

La Crosse County WROC – 3DEP
La Crosse County
LiDAR 2017

Vertical Accuracy Report

January 2018

Project Information

Prepared By: Ayres Associates

Project Name: Wisconsin WROC - 3DEP | La Crosse County LIDAR 2017

Sensor Info: Leica ALS70 SN 7161

Required Nominal Pulse Spacing: 0.7

Contractor Name: Ayres Associates

Units: US Survey Feet

Date of Acquisition: Start: 3/10/2017 Finish: 3/11/2017

Report Information

This report documents the absolute vertical accuracy of the LiDAR data collected for the La Crosse County, WI, QL2 LiDAR project. Independent ground control checkpoints were collected by land surveyors using Trimble GNSS equipment connected to WISCORS base stations. The checkpoints were collected in March 2017. The checkpoints were collected under various land cover types that are predominant in the County. Each land cover type falls into either the Non-vegetated Vertical Accuracy (NVA) or the Vegetated Vertical Accuracy (VVA) group. For this project, 52 NVA points and 25 VVA points were collected throughout the County.

The following report shows the final statistics for the NVA checkpoints compared against the raw swath point cloud and the bare earth DEM, and the VVA statistics compared against the DEM. Statistics are reported for LAS and DEM by NVA and VVA categories and by land cover type.

Vertical Accuracy Specifications per USGS QL2 level:

LAS:

NVA equates to 10 cm RMSEz, or 19.6 cm (0.64 ft) at the 95% confidence level.

DEM:

NVA equates to 10 cm RMSEz, or 19.6 cm (0.64 ft) at the 95% confidence level.

VVA equates to 29.4 cm (0.96 ft) at the 95th percentile.

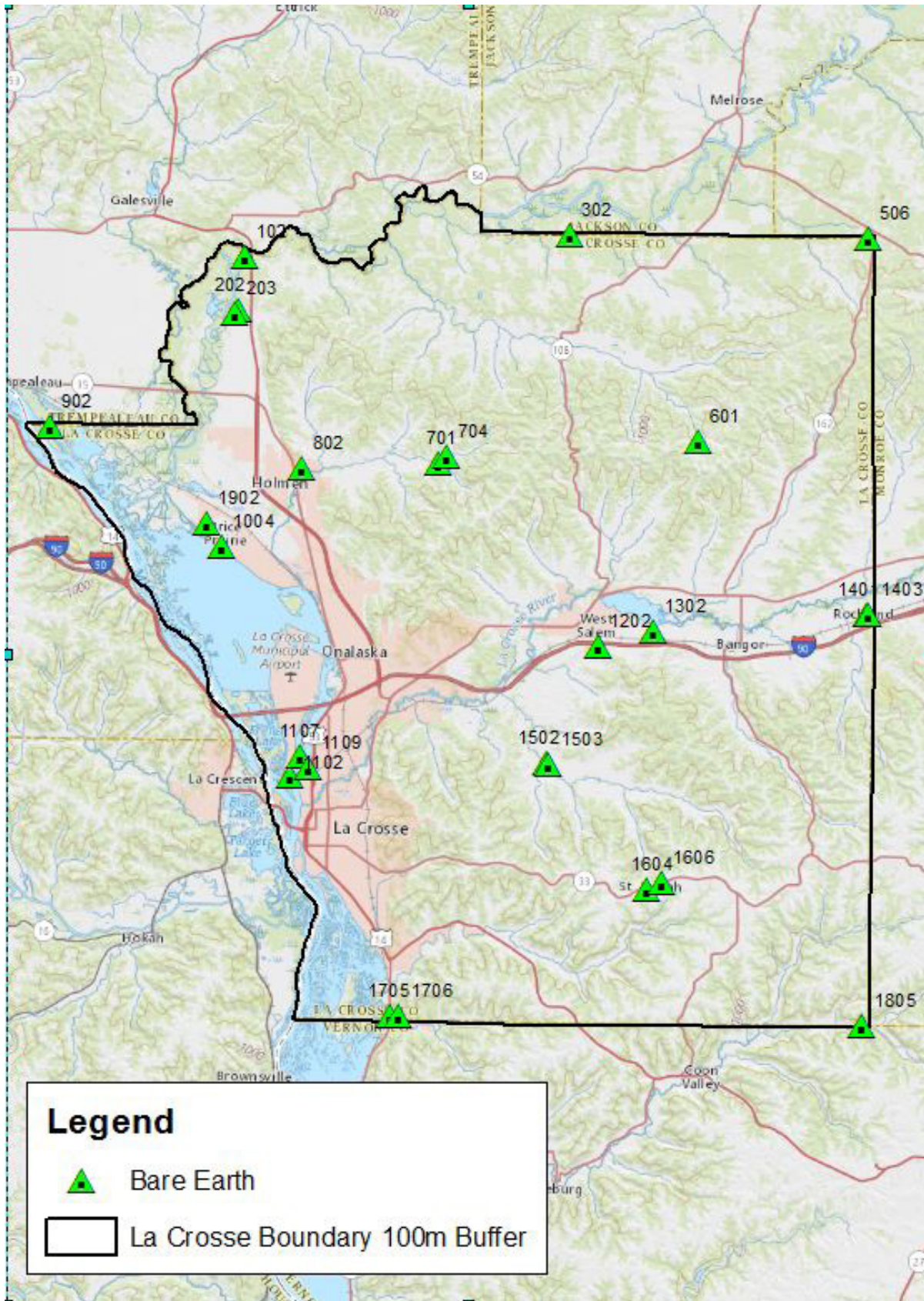
The NVA and VVA statistics for this project are within the above stated specifications.

