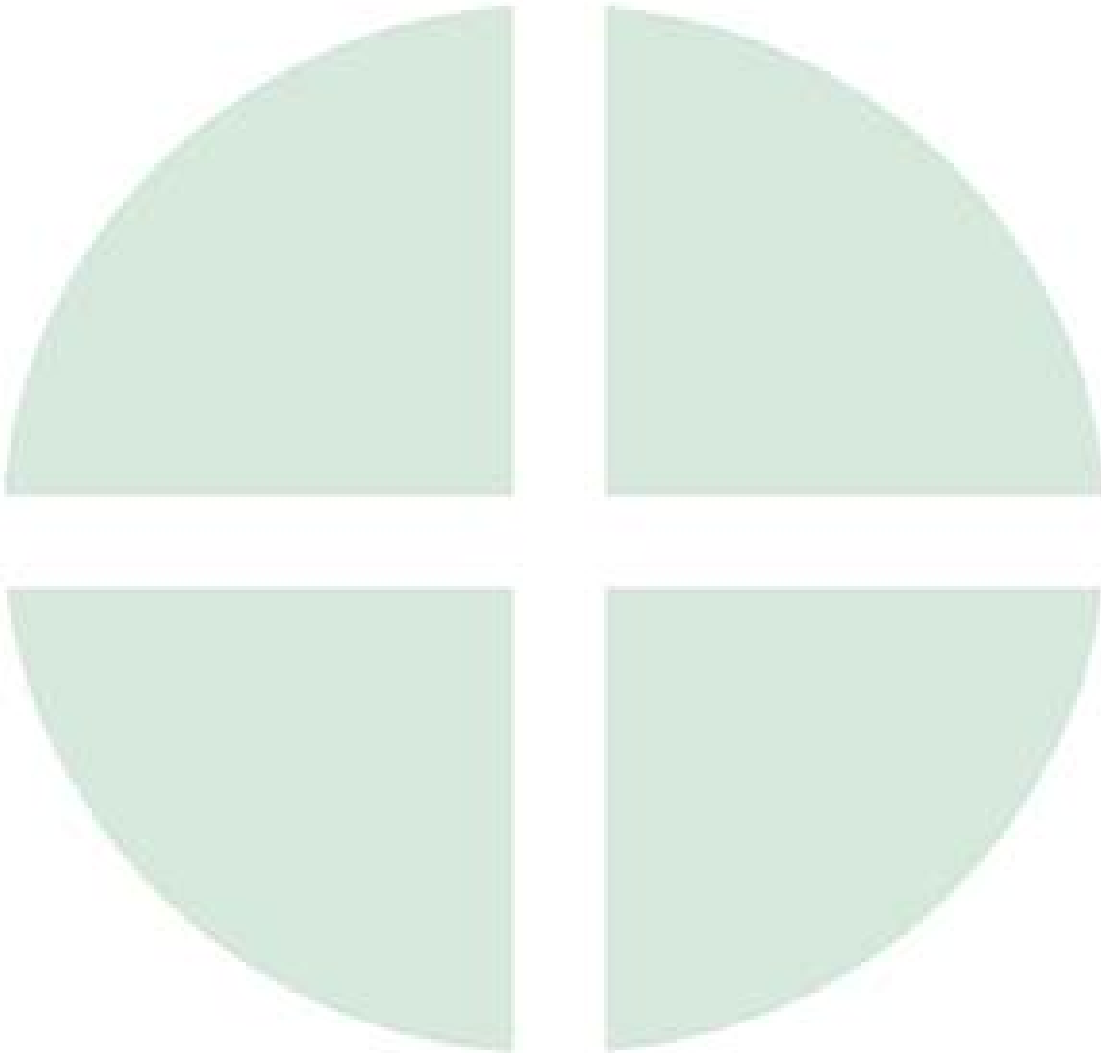

Checkpoint Exclusion Guide



Ashley Sedorovich

Manager of Field Data Collections, Spatial Information Solutions

Karen Schuckman

Senior Lecturer, Department of Geography, Penn State University

Charles O'Hara

President, Spatial Information Solutions

When performing an accuracy assessment in accuracy analyst, it may be necessary to turn off a location and exclude it from the analysis. There are several reasons why this may occur, but in each case the user must have a justifiable reason for not including the point in the assessment. This section will describe what the specific reasons are for turning off a location and when to choose that option. It also includes a photographic example of each option following the textual description.

