the acceptable values for each required field or expected values for fields that do not take a specific Census Bureau specific code.
3. Once the attribution is updated, save the edits, move to the next change polygon, and repeat the process in steps 1 and 2.
4. Once the known legal changes are complete, review the rest of the changes using the guidance in [Sections 3.2](#), [3.3](#), and [3.4](#).

**Table 2: Required attribution information for the different types of geographic change polygons.**

	CHNG_TYPE	NAME	EFF_DATE	AUTHTYPE	DOCU	AREA	RELATE
Annexation/ Addition	✓	✓	✓	✓	✓*	✓*	
Deannexation/ Deletion	✓	✓	✓	✓	✓*	✓*	
Boundary Correction	✓	✓					✓
Geographic Corridor	✓	✓					✓
Geographic Offset	✓	✓					✓
Disincorporation	✓	✓	✓	✓	✓		
New Incorporation	✓	✓	✓	✓	✓		
Name Change	✓	✓	✓	✓	✓		

(Note: ✓ = Required Field; \*DOCU is not required in Georgia, AREA is required in Georgia only)

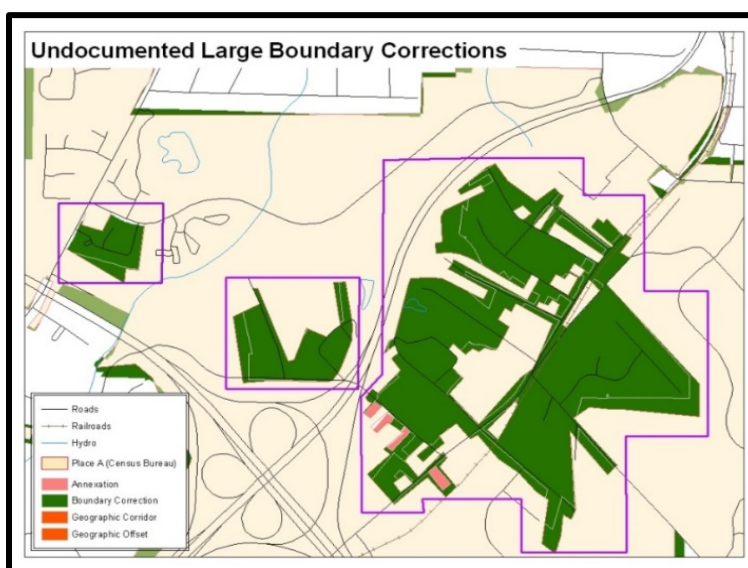
**Table 3: Acceptable field inputs for changes submitted to BAS.**

ATTRIBUTE FIELD	DESCRIPTION	
<b>CHNG_TYPE</b>	Type of area update. Addition and Deletion are used for Tribal submissions only. Allowable values include:	
	Annexation/Addition	A
	Deannexation/Deletion	D
	Boundary Correction	B
	Geographic Corridor	C
	Geographic Offset	F
	Disincorporation	X
	Name Change	G
<b>EFF_DATE</b>	Effective date of legal change	
<b>AUTHTYPE</b>	Authorization type. Allowable values include:	
	Ordinance	O
	Resolution	R
	Local Law	L
	State Level Action	S
	Executive Order (Tribal)	E
	BIA Certification (Tribal)	C
	Deed (Tribal)	D
Other	X	
<b>DOCU</b>	Supporting documentation number (not the book-deed page, file name, or plat); not required in the state of Georgia	

ATTRIBUTE FIELD	DESCRIPTION
AREA	Area of update in acres; only required in the state of Georgia
RELATE	Relationship description. <ul style="list-style-type: none"> <li>• IN</li> <li>• OUT</li> </ul>

### 3.2 Large Boundary Corrections

The Census Bureau will not accept large boundary corrections that substantially change the current boundary of a government without the appropriate legal documentation numbers and effective dates. These large boundary corrections ([Figure 17](#)) may be legal boundary changes that occurred in the past and were never reported to the Census Bureau.



