On-street Parking Census Data Guide

April 16, 2014

CIRCLE LESS, LIVE MORE

SFMTA
Municipal Transportation Agency

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1   Introduction

The SFTMA cannot manage well what it does not know it has. San Francisco completed the first phases of the parking census in 2008, a 20% sample of streets citywide, which allowed SFMTA to estimate total supply. Since then, the Agency has completed a full census with on-street parking supply counts for each block in the entire city.

This document provides critical information regarding availability and use of the data.

1.1   Timeline

- **2008-2011**: ~ 40% of the street segments were collected. SFpark pilot area and control areas and metered areas were collected first. 20% of sampling citywide, Non-metered areas north of Market and East of Van Ness, Outer Richmond, Pacific Heights and the Marina.
- **Fall 2011**: ~ 8% of total street segments were collected.
- **Spring**-**Summer 2012:** ~ 17% of total street segments were collected.
- **Spring**-**Summer 2013:** ~ 25% of total street segments were collected.
- **Winter 2014**: Remaining ~ 10% were remotely collected.

1.2   Availability of Data

The dataset is an ESRI shapefile and as an Excel file. A data dictionary defining key elements of the data is listed in section 2.2 of this document. For all data requests and related inquiries, please contact info@sfpark.org.

The file names, formats and sizes are as follows:

- ○   File name: Sfpark_OnStreetParkingCensus_201404.shp
- ○   File format: ESRI Shapefile (multiple files with the same name, but different file extensions)
- ○   File size: 2.97 MB

- ○   File name: SFpark_OnStreetParkingCensus_201404.xlsx
- ○   File format: MS Excel worksheet
- ○   File size: 458 KB

These datasets are available online: http://sfpark.org/resources-overview/

A data dictionary for each of the files above can be found in Section 2.1 of this document. For all data requests and related inquiries, please contact info@sfpark.org.

2   Overview

The parking census contains detailed location data of San Francisco's parking supply. The first parking census was completed in 2008, prioritized under the belief that the SFTMA cannot manage well what it does not know it has. Since then, the Agency has completed a full census by walking 97% of all blocks in the city. The other 3% of streets were collected using very high quality multi-angle aerial imagery. Data was collected by SFMTA and Nelson/Nygaard (NN).

The data is stored in a shapefile, originally derived from City of San Francisco's street centerline shapefile, current as of December 2013.

Supply counts include metered on-street spaces, non-metered demarcated spaces (parking stalls), and non-metered un-demarcated spaces (unmarked curb length). Supply counts include available parking along unpainted curb as well as curb length painted grey, white, yellow, green, and blue—as long as the street is wide enough to allow for both parking and through traffic. Red curb space is not included (bus stops, fire hydrants), nor are areas where parking is otherwise entirely prohibited 24/7. Parking regulations (such as tow-away or time limits, which apply to portions of a day or week) are not considered in the on-street parking census dataset.

The field "PRKNG_SPLY" depicts the number of on-street spaces for both sides of the street for each segment (one count per street segment).

2.1   Data Dictionary

Field Name	Description	Example	Notes
CNN	The street centerline segment unique identification number	924103	CNN's are for a street section only, i.e. one block along Grant Ave from Bush St to Harlan Place.
ST_NAME	Street name	19TH	Street name is separated from type i.e. Ave, St, etc.
ST_TYPE	Type of street	AVE	
PRKNG_SPLY	The total available legal parking supply count for that street section or block. The code "5555" indicates that the segment is a divided street	23	This includes both sides of street counts, not separated by blockface
YEAR	The year that the data was collected	2012	

2.2 Code 5555

The street centerline data typically uses a single line segment to represent a street. However, for streets with medians, a street is represented by two parallel line segments, one on either side of the median. Prior to 2012, parking supply counts for both sides of the median were compiled onto one side; in these cases, the code 5555 is entered for the segment on the opposite side of the median. For data collected in 2012 and later, parking supply counts were recorded separately for segments on each side of the median.

3 Methodology

3.1 Space Length

In areas with demarcated parking spaces—painted parking stalls or parking meters—each stall or meter is counted as one space. Standard demarcated parallel parking spaces span 20 feet in length.

For un-demarcated spaces (unmarked curb length), a 17 foot standard is employed. Surveyors measure the length of curb, counting one space per 17 feet. Based on the needs of a standard sedan such as the Honda Civic, this 17 foot standard includes one foot on either side for space between other parked vehicles (doubled, this allows for 2 feet between each vehicle).

