



Roy Cooper, Governor
Erik A. Hooks, Secretary

Michael A. Sprayberry, Director

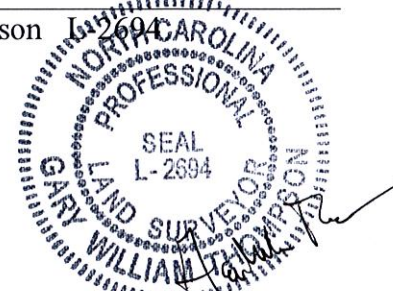
Aerial Imagery Quality Control Report – 2016 Coastal Orthoimagery Project

The North Carolina Geodetic Survey (NCGS) performed a horizontal quality control (QC) survey of aerial imagery collected in the North Carolina counties included in the 2016 Coastal Orthoimagery Project. The purpose of the QC survey was to test the horizontal accuracy of the aerial imagery collected as part of the 2016 Coastal Orthoimagery Project, which is funded by the NC 911 Board.

The field survey data that was used to generate the attached report was performed by three (3) firms that are licensed by the North Carolina Board of Examiners of Engineers and Surveyors. Each of these firms provided a signed and sealed report to NCGS that included all of the data that they collected under the responsible charge of a North Carolina licensed Professional Land Surveyor.

The attached report contains the results of the horizontal QC surveys conducted by the contractors. The error statistics in the CompassAA reports are in US Survey Feet. The review of the field data and the generation of the final QC report were performed under the supervision of Gary W. Thompson (L-2694).

Gary W. Thompson L-2694
Gary W. Thompson
Date 3/16/17



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This report contains the horizontal QC reports for the following counties:

- Beaufort
- Bertie
- Brunswick
- Camden
- Carteret
- Chowan
- Columbus
- Craven
- Currituck
- Dare
- Duplin
- Gates
- Greene
- Hertford
- Hyde
- Jones
- Lenoir
- Martin
- New Hanover
- Onslow
- Pamlico
- Pasquotank
- Pender
- Perquimans
- Pitt
- Tyrrell
- Washington

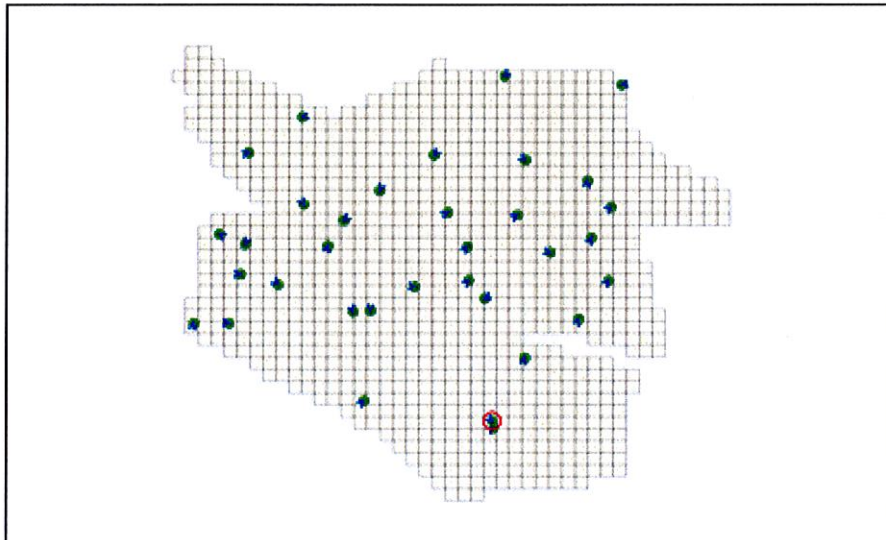
2016 Orthoimagery Statistics Summary

NAD 83/2011 US Survey Feet

County	MinΔX:	MinΔY:	MaxΔX:	MaxΔY:	MeanΔX	MeanΔY	RmseX:	RmseY:	RmseH:	CE90:	CE95:	CI:	No.Obs.:	NSSDA:
Beaufort	-0.608	-0.564	0.868	0.911	0.130	0.049	0.399	0.356	0.535	0.795	0.906	0.124	34	0.925
Bertie	-0.260	-0.825	0.868	1.085	0.282	-0.206	0.395	0.464	0.609	0.754	0.860	0.122	32	1.054
Brunswick	-0.781	-0.564	0.608	0.391	0.053	-0.037	0.342	0.242	0.419	0.628	0.716	0.093	38	0.720
Camden	-0.260	-0.911	0.868	0.651	0.413	-0.256	0.490	0.395	0.630	0.614	0.701	0.084	45	1.090
Carteret	-0.955	-0.477	0.955	1.085	0.002	0.115	0.418	0.401	0.579	0.873	0.996	0.135	35	1.002
Chowan	-1.042	-1.259	1.042	0.217	0.251	-0.328	0.477	0.489	0.683	0.839	0.957	0.142	29	1.183
Columbus	-0.694	-0.825	0.868	0.911	0.069	0.078	0.403	0.362	0.541	0.813	0.928	0.107	48	0.937
Craven	-0.694	-0.738	0.434	0.564	-0.043	-0.127	0.306	0.344	0.461	0.676	0.771	0.089	48	0.797
Currituck	-0.868	-0.825	1.215	0.738	0.353	-0.186	0.554	0.387	0.676	0.832	0.949	0.110	48	1.170
Dare	-1.042	-1.345	1.389	1.085	0.007	0.046	0.517	0.443	0.681	1.042	1.189	0.159	36	1.179
Duplin	-0.781	-0.651	0.608	0.911	-0.005	0.133	0.334	0.371	0.499	0.740	0.844	0.113	36	0.863
Gates	-1.128	-0.911	1.128	1.432	0.253	-0.107	0.542	0.439	0.697	0.984	1.122	0.148	37	1.206
Greene	-1.128	-0.564	0.955	0.564	-0.133	0.076	0.500	0.310	0.588	0.853	0.973	0.138	32	1.018
Hertford	-0.694	-0.477	1.476	0.651	0.307	-0.152	0.541	0.319	0.628	0.792	0.904	0.128	32	1.088
Hyde	-1.128	-0.477	0.868	0.911	0.087	0.135	0.504	0.345	0.611	0.886	1.011	0.139	34	1.057
Jones	-0.694	-0.738	0.521	0.825	-0.076	-0.141	0.360	0.372	0.518	0.759	0.866	0.121	33	0.897
Lenoir	-0.955	-0.651	1.389	0.825	0.050	0.033	0.449	0.307	0.544	0.818	0.933	0.126	35	0.942
Martin	-0.694	-0.738	0.694	0.738	0.024	0.000	0.384	0.326	0.504	0.770	0.878	0.106	44	0.872
New Hanover	-0.955	-0.564	0.608	0.825	-0.125	0.103	0.449	0.352	0.570	0.834	0.952	0.122	39	0.987
Onslow	-0.955	-0.998	0.608	0.738	-0.169	-0.011	0.446	0.364	0.576	0.845	0.964	0.125	38	0.997
Pamlico	-1.042	-0.825	0.868	0.998	-0.012	0.162	0.459	0.428	0.628	0.928	1.059	0.128	44	1.086
Pasquotank	-0.694	-0.911	1.128	0.738	0.460	-0.140	0.581	0.382	0.695	0.771	0.880	0.106	44	1.203
Pender	-0.868	-0.564	0.608	0.651	0.000	-0.033	0.368	0.300	0.475	0.723	0.825	0.101	43	0.822
Perquimans	-0.694	-0.911	1.128	0.217	0.461	-0.265	0.591	0.368	0.696	0.678	0.773	0.092	45	1.205
Pitt	-1.128	-0.651	0.781	0.738	-0.079	-0.058	0.432	0.332	0.544	0.817	0.932	0.126	35	0.942
Tyrrell	-0.608	-0.998	0.955	0.998	0.192	0.004	0.478	0.408	0.629	0.924	1.054	0.157	29	1.088
Washington	-0.868	-1.259	0.955	0.911	0.127	0.061	0.422	0.431	0.603	0.904	1.032	0.151	30	1.044
County-Wide Average							0.450	0.372	0.586	0.811	0.925	0.122		1.014

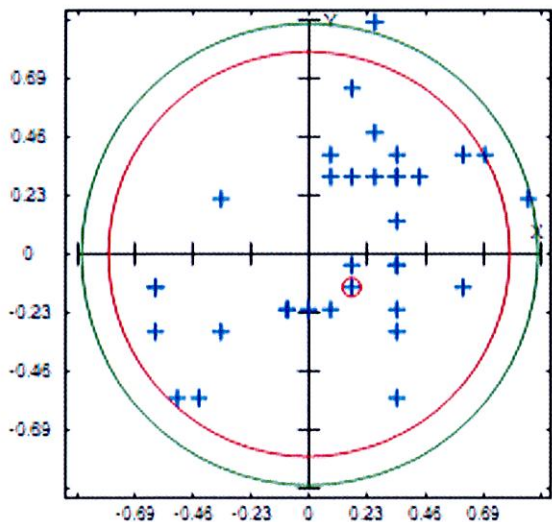


Vector Offset



Scaling Factor: 200

Circular Error

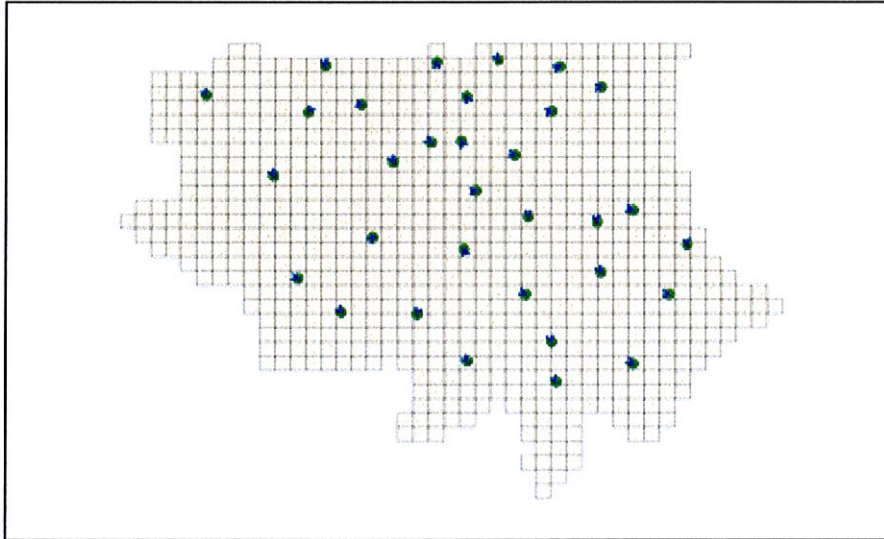


Error Statistics

Min ΔX :	-0.608
Min ΔY :	-0.564
Max ΔX :	0.868
Max ΔY :	0.911
Mean ΔX :	0.13
Mean ΔY :	0.049
RmseX:	0.399
RmseY:	0.356
RmseH:	0.535
NSSDA:	0.925
No. Obs.:	34
CE 90:	0.795
CE 95:	0.906
CI:	0.124

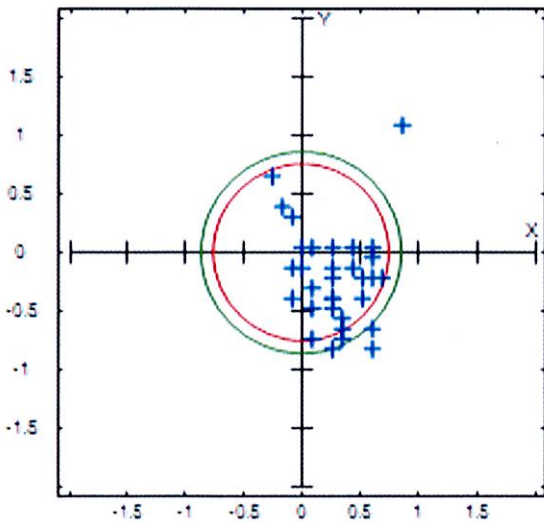


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.26
Min ΔY :	-0.825
Max ΔX :	0.868
Max ΔY :	1.085
Mean ΔX :	0.282
Mean ΔY :	-0.206
RmseX:	0.395
RmseY:	0.464
RmseH:	0.609
NSSDA:	1.054
No. Obs.:	32
CE 90:	0.754
CE 95:	0.86
CI:	0.122



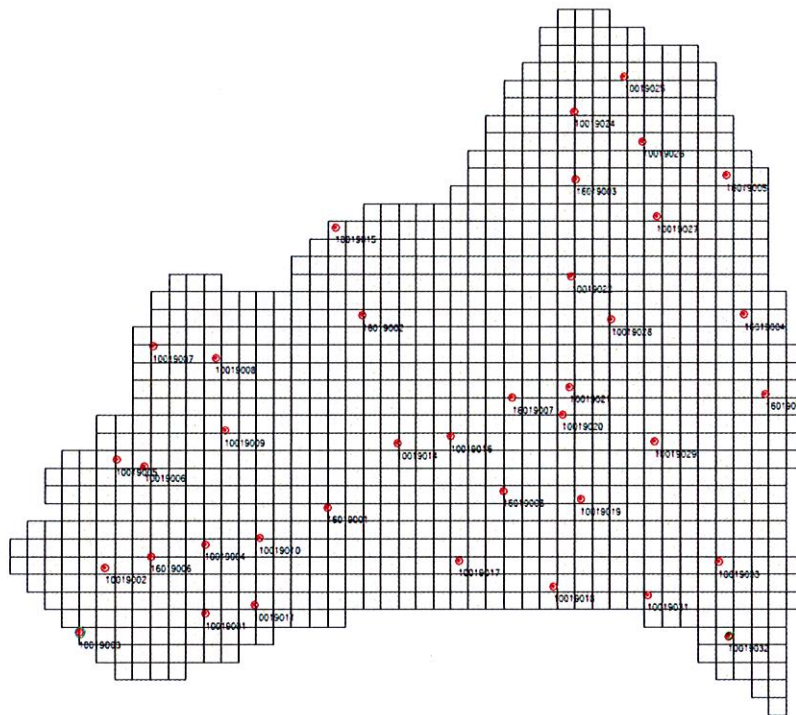
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: N/A
Sensor Resolution: 0.5
Vendor Name: N/A
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

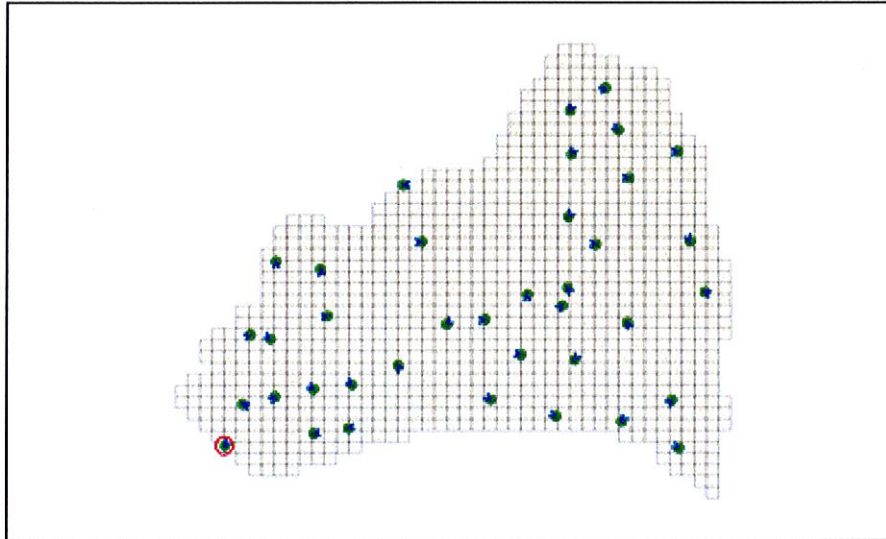
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of Matching Images: 1054
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Units: Feet
Image Folder Path: H:\Brunswick2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



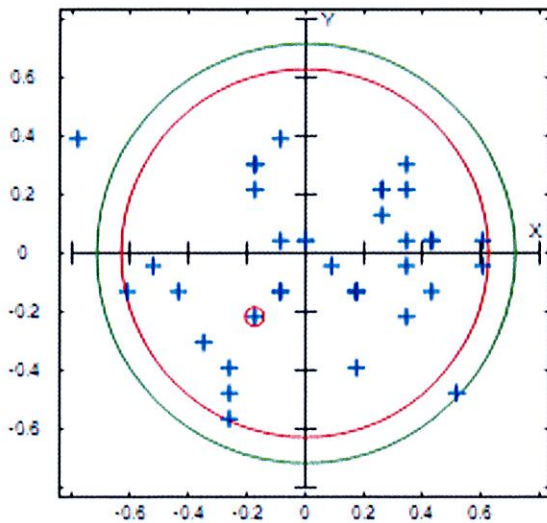


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.781
Min ΔY :	-0.564
Max ΔX :	0.608
Max ΔY :	0.391
Mean ΔX :	0.053
Mean ΔY :	-0.037
RmseX:	0.342
RmseY:	0.242
RmseH:	0.419
NSSDA:	0.726
No. Obs.:	38
CE 90:	0.628
CE 95:	0.716
CI:	0.093

