2020 Census Count Resolution Operation (CQR) Participant Guide

Instructions for Geographic Update Partnership Software (GUPS) Participants

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BACKGROUND

The Census Bureau estimates that completing this program will take 5.2 hours on average. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to <dcmd.2020.cqr.submissions@census.gov>. This collection has been approved by the Office of Management and Budget (OMB). The eight-digit OMB approval number that appears on the introductory email/letter and on the cover page of this material confirms this approval. If this number were not displayed, the Census Bureau could not conduct this operation. The Census Bureau conducts this operation under the legal authority of the Title 13 U.S. Code, Section 141.

A. Operation Overview

In December 2021, the U.S. Census Bureau announced the 2020 Census Count Question Resolution operation (2020 Census CQR) by distributing an introduction letter and flyer to the highest elected or appointed official in each eligible tribal, state, and local governmental units (GUs) in the United States, including the District of Columbia and Puerto Rico. This operation is open for voluntary participation from January 3, 2022 through June 30, 2023.

The 2020 Census CQR provides a mechanism for GUs to request the Census Bureau review their 2020 Census housing counts. Specifically, tribal chairpersons and the highest elected officials (or their representative) from tribal, state, and local GUs in the 50 states, the District of Columbia, and Puerto Rico can submit a CQR case to request review of their official 2020 Census count of housing, and to correct boundary and housing count issues. The 2020 Census CQR is focused on housing inventory (e.g., housing units and group quarters)[1] for specific 2020 tabulation blocks identified by the GU, not the population count[2] for those census blocks, or the overall population count for the GU.

Through this formal process, the Census Bureau reviews cases received to determine whether certain geographic or processing errors affected the 2020 Census count of housing (e.g., housing units and/or group quarters). Corrections made to housing counts by this operation will

[1] A housing unit may be a single-family home, townhouse, condominium, mobile home, trailer, apartment, group of rooms, or a single room occupied as a separate living quarters or, if vacant, intended for occupancy as a separate living quarters. A group quarters is a place where people live or stay, in a group living arrangement, owned or managed by an entity or organization providing housing and/or services for the residents. This is not a typical household-type living arrangement. These services may include custodial or medical care as well as other types of assistance, and residency is commonly restricted to those receiving these services. People living in group quarters are usually not related to each other. Group quarters include such places as college residence halls, residential treatment centers, skilled nursing facilities, group homes, military barracks, correctional facilities, and workers' dormitories. For detailed descriptions of group quarters types and codes, refer to the 2020 Census Group Quarters Definitions and Code List.

[2] Population counts for a census block or other geographic units below the state level may seem inaccurate due to disclosure avoidance measures the Census Bureau applies to the published data. Population counts at the block level have the most "noise" of any geographic level due to use of differential privacy to protect against data disclosure. Additional information on both disclosure avoidance and differential privacy is available at the following <www.census.gov/programs-surveys/decennial-census/decade/2020/planning-management/process/disclosure-avoidance.html>.

result in the issuance of new, official 2020 Census counts to the tribal chairperson or highest elected official of all affected GUs, which will also be posted on the CQR website as errata. GUs may use the revised counts for future programs requiring official 2020 Census data products.

IMPORTANT: The URL for the 2020 Census CQR website is <www.census.gov/programs-surveys/decennial-census/decade/2020/planning-management/evaluate/cqr.html>.

The revised counts are integrated into all population estimates released after the 2020 Census CQR case is closed. The American Community Survey (ACS) and Puerto Rico Community Survey (PRCS) use population totals from the Population Estimates Program at the incorporated place, minor civil division, and county levels to adjust the population totals published by the survey. Thus, to the extent that the population estimates incorporate the 2020 Census CQR results, the ACS and PRCS will also reflect those revisions.

Note: The Census Bureau will not incorporate CQR revisions into the 2020 Census data summary files and tables or re-tabulate any of the other 2020 Census data products.

B. Eligible Participants

The Census Bureau will only accept cases from the eligible participants listed below. A file of eligible participants, including the entity identification codes, is available for reference from the CQR website.

- Tribal areas, including federally recognized American Indian tribes with reservation and/or off-reservation trust lands, Alaska Native Regional Corporations, and Alaska Native villages.
  - Federally recognized American Indian tribes can ask the Census Bureau to review their legal boundary and the housing counts for any of the 2020 tabulation blocks within their American Indian reservation or off-reservation trust lands.
    - A review of statistically defined boundaries (e.g., boundaries of the tribal designated statistical areas (TDSAs), Oklahoma tribal statistical areas (OTSAs), and OTSA tribal subdivision) is out of scope for 2020 Census CQR.
  - Alaska Native Regional Corporations (ANRCs) can ask the Census Bureau to review their legal boundary and the housing counts for any of the 2020 tabulation blocks within their regional corporation boundary.
    - A review of the statistically defined Alaska Native village statistical area (ANVSA) boundaries is out of scope for 2020 Census CQR.
  - Alaska Native villages can ask the Census Bureau to review the housing counts for any of the 2020 tabulation blocks within their ANVSA.
    - A review of the statistically defined ANVSA boundaries is out of scope for 2020 Census CQR.
- States and equivalent entities (e.g., District of Columbia and Puerto Rico).
  - States and equivalent entities can ask the Census Bureau to review their legal boundary and the housing counts for any of the 2020 tabulation blocks within their jurisdiction.

    - States and equivalent entities can also ask the Census Bureau to review the boundaries for all legally functioning governments within their jurisdiction.
        - Hawaii can ask the Census Bureau to review the boundaries for the Hawaiian home lands and census designated places within their state.
        - Puerto Rico can ask the Census Bureau to review the boundaries for their sub-minor civil divisions (e.g., subbarrios).
        - A review of the statistically defined boundaries, such as those for state designated tribal statistical areas (SDTSAs) is out of scope for 2020 Census CQR.
- Counties and equivalent entities (e.g., parishes in Louisiana, boroughs in Alaska, municipios in Puerto Rico).
    - Counties and equivalent entities can ask the Census Bureau to review their legal boundary and the housing counts for any of the 2020 tabulation blocks within their jurisdiction.
    - Counties and equivalent entities can also ask the Census Bureau to review the boundaries for all legally functioning governments within their jurisdiction.
        - Counties in Hawaii can also ask the Census Bureau to review the boundaries for the census designated places within their jurisdiction because they are the equivalent of an incorporated place.
        - Municipios in Puerto Rico can also ask the Census Bureau to review boundaries for their sub-minor civil divisions (e.g., subbarrios).
- Minor civil divisions (e.g., townships).
    - Minor civil divisions can ask the Census Bureau to review their legal boundary and the housing counts for any of the 2020 tabulation blocks within their jurisdiction.
    - Minor civil divisions can also ask the Census Bureau to review the boundaries for all legally functioning governments within their jurisdiction.
- Consolidated cities.
    - Consolidated cities can ask the Census Bureau to review their legal boundary and the housing counts for any of the 2020 tabulation blocks within their consolidated city.
- Incorporated places (e.g., villages, towns, cities).
    - Incorporated places can ask the Census Bureau to review their legal boundary and the housing counts for any of the 2020 tabulation blocks within their incorporated place.
        - Because census designated places in Hawaii are the equivalent of an incorporated place, they can ask the Census Bureau to review the boundary and housing counts for their census designated place.

C. Case Types

There are two case types for 2020 Census CQR: boundary and housing count. A GU's submission can include both case types.

Boundary cases request a Census Bureau review of legal boundaries[3] in effect as of January 1, 2020, and the associated housing affected by the boundaries. Boundary cases may

[3] With one exception (e.g., census designated places in Hawaii) only legal boundaries are in scope for inclusion with a 2020 Census CQR boundary case. Because census designated places in Hawaii are treated as legal boundaries (per an agreement between the state and the Census Bureau), the state of Hawaii and its counties can request the Census Bureau review, and potentially correct, the boundaries of census designated places within their

correct the inaccurate recording of boundaries legally in effect on January 1, 2020 and update the housing counts for the blocks affected by the boundary correction if the GU supplies the required individual, residential address records for the affected blocks.

Boundary cases must include:

- A map indicating the portion of the boundary that the Census Bureau potentially depicted incorrectly, as well as depicting the corrected boundary. For GUPS participants, the map is generated by the software.
    - GUs must follow the boundary correction guidance as detailed in the Boundary and Annexation Survey (BAS) Respondent Guide that applies to their GU type. Non-tribal GUs use "2021 BAS Guide – GUPS" while tribal GUs use "2021 BAS Guide – Tribal GUPS." Both guides are available for download from the CQR website. Additional guides available on the website for GUs that are not using GUPS to prepare their CQR case.
- A list of residential addresses in the 2020 tabulation blocks affected by the incorrect boundary, indicating their correct coordinates or location in relation to the boundary. For GUPS participants, this list is known as the User Address List and is prepared in the software following specific rules and guidelines for acceptable addresses.
- Supporting documentation, as described in section **D** of the guide. Note that supporting documentation for boundary cases may include legal documentation for certain circumstances.

Note: Boundary changes effective after January 1, 2020, boundary corrections submitted without individual address records, and boundary corrections that do not affect housing counts are out of scope for 2020 Census CQR. GUs are encouraged to participate in the annual Boundary and Annexation Survey to make boundary updates that are out of scope for CQR. Learn more about the Boundary and Annexation Survey on the BAS website: <www.census.gov/programs-surveys/bas.html>.

Housing count cases request a Census Bureau review of the geographic location or placement of housing within specified 2020 tabulation blocks (i.e., a potential geocoding issue), as well as a review of the enumeration records for census processing errors that excluded valid housing (i.e., a potential coverage issue).

Note: Housing count cases may also be termed "count cases" in various 2020 Census CQR materials; however, GUs can only request a review of housing counts during 2020 Census CQR. They cannot request a review of population counts.

Housing count cases with geocoding issues may correct inaccurate geographic locations or placement of housing within the correct GU legal boundaries and 2020 tabulation blocks. Housing count cases with coverage issues may result in the addition of specific housing identified during the census process, but erroneously excluded from enumeration. Coverage corrections are limited to census processing errors, i.e., erroneous exclusions of housing identified as existing in census records as of April 1, 2020.

jurisdiction. Census designated places in Puerto Rico and the tribal statistical areas mentioned as eligible geographies for review are ineligible for submission as a boundary case.

Housing count cases must include:

- A list that includes the contested 2020 tabulation blocks in their GU, their current housing counts, and the corrected housing counts for both housing units and group quarters as of April 1, 2020. For GUPS participants, this list preloads into the software and follows the format of the CQR Block Count List Files provided by the Census Bureau as detailed in section **1.2**.
- Supporting documentation, as described in section **D**.

Note: Please be aware that corrections to the housing counts may not change the total housing and/or population counts for the GU. Situations arise where the redistribution of housing counts between blocks will change the respective housing counts for those blocks, but not result in an overall increase/decrease for the GU.

D. Supporting Documentation

The Census Bureau requires specific information from the GU before committing resources to investigate a CQR case. The Census Bureau labels this specific information as supporting documentation. In general, supporting documentation includes information or details that assist the Census Bureau with reviewing and processing a CQR case. Use the bullets below as a checklist when preparing the supporting documentation for your GU's 2020 Census CQR case submission. GUPS is programmed to allow GUs to upload their supporting documentation to accompany their case.

Supporting documentation for a boundary case includes:

- Written correspondence from the highest elected or appointed official, or their designated representative, that:
  - Specifies the case disputes the location of a legal boundary within the GU. If the case also disputes the housing count, then review the information below that outlines the supporting documentation for a housing count case.
    - Consider inclusion of a summary that confirms the contents of the submission, i.e., like an inventory of the case.
  - Discusses and certifies the accuracy and validity of the source materials used to prepare the case by including information on the creation date/timeframe, usual use, and maintenance cycle.
    - Source(s) must include the legal boundary in effect as of January 1, 2020 and the addresses affected by the boundary correction as of April 1, 2020. More recent source material must include a way to determine the boundary and addresses that were valid on January 1, 2020 and April 1, 2020, respectively.
- Confirmation the boundary was legally in effect as of January 1, 2020.
  - If required by state law, the GU must also provide evidence the required state agency approved the boundary change and provide a statement that the boundary is not under litigation.
- Legal documentation describing legal boundary changes to the GU, which may include annexations, incorporations, etc. Local laws, ordinances, or other types of legal documentation would fulfill this requirement.
  - Legal documentation is only required if it is applicable for the boundary correction submitted for CQR. It may not apply in all instances of boundary cases.

- Legal documentation, as cited in the Boundary and Annexation Survey materials, includes change type (e.g., annexation, deannexation, boundary correction, and other), authorization type (e.g., ordinance, resolution, local law, state-level action, and other), documentation number, and effective date (i.e., month, date, year).

- Confirmation the individual addresses included in the Address List Template are residential and were available for occupancy[4] on April 1, 2020.

Supporting documentation for a housing count case includes:

- Written correspondence from the highest elected or appointed official, or their designated representative, that:
  - Specifies the case disputes the housing counts for one or more 2020 tabulation blocks within the GU and includes details, if known, about the suspected housing count error(s). If the case also disputes a GU boundary, review the information above that outlines the supporting documentation for a boundary case.
    - Provide as much detail as possible about the housing count discrepancy to assist the Census Bureau with its research of your GU's case. Examples of valid details to include might be information about the conversion of a commercial building into residential housing units prior to April 1, 2020, or an incorrect geocode of an address to the incorrect side of the street.
    - Consider inclusion of a summary that confirms the contents of the submission, i.e., like an inventory of the case.
  - Discusses and certifies the accuracy and validity of the source materials used to prepare the case by including information on the creation date/timeframe, usual use, and maintenance cycle.
    - Source(s) to revise the housing counts must include the addresses as of April 1, 2020. More recent source material must include a way to determine the addresses that were valid on April 1,2020.
- Confirmation that the updated count information includes only residential addresses that existed and were available for occupancy on April 1, 2020.

IMPORTANT: If the GU's case asks for a review of both the boundary and housing counts, the GU must include supporting documentation for both case types.

E. Getting Help and Using this Guide

The CQR website provides useful content on 2020 Census CQR. A glossary of geographic and census terminology and a main Census glossary are available online for reference. For questions not covered in the materials available online or in this guide, contact the Census Bureau by email at <dcmd.2020.cqr.submissions@census.gov> or by phone at (888) 369-3617.

Note: If errors or unexpected results occur within GUPS, close the application to reset the software and try to reopen it prior to contacting the Census Bureau.

[4] The Census Bureau uses the terminology "available for occupancy" to mean the housing was closed to the elements, i.e., final roof, windows, and doors in place on April 1, 2020.

This guide provides specific instruction through "Step – Action and *Result(s)*" tables, where the Action is usually a command or action to perform a task and the *Result(s)* of the action(s) display in *italics*. Hyperlinks appear as underlined, light blue text. Readers can navigate the guide's chapters, tables, figures, and appendices by use of the Table of Contents and by use of cross-referenced links shown in **bold blue font**. Part 1 introduces the operation itself, while Part 2 introduces GUPS. Part 3 explores creating a CQR case. Part 4 provides instructions for submitting the case to the Census Bureau. Lastly, the appendices provide important, supplemental information.

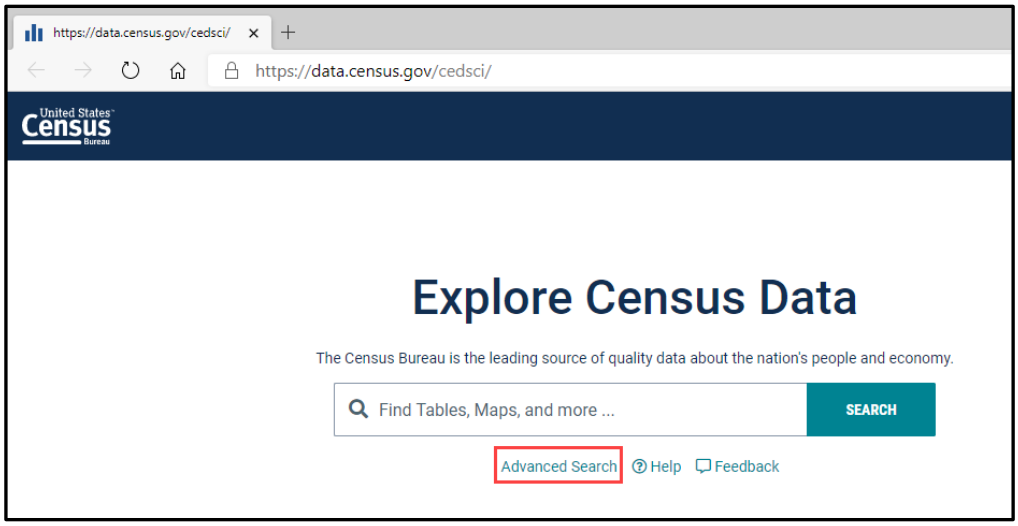
IMPORTANT: GUPS, the CQR website, and other tools/materials in support of the 2020 Census CQR were in the final stages of development when this guide was created. As a result, the images may vary slightly. Though the images may differ, the overall instruction, actions, and results remain consistent with what is anticipated in the finalized versions.

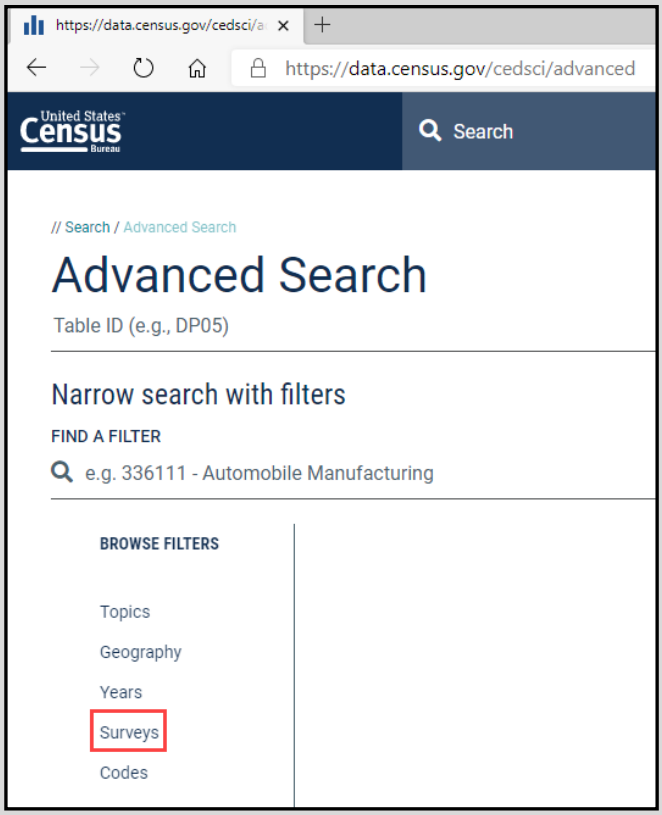
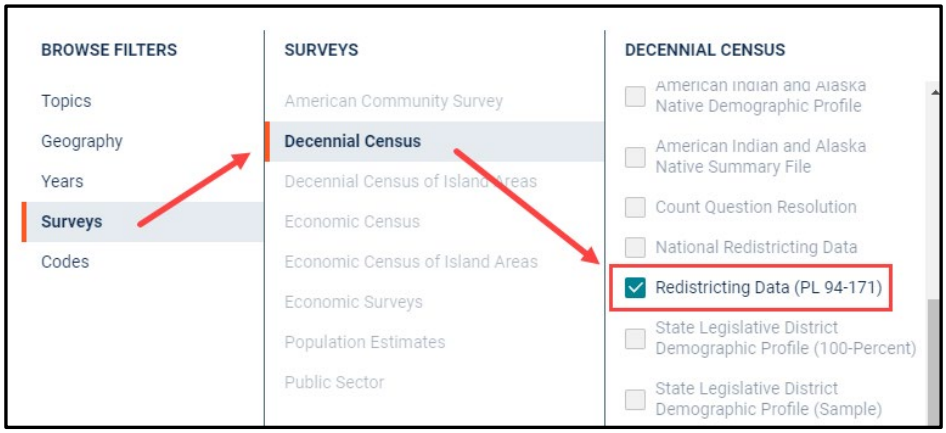
PART 1 INTRODUCTION TO 2020 CENSUS CQR

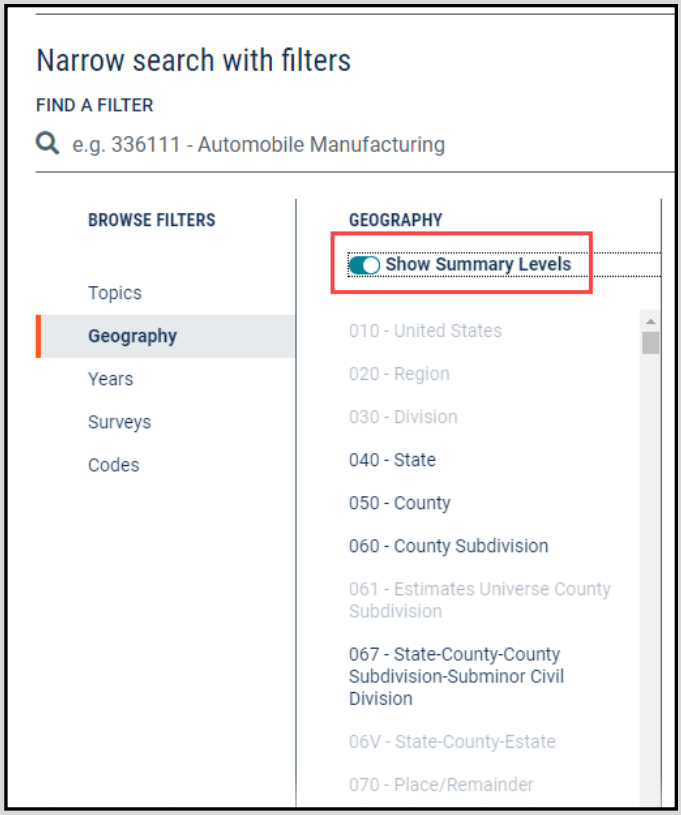
This first part of the guide begins by detailing the initial step, reviewing the overall 2020 Census results. Subsequent chapters in this part of the guide detail the tools and materials for use in 2020 Census CQR and provide two high-level overviews for conducting a detailed review of the 2020 Census results.

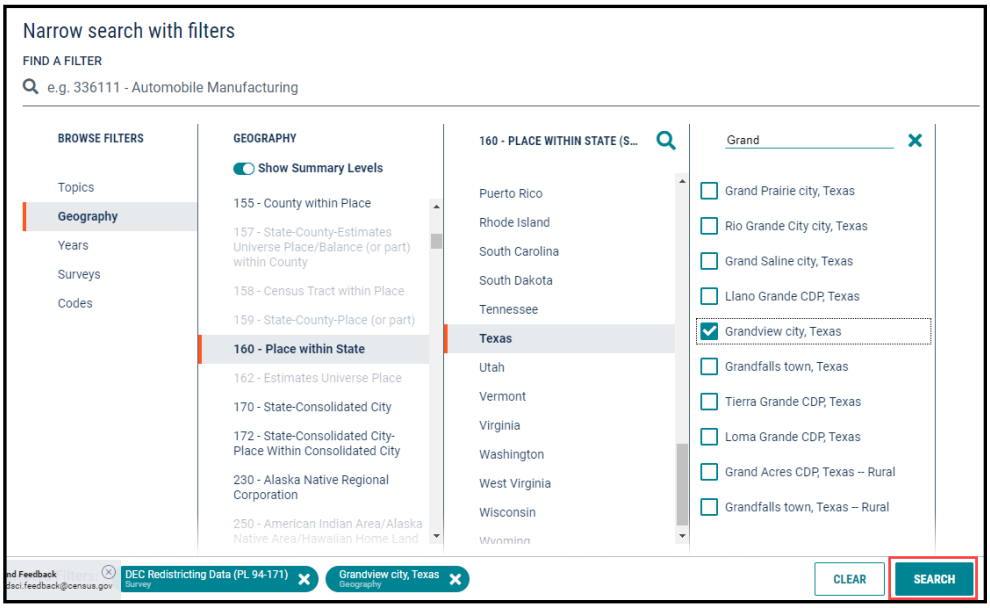
The initial step for 2020 Census CQR is to review your GU's overall 2020 Census results to determine if they align with your GU's expectations. **Table 1** provides the steps to locate the 2020 Census results using the <data.census.gov> website. Refer to appendix **A1** for more information.

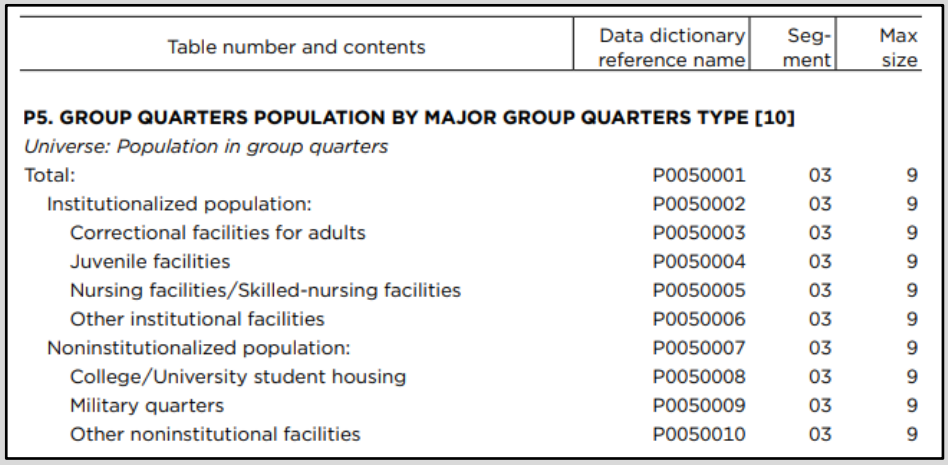
Table 1: Locating a GU's 2020 Census Counts for Total Population and Total Housing

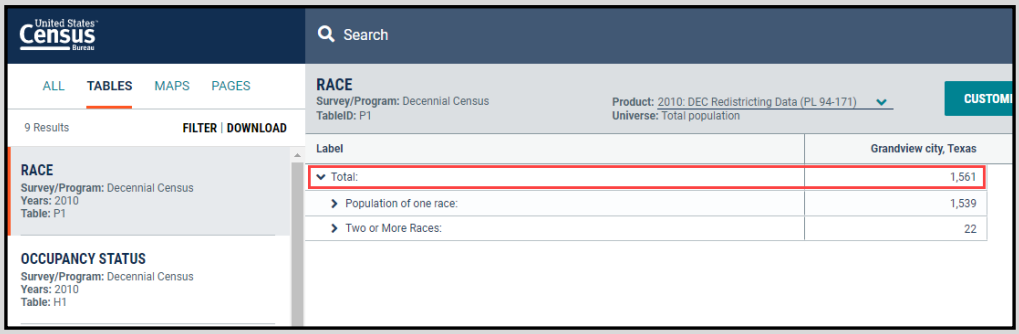
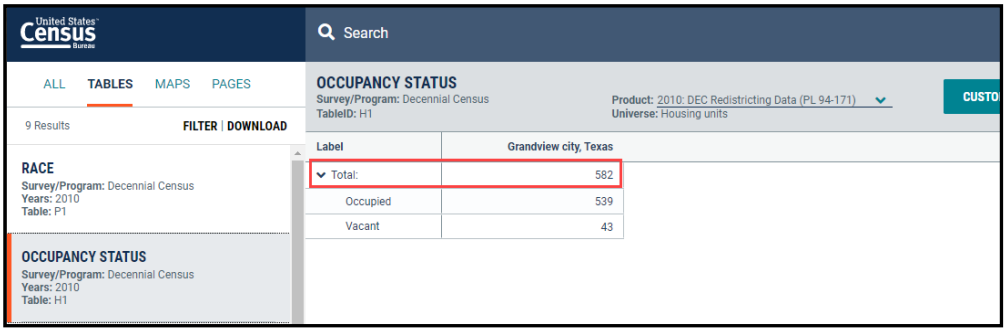
Step	Action and *Result(s)*
Step 1	Access <data.census.gov> and choose **Advanced Search**. 

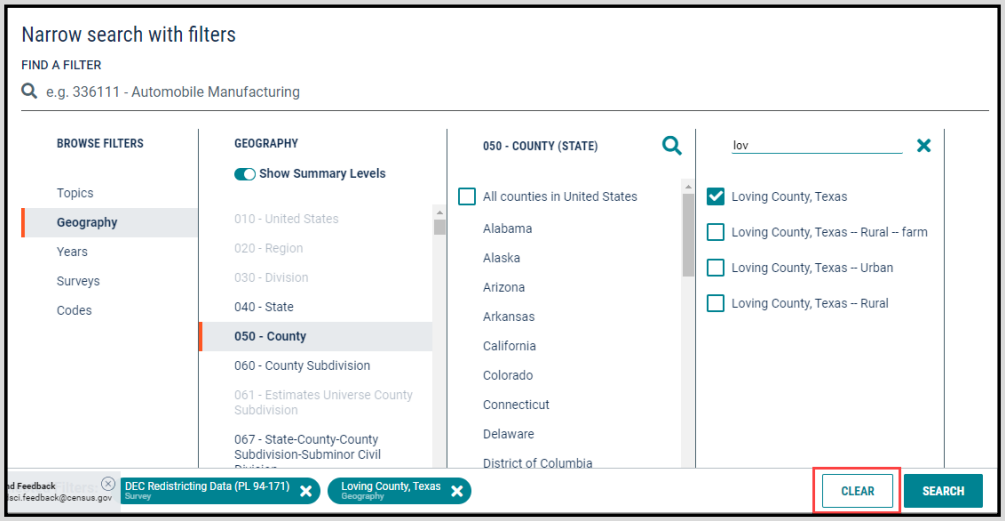
Step	Action and *Result(s)*
Step 2	From the left margin of the page beneath **Browse Filters**, choose **Surveys**. This allows for the selection of the proper dataset to use to conduct your search. 
Step 3	In the list of surveys that appear, scroll down to select **Decennial Census** then select **Redistricting Data (P.L. 94-171)**. 

Step	Action and *Result(s)*
Step 4	With the **Redistricting Data (P.L. 94-171)** survey still selected, choose the **Geography** filter along the left margin of the window and toggle on **Show Summary Levels**. 

Step	Action and *Result(s)*
Step 5	Choose the level of geography that matches your GU and continue to select the subsequent levels of information until you reach the list with your GU. Select **Search**. In the example below, Texas is selected in the summary level (second) column, and then rather than scrolling through the entire list of places in Texas, the image shows “Grand” entered as a search method in the top of the third column. This reduces the number of places to scroll through and allows for easier selection of “Grandview city, Texas.” It is important to note that multiple selections can be made prior to choosing Search. 

Step	Action and *Result(s)*
Step 6	A new window appears with the results of the search. **Table P1 – Race** includes the total population while **Table H1 – Occupancy Status** includes the total housing unit count.  Not shown in the screenshot above is a new table for 2020 known as **Table P5 – Group Quarters Population by Major Group Quarters Type**. The new table will include total group quarters population by the major group quarters types. The new table, shown in the image below taken from the 2020 Census State (P.L. 94-171) Redistricting Summary File Technical Documentation, includes 10 fields of information and the total group quarters population by the major group quarters types.  **P5. GROUP QUARTERS POPULATION BY MAJOR GROUP QUARTERS TYPE [10]** *Universe: Population in group quarters* Table number and contents | Data dictionary reference name | Seg-ment | Max size Total: P0050001 03 9 Institutionalized population: P0050002 03 9 Correctional facilities for adults P0050003 03 9 Juvenile facilities P0050004 03 9 Nursing facilities/Skilled-nursing facilities P0050005 03 9 Other institutional facilities P0050006 03 9 Noninstitutionalized population: P0050007 03 9 College/University student housing P0050008 03 9 Military quarters P0050009 03 9 Other noninstitutional facilities P0050010 03 9
	The screenshots in this table show results from the 2010 Census because at the time of preparation of this material the 2020 Census information was unavailable. When 2020 Census CQR begins the tables will reflect 2020 information and Table P5 will be available.

Step	Action and *Result(s)*
Step 7	Selecting **Table P1 - Race** opens with the total population shown at the very top of the table. For 2010, Grandview city, Texas, had total population of 1,561. If the population figure that appears is not what Grandview anticipates as its total population, they may want to investigate further by reviewing the information in tables H1 and P5. 
Step 8	Selecting **Table H1 – Occupancy Status** opens with the total housing units shown at the very top of the table. For 2010, Grandview city, Texas, had a total of 582 housing units. If this housing unit figure is not what Grandview anticipates, they may want to investigate further by reviewing the census block level data that is available in the CQR Block Count List Files and/or in the 2020 Address Count Listing Files Viewer. Both of those are described in Chapter 1.  IMPORTANT: The total in Table H1 does not include group quarters. To see the group quarters population information, Grandview city, Texas, would review the results in **Table P5 – Group Quarters Population by Major Group Quarters Type**. The information in Table P5 is an indicator of the presence of a group quarters, but does not provide a count of the group quarters themselves. If the information in the Table P5 seems incorrect, then additional research is necessary.

Step	Action and *Result(s)*
	The **Clear** button at the bottom right of the page clears all selections (geography and survey) so GUs will have to begin again at Step 3 with reselecting the **Survey** (e.g., **Decennial Census - Redistricting Data (P.L. 94-171)**) and then reselecting the **Geography**. 

In summary, the total population of the GU is found within Table P1, while the total count of housing units is in Table H1. The total group quarters population is in Table P5. There is no table that contains the total count of group quarters.

If, after reviewing the official 2020 Census results using the process described above, a GU believes its official 2020 Census results are inaccurate, they may use information presented in Chapter 1 and Chapter 2 of this guide to conduct a more detailed review of their 2020 Census results. Conducting a detailed review of the 2020 Census results includes a review of the legal boundary and housing counts by 2020 tabulation blocks. Should a GU identify a discrepancy in the legal boundary and/or housing counts at the block level that affects their official 2020 Census count, they may wish to submit a case for 2020 Census CQR.

CHAPTER 1 TOOLS AND MATERIALS FOR 2020 CENSUS CQR

This chapter discusses the preferred tools and materials available to conduct a review of the 2020 Census results. **Appendix A** describes additional materials available for use in 2020 Census CQR, specifically the 2020 Census P.L. 94-171 Redistricting Data Files and Geographic Products and the Census Block-based Work Maps.

The CQR website provides links to all these materials. Contact the Census Bureau by phone at (888) 369-3617 or by email at <dcmd.2020.cqr.submissions@census.gov> if the GU is unable to download the materials from the website. Details on digital and paper participation are included in a separate participant guide that explains the use of these materials in preparing a case as well as reviewing the 2020 Census results.

Note: The tools and materials described in this chapter are meant to be used independently from GUPS. GUs do not have to install GUPS to conduct a detailed review of their 2020 Census results. GUs would only need to proceed with GUPS installation and case preparation if they discovered discrepancies in their boundaries or housing counts that they want to report to the Census Bureau for research.

The Census Bureau recommends the creation of a local directory on a local computer workstation or perhaps on a shared network storage area (e.g., a folder named "CQR") to organize the CQR materials. Save the materials, whether downloaded from the CQR website or received in another manner from the Census Bureau, in the newly created directory.

1.1 Address Count Listing Files Viewer

The Address Count Listing Files Viewer is a web-based, map viewer that supplements the address count listing files with an interactive map of census blocks. Users of this tool can select a block on the map or use the Search functionality to obtain the same information contained in the files, such as the total housing in the block. Locate this tool by accessing the following link: 2020 Census Address Count Listing Files Viewer. Searching for a block can be especially useful rather than panning on-screen to visually locate a block.

The viewer uses address count listing files, also known as block count files, that differ slightly from the CQR Block Count List Files used in 2020 Census CQR. It will not display the counts in a manner identical to the CQR Block Count List Files, but it is an effective tool to view the blocks within a GU and the housing counts within the blocks rather than using the other materials outlined in this chapter. The viewer does not allow for edits or exports of the data within it; however, some GUs may wish to conduct the review of their legal boundaries and their 2020 tabulation blocks using this tool instead of the using the materials described in the remainder of this chapter.

Figure 1 provides a visual of how the viewer appears with a block selected (denoted by turquoise boundary instead of purple).

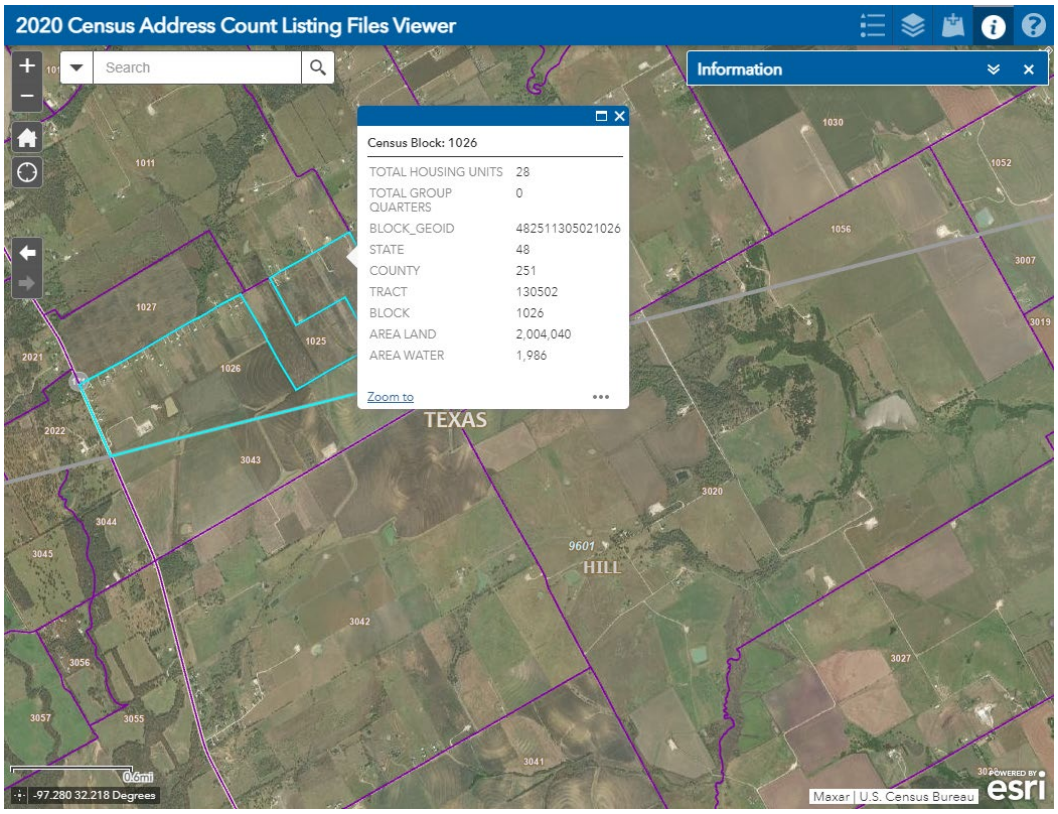


Figure 1: Example of the Address Count Listing Files Viewer with a Block Selected

Note: The "Search by BLOCK_GEOID" option zooms directly to the specific block if the complete block code (STATE, COUNTY, TRACT, and BLOCK) is provided. Locate this option within the Search section along the upper left corner of the viewer or from an icon that will appear just beneath the Search section.

If a discrepancy in either the counts of total residential or total group quarters is identified, the GU can determine whether they want to prepare a housing count case.

1.2 CQR Block Count List Files

The CQR Block Count List Files provide separate housing counts for housing units and group quarters by 2020 tabulation block for each of the 50 states, the District of Columbia and Puerto Rico. The Census Bureau makes these files available as comma separated values (.csv) files (i.e., comma-delimited text files), for use in a geographic information system (GIS) and in GUPS, and as Microsoft Excel workbook (.xlsx) files. GUs use this material with the 2021 Partnership shapefiles (described in section **1.3**) or with the 2020 Census Block Maps (described in section **1.4**) to review their block level housing counts from the 2020 Census. If a given block level housing count differs from the count the GU anticipated, this material becomes a key component of their CQR case. Instructions on preparing a case using this file are detailed in section **5.2**.

The individual, state-based files contain nine fields of information. **Table 2** provides the field specifications, names, descriptions, and requirements for this material. The last two fields are

blank for entering the GU's housing count information (e.g., CQRHU for GU's housing unit counts and CQRGQ for GU's group quarters counts).

Table 2: Details Regarding the CQR Block Count List Files

Field Number	Max Characters	Field Name	Field Description	Required (Yes or No or Recommended)
1	12	ENTITYID	Field to denote the unique identification number assigned by the Census Bureau to each entity. Field is blank for participant to complete.	Yes. Insert the Entity ID for the GU on each record with a revised housing count. Locate this code on the top of the Introduction Letter sent to the Tribal Chair or Highest Elected/Appointed Official in December 2021 or from a file on the CQR website.
2	2	STATEFP	Field to denote the two-digit Federal Information Processing Standards (FIPS) state code.	Prefilled. DO NOT EDIT.
3	3	COUNTYFP	Field to denote the three-digit FIPS county code.	Prefilled. DO NOT EDIT.
4	6	TRACT	Field to denote the six-digit 2020 census tract number, with an implied decimal point between the fourth and fifth digit, consisting of a four-digit base number, including leading zeros, plus two-digit number suffix, with trailing zeros. For example, 123401 and 000300.	Prefilled. DO NOT EDIT.
5	4	BLOCK	Field to denote the four-digit 2020 tabulation block number uniquely numbered from 0000 to 9999 within 2020 census tract. The first digit of the census block identifies the block group.	Prefilled. DO NOT EDIT.
6	4	CENSUSHU	Field to denote the total number of addresses identified as housing units by data in the Master Address File (MAF).	Prefilled. DO NOT EDIT.
7	4	CENSUSGQ	Field to denote the total number of addresses identified as group quarters by data in the MAF.	Prefilled. DO NOT EDIT.
8	4	CQRHU	Field to denote the total number of addresses identified as housing units by CQR participants.	Yes, if housing count discrepancy exists for CENSUSHU; otherwise leave blank.

Field Number	Max Characters	Field Name	Field Description	Required (Yes or No or Recommended)
9	4	CQRGQ	Field to denote the total number of addresses identified as group quarters by CQR participants.	Yes, if housing count discrepancy exists for CENSUSGQ; otherwise leave blank.

When using this file outside of GUPS to review the 2020 Census results, ensure all fields remain as Text to preserve the formatting of fields (e.g., STATEFP, COUNTYFP, TRACT, and BLOCK) that may contain leading or trailing zeros. When using this file in GUPS the fields within this file remain in Text format.

1.3 2021 Partnership Shapefiles

The 2021 Partnership shapefiles are extracts of selected geographic and cartographic information from the Master Address File/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) System. The version used for 2020 Census CQR, which is the same version used for the 2021 Boundary and Annexation Survey, includes geographical boundaries as of January 1, 2020 for the United States, District of Columbia, Puerto Rico, and the Island Areas. They include polygon features including boundaries of legal and statistical geographic areas, linear features including roads and hydrography, and point features including landmarks. This version (PVS_20_v2) is the first partnership shapefile source to include the 2020 tabulation geography (i.e., the 2020 census tracts and 2020 tabulation blocks). These shapefiles are used as a reference for the 2020 tabulation blocks and the legal boundaries as of January 1, 2020, by GUs that are using a GIS or GUPS to participate in 2020 Census CQR.

IMPORTANT: Regardless of the year (e.g., 2022 or 2023) the GU chooses to review the 2020 Census results and prepare a CQR case, the 2021 Partnership shapefiles (e.g., the PVS_20_v2 file naming convention) is the version of shapefiles required for 2020 Census CQR. This version contains the official boundaries as of January 1, 2020, and the 2020 tabulation blocks without any subsequent year's edits. Using a different version of shapefiles will prevent processing of your case.

The shapefiles do not include demographic data, but they do contain geographic entity codes (e.g., BLOCKID) that can be used to link to block level demographic data in a GIS software. After joining the 2020 tabulation block file (e.g., tabblock shapefile layer) from the 2021 Partnership shapefiles to the CQR Block Count List File, GUs can review their housing counts and perform comparisons/analysis with their own locally sourced data to determine if a housing count discrepancy exists. If a discrepancy is discovered, GUs decide whether to file a housing count case.

IMPORTANT: A concatenation of the STATEFP, COUNTYFP, TRACT, and BLOCK fields in the CQR Block Count List File is required to create a field (i.e., GEOID) for joining with the tabblock layer (e.g., BLOCKID) within the 2021 Partnership shapefiles.

In addition, GUs can use the appropriate boundary layer from the 2021 Partnership shapefiles in comparison with their local sourced boundary data to review their legal boundary and determine whether a boundary discrepancy exists. If a discrepancy is discovered, GUs must determine if the boundary discrepancy is in scope for 2020 Census CQR and whether to file a boundary case. If a GU wants to file a CQR case, these shapefiles load into GUPS and form the spatial base of the GU's CQR project.

Appendix B provides important information for the 2021 Partnership shapefiles, including information regarding the initial setup of the files and lists the shapefile layers of interest to CQR eligible participants (e.g., tribal areas, states and equivalents, counties and equivalents, minor civil divisions, consolidated cities, and incorporated places). Review the information in that appendix to prepare for the use of this material.

1.4 2020 Census Block Maps

The 2020 Census Block Maps are GU-based maps produced to support the decennial census data release. These large-scale, large format (i.e., 36"x32") maps show and label all 2020 tabulation blocks within a GU. They also show the boundaries, names, and codes for American Indian/Alaska Native areas, Hawaiian home lands, states (or state equivalents), counties (or county equivalents), county subdivisions, consolidated cities, places, and 2020 census tracts. Additionally, these maps show and label (as space allows) base features, such as roads, railroads, and hydrography.

They are Adobe Portable Document Files (PDFs) and are available for all tribal, state, and local GUs eligible to participate in 2020 Census CQR. GUs use these maps to review their legal boundary and locate their 2020 tabulation blocks to review in combination with the CQR Block Count List Files to determine if filing a case is necessary.

IMPORTANT: For GU's that plan to use GUPS, these materials are used solely to conduct their detailed review of the 2020 Census results, not to prepare their case. GUPS would handle the boundary correction since the mapping component is integrated into the software. Housing count cases do not require map updates.

Contact the Census Bureau by email at <dcmd.2020.cqr.submissions@census.gov> or by phone at (888) 369-3617 to discuss alternative access methods if your GU is unable to use these PDFs online or print them locally.

Note: For densely clustered areas of these maps, where features may be cluttered preventing the clear visualization of a GU boundary or of certain small 2020 tabulation blocks, the Census Bureau can create census block-based work maps upon request from the GU. See appendix **A2** for a summary of this product.

The maps are available through a link on the CQR website to the 2020 Census – Census Block Maps web page. The web page has six main map categories (**Figure 2**). GUs locate their maps by selecting the appropriate category for their GU. Continue navigating the subsequent screens

that appear to view the maps online. Once open, the map can be downloaded to a local computer rather than continuing to view them online.

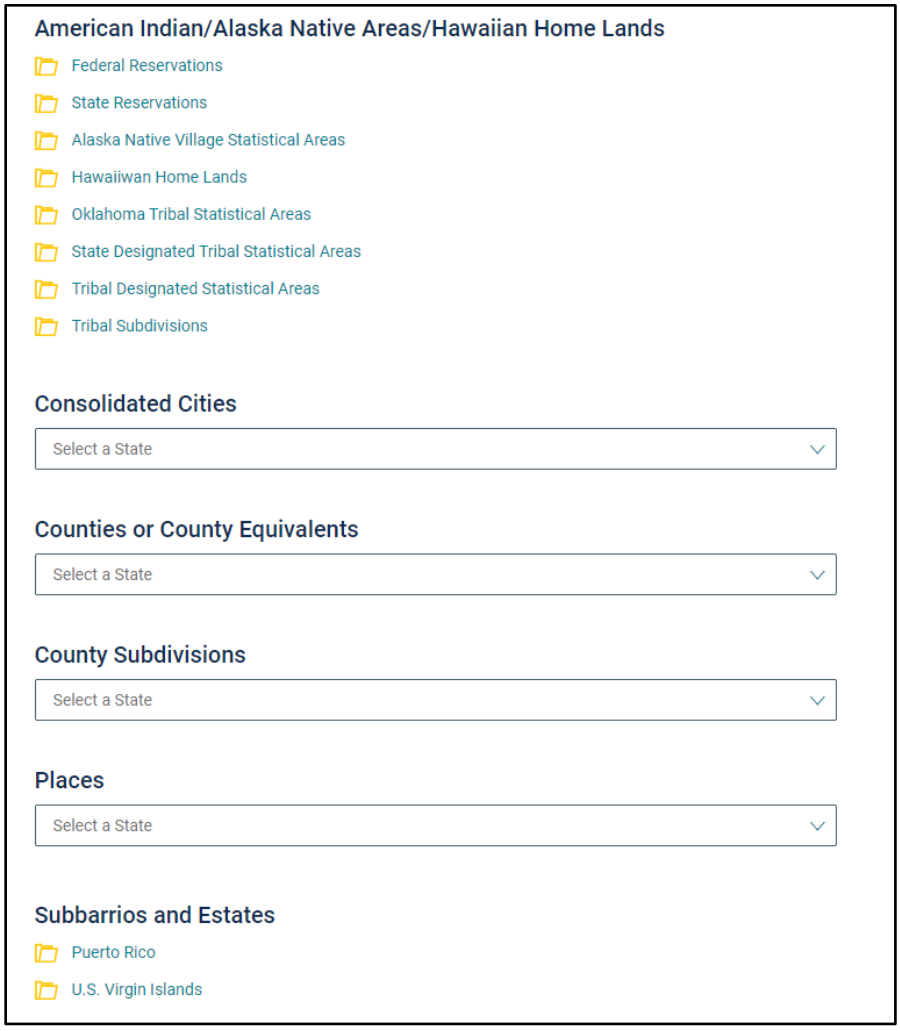


Figure 2: Map Categories on the 2020 Census - Census Block Maps Website

The file naming convention for the 2020 Census Block Maps is as follows: DC20BLK_<entity_type><entity_code>.pdf. For Puerto Rico, maps in Spanish have 'SP' appended to the map project abbreviation (e.g., DC20BLKSP_<entity_type><entity_code>.pdf).

Where "entity_type" is as follows:

- C for county.
- CC for consolidated city.
- CS for county subdivision (e.g., minor civil division and census county division).
- P for incorporated place (e.g., cities, towns, villages, and census designated places).
- FR for federal American Indian reservation.
- SR for state American Indian reservation.
- NV for Alaska Native village statistical areas (ANVSAs for use by Alaska Native villages).
- OT for Oklahoma tribal statistical areas (OTSA).
- SD for State designated tribal statistical areas (SDTSA).

- TD for Tribal designated statistical areas (TDSA).

Where "entity_code" is the FIPS code for the GU or the four-digit census code for the American Indian Areas. States and equivalent entities review these materials by county or lower level of geography. Alaska Native Regional Corporations use the county and/or ANVSA maps to view their ANRC.

If more than one large format map sheet exists in the bundled .pdf, GUs must scroll through each sheet to see the entire extent of their GU. Adjust the zoom level as necessary to view the 2020 census tract and 2020 tabulation block numbers on-screen.

IMPORTANT: Use of Adobe Reader® or Acrobat Professional® software is required to properly view and print these PDFs. Other software or browser readers may distort symbology and fill patterns on these maps. Download the free Adobe Reader software from <acrobat.adobe.com/us/en/acrobat/pdf-reader.html>.

There are three types of large format maps: Index, Parent, and Inset. All map types are identified along the lower right margin within the barcode of the map. The lower right margin is also the location of the state and county FIPS information. These maps contain the common elements of most map materials (e.g., title, north arrow, barcode, scale, projection information, source information, coordinate information, etc.) and the map border contains a legend to describe the symbology used within the map. The map examples (e.g., Figures 6 – 10) are prototypes. The final 2020 Census Block Map products may have minor modifications to design and/or content.

A Block-to-Map-Sheet relationship file exists to assist GUs with locating the 2020 tabulation block(s) on the 2020 Census Block Maps. This material, found in the same location as the map files, identifies each 2020 tabulation block in the GU and the map sheet(s) they fall within. The semicolon delimited text file contains a list of all the blocks within the GU's jurisdiction and sheet/grid number that identifies the large format parent sheet(s) or inset sheet(s) where the block is located. It also includes fields that list the incorporated place, county subdivision, consolidated city, and American Indian/Alaska Native/Native Hawaiian (AIANNH), as applicable.

GUs can open this file with a simple text editor such as Notepad or WordPad or import the file into a spreadsheet software like Microsoft Excel. **Figure 3** shows an example of how a Block-to-Map-Sheet relationship file (e.g., DC20BLK_C38065_BLK2MS.txt) appears when opened in Notepad. The data shown within the example is based on a prototype map example and is for visualization purposes only.

DC20BLK_C38065_BLK2MS - Notepad

File Edit Format View Help

```
TYPE;FULLCODE;STATE;COUNTY;TRACT;BLOCK;PLACE;COUSUB;CONCITY;AIANNH;SHEETS
Block;380659612001000;38;065;9612.00;1000;;21730;;;2
Block;380659612001001;38;065;9612.00;1001;;21730;;;2
Block;380659612001002;38;065;9612.00;1002;;21730;;;1,2
Block;380659612001003;38;065;9612.00;1003;;21730;;;1
Block;380659612001004;38;065;9612.00;1004;;21730;;;1
Block;380659612001005;38;065;9612.00;1005;;85110;;;1
Block;380659612001006;38;065;9612.00;1006;;85110;;;1
Block;380659612001007;38;065;9612.00;1007;;85110;;;1
Block;380659612001008;38;065;9612.00;1008;;85110;;;1
```

Figure 3: Example of a Block-to-Map-Sheet Relationship File in Notepad

1.4.1 Index Maps

Index map sheets cover the entire extent of the GU. They are divided into numbered grids that correspond to the parent sheets. They exist for GUs with more than one parent sheet and are for reference purposes only. Index map sheets are noted for summarizing the total number of sheets for the GU along the bottom of the right margin. See **Figure 4** for an example.

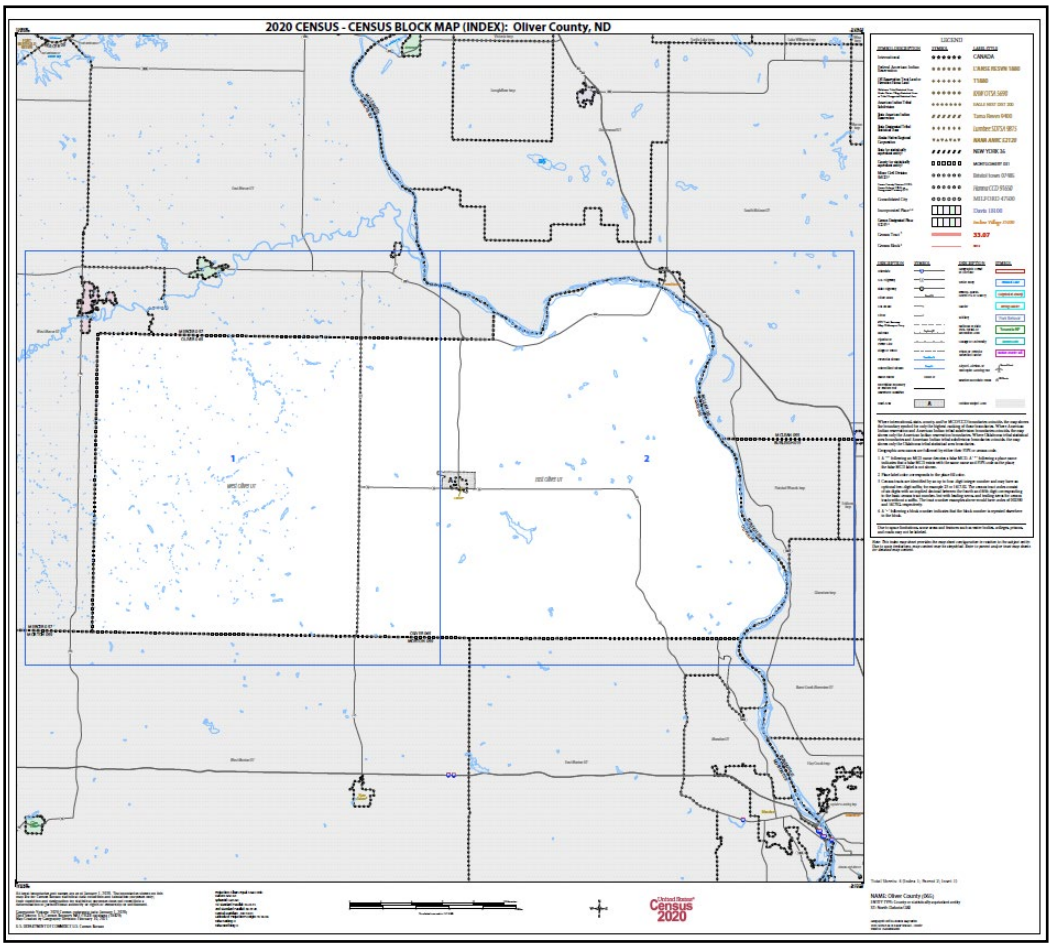


Figure 4: Example of a Large Format Index Map

1.4.2 Parent Maps

Parent map sheets provide a detailed view of a portion of the GU. They correspond to the numbered grid on the index sheet. They show detail for features and geographic areas and are used to identify the 2020 census tract and 2020 tabulation blocks within the GU. The lower right margin of a parent sheet includes a key to adjacent sheets and a sheet location graphic that provide an overview of the map layout for the GU. See **Figure 5** for an example and **Figure 6** for a zoomed depiction showing details of the map content. Note the zoomed example includes the symbology denoting the presence of an inset map (e.g., A).