LiDAR Accuracy Assessment Summary

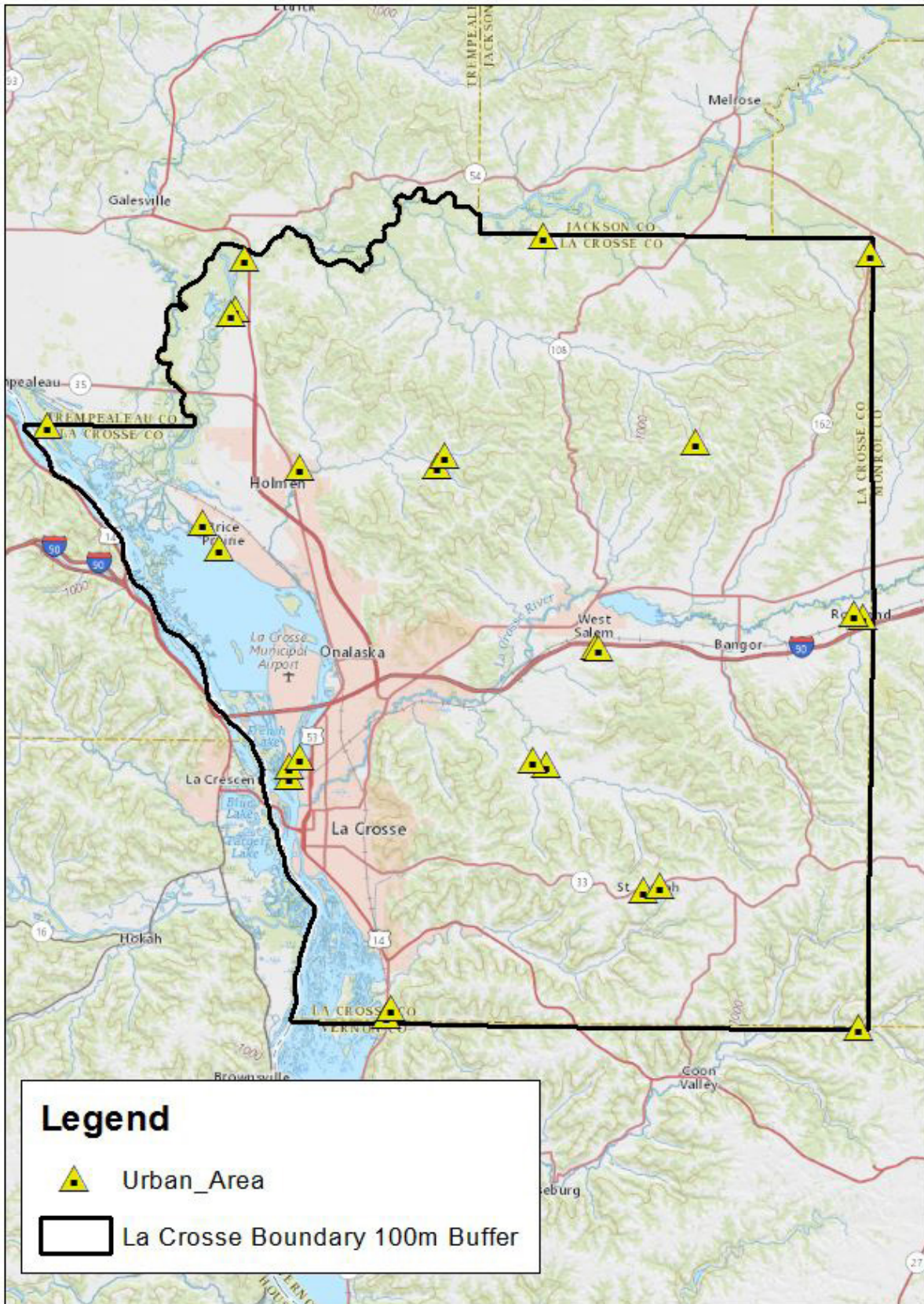
LAND COVER TYPE	# OF POINTS	NVA	VVA
LAS		95% confidence level	N/A
1. Bare Earth	26	0.388	N/A
2. Urban Areas	26	0.177	N/A
3. Tall Weeds	12	N/A	N/A
5. Forest	12	N/A	N/A
7. Swamp	1	N/A	N/A
TOTAL	77	0.301	N/A
DEM		95% confidence level	95th percentile
1. Bare Earth	26	0.422	N/A
2. Urban Areas	26	0.207	N/A
3. Tall Weeds	12	N/A	0.813
5. Forest	12	N/A	0.438
7. Swamp	1	N/A	0.676
TOTAL	77	0.332	0.676