NORTH CAROLINA GEODETIC SURVEY

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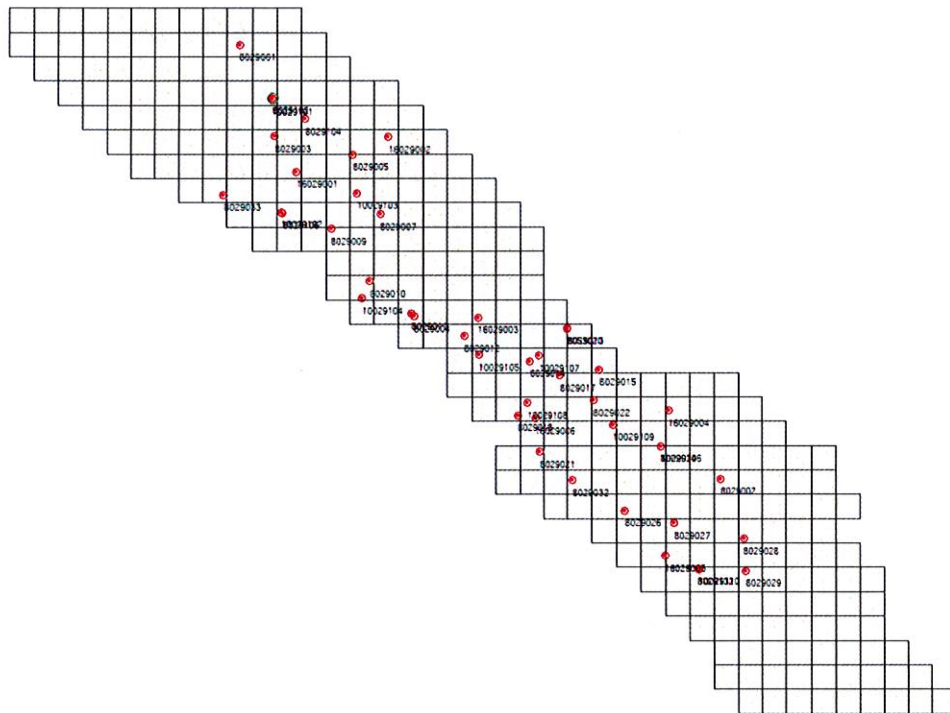
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: N/A
Sensor Resolution: 0.5
Vendor Name: N/A
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

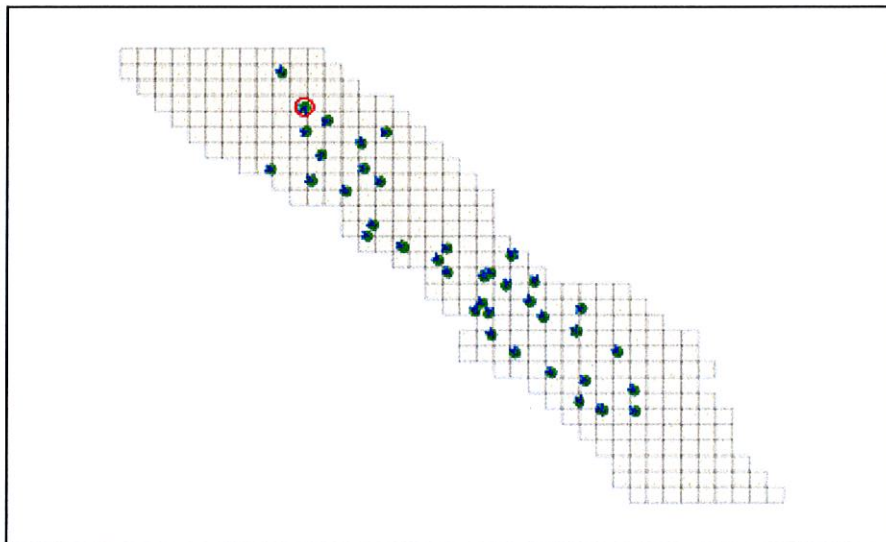
Index File Name: camden.shp
of Polygons: 322
of Matching Images: 322
Polygon ID: File_Name
Units: Feet
Image Folder Path: G:\CAMDEN2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



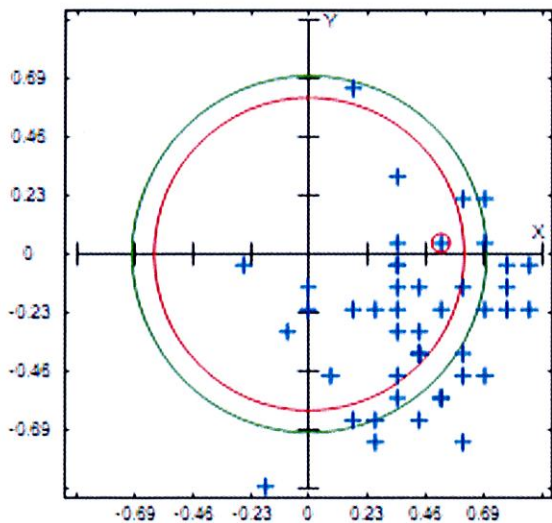


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.26
Min ΔY :	-0.911
Max ΔX :	0.868
Max ΔY :	0.651
Mean ΔX :	0.413
Mean ΔY :	-0.256
RmseX:	0.49
RmseY:	0.395
RmseH:	0.63
NSSDA:	1.09
No. Obs.:	45
CE 90:	0.614
CE 95:	0.701
CI:	0.084



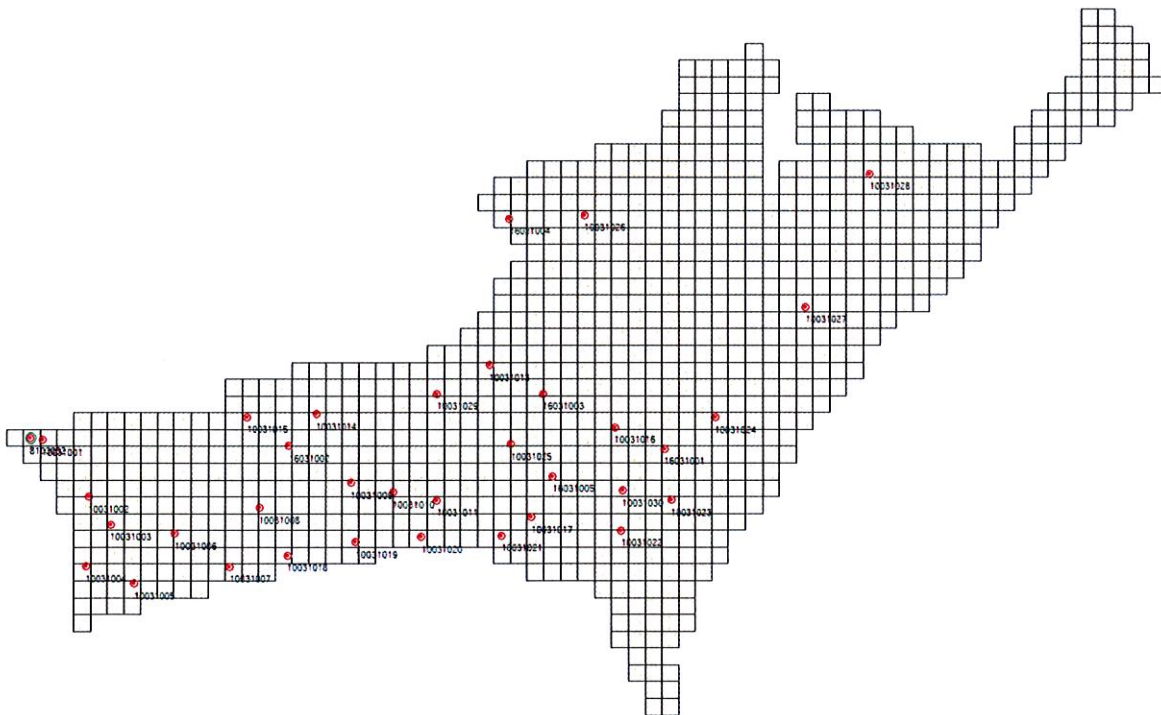
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

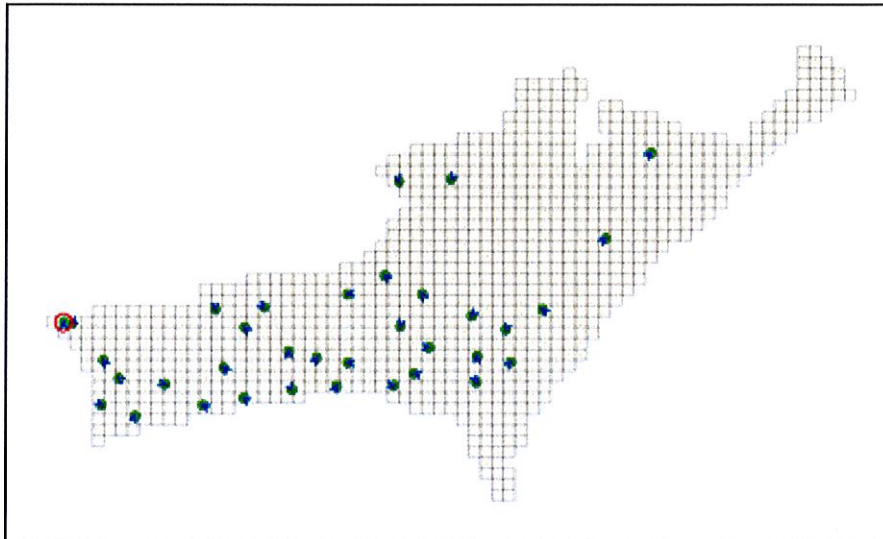
Index File Name: carteret.shp
of Polygons: 983
of Matching Images: 983
Polygon ID: File_Name
Units: Feet
Image Folder Path: H:\CARTERET2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



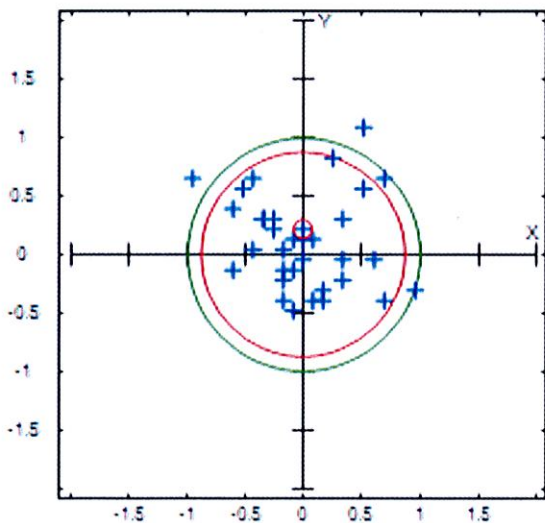


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.955
Min ΔY :	-0.477
Max ΔX :	0.955
Max ΔY :	1.085
Mean ΔX :	0.002
Mean ΔY :	0.115
RmseX:	0.418
RmseY:	0.401
RmseH:	0.579
NSSDA:	1.002
No. Obs.:	35
CE 90:	0.873
CE 95:	0.996
CI:	0.135



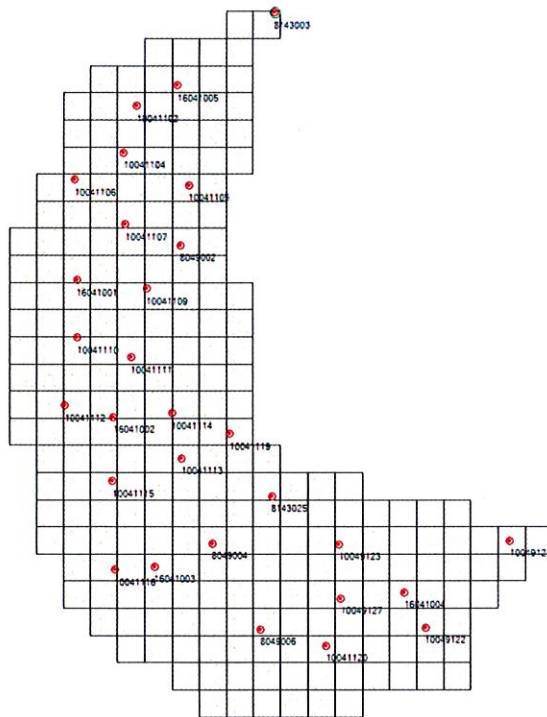
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: N/A
Sensor Resolution: 0.5
Vendor Name: N/A
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

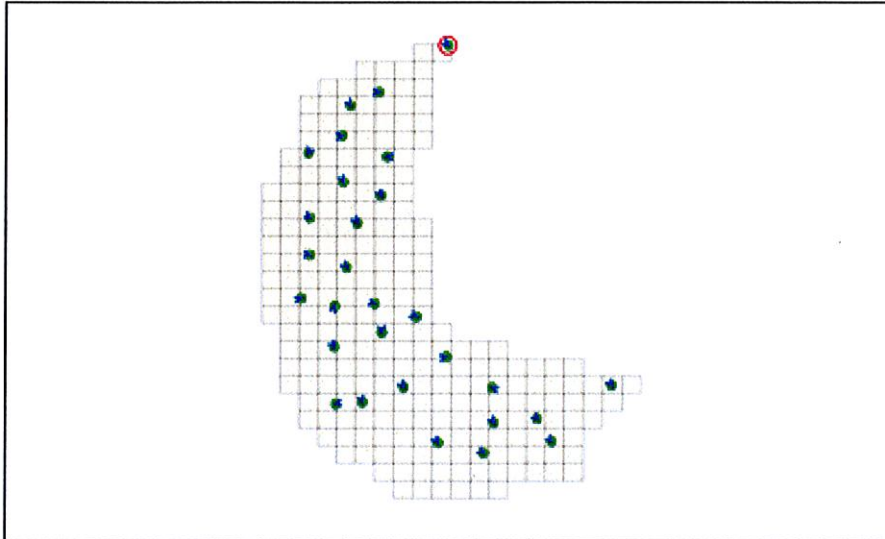
Index File Name: chowan.shp
of Polygons: 250
of Matching Images: 250
Polygon ID: File_Name
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Image Folder Path: H:\CHOWAN2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



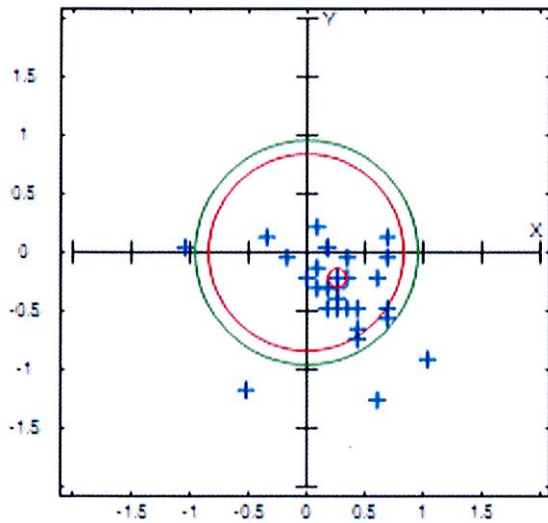


Vector Offset



Scaling Factor: 200

Circular Error

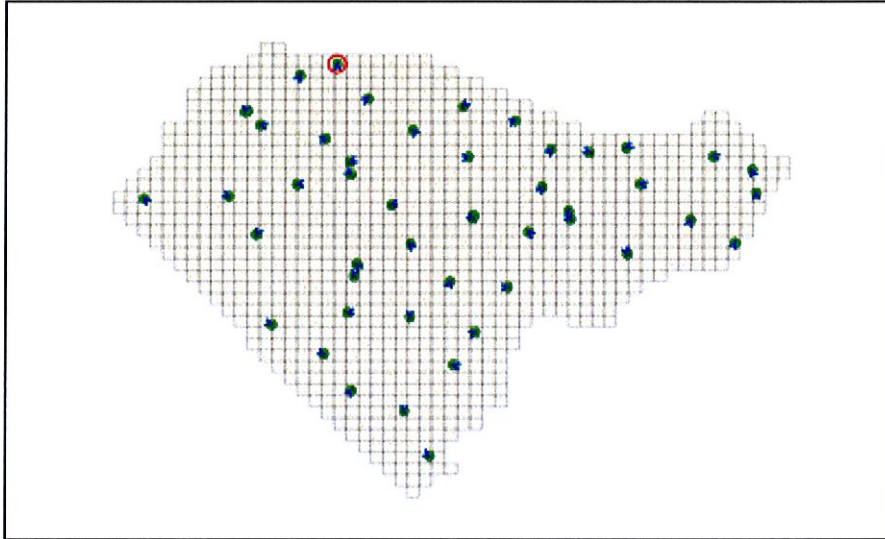


Error Statistics

Min ΔX :	-1.042
Min ΔY :	-1.259
Max ΔX :	1.042
Max ΔY :	0.217
Mean ΔX :	0.251
Mean ΔY :	-0.328
RmseX:	0.477
RmseY:	0.489
RmseH:	0.683
NSSDA:	1.183
No. Obs.:	29
CE 90:	0.839
CE 95:	0.957
CI:	0.142

