July 14, 2017

Survey Report of
LiDAR Calibration & Quality Control Points

USGS Contract: G16PC00016

CA_Eastern San Diego Co Lidar_2016_B16

USGS Task Order: G16PD01219

Presented to:

USGS
science for a changing world

Presented By:

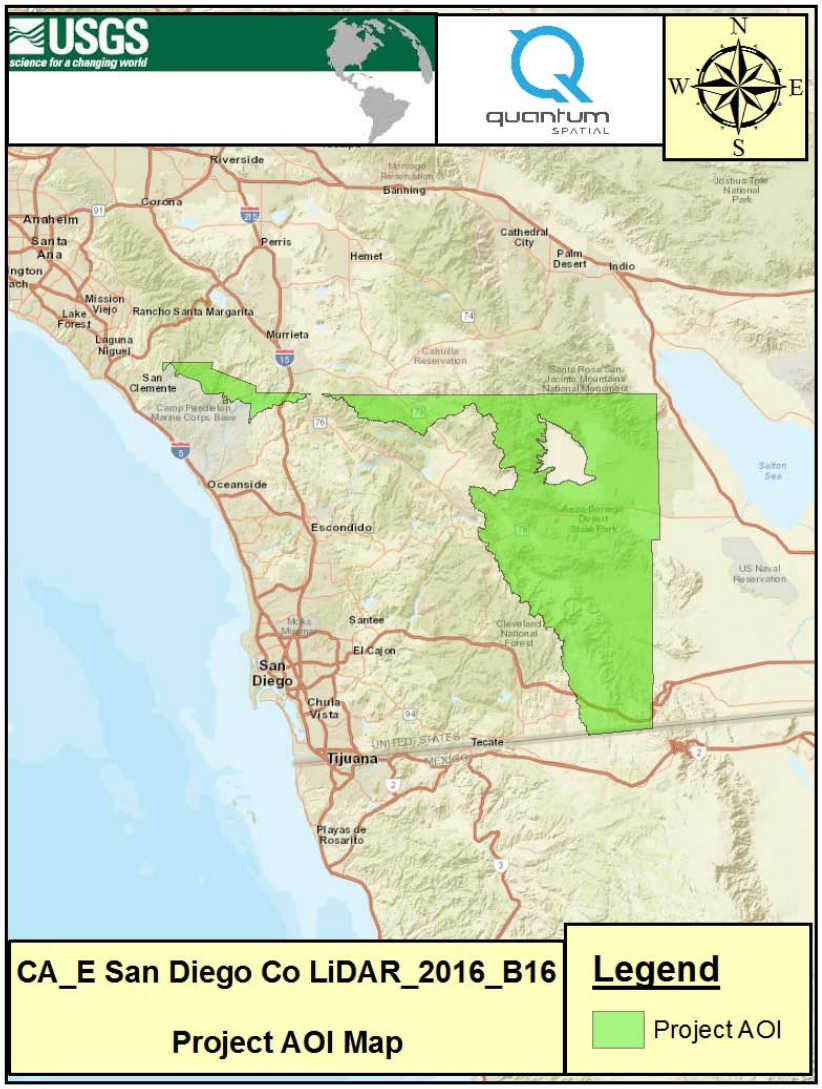
Contents of Report

Introduction

Quantum Spatial, Inc. was contracted by USGS under task order G16PD01219 to survey LiDAR calibration and quality control points in support of CA_Eastern San Diego Co LiDAR_2016_B16. The survey was in turn sub-contracted to CompassData, Inc. This is the report of the technical approach used and detail of each point surveyed.

Project Area

The Project Areas, shown in the figure below, consists of approximately 1,353 square miles.



Technical Approach to Land Cover Validation Point Selection

Referencing ASPRS Positional Accuracy Standards for Digital Geospatial Data (Edition 1, Version 1.0, - November, 2014) table C.1 Recommended Number of Checkpoints based on Area, Quantum Spatial calculated that 64 Non-Vegetated Vertical Assessment (NVA) and 52 Vegetated Vertical Assessment (VVA) points are required for this project area.

To ensure that checkpoints were distributed generally proportionate among the various vegetated land cover types, Quantum Spatial used existing USGS Land Cover data to divide both the NVA and VVA categories among the various types, calculating the approximate number of required points in each representative type proportionate to the total project area. The resulting point classes are detailed below:

NVA Class	# of Points
Bare Earth	63
Urban Area	1

VVA Class	# of Points
Forested	3
Tall Weeds/Crops	11
Brushland	38

Quantum Spatial has adopted the philosophy that each vegetative class must be well distributed throughout the project area. While points in varying classes may be near to one another, points of a single vegetative class may not. Proposed point locations are selected with this distribution methodology in mind.

Survey Accuracy Requirements

Given that the survey accuracy of calibration and quality control check points should be 3 times more accurate than the required accuracy of the data set, Quantum Spatial requires that calibration and NVA points are better than 3 centimeters RMSE, both horizontally and vertically, and that VVA points be better than 5 centimeters RMSE, both horizontally and vertically. The surveyed accuracy of each point must be determined through redundant measurements and/or network adjustment using procedures and methodologies that reliably and consistently result in the aforementioned accuracies.

Due to variances in reference control accuracy and adjustment, Quantum Spatial requires that the survey methodology used be explained, so that it can be repeated if necessary.

Field Survey Methodology

Date Range:

October 19, 2016 – November 4, 2016

Equipment Used:

Field crews used Trimble R8 dual frequency GNSS receivers as base stations and rovers.

GNSS Methodology:

A combination of static GPS and RTK methods were used during this project. Data from the NGS CORS and UNVACO networks were used to derive survey. Details of the survey, written by CompassData, is included with this report.

Overall Project Accuracy Statement

All point coordinates have been reported in the North American Datum of 1983 (NAD83 2011). Points are projected in California State Plane coordinates – Zone 6 in US Feet. All elevations are relative to the North American Vertical Datum of 1988 (NAVD 88) which were derived using the GEIOD 12B model and are reported in US Feet.

Calibration Points
Average Horizontal RMSE is 0.006 us foot.
Average Elevation RMSE is 0.008 us foot.
Average 3 dimensional RMSE is 0.009 us foot.

NVA Points
Average Horizontal RMSE is 0.006 us foot.
Average Elevation RMSE is 0.008 us foot.
Average 3 dimensional RMSE is 0.010 us foot.

VVA Points
Average Horizontal RMSE is 0.06 us foot.
Average Elevation RMSE is 0.007 us foot.
Average 3 dimensional RMSE is 0.009 us foot.

CompassData Summary

Datum Requirements

Contractual requirements for the survey by the client:

Horizontal: CA SPCS Zone VI, NAD83(2011), US Feet

Vertical: US Feet; NAVD88(Geoid 12B),

The NAD83 (2011) datum is a geodetic datum with the Epoch of 2010.0.

Surveying Methods

The combination of static Global Navigation Satellite System (GNSS) observations and UNAVCO (University NAVSTAR Consortium) network result in the highest accuracy of the coordinates. Static GNSS observations were performed at a minimum of 45 minutes long sessions. The UNAVCO GNSS observations were based on base stations established by UNAVCO, these are in some cases incorporated into the NGS CORS network, and in other cases GNSS base stations for scientific research with public access. CompassData used multi-hour, usually 24 hour static GNSS observations to predetermine coordinates that than were used in the network adjustment.

These are constrained to continuously operating reference stations (CORS) operated by the National Geodetic Survey (NGS) and UNAVCO. The field procedures for RTK provided two 90 second collects within each point visit. Between the two observations the GNSS unit was rotated by 180 degrees and re-setup.

Trimble R8 GNSS equipment was used.

Post-Processing Procedure in the Tectonically Active Region

The static data collected in the field was combined with static GNSS available from CORS and UNAVCO GNSS stations. Coordinates for the control points were established by a constrained network adjustment (Method of the Least Squares) and checked against Online Positioning User Service (OPUS) solutions for multi-hour observations.

The project AOI is situated in a tectonically active region between the major San Andreas Fault and other fault lines that mostly run parallel from northwest to southeast.

Tectonic movements constantly effect the ground as well the embedded passive NGS monuments in the ground and the active GNSS stations attached to buildings. Tectonic changes effect directly the coordinated positions, so the NAD83(2011) datum, based on the epoch of 2010.0, is distorted considering the large area of the AOI as movements of the last 6 years are not accounted.

CompassData has experience in processing highly accurate GNSS data in California and uses instead of the NAD83(2011) datum the more useful dynamic ITRF2008 datum. For this geodetic datum the best base coordinates are calculated by the Scripps Orbit and Permanent Array Center (SOPAC) located in San Diego, CA. SOPAC's primary scientific role is to support high precision geodetic and geophysical measurements

using Global Positioning System (GPS) satellites, particularly for the study of earthquake hazards, tectonic plate motion, plate boundary deformation, and meteorological processes.
After the successful network adjustments in the ITRF datum are completed a transformation to the NAD83 (2011) datum was conducted with the NGS service of the Horizontal Time-dependent positioning (HTDP). Finally, the latest NGS Geoid12B was applied to create orthometric NAVD88 elevations.

Trimble Business Center 3.70 was used for data processing.

Network and Base Stations

The Network Map shows the adjustment of NGS CORS and UNAVCO CORS as well static observation taken at least for 45 minutes on surveyed points.

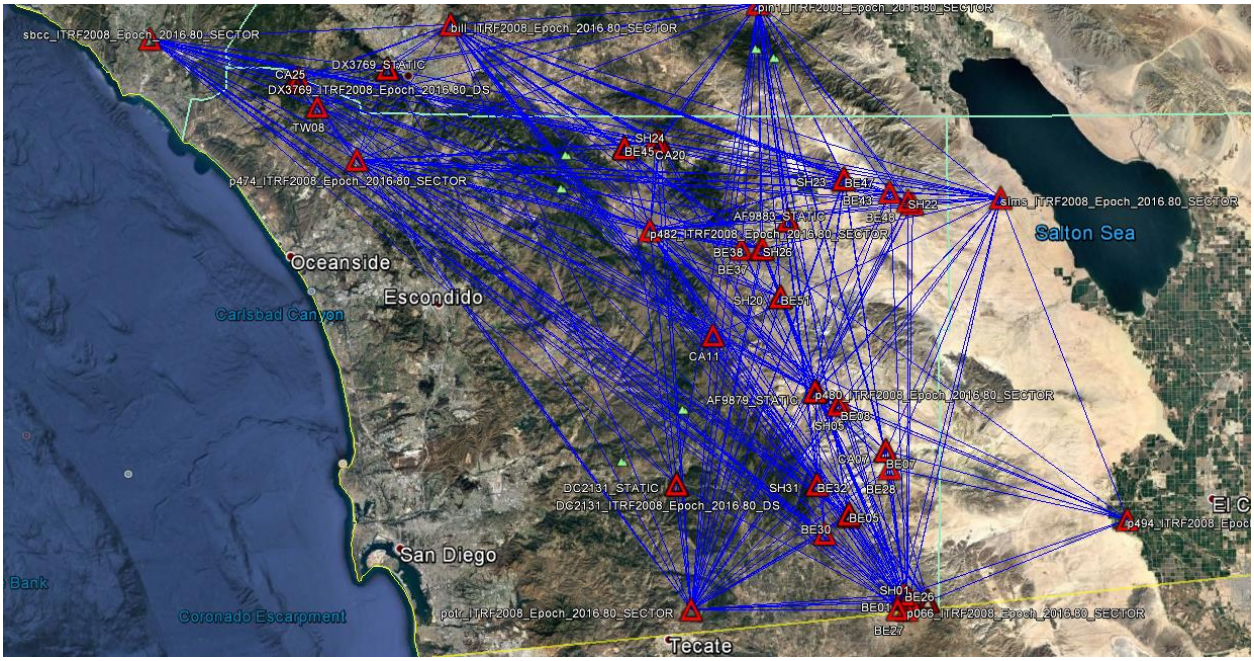


Figure 1: Network Map

First a free network adjustment was calculated, meaning without introduced coordinate constrains. The free network approach offers two advantages. First, to install an optimized geometry of measurements, and secondly it indicates potential issues in the coordinates that later are used as constrains. The free network also gives an assessment of all used baselines and RTK- vectors.

Network Adjustment Results including Checks on ITRF08 [Epoch 2016.80]

As described previously, special care was applied for the network base stations. Some NGS and UNAVCO CORS distributed over the AOI were constrained as fixed coordinates while other CORS were left unconstrained demonstrating accuracy and high confidence in using SOPAC Sector derived base coordinates for the undistorted Network in the dynamic ITRF2008 datum. The constrains are fixed with a software related and neglectable tolerance of 0.000001m.

Control Coordinate Comparisons

Values shown are control coordinates minus adjusted coordinates.

Point ID	ΔEasting (Meter)	ΔNorthing (Meter)	ΔHeight (Meter)
bill_ITRF2008_Epoch_2016.80_SECTOR	0.000	-0.002	-0.008
p066_ITRF2008_Epoch_2016.80_SECTOR	-0.002	-0.003	0.005
p474_ITRF2008_Epoch_2016.80_SECTOR	0.002	-0.002	0.001
p480_ITRF2008_Epoch_2016.80_SECTOR	-0.001	0.000	0.017
slms_ITRF2008_Epoch_2016.80_SECTOR	-0.001	0.001	0.030

Control Point Constraints

Point ID	Type	East σ (Meter)	North σ (Meter)	Height σ (Meter)
p482_ITRF2008_Epoch_2016.80_SECTOR	Global	Fixed	Fixed	Fixed
p494_ITRF2008_Epoch_2016.80_SECTOR	Global	Fixed	Fixed	Fixed
pin1_ITRF2008_Epoch_2016.80_SECTOR	Global	Fixed	Fixed	Fixed
potr_ITRF2008_Epoch_2016.80_SECTOR	Global	Fixed	Fixed	Fixed
sbcc_ITRF2008_Epoch_2016.80_SECTOR	Global	Fixed	Fixed	Fixed
Fixed = 0.000001(Meter)				

Figure 2: Published SOPAC coordinates compared with calculates coordinates in a constrained network adjustment.

Establishing the NAD83 (2011) Epoch 2010.0 Datum and conversion from ITRF08 [Epoch 2016.80]

The geodetic network is based on available CORS stations. In a prior quality assessment of the base stations, a network adjustment was calculated with RINEX data of the October 19th 2016. The date was chosen to have access to final orbit data that optimizes the base line calculations.

The coordinates based on October 19th 2016 are considered free of tension from tectonic movements since it is the same time as the field survey was performed. After the first calculation, the network results were converted to coordinates in NAD83 (2011) Epoch 2010.0 with the Horizontal Time Dependent Positioning tool (HTDP) by the NGS. The so converted coordinates are establishing the NAD83(2010) datum.

CompassData

Comparison of NAD83(2010) NGS Datasheet coordinates for CORS with calculated positions

The above described approach of establishing the NAD83(2010) datum is compared with actual NGS Datasheet (DS) coordinates. Without the exception of CORS P494 the inverse results of the base coordinates reflect good matching results considering the challenge due to tectonic movements.

Inverse Results

From	To	Grid Azimuth	Grid Distance (Meter)	Δ Elevation (Meter)
P066_NAD83(2011)_Epoch_2010_SECTOR_RTK	P066_NAD83(2011)_Epoch_2010_DS	273°06'51"	0.037	-0.014
P066_NAD83(2011)_Epoch_2010_DS	p066_NAD83(2011)_Epoch_2010_SECTOR_Static	87°58'27"	0.037	0.009
P474_NAD83(2011)_Epoch_2010_DS	p474_NAD83(2011)_Epoch_2010_SECTOR_Static	235°57'31"	0.007	-0.007
P474_NAD83(2011)_Epoch_2010_DS	p474_NAD83(2011)_Epoch_2010_SECTOR_RTK	229°07'55"	0.008	-0.005
p474_NAD83(2011)_Epoch_2010_SECTOR_RTK	p474_NAD83(2011)_Epoch_2010_SECTOR_Static	0°32'56"	0.001	-0.002
P480_NAD83(2011)_Epoch_2010_DS	p480_NAD83(2011)_Epoch_2010_SECTOR_Static	203°39'56"	0.006	-0.017
P482_NAD83(2011)_Epoch_2010_DS	p482_NAD83(2011)_Epoch_2010_SECTOR_Static	183°12'21"	0.008	-0.003
P482_NAD83(2011)_Epoch_2010_DS	p482_NAD83(2011)_Epoch_2010_SECTOR_RTK	215°17'07"	0.017	-0.005
P494_NAD83(2011)_Epoch_2010_DS	p494_NAD83(2011)_Epoch_2010_SECTOR_Static	353°04'14"	0.164	-0.019
POTR_NAD83(2011)_Epoch_2010_DS	potr_NAD83(2011)_Epoch_2010_SECTOR_Static	142°52'31"	0.015	-0.006
SBCC_NAD83(2011)_Epoch_2010_DS	sbcc_NAD83(2011)_Epoch_2010_SECTOR_Static	101°50'24"	0.003	-0.007

Independent OPUS Comparison in NAD83(2011) Epoch 2010 with the NGS Monuments and the final adjusted and converted positions

CompassData field crews further surveyed checks on passive NGS monuments. The table shows that static observations, RTK observations and the independent OPUS results agree within a small tolerance, while NGS datasheet values disagree. For monument AF9879 and AF9883 the OPUS service returned insufficient accuracy. On monument AF9879 the CompassData static and RTK measurements agree within 0.5 cm, while the datasheet agrees vertically, but appears to be 5 cm off horizontally. On monument AF9883 AF9879 the CompassData static and RTK measurements agree within 1.2 cm, while the datasheet is

vertically off by about 10cm, and agrees horizontally within 2.6cm. For monument DC2131 the OPUS result shows a difference within 4 cm to the published datasheet, while the OPUS result confirms the 2 RTK observations within 2.1 cm.

