

GROUND CONTROL SURVEY REPORT

**GPS SURVEY
FOR LIDAR CONTROL**

JUNEAU COUNTY, WI WROC LIDAR SURVEY

JUNEAU COUNTY, WISCONSIN

Services provided by:

AYRES

ASSOCIATES

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ABSTRACT

This report documents the GPS ground surveys conducted in support of FEMA accuracy testing of the lidar data collection for Juneau County, Wisconsin, in 2010. Surveys were conducted at 5 sites utilizing the base stations established in the static network. These surveys established “ground truth” data at each site on different surface types, including bare earth, low grass, brush lands, low trees, forest, high grass, weeds, crops, and urban areas. Statistical comparisons were made between ground truth points collected from the ground survey and the elevation at the associated horizontal coordinates represented on the LiDAR-derived digital terrain model.

SAMPLE POINTS/TEST POINTS

The ground survey test points were distributed and categorized into sites as shown in the Test Survey Locations map on the next page.

DATA ANALYSIS

To qualify as an acceptable accuracy test, the lidar data must be compared with a dataset of higher accuracy – in this instance ground survey. To develop a comparable dataset of points from the lidar dataset, a utility from proprietary software was used.

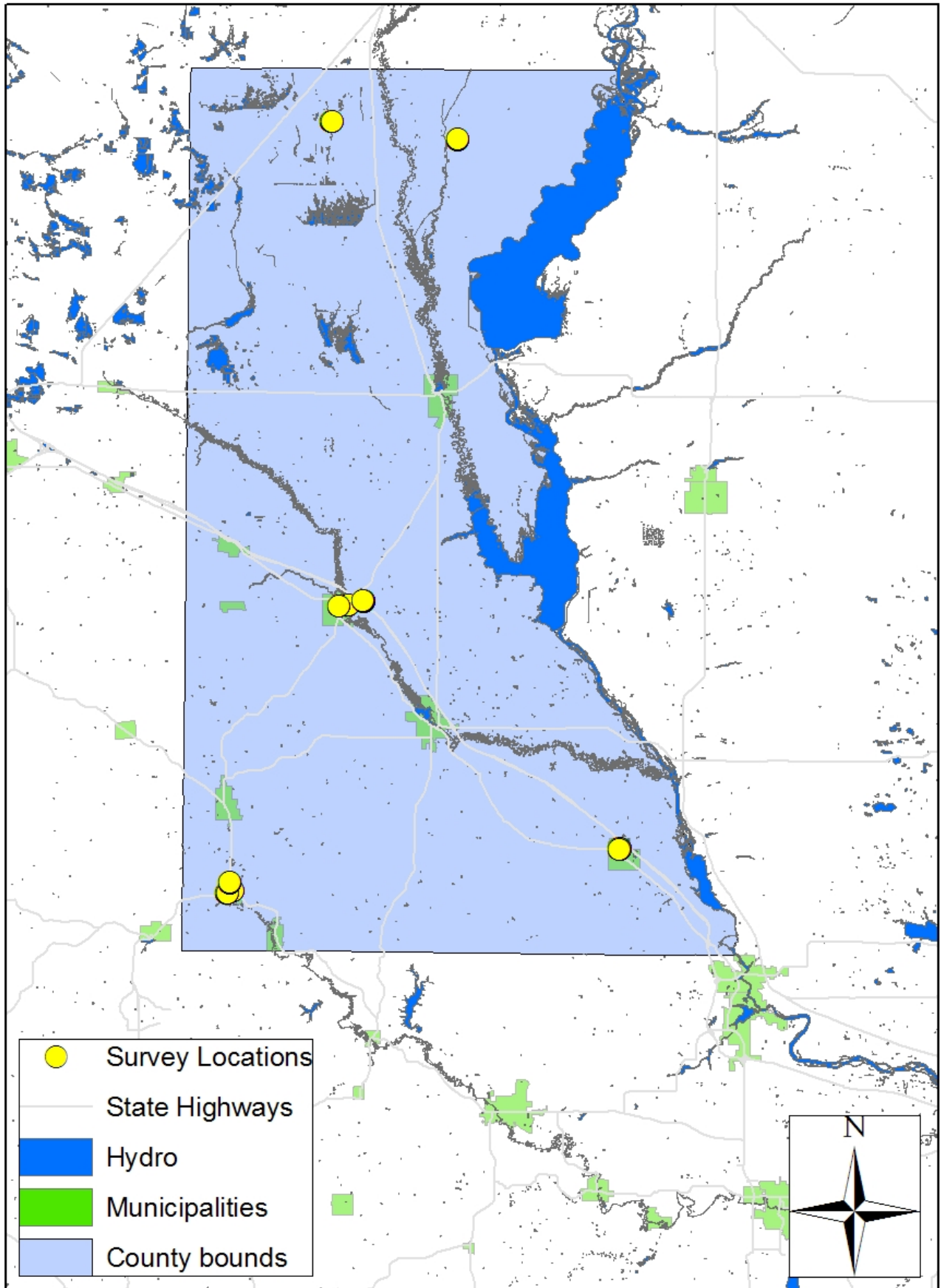
The ground control survey results were imported into an ESRI Pointz shapefile with each point’s information as attributes. The utility then accessed the lidar and generated a triangulated irregular network (TIN), which is a continuous digital terrain surface, using the bare-earth lidar points and the compiled breaklines. The utility probed the TIN surface to determine its elevations at each of the survey point’s horizontal locations.

The elevation was then appended as a field to the Pointz shapefile; the attributes for each point were exported to a database; and then statistical analysis was performed. The results can be seen on the following pages.

OVERALL ACCURACY

A comparison of ground survey versus lidar model values indicates a vertical root mean square error (RMSEz) of 0.290 feet. This is within the FEMA specified vertical accuracy tolerance of 0.6. This RMSEz equates to a tested 0.568 feet vertical accuracy at 95% confidence level.

Juneau County 2010 Test Survey Locations



GROUND TRUTH ANALYSIS
Comparison of Lidar Points to Ground-Truth Points
Juneau County Coordinate System WISCRS
NAD 83 HARN / NAVD 88, survey feet

Field definitions

Name – The designation given to the ground survey point to identify it with its coordinates and land cover type

X, Y, and Z – The coordinates that describe the point's horizontal and vertical location within the Juneau County WISCRS Coordinate System. The X and Y values are shared between the ground control points and lidar comparison points. The Z field shows the elevation of the survey number. The lidar comparison point's elevation is implicit in the analysis' delta Z

Delta Z – The error, the difference between the elevation at a horizontal location as determined by ground survey and as determined by the lidar dataset

Delta Z Squared – The value of squaring Delta Z

Land Cover – The predominant land cover category at the location of the survey point

Statistic definitions

Sum – The sum of the analysis' Delta Z Squared values

Average – The average of the analysis' Delta Z Squared values

RMSE – The root mean squared error, the square root of the average of the squared errors

Accuracyz – The product of multiplying the RMSE with 1.96, a conversion between the RMSE value and a value with a 95% confidence level