Out of Bounds

Occasionally a GPS point will be located outside of the boundary of the user image. If this occurs that point cannot be used in the analysis because there is no corresponding user-entered point available. When the user chooses to turn off a location for this purpose, the out of bounds option must be selected from the announcement box.

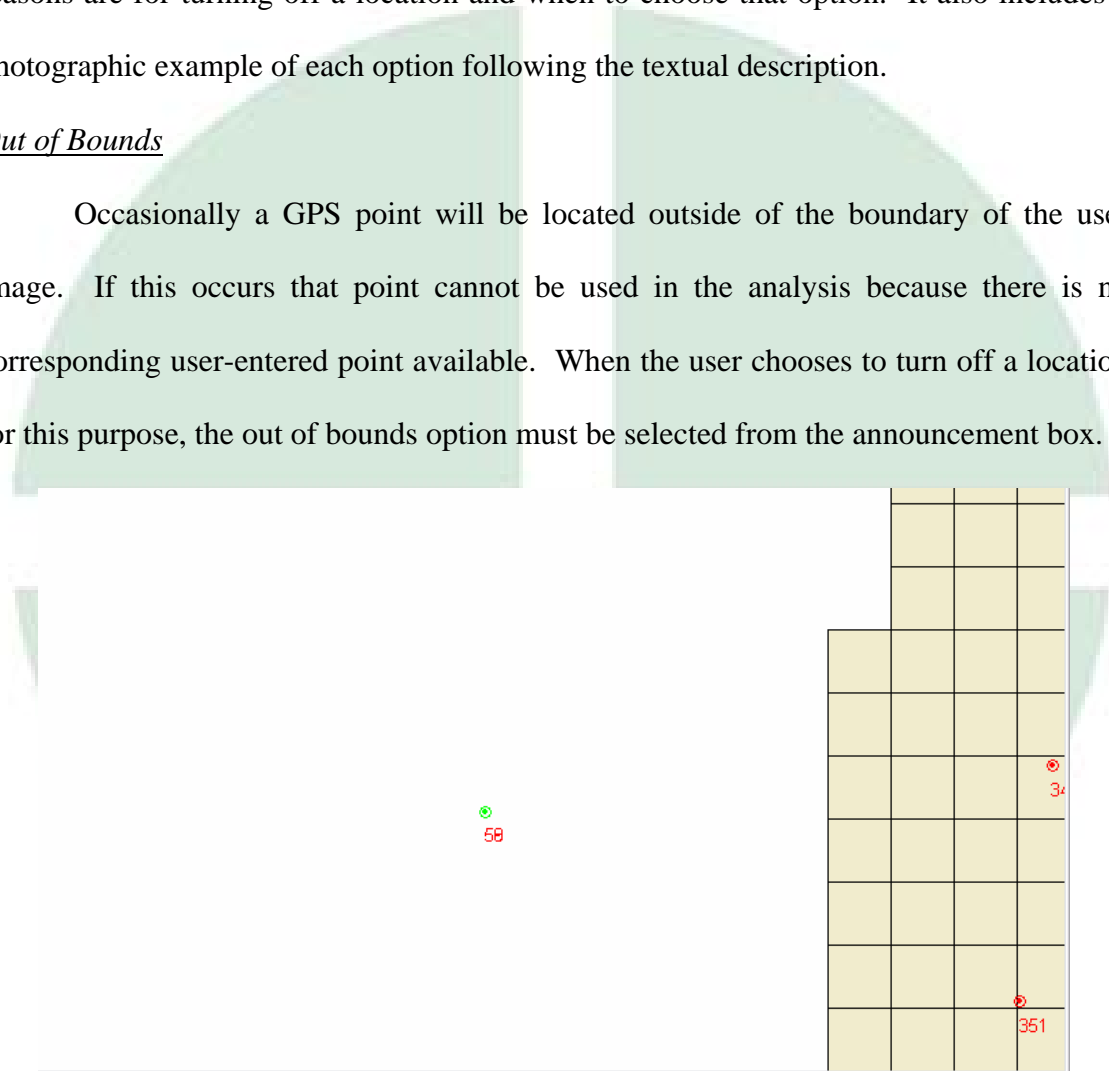


Figure 1. Out of Bounds Location

Ambiguous Location

An ambiguous location is one that is not clearly defined. If there is any uncertainty as to where the location exists, then this point should not be used in the accuracy assessment. If a point is located out of the boundaries of the image, the point can be turned off. When the announcement box pops up, the user can select ambiguous location. In the image below, the red lines indicate a structure that may or may not have previously existed, thus this point is an ambiguous location.