Units: US Survey Feet

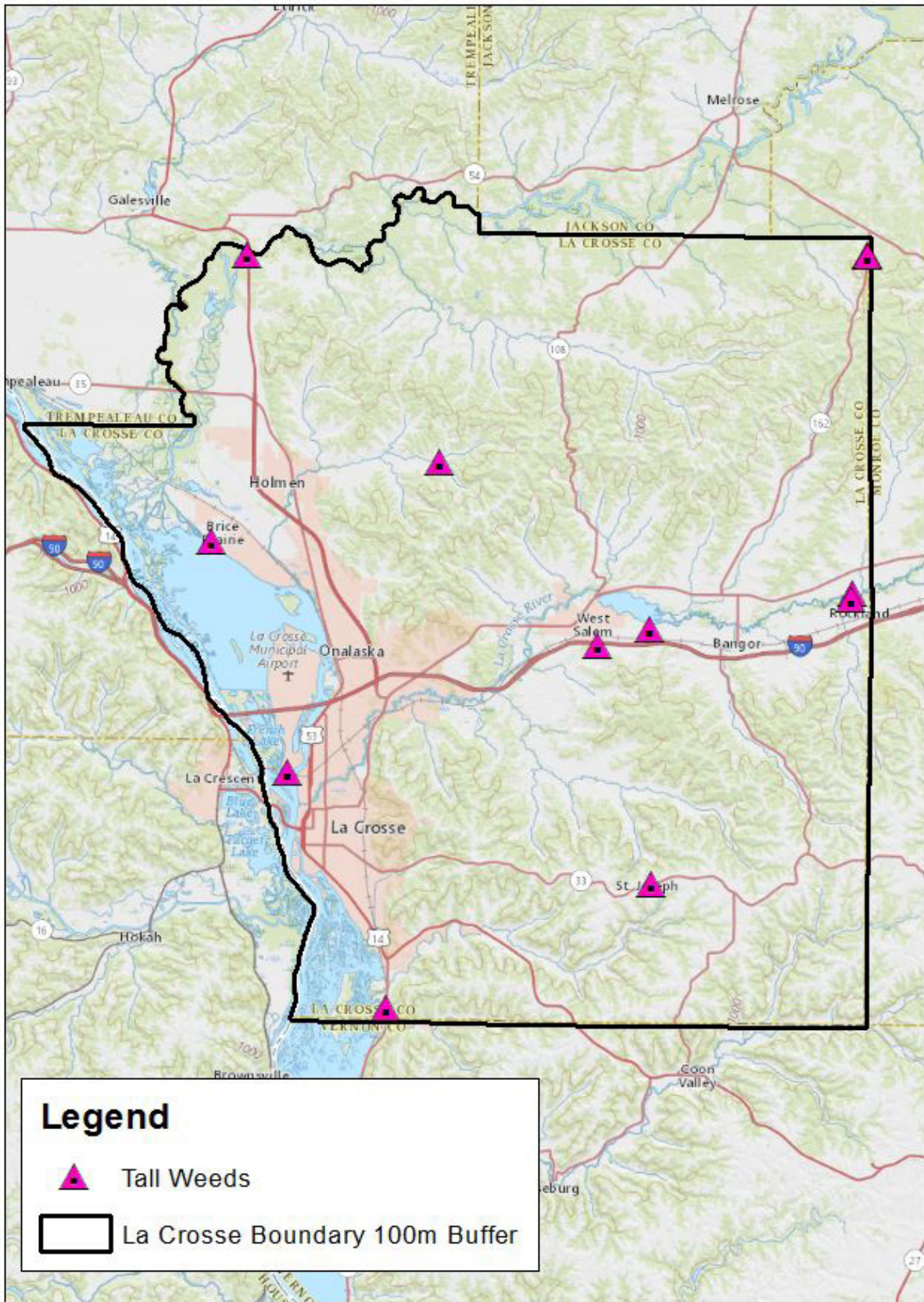
Map of NVA Checkpoint Locations - 1. Bare Earth



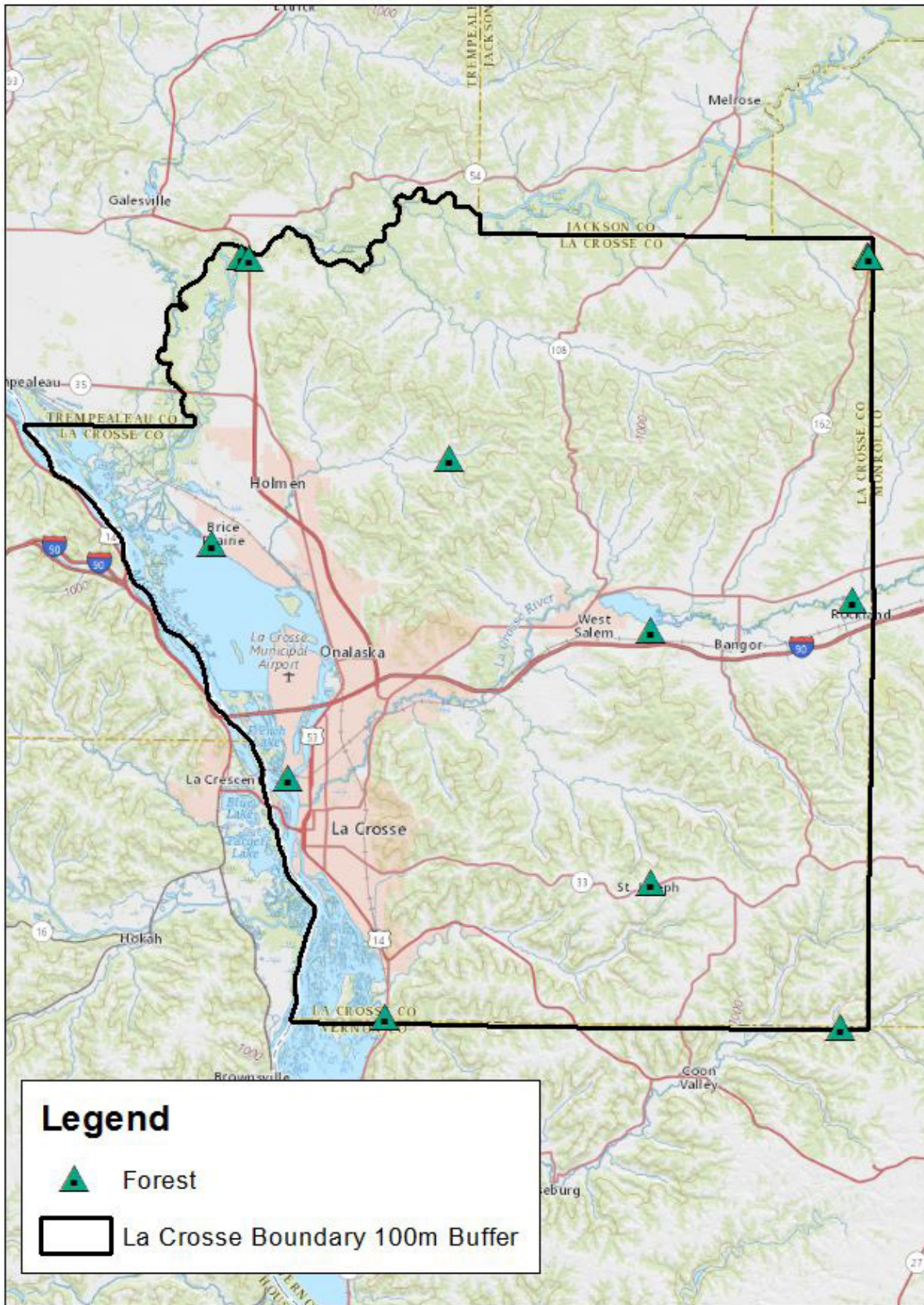
Map of NVA Checkpoint Locations - 2. Urban Area