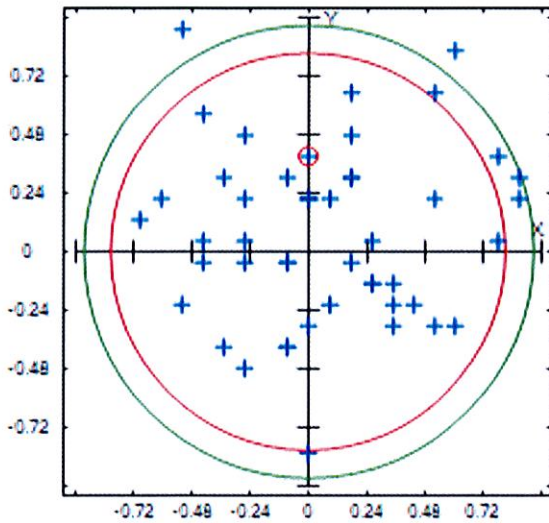


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.694
Min ΔY :	-0.825
Max ΔX :	0.868
Max ΔY :	0.911
Mean ΔX :	0.069
Mean ΔY :	0.078
RmseX:	0.403
RmseY:	0.362
RmseH:	0.541
NSSDA:	0.937
No. Obs.:	48
CE 90:	0.813
CE 95:	0.928
CI:	0.107



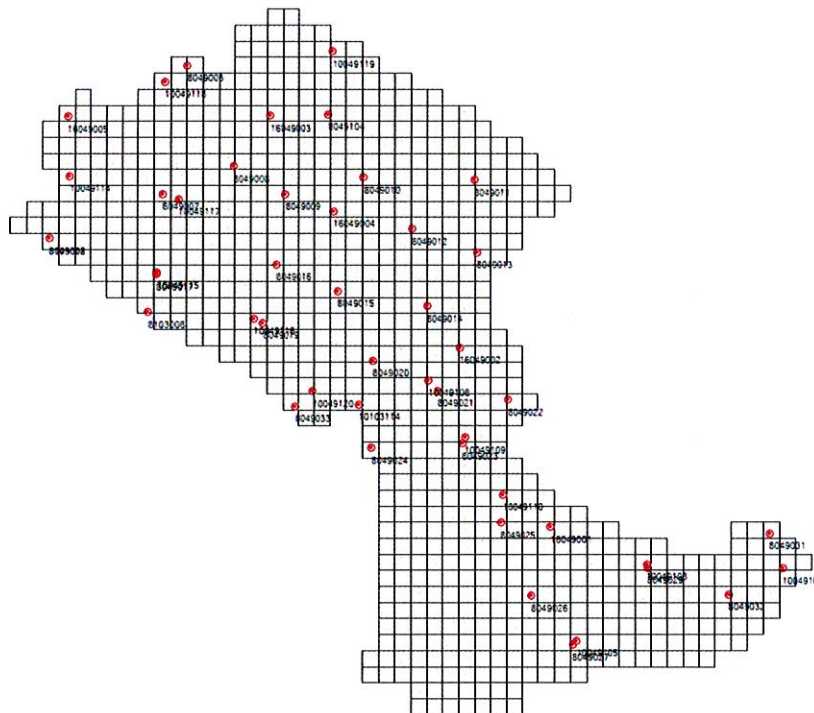
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

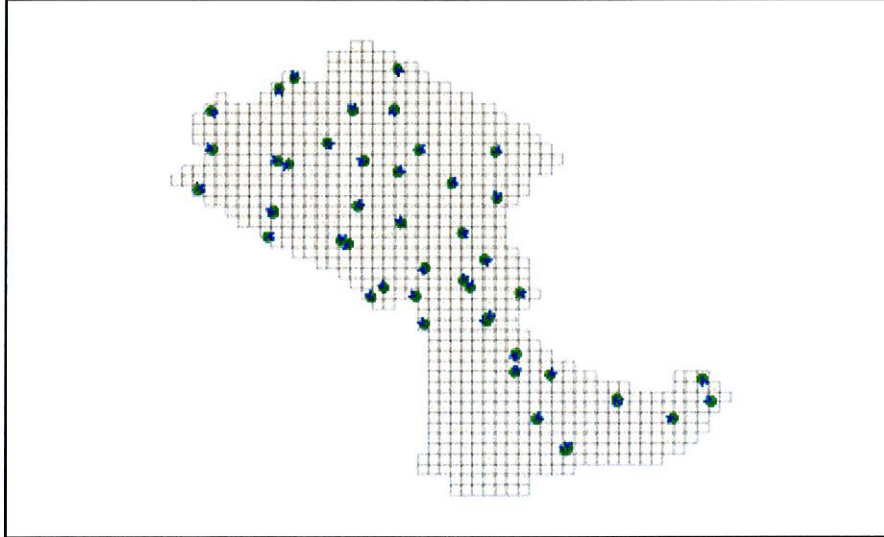
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of Polygons: 857
of Matching Images: 857
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Image Folder Path: H:\CRAVEN2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



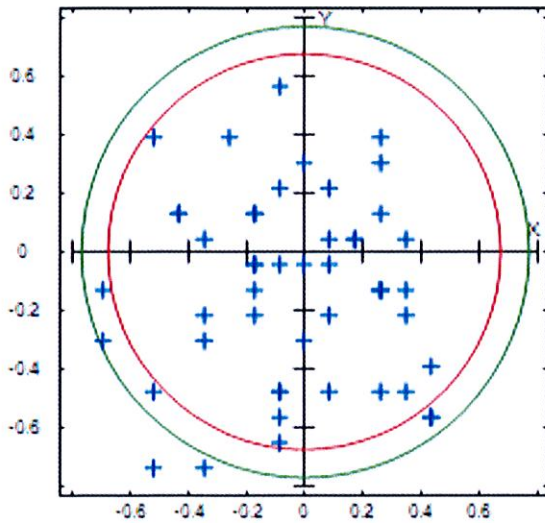


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.694
Min ΔY :	-0.738
Max ΔX :	0.434
Max ΔY :	0.564
Mean ΔX :	-0.043
Mean ΔY :	-0.127
RmseX:	0.306
RmseY:	0.344
RmseH:	0.461
NSSDA:	0.797
No. Obs.:	48
CE 90:	0.676
CE 95:	0.771
CI:	0.089



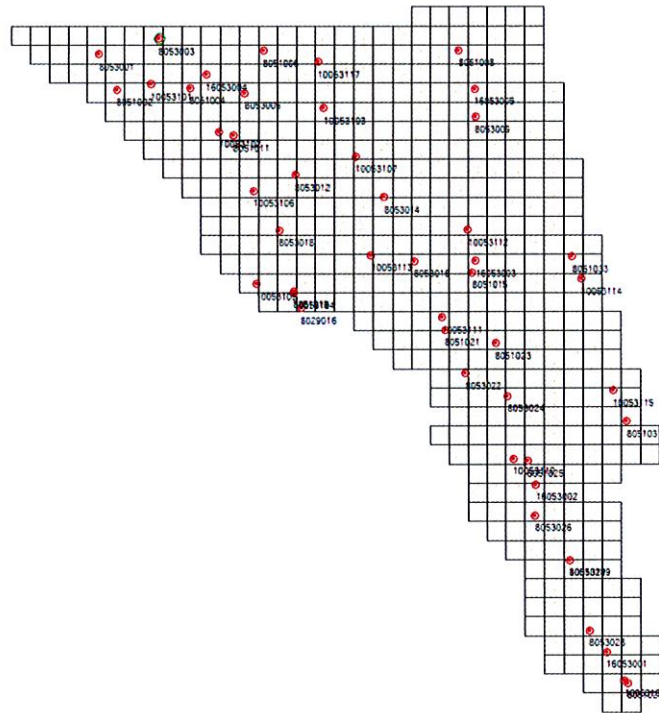
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: N/A
Sensor Resolution: 0.5
Vendor Name: N/A
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

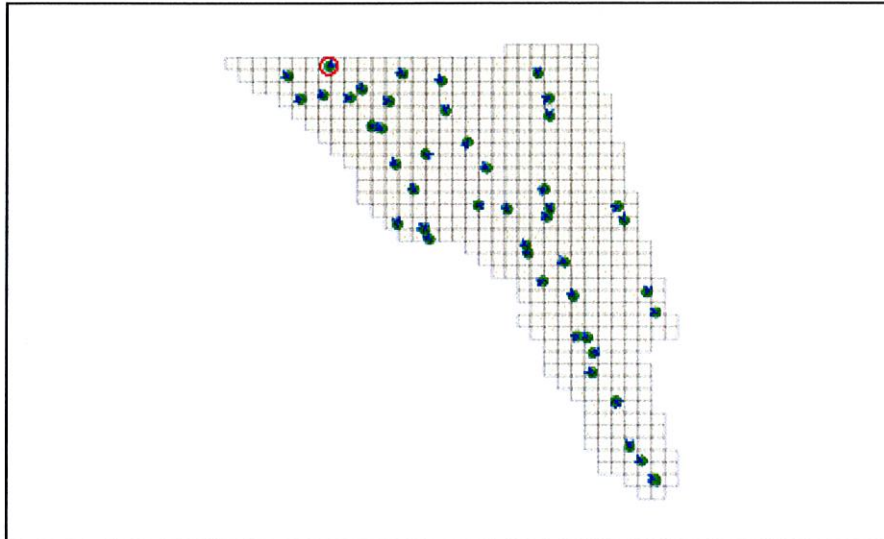
Index File Name: currituck.shp
of Polygons: 514
of Matching Images: 514
Polygon ID: File_Name
Units: Feet
Image Folder Path: G:\CURRITUCK2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



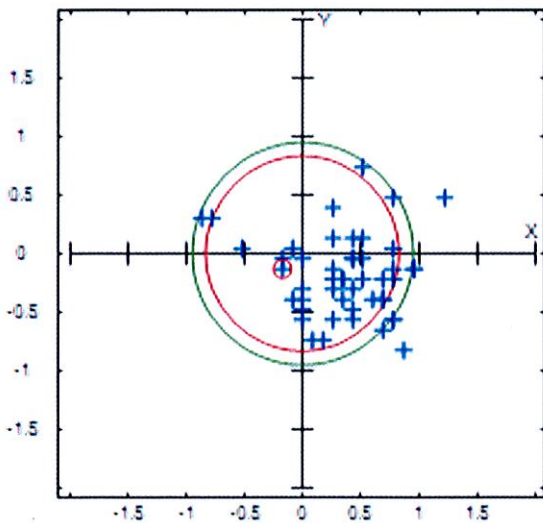


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.868
Min ΔY :	-0.825
Max ΔX :	1.215
Max ΔY :	0.738
Mean ΔX :	0.353
Mean ΔY :	-0.186
RmseX:	0.554
RmseY:	0.387
RmseH:	0.676
NSSDA:	1.17
No. Obs.:	48
CE 90:	0.832
CE 95:	0.949
CI:	0.11

NORTH CAROLINA GEODETIC SURVEY

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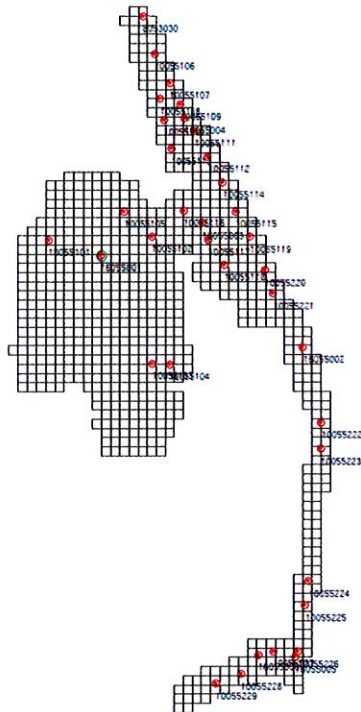
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: N/A
Sensor Resolution: 0.5
Vendor Name: N/A
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

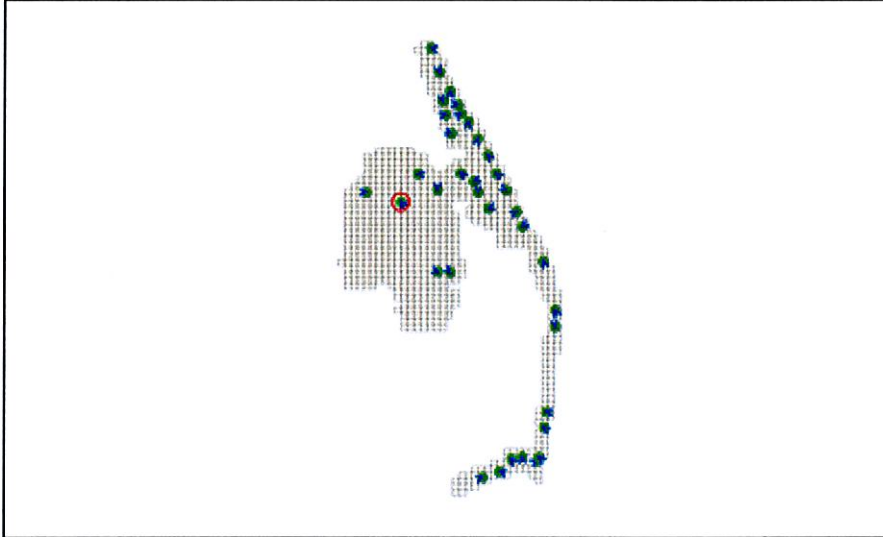
Index File Name: dare.shp
of Polygons: 799
of Matching Images: 799
Polygon ID: File_Name
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Image Folder Path: G:\Dare2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



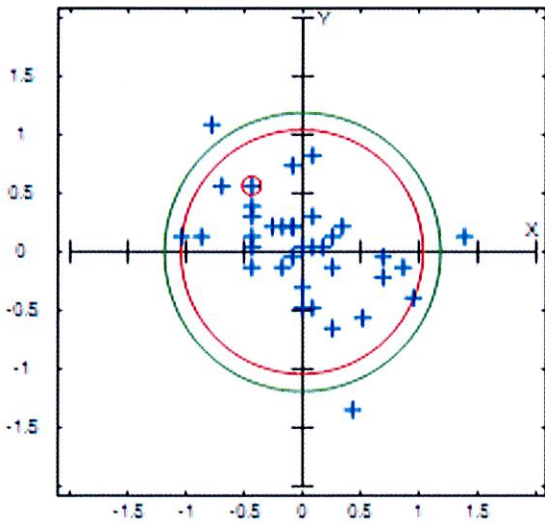


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-1.042
Min ΔY :	-1.345
Max ΔX :	1.389
Max ΔY :	1.085
Mean ΔX :	0.007
Mean ΔY :	0.046
RmseX:	0.517
RmseY:	0.443
RmseH:	0.681
NSSDA:	1.179
No. Obs.:	36
CE 90:	1.042
CE 95:	1.189
CI:	0.159



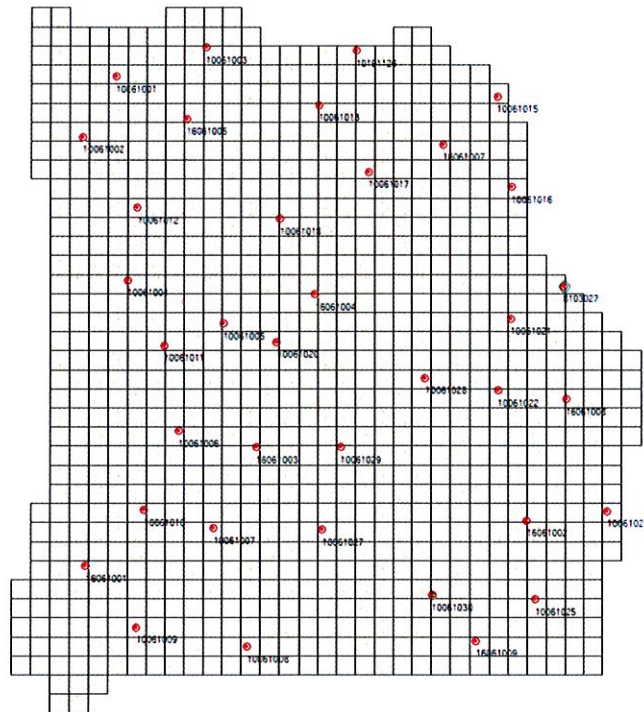
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

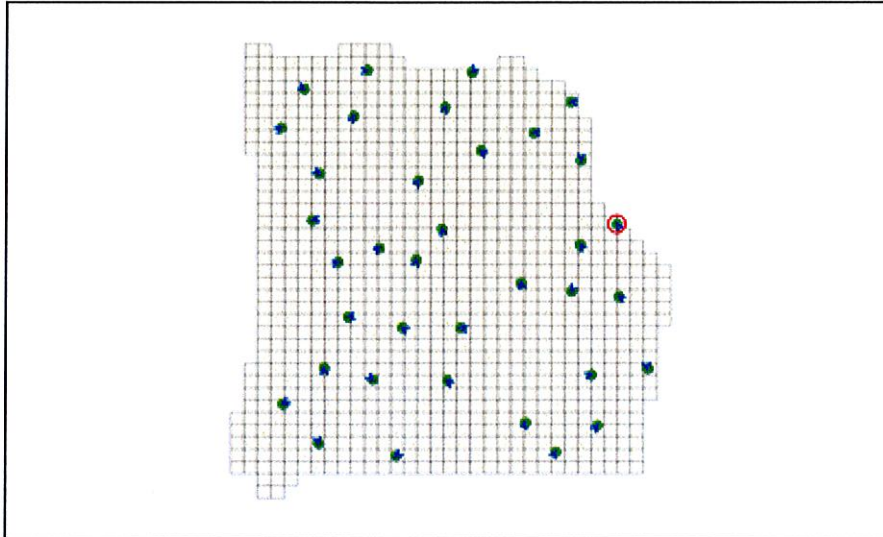
Index File Name: duplin.shp
of Polygons: 962
of Matching Images: 962
Polygon ID: File_Name
Units: Feet
Image Folder Path: H:\Duplin2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



