

DPH-11 Report on Absolute Vertical Accuracy

The USGS Lidar Base Specification Version 2.1 states: "Absolute vertical accuracy of the lidar data and the derived DEM will be assessed and reported in accordance with ASPRS (2014). Vegetated and nonvegetated land cover types shall be assessed for absolute vertical accuracy.

Three absolute accuracy values shall be assessed and reported:

1. NVA for the point data
2. VVA for the point data
3. NVA for the DEM
4. VVA for the DEM

The minimum NVA and VVA requirements for all data, using the ASPRS methodology, are listed in table 4. Both the NVA and VVA required values shall be met. NVA for the point data shall be assessed by comparing check points surveyed for NVA assessment to a triangulated irregular network (TIN) constructed from ground-classified lidar points in those areas. VVA for the point data shall be assessed by comparing check points surveyed for VVA assessment to a triangulated irregular network (TIN) constructed from ground-classified lidar points in those areas. NVA and VVA for the DEM are assessed by comparing check points to the final bare-earth surface. The minimum required thresholds for absolute and relative accuracy may be increased by the USGS–NGP when any of the following conditions are met:

- A demonstrable, substantial, and prohibitive increase in cost is needed to obtain this accuracy, which is often the case in heavily vegetated project areas.
- An alternate specification is needed to conform to previously contracted phases of a single larger overall collection effort such as for multiyear statewide collections
- The USGS–NGP agrees that the use of an alternate specification is reasonable and in the best interest of all stakeholders."

Table 4. Absolute vertical accuracy for light detection and ranging data and digital elevation models.

[QL, quality level, $RMSE_z$, root mean square error in the z direction; NVA, nonvegetated vertical accuracy; VVA, vegetated vertical accuracy; m, meter; \leq , less than or equal to]

Quality level	$RMSE_z$ (nonvegetated) (m)	NVA at the 95-percent confidence level (m)	VVA at the 95th percentile (m)
QL0	≤ 0.050	≤ 0.098	≤ 0.15
QL1	≤ 0.100	≤ 0.196	≤ 0.30
QL2	≤ 0.100	≤ 0.196	≤ 0.30
QL3	≤ 0.200	≤ 0.392	≤ 0.60

The purpose of this section is to report on the absolute vertical accuracy of the lidar data and DEMs generated from it by testing for NVA (Nonvegetated Vertical Accuracy) and VVA (Vegetated Vertical Accuracy) against surveyed ground check points.

DPH-11 Report on Absolute Vertical Accuracy - continued

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Units: Meter (/Feet)

Vertical Accuracy Class tested: 10-cm

Check Points in defined project area (DPA):	75
Check Points with Lidar Coverage	75
Check Points with Lidar Coverage (NVA)	41
Check Points with Lidar Coverage (VVA)	34
Average Z Error (NVA)	-0.014/-0.046
Maximum Z Error (NVA)	0.078/0.256
Median Z Error (NVA)	-0.017/-0.057
Minimum Z Error (NVA)	-0.085/-0.278
Standard deviation of Vertical Error (NVA)	0.041/0.134
Skewness of Vertical Error (NVA)	0.116
Kurtosis of Vertical Error (NVA)	-0.308
Non-vegetated Vertical Accuracy (NVA) RMSE(z) ¹	0.043/0.140 PASS
Non-vegetated Vertical Accuracy (NVA) at the 95% Confidence Level +/- ¹	0.083/0.274 PASS
FGDC/NSSDA Vertical Accuracy at the 95% Confidence Level +/-	0.083/0.274
Non-vegetated Vertical Accuracy (NVA) RMSE(z) (DEM) ²	0.045/0.147 PASS
Non-vegetated Vertical Accuracy (NVA) at the 95% Confidence Level (DEM) +/- ²	0.088/0.287 PASS
Vegetated Vertical Accuracy (VVA) at the 95th Percentile (TIN) +/- ¹	0.114/0.376 PASS
Vegetated Vertical Accuracy (VVA) at the 95th Percentile (DEM) +/- ²	0.116/0.381 PASS

This data set was tested to meet ASPRS Positional Accuracy Standard for Digital Geospatial Data (2014) for a 10-cm RMSEz Vertical Accuracy Class. Actual NVA accuracy was found to be RMSEz = 4.3cm, equating to +/- 8.3cm at the 95% confidence level. Actual VVA accuracy was found to be +/- 11.6cm at the 95th percentile.

¹ This value is calculated from TIN-based testing of the lidar point cloud data.

² This value is calculated from RAM-based grid testing of the lidar data. The grid cells are sized according to the Quality Level selected, and are defined in the USGS NGP Lidar Base Specification Version 2.1 (Table 6).

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The purpose of this section is to report the results of measuring the lidar point cloud data against surveyed ground NVA (nonvegetated vertical accuracy) check points. All XY coordinates and Z values reported are in the selected data units.

NVA (lidar data)