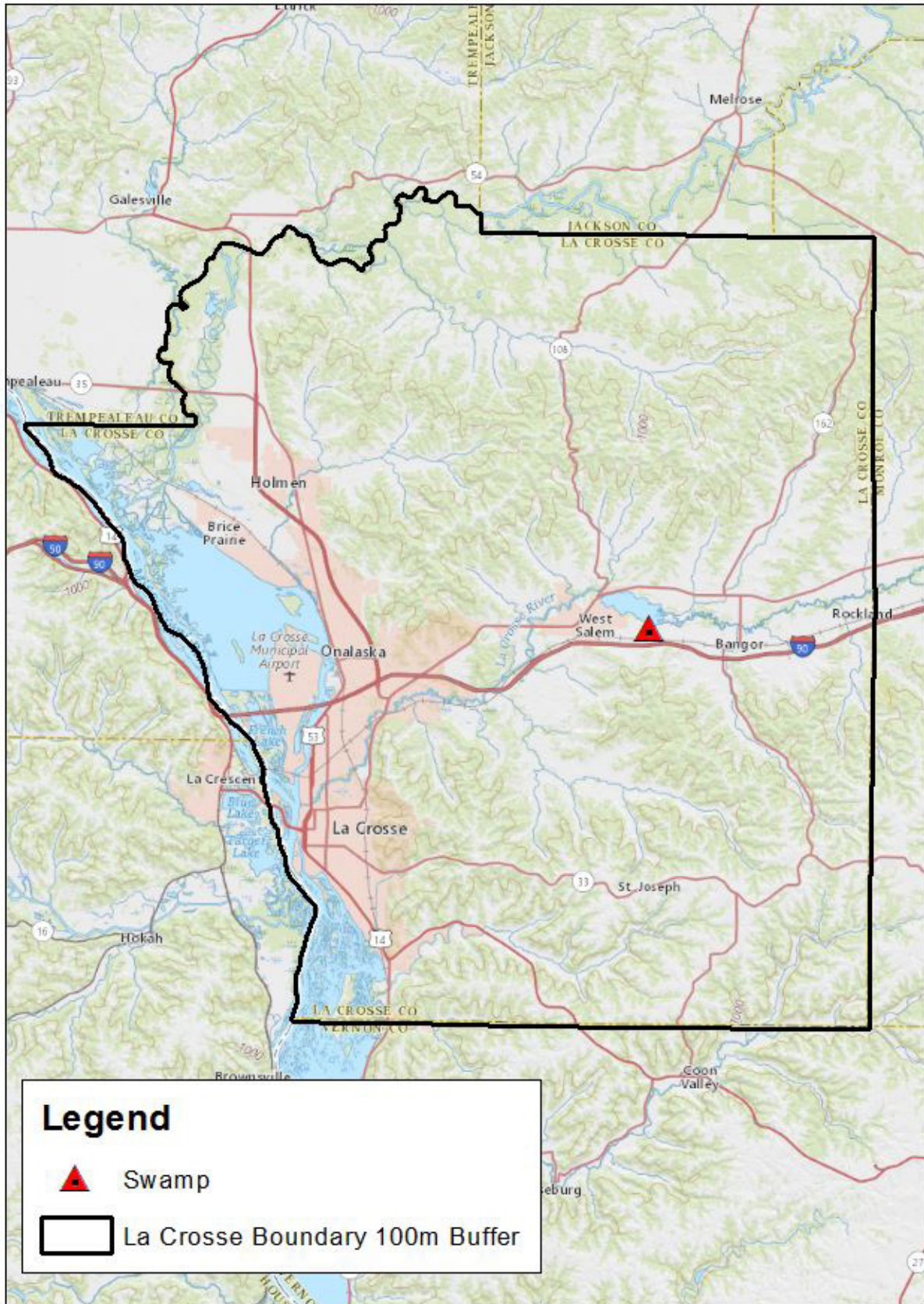
Map of NVA Checkpoint Locations - 3. Tall Weeds



Map of NVA Checkpoint Locations - 5. Forested Areas



Map of NVA Checkpoint Locations - 7. Swamp



LAS

NONVEGETATED VERTICAL ACCURACY – OVERALL	
Land Cover Type	1. Bare Earth, 2 Urban Areas
Minimum DZ	-0.171
Maximum DZ	0.408
Mean DZ	0.07
Mean Magnitude DZ	0.343
Number Observations	52
Standard Deviation DZ	0.138
RMSE Z	0.154
95% Confidence Level Z	0.301
Units	US Survey Feet

DEM

NONVEGETATED VERTICAL ACCURACY – OVERALL	
Land Cover Type	1. Bare Earth, 2. Urban Area
Minimum DZ	-0.149
Maximum DZ	0.43
Mean DZ	0.077
Mean Magnitude DZ	0.363
Number Observations	52
Standard Deviation DZ	0.152
RMSE Z	0.17
95% Confidence Level Z	0.332
Units	US Survey Feet

DEM (Continued)