Name	X	Y	Z	Delta Z	Delta Z Squared	Land Cover
5271	510071.852	126718.831	886.160	0.098	0.010	bare earth and low grass
5272	510071.926	126721.719	886.150	0.069	0.005	bare earth and low grass
5273	510071.997	126724.823	886.060	0.143	0.020	bare earth and low grass
5274	510071.709	126728.833	886.000	0.201	0.040	bare earth and low grass
5275	510071.676	126732.794	886.020	0.118	0.014	bare earth and low grass
5276	510068.627	126732.957	886.020	0.166	0.028	bare earth and low grass
5277	510068.702	126729.470	886.060	0.188	0.035	bare earth and low grass
5278	510068.388	126725.467	886.110	0.101	0.010	bare earth and low grass
5279	510068.053	126721.939	886.130	0.093	0.009	bare earth and low grass
5280	510067.669	126718.478	886.120	0.164	0.027	bare earth and low grass
5281	510065.052	126717.708	886.240	0.141	0.020	bare earth and low grass
5282	510064.154	126720.799	886.150	0.156	0.024	bare earth and low grass
5283	510063.635	126724.256	886.130	0.141	0.020	bare earth and low grass
5284	510063.452	126727.827	886.110	0.068	0.005	bare earth and low grass
5285	510063.044	126731.324	886.130	0.138	0.019	bare earth and low grass
5286	510059.971	126731.381	886.120	0.216	0.047	bare earth and low grass
5287	510059.686	126728.881	886.160	0.247	0.061	bare earth and low grass
5288	510059.725	126725.672	886.150	0.251	0.063	bare earth and low grass
5289	510059.721	126722.504	886.180	0.156	0.024	bare earth and low grass
5290	510059.862	126719.057	886.300	0.14	0.020	bare earth and low grass
5291	510056.908	126718.355	886.380	0.086	0.007	bare earth and low grass
5292	510056.615	126721.095	886.260	0.18	0.032	bare earth and low grass
5293	510056.403	126724.166	886.250	0.149	0.022	bare earth and low grass
5294	510056.140	126728.345	886.210	0.209	0.044	bare earth and low grass
5295	510055.957	126732.005	886.180	0.141	0.020	bare earth and low grass
5296	510023.085	126795.850	886.250	0.213	0.045	forest
5297	510022.820	126798.580	886.110	0.316	0.100	forest
5298	510022.691	126801.777	885.880	0.389	0.151	forest
5299	510022.738	126804.302	885.900	0.32	0.102	forest
5300	510022.635	126806.025	885.830	0.433	0.187	forest
5301	510020.425	126805.824	885.930	0.189	0.036	forest
5302	510020.432	126803.230	885.920	0.251	0.063	forest
5303	510020.771	126800.108	885.920	0.392	0.154	forest
5304	510020.227	126799.902	886.090	0.237	0.056	forest
5305	510020.716	126794.193	886.310	0.185	0.034	forest
5306	510017.987	126794.256	886.260	0.262	0.069	forest
5307	510017.895	126797.525	886.180	0.296	0.088	forest
5308	510017.652	126800.387	886.110	0.165	0.027	forest
5309	510017.329	126803.168	885.910	0.267	0.071	forest
5310	510016.692	126805.650	885.800	0.339	0.115	forest
5311	510014.581	126805.244	885.770	0.34	0.116	forest
5312	510014.589	126802.650	885.910	0.309	0.095	forest
5313	510014.794	126800.355	886.020	0.297	0.088	forest
5314	510014.842	126797.156	886.110	0.333	0.111	forest
5315	510014.866	126794.596	886.220	0.287	0.082	forest
5316	510011.752	126794.538	886.300	0.322	0.104	forest
5317	510011.700	126797.450	886.110	0.427	0.182	forest
5318	510011.819	126800.322	885.750	0.65	0.422	forest
5319	510011.257	126803.098	885.890	0.342	0.117	forest
5320	510011.055	126805.472	885.780	0.432	0.187	forest
5321	510114.930	126785.647	884.080	0.341	0.116	brush lands and low trees
5322	510115.600	126788.669	883.940	0.482	0.232	brush lands and low trees
5323	510116.727	126791.747	883.820	0.655	0.429	brush lands and low trees
5324	510117.053	126793.349	883.760	0.655	0.429	brush lands and low trees

5325	510117.643	126795.058	883.710	0.614	0.377	brush lands and low trees
5326	510117.307	126783.730	884.030	0.345	0.119	brush lands and low trees
5327	510117.664	126784.236	883.980	0.362	0.131	brush lands and low trees
5328	510119.977	126786.719	883.980	0.515	0.265	brush lands and low trees
5329	510121.770	126788.118	883.860	0.678	0.460	brush lands and low trees
5330	510122.903	126790.002	883.750	0.713	0.508	brush lands and low trees
5331	510126.558	126791.244	883.520	0.633	0.401	brush lands and low trees
5332	510125.768	126789.446	883.620	0.589	0.347	brush lands and low trees
5333	510124.751	126786.795	883.700	0.735	0.540	brush lands and low trees
5334	510123.689	126784.409	883.910	0.544	0.296	brush lands and low trees
5335	510122.606	126782.264	883.860	0.546	0.298	brush lands and low trees
5336	510125.643	126783.035	883.770	0.604	0.365	brush lands and low trees
5337	510127.384	126785.762	883.560	0.71	0.504	brush lands and low trees
5338	510128.176	126785.360	883.620	0.601	0.361	brush lands and low trees
5339	510129.395	126789.688	883.480	0.403	0.162	brush lands and low trees
5340	510129.711	126791.648	883.530	0.316	0.100	brush lands and low trees
5341	510126.972	126792.789	883.540	0.585	0.342	brush lands and low trees
5342	510124.743	126792.914	883.610	0.694	0.482	brush lands and low trees
5345	510270.241	126619.074	882.500	0.551	0.304	high grass, weeds, and crops
5346	510273.421	126619.559	882.550	0.449	0.202	high grass, weeds, and crops
5347	510277.313	126620.142	882.480	0.486	0.236	high grass, weeds, and crops
5348	510280.000	126620.543	882.400	0.483	0.233	high grass, weeds, and crops
5349	510283.222	126621.138	882.390	0.334	0.112	high grass, weeds, and crops
5350	510282.363	126623.720	882.300	0.396	0.157	high grass, weeds, and crops
5351	510280.309	126624.003	882.760	0.067	0.004	high grass, weeds, and crops
5352	510274.019	126623.490	882.680	0.417	0.174	high grass, weeds, and crops
5353	510269.504	126623.156	882.680	0.343	0.118	high grass, weeds, and crops
5354	510264.531	126623.616	882.720	0.48	0.230	high grass, weeds, and crops
5355	510265.094	126627.234	882.660	0.631	0.398	high grass, weeds, and crops
5356	510267.505	126626.689	882.680	0.508	0.258	high grass, weeds, and crops
5357	510272.133	126627.143	882.610	0.465	0.216	high grass, weeds, and crops
5358	510274.921	126627.155	882.670	0.355	0.126	high grass, weeds, and crops
5359	510277.351	126627.835	882.350	0.61	0.372	high grass, weeds, and crops
5360	510280.275	126628.395	882.210	0.568	0.323	high grass, weeds, and crops
5361	510283.570	126628.791	882.130	0.384	0.147	high grass, weeds, and crops
5362	510282.636	126631.703	882.250	0.321	0.103	high grass, weeds, and crops
5363	510278.299	126631.272	882.420	0.577	0.333	high grass, weeds, and crops
5364	510274.452	126630.936	882.620	0.558	0.311	high grass, weeds, and crops
5365	510270.314	126630.239	882.760	0.389	0.151	high grass, weeds, and crops
5366	510265.153	126629.408	882.680	0.623	0.388	high grass, weeds, and crops
5367	510265.512	126632.276	882.590	0.571	0.326	high grass, weeds, and crops
5368	510268.705	126632.755	882.710	0.442	0.195	high grass, weeds, and crops
5369	510271.423	126633.024	882.810	0.346	0.120	high grass, weeds, and crops
5370	510274.925	126633.354	882.720	0.439	0.193	high grass, weeds, and crops
5371	510278.164	126633.902	882.500	0.461	0.213	high grass, weeds, and crops
5372	510047.274	126580.638	890.370	0.118	0.014	urban areas
5373	510044.579	126580.267	890.350	0.134	0.018	urban areas
5374	510041.850	126580.312	890.350	0.174	0.030	urban areas
5375	510039.374	126580.357	890.360	0.167	0.028	urban areas
5376	510036.141	126580.843	890.340	0.171	0.029	urban areas
5377	510036.120	126578.475	890.370	0.174	0.030	urban areas
5378	510038.966	126578.259	890.380	0.137	0.019	urban areas
5379	510041.411	126578.432	890.380	0.142	0.020	urban areas
5380	510044.390	126578.871	890.410	0.121	0.015	urban areas
5381	510047.474	126578.978	890.390	0.139	0.019	urban areas

