

VERTICAL ACCURACY REPORT

Professional Management and LiDAR Data Collection and Processing Services

Block 7

PROJECT TITLE:	Professional Management and LiDAR Data Collection and Processing Services
WORK ORDER NAME:	Task Order A
WORK ORDER NUMBER:	2007058492720
CONSULTANT NAME:	3001, Inc., CH2M Hill, Inc.
PROJECT MANAGERS:	Jeremy Conner, 3001 Project Manager JoLee Gardner, CH2M Hill Project Manager



**3001, INC. THE GEOSPATIAL COMPANY
501 Robert Blvd. 2nd Floor
Slidell, Louisiana 70458**



June 2008

Florida Division of Emergency Management
2555 Shumard Oak Boulevard
Tallahassee, Florida 32399-2100

Re: Professional Management and LiDAR Data Collection and Processing Services,
Block 7

This photogrammetric mapping ground control survey is certified as meeting or exceeding, in quality and precision, the standards applicable for this work as set forth in Chapter 61G17-6, Florida Administrative Code.

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Signed: _____ Date: _____

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DATA ANALYSIS

This report documents the vertical accuracy of the LIDAR data as compared to the surveyed ground truth data for the Professional Management and LiDAR Data Collection and Processing Services project, Block 7. Fundamental Vertical Accuracy, Supplemental Vertical Accuracies and the Consolidated Vertical Accuracy have been calculated based on the appropriate land cover classes, and are shown in the following sections.

Data analysis was accomplished by comparing ground truth checkpoints with LIDAR points from the edited data set, which were within 3 feet horizontally from the ground truth points. Note that the edited LIDAR points are simply a subset of the raw LIDAR points. The points that fell above the ground surface on vegetation canopies, buildings, or other obstructions were removed from the data set. Comparisons were also made between the survey points and the LIDAR derived terrain surface. These comparisons provide an additional verification of the LIDAR data against the survey data.

The survey data was collected in accordance with the *FEMA FLOOD HAZARD MAPPING PROGRAM, GUIDELINES AND SPECIFICATIONS FOR FLOOD HAZARD MAPPING PARTNERS, APPENDIX A*.

Ground truth data was collected for each of the following land cover categories:

1. Bare-earth and low grass
2. Brush lands and low trees
3. Forested areas fully covered by trees
4. Urban areas

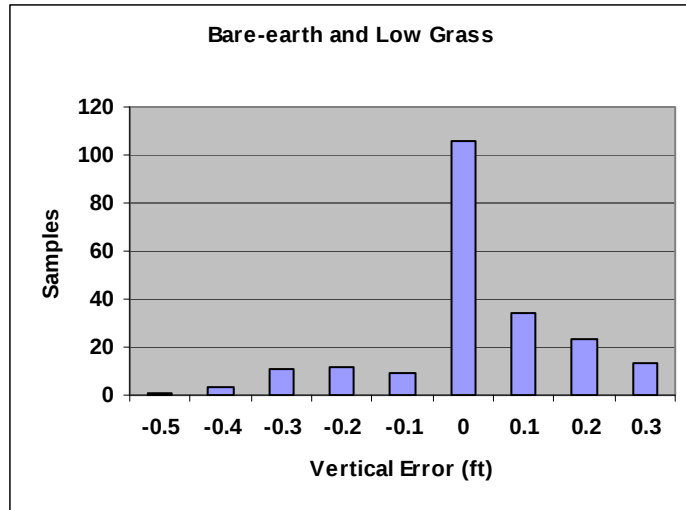
The accuracy assessment was performed using a standard method to compute the root mean square error (RMSE) based on a comparison of ground control points (GCP) and filtered LiDAR data points. Filtered LiDAR data has had vegetation and cultural features removed and by analysis represents bare-earth elevations. . The RMSE figure was used to compute the vertical National Standard for Spatial Data Accuracy (NSSDA). Ground control was established by 3001, Inc. A spatial proximity analysis was used to select edited LiDAR data points contiguous to the relevant GCPs. A search radius decision rule is applied with consideration of terrain complexity, cumulative error and adequate sample size. Cumulative error results from the errors inherent in the various sources of horizontal measurement. These sources include the airborne GPS, GCPs and the uncertainty of the accuracy of the LiDAR data points. This accuracy is achieved prior to the sub-sampling that occurs through integration with the inertial measurement unit (IMU) positions that are recorded. It is unclear at this time whether the initial accuracy is maintained. The horizontal accuracy of the GCPs is estimated to be in the range of approximately 1 to 1.6 inches. Finally, sample size was considered. The specification for the National Standard for Spatial Data Accuracy is a minimum of 20 points to conduct a statistically significant accuracy evaluation (Minnesota Planning,

1999, Positional Accuracy Handbook, Minnesota Planning Land Management Information Center, St. Paul, Minnesota., p.3). Most statistical texts indicate that a minimum of 30 sample points provide a reasonable Approximation of a normal distribution. The intent of the NSSDA is to reflect the geographic area of interest and the distribution of error in the data set (Federal Geographic Data Committee, 1998, Geospatial National Standard for Spatial Data Accuracy, Federal Geographic Data Committee Secretariat, Reston, Virginia, p.3-4). Additional steps were taken to ensure the vertical accuracy of the LiDAR data including: Step 1: Precision Bore sighting (Check Edge-matching) Step 2: Compare the LiDAR data to the Field Survey (Field survey is to FEMA specifications and more stringent internal specifications) Step 3: Automated Filtering Step 4: Manual Editing (Quality Control) Step 5: 3-D digitizing and photogrammetric compilation of hydrographic breaklines. Data analysis was accomplished by comparing ground truth checkpoints with LIDAR points from the edited data set, which were within 3 feet horizontally from the ground truth points. Note that the edited LIDAR points are simply a subset of the raw LIDAR points. The points that fell above the ground surface on vegetation canopies, buildings, or other obstructions were removed from the data set. Comparisons were also made between the survey points and the LIDAR derived terrain surface. These comparisons provide an additional verification of the LIDAR data against the survey data. The survey data was collected in accordance with the FEMA FLOOD HAZARD MAPPING PROGRAM, GUIDELINES AND SPECIFICATIONS FOR FLOOD HAZARD MAPPING PARTNERS, APPENDIX A.

FUNDAMENTAL VERTICAL ACCURACY

The Fundamental Vertical Accuracy is calculated using the bare-earth and low grass land class. A comparison of these values indicated a Vertical Root Mean Square Error (RMSEz) of 0.15 feet, which equates to a Vertical Accuracy of 0.29 feet at the 95 percent confidence level. Descriptive statistics and a histogram of the vertical error distribution are shown below.

Bare-earth and Low Grass (ft)	
RMSEz	0.15
Mean	0.02
Standard Error	0.01
Median	0.01
Mode	-0.01
Standard Deviation	0.15
Sample Variance	0.02
Kurtosis	0.96
Skewness	-0.56
Range	0.80
Minimum	-0.47
Maximum	0.33
Count	212



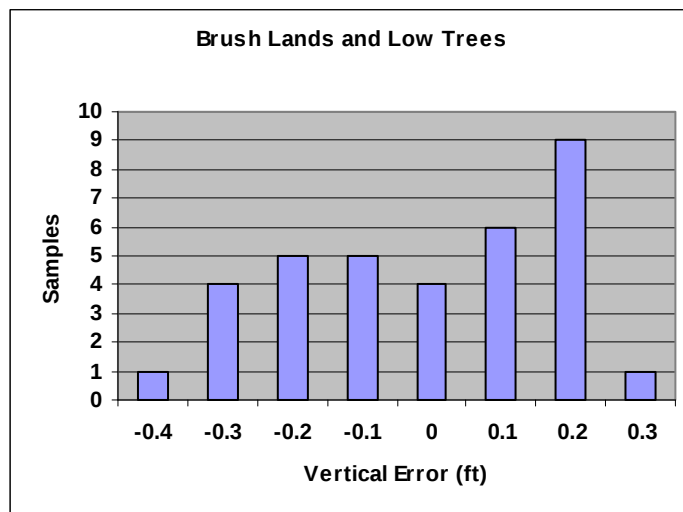
SUPPLEMENTAL VERTICAL ACCURACIES

The Supplemental Vertical Accuracies are calculated using each of the land cover classes, except for the bare-earth and low grass land class. The remaining land cover classes that are used for comparisons are brush lands and low trees, forested areas fully covered by trees, and urban areas. The RMSEz values and Vertical Accuracies are shown with each respective land class, along with histograms of vertical error distribution.

Brush Lands and Low Trees

This set includes only those points that were collected in areas of brush lands and low trees. The resulting RMSEz is 0.19 feet, which equates to a Vertical Accuracy of 0.37 feet at the 95 percent confidence level.