Figure 2. Ambiguous Location

Obscured Location

An obscured location occurs when something is blocking the user's view of the GPS location. This can happen if trees and/or shrubs have been planted over a location, if a building or a car is blocking the location, or if a shadow is inhibiting the user's view of a location. If a location has been obscured by another object, the user can turn off the point and select "obscured location" in the announcement box.



Figure 3. Obscured Location

Above Ground Locations

True photogrammetric methods require that all analysis points be taken at ground level. If a location exists on the top of a building, on the top of a plant, or anywhere that is not identifiable on the ground that point must be excluded from the analysis. If a location does not occur at ground level, the user can choose “Above Ground Location” from the announcement box that pops up.



Figure 4. Above Ground Location

Damaged Location

A damaged location is any location that has been damaged, destructed, or desecrated beyond the ability to be recognized by the user. If the damage exists to a point in which the location is no longer recognizable by the user, the point can be excluded and the “damaged location” option can be selected from the announcement box that is displayed when the point is shut off.



Figure 5. Damaged Location

Other

When choosing to turn off a location, only turn it off if completely necessary. At least 20 points are needed per analysis, however more points increase statistical rigor. If the image is being used in a court proceeding or any situation where the highest legal standards are required, proper documentation for turning off locations is vital. For these reasons, users should refrain from choosing the “other” option unless the location does not fit into any of the other categories. When choosing the “other” option, proper documentation should be listed in the records explaining why that point was turned off.

Selected References

“Analytical Photogrammetry Instrumentation” [Online]

<http://www.pharmacy.ferris.edu/faculty/burtchr/sure440/notes/Corrections_to_photo_coordinates.htm>

Congalton, R.G., Green K., 2009. Assessing the Accuracy of Remotely Sensed Data: Principles and Practices, CRC Press Taylor and Francis Group, Boca Raton, Florida, 183 p.

Dana, P. H. “Global Positioning System Overview.” [Online] September 1994.

<<http://www.colorado.edu/geography/gcraft/notes/gps/gps.html>>.

Department of Geosciences at Idaho State University. “Introduction to Topographic Maps.” [Online] 7 April 2008.

<http://geology.isu.edu/geostac/Field_Exercise/topomaps/map_proj.htm>.

GIS Development. “Global Positioning System- An Overview” [Online]

<<http://www.gisdevelopment.net/technology/gps/techgp0038.htm>>

National Geospatial-Intelligence Agency, cited 2009: Geolocation Accuracy Evaluations of OrbView-3, EROS-A, and SPOT-5 Imagery.

O’Hara, C.G., Cheriyyadat, A., 2008. Accuracy Analyst: A Horizontal Accuracy Assessment Tool.

“Photogrammetric Surveys” [Online]

<<http://www.state.nj.us/transportation/eng/documents/survey/Chapter7.shtm>>

Rose, C. M., 1991: Error Theory as Applied to Mapping, Charting, and Geodesy. DMA Tech. Rep. DMA TR 8400.1, 70 pp.

The Aerospace Corporation. “GPS Primer.” [Online] 29 April 2005.

<<http://www.aero.org/education/primers/gps/index.html>>.

“The Figure of the Earth.” [Online]

<<http://kartoweb.itc.nl/geometrics/Reference%20surfaces/body.htm>>.

United States Bureau of the Budget, cited 2009: U.S. National Map Accuracy Standards. [Available online at <http://rockyweb.cr.usgs.gov/nmpstds/nmas.html>]

World Health Organization, cited 2009: Guidelines for Data Collection in the Field using Global Positioning System (GPS) Technology. [Available online at http://www.who.int/entity/health_mapping/resources/GIS_guidelines_data_collection.pdf]