5382	510047.809	126575.778	890.430	0.155	0.024	urban areas
5383	510046.557	126575.384	890.420	0.173	0.030	urban areas
5384	510041.486	126575.411	890.440	0.073	0.005	urban areas
5385	510037.797	126575.472	890.390	0.133	0.018	urban areas
5386	510036.842	126573.305	890.430	0.095	0.009	urban areas
5387	510040.148	126572.914	890.460	0.177	0.031	urban areas
5388	510043.775	126572.817	890.480	0.119	0.014	urban areas
5389	510047.151	126572.680	890.490	0.085	0.007	urban areas
5390	510047.154	126569.409	890.520	0.069	0.005	urban areas
5391	510043.688	126569.758	890.520	0.195	0.038	urban areas
5392	510040.145	126570.000	890.520	0.24	0.058	urban areas
5393	510037.203	126569.910	890.500	0.157	0.025	urban areas
5394	510033.564	126569.581	890.510	0.112	0.013	urban areas
5395	445316.338	188072.767	886.620	0.012	0.000	high grass, weeds, and crops
5396	445316.588	188069.707	886.700	0.076	0.006	high grass, weeds, and crops
5397	445317.141	188066.385	886.670	0.121	0.015	high grass, weeds, and crops
5398	445317.686	188063.290	886.730	-0.013	0.000	high grass, weeds, and crops
5399	445317.957	188060.677	886.670	0.184	0.034	high grass, weeds, and crops
5400	445320.668	188061.332	886.720	-0.013	0.000	high grass, weeds, and crops
5401	445319.513	188065.017	886.700	-0.037	0.001	high grass, weeds, and crops
5402	445318.929	188068.669	886.690	0.065	0.004	high grass, weeds, and crops
5403	445319.152	188072.674	886.700	-0.061	0.004	high grass, weeds, and crops
5404	445318.913	188077.116	886.630	-0.093	0.009	high grass, weeds, and crops
5405	445321.454	188077.695	886.590	-0.117	0.014	high grass, weeds, and crops
5406	445321.498	188074.601	886.690	-0.12	0.014	high grass, weeds, and crops
5407	445321.851	188070.337	886.770	-0.094	0.009	high grass, weeds, and crops
5408	445321.548	188067.039	886.750	-0.079	0.006	high grass, weeds, and crops
5409	445322.096	188062.801	886.710	-0.027	0.001	high grass, weeds, and crops
5410	445324.783	188063.130	886.760	-0.003	0.000	high grass, weeds, and crops
5411	445324.541	188066.441	886.730	0.012	0.000	high grass, weeds, and crops
5412	445324.171	188071.039	886.780	-0.098	0.010	high grass, weeds, and crops
5413	445324.380	188074.773	886.710	-0.125	0.016	high grass, weeds, and crops
5414	445324.955	188079.106	886.550	0.026	0.001	high grass, weeds, and crops
5415	445327.590	188079.842	886.570	-0.015	0.000	high grass, weeds, and crops
5416	445327.389	188076.508	886.680	-0.044	0.002	high grass, weeds, and crops
5417	445326.915	188072.728	886.760	-0.075	0.006	high grass, weeds, and crops
5418	445327.358	188068.611	886.760	-0.054	0.003	high grass, weeds, and crops
5419	445328.027	188064.728	886.770	0.016	0.000	high grass, weeds, and crops
5420	445413.856	188187.170	884.740	0.152	0.023	brush lands and low trees
5421	445417.151	188185.862	884.940	-0.047	0.002	brush lands and low trees
5422	445419.638	188184.281	884.980	-0.042	0.002	brush lands and low trees
5423	445422.632	188183.016	884.820	0.121	0.015	brush lands and low trees
5424	445424.833	188182.383	884.890	0.101	0.010	brush lands and low trees
5425	445426.117	188184.544	884.790	0.162	0.026	brush lands and low trees
5426	445423.303	188186.003	884.850	0.144	0.021	brush lands and low trees
5427	445420.427	188187.059	884.820	0.289	0.084	brush lands and low trees
5428	445417.983	188188.501	884.600	0.333	0.111	brush lands and low trees
5429	445414.896	188190.194	884.680	0.057	0.003	brush lands and low trees
5430	445413.729	188194.941	884.680	0.115	0.013	brush lands and low trees
5431	445417.270	188194.013	884.820	0.121	0.015	brush lands and low trees
5432	445419.517	188193.642	884.750	0.225	0.051	brush lands and low trees
5433	445420.875	188192.775	884.850	0.15	0.022	brush lands and low trees
5434	445424.111	188192.019	884.880	0.3	0.090	brush lands and low trees
5435	445423.998	188194.922	884.720	0.209	0.044	brush lands and low trees
5436	445421.255	188195.692	884.930	-0.002	0.000	brush lands and low trees

5437	445419.789	188196.838	884.680	0.224	0.050	brush lands and low trees
5438	445416.924	188198.002	884.800	0.121	0.015	brush lands and low trees
5439	445413.786	188200.104	884.820	0.056	0.003	brush lands and low trees
5440	445415.090	188203.030	884.820	0.101	0.010	brush lands and low trees
5441	445419.415	188202.727	884.660	0.109	0.012	brush lands and low trees
5442	445422.625	188201.529	884.710	-0.041	0.002	brush lands and low trees
5443	445425.656	188200.103	884.780	-0.156	0.024	brush lands and low trees
5444	445428.500	188198.935	884.770	0.065	0.004	brush lands and low trees
5445	445471.341	188395.416	888.290	-0.194	0.038	forest
5446	445472.834	188396.691	888.290	-0.218	0.048	forest
5447	445475.322	188398.756	888.110	0.106	0.011	forest
5448	445478.015	188401.074	888.140	0.294	0.086	forest
5449	445481.397	188403.416	887.870	0.351	0.123	forest
5450	445480.360	188405.225	887.940	0.274	0.075	forest
5451	445478.067	188403.948	888.210	0.275	0.076	forest
5452	445475.480	188401.916	888.330	0.425	0.181	forest
5453	445473.031	188400.841	888.650	-0.092	0.008	forest
5454	445470.901	188398.871	888.440	-0.19	0.036	forest
5455	445471.782	188402.228	888.400	0.347	0.120	forest
5456	445474.292	188404.300	888.340	0.339	0.115	forest
5457	445476.432	188406.162	888.360	-0.017	0.000	forest
5458	445478.686	188407.451	888.220	-0.26	0.068	forest
5459	445480.728	188408.567	887.950	-0.304	0.092	forest
5460	445480.203	188411.777	888.060	0.015	0.000	forest
5461	445473.939	188408.918	888.770	-0.188	0.035	forest
5462	445471.528	188407.524	888.630	0.161	0.026	forest
5463	445469.543	188406.153	888.750	0.359	0.129	forest
5464	445467.062	188405.027	888.800	0.11	0.012	forest
5465	445466.107	188406.161	888.630	0.097	0.009	forest
5466	445473.908	188411.544	888.560	0.076	0.006	forest
5467	445476.779	188413.823	888.450	0.067	0.004	forest
5468	445479.822	188415.802	888.210	-0.057	0.003	forest
5469	445479.201	188413.788	888.170	0.158	0.025	forest
5470	445154.747	188285.228	889.450	-0.124	0.015	urban areas
5471	445151.675	188286.869	889.420	-0.25	0.062	urban areas
5472	445148.641	188288.811	889.320	-0.166	0.028	urban areas
5473	445145.988	188290.671	889.310	-0.194	0.038	urban areas
5474	445143.948	188292.296	889.230	-0.099	0.010	urban areas
5475	445155.929	188282.041	889.390	-0.04	0.002	urban areas
5476	445160.473	188279.241	889.320	-0.226	0.051	urban areas
5477	445164.335	188277.075	889.200	-0.152	0.023	urban areas
5478	445166.924	188275.355	889.090	-0.148	0.022	urban areas
5479	445169.848	188278.672	889.180	-0.189	0.036	urban areas
5480	445167.114	188280.561	889.250	-0.115	0.013	urban areas
5481	445164.072	188282.413	889.350	-0.154	0.024	urban areas
5482	445160.530	188284.586	889.420	-0.167	0.028	urban areas
5483	445157.163	188286.499	889.460	-0.019	0.000	urban areas
5484	445153.895	188288.254	889.440	-0.137	0.019	urban areas
5485	445158.119	188289.967	889.530	-0.146	0.021	urban areas
5486	445161.681	188288.280	889.500	-0.196	0.038	urban areas
5487	445165.292	188286.018	889.460	-0.109	0.012	urban areas
5488	445168.488	188284.482	889.360	-0.153	0.023	urban areas
5489	445171.606	188282.934	889.280	-0.256	0.066	urban areas
5490	445173.700	188286.039	889.360	-0.205	0.042	urban areas
5491	445172.870	188287.115	889.370	-0.119	0.014	urban areas