VEGETATED VERTICAL ACCURACY	
Land Cover Type	3. Tall Weeds
Minimum DZ	0.01
Maximum DZ	0.883
Mean DZ	0.404
Mean Magnitude DZ	0.635
Number Observations	12
Standard Deviation DZ	0.254
RMSE Z	0.471
95th Percentile	0.813
Units	US Survey Feet

DEM (Continued)

VEGETATED VERTICAL ACCURACY	
Land Cover Type	5. Forest
Minimum DZ	0.038
Maximum DZ	0.452
Mean DZ	0.209
Mean Magnitude DZ	0.457
Number Observations	12
Standard Deviation DZ	0.126
RMSE Z	0.242
95th Percentile	0.438
Units	US Survey Feet

DEM (Continued)

VEGETATED VERTICAL ACCURACY	
Land Cover Type	7. Swamp
Minimum DZ	0.676
Maximum DZ	0.676
Mean DZ	0.676
Mean Magnitude DZ	0.822
Number Observations	1
Standard Deviation DZ	NaN
RMSE Z	0.676
95th Percentile	0.676
Units	US Survey Feet

Point: 101 Urban Area

Survey X: 1628367.72, Survey Y: 753224.98, Z1: 707.21, Z DEM: 707.32, Z LAS: 707.3, LC Type: 2, ΔZ DEM: 0.11, ΔZ LAS: 0.09



North



South



East



West



Point: 102 Bare Earth

Survey X: 1628137.54, Survey Y: 753243.89, Z1: 703.52, Z DEM: 703.9, Z LAS: 703.91, LC Type: 1, ΔZ DEM: 0.38, ΔZ LAS: 0.39



North



South



East



West

Point: 103 Forested

Survey X: 1628030.97, Survey Y: 753367.88, Z1: 694.55, Z DEM: 695, Z LAS: 694.96, LC Type: 5, ΔZ DEM: 0.45, ΔZ LAS: 0.41



North



South



East



West

Point: 104 Tall Weeds

Survey X: 1629001.09, Survey Y: 753697.81, Z1: 694.88, Z DEM: 695.25, Z LAS: 695.37, LC Type: 3, ΔZ DEM: 0.37, ΔZ LAS: 0.49



North



South



East



West



Point: 105 Forested

Survey X: 1629245, Survey Y: 753262.23, Z1: 723.58, Z DEM: 723.67, Z LAS: 723.74, LC Type: 5, ΔZ DEM: 0.09, ΔZ LAS: 0.16



North



South



East



West



Point: 201 Urban Area

Survey X: 1627027.65, Survey Y: 745205.33, Z1: 722.57, Z DEM: 722.61, Z LAS: 722.59, LC Type: 2, ΔZ DEM: 0.04, ΔZ LAS: 0.02



North



South



East



West

Point: 202 Bare Earth

Survey X: 1627142.02, Survey Y: 744965.68, Z1: 722.85, Z DEM: 723.23, Z LAS: 723.11, LC Type: 1, ΔZ DEM: 0.38, ΔZ LAS: 0.26



North



South



East



West



Point: 203 Bare Earth

Survey X: 1626443.49, Survey Y: 744424.03, Z1: 720.3, Z DEM: 720.41, Z LAS: 720.46, LC Type: 1, ΔZ DEM: 0.11, ΔZ LAS: 0.16



North



South



East



West



Point: 204 Urban Area

Survey X: 1626370.43, Survey Y: 744432.18, Z1: 720.23, Z DEM: 720.19, Z LAS: 720.31, LC Type: 2, ΔZ DEM: -0.04, ΔZ LAS: 0.08



North



South



East



West



Point: 301 Urban Area

Survey X: 1676205.04, Survey Y: 756789, Z1: 769.45, Z DEM: 769.43, Z LAS: 769.36, LC Type: 2, ΔZ DEM: -0.02, ΔZ LAS: -0.09



North



South



Point: 302 Bare Earth

Survey X: 1680175.8, Survey Y: 756785.06, Z1: 804.3, Z DEM: 804.37, Z LAS: 804.34, LC Type: 1, ΔZ DEM: 0.07, ΔZ LAS: 0.04



North



South



East



West



Point: 501 Urban Area

Survey X: 1728526.5, Survey Y: 753877.75, Z1: 909.24, Z DEM: 909.25, Z LAS: 909.23, LC Type: 2, ΔZ DEM: 0.01, ΔZ LAS: -0.01



North



South



East



West



Point: 502 Tall Weeds

Survey X: 1728384.98, Survey Y: 753679.82, Z1: 910.44, Z DEM: 910.61, Z LAS: 910.69, LC Type: 3, AZ DEM: 0.17, AZ LAS: 0.25



North



South



East



West

Point: 503 Forested

Survey X: 1728164.2, Survey Y: 753791.05, Z1: 908.78, Z DEM: 908.97, Z LAS: 909.05, LC Type: 5, ΔZ DEM: 0.19, ΔZ LAS: 0.27



North



South



East



West

Point: 504 Forested

Survey X: 1728275.78, Survey Y: 753348.45, Z1: 910.83, Z DEM: 911.01, Z LAS: 911.05, LC Type: 5, ΔZ DEM: 0.18, ΔZ LAS: 0.22



North



South



East



West



Point: 505 Tall Weeds

Survey X: 1728500.26, Survey Y: 753513.52, Z1: 905.26, Z DEM: 905.65, Z LAS: 905.67, LC Type: 3, ΔZ DEM: 0.39, ΔZ LAS: 0.41



North



South



East



West



Point: 506 Bare Earth

Survey X: 1727856.82, Survey Y: 756284.9, Z1: 879.97, Z DEM: 880.13, Z LAS: 880.17, LC Type: 1, ΔZ DEM: 0.16, ΔZ LAS: 0.2



North



South



East



West



Point: 601 Bare Earth

Survey X: 1700605.49, Survey Y: 723909.99, Z1: 918.82, Z DEM: 919.01, Z LAS: 919.04, LC Type: 1, AZ DEM: 0.19, AZ LAS: 0.22