**Figure 17. Large Boundary Corrections**

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

If you identify a large boundary correction that is a previous legal change, please do the following:

1. Submit the appropriate legal documentation number and effective date (no matter how old) so that the changes may be incorporated into MAF/TIGER. Refer to [Table 2](#) and [Table 3](#) and the steps in [Section 3.1](#) to fill out required attribution for legal changes.
2. If legal documentation cannot be provided for any reason, please [Contact Us](#) to discuss your submission options.

---

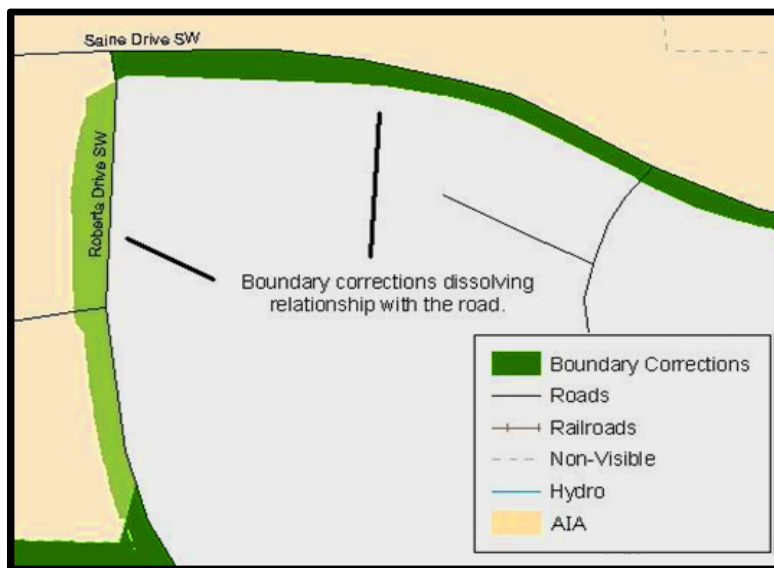
**Note:** There may be a few instances when large boundary corrections need to be made because of incorrect digitizing or where the boundary appears in the incorrect location due to other Census Bureau activities. If unsure how to proceed, [Contact Us](#) to discuss submission options.

---

### 3.3 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 (see the BAS Technical Guide <<https://www.census.gov/programs-surveys/bas/information/respondent-guides.html>>). This helps establish a more accurate population count for governments.

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 30 feet or less of gap or overlap between the existing linear feature and boundary into MAF/TIGER. **Figure 18** shows an example of changes that will not be accepted.



**Figure 18. Small Spatial Correction Not Accepted**

Small spatial boundary corrections (<30ft) 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.

Items to note if there are changes in your submission that would remove boundary-to-feature relationships:

1. Changes that are based on cadastral data and are not legally required to accurately display the boundary can be deleted from the submission.
2. If the change is along a roadway and must be incorporated, please consider marking it as an offset or corridor. Please refer to [Section 3.4](#) to learn how to add corridors and offsets.
3. If the feature is incorrectly located, the change can remain in the submission. Please note the incorrect feature in the JUSTIFY field.

### 3.4 Corridors and Offsets

The Census Bureau does not require places and AIAs to report right-of-ways. Geographic corridors are nonessential 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. For more information on appropriate uses of corridors and offsets, refer to the BAS Technical Guide <<https://www.census.gov/programs-surveys/bas/information/respondent-guides.html>>.

To add a corridor or offset to your submission:

1. Navigate to the change polygon and select it.
2. Using the Attribute table or the Attribute Window, change the **CHNG\_TYPE** to the appropriate value. For a corridor set it to C and for an Offset set it to F.
3. If this change is due to legal action, please provide the **AUTHTYPE**, **DOCU**, **EFF\_DATE**, and **AREA** as appropriate as well. Information on these required fields can be found in [Section 3.1](#).

### 3.5 CDP, Linear Feature, and Landmark Changes

Linear Features, area landmarks (e.g., lakes), point landmarks (e.g., mountain peaks), and CDPs can be updated through BAS, but are not required. The Census Bureau accepts updates to these areas in a similar manner to legal boundary changes. However, since they are not legal governments, no documentation or effective dates are required.