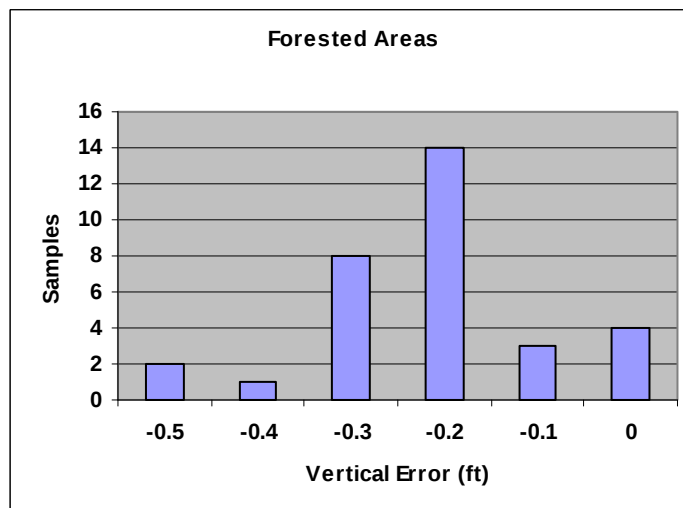
Brush Lands and Low Trees (ft)	
RMSEz	0.19
Mean	-0.01
Standard Error	0.03
Median	0.00
Mode	0.20
Standard Deviation	0.19
Sample Variance	0.04
Kurtosis	-1.17
Skewness	-0.35
Range	0.66
Minimum	-0.39
Maximum	0.27
Count	35



Forested Areas

This set includes only those points that were collected in forested areas fully covered by trees. The resulting RMSEz is 0.25 feet, which equates to a Vertical Accuracy of 0.49 feet at the 95 percent confidence level.

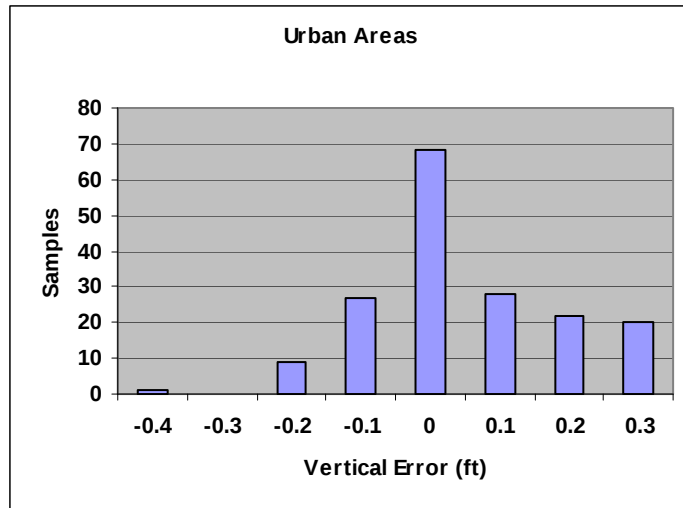
Forested Areas (ft)	
RMSEz	0.25
Mean	-0.20
Standard Error	0.03
Median	-0.21
Mode	-0.18
Standard Deviation	0.15
Sample Variance	0.02
Kurtosis	2.08
Skewness	-0.02
Range	0.77
Minimum	-0.57
Maximum	0.20
Count	32



Urban Areas

This set includes only those points that were collected in areas of urban land cover. The resulting RMSEz is 0.14 feet, which equates to a Vertical Accuracy of 0.27 feet at the 95 percent confidence level.

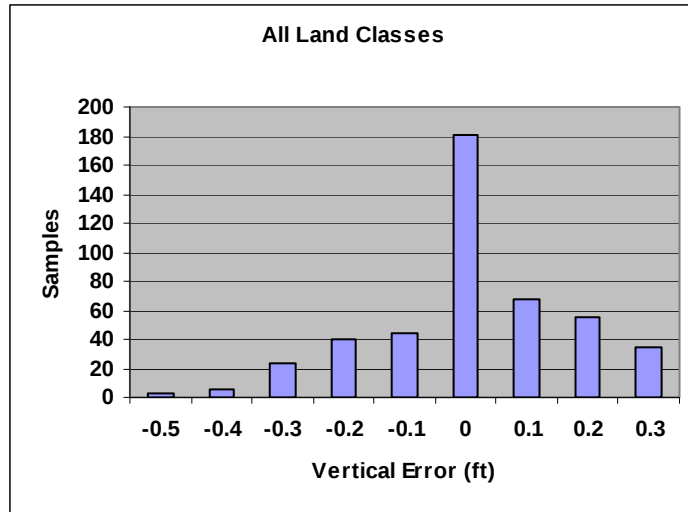
Urban Areas (ft)	
RMSEz	0.14
Mean	0.05
Standard Error	0.01
Median	0.02
Mode	-0.01
Standard Deviation	0.13
Sample Variance	0.02
Kurtosis	0.05
Skewness	0.19
Range	0.73
Minimum	-0.40
Maximum	0.33
Count	175



CONSOLIDATED VERTICAL ACCURACY

The Consolidated Vertical Accuracy is calculated using all land cover classes. The result of these comparisons of these values indicated a Vertical Root Mean Square Error (RMSEz) of 0.16 feet, which equates to Vertical Accuracy of 0.31 feet at the 95 percent confidence level. Descriptive statistics and a histogram of the vertical error distribution for all comparisons are shown below.

All Land Classes (ft)	
RMSEz	0.16
Mean	0.01
Standard Error	0.01
Median	0.01
Mode	-0.01
Standard Deviation	0.16
Sample Variance	0.02
Kurtosis	0.54
Skewness	-0.45
Range	0.90
Minimum	-0.57
Maximum	0.33
Count	454



GROUND TRUTH ANALYSIS **Comparison of LIDAR Points to Ground-Truth Points**

Horizontal units = US Survey Feet [US State Plane, Florida East, NAD83 (1999)]

Vertical units = US Survey feet [NAVD88 – Geoid03]

Name	Survey X	Survey Y	Survey Z	LIDAR X	LIDAR Y	LIDAR Z	dx	dy	dz	dist	Code
1A1	934404.28	958063.51	9.91	934401.51	958063.86	10.01	2.77	-0.35	-0.10	2.79	Forest
1A2	934412.32	958065.08	10.12	934409.68	958067.01	10.27	2.64	-1.93	-0.15	3.27	Forest
1A3	934421.31	958068.03	9.91	934424.11	958067.28	10.43	-2.80	0.75	-0.52	2.90	Forest
1A4	934433.89	958069.91	10.10	934432.87	958068.56	10.24	1.02	1.35	-0.14	1.69	Forest
1A5	934446.18	958072.32	10.08	934448.46	958073.02	10.33	-2.28	-0.70	-0.25	2.38	Forest
1A6	934458.48	958075.46	10.12	934461.02	958075.58	10.43	-2.54	-0.12	-0.31	2.54	Forest
1A7	934470.70	958078.44	10.13	934469.52	958076.89	10.14	1.18	1.55	-0.01	1.95	Forest
1A9	934490.38	958083.06	10.12	934490.62	958080.76	10.69	-0.24	2.30	-0.57	2.31	Forest
1A10	934498.53	958082.61	10.23	934498.75	958080.10	10.65	-0.22	2.51	-0.42	2.52	Forest
1A11	934520.31	958088.89	10.26	934521.88	958091.16	10.56	-1.57	-2.27	-0.30	2.75	Forest
1A12	934533.21	958092.02	10.18	934533.96	958090.14	10.17	-0.75	1.88	0.01	2.02	Forest
1A16	934596.26	958104.84	10.22	934596.62	958102.51	10.40	-0.36	2.33	-0.18	2.35	Forest
1A17	934615.30	958108.76	10.40	934617.22	958111.07	10.20	-1.92	-2.31	0.20	3.00	Forest
1A18	934627.73	958112.64	10.35	934630.28	958111.40	10.37	-2.55	1.24	-0.02	2.84	Forest
1A19	934640.80	958115.22	10.30	934642.81	958114.32	10.47	-2.01	0.90	-0.17	2.20	Forest
1A20	934652.44	958117.84	10.27	934655.25	958117.21	10.43	-2.81	0.63	-0.16	2.88	Forest
1A21	934630.41	958148.80	10.19	934628.67	958146.80	10.37	1.74	2.00	-0.18	2.65	Forest
1A22	934617.65	958146.75	10.60	934620.44	958146.11	10.66	-2.79	0.64	-0.06	2.86	Forest
1A26	934568.33	958132.64	10.43	934568.73	958132.30	10.66	-0.40	0.34	-0.23	0.52	Forest
1A27	934558.11	958129.42	10.19	934555.97	958129.25	10.40	2.14	0.17	-0.21	2.14	Forest
1A28	934548.14	958128.58	10.12	934550.39	958127.84	10.30	-2.25	0.74	-0.18	2.37	Forest
1A29	934536.02	958130.25	10.16	934535.70	958130.96	10.50	0.32	-0.71	-0.34	0.78	Forest
1A30	934523.66	958126.17	10.24	934525.89	958124.07	10.50	-2.23	2.10	-0.26	3.06	Forest
1A31	934523.68	958126.18	10.23	934525.89	958124.07	10.50	-2.21	2.11	-0.27	3.05	Forest
1A32	934513.75	958123.75	10.30	934513.71	958125.08	10.53	0.04	-1.33	-0.23	1.33	Forest
1A33	934502.91	958125.43	10.35	934505.58	958125.74	10.56	-2.67	-0.31	-0.21	2.69	Forest
1A34	934502.92	958125.43	10.34	934505.58	958125.74	10.56	-2.66	-0.31	-0.22	2.68	Forest
1A36	934471.88	958128.95	10.26	934473.10	958128.43	10.43	-1.22	0.52	-0.17	1.32	Forest
1A37	934471.97	958128.90	10.25	934473.10	958128.43	10.43	-1.13	0.47	-0.18	1.23	Forest
1A38	934460.85	958124.63	10.33	934459.97	958123.90	10.53	0.88	0.73	-0.20	1.14	Forest
1A39	934450.29	958120.84	10.39	934451.18	958118.42	10.63	-0.89	2.42	-0.25	2.58	Forest
1A40	934450.23	958120.82	10.38	934451.18	958118.42	10.63	-0.95	2.40	-0.25	2.58	Forest
1A41	934231.18	958023.18	9.31	934233.66	958022.20	9.35	-2.48	0.98	-0.04	2.67	Brush
1A42	934234.70	958014.55	9.37	934235.17	958017.21	9.55	-0.47	-2.66	-0.18	2.70	Brush
1A43	934234.62	958005.30	9.32	934236.19	958006.32	9.51	-1.57	-1.02	-0.19	1.88	Brush
1A44	934226.75	958004.09	9.24	934229.13	958002.51	9.48	-2.38	1.58	-0.24	2.86	Brush
1A45	934217.37	958003.60	9.49	934215.29	958005.60	9.58	2.08	-2.00	-0.09	2.88	Brush
1A47	934206.53	958012.30	9.24	934203.58	958012.09	9.55	2.95	0.21	-0.31	2.96	Brush
1A48	934206.98	958021.59	9.17	934208.96	958020.46	9.48	-1.98	1.13	-0.31	2.28	Brush
1A49	934215.28	958027.11	9.47	934216.63	958024.92	9.58	-1.35	2.19	-0.11	2.57	Brush
1A50	934221.22	958018.77	9.45	934220.51	958021.28	9.65	0.71	-2.51	-0.20	2.61	Brush

1A51	934083.92	958316.18	12.98	934085.79	958315.83	12.89	-1.87	0.35	0.09	1.91	Urban
1A52	934078.95	958326.68	12.98	934080.35	958324.30	12.86	-1.40	2.38	0.12	2.76	Urban
1A53	934073.64	958336.66	12.88	934076.02	958336.63	12.76	-2.38	0.03	0.12	2.38	Urban
1A54	934068.58	958345.77	12.82	934070.57	958346.44	12.86	-1.99	-0.67	-0.04	2.10	Urban
1A55	934063.20	958355.19	12.87	934062.17	958356.51	12.73	1.03	-1.32	0.14	1.68	Urban
1A56	934057.92	958364.31	12.90	934059.71	958365.04	12.76	-1.79	-0.73	0.14	1.94	Urban
1A57	934051.89	958374.25	12.90	934049.97	958373.44	12.89	1.92	0.81	0.01	2.08	Urban
1A58	934046.13	958384.36	12.76	934048.33	958384.76	12.63	-2.20	-0.40	0.13	2.24	Urban
1A59	934036.59	958379.62	13.05	934038.75	958380.50	13.06	-2.16	-0.88	-0.01	2.33	Urban
1A60	934040.62	958372.51	13.05	934042.46	958371.02	13.06	-1.84	1.49	-0.01	2.37	Urban
1A61	934044.62	958365.66	13.06	934044.33	958362.94	12.99	0.29	2.72	0.07	2.74	Urban
1A62	934048.84	958358.38	13.03	934048.39	958357.83	12.99	0.45	0.55	0.04	0.71	Urban
1A63	934053.15	958351.16	13.04	934051.81	958350.61	13.02	1.34	0.55	0.02	1.44	Urban
1A64	934057.24	958344.13	13.09	934057.61	958343.06	13.06	-0.37	1.07	0.03	1.14	Urban
1A65	934061.26	958336.79	13.09	934058.89	958335.09	13.06	2.37	1.70	0.03	2.92	Urban
2A1	953684.62	952893.33	11.14	953683.13	952893.70	11.15	1.49	-0.37	-0.01	1.53	Bare-earth
2A2	953695.82	952889.37	11.18	953698.39	952890.12	11.19	-2.57	-0.75	-0.01	2.68	Bare-earth
2A3	953706.06	952882.83	11.31	953708.43	952884.48	11.19	-2.37	-1.65	0.12	2.89	Bare-earth
2A4	953711.93	952869.86	11.07	953710.72	952870.40	11.06	1.21	-0.54	0.01	1.32	Bare-earth
2A5	953707.44	952856.23	10.82	953707.31	952858.23	10.83	0.13	-2.00	-0.01	2.00	Bare-earth
2A6	953696.81	952847.45	11.01	953695.20	952849.90	11.02	1.61	-2.45	-0.01	2.93	Bare-earth
2A7	953683.22	952847.26	11.13	953683.03	952848.88	11.12	0.19	-1.62	0.01	1.63	Bare-earth
2A8	953671.01	952848.78	11.28	953670.57	952849.27	11.29	0.44	-0.49	-0.01	0.66	Bare-earth
2A9	953672.69	952861.81	11.21	953672.93	952861.41	11.22	-0.24	0.40	-0.01	0.46	Bare-earth
2A10	953689.94	952871.43	11.28	953688.68	952869.19	11.29	1.26	2.24	-0.01	2.57	Bare-earth
2A11	953821.16	953144.89	8.56	953819.97	953147.31	8.63	1.19	-2.42	-0.07	2.70	Urban
2A12	953810.22	953144.69	8.54	953808.56	953143.96	8.60	1.66	0.73	-0.06	1.81	Urban
2A13	953808.19	953158.19	8.52	953806.65	953157.18	8.56	1.54	1.01	-0.04	1.84	Urban
2A14	953816.45	953162.37	8.55	953815.48	953165.05	8.60	0.97	-2.68	-0.05	2.85	Urban
2A15	953825.29	953166.32	8.68	953825.39	953164.17	8.73	-0.10	2.15	-0.05	2.15	Urban
2A16	953834.48	953170.54	8.83	953833.66	953167.81	8.82	0.82	2.72	0.01	2.85	Urban
2A17	953836.90	953192.47	8.80	953835.36	953191.99	8.86	1.54	0.48	-0.06	1.61	Urban
2A18	953826.04	953192.31	8.66	953824.44	953190.51	8.73	1.60	1.80	-0.07	2.41	Urban
2A19	953815.18	953191.58	8.54	953815.48	953193.83	8.56	-0.30	-2.25	-0.02	2.27	Urban
2A20	953804.11	953197.95	8.50	953804.13	953196.75	8.56	-0.02	1.20	-0.06	1.20	Urban
2A21	953693.64	953101.19	9.60	953693.60	953103.77	9.61	0.04	-2.58	-0.01	2.58	Bare-earth
2A22	953687.99	953109.90	9.52	953687.66	953107.64	9.51	0.33	2.26	0.01	2.28	Bare-earth
2A23	953700.74	953142.92	9.52	953702.62	953140.61	9.51	-1.88	2.31	0.01	2.98	Bare-earth
2A24	953706.59	953148.09	9.35	953706.56	953149.73	9.35	0.03	-1.64	0.00	1.64	Bare-earth
2A25	953693.87	953150.68	9.31	953692.61	953153.37	9.32	1.26	-2.69	-0.01	2.97	Bare-earth
2A26	953693.50	953161.85	9.52	953692.19	953161.64	9.51	1.31	0.21	0.01	1.33	Bare-earth
2A27	953704.64	953160.41	9.38	953706.79	953162.17	9.38	-2.15	-1.77	0.00	2.78	Bare-earth
2A28	953710.01	953174.32	9.43	953708.30	953173.95	9.42	1.71	0.37	0.01	1.75	Bare-earth
2A29	953701.53	953179.91	9.40	953701.14	953182.34	9.42	0.39	-2.43	-0.02	2.46	Bare-earth
2A30	953694.62	953173.46	9.48	953693.47	953173.98	9.48	1.15	-0.52	0.00	1.26	Bare-earth
2A31	953685.32	953202.94	9.93	953687.49	953201.44	9.94	-2.17	1.51	-0.01	2.64	Brush
2A32	953672.29	953205.39	10.23	953672.01	953202.52	10.33	0.28	2.86	-0.10	2.88	Brush
2A33	953672.35	953217.21	10.34	953674.31	953216.92	10.24	-1.96	0.29	0.10	1.98	Brush

2A34	953684.09	953219.80	9.87	953685.49	953222.17	10.20	-1.40	-2.37	-0.33	2.75	Brush
2A35	953697.29	953223.42	9.86	953695.30	953221.85	9.94	1.99	1.57	-0.08	2.54	Brush
2A36	953709.94	953240.32	9.67	953711.31	953242.88	9.65	-1.37	-2.56	0.02	2.91	Brush
2A37	953698.72	953244.24	9.89	953697.14	953246.35	10.20	1.58	-2.11	-0.31	2.63	Brush
2A38	953681.22	953245.59	10.16	953681.72	953245.76	10.27	-0.49	-0.17	-0.11	0.52	Brush
2A39	953683.33	953263.02	10.43	953683.89	953265.32	10.60	-0.56	-2.30	-0.17	2.37	Brush
2A40	953701.45	953268.70	10.04	953702.26	953265.97	10.04	-0.81	2.73	0.00	2.85	Brush
3A1	943582.74	935909.54	14.57	943582.50	935909.38	14.76	0.24	0.16	-0.19	0.29	Urban
3A2	943582.97	935915.88	14.64	943584.99	935913.94	14.66	-2.02	1.94	-0.02	2.80	Urban
3A3	943590.79	935915.77	14.67	943590.14	935918.37	14.76	0.65	-2.60	-0.09	2.68	Urban
3A4	943590.98	935908.31	14.57	943591.35	935910.43	14.66	-0.37	-2.12	-0.10	2.15	Urban
3A5	943598.84	935907.70	14.54	943598.08	935906.03	14.63	0.76	1.67	-0.09	1.83	Urban
3A6	943599.07	935915.12	14.64	943598.83	935914.50	14.76	0.24	0.62	-0.12	0.66	Urban
3A7	943606.13	935913.71	14.61	943607.07	935911.05	14.66	-0.94	2.66	-0.05	2.82	Urban
3A8	943606.97	935907.34	14.51	943606.94	935906.39	14.63	0.03	0.95	-0.13	0.95	Urban
3A9	943615.26	935907.25	14.48	943613.43	935907.44	14.63	1.83	-0.19	-0.15	1.84	Urban
3A10	943615.38	935913.09	14.55	943614.09	935915.12	14.63	1.29	-2.03	-0.08	2.40	Urban
3A11	943647.17	935866.04	13.50	943648.18	935865.09	13.48	-1.01	0.95	0.02	1.39	Urban
3A12	943644.48	935857.92	13.34	943646.08	935858.76	13.39	-1.60	-0.84	-0.05	1.81	Urban
3A13	943628.67	935858.00	13.41	943629.28	935858.10	13.42	-0.61	-0.10	-0.01	0.62	Urban
3A14	943627.90	935866.03	13.60	943626.36	935866.93	13.75	1.54	-0.91	-0.15	1.78	Urban
3A15	943605.15	935865.48	13.68	943607.76	935865.25	13.75	-2.61	0.23	-0.07	2.62	Urban
3A16	943605.48	935858.11	13.50	943602.93	935857.35	13.52	2.55	0.76	-0.02	2.66	Urban
3A17	943584.20	935858.30	13.47	943585.58	935856.36	13.48	-1.38	1.94	-0.02	2.38	Urban
3A18	943583.20	935865.92	13.68	943581.12	935865.15	13.75	2.08	0.77	-0.07	2.22	Urban
3A19	943566.55	935866.12	13.63	943567.96	935863.68	13.61	-1.41	2.44	0.02	2.82	Urban
3A20	943565.54	935857.75	13.43	943565.83	935855.61	13.39	-0.29	2.14	0.04	2.15	Urban
3A38	943427.81	935930.61	13.68	943427.18	935932.54	14.07	0.63	-1.93	-0.39	2.03	Brush
3A41	943306.38	935913.25	13.42	943305.95	935911.55	13.52	0.43	1.70	-0.10	1.76	Bare-earth
3A42	943305.96	935918.76	13.25	943304.38	935920.60	13.45	1.58	-1.84	-0.20	2.43	Bare-earth
3A43	943297.51	935919.17	13.05	943297.39	935921.72	13.52	0.12	-2.55	-0.47	2.56	Bare-earth
3A44	943297.55	935913.06	13.27	943298.64	935911.25	13.55	-1.09	1.81	-0.28	2.11	Bare-earth
3A45	943284.71	935912.68	13.24	943282.59	935912.10	13.39	2.12	0.58	-0.15	2.20	Bare-earth
3A48	943271.40	935912.55	13.21	943270.62	935912.50	13.29	0.78	0.05	-0.08	0.78	Bare-earth
3A49	943262.96	935912.20	13.23	943264.06	935911.41	13.45	-1.10	0.79	-0.22	1.35	Bare-earth
4A1	964252.51	928571.97	23.11	964254.53	928573.77	23.20	-2.02	-1.80	-0.09	2.71	Urban
4A2	964255.35	928564.22	23.15	964256.60	928566.09	23.23	-1.25	-1.87	-0.08	2.25	Urban
4A3	964257.59	928558.10	23.18	964256.76	928559.89	23.19	0.83	-1.79	-0.01	1.97	Urban
4A4	964259.63	928552.35	23.16	964258.63	928555.03	23.56	1.00	-2.68	-0.40	2.86	Urban
4A5	964259.87	928544.88	23.33	964260.83	928547.19	23.39	-0.96	-2.31	-0.06	2.51	Urban
4A6	964262.50	928538.44	23.37	964262.77	928540.92	23.39	-0.27	-2.48	-0.02	2.49	Urban
4A7	964265.03	928531.20	23.43	964266.90	928532.79	23.29	-1.87	-1.59	0.14	2.45	Urban
4A8	964267.15	928524.46	23.36	964268.15	928525.01	23.53	-1.00	-0.55	-0.17	1.14	Urban
4A9	964269.22	928517.97	23.43	964270.25	928519.66	23.54	-1.03	-1.69	-0.11	1.98	Urban
4A10	964271.74	928509.94	23.36	964273.50	928508.71	23.56	-1.76	1.23	-0.20	2.15	Urban
4A11	964274.32	928501.09	23.33	964274.48	928503.36	23.56	-0.16	-2.27	-0.23	2.27	Urban
4A12	964268.17	928496.66	23.61	964270.54	928495.52	23.75	-2.37	1.14	-0.14	2.63	Urban
4A13	964265.20	928504.10	23.65	964267.92	928504.93	23.71	-2.72	-0.83	-0.06	2.84	Urban

4A14	964262.69	928511.28	23.65	964264.21	928509.23	23.79	-1.52	2.05	-0.14	2.55	Urban
4A15	964260.26	928517.56	23.66	964260.83	928520.19	23.81	-0.57	-2.63	-0.15	2.69	Urban
4A16	964257.51	928525.60	23.70	964258.50	928528.26	23.80	-0.99	-2.66	-0.10	2.84	Urban
4A17	964254.86	928533.01	23.64	964257.52	928533.35	23.77	-2.66	-0.34	-0.13	2.69	Urban
4A18	964252.41	928540.06	23.64	964253.35	928541.48	23.80	-0.94	-1.42	-0.16	1.70	Urban
4A19	964250.00	928546.77	23.59	964251.25	928547.72	23.75	-1.25	-0.95	-0.16	1.57	Urban
4A20	964247.07	928554.88	23.52	964249.12	928555.56	23.65	-2.05	-0.68	-0.13	2.16	Urban
4A21	964261.15	928405.28	23.54	964259.68	928402.80	23.65	1.47	2.48	-0.11	2.89	Bare-earth
4A22	964263.29	928397.84	23.58	964262.41	928398.50	23.75	0.88	-0.66	-0.17	1.10	Bare-earth
4A23	964265.74	928390.92	23.65	964264.90	928391.22	23.83	0.84	-0.30	-0.18	0.89	Bare-earth
4A24	964267.71	928384.26	23.77	964265.36	928382.53	23.84	2.35	1.73	-0.07	2.92	Bare-earth
4A25	964270.23	928376.55	23.63	964269.36	928376.62	23.89	0.87	-0.07	-0.26	0.87	Bare-earth
4A26	964272.48	928368.44	23.59	964270.12	928369.37	23.78	2.36	-0.93	-0.19	2.54	Bare-earth
4A27	964274.63	928361.27	23.52	964273.46	928359.00	23.82	1.17	2.27	-0.30	2.56	Bare-earth
4A28	964276.34	928354.33	23.55	964275.10	928355.72	23.86	1.24	-1.39	-0.31	1.86	Bare-earth
4A29	964279.17	928346.81	23.57	964277.89	928345.29	23.85	1.28	1.52	-0.28	1.99	Bare-earth
4A30	964282.40	928339.36	23.55	964280.09	928337.77	23.84	2.31	1.59	-0.29	2.80	Bare-earth
4A31	964271.49	928333.72	23.57	964268.54	928334.17	23.63	2.95	-0.45	-0.06	2.99	Bare-earth
4A32	964267.59	928341.12	23.50	964265.43	928341.84	23.65	2.16	-0.72	-0.15	2.28	Bare-earth
4A33	964265.18	928348.25	23.41	964263.88	928347.75	23.66	1.30	0.50	-0.25	1.39	Bare-earth
4A34	964262.73	928355.14	23.45	964260.24	928355.39	23.58	2.49	-0.25	-0.13	2.51	Bare-earth
4A35	964260.19	928363.00	23.29	964258.11	928364.28	23.51	2.08	-1.28	-0.22	2.44	Bare-earth
4A36	964257.84	928370.91	23.11	964257.68	928370.26	23.48	0.16	0.65	-0.37	0.67	Bare-earth
4A37	964255.26	928378.66	23.03	964253.45	928379.05	23.36	1.81	-0.39	-0.33	1.85	Bare-earth
4A38	964253.58	928386.70	23.01	964251.58	928386.43	23.33	2.00	0.27	-0.32	2.01	Bare-earth
4A39	964254.53	928395.09	23.13	964254.40	928396.08	23.50	0.13	-0.99	-0.37	1.00	Bare-earth
4A40	964251.53	928404.31	22.93	964250.37	928404.70	23.17	1.16	-0.39	-0.24	1.22	Bare-earth
5A1	960141.00	888615.26	15.25	960142.47	888616.17	15.26	-1.47	-0.91	-0.01	1.73	Urban
5A2	960135.44	888613.18	15.31	960136.56	888612.72	15.32	-1.12	0.46	-0.01	1.21	Urban
5A3	960127.49	888609.92	15.40	960129.48	888609.38	15.39	-1.99	0.54	0.01	2.06	Urban
5A4	960119.51	888606.64	15.49	960120.72	888605.14	15.48	-1.21	1.50	0.01	1.92	Urban
5A5	960110.57	888602.29	15.60	960112.38	888601.90	15.62	-1.81	0.39	-0.02	1.85	Urban
5A6	960108.26	888613.05	15.43	960110.12	888611.41	15.42	-1.86	1.64	0.01	2.48	Urban
5A7	960115.61	888616.45	15.37	960117.99	888614.69	15.35	-2.38	1.77	0.02	2.96	Urban
5A8	960123.22	888619.40	15.28	960121.70	888621.42	15.29	1.52	-2.02	-0.01	2.53	Urban
5A9	960131.03	888621.88	15.25	960129.08	888620.70	15.26	1.95	1.18	-0.01	2.28	Urban
5A10	960138.27	888624.91	15.21	960136.30	888624.07	15.22	1.96	0.84	-0.01	2.14	Urban
5A11	960158.08	888676.51	15.27	960159.33	888676.17	15.26	-1.25	0.34	0.01	1.30	Bare-earth
5A12	960141.06	888679.10	15.22	960138.93	888679.16	15.22	2.13	-0.06	0.00	2.13	Bare-earth
5A13	960132.79	888677.85	15.19	960132.66	888678.83	15.19	0.13	-0.98	0.00	0.99	Bare-earth
5A14	960118.67	888679.29	15.31	960117.60	888677.19	15.32	1.07	2.10	-0.01	2.36	Bare-earth
5A15	960109.17	888679.25	15.22	960108.51	888676.96	15.22	0.66	2.29	0.00	2.38	Bare-earth
5A16	960106.06	888688.84	15.23	960104.35	888686.90	15.22	1.71	1.94	0.01	2.58	Bare-earth
5A17	960124.18	888684.03	15.15	960122.75	888683.95	15.12	1.43	0.08	0.03	1.43	Bare-earth
5A18	960135.23	888683.54	15.01	960132.30	888683.03	15.03	2.93	0.51	-0.02	2.97	Bare-earth
5A19	960150.31	888683.51	14.98	960149.62	888685.79	14.99	0.69	-2.28	-0.01	2.38	Bare-earth
5A20	960163.03	888685.17	15.08	960162.15	888684.25	15.09	0.88	0.92	-0.01	1.28	Bare-earth
5A21	960409.13	888719.03	14.76	960409.53	888717.84	14.73	-0.40	1.19	0.03	1.25	Urban

5A22	960408.13	888704.30	14.83	960405.16	888704.49	14.83	2.97	-0.19	0.00	2.98	Urban
5A23	960424.07	888701.49	14.77	960423.67	888699.11	14.76	0.40	2.38	0.01	2.42	Urban
5A24	960430.07	888715.52	14.80	960428.39	888714.43	14.80	1.68	1.09	0.00	2.00	Urban
5A25	960445.86	888715.15	14.69	960443.65	888715.05	14.70	2.21	0.10	-0.01	2.21	Urban
5A26	960445.64	888703.44	14.72	960445.52	888704.09	14.73	0.12	-0.65	-0.01	0.67	Urban
5A27	960464.09	888701.47	14.72	960461.37	888700.52	14.76	2.72	0.95	-0.04	2.88	Urban
5A28	960464.00	888713.38	14.64	960463.89	888713.64	14.63	0.11	-0.26	0.01	0.28	Urban
5A29	960488.94	888711.74	14.62	960486.86	888709.90	14.60	2.08	1.84	0.02	2.78	Urban
5A30	960491.95	888699.66	14.71	960492.17	888697.34	14.70	-0.22	2.32	0.01	2.33	Urban
5A31	960479.97	888744.04	15.07	960477.41	888744.42	15.39	2.56	-0.39	-0.33	2.59	Bare-earth
5A32	960494.25	888744.39	15.06	960492.63	888742.55	15.16	1.62	1.84	-0.10	2.45	Bare-earth
5A33	960508.91	888743.56	15.08	960507.89	888745.73	15.39	1.02	-2.17	-0.31	2.39	Bare-earth
5A34	960523.89	888743.53	15.05	960522.45	888741.53	15.29	1.44	2.00	-0.24	2.47	Bare-earth
5A35	960538.89	888743.84	14.88	960541.42	888742.35	14.99	-2.54	1.49	-0.11	2.94	Bare-earth
5A36	960537.52	888737.30	14.80	960539.12	888734.80	14.93	-1.60	2.50	-0.13	2.97	Bare-earth
5A37	960525.00	888737.90	14.98	960527.11	888739.07	15.16	-2.11	-1.17	-0.18	2.42	Bare-earth
5A38	960511.29	888737.97	15.01	960510.61	888736.25	15.39	0.68	1.72	-0.38	1.85	Bare-earth
5A39	960496.30	888738.68	15.00	960495.88	888740.41	15.03	0.42	-1.73	-0.03	1.78	Bare-earth
5A40	960484.40	888739.08	15.02	960485.74	888737.43	15.26	-1.34	1.65	-0.24	2.13	Bare-earth
6A1	941032.28	858149.37	17.27	941034.63	858149.43	17.13	-2.35	-0.06	0.14	2.35	Bare-earth
6A2	941028.73	858136.01	17.22	941027.25	858135.55	17.09	1.48	0.46	0.13	1.55	Bare-earth
6A3	941040.66	858134.75	17.11	941043.10	858133.09	16.99	-2.44	1.66	0.12	2.96	Bare-earth
6A4	941051.10	858141.08	17.12	941049.49	858142.44	16.99	1.61	-1.36	0.13	2.11	Bare-earth
6A5	941064.05	858150.69	17.06	941063.31	858153.47	16.99	0.74	-2.78	0.07	2.88	Bare-earth
6A6	941074.09	858157.99	16.95	941072.99	858155.80	16.86	1.10	2.19	0.09	2.46	Bare-earth
6A7	941081.06	858168.68	16.90	941082.01	858169.97	16.86	-0.95	-1.29	0.04	1.61	Bare-earth
6A8	941071.39	858174.96	17.01	941068.98	858174.04	16.99	2.41	0.92	0.02	2.58	Bare-earth
6A9	941062.31	858181.29	17.23	941062.16	858179.84	17.16	0.15	1.45	0.07	1.46	Bare-earth
6A10	941055.63	858170.19	17.18	941053.50	858170.49	17.13	2.13	-0.30	0.05	2.15	Bare-earth
6A11	941069.98	858146.06	16.99	941068.56	858144.25	16.99	1.42	1.81	0.00	2.30	Bare-earth
6A12	941080.07	858153.54	16.96	941080.47	858151.17	16.86	-0.40	2.37	0.10	2.40	Bare-earth
6A13	941087.75	858163.13	16.96	941089.29	858161.67	16.86	-1.54	1.46	0.10	2.13	Bare-earth
6A14	941103.91	858153.96	17.00	941104.02	858155.30	16.99	-0.11	-1.34	0.01	1.35	Bare-earth
6A15	941106.11	858141.12	16.83	941105.73	858141.59	16.80	0.38	-0.47	0.03	0.60	Bare-earth
6A16	941026.62	858310.85	17.77	941026.79	858309.70	17.75	-0.17	1.15	0.02	1.16	Urban
6A17	941032.03	858319.94	17.86	941034.60	858321.38	17.81	-2.57	-1.44	0.05	2.94	Urban
6A18	941045.02	858319.99	17.88	941042.74	858321.28	17.81	2.28	-1.29	0.07	2.62	Urban
6A19	941045.73	858310.88	17.75	941045.92	858309.37	17.62	-0.19	1.51	0.13	1.52	Urban
6A20	941057.22	858309.63	17.69	941057.37	858311.73	17.62	-0.15	-2.10	0.07	2.11	Urban
6A21	941062.22	858318.69	17.88	941060.39	858321.02	17.81	1.83	-2.33	0.07	2.96	Urban
6A22	941075.56	858317.25	17.84	941075.91	858316.13	17.88	-0.35	1.12	-0.04	1.18	Urban
6A23	941074.94	858307.76	17.60	941077.09	858308.85	17.55	-2.15	-1.09	0.05	2.41	Urban
6A24	941088.52	858308.07	17.62	941090.21	858306.58	17.62	-1.69	1.49	0.00	2.25	Urban
6A25	941092.68	858317.16	17.90	941090.51	858315.93	17.88	2.17	1.23	0.02	2.50	Urban
6A26	940910.83	858219.30	19.72	940913.80	858218.92	19.65	-2.97	0.38	0.07	3.00	Bare-earth
6A27	940908.57	858209.51	19.39	940910.19	858211.54	19.36	-1.62	-2.03	0.03	2.60	Bare-earth
6A28	940911.29	858195.31	19.08	940910.88	858193.89	19.09	0.41	1.42	-0.01	1.48	Bare-earth
6A29	940900.56	858194.90	19.35	940899.56	858197.53	19.36	1.00	-2.63	-0.01	2.82	Bare-earth

6A30	940898.48	858185.22	19.38	940897.95	858187.62	19.32	0.53	-2.40	0.05	2.46	Bare-earth
6A31	940909.02	858182.59	19.20	940906.58	858182.24	19.16	2.44	0.35	0.04	2.46	Bare-earth
6A32	940908.15	858169.79	19.22	940909.96	858168.95	19.13	-1.81	0.84	0.09	2.00	Bare-earth
6A33	940896.22	858168.52	19.43	940893.85	858169.21	19.29	2.37	-0.69	0.14	2.47	Bare-earth
6A34	940894.54	858157.28	19.22	940892.67	858158.39	19.19	1.87	-1.11	0.03	2.17	Bare-earth
6A35	940906.37	858155.23	19.17	940908.81	858156.09	19.09	-2.44	-0.86	0.08	2.59	Bare-earth
6A36	940904.69	858141.49	19.17	940906.52	858139.72	19.00	-1.83	1.77	0.17	2.55	Bare-earth
6A37	940895.07	858140.45	19.11	940894.41	858139.88	18.96	0.66	0.57	0.15	0.87	Bare-earth
6A38	940899.08	858127.73	18.97	940897.89	858125.58	18.90	1.19	2.15	0.07	2.46	Bare-earth
6A39	940898.94	858115.85	18.97	940897.53	858113.64	18.90	1.41	2.21	0.07	2.63	Bare-earth
6A40	940896.84	858103.54	18.99	940895.76	858103.99	18.96	1.08	-0.45	0.03	1.17	Bare-earth
7A1	965393.49	816491.20	12.09	965395.94	816489.97	12.07	-2.45	1.23	0.02	2.74	Urban
7A2	965384.56	816492.40	11.94	965385.01	816490.75	11.94	-0.45	1.65	0.00	1.71	Urban
7A3	965385.37	816504.30	11.96	965386.59	816505.81	11.97	-1.22	-1.51	-0.01	1.94	Urban
7A4	965393.80	816504.65	12.10	965394.89	816505.19	12.11	-1.09	-0.54	-0.01	1.21	Urban
7A5	965394.29	816515.59	12.12	965394.39	816513.95	12.11	-0.10	1.64	0.01	1.65	Urban
7A6	965384.74	816516.39	11.92	965385.80	816518.94	11.91	-1.06	-2.55	0.01	2.76	Urban
7A7	965385.48	816531.44	11.90	965384.91	816534.26	11.88	0.57	-2.82	0.02	2.88	Urban
7A8	965394.57	816532.05	12.11	965395.84	816533.50	12.11	-1.27	-1.45	0.00	1.93	Urban
7A9	965395.20	816546.96	12.16	965394.10	816546.46	12.17	1.10	0.50	-0.01	1.21	Urban
7A10	965386.07	816547.89	11.96	965385.67	816549.19	11.94	0.40	-1.30	0.02	1.36	Urban
7A11	965386.77	816562.20	12.00	965386.36	816561.95	12.01	0.41	0.25	-0.01	0.48	Urban
7A12	965395.73	816562.43	12.16	965395.35	816563.49	12.14	0.38	-1.06	0.02	1.13	Urban
7A13	965396.81	816579.52	12.20	965395.90	816580.12	12.17	0.91	-0.60	0.03	1.09	Urban
7A14	965387.72	816581.49	12.03	965387.50	816582.75	12.04	0.22	-1.26	-0.01	1.28	Urban
7A15	965388.35	816595.53	12.06	965391.18	816594.86	12.07	-2.83	0.67	-0.01	2.90	Urban
7A16	965457.17	816598.33	10.80	965459.16	816600.40	10.79	-1.99	-2.07	0.01	2.87	Bare-earth
7A17	965449.10	816599.61	10.92	965450.99	816600.96	10.92	-1.89	-1.35	0.00	2.32	Bare-earth
7A18	965449.67	816612.08	10.94	965449.84	816613.26	10.96	-0.17	-1.18	-0.02	1.19	Bare-earth
7A19	965457.31	816612.73	10.83	965458.86	816614.38	10.83	-1.55	-1.65	0.00	2.26	Bare-earth
7A20	965458.40	816623.32	10.84	965459.19	816624.74	10.83	-0.79	-1.42	0.01	1.62	Bare-earth
7A21	965450.36	816625.50	10.93	965449.22	816627.24	10.92	1.14	-1.74	0.01	2.08	Bare-earth
7A22	965451.19	816636.45	10.87	965451.55	816639.28	10.89	-0.36	-2.83	-0.02	2.85	Bare-earth
7A23	965457.69	816637.38	10.95	965460.60	816636.82	10.96	-2.91	0.56	-0.01	2.96	Bare-earth
7A24	965459.43	816647.83	11.01	965459.35	816650.76	10.99	0.08	-2.93	0.02	2.93	Bare-earth
7A25	965451.27	816648.95	10.97	965452.83	816649.42	10.96	-1.56	-0.47	0.00	1.63	Bare-earth
7A26	965451.44	816659.36	11.09	965449.28	816659.59	11.12	2.16	-0.23	-0.03	2.17	Bare-earth
7A27	965459.35	816659.91	11.07	965457.75	816661.26	11.06	1.60	-1.35	0.01	2.09	Bare-earth
7A28	965461.39	816671.24	11.07	965459.42	816671.00	11.06	1.97	0.24	0.01	1.99	Bare-earth
7A29	965452.36	816672.77	11.10	965452.60	816675.50	11.09	-0.24	-2.73	0.01	2.74	Bare-earth
7A30	965453.95	816684.76	11.17	965453.32	816687.54	11.15	0.63	-2.78	0.02	2.85	Bare-earth
7A31	965508.52	816766.21	9.85	965510.40	816766.28	9.84	-1.88	-0.07	0.01	1.88	Bare-earth
7A32	965507.81	816756.59	9.77	965508.34	816758.41	9.78	-0.53	-1.82	-0.01	1.90	Bare-earth
7A33	965507.65	816746.25	9.74	965507.78	816748.10	9.74	-0.13	-1.85	0.00	1.86	Bare-earth
7A34	965507.28	816736.50	9.77	965508.63	816738.36	9.78	-1.35	-1.86	-0.01	2.30	Bare-earth
7A35	965506.85	816726.99	9.78	965504.37	816728.32	9.78	2.48	-1.33	0.00	2.82	Bare-earth
7A36	965506.26	816717.13	9.80	965508.34	816718.28	9.81	-2.08	-1.15	-0.01	2.38	Bare-earth
7A37	965506.00	816706.36	9.80	965503.81	816708.24	9.78	2.19	-1.88	0.02	2.89	Bare-earth

7A38	965505.61	816696.01	9.73	965503.88	816696.10	9.74	1.73	-0.09	-0.01	1.73	Bare-earth
7A39	965504.95	816684.63	9.74	965507.09	816686.00	9.74	-2.14	-1.37	0.00	2.54	Bare-earth
7A40	965504.74	816673.17	9.74	965503.38	816675.79	9.74	1.36	-2.62	0.00	2.95	Bare-earth
8A1	942888.81	786629.75	18.61	942889.42	786632.22	18.31	-0.61	-2.47	0.30	2.54	Urban
8A2	942891.72	786621.04	18.69	942891.75	786623.85	18.40	-0.03	-2.81	0.29	2.81	Urban
8A3	942876.63	786619.33	18.58	942875.41	786618.21	18.31	1.22	1.12	0.27	1.66	Urban
8A4	942876.05	786627.42	18.56	942878.40	786626.18	18.27	-2.35	1.24	0.29	2.65	Urban
8A5	942860.54	786627.40	18.48	942860.91	786625.39	18.27	-0.37	2.01	0.21	2.05	Urban
8A6	942859.70	786618.10	18.53	942860.65	786618.60	18.21	-0.95	-0.50	0.32	1.07	Urban
8A7	942845.62	786617.27	18.50	942844.31	786616.11	18.24	1.31	1.16	0.26	1.75	Urban
8A8	942844.83	786625.75	18.52	942843.75	786625.99	18.27	1.08	-0.24	0.25	1.10	Urban
8A9	942831.64	786625.96	18.56	942833.19	786624.15	18.24	-1.55	1.81	0.32	2.39	Urban
8A10	942831.43	786618.05	18.55	942833.19	786615.98	18.24	-1.76	2.07	0.31	2.72	Urban
8A11	942818.44	786617.37	18.58	942816.58	786619.46	18.34	1.86	-2.09	0.24	2.79	Urban
8A12	942817.72	786625.77	18.59	942815.37	786624.61	18.40	2.35	1.16	0.19	2.62	Urban
8A13	942803.81	786624.68	18.69	942803.56	786622.87	18.37	0.25	1.81	0.32	1.83	Urban
8A14	942802.01	786615.21	18.67	942801.23	786616.11	18.37	0.78	-0.90	0.30	1.19	Urban
8A15	942789.02	786615.15	18.67	942787.68	786617.42	18.37	1.34	-2.27	0.30	2.63	Urban
8A16	942921.62	786583.38	18.41	942919.37	786584.61	18.31	2.25	-1.23	0.10	2.57	Brush
8A17	942928.59	786584.00	18.48	942927.67	786584.97	18.40	0.92	-0.97	0.08	1.34	Brush
8A18	942928.77	786574.43	18.18	942927.58	786577.07	18.04	1.19	-2.64	0.14	2.89	Brush
8A19	942922.72	786572.91	18.12	942923.70	786574.84	17.98	-0.98	-1.93	0.14	2.17	Brush
8A20	942923.08	786564.36	18.08	942920.92	786564.93	17.88	2.16	-0.57	0.20	2.23	Brush
8A21	942928.72	786564.49	18.13	942928.92	786562.93	18.01	-0.20	1.56	0.12	1.58	Brush
8A22	942929.44	786553.56	18.18	942928.82	786554.92	17.98	0.62	-1.36	0.20	1.50	Brush
8A23	942922.62	786552.27	18.10	942920.29	786553.02	17.95	2.33	-0.75	0.15	2.45	Brush
8A24	942922.50	786543.26	18.26	942920.32	786545.11	18.04	2.18	-1.85	0.22	2.86	Brush
8A25	942930.61	786542.68	18.16	942928.72	786541.83	18.01	1.89	0.85	0.15	2.08	Brush
8A26	942931.01	786531.19	18.18	942931.48	786529.27	17.98	-0.47	1.92	0.20	1.98	Brush
8A27	942922.62	786530.16	18.22	942924.23	786529.43	17.95	-1.61	0.73	0.27	1.77	Brush
8A28	942922.77	786519.51	18.28	942920.98	786521.46	18.08	1.79	-1.95	0.20	2.65	Brush
8A29	942931.02	786519.03	18.23	942928.59	786518.24	18.01	2.43	0.79	0.22	2.56	Brush
8A30	942931.58	786507.83	18.04	942930.76	786507.65	17.85	0.82	0.18	0.19	0.84	Brush
8A31	942941.58	786404.56	18.13	942944.24	786405.74	17.98	-2.66	-1.18	0.15	2.91	Bare-earth
8A32	942949.05	786404.08	18.53	942949.16	786402.26	18.34	-0.11	1.82	0.19	1.82	Bare-earth
8A33	942946.65	786392.50	18.57	942948.97	786392.85	18.40	-2.32	-0.35	0.17	2.34	Bare-earth
8A34	942940.23	786391.39	18.38	942939.32	786389.67	18.14	0.91	1.71	0.24	1.94	Bare-earth
8A35	942940.13	786378.09	18.47	942938.57	786378.09	18.31	1.56	0.00	0.16	1.56	Bare-earth
8A36	942950.05	786377.96	18.71	942952.54	786378.74	18.50	-2.49	-0.78	0.21	2.61	Bare-earth
8A37	942950.02	786365.35	18.64	942952.41	786367.03	18.40	-2.39	-1.68	0.24	2.92	Bare-earth
8A38	942942.01	786365.01	18.57	942942.34	786362.50	18.31	-0.33	2.51	0.27	2.53	Bare-earth
8A39	942942.37	786352.35	18.61	942943.45	786350.72	18.34	-1.08	1.63	0.27	1.95	Bare-earth
8A40	942950.29	786351.56	18.75	942949.75	786353.38	18.63	0.54	-1.82	0.12	1.90	Bare-earth
8A41	942949.19	786730.05	18.28	942950.31	786732.12	18.04	-1.12	-2.07	0.24	2.35	Urban
8A42	942937.81	786732.76	18.29	942940.11	786734.42	18.27	-2.30	-1.66	0.02	2.84	Urban
8A43	942936.86	786744.71	18.47	942934.86	786746.39	18.21	2.00	-1.68	0.25	2.61	Urban
8A44	942947.73	786745.28	18.50	942947.52	786746.03	18.27	0.21	-0.75	0.23	0.78	Urban
8A45	942947.93	786758.53	18.58	942949.06	786758.17	18.27	-1.13	0.36	0.31	1.18	Urban

8A46	942937.55	786759.01	18.55	942936.96	786756.76	18.44	0.59	2.25	0.11	2.33	Urban
8A47	942936.18	786772.06	18.58	942934.43	786772.44	18.54	1.75	-0.38	0.04	1.79	Urban
8A48	942945.79	786771.94	18.54	942945.36	786774.05	18.27	0.43	-2.11	0.27	2.15	Urban
8A49	942944.89	786786.06	18.45	942943.55	786784.81	18.21	1.34	1.25	0.24	1.83	Urban
8A50	942934.91	786785.74	18.56	942932.86	786784.15	18.34	2.05	1.59	0.22	2.60	Urban
9A1	922513.75	742315.75	17.38	922515.87	742315.18	17.39	-2.12	0.57	-0.01	2.20	Bare-earth
9A2	922513.58	742329.16	17.33	922516.10	742328.11	17.32	-2.52	1.05	0.01	2.73	Bare-earth
9A3	922513.38	742342.51	17.38	922515.38	742343.46	17.39	-2.00	-0.95	-0.01	2.21	Bare-earth
9A4	922513.60	742357.91	17.29	922514.85	742357.44	17.29	-1.25	0.47	0.00	1.34	Bare-earth
9A5	922513.39	742373.31	17.43	922510.82	742374.56	17.42	2.57	-1.25	0.01	2.86	Bare-earth
9A6	922513.45	742388.65	17.39	922511.54	742389.92	17.39	1.91	-1.27	0.00	2.29	Bare-earth
9A7	922513.18	742404.34	17.48	922514.89	742405.24	17.49	-1.71	-0.90	-0.01	1.93	Bare-earth
9A8	922513.07	742418.87	17.55	922514.53	742420.59	17.55	-1.46	-1.72	0.00	2.26	Bare-earth
9A9	922513.12	742433.56	17.48	922513.54	742436.01	17.49	-0.42	-2.45	-0.01	2.49	Bare-earth
9A10	922512.88	742446.69	17.57	922510.62	742447.69	17.58	2.26	-1.00	-0.01	2.48	Bare-earth
9A11	922512.77	742461.26	17.73	922510.65	742462.85	17.75	2.11	-1.59	-0.02	2.65	Bare-earth
9A12	922512.69	742475.94	17.83	922513.41	742476.47	17.85	-0.72	-0.53	-0.02	0.90	Bare-earth
9A13	922512.25	742490.58	17.80	922511.74	742493.43	17.81	0.51	-2.85	-0.01	2.89	Bare-earth
9A14	922512.38	742505.20	17.98	922511.38	742507.57	17.98	1.00	-2.36	0.00	2.57	Bare-earth
9A15	922512.18	742520.64	17.94	922511.77	742520.63	17.95	0.41	0.01	-0.01	0.41	Bare-earth
9A16	922470.57	742199.24	18.13	922472.83	742200.32	18.08	-2.26	-1.08	0.05	2.50	Urban
9A17	922478.97	742199.09	18.29	922480.60	742198.35	18.27	-1.63	0.74	0.02	1.79	Urban
9A18	922478.99	742187.11	18.31	922478.34	742186.90	18.24	0.65	0.21	0.07	0.69	Urban
9A19	922470.30	742186.36	18.15	922471.58	742188.84	18.11	-1.28	-2.48	0.04	2.79	Urban
9A20	922469.63	742172.10	18.14	922470.99	742169.77	18.14	-1.36	2.33	0.00	2.69	Urban
9A21	922478.86	742171.91	18.35	922477.88	742169.32	18.27	0.98	2.59	0.08	2.77	Urban
9A22	922479.65	742158.19	18.37	922480.44	742156.16	18.37	-0.79	2.03	0.00	2.18	Urban
9A23	922469.94	742156.10	18.21	922470.04	742158.36	18.18	-0.10	-2.26	0.03	2.26	Urban
9A24	922469.70	742140.76	18.22	922470.14	742143.04	18.18	-0.44	-2.28	0.04	2.32	Urban
9A25	922477.83	742140.87	18.38	922478.31	742138.71	18.37	-0.48	2.16	0.01	2.21	Urban
9A26	922383.04	741956.93	16.79	922385.16	741956.32	16.80	-2.12	0.61	-0.01	2.20	Bare-earth
9A27	922368.20	741955.09	16.80	922367.18	741955.54	16.80	1.02	-0.45	0.00	1.11	Bare-earth
9A28	922368.58	741936.47	16.84	922369.74	741938.61	16.83	-1.16	-2.14	0.01	2.43	Bare-earth
9A29	922385.26	741934.78	16.76	922383.10	741935.49	16.76	2.16	-0.71	0.00	2.27	Bare-earth
9A30	922387.71	741918.53	16.78	922385.79	741920.23	16.80	1.92	-1.70	-0.02	2.56	Bare-earth
9A31	922370.31	741917.64	16.77	922372.14	741915.84	16.80	-1.83	1.80	-0.03	2.57	Bare-earth
9A32	922372.04	741895.82	16.90	922371.48	741898.55	16.86	0.56	-2.73	0.04	2.79	Bare-earth
9A33	922386.64	741899.23	16.72	922387.43	741899.47	16.73	-0.79	-0.23	-0.01	0.82	Bare-earth
9A34	922386.58	741879.47	16.73	922384.93	741878.60	16.73	1.65	0.87	0.00	1.86	Bare-earth
9A35	922372.65	741877.66	16.83	922372.04	741877.94	16.83	0.61	-0.28	0.00	0.67	Bare-earth
9A36	922374.19	741857.62	16.76	922373.97	741860.52	16.76	0.22	-2.90	0.00	2.91	Bare-earth
9A37	922388.78	741857.69	16.64	922386.08	741857.90	16.63	2.70	-0.21	0.01	2.70	Bare-earth
9A38	922390.56	741838.57	16.59	922390.21	741840.22	16.57	0.35	-1.65	0.02	1.69	Bare-earth
9A39	922374.64	741837.07	16.66	922375.52	741839.69	16.67	-0.88	-2.62	-0.02	2.76	Bare-earth
9A40	922373.44	741819.17	16.60	922375.94	741820.63	16.60	-2.50	-1.46	0.00	2.90	Bare-earth
10A1	956054.64	743323.31	17.31	956053.76	743325.65	17.06	0.88	-2.34	0.25	2.50	Bare-earth
10A2	956059.81	743322.44	17.14	956057.17	743321.12	16.96	2.64	1.32	0.18	2.95	Bare-earth
10A3	956057.31	743309.98	17.09	956056.06	743307.53	16.76	1.25	2.45	0.33	2.75	Bare-earth

10A4	956049.87	743310.61	17.31	956048.05	743310.29	17.06	1.82	0.32	0.25	1.85	Bare-earth
10A5	956048.55	743297.30	17.20	956047.07	743298.58	16.93	1.48	-1.28	0.27	1.95	Bare-earth
10A6	956054.92	743296.13	16.99	956052.45	743296.08	16.67	2.47	0.05	0.32	2.47	Bare-earth
10A7	956053.03	743283.80	16.89	956051.24	743284.18	16.63	1.79	-0.38	0.26	1.83	Bare-earth
10A8	956046.42	743284.07	17.08	956046.84	743286.57	16.76	-0.42	-2.50	0.32	2.54	Bare-earth
10A9	956043.91	743273.37	16.90	956041.30	743273.28	16.67	2.61	0.09	0.23	2.61	Bare-earth
10A10	956051.51	743271.48	16.83	956049.53	743270.00	16.57	1.98	1.48	0.26	2.47	Bare-earth
10A11	956049.84	743258.86	16.75	956048.68	743256.26	16.47	1.16	2.60	0.28	2.85	Bare-earth
10A12	956041.76	743259.15	16.75	956040.02	743261.41	16.53	1.74	-2.26	0.22	2.86	Bare-earth
10A13	956039.86	743247.09	16.73	956039.95	743249.37	16.47	-0.09	-2.28	0.26	2.28	Bare-earth
10A14	956049.23	743244.85	16.69	956049.53	743244.15	16.40	-0.30	0.70	0.29	0.76	Bare-earth
10A15	956047.83	743232.28	16.63	956048.28	743232.31	16.40	-0.45	-0.03	0.23	0.45	Bare-earth
10A16	956085.60	743185.06	16.72	956085.29	743183.72	16.50	0.31	1.34	0.22	1.38	Bare-earth
10A17	956077.92	743187.06	16.58	956080.53	743188.31	16.44	-2.61	-1.25	0.14	2.90	Bare-earth
10A18	956078.92	743199.37	16.54	956079.32	743200.35	16.40	-0.40	-0.98	0.14	1.06	Bare-earth
10A19	956086.14	743198.06	16.61	956085.13	743199.56	16.50	1.01	-1.50	0.11	1.80	Bare-earth
10A20	956087.51	743210.66	16.71	956086.08	743209.27	16.50	1.43	1.39	0.21	1.99	Bare-earth
10A21	956079.59	743212.01	16.55	956081.65	743209.86	16.37	-2.06	2.15	0.18	2.97	Bare-earth
10A22	956081.36	743223.28	16.61	956083.03	743221.61	16.44	-1.67	1.67	0.17	2.36	Bare-earth
10A23	956090.14	743222.09	16.74	956089.20	743224.83	16.53	0.94	-2.74	0.21	2.90	Bare-earth
10A24	956092.15	743232.97	16.72	956090.67	743230.73	16.53	1.48	2.24	0.19	2.69	Bare-earth
10A25	956084.94	743234.70	16.66	956087.69	743235.13	16.50	-2.75	-0.43	0.16	2.79	Bare-earth
10A26	956086.70	743245.73	16.64	956087.82	743245.04	16.50	-1.12	0.69	0.14	1.32	Bare-earth
10A27	956095.31	743245.62	16.71	956093.66	743244.28	16.47	1.65	1.34	0.24	2.13	Bare-earth
10A28	956097.74	743259.33	16.73	956095.27	743258.19	16.50	2.47	1.14	0.23	2.72	Bare-earth
10A29	956088.16	743262.75	16.66	956088.38	743263.15	16.60	-0.22	-0.40	0.06	0.46	Bare-earth
10A30	956090.57	743276.31	16.68	956092.54	743274.76	16.47	-1.97	1.55	0.21	2.51	Bare-earth
10A31	956229.77	743223.21	15.68	956228.73	743224.83	15.52	1.04	-1.61	0.16	1.92	Urban
10A32	956231.14	743232.65	15.63	956231.81	743232.47	15.42	-0.67	0.18	0.21	0.69	Urban
10A33	956245.72	743231.07	15.64	956246.45	743230.57	15.39	-0.73	0.50	0.25	0.89	Urban
10A34	956245.71	743222.55	15.68	956245.30	743220.92	15.35	0.41	1.63	0.33	1.68	Urban
10A35	956258.62	743223.32	15.67	956259.31	743220.82	15.52	-0.69	2.50	0.15	2.60	Urban
10A36	956266.34	743233.99	15.50	956267.84	743231.78	15.39	-1.50	2.21	0.11	2.67	Urban
10A37	956276.76	743234.49	15.51	956278.66	743232.73	15.35	-1.90	1.76	0.16	2.59	Urban
10A38	956275.81	743223.85	15.68	956276.33	743220.95	15.42	-0.52	2.90	0.26	2.94	Urban
10A39	956288.11	743223.94	15.73	956287.00	743225.28	15.42	1.11	-1.34	0.31	1.74	Urban
10A40	956298.59	743224.26	15.67	956296.97	743222.33	15.42	1.62	1.93	0.25	2.52	Urban
11A1	935418.03	745297.75	17.57	935418.40	745298.41	17.45	-0.37	-0.67	0.12	0.76	Bare-earth
11A2	935425.37	745300.53	17.56	935423.26	745301.13	17.42	2.11	-0.60	0.13	2.19	Bare-earth
11A3	935421.41	745310.28	17.53	935419.29	745310.84	17.45	2.12	-0.56	0.08	2.19	Bare-earth
11A4	935413.87	745307.25	17.58	935413.29	745306.38	17.52	0.58	0.87	0.06	1.04	Bare-earth
11A5	935408.82	745317.09	17.62	935405.90	745316.85	17.62	2.92	0.24	0.00	2.93	Bare-earth
11A6	935417.08	745320.70	17.50	935415.94	745321.61	17.45	1.14	-0.91	0.05	1.46	Bare-earth
11A7	935412.12	745331.06	17.46	935412.99	745329.81	17.39	-0.87	1.24	0.07	1.52	Bare-earth
11A8	935404.44	745328.06	17.57	935402.98	745329.28	17.58	1.46	-1.22	-0.01	1.90	Bare-earth
11A9	935399.48	745337.98	17.52	935396.91	745337.26	17.49	2.57	0.72	0.03	2.67	Bare-earth
11A10	935407.13	745341.53	17.41	935407.64	745343.75	17.36	-0.51	-2.22	0.05	2.28	Bare-earth
11A11	935402.84	745352.16	17.42	935402.43	745354.35	17.39	0.41	-2.19	0.03	2.23	Bare-earth

11A12	935395.34	745349.89	17.47	935392.98	745351.36	17.39	2.36	-1.47	0.08	2.79	Bare-earth
11A13	935391.11	745359.53	17.48	935390.02	745357.83	17.42	1.09	1.70	0.06	2.02	Bare-earth
11A14	935398.86	745363.01	17.44	935398.39	745362.52	17.42	0.47	0.49	0.02	0.68	Bare-earth
11A15	935394.56	745373.53	17.33	935396.42	745375.15	17.32	-1.86	-1.62	0.01	2.47	Bare-earth
11A16	935386.36	745371.01	17.31	935383.99	745372.00	17.29	2.37	-0.99	0.02	2.57	Bare-earth
11A17	935382.26	745382.57	17.43	935380.48	745382.66	17.42	1.78	-0.09	0.01	1.78	Bare-earth
11A18	935390.93	745385.67	17.43	935391.76	745384.99	17.42	-0.83	0.68	0.01	1.07	Bare-earth
11A19	935385.57	745397.90	17.39	935386.42	745395.46	17.39	-0.85	2.44	0.00	2.58	Bare-earth
11A20	935376.49	745395.46	17.49	935373.95	745396.61	17.42	2.54	-1.15	0.07	2.79	Bare-earth
11A21	935577.45	745254.56	17.77	935575.56	745253.66	17.65	1.89	0.90	0.12	2.09	Urban
11A22	935587.43	745260.01	17.68	935587.14	745262.16	17.52	0.29	-2.15	0.16	2.17	Urban
11A23	935596.64	745248.16	17.59	935594.91	745249.49	17.42	1.73	-1.33	0.17	2.18	Urban
11A24	935589.07	745243.75	17.59	935587.14	745242.21	17.42	1.93	1.54	0.17	2.47	Urban
11A25	935592.51	745235.12	17.56	935590.68	745233.15	17.36	1.83	1.97	0.20	2.69	Urban
11A26	935601.41	745240.50	17.50	935601.61	745238.80	17.32	-0.20	1.70	0.18	1.71	Urban
11A27	935606.76	745232.80	17.47	935608.66	745233.84	17.29	-1.90	-1.04	0.18	2.17	Urban
11A28	935598.71	745228.67	17.44	935599.93	745230.43	17.29	-1.22	-1.76	0.15	2.14	Urban
11A29	935603.12	745220.36	17.36	935601.67	745218.10	17.19	1.45	2.26	0.17	2.68	Urban
11A30	935611.76	745226.34	17.43	935613.94	745226.95	17.26	-2.18	-0.61	0.17	2.27	Urban
11A31	935616.85	745218.06	17.42	935618.73	745217.83	17.29	-1.88	0.23	0.13	1.89	Urban
11A32	935609.62	745213.90	17.34	935610.89	745213.24	17.16	-1.27	0.66	0.18	1.43	Urban
11A33	935613.39	745206.21	17.35	935610.82	745205.00	17.22	2.57	1.21	0.13	2.84	Urban
11A34	935620.88	745209.92	17.39	935621.85	745210.84	17.22	-0.97	-0.92	0.17	1.33	Urban
11A35	935625.85	745202.52	17.38	935628.18	745202.91	17.29	-2.33	-0.39	0.09	2.36	Urban
11A36	935616.52	745197.79	17.32	935614.43	745196.80	17.26	2.09	0.99	0.06	2.31	Urban
11A37	935620.71	745187.55	17.32	935618.37	745187.88	17.22	2.34	-0.33	0.10	2.36	Urban
11A38	935629.52	745191.56	17.19	935631.26	745193.78	17.06	-1.74	-2.22	0.13	2.82	Urban
11A39	935634.56	745185.67	17.17	935636.09	745185.94	17.06	-1.53	-0.27	0.11	1.55	Urban
11A40	935625.18	745181.60	17.25	935624.83	745181.35	17.16	0.35	0.25	0.09	0.43	Urban