Post_Flood_Quick_QC

Summary USGS National Geospatial Program Lidar Base Specification Version 1.2 Report

Quality level tested: QL1

Report generated on 10/23/2019

This document reports on compliance with the USGS National Geospatial Program Lidar Base Specification Version 1.2. The complete specification, which also contains a list of abbreviations, acronyms, and a glossary of related terms, can be found here.

DPH-1.1 Report on ASPRS LAS File Format (Tiled Data) - Compliance

The USGS Lidar Base Specification Version 1.2 states: "All processing will be carried out with the understanding that all point deliverables are required to be fully compliant with ASPRS LAS Specification, version 1.4, using Point Data Record Format 6, 7, 8, 9 or 10. Data producers are encouraged to review the LAS Specification version 1.4 in detail (American Society for Photogrammetry and Remote Sensing, 2011)."

The purpose of this section is to show a table of LAS 1.4 compliance test results for each tiled file.

Classified Files - Y:\Mapping\Projects\65220282_NE_PostSpringFlood\Production\Final_Client_Deliverables\FINAL_LAS_NEED_TO_Divide

File	LAS Version/PDRF	System ID	Legacy Point Count	Legacy Return Counts	File Source ID	Global Encoding	VLRs / EVLRs	WKT	Intensity	Point Count with Bad Return Info

Pass: 9552 files
Fail: 0 files

DPH-1.2 Report on ASPRS LAS File Format (Tiled Data) - File Integrity

The purpose of this section is to show a table of LAS 1.4 file integrity test results for each tiled file.

File	Number of Points Outside Extent	Offset To Point Data	Offset To EVLR	Number Of Points	Number of Points by Return	Number of Duplicate Points

Pass: 9552 files
Fail: 0 files

DPH-1.3 Report on ASPRS LAS File Format (Tiled Data) - Informational

The purpose of this section is to show a table of LAS 1.4 file informational test results for each tiled file.

File	GPS Time min	GPS Time max	Extended Scan Angle	Scan Angle Rank	Scanner Channel	Scan Direction	Edge of Flight Line	User Data	Counts for Synthetic	Key-points	Withheld	Overlap
	242842838.5	247013670.96	[-7273, 6781]	[-43.638, 40.686]	[0, 0]	[0, 1]	[0, 1]	[0, 0]	0	11027785029	6111695327	0

DPH-1.4 Report on Elevation by Class for Tiled Data

The purpose of this section is to show a table of the Minimum and Maximum elevation (Z) values by Class for the tiled files.

File	Class	Z Min	Z Max
	1	626.055	5498.175
	2	960.71	2030.964
	7	-10985.04	1984.101
	9	960.75	1955.466
	10	1246.064	1575.739
	17	970.687	1873.373
	18	1245.647	5797.243
	20	960.819	1955.935

DPH-2 Report on Full Waveform (Tiled Data)

The purpose of this section is to show the presence of waveform data for the lidar tiled data.

Classified Files - Y:\Mapping\Projects\65220282_NE_PostSpringFlood\Production\Final_Client_Deliverables\FINAL_LAS_NEED_TO_Divide

All LAS tiled files have no waveform data present.

DPH-3 Report on Time of Global Positioning System Data (Tiled Data)

The purpose of this section is to show the GPS time type within the LAS files for the lidar tiled data.

Classified Files - Y:\Mapping\Projects\65220282_NE_PostSpringFlood\Production\Final_Client_Deliverables\FINAL_LAS_NEED_TO_Divide

All LAS tiled files are formatted as Adjusted GPS Time.

DPH-4 Report on Datums (Tiled Data)

The purpose of this section is to show the datums of the LAS files for the lidar tiled data.

Classified Files - Y:\Mapping\Projects\65220282_NE_PostSpringFlood\Production\Final_Client_Deliverables\FINAL_LAS_NEED_TO_Divide

All LAS tiled files are defined as:

Horizontal Datum = NAD83 (National Spatial Reference System 2011)
Horizontal EPSG Code = 1116
Vertical Datum = North American Vertical Datum 1988
Vertical EPSG Code = 5103

DPH-5 Report on Coordinate Reference System (Tiled Data)

The purpose of this section is to show the projections of the LAS files for the lidar tiled data.

Classified Files - Y:\Mapping\Projects\65220282_NE_PostSpringFlood\Production\Final_Client_Deliverables\FINAL_LAS_NEED_TO_Divide

All LAS tiled files are defined as:

EPSG Code = 6880
Coordinate Reference System = NAD83(2011) / Nebraska (ftUS)

DPH-6 Report on Units of Reference (Tiled Data)

The purpose of this section is to show the horizontal and vertical units of the LAS files for the lidar tiled data.