#### 3.5.1 CDP Changes

To create changes to CDPs, make sure you have already run the **3) Create Feature, Landmark, and CDP Changes Tool**. That tool creates an empty feature class called **bas<yy>\_<BAS ID>\_changes\_cdp**.

Each CDP update must have the required attributes and corresponding change type populated (refer to [Table 4](#)). The steps below document how to properly update your CDP layer.

**Table 4: Required Attribution for CDP Changes**

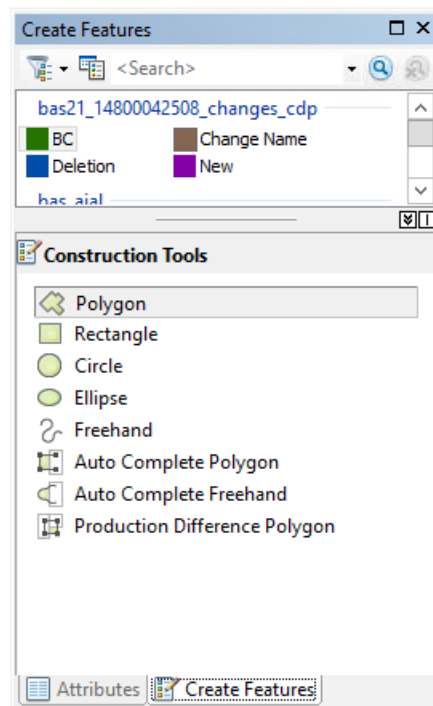
	CHNG_TYPE	NAME	RELATE
Boundary Correction	✓	B	✓
Delete CDP	✓	X	✓
New CDP	✓	E	✓
Name Change	✓	G	✓

(Note: ✓ = Required Field)

1. Start an editing session if you have not already. Navigate to the area where you would like to modify, add, or remove a CDP. Make sure the **Create Features** window is open as it should list all the appropriate types of CDP edits you may want to make.



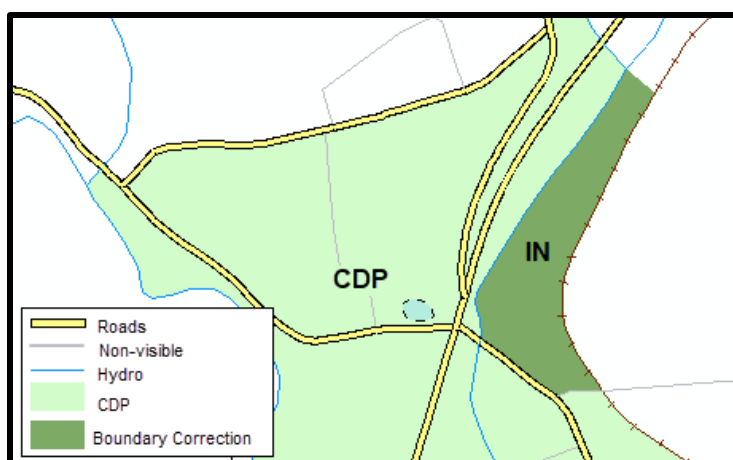
**Figure 19: The Editor Toolbar with the Create Features Tool highlighted**



**Figure 20: The Create Features window as it appears in ArcMap**

2. To modify a CDP's shape, you will use the built-in ArcGIS edit tools to draw the difference between the boundaries as you would like it to appear. Select the **BC (Boundary Correction)** template for these changes and draw the areas that should be added or removed from the CDP. Once the polygon is complete, update the following fields in the attribute table:
  - a. Enter the feature name in the **NAME** field. If you're not sure of the name, you can use the identify tool to get the name from the bas\_cdp layer.
  - b. Fill out the **RELATE** field to designate if the area is being added (IN) or removed (OUT) from the CDP.
  - c. Make sure the **CHNG\_TYPE** field has the appropriate designator (B). If it doesn't, change it to B.