5492	445168.273	188288.999	889.480	-0.261	0.068	urban areas
5493	445165.224	188291.235	889.550	-0.019	0.000	urban areas
5494	445161.856	188293.470	889.590	-0.162	0.026	urban areas
5495	412286.474	117432.828	916.840	0.624	0.389	brush lands and low trees
5496	412288.715	117433.393	916.990	0.874	0.764	brush lands and low trees
5497	412291.031	117434.457	917.060	0.678	0.460	brush lands and low trees
5498	412294.155	117435.799	917.270	0.437	0.191	brush lands and low trees
5499	412296.098	117436.948	917.360	0.388	0.151	brush lands and low trees
5500	412297.483	117433.799	917.390	0.523	0.274	brush lands and low trees
5501	412295.177	117432.254	917.280	0.195	0.038	brush lands and low trees
5502	412292.237	117431.332	916.960	0.788	0.621	brush lands and low trees
5503	412290.089	117429.652	916.860	0.964	0.929	brush lands and low trees
5504	412287.358	117428.117	916.840	0.728	0.530	brush lands and low trees
5505	412292.343	117426.420	917.110	0.697	0.486	brush lands and low trees
5506	412294.465	117427.427	917.000	0.586	0.343	brush lands and low trees
5507	412296.772	117429.023	917.300	0.373	0.139	brush lands and low trees
5508	412298.175	117430.428	917.340	0.454	0.206	brush lands and low trees
5509	412300.293	117431.874	917.280	0.546	0.298	brush lands and low trees
5510	412301.088	117428.076	917.430	0.43	0.185	brush lands and low trees
5511	412298.357	117426.090	917.330	0.356	0.127	brush lands and low trees
5512	412296.478	117423.910	917.090	0.633	0.401	brush lands and low trees
5513	412295.018	117422.253	916.930	0.808	0.653	brush lands and low trees
5514	412293.206	117420.269	916.920	0.858	0.736	brush lands and low trees
5515	412295.132	117418.542	916.940	0.529	0.280	brush lands and low trees
5516	412298.414	117419.717	917.030	0.434	0.188	brush lands and low trees
5517	412300.522	117422.125	917.340	0.366	0.134	brush lands and low trees
5518	412301.978	117424.186	917.310	0.56	0.314	brush lands and low trees
5519	412238.424	117604.977	916.780	0.018	0.000	forest
5520	412238.838	117607.650	916.730	0.083	0.007	forest
5521	412239.091	117609.062	916.750	0.064	0.004	forest
5522	412240.382	117612.576	916.790	0.14	0.020	forest
5523	412240.830	117615.063	916.830	0.167	0.028	forest
5524	412236.887	117615.596	916.790	0.1	0.010	forest
5525	412236.387	117612.618	916.750	0.092	0.008	forest
5526	412236.119	117610.022	916.800	-0.005	0.000	forest
5527	412235.723	117607.175	916.780	0.022	0.000	forest
5528	412235.333	117604.228	916.770	0.04	0.002	forest
5529	412232.871	117604.670	916.660	0.18	0.032	forest
5530	412233.377	117607.022	916.760	0.079	0.006	forest
5531	412233.796	117609.469	916.740	0.095	0.009	forest
5532	412234.123	117611.729	916.730	0.104	0.011	forest
5533	412234.670	117614.501	916.740	0.093	0.009	forest
5534	412232.409	117614.615	916.720	0.132	0.017	forest
5535	412232.143	117611.917	916.700	0.153	0.023	forest
5536	412231.747	117608.983	916.690	0.154	0.024	forest
5537	412231.314	117606.212	916.690	0.138	0.019	forest
5538	412231.166	117605.555	916.850	-0.022	0.000	forest
5539	412228.799	117605.019	916.730	0.271	0.073	forest
5540	412229.244	117607.760	916.710	0.117	0.014	forest
5541	412229.862	117609.966	916.730	0.119	0.014	forest
5542	412230.027	117612.538	916.630	0.256	0.066	forest
5543	412230.441	117615.169	916.710	0.204	0.042	forest
10001	436429.886	308491.123	955.790	0.046	0.002	urban areas
10002	436427.527	308491.029	955.810	0.106	0.011	urban areas
10003	436424.113	308491.102	955.810	0.082	0.007	urban areas

10004	436420.757	308490.942	955.820	-0.066	0.004	urban areas
10005	436416.386	308491.032	955.820	0.06	0.004	urban areas
10006	436415.996	308493.882	955.870	0.052	0.003	urban areas
10007	436419.484	308493.919	955.880	0.054	0.003	urban areas
10008	436423.181	308493.930	955.890	0.063	0.004	urban areas
10009	436426.934	308493.836	955.870	0.129	0.017	urban areas
10010	436430.927	308493.698	955.850	0.146	0.021	urban areas
10011	436429.574	308496.309	955.940	-0.016	0.000	urban areas
10012	436426.593	308496.019	955.950	0.065	0.004	urban areas
10013	436422.433	308496.119	955.950	0.073	0.005	urban areas
10014	436419.355	308496.338	955.960	0.03	0.001	urban areas
10015	436414.881	308496.134	955.970	-0.055	0.003	urban areas
10016	436414.642	308498.934	955.970	-0.053	0.003	urban areas
10017	436418.062	308499.001	955.970	-0.072	0.005	urban areas
10018	436422.096	308498.931	955.940	0.001	0.000	urban areas
10019	436426.716	308499.003	955.930	0.025	0.001	urban areas
10020	436430.710	308499.229	955.940	-0.106	0.011	urban areas
10021	436430.737	308502.578	955.880	-0.19	0.036	urban areas
10022	436427.476	308502.288	955.920	-0.206	0.042	urban areas
10023	436423.990	308502.204	955.950	-0.247	0.061	urban areas
10024	436419.979	308502.271	955.930	-0.09	0.008	urban areas
10025	436415.744	308502.333	955.960	-0.086	0.007	urban areas
10026	436527.326	308541.051	956.680	-0.185	0.034	high grass, weeds, and crops
10027	436530.178	308540.833	956.720	-0.165	0.027	high grass, weeds, and crops
10028	436533.631	308541.085	956.850	-0.009	0.000	high grass, weeds, and crops
10029	436536.846	308543.778	956.920	0.045	0.002	high grass, weeds, and crops
10030	436533.324	308543.428	956.830	-0.22	0.048	high grass, weeds, and crops
10031	436529.604	308543.620	956.780	-0.251	0.063	high grass, weeds, and crops
10032	436526.152	308543.693	956.680	-0.135	0.018	high grass, weeds, and crops
10033	436523.147	308544.715	956.640	0.14	0.020	high grass, weeds, and crops
10034	436525.718	308548.229	956.670	0.164	0.027	high grass, weeds, and crops
10035	436528.754	308547.191	956.690	-0.192	0.037	high grass, weeds, and crops
10036	436532.195	308546.767	956.810	0.026	0.001	high grass, weeds, and crops
10037	436535.269	308546.081	956.850	0.124	0.015	high grass, weeds, and crops
10038	436535.649	308548.608	957.030	-0.151	0.023	high grass, weeds, and crops
10039	436529.637	308548.698	956.750	-0.202	0.041	high grass, weeds, and crops
10040	436532.149	308548.685	956.830	-0.032	0.001	high grass, weeds, and crops
10041	436525.814	308549.650	956.660	0.196	0.038	high grass, weeds, and crops
10042	436525.498	308537.641	956.580	0.004	0.000	high grass, weeds, and crops
10043	436528.185	308536.655	956.550	0.08	0.006	high grass, weeds, and crops
10044	436531.727	308536.389	956.630	0.148	0.022	high grass, weeds, and crops
10045	436534.622	308535.814	956.630	0.036	0.001	high grass, weeds, and crops
10046	436534.683	308532.416	956.520	-0.002	0.000	high grass, weeds, and crops
10047	436531.465	308532.559	956.450	0.11	0.012	high grass, weeds, and crops
10048	436527.337	308532.940	956.490	-0.03	0.001	high grass, weeds, and crops
10049	436524.149	308533.368	956.420	-0.017	0.000	high grass, weeds, and crops
10050	436521.851	308533.493	956.350	0.008	0.000	high grass, weeds, and crops
10051	436506.782	308583.195	956.910	-0.196	0.038	brush lands and low trees
10052	436506.797	308580.194	956.830	0.012	0.000	brush lands and low trees
10053	436506.650	308576.797	956.860	0.161	0.026	brush lands and low trees
10054	436506.893	308573.730	956.860	0.311	0.097	brush lands and low trees
10055	436507.018	308570.945	956.660	0.188	0.035	brush lands and low trees
10056	436510.477	308570.565	956.730	-0.026	0.001	brush lands and low trees
10057	436511.445	308575.019	957.060	-0.058	0.003	brush lands and low trees
10058	436512.506	308578.163	956.880	0.108	0.012	brush lands and low trees

