

Digital Orthophotos Of Greater Toronto and Golden Horseshoe Regions

This document contains information about the 1999 1/2 metre colour digital orthophotos of the Greater Toronto and Golden Horseshoe regions. This document describes the coverage of the digital orthophotos, the acquisition and timing of the aerial photographs, and the naming convention used on the digital index. It also details the format and compatibility of the files found on the CD's.

COVERAGE

The region covered by the digital orthophotos is the Greater Toronto/Golden Horseshoe area. The area flown includes the complete regional districts of Niagara, Hamilton-Wentworth, Halton, Peel, York, the City of Toronto, and Oshawa. Index files are included for Microstation (.DGN) and AutoCad (.DWG and .DXF) are included to show image tile locations. The native projection is UTM Nad '83 and the ortho image tiles are organized in a regular block of rows and columns. There are 5 columns of tiles and 3 rows of tiles designed to neatly fit into each NAD '83 UTM 10,000 metre quadrangle. Therefore each tile has dimensions of approximately 2000 metres (East/West) x 3333 metres (North/South) and contains 666 hectares of land area.

THE SOURCE PHOTOGRAPHY

The 6" focal length aerial photography was flown by Northwest Geomatics Inc. of Calgary, AB in late April 1999 at an altitude of 10,000 feet above mean ground. This provides aerial photography at a nominal scale of 1:20000. The film used was Kodak 2445 Aerocolour Negative film.

CONTROL and ACCURACY

Ground survey was used to supplement precision airborne GPS in order to achieve an aerial triangulation result sufficient to support vector mapping to horizontal accuracy better than 1 metre, and vertical accuracy sufficient to provide 2 metre contours. Each digital orthophoto is designed to fit the ground control to better than 2 metres RSME.

DIGITAL ELEVATION DATA

The Digital Elevation Model (DEM) collected was designed so enable the orthophoto rectification to meet a 1:4000 scale accuracy (better than 2 metres). The new DEM's were collected photogrammetrically using soft copy, 1st order stereo plotters, high precision. The DEM was designed and collected for the sole purpose of meeting the stated orthophoto accuracy.

AUTOMATIC GEO-REFERENCING

The automatic geo-referencing provided by allows users with ArcInfo, MapInfo, Autocad, and Intergraph software to view the orthophotos directly from disc registration with other similarly organized data sets. As a result, hundreds of hours are saved by not having to register the orthophotos manually.

For each TIFF image file on CD there are three ASCII ancillary geo-referencing files, each being subdivided into six different projections (NAD83 UTM, NAD27 UTM, and the City of Toronto's 3TM27. It is up to the user to choose the appropriate registration file:

1. Image Report File {.IRP}

Provides the following technical details about individual TIFF files:

- Pixel size
- Number of rows and columns of pixels in the file
- Angle of rotation of the images
- Coordinates of the four corners of each image
- Standard 3x3 transformation matrix

2. World File {.TWF}

A file format developed by ESRI for use with Arc/Info. It contains transformation matrix information required to register the TIFF file to Arc/Info coverage. The registration in this image is carried out using the NAD '83 UTM projection.

Also allows automation of the process of registering image data with the AutoCad, ColorView, and others.

3. TAB File {.TAB}

For use with MapInfo. It allows automatic registering of the image to map data by providing geo-referencing information about the TIFF file relative to the datum used.

Additional Information:

NAD '83 UTM georeferencing files for ArcInfo (.TFW) and MapInfo (.TAB) are provided in the root directory with the image files. In addition, complete sets of the world, tab and image report files are provided in UTM (NAD 27 and 83), and MTM ` Nad 27). These files are available on-request from the Staff at the Walter Hitschfeld Geographic Information Centre. Please provide the list of the orthophotos you need and the desired projection of the file.

Note that Intergraph software can automatically read the transformation matrix embedded in the TIFF file. In this situation no operator intervention is required as the file will automatically register to a DGN file. The Units of Resolution (UOR's) used are metres with 100 UOR's per master unit. The Global Origin (GO) offsets are -21,474,836.48, -21,474,836.48, and -21,474,836.48. If your DGN file uses different settings for either of these parameters then the image will have to be manually or interactively placed.

Special Notes for Arc/Info Users :

Arc/Info software expects to find images in the same directory as the world files. Because of this, Arc/Info users who wish to use a datum other than NAD83 must copy the images, along with the world files from the appropriate subdirectory, to a directory on their hard drives and view from there.

Special Notes for MapInfo Users who wish to view images from a Hard Drive :

The MapInfo tab files have been created in such a way that different datums can be easily viewed directly from the CD. If you would rather view the images from a hard drive, you must use a special set of tab files found in the HARDDISK subdirectory. Copy the TIF images to your drive. Then copy the TAB files in the HARDDISK subdirectory of the appropriate datum subdirectory into the same directory as the image files.

CD-ROM's FILE FORMAT

The orthophotos are in TIFF format and are compatible with most image processing and GIS packages including ArcInfo, Intergraph, ColorView (for Autocad), MapInfo, CARIS and Erdas. To facilitate compatibility, all the orthos are in uncompressed standard TIFF files.

COPYRIGHT

Please read the License.txt file. All of the data on these discs is copyright to Triathlon Inc. The use of this data is limited by the subscribers contract. Unauthorized use of this data is prohibited. Product names listed are copyrighted by their respective companies.

Document originally created by Triathlon Inc., and modified by Rosa Orlandini, July 24, 2003, for purposes of the GIC website.