



## Region 5: CVA Test result for Saline, IL

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### Summary

In FEMA-Region 5 the Saline area encompasses 2179 square miles. A LiDAR data acquisition was ordered for a 2' equivalent contour accuracy, which equals the highest specification level. The area was flown by Woolpert in 2010. CompassData performed the quality control of the collected and processed LiDAR data with a consolidated vertical accuracy (CVA) assessment. The planning, data collection, data processing, and data testing were successfully accomplished by the STARR members.

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### Final Test Results

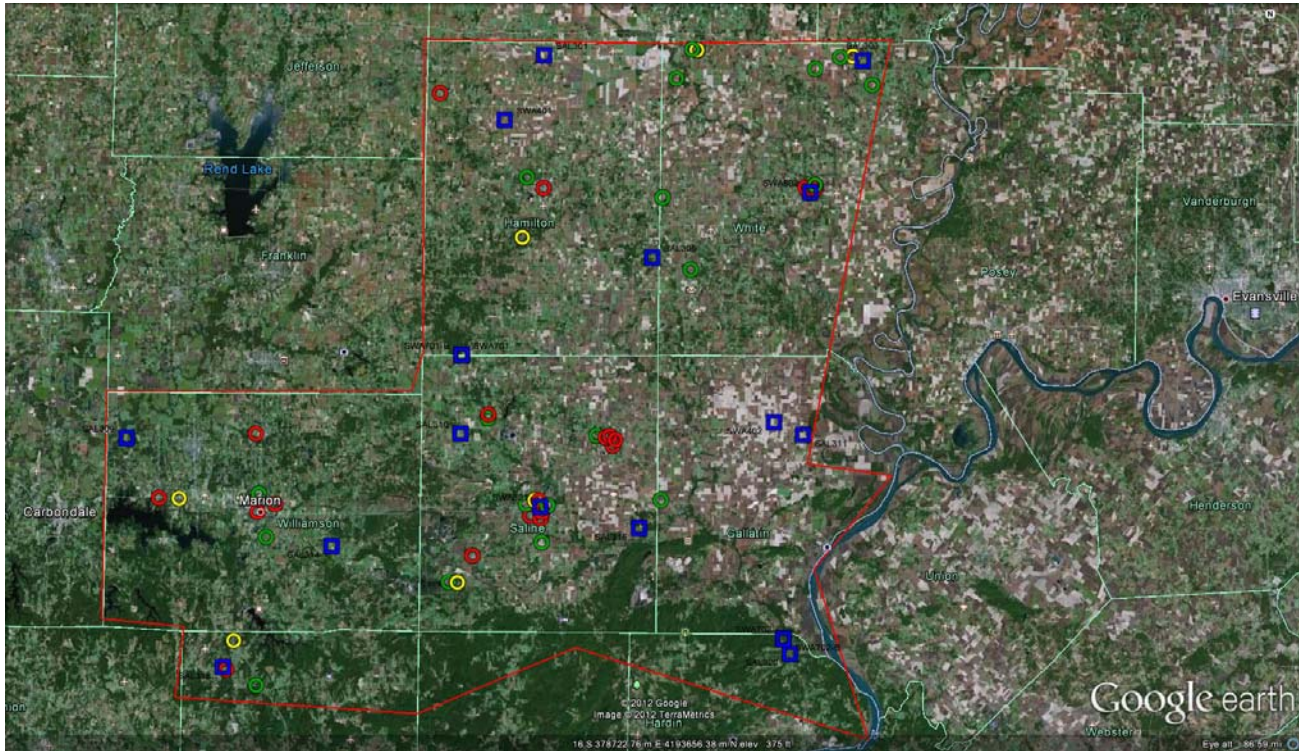
**The vertical accuracy requirements based on flood risk and terrain slope are met with 17 cm for CVA testing. The mandatory requirement for the highest specification for vertical accuracy, 95% percentile is for CVA < 36.3.**

### CVA Test

Tested 17 cm consolidated vertical accuracy at 95% confidence level in open terrain using  $RMSE_{(z)} \times 1.9600$ . The Root Mean Square Error for the elevation differences between GPS control points and LiDAR points is 9.4 cm calculated with 51 CVA points.







## Distribution of Testing Points



### Region 5, Saline, IL

Legend:

-  Formerly tested FVA points (Land class open)
-  CVA points in taller grass and crops
-  CVA points in forest
-  CVA points in urban environment