ID	X	Y	Coverage	Z	Z From Lidar	Z Error	Minimum Z	Median Z	Maximum Z	Intensity	Scan Angle Rank	Returns	Description	Comments
2001	322299.427	3929761.787	Yes	1889.172	1889.184	0.012	1889.157	1889.191	1889.193	7149	609	1,1,1		
2002	313933.178	3956597.163	Yes	1771.737	1771.675	-0.062	1771.646	1771.684	1771.686	6197	1902	1,1,1		
2002A	312141.016	3960621.807	Yes	1821.832	1821.836	0.004	1821.819	1821.83	1821.842	6795	266	1,1,1		
2003	304825.795	3947754.754	Yes	1808.636	1808.572	-0.064	1808.558	1808.57	1808.574	4581	272	1,1,1		
2004	311937.841	3936063.775	Yes	1621.843	1621.814	-0.029	1621.806	1621.811	1621.818	9060	436	1,1,1		
2005	320022.219	3916692.663	Yes	1570.542	1570.522	-0.020	1570.511	1570.562	1570.573	4151	884	1,1,1		
2006	331297.363	3931101.208	Yes	1762.914	1762.938	0.024	1762.926	1762.938	1762.941	7479	1044	1,1,1		
2007	316243.21	3940512.426	Yes	1984.937	1984.89	-0.047	1984.845	1984.866	1984.901	6405	-2480	1,1,1		
2007A	314237.54	3943378.951	Yes	1702.512	1702.455	-0.057	1702.43	1702.455	1702.462	7882	210	1,1,1		
2008	307217.159	3935394.379	Yes	1614.367	1614.371	0.004	1614.344	1614.356	1614.384	8289	182	1,1,1		
2009	305810.377	3926178.506	Yes	1600.41	1600.43	0.020	1600.405	1600.441	1600.449	8341	-382	1,1,1		
2009A	308888.313	3927315.665	Yes	1588.191	1588.165	-0.026	1588.163	1588.166	1588.167	7247	677	1,1,1		
2010	331307.376	3947374.211	Yes	1892.467	1892.387	-0.080	1892.37	1892.392	1892.397	6888	-1111	1,1,1		
2012	334398.103	3925821.457	Yes	1789.712	1789.717	0.005	1789.702	1789.712	1789.723	7419	151	1,1,1		
2013	326128.888	3940592.937	Yes	1852.336	1852.275	-0.061	1852.271	1852.272	1852.283	8264	-1487	1,1,1		
2014	313703.128	3925686.885	Yes	1583.29	1583.357	0.067	1583.354	1583.357	1583.358	7034	-1	1,1,1		
2015	310455.415	3970095.376	Yes	2004.329	2004.244	-0.085	2004.228	2004.249	2004.254	6968	-920	1,1,1		
2016	300541.254	3940308.558	Yes	1711.111	1711.18	0.069	1711.171	1711.176	1711.184	8864	1841	1,1,1		
2017	308850.783	3961993.448	Yes	1892.607	1892.53	-0.077	1892.524	1892.528	1892.551	6322	699	1,1,1		
2018	316677.977	3915981.706	Yes	1621.322	1621.348	0.026	1621.315	1621.36	1621.383	9193	289	1,1,1		
2019	315491.176	3920500.084	Yes	1571.324	1571.301	-0.023	1571.301	1571.305	1571.316	6686	1221	1,1,1		
2020	321368.613	3934915.763	Yes	1782.5	1782.479	-0.021	1782.473	1782.493	1782.508	8403	2214	1,1,1		
2021	307085.401	3951421.572	Yes	1964.209	1964.215	0.006	1964.209	1964.22	1964.221	4931	-830	1,1,1		
2022	313787.961	3947869.593	Yes	1696.195	1696.122	-0.073	1696.1	1696.126	1696.145	5635	1229	1,1,1		
2023	314207.849	3963868.364	Yes	1896.914	1896.897	-0.017	1896.869	1896.886	1896.918	1914	-1055	1,1,1		
2024	309863.369	3911722.509	Yes	1817.597	1817.576	-0.021	1817.573	1817.58	1817.582	6315	2177	1,1,1		
2024A	310714.708	3914849.982	Yes	1702.911	1702.989	0.078	1702.974	1702.984	1702.999	9112	-226	1,1,1		
2025	331090.649	3922452.455	Yes	1670.692	1670.684	-0.008	1670.673	1670.707	1670.737	6892	-2215	1,1,1		
2026	316819.351	3930483.518	Yes	1633.936	1633.911	-0.025	1633.902	1633.913	1633.93	7434	1339	1,1,1		
2026A	319082.186	3933056.884	Yes	1718.466	1718.489	0.023	1718.48	1718.485	1718.506	7555	1731	1,1,1		

Check Points Vertical Accuracy - continued

ID	X	Y	Coverage	Z	Z From Lidar	Z Error	Minimum Z	Median Z	Maximum Z	Intensity	Scan Angle Rank	Returns	Description	Comments
2027	325497.918	3945367.532	Yes	1964.965	1964.925	-0.040	1964.918	1964.931	1964.958	4201	301	1,1,1		
2028	339806.066	3921181.306	Yes	1869.602	1869.52	-0.082	1869.516	1869.521	1869.523	4894	-1811	1,1,1		
2029	303452.556	3930324.011	Yes	1632.948	1632.964	0.016	1632.961	1632.963	1632.97	5007	-2188	1,1,1		
2030	310038.24	3929021.477	Yes	1593.035	1593.057	0.022	1593.036	1593.056	1593.064	7656	-1609	1,1,1		
2031	324940.959	3908063.31	Yes	1568.125	1568.107	-0.018	1568.086	1568.111	1568.129	8285	-1633	1,1,1		
2031A	329841.358	3911166.474	Yes	1604.648	1604.644	-0.004	1604.64	1604.643	1604.647	3180	1271	1,1,1		
2032	303921.769	3956038.714	Yes	2072.9	2072.896	-0.004	2072.872	2072.891	2072.903	6396	-3308	1,1,1		
2033	340016.715	3921130.356	Yes	1872.548	1872.528	-0.020	1872.523	1872.525	1872.534	4608	-783	1,1,1		
2034	309584.193	3918827.981	Yes	1685.434	1685.443	0.009	1685.435	1685.439	1685.459	7706	-490	1,1,1		
2035	305076.675	3942359.853	Yes	1688.968	1688.981	0.013	1688.965	1688.973	1688.983	7734	-2210	1,1,1		
2036	337713.007	3932469.009	Yes	1906.078	1906.076	-0.002	1906.056	1906.074	1906.086	5998	118	1,1,1		

DPH-11 Report on Absolute Vertical Accuracy - continued

The purpose of this section is to report the results of measuring the lidar point cloud data against surveyed ground VVA (vegetated vertical accuracy) check points. All XY coordinates and Z values reported are in the selected data units.