Inverse Results

From	To	Grid Azimuth	Grid Distance (Meter)	Δ Elevation (Meter)
AF9879_NAD83(2011)_Epoch_2010_DS	AF9879_RTK	287°21'28"	0.049	-0.007
AF9879_NAD83(2011)_Epoch_2010_DS	AF9879_STATIC	283°00'42"	0.045	-0.007
AF9879_STATIC	AF9879_RTK	327°45'12"	0.005	0.000
AF9883_NAD83(2011)_Epoch_2010_DS	AF9883_RTK	175°01'34"	0.026	-0.098
AF9883_NAD83(2011)_Epoch_2010_DS	AF9883_STATIC	199°33'06"	0.024	-0.110
AF9883_STATIC	AF9883_RTK	108°03'58"	0.011	0.012
DC2131_NAD83(2011)_Epoch_2010_DS	DC2131_NAD83(2011)_Epoch_2010_Opus	254°18'44"	0.039	-0.035
DC2131_NAD83(2011)_Epoch_2010_Opus	DC2131_RTK_11_01	219°59'54"	0.020	-0.016
DC2131_NAD83(2011)_Epoch_2010_Opus	DC2131_RTK_11_02	326°11'35"	0.021	-0.008

Figure 3: OPUS compared with calculates coordinates in a constrained network adjustment.

CompassData

Surveyed Features and Point Selection

CompassData field crews surveyed Lidar features for which the location was preselected by the customer. Field crews tried their best to position the GNSS measurement right at the selected location. For expected reasons like flatness of terrain, accessibility and GNSS signal strength changes were made within a given tolerance.

The overviews show 28 Calibration Points (red triangles), 64 NVA Points (blues squares) and 52 VVA Points (green circles):

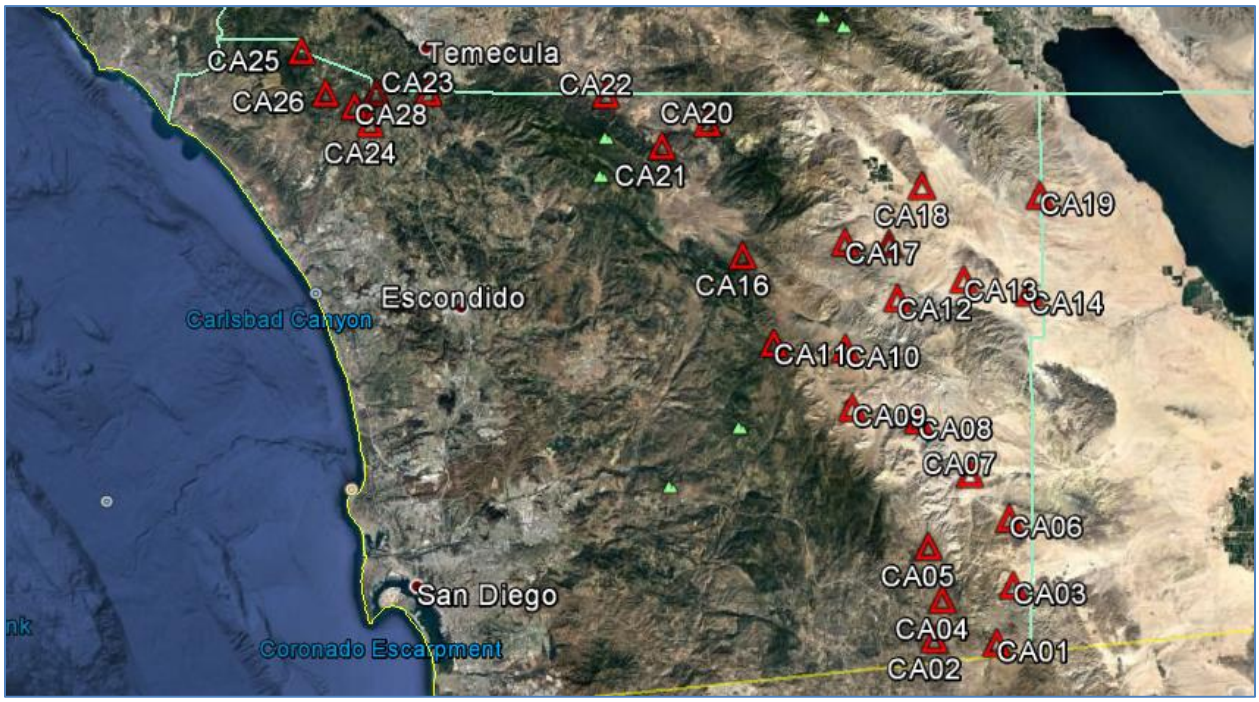


Figure 4: Surveyed Calibration Points

Calibration Points were selected to be on hard and flat surfaces that produces only a single Lidar signal return like asphalt, concrete, and gravel on roads, parking lots and turn outs. When possible points got marked with PK-nails or 60D-nails.

NVA Points were selected also to be on hard and flat surfaces that produces only a single Lidar signal return like gravel and dirt without vegetation. When possible points got marked with PK-nails or 60D-nails and in softer ground with wooden hubs.

VVA Points were selected on flat surfaces with vegetation. The vegetation in the AOI contains mostly grass, weeds, shrubs, cacti and very few forested areas.
Points got marked mostly with wooden hubs, but also PK-nails or 60D-nails and in harder ground.

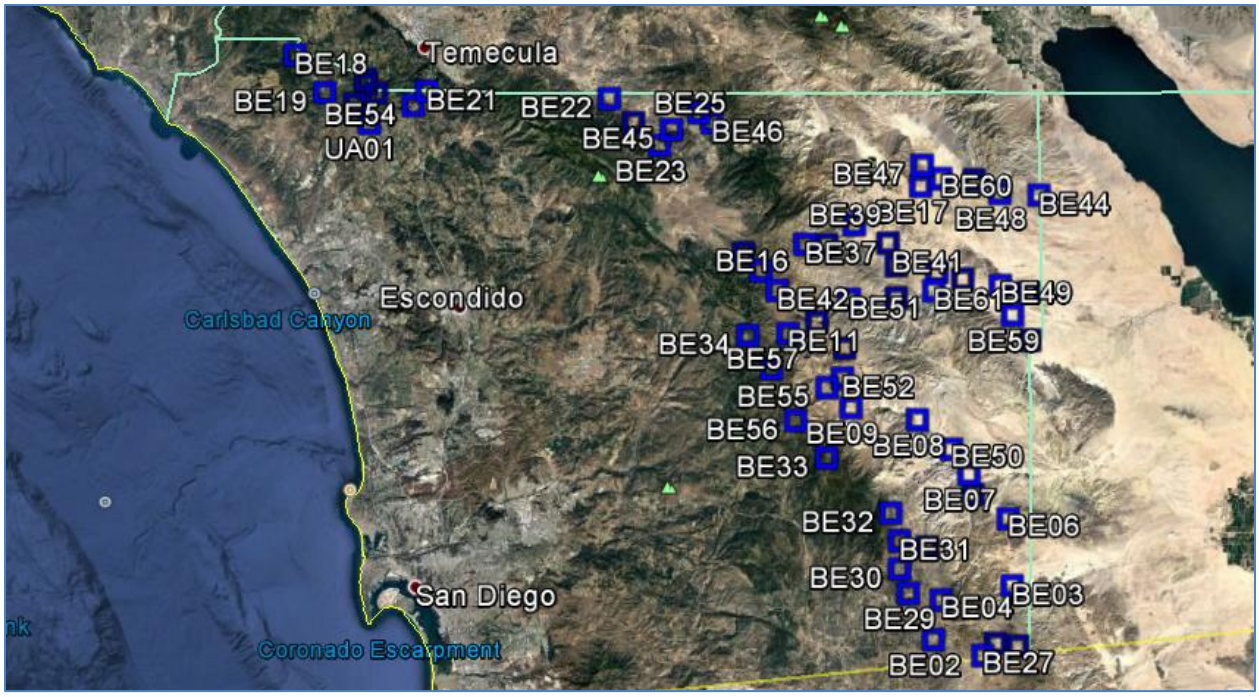


Figure 5: Surveyed NVA Points

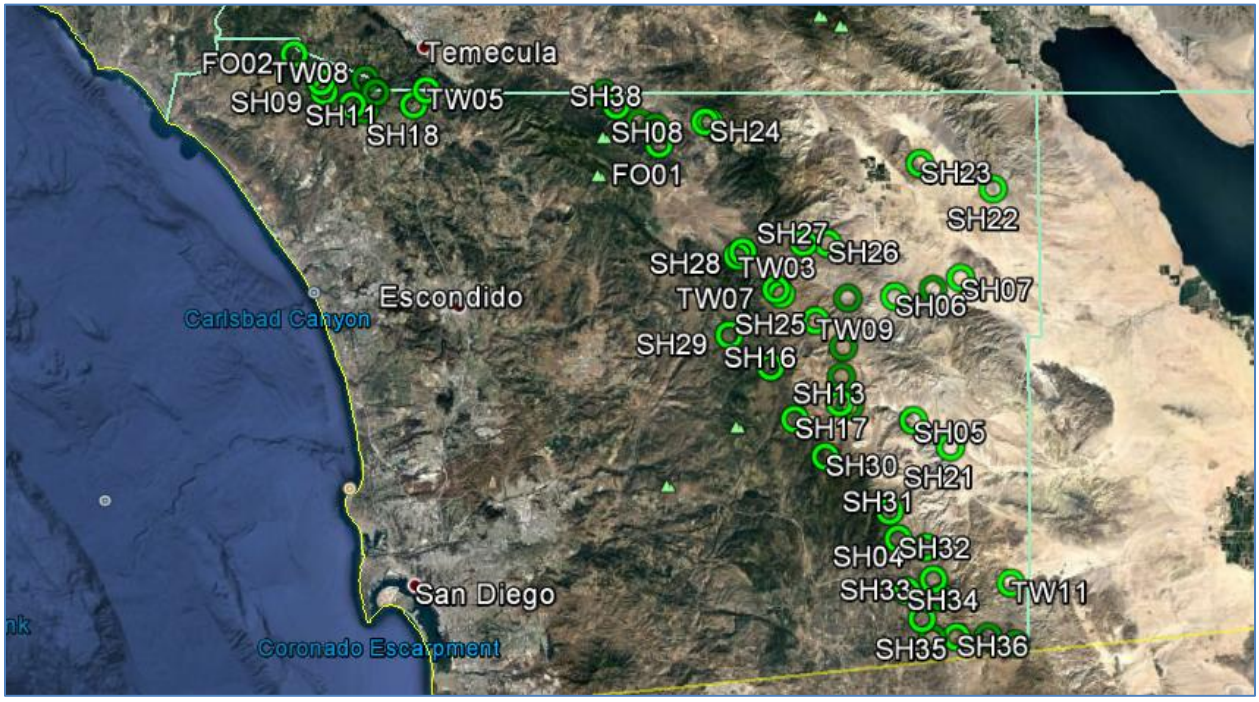
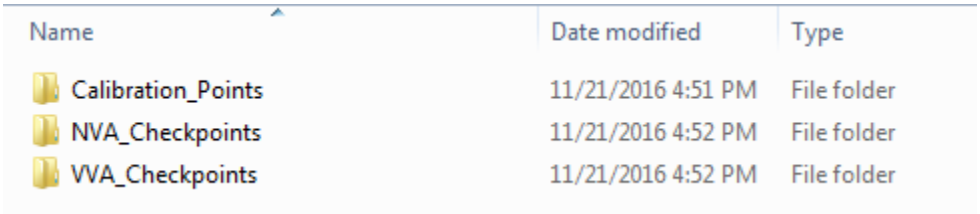


Figure 6: Surveyed VVA Points

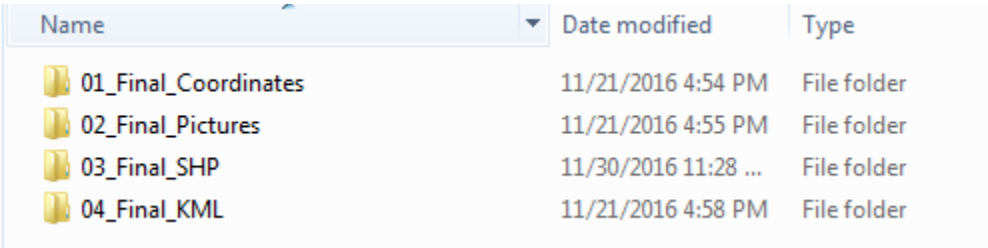
CompassData

Delivered Data

CompassData delivered Calibration Points, NVA Checkpoints, and VVA Checkpoints in separate folders.



Each folder contains coordinate lists (csv and xls), photos, shapefiles, and kml-files.



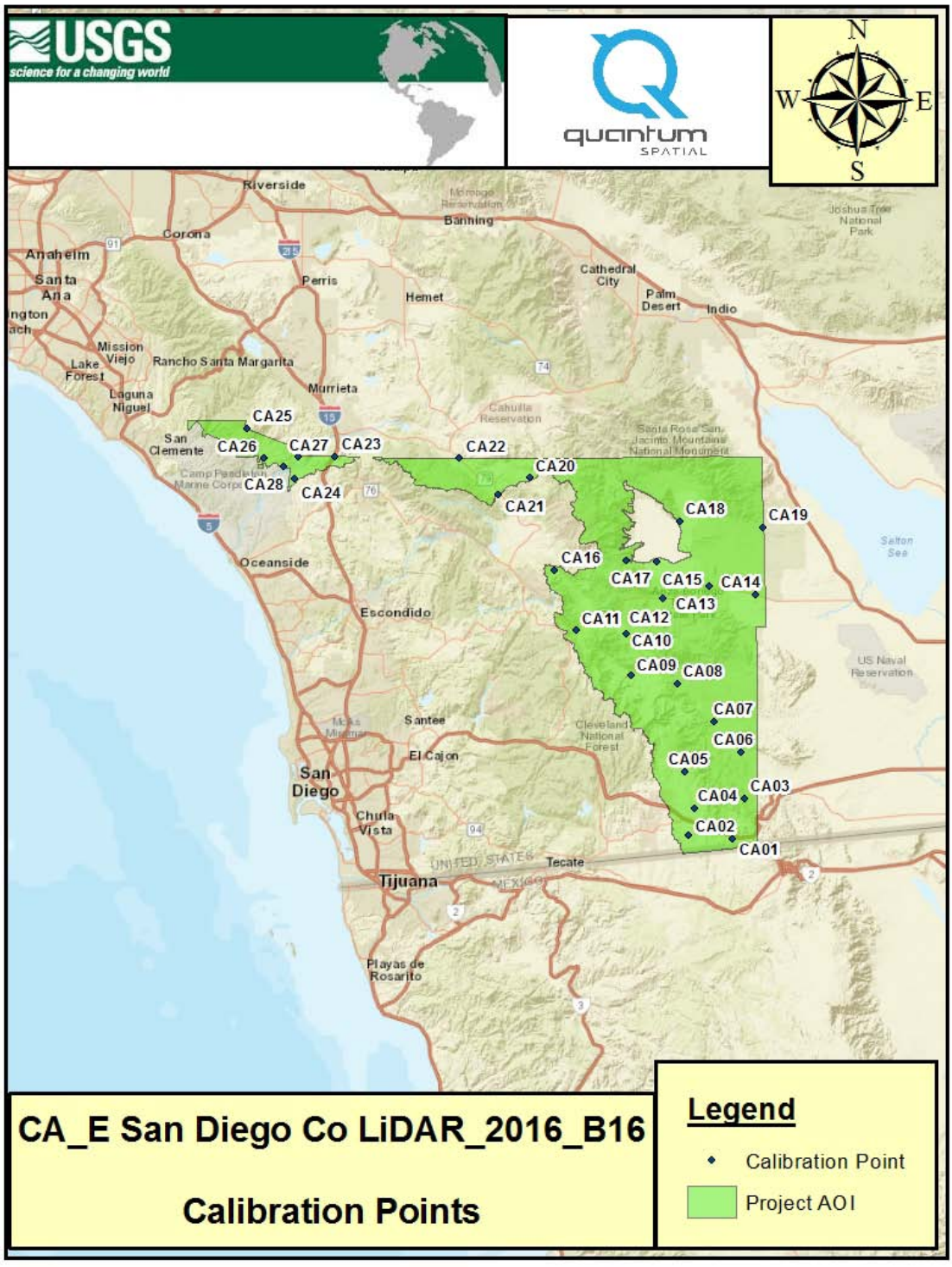
The coordinate lists contain:

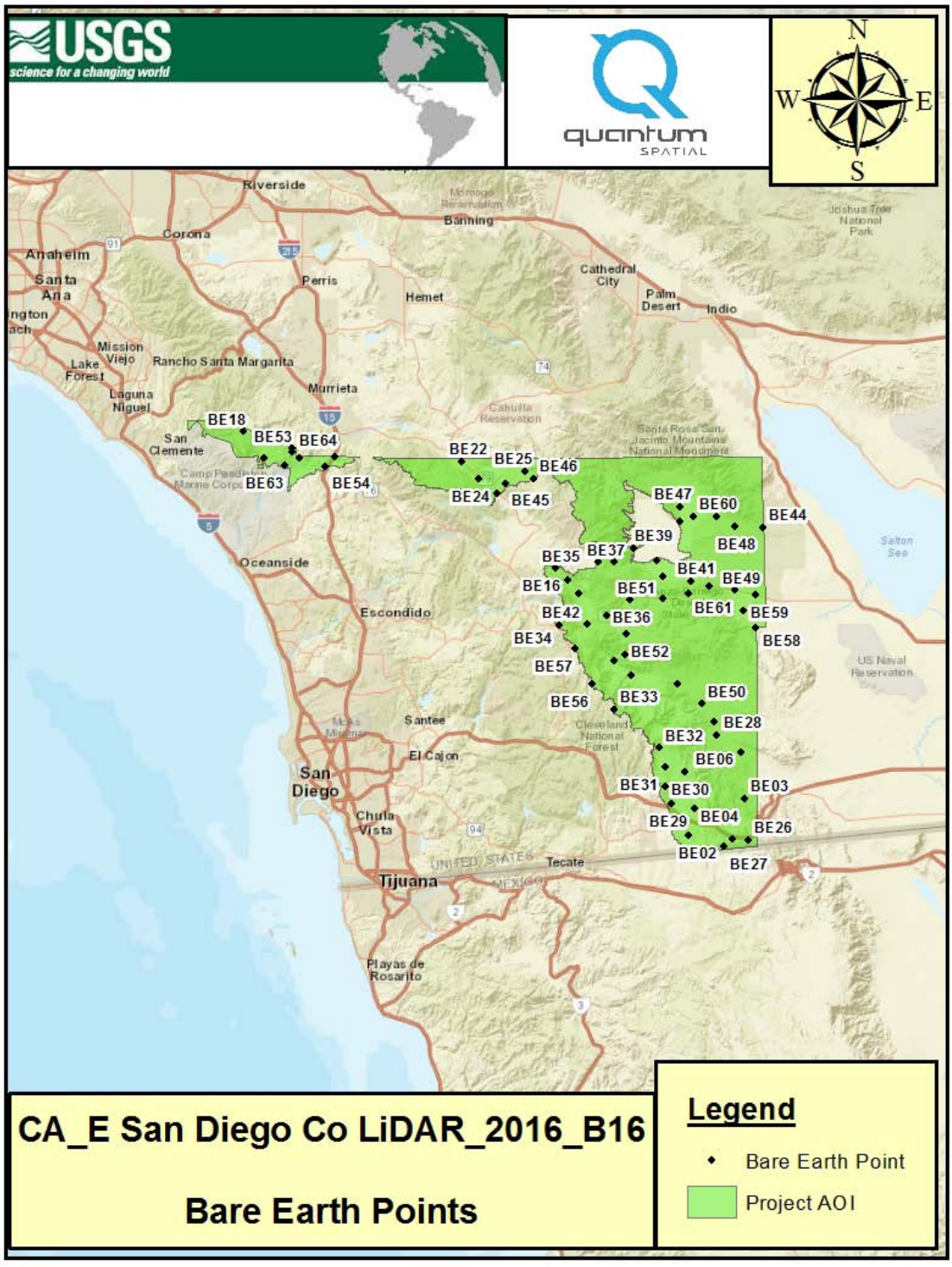
- Point ID
- Easting
- Northing
- Elevation
- Latitude
- Longitude
- Ellipsoid Height
- Horizontal Precision
- Vertical Precision
- Collection date
-

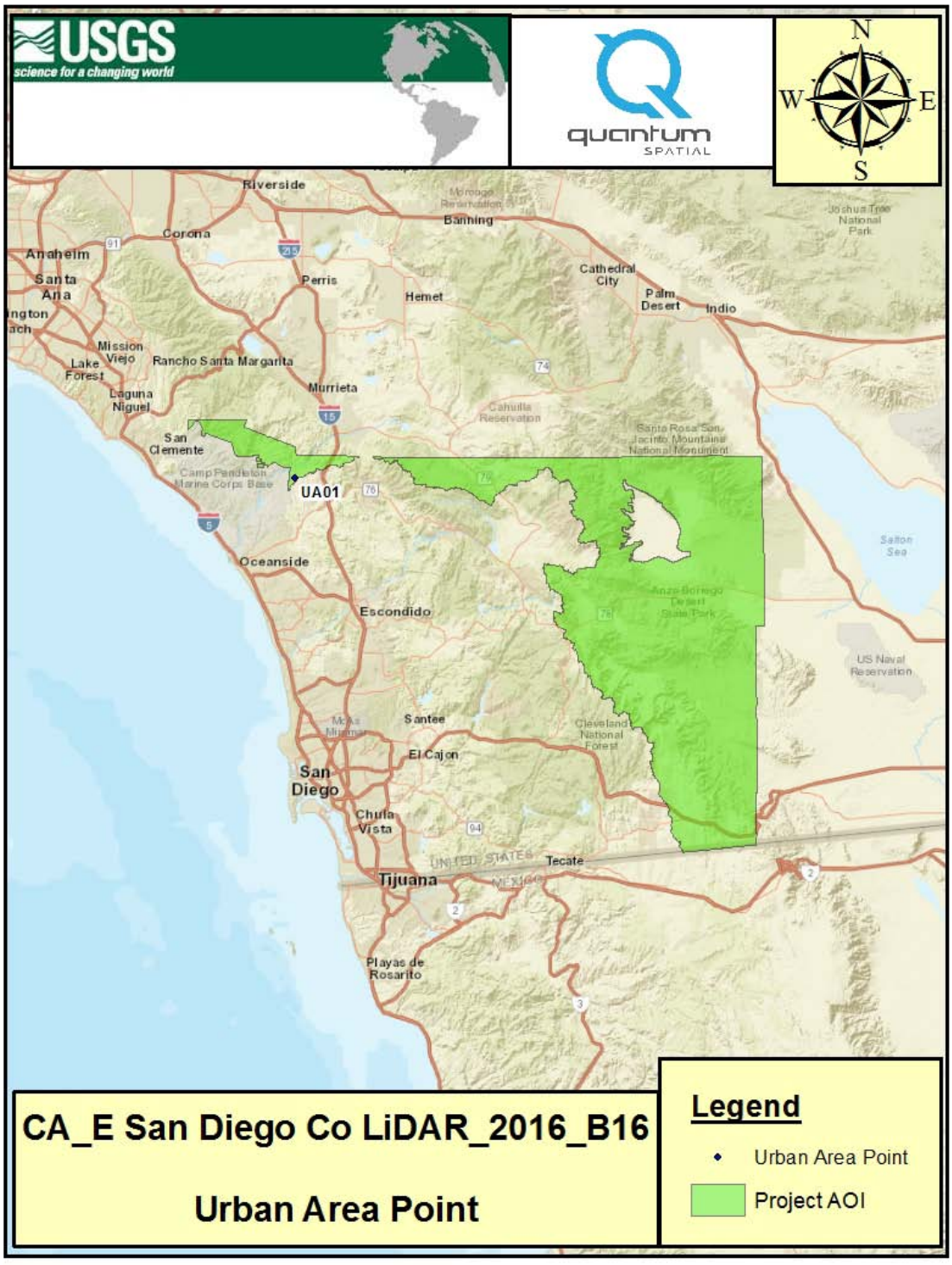
Philipp Hummel, PLS, CFedS, CP

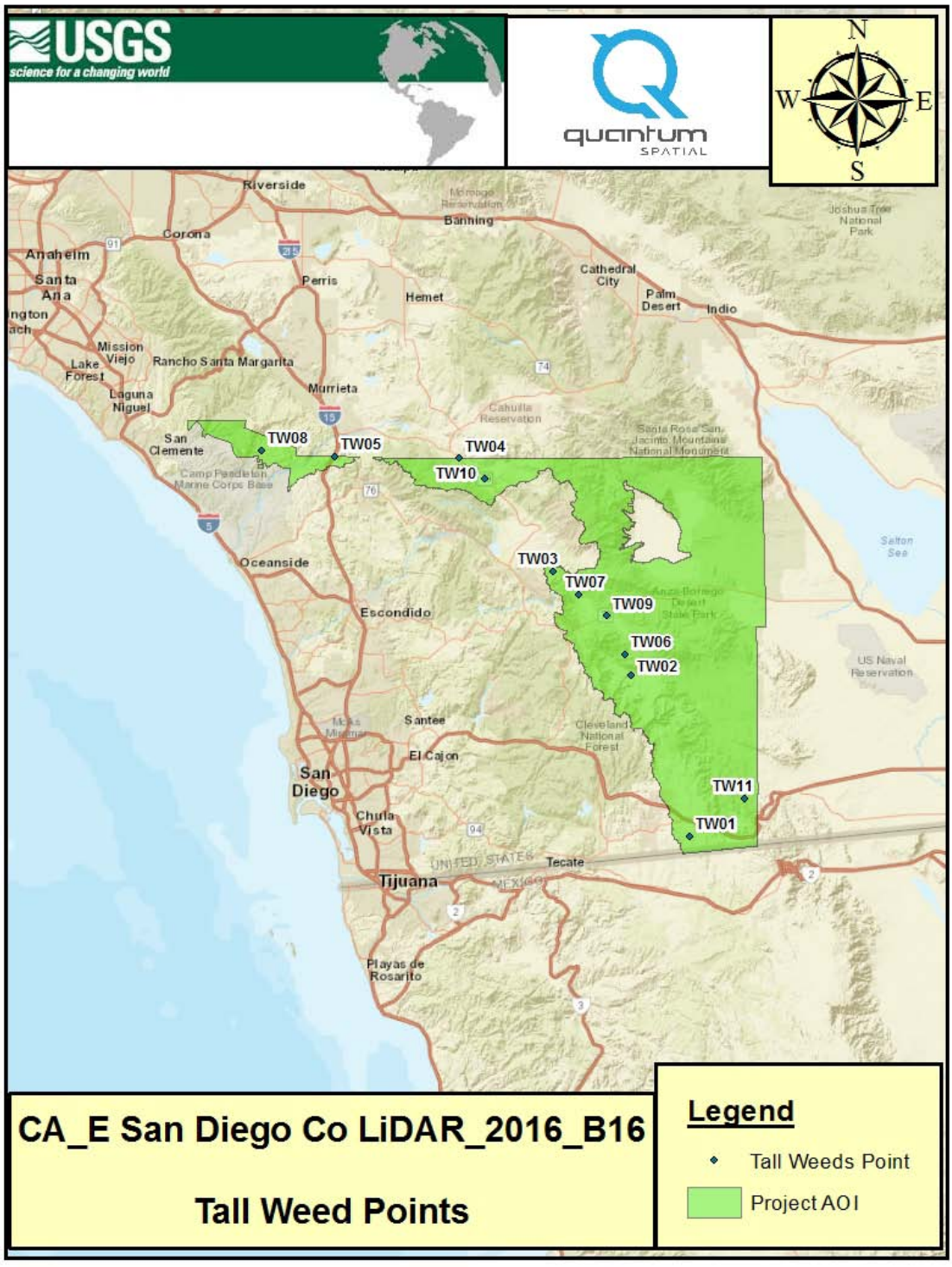
Technical Director
303.627.4058 Office
12353 E. Easter Avenue
Centennial, CO 80112
phummel@compassdatainc.com
www.compassdatainc.com

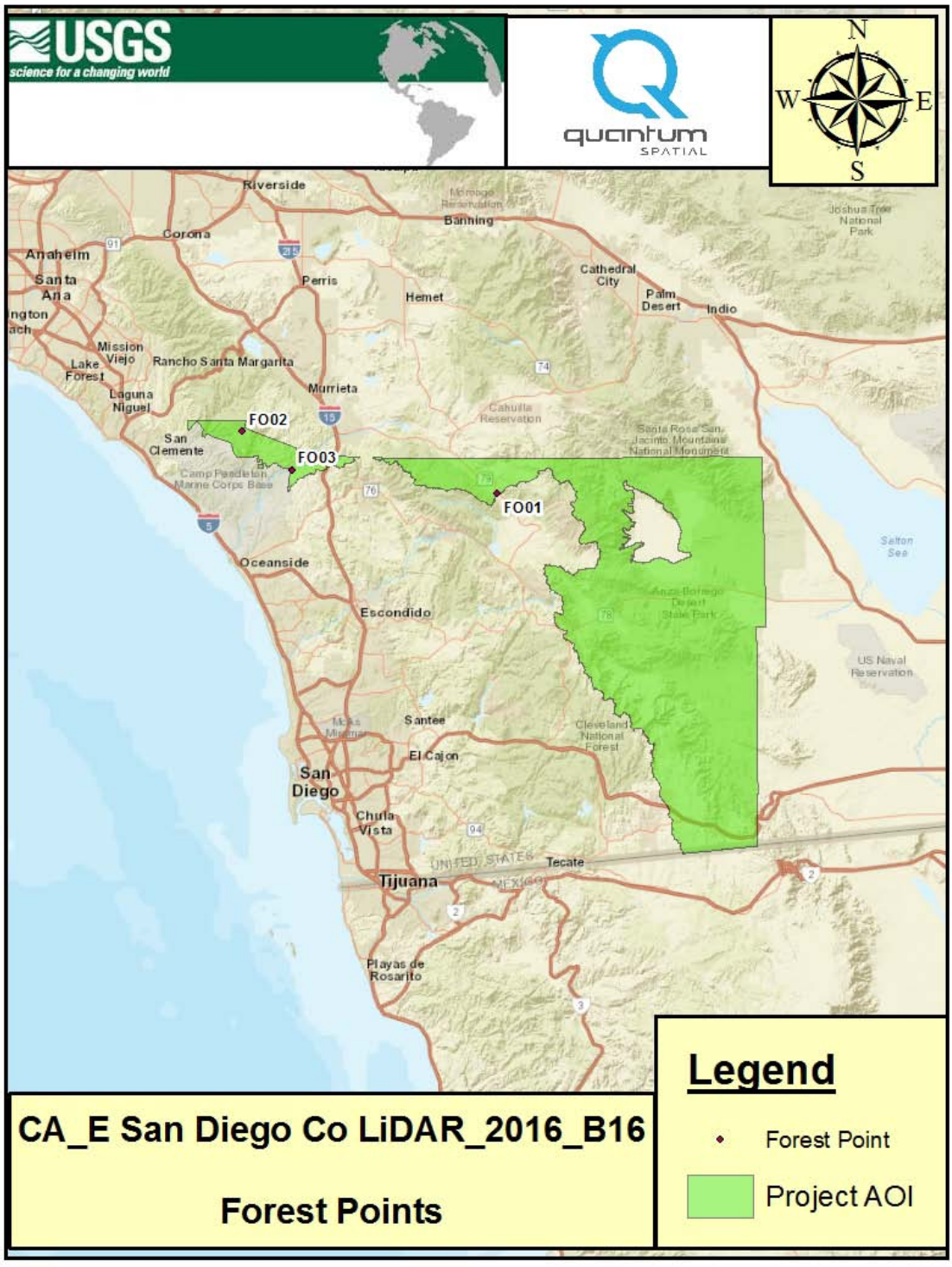
Project AOI & Point Location Maps

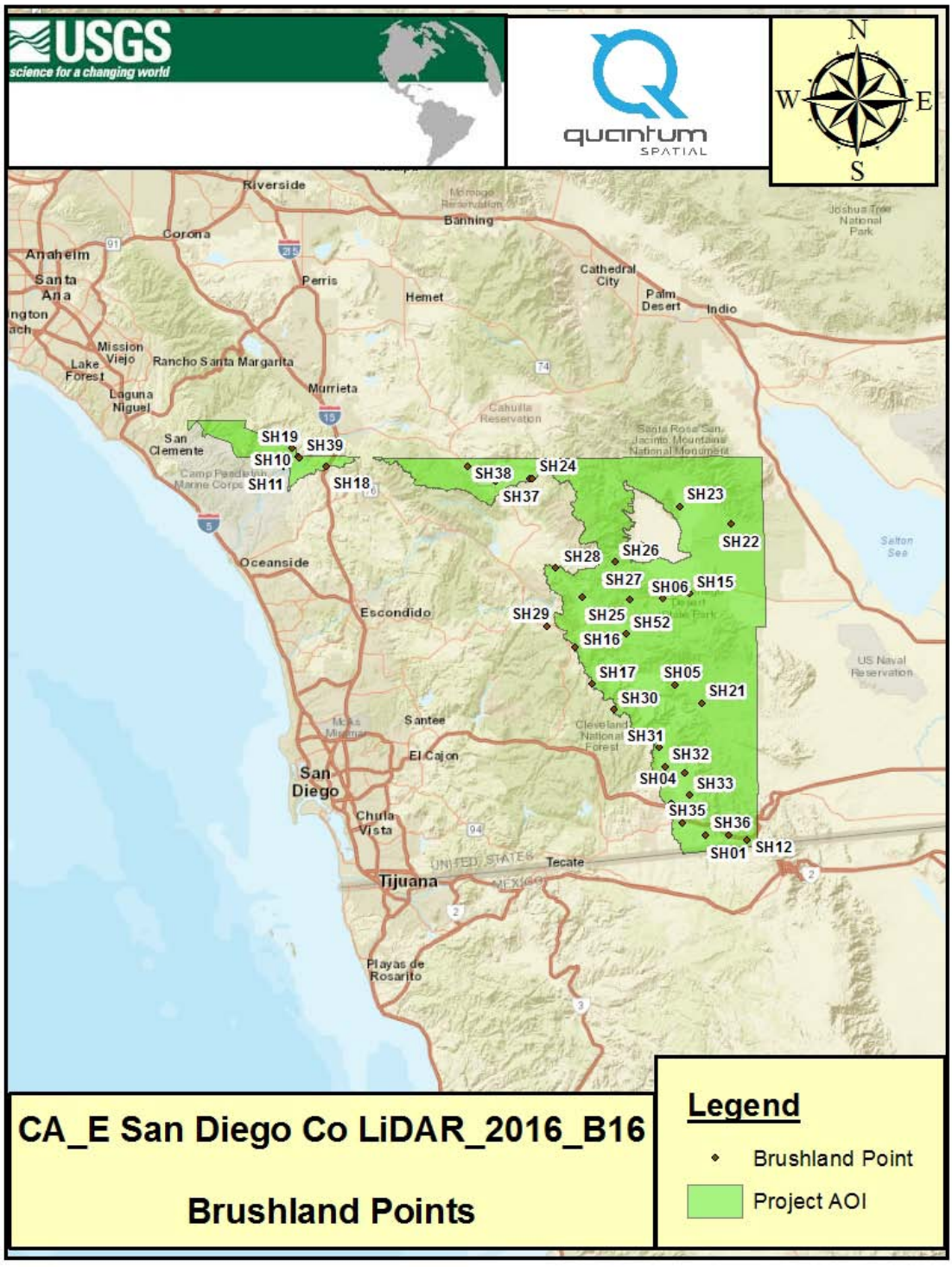

USGS
science for a changing world
quantum SPATIAL
N
W
E
S
Riverside
Corona
Anaheim
Santa Ana
Perris
Hemet
Banning
Cathedral City
Palm Desert
Indio
Joshua Tree National Park
Mission Viejo
Lake Forest
Rancho Santa Margarita
Laguna Niguel
Murrieta
San Clemente
Camp Pendleton Marine Corps
Cahuilla Reservation
Santa Rosa San Jacinto Mountains National Monument
Oceanside
Escondido
Salton Sea
US Naval Reservation
Santee
El Cajon
San Diego
Chula Vista
Cleveland National Forest
Tecate
Tijuana
Playas de Rosarito
CA01
CA02
CA03
CA04
CA05
CA06
CA07
CA08
CA09
CA10
CA11
CA12
CA13
CA14
CA15
CA16
CA17
CA18
CA19
CA20
CA21
CA22
CA23
CA24
CA25
CA26
CA27
CA28
CA_E San Diego Co LiDAR_2016_B16
Calibration Points
Legend
Calibration Point
Project AOI