10059	436513.429	308578.940	957.040	-0.061	0.004	brush lands and low trees
10060	436515.760	308581.385	956.910	0.166	0.028	brush lands and low trees
10061	436515.410	308578.296	956.830	0.182	0.033	brush lands and low trees
10062	436514.905	308575.476	956.830	0.242	0.059	brush lands and low trees
10063	436514.892	308572.077	956.860	-0.017	0.000	brush lands and low trees
10064	436514.442	308568.757	956.760	-0.015	0.000	brush lands and low trees
10065	436518.344	308568.027	956.740	0.006	0.000	brush lands and low trees
10066	436518.994	308571.112	956.810	0.086	0.007	brush lands and low trees
10067	436518.649	308574.544	956.920	0.164	0.027	brush lands and low trees
10068	436518.202	308578.044	956.930	0.112	0.013	brush lands and low trees
10069	436518.305	308581.164	956.770	0.375	0.141	brush lands and low trees
10070	436521.077	308579.692	957.050	0.103	0.011	brush lands and low trees
10071	436520.925	308577.121	956.830	0.256	0.066	brush lands and low trees
10072	436521.096	308574.634	956.870	0.186	0.035	brush lands and low trees
10073	436521.227	308571.083	956.790	0.135	0.018	brush lands and low trees
10074	436521.331	308567.207	956.790	-0.046	0.002	brush lands and low trees
10075	436520.983	308565.112	956.750	-0.115	0.013	brush lands and low trees
10076	436616.959	308426.258	956.360	-0.125	0.016	forest
10077	436613.845	308428.333	956.310	-0.015	0.000	forest
10078	436611.527	308430.069	956.310	0.04	0.002	forest
10079	436609.193	308431.695	956.330	0.059	0.003	forest
10080	436606.234	308433.358	956.440	-0.163	0.027	forest
10081	436604.615	308430.330	956.340	-0.032	0.001	forest
10082	436607.845	308428.956	956.280	-0.006	0.000	forest
10083	436610.655	308426.840	956.250	0.068	0.005	forest
10084	436614.122	308425.639	956.280	-0.058	0.003	forest
10085	436616.015	308423.339	956.230	-0.18	0.032	forest
10086	436612.449	308421.917	956.070	-0.095	0.009	forest
10087	436609.436	308423.970	956.100	0.091	0.008	forest
10088	436605.971	308426.326	956.210	0.035	0.001	forest
10089	436602.985	308428.477	956.310	0.045	0.002	forest
10090	436600.017	308430.637	956.230	0.037	0.001	forest
10091	436598.740	308428.009	956.210	0.148	0.022	forest
10092	436600.668	308426.630	956.210	0.215	0.046	forest
10093	436602.697	308425.080	956.180	0.2	0.040	forest
10094	436605.113	308423.250	955.950	0.225	0.051	forest
10095	436607.519	308421.624	956.000	-0.032	0.001	forest
10096	436607.332	308418.473	955.920	-0.263	0.069	forest
10097	436604.417	308420.726	955.990	-0.188	0.035	forest
10098	436603.562	308421.844	956.080	0.04	0.002	forest
10099	436599.162	308426.101	956.030	0.37	0.137	forest
10100	436596.164	308429.598	956.240	-0.1	0.010	forest
10101	468258.541	304364.776	947.660	-0.322	0.104	bare earth and low grass
10102	468256.635	304362.286	947.760	-0.341	0.116	bare earth and low grass
10103	468254.460	304359.314	947.800	-0.27	0.073	bare earth and low grass
10104	468252.170	304356.174	947.830	-0.338	0.114	bare earth and low grass
10105	468249.877	304352.734	948.000	-0.531	0.282	bare earth and low grass
10106	468252.276	304350.247	947.860	-0.372	0.138	bare earth and low grass
10107	468254.596	304353.090	947.870	-0.418	0.175	bare earth and low grass
10108	468256.979	304356.676	947.780	-0.373	0.139	bare earth and low grass
10109	468258.837	304359.240	947.700	-0.303	0.092	bare earth and low grass
10110	468261.521	304362.777	947.590	-0.253	0.064	bare earth and low grass
10111	468263.959	304360.114	947.660	-0.418	0.175	bare earth and low grass
10112	468262.031	304357.346	947.670	-0.39	0.152	bare earth and low grass
10113	468259.820	304354.415	947.710	-0.482	0.232	bare earth and low grass

10114	468257.888	304351.667	947.780	-0.419	0.176	bare earth and low grass
10115	468255.528	304348.530	947.870	-0.375	0.141	bare earth and low grass
10116	468257.917	304346.265	947.760	-0.302	0.091	bare earth and low grass
10117	468259.904	304348.541	947.730	-0.325	0.106	bare earth and low grass
10118	468261.770	304350.875	947.760	-0.457	0.209	bare earth and low grass
10119	468263.795	304353.566	947.670	-0.401	0.161	bare earth and low grass
10120	468265.964	304356.224	947.690	-0.457	0.209	bare earth and low grass
10121	468268.279	304354.149	947.600	-0.349	0.122	bare earth and low grass
10122	468266.268	304351.554	947.650	-0.355	0.126	bare earth and low grass
10123	468264.146	304348.724	947.710	-0.387	0.150	bare earth and low grass
10124	468261.989	304346.057	947.790	-0.4	0.160	bare earth and low grass
10125	468259.496	304343.073	947.800	-0.394	0.155	bare earth and low grass
10126	468135.937	304293.544	948.160	-0.437	0.191	urban areas
10127	468135.728	304290.103	948.150	-0.482	0.232	urban areas
10128	468135.779	304286.455	948.150	-0.354	0.125	urban areas
10129	468135.604	304282.646	948.140	-0.314	0.099	urban areas
10130	468135.604	304278.538	948.120	-0.369	0.136	urban areas
10131	468138.947	304279.300	948.130	-0.448	0.201	urban areas
10132	468139.149	304281.798	948.130	-0.448	0.201	urban areas
10133	468139.026	304285.796	948.140	-0.454	0.206	urban areas
10134	468139.040	304289.785	948.180	-0.579	0.335	urban areas
10135	468139.140	304293.861	948.190	-0.464	0.215	urban areas
10136	468143.340	304293.647	948.200	-0.47	0.221	urban areas
10137	468143.447	304288.880	948.180	-0.453	0.205	urban areas
10138	468143.505	304284.218	948.160	-0.447	0.200	urban areas
10139	468143.527	304278.996	948.130	-0.362	0.131	urban areas
10140	468143.688	304274.059	948.110	-0.497	0.247	urban areas
10141	468147.484	304274.055	948.110	-0.52	0.270	urban areas
10142	468147.342	304277.368	948.120	-0.475	0.226	urban areas
10143	468147.139	304280.501	948.130	-0.361	0.130	urban areas
10144	468146.940	304284.214	948.150	-0.501	0.251	urban areas
10145	468146.992	304288.352	948.170	-0.415	0.172	urban areas
10146	468150.645	304287.982	948.140	-0.378	0.143	urban areas
10147	468150.582	304284.472	948.130	-0.396	0.157	urban areas
10148	468150.508	304279.944	948.110	-0.31	0.096	urban areas
10149	468150.590	304275.774	948.090	-0.501	0.251	urban areas
10150	468150.398	304271.251	948.110	-0.526	0.277	urban areas
10151	468192.881	304141.452	945.070	-0.264	0.070	high grass, weeds, and crops
10152	468193.331	304144.913	945.040	-0.147	0.022	high grass, weeds, and crops
10153	468193.511	304147.937	945.050	-0.124	0.015	high grass, weeds, and crops
10154	468193.356	304150.568	945.120	-0.166	0.028	high grass, weeds, and crops
10155	468193.750	304153.985	945.160	-0.177	0.031	high grass, weeds, and crops
10156	468196.470	304154.383	945.190	-0.155	0.024	high grass, weeds, and crops
10157	468196.500	304151.278	945.180	-0.226	0.051	high grass, weeds, and crops
10158	468196.706	304148.687	945.080	-0.161	0.026	high grass, weeds, and crops
10159	468196.626	304146.218	945.050	-0.142	0.020	high grass, weeds, and crops
10160	468196.888	304143.509	945.030	-0.173	0.030	high grass, weeds, and crops
10161	468199.515	304143.625	945.100	-0.243	0.059	high grass, weeds, and crops
10162	468199.342	304146.319	945.160	-0.258	0.067	high grass, weeds, and crops
10163	468199.203	304149.456	945.180	-0.263	0.069	high grass, weeds, and crops
10164	468200.177	304151.100	945.200	-0.254	0.065	high grass, weeds, and crops
10165	468199.436	304155.502	945.230	-0.178	0.032	high grass, weeds, and crops
10166	468202.068	304155.318	945.250	-0.347	0.120	high grass, weeds, and crops
10167	468201.863	304152.542	945.190	-0.239	0.057	high grass, weeds, and crops
10168	468201.753	304150.416	945.190	-0.276	0.076	high grass, weeds, and crops