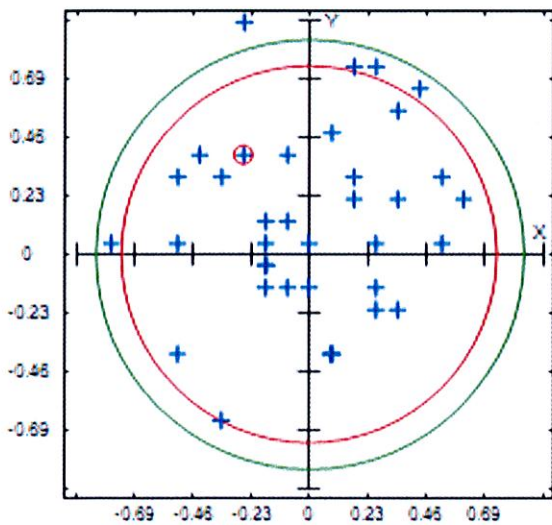


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.781
Min ΔY :	-0.651
Max ΔX :	0.608
Max ΔY :	0.911
Mean ΔX :	-0.005
Mean ΔY :	0.133
RmseX:	0.334
RmseY:	0.371
RmseH:	0.499
NSSDA:	0.863
No. Obs.:	36
CE 90:	0.74
CE 95:	0.844
CI:	0.113



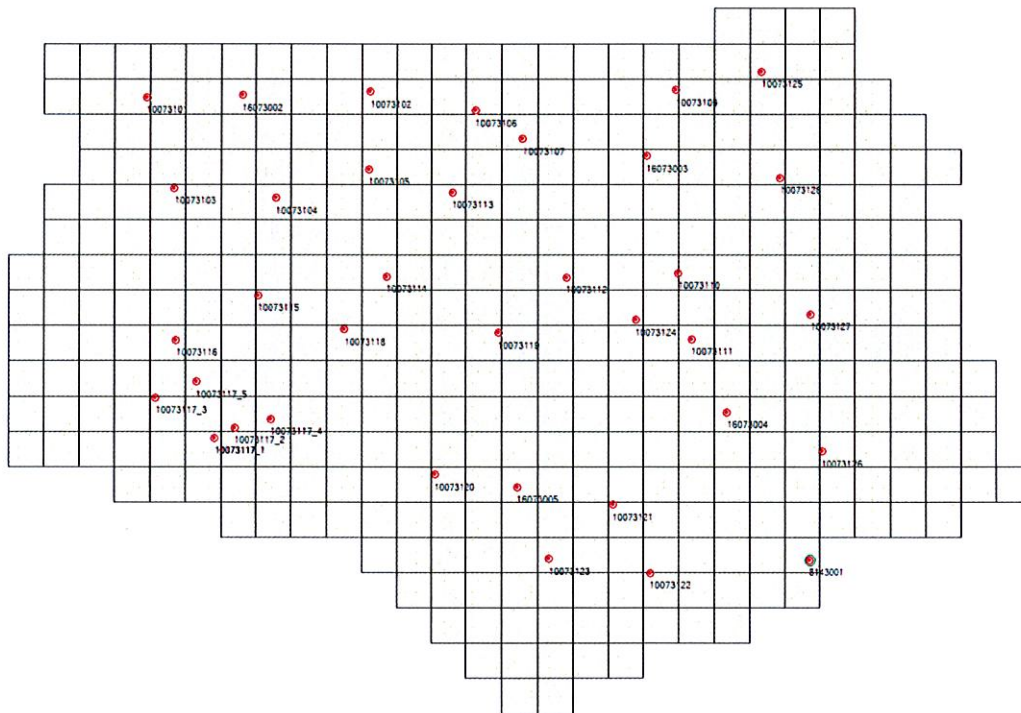
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: N/A
Sensor Resolution: 0.5
Vendor Name: N/A
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

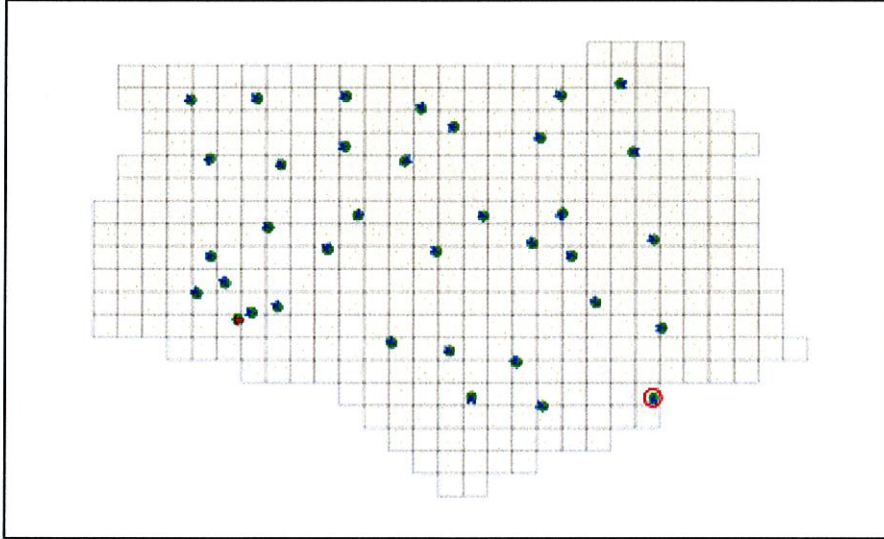
Index File Name: gates.shp
of Polygons: 404
of Matching Images: 404
Polygon ID: File_Name
Units: Feet
Image Folder Path: H:\GATES2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



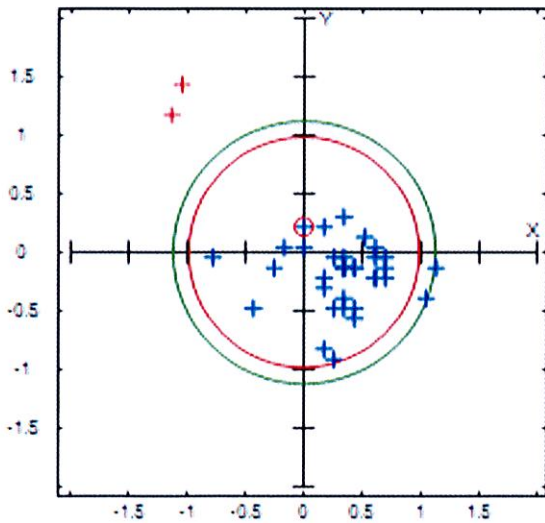


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-1.128
Min ΔY :	-0.911
Max ΔX :	1.128
Max ΔY :	1.432
Mean ΔX :	0.253
Mean ΔY :	-0.107
RmseX:	0.542
RmseY:	0.439
RmseH:	0.697
NSSDA:	1.206
No. Obs.:	37
CE 90:	0.984
CE 95:	1.122
CI:	0.148



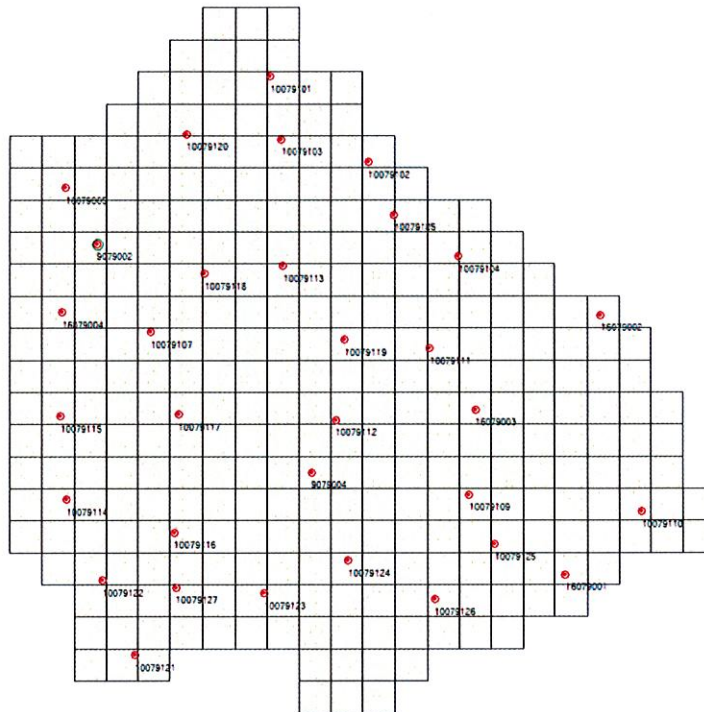
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

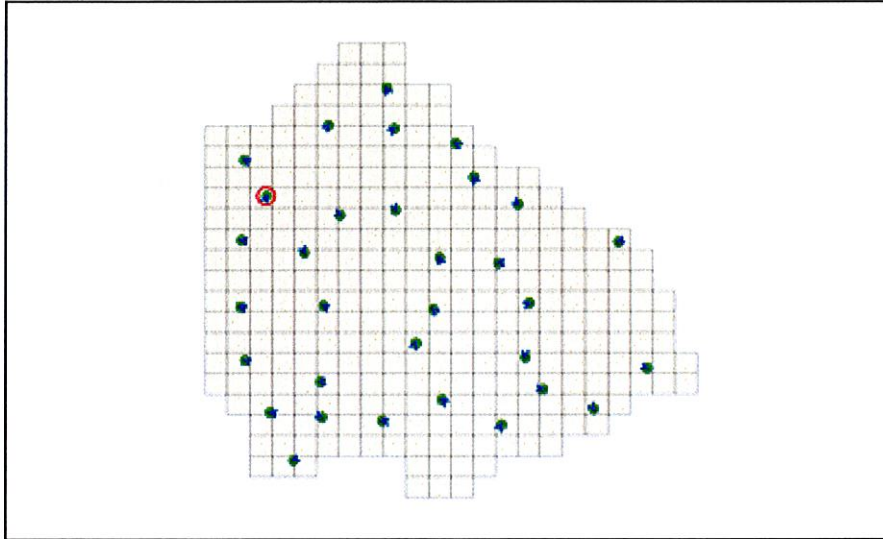
Index File Name: greene.shp
of Polygons: 319
of Matching Images: 319
Polygon ID: File_Name
Units: Feet
Image Folder Path: H:\GREENE2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



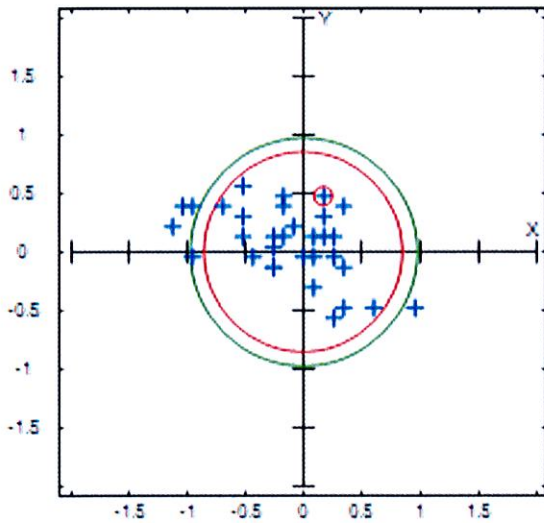


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-1.128
Min ΔY :	-0.564
Max ΔX :	0.955
Max ΔY :	0.564
Mean ΔX :	-0.133
Mean ΔY :	0.076
RmseX:	0.5
RmseY:	0.31
RmseH:	0.588
NSSDA:	1.018
No. Obs.:	32
CE 90:	0.853
CE 95:	0.973
CI:	0.138



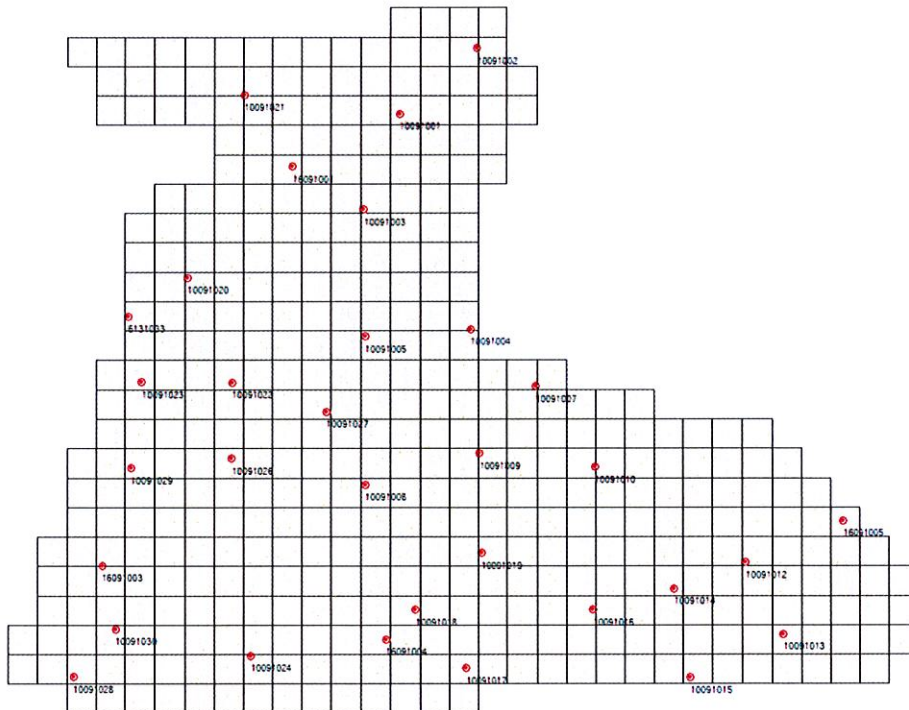
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: N/A
Sensor Resolution: 0.5
Vendor Name: N/A
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

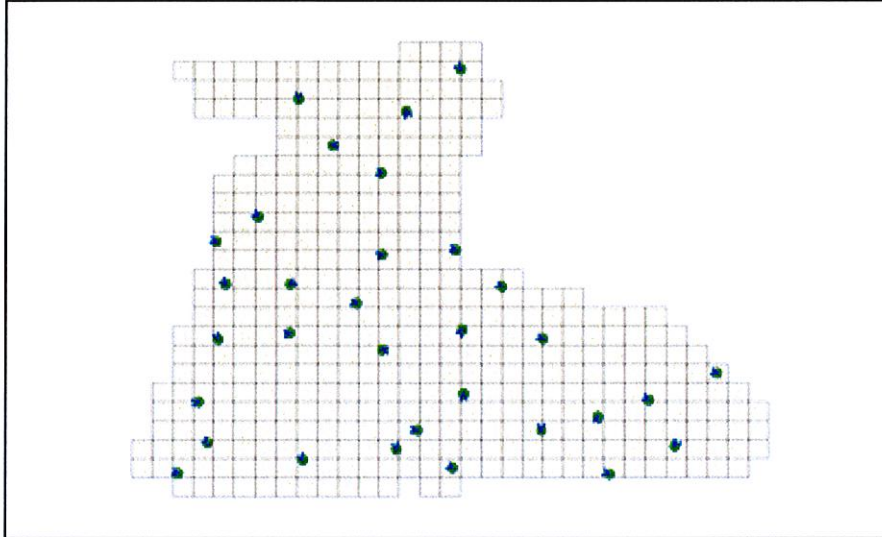
Index File Name: hertford.shp
of Polygons: 439
of Matching Images: 439
Polygon ID: File_Name
Units: Feet
Image Folder Path: H:\Hertford2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



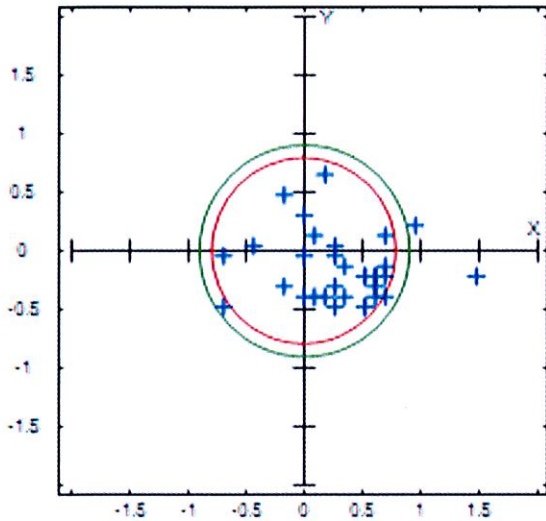


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.694
Min ΔY :	-0.477
Max ΔX :	1.476
Max ΔY :	0.651
Mean ΔX :	0.307
Mean ΔY :	-0.152
RmseX:	0.541
RmseY:	0.319
RmseH:	0.628
NSSDA:	1.088
No. Obs.:	32
CE 90:	0.792
CE 95:	0.904
CI:	0.128