USGS
science for a changing world
quantum SPATIAL
N
W
E
S
Riverside
Corona
Anaheim
Santa Ana
Perris
Hemet
Banning
Cathedral City
Palm Desert
Indio
Mission Viejo
Lake Forest
Rancho Santa Margarita
Laguna Niguel
Murrieta
San Clemente
Oceanside
Escondido
Santee
El Cajon
San Diego
Chula Vista
Tijuana
Tecate
Playas de Rosarito
BE18
BE53
BE64
BE63
BE54
BE22
BE25
BE46
BE24
BE45
BE47
BE60
BE44
BE39
BE48
BE35
BE37
BE41
BE49
BE16
BE51
BE61
BE59
BE42
BE36
BE34
BE58
BE52
BE57
BE33
BE50
BE56
BE28
BE32
BE06
BE31
BE30
BE03
BE29
BE04
BE26
BE02
BE27
CA_E San Diego Co LiDAR_2016_B16
Bare Earth Points
Legend
Bare Earth Point
Project AOI


USGS
science for a changing world
quantum SPATIAL
N
W
E
S
Riverside
Banning
Corona
Anaheim
Santa Ana
Perris
Hemet
Cathedral City
Palm Desert
Indio
Mission Viejo
Lake Forest
Rancho Santa Margarita
Murrieta
Laguna Niguel
San Clemente
Camp Pendleton Marine Corps Base
UA01
Oceanside
Escondido
Santee
El Cajon
San Diego
Chula Vista
Tijuana
Tecate
Playas de Rosarito
CA_E San Diego Co LiDAR_2016_B16
Urban Area Point
Legend
Urban Area Point
Project AOI


USGS
science for a changing world
quantum SPATIAL
N
W
E
S
Riverside
Banning
Corona
Anaheim
Santa Ana
Perris
Hemet
Cathedral City
Palm Desert
Indio
Mission Viejo
Lake Forest
Rancho Santa Margarita
Laguna Niguel
Murrieta
San Clemente
TW08
TW05
TW04
TW10
Camp Pendleton Marine Corps Base
Oceanside
TW03
TW07
TW09
Escondido
TW06
TW02
Santee
El Cajon
San Diego
Chula Vista
TW11
TW01
Tecate
Tijuana
Playas de Rosario
CA_E San Diego Co LiDAR_2016_B16
Tall Weed Points
Legend
Tall Weeds Point
Project AOI


USGS
science for a changing world
quantum SPATIAL
N
W
E
S
Riverside
Banning
Corona
Anaheim
Santa Ana
Perris
Hemet
Cathedral City
Palm Desert
Indio
Mission Viejo
Lake Forest
Rancho Santa Margarita
Laguna Niguel
Murrieta
FO02
FO03
FO01
San Clemente
Camp Pendleton Marine Corps Base
Oceanside
Escondido
Santee
El Cajon
San Diego
Chula Vista
Tijuana
Tecate
Playas de Rosarito
CA_E San Diego Co LiDAR_2016_B16
Forest Points
Legend
Forest Point
Project AOI


USGS
science for a changing world
quantum SPATIAL
N
W
E
S
Riverside
Corona
Anaheim
Santa Ana
Perris
Hemet
Banning
Cathedral City
Palm Desert
Indio
Mission Viejo
Lake Forest
Rancho Santa Margarita
Laguna Niguel
Murrieta
San Clemente
Camp Pendleton Marine Corps
Oceanside
Escondido
Santee
El Cajon
San Diego
Chula Vista
Tecate
Tijuana
Playas de Rosarito
SH19
SH39
SH10
SH11
SH18
SH38
SH24
SH37
SH23
SH22
SH28
SH26
SH27
SH06
SH15
SH29
SH25
SH52
SH16
SH17
SH05
SH21
SH30
SH31
SH32
SH04
SH33
SH35
SH36
SH01
SH12
CA_E San Diego Co LiDAR_2016_B16
Brushland Points
Legend
Brushland Point
Project AOI

Final Point Coordinates

Calibration Point Coordinates

Horizontal Datum - NAD83(2011)
CALIFORNIA STATE PLANE - ZONE 6
Vertical Datum - NAVD 88
Geoid - GEOID12B
Units – US FOOT

Point ID	Northing (usft)	Easting (usft)	Elev. (usft)
CA01	1810503.43	6587759.09	2829.51
CA02	1812794.98	6554631.64	3421.00
CA03	1840613.03	6596705.94	1861.74
CA04	1833646.23	6558978.26	3623.24
CA05	1861379.62	6551713.73	4044.12
CA06	1875741.25	6594911.67	1180.92
CA07	1899261.57	6574175.54	707.32
CA08	1927803.59	6546728.11	1227.09
CA09	1934637.01	6511680.20	1731.48
CA10	1965621.00	6508256.52	2347.84
CA11	1968555.90	6470528.83	2751.67
CA12	1991874.83	6536016.79	1247.78
CA13	2001528.90	6571229.83	650.05
CA14	1994562.91	6606087.59	162.26
CA15	2020507.45	6531925.36	601.51
CA16	2014460.70	6454400.92	3483.83
CA17	2021278.65	6508581.89	2325.09
CA18	2050690.32	6549382.48	627.65
CA19	2045511.69	6612005.69	524.94
CA20	2084059.44	6436168.54	4334.34
CA21	2072121.22	6412220.06	3288.37
CA22	2099143.09	6382857.69	2450.46
CA23	2101119.06	6289021.91	1148.34
CA24	2084891.94	6258247.34	727.09
CA25	2123119.12	6222149.38	2062.29
CA26	2100978.12	6234758.45	357.62
CA27	2101176.02	6261316.16	753.62
CA28	2094143.45	6249934.31	895.97

Bare Earth Point Coordinates

Horizontal Datum - NAD83(2011)
CALIFORNIA STATE PLANE - ZONE 6
Vertical Datum - NAVD 88
Geoid - GEOID12B
Units – US FOOT

Point ID	Northing (usft)	Easting (usft)	Elev. (usft)
BE01	1810523.19	6587741.17	2829.28
BE02	1812937.57	6554641.62	3430.74
BE03	1840653.26	6596702.93	1858.55
BE04	1833551.26	6558993.26	3619.88
BE05	1861395.96	6551686.13	4044.90
BE06	1875762.42	6594867.69	1182.20
BE07	1899242.15	6574212.13	706.15
BE08	1928082.06	6546763.13	1225.34
BE09	1934657.79	6511682.08	1731.97
BE10	1965776.48	6508332.69	2345.06
BE11	1973505.77	6478685.60	2536.59
BE12	1991904.82	6536017.84	1246.93
BE13	2001661.70	6571304.77	649.88
BE14	1994431.04	6606040.27	167.72
BE15	2020684.02	6531948.86	597.24
BE16	2006386.51	6464458.93	2919.72
BE17	2050504.37	6549331.70	624.58
BE18	2120777.75	6219205.67	1989.70
BE19	2101077.88	6234807.13	366.90
BE20	2100703.82	6262122.00	700.45
BE21	2101442.67	6288774.38	1154.30
BE22	2096797.52	6385129.07	2480.24
BE23	2072237.65	6411648.27	3274.26
BE24	2084209.26	6397905.98	2786.47
BE25	2089094.23	6432403.69	4386.21
BE26	1809182.14	6599366.79	3140.82
BE27	1804382.73	6580922.85	2813.21
BE28	1888688.12	6576452.22	728.96
BE29	1837370.70	6541520.77	3883.57

BE30	1850068.04	6536952.82	4059.14
BE31	1864762.20	6537002.49	4464.34
BE32	1879385.80	6532450.98	4424.25
BE33	1908468.70	6498599.22	5463.59
BE34	1972651.68	6457559.35	4143.98
BE35	2015751.05	6455452.69	3468.39
BE36	1979567.71	6493901.95	2256.47
BE37	2020179.60	6487857.49	4098.47
BE38	2019982.67	6499350.67	2964.27
BE39	2030420.43	6514080.04	1223.49
BE40	2008830.79	6536291.84	1019.08
BE41	2005371.99	6557626.43	731.55
BE42	1996127.42	6472971.50	2639.85
BE43	2053653.58	6577511.42	964.13
BE44	2045515.50	6612199.36	518.44
BE45	2080355.40	6417808.40	3587.21
BE46	2083883.54	6439082.56	4434.12
BE47	2061378.61	6550131.68	556.60
BE48	2046627.67	6591284.68	887.63
BE49	1998150.61	6591189.28	298.41
BE50	1912454.15	6564835.52	968.67
BE51	1991282.89	6511157.29	1624.01
BE52	1950119.28	6507179.91	2649.99
BE53	2107699.70	6256368.86	835.06
BE54	2094017.13	6281602.54	1037.90
BE55	1945177.12	6499092.66	2229.16
BE56	1928044.43	6482419.17	5179.17
BE57	1955232.94	6469863.38	4755.77
BE58	1969494.84	6606621.76	107.33
BE59	1982556.53	6597495.27	109.18
BE60	2054234.99	6559932.93	686.29
BE61	1995582.31	6555867.89	971.31
BE63	2095088.02	6250617.47	975.93
BE64	2104880.04	6256774.48	898.99

Urban Area Point Coordinates

Horizontal Datum - NAD83(2011)
CALIFORNIA STATE PLANE - ZONE 6
Vertical Datum - NAVD 88
Geoid - GEOID12B
Units – US FOOT

Point ID	Northing (usft)	Easting (usft)	Elev. (usft)
UA01	2084842.14	6258248.28	725.78

Tall Weed Point Coordinates

Horizontal Datum - NAD83(2011)
CALIFORNIA STATE PLANE - ZONE 6
Vertical Datum - NAVD 88
Geoid - GEOID12B
Units – US FOOT

Point ID	Northing (usft)	Easting (usft)	Elev. (usft)
TW01	1812627.34	6554888.17	3410.61
TW02	1934793.88	6511730.77	1734.01
TW03	2013618.49	6452879.48	3525.80
TW04	2099226.35	6382903.83	2454.31
TW05	2101626.21	6288843.81	1157.85
TW06	1950102.99	6507330.48	2652.63
TW07	1996003.21	6473042.70	2634.77
TW08	2106220.49	6233108.15	473.45
TW09	1979542.82	6493863.27	2256.38
TW10	2083868.70	6401704.93	2813.00
TW11	1840962.32	6596799.96	1832.58

Forest Point Coordinates

Horizontal Datum - NAD83(2011)
CALIFORNIA STATE PLANE - ZONE 6
Vertical Datum - NAVD 88
Geoid - GEOID12B
Units – US FOOT

Point ID	Northing (usft)	Easting (usft)	Elev. (usft)
FO01	2072357.78	6411738.23	3273.88
FO02	2120849.21	6219162.82	1994.10
FO03	2091159.12	6256242.55	317.12

Brushland Point Coordinates

Horizontal Datum - NAD83(2011)
CALIFORNIA STATE PLANE - ZONE 6
Vertical Datum - NAVD 88
Geoid - GEOID12B
Units – US FOOT

Point ID	Northing (usft)	Easting (usft)	Elev. (usft)
SH01	1813116.01	6584452.76	2743.53
SH03	1833887.81	6559348.54	3650.22
SH04	1860169.13	6551555.00	4041.35
SH05	1926865.71	6545374.02	1287.89
SH06	1991932.68	6535932.85	1250.90
SH07	2001619.64	6570897.65	657.46
SH08	2083907.78	6436064.53	4328.39
SH09	2101129.35	6234811.98	374.68
SH10	2101115.33	6261340.89	752.04
SH11	2094162.88	6249835.03	881.75
SH12	1809140.94	6599035.74	3131.29
SH13	1936346.62	6506399.60	2018.81
SH15	1995706.46	6556213.56	958.77
SH16	1955463.89	6469999.52	4748.57
SH17	1927940.94	6482537.46	5162.75
SH18	2093916.26	6282149.73	1020.30
SH19	2107563.90	6256833.69	893.07
SH20	1991325.20	6511073.75	1625.44
SH21	1912794.57	6565040.13	957.20
SH22	2048433.56	6588508.75	897.62
SH23	2061748.27	6549697.48	554.37
SH24	2083756.22	6438275.43	4402.00
SH25	1993559.94	6475629.17	2603.26
SH26	2020125.46	6500499.00	2895.34
SH27	2020364.44	6487629.07	4122.30
SH28	2015831.36	6455596.00	3490.25
SH29	1972159.33	6448279.00	3985.34
SH30	1908278.20	6498597.46	5471.59

SH31	1879437.42	6532453.59	4424.39
SH32	1864818.12	6536963.48	4469.53
SH33	1843345.40	6555532.61	3801.75
SH34	1837490.67	6541393.48	3891.41
SH35	1822740.06	6549382.41	3530.10
SH36	1813024.31	6567744.90	3336.32
SH37	2081428.83	6410025.45	3073.19
SH38	2092743.51	6389402.29	2604.44
SH39	2100614.55	6262192.51	696.79
SH52	1965598.30	6508365.98	2348.21

Point Data and Accuracy Log Sheets

Calibration Point Log Sheets

Point ID	CA01
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6587759.09	1810503.43	2829.51

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/2/2016

RMSE Hz(m): 0.013
RMSE Z(m): 0.012

PHOTOS:

Point ID	CA02
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6554631.64	1812794.98	3421.00

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/1/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.007

PHOTOS:

Point ID	CA03
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6596705.94	1840613.03	1861.74

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.007

PHOTOS:

Point ID	CA04
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6558978.26	1833646.23	3623.24

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/1/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	CA05
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6551713.73	1861379.62	4044.12

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/1/2016

RMSE Hz(m): 0.011
RMSE Z(m): 0.011

PHOTOS:

Point ID	CA06
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6594911.67	1875741.25	1180.92

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.01

PHOTOS:

Point ID	CA07
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6574175.54	1899261.57	707.32

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.011
RMSE Z(m): 0.011

PHOTOS:

Point ID	CA08
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6546728.11	1927803.59	1227.09

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.003
RMSE Z(m): 0.005

PHOTOS:

Point ID	CA09
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6511680.20	1934637.01	1731.48

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.003
RMSE Z(m): 0.005

PHOTOS:

Point ID	CA10
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6508256.52	1965621.00	2347.84

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/4/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	CA11
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6470528.83	1968555.90	2751.67

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.012
RMSE Z(m): 0.012

PHOTOS:

Point ID	CA12
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6536016.79	1991874.83	1247.78

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	CA13
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6571229.83	2001528.90	650.05

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/29/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	CA14
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6606087.59	1994562.91	162.26

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/29/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.009

PHOTOS:

Point ID	CA15
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6531925.36	2020507.45	601.51

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.008

PHOTOS:

Point ID	CA16
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6454400.92	2014460.70	3483.83

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/27/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	CA17
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6508581.89	2021278.65	2325.09

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/28/2016

RMSE Hz(m): 0.003
RMSE Z(m): 0.005

PHOTOS:

Point ID	CA18
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6549382.48	2050690.32	627.65

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/28/2016

RMSE Hz(m): 0.003
RMSE Z(m): 0.005

PHOTOS:

Point ID	CA19
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6612005.69	2045511.69	524.94

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/29/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.008

PHOTOS:

Point ID	CA20
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6436168.54	2084059.44	4334.34

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/27/2016

RMSE Hz(m): 0.013
RMSE Z(m): 0.012

PHOTOS:

Point ID	CA21
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6412220.06	2072121.22	3288.37

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/27/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.009

PHOTOS:

Point ID	CA22
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6382857.69	2099143.09	2450.46

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	CA23
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6289021.91	2101119.06	1148.34

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	CA24
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6258247.34	2084891.94	727.09

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/25/2016

RMSE Hz(m): 0.003
RMSE Z(m): 0.007

PHOTOS:

Point ID	CA25
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6222149.38	2123119.12	2062.29

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/25/2016

RMSE Hz(m): 0.011
RMSE Z(m): 0.011

PHOTOS:

Point ID	CA26
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6234758.45	2100978.12	357.62

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/25/2016

RMSE Hz(m): 0.002
RMSE Z(m): 0.003

PHOTOS:

Point ID	CA27
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6261316.16	2101176.02	753.62

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	CA28
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
X	LiDAR Ground Control
	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6249934.31	2094143.45	895.97

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/25/2016

RMSE Hz(m): 0.003
RMSE Z(m): 0.005

PHOTOS:

Bare Earth Point Log Sheets

Point ID	BE01
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6587741.17	1810523.19	2829.28

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/2/2016

RMSE Hz(m): 0.011
RMSE Z(m): 0.011

PHOTOS:

Point ID	BE02
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6554641.62	1812937.57	3430.74

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/1/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	BE03
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6596702.93	1840653.26	1858.55

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	BE04
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6558993.26	1833551.26	3619.88

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/1/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	BE05
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6551686.13	1861395.96	4044.90

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/1/2016

RMSE Hz(m): 0.011
RMSE Z(m): 0.011

PHOTOS:

Point ID	BE06
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6594867.69	1875762.42	1182.20

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.009

PHOTOS:

Point ID	BE07
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6574212.13	1899242.15	706.15

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.012
RMSE Z(m): 0.012

PHOTOS:

