

November 20, 2008



WOOLPERT, INC.

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Mr. Mike Merchant
GIS Manager
Department of Public Utilities
City of Columbus
910 Dublin Road, 3rd Floor
Columbus, Ohio 43215

RE: 2009 Columbus Impervious Surface Mapping Project

Dear Mr. Merchant:

Woolpert is pleased to submit our scope and fee proposal for 2009 Columbus Impervious Surface Mapping. The impervious surface mapping will include aerial imagery, LiDAR acquisition, ground control, creation of color/color infrared ortho-imagery and the creation of an updated impervious surface delineation. The project area to be included in this 2009 mapping program includes approximately 600 square miles. Woolpert will provide the following photogrammetric services:

Aerial Imagery Acquisition

Woolpert will acquire new 4-band aerial imagery covering the City of Columbus Service Area (~600 square miles). As an option, Woolpert may acquire 4-band imagery covering a 700 square mile area. Aerial Imagery will be acquired during the spring of 2009. This aerial imagery will support the generation of service area wide 1"=100' scale ortho-imagery with a pixel resolution of 0.5-foot.

LiDAR Acquisition

Woolpert will acquire new LiDAR data covering the City of Columbus Service Area (~600 square miles). As an option, Woolpert may acquire LiDAR covering a 700 square mile area. LiDAR data will be acquired during the spring of 2009. This LiDAR data will have a point density average of 3-feet and be used to rectify the aerial imagery and be used as an integral dataset during the processing of the service area wide impervious surfaces.

Ground Control

Woolpert will perform all the ground control survey necessary to support 1"=100' scale ortho base mapping. Woolpert will supply a control diagram to the City of Columbus depicting the proposed locations of horizontal and vertical GPS control points. Each photo-control point will consist of a photo identifiable point (ie. Edge of sidewalk at edge of paved driveway). In some instances, aerial targets may be painted (on road surfaces) or established with nylon reinforced plastic targeting material (if not placed on hard surfaces).

Aerial Triangulation

Woolpert will perform aerial triangulation on the newly acquired aerial imagery acquired during the spring of 2009. Triangulation extends and densifies the ground control and will subsequently support the 1"=100' scale ortho base mapping.

Ortho Base Mapping

Woolpert will produce service area wide (~600 square miles) 4-band 1"=100' scale ortho-imagery, with a pixel resolution of 0.5-foot. This ortho-imagery will be produced and delivered as 16-bit imagery, allowing for more precise delineation of impervious surfaces.

With the final ortho tiles being delivered in 16-bit and with four imagery bands (natural color and color infrared), the ortho tiles will be approximately 200 megabytes in size. This is assuming that the existing tile size of 2,500' x 2,500' is used. We'll review the tile size with the City prior to ortho production.

The imagery will be delivered in geotiff format, with the appropriate tiff world files and metadata. Upon acceptance of the ortho-imagery by the City, Woolpert will produce a service area wide MrSID Image.

Impervious Surface Delineation

Woolpert will utilize the newly acquired ortho-imagery and LiDAR DEM datasets to produce a new service area wide impervious surface layer. The process to generate the impervious surfaces (commercial properties) will be performed using the semi-automated feature extraction process. After the impervious surfaces are produced (covering the entire service area), commercial parcels will be extracted, cleaned and delivered. For purposes of this project, only commercial parcels will be reviewed/cleaned and delivered.

Based upon the 2009 project budget, Woolpert may perform a pilot (i.e. ~one square mile in size) for residential parcels.

Deliverables

Woolpert will supply the City of Columbus, Public Utilities with an external hard drive containing the digital ortho-imagery and LiDAR DEM datasets.

One GPS Control Report containing a control listing in the appropriate datum and log sheets with descriptions of points used in the survey will also be supplied.

Schedule

Woolpert will acquire new aerial imagery on or before April 30, 2009. The ground control survey/targeting will be performed prior to aerial imagery acquisition.

The anticipated delivery schedule for the 4-band, 16-bit imagery is August 31, 2009.
 The anticipated delivery schedule for the LiDAR DEM is August 31, 2009.
 The anticipated delivery schedule for the impervious surface is October 31, 2009.

Estimated Fees

600 Square Mile Project Area (Contiguous Area)

AERIAL IMAGERY, LIDAR ACQUISITION, GROUND CONTROL, ORTHO- IMAGERY AND IMPERVIOUS SURFACE DELINEATION	
1"=100' SCALE BASE MAPPING	
<i>Service</i>	<i>Fee</i>
City of Columbus Impervious Surface Delineation	\$320,000
Grand Total	\$320,000

700 Square Mile Project Area (Contiguous Area)

AERIAL IMAGERY, LIDAR ACQUISITION, GROUND CONTROL, ORTHO- IMAGERY AND IMPERVIOUS SURFACE DELINEATION	
1"=100' SCALE BASE MAPPING	
<i>Service</i>	<i>Fee</i>
City of Columbus Impervious Surface Delineation	\$362,000
Grand Total	\$362,000


We appreciate the opportunity to present this price proposal and look forward to working with you again. If you have any questions or need further clarification

Mike Merchant
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regarding the above, please call me at 937.531.1323. I can also be reached via my e-mail address: brian.stevens@woolpert.com.

Sincerely,

WOOLPERT Inc.

A handwritten signature in black ink, appearing to read "Brian Stevens", written over a horizontal line.

Brian Stevens, CP
Project Manager