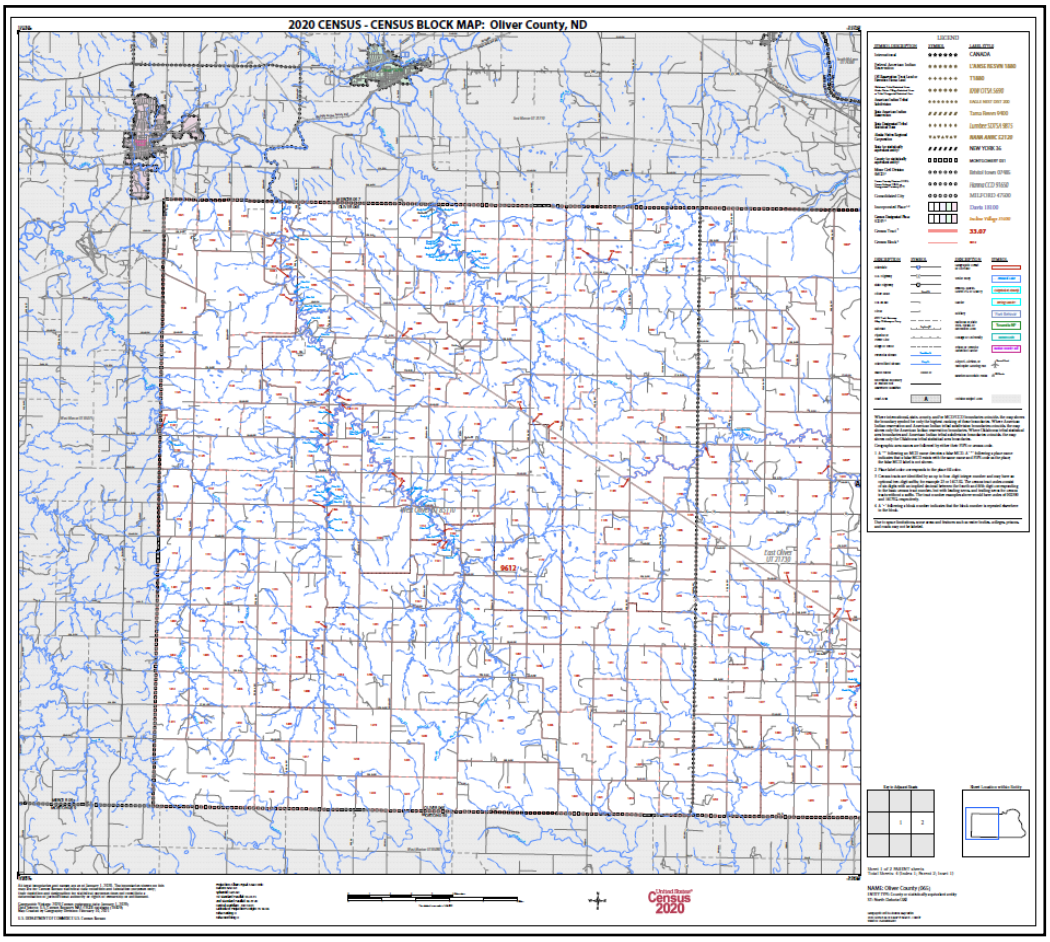


Figure 5: Example of a Large Format Parent Map

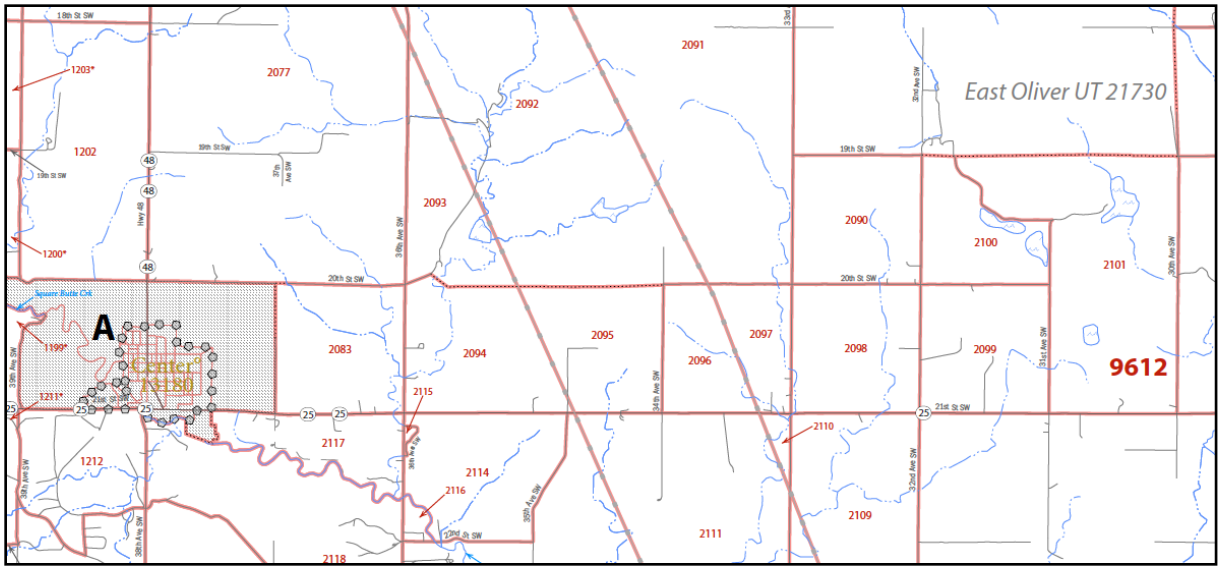


Figure 6: Example of a Large Format Parent Map (Zoomed View)

1.4.3 Inset Maps

Inset map sheets do not exist for every GU or on every parent map sheet. They show detail for congested areas on parent map sheets. They are denoted by an alpha character (e.g., A) and may be multi-sheeted (e.g., A1, A2, B1, etc.). They, like parent sheets, show detail for features and geographic areas and are used to identify 2020 census tracts and 2020 tabulation blocks for a specific area within a GU. See **Figure 7** for an example and **Figure 8** for a visual of the lower right margin of the map that identifies the map type and other important information.

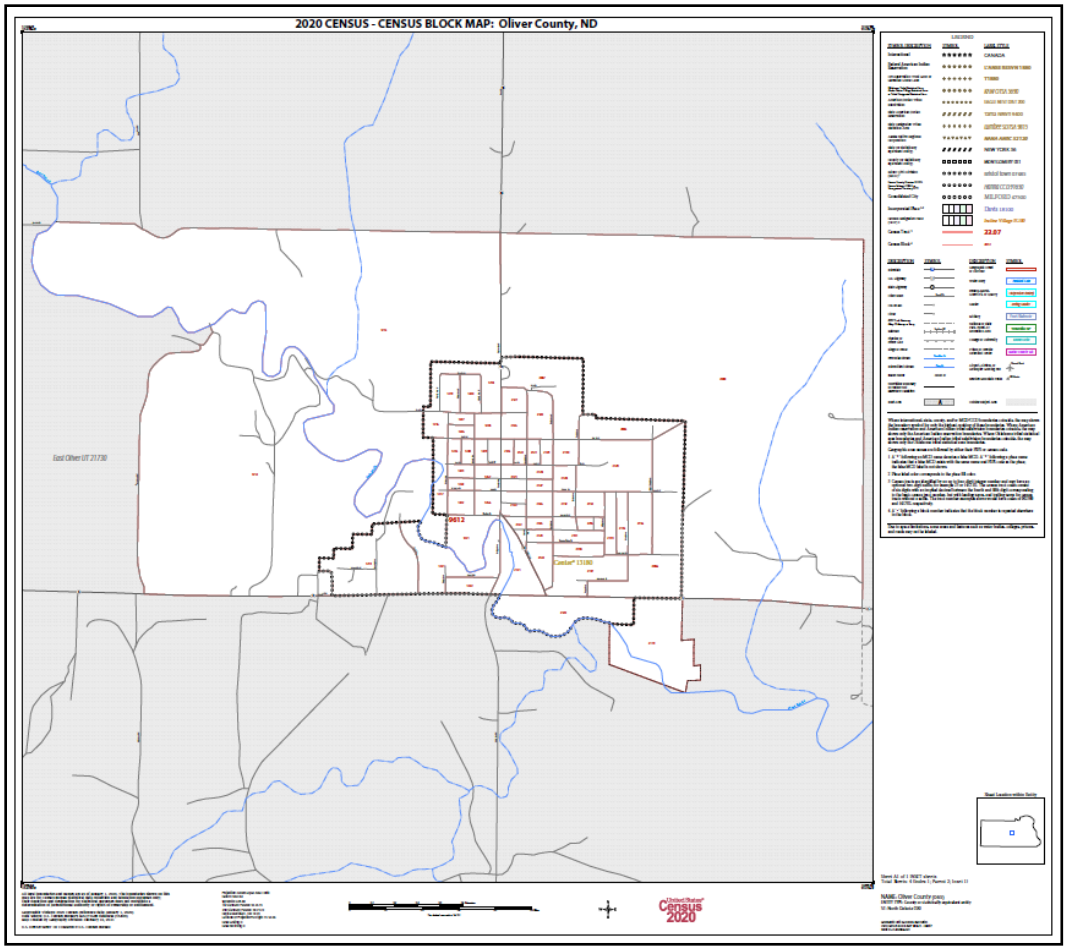


Figure 7: Example of a Large Format Inset Map

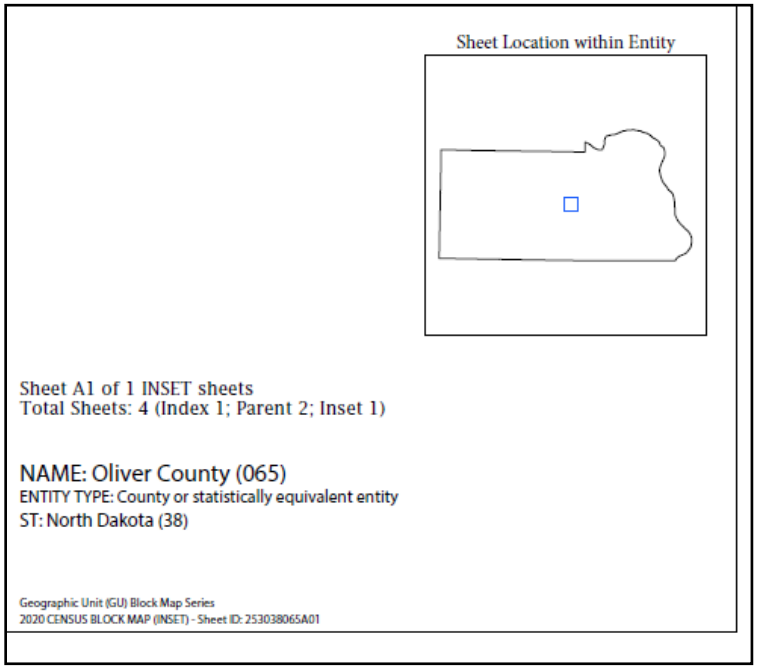


Figure 8: Example of a Large Format Map Margin

CHAPTER 2 REVIEWING THE 2020 CENSUS RESULTS

GUs would only proceed with a detailed review of the 2020 Census results if they believe the official 2020 Census count of housing and population, described in Table 1, is inaccurate. This chapter includes two, high-level overviews for conducting a detailed review of the 2020 Census results using the CQR Block Count List Files and the two mapping materials introduced in Chapter 1.

Note: The two sections included within this chapter assume the GU has downloaded the materials from the CQR website or has worked with the Census Bureau to receive the materials necessary to conduct a review of the 2020 Census results.

2.1 Using CQR Block Count List Files with 2021 Partnership Shapefiles

Refer to appendix **B1** to determine the specific shapefile layers to download for each GU type, then follow the guidance presented below to review the 2020 Census results using the CQR Block Count List Files and 2021 Partnership shapefiles.

IMPORTANT: GUs must use the 2021 Partnership shapefiles (e.g., PVS_20_v2 file naming convention) for 2020 Census CQR. This version of partnership shapefiles is the first source of the finalized 2020 legal boundaries and 2020 tabulation blocks. Do not use any other version of census shapefiles for 2020 Census CQR.

The steps below are not detailed instructions for conducting a review of the 2020 Census results because there are simply too many options to list. They provide a high-level approach using common ideas and concepts that GUs familiar with GIS should understand.

1. Assemble a local spatial data source(s) for the GU's legal boundary. Ensure the legal boundary for the GU was in effect as of January 1, 2020 and is accurate in the local data.
2. Refer to **Table 16** if the initial setup for the shapefiles has not occurred.
3. Use GIS to compare the GU's legal boundary in the 2021 Partnership shapefiles with the legal boundary in the local data source.
   a. If no discrepancy exists with the legal boundary, skip to Step 4 to proceed with a review of the housing counts for your GU.
   b. If a discrepancy exists for a boundary that was not legally in effect as of January 1, 2020, file the boundary update as part of the next annual Boundary and Annexation Survey. Do not file a CQR case. Proceed to Step 4 to conduct a review of the housing counts for your GU.
   c. If a discrepancy exists for a boundary but does not affect housing counts for the GU (i.e., minor spatial alignment issues), submit the boundary correction as part of the next annual Boundary and Annexation Survey. Do not file a CQR case. Proceed to Step 4 to conduct a review of the housing counts for your GU.
   d. If a boundary discrepancy exists and does affect the housing counts for the GU, note/flag the area/blocks/feature IDs within the spatial data, specifically in the shapefile layer with the errant boundary (varies based on type of GU) to navigate back to this discrepancy if the GU wishes to prepare a CQR case.

4. Assemble a local source(s) of individual addresses and/or housing counts at the block level for the GU. These sources should be digital. Ensure the source information includes residential addresses that existed and were available for occupancy on April 1, 2020.
    a. If the source includes a mix of residential and non-residential record types or includes records available for occupancy after April 1, 2020, ensure a method exists to identify and exclude the records that do not qualify for inclusion in the CQR case (i.e., those that are non-residential and available for occupancy after April 1, 2020).
    b. If the source includes individual, residential addresses only, proceed with generating locally derived housing counts by block, splitting the whole count into both housing units and group quarters categories using the 2021 Partnership shapefiles as the geographic base.
        i. GUs with address data in shapefile format can generate counts by geocoding the individual address records to the 2020 tabulation block layer (e.g., tabblock) using their GIS. If a GUs does not have address data in a shapefile with latitude and longitude coordinates, the Census Bureau hosts a tool for geocoding at <geocoding.geo.census.gov>. Review the Census Geocoder Documentation for details. This tool may not provide geocodes for all records in the local file because the Census Bureau may not have updated the area since concluding fieldwork. Conduct a review of the geocoder's results to ensure the information is as expected.
5. Navigate to the local directory (e.g., CQR) and open the CQR Block Count List File(s).
6. Concatenate the STATEFP (two-digits), COUNTYFP (three-digits), TRACT (six-digits), and BLOCK (four-digits) fields within your GU's CQR Block Count List File(s) to create a new field, i.e., GEOID (15-digits). Save the file.
    a. IMPORTANT: GUPS requires the original CQR Block Count List File, so keep a copy of the original file without the concatenated GEOID field in case the GU decides to prepare a case.
7. Use GIS to join the BLOCKID field from the 2021 Partnership shapefiles tabblock layer to the newly created GEOID field in your GU's CQR Block Count List File(s).
    a. Label, or thematically map, the housing counts from the CQR Block Count List File(s) by 2020 tabulation block.
    b. Label, or thematically map, housing counts from the local source(s) by 2020 tabulation block.
    c. Additionally, even though your GU has chosen to use the 2021 Partnership shapefiles rather than the 2020 Census Block Maps, the blocks listed in your GU's Block-to-Map-Sheet relationship file (BLK2MS) are the blocks for your GU. This file is located online with the 2020 Census Block Maps and may be beneficial for your research.
8. Compare the two sets of housing counts to determine if housing count discrepancies exist.
    a. If no discrepancy exists for either housing counts or the legal boundary, the review of 2020 Census results is complete. Take no further action. It is unnecessary for your GU to prepare a case for 2020 Census CQR.
    b. If a discrepancy exists for housing counts, note/flag the area/blocks within the spatial data to navigate back to this discrepancy if the GU wishes to prepare a CQR case.
9. Use the information on the discrepancies (boundary and/or housing count) to prepare a case.
    a. IMPORTANT: If a GU decides to prepare a case, the Census Bureau recommends the use of the Census Web option (described in **Table 5**) to simplify the CQR project creation using GUPS; however, the shapefiles and CQR Block Count List File downloaded from the CQR website (or received on DVD and saved locally) can be loaded into GUPS using the My Computer option (described in **Table 40**).
10. Proceed to **Part 2** for an introduction to GUPS.

2.2 Using CQR Block Count List Files with 2020 Census Block Maps

Follow the high-level guidance presented below to review the 2020 Census results using the CQR Block Count List Files and 2020 Census Block Maps. They do not provide exact instructions for conducting a closer review of the 2020 Census results because there are simply too many options to list. They provide a high-level approach using common ideas and concepts that GUs using these materials should understand.

1. Assemble a local source(s) for the GU's legal boundary. Ensure the legal boundary for the GU was in effect as of January 1, 2020 and is accurate in the local source(s).
2. Compare the GU's legal boundary in the 2020 Census Block Maps with the legal boundary in the local source(s).
    a. Depending on the number of map sheets for the GU, participants may wish to review 2020 Census Block Maps on-screen rather than downloading them to their local directory.
3. Pan around the legal boundary shown in the census maps on-screen to conduct a visual comparison between the census material and the local source(s).
    a. If no discrepancy exists with the legal boundary, skip to Step 4 to proceed with a review of the housing counts for your GU.
    b. If a discrepancy exists for a boundary that was not legally in effect as of January 1, 2020, submit the boundary update as part of the next annual Boundary and Annexation Survey. Do not file a CQR case. Proceed to Step 4 to conduct a review of the housing counts.
    c. If a discrepancy exists for a boundary but does not affect housing counts for the GU (i.e., minor spatial alignment issues), file the boundary correction as part of the next annual Boundary and Annexation Survey. Do not file a CQR case. Proceed to Step 4 to conduct a review of the housing counts.
    d. If a boundary discrepancy exists and does affect the housing counts for the GU, note or flag the map sheet or blocks to navigate back to this discrepancy if the GU wishes to prepare a CQR case.
4. Assemble a local source(s) of individual addresses and/or housing counts at the block level for the GU. These sources can be in digital or paper format. Ensure the source information includes residential addresses that existed and were available for occupancy on April 1, 2020.
    a. If the source includes a mix of residential and non-residential record types or includes records available for occupancy after April 1, 2020, ensure a method exists to identify and exclude the records that do not qualify for inclusion in the CQR case (i.e., those that are non-residential and available for occupancy after April 1, 2020).
    b. If the source includes individual, residential addresses only, proceed with generating locally derived housing counts by block, splitting the whole count into both housing units and group quarters categories using the 2020 Census Block Maps as the geographic base.
        i. GUs can generate counts by geocoding the individual address records to the 2020 tabulation blocks using the 2020 Census Block Maps as their geographic base or by using the Census Bureau's tool for geocoding, <geocoding.geo.census.gov>. Review the Census Geocoder Documentation for details. This tool may not provide geocodes for all records in the local file because the Census Bureau may not have updated the area since concluding fieldwork. Conduct a review of the geocoder's results to ensure the information is as expected.

5. Determine the 2020 tabulation blocks that fall within your GU.
   a. The blocks listed in your GU's Block-to-Map-Sheet relationship file (BLK2MS) are the blocks for your GU.
6. Review only the 2020 tabulation blocks in the CQR Block Count List File(s) for your GU.
   a. This involves sorting/culling the state-level CQR Block Count List File(s) to reduce it to include just the blocks within the GU.
7. Use Ctrl-F, a search function in most applications, to find specific blocks if viewing the maps on screen or refer to the Block-to-Map-Sheet relationship file that accompanies the 2020 Census Block Maps to identify the 2020 tabulation blocks and corresponding map sheets.
8. Compare the two sets of housing counts to determine if housing count discrepancies exist.
   a. If no discrepancy exists for either housing counts or the legal boundary, the review of 2020 Census results is complete. Take no further action. It is unnecessary for your GU to prepare a case for 2020 Census CQR.
   b. If a discrepancy exists for the housing counts, note/flag the map sheet or blocks to navigate back to this discrepancy if the GU wishes to prepare a CQR case.
9. Use the information on the discrepancies (boundary and/or housing count) to use GUPS to prepare a case.
   a. IMPORTANT: If a GU decides to prepare a case, the Census Bureau recommends the use of the Census Web option (described in **Table 5**) to simplify the CQR project creation using GUPS. The 2021 Partnership shapefiles automatically load into GUPS instead of the 2020 Census Block Maps used to conduct the review. If the GU cannot use the Census Web option, contact the Census Bureau by email at <dcmd.2020.cqr.submissions@census.gov> or by phone at (888) 369-3617 for assistance.
10. Proceed to **Part 2** for an introduction to GUPS.

PART 2 INTRODUCTION TO GUPS

Once your GU determines a CQR case is necessary and wants to participate using the Geographic Update Partnership Software, or GUPS, rather than digitally or with paper materials, use the guidance in this part of the guide to download, install, and open GUPS to start a CQR project. This part of the guide also includes information on the main software menus and toolbars used when creating a CQR project.

GUPS is a user-friendly, self-contained, customized GIS software tool provided to GUs by the Census Bureau for use in completing many of their geographic programs and operations. Each geographic program supported by GUPS includes a unique set of tools built to run within the QGIS environment.

For 2020 Census CQR, GUPS is programmed to provide built-in access to the TIGER partnership shapefiles used for CQR through a "Census Web" option. It includes a review tool requiring the validation of the data to the program criteria before creating a final 2020 CQR case .zip file and allows GU's to add external geospatial data (e.g., shapefiles, geodatabases, and imagery) and tabular data (e.g., text files in the .txt or .csv format) for comparison and update purposes. GUPS ensures the case is valid and allows for easier processing once received by the Census Bureau. While it does not require an internet connection to function, an internet connection is necessary to use the recommended "Census Web" option and the built-in imagery server.

CHAPTER 3 DOWNLOADING AND INSTALLING GUPS

GUs with previous versions of GUPS installed for use with other Census Bureau programs must install the new version of GUPS for 2020 Census CQR. This chapter includes the hardware and operating system requirements necessary to use GUPS, instructions for downloading and installing the software, and the basics of opening GUPS and starting a new CQR project.

Many agencies/organizations require certain security privileges to download and install external software. Work with your local Information Technology (IT) staff person to acquire those privileges or ask they assist with GUPS installation. Please note that GUPS users with different security privileges other than the IT staff person that installed the software may encounter problems accessing the directories and plugins needed to operate GUPS. This usually occurs when the software is not installed under the user's profile. To correct this, have the IT staff person reinstall GUPS under the user's profile using the user's credentials. If installation problems remain, contact the Census Bureau by phone at (888) 369-3617 or by email at <dcmd.2020.cqr.submissions@census.gov> for installation assistance.

IMPORTANT: While each GU will have a primary point of contact for submitting the CQR case to the Census Bureau, everyone that intends to help with preparing the GU's case must download, install, and use GUPS to share work.

See **Table 3** for the requirements necessary to download and install GUPS, as well as the internet browser version to use the Secure Web Incoming Module (SWIM).

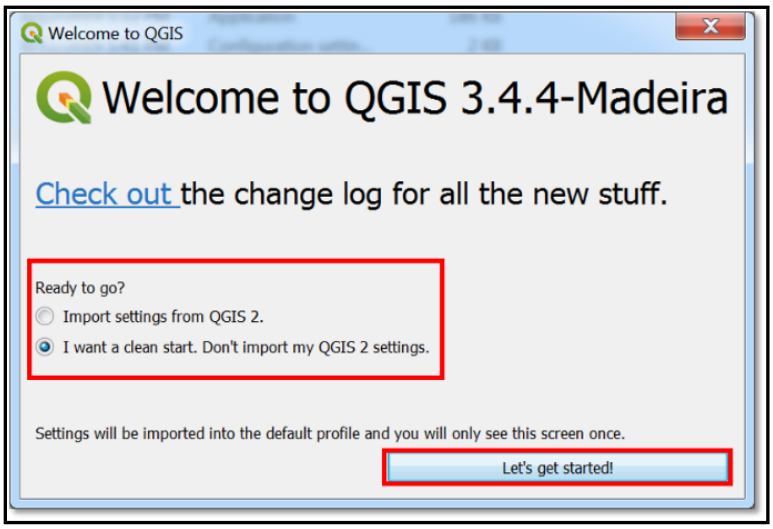
Table 3: Requirements for using GUPS and SWIM

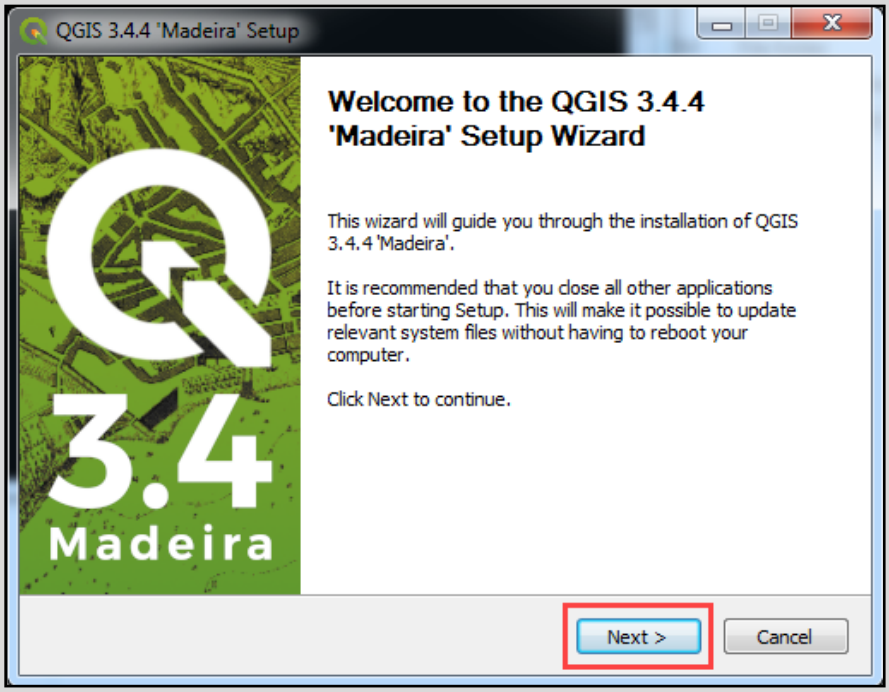
Hardware	Operating System	Supported Browser
Disk Space Required to Run GUPS : 4 GB (very important!) **Disk Space Needed to Store Shapefiles:** Shapefile sizes vary. To view the size of the shapefiles, use the mouse to select a file/folder, right-click, and choose Properties. The **Files Properties** box opens and displays the file/folder sizes. Select multiple files/folders in the list to view their properties using the same method. **RAM:** 4 GB minimum; 8 GB or more recommended for optimal performance.	**Windows®:** To run GUPS, Windows users need one of the following operating systems: • Windows 8® • Windows 10® **Apple®:** 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. Locate instructions for Boot Camp at: <www.apple.com/support/bootcamp/getstarted/> IMPORTANT: Since Boot Camp requires a restart of the computer to set up the bridge, be sure to print the instructions from URL above before beginning installation.	**SWIM runs on the two most recent versions of each of these major internet browsers:** • Microsoft Internet Explorer® • Microsoft Edge® • Google Chrome® • Mozilla Firefox® • Apple Safari®

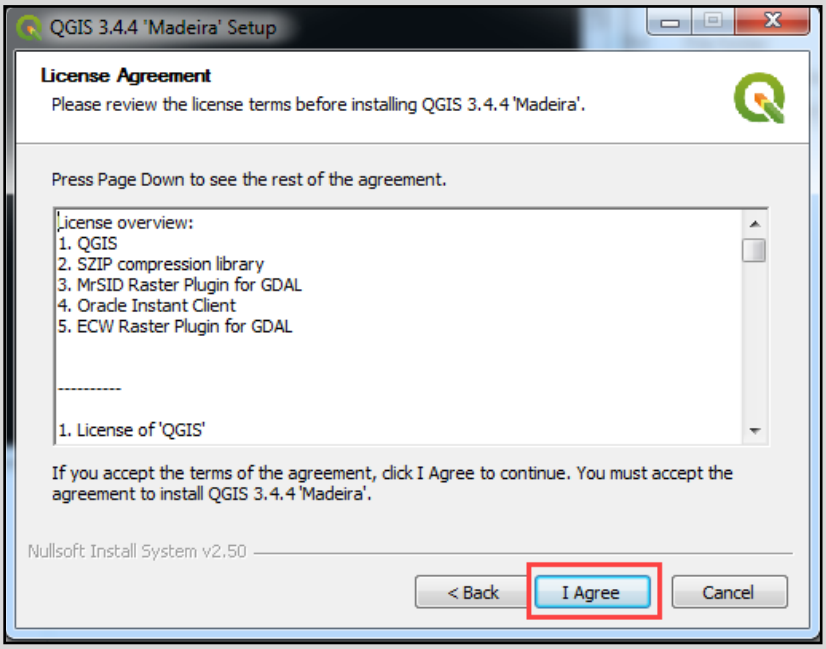
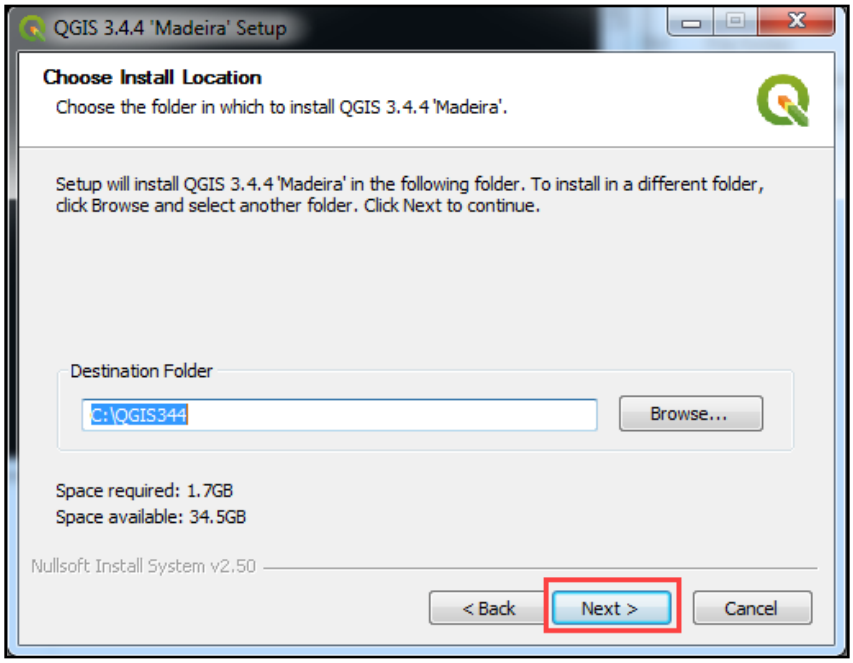
Note: The dialog boxes in GUPS may vary based on operating system. Screenshots in this guide were created using Windows 10. As a result the screenshots in this guide that feature GUPS actions may differ slightly from what a participant using Windows 8 or Boot Camp.

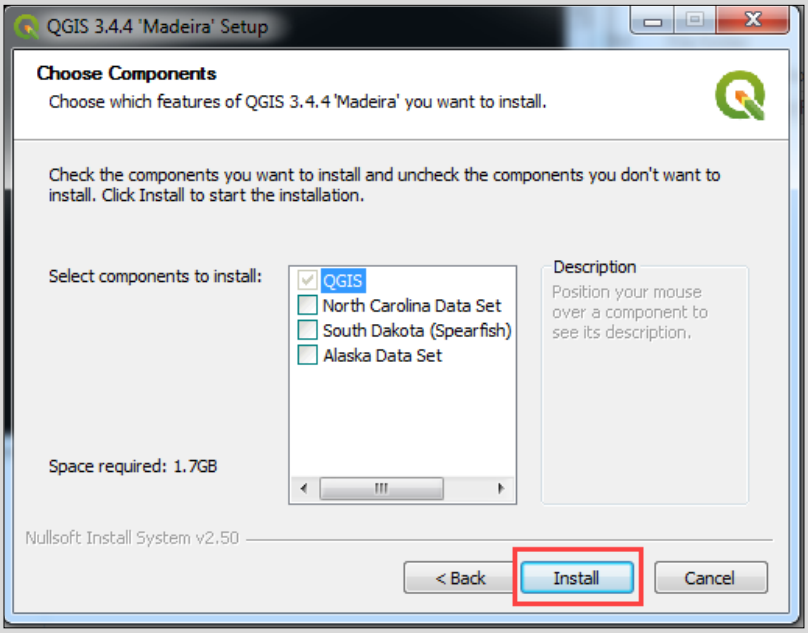
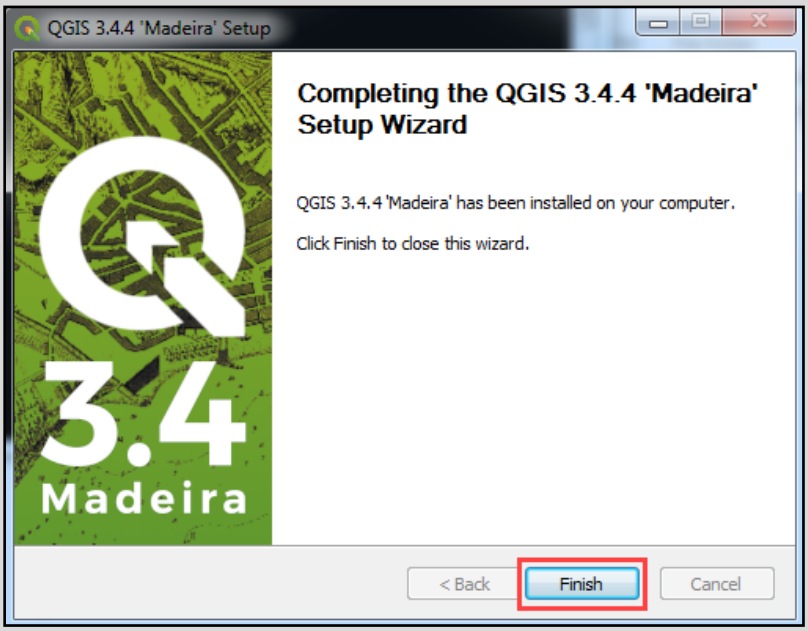
Follow the steps outlined below in **Table 4** to download GUPS from the CQR website and install it locally.

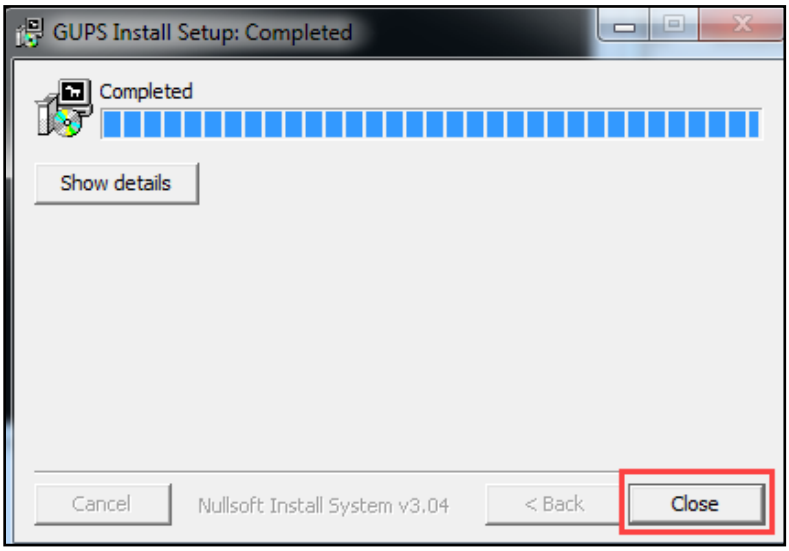
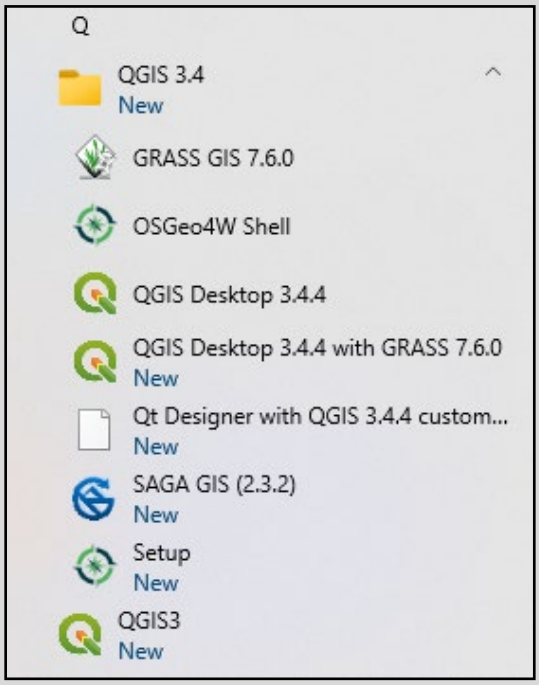
Table 4: Steps to Download and Install GUPS

Step	Action and *Result(s)*
Step 1	Navigate to the CQR website and scroll to the **Geographic Update Partnership Software (GUPS)** section.
Step 2	Choose the **Download GUPS** link. Select **Save As** rather than **Save** to navigate to a local directory (e.g., CQR) to download and save the **gups.zip** file.
Step 3	Navigate to the local directory where the downloaded gups.zip file resides and unzip the file to extract the contents. When complete, use the mouse to double-click the **SETUP-<version>.bat** file to start installation. Regardless of the version number of the file, there will be only one SETUP .bat file to choose.
	For those who received a DVD of GUPS, load the installation DVD into the computer's DVD drive. If software installation does not run automatically, open Windows Explorer, navigate to the DVD drive, use the mouse to double-click the setup file (e.g., **SETUP-<version>.bat**). Proceed with the remaining steps in this table to complete installation.
Step 4	*The **Welcome to QGIS** screen appears that allows a participant to import their previous settings from QGIS 2 or starting clean.*  Choose the option for a "clean start" and select **Let's get started** to proceed. If a new version of GUPS that uses QGIS 3 is already installed for use with other census programs, this window may not appear.

Step	Action and *Result(s)*
Step 5	When the installer opens, *the* ***Welcome to the QGIS 3.4.4 'Madeira' Setup Wizard*** *screen appears*.  Before proceeding with installation, close all other programs or applications. Once other programs and applications are closed, choose the **Next** button.
	The version needed for 2020 Census CQR is QGIS 3.4.4 Madeira. If the exact same version of QGIS exists on the computer, an instruction to uninstall and reinstall may appear. Participants may retain other versions of QGIS that may be in use for other programs, but the Census Bureau suggests reinstalling if the same version exists on the computer to ensure installation of the latest update

Step	Action and *Result(s)*
Step 6	*The **License Agreement** screen appears.*  Read the License Agreement and choose the **I Agree** button to continue.
Step 7	*The **Choose Install Location** screen opens*. For performance and stability, the Census Bureau recommends installation to the default directory (e.g., C:\QGIS344) even though the **Browse** button allows for changing of the installation directory.  Choose the **Next** button to continue with installation.

Step	Action and *Result(s)*
Step 8	*The **Choose Components** screen opens.* The '☑QGIS' in the **Select components to install** section is checked and grayed out since it is the default.  Choose the **Install** button to continue.
	To review a previous screen or reread the license agreement, choose the **<Back** button (each screen contains this button). *Selection of this button returns the screen to the previous page*.
Step 9	*The **Completing the QGIS 3.4.4 'Madeira' Setup Wizard** screen appears to confirm installation.*  Choose the **Finish** button to finish the QGIS update and launch the GUPS update. The installation can take five to 10 minutes to complete.

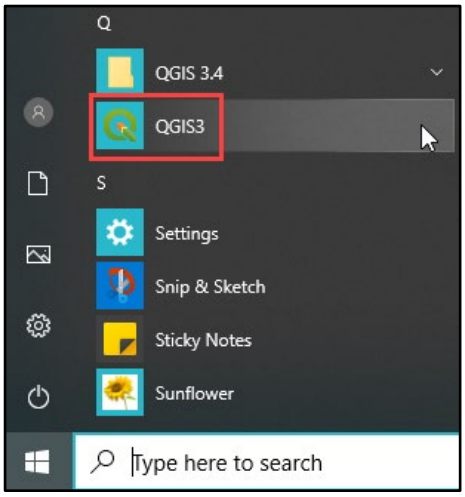
Step	Action and *Result(s)*
Step 10	*The **GUPS Install Setup: Completed** screen opens and displays the status of the installation.*  Choose the **Close** button to close the window.
Step 11	Once installed, *QGIS 3.4 appears in the Start Menu's All Programs list*. Please note depending on operating system, the image shown below may vary slightly.  Use **QGIS Desktop 3.4.4** or the **QGIS3** icon to launch GUPS. Disregard the other software installed.

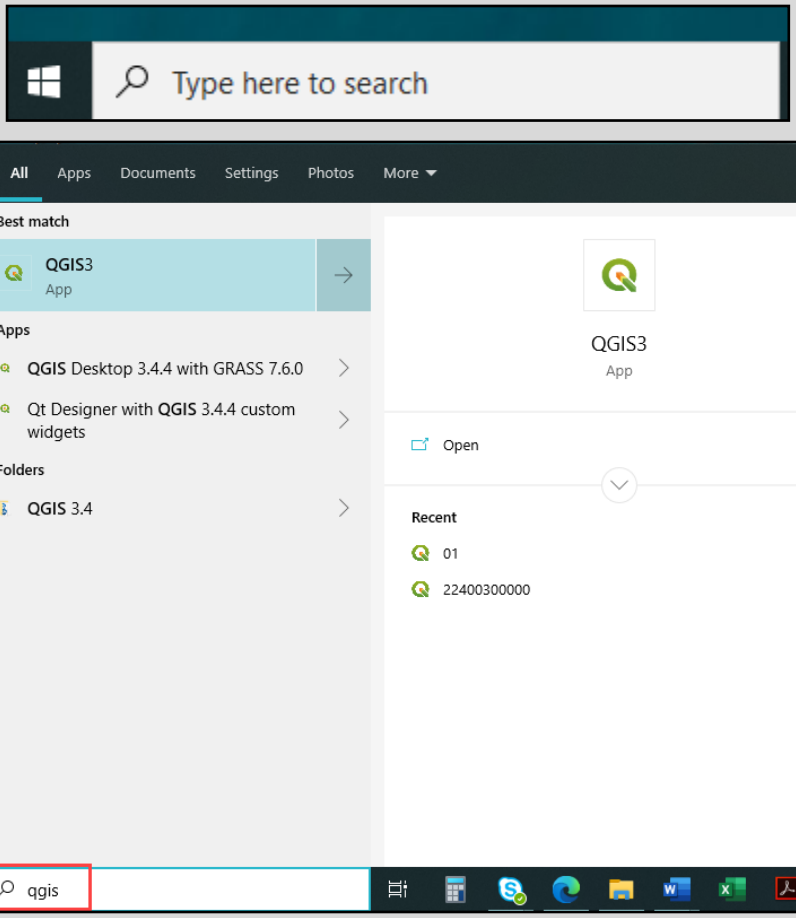
Proceed to the next chapter for guidance on opening GUPS and starting a CQR project.

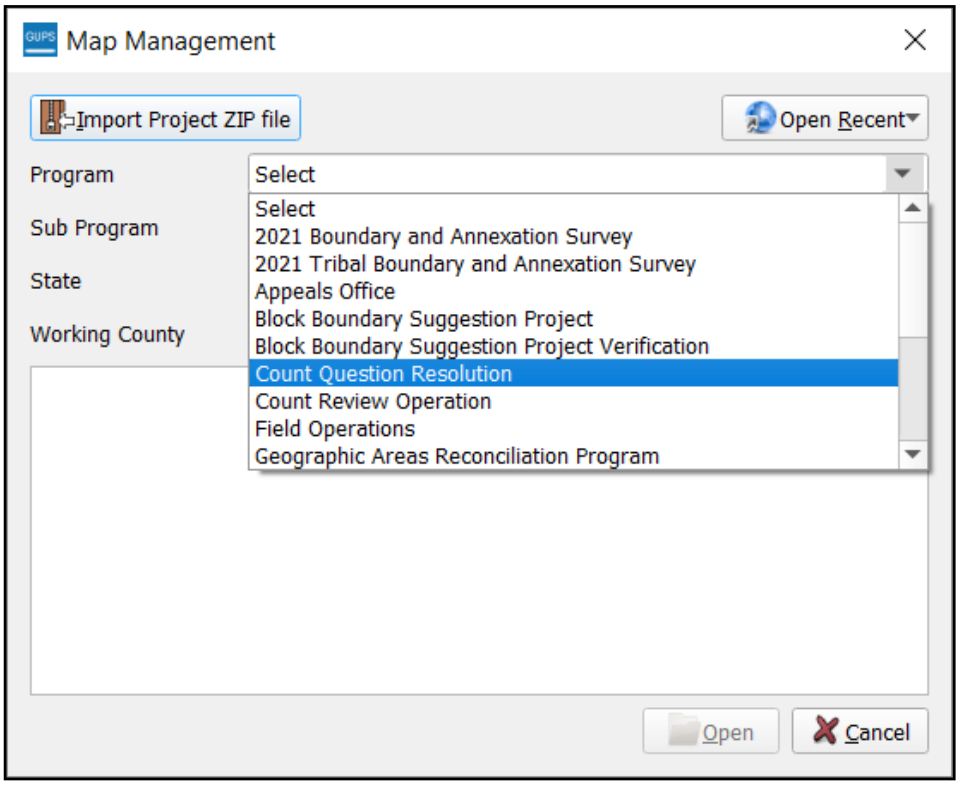
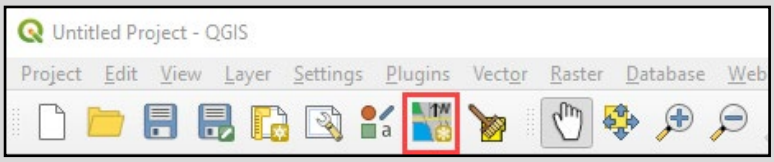
CHAPTER 4 OPENING GUPS AND STARTING A CQR PROJECT

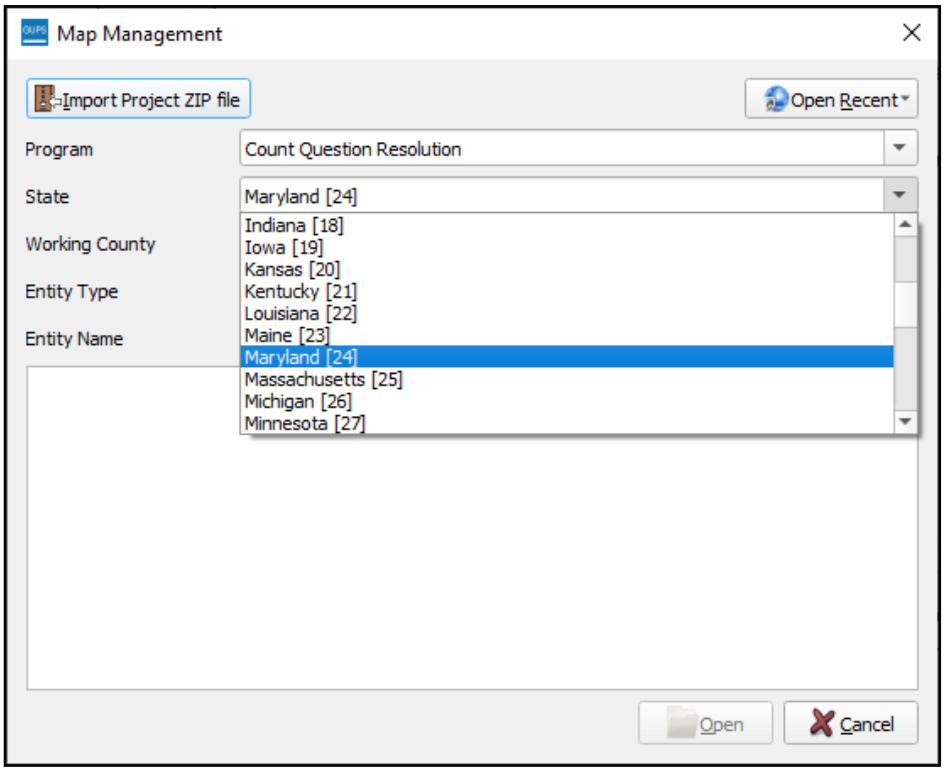
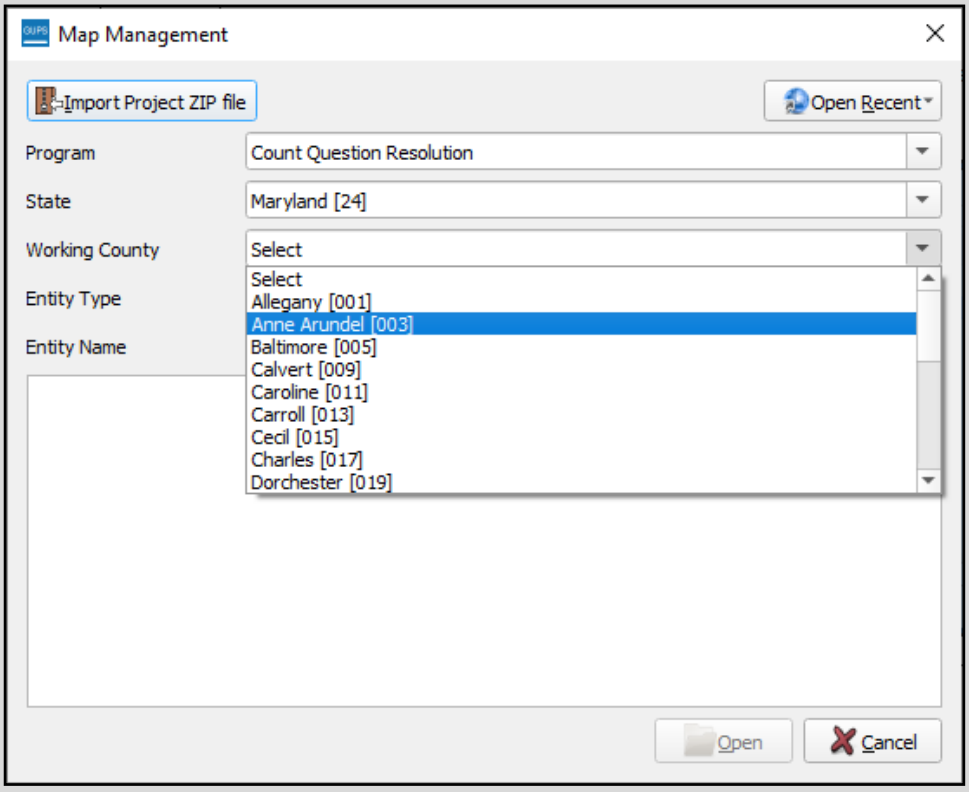
Follow steps listed in **Table 5** to open GUPS and start a new CQR project using the Census Web option of GUPS. The Census Bureau recommends the use of the Census Web option in GUPS for the data source to download the shapefiles directly into GUPS, but for those participants that are unable to use the Census Web option, refer to **Appendix C** for steps to use the My Computer data source option, then return to section **4.1** to continue learning about GUPS.

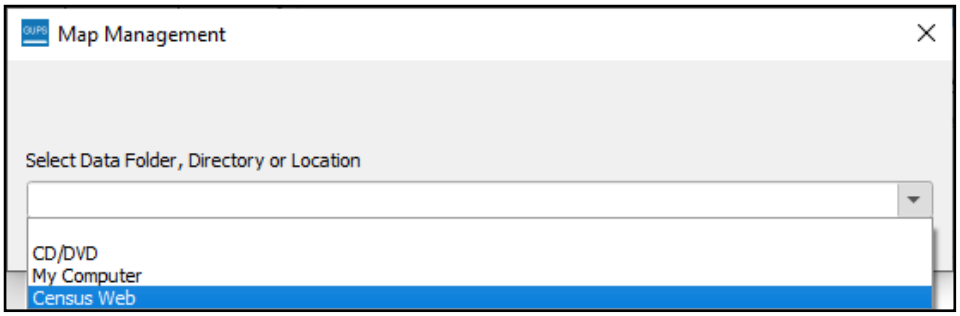
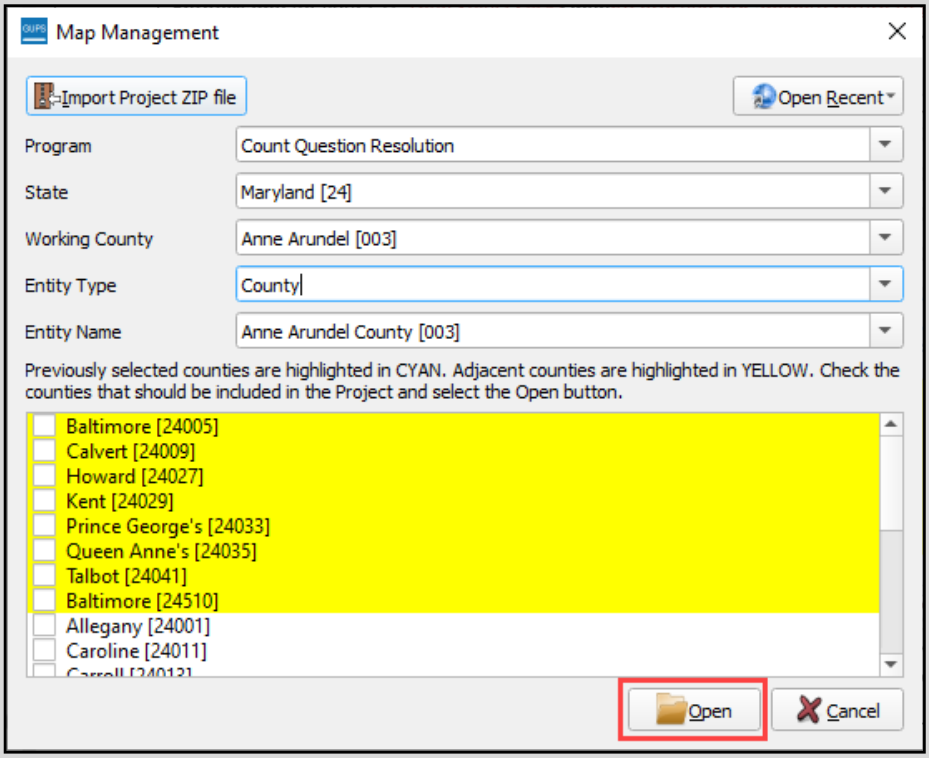
Table 5: Steps to Open GUPS and Start a CQR Project using Census Web

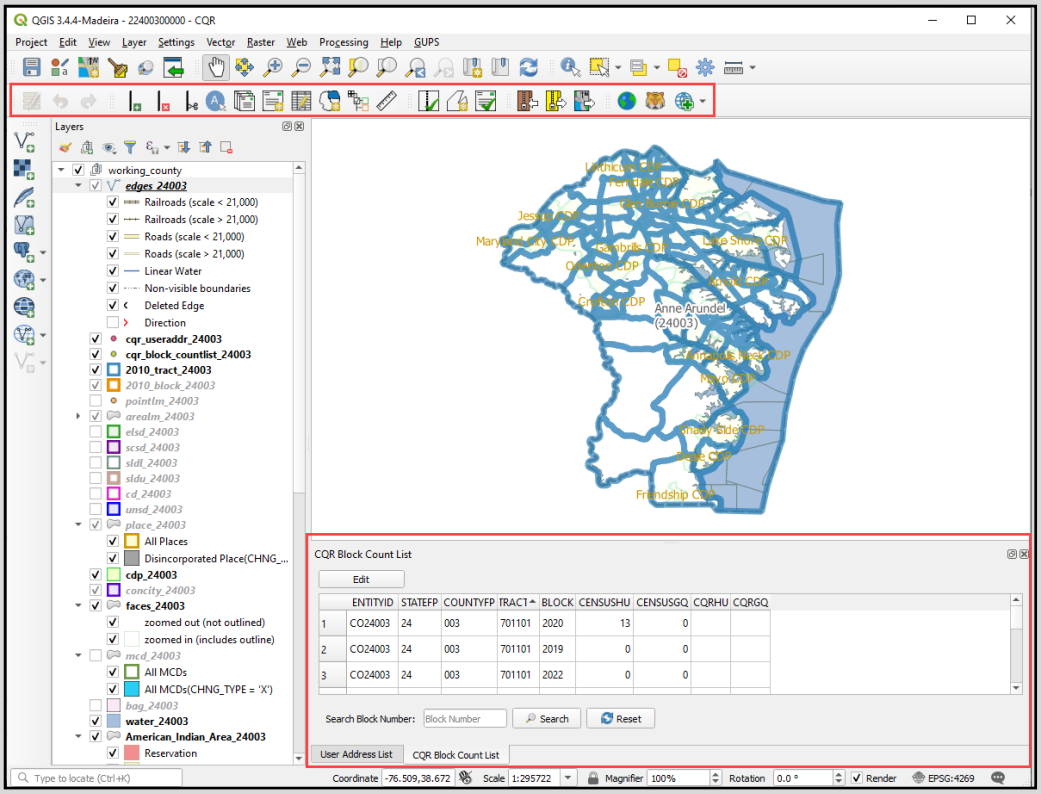
Step	Action and *Result(s)*
Step 1	To open GUPS, select the **QGIS3** icon from the Start Menu.  *The QGIS splash screen appears*. Depending on the age of the computer and amount of RAM, the application may require a few moments to load and open. 