North



South



East



West



Point: 602 Urban Area

Survey X: 1700753.14, Survey Y: 723933.13, Z1: 920.11, Z DEM: 920, Z LAS: 919.94, LC Type: 2, ΔZ DEM: -0.11, ΔZ LAS: -0.17



North



South



East



West



Point: 701 Bare Earth

Survey X: 1659061.08, Survey Y: 720242.33, Z1: 777.67, Z DEM: 777.56, Z LAS: 777.61, LC Type: 1, ΔZ DEM: -0.11, ΔZ LAS: -0.06



North



South



East



West



Point: 702 Urban Area

Survey X: 1659386.11, Survey Y: 719915.04, Z1: 798.5, Z DEM: 798.36, Z LAS: 798.48, LC Type: 2, ΔZ DEM: -0.14, ΔZ LAS: -0.02



North



South



East



West



Point: 703 Tall Weeds

Survey X: 1659815.13, Survey Y: 720597.98, Z1: 767.81, Z DEM: 768.21, Z LAS: 768.26, LC Type: 3, ΔZ DEM: 0.4, ΔZ LAS: 0.45



North



South



East



West



Point: 704 Bare Earth

Survey X: 1660403.81, Survey Y: 721464.72, Z1: 782.14, Z DEM: 782.57, Z LAS: 782.55, LC Type: 1, ΔZ DEM: 0.43, ΔZ LAS: 0.41



North



South



East



West



Point: 705 Urban Area

Survey X: 1660434.74, Survey Y: 721581.13, Z1: 787.69, Z DEM: 787.78, Z LAS: 787.77, LC Type: 2, ΔZ DEM: 0.09, ΔZ LAS: 0.08



North



South



East



West



Point: 706 Forested

Survey X: 1661284.26, Survey Y: 721160.11, Z1: 795.93, Z DEM: 796.04, Z LAS: 796.16, LC Type: 5, ΔZ DEM: 0.11, ΔZ LAS: 0.23



North



South



East



West



Point: 801 Urban Area

Survey X: 1637212.78, Survey Y: 719648, Z1: 722.9, Z DEM: 722.96, Z LAS: 722.97, LC Type: 2, ΔZ DEM: 0.06, ΔZ LAS: 0.07



North



South



East



West



Point: 802 Bare Earth

Survey X: 1637123.56, Survey Y: 719501.83, Z1: 717.44, Z DEM: 717.74, Z LAS: 717.69, LC Type: 1, ΔZ DEM: 0.3, ΔZ LAS: 0.25



North



South



East



West



Point: 901 Urban Area

Survey X: 1596867.5, Survey Y: 726345.58, Z1: 644.52, Z DEM: 644.62, Z LAS: 644.68, LC Type: 2, ΔZ DEM: 0.1, ΔZ LAS: 0.16



North



South



East



West



Point: 902 Bare Earth

Survey X: 1596907.06, Survey Y: 726309.15, Z1: 644.91, Z DEM: 645.11, Z LAS: 645, LC Type: 1, ΔZ DEM: 0.2, ΔZ LAS: 0.09



North



South



East



West



Point: 1001 Forested

Survey X: 1623294.69, Survey Y: 707662.45, Z1: 659.23, Z DEM: 659.49, Z LAS: 659.56, LC Type: 5, ΔZ DEM: 0.26, ΔZ LAS: 0.33



North



South



East



West



Point: 1002 Tall Weeds

Survey X: 1623204.55, Survey Y: 707712.94, Z1: 659.4, Z DEM: 659.63, Z LAS: 659.63, LC Type: 3, ΔZ DEM: 0.23, ΔZ LAS: 0.23



North



South



East



West

Point: 1003 Urban Area

Survey X: 1624339.81, Survey Y: 706805.44, Z1: 659.67, Z DEM: 659.8, Z LAS: 659.73, LC Type: 2, ΔZ DEM: 0.13, ΔZ LAS: 0.06



North



South



East



West

Point: 1004 Bare Earth

Survey X: 1624340.34, Survey Y: 706946.33, Z1: 657.93, Z DEM: 658.22, Z LAS: 658.21, LC Type: 1, AZ DEM: 0.29, AZ LAS: 0.28



North



South



East



West



Point: 1101 Urban Area

Survey X: 1635545.21, Survey Y: 670181.42, Z1: 650.99, Z DEM: 651.09, Z LAS: 651.06, LC Type: 2, ΔZ DEM: 0.1, ΔZ LAS: 0.07



North



South



East



West



Point: 1102 Bare Earth

Survey X: 1635371.45, Survey Y: 670307.08, Z1: 643.33, Z DEM: 643.54, Z LAS: 643.55, LC Type: 1, ΔZ DEM: 0.21, ΔZ LAS: 0.22



North



South



East



West



Point: 1103 Forested

Survey X: 1635463.86, Survey Y: 670075.24, Z1: 637.39, Z DEM: 637.54, Z LAS: 637.57, LC Type: 5, ΔZ DEM: 0.15, ΔZ LAS: 0.18



North



South



East



West



Point: 1105 Tall Weeds

Survey X: 1635496.38, Survey Y: 670839.94, Z1: 646.09, Z DEM: 646.33, Z LAS: 646.33, LC Type: 3, ΔZ DEM: 0.24, ΔZ LAS: 0.24



North



South



East



West



Point: 1106 Urban Area

Survey X: 1635554.32, Survey Y: 671945.07, Z1: 644.95, Z DEM: 645.24, Z LAS: 645.1, LC Type: 2, AZ DEM: 0.29, AZ LAS: 0.15