10169	468202.026	304147.900	945.140	-0.273	0.075	high grass, weeds, and crops
10170	468202.432	304144.977	945.170	-0.295	0.087	high grass, weeds, and crops
10171	468205.070	304145.244	945.170	-0.3	0.090	high grass, weeds, and crops
10172	468205.058	304147.995	945.170	-0.401	0.161	high grass, weeds, and crops
10173	468205.191	304151.601	945.080	-0.301	0.091	high grass, weeds, and crops
10174	468205.619	304154.128	945.120	-0.253	0.064	high grass, weeds, and crops
10175	468205.610	304156.562	945.150	-0.394	0.155	high grass, weeds, and crops
10176	468194.666	304003.417	944.550	-0.23	0.053	brush lands and low trees
10177	468194.606	304000.531	944.560	-0.192	0.037	brush lands and low trees
10178	468194.641	303997.677	944.630	-0.233	0.054	brush lands and low trees
10179	468194.546	303995.388	944.650	-0.195	0.038	brush lands and low trees
10180	468194.408	303992.916	944.720	-0.295	0.087	brush lands and low trees
10181	468197.021	303992.721	944.650	-0.167	0.028	brush lands and low trees
10182	468197.738	303992.688	944.980	-0.465	0.216	brush lands and low trees
10183	468196.303	303998.154	944.590	-0.23	0.053	brush lands and low trees
10184	468197.134	304001.050	944.530	-0.189	0.036	brush lands and low trees
10185	468196.962	304003.669	944.500	-0.18	0.032	brush lands and low trees
10186	468200.056	304002.958	944.630	-0.257	0.066	brush lands and low trees
10187	468199.973	304000.446	944.720	-0.34	0.116	brush lands and low trees
10188	468200.493	303997.482	944.750	-0.312	0.097	brush lands and low trees
10189	468200.808	303994.720	944.800	-0.334	0.112	brush lands and low trees
10190	468201.148	303992.688	944.700	-0.26	0.068	brush lands and low trees
10191	468203.534	303992.712	944.670	-0.141	0.020	brush lands and low trees
10192	468203.900	303995.357	944.740	-0.195	0.038	brush lands and low trees
10193	468204.150	303998.113	944.690	-0.147	0.022	brush lands and low trees
10194	468204.159	304001.478	944.680	-0.239	0.057	brush lands and low trees
10195	468204.753	304004.490	944.610	-0.317	0.100	brush lands and low trees
10196	468208.111	304001.465	944.680	-0.123	0.015	brush lands and low trees
10197	468207.546	303997.612	944.850	-0.287	0.082	brush lands and low trees
10198	468206.635	303994.733	944.760	-0.218	0.048	brush lands and low trees
10199	468204.391	303992.585	944.730	-0.187	0.035	brush lands and low trees
10200	468204.645	303998.431	944.660	-0.112	0.013	brush lands and low trees
10201	468247.417	304213.081	945.090	-0.179	0.032	forest
10202	468250.618	304212.636	945.120	-0.358	0.128	forest
10203	468253.518	304212.542	945.070	-0.222	0.049	forest
10204	468256.337	304211.753	945.090	-0.145	0.021	forest
10205	468259.138	304211.335	945.200	-0.147	0.022	forest
10206	468259.821	304213.597	945.090	-0.029	0.001	forest
10207	468256.953	304214.039	945.160	-0.218	0.048	forest
10208	468254.212	304214.400	945.150	-0.32	0.102	forest
10209	468250.966	304214.166	945.370	-0.545	0.297	forest
10210	468247.890	304215.024	945.320	-0.33	0.109	forest
10211	468247.700	304210.567	945.120	-0.281	0.079	forest
10212	468249.972	304210.322	945.120	-0.412	0.170	forest
10213	468251.994	304210.131	945.110	-0.401	0.161	forest
10214	468254.603	304209.556	945.200	-0.382	0.146	forest
10215	468258.659	304209.099	945.330	-0.237	0.056	forest
10216	468258.798	304207.106	945.450	-0.386	0.149	forest
10217	468256.029	304207.648	945.150	-0.244	0.060	forest
10218	468255.719	304207.803	945.190	-0.292	0.085	forest
10219	468252.410	304208.522	945.180	-0.463	0.214	forest
10220	468249.167	304209.045	945.150	-0.428	0.183	forest
10221	468248.303	304208.973	945.300	-0.515	0.265	forest
10222	468257.481	304210.545	945.160	-0.203	0.041	forest
10223	468256.156	304209.173	945.010	-0.076	0.006	forest

10224	468253.315	304213.112	945.120	-0.289	0.084	forest
10225	468249.524	304211.894	945.190	-0.395	0.156	forest
10004a	441293.091	187189.604	882.290	-0.256	0.066	urban areas
10005a	441295.548	187187.283	882.308	-0.372	0.138	urban areas
10006a	441297.274	187185.486	882.326	-0.355	0.126	urban areas
10007a	441298.984	187183.706	882.372	-0.307	0.094	urban areas
10008a	441301.012	187181.594	882.367	-0.287	0.082	urban areas
10009a	441299.103	187179.771	882.337	-0.26	0.068	urban areas
10010a	441297.223	187181.702	882.328	-0.287	0.082	urban areas
10011a	441295.711	187183.349	882.274	-0.282	0.080	urban areas
10012a	441294.086	187184.929	882.249	-0.221	0.049	urban areas
10013a	441292.458	187186.994	882.242	-0.192	0.037	urban areas
10014a	441290.508	187185.272	882.230	-0.112	0.013	urban areas
10015a	441292.461	187183.385	882.229	-0.097	0.009	urban areas
10016a	441294.192	187181.687	882.238	-0.213	0.045	urban areas
10017a	441295.948	187179.998	882.228	-0.183	0.033	urban areas
10018a	441297.506	187178.179	882.245	-0.175	0.031	urban areas
10019a	441295.556	187176.333	882.219	-0.154	0.024	urban areas
10020a	441293.707	187178.275	882.239	-0.227	0.052	urban areas
10021a	441291.887	187180.146	882.249	-0.245	0.060	urban areas
10022a	441290.330	187182.150	882.253	-0.171	0.029	urban areas
10023a	441288.488	187184.074	882.240	-0.112	0.013	urban areas
10024a	441286.851	187182.232	882.203	-0.195	0.038	urban areas
10025a	441288.525	187180.336	882.192	-0.196	0.038	urban areas
10026a	441290.014	187178.520	882.204	-0.268	0.072	urban areas
10027a	441291.621	187177.037	882.207	-0.308	0.095	urban areas
10028a	441293.319	187175.249	882.198	-0.249	0.062	urban areas
10029a	441526.626	187370.797	881.593	-0.354	0.125	bare earth and low grass
10030a	441530.213	187369.806	881.491	-0.158	0.025	bare earth and low grass
10031a	441533.122	187369.250	881.447	-0.077	0.006	bare earth and low grass
10032a	441536.324	187368.488	881.469	-0.175	0.031	bare earth and low grass
10033a	441539.052	187367.910	881.443	-0.111	0.012	bare earth and low grass
10034a	441538.753	187365.277	881.370	-0.159	0.025	bare earth and low grass
10035a	441535.771	187365.794	881.467	-0.162	0.026	bare earth and low grass
10036a	441533.189	187365.957	881.564	-0.183	0.033	bare earth and low grass
10037a	441530.381	187367.002	881.526	-0.075	0.006	bare earth and low grass
10038a	441527.533	187367.914	881.553	-0.241	0.058	bare earth and low grass
10039a	441526.862	187365.070	881.518	0.024	0.001	bare earth and low grass
10040a	441529.526	187364.316	881.523	-0.044	0.002	bare earth and low grass
10041a	441532.381	187363.686	881.518	-0.12	0.014	bare earth and low grass
10042a	441534.908	187363.111	881.464	-0.153	0.023	bare earth and low grass
10043a	441537.739	187361.923	881.363	-0.172	0.030	bare earth and low grass
10044a	441537.063	187359.653	881.365	-0.172	0.030	bare earth and low grass
10045a	441534.332	187360.408	881.380	-0.072	0.005	bare earth and low grass
10046a	441531.594	187361.184	881.415	-0.009	0.000	bare earth and low grass
10047a	441528.987	187361.691	881.477	-0.086	0.007	bare earth and low grass
10048a	441525.766	187362.251	881.511	-0.135	0.018	bare earth and low grass
10049a	441525.240	187359.868	881.479	-0.098	0.010	bare earth and low grass
10050a	441527.986	187359.372	881.443	-0.172	0.030	bare earth and low grass
10051a	441530.699	187358.754	881.437	-0.112	0.013	bare earth and low grass
10052a	441533.301	187358.166	881.377	-0.068	0.005	bare earth and low grass
10053a	441536.663	187356.868	881.284	-0.045	0.002	bare earth and low grass
10055a	439047.502	187046.453	895.248	-0.554	0.307	urban areas
10056a	439047.389	187043.310	895.114	-0.281	0.079	urban areas
10057a	439047.282	187040.300	895.107	-0.286	0.082	urban areas

