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| U.S. Geological Survey – Eastern Shore Virginia QL2 LiDAR BAA Delivery ReportDelivery Report Produced for U.S. Geological SurveyUSGS Contract: G10PC00013Task Order: G15PD00284Reporteport Date: 10/09/2012 |
| Report Date: March 21, 2016 |
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**USGS Eastern Shore Virginia QL2 LiDAR BAA LiDAR Deliverables Overview Checklist**

[x]  **Raw Point Cloud Data**

 [x]  LAS version 1.4

 [x]  Georeferenced

[x]  GPS Times are included

[x]  Intensity values are included

[x]  Full swaths

[x]  1 file per swath, 1 swath per file, file size does not exceed 2GB

[x]  **Classified Point Cloud Data**

 [x]  LAS Version 1.4

 [x]  Correct Georeference Information

 [x]  Contains GPS Times

 [x]  Contains Intensity Values

 [x]  Tile to 5,000 ft x 5,000 ft Tile Grid

[x]  Classified with class 1 – unclassified, class 2 – Bare-earth Ground, class 7 – Low Noise, class 8 - Model Key Points, class 9 – Water, class 10 – Ignored ground, class 17 – Bridge decks, Class 18 – High points

[x]  **Bare Earth Surface (Raster DEM)**

[x]  Cell size of 2.5 ft

[x]  ERDAS .img File format

 [x]  Georeference info included (xml files)

 [x]  Tiled with no overlap

 [x]  Reviewed for edgematching and artifacts

 [x]  Free of void areas

 [x]  Hydrographic features have been flattened according to SOW

[x]  **Survey Data**

 [x]  Surveyed Quality Check point report, photos, and coordinate listing

 [x]  Check points as a shapefile

[x]  **Calibration Points**

[x]  All points used by the LiDAR acquisition provider to calibrate and control the LiDAR data in shapefile format

 [x]  Attribute table includes x, y, and z coordinates

[x]  **Metadata**

 [x]  FGDC Compliant metadata for:

[x]  Deliverables (Boundary, Tile Grid, LAS Extent, LAS, DEM, Tidal Breakline, Lake Breaklines, Intensity Imagery, Lifts, Survey Checkpoints, Calibration Points, and Project)

[x]  **Project Reports**

 [x]  Collection Report detailing mission planning, flight logs, acquisition, and calibration

 [x]  Control Points used by Acquisition Partner are listed

 [x]  Processing report

 [x]  QA/QC Reports

[x]  **Extents**

 [x]  Tile grid in Shapefile format derived from the LiDAR Deliverable

[x]  Tile grid according to USNG format, 5,000 ft x 5,000 ft, and in Shapefile format

 [x]  Project Boundary created with buffer around ground tiles and delivered as shapefile

[x]  **Breakline Data**

 [x]  Breakline Data in GDB

 [x]  Breakline Data as Shapefiles

[x]  **Intensity Imagery**

[x]  Intensity imagery in GeoTIFF format and 2.5 ft pixel size

[x]  **Other Ancillary Data**

 [x]  Shapefile showing the locations of temporal areas

# Raw Point Cloud Data

Raw Point Cloud Data has been included as part of this delivery. The Raw Point Cloud Data is delivered in LAS v1.4 with all required header information including: Georeference information, GPS times, and Intensity Values.

# Classified Point Cloud

Classified point cloud data has been delivered tiled to 5,000 ft x 5,000 ft tiles that are named according to the USNG. The final delivery consists of 1,375 LiDAR tiles that meet the project specified requirement.

# Bare Earth Surface (Raster DEM)

A total of 1,310 5,000 ft x 5,000 ft tiled bare earth raster DEMs in ERDAS IMG format have been delivered for this project. All tiles have a cell size of 2.5 ft and have been reviewed to ensure that they meet the project required specifications. There are 65 tiles that have a LAS tile but do not have an associated bare earth DEM tile. These tiles are completely water and are along the project edge. They were causing interpolation issues in the DEMs and were removed from the DEM dataset.

# Survey Data

All survey control data, reports and photos are included in this delivery. Accuracy assessment points are delivered in ESRI shapefile format.

# Calibration Points

All points used by the LiDAR acquisition provider to control and calibrate the LiDAR data have been delivered in ESRI shapefile format. X, Y, and Z coordinates are provided in the attribute table.

# Metadata

Project level metadata for each of the deliverables (Swaths or Lifts, fully classified LiDAR, breaklines, bare-earth DEMs, first return DSMs, intensity imagery, project, and contours) has been delivered in XML format. Metadata has been reviewed through the USGS metaparser tool to ensure that it is FGDC compliant.

# Project Report

A comprehensive project report has been delivered in PDF format. This report includes the LiDAR acquisition and processing information along with detailed information on the production and quality control process used for the development of all deliverables.

# Extents

Three ESRI shapefiles are included with this delivery. One shapefile is the boundary created by Dewberry. The second shapefile is the tile grid, created and named according to US National Grid format. The third shapefile is derived from the extents of the actual LAS deliverable to ensure that all delivered LiDAR have been accounted for. The extents have been verified against the project boundary to ensure that there is full coverage for the project.

# Breakline Data

Breaklines have been delivered in an ESRI file geodatabase and as shapefiles. Breaklines were derived to meet the project specifications as outlined in the SOW.

# Intensity Imagery

Intensity imagery is delivered tiled to 5,000 ft x 5,000 ft tiles that are named to according to the project tile grid. The imagery is in GeoTIFF format with 1 ft pixel size. The intensity imagery is created from the full point cloud LiDAR data. The final delivery consists of 1,375 GeoTIFF tiles.

# Other Ancillary Data

Shapefile showing the locations of temporal areas

# Other Comments

Data for the Eastern Shore Virginia LiDAR Project is delivered on one (1) hard drive.