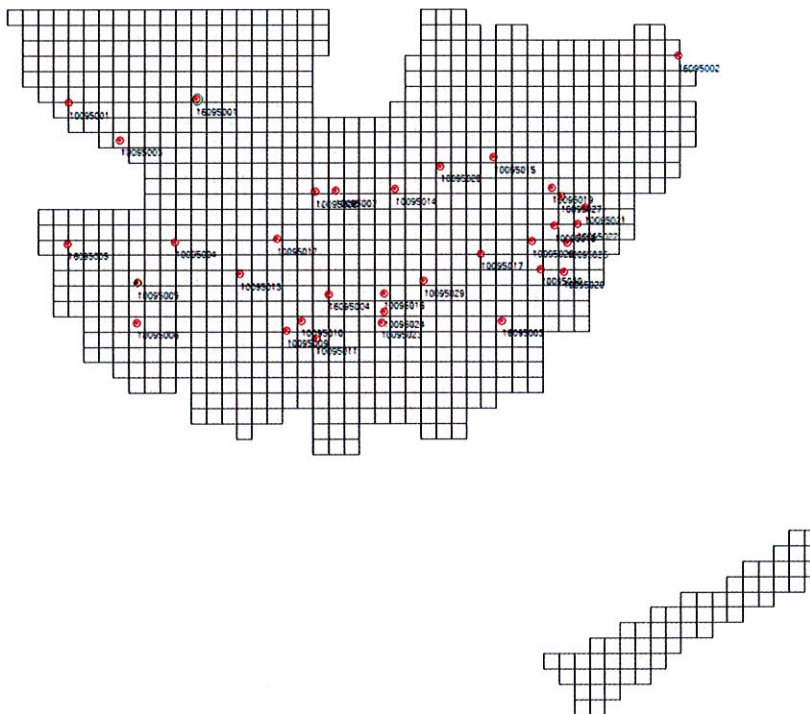
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

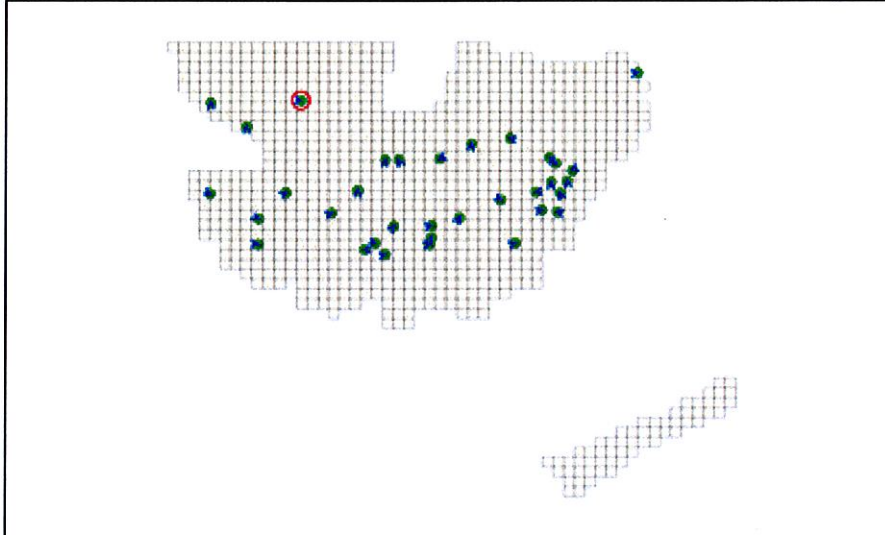
Index File Name: hyde.shp
of Polygons: 963
of Matching Images: 963
Polygon ID: File_Name
Units: Feet
Image Folder Path: G:\Hyde2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



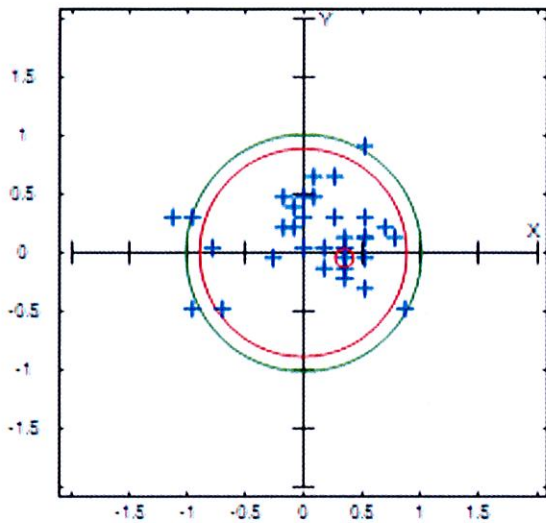


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-1.128
Min ΔY :	-0.477
Max ΔX :	0.868
Max ΔY :	0.911
Mean ΔX :	0.087
Mean ΔY :	0.135
RmseX:	0.504
RmseY:	0.345
RmseH:	0.611
NSSDA:	1.057
No. Obs.:	34
CE 90:	0.886
CE 95:	1.011
CI:	0.139



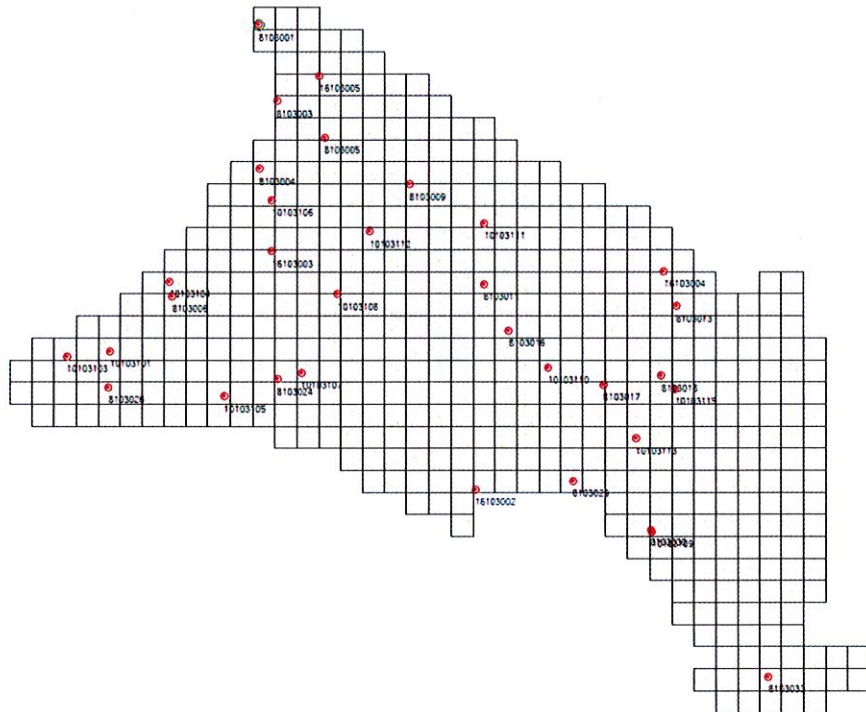
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

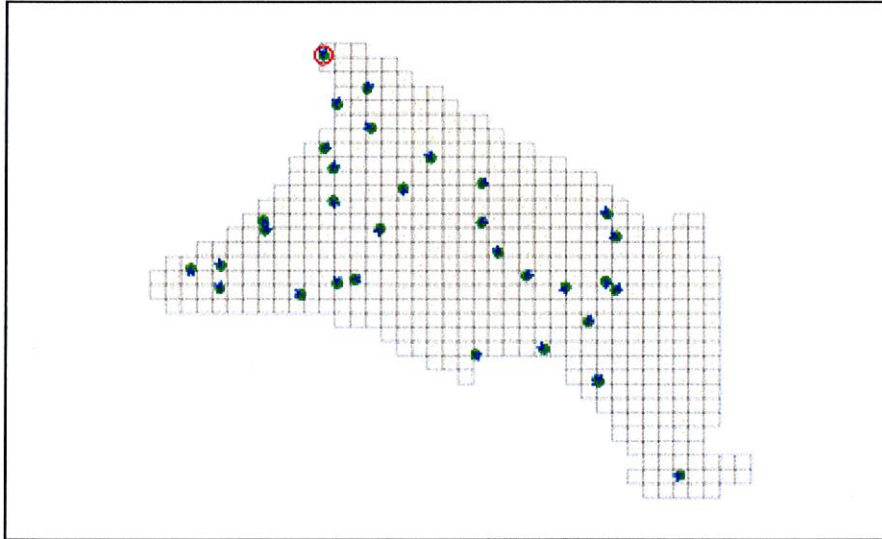
Index File Name: jones.shp
of Polygons: 534
of Matching Images: 534
Polygon ID: File_Name
Units: Feet
Image Folder Path: G:\JONES2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



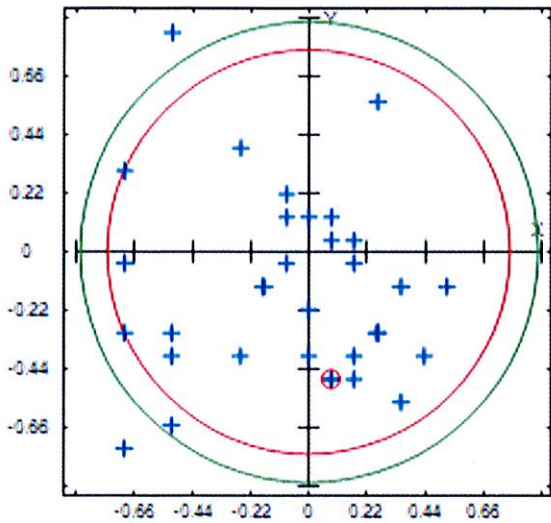


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.694
Min ΔY :	-0.738
Max ΔX :	0.521
Max ΔY :	0.825
Mean ΔX :	-0.076
Mean ΔY :	-0.141
RmseX:	0.36
RmseY:	0.372
RmseH:	0.518
NSSDA:	0.897
No. Obs.:	33
CE 90:	0.759
CE 95:	0.866
CI:	0.121

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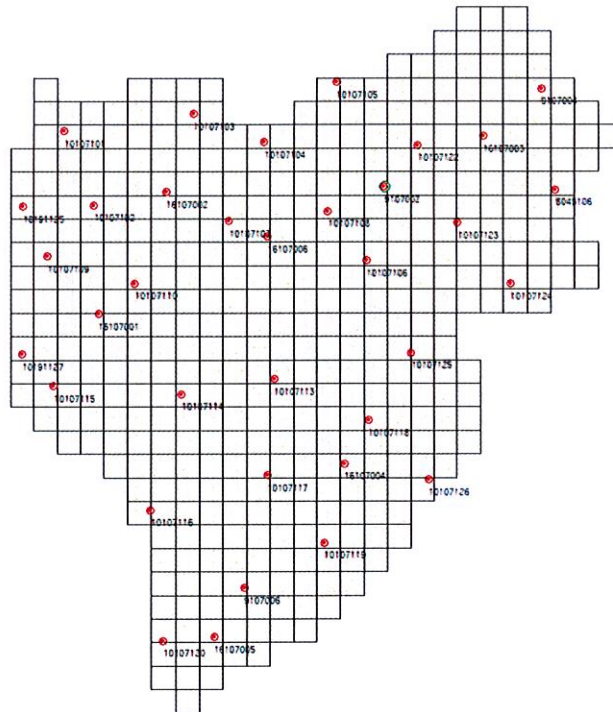
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

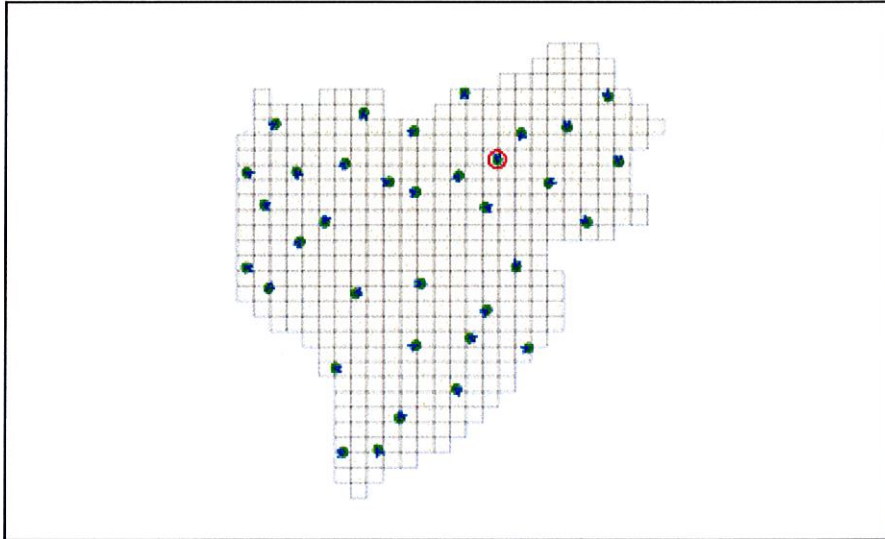
Index File Name: lenoir.shp
of Polygons: 456
of Matching Images: 456
Polygon ID: File_Name
Units: Feet
Image Folder Path: H:\LENOIR2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



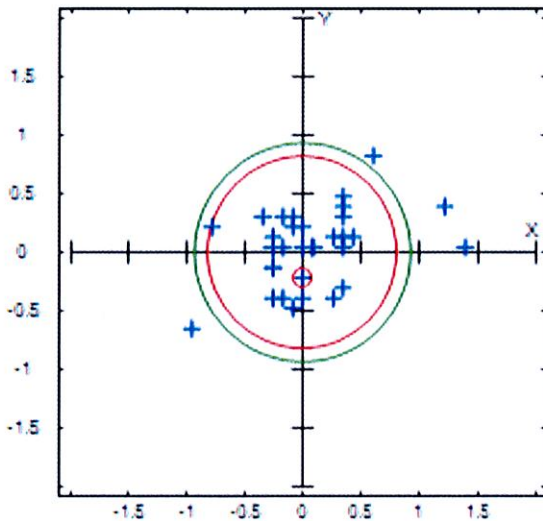


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.955
Min ΔY :	-0.651
Max ΔX :	1.389
Max ΔY :	0.825
Mean ΔX :	0.05
Mean ΔY :	0.033
RmseX:	0.449
RmseY:	0.307
RmseH:	0.544
NSSDA:	0.942
No. Obs.:	35
CE 90:	0.818
CE 95:	0.933
CI:	0.126

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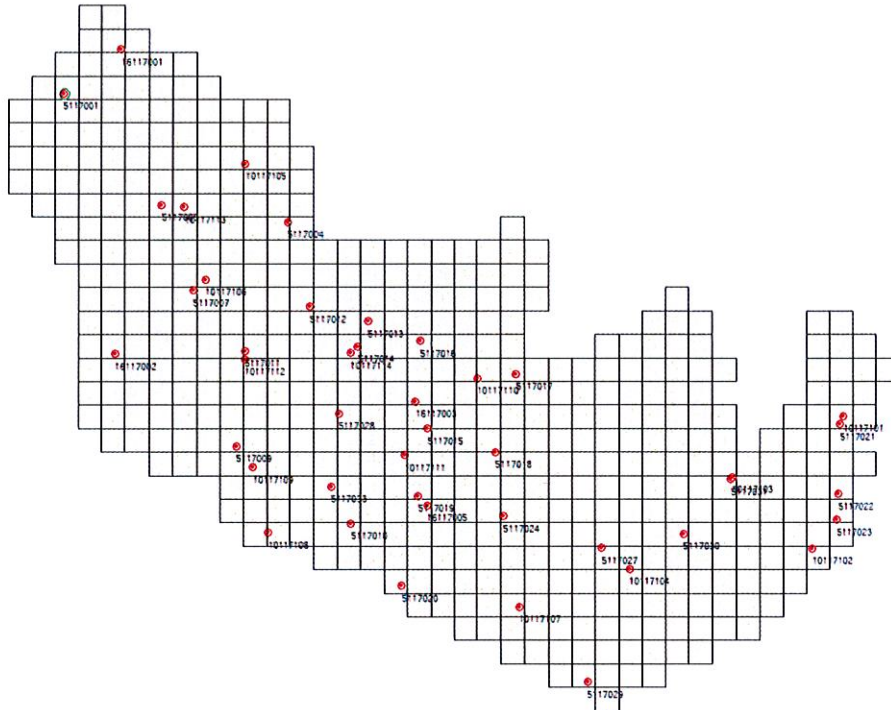
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