10058a	439047.250	187037.949	895.112	-0.373	0.139	urban areas
10059a	439044.789	187037.487	895.099	-0.442	0.195	urban areas
10060a	439044.554	187039.811	895.145	-0.43	0.185	urban areas
10061a	439044.417	187042.569	895.144	-0.324	0.105	urban areas
10062a	439044.619	187045.280	895.221	-0.361	0.130	urban areas
10063a	439044.693	187048.000	895.334	-0.303	0.092	urban areas
10064a	439042.610	187047.915	895.291	-0.393	0.154	urban areas
10065a	439042.429	187045.064	895.281	-0.38	0.144	urban areas
10066a	439042.350	187042.328	895.245	-0.426	0.181	urban areas
10067a	439042.100	187039.815	895.134	-0.532	0.283	urban areas
10068a	439041.889	187037.607	895.092	-0.479	0.229	urban areas
10069a	439038.876	187037.688	895.080	-0.459	0.211	urban areas
10070a	439038.508	187040.881	895.098	-0.543	0.295	urban areas
10071a	439038.378	187044.396	895.182	-0.421	0.177	urban areas
10072a	439038.513	187047.321	895.325	-0.373	0.139	urban areas
10073a	439038.450	187049.712	895.297	-0.248	0.062	urban areas
10074a	439035.780	187049.635	895.278	-0.267	0.071	urban areas
10075a	439035.810	187047.384	895.328	-0.269	0.072	urban areas
10076a	439035.721	187044.216	895.303	-0.498	0.248	urban areas
10077a	439035.530	187041.256	895.209	-0.576	0.332	urban areas
10079a	413117.892	115531.623	931.023	0.055	0.003	urban areas
10080a	413117.676	115529.033	930.924	0.076	0.006	urban areas
10081a	413117.125	115526.457	930.904	0.172	0.030	urban areas
10082a	413116.850	115523.729	930.873	0.191	0.036	urban areas
10083a	413116.676	115521.363	930.821	0.079	0.006	urban areas
10084a	413113.883	115521.993	930.772	-0.122	0.015	urban areas
10085a	413114.174	115524.334	930.779	-0.045	0.002	urban areas
10086a	413114.481	115526.680	930.823	0.026	0.001	urban areas
10087a	413115.238	115529.596	930.892	0.15	0.022	urban areas
10088a	413111.965	115526.469	930.746	-0.105	0.011	urban areas
10089a	413111.456	115523.465	930.742	-0.28	0.078	urban areas
10090a	413110.917	115520.917	930.746	-0.265	0.070	urban areas
10091a	413110.386	115518.395	930.622	0.034	0.001	urban areas
10092a	413109.891	115516.150	930.583	-0.032	0.001	urban areas
10093a	413109.337	115513.656	930.525	-0.09	0.008	urban areas
10094a	413108.950	115510.970	930.535	-0.163	0.027	urban areas
10095a	413112.082	115510.702	930.627	-0.18	0.032	urban areas
10096a	413114.335	115510.374	930.663	-0.175	0.031	urban areas
10097a	413116.829	115510.046	930.694	-0.109	0.012	urban areas
10098a	413119.163	115509.527	930.758	-0.161	0.026	urban areas
10099a	413119.001	115506.803	930.713	-0.186	0.035	urban areas
10100a	413116.179	115506.918	930.607	-0.068	0.005	urban areas
10101a	413113.887	115507.534	930.613	-0.076	0.006	urban areas
10102a	413111.455	115507.756	930.558	-0.065	0.004	urban areas
10103a	413109.117	115508.249	930.494	-0.017	0.000	urban areas
10104a	411597.962	114713.898	917.048	0.281	0.079	high grass, weeds, and crops
10105a	411597.390	114716.912	917.007	0.235	0.055	high grass, weeds, and crops
10106a	411596.777	114720.332	917.040	0.257	0.066	high grass, weeds, and crops
10107a	411596.490	114724.068	917.068	0.216	0.047	high grass, weeds, and crops
10108a	411596.045	114727.178	917.020	0.3	0.090	high grass, weeds, and crops
10109a	411598.526	114727.700	917.066	0.126	0.016	high grass, weeds, and crops
10110a	411599.630	114724.767	916.922	0.325	0.106	high grass, weeds, and crops
10111a	411600.376	114721.701	917.007	0.219	0.048	high grass, weeds, and crops
10112a	411600.880	114718.914	916.976	0.176	0.031	high grass, weeds, and crops
10113a	411601.593	114716.230	916.850	0.265	0.070	high grass, weeds, and crops

10114a	411604.141	114716.229	916.893	0.196	0.038	high grass, weeds, and crops
10115a	411604.023	114718.512	916.936	0.071	0.005	high grass, weeds, and crops
10116a	411604.413	114721.315	916.860	0.1	0.010	high grass, weeds, and crops
10117a	411604.701	114723.936	916.759	0.153	0.023	high grass, weeds, and crops
10118a	411604.550	114727.072	916.662	0.337	0.114	high grass, weeds, and crops
10119a	411606.375	114729.493	916.684	0.315	0.099	high grass, weeds, and crops
10120a	411606.977	114726.959	916.648	0.31	0.096	high grass, weeds, and crops
10121a	411607.688	114724.657	916.608	0.191	0.036	high grass, weeds, and crops
10122a	411608.243	114722.059	916.678	0.095	0.009	high grass, weeds, and crops
10123a	411608.840	114719.523	916.714	0.103	0.011	high grass, weeds, and crops
10124a	411611.577	114720.390	916.588	0.183	0.033	high grass, weeds, and crops
10125a	411611.055	114722.698	916.613	-0.023	0.001	high grass, weeds, and crops
10126a	411610.423	114725.483	916.551	0.035	0.001	high grass, weeds, and crops
10127a	411610.313	114727.895	916.445	0.264	0.070	high grass, weeds, and crops
10128a	411610.374	114730.471	916.460	0.267	0.071	high grass, weeds, and crops
10129a	411694.063	114878.108	918.173	0.102	0.010	bare earth and low grass
10130a	411693.310	114881.312	918.123	0.159	0.025	bare earth and low grass
10131a	411692.809	114884.081	918.084	0.244	0.060	bare earth and low grass
10132a	411692.575	114886.319	918.088	0.224	0.050	bare earth and low grass
10133a	411692.113	114888.583	918.099	0.2	0.040	bare earth and low grass
10134a	411694.619	114889.071	918.093	0.163	0.027	bare earth and low grass
10135a	411694.971	114886.653	918.083	0.213	0.045	bare earth and low grass
10136a	411695.552	114884.567	918.124	0.172	0.030	bare earth and low grass
10137a	411695.965	114882.266	918.115	0.144	0.021	bare earth and low grass
10138a	411696.437	114879.998	918.157	0.077	0.006	bare earth and low grass
10139a	411698.921	114880.173	918.186	0.083	0.007	bare earth and low grass
10140a	411698.568	114882.413	918.106	0.209	0.044	bare earth and low grass
10141a	411697.915	114884.794	918.095	0.231	0.053	bare earth and low grass
10142a	411697.564	114887.035	918.063	0.177	0.031	bare earth and low grass
10143a	411696.820	114888.992	918.059	0.142	0.020	bare earth and low grass
10144a	411699.620	114889.238	918.074	0.194	0.038	bare earth and low grass
10145a	411700.105	114886.753	918.090	0.197	0.039	bare earth and low grass
10146a	411700.595	114884.545	918.153	0.197	0.039	bare earth and low grass
10147a	411701.044	114882.118	918.166	0.165	0.027	bare earth and low grass
10148a	411701.377	114879.975	918.216	0.142	0.020	bare earth and low grass
10149a	411703.947	114883.975	918.161	0.202	0.041	bare earth and low grass
10150a	411703.518	114885.977	918.140	0.201	0.040	bare earth and low grass
10151a	411703.067	114888.181	918.106	0.242	0.059	bare earth and low grass
10152a	411702.520	114890.327	918.039	0.333	0.111	bare earth and low grass
10153a	411702.201	114892.398	918.022	0.256	0.066	bare earth and low grass