Along short lengths of curb that can only support one vehicle, such as between driveways, or between a driveway and the end of a block, 12 feet is used to count one parking space. Twelve feet can support small cars, such as Mini Coopers, that will use the space from adjacent driveways to pull in and out of the parking space. Surveyors were instructed to count a space as long as it was within six inches of this 12 foot standard.

In areas with unmarked perpendicular parking—as indicated by observed parked vehicles—an 8.5 foot standard is used, or half the length of the 17 foot parallel parking space standard.

Each surveyor participated in a hands on training conducted by SFMTA, which included calibration of their pacing to the 17 foot and 12 foot standards. In the field, surveyors used paces to evaluate these two distances.

In cases where an entire blockface was completely parked out, surveyors counted the parked cars. The method follows the belief that drivers parking in unmetered areas park efficiently, leaving just enough space to allow vehicles to pull in and out of parking spaces. Empty spaces in heavily parked areas are generally the result of a vehicle pulling out, and so the empty space, also representing one car, is easy to identify. In developing the parking census survey methodology, SFMTA staff found that counts for parked out blocks were consistent with the 17 and 12 foot standards. The shorter 17 foot and 12 foot standards were employed instead of the 20 foot marked space standard based on observations of how un-

demarcated spaces are actually utilized in San Francisco neighborhoods. As such, surveyors used parked out blocks to recalibrate their pacing in the field, as needed. In some instances, SFMTA re-trained surveyors in order to ensure their pacing was consistently measuring 17 and 12 feet.

3.2   T-intersections

At T-intersections, surveyors must determine how to split the unbroken curb at the intersection into each of the two blocks. Surveyors make sure all parkable space is accounted for, using the centerline of the cross street as the breaking point. When the centerline splits a viable parking space, the surveyor counts the divided parking space with the blockface that possesses more than half of the space.
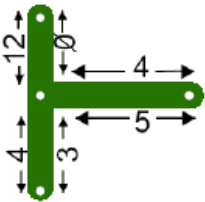
4   Definitions

4.1   Geographies

- **Street Segment (or CNN).** A section of street from intersection to intersection (or node to node), including both sides or blockfaces, i.e. CNN 121222= Franklin Street from Grove Street to Ivy St.

- **Block.** The distance between two intersections; includes both sides of the street.

- **Blockface.** One side of the block, along a curb.

- **Parking space.** A length of curb that can accommodate a vehicle.

- **Colored curb.** A length of curb, generally painted a color representing a particular regulation.

5   Known Issues

Users of the on-street parking census dataset are advised to take note of the known issues, described below.

5.1   Changes in San Francisco's Built Environment, 2008-2014

Due to the six year span for the parking census data collection effort, some of the data may already be out of date in the city's rapidly changing neighborhoods. The SFMTA is currently devising a data maintenance plan for the parking census to ensure all street segments are reasonably up to date.

5.2   Quality Control and Accuracy

SFMTA staff and contractors conducted spot checks of the parking census dataset and made corrections as needed. However, due to the scale of the effort, the majority of street segments have not been double checked for accuracy.

For data collected in 2013, each surveyor was monitored in the field (at random intervals), and re-trained as needed to ensure consistent and accurate pacing. Additionally, contractors checked the accuracy of parking counts during data entry to ensure data recorded on route maps matched data entered in digital format.

Methodology

The standards described in the methodology section were employed throughout the data collection effort. However, given that the effort took six years to complete, several project managers and dozens of surveyors, some reasonable variation in data collection results can be expected.

Additionally, the final~5% of city streets were collected using remote methods. This is due to the fact that once all parking census data was QAQC'd and compiled, a small percentage of remaining streets were scattered throughout the city. Remote methods relied heavily on Pictometry imagery from spring of 2013, which allows users to view aerial imagery from 4 angles on every street in the city.

Protocols for field and remote data collection methods are attached in Appendix B and C.

5.3 Streets with Medians: Code 5555

The street centerline data typically uses a single line segment to represent a street. However, for streets with medians, a street is represented by two parallel line segments, one on either side of the median. Prior to 2012, parking supply counts for both sides of the median were compiled onto one side; in these cases, the code 5555 is entered for the segment on the opposite side of the median. For data collected in 2012 and later, parking supply counts were recorded separately for segments on each side of the median.