Point ID	BE08
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

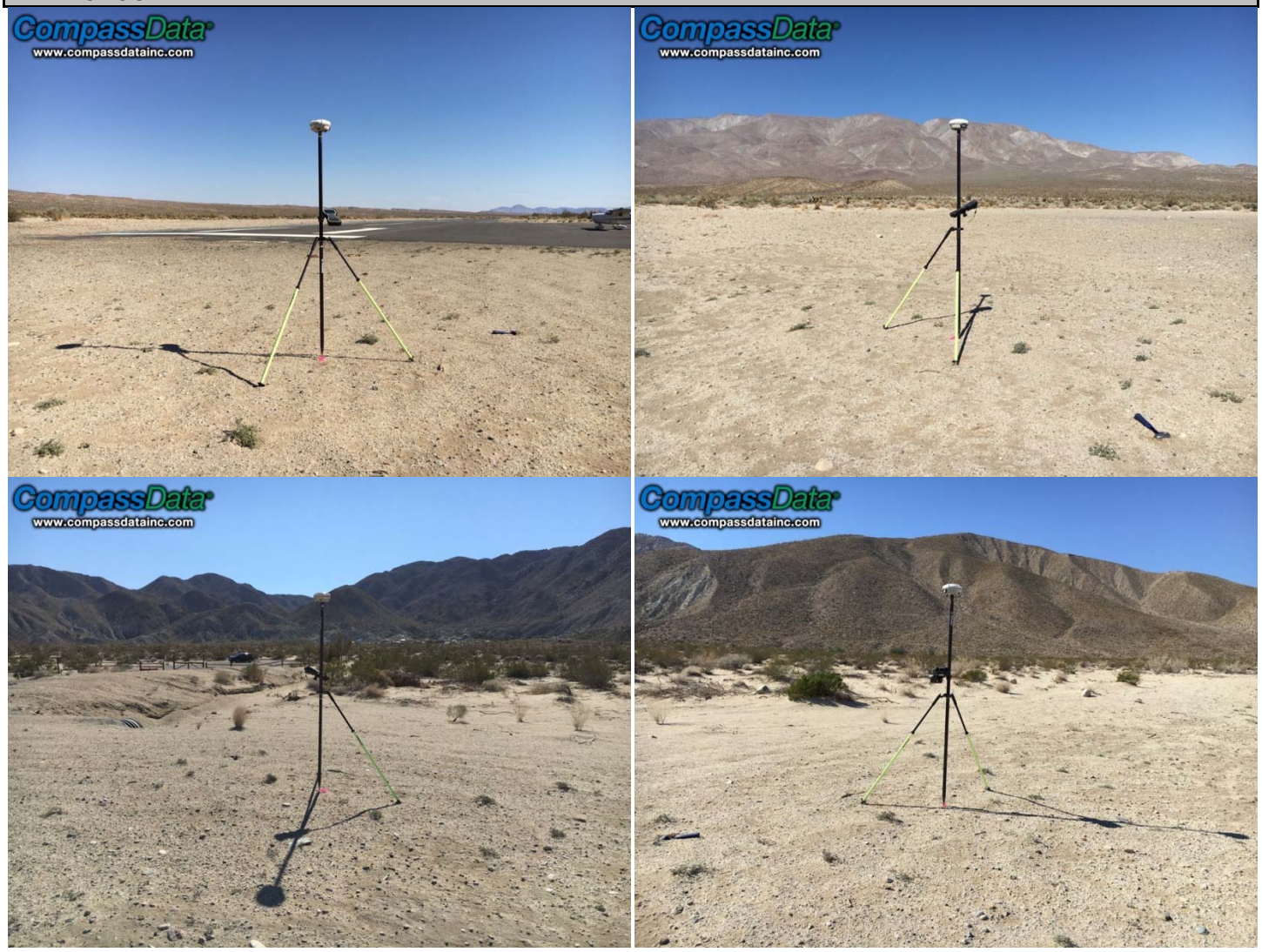
Northing	Easting	Elevation
6546763.13	1928082.06	1225.34

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.015
RMSE Z(m): 0.014

PHOTOS:



Point ID	BE09
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6511682.08	1934657.79	1731.97

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.003
RMSE Z(m): 0.005

PHOTOS:

Point ID	BE10
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6508332.69	1965776.48	2345.06

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/4/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	BE11
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6478685.60	1973505.77	2536.59

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/4/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	BE12
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6536017.84	1991904.82	1246.93

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	BE13
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6571304.77	2001661.70	649.88

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/29/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	BE14
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

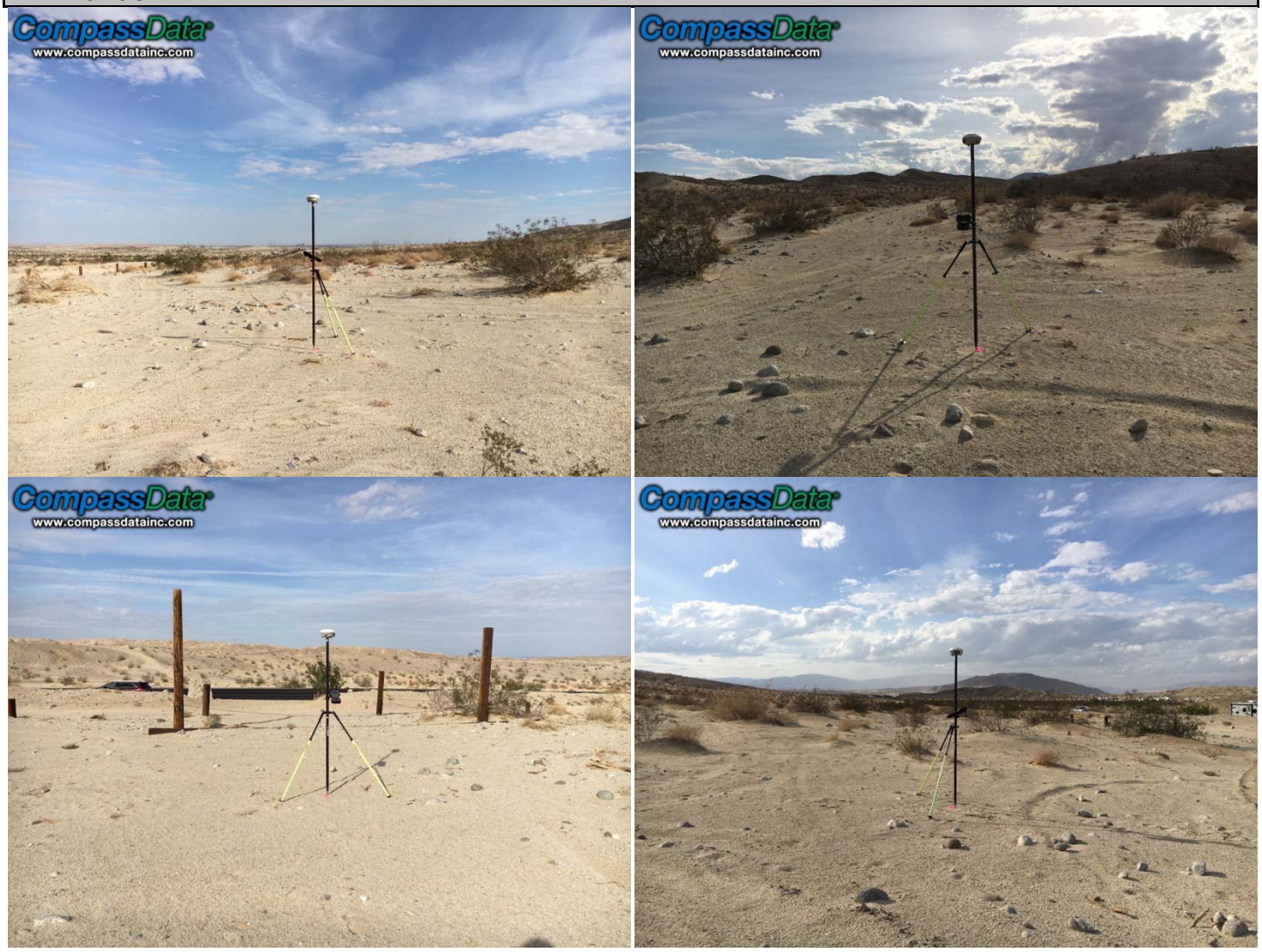
Northing	Easting	Elevation
6606040.27	1994431.04	167.72

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/29/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.009

PHOTOS:



Point ID	BE15
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6531948.86	2020684.02	597.24

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.008

PHOTOS:

Point ID	BE16
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6464458.93	2006386.51	2919.72

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/28/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.008

PHOTOS:

Point ID	BE17
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

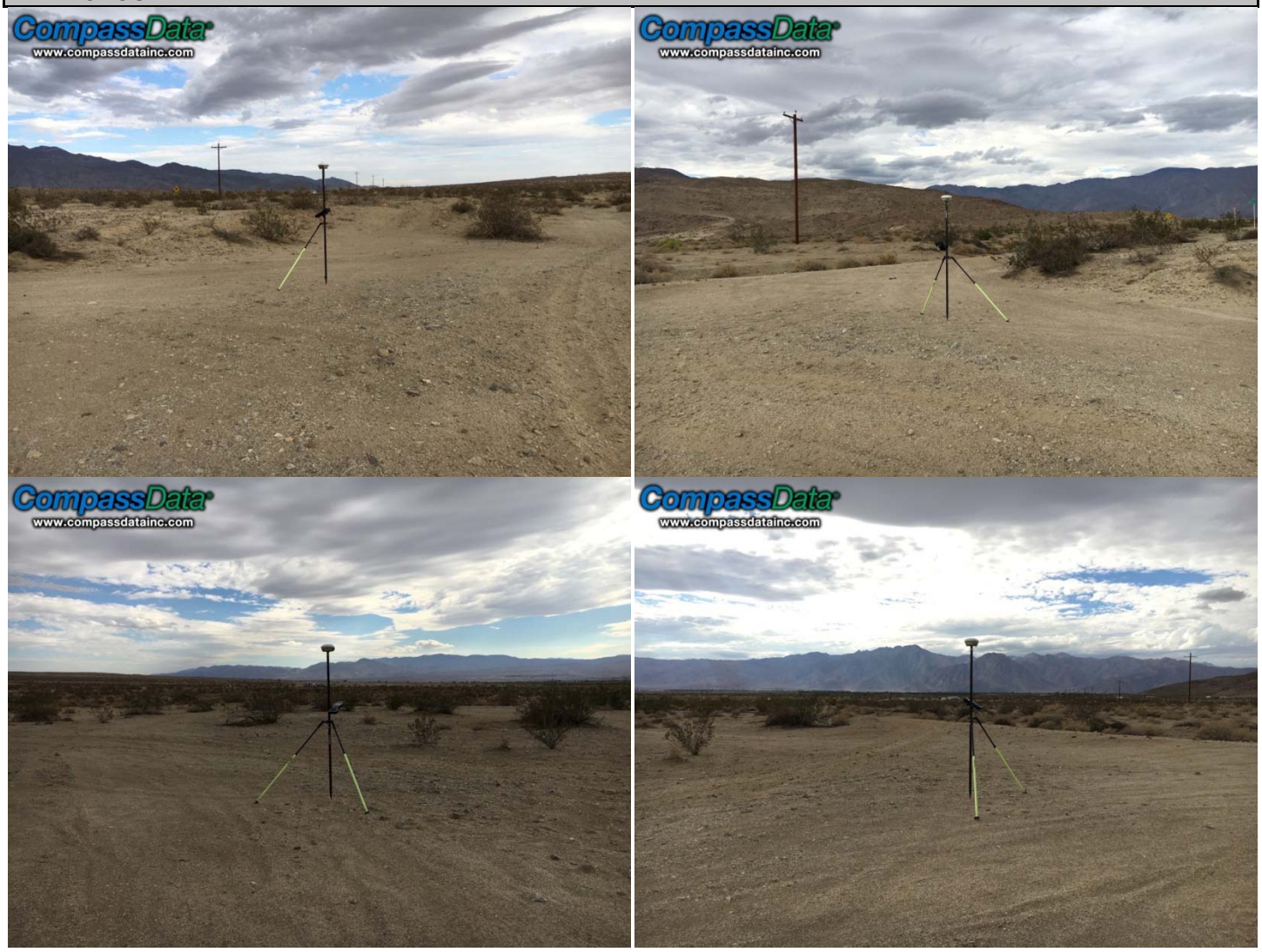
Northing	Easting	Elevation
6549331.70	2050504.37	624.58

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/28/2016

RMSE Hz(m): 0.003
RMSE Z(m): 0.005

PHOTOS:



Point ID	BE18
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6219205.67	2120777.75	1989.70

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/25/2016

RMSE Hz(m): 0.011
RMSE Z(m): 0.011

PHOTOS:

Point ID	BE19
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

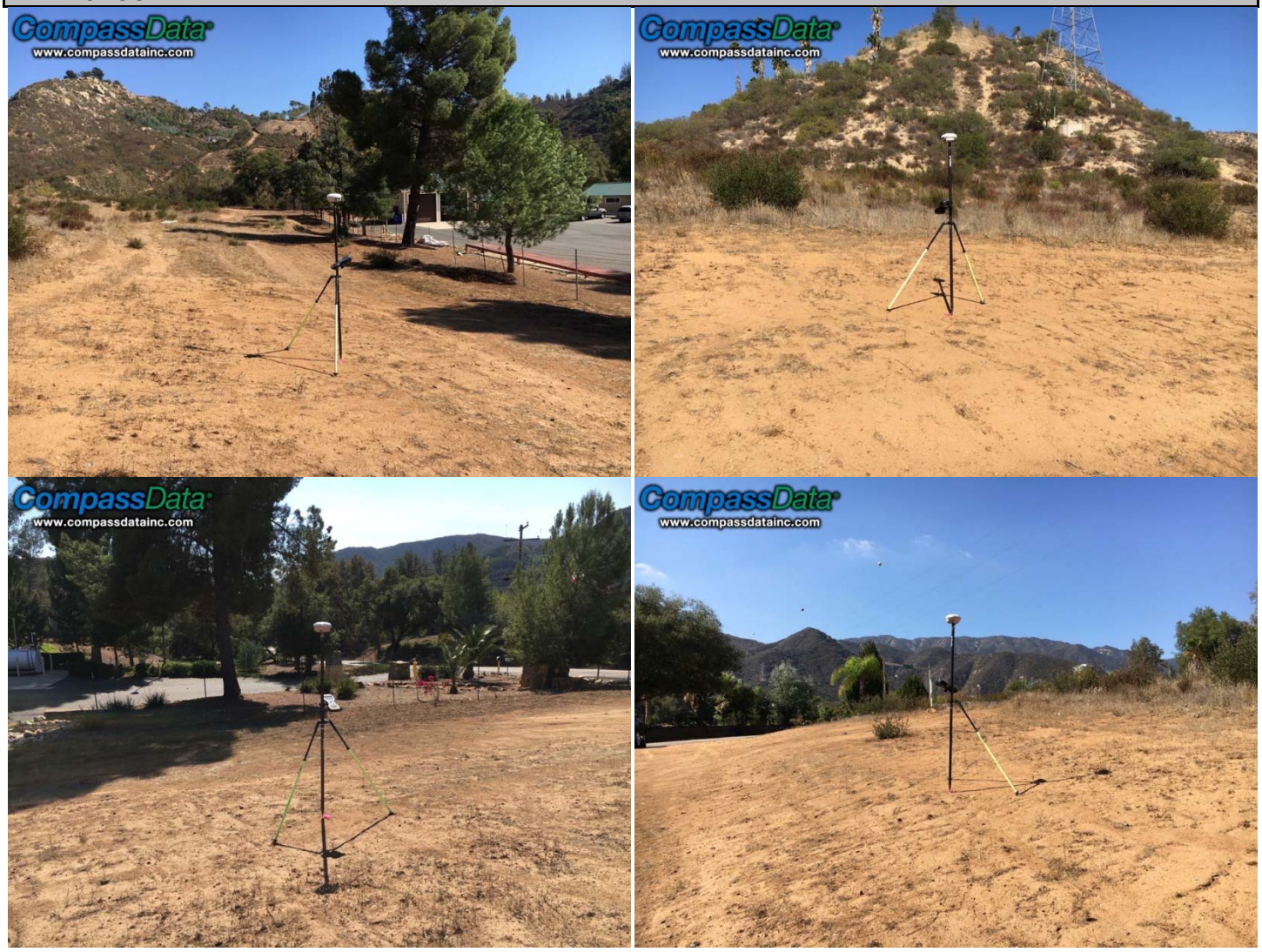
Northing	Easting	Elevation
6234807.13	2101077.88	366.90

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/25/2016

RMSE Hz(m): 0.002
RMSE Z(m): 0.003

PHOTOS:



Point ID	BE20
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6262122.00	2100703.82	700.45

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/4/2016

RMSE Hz(m): 0.003
RMSE Z(m): 0.007

PHOTOS:

Point ID	BE21
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6288774.38	2101442.67	1154.30

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	BE22
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6385129.07	2096797.52	2480.24

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.005

PHOTOS:

Point ID	BE23
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6411648.27	2072237.65	3274.26

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/27/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.008

PHOTOS:

Point ID	BE24
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6397905.98	2084209.26	2786.47

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.005

PHOTOS:

Point ID	BE25
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6432403.69	2089094.23	4386.21

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/27/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	BE26
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6599366.79	1809182.14	3140.82

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/2/2016

RMSE Hz(m): 0.013
RMSE Z(m): 0.012

PHOTOS:

Point ID	BE27
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6580922.85	1804382.73	2813.21

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/2/2016

RMSE Hz(m): 0.014
RMSE Z(m): 0.013

PHOTOS:

Point ID	BE28
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6576452.22	1888688.12	728.96

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.012
RMSE Z(m): 0.011

PHOTOS:

Point ID	BE29
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6541520.77	1837370.70	3883.57

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/31/2016

RMSE Hz(m): 0.003
RMSE Z(m): 0.008

PHOTOS:

Point ID	BE30
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6536952.82	1850068.04	4059.14