VVA (lidar data)

ID	X	Y	Coverage	Z	Z From Lidar	Z Error	Minimum Z	Median Z	Maximum Z	Intensity	Scan Angle Rank	Returns	Description	Comments
3001	322273.804	3929835.574	Yes	1884.397	1884.372	-0.025	1884.342	1884.345	1884.4	7179	-1771	1,1,1		
3001A	316809.281	3930504.931	Yes	1634.327	1634.327	0.000	1634.308	1634.318	1634.347	8402	-494	1,1,1		
3002	313945.377	3956595.953	Yes	1771.852	1771.736	-0.116	1771.728	1771.788	1771.832	1589	-2723	2,2,3		
3003	311943.943	3936080.461	Yes	1622.309	1622.287	-0.022	1622.272	1622.297	1622.303	9834	-1621	1,1,1		
3004	320039.967	3916690.312	Yes	1570.075	1570.127	0.052	1570.106	1570.138	1570.157	7056	-890	1,1,1		
3005	331317.512	3931112.664	Yes	1763.379	1763.364	-0.015	1763.337	1763.363	1763.37	5421	-1914	1,1,2		
3006	316257.563	3940520.529	Yes	1983.628	1983.578	-0.050	1983.555	1983.568	1983.602	6961	1607	1,1,1		
3006A	315241.144	3943780.52	Yes	1749.588	1749.659	0.071	1749.515	1749.671	1749.681	3570	2327	4,3,3		
3007	307174.958	3935378.24	Yes	1614.245	1614.281	0.036	1614.273	1614.282	1614.296	6871	236	1,1,1		
3008	331306.114	3947351.623	Yes	1891.835	1891.875	0.040	1891.874	1891.876	1891.882	6108	1965	2,1,1		
3010	334358.282	3925794.75	Yes	1788.685	1788.628	-0.057	1788.617	1788.643	1788.767	4632	-1885	2,1,2		
3011	326114.987	3940586.608	Yes	1852.706	1852.557	-0.149	1852.489	1852.628	1852.654	2468	-427	1,2,1		
3012	310417.62	3970312.392	Yes	2011.733	2011.62	-0.113	2011.604	2011.664	2011.666	5200	1224	3,1,1		
3013	300533.986	3940271.82	Yes	1710.782	1710.861	0.079	1710.819	1710.901	1710.913	7232	60	1,1,1		
3014	308845.519	3962015.63	Yes	1892.565	1892.539	-0.026	1892.518	1892.54	1892.553	4824	-701	1,1,1		
3015	315487.812	3920488.026	Yes	1570.919	1570.963	0.044	1570.951	1570.965	1570.966	7931	-480	1,1,1		
3015A	313717.664	3925731.385	Yes	1582.312	1582.299	-0.013	1582.295	1582.305	1582.376	7681	-2129	1,1,1		
3016	321456.873	3934998.326	Yes	1784.081	1784.118	0.037	1784.073	1784.118	1784.148	4443	-292	1,2,2		
3017	307111.341	3951399.856	Yes	1962.994	1962.962	-0.032	1962.949	1962.956	1962.974	6564	686	1,1,1		
3017A	304843.687	3947751.103	Yes	1806.972	1806.946	-0.026	1806.928	1806.941	1806.982	5193	-1323	2,1,2		
3018	313737.451	3947862.438	Yes	1696.544	1696.515	-0.029	1696.486	1696.527	1696.537	6304	395	1,1,1		
3019	314224.168	3963862.758	Yes	1895.234	1895.169	-0.065	1895.155	1895.162	1895.178	4860	261	1,1,1		
3020	309861.215	3911730.32	Yes	1817.483	1817.393	-0.090	1817.38	1817.389	1817.406	6807	-1868	1,1,1		
3020A	310733.859	3914844.593	Yes	1703.061	1703.16	0.099	1703.14	1703.166	1703.178	6424	1498	1,1,1		
3021	331081.805	3922446.761	Yes	1670.984	1671.054	0.070	1671.026	1671.071	1671.081	5599	2089	1,1,2		
3022	325515.451	3945349.726	Yes	1965.733	1965.699	-0.034	1965.667	1965.706	1965.713	2436	-1275	2,2,1		
3023	303437.763	3930303.811	Yes	1632.361	1632.419	0.058	1632.416	1632.419	1632.422	6755	324	1,1,1		
3024	310064.741	3929039.696	Yes	1593.221	1593.254	0.033	1593.227	1593.256	1593.258	6850	-1734	1,1,1		
3025	324921.647	3908188.778	Yes	1569.284	1569.321	0.037	1569.313	1569.328	1569.338	7184	1564	1,1,1		
3025A	329831.961	3911173.466	Yes	1604.707	1604.722	0.015	1604.693	1604.728	1604.738	6561	-975	1,1,1		

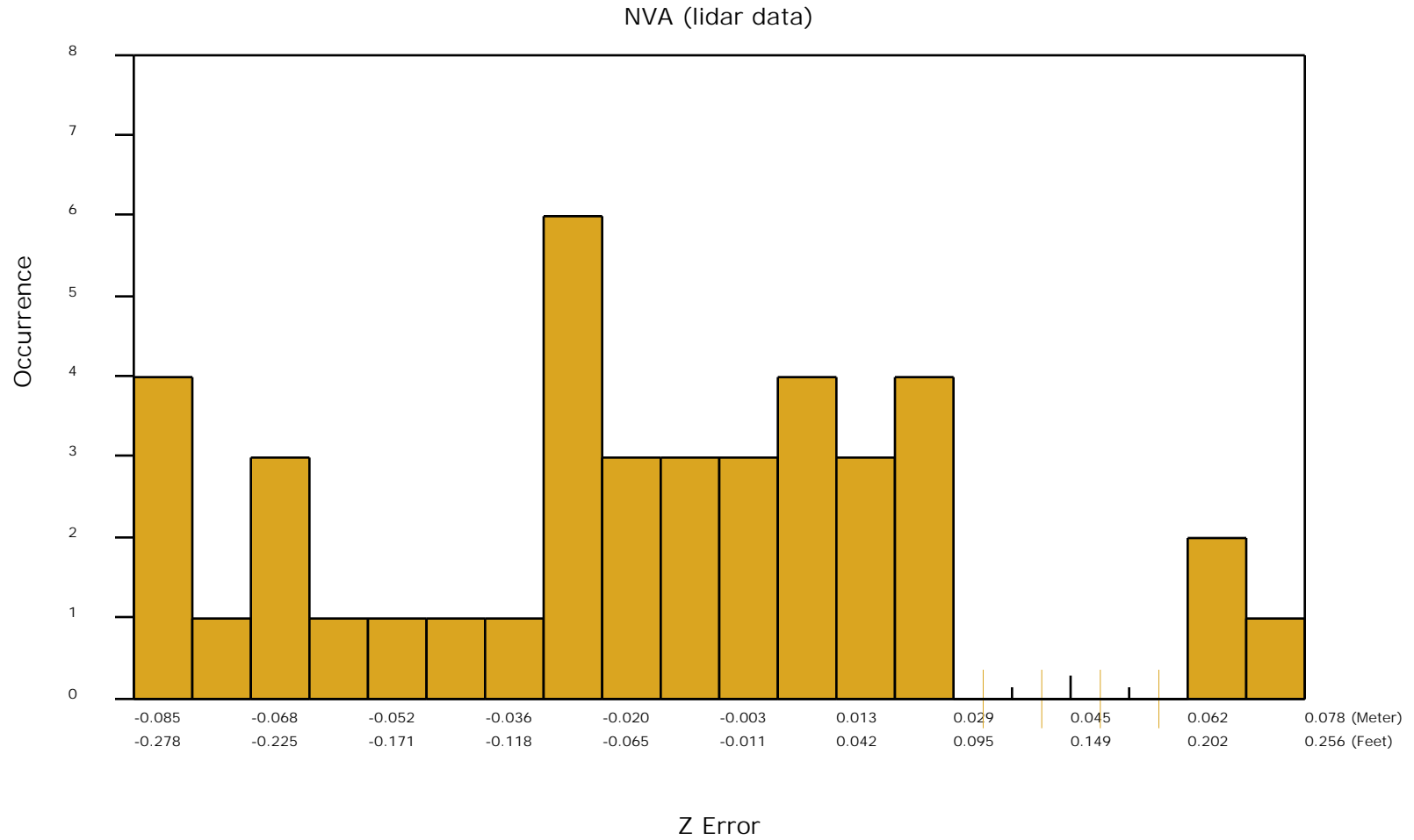
Check Points Vertical Accuracy - continued