### CVA Test Details

<b>CVA</b>	<b>Type</b>	<b>Northing</b>	<b>Easting</b>	<b>MSL(GPS)</b>	<b>MSL(LiDAR)</b>	<b>Δ Z</b>	<b>Δ Z<sup>2</sup></b>
SAL421	G/C	4178131.01	365306.91	109.50	109.43	<b>0.07</b>	0.00
SAL422	G/C	4173570.02	364554.68	113.35	113.35	<b>0.00</b>	0.00
SAL423	G/C	4168752.16	354075.48	124.36	124.51	<b>-0.15</b>	0.02
SAL424	G/C	4156210.57	328899.70	231.45	231.47	<b>-0.02</b>	0.00
SAL425	G/C	4174548.77	330329.20	132.46	132.63	<b>-0.17</b>	0.03
SAL426	G/C	4179861.48	329491.23	143.30	143.35	<b>-0.05</b>	0.00
SAL427	G/C	4186675.53	371493.48	125.87	125.86	<b>0.01</b>	0.00
SAL428	G/C	4188959.88	358036.31	120.25	120.28	<b>-0.03</b>	0.00
SAL429	G/C	4218607.10	363148.34	155.01	154.97	<b>0.04</b>	0.00
SAL430	G/C	4215960.29	379956.47	143.37	143.47	<b>-0.10</b>	0.01
SAL431	G/C	4229631.37	406086.16	123.11	123.22	<b>-0.11</b>	0.01
SAL432	G/C	4233065.81	402167.52	115.75	115.80	<b>-0.05</b>	0.00
SAL433	G/C	4231673.46	399054.73	116.95	117.06	<b>-0.11</b>	0.01
SAL434	G/C	4234128.47	384419.77	125.21	125.22	<b>-0.01</b>	0.00
SAL435	G/C	4230644.39	381809.67	114.38	114.53	<b>-0.15</b>	0.02
SAL436	G/C	4207047.43	383353.44	125.27	125.32	<b>-0.05</b>	0.00
SAL437	G/C	4178561.66	363743.65	111.50	111.54	<b>-0.04</b>	0.00
SAL438	G/C	4178646.10	379382.77	114.78	114.81	<b>-0.03</b>	0.00
SAL439	G/C	4217309.25	398881.12	113.68	113.88	<b>-0.20</b>	0.04
SAL440	G/C	4217263.17	398905.87	113.62	113.78	<b>-0.16</b>	0.03
SAL721	F	4168739.46	354052.69	123.90	124.03	<b>-0.13</b>	0.02
SAL722	F	4168736.37	354000.88	123.49	123.65	<b>-0.16</b>	0.03
SAL723	F	4161789.40	326163.59	199.08	199.06	<b>0.02</b>	0.00
SAL724	F	4179395.37	319537.84	139.28	139.28	<b>0.00</b>	0.00
SAL726	F	4211211.16	362494.64	162.97	163.18	<b>-0.21</b>	0.05
SAL727	F	4211198.68	362528.36	162.71	162.89	<b>-0.18</b>	0.03
SAL728	F	4233191.27	403746.41	117.42	117.56	<b>-0.14</b>	0.02
SAL729	F	4234129.67	384378.75	125.83	125.90	<b>-0.08</b>	0.01
SAL730	F	4234120.04	384400.85	125.72	125.75	<b>-0.03</b>	0.00
SAL731	F	4178771.12	363777.05	110.29	110.31	<b>-0.02</b>	0.00
SAL732	F	4178758.13	363768.12	110.09	110.23	<b>-0.14</b>	0.02
SAL821	U	4177299.26	364651.56	110.96	110.95	<b>0.01</b>	0.00
SAL822	U	4172015.46	355939.90	119.58	119.68	<b>-0.11</b>	0.01
SAL823	U	4158196.94	325201.37	227.27	227.32	<b>-0.05</b>	0.00
SAL824	U	4177685.36	329265.12	130.92	130.92	<b>0.00</b>	0.00
SAL825	U	4179504.94	317033.73	133.39	133.30	<b>0.09</b>	0.01
SAL826	U	4178627.90	331493.40	135.14	135.19	<b>-0.05</b>	0.00



SAL827	U	4187308.88	329189.26	122.37	122.46	<b>-0.09</b>	0.01
SAL828	U	4189400.88	358083.43	125.47	125.43	<b>0.04</b>	0.00
SAL829	U	4186455.88	372597.02	134.66	134.80	<b>-0.14</b>	0.02
SAL830	U	4217259.50	365193.20	145.17	145.22	<b>-0.06</b>	0.00
SAL831	U	4229109.12	352471.43	156.62	156.68	<b>-0.06</b>	0.00
SAL832	U	4176545.51	364463.77	110.90	110.90	<b>0.00</b>	0.00
SAL833	U	4176869.74	363188.73	113.45	113.52	<b>-0.07</b>	0.01
SAL834	U	4178721.10	364273.05	110.64	110.70	<b>-0.06</b>	0.00
SAL835	U	4185447.36	373479.43	116.20	116.14	<b>0.06</b>	0.00
SAL836	U	4186130.93	373800.55	120.83	120.80	<b>0.03</b>	0.00
SAL837	U	4186604.68	373127.70	125.53	125.51	<b>0.02</b>	0.00
SAL838	U	4216386.51	398081.48	119.42	119.50	<b>-0.08</b>	0.01
SAL839	U	4216993.82	397683.55	123.10	123.13	<b>-0.03</b>	0.00
SAL840	U	4216892.62	398940.91	114.38	114.46	<b>-0.08</b>	0.01

<b><math>\Delta Z</math></b>			
Mean	<b>0.07</b>	RMSE:	<b>0.094</b>
$\Delta Z$ Min	<b>-0.21</b>	*1.96	<b>0.184</b>
$\Delta Z$ Max	<b>0.09</b>	95%- Percentile	<b>0.17</b>

*UTM Zone 16 North, NAD83, NAVD88*

*MSL = NAVD88/Geoid09*

*All units in meters*

Land classifications tested are grass and crops (G/C), forest (F) and urban (U).

**Note:**

All 51 of the CVA points passed. 100% of the points are within the 36.3 cm confidence level. The CVA test is passed.