

*ISO 19131 Redberry Lake Biosphere
Reserve LiDAR Survey – Data Product
Specifications*

Revision: A

Data product specifications: Redberry Lake Biosphere Reserve LiDAR Survey

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Data product specifications: Redberry Lake Biosphere Reserve LiDAR Survey

1. Overview

1.1. Informal description

LiDAR Services International (LSI), a Calgary-based LiDAR company completed an airborne LiDAR survey for the Redberry Lake Biosphere Reserve (RLBR) and Agriculture and Agri-Foods Canada (AAFC) in October 2011. The project involved collection of LiDAR data for a 362.97 km² block area, 252.77 km² for Redberry Lake and 110.20 km² for AAFC northwest of Saskatoon, SK.

1.2. Data product specification - metadata

This section provides metadata about the creation of this data product specification

Data product specification – title:	Redberry Lake Biosphere Reserve LiDAR Survey
Data product specification - reference date:	June 6 th , 2013
Data product specification - responsible party:	STB
Data product specification – language:	English
Data product specification - topic category:	elevation

1.3. Terms and definitions

- Feature attribute
characteristic of a feature
- Class
description of a set of objects that share the same attributes, operations, methods, relationships, and semantics [UML Semantics]
NOTE: A class does not always have an associated geometry (e.g. the metadata class).
- Feature
abstraction of real world phenomena
- Object
entity with a well-defined boundary and identity that encapsulates state and behaviour [UML Semantics]
NOTE: An object is an instance of a class.
- Package
grouping of a set of classes, relationships, and even other packages with a view to organizing the model into more abstract structures

1.4. Abbreviations

AAFC Agriculture and Agri-Food Canada

2. SPECIFICATION SCOPE

This data specification has only one scope, the general scope.

NOTE: The term 'specification scope' originates from the International Standard ISO19131. 'Specification scope' does not express the purpose for the creation of a data specification or the potential use of data, but identifies partitions of the data specification where specific requirements apply.

3. DATA PRODUCT IDENTIFICATION

3.1. Data series identification

Title	Redberry Lake Biosphere Reserve LiDAR Survey
Alternate Title	
Abstract	<p>LiDAR Services International (LSI), a Calgary-based LiDAR company completed an airborne LiDAR survey for the Redberry Lake Biosphere Reserve (RLBR) and Agriculture and Agri-Foods Canada (AAFC) in October 2011. The project involved collection of LiDAR data for a 362.97 km² block area, 252.77 km² for Redberry Lake and 110.20 km² for AAFC northwest of Saskatoon, SK.</p> <p>Deliverables included:</p> <ul style="list-style-type: none"> • 1 m bare earth and full feature grids in 1 km x 1 km tiles (ASCII XYZ format) • 1 m bare earth and full feature greyscale hillshades (GeoTiff format) • Classified LiDAR point clouds and ASCII extractor program (LAS v1.2 format)
Purpose	
Topic Category	elevation
Spatial Representation Type	grid
Spatial Resolution	
Geographic Description	Saskatchewan
Supplemental Information	

Constraints	Data are subject to the Government of Canada Open Data License Agreement: http://www.data.gc.ca
Keywords	Thesaurus: Government of Canada Core Subject Thesaurus (http://www.thesaurus.gc.ca/recherche-search/thes-eng.html) Date: February 1, 2000 Keywords: Earth Science, Topography
Scope identification	series

3.2. Dataset identification

3.2.1. Redberry Lake Biosphere Reserve – 30 Centimeter Contours

Title	Redberry Lake Biosphere Reserve – 30 Centimeter Contours
Alternate Title	
Abstract	<p>Thirty-centimeter contours generated from bare earth LiDAR points.</p> <p>LiDAR Services International (LSI), a Calgary-based LiDAR company completed an airborne LiDAR survey for the Redberry Lake Biosphere Reserve (RLBR) and Agriculture and Agri-Foods Canada (AAFC) in October 2011. The project involved collection of LiDAR data for a 362.97 km² block area, 252.77 km² for Redberry Lake and 110.20 km² for AAFC northwest of Saskatoon, SK.</p>
Purpose	
Topic Category	elevation
Spatial Representation Type	Vector
Spatial Resolution	1 meter horizontal
Geographic Description	Saskatchewan
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data License Agreement: http://www.data.gc.ca
Keywords	Thesaurus: Government of Canada Core Subject Thesaurus (http://www.thesaurus.gc.ca/recherche-search/thes-eng.html) Date: February 1, 2000 Keywords: Earth Science, Topography
Scope Identification	dataset
Feature Attribute Names	Elevation (ELEVATION_METER_NUM)

3.2.2. Redberry Lake Biosphere Reserve – 1 meter Bare Earth DEM

Title	Redberry Lake Biosphere Reserve – 1 meter Bare Earth DEM
Alternate Title	
Abstract	<p>One meter digital elevation model generated from bare earth LiDAR points.</p> <p>LiDAR Services International (LSI), a Calgary-based LiDAR company completed an airborne LiDAR survey for the Redberry Lake Biosphere Reserve (RLBR) and Agriculture and Agri-Foods Canada (AAFC) in October 2011. The project involved collection of LiDAR data for a 362.97 km² block area, 252.77 km² for Redberry Lake and 110.20 km² for AAFC northwest of Saskatoon, SK.</p>
Purpose	
Topic Category	elevation
Spatial Representation Type	Grid
Spatial Resolution	1 meter horizontal
Geographic Description	Saskatchewan
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data License Agreement: http://www.data.gc.ca
Keywords	<p>Thesaurus: Government of Canada Core Subject Thesaurus (http://www.thesaurus.gc.ca/recherche-search/thes-eng.html)</p> <p>Date: February 1, 2000</p> <p>Keywords: Earth Science, Topography</p>
Scope Identification	dataset
Feature Attribute Names	

3.2.3. Redberry Lake Biosphere Reserve – 1 meter Full Feature DEM

Title	Redberry Lake Biosphere Reserve – 1 meter Full Feature DEM
Alternate Title	
Abstract	<p>One meter digital elevation model generated from LiDAR point files.</p> <p>LiDAR Services International (LSI), a Calgary-based LiDAR company completed an airborne LiDAR survey for the Redberry Lake Biosphere Reserve (RLBR) and Agriculture and Agri-Foods Canada (AAFC) in October 2011. The project involved collection of LiDAR data for a 362.97 km² block area, 252.77 km² for Redberry Lake and 110.20 km² for AAFC northwest of Saskatoon, SK.</p>

Purpose	
Topic Category	elevation
Spatial Representation Type	Grid
Spatial Resolution	1 meter horizontal
Geographic Description	Saskatchewan
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data License Agreement: http://www.data.gc.ca
Keywords	Thesaurus: Government of Canada Core Subject Thesaurus (http://www.thesaurus.gc.ca/recherche-search/thes-eng.html) Date: February 1, 2000 Keywords: Earth Science, Topography
Scope Identification	dataset
Feature Attribute Names	

3.2.4. Redberry Lake Biosphere Reserve – 1 meter Bare Earth Hillshade

Title	Redberry Lake Biosphere Reserve – 1 meter Bare Earth Hillshade
Alternate Title	
Abstract	<p>One meter hillshade generated from bare earth DEM.</p> <p>LiDAR Services International (LSI), a Calgary-based LiDAR company completed an airborne LiDAR survey for the Redberry Lake Biosphere Reserve (RLBR) and Agriculture and Agri-Foods Canada (AAFC) in October 2011. The project involved collection of LiDAR data for a 362.97 km² block area, 252.77 km² for Redberry Lake and 110.20 km² for AAFC northwest of Saskatoon, SK.</p>
Purpose	
Topic Category	elevation
Spatial Representation Type	Grid
Spatial Resolution	1 meter horizontal
Geographic Description	Saskatchewan
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data License Agreement: http://www.data.gc.ca
Keywords	Thesaurus: Government of Canada Core Subject Thesaurus (http://www.thesaurus.gc.ca/recherche-search/thes-eng.html) Date: February 1, 2000 Keywords: Earth Science, Topography
Scope Identification	dataset
Feature Attribute Names	