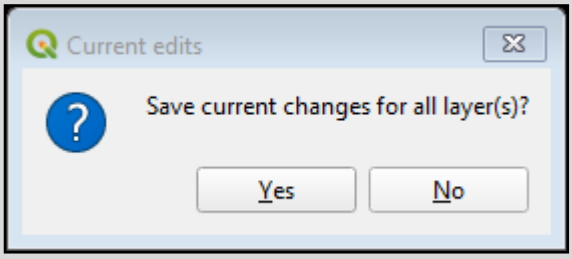
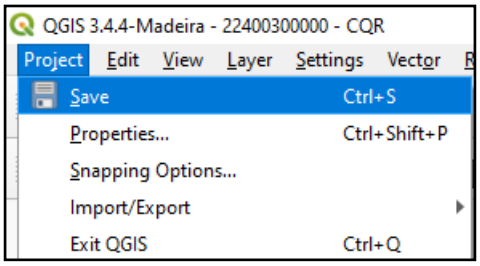
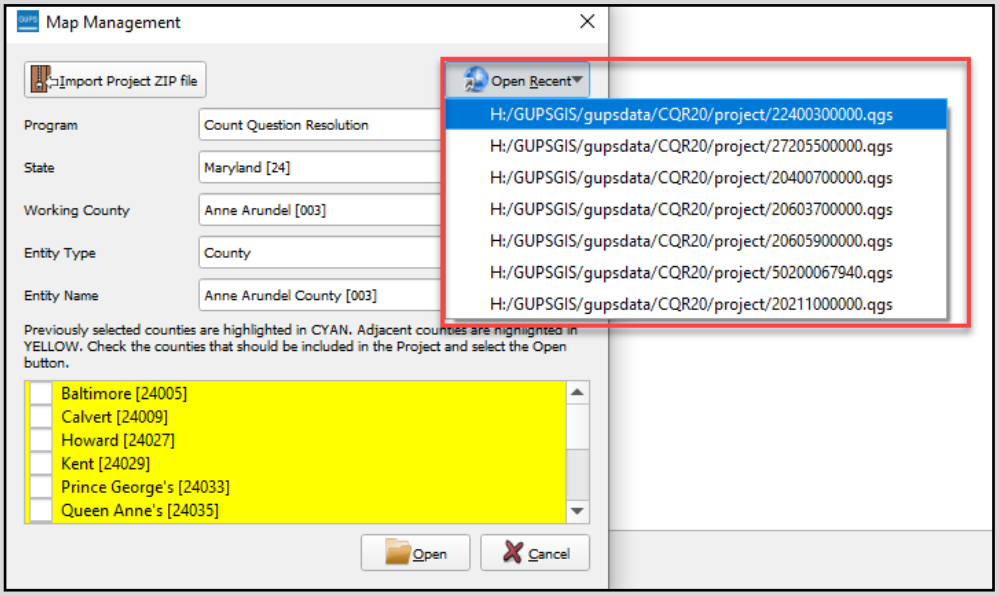
Step	Action and *Result(s)*
	A participant can also locate QGIS3 by typing ‘qgis’ in the Search area at the bottom left of the screen, near the Start button, in Windows 10. 

Step	Action and *Result(s)*
Step 2	*The **Map Management** window appears.*  Use the drop-down menu next to the **Program** field to select **Count Question Resolution**.
	If the Map Management window does not appear, choose the Map Management button from the Standard toolbar (shown below highlighted by a red rectangle). If it still does not appear, refer to **Appendix D** for troubleshooting tips. 

Step	Action and *Result(s)*
Step 3	Choose the GU's state from the **State** drop-down menu. 
Step 4	Choose the GU's county from the **Working County** drop-down menu. Note: This field is required for all entity types to prepare the CQR Block Count List within the CQR project. 

Step	Action and *Result(s)*
Step 5	*A secondary **Map Management** window appears to select the data source*. From this secondary **Map Management** window, choose **Census Web** from the **Select Data Folder, Directory or Location** drop-down menu to establish the link to the Census Bureau servers to download the shapefile data layers with preset symbology and labels directly into GUPS.  Note: The CD/DVD option is not used for 2020 Census CQR. Files received on DVD to review the 2020 Census results are copied locally and not loaded into GUPS directly from the DVD.
Step 6	After the initial connection is made, *the secondary Map Management window reappears to select the **Entity Type** and **Entity Name** for the GU*.  Select **Open** to proceed or **Cancel** to return to the previous menu. Note: The **ENTITYID** field, as described in **Table 2**, appears in the **CQR Block Count List** for the selected **Entity Type** and **Entity Name** from **Map Management** window.

Step	Action and *Result(s)*
	Unless needed to provide reference visuals to complete the case, the Census Bureau does not advise participants to select counties from the list of adjacent counties. Adding adjacent counties increases the time to open the project and slows response times of GUPS while working in a project. Additionally, though a maximum of 10 counties can be loaded into the project, only the working county is editable. IMPORTANT: For GUs that have proposed changes across multiple counties, (like a state planning to submit housing count corrections for several counties or a city that spans more than one county) work one county, then repeat Steps 1-6 above to create a CQR project for each of the other counties necessary. Export each county individually. For further assistance with this process, contact us by email at <dcmd.2020.cqr.submissions@census.gov> or by phone at (888) 369-3617.
Step 7	Project load times vary based upon the size of the working county's CQR Block Count List (i.e., the number of blocks). After the data loads into GUPS, *the **Table of Contents** populates and symbolizes according to preset styles. The **Map View** fills with the working county. The **Menu Bar, Standard Toolbar, and CQR Toolbar** appear along the top and the **Status Bar** appears at the bottom of the screen. The CQR Block Count List opens by default.* The counts shown in the screenshot for Anne Arundel County (24003) are fictional and used for illustrative purposes only.  Note: The **QGIS 3.4.4 Madeira** and **CQR** display at the very top left of the application window, along with the entity coding for the GU. This code differs from the Entity ID that appears in other materials and is only used in GUPS as it creates, saves, and exports the project. This information helps a participant confirm use of the newer QGIS version and selection of the correct GU and program.
	The Census Bureau requests no changes to the default projection and recommends no changes be made to the default layer symbology once the project loads.

Step	Action and *Result(s)*
Step 8	To save a project, use the **Save** button on the **Standard toolbar**. Otherwise, edits will be lost.  *The **Current edits** confirmation dialog box appears*. Choose the **Yes** button to save or the **No** button to cancel without saving the project. 
	Participants may also use the **Save** option beneath the **Project** tab on the **Menu bar** to save the project. 
Step 9	To reopen a saved project, expand the menu beneath the **Open Recent** button from the **Map Management** window. *The drop-down list provides a list of current projects created using GUPS*. 

Proceed to the next section for an introduction to the GUPS menus and toolbars.

4.1 GUPS Menus and Toolbars

The GUPS main page elements, shown below in **Figure 9** and briefly mentioned in **Table 5**, are explained in this section to build familiarity with the software and the default layout.

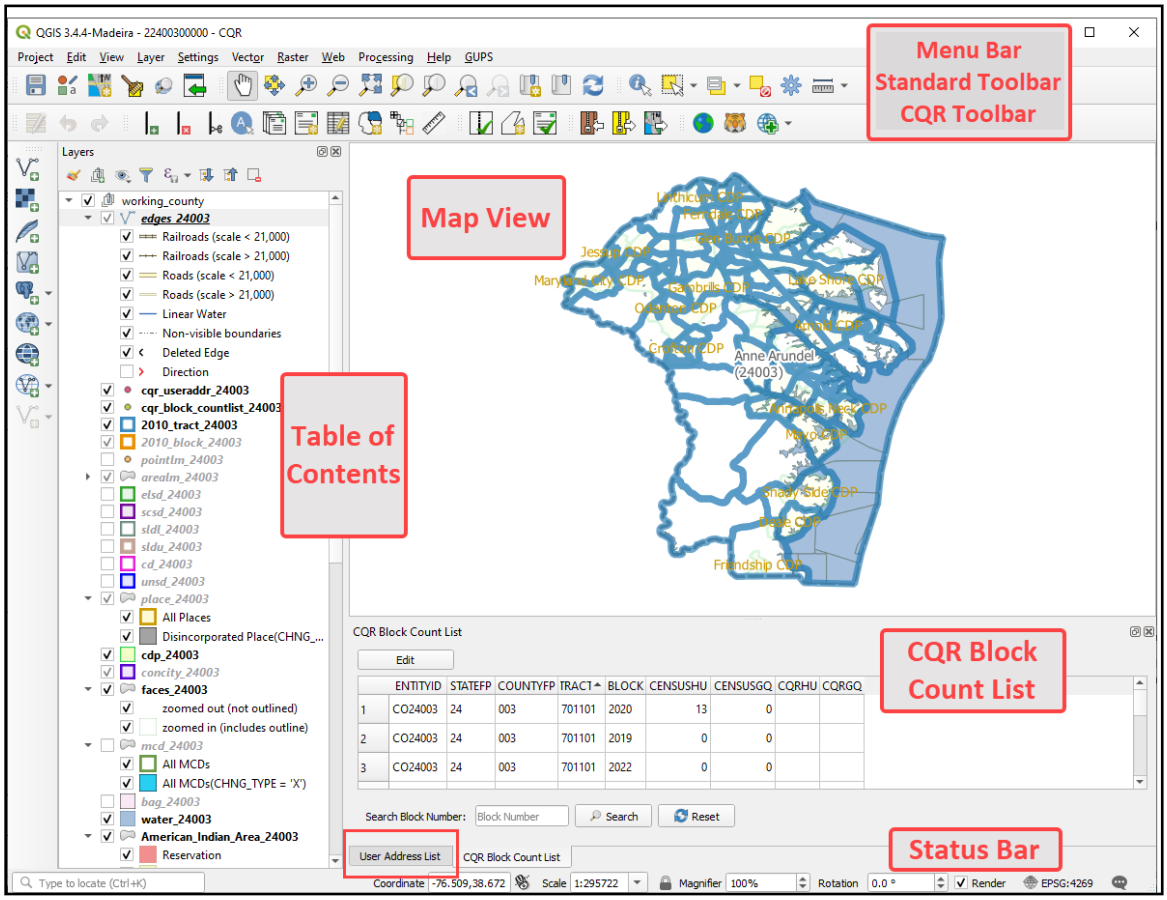
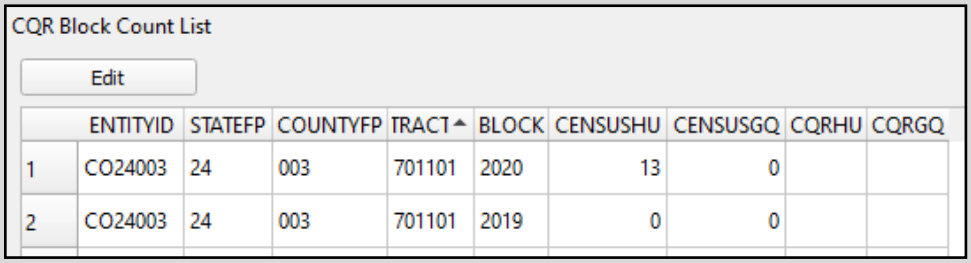


Figure 9: GUPS Main Page Elements and Default Layout

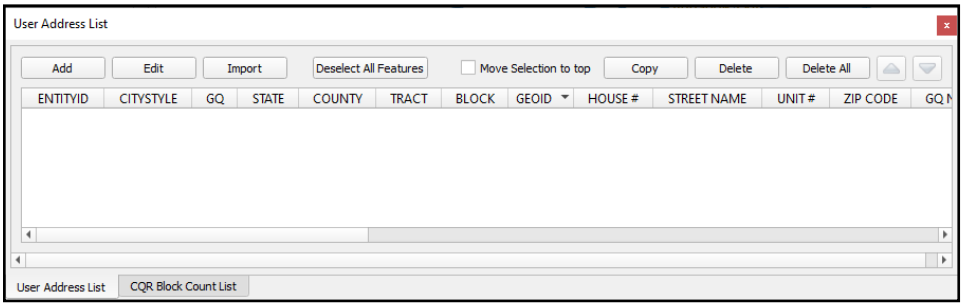
Refer to **Table 6** for high-level information about the elements that comprise the main page once CQR GUPS is opened. Detailed descriptions and functions of menus, sub-menus, and toolbars is in **Appendix E**.

Table 6: GUPS Main Page Elements and Their Function/Description

Page Element	Function/Description
Menu Bar	Permits access to QGIS and GUPS features using a standard hierarchical menu. Offers basic features such as Settings and Help; tools to manage the Map View. Almost all functions available in Menu bar are available in toolbars. Refer to appendix **E1** for more details.
Standard Toolbar	Provides navigation functions and other tools needed to interact with the Map View and layers. Refer to appendix **E3** for more details.
CQR Toolbar	Provides tools for specific to the 2020 Census CQR as well as some tools from previous Census Bureau programs. See section **4.1.1** for descriptions of the buttons.

Page Element	Function/Description
Map View	Displays the default data layers for the working county selected in the Map Management window. It reflects the colors and symbology of layers in the Table of Contents and is where the participant performs boundary and spatial updates.
Table of Contents	Depicts the layers in the Map View. Layers have been pre-styled and arranged for optimal use as part of the Census Web option. However, layers can be managed by manipulating the visibility (i.e., check/uncheck the layer) or reorganized using tools from the Table of Contents toolbar that appears at the top of the Table of Contents. Refer to appendix **E2** for more details.
CQR Block Count List	Displays the housing counts for the working county from the state-level list. It permits participants to edit the housing counts for blocks shown within the list once selected for editing. Only two fields, the CQRHU (housing units) and CQRGQ (group quarters) are editable. The information shown is fictional and for illustrative purposes only. Locate details for this material in section **5.2.1**. 

	ENTITYID	STATEFP	COUNTYFP	TRACT	BLOCK	CENSUSHU	CENSUSGQ	CQRHU	CQRGQ
1	CO24003	24	003	701101	2020	13	0		
2	CO24003	24	003	701101	2019	0	0		

User Address List	Displays a blank table for providing individual, residential addresses affected by a boundary correction. Only required for boundary cases. Not used to supply a complete list of addresses for the GU. Locate details for this material in section **5.1.2**. 
Status Bar	Displays information on the coordinates, map scale, magnification, rotation, and projection. Allows for adjustment of the display. Refer to appendix **E4** for more details.

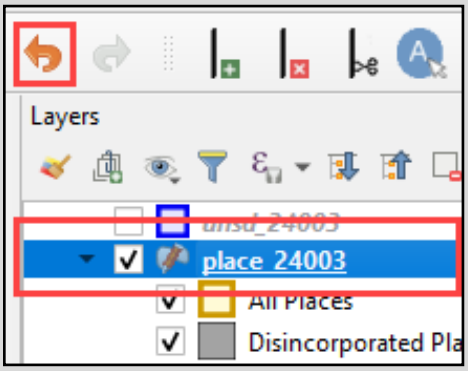
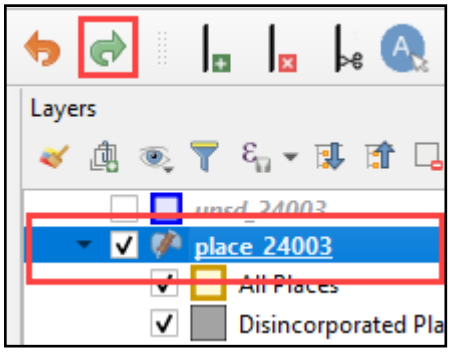
4.1.1 CQR Toolbar

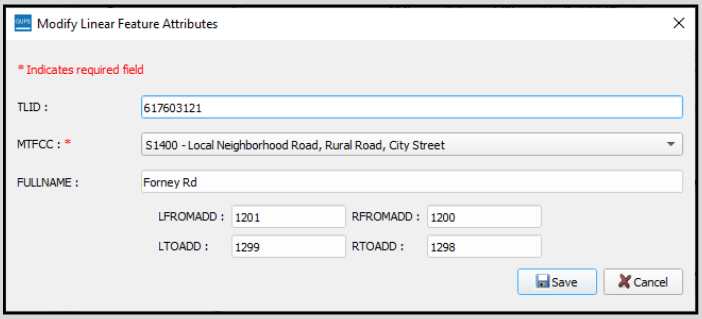
The CQR toolbar, shown in **Figure 10**, includes buttons specifically for preparing a CQR case.

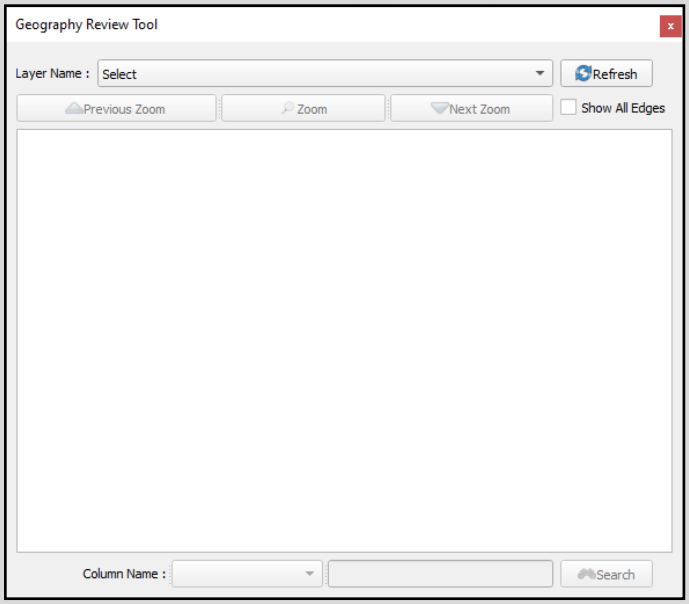
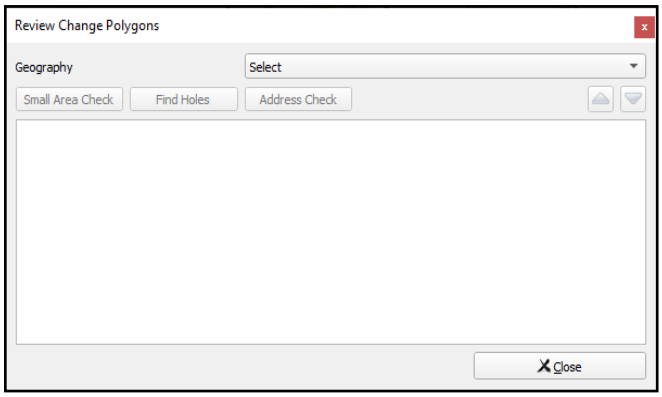
Figure 10: CQR Toolbar

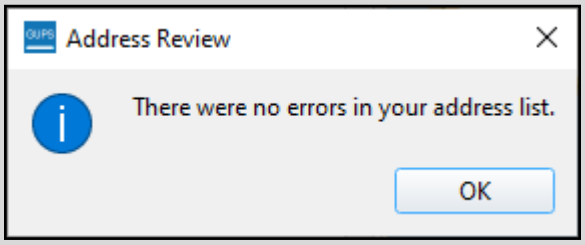
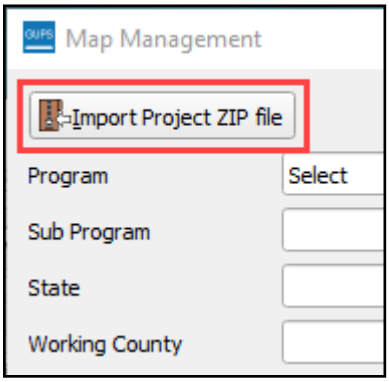
Table 7 provides a visual for each button and details the function and/or description of each button.

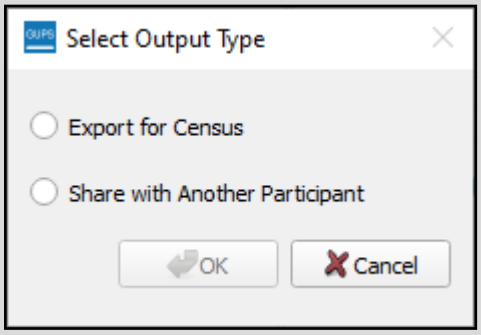
Table 7: CQR Toolbar Buttons and Their Function/Description

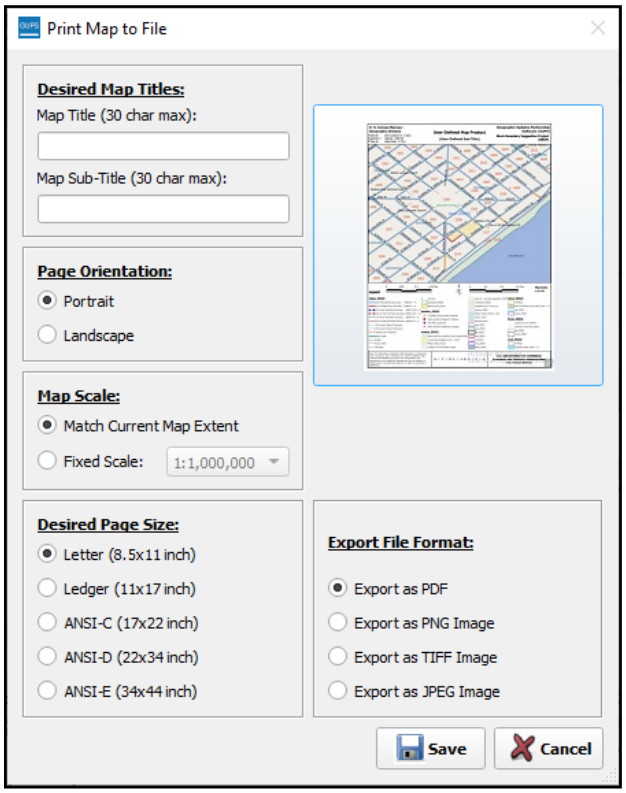
Button	Name	Function/Description
	Modify the Attributes of All Selected Features Simultaneously	Not used for 2020 Census CQR. Remains grayed out until layer selected and ready to edit. Modifies the attributes of the linear features.
	Undo	Reverts the last change made by a participant. Must make the layer where the change was made active in the Table of Contents to activate the button. When active, the button's backward arrow symbol is orange in color. Must be used prior to saving the project. For example, if a boundary correction to a city was made inaccurately, the participant would select the "place" layer in the Table of Contents (since the change was made to the place boundary) to activate the button and undo the boundary correction. 
	Redo	Restores the last change made by a participant. Must make the layer where the change was made active in the Table of Contents to activate the button. When active, the button's forward arrow symbol is green in color. Must be used prior to saving the project. 
	Add Linear Feature	Adds a linear feature in the Map View. CQR participants use this to add a linear feature for boundary corrections, not to add linear features that are missing from the Map View that do not involve a boundary correction.

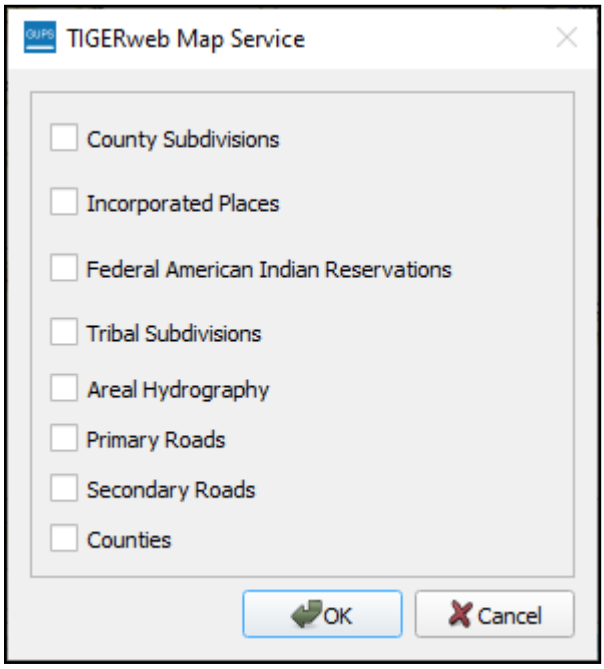
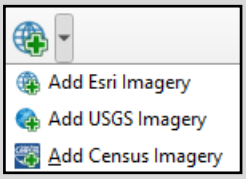
Button	Name	Function/Description
	Delete/Restore Linear Feature	Deletes an added linear feature or restores a linear feature deleted from the Map View using this button. CQR participants use this to delete a linear feature added using the Add Linear Feature button (or to restore a feature that was added and deleted).
	Split Linear Feature	Rarely, if at all, used for 2020 Census CQR. Splits an already existing linear feature in the Map View to assist with modifying a coincident boundary.
	Display All Names	Displays all the names for features in the edges layer in the Map View once a zoom level below 1:24000 is reached.
	Block Count List	Reopens the CQR Block Count List if a participant closed it.
	Address List	Reopens the User Address List if a participant closed it.
	Modify Linear Feature Attributes	Opens the Modify Linear Feature Attributes window to permit the edit of MTFCC, FULLNAME, and address range fields for a selected linear feature. May not use this tool often during CQR unless GU needs to return to a linear feature after its added for the purpose of a boundary correction. 
	Modify Area Feature	Chooses the geography (e.g., County, MCD, Place, Reservation/Trust Land, or Tribal Subdivision) to make spatial edits.
	Show/Hide Legend	Shows or hides the legend (e.g., Table of Contents). It may be helpful to close the legend to make more screen space for the Map View.
	Scale Bar Tool	Permits the selection of units of measure to display in the scale bar as well as the color of the scale bar to display in the Map View.

Button	Name	Function/Description
	Geography Review Tool	Filters a layer based on field values in the attribute table. It provides access to the attributes of the selected layers. This button does not allow for changes to the geography. Used to locate different geographies in the project. For details on this tool, review section **5.1.4**.  IMPORTANT: This validation check is not required for a boundary case prior to exporting the project for submission.
	Review Change Polygons	Permits a review of the transactions (change polygons) for layers (Geography) that changed because of a boundary correction. It contains three quality checks for geographies where boundary corrections occurred. These checks include: **Small Area Check**, **Find Holes**, and **Address Check**. For details, on this tool, review section **5.1.4**.  IMPORTANT: This validation check, and its quality checks, are required for a boundary case prior to exporting the project for submission.

Button	Name	Function/Description
	Address Review Tool	Performs validation checks of the **User Address List** to ensure the address records do not contain errors and meet the required address specifications. The tool returns a secondary window with results of the check. For details on this tool, review section **5.1.4**.  Note: This tool differs from the **Address Check** that is run within the **Review Change Polygons** validation check. It is particularly important for participants that import their addresses from an external source rather than manually adding them since GUPS would not permit a participant to interactively add an address record with errors. IMPORTANT: This validation check is required for a boundary case prior to exporting the project for submission.
	Import County Zip	Used internally by the Census Bureau while processing cases. Imports the "DataDictionary" output .zip file produced from the **Export to Zip – Share with Another Participant** option mentioned in the next row of this table. Would only be used by participants during 2020 Census CQR if they used the **Export to Zip – Share with Another Participant** option. Note: This button will not work if the same project is open. As an alternative, use the "Import Project ZIP file" button on the Map Management window prior to opening any project. 

Button	Name	Function/Description
	Export to Zip	Includes two export options: **Export for Census** and **Share with Another Participant**.  Use the **Export for Census** option to create the .zip file of the CQR project that contains all required data for submission to the Census Bureau. The **Share with Another Participant** option is used internally by the Census Bureau as processing of the case occurs; however, GU's may use this option to share work with others in their GU. Given the current workplace environment because of the COVID-19 pandemic, this method of sharing the project permits staff to review an entire project which may be useful prior to finalizing the submission for the Census Bureau. Note: The guide does not include instructions for the **Share with Another Participant** option. Contact the Census Bureau by email at <dcmd.2020.cqr.submissions@census.gov> or by phone at (888) 369-3617 if there are questions surrounding its use/functionality.

Button	Name	Function/Description
	Print Map to File	Exports a printable map in *.pdf, *.png, *.tiff, or *.jpeg format. This tool allows users to assign a map title and sub-title and to set the page orientation, scale, and page size. 
	Internet Map Service	Opens a GIS map service from the internet (i.e., Google Maps or Bing Maps) after selecting a point in the Map View. The intent of this tool is to provide visual assistance from an external source. An internet connection is required for this button to function.

Button	Name	Function/Description
	TIGERweb Map Service	Permits loading of census spatial data from Census Bureau's TIGERweb Map Service (WMS). The selected data layers load into the Table of Contents of the project. To remove the loaded layers, relaunch the button and uncheck the selected layers.  Note: These layers appear in the CQR project as part of the GUPS project creation process; therefore, loading layers from TIGERweb is needed only to compare different vintages of spatial data that MAY exist between the data loaded in the project versus the data available in TIGERweb.
 	Add Imagery / Remove Imagery	Adds imagery to the CQR project. The imagery loads near the bottom of the Table of Contents, so it underlies other layers. The button includes three imagery options: **Add Esri Imagery**, **Add USGS Imagery**, or **Add Census Imagery**. Remove imagery by using the same button. It will change to include a red negative symbol. Or participants can remove imagery by using the mouse to right-click on the imagery layer in the Table of Contents. IMPORTANT: The Census Bureau recommends turning off or removing the imagery prior to saving the CQR project.

PART 3 CREATING A CQR PROJECT

This part of the guide contains the details and instructions for creating a CQR project. The information in this part of the guide serves as the main resource available for participants to understand use of GUPS to prepare the GU's case. The content details all the steps necessary to prepare both case types, boundary and housing count.

CHAPTER 5 PREPARING A CQR CASE

The type of discrepancy(s) uncovered while reviewing the 2020 Census results dictates the sections to review within this chapter. Navigate the sections as appropriate for the GU's situation (i.e., section **5.1** for boundary case and section **5.2** for housing count case). If a GU has both boundary and housing count discrepancies, review both sections.

5.1 Preparing a Boundary Case

IMPORTANT: Boundary cases request a Census Bureau review of legal boundaries in effect as of January 1, 2020. Cases submitted with a boundary correction effective after January 1, 2020, will be forwarded to the Boundary and Annexation Survey staff for research and potential update.

As first introduced in section **C**, for the Census Bureau to successfully review and process a case with a boundary discrepancy, it must include the following items:

- A map showing both the incorrect and correct boundaries.
- A list of individual, residential addresses affected by the boundary correction with latitude/longitude coordinate information for each record.
  - Do not create complete address list for the GU. Only addresses affected by the boundary correction are required for submission and review during CQR.
- Supporting documentation, as detailed in section **D**.

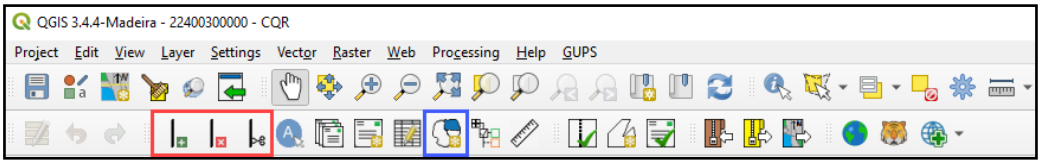
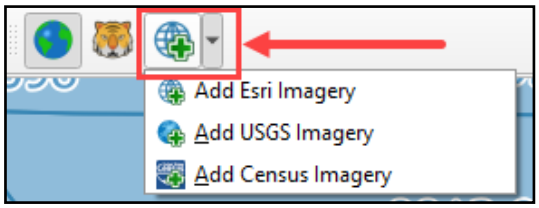
For GUPS participants, the map and the list of individual, residential addresses, (i.e., the User Address List) are generated by GUPS following specific rules and guidelines. GUPS also permits GUs to upload their supporting documentation and associates it with the case prior to submission. Review the sections below for the steps to prepare a boundary case. For additional reference and support related to boundary corrections not detailed in the sections below, refer to the appropriate Boundary and Annexation Survey (BAS) Respondent Guides (i.e., GUPS or Tribal GUPS) available from the CQR website. Though participants use the BAS guides for boundary correction reference, they must use the case preparation and submission instructions from this material.

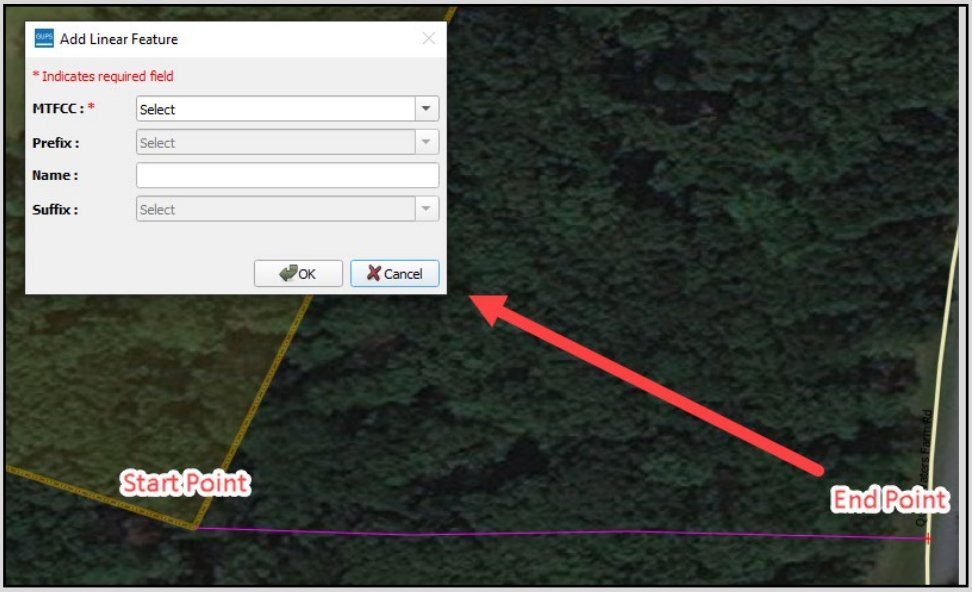
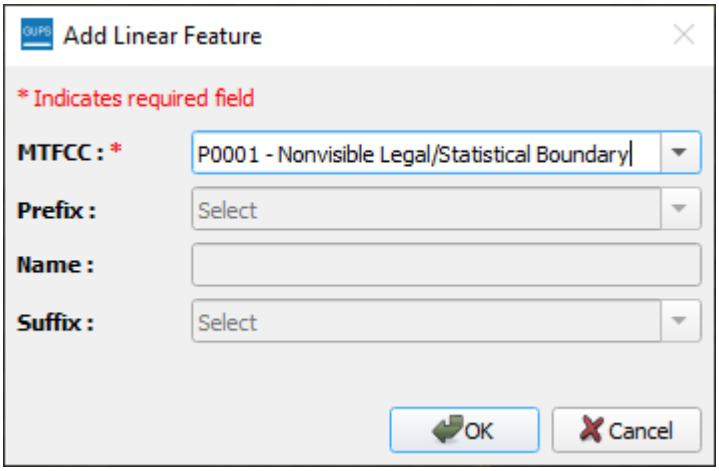
Note: The Census Bureau will generate boundary verification materials for GUs that submit a boundary case to verify the boundary correction(s). Details about these materials are included in **Appendix G**.

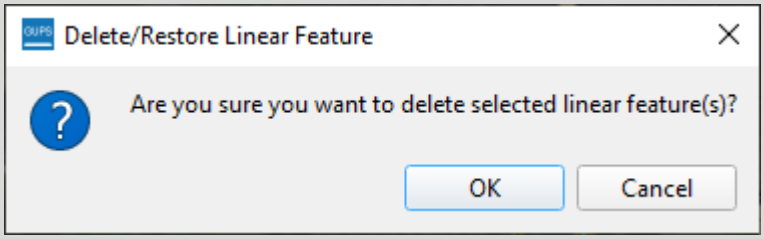
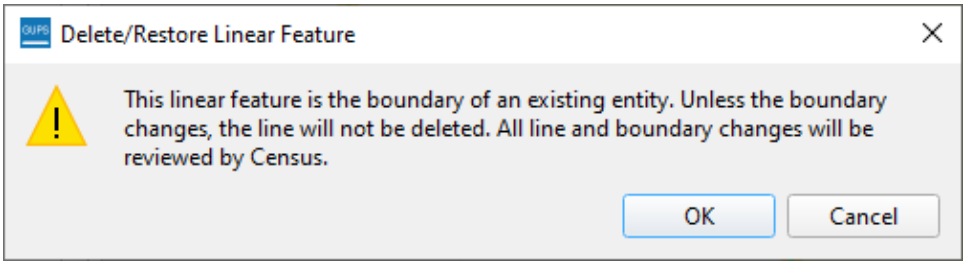
5.1.1 Correcting a Boundary

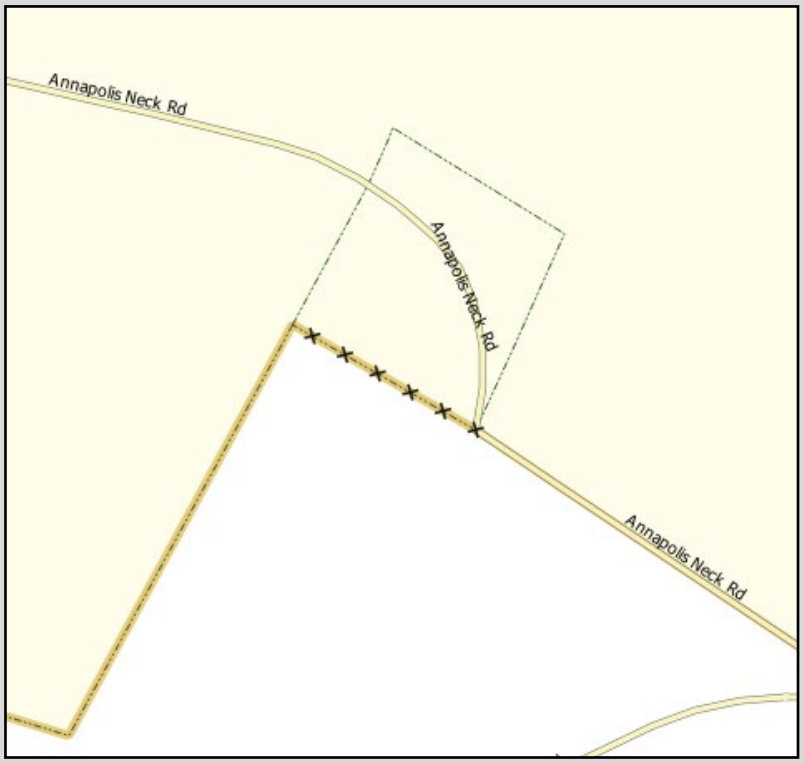
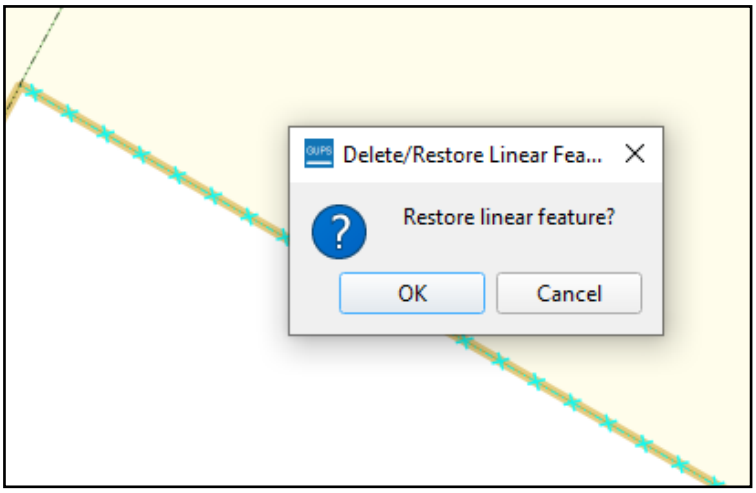
This section discusses how to correct a discrepant boundary using the various tools in GUPS. If linear feature updates are needed to correct a discrepant boundary, refer to **Table 8** for instructions for adding, deleting, and splitting a linear feature. For boundary corrections that involve adding or removing existing areas where it is unnecessary to add, delete, or split a linear feature, skip to **Table 9**. For more details on the buttons/tools used in the two tables below refer to **Table 7** and **Appendix E**.

Table 8: Steps to Add, Delete, and Split a Linear Feature

Step	Action and *Result(s)*
Step 1	With the CQR project open, use the **Add Linear Feature**, **Delete/Restore Linear Feature**, or **Split Linear Feature** buttons as needed prior to using the **Modify Area Feature** button to correct a boundary. These four buttons are denoted on the CQR toolbar visual below in red and blue. 
	The scope of CQR includes correcting discrepancies with boundaries and housing counts. Do not complete linear feature updates (adds, deletes, or splits) that are not affected by a boundary correction that involves housing counts.
Step 2	Before adding a linear feature to be used as the new boundary of the GU, the Census Bureau recommends enabling imagery for visual reference. In GUPS, choose the **Add Imagery** button from the **CQR toolbar**. 

Step	Action and *Result(s)*
Step 3	To add a linear feature choose the **Add Linear Feature**, button from the **CQR toolbar**. Zoom in close enough to see where to start.  *The mouse cursor that appears in the Map View changes to a round, pink symbol (not captured in the image below)*. Use the left button of the mouse to create a start point to begin digitizing the linear feature in the Map View and continue using the mouse's left button to insert vertexes to shape the linear feature. Once the end of the linear feature is reached, use the right-button of the mouse to stop digitizing and create an end point. *The **Add Linear Feature** window appears to assign attributes to the newly added linear feature*. 
Step 4	In the **Add Linear Feature** window, select an **MTFCC** from the drop-down menu (refer to **Appendix F** for information on the various MTFCC definitions/choices) and provide a Prefix, Name, and Suffix if applicable. *This example inserted a non-visible legal boundary, so no name attribution is needed*. Select **OK** to proceed or **Cancel** to return to the **Map View**. The addition of this linear feature creates an area that can now be included as part of a boundary correction.  Save the project by using the **Save** icon from the **Standard toolbar**.

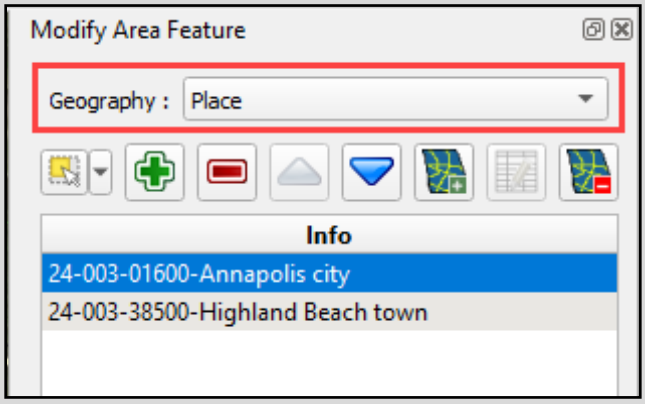
Step	Action and *Result(s)*
	Proceed to **Table 9** if this action concludes linear feature work in the CQR project or repeat this action to add other linear features in the working county. The area modified in Table 9 differs from the area shown above, but the process is the same.
Step 5	To delete a linear feature that serves as a legal boundary, choose the **Delete/Restore Linear Feature** button from the **CQR toolbar**. 
Step 6	Use the mouse to select the linear feature from the Map View. *A **Delete/Restore Linear Feature** confirmation window appears*. Choose **OK** to mark the feature for deletion or **Cancel** to deselect the feature and return to the Map View.  Note: GUPS permits for the selection of multiple linear features to delete. Press and hold the Ctrl key on the keyboard while selecting the features to delete or drag the cursor over multiple features to select them for deletion.
Step 7	Because the linear feature is an existing legal boundary, the selection of **OK** *opens a secondary **Delete/Restore Linear Feature** confirmation window with information about the linear feature chosen for deletion*.  Select **OK** to proceed with marking the linear feature for deletion or **Cancel** to cancel the delete action and return to the Map View.

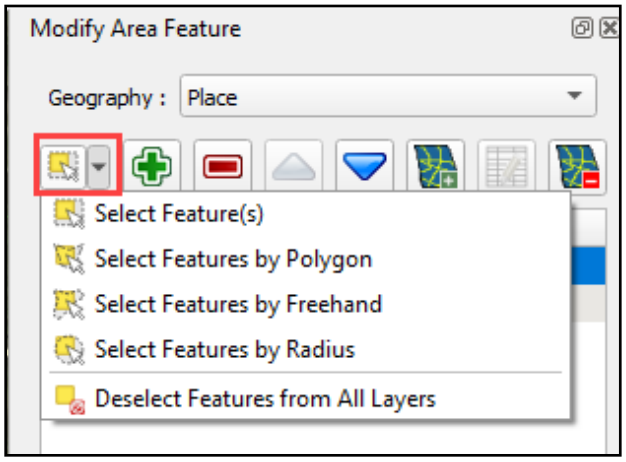
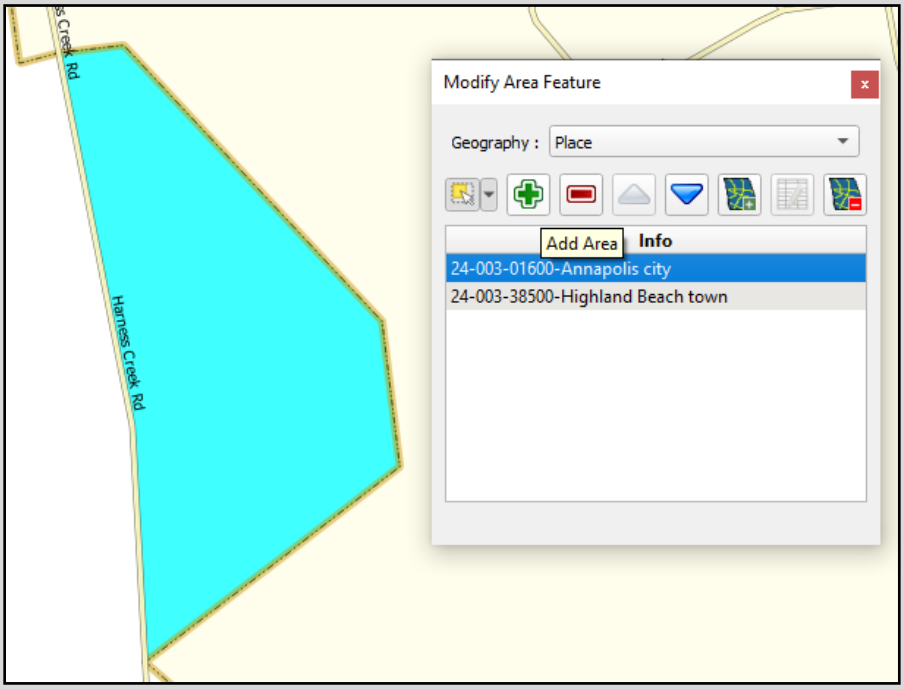
Step	Action and *Result(s)*
Step 8	*The linear feature marked for deletion appears in the Map View marked with black X's.* 
Step 9	To restore the linear feature prior to saving the CQR project, select the **Delete/Restore Linear Feature** button again, then select the feature marked for deletion. *A **Delete/Restore Linear Feature** confirmation window appears with a question to restore the linear feature*.  Select **OK** to restore the linear feature or **Cancel** to return to the Map View and keep the linear feature flagged for deletion. Save the project by using the **Save** icon from the **Standard toolbar.**
	Proceed to **Table 9** if this action concludes linear feature work in the CQR project or repeat this action to delete other linear features in the working county. The area modified in Table 9 differs from the area shown above, but the process is the same.

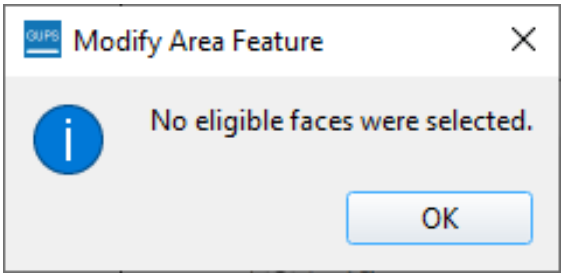
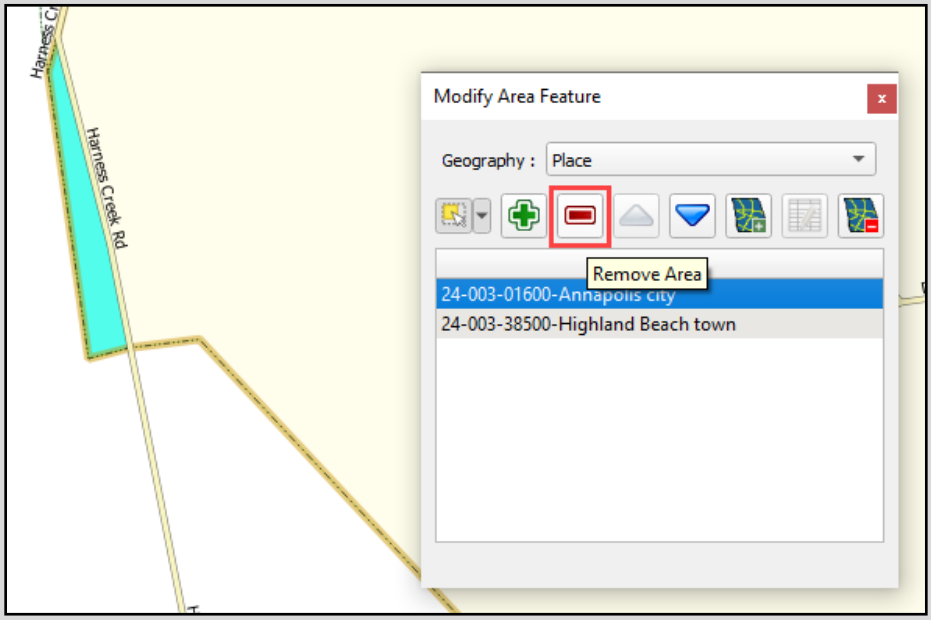
Step	Action and *Result(s)*
Step 10	To split a linear feature that serves as a legal boundary, choose the **Split Linear Feature** button from the **CQR toolbar**. Splitting a linear feature creates a node from which the linear feature can be manipulated. This tool is not used/rarely used in 2020 Census CQR. Contact the Census Bureau if the GU believes a linear feature needs to be split. 
Step 11	Save the project using the **Save** icon from the **Standard toolbar** or from beneath the **Project menu**.

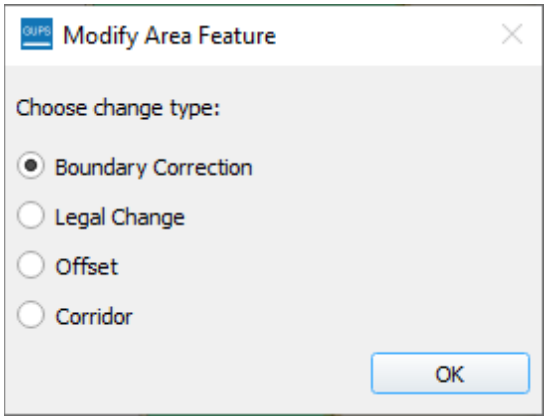
With the linear feature update(s) complete, proceed to the next table for the steps to correct a boundary. Please also recall from the introductory paragraph in this section that boundary corrections can occur on existing areas without making linear feature updates or corrections. Follow the instructions in **Table 9** to correct a boundary.

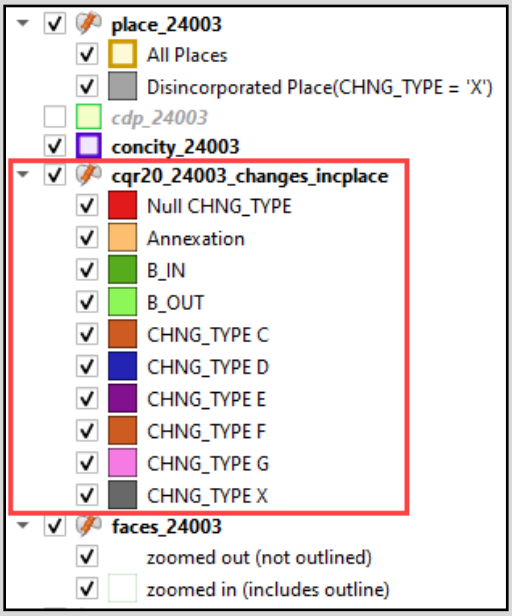
Table 9: Steps to Correct a Boundary

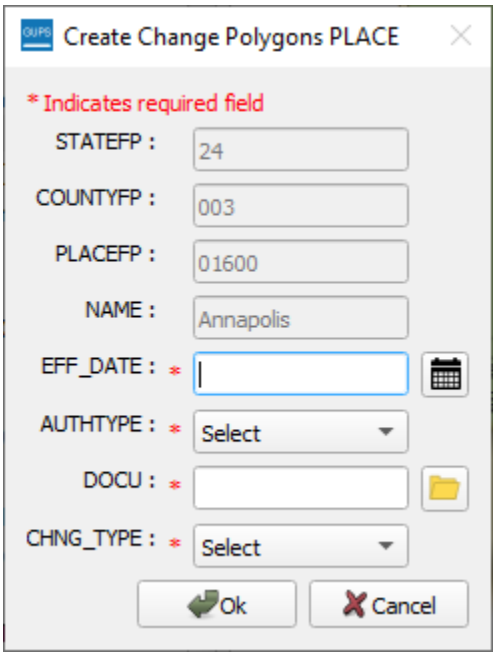
Step	Action and *Result(s)*
Step 1	With the CQR project open, select the **Modify Area Feature** button from the **CQR toolbar**. 
Step 2	*The **Modify Area Feature** window opens.*  Choose the type of geography from the **Geography** drop-down menu. This is the type of GU in which the boundary correction is being made. Select the GU from the list that appears in the **Info** section of the window. *This example is using **Place**.*

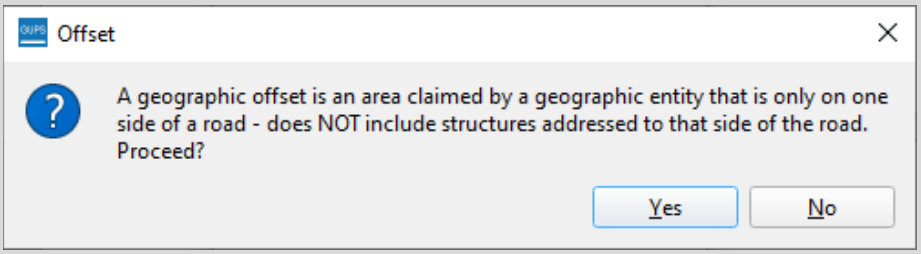
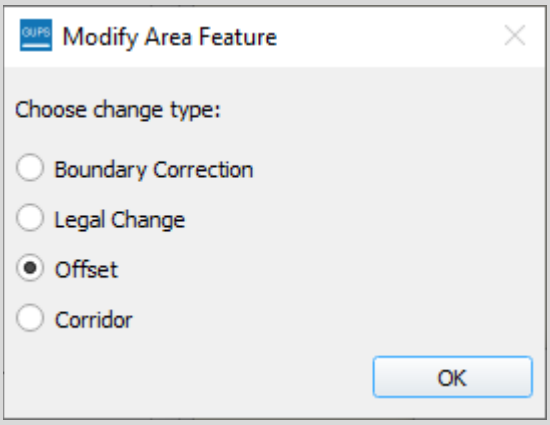
Step	Action and *Result(s)*
Step 3	Choose a **Select Feature(s)** tool from the drop-down window. Participants may choose one of four methods for selecting the polygon or polygons (i.e. face/faces) to add or delete from the GU.  Note: Press and hold the Ctrl key on the keyboard while selecting more than one area to add or delete from the GU or drag the cursor over multiple areas.
Step 4a	To add area to a GU to correct the boundary, select face/faces and then select the **Add Area** button from the **Modify Area Feature** window. *The selected area(s) display with a color in the **Map View**.* 

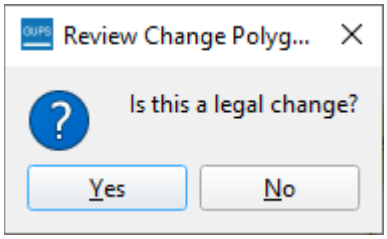
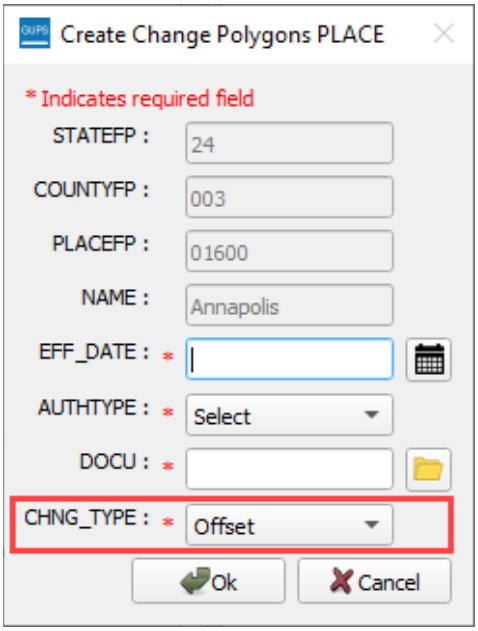
Step	Action and *Result(s)*
	If a participant selects an ineligible face, such as one that is already included in the GU, a pop-up window appears indicating that no eligible faces were selected.  If a participant wants to deselect a face(s), choose the **Deselect Features from All Layers** button on the **Standard toolbar**.  IMPORTANT: This deselection action is very important to conduct prior to proceeding with making a boundary correction that includes an inaccurately selected face(s). Once selected for a boundary correction, GUPS flags the face(s) for change. The participant would be required to use the **Undo** action to unflag the incorrect face(s). Find instructions on the **Undo** action in **Step 6**.
Step 4b	<u>To delete area</u> from a GU to correct the boundary, select face/faces and then select the **Remove Area** button from the **Modify Area Feature** window. *The selected area(s) display with a color in the **Map View**.* 

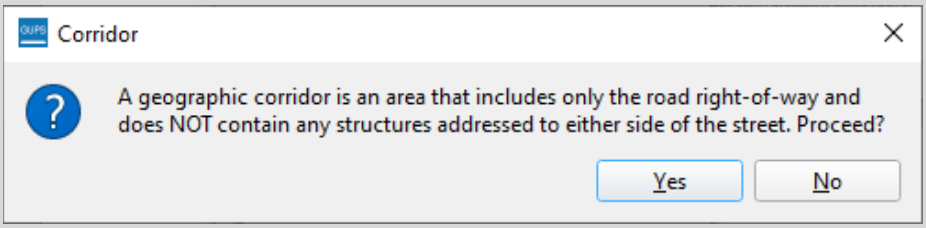
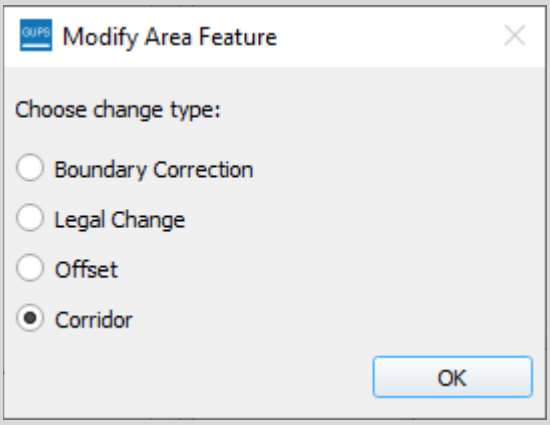
Step	Action and *Result(s)*
Step 5	*Both adding or removing area results in the appearance of a secondary* ***Modify Area Feature*** *window that asks to choose a change type*. 
	Detailed definitions of the four change types are included in the BAS Guides, but use the following as a summarization of each. • Use the **Boundary Correction** option for minor discrepancies in the boundary that do not involve a legal change. These involve existing boundaries that are digitized incorrectly and do not modify the overall shape of the geographic area. • Use the **Legal Change** option for all boundary modifications involving a legal change such as an annexation or deannexation. • Use the **Offset** option to identify an area claimed by a GU that is only on one side of a street and does not include structure addressed to that side of the street. • Use the **Corridor** option to identify an area that includes only the road right-of-way and does not contain any structures addressed to either side of the street.
Step 5a	Choosing **Boundary Correction** and selecting **OK** flags the selected face/faces for adding to or removing from the GU. No additional windows appear for confirmation or action by the participant. *The face/faces are added to the "changes" layer for the specific GU type (incplace, cousub, county, or aial) and are symbolized based on preset values in the Table of Contents*.

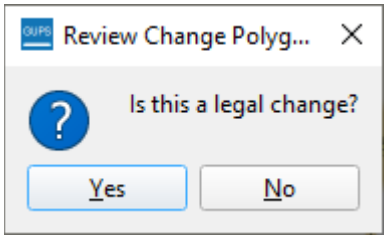
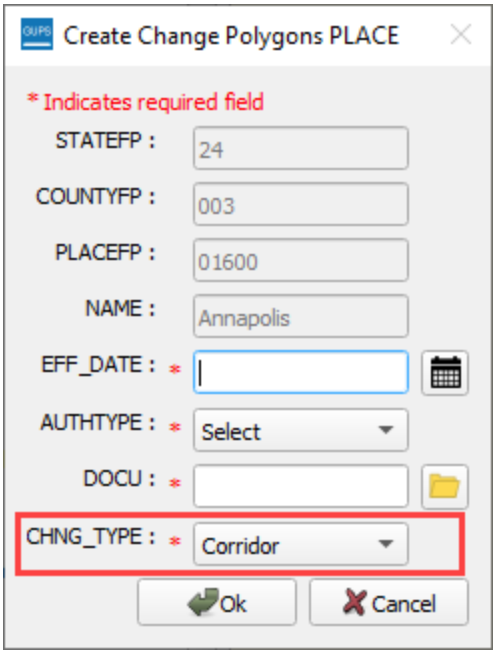
Step	Action and *Result(s)*
	Expand the “changes” layer(s) for the entity type with the boundary corrections in the Table of Contents to view the color scheme used for the various change types.  A = Annexation, B_IN = Boundary correction that moved area(s) into a GU, B_OUT = Boundary correction that moved an area(s) out of a GU, C = Corridor, D = Deannexation, E = New Incorporation, F = Offset, G = Change Name (point features), X = Disincorporation.

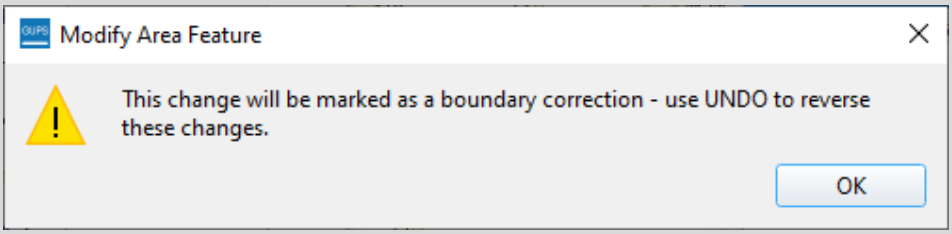
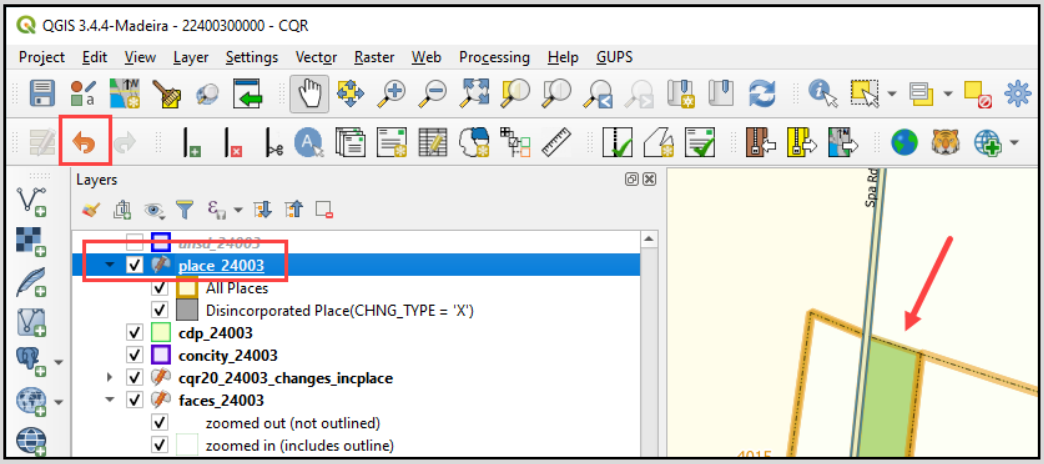
Step	Action and *Result(s)*
Step 5b	Choosing **Legal Change** *opens the* ***Create Change Polygons*** *window.*  Complete the required fields for effective date (EFF_DATE), authorization type (AUTHTYPE), supporting documentation (DOCU), and change type (CHNG_TYPE). Select **OK** to finalize the legal change correction. *The face/faces are added to the "changes" layer for the specific GU type (incplace, cousub, county, or aial) and are symbolized based on preset values in the Table of Contents as shown in the informational row above this step*. Skip to **Step 6** for instructions on cancelling the correction. Note: Supporting documentation added here is not added again during the export process for the CQR project. The process of adding additional, non-boundary related supporting documentation is covered in Chapter 6. Refer to section **D** for specific details on the required supporting documentation.

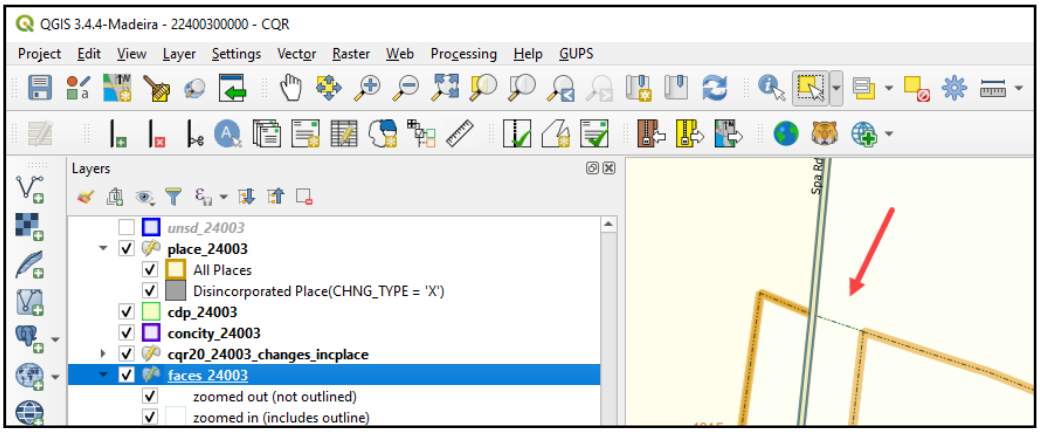
Step	Action and *Result(s)*
Step 5c	Choosing **Offset** *opens a secondary confirmation window*. Before GUPS processes an offset correction, the participant must answer **Yes** in the secondary confirmation window. An answer of **No** returns the participant to the **Modify Area Feature** window to select another change type.  With a selection of **Yes**, *the secondary* ***Modify Area Feature*** *window reappears with* ***Offset*** *selected*.  Choose **OK** to proceed.

Step	Action and *Result(s)*
Step 5d	*A **Review Change Polygon** window appears with a question about whether the correction is a legal change.*  Selection of **No** flags the face/faces as an Offset. No additional windows appear. No additional action is needed to make the offset correction. *The face/faces are added to the "changes" layer for the specific GU type (incplace, cousub, county, or aial) and are symbolized based on preset values in the Table of Contents as show in the information step above.* If the correction is errant, skip to Step 6 for instructions to undo the offset correction. Selection of **Yes** *opens the **Create Change Polygons** window with the **CHNG_TYPE** prefilled, but with three other required fields to complete: Effective Date (EFF_DATE), Authorization Type (AUTHTYPE), and Supporting Documentation (DOCU).*  Complete the three fields and select **OK** to finalize the correction. *The face/faces are added to the "changes" layer for the specific GU type (incplace, cousub, county, or aial) and are symbolized based on preset values in the Table of Contents as shown in the informational step above.* Skip to **Step 6** for instructions on cancelling the correction. Note: Supporting documentation added here is not added again during the export process for the CQR project. The process of adding additional, non-boundary related supporting documentation is covered in Chapter 6. Refer to section **D** for specific details on the required supporting documentation.

Step	Action and *Result(s)*
Step 5e	Choosing **Corridor** *opens a secondary confirmation window*. Before GUPS processes a corridor correction, the participant must answer **Yes** in the secondary confirmation window. An answer of **No** returns the participant to the **Modify Area Feature** window to select another change type.  With a selection of **Yes**, *the secondary **Modify Area Feature** window reappears with **Corridor** selected*.  Choose **OK** to proceed.

Step	Action and *Result(s)*
Step 5f	*A **Review Change Polygon** window appears with a question about whether the correction is a legal change*.  Selection of **No** flags the face/faces as a Corridor. No additional windows appear. No additional action is needed to make the offset correction. *The face/faces are added to the "changes" layer for the specific GU type (incplace, cousub, county, or aial) and are symbolized based on preset values in the Table of Contents as shown in the informational step above.* If the correction is errant, skip to **Step 6** for instructions to undo the corridor correction. Selection of **Yes** *opens the **Create Change Polygons** window with the **CHNG_TYPE** prefilled, but with three other required fields to complete: Effective Date (EFF_DATE), Authorization Type (AUTHTYPE), and Supporting Documentation (DOCU)*.  Complete the three fields and select **OK** to finalize the correction. *The face/faces are added to the "changes" layer for the specific GU type (incplace, cousub, county, or aial) and are symbolized based on preset values in the Table of Contents as shown in the informational step above*. Note: Supporting documentation added here is not added again during the export process for the CQR project. The process of adding additional, non-boundary related supporting documentation is covered in **Chapter 6**. Refer to section **D** for specific details on the required supporting documentation.

Step	Action and *Result(s)*
Step 6	Selection of **Cancel** *opens a Modify Area Feature warning window.*  Select **OK** to close the window.
	Undo actions must be performed prior to saving the project. Take no other action in the project. Ensuring no other actions are taken will allow participants to successfully undo an errant correction and/or redo a correction that should not have been undone. Participants may encounter additional GUPS messages with information about the availability of Undo/Redo functionality and with instructions regarding the order that Undo/Redo actions can occur. 
Step 7	To undo a boundary correction (*shown in green in the Map View and denoted by the red arrow in the image below*), select the GU's layer in the Table of Contents. *The selection of the "places" layer activates the* ***Undo*** *button in the* ***CQR toolbar***.  For this example, *it is the "places" layer because the boundary correction was for an incorporated place*.

Step	Action and *Result(s)*
Step 8	Select the **Undo** button from the **CQR toolbar**. Allow time for the undo action to execute. *The **Map View** updates to remove the face(s) flagged as a correction*.  Note: The Table of Contents now has the "faces" layer selected because that is the layer in which the faces are selected when using the **Modify Area Feature** button, as described at the beginning of this table.
Step 9	Repeat the appropriate steps in this table for all proposed area changes in the working county. Save the project by using the **Save** icon from the **Standard toolbar**.

Proceed to the next section for instructions on updating the User Address List which is a requirement for boundary corrections made during 2020 Census CQR.

5.1.2 Updating the User Address List

GUs must provide at least one address within the block(s) affected by a boundary correction to be considered within scope for 2020 Census CQR. When preparing address records to support a boundary correction, there are three types of acceptable addresses: city style, non-city style, and group quarters that can be inserted into the User Address List. Examples of each are included below in section **5.1.2.1**.

Refer to **Table 10** for the steps to manually update the User Address List and **Table 11** for the steps to import an address file into the User Address List. GUPS allows participants to use both methods for updating the User Address List in a CQR project, so review the instructions in both tables to gain familiarity of each method.

IMPORTANT: Implement the United States Postal Service (USPS) abbreviations for the individual address records included to support a boundary case. For acceptable addressing standards and abbreviations that the Census Bureau recognizes for its individual address records, refer to the USPS *Publication 28, Postal Addressing Standards* from <pe.usps.com/text/pub28/welcome.htm>.

5.1.2.1 Acceptable Address Types

The Census Bureau defines addresses, for both housing units and group quarters, with a house number and street name as city style. City style addresses are used as mailing addresses and/or

as addresses that provide location for emergency services, such as fire, police, and rescue (also termed E-911 addresses).

City style examples include:

- 20 N Main St
- 1 Apple Ct Apt 300
- 35A County Road 1413 N
- 87 Cll Sabanetas, Apto 1

The Census Bureau classifies addresses, for both housing units and group quarters, that do not include a house number and/or a street name as non-city style. Non-city style addresses include rural route and highway contract route addresses, physical location descriptions, and any other addresses that do not contain components of a city style address.

Non-city style addresses often do not follow any numeric sequence and may not be associated with the name of the street or highway on which they are located. Rural routes and highway contract routes are mailbox delivery routes served by rural carriers to deliver and collect mail from roadside mailboxes. In addition to the route and box numbers, these addresses may also include a complete address number, complete street name, and location description, or any combination used for emergency location services, such as police, fire, and rescue (E-911 addresses). In some instances, the complete address number and box number are identical. In other instances, the rural or highway contract route and box number and the complete address number are different.

Non-city style examples include:

- RR 2 Box 34
- HC 1 Box 135
- Red House on corner of US Highway 1 and N Elm Ave
- Casa de ladrillo c/ garaje a la derecha

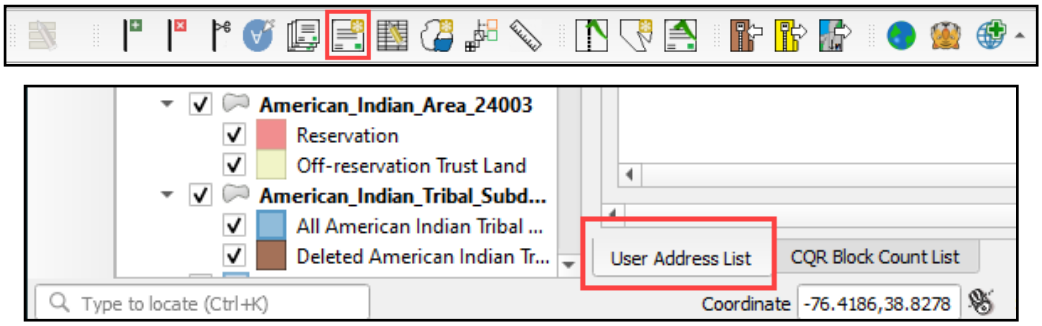
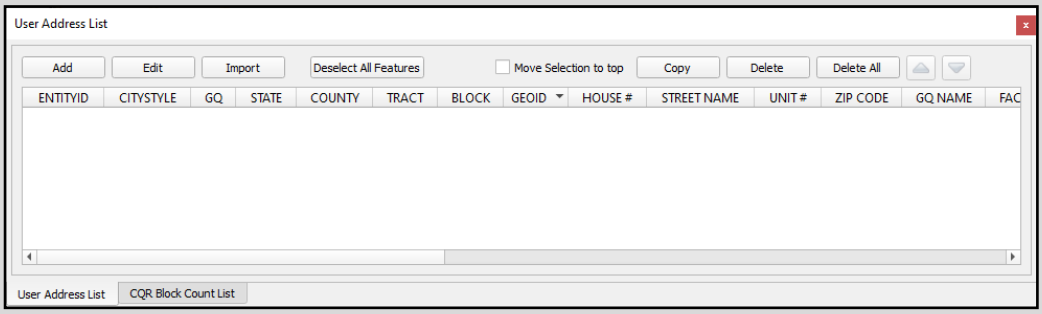
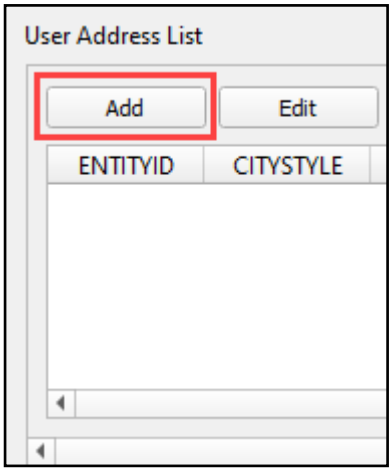
Note: Since PO Box numbers and general delivery addresses are mailing addresses only and not associated with a housing unit or housing unit location, they were not part of the address list used for the 2020 Census and the Census Bureau cannot accept them as valid addresses for the 2020 Census CQR.

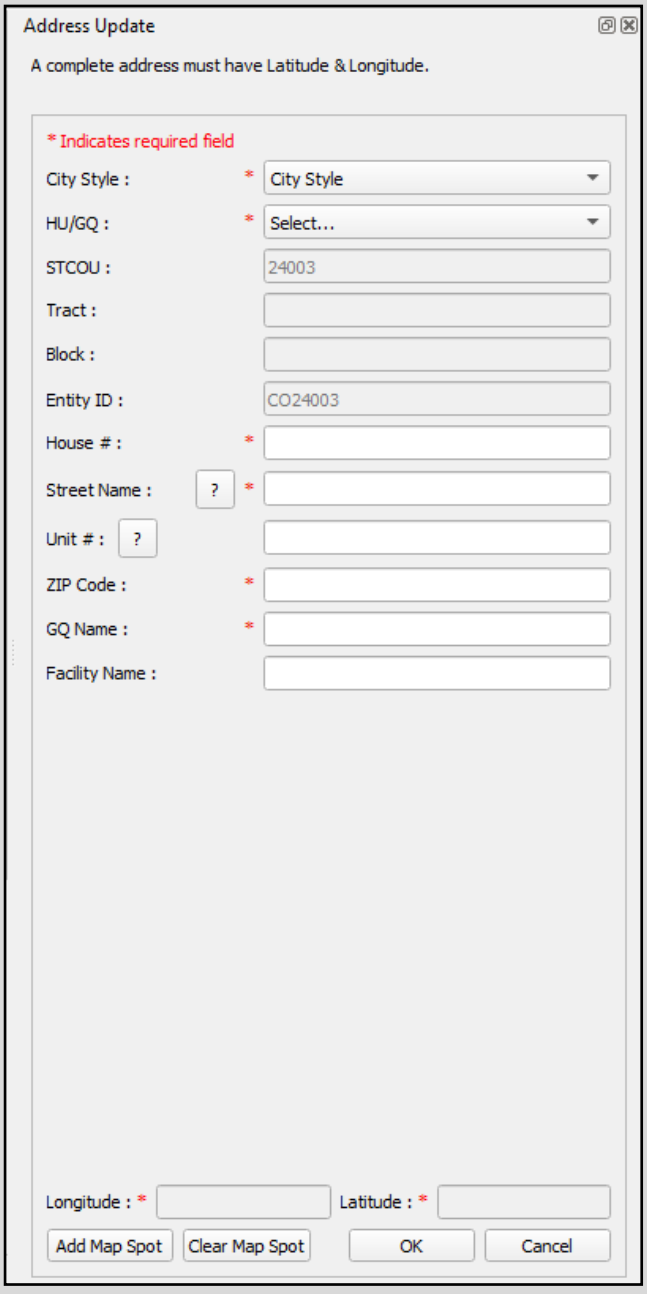
Group quarters addresses include such places as college residence halls, residential treatment centers, skilled nursing facilities, group homes, military barracks, correctional facilities, etc. Group quarters addresses can be city style or non-city style.

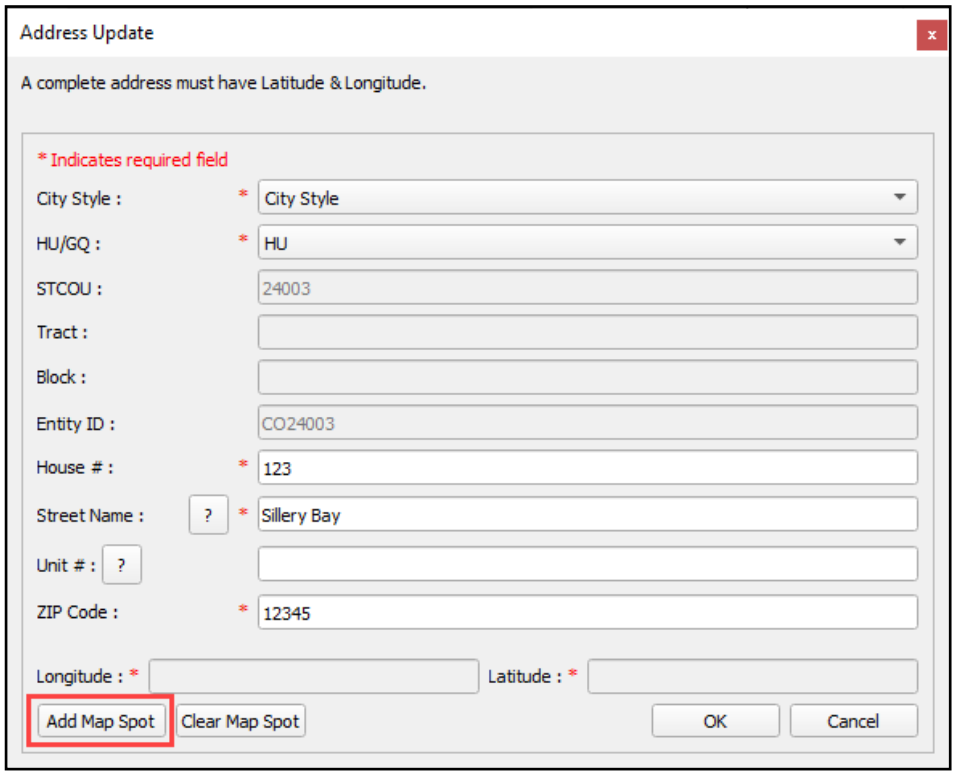
Group quarters address examples include:

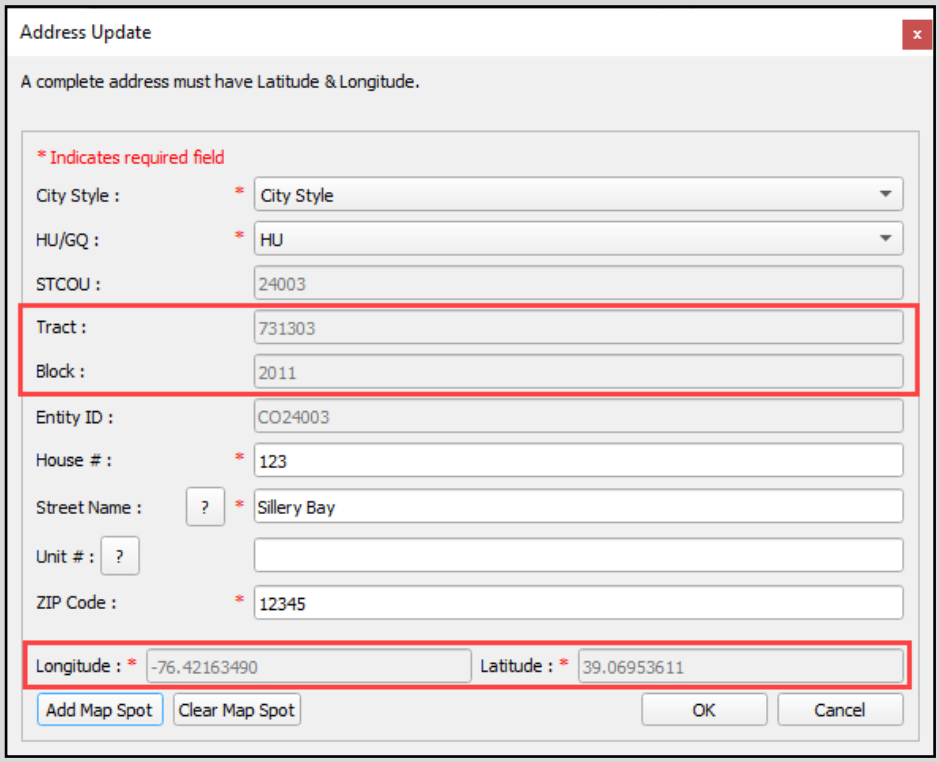
- 2200 Achilles Dr, Dobbs Hall, University of Illinois
- 120 N Elm Ave, Bayside Nursing Home
- RR 3 Box 100, Eastfork Prison
- 198 Cll Vole, Salón Jiménez, Universidad de San Juan

Table 10: Steps to Manually Update the User Address List

Step	Action and *Result(s)*
Step 1	With the CQR project open, if the **User Address List** is not displayed, select the **Address List** button from the **CQR toolbar** or choose the **User Address List** tab at the bottom of the **Map View**. 
Step 2	*The **User Address List** opens near the bottom of the **Map View***. The window is undocked and can be moved. 
Step 3	Select the **Add** button from the **User Address List**. 

Step	Action and *Result(s)*
Step 4	*A blank **Address Update** window opens on the right side of the **Map View***. It too can be repositioned on the screen/across screens. 

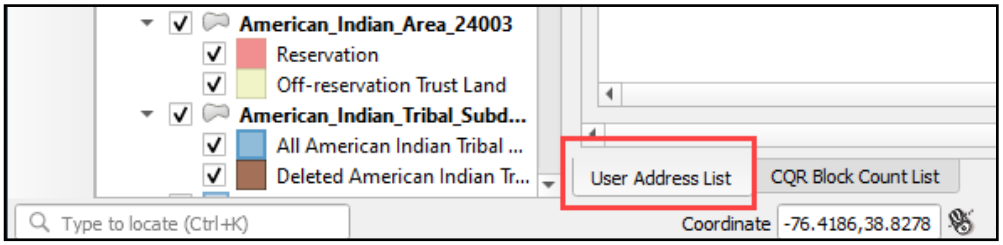
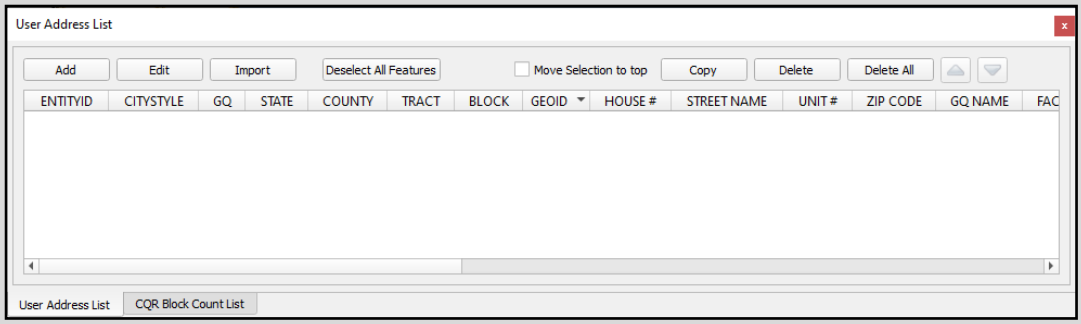
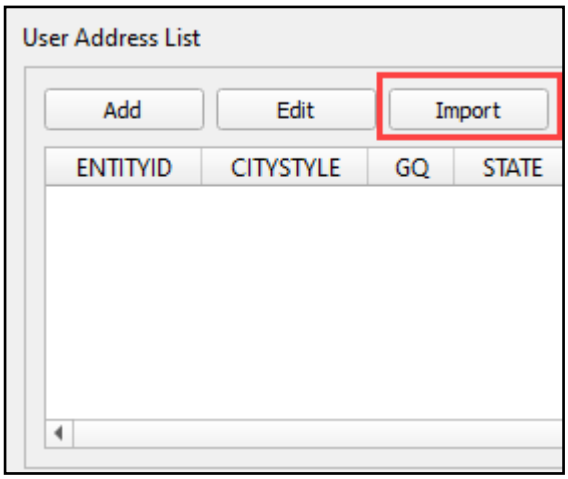
Step	Action and *Result(s)*
Step 5	Field requirements, shown with red asterisk, vary based upon the selection made for **City Style** and **HU/GQ** fields. Complete the required fields, then select the **Add Map Spot** button to add a map spot for the address. The **Clear Map Spot** button is used to remove an added map spot.  Note: GUPS requires a minimum scale of 1:5000 to add a map spot.

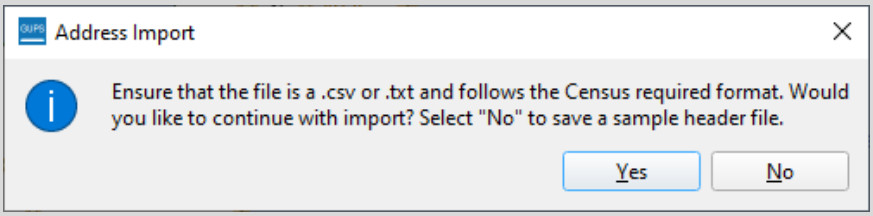
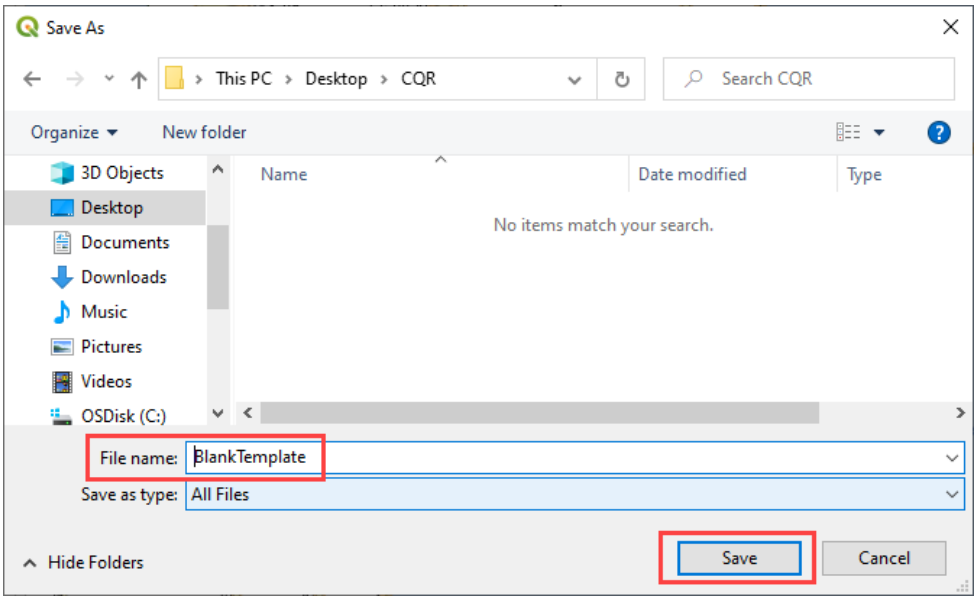
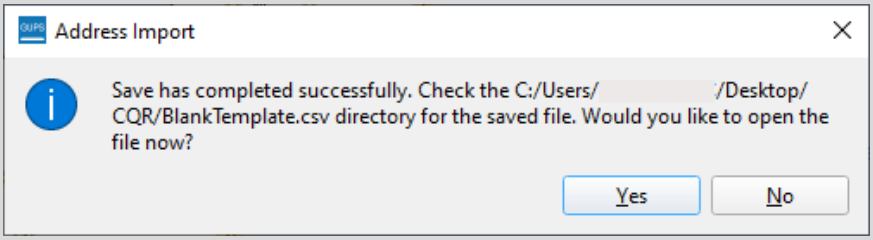
Step	Action and *Result(s)*
	Adding a map spot auto-fills the required **Latitude** and **Longitude** fields and populates the **Tract** and **Block** fields. IMPORTANT: The individual address and map spot coordinates are fictitious and do not represent a Title 13 address. 
Step 6	Select **OK** to complete the addition of the address record to the **User Address List**. Select **Cancel** to close the **Address Update** window and cancel adding the record**.**
Step 7	Repeat this process to add each residential address affected by the boundary correction in the working county. Save the project by using the **Save** icon from the **Standard toolbar**. IMPORTANT: Only include residential addresses affected by the boundary correction. CQR is not an opportunity to add all addresses for a GU.

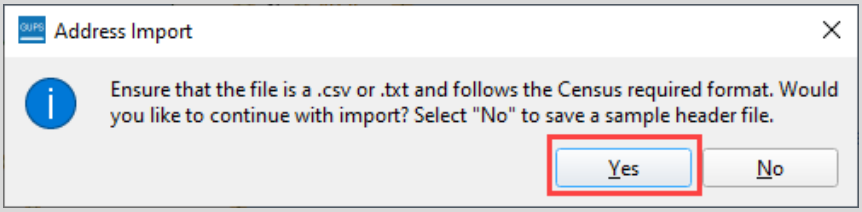
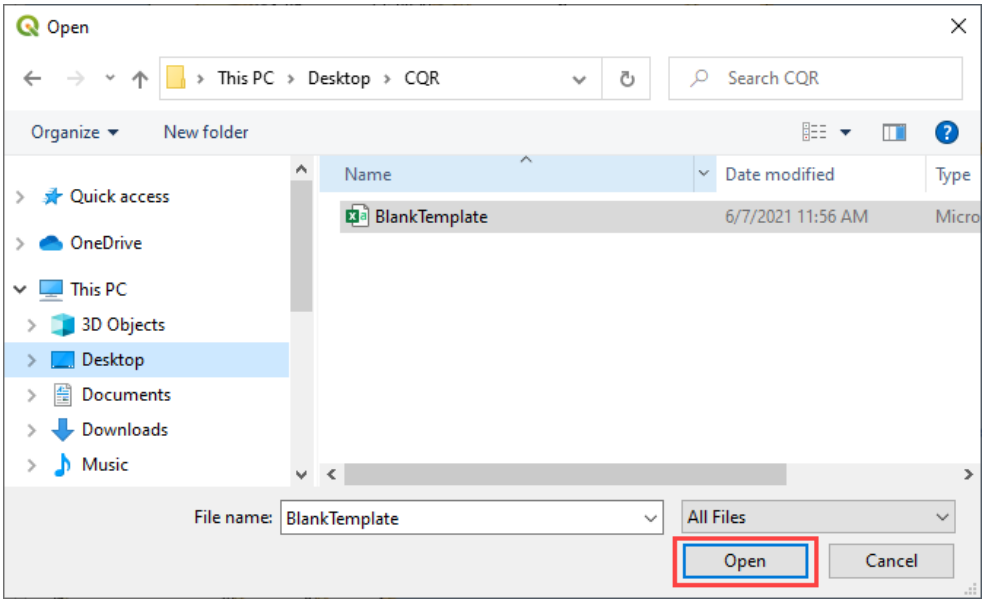
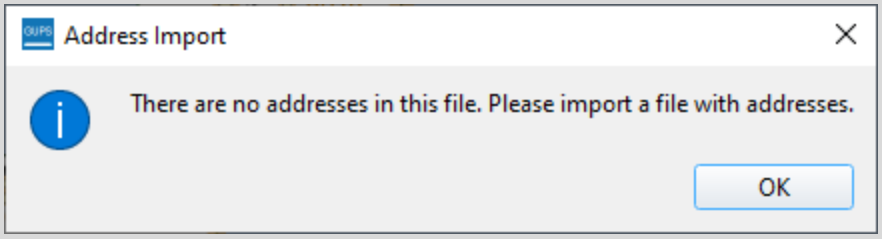
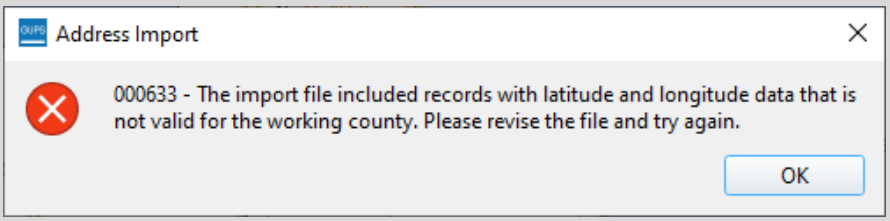
GUs that have the address records affected by the boundary correction in a separate file(s) that do not wish to re-enter the information manually into the Address Update window can use the steps in **Table 11** to import their address file into the User Address List.

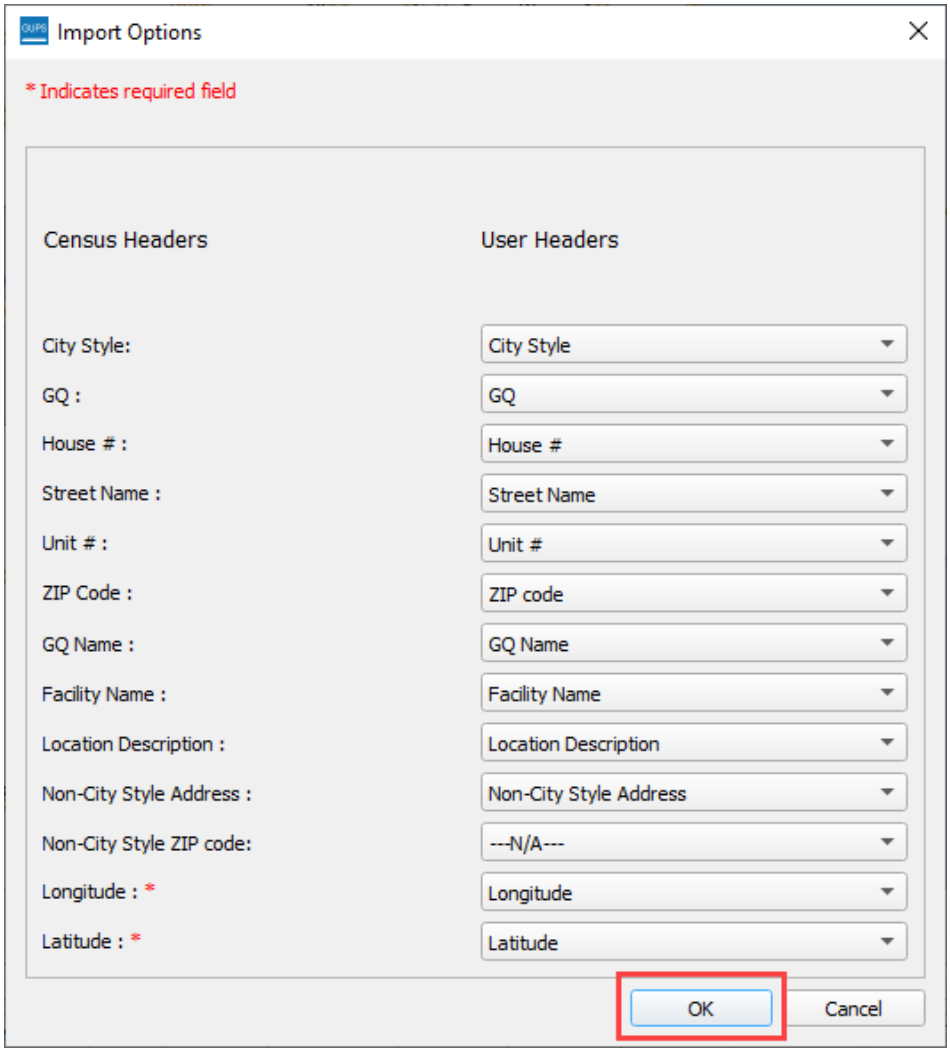
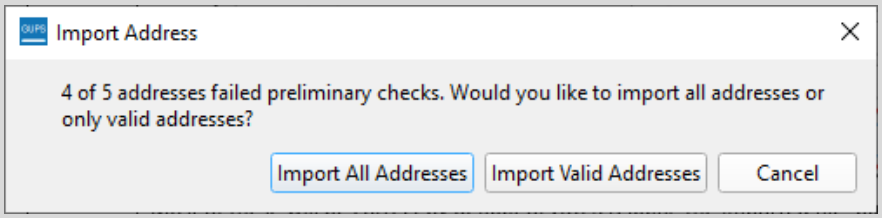
IMPORTANT: GUPS allows participants to import more than one file of addresses and will append records to the User Address List. It will not prevent a participant from re-importing the same file. A participant must manually check for duplicate imported records. The validation checks do not identify duplicate records, only records that are missing information in required fields. Participants must conduct their own quality checks of the records within their User Address List.

Table 11: Steps to Import an Address File into the User Address List

Step	Action and *Result(s)*
Step 1	With the CQR project open, if the **User Address List** is not displayed, select the **Address List** button from the **CQR toolbar**,  or choose the **User Address List** tab at the bottom of the **Map View**. 
Step 2	*The **User Address List** opens near the bottom of the **Map View***. The window is undocked and can be moved. 
Step 3	Select the **Import** button from the **User Address List**. 

Step	Action and *Result(s)*
Step 4	*The **Address Import** window appears with questions regarding the import or saving of a sample header file*. To save a blank sample header file to complete and import later, choose **No** and follow Steps 5-7. To continue with importing a file, choose **Yes** and follow Steps 8 - 11. 
Step 5	*The **Save As** window opens*. Navigate to a local directory and provide a file name to save the file. 
Step 6	Once saved, *the **Address Import** window reappears with information about the location of the saved file*.  Select **Yes** to open the file or **No** to return to the **Map View**.
Step 7	GUs proceed with populating the address records into the sample header file, ensuring that required information is included and proper formatting is followed. The file must be saved as a comma-delimited text file (i.e., a .csv or a .txt). Refer to **Appendix H** for information on the Sample Header file and its required fields.

Step	Action and *Result(s)*
Step 8	GUs with an acceptable address list prepared, or that have completed the sample header file downloaded in **Step 5**, select **Yes** in the **Address Import** window. 
Step 9	Navigate to the directory of the address list, select the file, and choose **Open**. 
	If the file is empty or contains errors GUPS will return errors in the **Address Import** window.  

Step	Action and *Result(s)*
Step 10	With a properly formatted file, *the **Import Options** window appears for the participant to associate the field names in the file with the field names in **User Address List**.*  Most of these will be correct by default of GUPS reading the imported file, but participants are advised to scroll through all the options for each header to ensure the fields in the file for import match what will be displayed in GUPS. With all the **Census Headers** associated with the **User Headers**, select **OK**.
	*If the import process encounters problems, an **Import Address** window appears seeking confirmation regarding how to proceed.*  **Import All Addresses** will import all records into the **User Address List**, but the errant records must be corrected prior to finishing work on the project. The errors are identified as part of **the Address Review Tool** covered later in the guide in section **5.1.4**.

Step	Action and *Result(s)*
Step 11	If the import completes successfully, the address(es) import into in the **User Address List**.

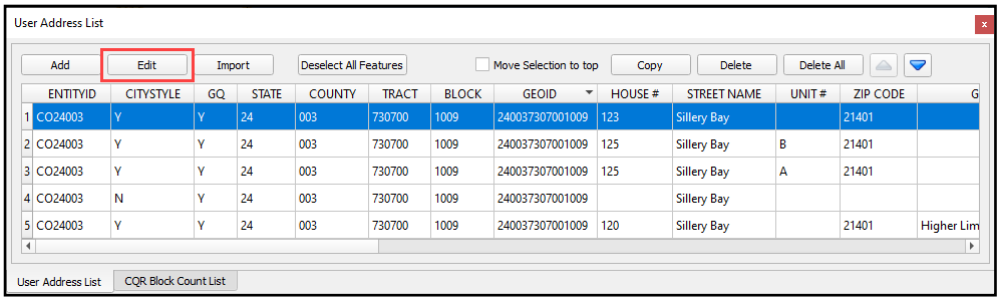
Proceed to the next section for instructions on additional functionality within the User Address List.

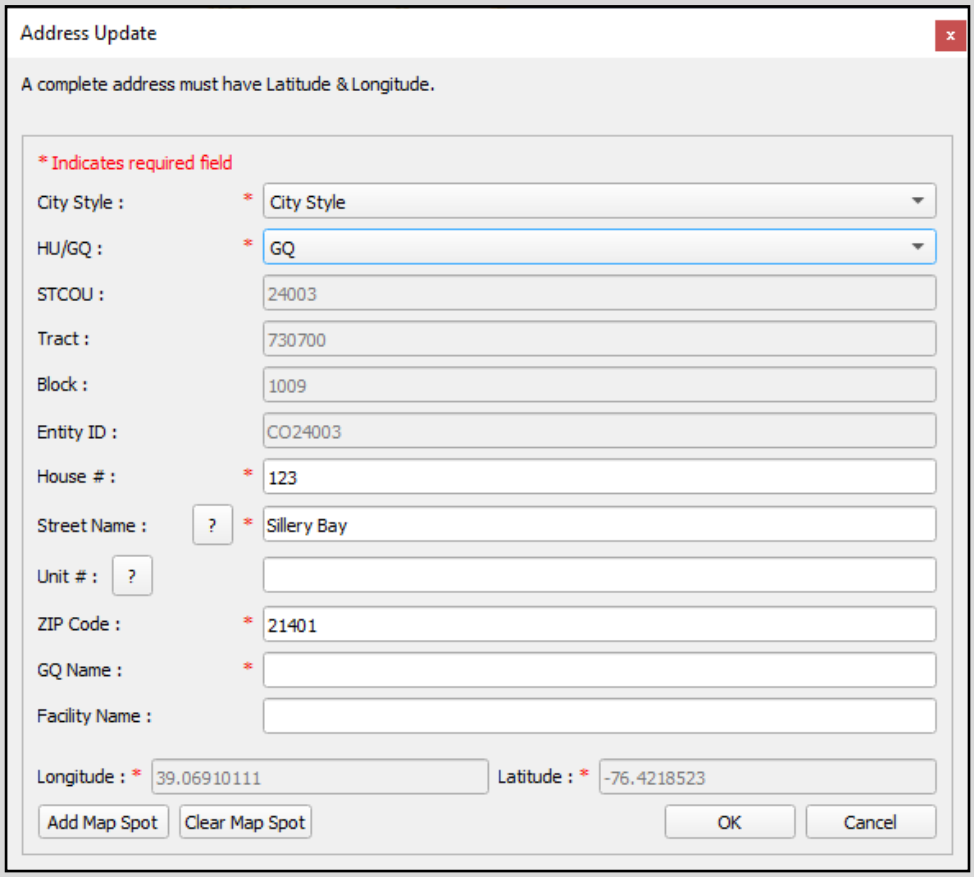
5.1.3 Editing, Copying, and Deleting Records in the User Address List

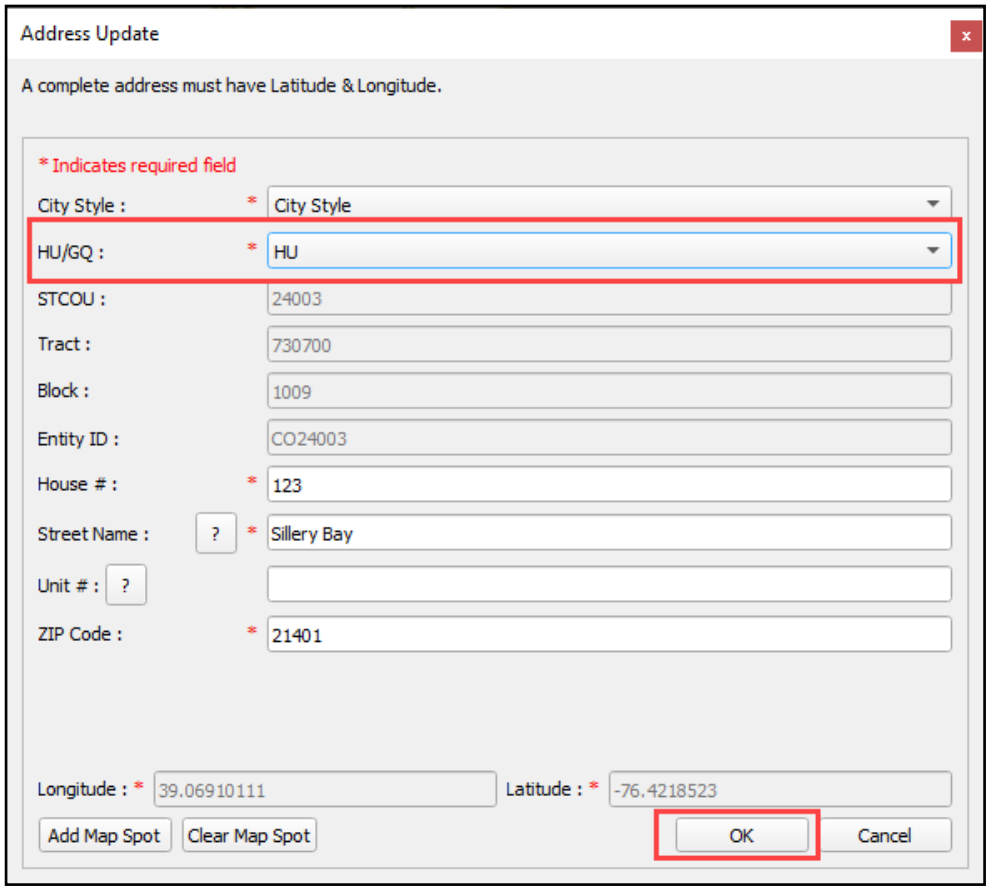
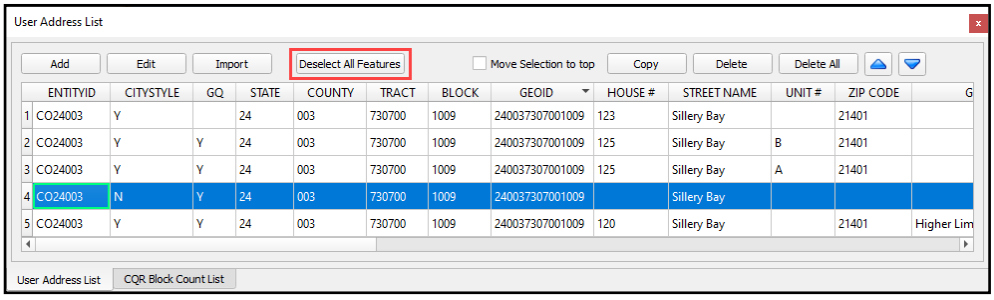
With records added or imported into the User Address List, participants can use additional functionality integrated into the User Address List to edit, copy, or delete records. These functions are rather intuitive, but follow the steps in **Table 12** for guidance on these tasks.

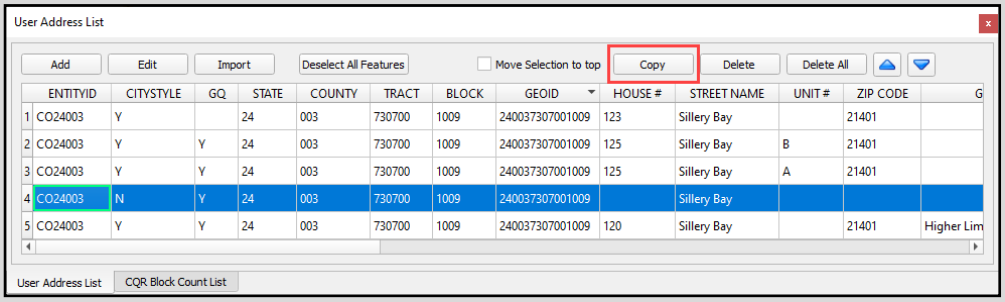
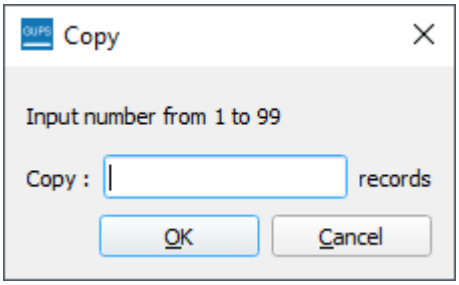
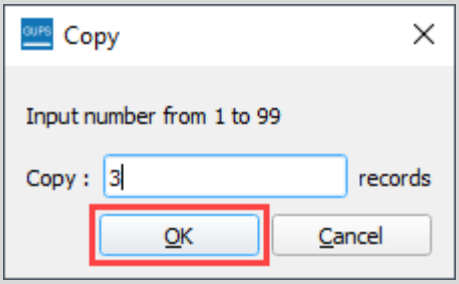
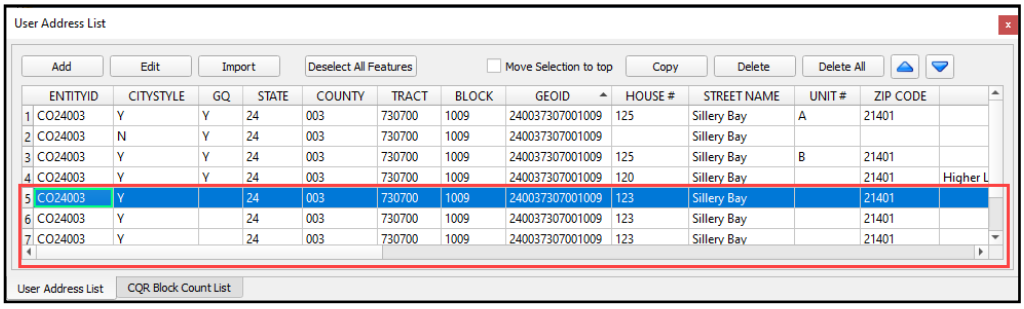
IMPORTANT: All address records that appear are fictitious and do not represent a Title 13 address record.

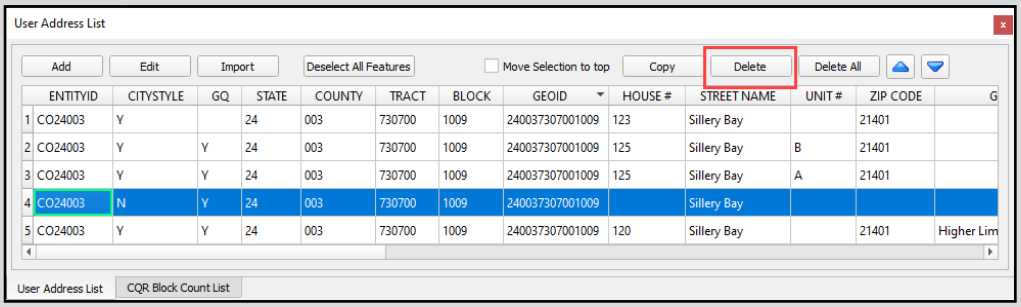
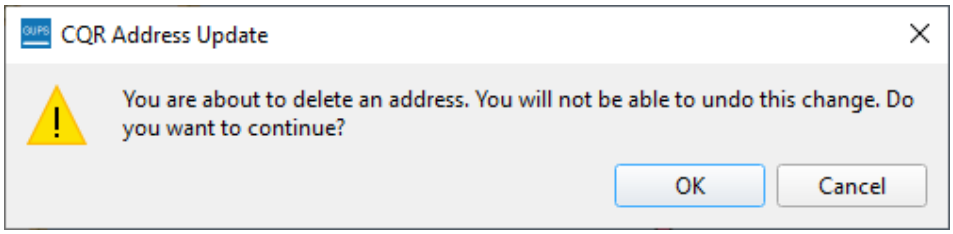
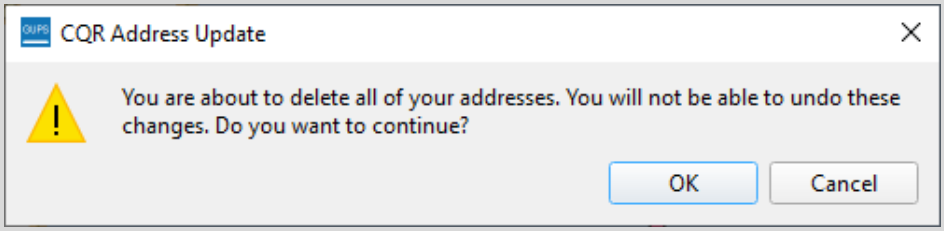
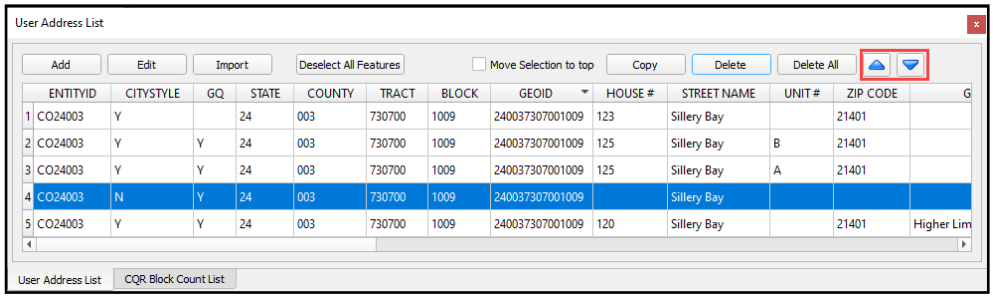
Table 12: Steps to Edit, Copy, and Delete Records in the User Address List

Step	Action and *Result(s)*
Step 1	To edit a record in the **User Address List**, select the record and then select the **Edit** button. 

Step	Action and *Result(s)*
Step 2	*The **Address Update** window opens with the record populated.* 

Step	Action and *Result(s)*
Step 3	Edit the information and select **OK** to apply the edit to the record and close the window. *For this record, the type was changed from a GQ to a HU*. 
Step 4	Proceed with editing records as necessary using the same steps above.
	<u>To deselect a selected record</u>, choose the **Deselect All Features** button from the **User Address List**. 

Step	Action and *Result(s)*
Step 5	<u>To copy a record</u> in the **User Address List**, select the record and then select the **Copy** button. 
Step 6	*A **Copy** input window appears*. Participants enter the number of new address records to create. 
Step 7	Key the number of record to copy from the selected record and select **OK** or select **Cancel** to return to the User Address List. 
Step 8	*Three copied records appear at the bottom of the User Address List for a participant to edit*. Use the instructions from Steps 1 -4 to apply edits to the records so they do not duplicate the original record.  This functionality is especially helpful for adding multi-unit records where the only difference in the address and latitude/longitude is the unit information.

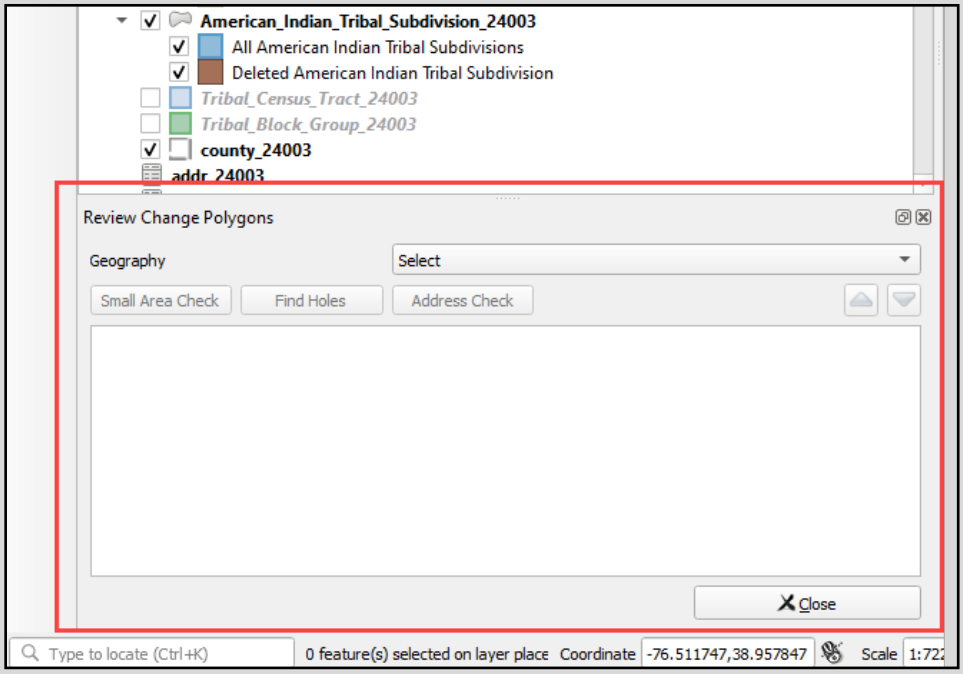
Step	Action and *Result(s)*
Step 9	<u>To delete a record</u> in the **User Address List**, select the record and then select the **Delete** button. 
Step 10	*The **CQR Address Update** window appears with a warning that the deletion of the record cannot be undone*.  Select **OK** to delete the address or **Cancel** to return to the User Address List.
Step 11	To start over with creating the User Address List, participants may use the **Delete All** button. *A **CQR Address Update** window warns the participant the deletion cannot be undone*. Select **OK** to delete all the addresses from the User Address List or **Cancel** to return to the User Address List. 
	Use of the **two blue arrows** to the right of the **Delete All** button from the **User Address List** moves the selection from one record to another. 
Step 12	Save the project using the **Save** icon from the **Standard toolbar** or from beneath the **Project menu**.

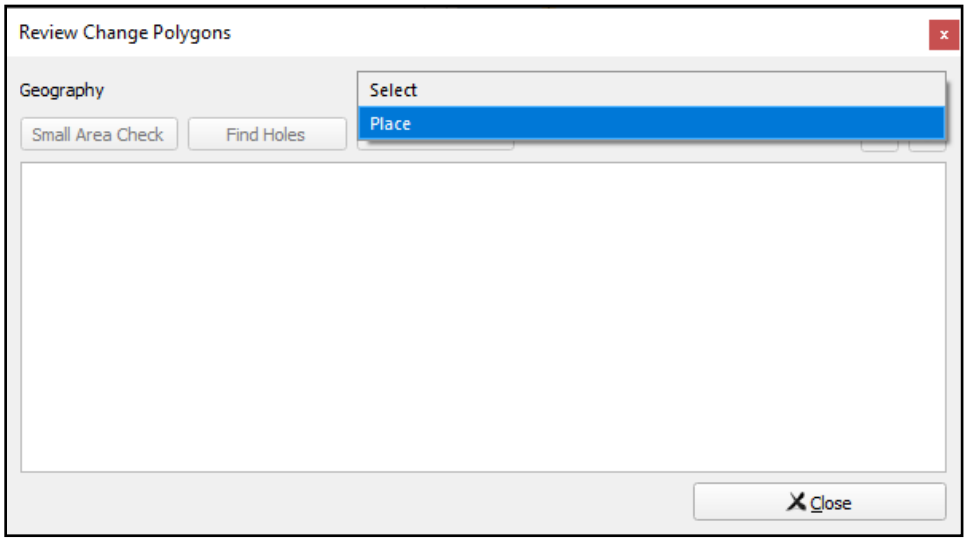
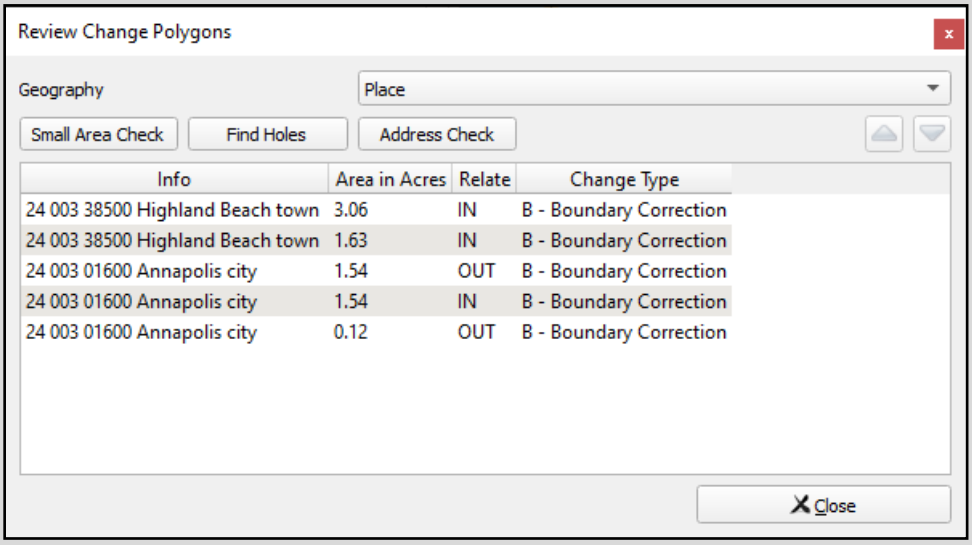
All boundary cases must execute validation checks to ensure the spatial changes and addresses including in the User Address List are valid for Census Bureau processing. Proceed to the next section for instructions on executing these checks.

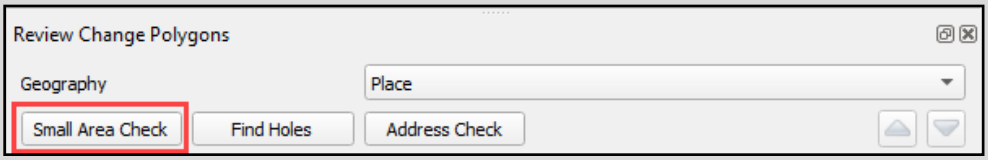
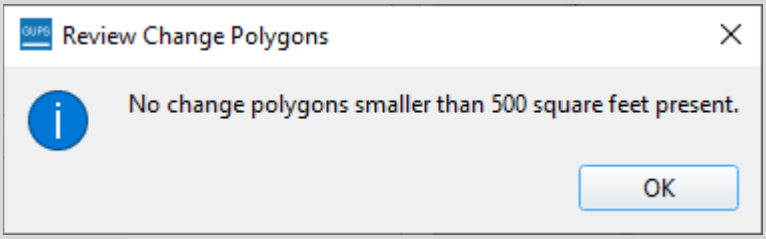
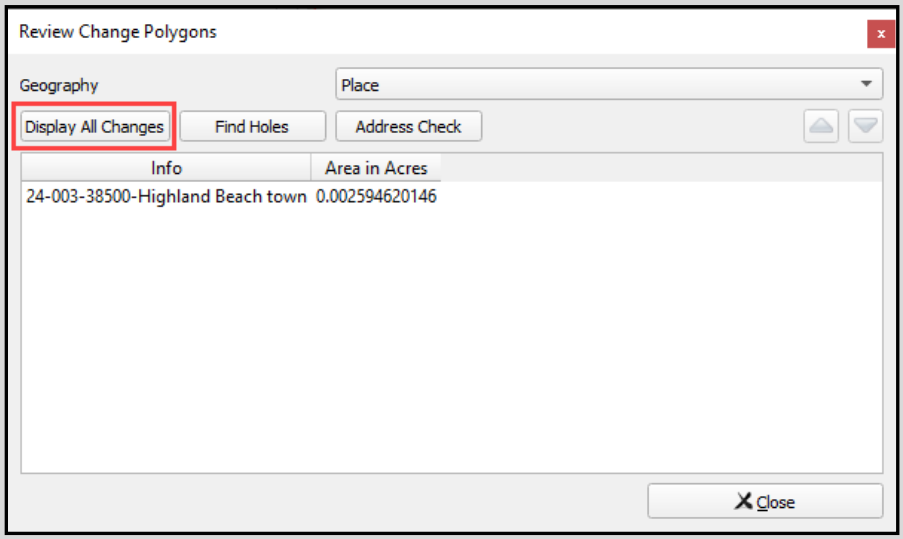
5.1.4 Executing Validation Checks

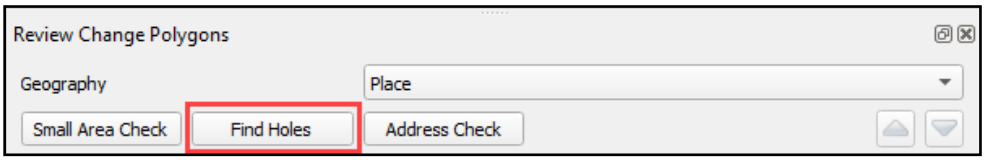
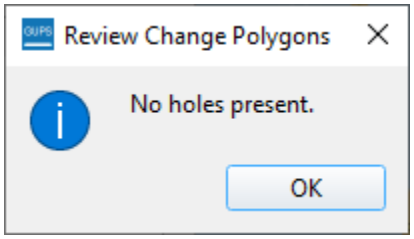
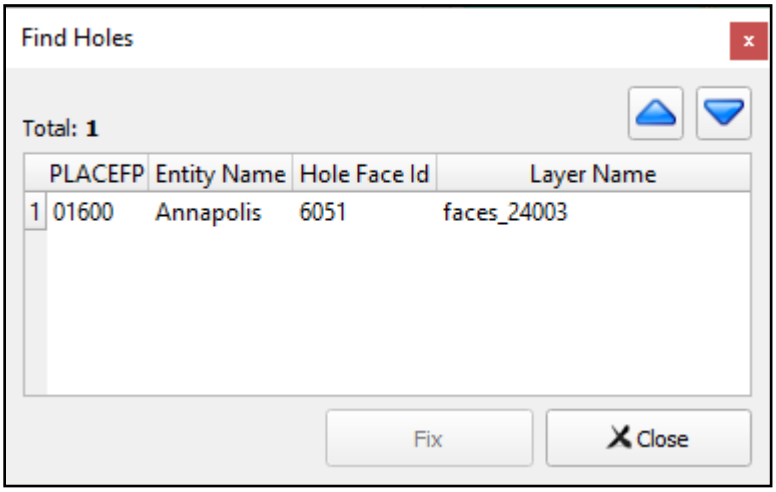
With the boundary correction(s) complete, follow the steps in **Table 13** for the steps to execute the validation checks. If a participant skips these validation checks, the Export to Zip tool, detailed in **Chapter 6**, will notify the participant and will not proceed with exporting the case.

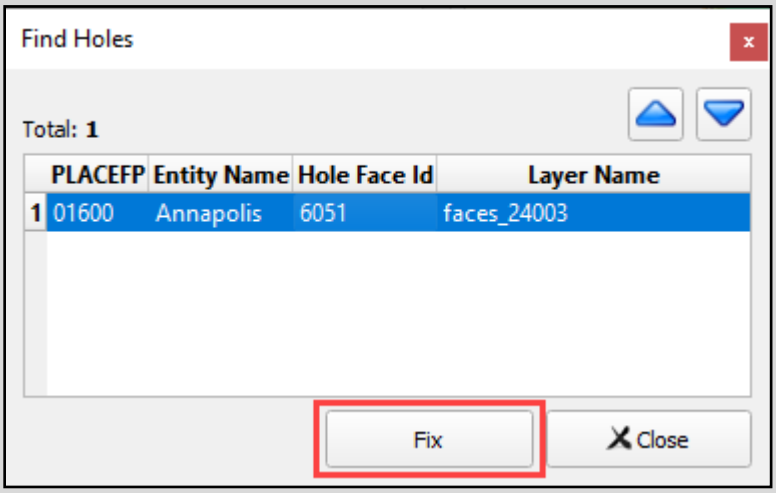
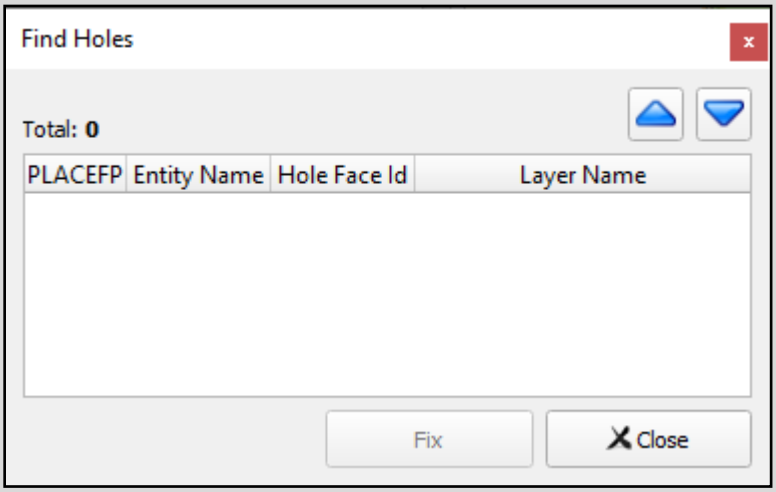
Table 13: Steps to Execute Validation Checks (Boundary Cases Only)

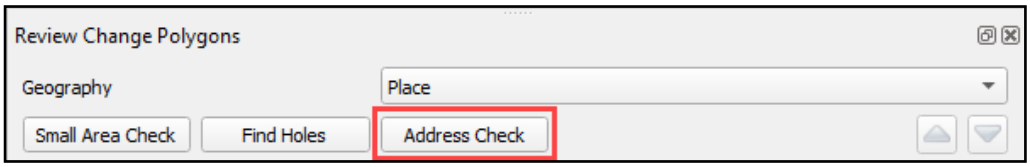
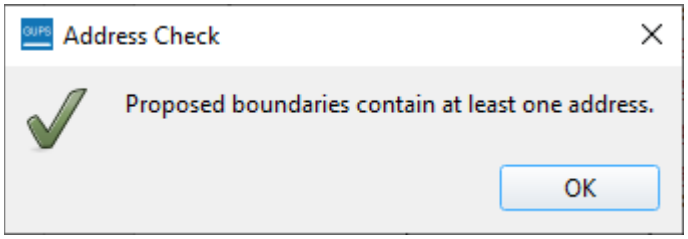
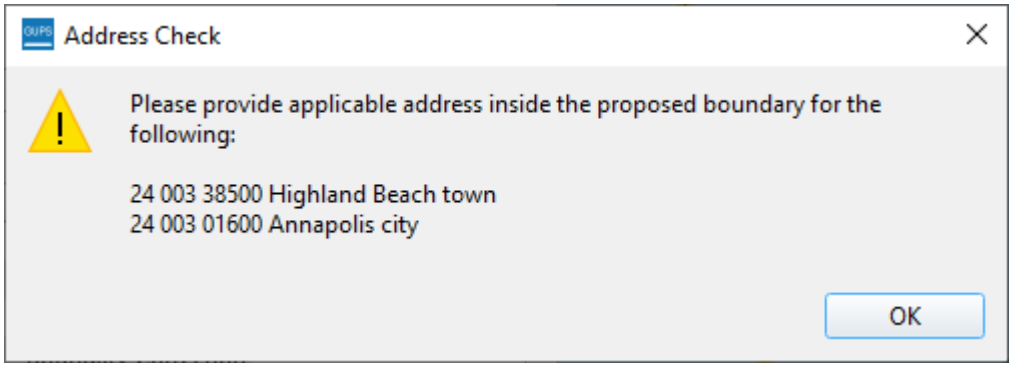
Step	Action and *Result(s)*
Step 1	With the CQR project open, select the **Review Change Polygons** button from the **CQR toolbar**. 
Step 2	*The **Review Change Polygons** window appears beneath the Table of Contents.*  The window can be undocked and relocated by participants within the project or outside of the project window.

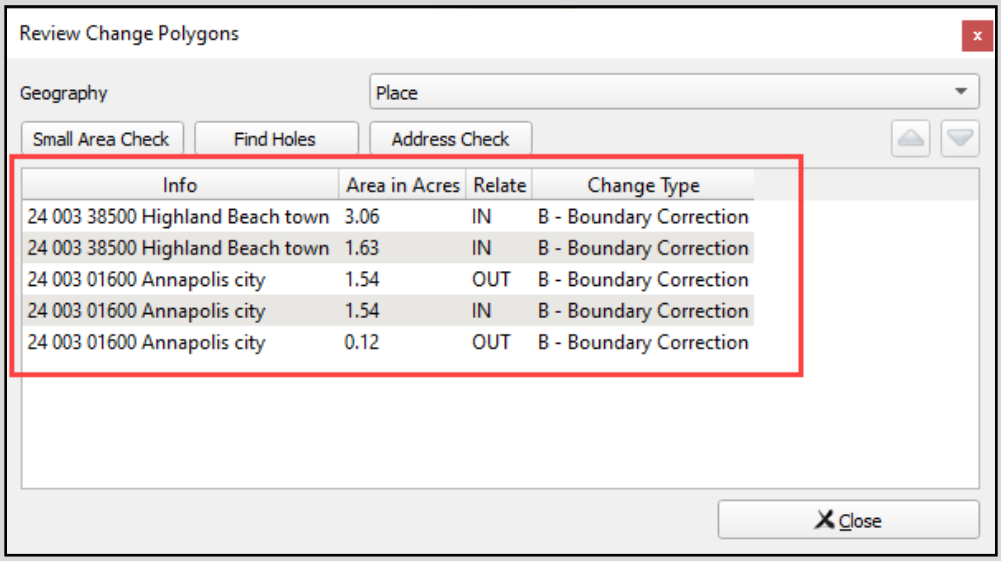
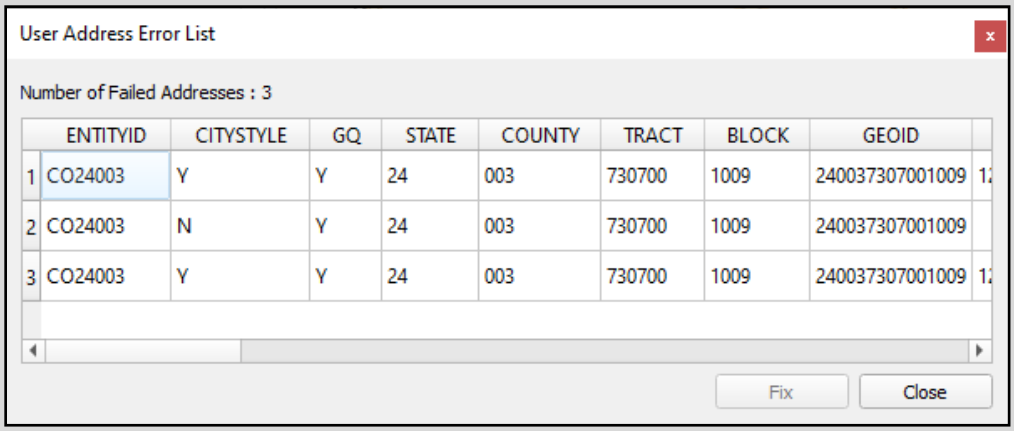
Step	Action and *Result(s)*
	Only the layers in which a participant made a boundary correction appear beneath the **Geography** drop-down menu. In this example, only the **Place** layer appears. 
Step 3	Select the **Geography** from the drop-down menu. *The window updates to reveal the polygons that changed during the boundary correction process*. 
	Selection of a polygon in the **Review Change Polygons** window zooms to the polygon in the **Map View**. This permits the participant to review the change polygons involved with the boundary correction prior to running the three checks that appear within the tool itself (e.g., Small Area Check, Find Holes, and Address Check). Refer to section **5.1.1** for instruction to correct the boundary. Note: In the image shown in **Step 3**, the polygon for Annapolis with 1.54 acres appears twice because it was added to Annapolis and then deleted rather than using the **Undo** action described in **Table 9**. Participants should understand that the **Review Change Polygons** tool locates all changed polygons, even if they are duplicates caused by moving a face in and out of a GU. Review the polygon to confirm it is correct for the GU.

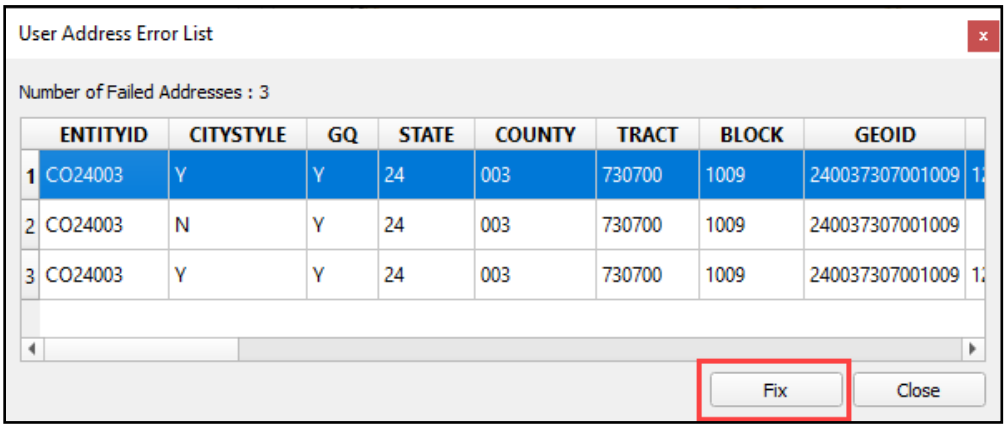
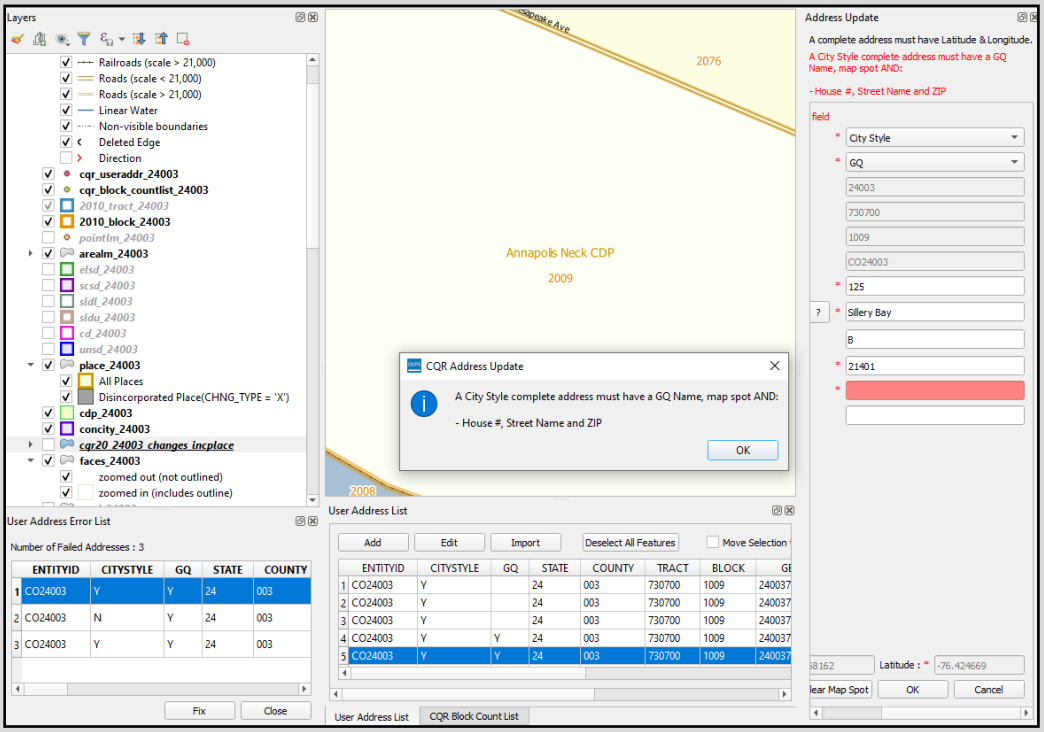
Step	Action and *Result(s)*
Step 3a	Select the **Small Area Check** button from the **Review Change Polygons** window to check for change polygons with an area smaller than 500 square feet.  *A passing check results in a window confirming no change polygons exists that are smaller than 500 square feet*.  *A failed check results the **Small Area Check** button name changing to **Display All Changes**. The **Review Change Polygons** window lists the polygon(s) with the small area and its acreage.*  All polygons on this list should be investigated to determine if a correction is needed. Not all polygons less than 500 square feet are errors. Participants choose the polygon(s) that appears to zoom in the Map View and review it. If correction is needed, use the **Modify Area Feature** tool to remove the small area polygon (**Remove Area** button) from the entity or add to the polygon (**Add Area** button).

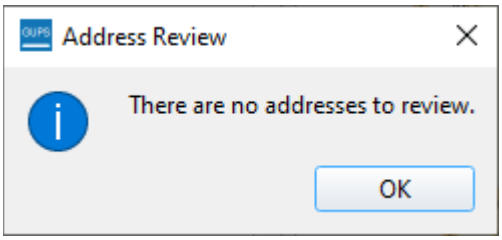
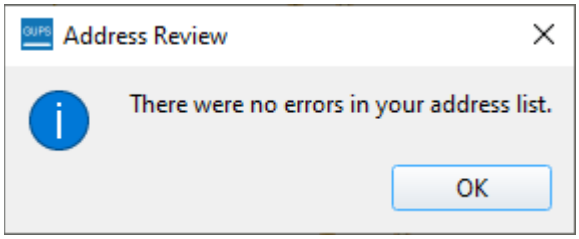
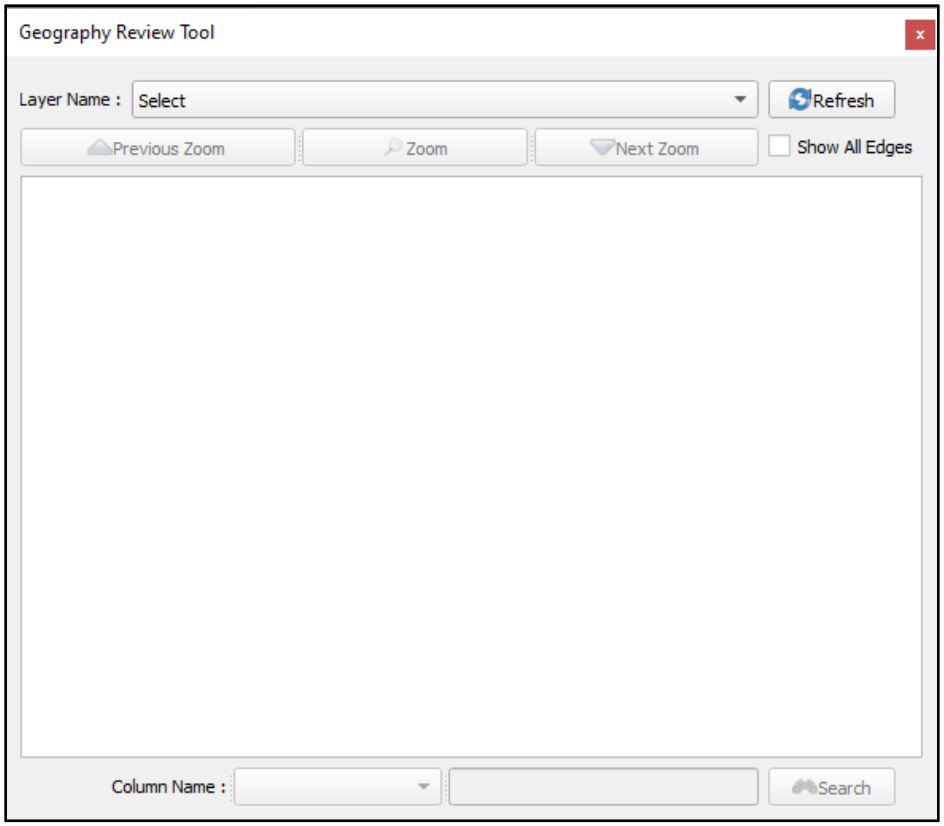
Step	Action and *Result(s)*
Step 3b	Select the **Find Holes** button from the **Review Change Polygons** window to check for holes, or gaps, within the GU boundary. Holes in coverage could occur if very small faces are missed during the boundary correction process.  *A passing check results in a window that indicates no holes are present.*  *A failed check opens a **Find Holes** window that lists the holes for review and correction.* 

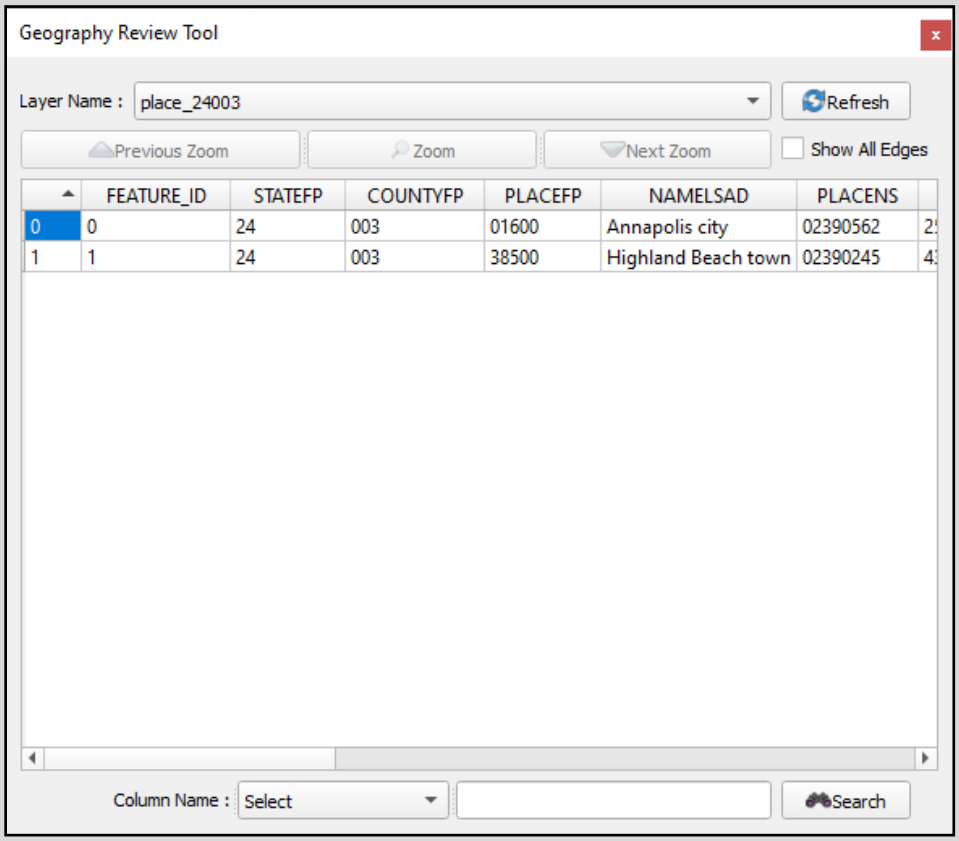
Step	Action and *Result(s)*
Step 3c	To fix the hole, choose the record and select the **Fix** button  *The tool consumes the hole back into the GU and removes the record from the **Find Hole** window.*  Note: The "fix" action for the face causes the face to appear as a change polygon in the **Review Change Polygons** window.

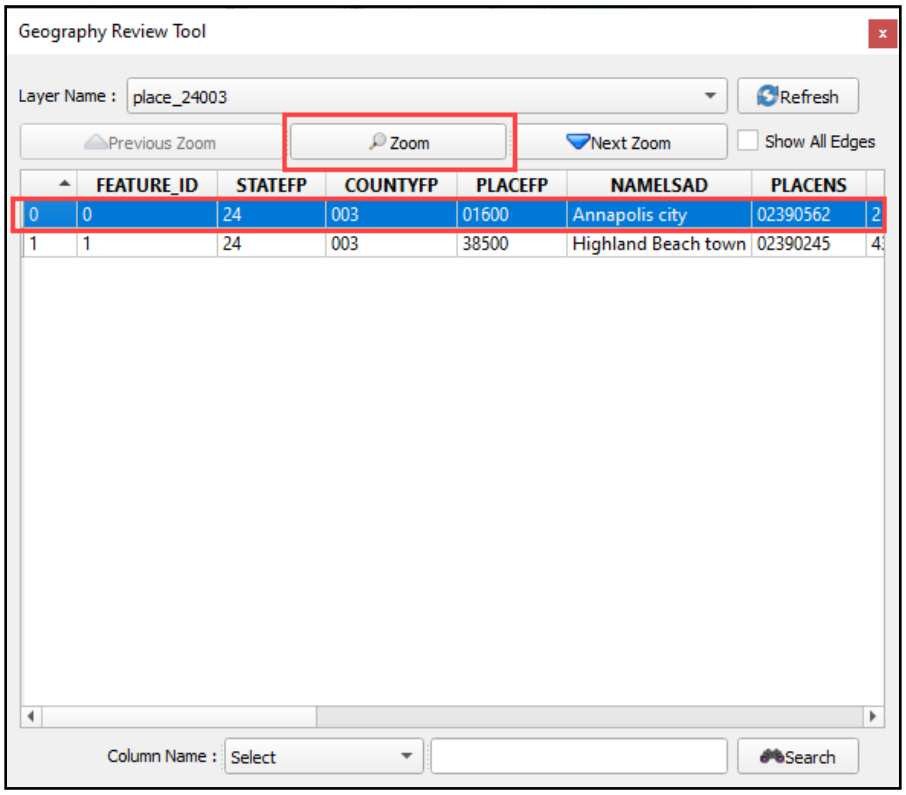
Step	Action and *Result(s)*
Step 3d	Select the **Address Check** button from the **Review Change Polygons** window to check the **User Address List** for the presence of at least one address record associated with the boundary correction(s).  *A passing check results in a window that indicates the proposed boundaries contain at least one address.*  *A failed check results in a window that instructs the participant to provide an applicable address inside the proposed boundary of the GU(s) listed*. 

Step	Action and *Result(s)*
	Use the list of change polygons that appears in the **Review Change Polygons** window to navigate to the boundary correction area(s) in the **Map View** and identify the blocks to review for the presence of addresses in the **User Address List**.  Refer to section **5.1.2** for instructions to add records in the **User Address List**.
Step 4	Repeat all three checks within the **Review Change Polygons** window to confirm no issues remain and no new failures occur following additional boundary corrections. Save the project by using the **Save** icon from the **Standard toolbar**.
Step 5	To review the validity of the addresses in the **User Address List**, select the **Address Review** button from the **CQR toolbar**.  *If errors are present, a **User Address Error List** window opens and docks beneath the Table of Contents. This list contains three errors to "Fix."*  As with other resulting windows, it can be undocked and moved if needed.

Step	Action and *Result(s)*
Step 6	Choose an address record from the **User Address Error List**. *The **Fix** button activates for selection.* 
Step 7	Select the **Fix** button. *The **Address Update** window opens along the right side of the **Map View** and a **CQR Address Update** window appears with details about the failed address record.* 
Step 8	Select **OK** to dismiss the **CQR Address Update** window, then correct the error(s) in the **Address Update** window before selecting **OK** to close the window.
Step 9	Proceed to select, review, and fix each record in the **User Address Error List**. Once complete, execute the **Address Review Tool** again to confirm all errors were fixed. Save the project by using the **Save** icon from the **Standard toolbar**.

Step	Action and *Result(s)*
	If addresses do not exist in the User Address List, a confirmation window appears indicating there are no addresses to review. Dismiss the window by selecting **OK**, add records to the **User Address List**, and execute the tool again.  *If there are no errors, a confirmation window appears indicating there were no errors in the address list*. Dismiss the window by selecting **OK**. 
Step 10	Though not required, participants can execute a review of the geography by selecting the **Geography Review Tool** button from the **CQR toolbar**. 
Step 11	*A **Geography Review Tool** window opens*. 

Step	Action and *Result(s)*
Step 12	All layers within the project appear for selection beneath the **Layer Name** drop-down menu. To review the layers that have changed, choose a layer that was edited in the project. *For this example, the "place_24003" layer is selected and the two places in the county appear*.  Note: Other layers that could be reviewed depending on the type of modifications made in the project include the **edges** layer for linear feature updates and the **county**, **mcd**, **American Indian Area**, **American Indian Tribal Subdivision**, etc. for boundary corrections.

Step	Action and *Result(s)*
Step 13	Select a record from the list to activate the **Zoom** button and zoom to the selected record in the **Map View** or use the mouse to double-click the record in the **Geography Review Tool** window to zoom to the selected record.  Note: the **Column Name** drop-down menu permits the selection of attributes within the selected layer to further query the layer.
Step 14	Close the **Geography Review Tool** window by selecting the red X in the upper right corner of the window or move the window away from the Map View then proceed to zoom and pan around the outer edge of the boundary of the layer and entity selected to confirm it is accurate.
	If any modification was made in the project , the Census Bureau recommends participants repeat the validation checks to ensure the project is free of errors before proceeding with updating housing counts and/or exporting the case for submission.

If the CQR case only includes boundary correction(s), proceed to **Part 4** for instructions to submit the case. Otherwise, continue to the next section for instructions on preparing a case with housing count discrepancies.

5.2 Preparing a Housing Count Case

As first introduced in section **C**, for the Census Bureau to successfully review and process a case with a housing count discrepancy, it must include the following items:

- A list that includes the contested 2020 tabulation blocks in their GU, their current housing and group quarters counts, and the corrected counts for both housing units and group quarters as of April 1, 2020. Any counts after this date are considered out of scope for CQR and will not be processed during the CQR operation.
- Supporting documentation, as detailed in section **D**.

For GUPS participants, the list (i.e., the CQR Block Count List File) is preloaded in the software and permits the GU to add their counts to the appropriate fields (e.g., CQRHU and CQRGQ) in the file for the blocks they believe to be discrepant. The software also permits GUs to upload their supporting documentation and associates it with the case prior to submission.

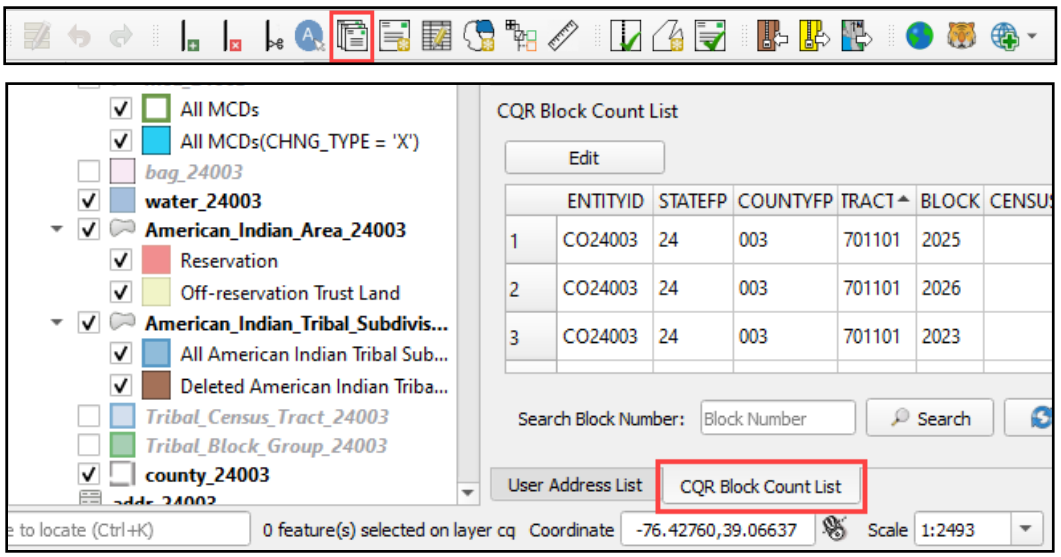
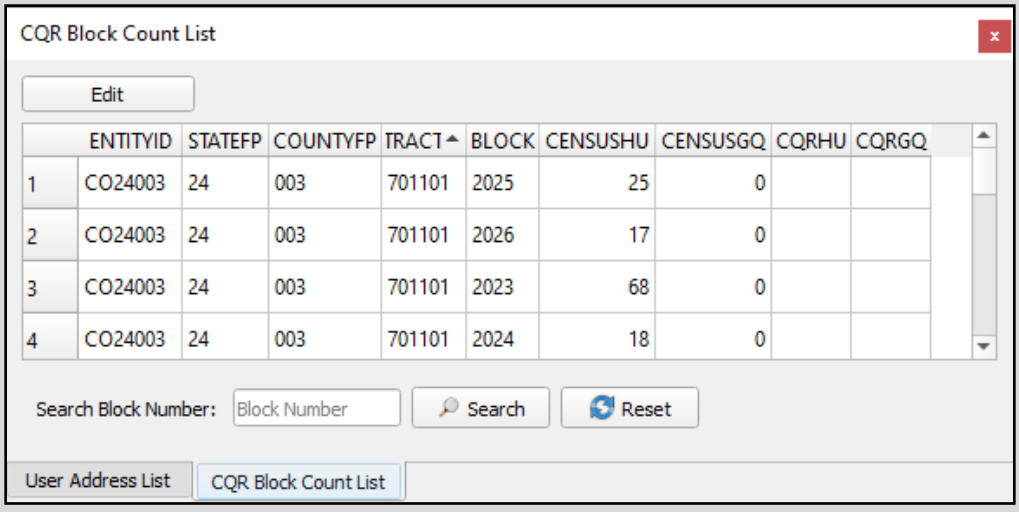
5.2.1 Correcting the Housing Counts

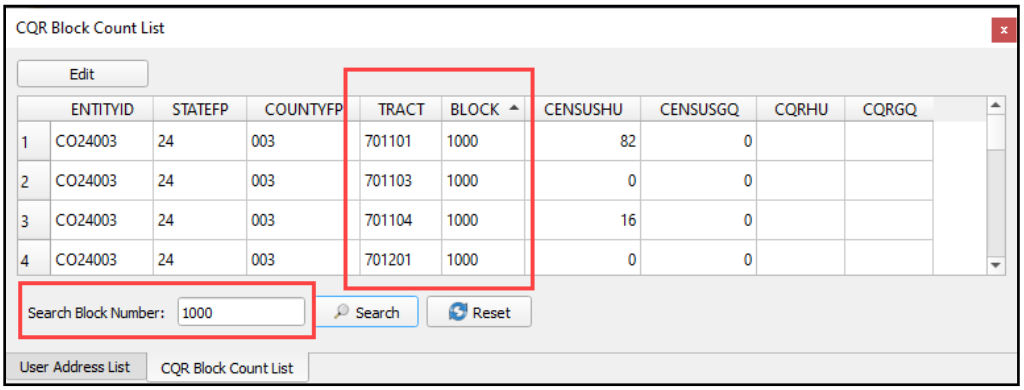
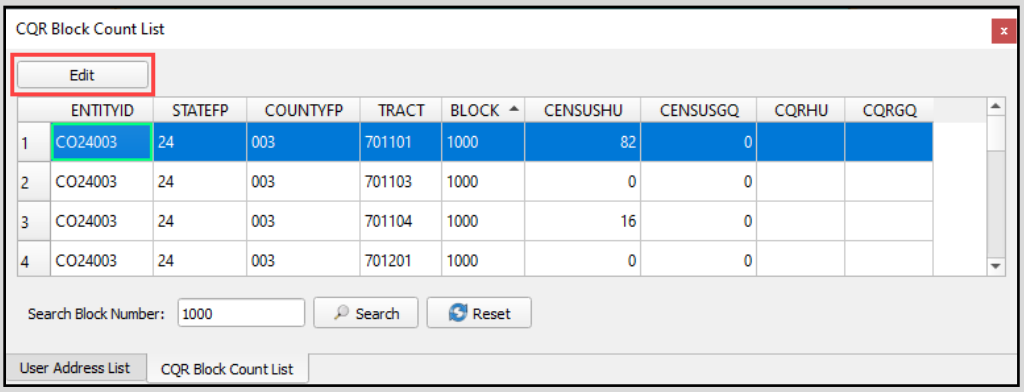
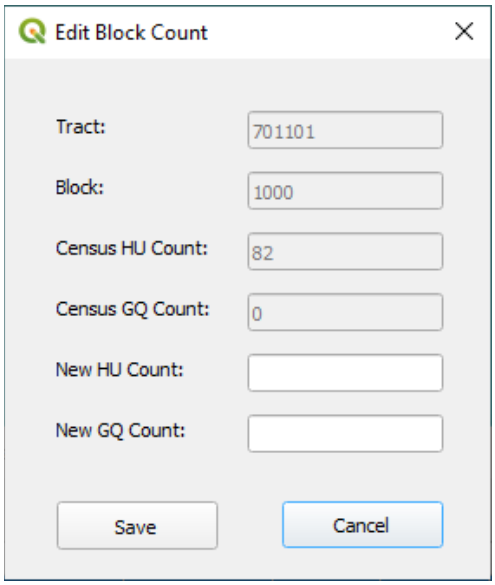
This section discusses how to correct a discrepant housing count in GUPS. **Table 2** from earlier in the guide provides the field specifications, names, descriptions, and edit information for the CQR Block Count List File which is the same material that appears in GUPS. The last two fields are blank for entering the GU's housing count information (e.g., CQRHU for housing unit counts and CQRGQ for group quarters counts).

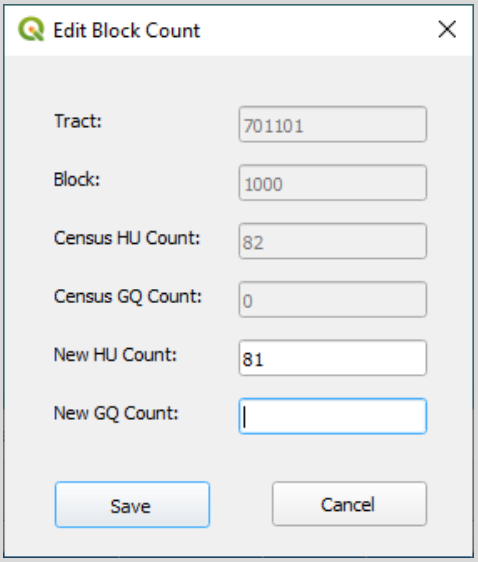
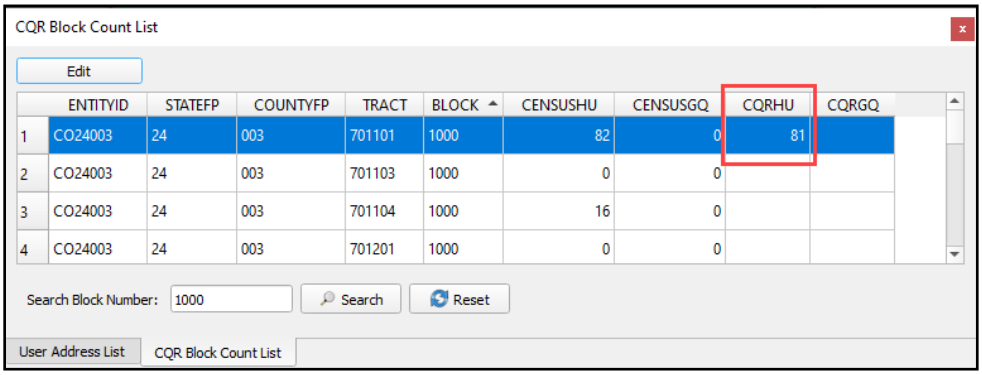
Table 14 provides steps to correct the housing counts in the CQR Block Count List. GUs must edit the housing counts for at least ONE 2020 tabulation block to be a housing count case for 2020 Census CQR.

Note:	GUs with only boundary corrections are not required to update the housing counts in the CQR Block Count List for the blocks affected by their boundary correction since they are supplying a User Address List for the individual addresses in the affected blocks.

Table 14: Steps to Correct Housing Counts in the CQR Block Count List

Step	Action and *Result(s)*
Step 1	With the CQR project open, if the **CQR Block Count List** is not displayed, select the **Block Count List** button from the **CQR toolbar** or choose the **CQR Block Count List** tab at the bottom of the **Map View**. 
Step 2	*The **CQR Block Count List** opens near the bottom of the **Map View***. The window is undocked and can be moved. IMPORTANT: The figures used in the **CENSUSHU** and **CENSUSGQ** fields are fictitious and for testing purposes only. They are not the tallies from the 2020 Census. 

Step	Action and *Result(s)*
	Using information from the research conducted in Part 1, navigate/sort through the **CQR Block Count List** to locate the blocks identified as having a housing count discrepancy. Participants may use the **Search Block Number** field to enter a block number to search the list. *Once located, the **CQR Block Count List** will display all records that contain that block, first sorted by the **Tract** field.* 
Step 3	Select the block with the discrepancy in the **CQR Block Count List** and choose the **Edit** button. 
Step 4	*The **Map View** zooms to the selected block and the **Edit Block Count** window opens*. In this window, the **New HU Count** and **New GQ Count** fields are the only editable fields. 

Step	Action and *Result(s)*
Step 5	To submit a correction for either of the two Census count fields (e.g., Census HU Count or Census GQ Count), enter the corrected count(s) in the appropriate New Count (e.g. **New HU Count** or **New GQ Count**) field. When editing these two fields, a maximum of 4 digits can be entered. If a Census count is correct, leave the corresponding New Count field blank. 
Step 6	Select the **Save** button to close the **Edit Block Count** window. *The corrected count information appears in the **CQR Block Count List**.* 
Step 7	Repeat this process to correct all the discrepant housing counts in the working county. Save the project by using the **Save** icon from the **Standard toolbar**.

If all work is complete, proceed to **Part 4** for instructions to submit the project(s) that form the CQR case.

PART 4 SUBMITTING A CQR CASE

With the case preparation complete, this part of the guide provides instructions submitting a CQR case. Chapter 6 summarizes the steps for exporting a CQR project to generate the CQR case .zip file for submission, while the Chapter 7 provides the steps for using the Secure Web Incoming Module (SWIM) to submit the GU's CQR case to the Census Bureau. The closing chapter includes the next steps for the operation.

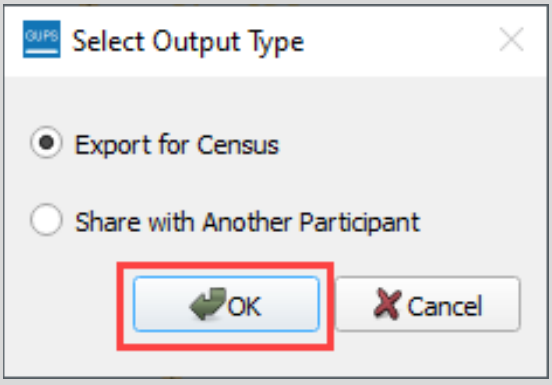
Note: Recall if a GU spans more than one county, more than one case may exist to export for submission. Apply the guidance in this part of the guide to all cases for the GU; meaning export each CQR project for the GU and submit each using SWIM.

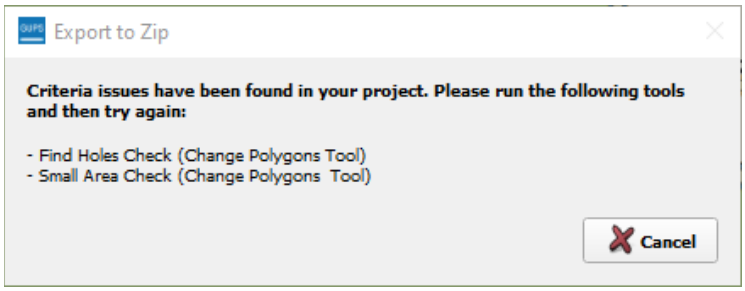
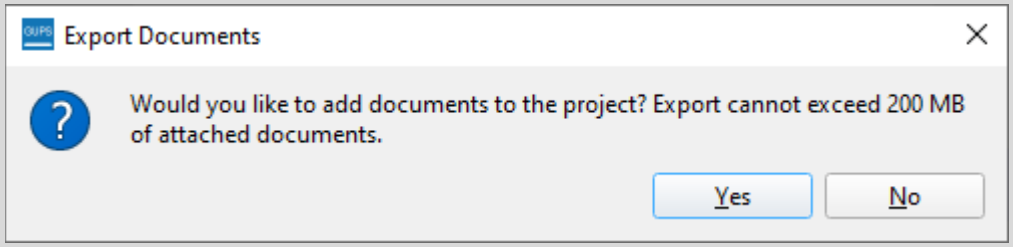
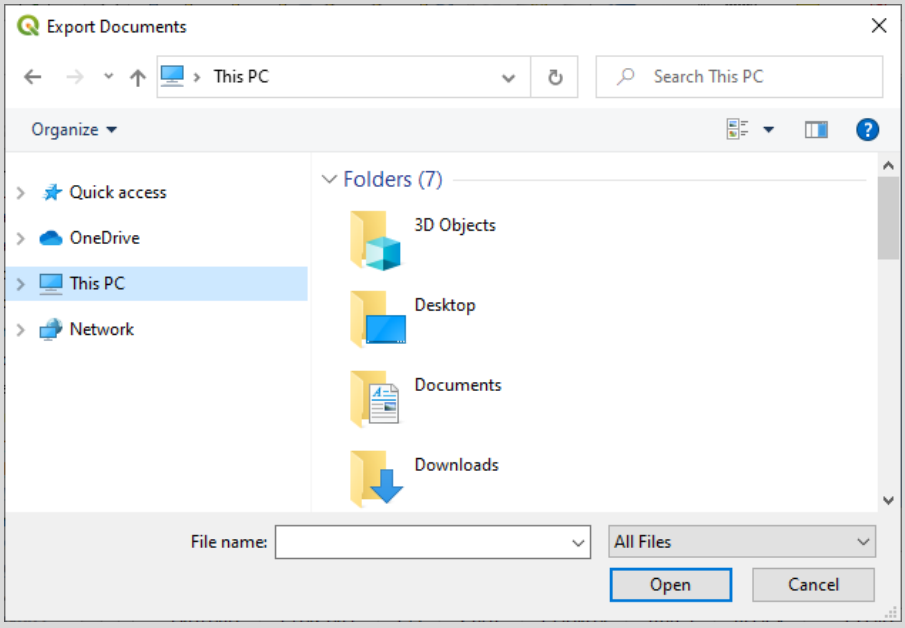
CHAPTER 6 EXPORTING A CQR PROJECT

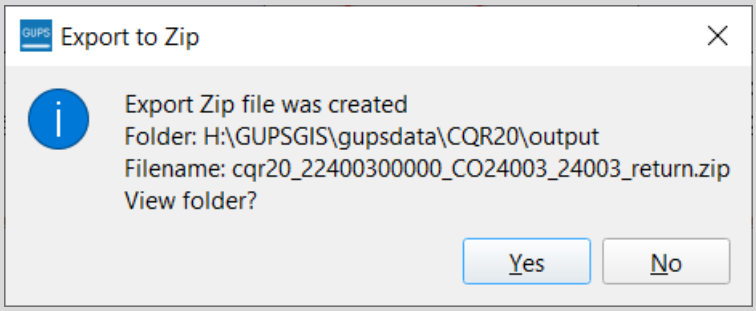
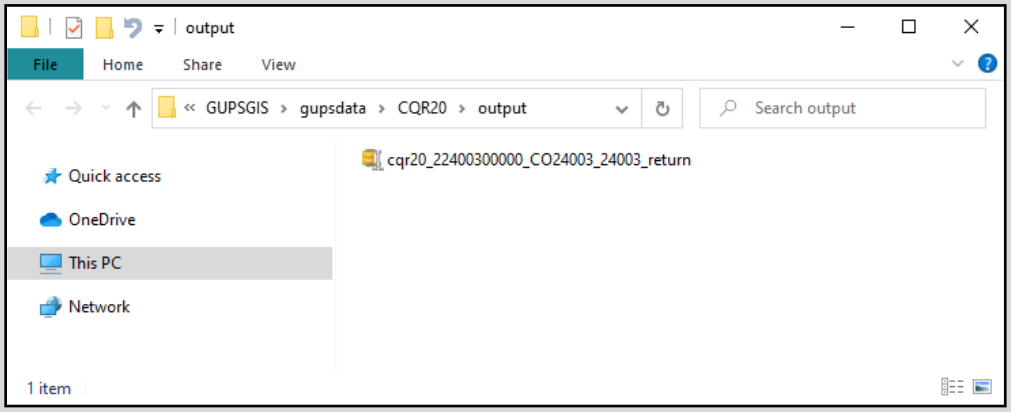
Follow the instructions in **Table 15** to export the CQR project for submission to the Census Bureau. Participants export their project for submission to the Census Bureau after all work is complete within the working county.

Note: The second option, Share with Another Participant, is not covered in this table. If there are questions regarding this second option , contact the Census Bureau by phone at (888) 369-3617 or by email at <dcmd.2020.cqr.submissions@census.gov>.

Table 15: Steps to Export CQR Project for Census

Step	Action and *Result(s)*
Step 1	With the CQR project open, select the **Export to Zip** button from the **CQR toolbar**. 
Step 2	*A **Select Output Type** window appears*. Choose **Export for Census** and select **OK**. 

Step	Action and *Result(s)*
	If the project contains spatial changes (i.e., a boundary case) and the validation checks were not previously executed, or if errors were not corrected, *the resulting **Export to Zip** window prompts the participant to run the validation checks/tools*.  Select **Cancel** to return to the **Map View**. Return to section **5.1.4** for the instructions to run the required validation checks.
Step 3	If the project contains no errors, or if all errors have been corrected, *the **Export Documents** window appears and asks if the participant wants to add more documents to the project*.  Select **No** to dismiss the window and not add any supporting documentation. Select **Yes** to *open an **Export Documents** secondary window and navigate to the directory where the supporting documentation is located*.  Select the document(s) and then select the **Open** button to add the document(s) to the project zip file. Refer to section **D** for the supporting documentation required by the Census Bureau before committing resources to investigate a CQR case. It provides the details for both boundary and housing count cases.

Step	Action and *Result(s)*
	The process described above adds supporting documentation to the CQR case .zip file for housing count cases and for additional boundary case documentation not specifically related to the boundary correction. Recall that adding specific boundary correction documentation is part of the process for correcting a boundary outlined in **Table 9**.
Step 4	Upon completion of adding supporting documentation files, *an **Export to Zip** window appears confirming the .zip file creation and providing the folder location of the file*.  Select **Yes** to open the folder location window and view the .zip file or select **No** to dismiss the window.  This is the .zip file the GU provides to the Census Bureau. GUs with more than one project (i.e., more than one working county) will have a .zip file for each project in this folder following each project's export process. All exported.zip files appear in this same folder.

Follow the instructions in the next chapter to provide the exported .zip file(s) to the Census Bureau.

CHAPTER 7 USING THE SECURE WEB INCOMING MODULE (SWIM)

GUPS participants use the Secure Web Incoming Module (SWIM) to provide their CQR case to the Census Bureau. Use the information in this chapter to establish or access an existing SWIM account and to submit the exported .zip file(s) generated in Chapter 6. Some GUs may have staff with established SWIM accounts from other Census geography programs. If so, that person may submit the GU's CQR case submission using their existing account. For GUs without staff with an established account, contact the Census Bureau by phone at (888) 369-3617 or by email at <dcmd.2020.cqr.submissions@census.gov> to request a registration token.

To check for the existence of a SWIM account or to reset a password on an established account, choose "Forgot your password?" on the main SWIM page and enter the email address in question to check for the existence of an account. If SWIM locates an account, it asks the established security question for the account, for which the answer is not case-sensitive, and sends an email to reset the forgotten password. If SWIM does not locate an account associated with the email address, it returns the following message, "*No account registered for this email address. The email address associated with the account is case sensitive. Try again with the proper case or go to* Account Registration *to register for a SWIM account*." Choosing the Account Registration link opens another window to establish a SWIM account; however, the GU staff person must have a registration token to proceed.

Note: The components of both the email address and the password of SWIM accounts are case-sensitive. Make note of the format used when establishing the SWIM account (e.g., jane@anytown.org or Jane@anytown.org or JANE@ANYTOWN.ORG). The Census Bureau recommends use of lowercase letters and safe retention of this information for future reference.

SWIM allows four attempts to login before it temporarily locks the account for 15 minutes. After the lock expires, try to login again or reset the password using the aforementioned "Forgot your password?" link on the login page. Once reset and logged into SWIM, account holders may modify their password and security answer by selecting "Change Security" link along the top, right side of the window.

If login issues persist, confirm the vintage of internet browser version. SWIM runs on the two most recent versions of each of the major internet browsers, Microsoft Internet Explorer®, Microsoft Edge®, Google Chrome®, Mozilla Firefox®, and Apple Safari®. If the browser version is older, upgrade the version. If problems still occur with SWIM, contact the Census Bureau because it may be necessary to create a new SWIM account.

IMPORTANT: Do not use email to send the CQR case submission to the Census Bureau. Contact the Census Bureau to resolve SWIM issues.

SWIM file requirements include submission of .zip file format. The .zip file may not include another .zip file as a component and it must not be larger than 250 megabytes. Follow the steps below for instructions on using SWIM to submit your GU's CQR case .zip file.

1. Open a new browser window and enter the SWIM URL <respond.census.gov/swim>.
2. For persons with an existing SWIM account, enter the email address and password associated with the account and choose the Login button. Skip to step 3.
    a. For persons without an existing SWIM account, have the 12-digit registration token provided by the Census Bureau ready for account registration. Select the Register Account button to open the "Account Registration" screen. All fields within this screen are required.
        i. The password must be at least 8-characters in length and have at least one uppercase character, one lowercase character, one number, and one special character. (Valid special characters are limited to the #, !, $, *, &, ?, and ~.
        ii. Establish a security question associated with the account. Expand the choices arrow to the right of the Security Question field and select a question from the drop-down menu. Enter an answer in the Answer field. Select the Submit button. A "Success!" pop-up window appears confirming successful account registration.
        iii. Select Login from the "Success!" pop-up window to return to the SWIM Login screen to enter the newly established account login and password information.
3. With a valid login and password, the "Welcome" screen opens.
    a. If the account has uploaded other files for different geography programs, a list of files previously uploaded by the SWIM user displays. The list includes the creation date of the file upload, the name of the file, and the corresponding size of the .zip file.
4. To submit your GU's CQR submission .zip file, choose the Start New Upload button at the bottom of the "Welcome" screen.
5. From the "What Census program are you reporting data for?" screen, choose the Count Question Resolution (CQR) radio button and choose Next.
6. From the "What type of CQR entity are you reporting for" screen choose the entity choice that aligns with your GU's entity type. If uncertain of the correct choice, contact the Census Bureau by email at <dcmd.2020.cqr.submissions@census.gov> or by phone at (888) 369-3617.
7. Completing the subsequent windows associated with the GU's entity type opens the "Select a .ZIP file to upload" screen.
8. Select the +Add File button and the "Choose File to Upload" screen opens.
9. Navigate to the directory location of the CQR case .zip file (e.g., the "/GUPSGIS/gupsdata/CQR20/output" folder).
10. Select the exported .zip file and choose the Open button.
11. Upon completion, the Status field shows Success, and the name of the file appears in the File(s) field. Add additional, pertinent information to the Comments section if possible.
12. Select the Next button to proceed with the upload OR repeat steps 9 and 10 for each .zip file associated with the GU (i.e., GUs that span more than one county or states that worked more than one county may have .zip file for each of their counties).
    a. Note, please complete all work in all counties prior to making a submission with multiple working counties.
13. The "Thank You" screen appears and indicates a forthcoming email once the transfer completes. GUs can expect to receive the email within a business day of uploading the submission.
14. Choose either Upload Form or Log Out option from the "Thank You" screen message.

If GUs want to ship their CQR case submission rather than using SWIM, please contact the Census Bureau by email at <dcmd.2020.cqr.submissions@census.gov> or by phone at (888) 369-3617 to discuss shipping instructions; otherwise, proceed to the next chapter for the next steps in 2020 Census CQR.

CHAPTER 8 NEXT STEPS FOR 2020 CENSUS CQR

This final chapter of the guide summarizes the next steps for 2020 Census CQR, which include 1) the issuance of the determination letters/emails to communicate with the GU the results of research and findings for their case and 2) the publication of revised data, or errata, online.

Note: The determination letters/emails vary based upon outcome of the case.

For cases resulting in revisions to the official 2020 Census counts, the Census Bureau issues new, official revised counts to the GU and any additional affected GUs. These new counts can be used by GUs for future programs or operations that require official 2020 Census data. The counts can also be used to calculate subsequent population estimates for the GU. The results are also prepared as revised counts, or errata. Errata is posted on the CQR website on a flow basis as they become available.

The revised counts are integrated into all population estimates released after the 2020 Census CQR case is closed. The ACS and PRCS use population totals from the Population Estimates Program at the incorporated place, minor civil division, and county levels to adjust the population totals published by the survey. Thus, to the extent that the population estimates incorporate the 2020 Census CQR results, the ACS and PRCS will also reflect those revisions. The Census Bureau will not incorporate CQR revisions into the 2020 Census data summary files and tables or re-tabulate any of the other 2020 Census data products.

APPENDICES

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APPENDIX A OTHER MATERIALS AVAILABLE FOR 2020 CENSUS CQR

A1 2020 Census P.L. 94-171 Redistricting Data Files and Geographic Products

These materials, as directed by Public Law (P.L.) 94-171, were the first materials released by the Census Bureau, other than Apportionment, with the 2020 Census results. They include data files and geographic products (e.g., maps, block equivalency files, and shapefiles), that the 50 states, District of Columbia, and Puerto Rico use for legislative redistricting. Though not the preferred material to conduct a review for CQR purposes, GUs may use this material to determine if their boundary is incorrect and/or their housing counts and group quarters population are not as anticipated and determine whether to prepare a case requesting a review by the Census Bureau of specific blocks or boundaries.

The redistricting data files contain block level 2020 Census results that include people and housing characteristics for specific geographic areas. GUs may review Table P1 – Race to determine if their overall, total population aligns with their expectations. If not, GUs may review tables H1 – Occupancy Status and P5 – Group Quarters Population by Major Group Quarters Type in their state's data file with the corresponding shapefiles and/or maps to determine if their housing counts and group quarters population counts from the 2020 Census are as they expect. If the counts are not as expected, GUs should investigate further using the materials available for block level analysis (e.g., the CQR Block Count List and/or the 2020 Address Count Listing Files Viewer). Those materials are detailed in Chapter 1 of this guide.

The universe table for Table H1 – Occupancy Status is housing units. In other words, Table H1 specifically contains living quarters defined as housing units. This table does not contain unit counts for living quarters defined as group quarters.

The universe table for Table P5 – Group Quarters Population by Major Group Quarters Type is population in group quarters. Table P5 contains the total population living in group quarters. This count is further disaggregated into institutionalized and noninstitutionalized group quarters population counts. Table P5 does not contain demographic characteristics.

To learn more about all the redistricting materials, navigate to the main Redistricting Data Office website: <www.census.gov/programs-surveys/decennial-census/about/rdo/summary-files.2020.html>. The 2020 redistricting materials are located beneath the "2020" tab.

A2 Census Block-based Work Maps

There are some instances where the scale of the 2020 Census Block Maps prevents the clear visualization of a GU boundary or of certain densely clustered or geographically small 2020 tabulation blocks. To remedy that situation, the Census Bureau can create census block-based work maps for the GU; however, the GUs must contact the Census Bureau either by email at <dcmd.2020.cqr.submissions@census.gov> or by phone at (888) 369-3617 to discuss their specific situation and request these materials.

These maps are large-scale, small format (e.g., legal size – 8.5” x 14”) individual census block-based PDF maps. They do not contain any individual address or map spot information that would be protected under Title 13 U.S.C. These materials are only available upon request if the other available map materials prevent a review of a legal boundary or census block. The Census Bureau will provide this material on DVD along with other supporting files. The map related contents on the DVD include:

- About_the_maps.pdf
- Readme.txt
- DC20BLK_<entity_type><entity_code>.pdf (large format 2020 Census Block Maps)
- DC20BLK_<entity_type><entity_code>_BLK2MS.txt (Block-to-Map-Sheet relationship file for the large format maps)
- /2020Census_workmaps
  - BLOCKLEGEND_CQR20.pdf
  - BLOCKINFO_CQR20_<entity_type><entity_code.pdf (entity-based block map inventory file with a list of the blocks included and the number of sheets in each).
  - CQR20BLK_<ssccctttttbbbb>.pdf
  - CQR20BLK_<ssccctttttbbbb>.pdf
    - Where ss is the two-digit state FIPS code, ccc is the three-digit county FIPS code, ttttt is the six-digit census tract number, and bbbb is the four-digit census block number).

Figure 11 shows an example of an index sheet for a census block with five parent sheets while **Figure 12** shows parent sheet 1 for that same census block. Both map sheets are in landscape orientation; however, map sheets are generated using the best layout for the shape of the census block. As a result, a GU may receive maps in portrait and landscape orientation. Refer to **Figure 13** for an example of a legend. All three of these examples are of prototype maps and may not be identical to the final materials.

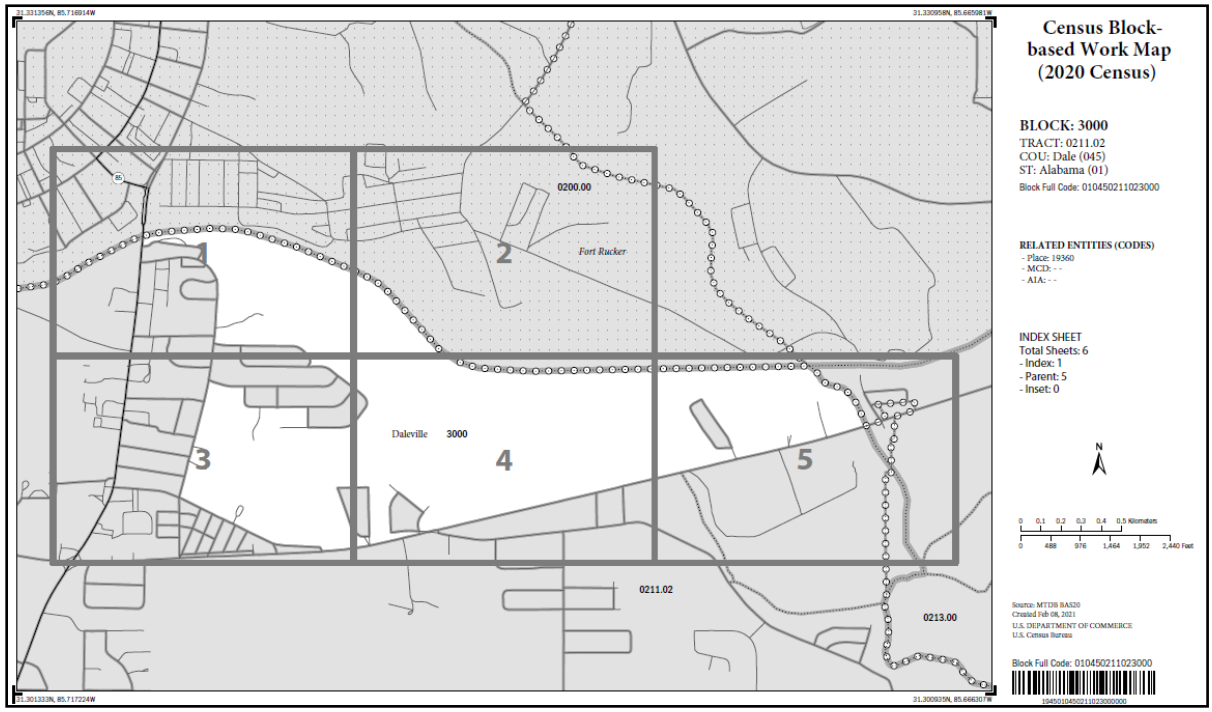


Figure 11: Example of a Census Block-based Work Map Index Sheet

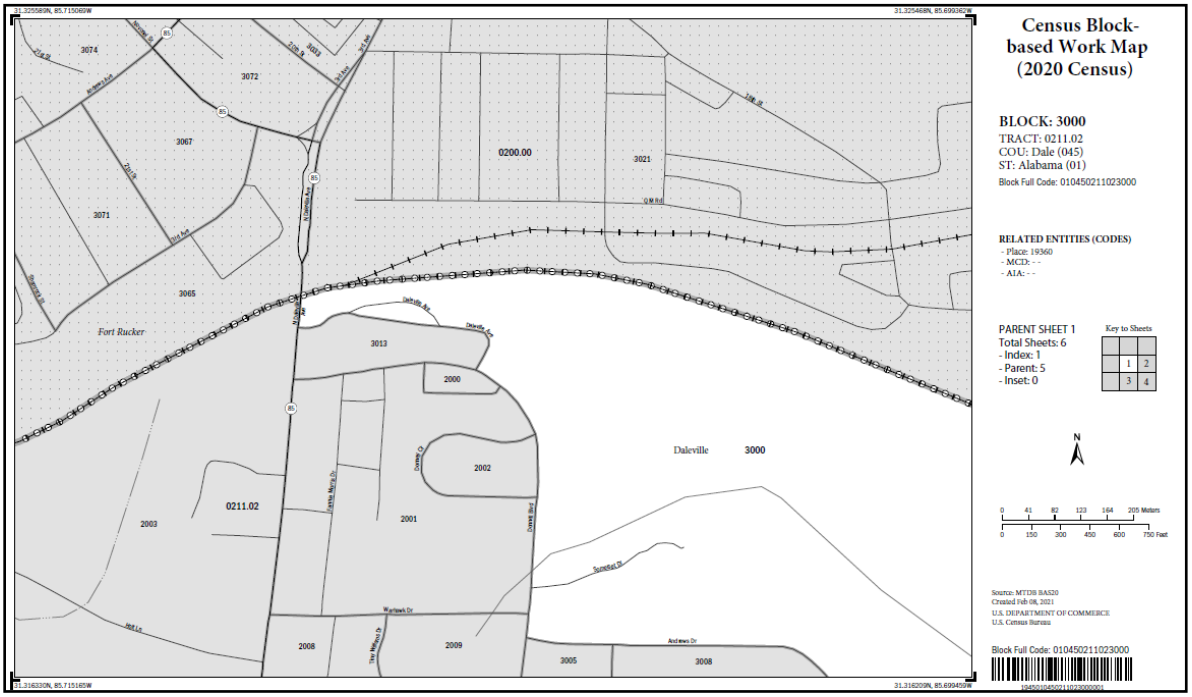


Figure 12: Example of a Census Block-based Work Map Parent Sheet

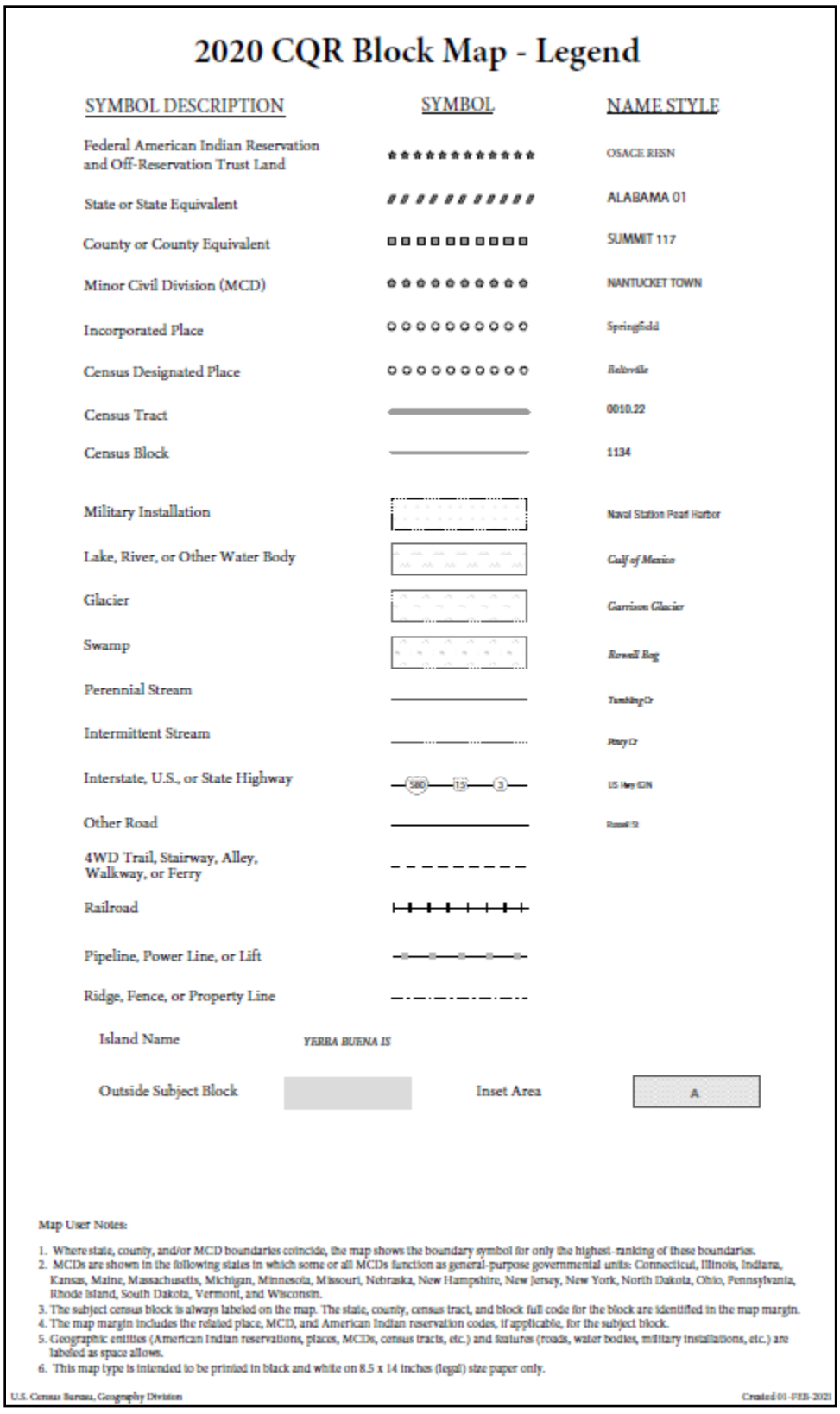


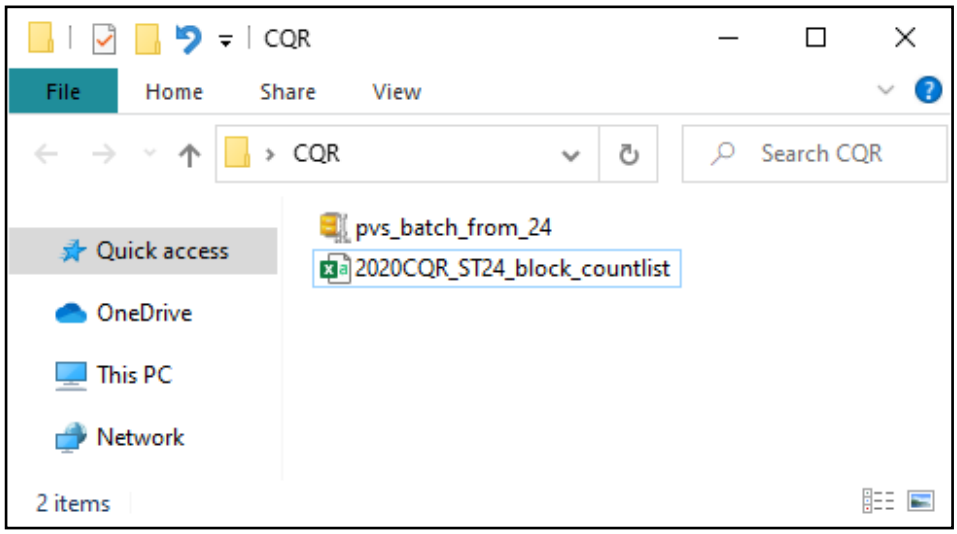
Figure 13: Example of a Census Block-based Work Map Legend

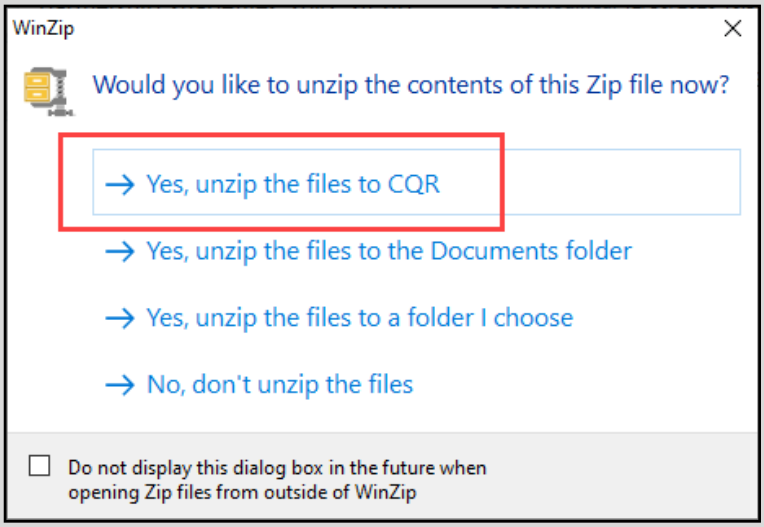
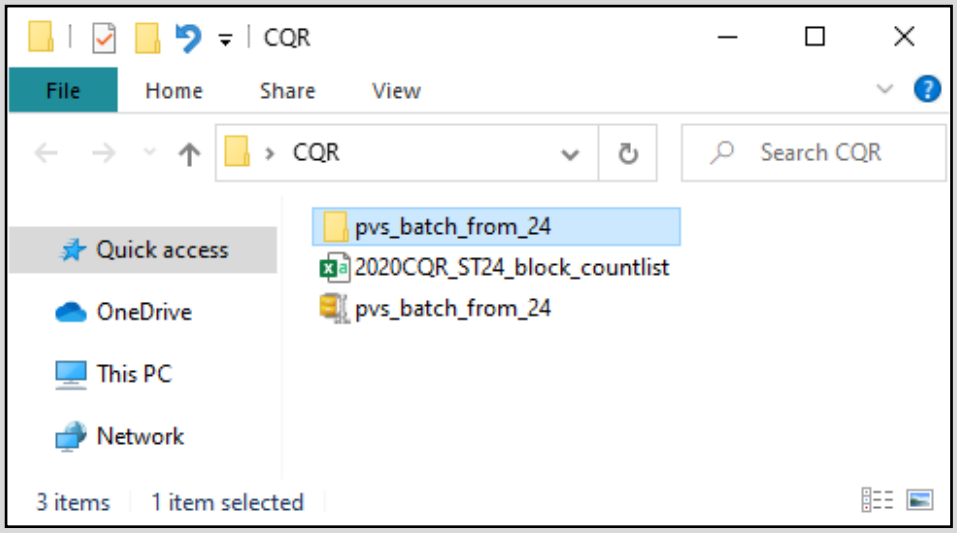
APPENDIX B PARTNERSHIP SHAPEFILE REFERENCE INFORMATION

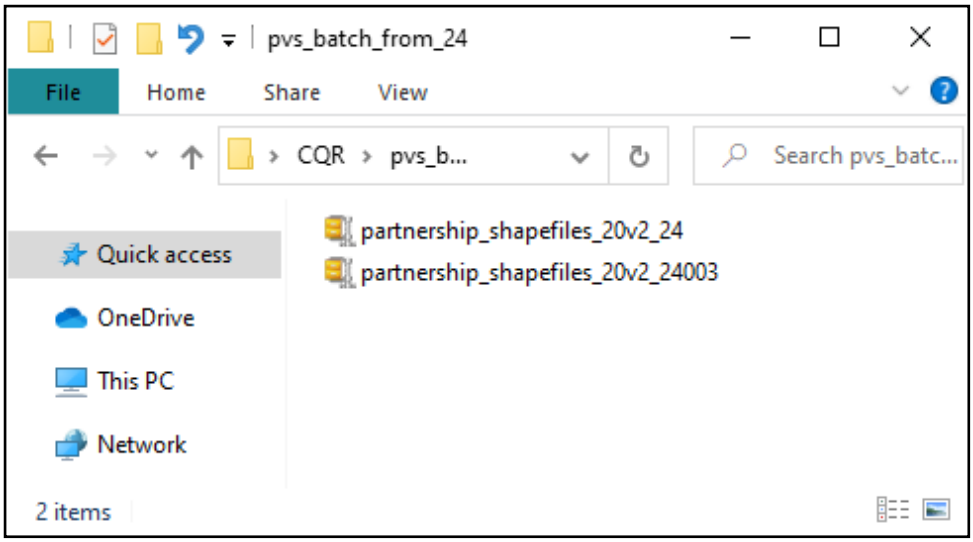
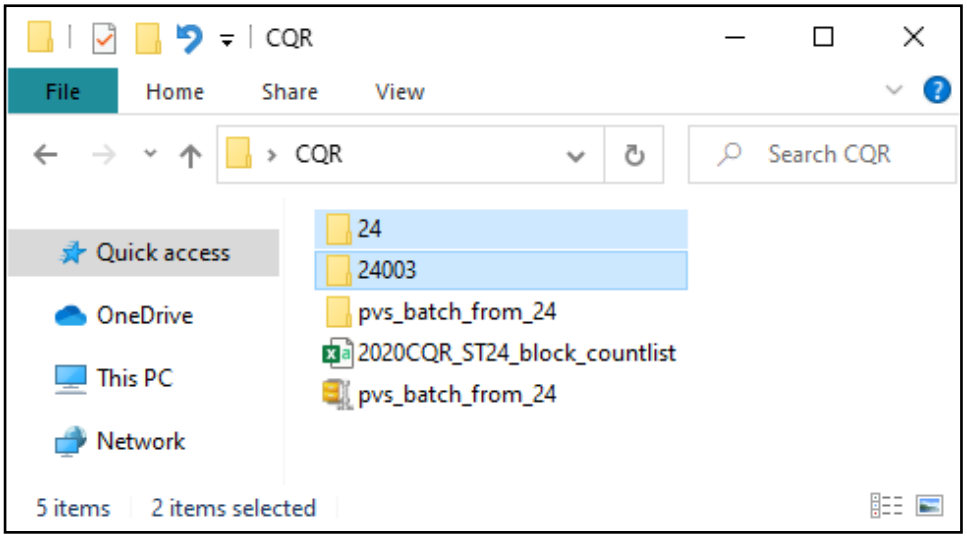
The information included in this appendix is a metadata resource. Use these shapefiles to conduct a detailed review of the 2020 Census results and, if necessary, to prepare a case. Before the shapefiles can be used, follow the steps outlined in **Table 16**.

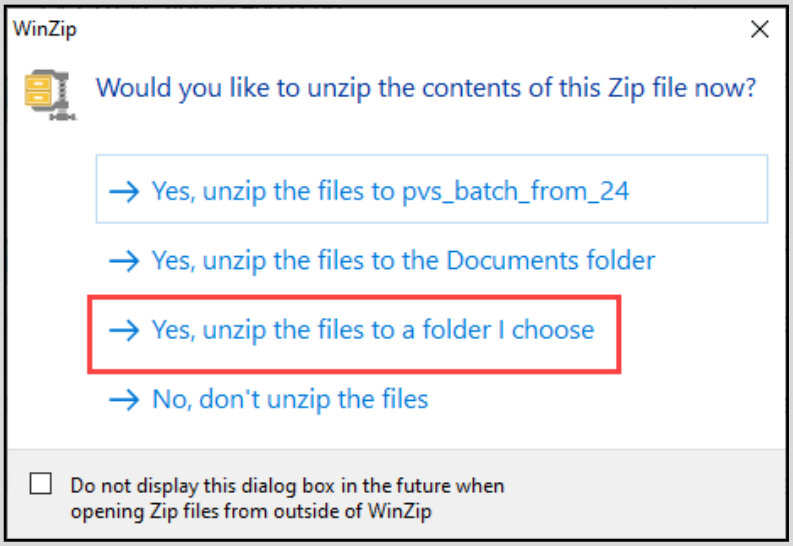
Note: For participants using GUPS, these shapefiles load directly into GUPS by using the "Census Web" option as discussed in **Table 5**. To use these files saved locally, refer to instructions in **Table 40**.

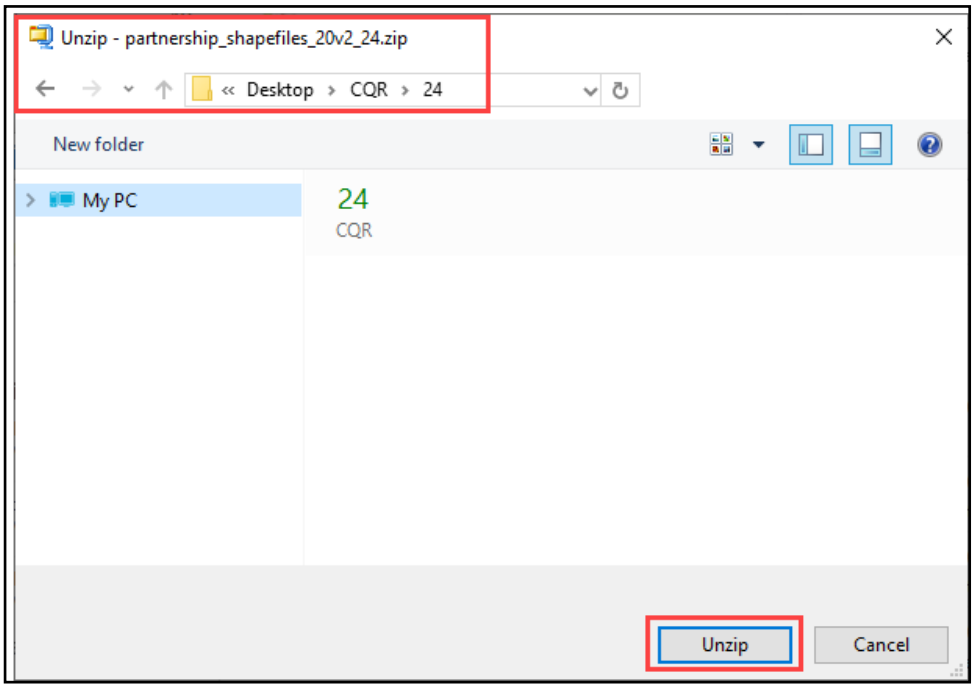
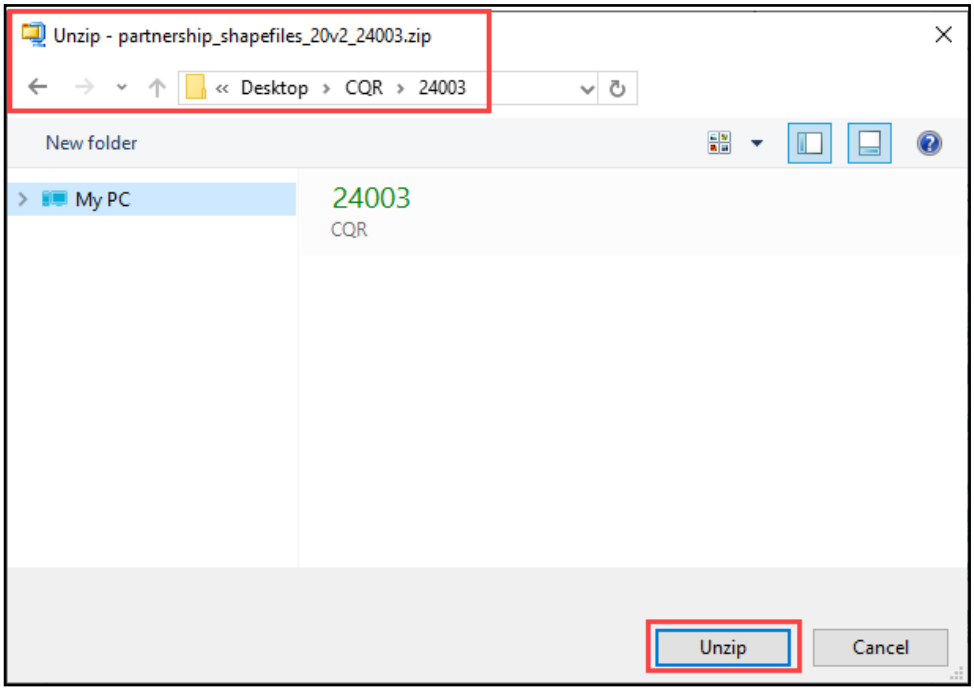
Table 16: Steps to Unzip and Stage the 2021 Partnership Shapefiles

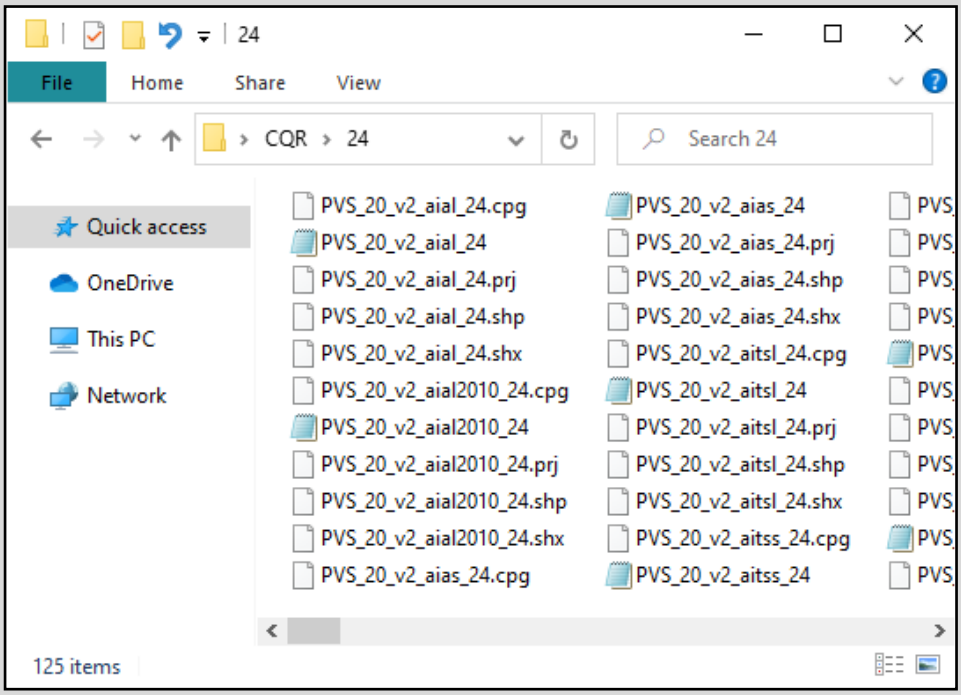
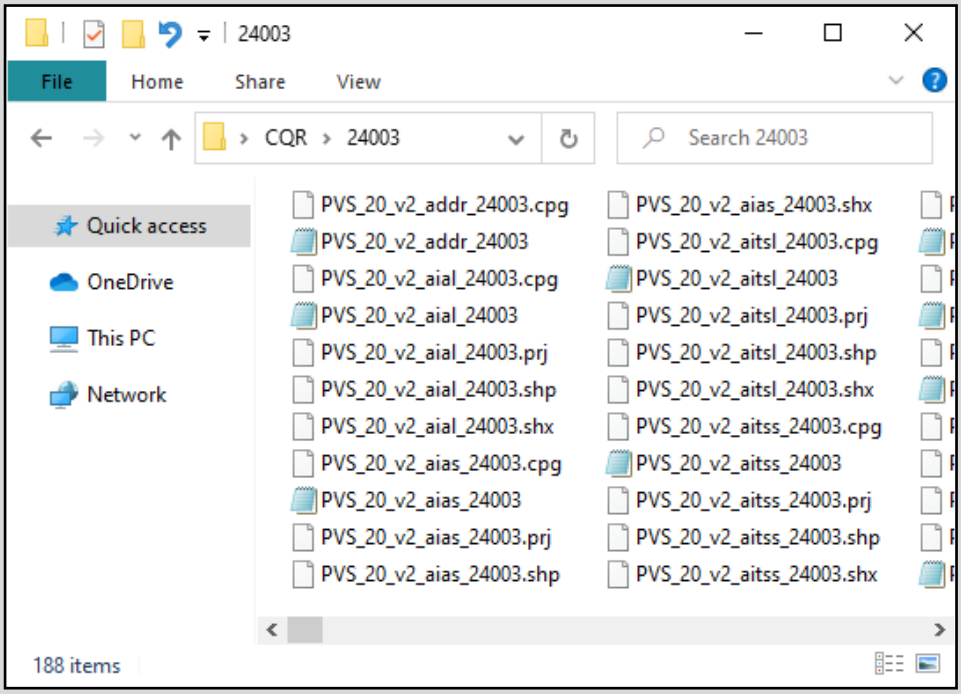
Step	Action and *Result(s)*
Step 1	From the locally created directory where the materials are saved, unzip the Partnership shapefiles .zip file. For this example that is "CQR."  Note: The example above shows the naming convention of a "shapefile" .zip file downloaded from the partnership shapefiles website. The naming convention may vary based on how the file was received (e.g., downloaded from CQR website or received in a different manner from the Census Bureau). The screen capture also shows the CQR Block Count List File for the state Maryland discussed in section **1.2**.

Step	Action and *Result(s)*
Step 2	*For this example, a WinZip confirmation window appears asking where to unzip the file*. Choose the first option to unzip to the locally created directory (e.g., CQR).  *An additional sub-directory, with the same name as the .zip file, appears within the CQR directory after the unzip action completes*. 

Step	Action and *Result(s)*
Step 3	Open the sub-directory, to reveal a minimum of two additional .zip file that must be unzipped. The first file, which ends with the two-digit state FIPS code, includes the state-level files for the GU and is automatically delivered with the county-level files requested by the GU. These files can be useful while conducting the review of 2020 Census results in the local GIS and are required by GUPS.  *This example shows the state-level Maryland .zip file (24) and a county-level Anne Arundel County, Maryland, .zip file (24003).*
	The unzip process on the initial .zip file could result in more than one county-level .zip file based on whether more than one county was selected during the shapefile download process. For example, if a GU spans more than one county, they would download all applicable county-based shapefiles to cover the entirety of the GU to conduct their review.
Step 4	Create the two additional sub-directories within the CQR directory. One for the state and one for the county-level .zip file. Note: If the GU's initial .zip file includes more than one county-level .zip file, create individual county sub-directories for each. 

Step	Action and *Result(s)*
Step 5	Unzip the state-level zip to the state sub-directory and the county-level zip to the county sub-directory. For WinZip this is the third option, “Yes, unzip the files to a folder I choose.” 

Step	Action and *Result(s)*
Step 6	For each zip file, navigate to the appropriate sub-directory and select **Unzip**.  

Step	Action and *Result(s)*
Step 7	*Once unzipped, each sub-directory contains the shapefile components.* Once complete, confirm both sub-directories contain shapefiles that begin with "PVS_20_v2." This is the version required by 2020 Census CQR.  

Step	Action and *Result(s)*
	GUPS participants using the "My Computer" option rather than "Census Web" **must** save their data (2021 Partnership shapefiles and CQR Block Count List File) as described in this table. GUPS requires one sub-directory with the state shapefiles (named by the state FIPS code), one sub-directory with the county shapefiles (named by the county FIPS code), and the CQR Block Count List (correctly named "2020CQR_STxx_block_countlist.csv"), where xx is the two-digit state FIPS code. The presence of additional files in the main folder (CQR) does not affect GUPS. These additional files could be local GIS files, local supporting documentation, the initial .zip file of shapefiles, etc.

All shapefiles provided by the Census Bureau are in an unprojected, geographic-based coordinate system. They have the following associated metrics:

- Coordinate System: Geographic Coordinate System (GCS)
- Datum: North American Datum 1983 (NAD83).
- Spheroid: Geographic Reference System 1980 (GRS1980).
  - Semimajor Axis: 6378137.000000000000000.
  - Semiminor Axis: 6356752.314140356100000000.
  - Inverse Flattening: 298.257222101000020000.
- Prime Meridian: Greenwich (Longitude 0.000000000000000000).
- Angular Unit: Decimal Degree.
  - Radians per Unit (0.017453292519943295).

All shapefile coordinates are double precision (64-bit) floating point numbers. Double precision coordinate shapefiles are necessary to accurately represent geographic features, including geographic entity boundaries. All shapefiles are a collection of four files that include:

- .shp (main file).
- .shx (index file).
- .dbf (database table in dBase IV format).
- .prj (projection file in well-known text format (WKT)).

Table 17 contains the important 2021 Partnership shapefiles for 2020 Census CQR. Using this table with the information discussed in section **B** and appendix **B1**, GUs can determine which files they need to complete their review of the 2020 Census results. GUPS uses these same layers to prepare a case.

Note: Refer to detailed technical documentation on the TIGER/Line Shapefiles and TIGER/Line Files that provide supplementary information to the Partnership shapefiles. This documentation may prove helpful to tribal GUs to understand the coding with the shapefiles that identify their entity.

Table 17: 2021 Partnership Shapefiles Important for 2020 Census CQR

Shapefile Layer	Naming Convention	Availability (State/County)	Uses	Notes
Alaska Native Regional Corporation	PVS_20_v2_anrc_	State and County	Use for the boundaries of Alaska Native Regional Corporations.	Applicable only for Alaska.
All Lines	PVS_20_v2_edges_	County	Use for the depiction of roads, rails, hydrography lines, powerlines, etc.	Map by the MAF/TIGER Feature Classification Code field (MTFCC) to discern the type of line.
American Indian Areas – Legal	PVS_20_v2_aial_	State and County	Use for the boundaries of Federal reservations and off-reservation trust lands as well as State reservations.	
American Indian Areas – Statistical	PVS_20_v2_aias_	State and County	Use for the boundaries of tribal statistical geographies (e.g., Alaska Native village statistical areas, Oklahoma tribal statistical areas, Tribal designated statistical areas, and State designated tribal statistical areas.	
American Indian Tribal Subdivisions – Legal	PVS_20_v2_aitsl_	State and County	Use for the boundaries of tribal subdivisions located on federal reservations and/or off-reservation trust lands.	
American Indian Tribal Subdivisions – Statistical	PVS_20_v2_aitss_	State and County	Use for the boundaries of statistical tribal subdivisions.	Applicable only for Oklahoma (e.g., OTSA tribal subdivisions).
Area Landmarks	PVS_20_v2_arealm_	County	May be a useful reference layer.	

Shapefile Layer	Naming Convention	Availability (State/County)	Uses	Notes
Census Blocks – Current	PVS_20_v2_tabblock_	County	IMPORTANT: Use as the source of the 2020 tabulation blocks in conjunction with the PVS_20_v2_curtracts layer.	Regardless of the year (2021-2023) submitting a CQR case, use the PVS_20_v2 version of Partnership shapefiles as the source of official 2020 tabulation blocks.
Census Designated Places	PVS_20_v2_cdp_	State and County	Use for the boundaries of census designated places.	IMPORTANT: For 2020 Census CQR, this layer is applicable only for Hawaii and Puerto Rico.
Census Tracts – Current	PVS_20_v2_curtracts_	County	IMPORTANT: Use as the source of the 2020 census tracts in conjunction with the PVS_20_v2_tabblock layer.	Regardless of the year (2021-2023) submitting a CQR case, use the PVS_20_v2 version of Partnership shapefiles as the source of official 2020 census tracts.
Consolidated Cities	PVS_20_v2_concity_	County	Use for the boundaries of consolidated cities.	
Counties and Equivalent Areas	PVS_20_v2_county_	State and County	Use for the boundaries of counties and county equivalents.	
County Subdivisions – Legal	PVS_20_v2_mcd_	State and County	Use for the boundaries of legally defined county subdivisions (e.g., minor civil divisions).	
Geographic Offsets	PVS_20_v2_offset_	County	Use for the boundaries of corporate corridors and/or offsets to view those special type of legally recognized boundaries.	
Hawaiian Home Lands	PVS_20_v2_hhl_	State and County	Use for the boundaries of Hawaiian home lands.	Applicable only for Hawaii.
Hydrography – Area	PVS_20_v2_water_	County	May be a useful reference layer.	

Shapefile Layer	Naming Convention	Availability (State/County)	Uses	Notes
Incorporated Places	PVS_20_v2_place_	State and County	Use for the boundaries of incorporated places (e.g., cities, towns, villages, etc.).	
Point Landmarks	PVS_20_v2_pointlm_	County	May be a useful reference layer.	
Roads	PVS_20_v2_roads_	County	Use as resource for road features without having to thematically map the edges layer.	This a subset of the edges layer since it only contains road features (e.g. MTFCC with 'S').
States and Equivalent Areas	PVS_20_v2_state_	State	Use for the boundaries of states and state equivalents.	
Subbarrios	PVS_20_v2_submcd_	County	Use for the boundaries of subbarrio (e.g., subminor civil divisions).	Applicable only for Puerto Rico.
Address Ranges	PVS_20_v2_addr_	County	Relationship Table, not a shapefile, to use for source of address ranges associated with roads in the edges layer.	Match the TLID fields in this table with the same field in the edges layer. TLID is not included in roads layer, so ensure use of edges when joining.

For definitions of the legal and statistical area description codes (LSADs) used as an attribute within many of the shapefiles, refer to the list of legal status codes available online. These codes provide query capabilities to sort through the data and reference the proper records.

B1 Eligible Participants and Relevant Shapefile Layers

After reviewing **Table 17**, refer to the information below for suggestions on which Partnership shapefile layers are relevant for 2020 Census CQR based by type of eligible participant. Review the Data Dictionary tables included in appendix **B2** for specifics on the content of the layers mentioned.

B1.1 Tribal Areas – Federally recognized American Indian Tribe

- American Indian Areas – Legal (for federally recognized American Indian reservations and off-reservation trust lands and state recognized American Indian reservations).
- American Indian Areas – Statistical (for tribal designated statistical areas and Oklahoma tribal statistical areas).

- American Indian Tribal Subdivisions – Legal (for tribal subdivisions).
- American Indian Tribal Subdivisions – Statistical (for tribal subdivisions within Oklahoma tribal statistical areas).
- Census Tracts. Note, these differ from Tribal Census Tracts.
- Tabulation Blocks.
- For reference only (as needed and if applicable):
  - Address Ranges.
  - All Lines.
  - Consolidated Cities.
  - Counties (and equivalents).
  - County Subdivisions – Legal.
  - Geographic Offsets.
  - Hydrography (Area).
  - Incorporated Places.
  - Landmarks (Area and Point).
  - Roads.
  - States (and equivalents).

B1.2 Tribal Areas – Alaska Native Regional Corporations

- Alaska Native Regional Corporation.
- American Indian Areas – Statistical (for the ANVSA geography).
- Census Tracts. Note, these differ from Tribal Census Tracts.
- Tabulation Blocks.
- For reference only (as needed and if applicable):
  - Address Ranges.
  - All Lines.
  - Consolidated Cities.
  - Counties (and equivalents).
  - County Subdivisions – Legal.
  - Geographic Offsets.
  - Hydrography (Area).
  - Incorporated Places.
  - Landmarks (Area and Point).
  - Roads.
  - States (and equivalents).

B1.3 Tribal Areas – Alaska Native Villages

- American Indian Areas – Statistical (for the ANVSA geography).
- Census Tracts. Note, these differ from Tribal Census Tracts.
- Tabulation Blocks.

- For reference only (as needed and if applicable):
  - Address Ranges.
  - Alaska Native Regional Corporation.
  - All Lines.
  - Consolidated Cities.
  - Counties (and equivalents).
  - County Subdivisions – Legal.
  - Geographic Offsets.
  - Hydrography (Area).
  - Incorporated Places.
  - Landmarks (Area and Point).
  - Roads.
  - States (and equivalents).

B1.4 State and Equivalents

- American Indian Areas – Legal (for state recognized American Indian reservations).
- American Indian Areas – Statistical (for state designated tribal statistical areas).
- Census Designated Places (applicable for Hawaii and Puerto Rico only).
- Census Tracts.
- Consolidated Cities.
- Counties (and equivalents).
- County Subdivisions – Legal.
- Geographic Offsets.
- Hawaiian Home Lands (for Hawaii only).
- Incorporated Places.
- States (and equivalents).
- Subbarrio (for Puerto Rico only).
- Tabulation Blocks.
- For reference only (as needed and if applicable):
  - Address Ranges.
  - All Lines.
  - Hydrography (Area).
  - Landmarks (Area and Point).
  - Roads.

B1.5 County and Equivalents

- Census Designated Places (applicable for Hawaii and Puerto Rico only)
- Census Tracts.
- Counties (and equivalents).
- County Subdivisions – Legal.
- Geographic Offsets.

- Incorporated Places.
- Subbarrio (for Puerto Rico only).
- Tabulation Blocks.
- For reference only (as needed and if applicable):
  - Address Ranges.
  - All Lines.
  - Census Designated Places.
  - Hydrography (Area).
  - Landmarks (Area and Point).
  - Roads.
  - States (and equivalents).

B1.6 Minor Civil Divisions

- Census Tracts.
- County Subdivisions – Legal.
- Geographic Offsets.
- Incorporated Places.
- Tabulation Blocks.
- For reference only (as needed and if applicable):
  - Address Ranges.
  - All Lines.
  - Census Designated Places.
  - Consolidated Cities.
  - Counties (and equivalents).
  - Hydrography (Area).
  - Landmarks (Area and Point).
  - Roads.
  - States (and equivalents).

B1.7 Consolidated Cities

- Census Tracts.
- Consolidated Cities.
- Tabulation Blocks.
- For reference only (as needed and if applicable):
  - Address Ranges.
  - All Lines.
  - Census Designated Places.
  - Hydrography (Area).
  - Incorporated Places.
  - Counties (and equivalents).
  - County Subdivisions – Legal.

- Geographic Offsets.
- Landmarks (Area and Point).
- Roads.
- States (and equivalents).

B1.8 Incorporated Places

- Census Tracts.
- Geographic Offsets.
- Incorporated Places.
- Tabulation Blocks.
- For reference only (as needed and if applicable):
  - Address Ranges.
  - All Lines.
  - Census Designated Places.
  - Consolidated Cities.
  - Counties (and equivalents).
  - County Subdivisions – Legal.
  - Hydrography (Area).
  - Landmarks (Area and Point).
  - Roads.
  - States (and equivalents).

B2 Data Dictionary Tables

The table information below, except for the state layer, is documented for the county-level files. For layers that exist at both the state and county levels, only the county-level information is provided. In addition, only the layers of interest for CQR that correspond to the layers mentioned in appendix **B1** are included in the tables below.

Table 18: Census Blocks - Current (tabblock) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
STATEFP20	2	Char	FIPS 2020 State Code
COUNTYFP20	3	Char	FIPS 2020 County Code
TRACTCE20	6	Char	2020 Census Tract Code
BLOCKCE	4	Char	Tabulation Block Number
SUFFIX1CE	2	Char	Census Block Suffix 1
SUFFIX2CE	2	Char	Census Block Suffix 2
NCELIGIBLE	1	Char	Field no longer used or accurate regarding New Construction Program eligibility
BLKSZIND	1	Char	Block Size Indicator Field
BLOCK	8	Char	Tabulation Block Number, Census Block Suffix 1, Census Block Suffix 2
PARTFLG	1	Char	Part flag indicator
BLOCKID	19	Char	FIPS State Code, FIPS County Code, Census Tract Code, Tabulation Block Number, Census Block Suffix 1, Census Block Suffix 2

Table 19: Census Tract - Current (curtracts) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
TRACTCE	6	Char	2020 Census Tract Code
NAME	100	Char	Base Name portion of the Standardized Name
TRACTID	11	Char	FIPS State Code, FIPS County Code, Census Tract Code
NEW_CODE	6	Char	New Tract Code
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
TRACTTYP	1	Char	Tract Characteristic Flag
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification
TRACTLABEL	7	Char	Census tract number used for LUCA geocoding
VINTAGE	2	Char	Vintage

Table 20: All Lines (edges) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
TLID	10,0	Number	TIGER Line ID or the Permanent Edge ID
TFIDL	10,0	Number	TIGER Line ID or the Permanent Face ID, Left
TFIDR	10,0	Number	TIGER Line ID or the Permanent Face ID, Right
MTFCC	5	Char	MAF/TIGER Feature Classification Code
FIDELITY	1	Char	Indication to a participant when their entity boundary has changed through spatial enhancement
FULLNAME	40	Char	Decoded Feature Name with abbreviated qualifier, direction, and feature type
SMID	22,0	Number	Spatial Tmeta ID
SMIDTYPE	1	Varchar2	Source attribution for boundary edges. PLSS, Parcels, Surveyed, etc.
BBSPFLG	1	Char	Indicates the Redistricting Data Project participant's submitted request of an EDGE for selection for holding.
CBBFLG	1	Char	Indicates the status of an EDGE for a selection as tabulation block boundary
BBSP_2020	1	Char	New BBSP Flag
CHNG_TYPE	4	Char	Type of area update
JUSTIFY	150	Char	Justification
LTOADD	10	Char	Left to address
RTOADD	10	Char	Right to address
LFROMADD	10	Char	Left from address
RFROMADD	10	Char	Right from address
ZIPL	5	Char	USPS ZIP Code to left side of the edge
ZIPR	5	Char	USPS ZIP Code to right side of the edge
EXTTYP	1	Char	Extension type
MTUPDATE	10	Date	Date of last update to the edge

Table 21: Alaska Native Regional Corporations (anrc) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
ANRCFP	5	Char	FIPS ANRC Code (state based)
NAMELSAD	100	Char	Name with translated LSAD
LSAD	2	Char	Legal/Statistical Area Description
AIANNHNS	8	Char	ANSI numeric identifier for AIANNH Areas
FUNCSTAT	1	Char	Functional Status
CLASSFP	2	Char	FIPS 55 class code describing an entity
PARTFLG	1	Char	Part flag indicator
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	Char	Authorization type for legal area updates
DOCU	120	Char	Supporting documentation
FORM_ID	4	Char	Record ID for any boundary update
AREA	10,3	Number	Acreage of area update
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification
NAME	100	Char	Name
VINTAGE	2	Char	Vintage
AIANNHFSR	1	Char	Flag indicating level of recognition of an American Indian, Alaska Native, or Native Hawaiian tribe or group

Table 22: American Indian Areas – Legal (aial) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
AIANNHCE	4	Char	Census AIANNH code
COMPTYP	1	Char	Indicates if reservation (or equivalent) or off-reservation trust land is present, or both
AIANNHFSR	1	Char	Flag indicating level of recognition of an American Indian, Alaska Native, or Native Hawaiian tribe or group
NAMELSAD	100	Char	Name with translated LSAD
AIANNHNS	8	Char	ANSI numeric identifier for AIANNH Areas
LSAD	2	Char	Legal/Statistical Area Description
FUNCSTAT	1	Char	Functional Status
CLASSFP	2	Char	FIPS 55 class code describing an entity
PARTFLG	1	Char	Part flag indicator
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	Char	Authorization type for legal area updates
DOCU	120	Char	Supporting documentation
FORM_ID	4	Char	Record ID for any boundary update
AREA	10,3	Number	Acreage of area update
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification
NAME	100	Char	Name
VINTAGE	2	Char	Vintage

Table 23: American Indian Areas – Statistical (aias) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
AIANNHCE	4	Char	Census AIANNH code
COMPTYP	1	Char	Indicates if reservation (or equivalent) or off-reservation trust land is present, or both
AIANNHFSR	1	Char	Flag indicating level of recognition of an American Indian, Alaska Native, or Native Hawaiian tribe or group
NAMELSAD	100	Char	Name with translated LSAD
AIANNHNS	8	Char	ANSI numeric identifier for AIANNH Areas
LSAD	2	Char	Legal/Statistical Area Description
FUNCSTAT	1	Char	Functional Status
CLASSFP	2	Char	FIPS 55 class code describing an entity
PARTFLG	1	Char	Part flag indicator
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification
NAME	100	Char	Name
VINTAGE	2	Char	Vintage

Table 24: American Indian Tribal Subdivisions - Legal (aitsl) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
AIANNHCE	4	Char	Census AIANNH code
TRIBSUBCE	3	Char	Census Tribal Subdivision Code
NAMELSAD	100	Char	Name with translated LSAD
TRIBSUBNS	8	Char	ANSI eight-digit feature code for the tribal subdivision
LSAD	2	Char	Legal/Statistical Area Description
FUNCSTAT	1	Char	Functional Status
CLASSFP	2	Char	FIPS 55 class code describing an entity
PARTFLG	1	Char	Part flag indicator
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	Char	Authorization type for legal area updates
DOCU	120	Char	Supporting documentation
FORM_ID	4	Char	Record ID for any boundary update
AREA	10,3	Number	Acreage of area update
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification
NAME	100	Char	Name
VINTAGE	2	Char	Vintage
AIANNHFSR	1	Char	Flag indicating level of recognition of an American Indian, Alaska Native, or Native Hawaiian tribe or group

Table 25: American Indian Tribal Subdivisions - Statistical (aitss) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
AIANNHCE	4	Char	Census AIANNH code
TRIBSUBCE	3	Char	Census Tribal Subdivision Code
NAMELSAD	100	Char	Name with translated LSAD
TRIBSUBNS	8	Char	ANSI eight-digit feature code for the tribal subdivision
LSAD	2	Char	Legal/Statistical Area Description
FUNCSTAT	1	Char	Functional Status
CLASSFP	2	Char	FIPS 55 class code describing an entity
PARTFLG	1	Char	Part flag indicator
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification
NAME	100	Char	Name
VINTAGE	2	Char	Vintage
AIANNHFSR	1	Char	Flag indicating level of recognition of an American Indian, Alaska Native, or Native Hawaiian tribe or group

Table 26: Area Landmarks (arealm) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
MTFCC	5	Char	MAF/TIGER Feature Classification Code
FULLNAME	120	Char	Prefix Direction Code, Prefix Type code, Base Name, Suffix Type Code, Suffix Direction code
AREAID	22	Char	Object ID
ANSICODE	8	Char	Represents the official code for use by Federal agencies for data transfer and dissemination
PARTFLG	1	Char	Part flag indicator
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification
BAG	3	Char	Block Area Grouping

Table 27: Census Designated Places (cdp) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
PLACEFP	5	Char	FIPS 55 Place Code
PLACENS	8	Char	ANSI feature code for the place
NAMELSAD	100	Char	Name with translated LSAD
LSAD	2	Char	Legal/Statistical Area Description
FUNCSTAT	1	Char	Functional Status
CLASSFP	2	Char	FIPS 55 class code describing an entity
PARTFLG	1	Char	Part flag indicator
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification
NAME	100	Char	Name
VINTAGE	2	Char	Vintage

Table 28: Consolidated Cities (concity) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
CONCITYFP	5	Char	FIPS 55 Place Code
NAMELSAD	100	Char	Name with translated LSAD
PLACENS	8	Char	ANSI feature code for the place
LSAD	2	Char	Legal/Statistical Area Description
FUNCSTAT	1	Char	Functional Status
CLASSFP	2	Char	FIPS 55 class code describing an entity
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	Char	Authorization type for legal area updates
DOCU	120	Char	Supporting documentation
FORM_ID	4	Char	Record ID for any boundary update
AREA	10,3	Number	Acreage of area update
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification
NAME	100	Char	Name
VINTAGE	2	Char	Vintage

Table 29: Counties and Equivalent Areas (county) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
COUNTYNS	8	Char	ANSI feature code for county or equivalent feature
NAMELSAD	100	Char	Name with translated LSAD
LSAD	2	Char	Legal/Statistical Area Description
FUNCSTAT	1	Char	Functional Status
CLASSFP	2	Char	FIPS 55 class code describing an entity
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	Char	Authorization type for legal area updates
DOCU	120	Char	Supporting documentation
FORM_ID	4	Char	Record ID for any boundary update
AREA	10,3	Number	Acreage of area update
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification
NAME	100	Char	Name
VINTAGE	2	Char	Vintage

Table 30: County Subdivisions - Legal (mcd) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
COUSUBFP	5	Char	FIPS 55 County Subdivision code
NAMELSAD	100	Char	Name with translated LSAD
COUSUBNS	8	Char	ANSI feature code for the county subdivision
LSAD	2	Char	Legal/Statistical Area Description
FUNCSTAT	1	Char	Functional Status
CLASSFP	2	Char	FIPS 55 class code describing an entity
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	Char	Authorization type for legal area updates
DOCU	120	Char	Supporting documentation
FORM_ID	4	Char	Record ID for any boundary update
AREA	10,3	Number	Acreage of area update
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification
NAME	100	Char	Name
VINTAGE	2	Char	Vintage

Table 31: Geographic Offsets (offset) Layer

Attribute Name	Field Length	Field Type	Description
TFID	20	Number	Permanent Face ID
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
OFFSET	1	Char	Geographic Corridor/Offset Flag
ADDEXCLUDE	1	Char	Address Exclusion Indicator
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification

Table 32: Hawaiian Home Lands (hhl) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
AIANNHCE	4	Char	Census AIANNH code
COMPTYP	1	Char	Indicates if reservation (or equivalent) or off-reservation trust land is present
NAMELSAD	100	Char	Name with translated LSAD
AIANNHNS	8	Char	ANSI numeric identifier for AIANNH Areas
LSAD	2	Char	Legal/Statistical Area Description
FUNCSTAT	1	Char	Functional Status
CLASSFP	2	Char	FIPS 55 class code describing an entity
PARTFLG	1	Char	Part flag indicator
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	Char	Authorization type for legal area updates
DOCU	120	Char	Supporting documentation
FORM_ID	4	Char	Record ID for any boundary update
AREA	10,3	Number	Acreage of area update
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification
NAME	100	Char	Name
VINTAGE	2	Char	Vintage
AIANNHFSR	1	Char	Flag indicating level of recognition of an American Indian, Alaska Native, or Native Hawaiian tribe or group

Table 33: Hydrography - Area (water) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
ANSICODE	8	Char	Represents the official code for use by Federal agencies for data transfer and dissemination
MTFCC	5	Char	MAF/TIGER Feature Classification Code
FULLNAME	120	Char	Prefix Direction Code, Prefix Type code, Base Name, Suffix Type Code, Suffix Direction code
CHNG_TYPE	2	Char	Type of area update
HYDROID	22	Char	Object ID
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification

Table 34: Incorporated Places (place) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
PLACEFP	5	Char	FIPS 55 Place Code
NAMELSAD	100	Char	Name with translated LSAD
PLACENS	8	Char	ANSI feature code for the place
LSAD	2	Char	Legal/Statistical Area Description
FUNCSTAT	1	Char	Functional Status
CLASSFP	2	Char	FIPS 55 class code describing an entity
PARTFLG	1	Char	Part flag indicator
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	Char	Authorization type for legal area updates
DOCU	120	Char	Supporting documentation
FORM_ID	4	Char	Record ID for any boundary update
AREA	10,3	Number	Acreage of area update
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification
NAME	100	Char	Name
VINTAGE	2	Char	Vintage

Table 35: Point Landmarks (pointlm) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
POINTID	22	Char	Object ID
ANSICODE	8	Char	Represents the official code for use by Federal agencies for data transfer and dissemination
MTFCC	5	Char	MAF/TIGER Feature Classification Code
FULLNAME	120	Char	Prefix Direction Code, Prefix Type code, Base Name, Suffix Type Code, Suffix Direction code
CHNG_TYPE	2	Char	Type of point update
JUSTIFY	150	Char	Justification

Table 36: Roads (roads) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
LINEARID	22	Char	Object ID
FULLNAME	120	Char	Prefix Direction Code, Prefix Type code, Base Name, Suffix Type Code, Suffix Direction code
RTTYP	1	Varchar2	Route type code
MTFCC	5	Char	MAF/TIGER Feature Classification Code

Table 37: States and Equivalent Areas (state) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
STATEUSPS	2	Char	USPS State Abbreviation
NAME	100	Char	Base Name Portion of Standardized Name
KSAD	2	Char	Legal/Statistical Area Description Code
STATENS	8	Char	ANSI Feature Code for the State

Table 38: Subbarrios (submcd) Layer

Attribute Name	Field Length	Field Type	Description
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
COUSUBFP	5	Char	FIPS 55 County Subdivision Code
SUBMCDFP	5	Char	FIPS Sub-minor Civil Division Code
NAMELSAD	100	Char	Name with translated LSAD
SUBMCDNS	8	Char	ANSI feature code for the sub-minor civil division
LSAD	2	Char	Legal/Statistical Area Description
CHNG_TYPE	2	Char	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AREA	10,3	Number	Acreage of area update
RELATE	120	Char	Relationship description
JUSTIFY	150	Char	Justification
FORM_ID	4	Char	Record ID for any boundary update
NAME	100	Char	Name
VINTAGE	2	Char	Vintage
FUNCSTAT	1	Char	Functional Status

Table 39: Address Ranges (addr) Relationship Table

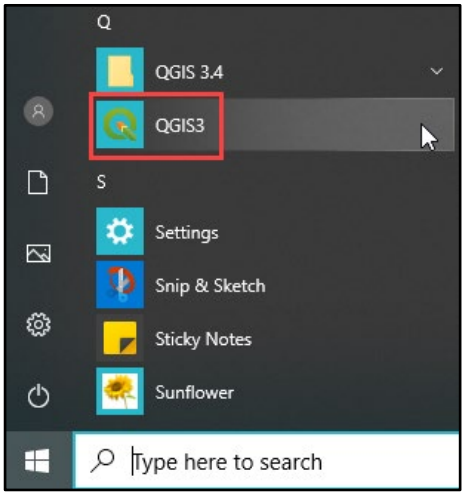
Attribute Name	Field Length	Field Type	Description
TLID	10,0	Number	TIGER Line ID or the Permanent Edge ID
STATEFP	2	Char	FIPS State Code
COUNTYFP	3	Char	FIPS County Code
FROMHN	12	Char	From House Number
TOHN	12	Char	To House Number
SIDE	1	Char	Side Indicator Flag
ZIP	5	Char	USPS ZIP Code
PLUS4	4	Char	USPS ZIP +4 Code
LFROMADD	10	Char	Blank; outdated field no longer used
LTOADD	10	Char	Blank; outdated field no longer used
RFROMADD	10	Char	Blank; outdated field no longer used
RTOADD	10	Char	Blank; outdated field no longer used
ZIPL	5	Char	Blank; outdated field no longer used
ZIPR	5	Char	Blank; outdated field no longer used
ZIP4L	4	Char	Blank; outdated field no longer used
ZIP4R	4	Char	Blank; outdated field no longer used

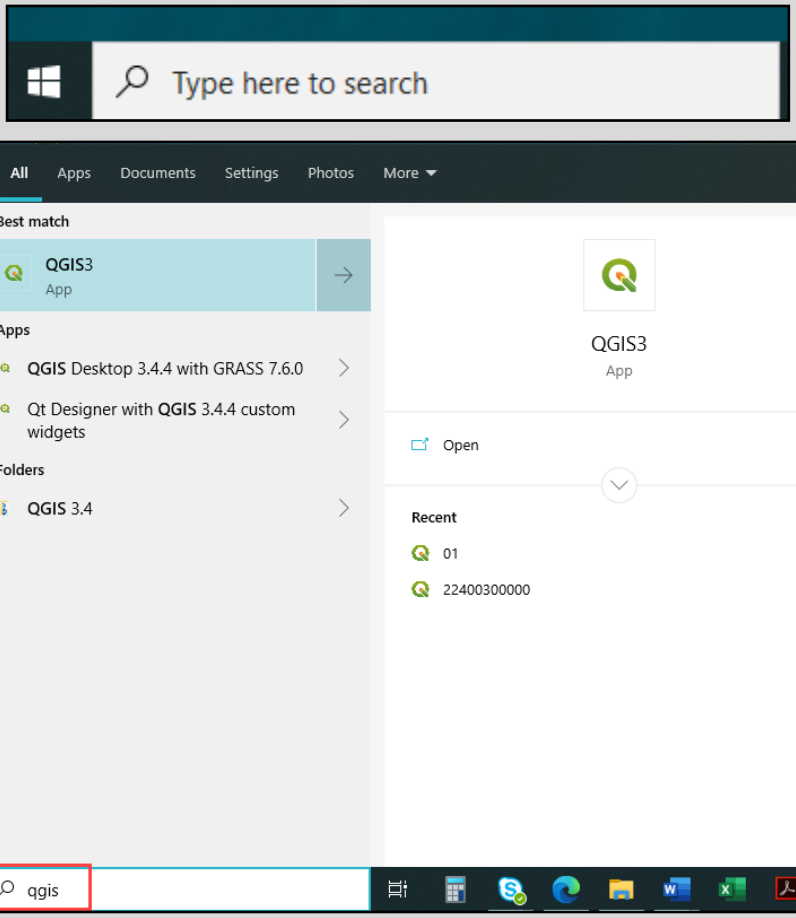
APPENDIX C START A CQR PROJECT USING MY COMPUTER

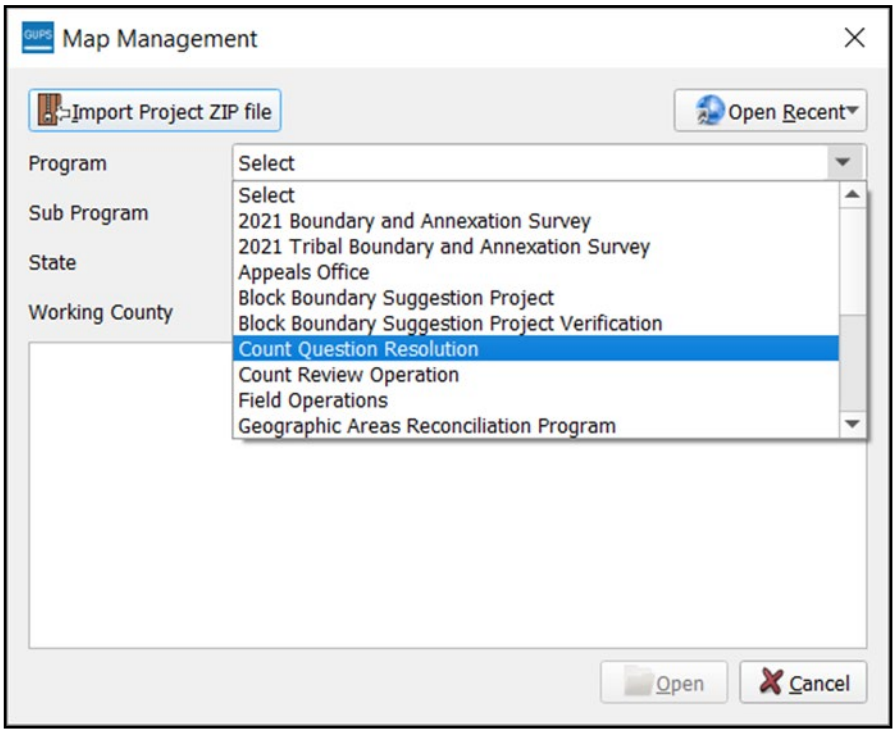
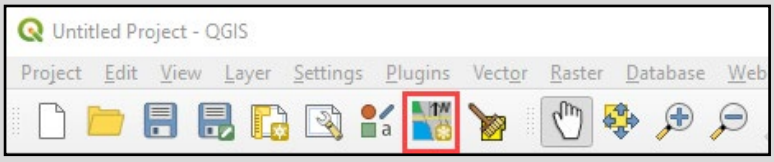
Because the CQR Block Count List File and 2021 Partnership shapefiles were previously downloaded to conduct a review of the 2020 Census results, as detailed in **Table 16**, use those files with the instructions below.

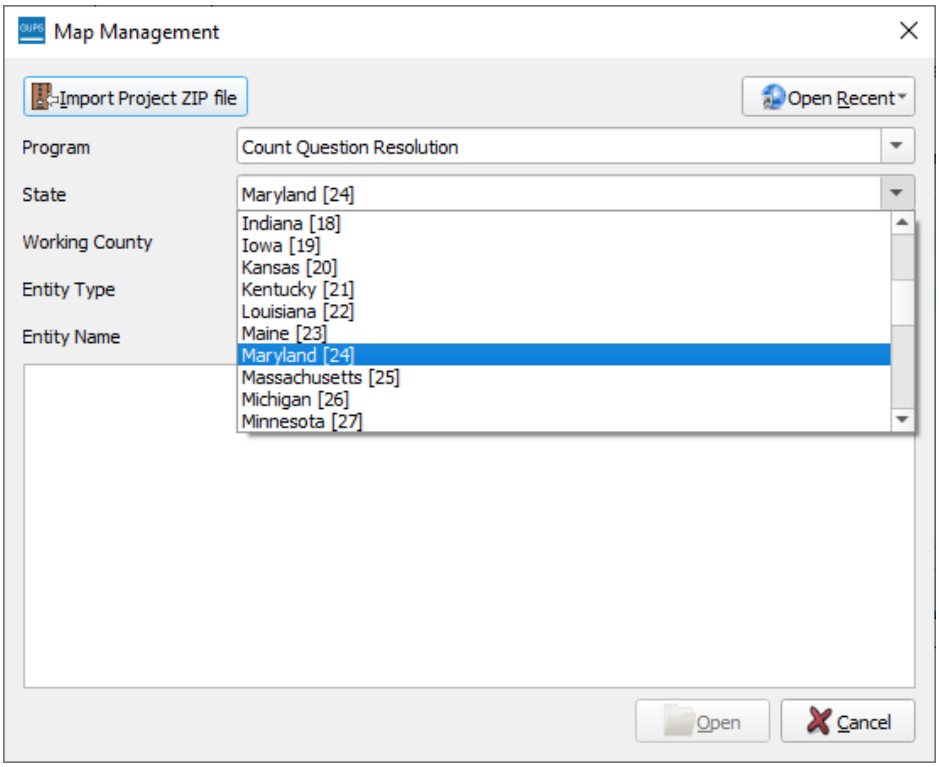
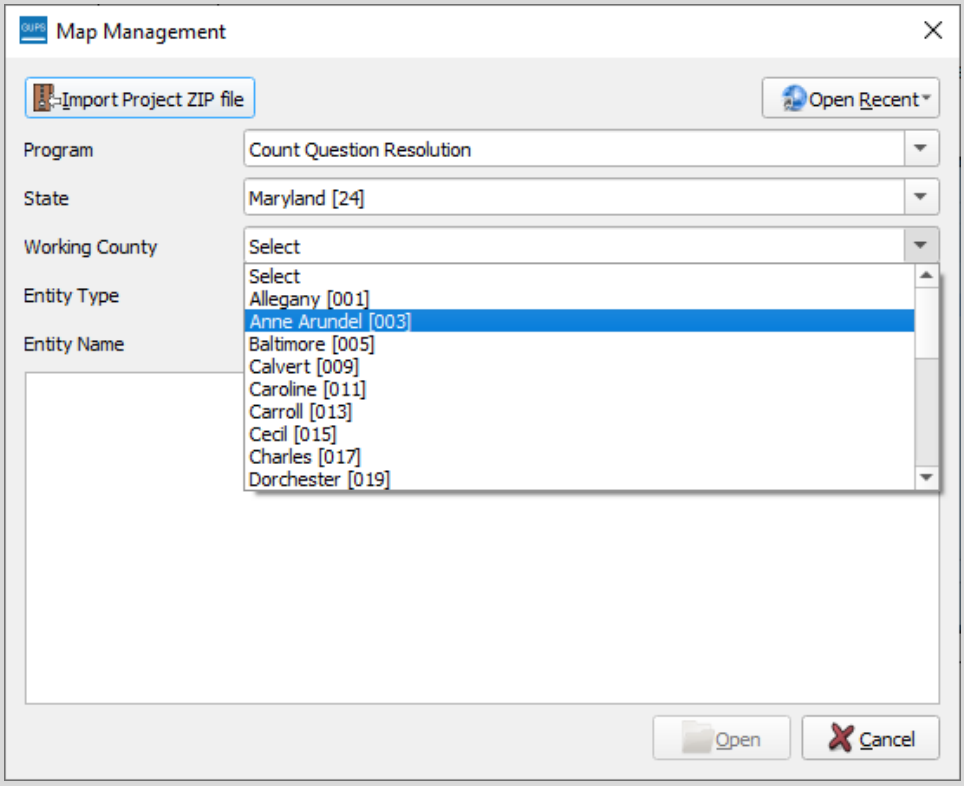
Note: If the GU received materials from the Census Bureau on a DVD, the GU must copy the contents of the DVD to a local directory and use the My Computer option. GUPS does not load files directly from the DVD.

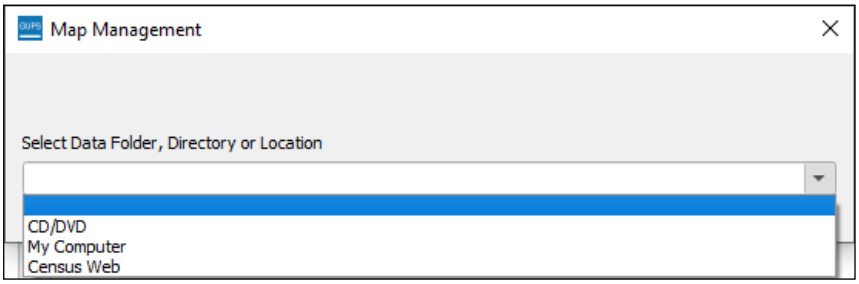
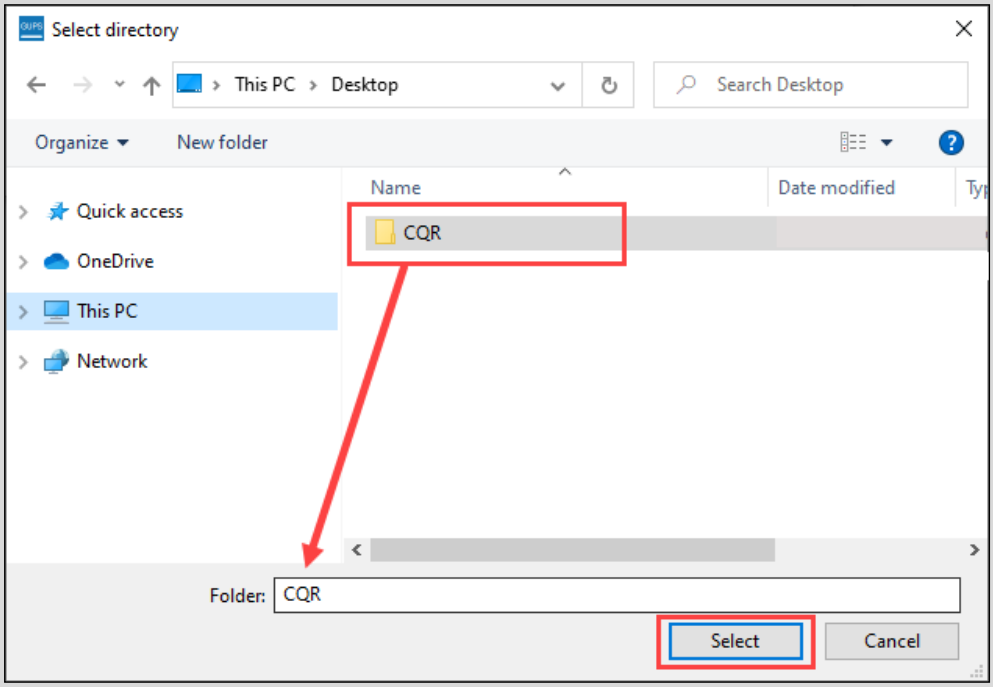
Table 40: Steps to Open GUPS and Start a CQR Project Using My Computer

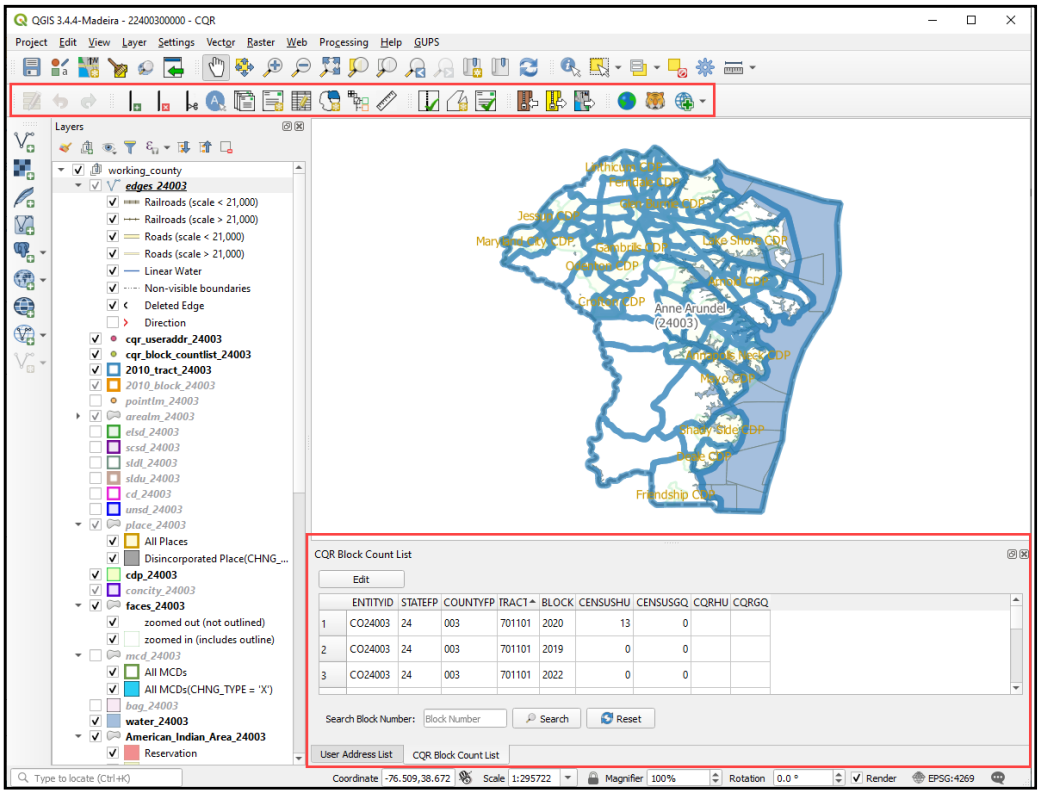
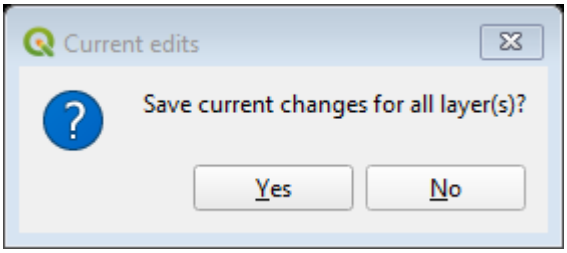
Step	Action and *Result(s)*
Step 1	To open GUPS, select the **QGIS3** icon from the Start button.  *The QGIS splash screen appears.* 

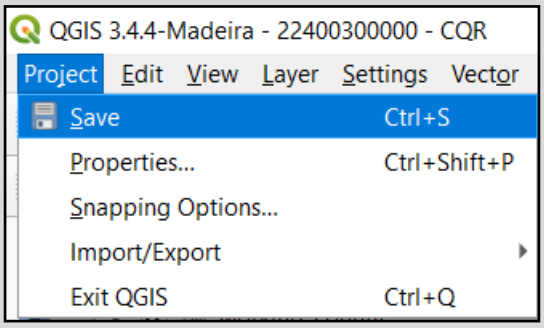
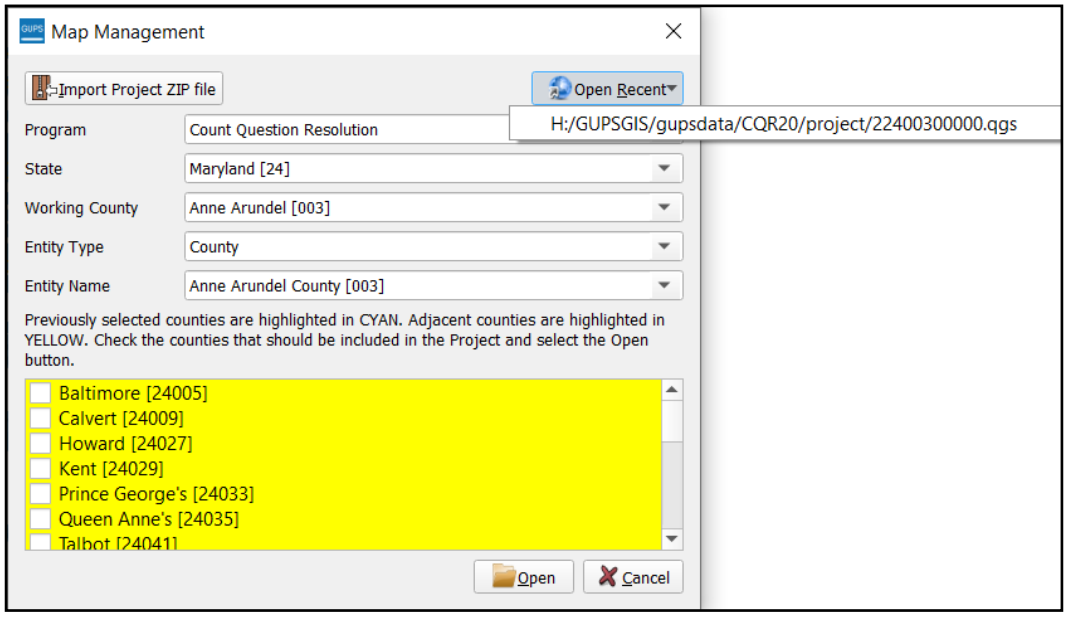
Step	Action and *Result(s)*
	A participant can also locate QGIS3 by typing ‘qgis’ in the Search area at the bottom left of the screen, near the Start button, in Windows 10. 

Step	Action and *Result(s)*
Step 2	*The **Map Management** window appears.*  Use the drop-down menu next to the **Program** field to select **Count Question Resolution**.
	If the Map Management window does not appear, choose the Map Management button from the Standard toolbar (shown below highlighted by a red rectangle). If it still does not appear, refer to **Appendix D** for troubleshooting tips. 

Step	Action and *Result(s)*
Step 3	Choose the GU's state from the **State** drop-down menu. 
Step 4	Choose the GU's county from the **Working County** drop-down menu. Note: This field is required for all entity types to prepare the CQR Block Count List within the CQR project. 

Step	Action and *Result(s)*
Step 5	*A secondary **Map Management** window appears to select the data source*. From this secondary **Map Management** window, choose **My Computer** from the **Select Data Folder, Directory** or **Location** drop-down menu.  Note: The CD/DVD option is not used for 2020 Census CQR. Files received on DVD to review the 2020 Census results are copied locally and not loaded into GUPS directly from the DVD.
Step 6	*A **Select directory** window opens.* Choose the local directory (e.g., "CQR" as detailed in **Table 16**) where the unzipped shapefiles and the original CQR Block Count List File reside, then choose the **Select** button. Project load times vary based upon the size of the working county's CQR Block Count List FIle (i.e., the number of blocks).  IMPORTANT: GUPS requires the original CQR Block Count List File, not the one with a concatenated GEOID described in section **2.1**.

Step	Action and *Result(s)*
Step 7	Project load times vary based upon the size of the working county's CQR Block Count List (i.e., the number of blocks). After the data loads into GUPS, *the* ***Table of Contents*** *populates and symbolizes according to preset styles. The* ***Map View*** *fills with the working county. The* ***Menu Bar, Standard Toolbar, and CQR Toolbar*** *appear along the top and the* ***Status Bar*** *appears at the bottom of the screen. The CQR Block Count List opens by default.* The counts shown in the screenshot for Anne Arundel County (24003) are fictional and used for illustrative purposes only.  Note: The **QGIS 3.4.4 Madeira** and **CQR** display at the very top left of the application window, along with the entity coding for the GU. This information helps a participant confirm use of the newer QGIS version and selection of the correct GU and program.
	The Census Bureau requests no changes to the default projection and recommends no changes be made to the default layer symbology once the project loads.
Step 8	To save a project, use the **Save** button on the **Standard toolbar**. Otherwise, edits will be lost.  From the **Current edits** confirmation dialog box choose the **Yes** button to save or the **No** button to cancel without saving the project. 

Step	Action and *Result(s)*
	Participants may use the **Save** option beneath the **Project** tab to save the project as well. 
Step 9	To reopen a saved project, expand the menu beneath the **Open Recent** button from the **Map Management** window. *The drop-down list provides a list of current projects created using GUPS*. 

Proceed back to section **4.1** to resume the guide's instruction.

APPENDIX D TROUBLESHOOTING GUPS INSTALLATION

If the default Map Management window, as shown in **Figure 14**, does not display after opening QGIS (**Figure 15**), then this indicates a GUPS installation issue.

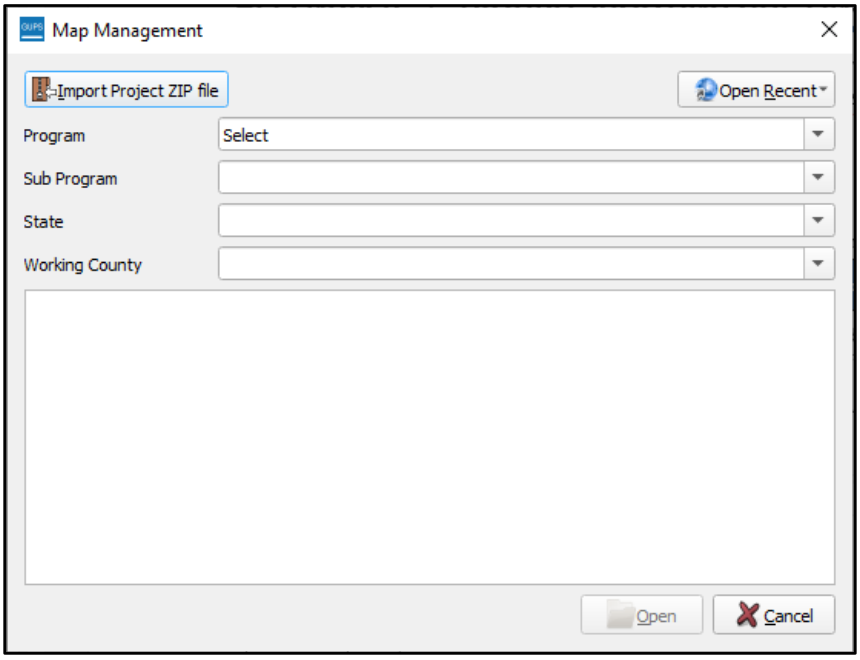


Figure 14: Default Map Management Window

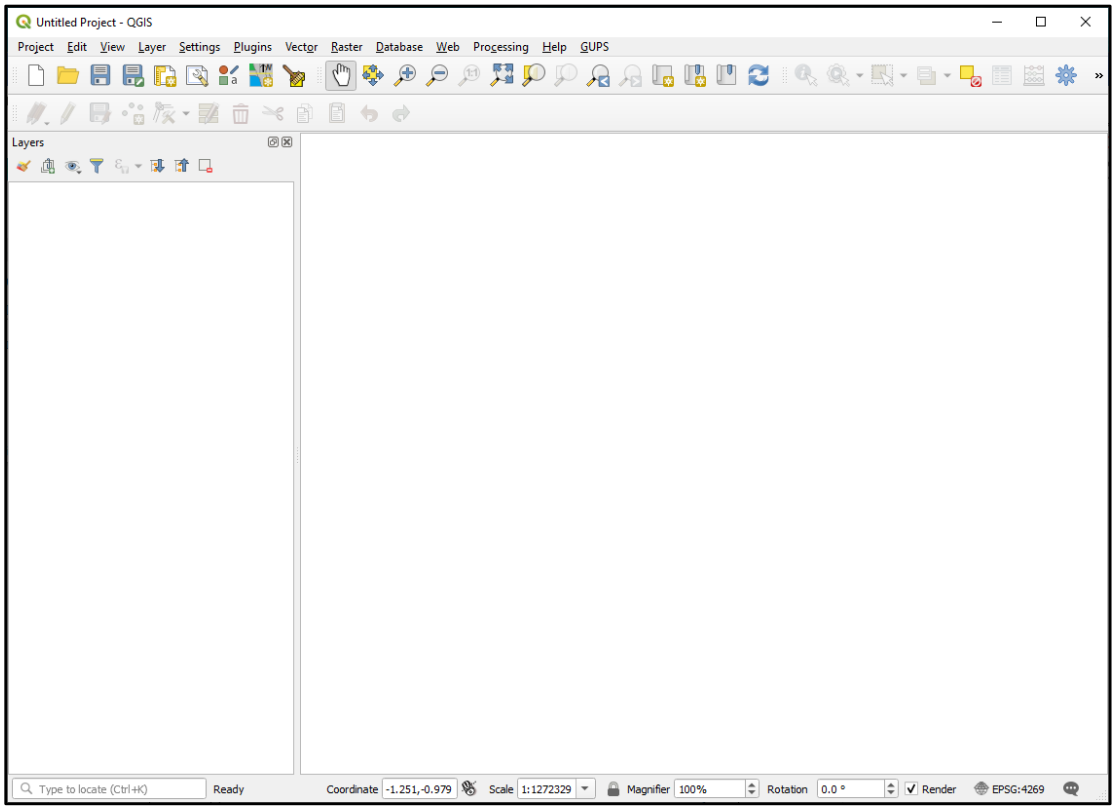
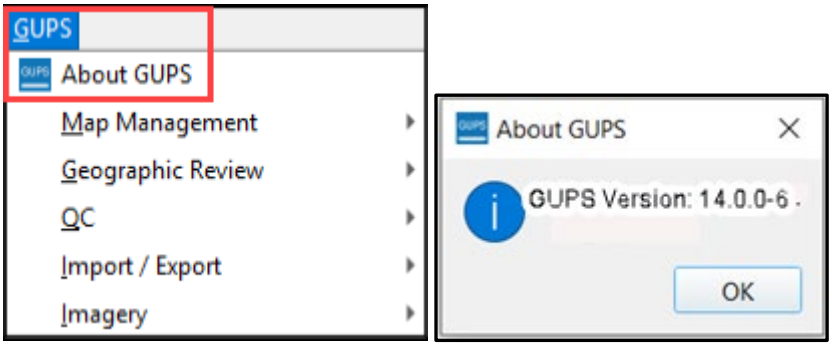
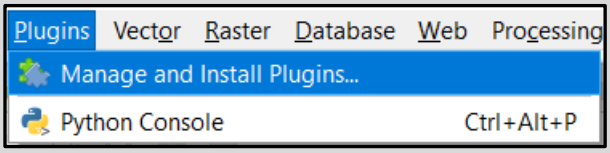
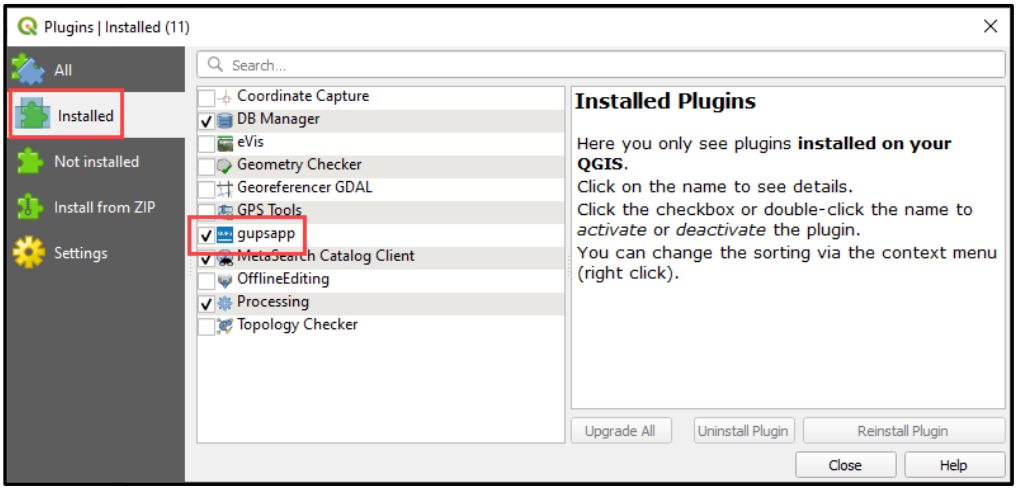
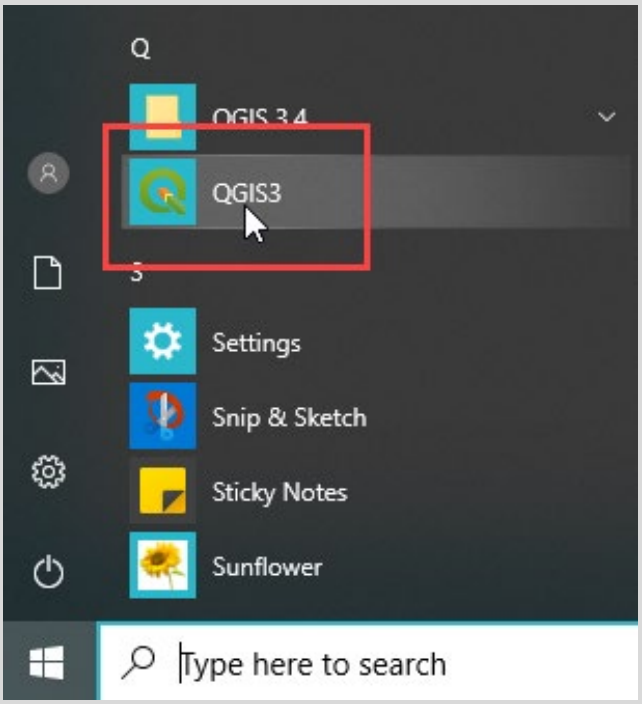


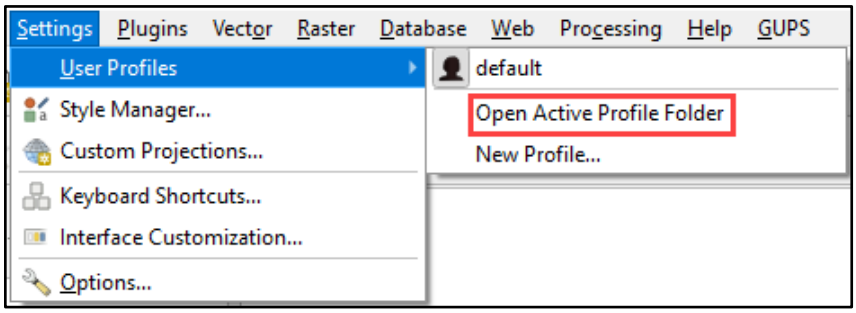
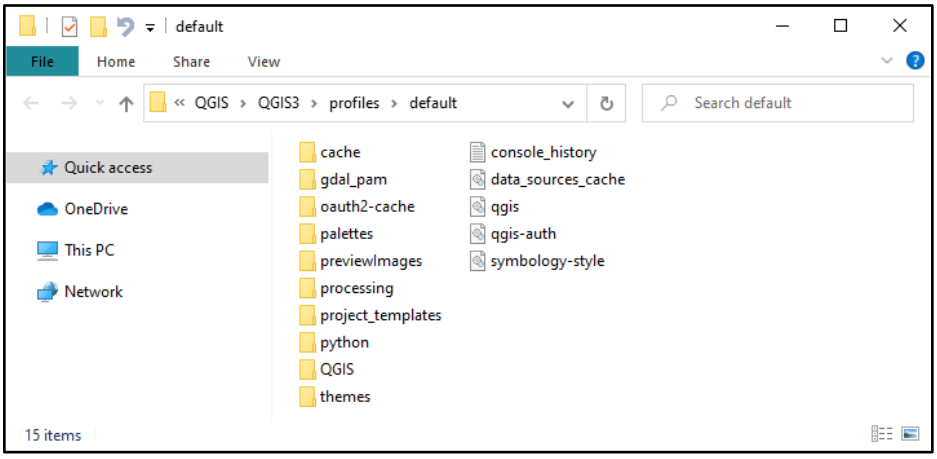
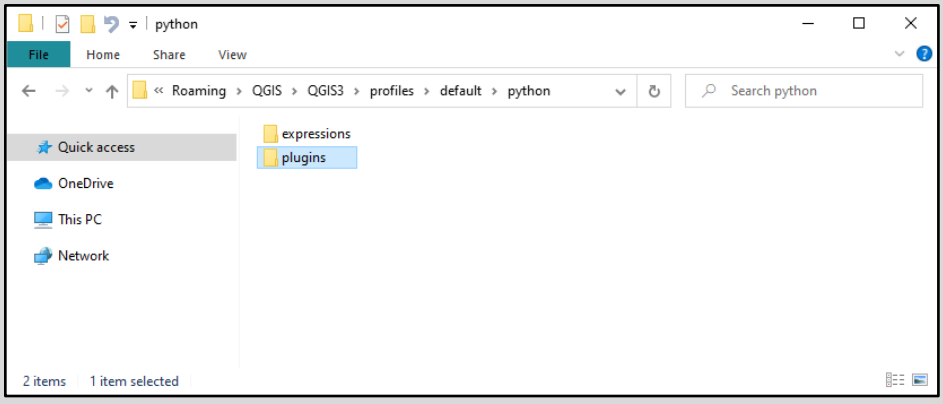
Figure 15: QGIS without a Map Management Window

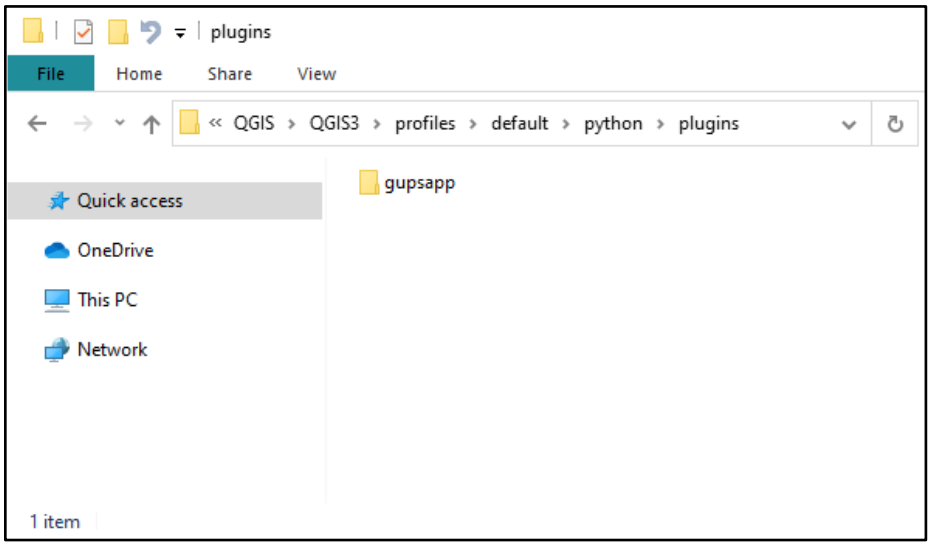
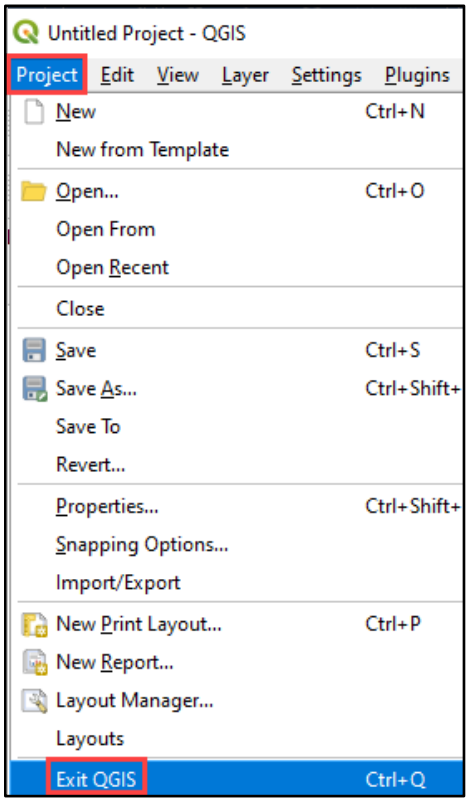
Follow the instructions below in **Table 41** to correct the installation issue(s). If problems persist after applying the instructions in the table below, contact the Census Bureau by phone at (888) 369-3617 or by email at <dcmd.2020.cqr.submissions@census.gov>.

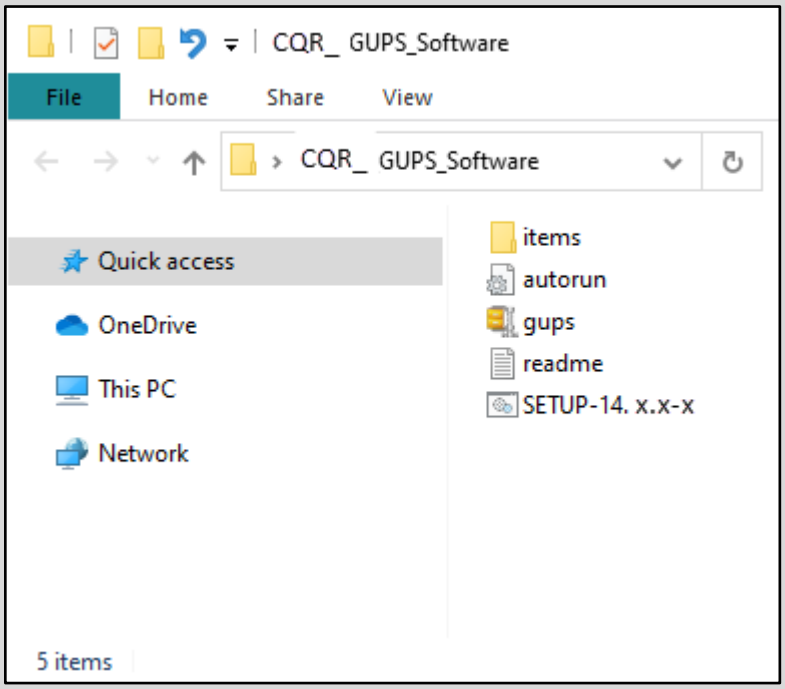
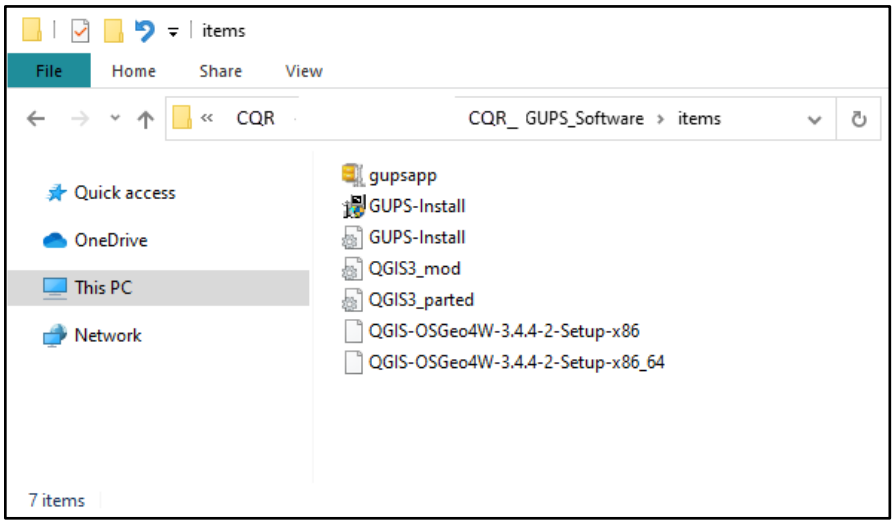
Table 41: Steps to Troubleshoot GUPS Installation

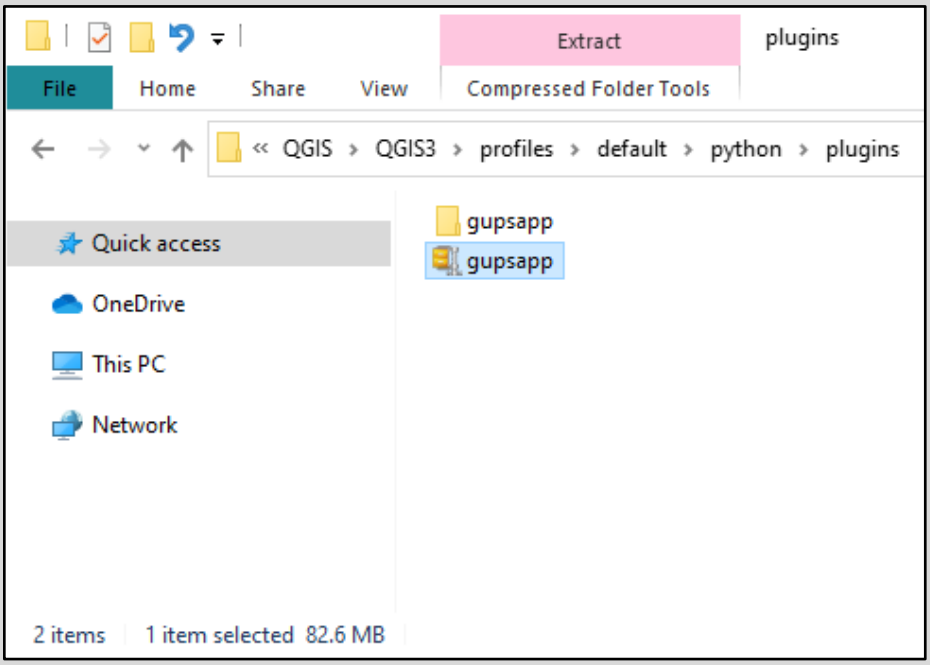
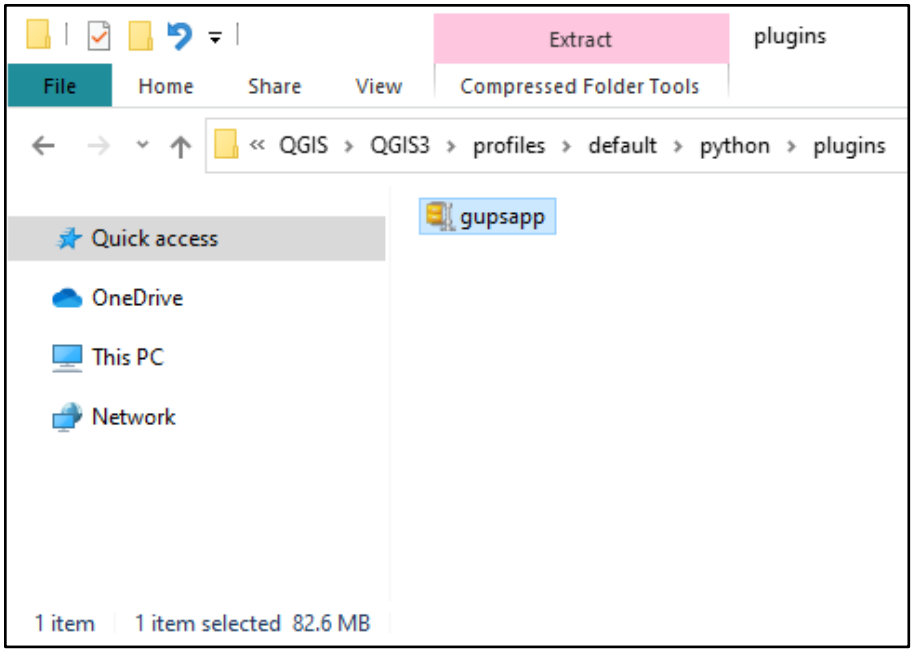
Step	Action and *Result(s)*
Step 1	With QGIS open, identify the GUPS version by accessing the **GUPS → About GUPS** menu located on the **Menu bar**. The Menu bar buttons are described in sub-appendix **E1**. If the version is lower than version 14.0.0-6, navigate to the CQR website and download the proper version. Those steps are discussed in **Table 4** and should be applied before proceeding with the details in this table. 
Step 2	If no Map Management window is visible, from the **Menu bar** choose the **Plugins** menu and then **Manage and Install Plugins**. 
Step 3	*The Plugins window opens*. Select the **Installed** option on the left side of the window. Confirm a checkmark exists next to the **gupsapp** item. If a checkmark is absent, use the mouse to select the box to the left of the gupsapp name. Choose the **Close** button to close the window. 

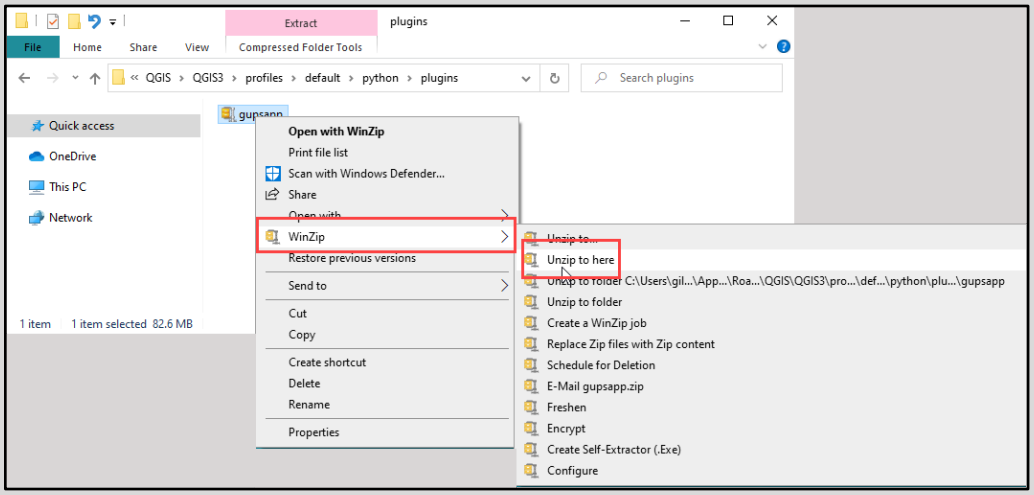
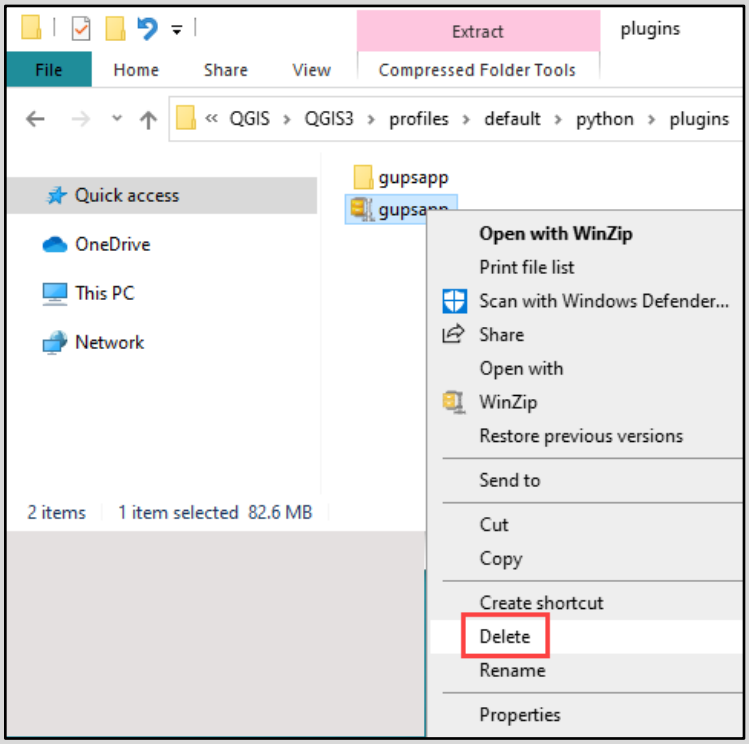
Step	Action and *Result(s)*
Step 4	Close QGIS and restart the software by selecting the **QGIS3** icon from the Start Menu.  If the Map Management window still does not appear, add the plugin manually following the remaining steps in this table.

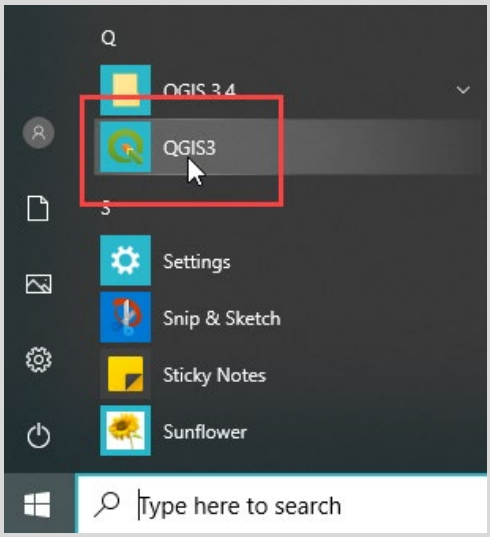
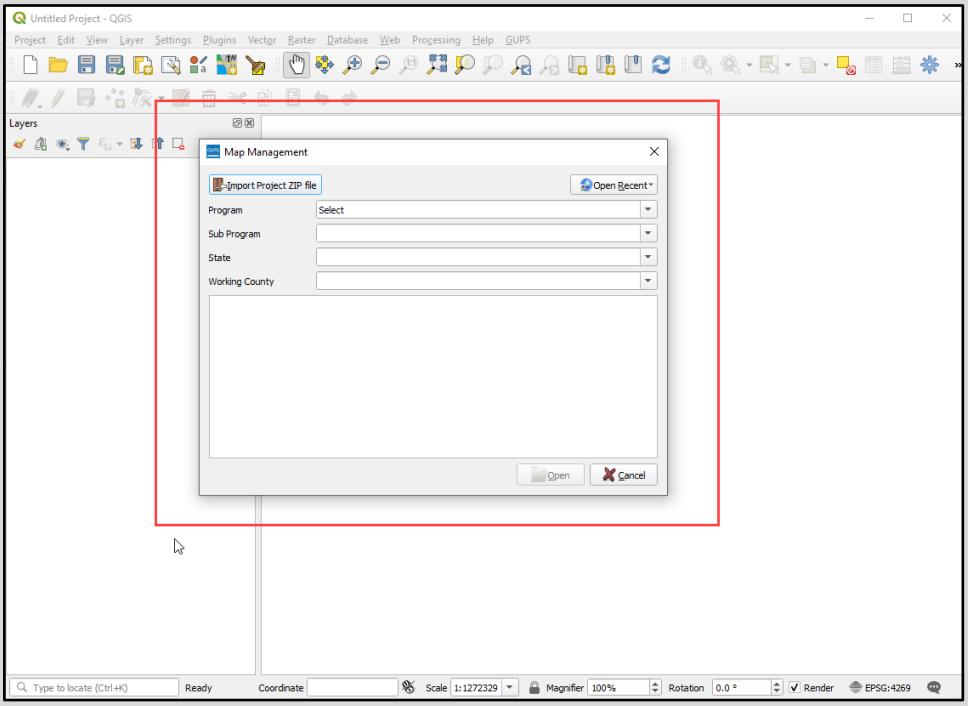
Step	Action and *Result(s)*
Step 5	From the **Menu bar**, select the **Settings→Select User Profiles→Open Active Profile Folder**.  *The default profile window opens*. 
Step 6	Select and open the **python** folder. *The window shows the contents of the **python** folder*. 

Step	Action and *Result(s)*
Step 7	Select and open the **plugins** folder. *The window shows the contents of the **plugins** folder.* 
	Keep this window open. Do not close this window. This window provides the location where upcoming changes are needed.
Step 8	Close QGIS by selecting **Project →Exit QGIS** or by selecting the "X" in the upper right corner. 

Step	Action and *Result(s)*
Step 9	With the plugins window still open, open another File Explorer window on the computer. Navigate to the location where the **gups.zip** file was saved and unzipped. Note, this occurred as part of action described in **Table 4**. 
Step 10	Select and open the **items** folder. 

Step	Action and *Result(s)*
Step 11	Copy the **gupsapp.zip** file from the **items** folder into the **plugins** folder in Step 7. 
Step 12	Delete the **gupsapp** folder so that only the **gupsapp.zip** file exists in the **plugins** folder. 

Step	Action and *Result(s)*
Step 13	Unzip the **gupsapp.zip** file to the **plugins** folder. WinZip provides the **Unzip to here** option that handles the proper placement of unzipped file contents. 
	Unzipping the file elsewhere is incorrect and will cause problems with correcting the installation problem.
Step 14	Once the unzip action completes, confirm the new **gupsapp** folder was created and delete the **gupsapp.zip** file from the **plugins** folder. 

Step	Action and *Result(s)*
	For GUPS to work, the plugins folder must contain only the **gupsapp** folder, as shown in Step 7.
Step 15	Open QGIS by selecting the **QGIS3** icon from the Start Menu.  If the Map Management window appears, the installation issue is resolved. 
Step 16	If the Map Management window does not appear, please contact the Census Bureau by phone at (888) 369-3617 or by email at <dcmd.2020.cqr.submissions@census.gov>.for assistance.

APPENDIX E ADDITIONAL GUPS FUNCTIONALITY

The Census Bureau strongly recommends the use of the QGIS documentation to supplement information provided within this appendix. Refer to the QGIS documentation guide on-screen or download an Adobe Acrobat PDF of the QGIS 3.4 documentation from the following link, <Documentation (qgis.org)>. The QGIS 3.4 documentation is in the "Archived" section of the link, near the bottom of the page.

The content included in the subsequent appendices may vary from what appears with each QGIS/GUPS installation, but we anticipate most installations will include the menus and toolbar elements described within this appendix. If new/different menus, sub-menus, toolbar buttons, etc. appear that are not included in this appendix, check the QGIS documentation.

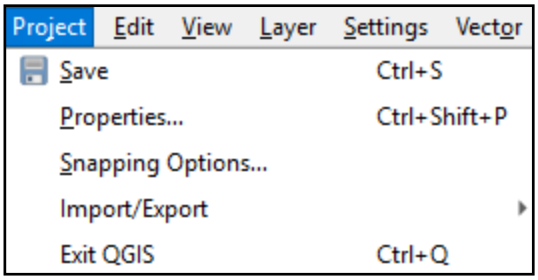
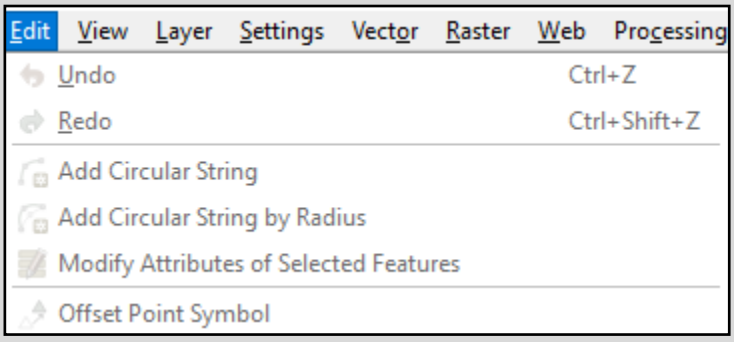
E1 Menu Bar

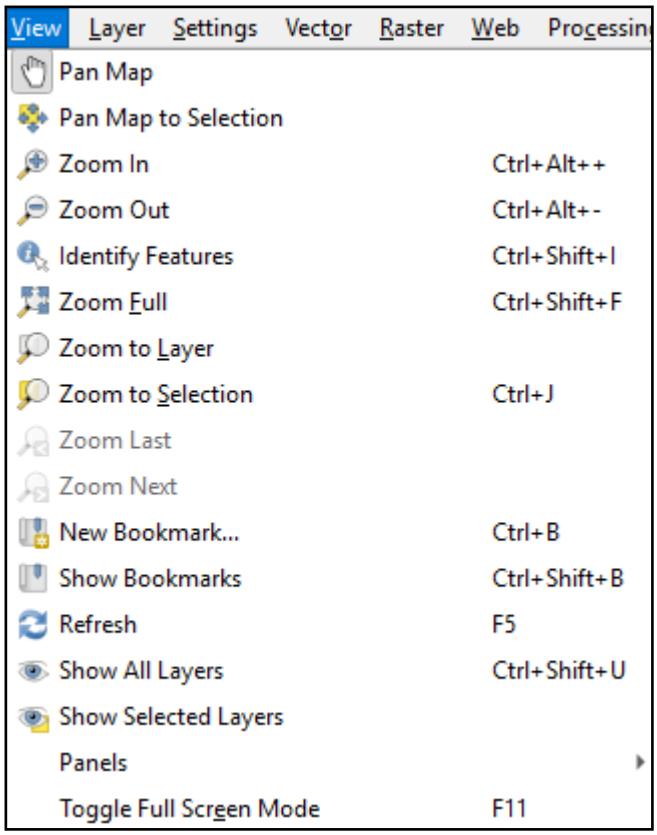
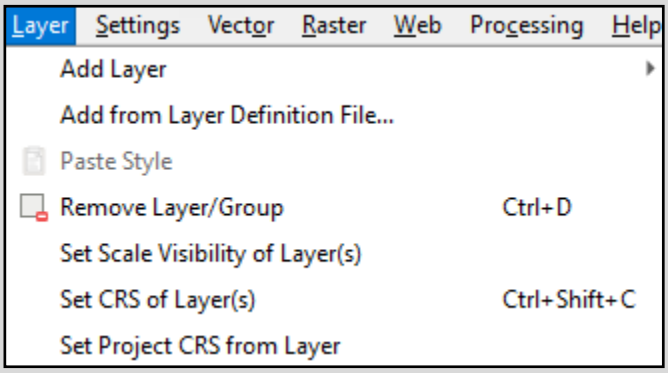
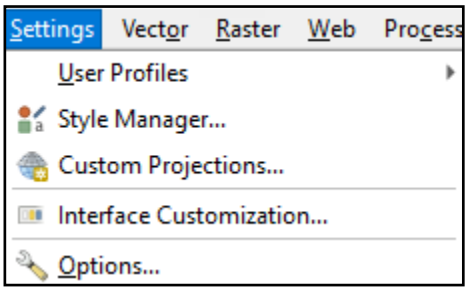
The Menu bar includes top-level, drop-down menus and allows navigation through GUPS using a standard hierarchical menu. Most relate to QGIS functionality and not GUPS functionality. The Menu bar, shown in **Figure 16**, offers basic features to manage the Map View. Almost all the functions available from the Menu bar are also available in the various toolbars.

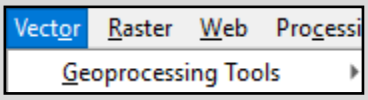
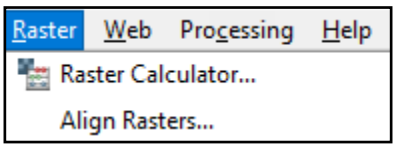
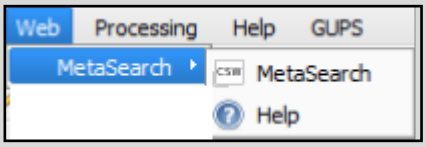
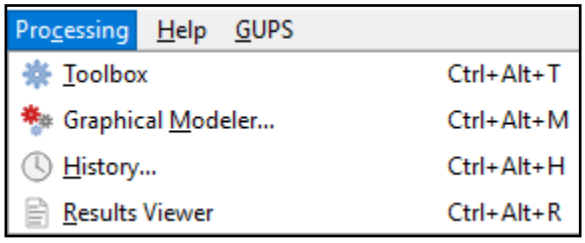
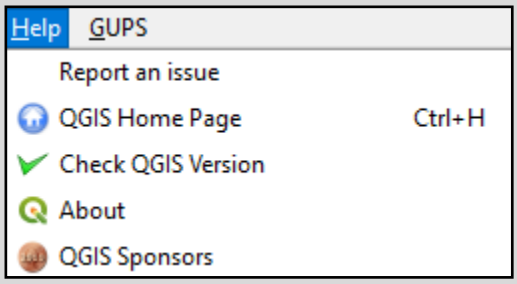
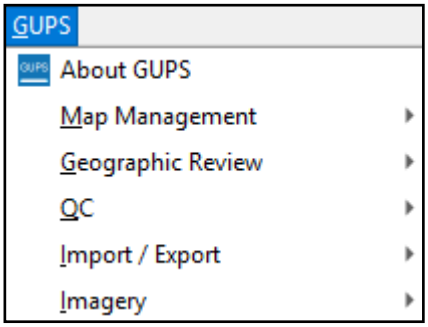
Figure 16: Menu Bar

Table 42 provides the function(s)/description(s) of the menus and sub-menus of the Menu bar.

Table 42: Menu Bar Tabs and Their Function/Description

Menu	Menu Option(s)	Function/Description
Project		Provides access and exit points of the project file.
Edit		Provides most of the native tools to edit layer attributes or geometry. IMPORTANT: For the Undo and Redo sub-menus to activate, the layer must be active/selected in the Table of Contents

Menu	Menu Option(s)	Function/Description
View		Provides tools to interact with Map View.
Layer		Provides large set of tools to create new data sources, add them to a project, or save modifications to them. Note: The Add Layer sub-menu is useful to add locally created shapefiles as reference layers.
Settings		Provides tools and options to manage profiles, styles, projections, and interfaces of the project. Because we ask for no changes to the projection, this menu is not needed for CQR.

Menu	Menu Option(s)	Function/Description
Vector		Provides common vector-based GIS tasks from different providers. Core plugins affect subcomponent availability. Not needed for CQR.
Raster		Provides common raster-based GIS tasks from different providers. Core plugins affect subcomponent availability. Not needed for CQR.
Web		Provides access to tools that are QGIS based. Not needed for CQR.
Processing		Provides tools that pertain to algorithms, models, etc. Not needed for CQR.
Help		Provides common help functions for understanding QGIS.
GUPS		Provides information about GUPS version (About GUPS) and shortcuts to other common GUPS related toolbars. IMPORTANT: The About GUPS sub-menu provides the GUPS version number. Callers to technical support need to provide the version number with their question.

Proceed to the next appendix for details on the Table of Contents and its toolbar.

E2 Table of Contents and TOC Toolbar

Though the Census Bureau believes the default organization of layers and symbology serves GUs in the most efficient manner, participants may use the Table of Contents and Table of Contents toolbar to manage the Map View. See **Figure 17** for a visual of the Table of Contents toolbar.

Using the Table of Contents toolbar, participants can add and remove layers or groups, manage map themes, filter the legend by map content or by expression, expand or collapse all sections of the Table of Contents list at once and may remove layers/groups. Participants may manipulate layers and symbology in GUPS using basic selection/deselection techniques in the Table of Contents, like with other GIS software. Manipulation of layers within the Table of Contents may assist with viewing information more appropriately in the Map View. Changes made in the Table of Contents reflect immediately in the Map View.

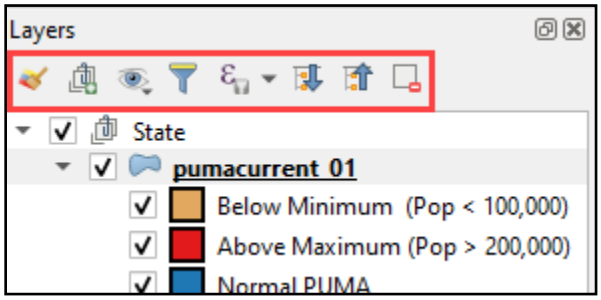


Figure 17: Table of Contents Toolbar

Table 43 provides a visual of each button, the corresponding name, and each button's function/description.

Table 43: Table of Contents Toolbar Buttons and Their Function/Description

Button	Name	Function/Description
	Open Layer Styling Panel	Toggles layer styling panel on/off.
	Add Group	Organizes layers in the Table of Contents into groups.
	Manage Map Themes	Offers modification of views based on layers in the Table of Contents.
	Filter Legend by Map Content	Removes layers not currently in the Map View extent.
	Filter Legend by Expression	Removes features from the selected layer tree style that have no features satisfying a condition/expression.

Button	Name	Function/Description
	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 only show groups (not the layers beneath).
	Remove Layer/Group	Removes a layer or group from the Table of Contents.

To manage visibility of individual groups or layers, check the checkbox next to a layer to make the layer visible (e.g., turn the layer on) in the Map View. Uncheck the checkbox (e.g., turn the layer off) next to a layer to make the layer invisible in the Map View. This may prove beneficial if the Map View is cluttered with too many data layers.

To expand the menu for a layer or grouped layer, select the ▸ symbol and the sub-menu opens. Select the ▾ symbol to collapse the sub-menu. See **Figure 18** for an example of the checkmark and arrow symbology.

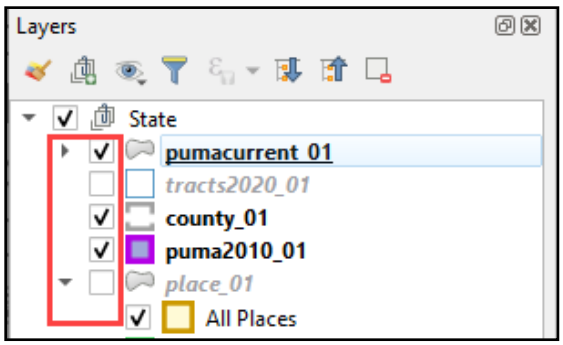


Figure 18: Table of Contents with Layer Checkmarks and Arrows

The order in which the layers appear in the Table of Contents determines the order that the layers display in the Map View. The layers at the top of the Table of Contents display on top of the layers that appear below them. While CQR GUPS is programmed to display data layers in an order that works for most participants, adding imagery or other data layers may require a reordering of layers for the map elements to appear properly within GUPS. To manage the order of layers use the mouse and follow these steps:

1. Select the layer name in the Table of Contents.
1. Hold down the mouse button and drag the layer to the desired position in the Table of Contents.
2. Release the mouse button to place the layer in its new position. The Map View will reflect the new layer order in the Table of Contents.

IMPORTANT: Map labels appear at varying scales dependent on the map layer. For instance, census tract labels appear at the 1:20,000 scale, while minor civil division and incorporated place labels appear at 1:250,000 scale.

Proceed to the next appendix for details on the Standard toolbar.

E3 Standard Toolbar

The Standard toolbar, shown in **Figure 19**, provides navigation tools and other tools needed to interact with the Map View and layers' attribute tables.

Figure 19: Standard Toolbar

The Standard toolbar includes three sub-toolbars, identified by the grouping bars or markers on the toolbar. See **Figure 20** for a visual of the markers.

Figure 20: Sub-Toolbar Markers

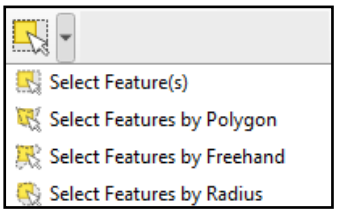
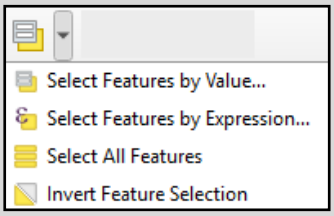
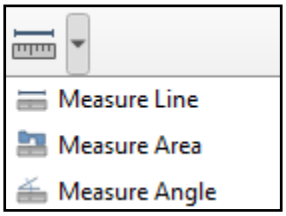
The first sub-toolbar, the Project toolbar, contains buttons for saving projects, changing map projects, and managing map projects. The second sub-toolbar, the Map Navigation toolbar, contains buttons to navigate the Map View. The last sub-toolbar, the Attributes toolbar, contains buttons to identify, select, and measure elements within the map. To rearrange the toolbars, press the left mouse button and hold the sub-toolbar marker then drag it to the desired location within the project. Release the mouse button to set the toolbar in the new location.

Table 44 provides a visual of each button, the corresponding name, and each button's function/description.

Table 44: Standard Toolbar Buttons and Their Function/Description

Button	Name	Function/Description
	Save	Saves the current GUPS project including changes to the layer properties, last viewed map extent, and layers added.
	Style Manager	Opens window to edit the markers, lines, fills, colors, etc. within a project. Not recommended for use in CQR.
	Map Management	Opens window to choose GUPS program, import a zip file, or open a recent project. Likely will not use once the CQR project is initially created.
	GUPS Data Settings	Opens window to change the GUPS working directory should problems occur when loading data. Also allows for deletion of a program or a project. Contact the Census Bureau prior to use of this button because deletion of program or project is permanent. For more instructions specific to cleaning a CQR project refer to **Appendix I**.

Button	Name	Function/Description
	Import Custom Shapefile	Permits user to import their own shapefiles for reference into a project.
	Pan Map	Re-centers Map View based on location selected in the Map View without changing the scale.
	Pan Map to Selection	Re-centers Map View based on selected feature(s) without changing the scale.
	Zoom In	Increases the map scale after selecting the Map View and displays Map View at the larger scale.
	Zoom Out	Decreases the map scale after selecting the Map View and displays Map View at the smaller scale.
	Zoom Full	Displays Map View at the full extent of the project.
	Zoom to Selection	Zooms to the scale of the feature selected in the Map View or in the attribute table.
	Zoom to Layer	Zooms to the extent of layer selected in the Table of Contents.
	Zoom Last	Returns to the previous zoom extent.
	Zoom Next	Moves forward to the next zoom extent.
	New Bookmark	Creates a spatial bookmark for the given area to ease navigation. Allows for the naming and saving of the geographic location for future reference.
	Show Bookmarks	Views and manages spatial bookmarks. Use the mouse to double-click bookmark name in the Spatial Bookmark window to zoom to the bookmark.
	Refresh	Refreshes Map View at the current extent.
	Identify Features	Identifies features in the Map View.

Button	Name	Function/Description
	Select Features by area or single click	Reveals four selection methods: single click, polygon, freehand, and radius. GUs likely use tools from the CQR toolbar to select features.
	Select Features by Value	Reveals four selection tactics: by value, by expression, all features, and invert selection. GUs likely use tools from the CQR toolbar to select features.
	Deselect Features from All Layers	Deselects selected features from all layers in a single action.
	Toolbox	Reveals a Processing Toolbox window with numerous QGIS processing tasks. Not used in 2020 Census CQR.
	Measure	Reveals three measure options to measure the distance along a line, for an area, or for an angle on the map.

Proceed to the next appendix for details on the Status bar.

E4 Status Bar

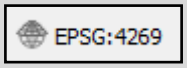
The Status bar, shown in **Figure 21**, provides details on the coordinates, scale, magnification, rotation, and projection. These tools allow users to adjust the display. Also included are an icon to review the software logs and a tool for rendering. Neither of which are used very often during CQR.

Figure 21: Status Bar

Table 45 shows the elements within the Status bar and describes their function(s) or description(s).

Table 45: Status Bar Elements and Their Function/Description

Element	Function/Description
	This locator bar, a quick search widget, helps find and run any feature or option in QGIS.

Element	Function/Description
Coordinate	Shows the current position in map coordinates as the mouse moves across the Map View. The default unit shown is decimal degrees. As a reminder, do not change the projection of the project.
	Toggles between the coordinate position of the mouse cursor or the Map View extents as the map is panned and zoomed.
	Locks the scale to use the magnifier to zoom in and out at the locked scale.
Magnifier	Allows user to zoom without changing the scale in the Map View, making it easier to tweak label positions and symbols. Magnification is as percentage. If 100%, then magnification is not applied to the view.
Rotation	Defines the clockwise rotation for Map View in degrees.
Render	Checkbox to handle the rendering of layers to the Map View.
	Shows the current coordinate reference system used in the Map View.
	Shows the logs for the GUPS session.

APPENDIX F MAF/TIGER FEATURE CLASSIFICATION CODES

IMPORTANT: Only use the information within this appendix if the CQR case includes a new/corrected boundary feature to add in GUPS. The Census Bureau will not process spatial updates submitted with the CQR case submission unless they involve the reported boundary discrepancy.

The MAF/TIGER Feature Classification Code (MTFCC) is a five-digit code assigned by the Census Bureau intended to classify and describe geographic objects or features. The 2021 Partnership shapefile products include these codes. GUs that add a new/missing feature(s) to show a boundary correction must assign a MTFCC to the added feature to ensure proper processing.

Map symbolization of these codes assist with distinguishing feature types, for instance symbolizing based on the MTFCC helps distinguish a road from a stream or a railroad from a pipeline in the All Lines (e.g. edges.zip file). To learn more about MTFCCs refer to the online list of MTFCC codes.

Note: Use "P0001" for a non-visible linear feature that serves as a legal/statistical boundary when the boundary does not correspond to a shoreline or other visible feature on the ground represented by the other MTFCCs.

APPENDIX G BOUNDARY VERIFICATION MATERIALS

For GUs that submit a case with a boundary correction(s), if the Census Bureau research concludes the boundary correction is valid and makes the update(s), they will prepare verification materials for the GU to use to confirm the work prior to finalizing the boundary and revising the counts. These boundary verification materials are available to a GU as either large format 2020 Census CQR Block Maps or updated Partnership shapefiles. The Census Bureau will contact the GU when the materials are available for review. If the GU finds that the correction is not accurate in the verification materials, the Census Bureau will work with the GU to resolve the inaccuracy and will contact the GU to verify the correction again once updated materials are available. Approval of the boundary correction is necessary to finalize the case.

The large format map materials are Adobe PDFs. Other than their title and file name, these are identical in content and design to the 2020 Census Block Maps described earlier in this guide. Regardless of the method of participation (digital, paper, or GUPS), GUs may use the 2020 Census CQR Block Maps to confirm the boundary correction prior to finalization and closure of the CQR case.

The updated partnership shapefiles will have different attribute fields for the 2020 census tract and 2020 tabulation block from the 2021 Partnership shapefile version. If a GU has questions regarding the correct fields to use or how to use these files, the Census Bureau is available to assist by phone at (888) 369-3617 or by email at <dcmd.2020.cqr.submissions@census.gov>.

APPENDIX H SAMPLE HEADER FILE INFORMATION

Use the information in **Table 46** to understand the fields and their requirements for the sample header file generated by GUPS that can be used to import individual address records into the User Address List.

Table 46: Details Regarding the Sample Header File

Field Number	Max Characters	Field Name	Field Description	Required (Yes or No or Recommended)
1	1	City Style	Field to denote the address record as city style or non-city style. Enter 'Y' for city style or an 'N' for non-city style. Refer to section **5.1.2.1** for definitions of the city style and non-city style address types.	Yes, for all records.
2	1	GQ	Field to denote the address record as a group quarters. Enter 'Y' for group quarters, otherwise leave blank. Refer to section **5.1.2.1** for a definition of the GQs address types.	Yes, ONLY if adding a group quarters address. IMPORTANT: Leave this field blank if the address is not a GQ.
3	35	House #	Field to denote the housing unit or group quarters assigned address number, alone or with an address number prefix and/or address number suffix that identifies a location along a thoroughfare or within a community. For 123 Main St, the "123" is the complete address number.	Yes, if 'Y' appears in 'City Style' field.

Field Number	Max Characters	Field Name	Field Description	Required (Yes or No or Recommended)
4	100	Street Name	Field to denote the full street or road name. The official name of a thoroughfare as assigned by a governing authority or used and recognized alternate (alias) name. For 123 Main St, “Main St” is the complete street name. For 456 W Apple St N, “W Apple St N” is the complete street name.	Yes, if ‘Y’ appears in ‘City Style’ field.
5	65	Unit #	Field to denote the combination of within structure descriptor and identifier, e.g., "Apt 1", "Ste 22", “Unit A”, “Bldg 2 Unit 10”, etc. Populate with a value other than one already used for the address.	Yes, if the address is a duplicate (same House #, Street Name, ZIP or Lat/Long). Commonly occurs with multi-unit addresses.
6	5	ZIP code	Field to denote the five-digit United States Postal Service (USPS) mailing ZIP Code for the city style address.	Yes, if a ‘Y’ appears in the ‘City Style’ field. It must be five-digit numeric characters only. Cannot be "00000", "11111", "33333", "66666", "77777", "88888", or "99999."
7	50	Urbanization	Field to denote the name of the neighborhood or group of houses (e.g., URB Manzana or URB Flora).	FOR PUERTO RICO RECORDS ONLY. Required if an ‘Urbanizacion’ based address. Providing as much information about the address as possible helps the Census Bureau with CQR research.

Field Number	Max Characters	Field Name	Field Description	Required (Yes or No or Recommended)
8	100	Condo/Res	Field to denote the name of the residential complex of apartments, condominiums, or public housing (e.g., Cond Jardín de Rosas or apartamentos de árboles verdes).	FOR PUERTO RICO RECORDS ONLY. Required if a Condominium, Apartment Complex, Public Housing based address. Providing as much information about the address as possible helps the Census Bureau with CQR research.
9	22	Complex Descriptor	Field to denote the descriptor or identifier of the building (e.g., Torre 2 o Edificio III).	FOR PUERTO RICO RECORDS ONLY. Recommended if known. Providing as much information about the address as possible helps the Census Bureau with CQR research.
10	50	Area 1	Field to denote the name of a geographic area that typically delimits a neighborhood. Include the type of neighborhood barrio (BO), sector (SEC), neighborhood barriada (BDA), community (COM), or parcel (PARC) with the geographical name.	FOR PUERTO RICO RECORDS ONLY. Recommended if known. Providing as much information about the address as possible helps the Census Bureau with CQR research.
11	50	Area 2	Field to denote the name of a geographic area that typically delimits a neighborhood. Include the type of sector (SEC), neighborhood (BDA), community (COM), or parcel (PARC) with the geographical name.	FOR PUERTO RICO RECORDS ONLY. Recommended if known. Providing as much information about the address as possible helps the Census Bureau with CQR research.

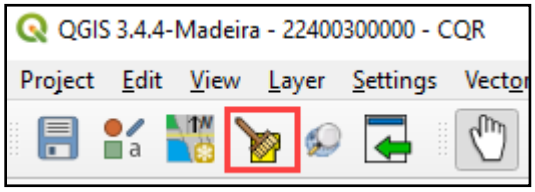
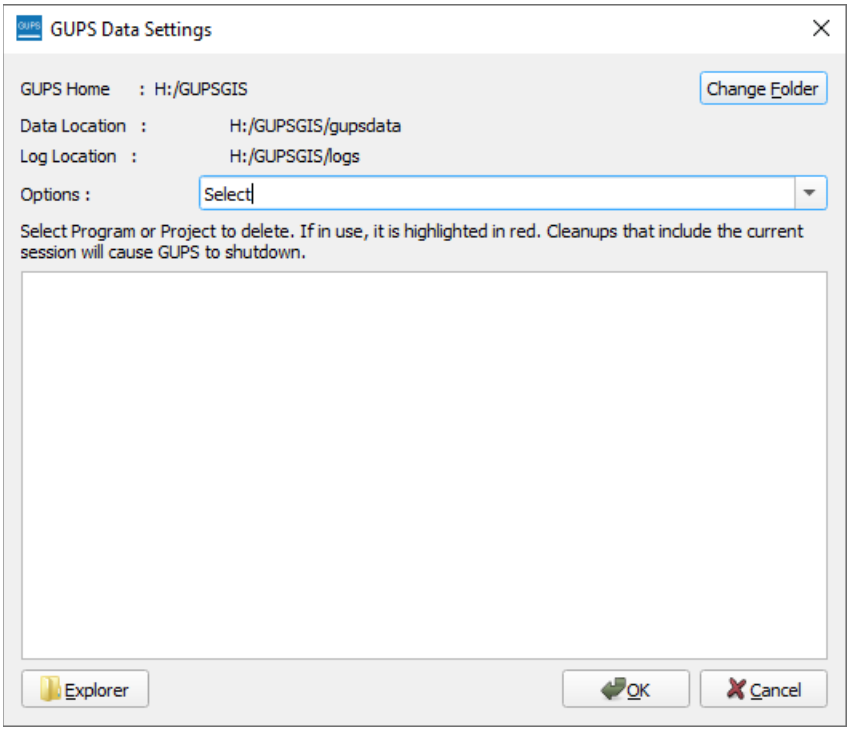
Field Number	Max Characters	Field Name	Field Description	Required (Yes or No or Recommended)
12	12	KM/HM	Field to denote the road marker values in kilometers and hectometers.	FOR PUERTO RICO RECORDS ONLY. Recommended if known. Providing as much information about the address as possible helps the Census Bureau with CQR research.
13	100	GQ Name	Field to denote the name of group quarters (e.g., Dobbs Hall, Bayside Nursing Home, Eastfork Prison, or Salón Jiménez).	Yes, if 'Y' in 'GQ' field. Cannot be "null" if there is a value in "GQ_FLAG" or "FACILITY_NAME" field. Cannot contain a comma (e.g.",").
14	100	Facility Name	Field to denote the name of the group quarters facility. Usually a broader name than the GQ name (e.g., University of Illinois or Universidad de San Juan).	No, but recommended if group quarters addresses being added are associated with a facility (e.g., The University of Illinois for dorms on its campus).
15	100	Location Description	Field to denote a short description of the location and physical characteristics of living quarters (e.g., Apt above gas station on the SE corner of N Main St and N Elm Ave or tent city behind hardware store).	No. Use only if a non-city style address is not available or if providing extra information can assist the Census Bureau in locating the address during CQR research.
16	50	Non-City Style Address	Field to denote the rural route and box number or highway contract route and box number (e.g., RR 2 Box 34, or HC 1.Box 135).	Yes, if 'N' appears in the 'City Style' field. If not available or unknown, the 'Location Description' field becomes required.

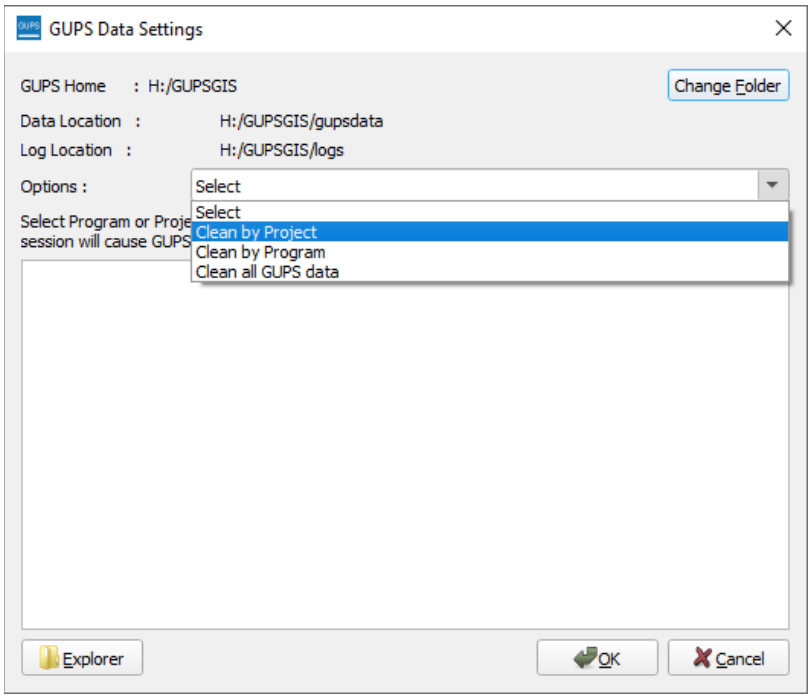
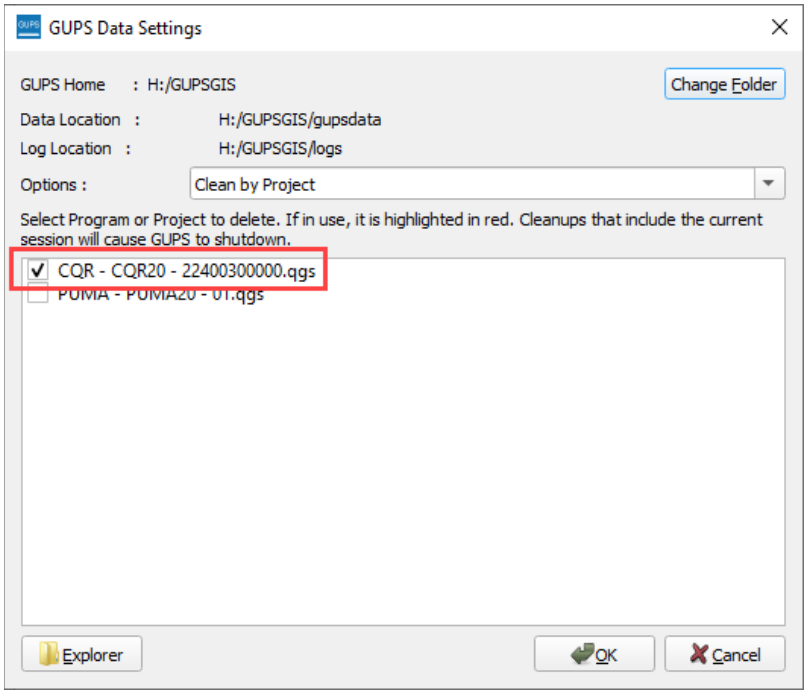
Field Number	Max Characters	Field Name	Field Description	Required (Yes or No or Recommended)
17	5	Non-City Style ZIP code	Field to denote the five-digit USPS mailing ZIP Code for the non-city style address.	Yes, if 'Non-City Style Address' field is not "null." It must be five-digit numeric characters only. Cannot be "00000", "11111", "33333", "66666", "77777", "88888", or "99999."
18	12	Longitude	Field to denote the longitude coordinate of address in decimal degrees with minimum of 6 digits following the decimal.	Yes. Cannot contain special characters, except the decimal (e.g. ".") and the negative sign (e.g. "-") for this hemisphere.
19	11	Latitude	Field to denote the latitude coordinate of address in decimal degrees with minimum of 6 digits following the decimal.	Yes. Cannot contain special characters, except the decimal (e.g. ".").

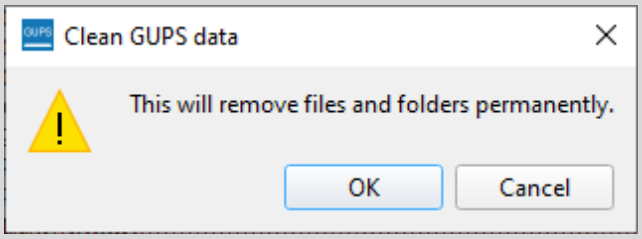
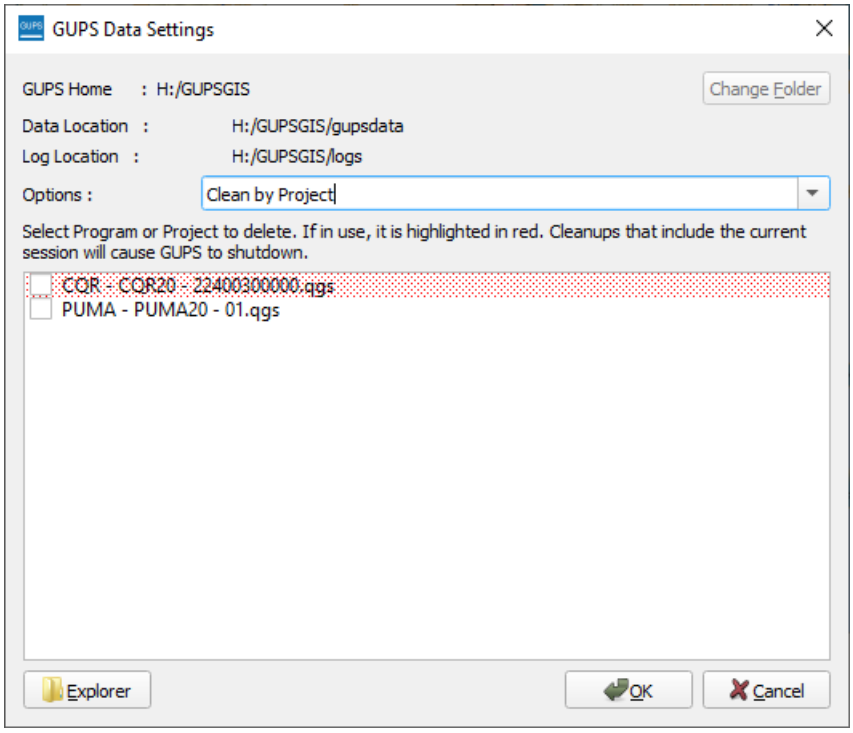
APPENDIX I DELETE (CLEAN) A CQR PROJECT

To ensure a successful import of a shared CQR project or to completely delete a project that may be problematic, participants use the Clean button from the Standard toolbar to erase an existing CQR project and the sub-directories associated with the data in the project. Follow the steps in **Table 47** for instructions on this process.

Table 47: Steps to Delete (Clean) a CQR Project

Step	Action and *Result(s)*
Step 1	With GUPS launched, but no CQR project open, select the **Clean** button from the **Standard toolbar**.  *A **GUPS Data Settings** window appears.* 
	A participant uses this button/window to change the GUPS working directory (e.g., GUPS Home) location. This graphic uses the H:/GUPSGIS.

Step	Action and *Result(s)*
Step 2	Select **Clean by Project** from **Options** section of the **GUPS Data Settings** window.  *A list of projects saved on in the GUPS data directory appear*. Select the project to delete from the list that appears and choose **OK** to proceed or **Cancel** to return to QGIS. 

Step	Action and *Result(s)*
Step 3	*A **Clean GUPS data** warning window appears that informs the participant of the permanent nature of this action*. Select **OK** to proceed with the deletion or **Cancel** to return to the **GUPS Data Settings** window. 
	An opened CQR project will appear with a red shading from the list of program/project to delete.  If the opened project is selected for deletion, QGIS will offer the **Clean GUPS data** warning message and then close automatically and delete the project if **OK** is selected.

GUs may now proceed with creating a new CQR project, described in **Chapter 4**.