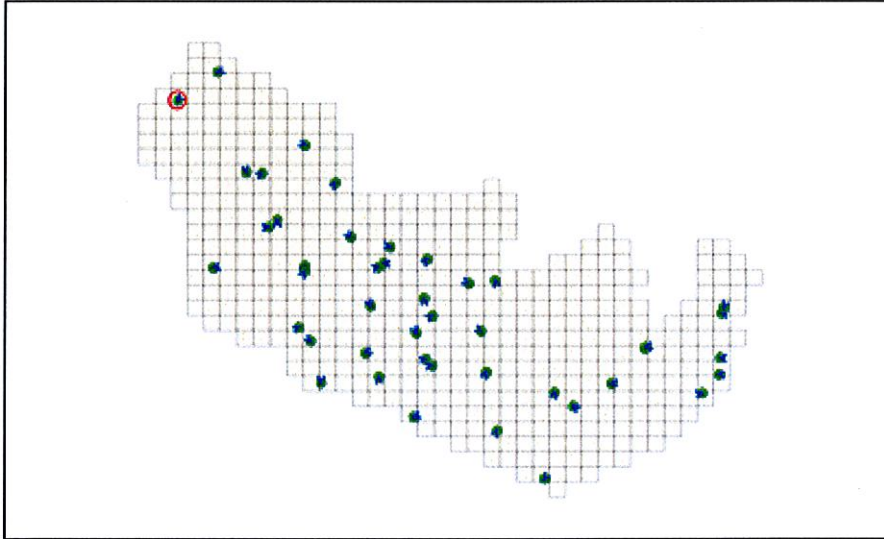
Index File Name: martin.shp
of Polygons: 526
of Matching Images: 526
Polygon ID: File_Name
Units: Feet
Image Folder Path: G:\Martin2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



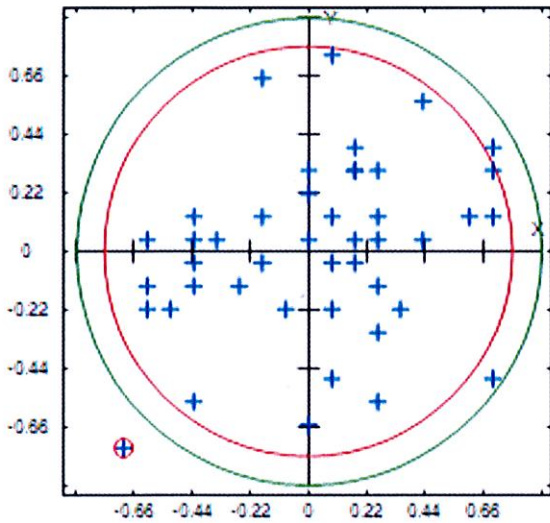


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.694
Min ΔY :	-0.738
Max ΔX :	0.694
Max ΔY :	0.738
Mean ΔX :	0.024
Mean ΔY :	0
RmseX:	0.384
RmseY:	0.326
RmseH:	0.504
NSSDA:	0.872
No. Obs.:	44
CE 90:	0.77
CE 95:	0.878
CI:	0.106

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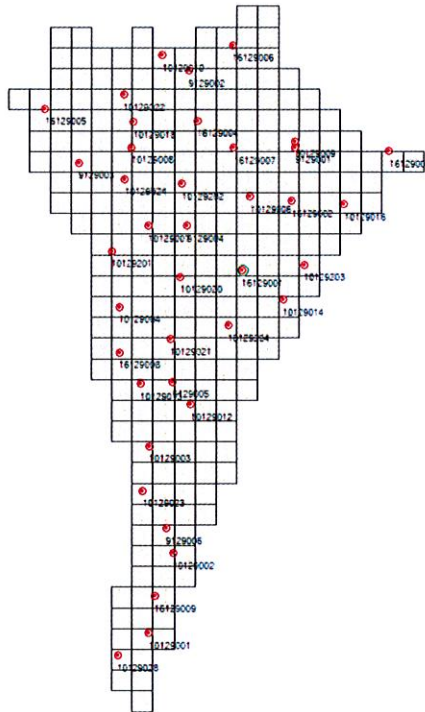
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: N/A
Sensor Resolution: 0.5
Vendor Name: N/A
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

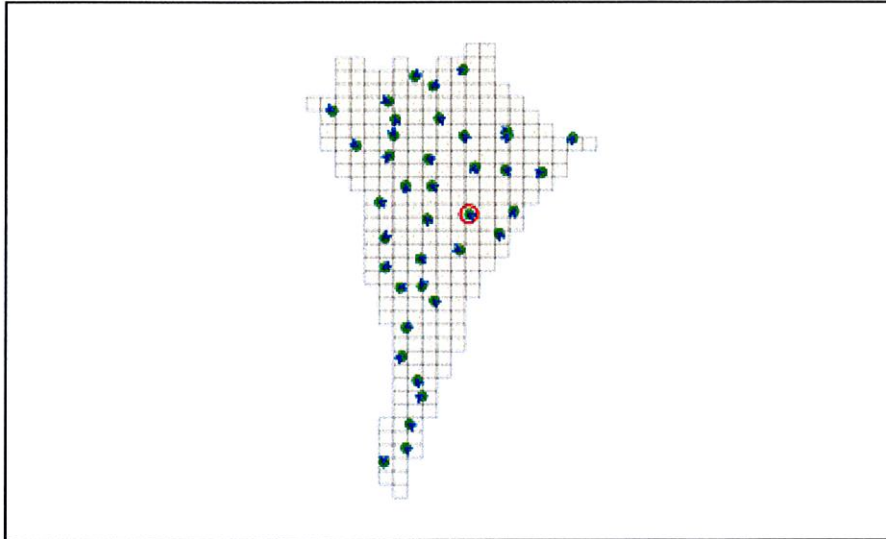
Index File Name: new_hanover.shp
of Polygons: 274
of Matching Images: 274
Polygon ID: File_Name
Units: Feet
Image Folder Path: H:\New Hanover2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



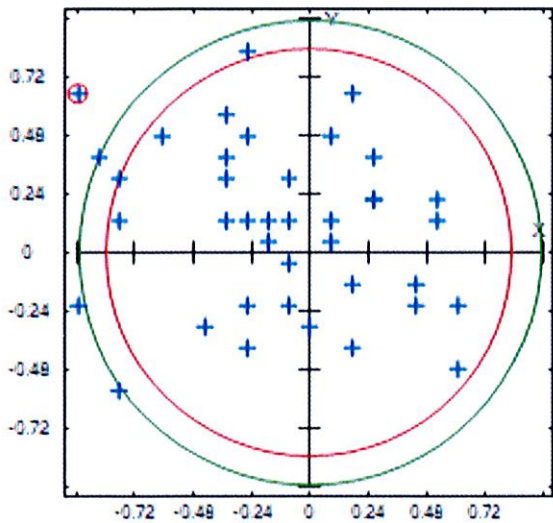


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.955
Min ΔY :	-0.564
Max ΔX :	0.608
Max ΔY :	0.825
Mean ΔX :	-0.125
Mean ΔY :	0.103
RmseX:	0.449
RmseY:	0.352
RmseH:	0.57
NSSDA:	0.987
No. Obs.:	39
CE 90:	0.834
CE 95:	0.952
CI:	0.122

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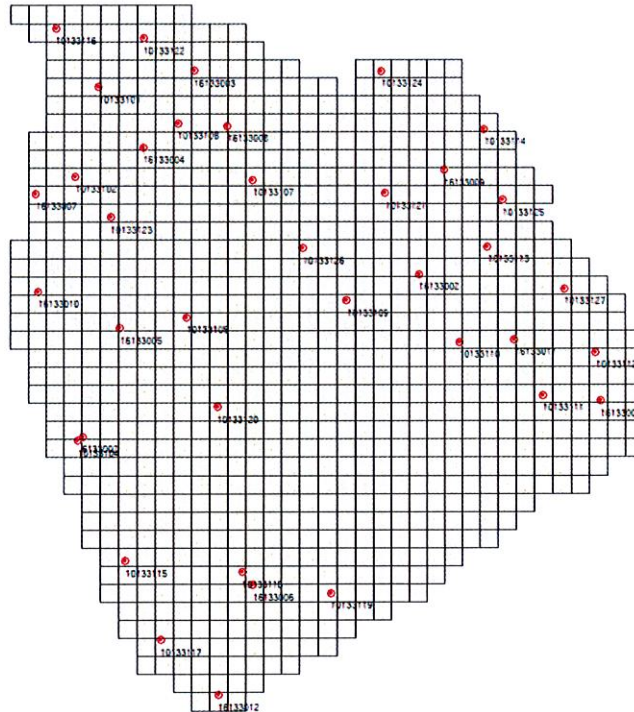
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

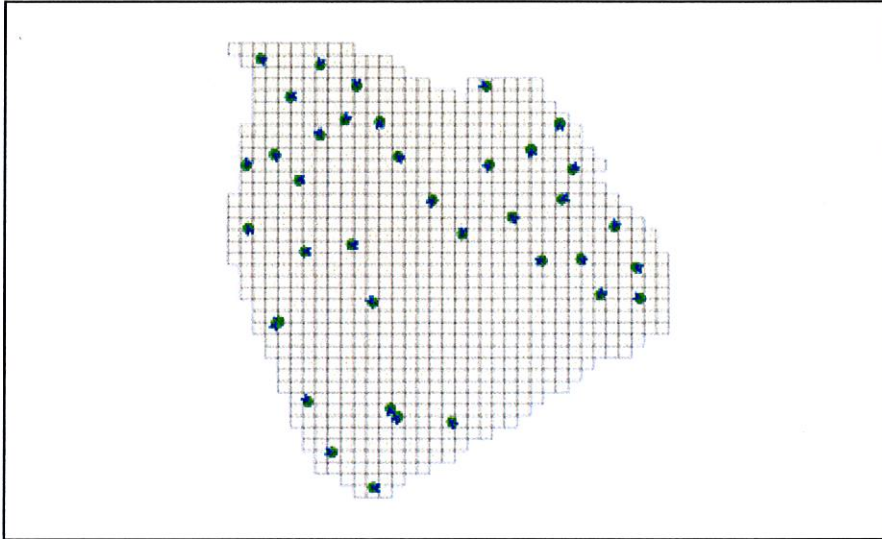
Index File Name: onslow.shp
of Polygons: 937
of Matching Images: 937
Polygon ID: File_Name
Units: Feet
Image Folder Path: H:\ONSLOW2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



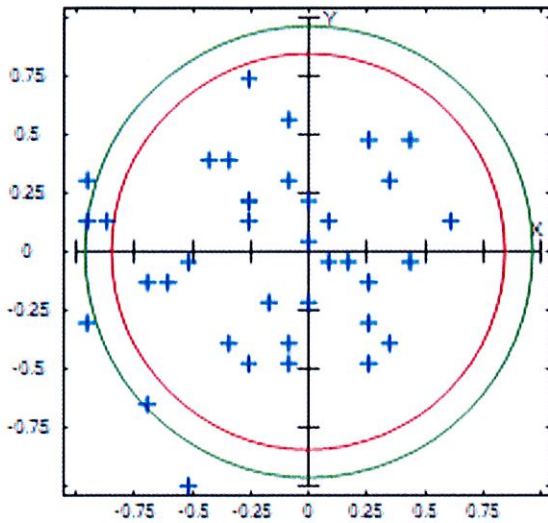


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.955
Min ΔY :	-0.998
Max ΔX :	0.608
Max ΔY :	0.738
Mean ΔX :	-0.169
Mean ΔY :	-0.011
RmseX:	0.446
RmseY:	0.364
RmseH:	0.576
NSSDA:	0.997
No. Obs.:	38
CE 90:	0.845
CE 95:	0.964
CI:	0.125



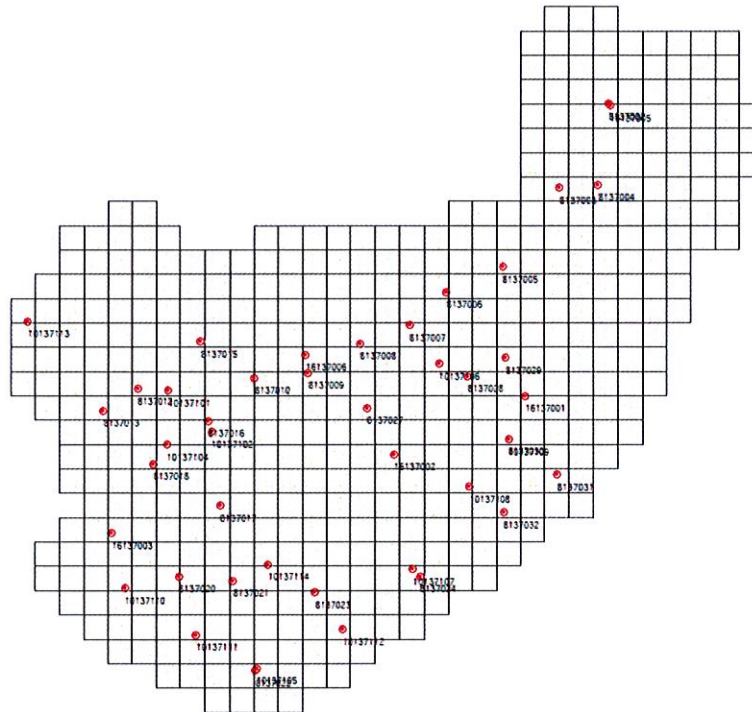
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

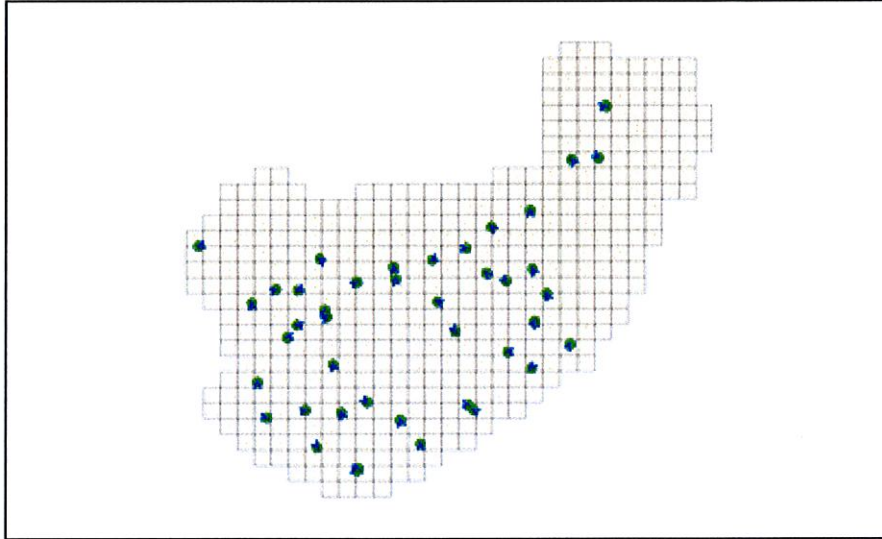
Index File Name: pamlico.shp
of Polygons: 497
of Matching Images: 497
Polygon ID: File_Name
Units: Feet
Image Folder Path: H:\PAMLICO2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



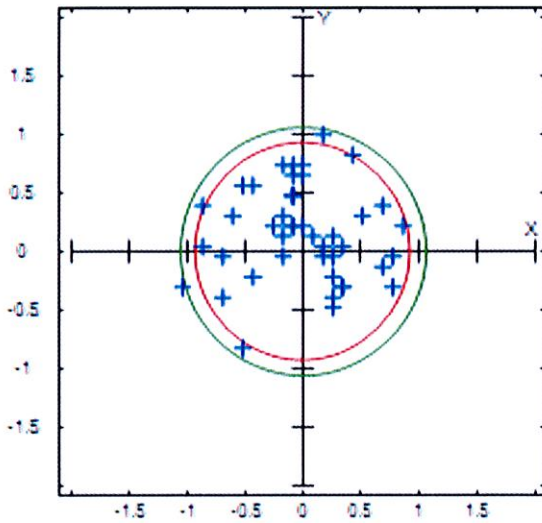


Vector Offset



Scaling Factor: 200

Circular Error

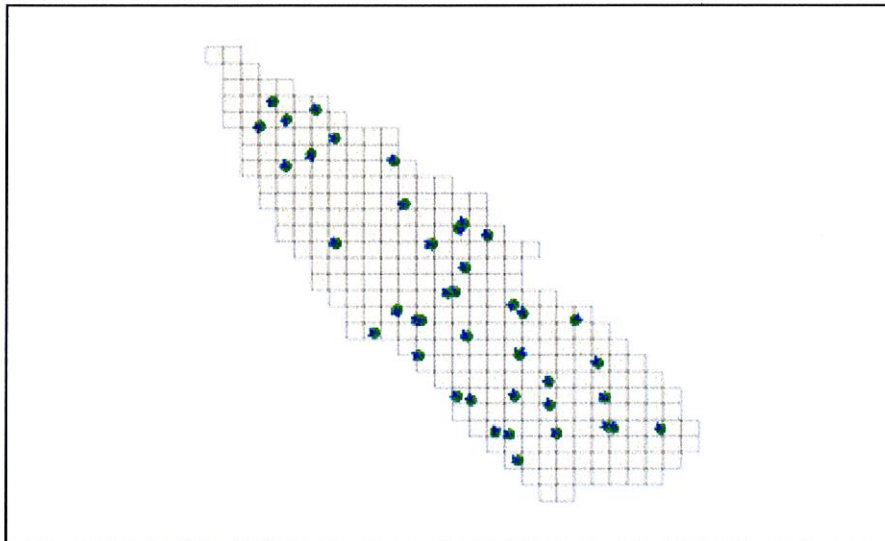


Error Statistics

Min ΔX :	-1.042
Min ΔY :	-0.825
Max ΔX :	0.868
Max ΔY :	0.998
Mean ΔX :	-0.012
Mean ΔY :	0.162
RmseX:	0.459
RmseY:	0.428
RmseH:	0.628
NSSDA:	1.086
No. Obs.:	44
CE 90:	0.928
CE 95:	1.059
CI:	0.128