3.2.5. Redberry Lake Biosphere Reserve – 1 meter Full Feature Hillshade

Title	Redberry Lake Biosphere Reserve – 1 meter Full Feature Hillshade
Alternate Title	
Abstract	<p>One meter hillshade generated from full feature DEM.</p> <p>LiDAR Services International (LSI), a Calgary-based LiDAR company completed an airborne LiDAR survey for the Redberry Lake Biosphere Reserve (RLBR) and Agriculture and Agri-Foods Canada (AAFC) in October 2011. The project involved collection of LiDAR data for a 362.97 km² block area, 252.77 km² for Redberry Lake and 110.20 km² for AAFC northwest of Saskatoon, SK.</p>
Purpose	
Topic Category	elevation
Spatial Representation Type	Grid
Spatial Resolution	1 meter horizontal
Geographic Description	Saskatchewan
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data License Agreement: http://www.data.gc.ca
Keywords	<p>Thesaurus: Government of Canada Core Subject Thesaurus (http://www.thesaurus.gc.ca/recherche-search/thes-eng.html)</p> <p>Date: February 1, 2000</p> <p>Keywords: Earth Science, Topography</p>
Scope Identification	dataset
Feature Attribute Names	

4. DATA CONTENT AND STRUCTURE

4.1. Feature-based application schema

Redberry Lake Biosphere Reserve - 30 Centimeter Contours	
Elevation	NUMBER

4.2. Feature Catalog

Title	Redberry Lake Biosphere Reserve LiDAR Survey - Feature Catalogue
Scope	Elevation
Version Number	
Version Date	
Producer	Agri-Geomatics, Agriculture and Agri-Food Canada

4.2.1. Feature attributes

4.2.1.1. Elevation

Name	Elevation (ELEVATION_METER_NUM)		
Definition	Elevation in meters		
Aliases			
Producer	Agriculture and Agri-Food Canada, Government of Canada		
Value Data Type	Double		
Value Domain Type	0 (not enumerated)		
Value Domain			
	Feature Attribute Value		
	Label	Code	Definition

5. REFERENCE SYSTEMS

5.1. Spatial reference system

Horizontal coordinate reference system: NAD83(CSRS)

Map projection: UTM Zone 14N

Horizontal coordinate reference system: WGS84

Map projection: Web Mercator Auxillary Sphere (EPSG: 3857 version 8.1.4)

5.2. Temporal reference system

Gregorian calendar

6. DATA QUALITY

Not completed

6.1. Completeness

6.2. Logical consistency

6.3. Positional accuracy

6.4. Temporal accuracy

6.5. Thematic accuracy

6.6. Lineage statement

Lineage Statement	<p>LiDAR data was collected on October 21 and 22 2011 and then processed into the derived products (Digital Elevation Model and Hillshade) by the contractor (LSI)</p> <p>Mosaicking derived products provided by the contractor revealed a 50 centimeter gap between tiles making it unusable for modeling and analysis. Therefore, LiDAR point files were processed by AAFC staff to create seamless DEM, Hillshade, and Contour products.</p>
Scope	Redberry Lake Biosphere Reserve LiDAR Survey

7. DATA CAPTURE

- LiDAR system installed in a Cessna 185 airplane owned and operated by CanWest Corporate Air Charters of Slave Lake, Alberta
- Airborne LiDAR collection occurred October 21-22nd, 2011.
- LiDAR data was collected at a flying height of 600 m above ground level and an air speed of 240 km/h.
- Riegl LMS-Q560 laser used pulsed at an approximate rate of 137 kHz resulting in a computed average ground spacing equal to 0.70 m
- Horizontal Datum: NAD83 (CSRS)
- Vertical Datum: CGVD28 orthometric heights (HTv2.0 height transformation model)
- Map projection: UTM Zone 13 (Central meridian = 105 degrees west longitude)

8. DATA MAINTENANCE

None planned

9. PORTRAYAL

Not applicable.

10. DATA PRODUCT DELIVERY

Format name: Tag Interleaved File
 Version: 6.0
 Specification: GeoTIFF is a format extension for storing georeference and geocoding information in a TIFF 6.0 compliant raster file by tying a raster image to a know model space of map projection.

Languages: eng
 Character set: utf8

Format name: LASer File Format
 Version: 1.2
 Specification:

http://asprs.org/a/society/committees/standards/asprs_las_format_v12.pdf

11. METADATA

The metadata requirements follow the Government of Canada's Treasury Board Standard on Geospatial Data (ISO 19115).