ID	X	Y	Coverage	Z	Z From Lidar	Z Error	Minimum Z	Median Z	Maximum Z	Intensity	Scan Angle Rank	Returns	Description	Comments
3027	340016.251	3921146.575	Yes	1872.835	1872.82	-0.015	1872.812	1872.818	1872.836	5989	-956	1,1,1		
3028	309593.639	3918823.482	Yes	1685.172	1685.184	0.012	1685.174	1685.182	1685.186	6782	539	2,1,1		
3029	305099.956	3942332.353	Yes	1688.659	1688.682	0.023	1688.665	1688.676	1688.685	7818	-2104	1,1,1		
3030	337681.281	3932485.753	Yes	1906.304	1906.278	-0.026	1906.271	1906.285	1906.304	7423	-1007	1,1,1		

DPH-11 Report on Absolute Vertical Accuracy - continued

The purpose of this section is to show a frequency distribution chart of the non-vegetated vertical accuracy (NVA) of the lidar point cloud data measured against surveyed ground check points.

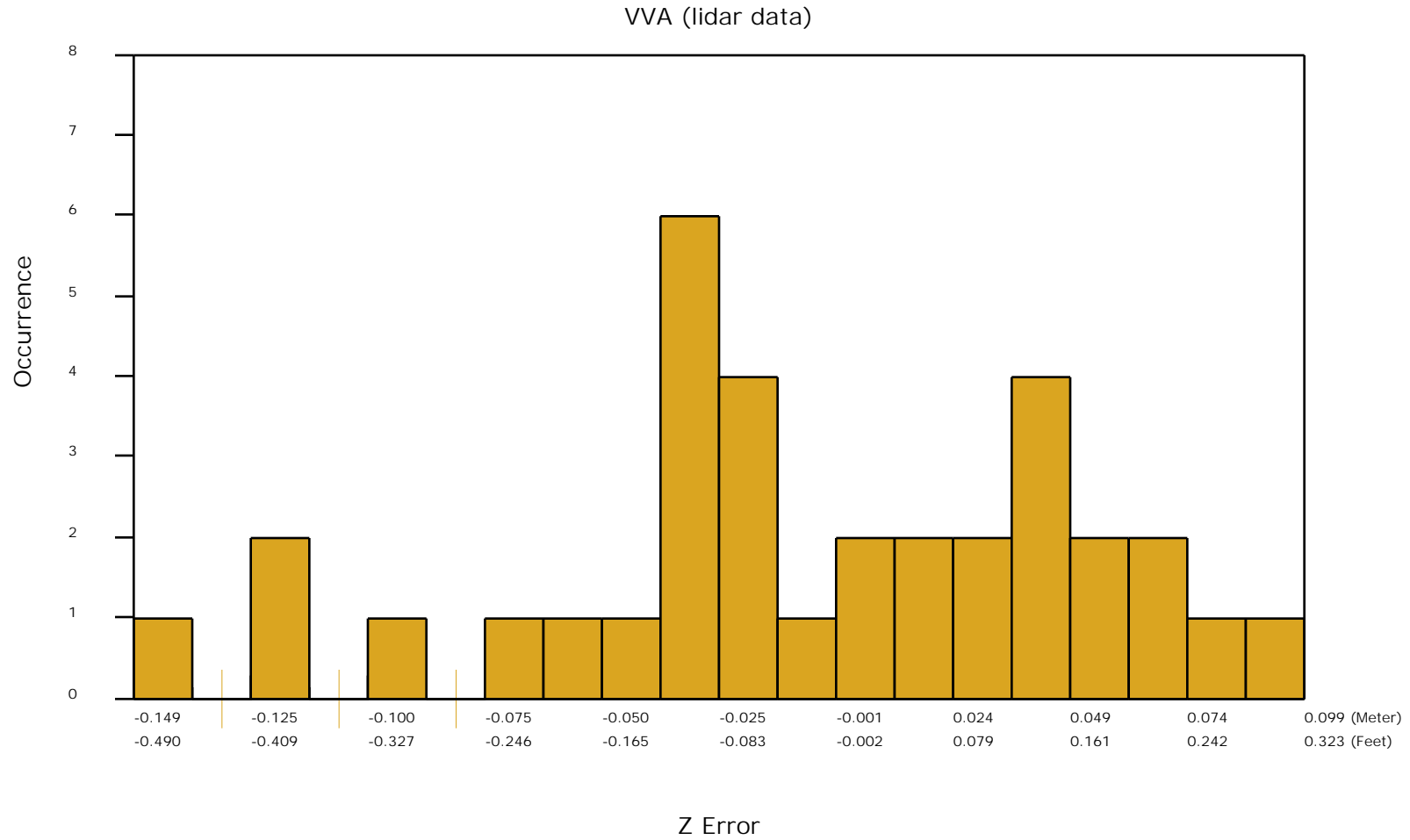
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DPH-11 Report on Absolute Vertical Accuracy - continued

The purpose of this section is to show a frequency distribution chart of the vegetated vertical accuracy (VVA) of the lidar point cloud data measured against surveyed ground check points.

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DPH-11 Report on Absolute Vertical Accuracy - continued

The purpose of this section is to report the results of measuring the DEM data against surveyed ground NVA (nonvegetated vertical accuracy) check points. All XY coordinates and Z values reported are in the selected data units.

NVA (DEM)

ID	X	Y	Coverage	Z	Z From Lidar	Z Error	Description	Comments
2001	322299.427	3929761.787	Yes	1889.172	1889.157	-0.015		
2002	313933.178	3956597.163	Yes	1771.737	1771.658	-0.079		
2002A	312141.016	3960621.807	Yes	1821.832	1821.827	-0.005		
2003	304825.795	3947754.754	Yes	1808.636	1808.570	-0.066		
2004	311937.841	3936063.775	Yes	1621.843	1621.813	-0.030		
2005	320022.219	3916692.663	Yes	1570.542	1570.526	-0.016		
2006	331297.363	3931101.208	Yes	1762.914	1762.935	0.021		
2007	316243.21	3940512.426	Yes	1984.937	1984.909	-0.028		
2007A	314237.54	3943378.951	Yes	1702.512	1702.446	-0.066		
2008	307217.159	3935394.379	Yes	1614.367	1614.367	0.000		
2009	305810.377	3926178.506	Yes	1600.41	1600.443	0.033		
2009A	308888.313	3927315.665	Yes	1588.191	1588.158	-0.033		
2010	331307.376	3947374.211	Yes	1892.467	1892.390	-0.077		
2012	334398.103	3925821.457	Yes	1789.712	1789.711	-0.001		
2013	326128.888	3940592.937	Yes	1852.336	1852.284	-0.052		
2014	313703.128	3925686.885	Yes	1583.29	1583.353	0.063		
2015	310455.415	3970095.376	Yes	2004.329	2004.219	-0.110		
2016	300541.254	3940308.558	Yes	1711.111	1711.187	0.076		
2017	308850.783	3961993.448	Yes	1892.607	1892.533	-0.074		
2018	316677.977	3915981.706	Yes	1621.322	1621.385	0.063		
2019	315491.176	3920500.084	Yes	1571.324	1571.316	-0.008		
2020	321368.613	3934915.763	Yes	1782.5	1782.489	-0.011		
2021	307085.401	3951421.572	Yes	1964.209	1964.205	-0.004		
2022	313787.961	3947869.593	Yes	1696.195	1696.111	-0.084		
2023	314207.849	3963868.364	Yes	1896.914	1896.882	-0.032		
2024	309863.369	3911722.509	Yes	1817.597	1817.582	-0.015		
2024A	310714.708	3914849.982	Yes	1702.911	1702.979	0.068		
2025	331090.649	3922452.455	Yes	1670.692	1670.684	-0.008		
2026	316819.351	3930483.518	Yes	1633.936	1633.906	-0.030		
2026A	319082.186	3933056.884	Yes	1718.466	1718.483	0.017		

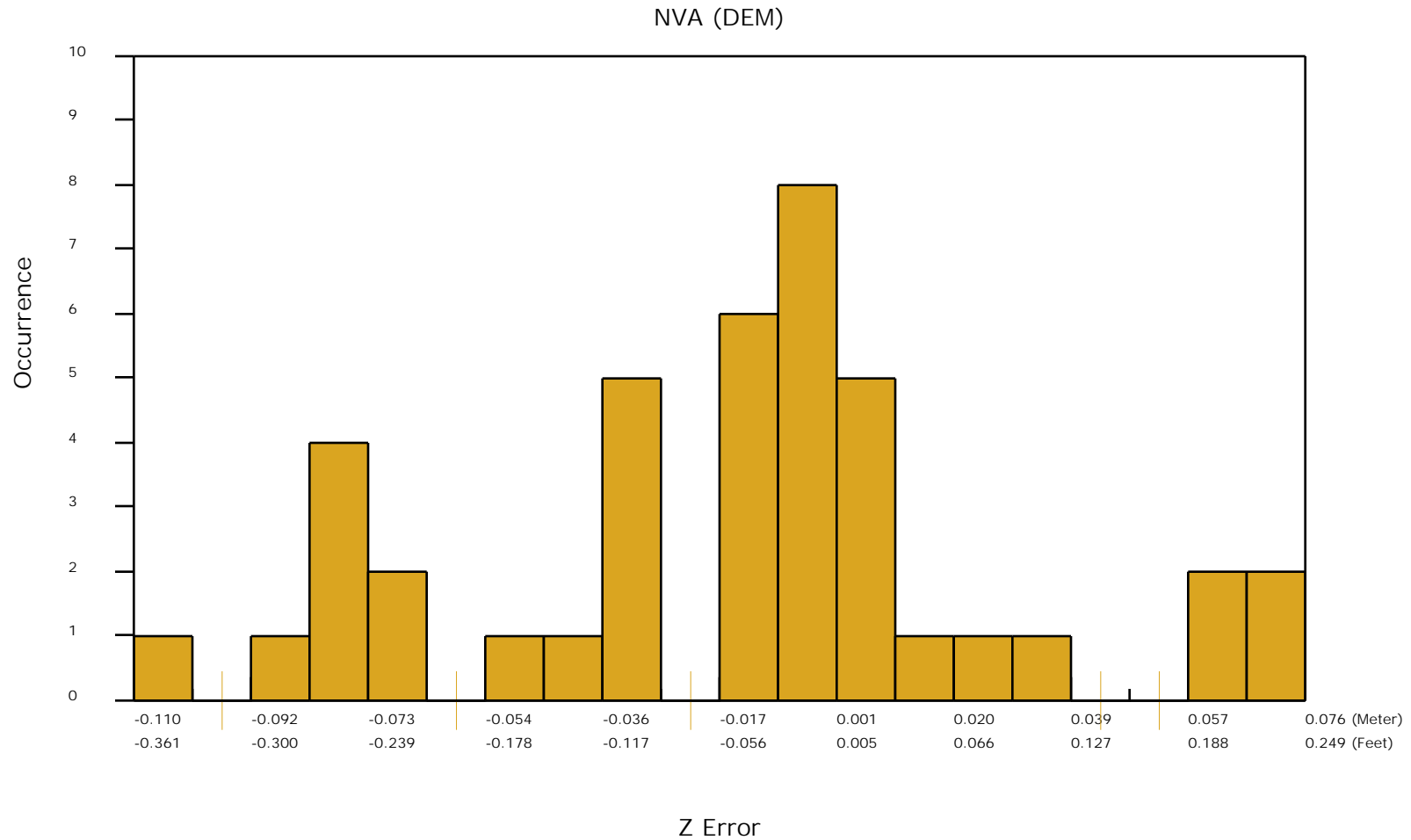
Check Points Vertical Accuracy - continued

ID	X	Y	Coverage	Z	Z From Lidar	Z Error	Description	Comments
2027	325497.918	3945367.532	Yes	1964.965	1964.923	-0.042		
2028	339806.066	3921181.306	Yes	1869.602	1869.527	-0.075		
2029	303452.556	3930324.011	Yes	1632.948	1632.958	0.010		
2030	310038.24	3929021.477	Yes	1593.035	1593.039	0.004		
2031	324940.959	3908063.31	Yes	1568.125	1568.128	0.003		
2031A	329841.358	3911166.474	Yes	1604.648	1604.646	-0.002		
2032	303921.769	3956038.714	Yes	2072.9	2072.893	-0.007		
2033	340016.715	3921130.356	Yes	1872.548	1872.541	-0.007		
2034	309584.193	3918827.981	Yes	1685.434	1685.443	0.009		
2035	305076.675	3942359.853	Yes	1688.968	1688.970	0.002		
2036	337713.007	3932469.009	Yes	1906.078	1906.070	-0.008		

DPH-11 Report on Absolute Vertical Accuracy - continued

The purpose of this section is to show a frequency distribution chart of the non-vegetated vertical accuracy (NVA) of the DEM data measured against surveyed ground check points.

[Data Source - D:\00_Aubrey\Client_Tiles_Final](#)



DPH-11 Report on Absolute Vertical Accuracy - continued

The purpose of this section is to report the results of measuring the DEM data against surveyed ground VVA (vegetated vertical accuracy) check points. All XY coordinates and Z values reported are in the selected data units.

VVA (DEM)								
ID	X	Y	Coverage	Z	Z From Lidar	Z Error	Description	Comments
3001	322273.804	3929835.574	Yes	1884.397	1884.361	-0.036		
3001A	316809.281	3930504.931	Yes	1634.327	1634.326	-0.001		
3002	313945.377	3956595.953	Yes	1771.852	1771.741	-0.111		
3003	311943.943	3936080.461	Yes	1622.309	1622.271	-0.038		
3004	320039.967	3916690.312	Yes	1570.075	1570.111	0.036		
3005	331317.512	3931112.664	Yes	1763.379	1763.359	-0.020		
3006	316257.563	3940520.529	Yes	1983.628	1983.622	-0.006		
3006A	315241.144	3943780.52	Yes	1749.588	1749.621	0.033		
3007	307174.958	3935378.24	Yes	1614.245	1614.289	0.044		
3008	331306.114	3947351.623	Yes	1891.835	1891.873	0.038		
3010	334358.282	3925794.75	Yes	1788.685	1788.635	-0.050		
3011	326114.987	3940586.608	Yes	1852.706	1852.564	-0.142		
3012	310417.62	3970312.392	Yes	2011.733	2011.618	-0.115		
3013	300533.986	3940271.82	Yes	1710.782	1710.901	0.119		
3014	308845.519	3962015.63	Yes	1892.565	1892.518	-0.047		
3015	315487.812	3920488.026	Yes	1570.919	1570.977	0.058		
3015A	313717.664	3925731.385	Yes	1582.312	1582.292	-0.020		
3016	321456.873	3934998.326	Yes	1784.081	1784.100	0.019		
3017	307111.341	3951399.856	Yes	1962.994	1962.958	-0.036		
3017A	304843.687	3947751.103	Yes	1806.972	1806.968	-0.004		
3018	313737.451	3947862.438	Yes	1696.544	1696.516	-0.028		
3019	314224.168	3963862.758	Yes	1895.234	1895.167	-0.067		
3020	309861.215	3911730.32	Yes	1817.483	1817.383	-0.100		
3020A	310733.859	3914844.593	Yes	1703.061	1703.148	0.087		
3021	331081.805	3922446.761	Yes	1670.984	1671.049	0.065		
3022	325515.451	3945349.726	Yes	1965.733	1965.682	-0.051		
3023	303437.763	3930303.811	Yes	1632.361	1632.420	0.059		
3024	310064.741	3929039.696	Yes	1593.221	1593.250	0.029		
3025	324921.647	3908188.778	Yes	1569.284	1569.324	0.040		
3025A	329831.961	3911173.466	Yes	1604.707	1604.700	-0.007		

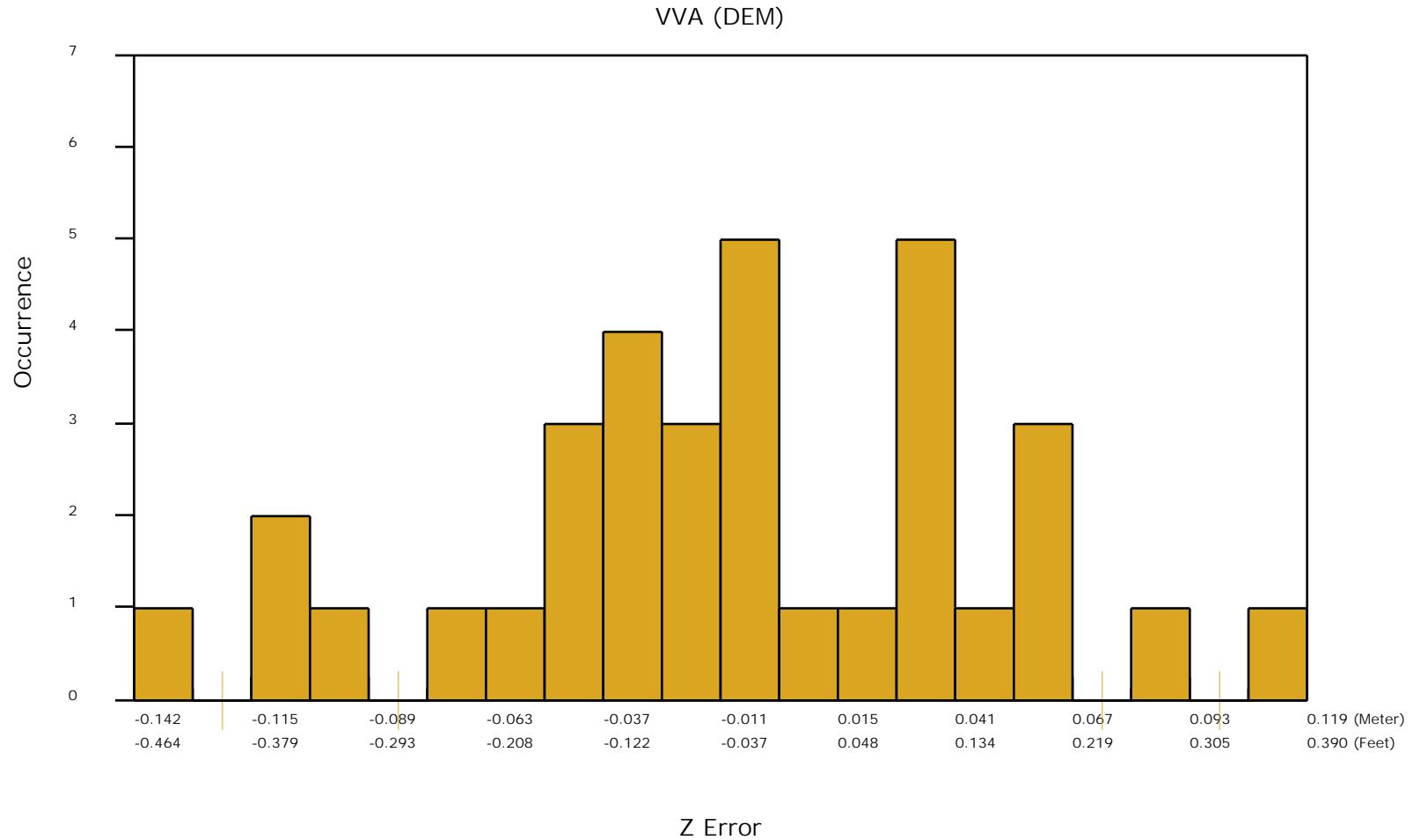
Check Points Vertical Accuracy - continued

ID	X	Y	Coverage	Z	Z From Lidar	Z Error	Description	Comments
3027	340016.251	3921146.575	Yes	1872.835	1872.832	-0.003		
3028	309593.639	3918823.482	Yes	1685.172	1685.153	-0.019		
3029	305099.956	3942332.353	Yes	1688.659	1688.667	0.008		
3030	337681.281	3932485.753	Yes	1906.304	1906.278	-0.026		

DPH-11 Report on Absolute Vertical Accuracy - continued

The purpose of this section is to show a frequency distribution chart of the vegetated vertical accuracy (VVA) of the DEM data measured against surveyed ground check points.

[Data Source - D:\00_Aubrey\Client_Tiles_Final](#)

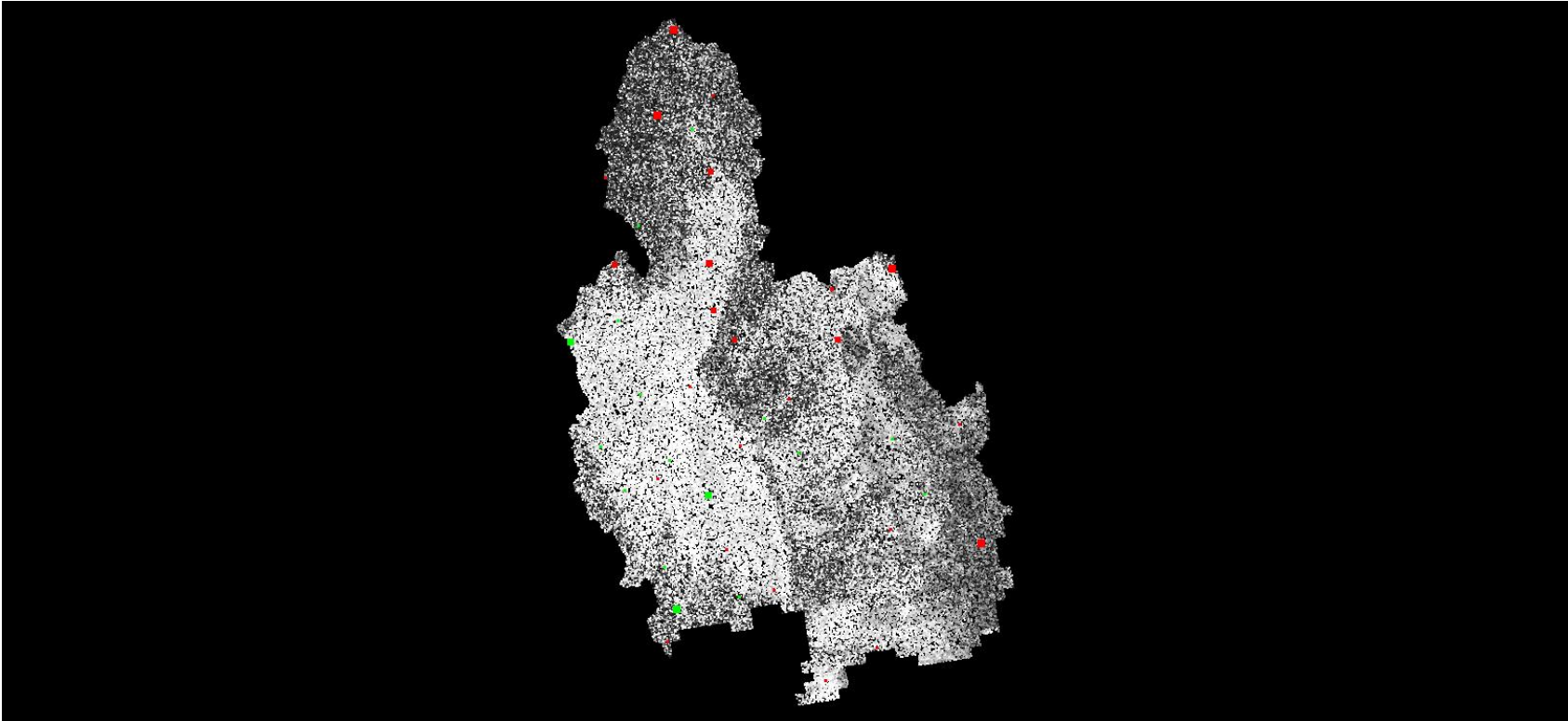


DPH-11 Report on Absolute Vertical Accuracy - continued

The purpose of this section is to show a graphic of lidar data points colored by intensity with NVA check points rendered "thematically" showing the green and red squares sized by Z error.

[Data Source - D:\00_Aubrey\Client_Tiles_Final](#)

[Result Path - D:\00_Aubrey\Aubrey_QC\DPH_11\ColorByIntensity_CheckPoints_NVA.jpg](#)



■ Green represents where the lidar surface is above the check point (positive elevation error).

■ Red represents where the lidar surface is below the check point (negative elevation error).

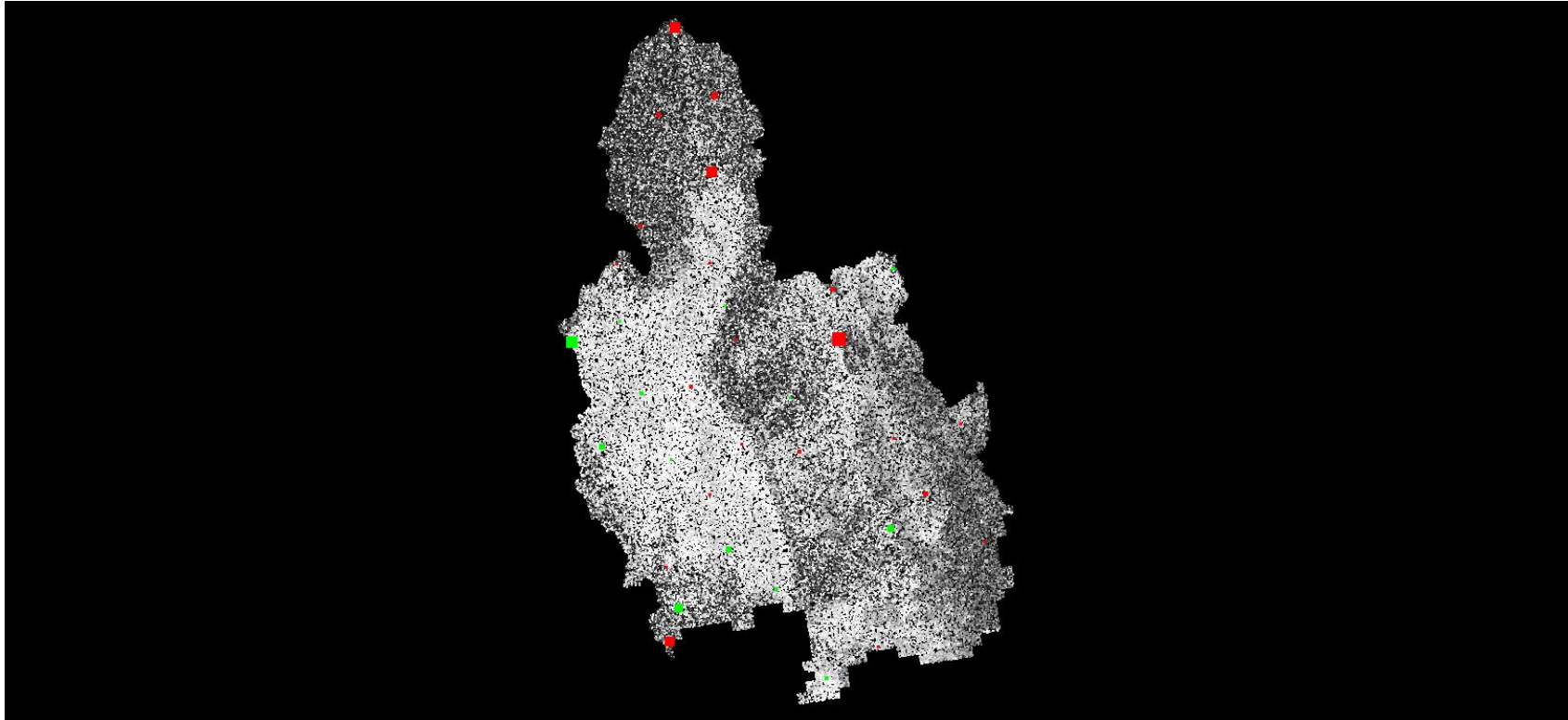
The size of the square symbol represents the absolute value magnitude of error.

DPH-11 Report on Absolute Vertical Accuracy - continued

The purpose of this section is to show a graphic of lidar data points colored by intensity with VVA check points rendered "thematically" showing the green and red squares sized by Z error.

[Data Source - D:\00_Aubrey\Client_Tiles_Final](#)

[Result Path - D:\00_Aubrey\Aubrey_QC\DPH_11\ColorByIntensity_CheckPoints_VVA.jpg](#)



■ Green represents where a DEM of the lidar surface is above the check point (positive elevation error).

■ Red represents where a DEM of the lidar surface is below the check point (negative elevation error).

The size of the square symbol represents the absolute value magnitude of error.