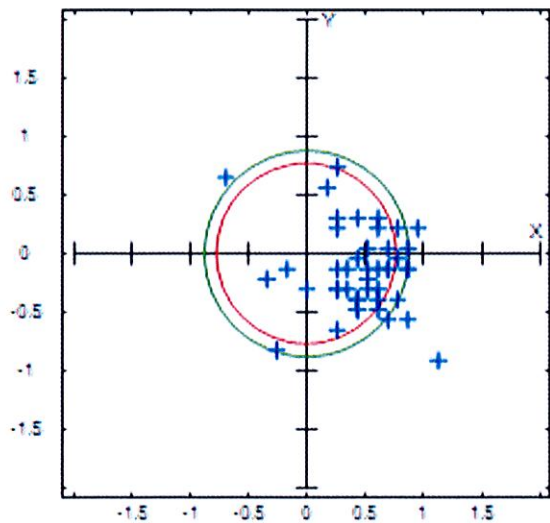


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.694
Min ΔY :	-0.911
Max ΔX :	1.128
Max ΔY :	0.738
Mean ΔX :	0.46
Mean ΔY :	-0.14
RmseX:	0.581
RmseY:	0.382
RmseH:	0.695
NSSDA:	1.203
No. Obs.:	44
CE 90:	0.771
CE 95:	0.88
CI:	0.106



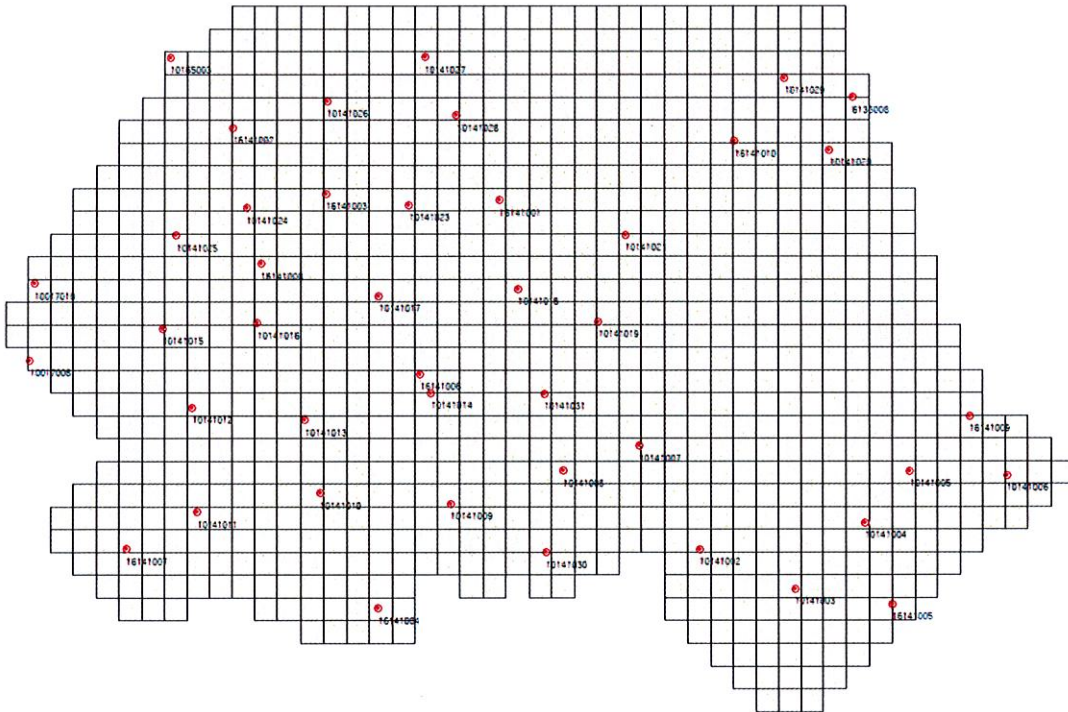
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: N/A
Sensor Resolution: 0.5
Vendor Name: N/A
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

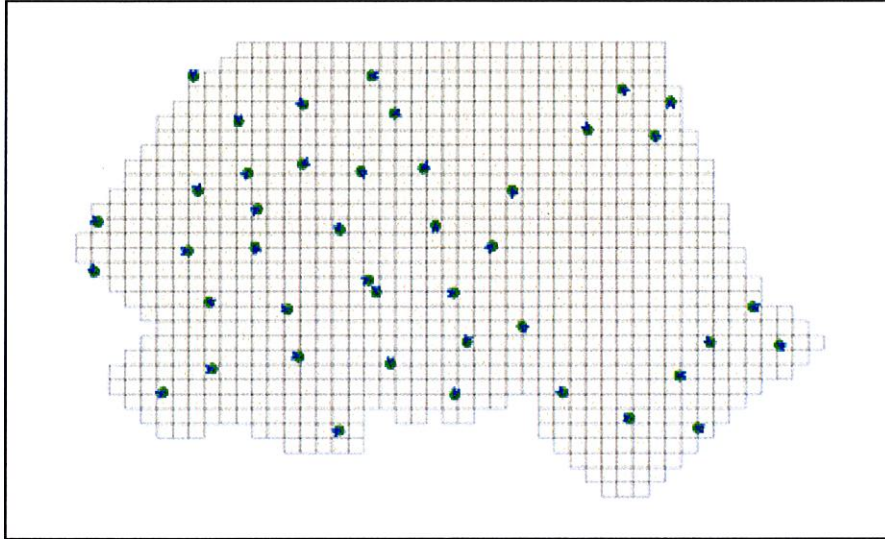
Index File Name: pender.shp
of Polygons: 1016
of Matching Images: 1016
Polygon ID: File_Name
Units: Feet
Image Folder Path: H:\Pender2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



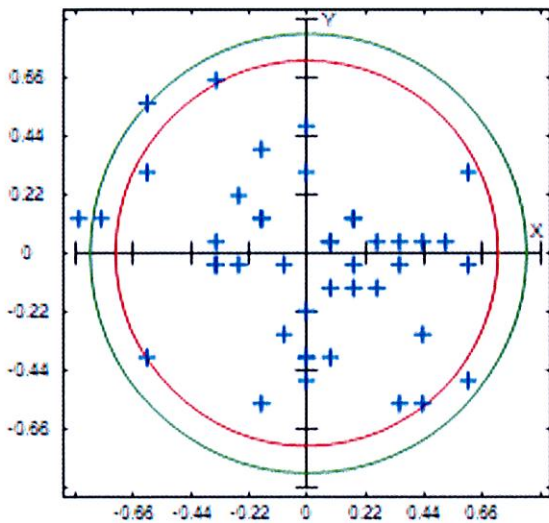


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.868
Min ΔY :	-0.564
Max ΔX :	0.608
Max ΔY :	0.651
Mean ΔX :	0
Mean ΔY :	-0.033
RmseX:	0.368
RmseY:	0.3
RmseH:	0.475
NSSDA:	0.822
No. Obs.:	43
CE 90:	0.723
CE 95:	0.825
CI:	0.101



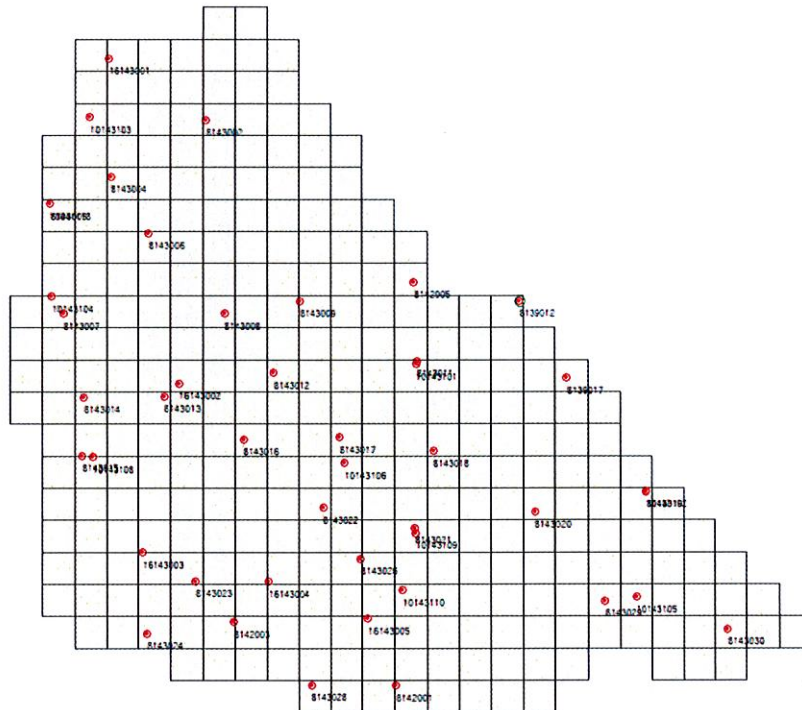
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: N/A
Sensor Resolution: 0.5
Vendor Name: N/A
Date of Aquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

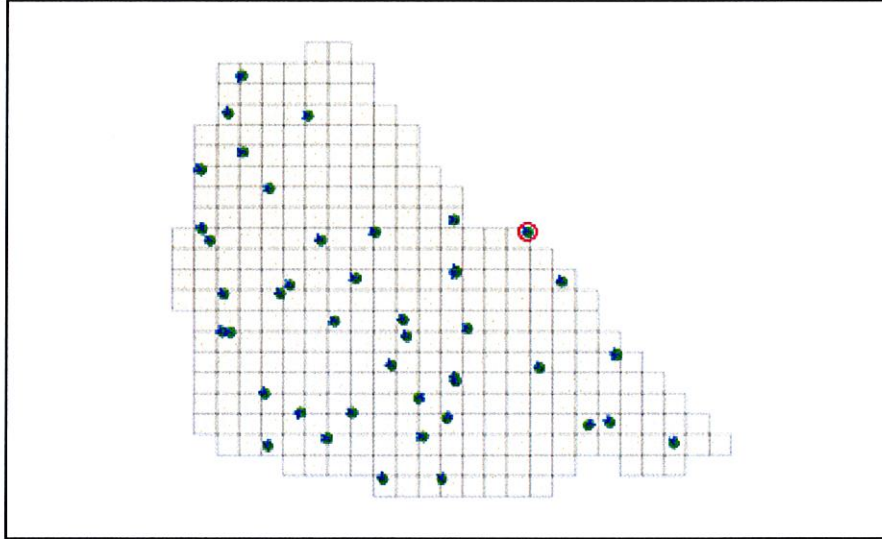
Index File Name: perquimans.shp
of Polygons: 319
of Matching Images: 319
Polygon ID: File_Name
Units: Feet
Image Folder Path: H:\PERQUIMANS2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



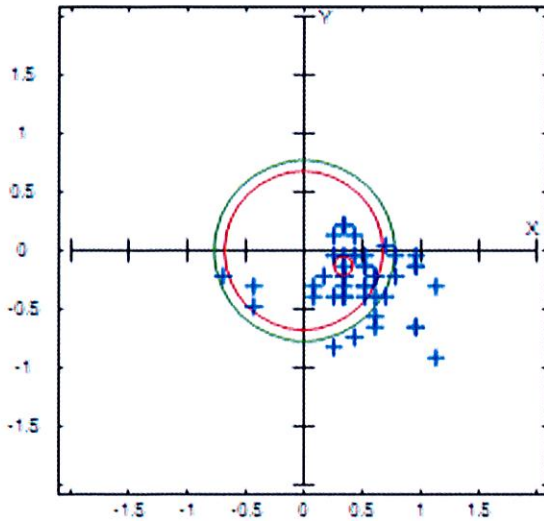


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.694
Min ΔY :	-0.911
Max ΔX :	1.128
Max ΔY :	0.217
Mean ΔX :	0.461
Mean ΔY :	-0.265
RmseX:	0.591
RmseY:	0.368
RmseH:	0.696
NSSDA:	1.205
No. Obs.:	45
CE 90:	0.678
CE 95:	0.773
CI:	0.092

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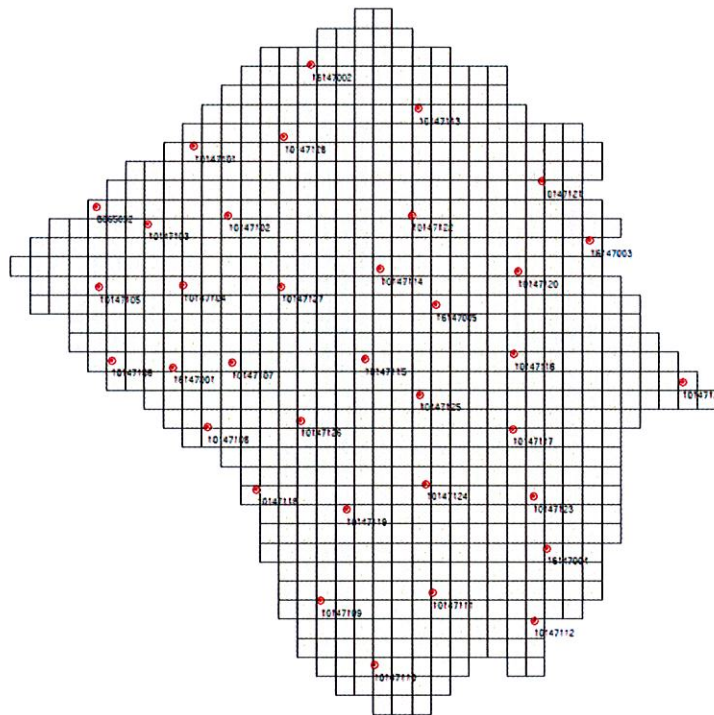
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

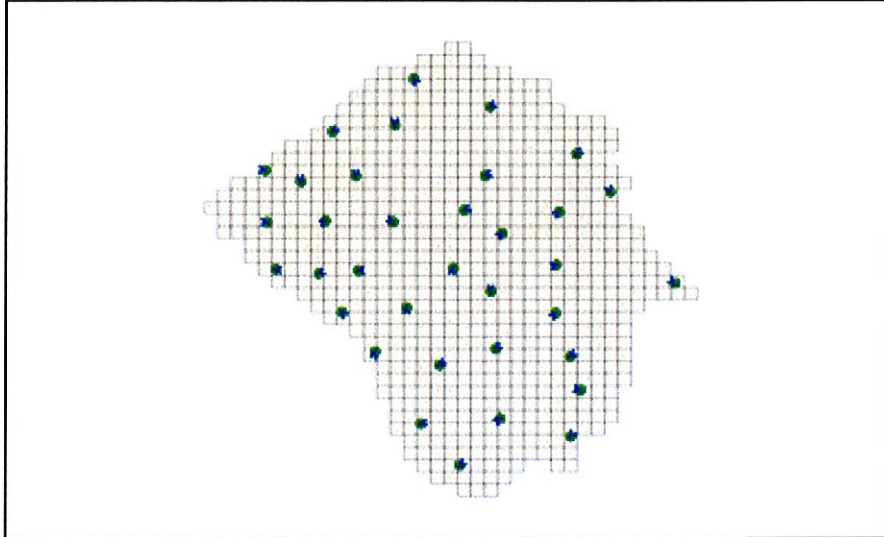
Index File Name: pitt.shp
of Polygons: 751
of Matching Images: 751
Polygon ID: File_Name
Units: Feet
Image Folder Path: H:\Pitt2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



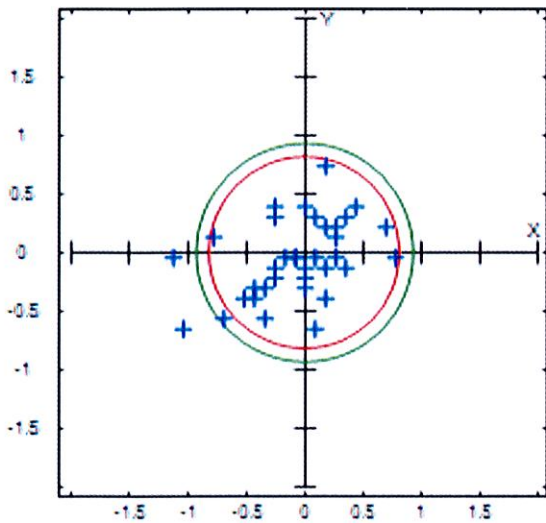


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-1.128
Min ΔY :	-0.651
Max ΔX :	0.781
Max ΔY :	0.738
Mean ΔX :	-0.079
Mean ΔY :	-0.058
RmseX:	0.432
RmseY:	0.332
RmseH:	0.544
NSSDA:	0.942
No. Obs.:	35
CE 90:	0.817
CE 95:	0.932
CI:	0.126

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Raleigh, North Carolina 27607
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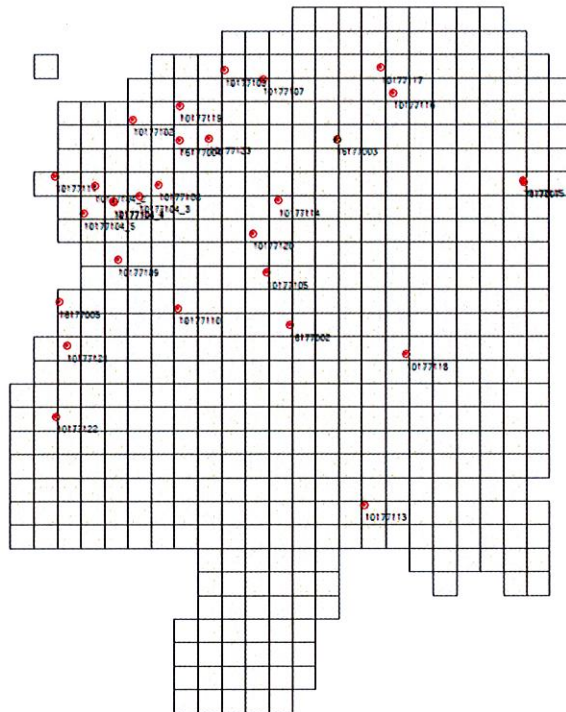
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: N/A
Date of Aquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

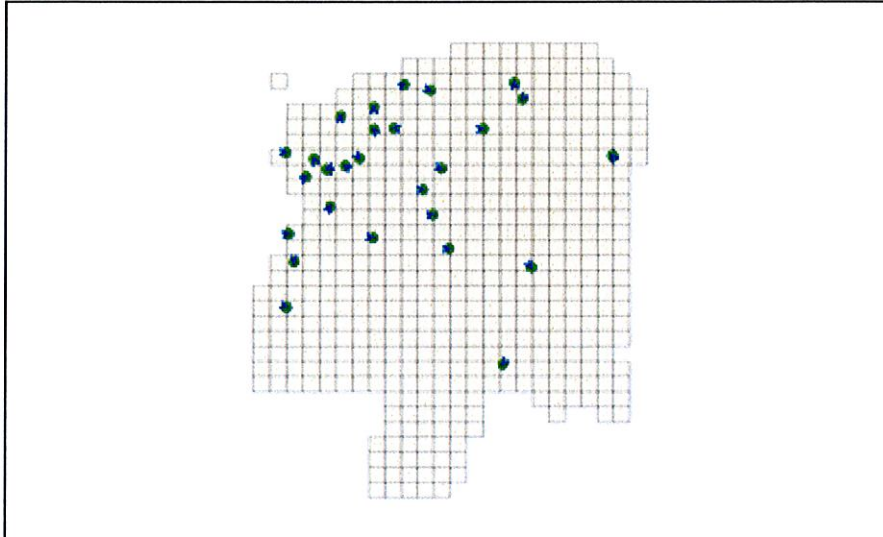
Index File Name: tyrrell.shp
of Polygons: 526
of Matching Images: 526
Polygon ID: File_Name
Units: Feet
Image Folder Path: G:\Tyrrell2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



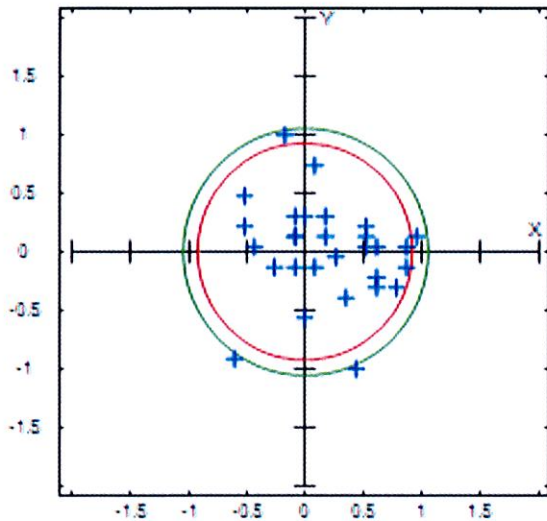


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.608
Min ΔY :	-0.998
Max ΔX :	0.955
Max ΔY :	0.998
Mean ΔX :	0.192
Mean ΔY :	0.004
RmseX:	0.478
RmseY:	0.408
RmseH:	0.629
NSSDA:	1.088
No. Obs.:	29
CE 90:	0.924
CE 95:	1.054
CI:	0.157

NORTH CAROLINA GEODETIC SURVEY

Claude T Bowers Building
4105 Reedy Creek Road
Raleigh, North Carolina 27607
(919)733-3836



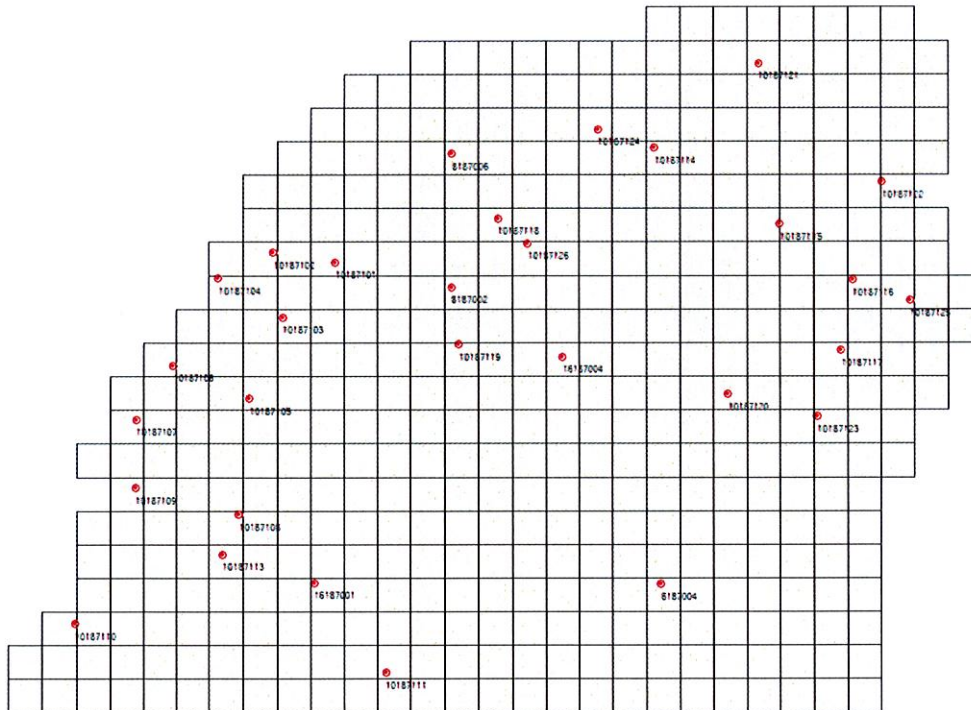
Project Information

Prepared By: Watson Ross
Project Name: 2016 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 12/2/2016 Finish: 12/2/2016

Metadata Information

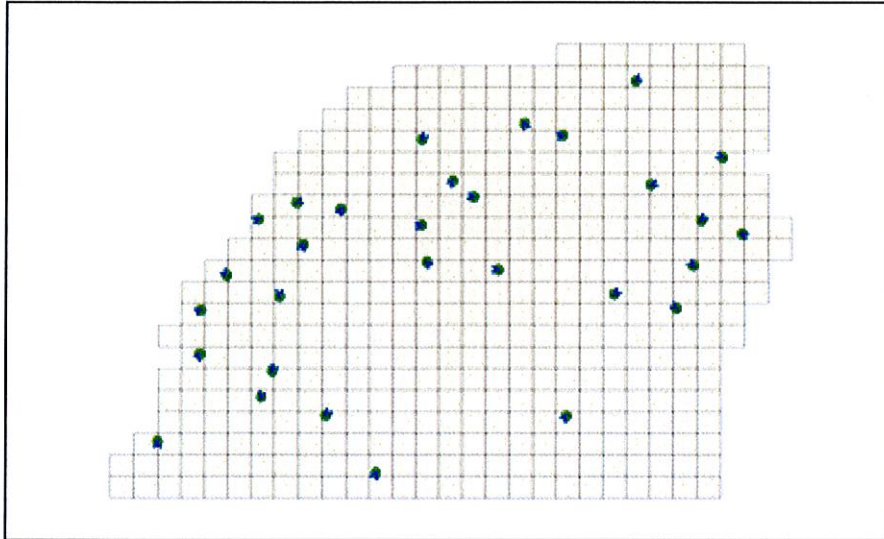
Index File Name: washington.shp
of Polygons: 461
of Matching Images: 461
Polygon ID: File_Name
Units: Feet
Image Folder Path: H:\Washington2016\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



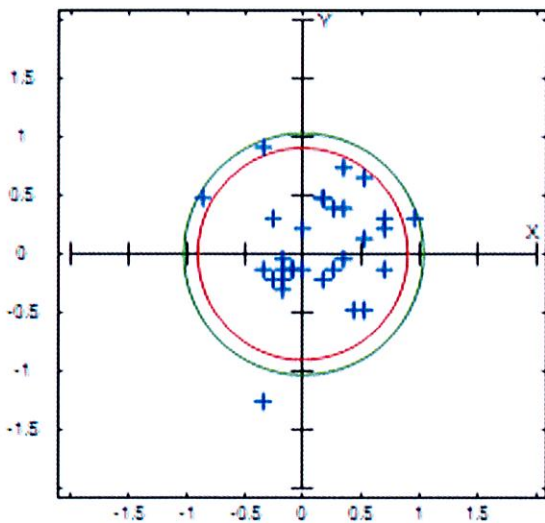


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.868
Min ΔY :	-1.259
Max ΔX :	0.955
Max ΔY :	0.911
Mean ΔX :	0.127
Mean ΔY :	0.061
RmseX:	0.422
RmseY:	0.431
RmseH:	0.603
NSSDA:	1.044
No. Obs.:	30
CE 90:	0.904
CE 95:	1.032
CI:	0.151

Station Name	PID	NAD83(2011)	NAVD88	NAD83 (2011)		SPC Combined		
		Ellipsoid Height (m)	Orthometric Height (m)	Latitude DMS	Longitude DMS	SPC North (m)	SPC East (m)	Factor
ASHEBORO 2 CORS ARP	DL6900	210.381	240.79	35 37 49.38501 N	079 45 53.75304 W	208859.939 m	540319.797 m	0.99986134
BURLINGTON CORS ARP	DF9213	173.385	203.61	36 05 29.58604 N	079 26 12.17620 W	259845.465 m	570271.809 m	0.99995269
CARTHAGE CORS ARP	DG5938	149.605	181	35 20 30.04880 N	079 23 05.08515 W	176632.942 m	574629.599 m	0.99985034
CLINTON BASE ARP	DP9434	23.891	58.49	34 59 25.64828 N	078 21 31.47858 W	137793.223 m	668139.836 m	0.99987918
DURHAM COOP CORS ARP	DG9328	117.466	148.79	35 59 46.12942 N	078 53 58.03641 W	249177.805 m	618666.816 m	0.99993843
ELIZABETHTOWN CORS ARP	DI1680	-9.525	25.46	34 39 13.60147 N	078 31 11.73447 W	100363.878 m	653606.669 m	0.99992817
FAYETTEVILLE 2006 CORS ARP	DH9594	16.912	50.45	35 02 02.48998 N	078 52 14.73160 W	142444.626 m	621393.108 m	0.99987712
GATESVILLE CORS ARP	DL6898	-20.438	15.68	36 26 12.65517 N	076 43 16.51658 W	300420.808 m	813921.941 m	1.00008983
GOLDSBORO CORS ARP	DK5550	14.084	48.9	35 25 16.86892 N	078 03 30.57562 W	185808.939 m	695094.939 m	0.99987475
HIGH POINT CORS ARP	AI4198	267.939	299.22	35 57 56.48686 N	080 00 48.93737 W	246260.723 m	518178.455 m	0.99990805
JACKSON NC CORS ARP	DH7133	13.263	47.68	36 24 30.56335 N	077 26 15.30879 W	296031.384 m	749749.096 m	1.00007439
JORDAN LAKE CORS ARP	DL3891	46.013	77.43	35 46 52.49646 N	079 02 03.92766 W	225330.877 m	606489.109 m	0.99990797
KENANSVILLE CORS ARP	DI1071	15.568	51.36	34 56 30.49763 N	077 58 49.94532 W	132685.360 m	702719.518 m	0.9998847
LILLINGTON 2004 CORS ARP	DG5759	25.711	58.73	35 25 12.54674 N	078 48 40.33946 W	185286.626 m	626745.253 m	0.99987285
LUMBERTON CORS ARP	DI1682	15.833	49.56	34 37 36.33605 N	079 04 39.69481 W	97263.238 m	602477.201 m	0.99992917
NASHVILLE CORS ARP	DK7576	34.503	68.96	35 58 09.06797 N	078 01 11.34161 W	246618.195 m	698006.712 m	0.99994545
POLKTON CORS ARP	DG7402	84.929	115.53	34 59 33.17297 N	080 10 37.85763 W	138473.153 m	502143.744 m	0.99986944
RAEFORD BASE ARP		51.563	84.27	34 58 45.00930 N	079 13 04.01644 W	136373.746 m	589717.557 m	0.99987575
RALEIGH DOT CORS ARP	DG4687	51.79	85.04	35 45 49.50795 N	078 34 44.39448 W	223469.874 m	647669.715 m	0.99990429
ROANOKE RAPIDS BASE ARP	DN9330	10.602	44.65	36 28 29.12759 N	077 34 56.60686 W	303189.882 m	736656.060 m	1.00009891
ROCKINGHAM CORS ARP	DM3995	91.874	122.95	34 57 51.98780 N	079 47 47.74087 W	135010.039 m	536859.244 m	0.99987067
ROXBORO CORS ARP	DM3527	194.648	225.65	36 23 28.05620 N	078 59 54.41890 W	293001.606 m	609740.318 m	1.00003983
SANFORD CORS ARP	AM7024	95.454	127.14	35 28 24.67784 N	079 09 28.98436 W	191202.330 m	595258.352 m	0.99986507
SMITHFIELD CORS ARP	DK6525	24.469	58.66	35 33 49.60980 N	078 20 10.80495 W	201405.073 m	669760.307 m	0.99988353
TARBORO CORS ARP	DK7578	-0.507	34.83	35 52 56.96198 N	077 34 21.39610 W	237489.266 m	738477.556 m	0.99993315
TROY CORS ARP	DK4045	144.059	174.59	35 22 01.84517 N	079 52 12.77094 W	179740.437 m	530528.389 m	0.999852
WARRENTON CORS ARP	DM3529	76.221	109.53	36 23 41.68571 N	078 10 13.74958 W	293732.691 m	684023.061 m	1.00005974
WILSON CORS ARP	DK7563	11.185	46.03	35 42 26.29637 N	077 55 57.08393 W	217645.964 m	706192.128 m	0.99990235

m = meters

NAVD88 = North American Vertical Datum of 1988

NAD83 (2011) = North American Datum of 1983 realization of 2011

Acronyms, Abbreviations, and Definitions

ARP - Antenna Reference Point

CORS - Continuous Operating Reference Station

DMS - Degrees Minutes Seconds

m – Meter

PID - Permanent Identifier

SPC - State Plane Coordinates

Statistical Definitions:

Min ΔX / ΔY – These statistics represent the change in value between the X(Y)-coordinate location in the photo and X(Y)-coordinate location in the survey. The minimum of each simply represents the smallest value out of all of the analyzed locations. This component of the statistics can be used to show which user entered locations most closely correspond to the surveyed points.

Max ΔX / ΔY – These statistics represent the change in value between the X(Y)-coordinate location in the photo and X(Y)-coordinate location in the survey. The maximum value of each represents the largest value out of all of the analyzed locations. Maximum values can be used to show which user entered locations most closely correspond to the surveyed points.

Mean ΔX / ΔY - The statistics of the mean ΔX and mean ΔY are intended to show the average values of the ΔX and ΔY . These statistics show the change in value between the X(Y)-coordinate location in the photo and X(Y)-coordinate location in the survey. The mean values can be used to show the average off-sets of all of the analyzed locations

RMSE X / Y / H - The RMSE is used to describe accuracy encompassing both random and systematic errors. RMSE is the square root of the square of the difference between a true test point and an interpolated test point divided by the total number of test points in the arithmetic mean. RMSE X measures RMSE in the X direction only, and similarly RMSE Y measures RMSE in the Y direction only. RMSE H takes both X and Y directions into account, and measures the RMSE in a straight line between the true test point and the interpolated test point.

NSSDA – Horizontal accuracy standard adopted by the National Standard for Spatial Data Accuracy, computed utilizing the $RMSE_x$ and $RMSE_y$ values.

No. Obs. – Number of observations

CE 90 and CE 95 - Circular Error probable, defined as a circle, centered about the mean, whose boundary is expected to include a certain percentage of the population within it. In the case of CE90, 90% of the population is expected to be included within the circular radius and in the case of CE95, 95% of the population is expected to be included within the circular radius.

CI – Confidence Interval, which describes the uncertainty associated with a sampling method.