6 Frequently Asked Questions

6.1 Question 1: What types of spaces does the dataset include?

The dataset includes all spaces where vehicles can be parked. This includes colored curbs which denote certain spaces for commercial loading, passenger loading, short term parking, and disabled parking. Not included are length of curb where parking is completely prohibited, with the understanding that these spaces are unlikely to return to the public parking supply; such spaces include spaces in front of bus zones, spaces in front of fire hydrants, streets that are too narrow to support parking on both sides with chosen parking orientations (such as streets with a steep grade that support perpendicular parking on one side and no parking on the other side), streets which offer no parking because the curb-side lane is used for moving traffic.

6.2 Question 2: Cars are different sizes! How do you determine what a parking space is?

In areas with demarcated parking spaces—painted parking stalls or parking meters—each stall or meter is counted as one space. Standard demarcated parallel parking spaces span 20 feet in length. For un-demarcated spaces (unmarked curb length), a 17 foot standard is employed. Surveyors measure the length of curb, counting one space per 17 feet. Based on the needs of a standard sedan such as the Honda Civic, this 17 foot standard includes one foot on either side for space between other parked vehicles (doubled, this allows for 2 feet between each vehicle).

Along short lengths of curb that can only support one vehicle, such as between driveways, or between a driveway and the end of a block, 12 feet is used to count one parking space. Twelve feet can support small cars, such as Mini Coopers, that will use the space from adjacent driveways to pull in and out of the parking space. Surveyors were instructed to count a space as long as it was within six inches of this 12 foot standard.

The shorter 17 foot and 12 foot standards were employed instead of the 20 foot marked space standard based on observations of how un-demarcated spaces are actually utilized in San Francisco neighborhoods.

For more information, see section 3.1.

6.3   Question 3: Are metered spaces counted?

Yes, the parking census includes metered areas. Each metered spaces is counted according to its painted stall. However, the type of meters or any other meter information is not included in this dataset.

6.4   Question 4: Does the parking census include counts of colored curb spaces or other regulations?

With the exception of red curb, all color curb counts are included but the dataset does not specify totals for each curb color. Colored curb spaces are simply counted in the total parking supply without any differentiation. Some regulations, such as regular tow away regulations, are available as separate datasets.

6.5   Question 5: Why are some streets missing?

Streets which are known to have no parking, such as Market east of Octavia, as well as pedestrian walkways, have been removed from the dataset.

Appendix A: Field Data Collection Methodology

Goals

To develop an accurate count of all legal on-street parking spaces in the City, so that the SFMTA can better manage the existing parking supply.

Field Methodology

Supplies

- Clicker
- Clipboard
- Field version of data collection form
- Clean version of data collection form
- Water, sunscreen, walking shoes, clothing to keep you warm, dry, and cool.

Methodology

General

- Count all legal curbside spaces, including spaces in yellow zones, green zones, blue zones, and other colored zones, except red zones[1] and no parking areas.
- Only count spaces for blocks which are green on your map.

Counting spaces

- In spaces where a car is parked legally, simply count the car as occupying one space. You do not need to measure the width of the space. On a block that is completely parked-in, for instance, it is only necessary to count the parked cars on the block (excluding any cars parked in driveways or otherwise parked illegally).
- If no car is parked in a legal parking space, count spaces based on the following guidelines:
    - A standard parking space is 17 feet long: about 15 feet for the car (based on the size of a Toyota Camry) and a 2-foot buffer. In other words, if there is a 10-foot space between

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[1] Any of the spaces on the street could be converted to regular parking at some point, even if they are loading and drop-off only right now, for instance, so the SFMTA counts them as part of the parking census. Red zones are unlikely to be converted to parking spaces, however, so they are not counted.

two parked cars, do not count it as a space. If there is an 18-foot space between two parked cars, count it as one space. If there is 40 feet of space between two parked cars, count it as two spaces.

- In small spaces between driveways, count a space if there is at least 12 feet to park (based on the size of a Mini Cooper).

- In areas with perpendicular parking, follow the regular counting procedure, except that spaces only need to be half the width of normal spaces. As usual, count cars if there are cars parked, and measure spaces by counting your paces if there is no car parked and no painted demarcation or meter on the space.

- If there are meters or demarcated parking spaces, count the spaces based on these, not based on measurements.

- In tour bus loading zones and other spaces where large vehicles park, count the spaces based on the normal 17-foot measurement; do not count the buses as occupying one space.

- In areas that are striped for motorcycle parking, using the pacing technique to determine how many vehicles could park there. Generally, five consecutive parking spaces re equivalent to one parking space.