North



South



East



West



Point: 1107 Bare Earth

Survey X: 1636980.11, Survey Y: 673357.73, Z1: 644.8, Z DEM: 644.98, Z LAS: 644.9, LC Type: 1, ΔZ DEM: 0.18, ΔZ LAS: 0.1



North



South



East



West



Point: 1108 Urban Area

Survey X: 1637406.85, Survey Y: 673417.01, Z1: 642.36, Z DEM: 642.38, Z LAS: 642.36, LC Type: 2, ΔZ DEM: 0.02, ΔZ LAS: 0



North



South



East



West



Point: 1109 Bare Earth

Survey X: 1638240.27, Survey Y: 671637.77, Z1: 641.84, Z DEM: 642, Z LAS: 642, LC Type: 1, ΔZ DEM: 0.16, ΔZ LAS: 0.16



North



South



East



West



Point: 1201 Urban Area

Survey X: 1684574.79, Survey Y: 691056.16, Z1: 803.6, Z DEM: 803.46, Z LAS: 803.46, LC Type: 2, ΔZ DEM: -0.14, ΔZ LAS: -0.14



North



South



East



West



Point: 1202 Bare Earth

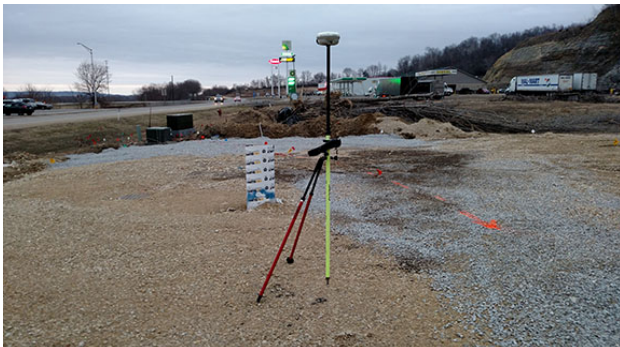
Survey X: 1684534.84, Survey Y: 690920.65, Z1: 806.17, Z DEM: 806.24, Z LAS: 806.28, LC Type: 1, ΔZ DEM: 0.07, ΔZ LAS: 0.11



North



South



East



West



Point: 1203 Urban Area

Survey X: 1685208.74, Survey Y: 690875.09, Z1: 810.49, Z DEM: 810.36, Z LAS: 810.4, LC Type: 2, ΔZ DEM: -0.13, ΔZ LAS: -0.09



North



South



East



West



Point: 1204 Tall Weeds

Survey X: 1685186.54, Survey Y: 691016.49, Z1: 798.77, Z DEM: 799.07, Z LAS: 799.14, LC Type: 3, ΔZ DEM: 0.3, ΔZ LAS: 0.37



North



South



East



West



Point: 1301 Tall Weeds

Survey X: 1693403.14, Survey Y: 693630.3, Z1: 713.59, Z DEM: 713.6, Z LAS: 713.65, LC Type: 3, ΔZ DEM: 0.01, ΔZ LAS: 0.06



North



South



East



West

Point: 1302 Bare Earth

Survey X: 1693457.61, Survey Y: 693437.62, Z1: 714.63, Z DEM: 714.64, Z LAS: 714.68, LC Type: 1, ΔZ DEM: 0.01, ΔZ LAS: 0.05



North



South



East



West



Point: 1303 Forested

Survey X: 1693534.29, Survey Y: 693797.5, Z1: 705.13, Z DEM: 705.3, Z LAS: 705.4, LC Type: 5, ΔZ DEM: 0.17, ΔZ LAS: 0.27



North



South



East



West

Point: 1304 Swamp

Survey X: 1692976.16, Survey Y: 694061.2, Z1: 698.26, Z DEM: 698.94, Z LAS: 698.77, LC Type: 7, ΔZ DEM: 0.68, ΔZ LAS: 0.51



North



South



East



West



Point: 1401 Bare Earth

Survey X: 1727542.11, Survey Y: 695968.3, Z1: 754.86, Z DEM: 754.92, Z LAS: 754.9, LC Type: 1, ΔZ DEM: 0.06, ΔZ LAS: 0.04



North



South



East



West



Point: 1402 Urban Area

Survey X: 1727529.41, Survey Y: 695845.41, Z1: 756.95, Z DEM: 756.83, Z LAS: 756.78, LC Type: 2, ΔZ DEM: -0.12, ΔZ LAS: -0.17



North



South



East



West

Point: 1403 Bare Earth

Survey X: 1727958.45, Survey Y: 696060.45, Z1: 756.77, Z DEM: 756.86, Z LAS: 756.82, LC Type: 1, ΔZ DEM: 0.09, ΔZ LAS: 0.05



North



South



East



West



Point: 1404 Urban Area

Survey X: 1725948.86, Survey Y: 696314.94, Z1: 751.86, Z DEM: 751.82, Z LAS: 751.84, LC Type: 2, ΔZ DEM: -0.04, ΔZ LAS: -0.02



North



South



East



West



Point: 1405 Tall Weeds

Survey X: 1725985.61, Survey Y: 699346.77, Z1: 729.82, Z DEM: 730.63, Z LAS: 730.39, LC Type: 3, ΔZ DEM: 0.81, ΔZ LAS: 0.57



North



South



East



West



Point: 1407 Tall Weeds

Survey X: 1725788.95, Survey Y: 698460.03, Z1: 731.18, Z DEM: 731.76, Z LAS: 731.62, LC Type: 3, ΔZ DEM: 0.58, ΔZ LAS: 0.44



North



South



East



West



Point: 1408 Forested

Survey X: 1725672.61, Survey Y: 698543.76, Z1: 731.16, Z DEM: 731.39, Z LAS: 731.37, LC Type: 5, ΔZ DEM: 0.23, ΔZ LAS: 0.21



North



South



East



West



Point: 1501 Urban Area

Survey X: 1676685.56, Survey Y: 672144.98, Z1: 755, Z DEM: 754.86, Z LAS: 754.88, LC Type: 2, ΔZ DEM: -0.14, ΔZ LAS: -0.12



North



South



East



West



Point: 1502 Bare Earth

Survey X: 1676465.22, Survey Y: 672257.17, Z1: 750.07, Z DEM: 750.19, Z LAS: 750.16, LC Type: 1, ΔZ DEM: 0.12, ΔZ LAS: 0.09



North



South



East



West



Point: 1503 Bare Earth

Survey X: 1676710.57, Survey Y: 672167.91, Z1: 755.4, Z DEM: 755.31, Z LAS: 755.3, LC Type: 1, ΔZ DEM: -0.09, ΔZ LAS: -0.1



North



South



East



West



Point: 1504 Urban Area

Survey X: 1674623.28, Survey Y: 673023.06, Z1: 722.63, Z DEM: 722.48, Z LAS: 722.51, LC Type: 2, ΔZ DEM: -0.15, ΔZ LAS: -0.12



North



South



East



West



Point: 1601 Tall Weeds

Survey X: 1693768.4, Survey Y: 652884.88, Z1: 1276.83, Z DEM: 1277.71, Z LAS: 1277.82, LC Type: 3, ΔZ DEM: 0.88, ΔZ LAS: 0.99



North



South



East



West



Point: 1602 Forested

Survey X: 1693580.99, Survey Y: 653294.94, Z1: 1215.4, Z DEM: 1215.84, Z LAS: 1215.85, LC Type: 5, ΔZ DEM: 0.44, ΔZ LAS: 0.45



North



South



East



West



Point: 1603 Urban Area

Survey X: 1692325.03, Survey Y: 652236.84, Z1: 1299.25, Z DEM: 1299.3, Z LAS: 1299.28, LC Type: 2, ΔZ DEM: 0.05, ΔZ LAS: 0.03



North



South



East



West



Point: 1604 Bare Earth

Survey X: 1692306.02, Survey Y: 652149.77, Z1: 1300.07, Z DEM: 1300.1, Z LAS: 1300.05, LC Type: 1, ΔZ DEM: 0.03, ΔZ LAS: -0.02



North



South



East



West



Point: 1605 Urban Area

Survey X: 1694850.13, Survey Y: 652961.38, Z1: 1303.49, Z DEM: 1303.48, Z LAS: 1303.49, LC Type: 2, ΔZ DEM: -0.01, ΔZ LAS: 0



North



South



East



West



Point: 1606 Bare Earth

Survey X: 1694774.68, Survey Y: 653171.84, Z1: 1300.93, Z DEM: 1301.31, Z LAS: 1301.27, LC Type: 1, ΔZ DEM: 0.38, ΔZ LAS: 0.34



North



South



East



West



Point: 1701 Tall Weeds

Survey X: 1651136.45, Survey Y: 633100.23, Z1: 644.09, Z DEM: 644.54, Z LAS: 644.37, LC Type: 3, ΔZ DEM: 0.45, ΔZ LAS: 0.28



North



South



East



West



Point: 1703 Forested

Survey X: 1650853.24, Survey Y: 631927.92, Z1: 634.8, Z DEM: 634.84, Z LAS: 634.87, LC Type: 5, ΔZ DEM: 0.04, ΔZ LAS: 0.07



North



South



East



West

Point: 1704 Urban Area

Survey X: 1651267.93, Survey Y: 631987.28, Z1: 645.2, Z DEM: 645.19, Z LAS: 645.23, LC Type: 2, ΔZ DEM: -0.01, ΔZ LAS: 0.03



North



South



East



West



Point: 1705 Bare Earth

Survey X: 1651269.9, Survey Y: 631756.15, Z1: 641.68, Z DEM: 641.63, Z LAS: 641.67, LC Type: 1, ΔZ DEM: -0.05, ΔZ LAS: -0.01



North



South



East



West



Point: 1706 Bare Earth

Survey X: 1652743.55, Survey Y: 631831.97, Z1: 692.95, Z DEM: 693.09, Z LAS: 693.13, LC Type: 1, ΔZ DEM: 0.14, ΔZ LAS: 0.18



North



South



East



West



Point: 1707 Urban Area

Survey X: 1651827.27, Survey Y: 633139.6, Z1: 846.78, Z DEM: 846.76, Z LAS: 846.78, LC Type: 2, ΔZ DEM: -0.02, ΔZ LAS: 0



North



South



East



West



Point: 1801 Forested

Survey X: 1723756.6, Survey Y: 630180.52, Z1: 809.7, Z DEM: 809.91, Z LAS: 809.93, LC Type: 5, ΔZ DEM: 0.21, ΔZ LAS: 0.23



North



South



East



West



Point: 1804 Urban Area

Survey X: 1726762.39, Survey Y: 630194.16, Z1: 832.55, Z DEM: 832.54, Z LAS: 832.51, LC Type: 2, ΔZ DEM: -0.01, ΔZ LAS: -0.04



North



South



East



West



Point: 1805 Bare Earth

Survey X: 1726823.46, Survey Y: 630204.83, Z1: 830.81, Z DEM: 830.96, Z LAS: 830.96, LC Type: 1, ΔZ DEM: 0.15, ΔZ LAS: 0.15



North



South



East



West



Point: 1901 Urban Area

Survey X: 1621884.99, Survey Y: 710856.08, Z1: 669.76, Z DEM: 669.66, Z LAS: 669.69, LC Type: 2, ΔZ DEM: -0.1, ΔZ LAS: -0.07



North



South



East



West



Point: 1902 Bare Earth

Survey X: 1621915.47, Survey Y: 710738.24, Z1: 668.82, Z DEM: 669.12, Z LAS: 669.09, LC Type: 1, ΔZ DEM: 0.3, ΔZ LAS: 0.27



North



South



East



West