Sum	53.996
Average	0.084
RMSE	0.290
Accuracyz	0.568

Tested 0.57 feet vertical accuracy at 95% confidence level

FIELD NOTES

Project FEMA ground survey notes

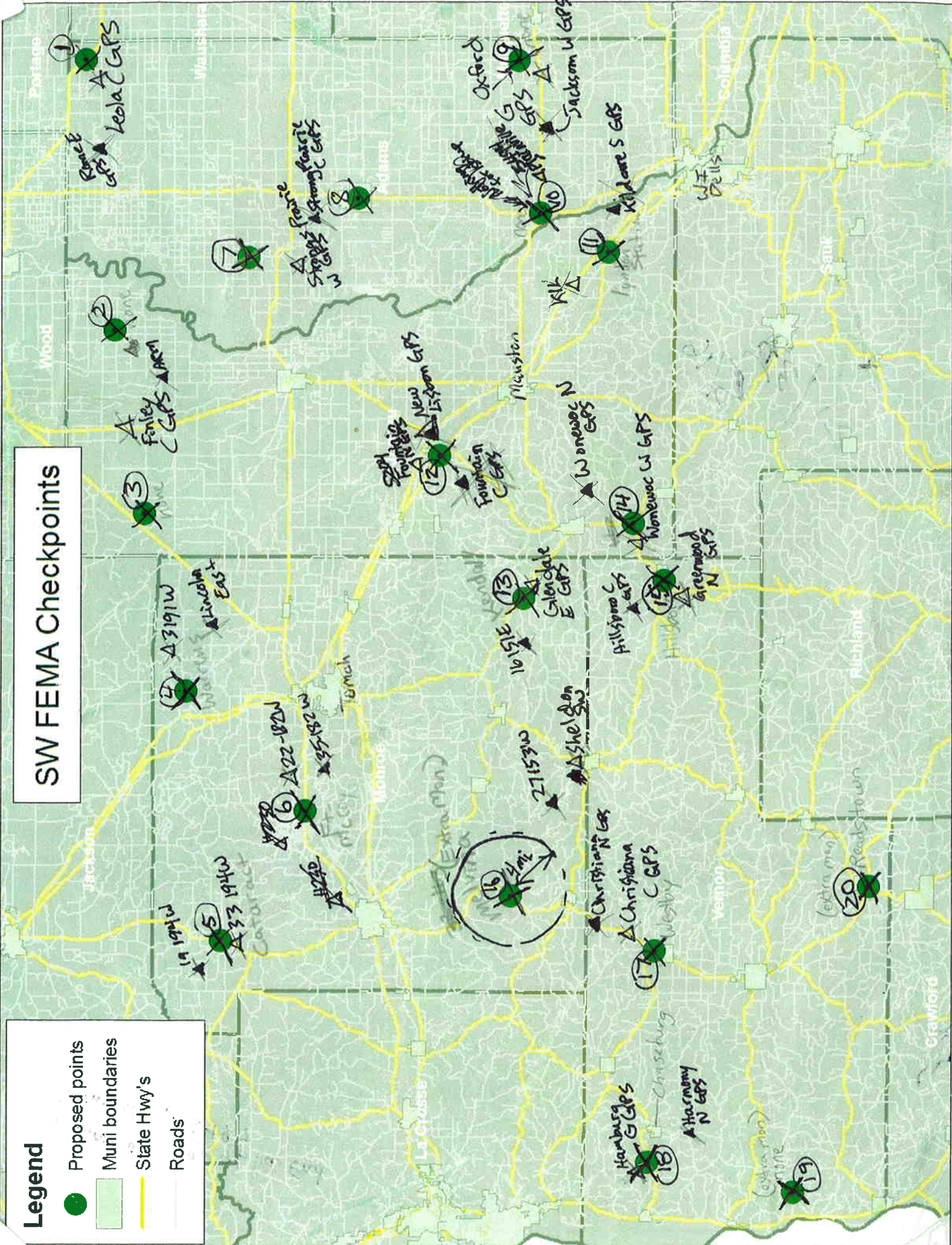
Contains point number and descriptions

Includes Control and Check Points left out of statistical analysis

SW FEMA Checkpoints

Legend

- Proposed points
- Muni boundaries
- State Hwy's
- Roads



Juneau County Ground Trussing

Control Point Setups

Location #2:

- * Base Setup @ PID "DH4982" (ARM)
- * Checked into PID "DH5640" (Finley, CGPS)
- Vertical within 0.05' ✓

Mowed Grass: Pts 10,101 - 10,125

~~Location #2:~~ Asphalt: Pts 10,126 - 10,150

Tall Grass/Weeds: Pts 10,151 - 10,175

Brush/Low Trees: Pts 10,176 - 10,200

Tree Cover: Pts 10,201 - 10,225

Location #3:

- * Base Setup @ PID "DH5640" (Finley, CGPS)
- * Checked into PID "DH4982" (ARM)
- Vertical within 0.05' ✓

Gravel: 10,001 - 10,025

Tall Grass/Weeds: Pts 10,026 - 10,050

Brush/Low Trees: Pts 10,051 - 10,075

Tree Cover: Pts 10,076 - 10,100

Location 11:

- * Base Setup @ "DH4995" (KIL)
- * Checked into PID "DH5471" (Kildare S GPS)
- Vertical within 0.05' ✓

Mowed Grass: Pts 5271 - 5295

Tree Cover: Pts 5296 - 5320

Brush/Low Trees: Pts 5321 - 5342

Tall Grass/Weeds: Pts 5345 - 5371

Concrete: Pts 5372 - 5394

Location 12:

- * Base setup @ PID "DH5204" (Fountain, N GPS)
- * Checked into PID "ON1310" (New Lisbon GPS)
- Vertical within 0.05' ✓

Tall Grass/Weeds: Pts 5395 - 5419

Brush/Low Trees: Pts 5420 - 5444

Tree Cover: Pts 5445 - 5469

Asphalt (Area 1): Pts 5470 - 5494

Asphalt (Area 2): Pts 10,004a - 10,028a

Mowed Grass: Pts 10,029a - 10,053a

Concrete: Pts 10,055a - 10,077a

Juneau County Ground Truthing
Control Pt. Setups Continued

Location 14:

- * Base Setup at PID "DH5082" (Wonevoc W GPS)
 - * Checked into PID "DH5192" (Wonevoc N GPS)
- Vertical within 0.05' ✓

Brush/low Trees: Pts 5495 - 5518

Tree Cover: Pts 5519 - 5543

Asphalt: Pts 10,079a - 10,103a

Tall Grass/Weeds: Pts 10,104a - 10,128a

Bare Ground: Pts 10,129a - 10,153a