Measuring in the field

- To measure a 17-foot space or a 12-foot space, determine how many paces you walk in 17 feet and 12 feet. When out in the field, determine the distance by walking the relevant number of paces, not with a tape measure.

Recording spaces on the census map

- Count the number of parking spaces for each block face (that is, each side of every block), using the white dots as break points between blockfaces. This normally happens every time a street intersects with another street or alley, but it can also happen mid-block. If an intersecting street or alley is only on the opposite block face (a "T" intersection), you should still start a new blockface at the mid-point of the intersection.
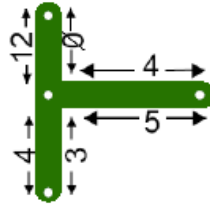
- After completing the count for a block face, record the number of parking spaces on the map printout. Write the number of spaces immediately above or below the block face (depending on which block face side it is). Draw lines with arrows indicating the area that the space number applies to (see the diagram below). When writing the numbers on the map, always orient the text to the orientation of the street name.

Verify disabled parking space (blue zones)

- The blue zone dataset is printed on this map. As you collection parking space counts, verify the blue zone dataset. Note any additional blue zones observed on the street and cross out any blue zones marked on the map and not observed in the field.

Create a clean copy of the field data

- When you return from the field, transfer the data from the field copy onto a new, clean version of data collection form. Save both copies.

Data Entry

Data entry will happen in the field or the office using a tool called GoogleMyMapPlus. The GoogleMyMapPlus data is then exported as a KML file to the GIS ArcMap shapefile where the points are joined to the streets center line data, and then QAQCed for accuracy. This results in a line shapefile with the counts for both blockfaces or both sides of the street.

# Appendix B: Remote Data Collection Methodology

General

Count all legal curbside spaces, including spaces in yellow zones, green zones, blue zones, and other colored zones, except red zones and no parking areas.

Data Sources and Supplies

1. In ArcMap- Streets to be collected Shapefile for each user, e.g. "StreetsTBC_UserA"
2. In ArcMap- Points to collect and populate shapefile for each user, e.g. "StreetsTBCPoints_UserA"
   a. These are both here-
      ..\..\GIS\Projects\ParkingCensus\DATA\FinalRemoteDataCollectionFiles
3. Pictomery online-http://pol.pictometry.com/en-us/app/
4. Aerial Imagery in Arcmap (To be added)

Steps

1. In Arcmap, search in your own preferred method for streets that need collecting, either by seeing empty streets in the map view or searching by CNN in the attribute table, it's up to you.
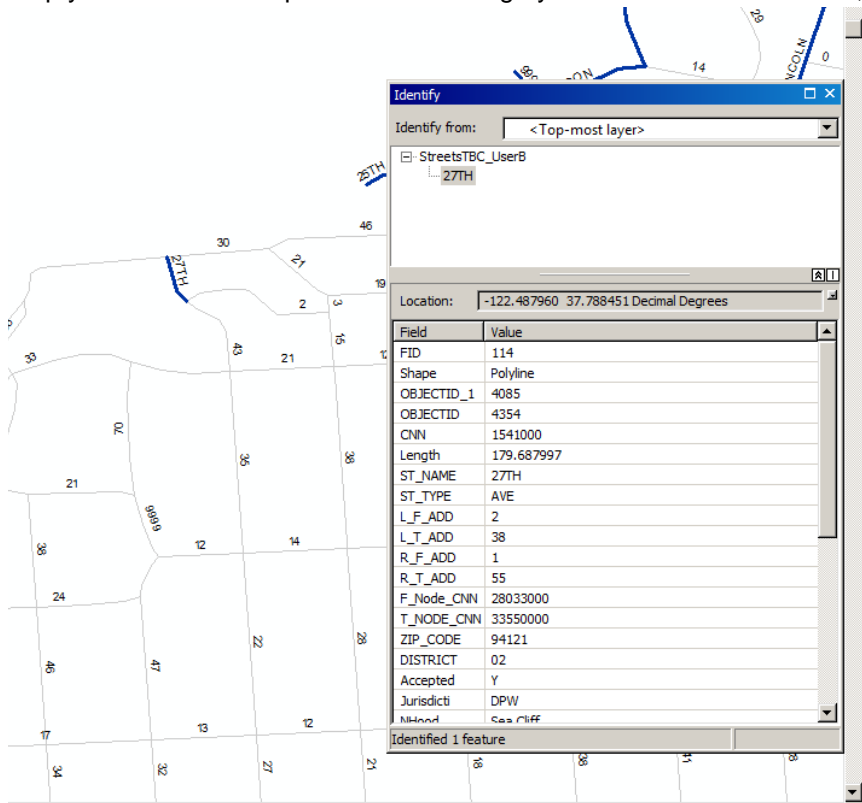
2. Identify the block number and street and look it up in Pictometry online
3. Count parking spaces using the same methodology as in the field. If a block is parked out, count the cars. If not, use 17 ft. for 1 parking space unless it's between driveways, which is 12ft per parking space. Pictometry has a measurement tool to use for those spots in question.

It's the D with arrows underneath in the toolbar at the top
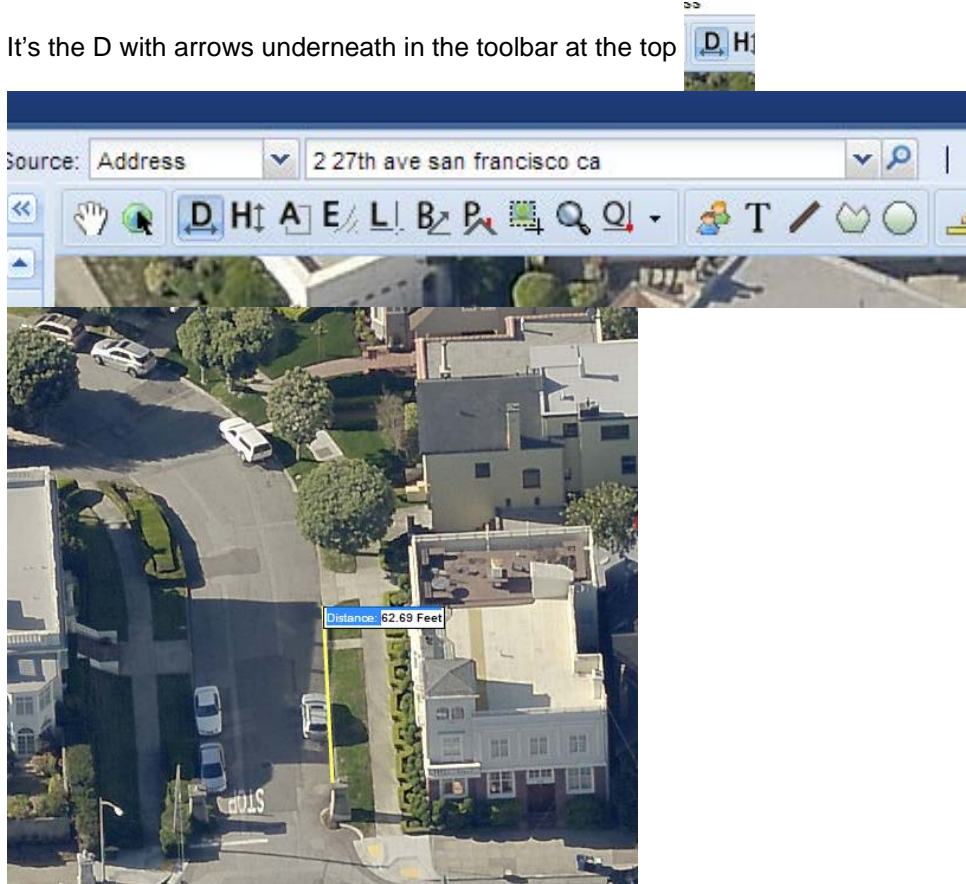
You may need to measure the entire block and subtract feet that are taken up by driveways, fire hydrants, etc. Take your time to not make mathematical errors.

4. Count the supply for each side of the street.

5. Go back to ArcMap. Create a new feature in the Streets to be collected POINT shape file, e.g. "StreetsTBC_points_UserB" by starting an edit session. Select the file to be edited in the data

frame layers by right clicking and select "edit features", then select "Start Editing".
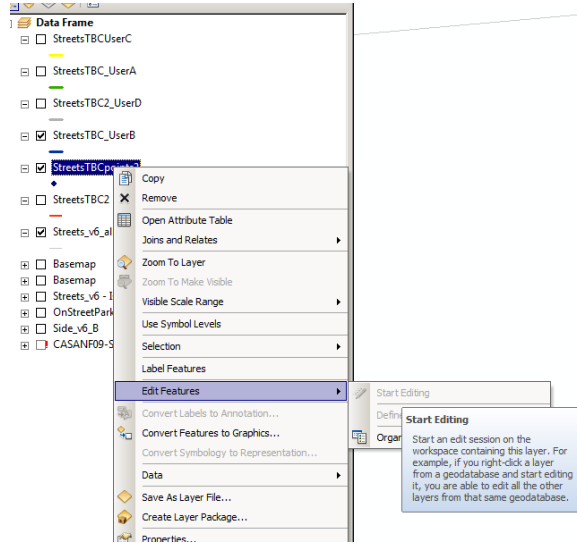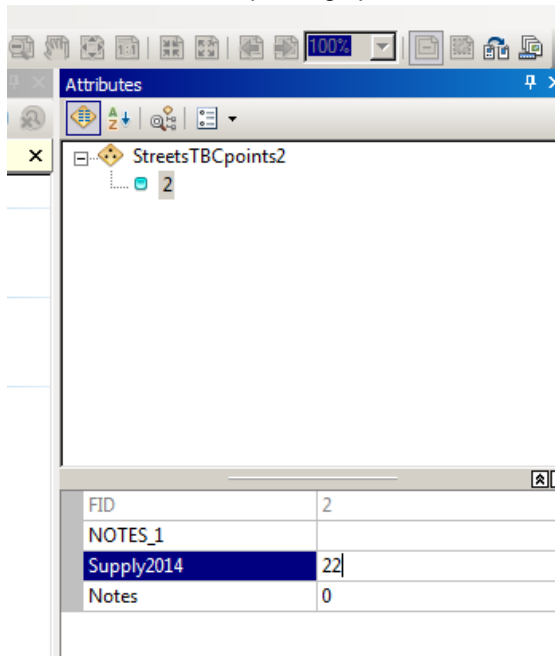

6. Select the file to be edited in the dialog box that opens to the right and then select "POINT" as the 'construction' tool.
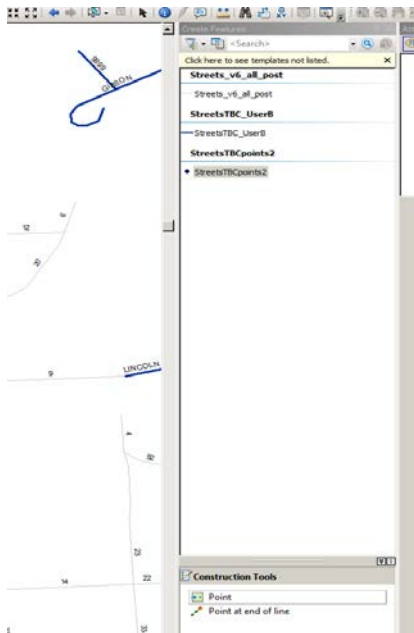
7. Then drop the point in the appropriate side of the street at the mid-point of the block in the mapview.

8. Enter the number of parking spaces in the attribute field "Supply2014" and any notes.

9. Then open the STREETS attribute table. Enter the TOTAL number of parking spaces for both blockfaces in the STREETS shapefile for that street's CNN ID. Enter the total parking supply in the attribute table field " NewSupply". Be careful to not make arthimetic errors since you will be adding both points totals up for one supply count for the street.

FFPARK_v5	JOINED	VRFY_CNT	NOTES	SIDE	NEW_SPLY
666	0	0		A	9999
999	0	0		A	40
999	0	0		A	9999
999	0	0		A	9999
666	0	0		A	9999
666	0	0		A	9999
999	0	0		A	9999

10. Save the edits after you have done a few so you don't lose any data in case Arcmap freezes. By going to editor toolbar at the top, select save edits. This will not stop your edit session.
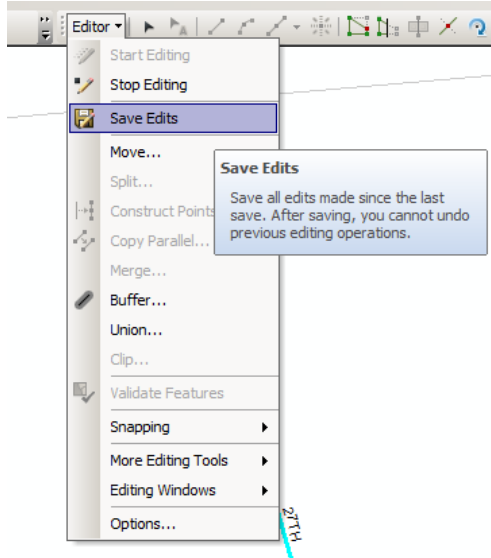
11. Repeat for your whole section, be careful to ask for help or a second opinion when ever you need one.

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