**Figure 21. A Boundary Correction to CDP**

3. To modify a CDP's Name:
  - a. Select the CDP from the `bas_cdp` layer. Copy and paste it into the `bas<yy>_<BAS ID>_changes_cdp` layer.
  - b. Begin editing the attributes for the pasted change. Enter a 'G' in the **CHNG\_TYPE** field and enter the new name in the **NAME** field.
4. To add a CDP, use the built in ArcGIS edit tools to draw the new boundaries as you would like it to appear, using the New Incorporation template. Once the polygon is complete, make sure to update the following fields in the attribute table:
  - a. Enter the new name in the **NAME** field.
  - b. Make sure the **CHNG\_TYPE** field has the appropriate designator (E). If it doesn't, change it to E.
5. To delete a CDP:
  - a. Select the CDP from the `bas_cdp` layer. Copy and paste it into the `bas<yy>_<BAS ID>_changes_cdp` layer.
  - b. Begin editing the attributes for the pasted change. Enter an 'X' in the **CHNG\_TYPE** field.

### 3.5.2 Linear Feature Changes

The Census Bureau will accept linear feature modifications when needed. If you have linear feature changes to submit, make sure you have already run the **3) Create Feature, Landmark, and CDP Changes Tool**. That tool creates an empty feature class called `bas<yy>_<BAS ID>_In_changes`. There are multiple valid approaches to populating this layer with appropriate change data. Since these would include potential updates to local data sources, we cannot say which would be most appropriate for each individual user.

Each linear feature update must have the required attributes and corresponding change type populated (refer to [Table 5](#)). The steps below document how to properly update your linear feature layer.

**Table 5: Required Attribution for Linear Feature Updates**

	CHNG_TYPE		TLID	FULLNAME	MTFCC	LTOADD	RTOADD	LFROMADD	RFROMADD
Add Feature	✓	AL		✓	✓	✓	✓	✓	✓
Delete Feature	✓	DL	✓						
Rename Feature	✓	CA	✓	✓					
Recode Feature	✓	CA	✓		✓				

(Note: ✓ = Required Field; LTOADD, RTOADD, LFROMADD, and RFROMADD are not required but requested only for Add Feature records)

1. Some possible methods for adding lines include:
  - Load the data (with or without a query) into the changes feature class so that individual fields can be mapped into the Census Bureau requested schema.
  - During an edit session, trace the local data source or create streets from imagery using the appropriate **bas<yy>\_<basid>\_In\_changes** template to create new records, or
  - During an edit session, copy and paste data from the local streets data source.
2. For adding linear features, modify the attribution for the features using your preferred editing method:
  - a. Enter 'AL' in the **CHNG\_TYPE** field (if it is not already populated) and enter the appropriate MTFCC in the **MTFCC** field. If the feature has a name, enter the name in the **FULLNAME** field.
  - b. If this is a new street (MTFCC starts with S), you must provide the name of the street in the **FULLNAME** field and you may also provide Address Ranges (**LTOADD**, **RTOADD**, **LFROMADD**, and **RFROMADD**).
3. To modify or delete lines, start an editing session if you haven't already. Then copy and paste the records from the **bas\_edges** feature class that you want to change. By doing this you preserve the TIGER/Line ID (TLID) in the TLID field to ensure the correct features are affected.
4. If a feature that does not exist is in the Census Bureau's feature network, mark the feature for deletion by entering 'DL' in the **CHNG\_TYPE** field.
5. If a feature is in the incorrect location in the Census Bureau's feature network, mark the feature for deletion and re-add it in the correct location using the steps laid out above. Only do this if the feature is significantly off, or in the wrong position relative to boundaries or other features.
6. If a feature has an incorrect name and/or MTFCC, enter 'CA' in the **CHNG\_TYPE** field. Populate the correct MTFCC in **MTFCC** and/or the correct name in **FULLNAME**.

Note: A list of MAF/TIGER Feature Classification Codes (MTFCC) can be found at <https://www.census.gov/library/reference/code-lists/mt-feature-class-codes.html>.

### 3.5.3 Area Landmark, Hydrographic Area, and Point Landmark Updates

Area landmarks, hydrographic areas (e.g., lakes), and point landmarks (e.g., mountain peaks) can be updated through BAS, but the Census Bureau doesn't require updates to them. Hydrographic area changes should be included in the area landmark changes file, so for this section the term "area landmark" includes hydrographic updates. Landmark updates that are accepted through BAS are listed in [Table 6](#). For more guidance on MTFCCs, acceptable values, and how they are used, please visit <https://www.census.gov/library/reference/code-lists/mt-feature-class-codes.html>.

**Table 6: Examples of acceptable landmark updates**

Area Landmarks	Area or Point Landmarks	Point Landmarks
<ul style="list-style-type: none"> <li>Water bodies</li> <li>Swamps</li> <li>Quarries</li> <li>National parks</li> <li>Forests</li> </ul>	<ul style="list-style-type: none"> <li>Airports</li> <li>Parks</li> <li>Schools</li> <li>Golf courses</li> <li>Museums</li> <li>Cemeteries</li> </ul>	<ul style="list-style-type: none"> <li>Mountain peaks or summits</li> <li>Libraries</li> <li>City halls</li> <li>Community centers and police stations</li> </ul>

It is important to note that the Census Bureau cannot delete or modify any point landmarks imported from the USGS GNIS database. Therefore, changes submitted for the following types of landmarks may be left unchanged even though they are acceptable updates:

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

In order to submit updates, make sure you have run the **2) Create Changes** tool as described in [Section 2.3](#) for each type of change you want to submit. That tool creates an empty feature class called **bas<yy>\_<BAS ID>\_pointlm\_changes** or **bas<yy>\_<BAS ID>\_arealm\_changes** based on the requested input. The types of updates that can be submitted for point and area landmarks are laid out in [Table 7](#).

**Table 7: Methods for Updating Landmarks**

Update Type	Area (arealm_changes)	Points (pointlm_changes)
Boundary Corrections (adding and removing area)	✓	
Create New	✓	✓

Remove	✓	✓
Name changes	✓	✓

Each area landmark or hydrographic area update must have the required attributes and corresponding change type populated (refer to [Table 8](#)). The steps below document how to properly update your point and area landmark changes layer(s).

**Table 8: Required Attribution for Point Landmark, Area Landmark, and Hydrographic Area Updates**

	FULLNAME	CHNG_TYPE	RELATE	MTFCC	AREAID/POINTID
Boundary Correction (Area landmarks only)	✓	✓	B	✓	✓
Delete Landmark		✓	X		✓
Change Landmark Name	✓	✓	G		✓
New Landmark	✓	✓	E	✓	

(Note: ✓ = Required Field)

1. To modify the shape of an area landmark, create the change polygons using the built-in ArcGIS Editing tools in the **Create Features** window. This window should list all the appropriate types of landmark edits you may want to make. Select the Boundary Correction template for these changes and draw the areas that should be added or removed from the landmark.
2. Once you have completed the change polygon, modify the attribution for the features using your preferred editing method:
  - a. Enter the feature name in the **FULLNAME** field. If you're not sure of the name, you can use the identify tool to get the name from the bas\_arealm and/or bas\_water layer.
  - b. Fill-out the **RELATE** field to designate if the area is being added (IN) or removed (OUT) from the area landmark.
  - c. Make sure the **CHNG\_TYPE** field has the appropriate designator (B). If it doesn't, change it to B.
3. To add new features, use the built in ArcGIS editing tools to create new point/area landmarks or to copy/paste landmarks from another data source.
  - a. Enter the name of the new feature in the **FULLNAME** field.
  - b. Enter an MTFCC in the **MTFCC** field. The acceptable MTFCC codes for new landmarks are listed at <<https://www.census.gov/library/reference/code-lists/mt-feature-class-codes.html>>.
  - c. Make sure the **CHNG\_TYPE** field has the appropriate designator (E). If it doesn't, change it to E.

When adding new area landmarks, please only add the following types of areas:

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

The Census Bureau cannot add other types of areas at this time (although some may already exist in MAF/TIGER).

---

**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.

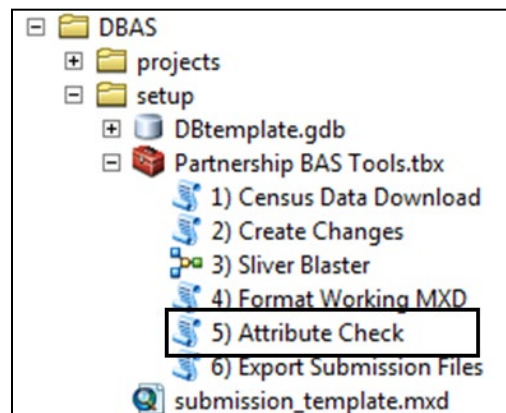
---

4. To delete any type of landmark, copy and paste the records from the bas\_arealm, bas\_pointlm, or bas\_water feature class that you want to remove into the appropriate changes feature class. Edit the **CHNG\_TYPE** field so that they are marked with a 'X'.
5. To modify the location of a point landmark, mark the feature for deletion and re-add it in the correct location using the steps laid out above. Only do this if the feature is very far off or in the wrong position relative to boundaries or other features.
6. If a landmark has an incorrect name and/or MTFCC, copy and paste the records from the bas\_arealm, bas\_pointlm, or bas\_water feature class that you want to remove into the appropriate changes feature class. Enter 'G' in the **CHNG\_TYPE** field. Populate the correct MTFCC in **MTFCC** and/or the correct name in **FULLNAME**.

### 3.6 Attribute Check Tool

This tool is used to verify that there are no inconsistencies with the data included in the submission. Run this tool during or after change polygons have been reviewed for spatial accuracy to produce a report of attribution errors. It may also run for all levels of geography that have changes since it is run on each individual change file.

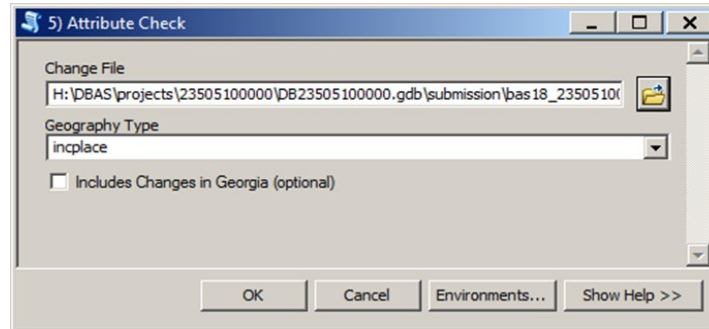
1. Double click on the **5) Attribute Check** tool.



**Figure 22. Partnership Tools Menu with Attribute Check Selected**

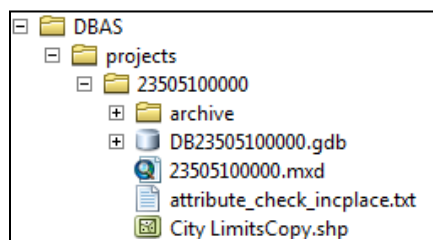
2. In the **Attribute Check** window:

- The **Change File** should be the change file created in tool **2) Create Changes** for which to generate a report.
- In **Geography Type**, choose the type of geography being worked on from the dropdown. The same options as the Create Changes tool are available here.
- The last input is the optional check box for **Includes Changes in Georgia**. This box only needs to be checked if responding in the state of Georgia.



**Figure 23. Attribute Check Window**

3. Click **OK** to run the tool.
4. There should now be a text file in the working folder called **attribute\_check\_<geogtype>.txt** containing all the discrepancies identified in the change file that still need to be fixed.



**Figure 24. Projects Submenu Showing an attribute\_check Text File**

5. Reopen the working mxd and correct any attribution errors identified in the error text file. Use the tables in the above sections to assist in correcting those errors.

### 3.7 Export Submission Tool

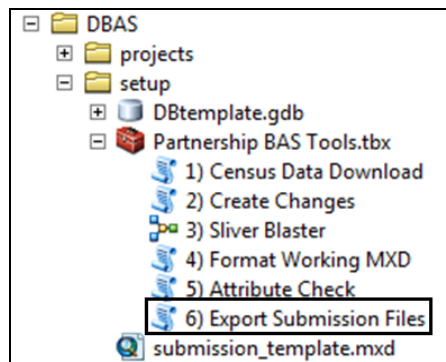
Upon review of the changes file and the attribute error report, the finalized changes may be exported for submission to the Census Bureau. This tool can also be used to provide updated contact information with the submission.

---

**Note:** This tool does not submit the changes, it just makes a file for submission. Please follow steps listed in [Chapter 4](#) to submit the changes through the Secure Web Incoming Module (SWIM).

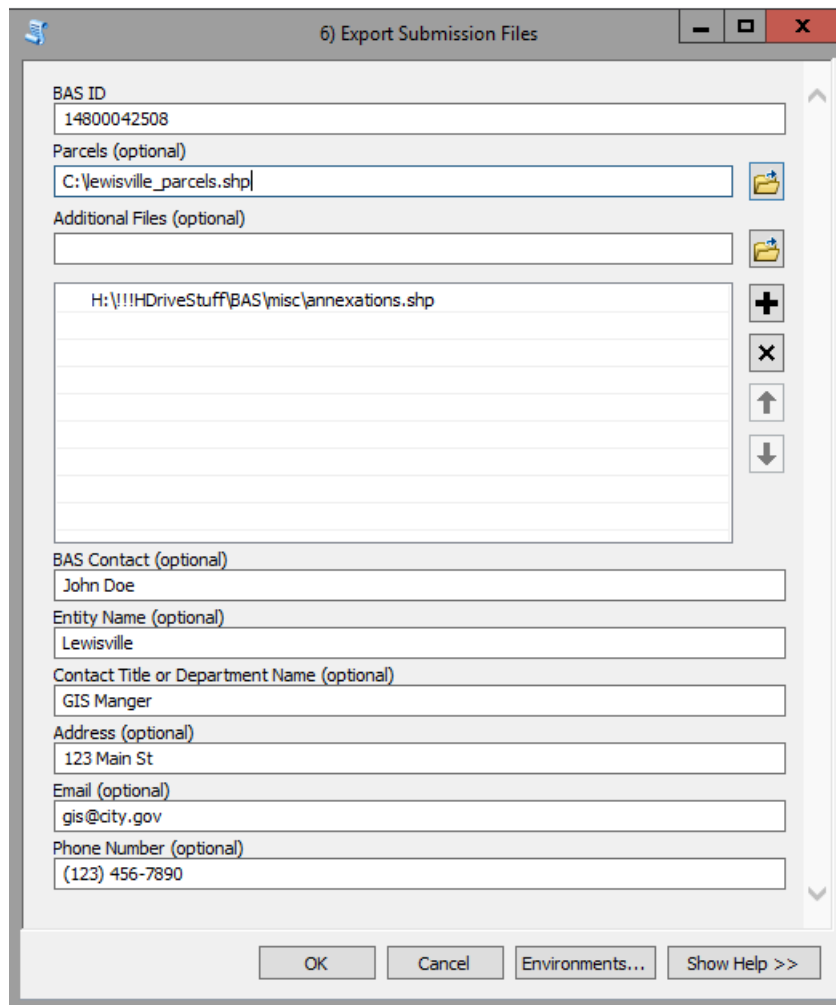
---

1. Double click on the **6) Export Submission Files** tool.



**Figure 25. Partnership Tools Menu with Export Submission Files Selected**

2. In the Export Submission Files tool window:
  - Enter the 11-digit BAS ID in the **BAS ID** field.
  - Parcel data can be included as supplemental information in the **Parcels** field. This is an optional field so it can also be left blank.
  - Under **Additional Files**, drag in or navigate to any additional files to be included in the submission. This can include streets data, maps, legal documentation, or any other helpful supporting data. This is an optional field so it can also be left blank. There is no need to add the changes layers here as the tool will handle those already based on the BAS ID.
  - For **BAS Contact, Entity Name, Contact Title or Department Name, Address, Email, and Phone Number**, please include any or all contact information updates that are to be sent to the Census Bureau. These fields can be left blank if there are no updates, though if someone other than the BAS Contact prepared the submission, include the contact information.



**Figure 26. Export Submission Files Window**

3. Click **OK** to run the tool.
4. When the tool completes, a new browser window will open and load the SWIM webpage. The zip file with your submission will be located inside the BAS ID folder and named **BAS<yy>\_<BASID>\_return.zip**.



## CHAPTER 4 SUBMIT CHANGES TO THE CENSUS BUREAU

---

All participants must use the Secure Web Incoming Module (SWIM) to submit their changes to the Census Bureau. Due to security requirements, the Census Bureau cannot accept submissions via File Transfer Protocol (FTP), email or any protocol other than the SWIM site.

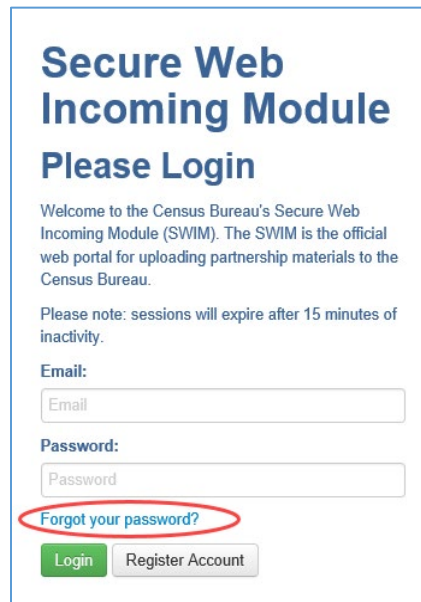
To upload and transmit update files to the Census Bureau, participants must access their SWIM account.

1. Open a web browser window and enter the SWIM URL: <<https://respond.census.gov/swim/>>. SWIM runs on the two most recent versions of each of these major browsers:
  - Microsoft Edge®
  - Google Chrome®
  - Mozilla Firefox®
  - Apple Safari®
2. Participants who already have a SWIM account should proceed to Step 4 to log in.
3. Participants who do not have a SWIM account click 'Register Account':
  - Enter the 12-digit token provided by the Census Bureau.
  - Create a password following the five criteria below:
    - a. Username and password are case sensitive.
    - b. It must be at least eight characters in length.
    - c. It must have at least one upper case character.
    - d. It must have at least one lower case character.
    - e. It must have at least one number.
    - f. It must have at least one special character (valid characters are: #, !, \$, &, ?, ~).
  - Complete the registration information form.
4. Log in to SWIM using your email address and password.
5. Upload a BAS submission:
  - a. Select the *Start New Upload* button.
  - b. Select the *BAS* radio button.
  - c. Select the Entity type (State, Place, County, MCD, Tribal Area, or Consolidated City).
  - d. Select the State and County.
  - e. Click the *+ Add File* button.
  - f. Select the .zip file to upload.
  - g. Double-click on the .zip file to upload. Add additional files in the same manner.
  - h. Add any additional information to the **Comments** field.
6. Click the *Next* button. A **Thank You** screen will appear.
7. Logout of SWIM.

## 4.1 Troubleshooting SWIM

If you are having trouble accessing your SWIM account, here are some tips for using SWIM:

- SWIM email addresses *and* passwords are case sensitive.
- If you forgot your password, participants may reset their password using the “Forgot your password?” link on the login page. Follow the prompts to enter the case-sensitive email address and provide the security answer (not case-sensitive). If the security answer is correct, the SWIM system sends a password reset link to the email account for use in resetting the password. Once logged into SWIM, users can modify their password and security answer by selecting the ‘Change Security’ link at the top, right-hand side of the page.



**Secure Web Incoming Module**  
**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?](#)

- If you cannot recover your password through the “Forgot your Password?” menu, please email <[geo.bas@census.gov](mailto:geo.bas@census.gov)> with the subject line “SWIM Account Assistance” with a brief description of the issue.
- SWIM accounts are specific to users, not to your government so we do not advise sharing an account. You may always request another account for a new BAS Contact.
- If you already created an account through another decennial program such as PSAP, LUCA, or GSS, you do not need another account. You may use the same previously established login information.