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/31/2016

RMSE Hz(m): 0.01
RMSE Z(m): 0.01

PHOTOS:

Point ID	BE31
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6537002.49	1864762.20	4464.34

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/1/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	BE32
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6532450.98	1879385.80	4424.25

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/1/2016

RMSE Hz(m): 0.012
RMSE Z(m): 0.011

PHOTOS:

Point ID	BE33
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6498599.22	1908468.70	5463.59

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/31/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.005

PHOTOS:

Point ID	BE34
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6457559.35	1972651.68	4143.98

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	BE35
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6455452.69	2015751.05	3468.39

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/27/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.006

PHOTOS:

Point ID	BE36
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6493901.95	1979567.71	2256.47

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	BE37
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6487857.49	2020179.60	4098.47

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/28/2016

RMSE Hz(m): 0.011
RMSE Z(m): 0.01

PHOTOS:

Point ID	BE38
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6499350.67	2019982.67	2964.27

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/28/2016

RMSE Hz(m): 0.01
RMSE Z(m): 0.009

PHOTOS:

Point ID	BE39
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6514080.04	2030420.43	1223.49

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/28/2016

RMSE Hz(m): 0.003
RMSE Z(m): 0.006

PHOTOS:

Point ID	BE40
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6536291.84	2008830.79	1019.08

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.008

PHOTOS:

Point ID	BE41
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6557626.43	2005371.99	731.55

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	BE42
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6472971.50	1996127.42	2639.85

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/28/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.008

PHOTOS:

Point ID	BE43
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6577511.42	2053653.58	964.13

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/29/2016

RMSE Hz(m): 0.01
RMSE Z(m): 0.009

PHOTOS:

Point ID	BE44
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6612199.36	2045515.50	518.44

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/29/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.008

PHOTOS:

Point ID	BE45
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6417808.40	2080355.40	3587.21

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/27/2016

RMSE Hz(m): 0.012
RMSE Z(m): 0.011

PHOTOS:

Point ID	BE46
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6439082.56	2083883.54	4434.12

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/27/2016

RMSE Hz(m): 0.013
RMSE Z(m): 0.013

PHOTOS:

Point ID	BE47
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6550131.68	2061378.61	556.60

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/28/2016

RMSE Hz(m): 0.01
RMSE Z(m): 0.009

PHOTOS:

Point ID	BE48
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6591284.68	2046627.67	887.63

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/29/2016

RMSE Hz(m): 0.01
RMSE Z(m): 0.009

PHOTOS:

Point ID	BE49
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6591189.28	1998150.61	298.41

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/29/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	BE50
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6564835.52	1912454.15	968.67

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.005

PHOTOS:

Point ID	BE51
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6511157.29	1991282.89	1624.01

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.014
RMSE Z(m): 0.014

PHOTOS:

Point ID	BE52
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

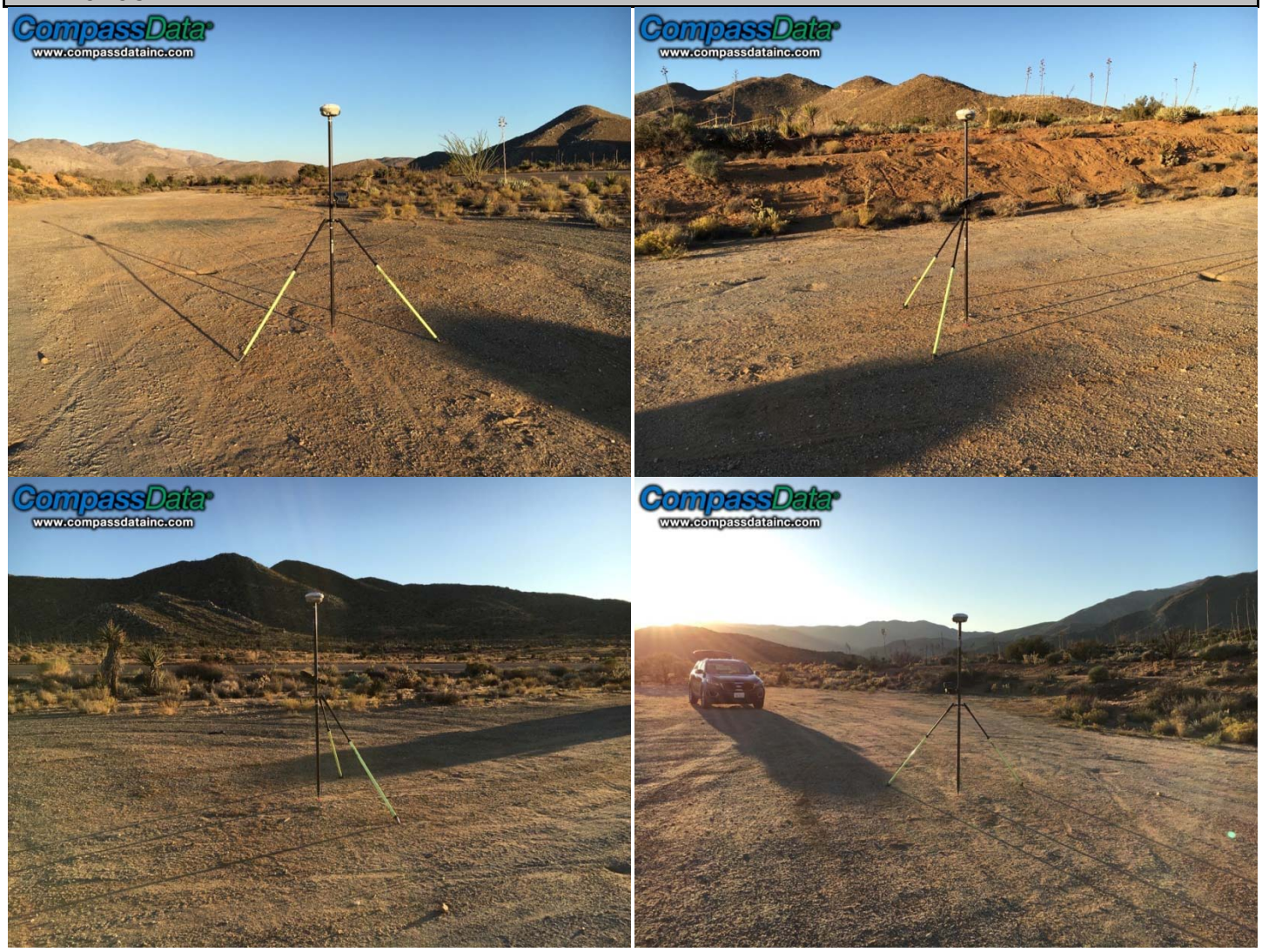
Northing	Easting	Elevation
6507179.91	1950119.28	2649.99

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/4/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:



Point ID	BE53
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6256368.86	2107699.70	835.06

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	BE54
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6281602.54	2094017.13	1037.90

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	BE55
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6499092.66	1945177.12	2229.16

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/4/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	BE56
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6482419.17	1928044.43	5179.17

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/31/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	BE57
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6469863.38	1955232.94	4755.77

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/31/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	BE58
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

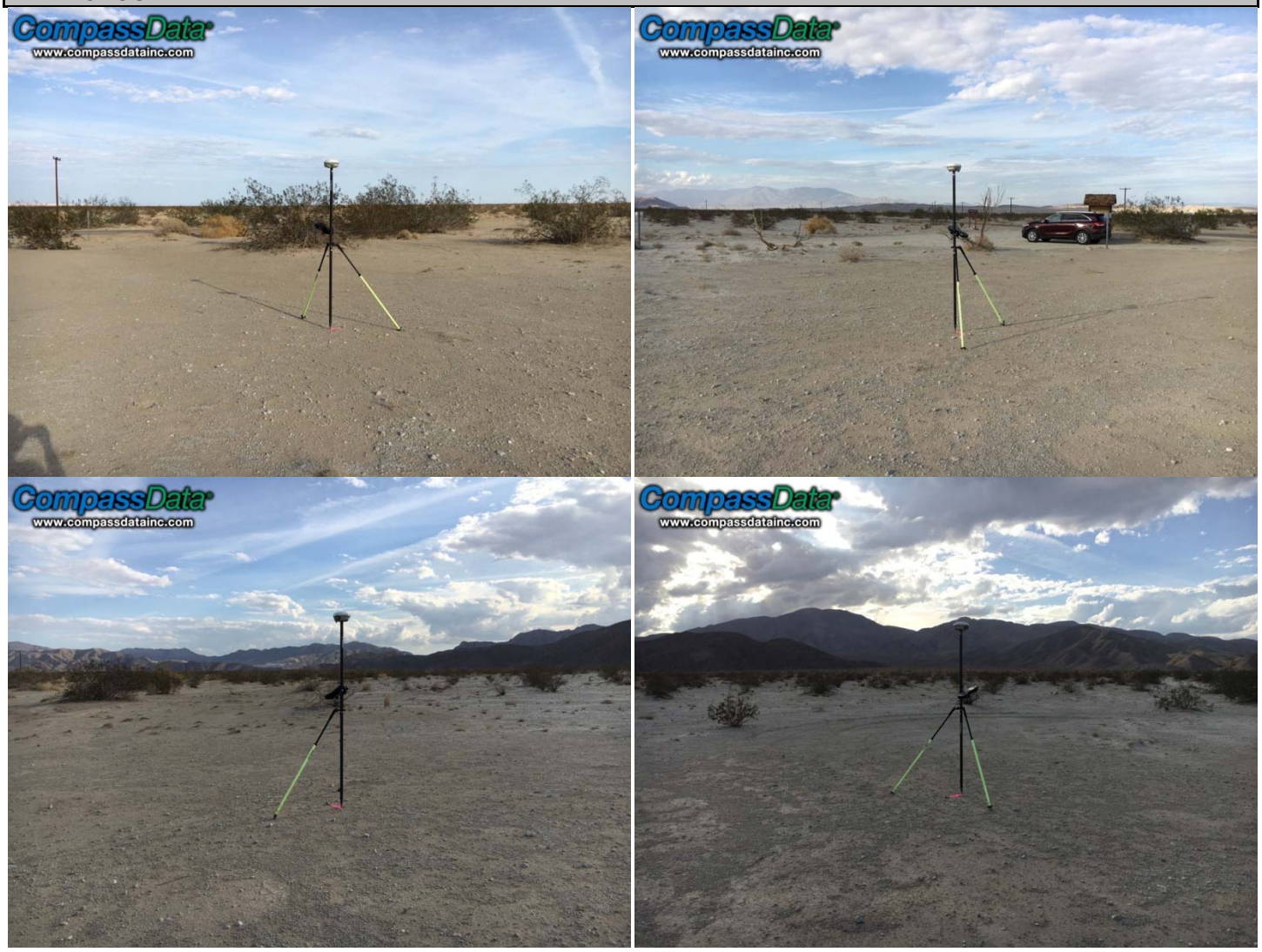
Northing	Easting	Elevation
6606621.76	1969494.84	107.33

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/29/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:



Point ID	BE59
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6597495.27	1982556.53	109.18

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/29/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.006

PHOTOS:

Point ID	BE60
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

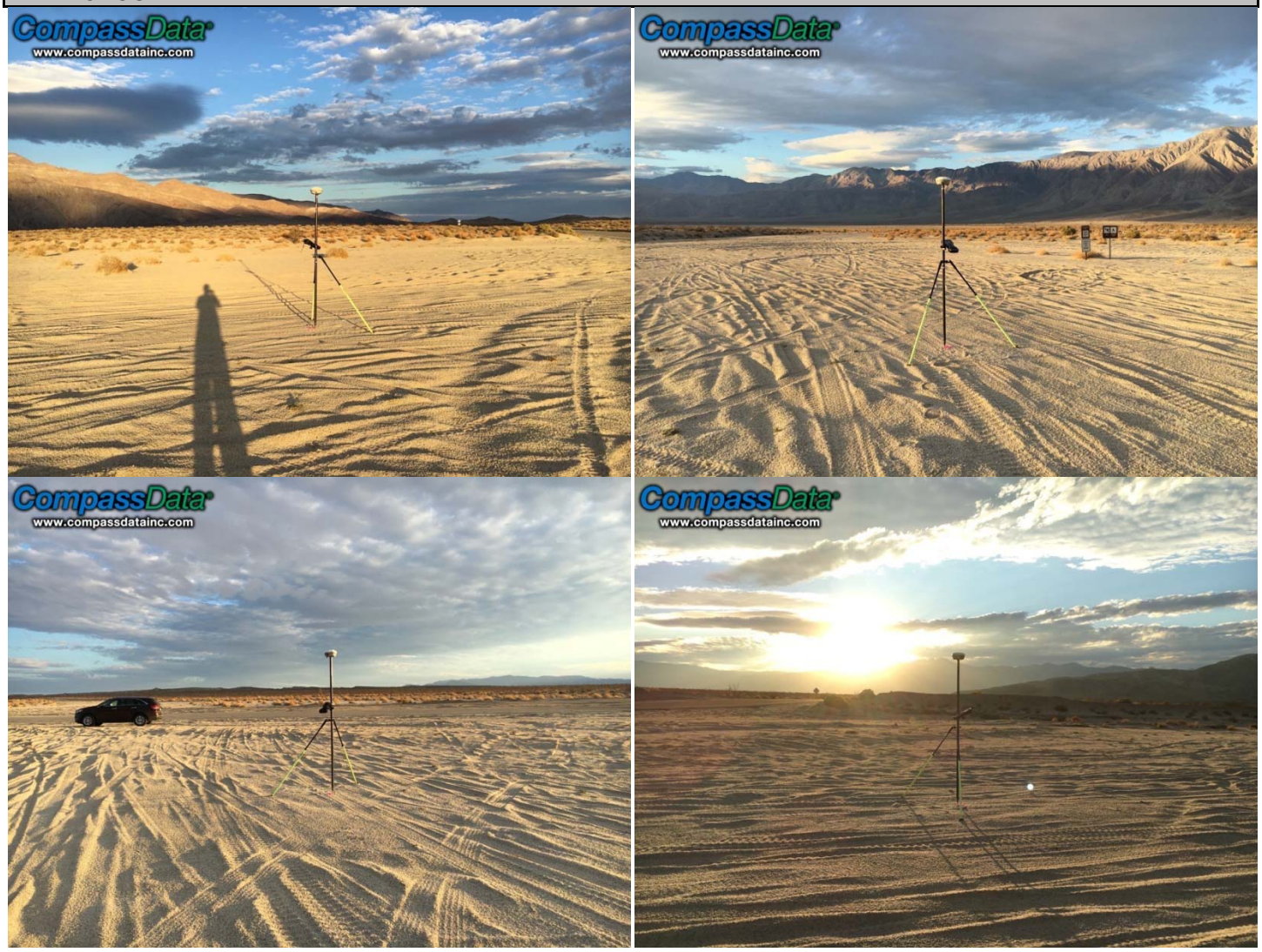
Northing	Easting	Elevation
6559932.93	2054234.99	686.29

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/4/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.005

PHOTOS:



Point ID	BE61
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6555867.89	1995582.31	971.31

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.007

PHOTOS:

Point ID	BE63
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6250617.47	2095088.02	975.93

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/4/2016

RMSE Hz(m): 0.003
RMSE Z(m): 0.004

PHOTOS:

Point ID	BE64
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Open terrain

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

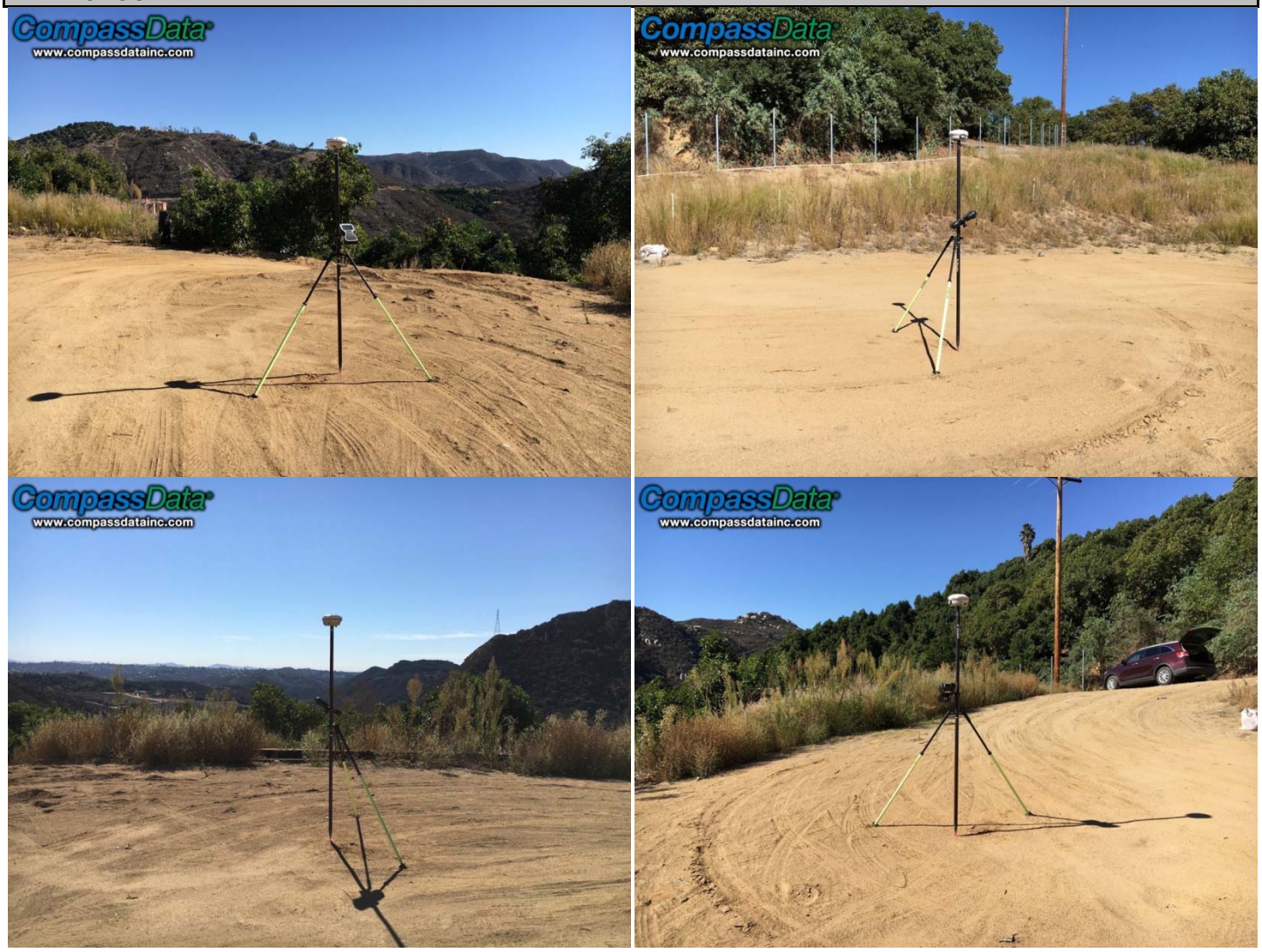
Northing	Easting	Elevation
6256774.48	2104880.04	898.99