Classified Files - Y:\Mapping\Projects\65220282_NE_PostSpringFlood\Production\Final_Client_Deliverables\FINAL_LAS_NEED_TO_Divide

All LAS tiles files are defined as:

Horizontal Unit = US Survey Foot
Vertical Unit = US Survey Foot

DPH-14 Report on Point Classification

The USGS Lidar Base Specification Version 1.2 states: "The minimum scheme required for lidar point clouds is listed in the table 'Minimum classified pointcloud classification scheme' (table 6). All points not identified as Withheld (WH) shall be classified. "

Table 6. Minimum classified point cloud classification scheme.

Code	Description
1	Processed, but unclassified.
2	Bare earth.
7	Low noise.
9	Water.
10	Ignored ground (near a breakline).
17	Bridge decks.
18	High noise.

The purpose of this section is to report total numbers of points for each class within the tile based LAS files.

DPH-14 Report on Point Classification - Class Totals

The purpose of this section is to list the number of points in each classification so that the user can determine if any points exist in unintended classes.

Classified Files - Y:\Mapping\Projects\65220282_NE_PostSpringFlood\Production\Final_Client_Deliverables\FINAL_LAS_NEED_TO_Divide

Class	Total	MKP	WH	Class	Total	MKP	WH	Class	Total	MKP	WH	Class	Total	MKP	WH
0	00	00	00	64	00	00	00	128	00	00	00	192	00	00	00
1	62,323,328,455	6,011,689,696		65	00	00	00	129	00	00	00	193	00	00	00
2	87,862,140,575	175,027,781,968	00	66	00	00	00	130	00	00	00	194	00	00	00
3	00	00	00	67	00	00	00	131	00	00	00	195	00	00	00
4	00	00	00	68	00	00	00	132	00	00	00	196	00	00	00
5	00	00	00	69	00	00	00	133	00	00	00	197	00	00	00
6	00	00	00	70	00	00	00	134	00	00	00	198	00	00	00
7	459,980	00	00	71	00	00	00	135	00	00	00	199	00	00	00
8	00	00	00	72	00	00	00	136	00	00	00	200	00	00	00
9	1,069,867,632	00	00	73	00	00	00	137	00	00	00	201	00	00	00
10	00	00	00	74	00	00	00	138	00	00	00	202	00	00	00
11	00	00	00	75	00	00	00	139	00	00	00	203	00	00	00
12	00	00	00	76	00	00	00	140	00	00	00	204	00	00	00
13	00	00	00	77	00	00	00	141	00	00	00	205	00	00	00
14	00	00	00	78	00	00	00	142	00	00	00	206	00	00	00
15	00	00	00	79	00	00	00	143	00	00	00	207	00	00	00
16	00	00	00	80	00	00	00	144	00	00	00	208	00	00	00
17	16,247,543	00	00	81	00	00	00	145	00	00	00	209	00	00	00
18	3,651,034	00	00	82	00	00	00	146	00	00	00	210	00	00	00
19	00	00	00	83	00	00	00	147	00	00	00	211	00	00	00
20	15,377,334	00	00	84	00	00	00	148	00	00	00	212	00	00	00
21	00	00	00	85	00	00	00	149	00	00	00	213	00	00	00
22	00	00	00	86	00	00	00	150	00	00	00	214	00	00	00
23	00	00	00	87	00	00	00	151	00	00	00	215	00	00	00
24	00	00	00	88	00	00	00	152	00	00	00	216	00	00	00
25	00	00	00	89	00	00	00	153	00	00	00	217	00	00	00
26	00	00	00	90	00	00	00	154	00	00	00	218	00	00	00
27	00	00	00	91	00	00	00	155	00	00	00	219	00	00	00
28	00	00	00	92	00	00	00	156	00	00	00	220	00	00	00
29	00	00	00	93	00	00	00	157	00	00	00	221	00	00	00
30	00	00	00	94	00	00	00	158	00	00	00	222	00	00	00
31	00	00	00	95	00	00	00	159	00	00	00	223	00	00	00
32	00	00	00	96	00	00	00	160	00	00	00	224	00	00	00
33	00	00	00	97	00	00	00	161	00	00	00	225	00	00	00
34	00	00	00	98	00	00	00	162	00	00	00	226	00	00	00
35	00	00	00	99	00	00	00	163	00	00	00	227	00	00	00
36	00	00	00	100	00	00	00	164	00	00	00	228	00	00	00
37	00	00	00	101	00	00	00	165	00	00	00	229	00	00	00
38	00	00	00	102	00	00	00	166	00	00	00	230	00	00	00
39	00	00	00	103	00	00	00	167	00	00	00	231	00	00	00
40	00	00	00	104	00	00	00	168	00	00	00	232	00	00	00
41	00	00	00	105	00	00	00	169	00	00	00	233	00	00	00
42	00	00	00	106	00	00	00	170	00	00	00	234	00	00	00
43	00	00	00	107	00	00	00	171	00	00	00	235	00	00	00
44	00	00	00	108	00	00	00	172	00	00	00	236	00	00	00
45	00	00	00	109	00	00	00	173	00	00	00	237	00	00	00
46	00	00	00	110	00	00	00	174	00	00	00	238	00	00	00
47	00	00	00	111	00	00	00	175	00	00	00	239	00	00	00
48	00	00	00	112	00	00	00	176	00	00	00	240	00	00	00
49	00	00	00	113	00	00	00	177	00	00	00	241	00	00	00
50	00	00	00	114	00	00	00	178	00	00	00	242	00	00	00
51	00	00	00	115	00	00	00	179	00	00	00	243	00	00	00
52	00	00	00	116	00	00	00	180	00	00	00	244	00	00	00
53	00	00	00	117	00	00	00	181	00	00	00	245	00	00	00
54	00	00	00	118	00	00	00	182	00	00	00	246	00	00	00
55	00	00	00	119	00	00	00	183	00	00	00	247	00	00	00
56	00	00	00	120	00	00	00	184	00	00	00	248	00	00	00
57	00	00	00	121	00	00	00	185	00	00	00	249	00	00	00
58	00	00	00	122	00	00	00	186	00	00	00	250	00	00	00
59	00	00	00	123	00	00	00	187	00	00	00	251	00	00	00
60	00	00	00	124	00	00	00	188	00	00	00	252	00	00	00
61	00	00	00	125	00	00	00	189	00	00	00	253	00	00	00
62	00	00	00	126	00	00	00	190	00	00	00	254	00	00	00
63	00	00	00	127	00	00	00	191	00	00	00	255	00	00	00

Bold – point counts in 'Minimum classified point cloud classification scheme' (see table on previous page)

– point counts in Classes beyond the minimum

– disallowed point counts per USGS spec

– not all Class 0 points flagged as Withheld

Skipped Tests

C-1 Report on Collection Area
C-2 Report on Returns
C-3 Report on Intensity
C-4 Report on Point Density and NPS per Flight Line
C-5 Report on Data Void
C-6 Overview of Spatial Distribution Verification
C-7 Report on Collection Conditions
DPH-7 Report on File Source ID
DPH-8 Report on Point Families
DPH-9 Report on LAS File Size
DPH-10 Flight Line Coverage
DPH-11.1.1 Smooth Surface Repeatability
DPH-11.1.2 Overlap consistency (interswath)
DPH-11.2 Check Points
DPH-11.3 Report on Vertical Accuracy
DPH-12 Use of the LAS Withheld Flag
DPH-13 Use of the LAS Overlap Flag
DPH-15/DPH-16 Reports on Classification Accuracy and Consistency
DPH-17 Report on Tiles

USGS LBS 1.2 QC Module Input Requirements Matrix

Test number	Swath LAS (Collection Scan)	Classified LAS (Tiled Data)	Tile Scheme Shapefile	DPA Boundary Shapefile	LiDAR Check Points
C-1	X	X		X	
C-2	X	X			
C-3	X	X			
C-4	X			O	
C-5	X			O	
C-6	X			O	
C-7	X	X			
DPH-1	X	X			
DPH-2	X	X			
DPH-3	X	X			
DPH-4	X	X			
DPH-5	X	X			
DPH-6	X	X			
DPH-7	X				
DPH-8	X	O			
DPH-9	X				
DPH-10	X			X	
DPH-11.1.1	X				
DPH-11.1.2	X			X	
DPH-11.2				X	X
DPH-11.3	X	X		X	X
DPH-12	X	X			
DPH-13	X	X			
DPH-14		X			
DPH-15		X			
DPH-16		X			
DPH-17			X		

X = Will use Swath (Collection Scan) LAS, Classified (Tiled) LAS, or both, depending on availability

X = Required to run test

X = Will use Swath (Collection Scan) LAS if available, otherwise Classified (Tiled) LAS

O = Optional

O = Optional for single-area density reporting, but required for multi-area (multiple boundary) reporting of individual and aggregate areas