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/4/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:



Urban Area Point Log Sheets

Point ID	UA01
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Pavement

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6258248.28	2084842.14	725.78

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/25/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Tall Weed Point Log Sheets

Point ID	TW01
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Tall Grass

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6554888.17	1812627.34	3410.61

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/1/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	TW02
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Tall Grass

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6511730.77	1934793.88	1734.01

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.005

PHOTOS:

Point ID	TW03
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Tall Grass

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6452879.48	2013618.49	3525.80

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/27/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	TW04
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Tall Grass

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6382903.83	2099226.35	2454.31

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	TW05
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Tall Grass

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6288843.81	2101626.21	1157.85

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	TW06
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Tall Grass

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6507330.48	1950102.99	2652.63

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/4/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	TW07
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Tall Grass

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6473042.70	1996003.21	2634.77

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/28/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.008

PHOTOS:

Point ID	TW08
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Tall Grass

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6233108.15	2106220.49	473.45

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/25/2016

RMSE Hz(m): 0.011
RMSE Z(m): 0.009

PHOTOS:

Point ID	TW09
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Tall Grass

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6493863.27	1979542.82	2256.38

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.007

PHOTOS:

Point ID	TW10
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Tall Grass

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6401704.93	2083868.70	2813.00

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	TW11
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Tall Grass

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6596799.96	1840962.32	1832.58

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Forest Point Log Sheets

Point ID	FO01
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Forest

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6411738.23	2072357.78	3273.88

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/27/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.008

PHOTOS:

Point ID	FO02
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Trees

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6219162.82	2120849.21	1994.10

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/25/2016

RMSE Hz(m): 0.011
RMSE Z(m): 0.009

PHOTOS:

Point ID	FO03
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Trees

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6256242.55	2091159.12	317.12

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/4/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Brushland Point Log Sheets

Point ID	SH01
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6584452.76	1813116.01	2743.53

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/2/2016

RMSE Hz(m): 0.01
RMSE Z(m): 0.009

PHOTOS:

Point ID	SH03
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6559348.54	1833887.81	3650.22

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/2/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	SH04
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6551555	1860169.13	4041.35

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/1/2016

RMSE Hz(m): 0.011
RMSE Z(m): 0.009

PHOTOS:

Point ID	SH05
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6545374.02	1926865.71	1287.89

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.012
RMSE Z(m): 0.012

PHOTOS:

Point ID	SH06
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6535932.85	1991932.68	1250.90

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	SH07
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6570897.65	2001619.64	657.46

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/29/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	SH08
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6436064.53	2083907.78	4328.39

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/27/2016

RMSE Hz(m): 0.003
RMSE Z(m): 0.006

PHOTOS:

Point ID	SH09
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

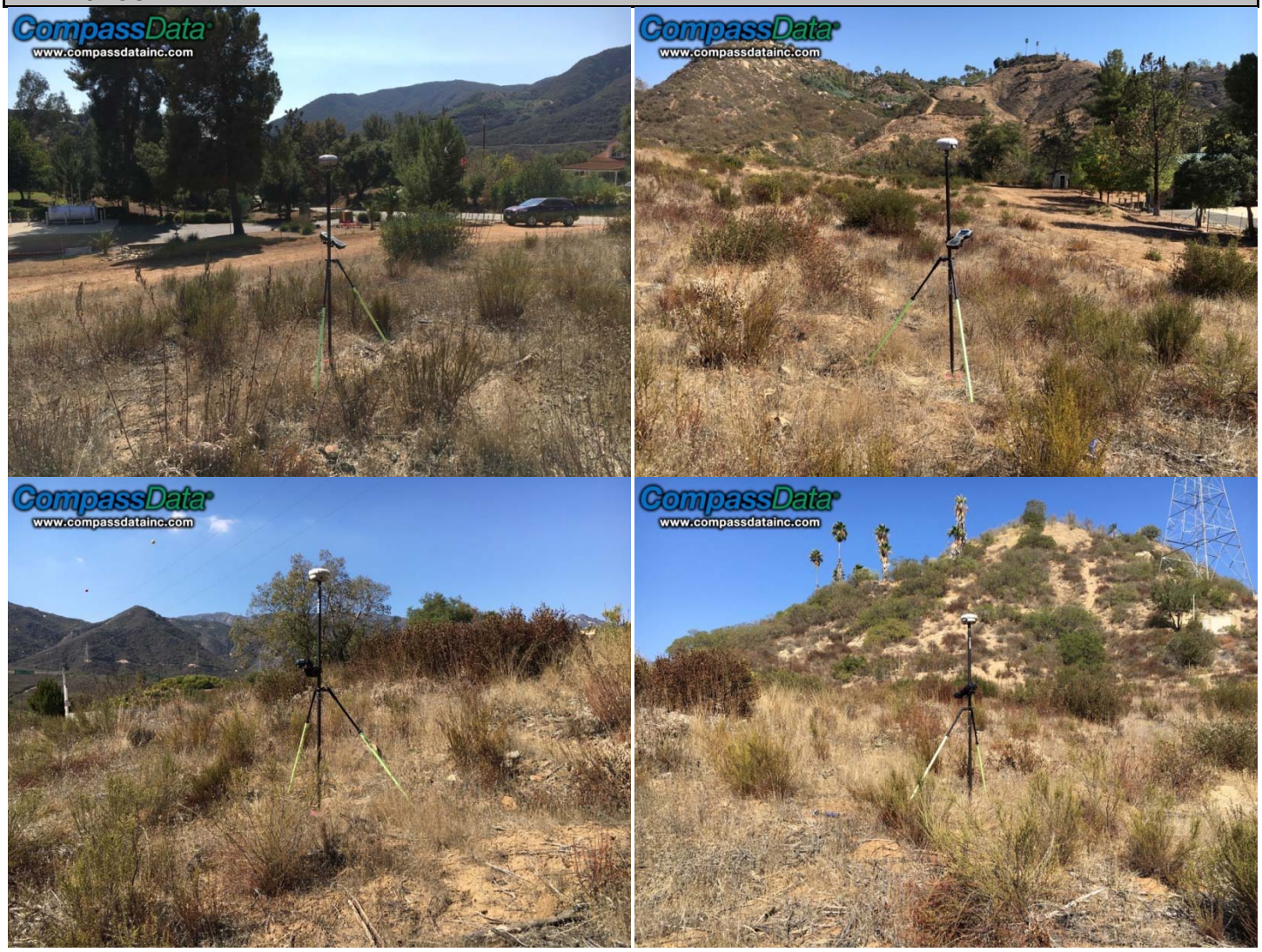
Northing	Easting	Elevation
6234811.98	2101129.35	374.68

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/25/2016

RMSE Hz(m): 0.002
RMSE Z(m): 0.003

PHOTOS:



Point ID	SH10
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6261340.89	2101115.33	752.04

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	SH11
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

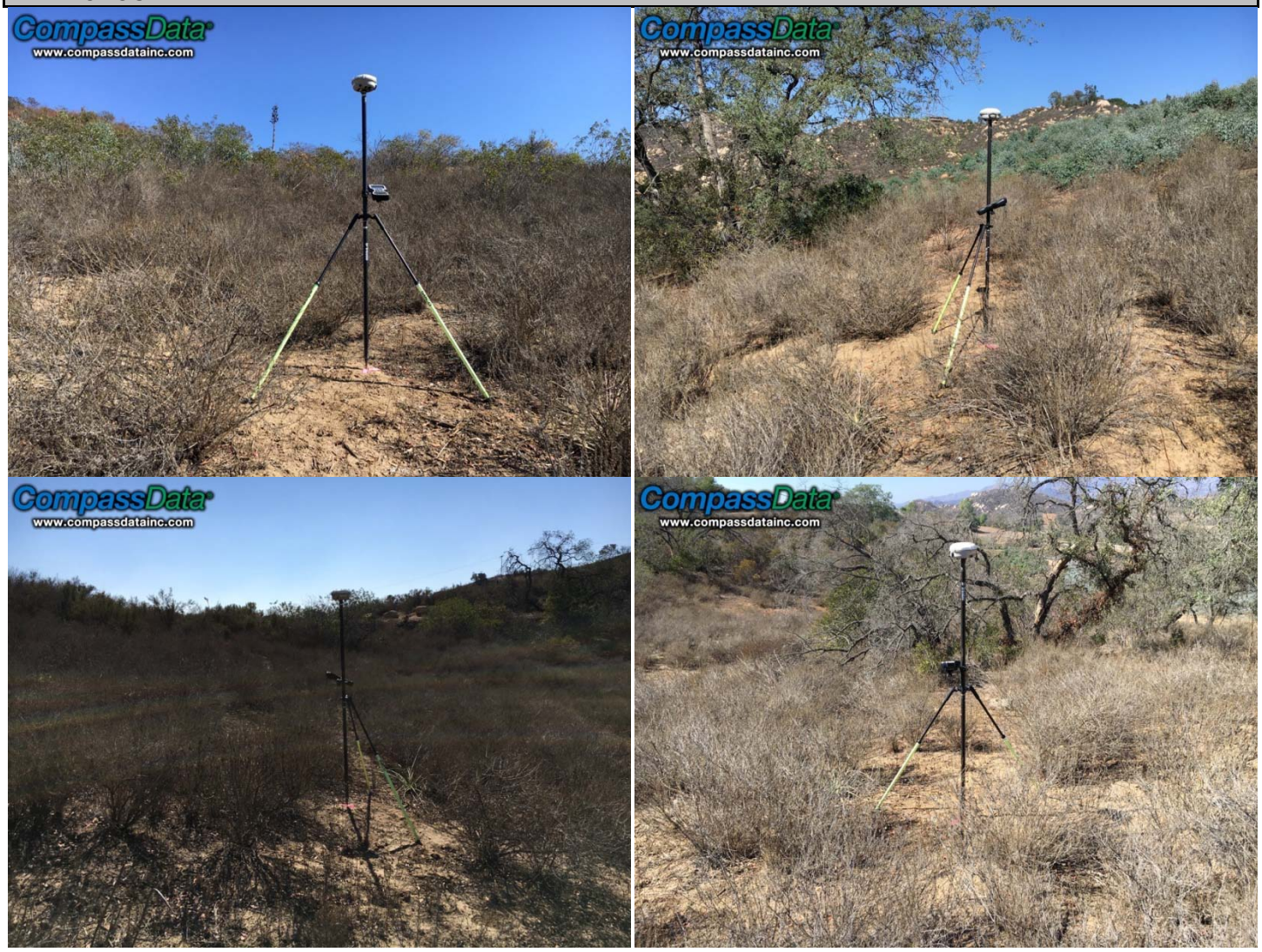
Northing	Easting	Elevation
6249835.03	2094162.88	881.75

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/25/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:



Point ID	SH12
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6599035.74	1809140.94	3131.29

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/2/2016

RMSE Hz(m): 0.015
RMSE Z(m): 0.015

PHOTOS:

Point ID	SH13
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6506399.60	1936346.62	2018.81

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	SH15
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6556213.56	1995706.46	958.77

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.006

PHOTOS:

Point ID	SH16
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6469999.52	1955463.89	4748.57

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/31/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	SH17
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

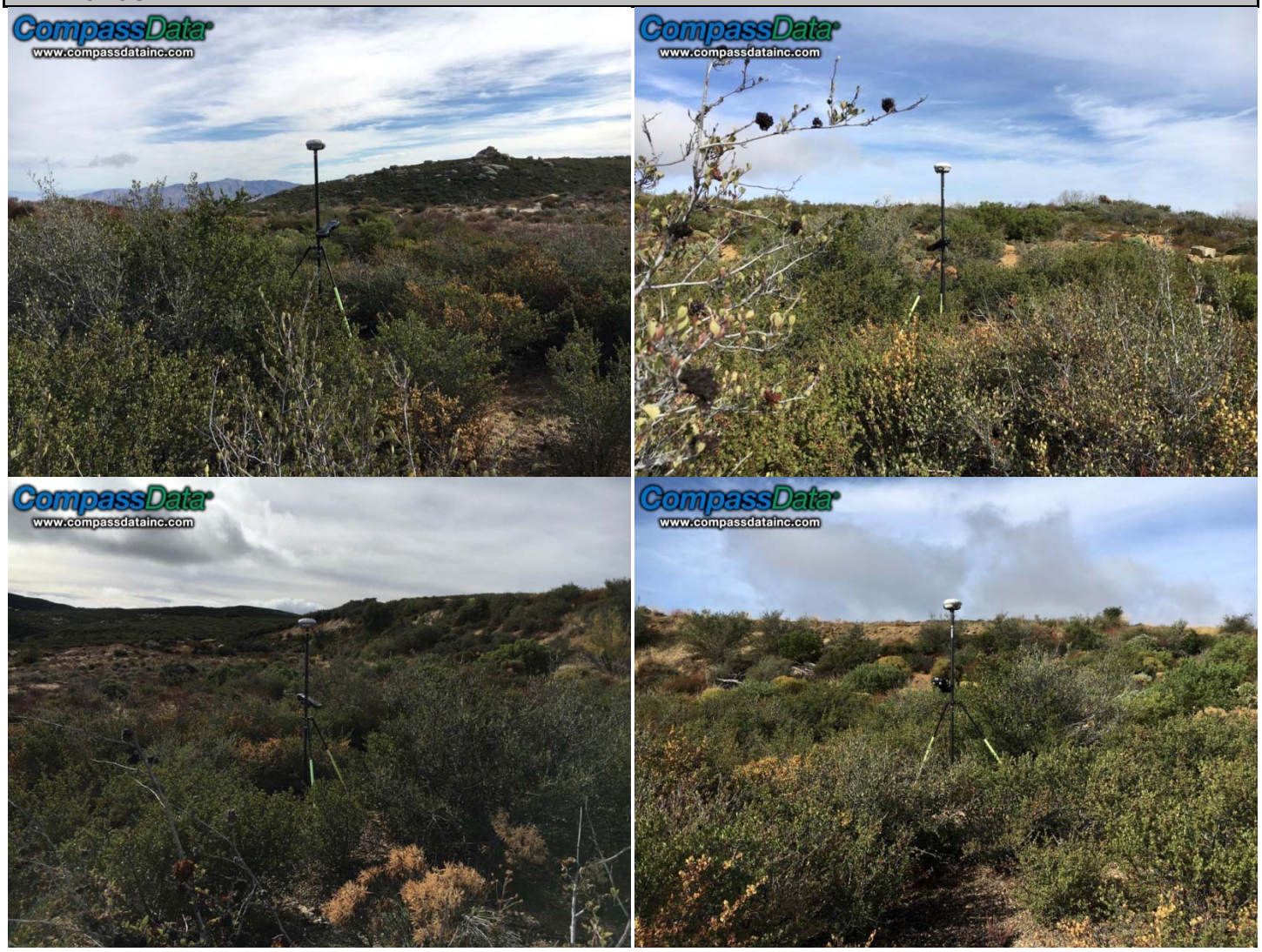
Northing	Easting	Elevation
6482537.46	1927940.94	5162.75

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/31/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:



Point ID	SH18
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6282149.73	2093916.26	1020.30

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	SH19
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6256833.69	2107563.90	893.07

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	SH20
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6511073.75	1991325.20	1625.44

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.011
RMSE Z(m): 0.01

PHOTOS:

Point ID	SH21
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6565040.13	1912794.57	957.20

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/3/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.005

PHOTOS:

Point ID	SH22
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6588508.75	2048433.56	897.62

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/29/2016

RMSE Hz(m): 0.01
RMSE Z(m): 0.009

PHOTOS:

Point ID	SH23
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6549697.48	2061748.27	554.37

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/28/2016

RMSE Hz(m): 0.01
RMSE Z(m): 0.01

PHOTOS:

Point ID	SH24
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

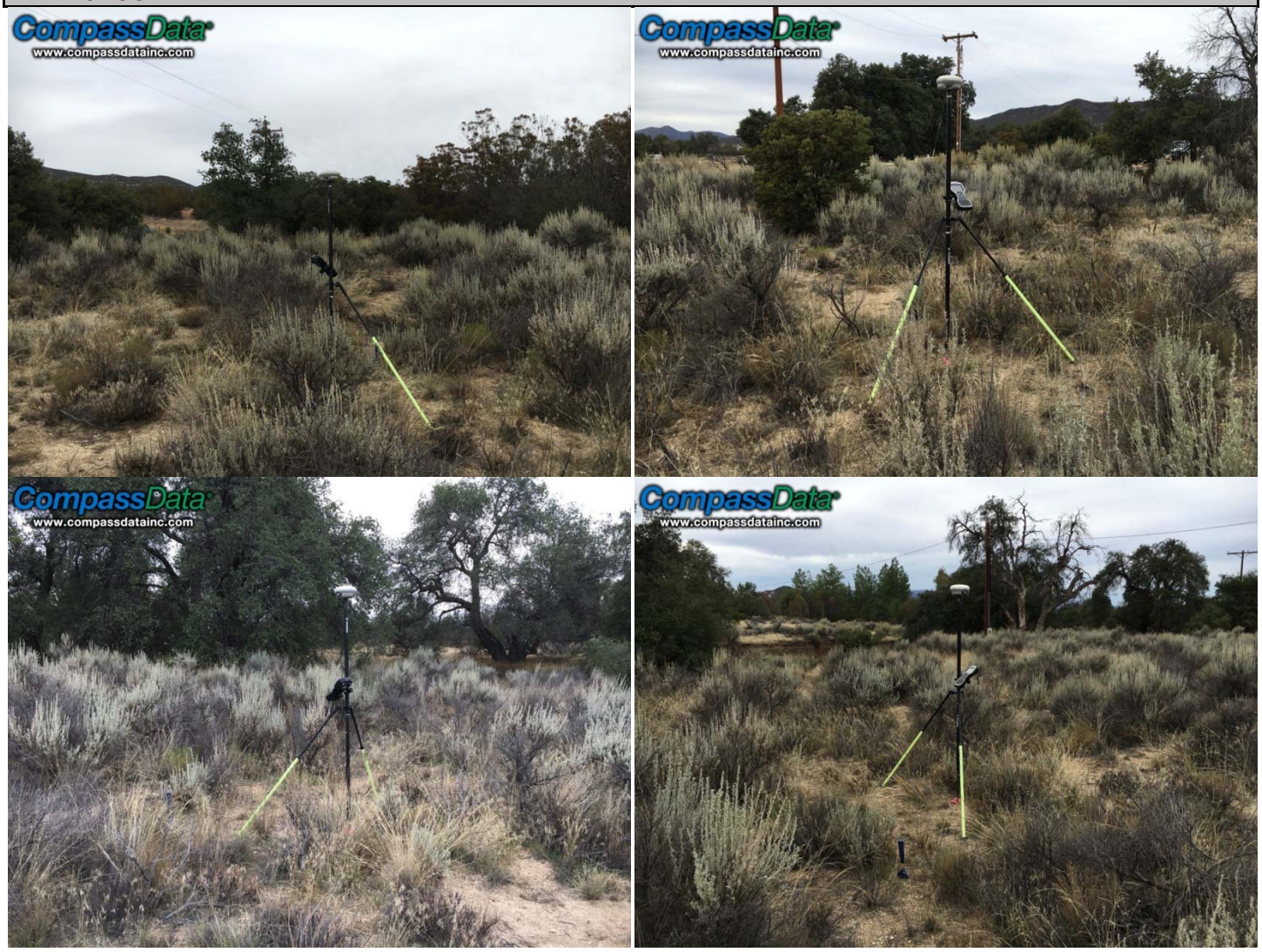
Northing	Easting	Elevation
6438275.43	2083756.22	4402.00

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/27/2016

RMSE Hz(m): 0.012
RMSE Z(m): 0.013

PHOTOS:



Point ID	SH25
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6475629.17	1993559.94	2603.26

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/4/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.007

PHOTOS:

Point ID	SH26
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

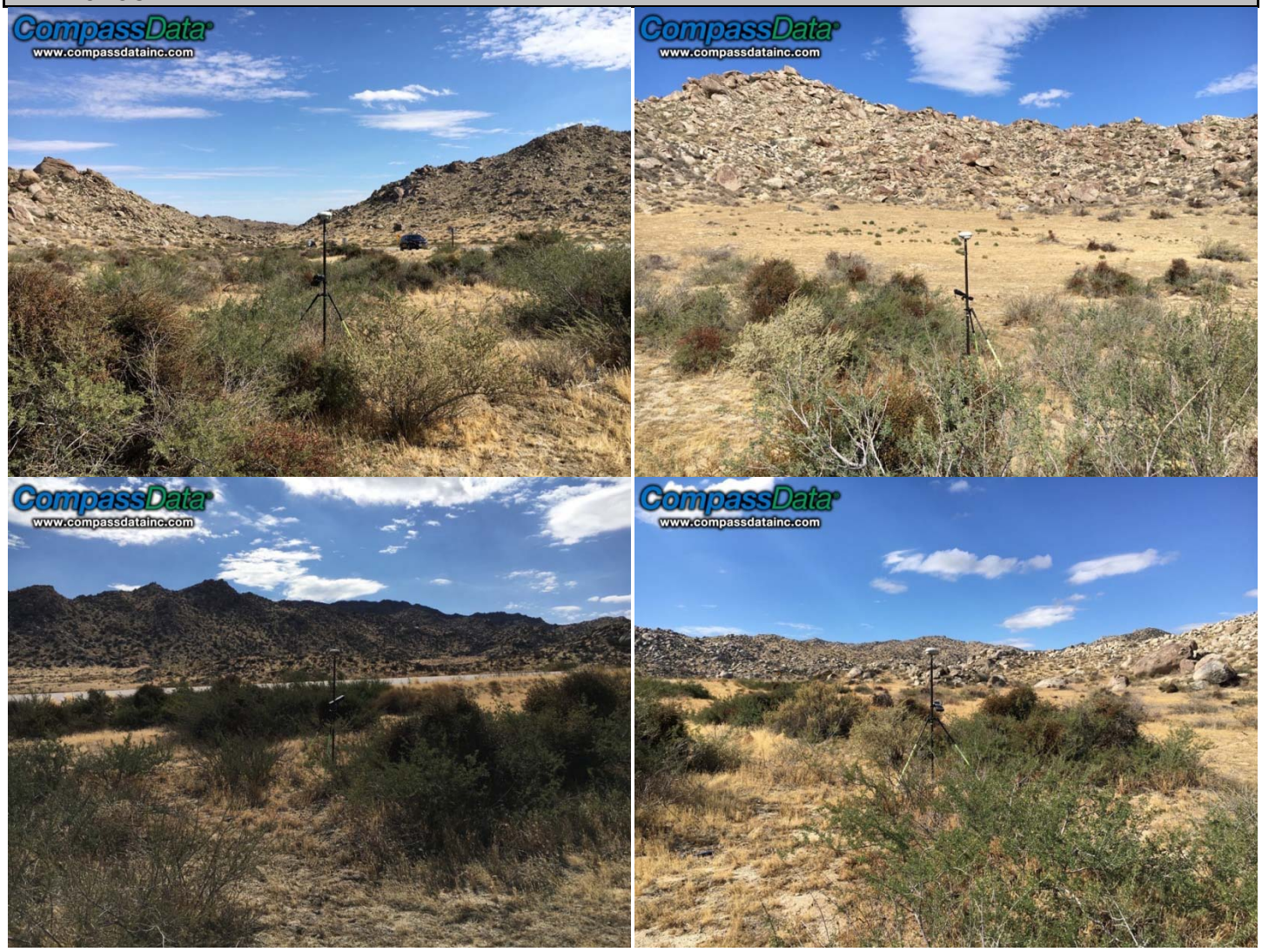
Northing	Easting	Elevation
6500499.00	2020125.46	2895.34

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/28/2016

RMSE Hz(m): 0.01
RMSE Z(m): 0.009

PHOTOS:



Point ID	SH27
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6487629.07	2020364.44	4122.30

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/28/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.008

PHOTOS:

Point ID	SH28
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6455596.00	2015831.36	3490.25

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/27/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	SH29
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6448279.00	1972159.33	3985.34

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/30/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	SH30
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

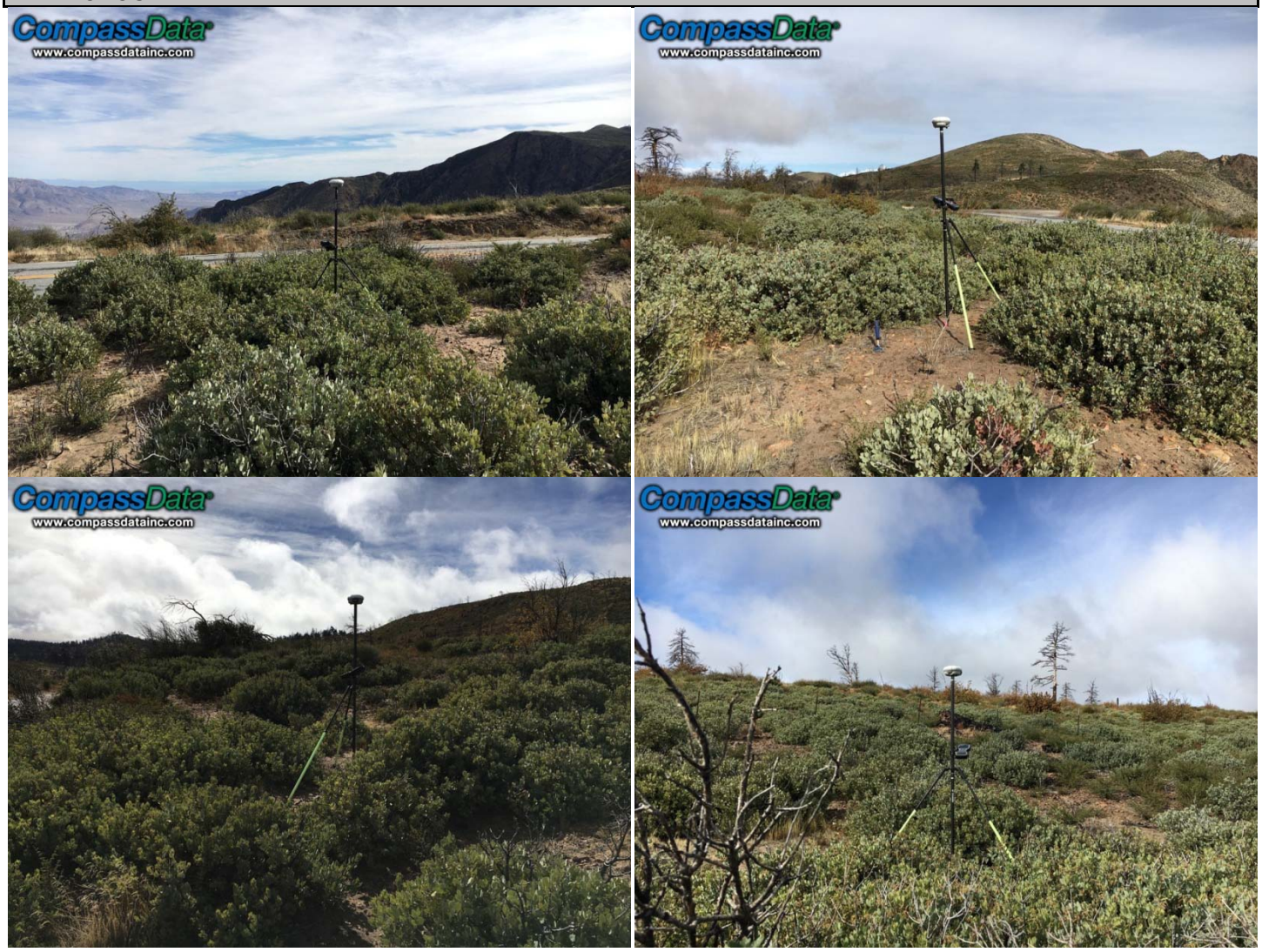
Northing	Easting	Elevation
6498597.46	1908278.20	5471.59

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/31/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.005

PHOTOS:



Point ID	SH31
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6532453.59	1879437.42	4424.39

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/1/2016

RMSE Hz(m): 0.011
RMSE Z(m): 0.01

PHOTOS:

Point ID	SH32
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6536963.48	1864818.12	4469.53

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/1/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	SH33
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6555532.61	1843345.40	3801.75

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/1/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:

Point ID	SH34
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6541393.48	1837490.67	3891.41

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/31/2016

RMSE Hz(m): 0.003
RMSE Z(m): 0.008

PHOTOS:

Point ID	SH35
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6549382.41	1822740.06	3530.10

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/1/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	SH36
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

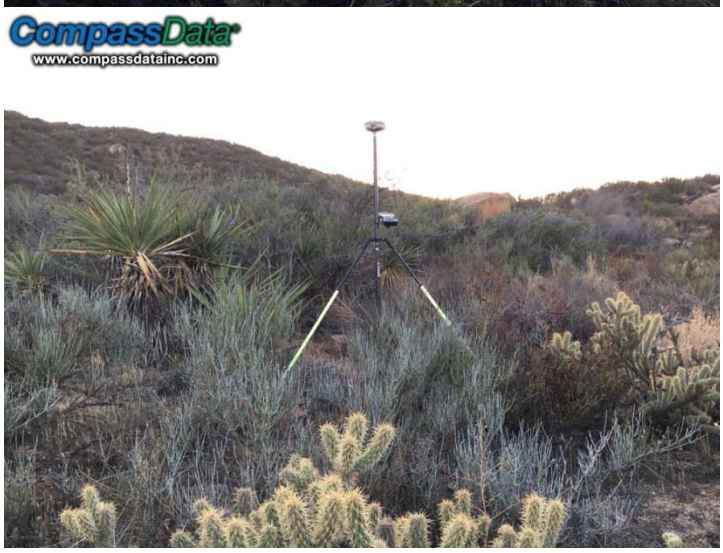
Northing	Easting	Elevation
6567744.90	1813024.31	3336.32

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/2/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS:



Point ID	SH37
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

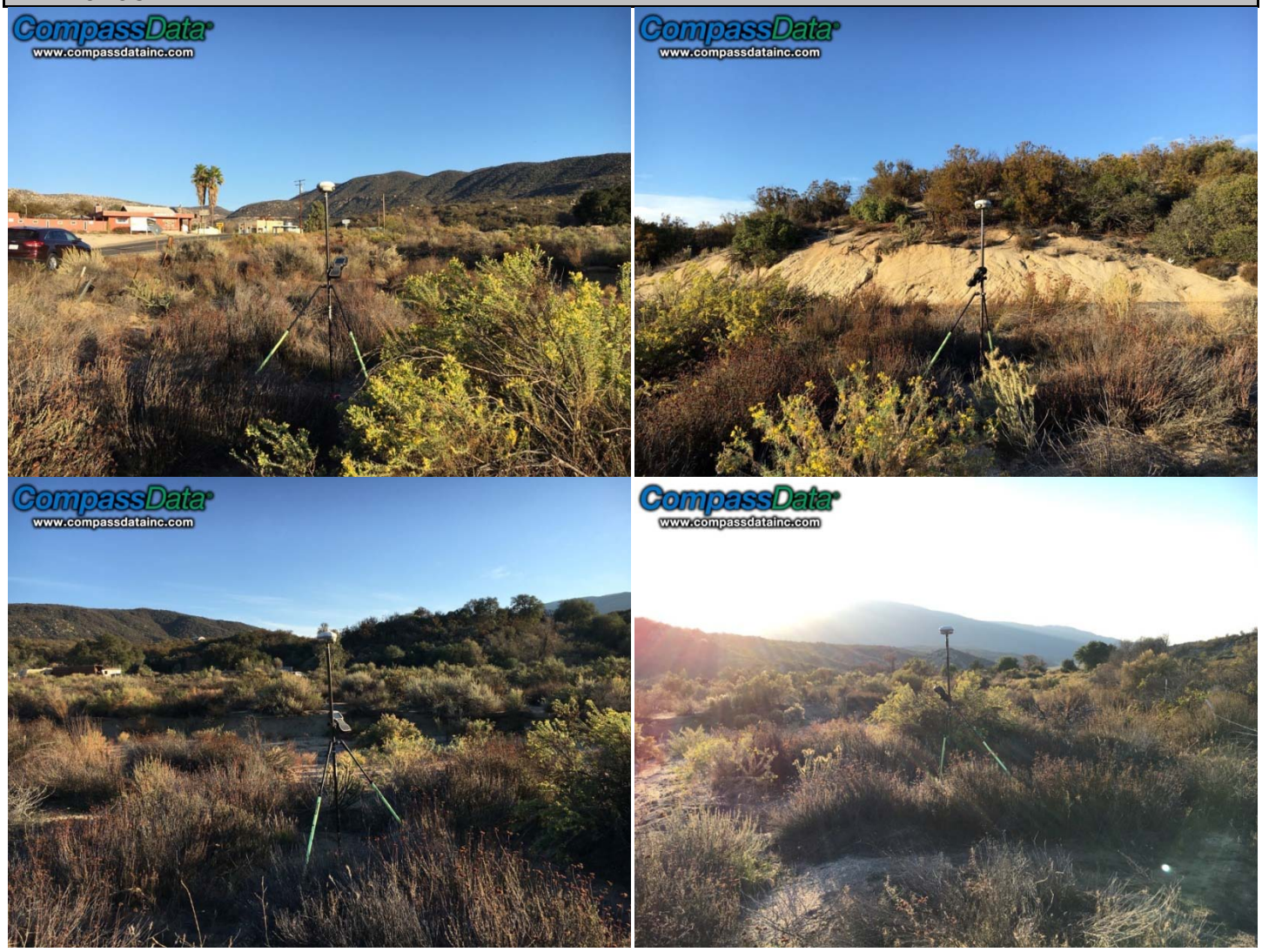
Northing	Easting	Elevation
6410025.45	2081428.83	3073.19

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/27/2016

RMSE Hz(m): 0.005
RMSE Z(m): 0.007

PHOTOS:



Point ID	SH38
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6389402.29	2092743.51	2604.44

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	10/26/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.005

PHOTOS:

Point ID	SH39
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6262192.51	2100614.55	696.79

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/4/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.007

PHOTOS:

Point ID	SH52
Project No.	28793
Project Name	USGS - Eastern San Diego LiDAR
State	California
Description	Brush

	Aerial Target
	LiDAR Ground Control
X	LiDAR QC Point
	New Control
	Published Control

Coordinate System
NAD83(2011)
CA VI
NAVD88 (GEOID12B)
US Foot

Northing	Easting	Elevation
6508365.98	1965598.30	2348.21

Operator	CompassData
Receiver Model	Trimble R8

Static Session	RTK
Date (MM-DD-YYYY)	11/4/2016

RMSE Hz(m): 0.004
RMSE Z(m): 0.006

PHOTOS: