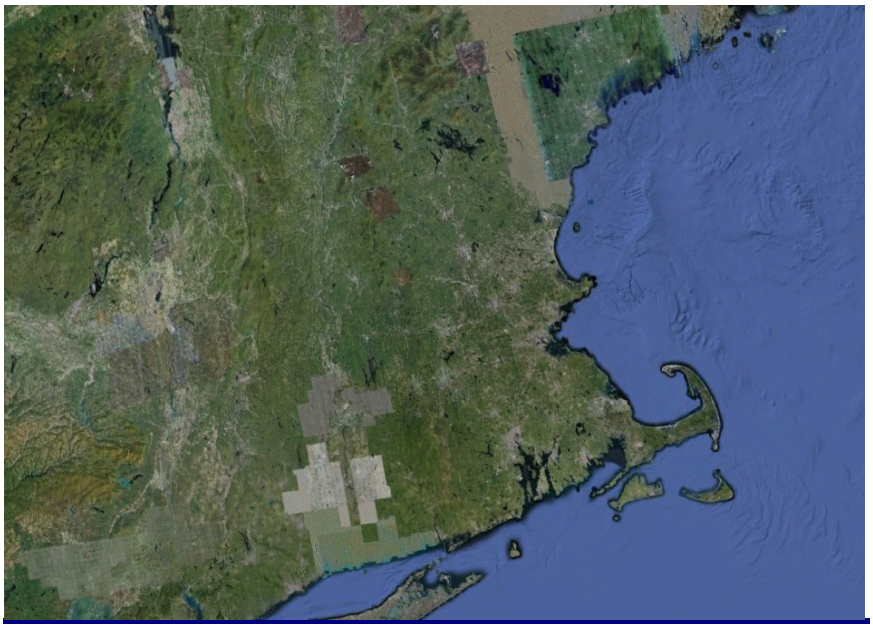
LIDAR GROUND CONTROL FINAL SURVEY REPORT



NEW YORK CMGP SANDY LIDAR

USGS/NGTOC

CONTRACT NUMBER: G10PC00057
ORDER NUMBER: G13PD00797

WOOLPERT PROJECT #73666
OCTOBER 2014

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Lidar Ground Control Final Survey Report

USGS/NGTOC
Task Order: New York CMGP Sandy Lidar
Contract Number G10PC00057, Order Number: G13PD00797
Woolpert, Inc. Project Number 73666

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Introduction

This report contains an outline of the ground control surveys that supported the topographic lidar along the Atlantic coast of New York; Contract Number G10PC00057, ORDER NUMBER G13PD00797; Woolpert Number 73666.

Project Area

The project area encompasses over 304 square miles in southeastern New York, to include the entire counties of Bronx, Kings, Richmond and Queens.

Purpose

The purpose of this survey was to establish three-dimensional coordinates for airborne sensor system calibrations and ground-truthing in support of topographic lidar data acquisition in southeastern New York.

Date of Survey

All ground control field operations took place between December 3, 2013 and May 7, 2014.

Existing Project Control

Prior to the lidar mission, Woolpert staff researched suitable NGS, CORS and KeyNet stations staggered throughout the project limits. CORS stations utilized were NYQN; and KeyNet stations were KP14, PRS7795813199, PRS36652789504, PRS532579291404, ROG1 and TWDA. Woolpert crews also performed reconnaissance on existing NGS control stations 12 F 3, FORRESTAL, H 103, HAMBONE, KIMCOB, MARCZUK, NELSON, W ANDERSON2 and Z 340 to compare resulting coordinates when processed with CORS and KeyNet stations.

Ground Truthing and Calibration Sites

Information sheets for the newly established photogrammetric control stations can be found in Section 3 of this report. These information sheets consist of photographs, description of the point observed, and geographic coordinates. A diagram showing the ground control stations used to support this photogrammetric mapping project can be found in Section 5 of this report.

Methodology

Two types of GPS survey techniques were performed for this project: Rapid-Static GPS and Real-Time Kinematics (RTK) GPS. Conventional survey methodology was used as well in obscured areas.

Rapid Static GPS

Rapid-Static GPS surveying techniques were used for establishing primary control from which ground-truthing was performed. Rapid-Static GPS surveying, requires a minimum of two receivers to occupy stations at either end of a baseline for a set duration based on the baseline length, number of satellites, and satellite geometry. For this survey mission, field crews utilized Woolpert-owned, Trimble Navigation R8 series and Trimble Navigation 4000 series dual-frequency geodetic GPS receivers. Each observation session utilized a 10-second sync rate, lasting up to (2) two hours for longer baselines.

Real-Time Kinematics (RTK) GPS

The field crews utilized RTK GPS by setting a base station on control previously set by rapid-static methodology noted above. RTK GPS is a technique used in land surveying based on the use of carrier phase measurements of the GPS and GLONASS signals where a single reference station provides the real-time corrections, providing up to centimeter-level accuracy. This methodology allowed for efficient survey grade observations for sensor calibrations and ground-truthing. Woolpert utilized Trimble Navigation R8 dual-frequency geodetic GPS receivers on the base and rover end of the vector for this task. The survey was conducted using a 1-second epoch rate, in a fixed solution RTK mode with each GPS session lasting 90 seconds to 180 seconds each.

Datum Reference and Final Coordinates

All horizontal GPS control was based on the Universal Transverse Mercator (UTM) Zone 18, referenced to the North American Datum 1983, National Re-adjustment of 2002 (NAD83/2002). All vertical control was based on the North American Vertical Datum of 1988 (NAVD88). These final coordinates for the ground control survey are expressed in Meters and can be found in Section 2 of this report.

GPS Data Analysis and Processing

All session baselines were processed each day using *Trimble Navigation's* Trimble Business Center (TBC) version 3.1 baseline processor with the broadcast ephemeris.

Daily processing allowed immediate feedback to field crews to discover any weak links in the network and immediately schedule re-observations of the affected baselines. Once the fieldwork was complete, the processed baselines were then run through a rigorous loop closure analysis.

RTK-Rapid Static GPS Adjustment

Upon completion of all field data processing, Woolpert constrained to NGS CORS station *NYQN* and KeyNetGPS stations *KP14*, *PRS7795813199*, *PRS36652789504*, *PRS532579291404*, *ROG1* and *TWDA* using *Trimble Navigation's* Trimble Business Center (TBC) version 3.1. Geoid 12A was used to model the elevations.

Conventional Survey

Where obstructions precluded Woolpert crews from using GPS conventional survey methods were utilized. All conventional survey observations were referenced to control established from Static and RTK GPS methods.

Accuracy Specifications

The final analysis of the GPS network indicates that the GPS and conventional survey observations used for ground-truthing and sensor calibration meet or exceed the accuracy criteria set forth in the statement of work.

SECTION 2: GROUND CONTROL COORDINATE LISTING

This section contains a complete listing of the Final UTM 18 Coordinates, Orthometric Heights, Latitude, Longitude, Station Descriptions and Locations for the USGS/NGTOC New York CMGP Sandy Lidar Project:

USGS/NGTOC

New York CMGP Sandy Lidar

Horizontal Datum: NAD 83 (2011), Vertical Datum: NAVD 1988
Units: Meters, Coordinate Zone: UTM 18, Geoid Model: Geoid 12A
Date: December 2013

Lidar Quality Control Check Points

Site ID	Point No.	Northing	Easting	Elev.	Latitude	Longitude	Surface Desc.	Location
8	2008	4524448.320	600936.951	2.436	40°51'53.57978" N	73°48'08.19224" W	Low Grass	Bronx County, New York
	3008	4526525.436	597011.024	41.683	40°53'02.63521" N	73°50'54.69955" W	Urban	Bronx County, New York
	5008	4524440.113	600907.256	1.122	40°51'53.32685" N	73°48'09.46530" W	Brush	Bronx County, New York
	6008	4524439.183	600850.258	4.583	40°51'53.32199" N	73°48'11.90013" W	Trees	Bronx County, New York
	6008A	4524455.283	600863.983	2.495	40°51'53.83792" N	73°48'11.30457" W	Trees	Bronx County, New York
9	2009	4514951.080	590996.078	5.156	40°46'49.82482" N	73°55'17.76067" W	Bare Earth	Queens County, New York
	3009	4514710.820	592590.135	4.556	40°46'41.39333" N	73°54'09.89210" W	Urban	Queens County, New York
	5009	4493173.639	585476.973	2.828	40°35'05.79476" N	73°59'23.86704" W	Brush	Kings County, New York
	6009	4514918.850	590994.169	5.860	40°46'48.78052" N	73°55'17.85898" W	Trees	Queens County, New York
	6009A	4514897.538	590972.253	5.828	40°46'48.09819" N	73°55'18.80503" W	Trees	Queens County, New York
10	2010	4510671.764	606819.714	37.194	40°44'24.21959" N	73°44'05.44116" W	Bare Earth (Ball field)	Queens County, New York
	3010	4510823.431	607295.081	37.591	40°44'28.91448" N	73°43'45.08366" W	Urban	Queens County, New York
	5010	4513387.033	605731.702	5.521	40°45'52.76342" N	73°44'50.16871" W	Brush	Queens County, New York
	6010	4513403.377	605769.453	8.532	40°45'53.27587" N	73°44'48.54891" W	Trees	Queens County, New York
	6010A	4513415.318	605772.430	8.874	40°45'53.66164" N	73°44'48.41467" W	Trees	Queens County, New York
11	2011	4494752.025	606788.496	2.004	40°35'48.05846" N	73°44'16.51507" W	Short Grass	Queens County, New York
	3011	4494724.081	606799.747	2.072	40°35'47.14719" N	73°44'16.05354" W	Urban	Queens County, New York
	5011	4494781.011	606337.033	2.016	40°35'49.20773" N	73°44'35.70124" W	Brush	Queens County, New York
	6011	4494748.855	606374.205	2.278	40°35'48.14789" N	73°44'34.13961" W	Trees	Queens County, New York
	6011A	4494753.941	606397.284	2.153	40°35'48.30213" N	73°44'33.15481" W	Trees	Queens County, New York
12	2012	4490491.909	591589.089	1.856	40°33'36.48172" N	73°55'05.30525" W	Bare Earth (Ball field)	Queens County, New York
	3012	4490354.040	591527.292	2.368	40°33'32.03573" N	73°55'08.00458" W	Urban	Queens County, New York
	5012	4490841.234	592234.286	1.595	40°33'47.55121" N	73°54'37.69019" W	Brush	Queens County, New York

Site ID	Point No.	Northing	Easting	Elev.	Latitude	Longitude	Surface Desc.	Location
12	6012	4490879.049	592234.745	1.857	40°33'48.77723" N	73°54'37.65078" W	Trees	Queens County, New York
	6012A	4490893.763	592234.539	1.792	40°33'49.25443" N	73°54'37.65182" W	Trees	Queens County, New York
13	2013	4502504.166	600743.869	5.131	40°40'02.14970" N	73°48'29.17104" W	Bare Earth (Ball field)	Queens County, New York
	2013A	4502504.690	600744.728	5.082	40°40'02.16629" N	73°48'29.13415" W	Bare Earth (Ball field)	Queens County, New York
	3013	4502554.136	600685.987	4.071	40°40'03.79539" N	73°48'31.60699" W	Urban	Queens County, New York
	3013A	4502554.467	600685.983	4.020	40°40'03.80612" N	73°48'31.60695" W	Urban	Queens County, New York
	5013	4500971.843	604787.146	4.011	40°39'10.65253" N	73°45'37.91939" W	Brush	Queens County, New York
	6013	4500943.421	604794.719	4.656	40°39'09.72753" N	73°45'37.61405" W	Trees	Queens County, New York
	6013A	4500939.945	604805.933	4.741	40°39'09.60969" N	73°45'37.13874" W	Trees	Queens County, New York
14	2014	4494371.192	584458.884	3.926	40°35'45.00427" N	74°00'06.59213" W	Short Grass	Kings County, New York
	3014	4494297.644	584540.926	2.890	40°35'42.58914" N	74°00'03.13758" W	Urban	Kings County, New York
	5014	4493396.135	585084.387	2.187	40°35'13.15532" N	73°59'40.45687" W	Brush	Kings County, New York
	6014	4493438.627	585206.216	3.493	40°35'14.48805" N	73°59'35.25428" W	Trees	Kings County, New York
	6014A	4493436.064	585258.657	2.565	40°35'14.38551" N	73°59'33.02497" W	Trees	Kings County, New York
15	2015	4505653.219	586184.627	4.350	40°41'50.20009" N	73°58'47.61258" W	Bare Earth (Ball field)	Kings County, New York
	3015	4505712.486	586189.849	3.664	40°41'52.11993" N	73°58'47.36078" W	Urban	Kings County, New York
16	2016	4499506.179	575258.905	6.605	40°38'34.71920" N	74°06'35.75954" W	Bare Earth (Ball field)	Richmond County, New York
	3016	4499961.597	576977.449	2.670	40°38'48.91693" N	74°05'22.39845" W	Urban	Richmond County, New York
	5016	4503079.227	575927.174	4.161	40°40'30.36427" N	74°06'05.75635" W	Brush	Richmond County, New York
	6016	4499504.481	575336.929	5.705	40°38'34.63852" N	74°06'32.43872" W	Trees	Richmond County, New York
	6016A	4499535.552	575330.509	5.693	40°38'35.64820" N	74°06'32.69862" W	Trees	Richmond County, New York
17	2017	4485599.292	568709.014	5.729	40°31'05.79187" N	74°11'20.05383" W	Low Grass	Richmond County, New York
	3017	4485026.644	568044.319	2.143	40°30'47.41865" N	74°11'48.52055" W	Urban	Richmond County, New York
	4017	4484998.907	568074.515	2.895	40°30'46.51026" N	74°11'47.24827" W	Tall Grass	Richmond County, New York
	5017	4485694.422	568688.229	7.527	40°31'08.88305" N	74°11'20.89990" W	Long Grass	Richmond County, New York
	6017	4485578.000	568558.618	9.685	40°31'05.14620" N	74°11'26.45294" W	Trees	Richmond County, New York
	6017A	4485591.195	568606.291	7.625	40°31'05.55991" N	74°11'24.42205" W	Trees	Richmond County, New York

Point No.	Northing	Easting	Elev.	Latitude	Longitude	Surface Desc.	Location
BE OT 1	4492498.085	585028.633	3.178	40°34'44.05488" N	73°59'43.26410" W	Bare Earth (Ball field)	Kings County, New York
BE OT 2	4497744.430	573190.035	6.325	40°37'38.25872" N	74°08'04.57235" W	Bare Earth	Richmond County, New York
BE OT 3	4494842.592	569059.567	3.136	40°36'05.43663" N	74°11'01.51900" W	Bare Earth (Ball field)	Richmond County, New York
BE OT 4	4484589.391	565055.999	15.612	40°30'34.10197" N	74°13'55.65708" W	Bare Earth (Ball field)	Richmond County, New York
BE OT 5	4492462.050	590373.025	4.021	40°34'40.84738" N	73°55'55.99267" W	Short Grass	Kings County, New York
BE OT 6	4494899.868	576676.538	34.760	40°36'04.87744" N	74°05'37.42882" W	Short Grass	Richmond County, New York
BE OT 7	4500178.618	584084.190	48.422	40°38'53.45854" N	74°00'19.73952" W	Short Grass	Kings County, New York
BE OT 8	4503182.714	589960.782	26.055	40°40'28.63914" N	73°56'08.00870" W	Bare Earth (Ball field)	Kings County, New York
URBAN 1	4486160.862	564460.141	9.363	40°31'25.23146" N	74°14'20.39783"W	Urban	Richmond County, New York
URBAN 2	4490308.485	570265.476	4.132	40°33'38.03609" N	74°10'12.03070" W	Urban	Richmond County, New York
URBAN 2A	4484771.097	565214.020	17.455	40°30'39.94992" N	74°13'48.87568" W	Urban	Richmond County, New York
URBAN 3	4497727.768	573166.325	6.482	40°37'37.72599" N	74°08'05.58846" W	Urban	Richmond County, New York
URBAN 4	4494871.248	576709.115	34.075	40°36'03.93850" N	74°05'36.05537" W	Urban	Richmond County, New York
URBAN 5	4494832.294	568302.370	2.650	40°36'05.32908" N	74°11'33.73866" W	Urban	Richmond County, New York
URBAN 6	4500213.628	584005.633	38.298	40°38'54.62259" N	74°00'23.06713" W	Urban	Kings County, New York
URBAN 7	4500636.579	595429.875	4.092	40°39'03.86723" N	73°52'16.47984" W	Urban	Kings County, New York
URBAN 10	4503752.562	590544.815	16.101	40°40'46.88681" N	73°55'42.83939" W	Urban	Kings County, New York

Lidar Control Points

Site ID	Point No.	Northing	Easting	Elev.	Latitude	Longitude	Surface Desc.	Location
8	1008	4526528.148	597040.129	41.957	40°53'02.71073" N	73°50'53.45457" W	Asphalt	Bronx County, New York
9	1009	4514961.063	590954.937	3.656	40°46'50.16492" N	73°55'19.51036" W	Asphalt	Bronx County, New York
10	1010	4510646.344	606840.035	36.534	40°44'23.38591" N	73°44'04.59051" W	Asphalt	Queens County, New York
11	1011	4494539.241	606540.976	2.066	40°35'41.27405" N	73°44'27.17324" W	Asphalt	Queens County, New York
12	1012	4490514.832	591693.020	1.926	40°33'37.18360" N	73°55'00.87451" W	Asphalt	Queens County, New York
13	1013	4502513.480	600807.532	5.413	40°40'02.42370" N	73°48'26.45471" W	Asphalt	Queens County, New York
14	1014	4494350.315	584552.459	2.833	40°35'44.29285" N	74°00'02.62152" W	Manhole Cover	Kings County, New York
15	1015	4505727.832	586266.198	3.563	40°41'52.58879" N	73°58'44.10033" W	Asphalt	Kings County, New York
16	1016	4500011.400	577048.394	2.788	40°38'50.50810" N	74°05'19.35609" W	Asphalt	Richmond County, New York
17	1017	4485606.102	568692.693	6.058	40°31'06.01760" N	74°11'20.74472" W	Asphalt	Richmond County, New York

Survey Control Points

Site ID	Point No.	Northing	Easting	Elev.	Latitude	Longitude	Surface Desc.	Location
17	211	4485707.975	568746.971	7.641	40°31'09.30504" N	74°11'18.39840" W	Short Grass	Richmond County, New York
	212	4485706.003	568683.201	7.647	40°31'09.26012" N	74°11'21.10902" W	Short Grass	Richmond County, New York
	213	4485540.175	568593.479	6.134	40°31'03.90918" N	74°11'24.98638" W	Short Grass	Richmond County, New York
	214	4485475.277	568625.639	5.014	40°31'01.79505" N	74°11'23.64511" W	Concrete	Richmond County, New York
16	215	4499525.885	575237.757	6.611	40°38'35.36517" N	74°06'36.65139" W	Short Grass	Richmond County, New York
	216	4499507.237	575300.972	6.104	40°38'34.73968" N	74°06'33.96826" W	Short Grass	Richmond County, New York
8	269	4524456.972	600887.796	2.098	40°51'53.88211" N	73°48'10.28656" W	Short Grass	Bronx County, New York
9	270	4514925.852	591035.747	8.318	40°46'48.99097" N	73°55'16.08175" W	Bare Earth	Queens County, New York
10	271	4513397.673	605732.251	5.473	40°45'53.10814" N	73°44'50.13880" W	Gravel	Queens County, New York
	272	4513373.866	605668.869	4.299	40°45'52.36560" N	73°44'52.85616" W	Asphalt	Queens County, New York
13	273	4500935.696	604777.694	4.373	40°39'09.48485" N	73°45'38.34349" W	Asphalt	Queens County, New York
	274	4500896.284	604831.098	4.439	40°39'08.18253" N	73°45'36.09358" W	Asphalt	Queens County, New York
11	275	4494781.287	606366.791	2.354	40°35'49.20291" N	73°44'34.43528" W	Short Grass	Queens County, New York
	276	4494768.061	606333.310	2.136	40°35'48.78957" N	73°44'35.86748" W	Short Grass	Queens County, New York

Site ID	Point No.	Northing	Easting	Elev.	Latitude	Longitude	Surface Desc.	Location
12	277	4490820.801	592225.614	1.717	40°33'46.89211" N	73°54'38.06967" W	Asphalt	Queens County, New York
	278	4490870.753	592209.562	1.751	40°33'48.51832" N	73°54'38.72590" W	Short Grass	Queens County, New York
14	279	4493422.544	585272.126	2.730	40°35'13.94210" N	73°59'32.45867" W	Short Grass	Kings County, New York
	280	4493377.808	585259.825	3.816	40°35'12.49600" N	73°59'33.00363" W	Asphalt	Kings County, New York

NGS Stations

Station Name	Northing	Easting	Elev.	Latitude	Longitude	Location
12 F 3	4457659.712	544986.179	35.153	40°16'05.51891" N	74°28'15.26338" W	Middlesex County, New Jersey
FORRESTAL	4467564.199	533206.106	34.191	40°21'28.73083" N	74°36'32.17267" W	Middlesex County, New Jersey
H 103	4541662.543	573509.685	79.804	41°01'22.28420" N	74°07'32.31780" W	Bergen County, New Jersey
HAMBONE	4450643.371	531071.645	28.135	40°12'20.23298" N	74°38'05.62046" W	Mercer County, New Jersey
KIMCOB	4455916.008	564057.865	44.760	40°15'04.49424" N	74°14'48.44241" W	Monmouth County, New Jersey
MARCZUK	4493721.561	561342.579	6.256	40°35'31.27305" N	74°16'30.24260" W	Middlesex County, New Jersey
NELSON	4489330.792	546377.936	20.771	40°33'12.38602" N	74°27'08.02751" W	Middlesex County, New Jersey
W ANDERSON 2	4527223.373	581144.132	3.728	40°53'31.48128" N	74°02'12.26648" W	Bergen County, New Jersey
Z 340	4513261.404	605367.525	5.294	40°45'48.85842" N	73°45'05.77484" W	Queens County, New York

NGS CORS Stations

Station Name	Northing	Easting	Elev.	Latitude	Longitude	Location
NYQN	4508397.044	607255.512	31.182	40d43'10.26183" N	73d43'48.26660" W	Queens County, New York

KeyNetGPS Stations

Station Name	Northing	Easting	Elev.	Latitude	Longitude	Location
KP14	4534862.818	573101.477	39.475	40°57'41.92876" N	74°07'52.69094" W	Bergen County, New Jersey
PRS7795813199	4459045.639	584582.065	19.851	40°16'39.42502" N	74°00'18.27904" W	Monmouth County, New Jersey
PRS36652789504	4499648.675	553336.101	59.655	40°38'45.48657" N	74°22'09.04156" W	Union County, New Jersey
PRS532579291404	4443183.229	578139.818	39.903	40°08'07.26404" N	74°04'57.98996" W	Monmouth County, New Jersey
ROG1	4499086.365	574354.799	18.556	40°38'21.40042" N	74°07'14.42730" W	Richmond County, New York
TWDA	4469112.120	541650.086	39.466	40°22'17.56876" N	74°30'33.82353" W	Middlesex County, New Jersey

SECTION 3: GROUND CONTROL STATION INFORMATION SHEETS

This section contains the station information sheets for each of the new quality control check points to support the 2013 New York CMGP Sandy Lidar Project.

Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Bronx County, New York				Station Description Site ID 8 QA/QC # 2008	
Date of Survey 12/10/2013				Ground Type Low Grass	
Established by WOOLPERT, INC.	Latitude 40°51'53.57978" N	Longitude 73°48'08.19224" W	Ellipsoid Ht. -28.773 (Meters)	Geoid Ht. -31.209 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999729912	Northing (UTM 18) 4524448.320 (Meters)	Easting (UTM 18) 600936.951 (Meters)	Elevation 2.436 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Bronx County, New York				Station Description Site ID 8 QA/QC # 3008	
Date of Survey 12/10/2013				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°53'02.63521" N	Longitude 73°50'54.69955" W	Ellipsoid Ht. 10.435 (Meters)	Geoid Ht. -31.248 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999714208	Northing (UTM 18) 4526525.436 (Meters)	Easting (UTM 18) 597011.024 (Meters)	Elevation 41.683 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Bronx County, New York				Station Description Site ID 8 QA/QC # 5008	
Date of Survey 12/10/2013				Ground Type Brush	
Established by WOOLPERT, INC.	Latitude 40°51'53.32685" N	Longitude 73°48'09.46530" W	Ellipsoid Ht. -30.088 (Meters)	Geoid Ht. -31.210 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999730044	Northing (UTM 18) 4524440.113 (Meters)	Easting (UTM 18) 600907.256 (Meters)	Elevation 1.122 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Bronx County, New York				Station Description Site ID 8 QA/QC # 6008	
Date of Survey 12/10/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°51'53.32199" N	Longitude 73°48'11.90013" W	Ellipsoid Ht. -26.628 (Meters)	Geoid Ht. -31.211 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999729361	Northing (UTM 18) 4524439.183 (Meters)	Easting (UTM 18) 600850.258 (Meters)	Elevation 4.583 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Bronx County, New York				Station Description Site ID 8 QA/QC # 6008A	
Date of Survey 12/10/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°51'53.83792" N	Longitude 73°48'11.30457" W	Ellipsoid Ht. -28.715 (Meters)	Geoid Ht. -31.210 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999729721	Northing (UTM 18) 4524455.283 (Meters)	Easting (UTM 18) 600863.983 (Meters)	Elevation 2.495 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 9 QA/QC # 2009	
Date of Survey 12/10/2013				Ground Type Bare Earth	
Established by WOOLPERT, INC.	Latitude 40°46'49.82482" N	Longitude 73°55'17.76067" W	Ellipsoid Ht. -26.400 (Meters)	Geoid Ht. -31.556 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999706055	Northing (UTM 18) 4514951.080 (Meters)	Easting (UTM 18) 590996.078 (Meters)	Elevation 5.156 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 9 QA/QC # 3009	
Date of Survey 12/10/2013				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°46'41.39333" N	Longitude 73°54'09.89210" W	Ellipsoid Ht. -26.965 (Meters)	Geoid Ht. -31.522 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999709746	Northing (UTM 18) 4514710.820 (Meters)	Easting (UTM 18) 592590.135 (Meters)	Elevation 4.556 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description Site ID 9 QA/QC # 5009	
Date of Survey 12/10/2013				Ground Type Brush	
Established by WOOLPERT, INC.	Latitude 40°35'05.79476" N	Longitude 73°59'23.86704" W	Ellipsoid Ht. -29.332 (Meters)	Geoid Ht. -32.159 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999694528	Northing (UTM 18) 4493173.639 (Meters)	Easting (UTM 18) 585476.973 (Meters)	Elevation 2.828 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 9 QA/QC # 6009	
Date of Survey 12/10/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°46'48.78052" N	Longitude 73°55'17.85898" W	Ellipsoid Ht. -25.696 (Meters)	Geoid Ht. -31.556 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.99970594	Northing (UTM 18) 4514918.850 (Meters)	Easting (UTM 18) 590994.169 (Meters)	Elevation 5.860 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 9 QA/QC # 6009A	
Date of Survey 12/10/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°46'48.09819" N	Longitude 73°55'18.80503" W	Ellipsoid Ht. -25.730 (Meters)	Geoid Ht. -31.557 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999705897	Northing (UTM 18) 4514897.538 (Meters)	Easting (UTM 18) 590972.253 (Meters)	Elevation 5.828 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 10 QA/QC # 2010	
Date of Survey 12/16/2013				Ground Type Bare Earth (Ball field)	
Established by WOOLPERT, INC.	Latitude 40°44'24.21959" N	Longitude 73°44'05.44116" W	Ellipsoid Ht. 5.698 (Meters)	Geoid Ht. -31.496 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999739566	Northing (UTM 18) 4510671.764 (Meters)	Easting (UTM 18) 606819.714 (Meters)	Elevation 37.194 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 10 QA/QC # 3010	
Date of Survey 12/16/2013				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°44'28.91448" N	Longitude 73°43'45.08366" W	Ellipsoid Ht. 6.101 (Meters)	Geoid Ht. -31.490 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999740756	Northing (UTM 18) 4510823.431 (Meters)	Easting (UTM 18) 607295.081 (Meters)	Elevation 37.591 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 10 QA/QC # 5010	
Date of Survey 12/16/2013				Ground Type Brush	
Established by WOOLPERT, INC.	Latitude 40°45'52.76342"N	Longitude 73°44'50.16871"W	Ellipsoid Ht. -25.890 (Meters)	Geoid Ht. -31.411 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999741663	Northing (UTM 18) 4513387.033 (Meters)	Easting (UTM 18) 605731.702 (Meters)	Elevation 5.521 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:

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Photogrammetric Ground Control Information Sheet

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 10 QA/QC # 6010	
Date of Survey 12/20/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°45'53.27587"N	Longitude 73°44'48.54891"W	Ellipsoid Ht. -22.878 (Meters)	Geoid Ht. -31.410 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.99974129	Northing (UTM 18) 4513403.377 (Meters)	Easting (UTM 18) 605769.453 (Meters)	Elevation 8.532 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 10 QA/QC # 6010A	
Date of Survey 12/20/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°45'53.66164"N	Longitude 73°44'48.41467"W	Ellipsoid Ht. -22.536 (Meters)	Geoid Ht. -31.410 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999741244	Northing (UTM 18) 4513415.318 (Meters)	Easting (UTM 18) 605772.430 (Meters)	Elevation 8.874 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 11 QA/QC # 2011	
Date of Survey 12/11/2013				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°35'48.05846"N	Longitude 73°44'16.51507"W	Ellipsoid Ht. -30.068 (Meters)	Geoid Ht. -32.072 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999745087	Northing (UTM 18) 4494752.025 (Meters)	Easting (UTM 18) 606788.496 (Meters)	Elevation 2.004 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 11 QA/QC # 3011	
Date of Survey 12/11/2013				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°35'47.14719"N	Longitude 73°44'16.05354"W	Ellipsoid Ht. -30.001 (Meters)	Geoid Ht. -32.073 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999745106	Northing (UTM 18) 4494724.081 (Meters)	Easting (UTM 18) 606799.747 (Meters)	Elevation 2.072 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 11 QA/QC # 5011	
Date of Survey 12/11/2013				Ground Type Brush	
Established by WOOLPERT, INC.	Latitude 40°35'49.20773"N	Longitude 73°44'35.70124"W	Ellipsoid Ht. -30.063 (Meters)	Geoid Ht. -32.079 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999743902	Northing (UTM 18) 4494781.011 (Meters)	Easting (UTM 18) 606337.033 (Meters)	Elevation 2.016 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 11 QA/QC # 6011	
Date of Survey 12/11/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°35'48.14789"N	Longitude 73°44'34.13961"W	Ellipsoid Ht. -29.801 (Meters)	Geoid Ht. -32.079 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999743958	Northing (UTM 18) 4494748.855 (Meters)	Easting (UTM 18) 606374.205 (Meters)	Elevation 2.278 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 11 QA/QC # 6011A	
Date of Survey 12/11/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°35'48.30213"N	Longitude 73°44'33.15481"W	Ellipsoid Ht. -29.926 (Meters)	Geoid Ht. -32.078 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999744038	Northing (UTM 18) 4494753.941 (Meters)	Easting (UTM 18) 606397.284 (Meters)	Elevation 2.153 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 12 QA/QC # 2012	
Date of Survey 12/11/2013				Ground Type Bare Earth (Ball Field)	
Established by WOOLPERT, INC.	Latitude 40°33'36.48172"N	Longitude 73°55'05.30525"W	Ellipsoid Ht. -30.442 (Meters)	Geoid Ht. -32.297 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999708026	Northing (UTM 18) 4490491.909 (Meters)	Easting (UTM 18) 591589.089 (Meters)	Elevation 1.856 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 12 QA/QC # 3012	
Date of Survey 12/11/2013				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°33'32.03573"N	Longitude 73°55'08.00458"W	Ellipsoid Ht. -29.933 (Meters)	Geoid Ht. -32.302 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999707807	Northing (UTM 18) 4490354.040 (Meters)	Easting (UTM 18) 591527.292 (Meters)	Elevation 2.368 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 12 QA/QC # 5012	
Date of Survey 12/11/2013				Ground Type Brush	
Established by WOOLPERT, INC.	Latitude 40°33'47.55121"N	Longitude 73°54'37.69019"W	Ellipsoid Ht. -30.694 (Meters)	Geoid Ht. -32.288 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999709525	Northing (UTM 18) 4490841.234 (Meters)	Easting (UTM 18) 592234.286 (Meters)	Elevation 1.595 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 12 QA/QC # 6012	
Date of Survey 12/11/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°33'48.77723"N	Longitude 73°54'37.65078"W	Ellipsoid Ht. -30.430 (Meters)	Geoid Ht. -32.287 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999709485	Northing (UTM 18) 4490879.049 (Meters)	Easting (UTM 18) 592234.745 (Meters)	Elevation 1.857 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 12 QA/QC # 6012A	
Date of Survey 12/11/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°33'49.25443"N	Longitude 73°54'37.65182"W	Ellipsoid Ht. -30.495 (Meters)	Geoid Ht. -32.287 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999709495	Northing (UTM 18) 4490893.763 (Meters)	Easting (UTM 18) 592234.539 (Meters)	Elevation 1.792 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 13 QA/QC # 2013	
Date of Survey 12/10/2013				Ground Type Bare Earth (Ball field)	
Established by WOOLPERT, INC.	Latitude 40°40'02.14970"N	Longitude 73°48'29.17104"W	Ellipsoid Ht. -26.701 (Meters)	Geoid Ht. -31.832 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999729114	Northing (UTM 18) 4502504.166 (Meters)	Easting (UTM 18) 600743.869 (Meters)	Elevation 5.131 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 13 QA/QC # 2013A	
Date of Survey 12/11/2013				Ground Type Bare Earth (Ball field)	
Established by WOOLPERT, INC.	Latitude 40°40'02.16629"N	Longitude 73°48'29.13415"W	Ellipsoid Ht. -26.750 (Meters)	Geoid Ht. -31.832 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999729124	Northing (UTM 18) 4502504.690 (Meters)	Easting (UTM 18) 600744.728 (Meters)	Elevation 5.082 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 13 QA/QC # 3013	
Date of Survey 12/10/2013				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°40'03.79539"N	Longitude 73°48'31.60699"W	Ellipsoid Ht. -27.758 (Meters)	Geoid Ht. -31.829 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999729136	Northing (UTM 18) 4502554.136 (Meters)	Easting (UTM 18) 600685.987 (Meters)	Elevation 4.071 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 13 QA/QC # 3013A	
Date of Survey 12/10/2013				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°40'03.80612"N	Longitude 73°48'31.60695"W	Ellipsoid Ht. -27.809 (Meters)	Geoid Ht. -31.829 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999729144	Northing (UTM 18) 4502554.467 (Meters)	Easting (UTM 18) 600685.983 (Meters)	Elevation 4.020 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 13 QA/QC # 5013	
Date of Survey 12/11/2013				Ground Type Brush	
Established by WOOLPERT, INC.	Latitude 40°39'10.65253"N	Longitude 73°45'37.91939"W	Ellipsoid Ht. -27.884 (Meters)	Geoid Ht. -31.895 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.99973953	Northing (UTM 18) 4500971.843 (Meters)	Easting (UTM 18) 604787.146 (Meters)	Elevation 4.011 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 13 QA/QC # 6013	
Date of Survey 12/11/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°39'09.72753"N	Longitude 73°45'37.61405"W	Ellipsoid Ht. -27.240 (Meters)	Geoid Ht. -31.896 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999739449	Northing (UTM 18) 4500943.421 (Meters)	Easting (UTM 18) 604794.719 (Meters)	Elevation 4.656 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 13 QA/QC # 6013A	
Date of Survey 12/11/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°39'09.60969"N	Longitude 73°45'37.13874"W	Ellipsoid Ht. -27.155 (Meters)	Geoid Ht. -31.896 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999739465	Northing (UTM 18) 4500939.945 (Meters)	Easting (UTM 18) 604805.933 (Meters)	Elevation 4.741 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description Site ID 14 QA/QC # 2014	
Date of Survey 12/11/2013				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°35'45.00427"N	Longitude 74°00'06.59213"W	Ellipsoid Ht. -28.191 (Meters)	Geoid Ht. -32.117 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.99969222	Northing (UTM 18) 4494371.192 (Meters)	Easting (UTM 18) 584458.884 (Meters)	Elevation 3.926 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description Site ID 14 QA/QC # 3014	
Date of Survey 12/11/2013				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°35'42.58914"N	Longitude 74°00'03.13758"W	Ellipsoid Ht. -29.230 (Meters)	Geoid Ht. -32.120 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999692553	Northing (UTM 18) 4494297.644 (Meters)	Easting (UTM 18) 584540.926 (Meters)	Elevation 2.890 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



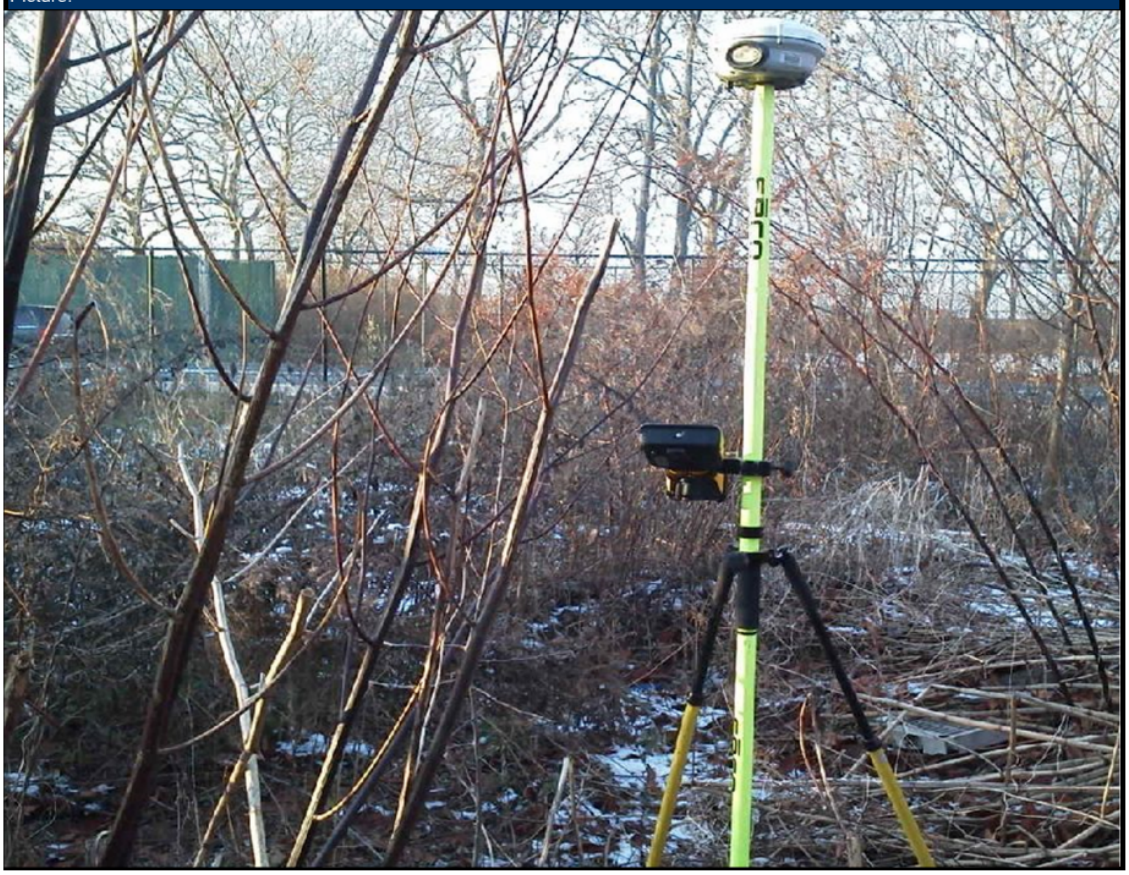
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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description Site ID 14 QA/QC # 5014	
Date of Survey 12/11/2013				Ground Type Brush	
Established by WOOLPERT, INC.	Latitude 40°35'13.15532"N	Longitude 73°59'40.45687"W	Ellipsoid Ht. -29.963 (Meters)	Geoid Ht. -32.150 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999693803	Northing (UTM 18) 4493396.135 (Meters)	Easting (UTM 18) 585084.387 (Meters)	Elevation 2.187 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



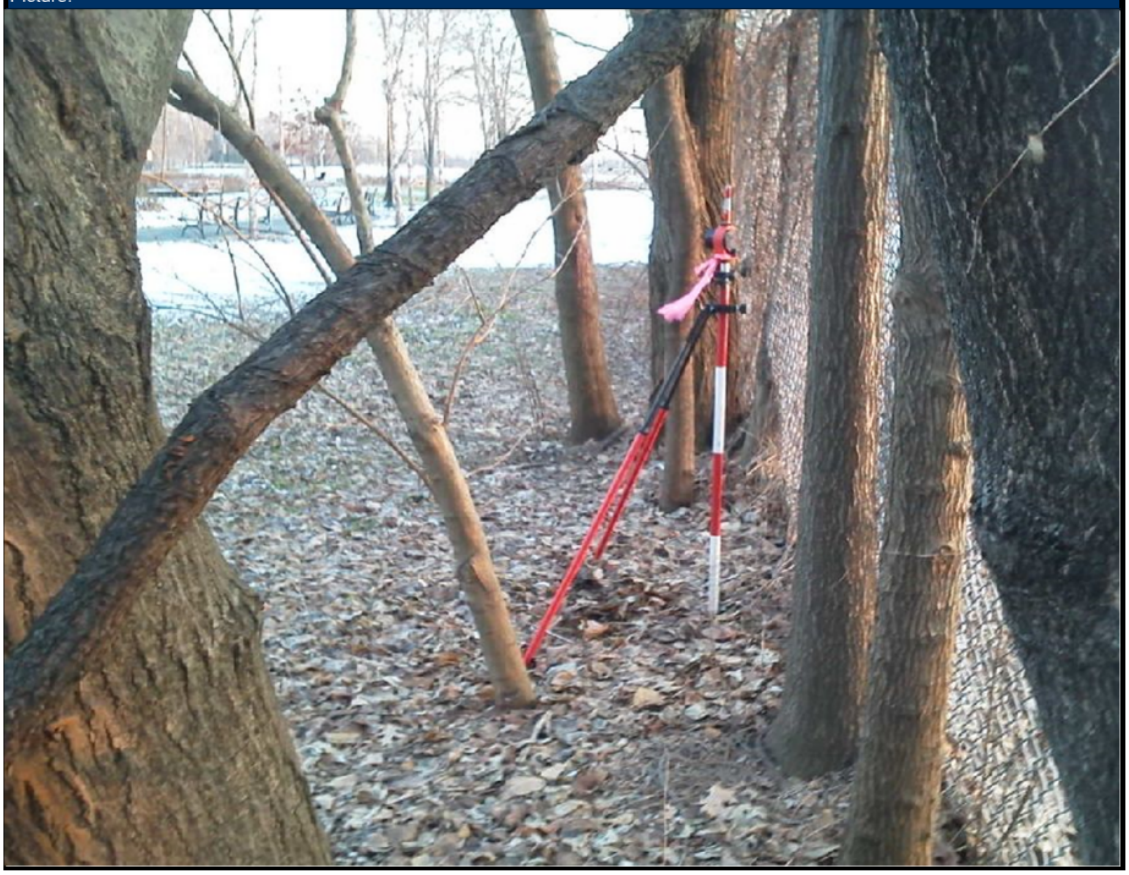
Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description Site ID 14 QA/QC # 6014	
Date of Survey 12/11/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°35'14.48805"N	Longitude 73°59'35.25428"W	Ellipsoid Ht. -28.656 (Meters)	Geoid Ht. -32.149 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999693853	Northing (UTM 18) 4493438.627 (Meters)	Easting (UTM 18) 585206.216 (Meters)	Elevation 3.493 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description Site ID 14 QA/QC # 6014A	
Date of Survey 12/11/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°35'14.38551"N	Longitude 73°59'33.02497"W	Ellipsoid Ht. -29.585 (Meters)	Geoid Ht. -32.150 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999694109	Northing (UTM 18) 4493436.064 (Meters)	Easting (UTM 18) 585258.657 (Meters)	Elevation 2.565 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description Site ID 15 QA/QC # 2015	
Date of Survey 12/10/2013				Ground Type Bare Earth (Ball field)	
Established by WOOLPERT, INC.	Latitude 40°41'50.20009"N	Longitude 73°58'47.61258"W	Ellipsoid Ht. -27.471 (Meters)	Geoid Ht. -31.822 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.99969573	Northing (UTM 18) 4505653.219 (Meters)	Easting (UTM 18) 586184.627 (Meters)	Elevation 4.350 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description Site ID 15 QA/QC # 3015	
Date of Survey 12/10/2013				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°41'52.11993"N	Longitude 73°58'47.36078"W	Ellipsoid Ht. -28.156 (Meters)	Geoid Ht. -31.821 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999695848	Northing (UTM 18) 4505712.486 (Meters)	Easting (UTM 18) 586189.849 (Meters)	Elevation 3.664 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 16 QA/QC # 2016	
Date of Survey 12/6/2013				Ground Type Bare Earth (Ball field)	
Established by WOOLPERT, INC.	Latitude 40°38'34.71920"N	Longitude 74°06'35.75954"W	Ellipsoid Ht. -25.559 (Meters)	Geoid Ht. -32.164 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999673718	Northing (UTM 18) 4499506.179 (Meters)	Easting (UTM 18) 575258.905 (Meters)	Elevation 6.605 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 16 QA/QC # 3016	
Date of Survey 12/6/2013				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°38'48.91693"N	Longitude 74°05'22.39845"W	Ellipsoid Ht. -29.447 (Meters)	Geoid Ht. -32.117 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999677547	Northing (UTM 18) 4499961.597 (Meters)	Easting (UTM 18) 576977.449 (Meters)	Elevation 2.670 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 16 QA/QC # 5016	
Date of Survey 12/6/2013				Ground Type Brush	
Established by WOOLPERT, INC.	Latitude 40°40'30.36427"N	Longitude 74°06'05.75635"W	Ellipsoid Ht. -27.969 (Meters)	Geoid Ht. -32.129 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999675338	Northing (UTM 18) 4503079.227 (Meters)	Easting (UTM 18) 575927.174 (Meters)	Elevation 4.161 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 16 QA/QC # 6016	
Date of Survey 12/6/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°38'34.63852"N	Longitude 74°06'32.43872"W	Ellipsoid Ht. -26.457 (Meters)	Geoid Ht. -32.162 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999674003	Northing (UTM 18) 4499504.481 (Meters)	Easting (UTM 18) 575336.929 (Meters)	Elevation 5.705 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 16 QA/QC # 6016A	
Date of Survey 12/6/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°38'35.64820"N	Longitude 74°06'32.69862"W	Ellipsoid Ht. -26.469 (Meters)	Geoid Ht. -32.162 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999673993	Northing (UTM 18) 4499535.552 (Meters)	Easting (UTM 18) 575330.509 (Meters)	Elevation 5.693 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 17 QA/QC # 2017	
Date of Survey 12/5/2013				Ground Type Low Grass	
Established by WOOLPERT, INC.	Latitude 40°31'05.79187"N	Longitude 74°11'20.05383"W	Ellipsoid Ht. -26.630 (Meters)	Geoid Ht. -32.359 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.99966228	Northing (UTM 18) 4485599.292 (Meters)	Easting (UTM 18) 568709.014 (Meters)	Elevation 5.729 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 17 QA/QC # 3017	
Date of Survey 12/5/2013				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°30'47.41865"N	Longitude 74°11'48.52055"W	Ellipsoid Ht. -30.228 (Meters)	Geoid Ht. -32.371 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999661724	Northing (UTM 18) 4485026.644 (Meters)	Easting (UTM 18) 568044.319 (Meters)	Elevation 2.143 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 17 QA/QC # 4017	
Date of Survey 12/5/2013				Ground Type Tall Grass	
Established by WOOLPERT, INC.	Latitude 40°30'46.51026"N	Longitude 74°11'47.24827"W	Ellipsoid Ht. -29.476 (Meters)	Geoid Ht. -32.371 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999661657	Northing (UTM 18) 4484998.907 (Meters)	Easting (UTM 18) 568074.515 (Meters)	Elevation 2.895 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 17 QA/QC # 5017	
Date of Survey 12/5/2013				Ground Type Long Grass	
Established by WOOLPERT, INC.	Latitude 40°31'08.88305"N	Longitude 74°11'20.89990"W	Ellipsoid Ht. -24.832 (Meters)	Geoid Ht. -32.359 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999661963	Northing (UTM 18) 4485694.422 (Meters)	Easting (UTM 18) 568688.229 (Meters)	Elevation 7.527 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 17 QA/QC # 6017	
Date of Survey 12/6/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°31'05.14620"N	Longitude 74°11'26.45294"W	Ellipsoid Ht. -22.676 (Meters)	Geoid Ht. -32.361 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999661407	Northing (UTM 18) 4485578.000 (Meters)	Easting (UTM 18) 568558.618 (Meters)	Elevation 9.685 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 17 QA/QC # 6017A	
Date of Survey 12/6/2013				Ground Type Trees	
Established by WOOLPERT, INC.	Latitude 40°31'05.55991"N	Longitude 74°11'24.42205"W	Ellipsoid Ht. -24.736 (Meters)	Geoid Ht. -32.361 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.99966181	Northing (UTM 18) 4485591.195 (Meters)	Easting (UTM 18) 568606.291 (Meters)	Elevation 7.625 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description QA/QC # BE OT 1	
Date of Survey 5/7/2014				Ground Type Bare Earth (Ball field)	
Established by WOOLPERT, INC.	Latitude 40°34'44.05488"N	Longitude 73°59'43.26410"W	Ellipsoid Ht. -29.000 (Meters)	Geoid Ht. -32.178 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999693535	Northing (UTM 18) 4492498.085 (Meters)	Easting (UTM 18) 585028.633 (Meters)	Elevation 3.178 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description QA/QC # BE OT 2	
Date of Survey 5/7/2014				Ground Type Bare Earth	
Established by WOOLPERT, INC.	Latitude 40°37'38.25872"N	Longitude 74°08'04.57235"W	Ellipsoid Ht. -25.899 (Meters)	Geoid Ht. -32.224 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999669991	Northing (UTM 18) 4497744.430 (Meters)	Easting (UTM 18) 573190.035 (Meters)	Elevation 6.325 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description QA/QC # BE OT 3	
Date of Survey 5/7/2014				Ground Type Bare Earth (Ball field)	
Established by WOOLPERT, INC.	Latitude 40°36'05.43663"N	Longitude 74°11'01.51900"W	Ellipsoid Ht. -29.202 (Meters)	Geoid Ht. -32.338 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999663276	Northing (UTM 18) 4494842.592 (Meters)	Easting (UTM 18) 569059.567 (Meters)	Elevation 3.136 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description QA/QC # BE OT 4	
Date of Survey 5/7/2014				Ground Type Bare Earth (Ball field)	
Established by WOOLPERT, INC.	Latitude 40°30'34.10197"N	Longitude 74°13'55.65708"W	Ellipsoid Ht. -16.816 (Meters)	Geoid Ht. -32.428 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999654729	Northing (UTM 18) 4484589.391 (Meters)	Easting (UTM 18) 565055.999 (Meters)	Elevation 15.612 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description QA/QC # BE OT 5	
Date of Survey 5/7/2014				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°34'40.84738"N	Longitude 73°55'55.99267"W	Ellipsoid Ht. -28.198 (Meters)	Geoid Ht. -32.219 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.99970495	Northing (UTM 18) 4492462.050 (Meters)	Easting (UTM 18) 590373.025 (Meters)	Elevation 4.021 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description QA/QC # BE OT 6	
Date of Survey 5/7/2014				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°36'04.87744"N	Longitude 74°05'37.42882"W	Ellipsoid Ht. 2.599 (Meters)	Geoid Ht. -32.161 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999671963	Northing (UTM 18) 4494899.868 (Meters)	Easting (UTM 18) 576676.538 (Meters)	Elevation 34.760 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description QA/QC # BE OT 7	
Date of Survey 5/7/2014				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°38'53.45854"N	Longitude 74°00'19.73952"W	Ellipsoid Ht. 16.455 (Meters)	Geoid Ht. -31.967 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999684453	Northing (UTM 18) 4500178.618 (Meters)	Easting (UTM 18) 584084.190 (Meters)	Elevation 48.422 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description QA/QC # BE OT 8	
Date of Survey 5/7/2014				Ground Type Bare Earth (Ball field)	
Established by WOOLPERT, INC.	Latitude 40°40'28.63914"N	Longitude 73°56'08.00870"W	Ellipsoid Ht. -5.762 (Meters)	Geoid Ht. -31.817 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999700521	Northing (UTM 18) 4503182.714 (Meters)	Easting (UTM 18) 589960.782 (Meters)	Elevation 26.055 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description QA/QC # URBAN 1	
Date of Survey 5/7/2014				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°31'25.23146"N	Longitude 74°14'20.39783"W	Ellipsoid Ht. -23.083 (Meters)	Geoid Ht. -32.446 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999654759	Northing (UTM 18) 4486160.862 (Meters)	Easting (UTM 18) 564460.141 (Meters)	Elevation 9.363 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



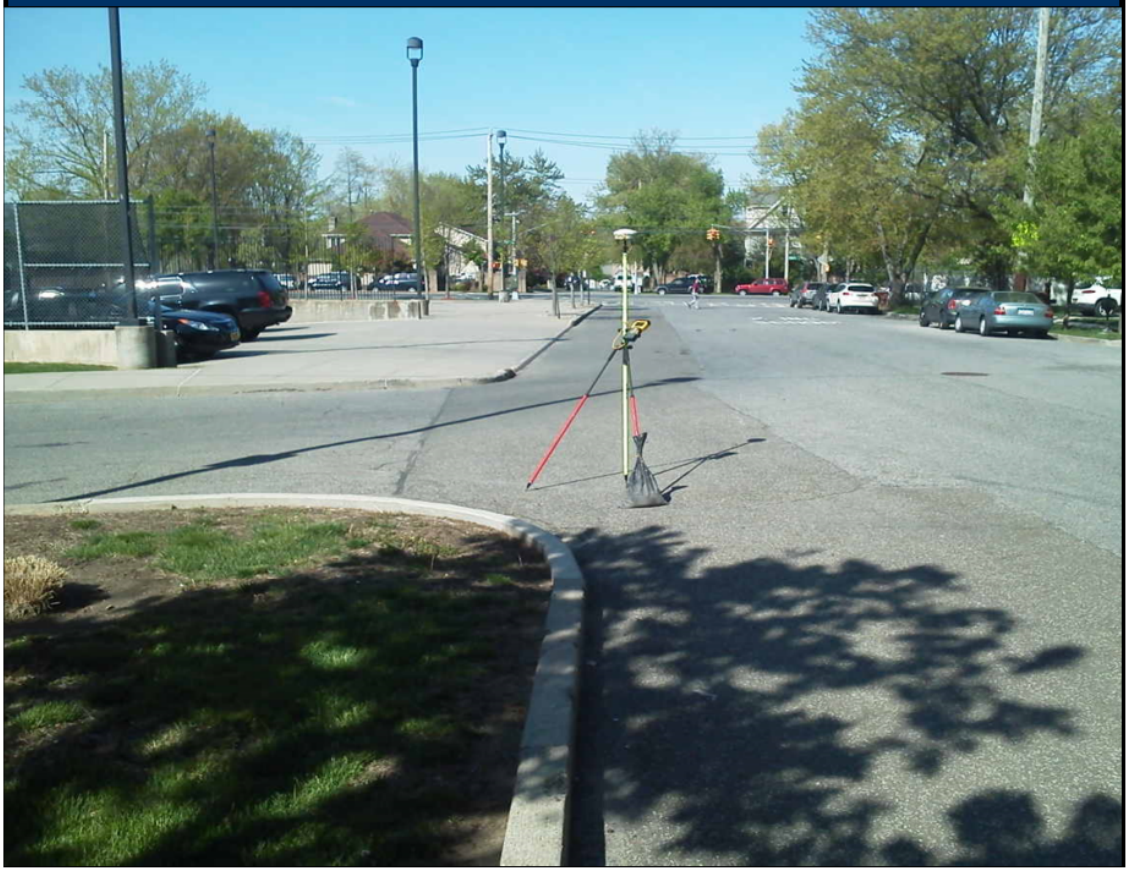
Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description QA/QC # URBAN 2	
Date of Survey 5/7/2014				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°33'38.03609"N	Longitude 74°10'12.03070"W	Ellipsoid Ht. -28.183 (Meters)	Geoid Ht. -32.315 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999665185	Northing (UTM 18) 4490308.485 (Meters)	Easting (UTM 18) 570265.476 (Meters)	Elevation 4.132 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description QA/QC # URBAN 2A	
Date of Survey 5/7/2014				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°30'39.94992"N	Longitude 74°13'48.87568"W	Ellipsoid Ht. -14.970 (Meters)	Geoid Ht. -32.425 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999654693	Northing (UTM 18) 4484771.097 (Meters)	Easting (UTM 18) 565214.020 (Meters)	Elevation 17.455 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:

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NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description QA/QC # URBAN 3	
Date of Survey 5/7/2014				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°37'37.72599"N	Longitude 74°08'05.58846"W	Ellipsoid Ht. -25.743 (Meters)	Geoid Ht. -32.225 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999669924	Northing (UTM 18) 4497727.768 (Meters)	Easting (UTM 18) 573166.325 (Meters)	Elevation 6.482 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description QA/QC # URBAN 4	
Date of Survey 5/7/2014				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°36'03.93850"N	Longitude 74°05'36.05537"W	Ellipsoid Ht. 1.914 (Meters)	Geoid Ht. -32.161 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999672132	Northing (UTM 18) 4494871.248 (Meters)	Easting (UTM 18) 576709.115 (Meters)	Elevation 34.075 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description QA/QC # URBAN 5	
Date of Survey 5/7/2014				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°36'05.32908"N	Longitude 74°11'33.73866"W	Ellipsoid Ht. -29.711 (Meters)	Geoid Ht. -32.360 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999662075	Northing (UTM 18) 4494832.294 (Meters)	Easting (UTM 18) 568302.370 (Meters)	Elevation 2.650 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description QA/QC # URBAN 6	
Date of Survey 5/7/2014				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°38'54.62259"N	Longitude 74°00'23.06713"W	Ellipsoid Ht. 6.330 (Meters)	Geoid Ht. -31.968 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999685875	Northing (UTM 18) 4500213.628 (Meters)	Easting (UTM 18) 584005.633 (Meters)	Elevation 38.298 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



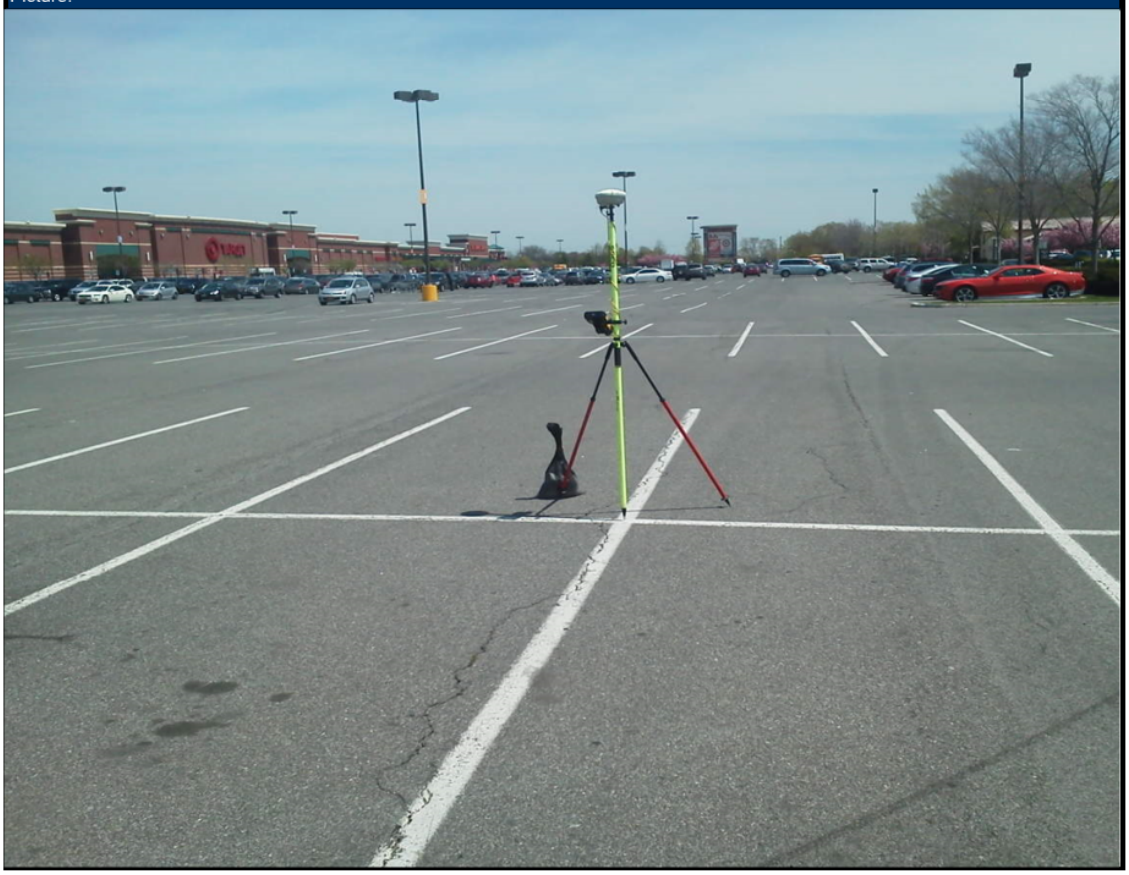
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USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description QA/QC # URBAN 7	
Date of Survey 5/7/2014				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°39'03.86723"N	Longitude 73°52'16.47984"W	Ellipsoid Ht. -27.807 (Meters)	Geoid Ht. -31.899 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999716454	Northing (UTM 18) 4500636.579 (Meters)	Easting (UTM 18) 595429.875 (Meters)	Elevation 4.092 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



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USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description QA/QC # URBAN 10	
Date of Survey 5/7/2014				Ground Type Urban	
Established by WOOLPERT, INC.	Latitude 40°40'46.88681"N	Longitude 73°55'42.83939"W	Ellipsoid Ht. -15.694 (Meters)	Geoid Ht. -31.796 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999703373	Northing (UTM 18) 4503752.562 (Meters)	Easting (UTM 18) 590544.815 (Meters)	Elevation 16.101 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Bronx County, New York				Station Description Site ID 8 Lidar Control Point # 1008	
Date of Survey 12/10/2013				Ground Type Asphalt	
Established by WOOLPERT, INC.	Latitude 40°53'02.71073"N	Longitude 73°50'53.45457"W	Ellipsoid Ht. 10.709 (Meters)	Geoid Ht. -31.248 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999714234	Northing (UTM 18) 4526528.148 (Meters)	Easting (UTM 18) 597040.129 (Meters)	Elevation 41.957 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Bronx County, New York				Station Description Site ID 9 Lidar Control Point # 1009	
Date of Survey 12/10/2013				Ground Type Asphalt	
Established by WOOLPERT, INC.	Latitude 40°46'50.16492"N	Longitude 73°55'19.51036"W	Ellipsoid Ht. -27.901 (Meters)	Geoid Ht. -31.557 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999706198	Northing (UTM 18) 4514961.063 (Meters)	Easting (UTM 18) 590954.937 (Meters)	Elevation 3.656 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 10 Lidar Control Point # 1010	
Date of Survey 12/10/2013				Ground Type Asphalt	
Established by WOOLPERT, INC.	Latitude 40°44'23.38591"N	Longitude 73°44'04.59051"W	Ellipsoid Ht. 5.037 (Meters)	Geoid Ht. -31.497 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999739723	Northing (UTM 18) 4510646.344 (Meters)	Easting (UTM 18) 606840.035 (Meters)	Elevation 36.534 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



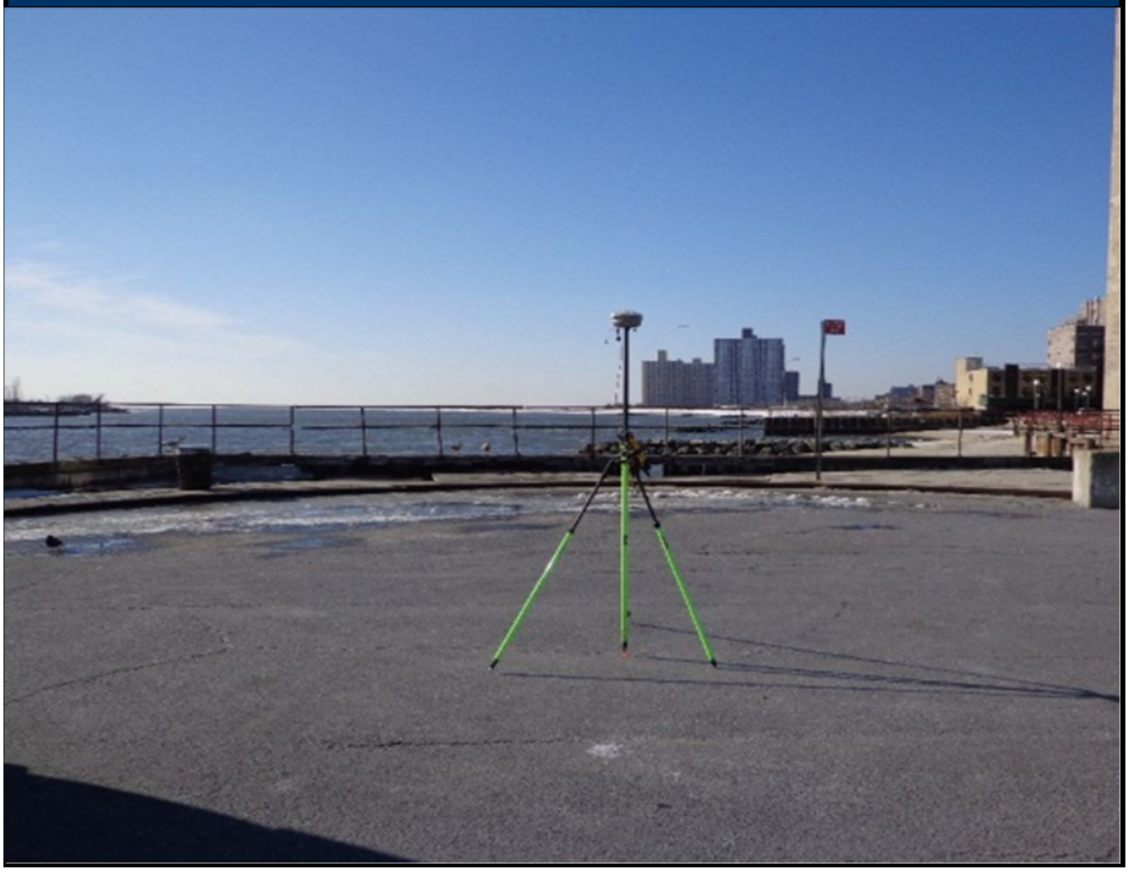
Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 11 Lidar Control Point # 1011	
Date of Survey 12/11/2013				Ground Type Asphalt	
Established by WOOLPERT, INC.	Latitude 40°35'41.27405"N	Longitude 73°44'27.17324"W	Ellipsoid Ht. -30.015 (Meters)	Geoid Ht. -32.081 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999744429	Northing (UTM 18) 4494539.241 (Meters)	Easting (UTM 18) 606540.976 (Meters)	Elevation 2.066 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 12 Lidar Control Point # 1012	
Date of Survey 12/11/2013				Ground Type Asphalt	
Established by WOOLPERT, INC.	Latitude 40°33'37.18360"N	Longitude 73°55'00.87451"W	Ellipsoid Ht. -30.371 (Meters)	Geoid Ht. -32.297 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999708249	Northing (UTM 18) 4490514.832 (Meters)	Easting (UTM 18) 591693.020 (Meters)	Elevation 1.926 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 13 Lidar Control Point # 1013	
Date of Survey 12/10/2013				Ground Type Asphalt	
Established by WOOLPERT, INC.	Latitude 40°40'02.42370"N	Longitude 73°48'26.45471"W	Ellipsoid Ht. -26.419 (Meters)	Geoid Ht. -31.831 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999729228	Northing (UTM 18) 4502513.480 (Meters)	Easting (UTM 18) 600807.532 (Meters)	Elevation 5.413 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description Site ID 14 Lidar Control Point # 1014	
Date of Survey 12/11/2013				Ground Type Manhole Cover	
Established by WOOLPERT, INC.	Latitude 40°35'44.29285"N	Longitude 74°00'02.62152"W	Ellipsoid Ht. -29.285 (Meters)	Geoid Ht. -32.118 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999692586	Northing (UTM 18) 4494350.315 (Meters)	Easting (UTM 18) 584552.459 (Meters)	Elevation 2.833 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description Site ID 15 Lidar Control Point # 1015	
Date of Survey 12/10/2013				Ground Type Asphalt	
Established by WOOLPERT, INC.	Latitude 40°41'52.58879"N	Longitude 73°58'44.10033"W	Ellipsoid Ht. -28.255 (Meters)	Geoid Ht. -31.819 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999696026	Northing (UTM 18) 4505727.832 (Meters)	Easting (UTM 18) 586266.198 (Meters)	Elevation 3.563 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 16 Lidar Control Point # 1016	
Date of Survey 12/6/2013				Ground Type Asphalt	
Established by WOOLPERT, INC.	Latitude 40°38'50.50810"N	Longitude 74°05'19.35609"W	Ellipsoid Ht. -29.327 (Meters)	Geoid Ht. -32.115 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999677663	Northing (UTM 18) 4500011.400 (Meters)	Easting (UTM 18) 577048.394 (Meters)	Elevation 2.788 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 17 Lidar Control Point # 1017	
Date of Survey 12/5/2013				Ground Type Asphalt	
Established by WOOLPERT, INC.	Latitude 40°31'06.01760"N	Longitude 74°11'20.74472"W	Ellipsoid Ht. -26.301 (Meters)	Geoid Ht. -32.359 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999662201	Northing (UTM 18) 4485606.102 (Meters)	Easting (UTM 18) 568692.693 (Meters)	Elevation 6.058 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 17 Survey Control Point # 211	
Date of Survey 12/5/2013				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°31'09.30504"N	Longitude 74°11'18.39840"W	Ellipsoid Ht. -24.717 (Meters)	Geoid Ht. -32.358 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999662045	Northing (UTM 18) 4485707.975 (Meters)	Easting (UTM 18) 568746.971 (Meters)	Elevation 7.641 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 17 Survey Control Point # 212	
Date of Survey 12/5/2013				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°31'09.26012"N	Longitude 74°11'21.10902"W	Ellipsoid Ht. -24.712 (Meters)	Geoid Ht. -32.359 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999661936	Northing (UTM 18) 4485706.003 (Meters)	Easting (UTM 18) 568683.201 (Meters)	Elevation 7.647 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 17 Survey Control Point # 213	
Date of Survey 12/6/2013				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°31'03.90918"N	Longitude 74°11'24.98638"W	Ellipsoid Ht. -26.227 (Meters)	Geoid Ht. -32.361 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999662021	Northing (UTM 18) 4485540.175 (Meters)	Easting (UTM 18) 568593.479 (Meters)	Elevation 6.134 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 17 Survey Control Point # 214	
Date of Survey 12/6/2013				Ground Type Concrete	
Established by WOOLPERT, INC.	Latitude 40°31'01.79505"N	Longitude 74°11'23.64511"W	Ellipsoid Ht. -27.347 (Meters)	Geoid Ht. -32.360 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999662251	Northing (UTM 18) 4485475.277 (Meters)	Easting (UTM 18) 568625.639 (Meters)	Elevation 5.014 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 16 Survey Control Point # 215	
Date of Survey 12/6/2013				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°38'35.36517"N	Longitude 74°06'36.65139"W	Ellipsoid Ht. -25.553 (Meters)	Geoid Ht. -32.165 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999673678	Northing (UTM 18) 4499525.885 (Meters)	Easting (UTM 18) 575237.757 (Meters)	Elevation 6.611 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Richmond County, New York				Station Description Site ID 16 Survey Control Point # 216	
Date of Survey 12/6/2013				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°38'34.73968"N	Longitude 74°06'33.96826"W	Ellipsoid Ht. -26.059 (Meters)	Geoid Ht. -32.163 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999673874	Northing (UTM 18) 4499507.237 (Meters)	Easting (UTM 18) 575300.972 (Meters)	Elevation 6.104 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



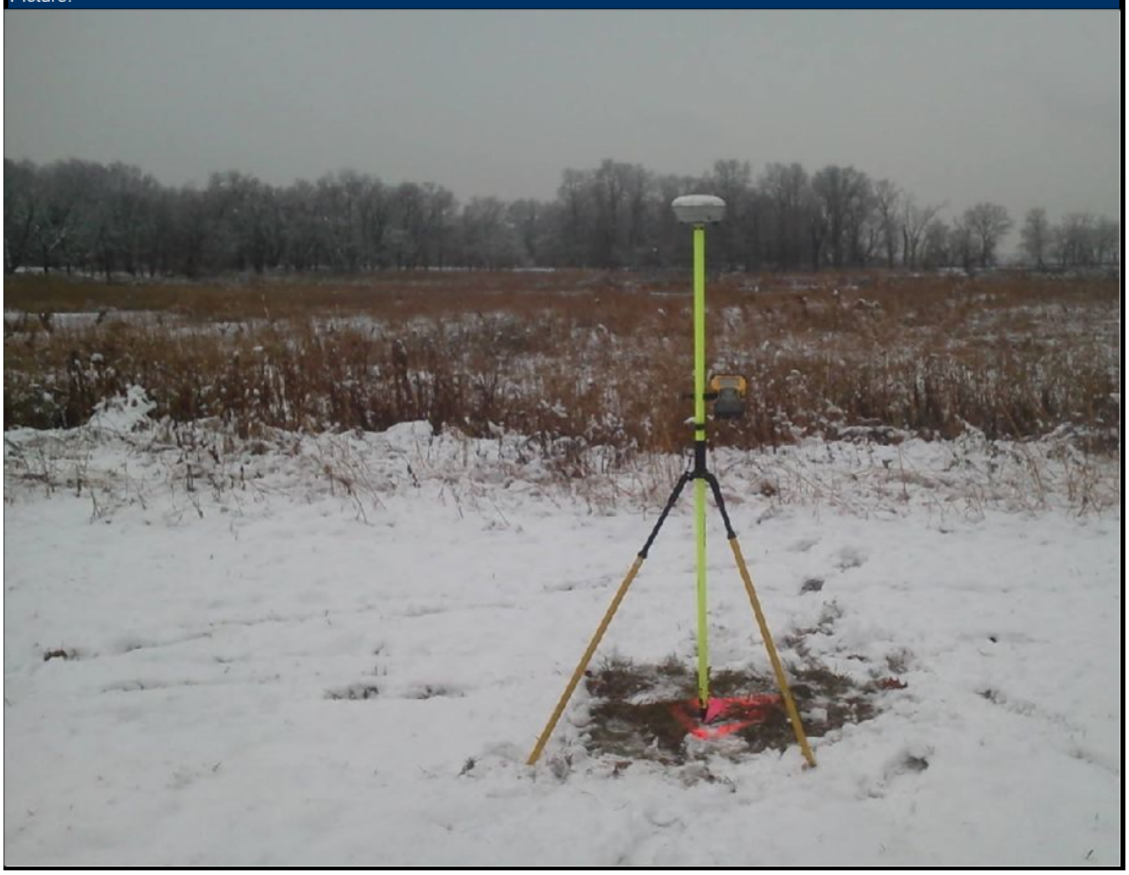
Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Bronx County, New York				Station Description Site ID 8 Survey Control Point # 269	
Date of Survey 12/10/2013				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°51'53.88211"N	Longitude 73°48'10.28656"W	Ellipsoid Ht. -29.112 (Meters)	Geoid Ht. -31.210 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999729843	Northing (UTM 18) 4524456.972 (Meters)	Easting (UTM 18) 600887.796 (Meters)	Elevation 2.098 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 9 Survey Control Point # 270	
Date of Survey 12/10/2013				Ground Type Bare Earth	
Established by WOOLPERT, INC.	Latitude 40°46'48.99097"N	Longitude 73°55'16.08175"W	Ellipsoid Ht. -23.237 (Meters)	Geoid Ht. -31.555 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999705649	Northing (UTM 18) 4514925.852 (Meters)	Easting (UTM 18) 591035.747 (Meters)	Elevation 8.318 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



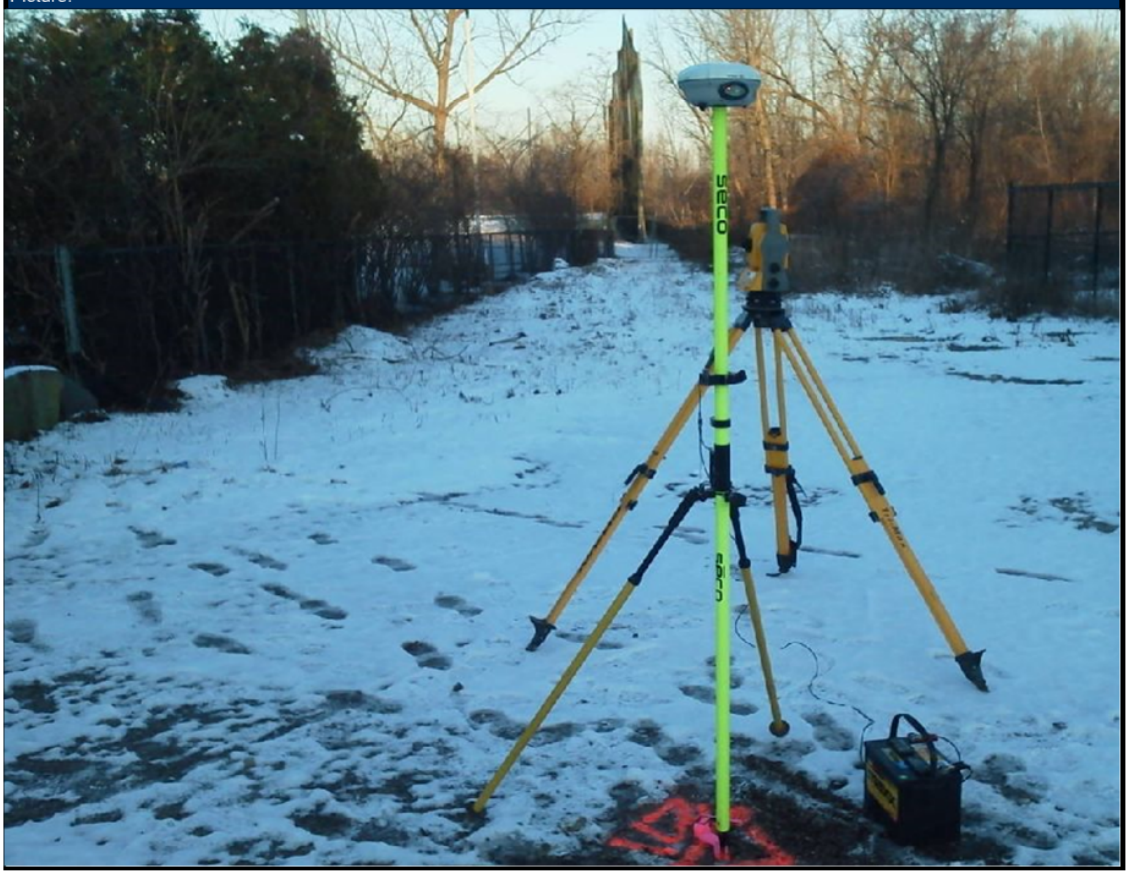
Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 10 Survey Control Point # 271	
Date of Survey 12/11/2013				Ground Type Gravel	
Established by WOOLPERT, INC.	Latitude 40°45'53.10814"N	Longitude 73°44'50.13880"W	Ellipsoid Ht. -25.938 (Meters)	Geoid Ht. -31.411 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999741672	Northing (UTM 18) 4513397.673 (Meters)	Easting (UTM 18) 605732.251 (Meters)	Elevation 5.473 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 10 Survey Control Point # 272	
Date of Survey 12/11/2013				Ground Type Asphalt	
Established by WOOLPERT, INC.	Latitude 40°45'52.36560"N	Longitude 73°44'52.85616"W	Ellipsoid Ht. -27.113 (Meters)	Geoid Ht. -31.412 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999741691	Northing (UTM 18) 4513373.866 (Meters)	Easting (UTM 18) 605668.869 (Meters)	Elevation 4.299 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 13 Survey Control Point # 273	
Date of Survey 12/11/2013				Ground Type Asphalt	
Established by WOOLPERT, INC.	Latitude 40°39'09.48485"N	Longitude 73°45'38.34349"W	Ellipsoid Ht. -27.523 (Meters)	Geoid Ht. -31.896 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999739449	Northing (UTM 18) 4500935.696 (Meters)	Easting (UTM 18) 604777.694 (Meters)	Elevation 4.373 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 13 Survey Control Point # 274	
Date of Survey 12/11/2013				Ground Type Asphalt	
Established by WOOLPERT, INC.	Latitude 40°39'08.18253"N	Longitude 73°45'36.09358"W	Ellipsoid Ht. -27.459 (Meters)	Geoid Ht. -31.898 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999739577	Northing (UTM 18) 4500896.284 (Meters)	Easting (UTM 18) 604831.098 (Meters)	Elevation 4.439 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 11 Survey Control Point # 275	
Date of Survey 12/11/2013				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°35'49.20291"N	Longitude 73°44'34.43528"W	Ellipsoid Ht. -29.724 (Meters)	Geoid Ht. -32.078 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999743927	Northing (UTM 18) 4494781.287 (Meters)	Easting (UTM 18) 606366.791 (Meters)	Elevation 2.354 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 11 Survey Control Point # 276	
Date of Survey 12/11/2013				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°35'48.78957"N	Longitude 73°44'35.86748"W	Ellipsoid Ht. -29.943 (Meters)	Geoid Ht. -32.079 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999743873	Northing (UTM 18) 4494768.061 (Meters)	Easting (UTM 18) 606333.310 (Meters)	Elevation 2.136 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 12 Survey Control Point # 277	
Date of Survey 12/11/2013				Ground Type Asphalt	
Established by WOOLPERT, INC.	Latitude 40°33'46.89211"N	Longitude 73°54'38.06967"W	Ellipsoid Ht. -30.572 (Meters)	Geoid Ht. -32.289 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999709486	Northing (UTM 18) 4490820.801 (Meters)	Easting (UTM 18) 592225.614 (Meters)	Elevation 1.717 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Queens County, New York				Station Description Site ID 12 Survey Control Point # 278	
Date of Survey 12/11/2013				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°33'48.51832"N	Longitude 73°54'38.72590"W	Ellipsoid Ht. -30.536 (Meters)	Geoid Ht. -32.287 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999709444	Northing (UTM 18) 4490870.753 (Meters)	Easting (UTM 18) 592209.562 (Meters)	Elevation 1.751 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description Site ID 14 Survey Control Point # 279	
Date of Survey 12/11/2013				Ground Type Short Grass	
Established by WOOLPERT, INC.	Latitude 40°35'13.94210"N	Longitude 73°59'32.45867"W	Ellipsoid Ht. -29.420 (Meters)	Geoid Ht. -32.150 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999694111	Northing (UTM 18) 4493422.544 (Meters)	Easting (UTM 18) 585272.126 (Meters)	Elevation 2.730 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



Photogrammetric Ground Control Information Sheet

USGS/NGTOC

NEW YORK CMGP SANDY LIDAR PROJECT

County, State Kings County, New York				Station Description Site ID 14 Survey Control Point # 280	
Date of Survey 12/11/2013				Ground Type Asphalt	
Established by WOOLPERT, INC.	Latitude 40°35'12.49600"N	Longitude 73°59'33.00363"W	Ellipsoid Ht. -28.336 (Meters)	Geoid Ht. -32.151 (Meters)	Horizontal Datum NAD 83 (2011)
Combined Scale Factor 0.999693916	Northing (UTM 18) 4493377.808 (Meters)	Easting (UTM 18) 585259.825 (Meters)	Elevation 3.816 (Meters)	Vertical Datum NAVD 88	Geoid Model GEOID 12A

Picture:



SECTION 4: EXISTING CONTROL STATION INFORMATION SHEETS

This contains the published Survey Control information sheets used in the final control network for the 2013 USGS/NGTOC, Task Order: New York CMGP Sandy Lidar project.

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

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PROGRAM = datasheet95, VERSION = 8.3
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 KV6940  DESIGNATION -  12 F 3
 KV6940  PID         -  KV6940
 KV6940  STATE/COUNTY-  NJ/MIDDLESEX
 KV6940  COUNTRY     -  US
 KV6940  USGS QUAD   -  JAMESBURG (1981)
 KV6940
 KV6940                         *CURRENT SURVEY CONTROL
 KV6940  ______________________________________________________________________
 KV6940* NAD 83(2011) POSITION- 40 16 05.51980(N) 074 28 15.26348(W)    ADJUSTED
 KV6940* NAD 83(2011) ELLIP HT-     2.588 (meters)        (06/27/12)    ADJUSTED
 KV6940* NAD 83(2011) EPOCH   -  2010.00
 KV6940* NAVD 88 ORTHO HEIGHT -    35.19   (meters)     115.5    (feet) LEVELING
 KV6940  ______________________________________________________________________
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 KV6940  NAD 83(2011) Z  -  4,100,755.296 (meters)                      COMP
 KV6940  LAPLACE CORR    -          4.62  (seconds)                     DEFLEC12A
 KV6940  VERT ORDER      -  THIRD ?
 KV6940
 KV6940  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 KV6940  Type                                           Horiz  Ellip  Dist(km)
 KV6940  ----------------------------------------------------------------------
 KV6940  NETWORK                                          0.63   0.82
 KV6940  ----------------------------------------------------------------------
 KV6940  MEDIAN LOCAL ACCURACY AND DIST (010 points)    0.69   0.85      3.94
 KV6940  ----------------------------------------------------------------------
 KV6940  NOTE: Click here for information on individual local accuracy
 KV6940  values and other accuracy information.
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 KV6940
 KV6940.The horizontal coordinates were established by GPS observations
 KV6940.and adjusted by the National Geodetic Survey in June 2012.
 KV6940
 KV6940.NAD 83(2011) refers to NAD 83 coordinates where the reference
 KV6940.frame has been affixed to the stable North American tectonic plate. See
 KV6940.NA2011 for more information.
 KV6940
 KV6940.The horizontal coordinates are valid at the epoch date displayed above
 KV6940.which is a decimal equivalence of Year/Month/Day.
 KV6940
 KV6940.The orthometric height was determined by differential leveling.
 KV6940.The vertical network tie was performed by a horz. field party for horz.
 KV6940.obs reductions. Reset procedures were used to establish the elevation.
 KV6940
 KV6940.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 KV6940
 KV6940.The Laplace correction was computed from DEFLEC12A derived deflections.
 KV6940
 KV6940.The ellipsoidal height was determined by GPS observations
 KV6940.and is referenced to NAD 83.
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```
KV6940
KV6940. The following values were computed from the NAD 83(2011) position.
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KV6940
KV6940                          SUPERSEDED SURVEY CONTROL
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KV6940  ELLIP H (05/14/99)    2.609  (m)                        GP(       ) 4 1
KV6940  NAD 83(1986)-  40 16 05.52037(N)    074 28 15.26639(W) AD(       ) 1
KV6940
KV6940.Superseded values are not recommended for survey control.
KV6940
KV6940.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
KV6940.See file dsdata.txt to determine how the superseded data were derived.
KV6940
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KV6940_MARKER: DD = SURVEY DISK
KV6940_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
KV6940_SP_SET: CONCRETE POST
KV6940_STAMPING: 12 F 3 1991
KV6940_MARK LOGO: NJGS
KV6940_MAGNETIC: N = NO MAGNETIC MATERIAL
KV6940_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
KV6940+STABILITY: SURFACE MOTION
KV6940_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
KV6940+SATELLITE: SATELLITE OBSERVATIONS - August 17, 2002
KV6940
KV6940  HISTORY     - Date     Condition        Report By
KV6940  HISTORY     - 1991     MONUMENTED       NJGS
KV6940  HISTORY     - 19920124 GOOD
KV6940  HISTORY     - 20010711 GOOD             AASCO
KV6940  HISTORY     - 20020817 GOOD             INDIV
KV6940
KV6940                          STATION DESCRIPTION
KV6940
KV6940'DESCRIBED BY NEW JERSEY GEODETIC SURVEY 1991
KV6940'THE STATION IS LOCATED IN MONROE TOWNSHIP, ON THE NORTHEAST CORNER OF
KV6940'STATE HIGHWAY 33 WESTBOUND LANES RAMP LEADING TO APPLEGARTH ROAD
KV6940'NORTH, COUNTY ROAD 619.  TO REACH THE STATION FROM THE INTERSECTION
KV6940'OF THE NEW JERSEY TURNPIKE OVER STATE HIGHWAY 33, GO 2.1 MI (3.4 KM)
KV6940'EAST ON STATE HIGHWAY 33 TO THE JUNCTION WITH APPLEGARTH ROAD.  TAKE
KV6940'THE JUGHANDLE AND GO 0.1 MI (0.2 KM) NORTH ON APPLEGARTH ROAD TO THE
KV6940'RAMP AND STATION ON THE RIGHT.  THE STATION IS 4.4 M (14.4 FT)
KV6940'NORTHWEST FROM THE CENTER OF AN INLET IN THE CURBLINE ON THE RAMP,
KV6940'12.55 M (41.17 FT) SOUTHEAST FROM POLE NUMBER 909-1 MT, 8.1 M
KV6940'(26.6 FT) EAST FROM THE NORTH CURB NOSE OF A TRIANGULAR CONCRETE
KV6940'TRAFFIC ISLAND, 11.8 M (38.7 FT) NORTHEAST FROM THE SOUTHEAST CURB
KV6940'NOSE OF A TRIANGULAR CONCRETE TRAFFIC ISLAND, 9.1 M (29.9 FT) NORTH
KV6940'FROM THE EAST METAL LEG OF A SIGN FOR PROSPECT PLAINS APPLEGARTH ROAD
KV6940'BUTCHER ROAD AND 2.65 M (8.69 FT) NORTHEAST FROM THE CURBLINE.  THE
KV6940'STATION IS SET FLUSH WITH THE GROUND.
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KV6940
KV6940                          STATION RECOVERY (1992)
KV6940
KV6940'RECOVERED 1992
KV6940'RECOVERED IN GOOD CONDITION.
KV6940
KV6940                          STATION RECOVERY (2001)
KV6940
KV6940'RECOVERY NOTE BY ATLANTIS AERIAL SURVEY COMPANY 2001 (GLB)
KV6940'RECOVERED IN GOOD CONDITION.
KV6940
KV6940                          STATION RECOVERY (2002)
KV6940
KV6940'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2002 (APC)
KV6940'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:02
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.3
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 12, 2014
 DH4390 ***********************************************************************
 DH4390  DESIGNATION -  FORRESTAL
 DH4390  PID         -  DH4390
 DH4390  STATE/COUNTY-  NJ/MIDDLESEX
 DH4390  COUNTRY     -  US
 DH4390  USGS QUAD   -  HIGHTSTOWN (1981)
 DH4390
 DH4390                        *CURRENT SURVEY CONTROL
 DH4390  ______________________________________________________________________
 DH4390* NAD 83(2011) POSITION- 40 21 28.73110(N) 074 36 32.17309(W)   ADJUSTED
 DH4390* NAD 83(2011) ELLIP HT-     1.074 (meters)        (06/27/12)   ADJUSTED
 DH4390* NAD 83(2011) EPOCH   -  2010.00
 DH4390* NAVD 88 ORTHO HEIGHT -    34.232  (meters)     112.31  (feet) ADJUSTED
 DH4390  ______________________________________________________________________
 DH4390  NAD 83(2011) X  -  1,291,746.425 (meters)                     COMP
 DH4390  NAD 83(2011) Y  - -4,692,514.584 (meters)                     COMP
 DH4390  NAD 83(2011) Z  -  4,108,356.138 (meters)                     COMP
 DH4390  LAPLACE CORR    -          5.92  (seconds)                    DEFLEC12A
 DH4390  GEOID HEIGHT    -        -33.18  (meters)                     GEOID12A
 DH4390  DYNAMIC HEIGHT  -         34.216 (meters)      112.26  (feet) COMP
 DH4390  MODELED GRAVITY -    980,175.5   (mgal)                       NAVD 88
 DH4390
 DH4390  VERT ORDER      -  FIRST     CLASS II
 DH4390
 DH4390  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DH4390  Type                                           Horiz  Ellip  Dist(km)
 DH4390  ----------------------------------------------------------------------
 DH4390  NETWORK                                         0.74   1.88
 DH4390  ----------------------------------------------------------------------
 DH4390  MEDIAN LOCAL ACCURACY AND DIST (018 points)    0.76   1.94     48.03
 DH4390  ----------------------------------------------------------------------
 DH4390  NOTE: Click here for information on individual local accuracy
 DH4390  values and other accuracy information.
 DH4390
 DH4390
 DH4390.The horizontal coordinates were established by GPS observations
 DH4390.and adjusted by the National Geodetic Survey in June 2012.
 DH4390
 DH4390.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DH4390.frame has been affixed to the stable North American tectonic plate. See
 DH4390.NA2011 for more information.
 DH4390
 DH4390.The horizontal coordinates are valid at the epoch date displayed above
 DH4390.which is a decimal equivalence of Year/Month/Day.
 DH4390
 DH4390.The orthometric height was determined by differential leveling and
 DH4390.adjusted by the NATIONAL GEODETIC SURVEY
 DH4390.in February 2010.
 DH4390
 DH4390.No vertical observational check was made to the station.
 DH4390
 DH4390.The X, Y, and Z were computed from the position and the ellipsoidal ht.
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DH4390
DH4390.The Laplace correction was computed from DEFLEC12A derived deflections.
DH4390
DH4390.The ellipsoidal height was determined by GPS observations
DH4390.and is referenced to NAD 83.
DH4390
DH4390.The dynamic height is computed by dividing the NAVD 88
DH4390.geopotential number by the normal gravity value computed on the
DH4390.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DH4390.degrees latitude (g = 980.6199 gals.).
DH4390
DH4390.The modeled gravity was interpolated from observed gravity values.
DH4390
DH4390. The following values were computed from the NAD 83(2011) position.
DH4390
DH4390;                      North         East     Units Scale Factor Converg.
DH4390;SPC NJ       -   169,265.635   140,747.136   MT  0.99990105   -0 04 14.0
DH4390;SPC NJ       -   555,332.34    461,767.90   sFT  0.99990105   -0 04 14.0
DH4390;UTM  18      - 4,467,564.208   533,206.096   MT  0.99961357   +0 15 11.7
DH4390
DII4390!             -  Elev Factor  x  Scale Factor =   Combined Factor
DH4390!SPC NJ       -   0.99999983  x   0.99990105  =   0.99990088
DH4390!UTM  18      -   0.99999983  x   0.99961357  =   0.99961340
DH4390
DH4390                          SUPERSEDED SURVEY CONTROL
DH4390
DH4390  NAD 83(2007)-  40 21 28.73137(N)    074 36 32.17380(W) AD(2002.00) 0
DH4390  ELLIP H (02/10/07)    1.077  (m)                       GP(2002.00)
DH4390  NAD 83(1996)-  40 21 28.73128(N)    074 36 32.17375(W) AD(       ) B
DH4390  ELLIP H (06/06/05)    1.090  (m)                       GP(       ) 3 1
DH4390  NAVD 88 (06/06/05)   34.2    (m)  GEOID03 model used   GPS OBS
DH4390
DH4390.Superseded values are not recommended for survey control.
DH4390
DH4390.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DH4390.See file dsdata.txt to determine how the superseded data were derived.
DH4390
DH4390_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TWK3320667564(NAD 83)
DH4390
DH4390_MARKER: F = FLANGE-ENCASED ROD
DH4390_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
DH4390_STAMPING: FORRESTAL 2004
DH4390_MARK LOGO: NGS
DH4390_PROJECTION: RECESSED 30 CENTIMETERS
DH4390_MAGNETIC: I = MARKER IS A STEEL ROD
DH4390_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
DH4390_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DH4390+SATELLITE: SATELLITE OBSERVATIONS - May 12, 2008
DH4390_ROD/PIPE-DEPTH:  3.7 meters
DH4390_SLEEVE-DEPTH  :  0.9 meters
DH4390
DH4390  HISTORY     - Date     Condition        Report By
DH4390  HISTORY     - 20041205 MONUMENTED       NJGS
DH4390  HISTORY     - 20060613 GOOD             NJGS
DH4390  HISTORY     - 20080512 GOOD             INDIV
DH4390
DH4390                          STATION DESCRIPTION
DH4390
DH4390'DESCRIBED BY NEW JERSEY GEODETIC SURVEY 2004 (RJK)
DH4390'THE STATION IS LOCATED IN PLAINSBORO TOWNSHIP,  SET IN THE TRIANGULAR
DH4390'SHAPED GRASS AREA  OF THE CLOVERLEAF INTERCHANGE OF U.S. HIGHWAY 1 AND
DH4390'COLLEGE ROAD WEST, JUST NORTH OF  THE FORRESTAL VILLAGE SHOPPING
DH4390'CENTER ON THE SOUTHBOUND LANES OF ROUTE 1.
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DH4390'
DH4390'THE STATION IS 47.1 M NORTHWEST OF THE SOUTHEAST NOSE OF THE WESTBOUND
DH4390'COLLEGE ROAD  WEST LEADING TO THE SOUTHBOUND LANES OF U.S. ROUTE 1,
DH4390'36.0 M SOUTHEAST OF A SIGN FOR THE  FORRESTAL VILLAGE AT THE JUGHANDLE
DH4390'RAMP ACCESS ROAD LEADING TO THE SHOPPING CENTER  FROM COLLEGE ROAD
DH4390'WEST, 3.4 NORTH OF THE NORTH CURB OF COLLEGE ROAD WEST, 35.7
DH4390'SOUTHEAST OF AN INLET  IN THE MIDDLE OF THE DRAINAGE DEPRESSION FOR
DH4390'THE GRASS AREA, 25.8  M WEST NORTHWEST OF A DEPARTMENT OF
DH4390'TRANSPORTATION MANHOLE, 14.8 M NORTH OF THE  CENTERLINE OF THE
DH4390'WESTBOUND LANES OF COLLEGE ROAD WEST, 27.0 M NORTHEAST OF AN INLET  IN
DH4390'THE CURBLINE OF THE CENTER MEDIAN ISLAND OF COLLEGE ROAD WEST.
DH4390
DH4390                          STATION RECOVERY (2006)
DH4390
DH4390'RECOVERY NOTE BY NEW JERSEY GEODETIC SURVEY 2006 (RJK)
DH4390'RECOVERED AS DESCRIBED.
DH4390
DH4390                          STATION RECOVERY (2008)
DH4390
DH4390'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2008 (EJF)
DH4390'RECOVERED AS DESCRIBED

*** retrieval complete.
Elapsed Time = 00:00:06
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.3
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 12, 2014
 PH1253 ***********************************************************************
 PH1253  DESIGNATION -  H 103
 PH1253  PID         -  PH1253
 PH1253  STATE/COUNTY-  NY/JEFFERSON
 PH1253  COUNTRY     -  US
 PH1253  USGS QUAD   -  NORTH WILNA (1982)
 PH1253
 PH1253                         *CURRENT SURVEY CONTROL
 PH1253  ______________________________________________________________________
 PH1253* NAD 83(1986) POSITION- 44 00 17.     (N) 075 31 58.     (W)    SCALED
 PH1253* NAVD 88 ORTHO HEIGHT -   257.160  (meters)     843.70  (feet) POSTED
 PH1253  ______________________________________________________________________
 PH1253  GEOID HEIGHT    -        -32.15  (meters)                    GEOID12A
 PH1253  DYNAMIC HEIGHT  -        257.12  (meters)      843.6   (feet) COMP
 PH1253  MODELED GRAVITY -    980,436.2   (mgal)                      NAVD 88
 PH1253
 PH1253  VERT ORDER      -  * POSTED, Code D , SEE BELOW
 PH1253
 PH1253.The horizontal coordinates were scaled from a topographic map and have
 PH1253.an estimated accuracy of +/- 6 seconds.
 PH1253.
 PH1253.The orthometric height was determined by differential leveling
 PH1253.and adjusted by the NATIONAL GEODETIC SURVEY in 1992.
 PH1253
 PH1253.* This is a POSTED BENCH MARK height.  Code D indicates a distribution
 PH1253.rate of 3.1 thru 4.0 mm/km.
 PH1253
 PH1253.The dynamic height is computed by dividing the NAVD 88
 PH1253.geopotential number by the normal gravity value computed on the
 PH1253.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 PH1253.degrees latitude (g = 980.6199 gals.).
 PH1253
 PH1253.The modeled gravity was interpolated from observed gravity values.
 PH1253
 PH1253;                    North         East     Units  Estimated Accuracy
 PH1253;SPC NY C     -   445,330.      334,250.      MT  (+/- 180 meters Scaled)
 PH1253
 PH1253                          SUPERSEDED SURVEY CONTROL
 PH1253
 PH1253  NGVD 29 (??/??/92)  257.277  (m)          844.08   (f) ADJ UNCH    2 0
 PH1253
 PH1253.Superseded values are not recommended for survey control.
 PH1253
 PH1253.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 PH1253.See file dsdata.txt to determine how the superseded data were derived.
 PH1253
 PH1253_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TVP572725(NAD 83)
 PH1253
 PH1253_MARKER: DB = BENCH MARK DISK
 PH1253_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 PH1253_SP_SET: SET IN TOP OF CONCRETE MONUMENT
 PH1253_STAMPING: H-103--1935
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PH1253_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
PH1253+STABILITY: SURFACE MOTION
PH1253
PH1253  HISTORY     - Date     Condition        Report By
PH1253  HISTORY     - 1935     MONUMENTED       CGS
PH1253  HISTORY     - 1947     GOOD             AMS
PH1253
PH1253                          STATION DESCRIPTION
PH1253
PH1253'DESCRIBED BY COAST AND GEODETIC SURVEY 1935
PH1253'4.9 MI  E FROM CARTHAGE.
PH1253'H 103 IS LOCATED 4.9 MILES EAST OF THE DEPOT AT CARTHAGE.  120 FT.
PH1253'SOUTHWEST OF CENTERLINE OF RAILROAD CROSSING NO. 776 AT ROGERS
PH1253'STATION.  34.5 FT. NORTH OF NORTH RAIL.  22 FT. WEST OF CORNER FENCE
PH1253'POST.  16 FT. NORTHWEST OF TELEGRAPH POLE NO. 57-191. 2.5 FT. SOUTH OF
PH1253'R/W FENCE.  TABLET SET IN TOP OF CONCRETE POST 1 IN. HIGH.
PH1253
PH1253                          STATION RECOVERY (1947)
PH1253
PH1253'RECOVERY NOTE BY US ARMY MAP SERVICE (NOW DMA) 1947
PH1253'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:04
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

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PROGRAM = datasheet95, VERSION = 8.3
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 12, 2014
 DH4392 ***********************************************************************
 DH4392  DESIGNATION -  HAMBONE
 DH4392  PID         -  DH4392
 DH4392  STATE/COUNTY-  NJ/MERCER
 DH4392  COUNTRY     -  US
 DH4392  USGS QUAD   -  TRENTON EAST (1981)
 DH4392
 DH4392                         *CURRENT SURVEY CONTROL
 DH4392  ______________________________________________________________________
 DH4392* NAD 83(2011) POSITION- 40 12 20.23264(N) 074 38 05.62107(W)   ADJUSTED
 DH4392* NAD 83(2011) ELLIP HT-     -4.625 (meters)        (06/27/12)   ADJUSTED
 DH4392* NAD 83(2011) EPOCH   -  2010.00
 DH4392* NAVD 88 ORTHO HEIGHT -     28.182  (meters)      92.46  (feet) ADJUSTED
 DH4392  ______________________________________________________________________
 DH4392  NAD 83(2011) X  -  1,292,517.533 (meters)                     COMP
 DH4392  NAD 83(2011) Y  - -4,703,642.537 (meters)                     COMP
 DH4392  NAD 83(2011) Z  -  4,095,446.057 (meters)                     COMP
 DH4392  LAPLACE CORR    -          5.16  (seconds)                    DEFLEC12A
 DH4392  GEOID HEIGHT    -        -32.81  (meters)                     GEOID12A
 DH4392  DYNAMIC HEIGHT  -         28.170 (meters)       92.42  (feet) COMP
 DH4392  MODELED GRAVITY -    980,196.1   (mgal)                       NAVD 88
 DH4392
 DH4392  VERT ORDER      -  FIRST     CLASS II
 DH4392
 DH4392  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DH4392  Type                                           Horiz  Ellip  Dist(km)
 DH4392  ----------------------------------------------------------------------
 DH4392  NETWORK                                         0.35   0.51
 DH4392  ----------------------------------------------------------------------
 DH4392  MEDIAN LOCAL ACCURACY AND DIST (019 points)   0.41   0.76     36.20
 DH4392  ----------------------------------------------------------------------
 DH4392  NOTE: Click here for information on individual local accuracy
 DH4392  values and other accuracy information.
 DH4392
 DH4392
 DH4392.The horizontal coordinates were established by GPS observations
 DH4392.and adjusted by the National Geodetic Survey in June 2012.
 DH4392
 DH4392.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DH4392.frame has been affixed to the stable North American tectonic plate. See
 DH4392.NA2011 for more information.
 DH4392
 DH4392.The horizontal coordinates are valid at the epoch date displayed above
 DH4392.which is a decimal equivalence of Year/Month/Day.
 DH4392
 DH4392.The orthometric height was determined by differential leveling and
 DH4392.adjusted by the NATIONAL GEODETIC SURVEY
 DH4392.in February 2010.
 DH4392
 DH4392.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 DH4392
 DH4392.The Laplace correction was computed from DEFLEC12A derived deflections.
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DH4392
DH4392.The ellipsoidal height was determined by GPS observations
DH4392.and is referenced to NAD 83.
DH4392
DH4392.The dynamic height is computed by dividing the NAVD 88
DH4392.geopotential number by the normal gravity value computed on the
DH4392.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DH4392.degrees latitude (g = 980.6199 gals.).
DH4392
DH4392.The modeled gravity was interpolated from observed gravity values.
DH4392
DH4392. The following values were computed from the NAD 83(2011) position.
DH4392
DH4392;                    North         East     Units Scale Factor Converg.
DH4392;SPC NJ       -   152,352.219   138,516.590   MT  0.99990162   -0 05 13.5
DH4392;SPC NJ       -   499,842.24    454,449.85    sFT  0.99990162   -0 05 13.5
DH4392;UTM  18      - 4,450,643.361   531,071.630   MT  0.99961188   +0 14 08.5
DH4392
DH4392!             -  Elev Factor  x  Scale Factor =   Combined Factor
DH4392!SPC NJ       -   1.00000073  x   0.99990162  =   0.99990235
DH4392!UTM  18      -   1.00000073  x   0.99961188  =   0.99961261
DH4392
DH4392                          SUPERSEDED SURVEY CONTROL
DH4392
DH4392  NAD 83(2007)-  40 12 20.23299(N)    074 38 05.62170(W) AD(2002.00) 0
DH4392  ELLIP H (02/10/07)   -4.620  (m)                       GP(2002.00)
DH4392  NAD 83(1996)-  40 12 20.23296(N)    074 38 05.62163(W) AD(       ) B
DH4392  ELLIP H (06/06/05)   -4.596  (m)                       GP(       ) 3 1
DH4392  NAVD 88 (06/06/05)   28.2    (m)  GEOID03 model used   GPS OBS
DH4392
DH4392.Superseded values are not recommended for survey control.
DH4392
DH4392.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DH4392.See file dsdata.txt to determine how the superseded data were derived.
DH4392
DH4392_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TWK3107150643(NAD 83)
DH4392
DH4392_MARKER: F = FLANGE-ENCASED ROD
DH4392_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
DH4392_STAMPING: HAMBONE 2004
DH4392_MARK LOGO: NGS
DH4392_PROJECTION: RECESSED 20 CENTIMETERS
DH4392_MAGNETIC: I = MARKER IS A STEEL ROD
DH4392_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
DH4392_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DH4392+SATELLITE: SATELLITE OBSERVATIONS - June 27, 2006
DH4392_ROD/PIPE-DEPTH:  5.5 meters
DH4392_SLEEVE-DEPTH  : 0.92 meters
DH4392
DH4392  HISTORY     - Date     Condition        Report By
DH4392  HISTORY     - 20041213 MONUMENTED       NJGS
DH4392  HISTORY     - 20060627 GOOD             NJGS
DH4392
DH4392                          STATION DESCRIPTION
DH4392
DH4392'DESCRIBED BY NEW JERSEY GEODETIC SURVEY 2004 (FAC)
DH4392'THE STATION IS LOCATED IN HAMILTON TOWNSHIP ON THE SOUTHWEST SIDE OF
DH4392'KUSER ROAD,  ON THE GROUNDS OF A MAINTENANCE FACILITY FOR THE NEW
DH4392'JERSEY DEPARTMENT OF  TRANSPORTATION.
DH4392'
DH4392'TO REACH THE STATION FROM THE INTERSECTION OF U.S. ROUTE 130 AND KUSER
DH4392'ROAD, GO  NORTHWEST ON KUSER ROAD FOR 0.25 MILE TO THE ENTRANCE DRIVE
DH4392'LEADING TO THE  MAINTENANCE FACILITY ON THE LEFT.  TURN LEFT INTO THE
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DH4392'DRIVE, TURN SHARP LEFT AND GO EAST  SOUTHEAST ABOUT 34 M TO THE
DH4392'STATION AHEAD, SET FLUSH WITH THE GROUND IN THE TOP OF A  LANDSCAPED
DH4392'GRASS BERM IN FRONT OF THE PARKING LOT FOR THE MAINTENANCE FACILITY.
DH4392'
DH4392'THE STATION IS 7.8 M SOUTHWEST AND NORMAL TO A 6 FT HIGH CHAIN LINK
DH4392'FENCE TOPPED WITH  BARBED WIRE SURROUNDING THE MAINTENANCE FACILITY,
DH4392'26.9 M WEST FROM A WOOD UTILITY POLE   AT THE NORTHEAST EDGE OF THE
DH4392'MAINTENANCE FACILITY PROPERTY, 32.2 M EAST FROM A FIRE  HYDRANT, 34.4
DH4392'M EAST SOUTHEAST FROM THE CENTER OF THE ENTRANCE DRIVE LEADING INTO
DH4392'THE  MAINTENANCE FACILITY AND 17.5 M NORTHEAST FROM AN ALUMINUM LIGHT
DH4392'POLE AT THE  NORTHEAST EDGE OF THE PARKING LOT, 0.5 M SOUTH OF A METAL
DH4392'WITNESS POST.
DH4392
DH4392                          STATION RECOVERY (2006)
DH4392
DH4392'RECOVERY NOTE BY NEW JERSEY GEODETIC SURVEY 2006 (RJK)
DH4392'RECOVERED AS DESCRIBED.

*** retrieval complete.
Elapsed Time = 00:00:07
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.3
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 12, 2014
 DJ5354 ***********************************************************************
 DJ5354  DESIGNATION -  KIMCOB
 DJ5354  PID         -  DJ5354
 DJ5354  STATE/COUNTY-  NJ/MONMOUTH
 DJ5354  COUNTRY     -  US
 DJ5354  USGS QUAD   -  MARLBORO (1981)
 DJ5354
 DJ5354                         *CURRENT SURVEY CONTROL
 DJ5354  ______________________________________________________________________
 DJ5354* NAD 83(2011) POSITION- 40 15 04.49451(N) 074 14 48.44294(W)   ADJUSTED
 DJ5354* NAD 83(2011) ELLIP HT-     12.461 (meters)        (06/27/12)   ADJUSTED
 DJ5354* NAD 83(2011) EPOCH   -  2010.00
 DJ5354* NAVD 88 ORTHO HEIGHT -     44.806  (meters)     147.00  (feet) ADJUSTED
 DJ5354  ______________________________________________________________________
 DJ5354  NAD 83(2011) X  -  1,323,463.923 (meters)                      COMP
 DJ5354  NAD 83(2011) Y  - -4,691,642.865 (meters)                      COMP
 DJ5354  NAD 83(2011) Z  -  4,099,325.260 (meters)                      COMP
 DJ5354  LAPLACE CORR    -         -1.26  (seconds)                     DEFLEC12A
 DJ5354  GEOID HEIGHT    -        -32.38  (meters)                      GEOID12A
 DJ5354  DYNAMIC HEIGHT  -         44.787 (meters)      146.94  (feet) COMP
 DJ5354  MODELED GRAVITY -    980,213.5   (mgal)                        NAVD 88
 DJ5354
 DJ5354  VERT ORDER      -  SECOND    CLASS II
 DJ5354
 DJ5354  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DJ5354  Type                                           Horiz  Ellip  Dist(km)
 DJ5354  ----------------------------------------------------------------------
 DJ5354  NETWORK                                         0.53   1.33
 DJ5354  ----------------------------------------------------------------------
 DJ5354  MEDIAN LOCAL ACCURACY AND DIST (021 points)    0.59   1.47     69.48
 DJ5354  ----------------------------------------------------------------------
 DJ5354  NOTE: Click here for information on individual local accuracy
 DJ5354  values and other accuracy information.
 DJ5354
 DJ5354
 DJ5354.The horizontal coordinates were established by GPS observations
 DJ5354.and adjusted by the National Geodetic Survey in June 2012.
 DJ5354
 DJ5354.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DJ5354.frame has been affixed to the stable North American tectonic plate. See
 DJ5354.NA2011 for more information.
 DJ5354
 DJ5354.The horizontal coordinates are valid at the epoch date displayed above
 DJ5354.which is a decimal equivalence of Year/Month/Day.
 DJ5354
 DJ5354.The orthometric height was determined by differential leveling and
 DJ5354.adjusted by the NATIONAL GEODETIC SURVEY
 DJ5354.in May 2011.
 DJ5354
 DJ5354.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 DJ5354
 DJ5354.The Laplace correction was computed from DEFLEC12A derived deflections.
```

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DJ5354
DJ5354.The ellipsoidal height was determined by GPS observations
DJ5354.and is referenced to NAD 83.
DJ5354
DJ5354.The dynamic height is computed by dividing the NAVD 88
DJ5354.geopotential number by the normal gravity value computed on the
DJ5354.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DJ5354.degrees latitude (g = 980.6199 gals.).
DJ5354
DJ5354.The modeled gravity was interpolated from observed gravity values.
DJ5354
DJ5354. The following values were computed from the NAD 83(2011) position.
DJ5354
DJ5354;                     North         East     Units Scale Factor Converg.
DJ5354;SPC NJ       -   157,440.263   171,541.005   MT  0.99990571   +0 09 49.0
DJ5354;SPC NJ       -   516,535.26    562,797.45   sFT  0.99990571   +0 09 49.0
DJ5354;UTM  18      - 4,455,916.016   564,057.853   MT  0.99965051   +0 29 12.1
DJ5354
DJ5354!             -  Elev Factor  x  Scale Factor =   Combined Factor
DJ5354!SPC NJ       -   0.99999805  x   0.99990571  =   0.99990376
DJ5354!UTM  18      -   0.99999805  x   0.99965051  =   0.99964856
DJ5354
DJ5354                          SUPERSEDED SURVEY CONTROL
DJ5354
DJ5354  NAD 83(2007)-  40 15 04.49469(N)    074 14 48.44349(W) AD(2002.00) B
DJ5354  ELLIP H (03/15/07)   12.476  (m)                       GP(2002.00) 4 1
DJ5354  NAVD 88 (03/15/07)   44.84   (m)  GEOID03 model used   GPS OBS
DJ5354
DJ5354.Superseded values are not recommended for survey control.
DJ5354
DJ5354.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DJ5354.See file dsdata.txt to determine how the superseded data were derived.
DJ5354
DJ5354_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TWK6405755916(NAD 83)
DJ5354
DJ5354_MARKER: DD = SURVEY DISK
DJ5354_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DJ5354_STAMPING: KIMCOB 2006
DJ5354_MARK LOGO: NJDT
DJ5354_PROJECTION: FLUSH
DJ5354_MAGNETIC: N = NO MAGNETIC MATERIAL
DJ5354_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DJ5354+STABILITY: SURFACE MOTION
DJ5354_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DJ5354+SATELLITE: SATELLITE OBSERVATIONS - November 02, 2006
DJ5354
DJ5354  HISTORY     - Date     Condition        Report By
DJ5354  HISTORY     - UNK      MONUMENTED       NJDT
DJ5354  HISTORY     - 20061102 GOOD             NJGS
DJ5354  HISTORY     - 20061102 GOOD             NJGS
DJ5354
DJ5354                          STATION DESCRIPTION
DJ5354
DJ5354'DESCRIBED BY NEW JERSEY GEODETIC SURVEY 2006 (RJK)
DJ5354'THE STATION IS LOCATED IN FREEHOLD TOWNSHIP, A NJDT DISK IN A SQUARE
DJ5354'CONCRETE MONUMENT FLUSH IN THE BLACKTOP SIDEWALK ON THE EAST SIDE OF
DJ5354'KOZLOWSKI ROAD (COUNTY ROUTE 55), JUST NORTH OF THE KOZLOWSKI ROAD
DJ5354'BRIDGE OVER NJ ROUTE 33 BUSINESS.
DJ5354'
DJ5354'TO REACH THE STATION FROM THE JUNCTION OF SOUTH STREET (NJ STATE ROUTE
DJ5354'79) AND PARK AVENUE (NJ STATE ROUTE 33 BUSINESS) IN THE BOROUGH OF
DJ5354'FREEHOLD, GO ABOUT 1.4 MI (2.25 KM) EAST ON ROUTE 33 BUSINESS TO THE
DJ5354'KOZLOWSKI ROAD CLOVERLEAF AND BRIDGE COMPLEX, TAKE CLOVERLEAF RAMP
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DJ5354'NORTH ON KOZLOWSKI ROAD OVER BRIDGE TO THE STATION ON THE RIGHT.
DJ5354'
DJ5354'THE STATION IS 43.4 FT (13.2 M) EAST OF THE EAST CURB OF KOZLOWSKI
DJ5354'ROAD, 7.0 FT (2.1 M) WEST OF A WITNESS SIGN, 22.5 FT (6.9 M) SOUTH OF
DJ5354'THE RANGE OF A CANTILEVER HIGHWAY SIGN (BUSINESS 33 WEST MANALAPAN)
DJ5354'FOR THE SOUTHBOUND LANES OF KOZLOWSKI ROAD, 151.4 FT (46.1 M) SOUTH OF
DJ5354'THE NORTH END OF THE GUIDERAIL FOR THE NORTHBOUND LANES OF KOZLOWSKI
DJ5354'ROAD, 3.2 FT (1.0 M) WEST OF THE GUARDRAIL.
DJ5354
DJ5354                          STATION RECOVERY (2006)
DJ5354
DJ5354'RECOVERY NOTE BY NEW JERSEY GEODETIC SURVEY 2006 (RJK)
DJ5354'THE STATION IS LOCATED IN FREEHOLD TOWNSHIP, A DISK IN A SQUARE
DJ5354'CONCRETE MONUMENT IN THE BLACKTOP SIDEWALK ON THE EAST SIDE OF
DJ5354'KOZLOWSKI ROAD (COUNTY ROUTE 55), JUST NORTH OF THE KOZLOWSKI ROAD
DJ5354'BRIDGE OVER NJ ROUTE 33 BUSINESS.
DJ5354'
DJ5354'TO REACH THE STATION FROM THE JUNCTION OF SOUTH STREET (NJ STATE ROUTE
DJ5354'79) AND PARK AVENUE (NJ STATE ROUTE 33 BUSINESS) IN THE BOROUGH OF
DJ5354'FREEHOLD, GO ABOUT 1.4 MI (2.25 KM) EAST ON ROUTE 33 BUSINESS TO THE
DJ5354'KOZLOWSKI ROAD CLOVERLEAF AND BRIDGE COMPLEX, TAKE CLOVERLEAF RAMP
DJ5354'NORTH ON KOZLOWSKI ROAD OVER BRIDGE TO THE STATION ON THE RIGHT.
DJ5354'
DJ5354'THE STATION IS 43.4 FT (13.2 M) EAST OF THE EAST CURB OF KOZLOWSKI
DJ5354'ROAD, 7.0 FT (2.1 M) WEST OF A WITNESS SIGN, 22.5 FT (6.9 M) SOUTH OF
DJ5354'THE RANGE OF A CANTILEVER HIGHWAY SIGN (BUSINESS 33 WEST MANALAPAN)
DJ5354'FOR THE SOUTHBOUND LANES OF KOZLOWSKI ROAD, 151.4 FT (46.1 M) SOUTH OF
DJ5354'THE NORTH END OF THE GUIDERAIL FOR THE NORTHBOUND LANES OF KOZLOWSKI
DJ5354'ROAD, 3.2 FT (1.0 M) WEST OF THE GUARDRAIL.

*** retrieval complete.
Elapsed Time = 00:00:05
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

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PROGRAM = datasheet95, VERSION = 8.3
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 12, 2014
 DH2905 ***********************************************************************
 DH2905  DESIGNATION -  MARCZUK
 DH2905  PID         -  DH2905
 DH2905  STATE/COUNTY-  NJ/MIDDLESEX
 DH2905  COUNTRY     -  US
 DH2905  USGS QUAD   -  PERTH AMBOY (1981)
 DH2905
 DH2905                         *CURRENT SURVEY CONTROL
 DH2905
 DH2905* NAD 83(2011) POSITION- 40 35 31.27303(N) 074 16 30.24301(W)    ADJUSTED
 DH2905* NAD 83(2011) ELLIP HT-   -26.274 (meters)        (06/27/12)    ADJUSTED
 DH2905* NAD 83(2011) EPOCH   -  2010.00
 DH2905* NAVD 88 ORTHO HEIGHT -     6.290  (meters)      20.64   (feet) ADJUSTED
 DH2905
 DH2905  NAD 83(2011) X  -  1,314,490.569 (meters)                      COMP
 DH2905  NAD 83(2011) Y  - -4,668,649.544 (meters)                      COMP
 DH2905  NAD 83(2011) Z  -  4,128,107.598 (meters)                      COMP
 DH2905  LAPLACE CORR    -          5.37  (seconds)                     DEFLEC12A
 DH2905  GEOID HEIGHT    -        -32.57  (meters)                      GEOID12A
 DH2905  DYNAMIC HEIGHT  -          6.287 (meters)       20.63   (feet) COMP
 DH2905  MODELED GRAVITY -    980,213.5   (mgal)                        NAVD 88
 DH2905
 DH2905  VERT ORDER      -  FIRST     CLASS II
 DH2905
 DH2905  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DH2905  Type                                           Horiz  Ellip  Dist(km)
 DH2905  ----------------------------------------------------------------------
 DH2905  NETWORK                                         0.61   1.61
 DH2905  ----------------------------------------------------------------------
 DH2905  MEDIAN LOCAL ACCURACY AND DIST (013 points)    0.63   1.71     26.03
 DH2905  ----------------------------------------------------------------------
 DH2905  NOTE: Click here for information on individual local accuracy
 DH2905  values and other accuracy information.
 DH2905
 DH2905
 DH2905.The horizontal coordinates were established by GPS observations
 DH2905.and adjusted by the National Geodetic Survey in June 2012.
 DH2905
 DH2905.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DH2905.frame has been affixed to the stable North American tectonic plate. See
 DH2905.NA2011 for more information.
 DH2905
 DH2905.The horizontal coordinates are valid at the epoch date displayed above
 DH2905.which is a decimal equivalence of Year/Month/Day.
 DH2905
 DH2905.The orthometric height was determined by differential leveling and
 DH2905.adjusted by the NATIONAL GEODETIC SURVEY
 DH2905.in May 2006.
 DH2905
 DH2905.No vertical observational check was made to the station.
 DH2905
 DH2905.The X, Y, and Z were computed from the position and the ellipsoidal ht.
```

```
DH2905
DH2905.The Laplace correction was computed from DEFLEC12A derived deflections.
DH2905
DH2905.The ellipsoidal height was determined by GPS observations
DH2905.and is referenced to NAD 83.
DH2905
DH2905.The dynamic height is computed by dividing the NAVD 88
DH2905.geopotential number by the normal gravity value computed on the
DH2905.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DH2905.degrees latitude (g = 980.6199 gals.).
DH2905
DH2905.The modeled gravity was interpolated from observed gravity values.
DH2905
DH2905. The following values were computed from the NAD 83(2011) position.
DH2905
DH2905;                    North         East     Units Scale Factor Converg.
DH2905;SPC NJ       -   195,270.278   169,039.051   MT  0.99990446   +0 08 46.9
DH2905;SPC NJ       -   640,649.24    554,588.95    sFT  0.99990446   +0 08 46.9
DH2905;UTM  18      - 4,493,721.561   561,342.569   MT  0.99964632   +0 28 18.1
DH2905
DH2905!             -  Elev Factor  x  Scale Factor =   Combined Factor
DH2905!SPC NJ       -   1.00000412  x   0.99990446  =   0.99990858
DH2905!UTM  18      -   1.00000412  x   0.99964632  =   0.99965044
DH2905
DH2905                          SUPERSEDED SURVEY CONTROL
DH2905
DH2905  NAD 83(2007)-  40 35 31.27323(N)    074 16 30.24368(W) AD(2002.00) 0
DH2905  ELLIP H (02/10/07)  -26.266  (m)                       GP(2002.00)
DH2905  NAD 83(1996)-  40 35 31.27333(N)    074 16 30.24376(W) AD(       ) B
DH2905  ELLIP H (06/06/05)  -26.259  (m)                       GP(       ) 3 1
DH2905  NAVD 88 (06/06/05)    6.29   (m)           20.6    (f) LEVELING    3
DH2905
DH2905.Superseded values are not recommended for survey control.
DH2905
DH2905.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DH2905.See file dsdata.txt to determine how the superseded data were derived.
DH2905
DH2905_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TWK6134293721(NAD 83)
DH2905
DH2905_MARKER: I = METAL ROD
DH2905_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
DH2905_STAMPING: MARCZUK 2004
DH2905_MARK LOGO: NGS
DH2905_PROJECTION: RECESSED 10 CENTIMETERS
DH2905_MAGNETIC: I = MARKER IS A STEEL ROD
DH2905_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
DH2905_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DH2905+SATELLITE: SATELLITE OBSERVATIONS - October 01, 2005
DH2905_ROD/PIPE-DEPTH: 11.3 meters
DH2905_SLEEVE-DEPTH  :  0.9 meters
DH2905
DH2905  HISTORY     - Date     Condition        Report By
DH2905  HISTORY     - 20040625 MONUMENTED       NJGS
DH2905  HISTORY     - 20051001 GOOD             CHANCE
DH2905
DH2905                          STATION DESCRIPTION
DH2905
DH2905'DESCRIBED BY NEW JERSEY GEODETIC SURVEY 2004 (RJK)
DH2905'THE STATION IS LOCATED IN WOODBRIDGE TOWNSHIP  ON THE GROUNDS OF THE
DH2905'STATE OF NEW  JERSEY, DEPARTMENT OF LAW AND PUBLIC SAFETY, DIVISION OF
DH2905'CONSUMER AFFAIRS, OFFICE OF  WEIGHTS AND MEASURES.  THE STATION IS
DH2905'LOCATED SOUTHEAST OF THE OFFICE BUILDING FOR THE  OFFICE OF WEIGHTS
DH2905'AND MEASURES, NUMBER 1261, IN THE GRASS AREA BETWEEN AN EIGHT FOOT
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DH2905'HIGH CHAIN LINK FENCE SURROUNDING THE PROPERTY AND THE SOUTHBOUND
DH2905'LANES OF U.S.  ROUTE 1.  THE STATION IS ABOUT 0.25 MILE SOUTH OF THE
DH2905'BRIDGE CARRYING U.S. ROUTE 1 OVER  THE RAHWAY RIVER.
DH2905'
DH2905'THE STATION IS 11.3 M NORTHWEST FROM THE WEST CURB OF THE SOUTHBOUND
DH2905'LANES OF U.S.  ROUTE 1, 29.8 M SOUTHWEST FROM UTILITY POLE NUMBER E
DH2905'71879 WB, 19.5 M SOUTHWEST FROM  THE SOUTHEAST CORNER OF THE FENCE
DH2905'SURROUNDING THE OFFICE OF WEIGHTS AND MEASURES  PROPERTY, 13.2 M
DH2905'SOUTHEAST FROM THE SOUTHEAST RANGE OF THE FENCE, 27.3 M NORTHWEST OF
DH2905'A UTILITY POLE WITH NO NUMBER, 16.3 M EAST SOUTHEAST FROM THE EAST
DH2905'POST OF THE SIGN FOR  THE OFFICE OF WEIGHTS AND MEASURES AND 1.0 M
DH2905'SOUTHEAST FROM A METAL WITNESS POST AND  SIGN.
DH2905
DH2905                          STATION RECOVERY (2005)
DH2905
DH2905'RECOVERY NOTE BY JE CHANCE AND ASSOCIATES 2005 (JWC)
DH2905'RECOVERED FOR THE USACE CHARTS-HYPERSPECTRAL PROJECT.  MONUMENT IS
DH2905'GOOD FOR AIRBORNE KGPS SURVEYS.

*** retrieval complete.
Elapsed Time = 00:00:04
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

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PROGRAM = datasheet95, VERSION = 8.3
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 12, 2014
 KV5848 ***********************************************************************
 KV5848  DESIGNATION -  NELSON
 KV5848  PID         -  KV5848
 KV5848  STATE/COUNTY-  NJ/MIDDLESEX
 KV5848  COUNTRY     -  US
 KV5848  USGS QUAD   -  PLAINFIELD (1995)
 KV5848
 KV5848                         *CURRENT SURVEY CONTROL
 KV5848  ______________________________________________________________________
 KV5848* NAD 83(2011) POSITION- 40 33 12.38606(N) 074 27 08.02708(W)   ADJUSTED
 KV5848* NAD 83(2011) ELLIP HT-   -12.174 (meters)        (06/27/12)   ADJUSTED
 KV5848* NAD 83(2011) EPOCH    -  2010.00
 KV5848* NAVD 88 ORTHO HEIGHT -    20.805  (meters)      68.26  (feet) ADJUSTED
 KV5848  ______________________________________________________________________
 KV5848  NAD 83(2011) X  -  1,300,798.293 (meters)                     COMP
 KV5848  NAD 83(2011) Y  - -4,675,386.495 (meters)                     COMP
 KV5848  NAD 83(2011) Z  -  4,124,862.650 (meters)                     COMP
 KV5848  LAPLACE CORR    -          4.85  (seconds)                    DEFLEC12A
 KV5848  GEOID HEIGHT    -        -32.99  (meters)                     GEOID12A
 KV5848  DYNAMIC HEIGHT  -         20.796 (meters)       68.23  (feet) COMP
 KV5848  MODELED GRAVITY -    980,192.1   (mgal)                       NAVD 88
 KV5848
 KV5848  VERT ORDER      -  FIRST     CLASS II
 KV5848
 KV5848  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 KV5848  Type                                           Horiz  Ellip  Dist(km)
 KV5848  ----------------------------------------------------------------------
 KV5848  NETWORK                                         0.60   0.96
 KV5848  ----------------------------------------------------------------------
 KV5848  MEDIAN LOCAL ACCURACY AND DIST (005 points)   0.63   0.96      3.94
 KV5848  ----------------------------------------------------------------------
 KV5848  NOTE: Click here for information on individual local accuracy
 KV5848  values and other accuracy information.
 KV5848
 KV5848
 KV5848.The horizontal coordinates were established by GPS observations
 KV5848.and adjusted by the National Geodetic Survey in June 2012.
 KV5848
 KV5848.NAD 83(2011) refers to NAD 83 coordinates where the reference
 KV5848.frame has been affixed to the stable North American tectonic plate. See
 KV5848.NA2011 for more information.
 KV5848
 KV5848.The horizontal coordinates are valid at the epoch date displayed above
 KV5848.which is a decimal equivalence of Year/Month/Day.
 KV5848
 KV5848.The orthometric height was determined by differential leveling and
 KV5848.adjusted by the NATIONAL GEODETIC SURVEY
 KV5848.in March 2001.
 KV5848
 KV5848.No vertical observational check was made to the station.
 KV5848
 KV5848.The X, Y, and Z were computed from the position and the ellipsoidal ht.
```

```
KV5848
KV5848.The Laplace correction was computed from DEFLEC12A derived deflections.
KV5848
KV5848.The ellipsoidal height was determined by GPS observations
KV5848.and is referenced to NAD 83.
KV5848
KV5848.The dynamic height is computed by dividing the NAVD 88
KV5848.geopotential number by the normal gravity value computed on the
KV5848.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
KV5848.degrees latitude (g = 980.6199 gals.).
KV5848
KV5848.The modeled gravity was interpolated from observed gravity values.
KV5848
KV5848. The following values were computed from the NAD 83(2011) position.
KV5848
KV5848;                    North         East     Units Scale Factor Converg.
KV5848;SPC NJ       -   190,963.376   154,045.758   MT  0.99990020   +0 01 51.8
KV5848;SPC NJ       -   626,519.01    505,398.46   sFT  0.99990020   +0 01 51.8
KV5848;UTM  18      - 4,489,330.794   546,377.946   MT  0.99962648   +0 21 22.1
KV5848
KV5848!             -  Elev Factor  x  Scale Factor =   Combined Factor
KV5848!SPC NJ       -   1.00000191  x   0.99990020  =   0.99990211
KV5848!UTM  18      -   1.00000191  x   0.99962648  =   0.99962839
KV5848
KV5848|---------------------------------------------------------------------|
KV5848| PID    Reference Object                    Distance      Geod. Az  |
KV5848|                                                          dddmmss.s |
KV5848| KV5841 BOUND                             331.963 METERS 03053     |
KV5848|---------------------------------------------------------------------|
KV5848
KV5848                          SUPERSEDED SURVEY CONTROL
KV5848
KV5848  NAD 83(2007)-  40 33 12.38628(N)    074 27 08.02782(W) AD(2002.00) 0
KV5848  ELLIP H (02/10/07)  -12.169  (m)                       GP(2002.00)
KV5848  ELLIP H (10/23/02)  -12.168  (m)                       GP(       ) 4 1
KV5848  NAD 83(1996)-  40 33 12.38640(N)    074 27 08.02797(W) AD(       ) 1
KV5848  ELLIP H (05/14/99)  -12.163  (m)                       GP(       ) 4 1
KV5848  NAD 83(1996)-  40 33 12.38627(N)    074 27 08.02903(W) AD(       ) 1
KV5848  NAD 83(1986)-  40 33 12.38696(N)    074 27 08.03024(W) AD(       ) 1
KV5848  NAD 83(1986)-  40 33 12.38677(N)    074 27 08.02662(W) AD(       ) 1
KV5848  NAVD 88 (01/21/93)   20.8    (m)  UNKNOWN model used   GPS OBS
KV5848  NGVD 29 (09/27/88)   21.1    (m)  RAPSU86 model used   GPS OBS
KV5848
KV5848.Superseded values are not recommended for survey control.
KV5848
KV5848.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
KV5848.See file dsdata.txt to determine how the superseded data were derived.
KV5848
KV5848_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TWK4637789330(NAD 83)
KV5848
KV5848_MARKER: DG = GRAVITY STATION DISK
KV5848_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
KV5848_SP_SET: SQUARE CONCRETE MONUMENT
KV5848_STAMPING: NELSON
KV5848_MARK LOGO: PSEG
KV5848_PROJECTION: FLUSH
KV5848_MAGNETIC: N = NO MAGNETIC MATERIAL
KV5848_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
KV5848+STABILITY: SURFACE MOTION
KV5848_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
KV5848+SATELLITE: SATELLITE OBSERVATIONS - April 27, 2010
KV5848
KV5848  HISTORY     - Date     Condition        Report By
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KV5848  HISTORY     - 1985     MONUMENTED       PSEG
KV5848  HISTORY     - 1985     GOOD             GEOHYD
KV5848  HISTORY     - 19901114 GOOD             NJGS
KV5848  HISTORY     - 19970707 GOOD             NJGS
KV5848  HISTORY     - 20100427 GOOD             NJGS
KV5848
KV5848                          STATION DESCRIPTION
KV5848
KV5848'DESCRIBED BY PUBLIC SERVICE E + G 1985 (AXH)
KV5848'THE STATION IS LOCATED ABOUT 0.6 KM (0.4 MI) WEST OF THE JUNCTION
KV5848'OF INTERSTATE I278/95 AND WASHINGTON AVENUE IN PISCATAWAY.
KV5848'OWNERSHIP--PSE+G
KV5848'
KV5848'TO REACH THE STATION FROM THE JUNCTION OF INTERSTATE I287/95 AND
KV5848'WASHINGTON AVENUE, GO SOUTH ON WASHINGTON AVENUE FOR ABOUT 50
KV5848'METERS.  TURN RIGHT AND GO ABOUT 300 METERS TO A SIDE ROAD LEFT.
KV5848'GO WEST ALONG THIS ROAD FOR 300 METERS TO THE STATION ON THE LEFT.
KV5848'
KV5848'THE STATION IS A STANDARD PSE+G DISK SET IN A CONCRETE MONUMENT
KV5848'PROJECTING 3 CM ABOVE THE GROUND.  THE STATION IS LOCATED
KV5848'21.601 METERS NORTHEAST OF THE NORTHEAST CORNER OF THE MASONARY
KV5848'SUBSTATION, 21.184 METERS NORTHWEST OF POWER POLE 7934PC-LN8012 AND
KV5848'4.930 METERS SOUTHEAST OF A RAILROAD SPIKE IN THE EDGE OF THE
KV5848'PAVEMENT.
KV5848'
KV5848'DESCRIBED BY--GEO/HYDRO
KV5848
KV5848                          STATION RECOVERY (1985)
KV5848
KV5848'RECOVERY NOTE BY GEO-HYDRO INCORPORATED 1985
KV5848'RECOVERED IN GOOD CONDITION.
KV5848
KV5848                          STATION RECOVERY (1990)
KV5848
KV5848'RECOVERY NOTE BY NEW JERSEY GEODETIC SURVEY 1990
KV5848'THE STATION IS LOCATED IN PISCATAWAY TOWNSHIP, AT THE PUBLIC SREVICE
KV5848'GAS AND ELECTRIC COMPANY SUBSTATION NEAR INTERSTATE 287.  TO REACH
KV5848'THE STATION FROM THE JUNCTION OF INTERSTATE 287 ANN WASHINGTON
KV5848'AVENUE, GO 50 M (164.0 FT) SOUTH ON WASHINGTON AVENUE TO A TRAFFIC
KV5848'LIGHT, TURN RIGHT AND GO 0.48 KM (0.30 MI) WEST ON AN ACCESS ROAD TO
KV5848'THE JUNCTION WITH ANOTHER ACCESS ROAD, TURN LEFT AND GO 0.16 KM
KV5848'(0.10 MI) SOUTH TO THE STATION ON THE LEFT.  THE STATION IS 22.3 M
KV5848'(73.2 FT) NORTH NORTHEAST OF THE EAST CORNER OF A ONE STORY BLOCK
KV5848'BUILDING, 21.1 M (69.2 FT) NORTHEAST OF THE NORTH CORNER OF THE SAME
KV5848'BUILDING, 21.3 M (69.9 FT) NORTHWEST OF POLE 7934 PC LN 8012, 16.9 M
KV5848'(55.4 FT) EAST NORTHEAST OF A PUBLIC SERVICE MANHOLE, 4.9 M
KV5848'(16.1 FT) SOUTHEAST OF A RAILROAD SPIKE IN THE ROAD.
KV5848
KV5848                          STATION RECOVERY (1997)
KV5848
KV5848'RECOVERY NOTE BY NEW JERSEY GEODETIC SURVEY 1997 (ECB)
KV5848'RECOVERED AS DESCRIBED.
KV5848
KV5848                          STATION RECOVERY (2010)
KV5848
KV5848'RECOVERY NOTE BY NEW JERSEY GEODETIC SURVEY 2010 (RJK)
KV5848'RECOVERED IN GOOD CONDITION.
KV5848'
KV5848'NOTE-THE STATION IS ALSO 21.9 FT (6.7 M) SOUTHEAST FROM THE CENTER
KV5848'LINE OF THE ENTRANCE DRIVE AND 1.2 FT (0.4 M) NORTHWEST FROM A METAL
KV5848'WITNESS POST WITH SIGN ATTACHED.
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*** retrieval complete.
Elapsed Time = 00:00:02
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

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PROGRAM = datasheet95, VERSION = 8.3
1         National Geodetic Survey,   Retrieval Date = FEBRUARY 12, 2014
 KV0495 ***********************************************************************
 KV0495  CBN         -  This is a Cooperative Base Network Control Station.
 KV0495  DESIGNATION -  W ANDERSON 2
 KV0495  PID         -  KV0495
 KV0495  STATE/COUNTY-  NJ/BERGEN
 KV0495  COUNTRY     -  US
 KV0495  USGS QUAD   -  HACKENSACK (1997)
 KV0495
 KV0495                        *CURRENT SURVEY CONTROL
 KV0495  ______________________________________________________________________
 KV0495* NAD 83(2011) POSITION- 40 53 31.48130(N) 074 02 12.26683(W)   ADJUSTED
 KV0495* NAD 83(2011) ELLIP HT-   -28.064 (meters)        (06/27/12)   ADJUSTED
 KV0495* NAD 83(2011) EPOCH    -  2010.00
 KV0495* NAVD 88 ORTHO HEIGHT -     3.761  (meters)      12.34  (feet) ADJUSTED
 KV0495  ______________________________________________________________________
 KV0495  NAD 83(2011) X  -  1,327,917.523 (meters)                     COMP
 KV0495  NAD 83(2011) Y  - -4,642,231.681 (meters)                     COMP
 KV0495  NAD 83(2011) Z  -  4,153,352.211 (meters)                     COMP
 KV0495  LAPLACE CORR    -          7.91  (seconds)                    DEFLEC12A
 KV0495  GEOID HEIGHT    -        -31.83  (meters)                     GEOID12A
 KV0495  DYNAMIC HEIGHT  -          3.760 (meters)       12.34  (feet) COMP
 KV0495  MODELED GRAVITY -    980,240.7   (mgal)                       NAVD 88
 KV0495
 KV0495  VERT ORDER      -  FIRST     CLASS II
 KV0495
 KV0495  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 KV0495  Type                                           Horiz  Ellip  Dist(km)
 KV0495  ----------------------------------------------------------------------
 KV0495  NETWORK                                         0.55   1.25
 KV0495  ----------------------------------------------------------------------
 KV0495  MEDIAN LOCAL ACCURACY AND DIST (083 points)    0.63   1.47     82.94
 KV0495  ----------------------------------------------------------------------
 KV0495  NOTE: Click here for information on individual local accuracy
 KV0495  values and other accuracy information.
 KV0495
 KV0495
 KV0495.The horizontal coordinates were established by GPS observations
 KV0495.and adjusted by the National Geodetic Survey in June 2012.
 KV0495
 KV0495.NAD 83(2011) refers to NAD 83 coordinates where the reference
 KV0495.frame has been affixed to the stable North American tectonic plate. See
 KV0495.NA2011 for more information.
 KV0495
 KV0495.The horizontal coordinates are valid at the epoch date displayed above
 KV0495.which is a decimal equivalence of Year/Month/Day.
 KV0495
 KV0495.The orthometric height was determined by differential leveling and
 KV0495.adjusted by the NATIONAL GEODETIC SURVEY
 KV0495.in March 2001.
 KV0495
 KV0495.No vertical observational check was made to the station.
 KV0495
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KV0495.The X, Y, and Z were computed from the position and the ellipsoidal ht.
KV0495
KV0495.The Laplace correction was computed from DEFLEC12A derived deflections.
KV0495
KV0495.The ellipsoidal height was determined by GPS observations
KV0495.and is referenced to NAD 83.
KV0495
KV0495.The dynamic height is computed by dividing the NAVD 88
KV0495.geopotential number by the normal gravity value computed on the
KV0495.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
KV0495.degrees latitude (g = 980.6199 gals.).
KV0495
KV0495.The modeled gravity was interpolated from observed gravity values.
KV0495
KV0495. The following values were computed from the NAD 83(2011) position.
KV0495
KV0495;                     North          East      Units Scale Factor Converg.
KV0495;SPC NJ       -   228,667.041   189,036.063   MT  0.99991875   +0 18 11.8
KV0495;SPC NJ       -   750,218.45    620,195.82   sFT  0.99991875   +0 18 11.8
KV0495;SPC NY E     -   228,667.041   189,036.063   MT  0.99991875   +0 18 11.8
KV0495;SPC NY E     -   750,218.45    620,195.82   sFT  0.99991875   +0 18 11.8
KV0495;UTM  18      - 4,527,223.374   581,144.124   MT  0.99968104   +0 37 50.2
KV0495
KV0495!             -  Elev Factor  x  Scale Factor =   Combined Factor
KV0495!SPC NJ       -   1.00000440  x   0.99991875  =   0.99992315
KV0495!SPC NY E     -   1.00000440  x   0.99991875  =   0.99992315
KV0495!UTM  18      -   1.00000440  x   0.99968104  =   0.99968544
KV0495
KV0495:                Primary Azimuth Mark                     Grid Az
KV0495:SPC NJ       -  HACKENSACK FIRST PRESB CHURCH            256 39 25.6
KV0495:SPC NY E     -  HACKENSACK FIRST PRESB CHURCH            256 39 25.6
KV0495:UTM  18      -  HACKENSACK FIRST PRESB CHURCH            256 19 47.2
KV0495
KV0495|-------------------------------------------------------------------------|
KV0495| PID    Reference Object                        Distance      Geod. Az  |
KV0495|                                                              dddmmss.s |
KV0495| KV0496 W ANDERSON 2 RM 3                        5.581 METERS 09730     |
KV0495| KV0497 W ANDERSON 2 RM 4                        8.586 METERS 18551     |
KV0495| KV0494 WEST ANDERSON RESET                     18.850 METERS 19246     |
KV0495| KV3905 HACKENSACK FIRST PRESB CHURCH          461.746 METERS 2565737.4 |
KV0495| KV3902 HACKENSACK SEARS FLAGPOLE              216.784 METERS 28132     |
KV0495| KV3901 HACKENSACK HOLY TRINITY CHURCH         387.207 METERS 29928     |
KV0495|-------------------------------------------------------------------------|
KV0495
KV0495                          SUPERSEDED SURVEY CONTROL
KV0495
KV0495  NAD 83(2007)-  40 53 31.48114(N)    074 02 12.26783(W) AD(2002.00) 0
KV0495  ELLIP H (02/10/07)  -28.057  (m)                       GP(2002.00)
KV0495  NAD 83(1996)-  40 53 31.48145(N)    074 02 12.26776(W) AD(       ) A
KV0495  ELLIP H (09/24/01)  -28.041  (m)                       GP(       ) 4 1
KV0495  NAD 83(1996)-  40 53 31.48117(N)    074 02 12.26883(W) AD(       ) 1
KV0495  ELLIP H (05/14/99)  -28.048  (m)                       GP(       ) 4 1
KV0495  NAD 83(1996)-  40 53 31.48105(N)    074 02 12.26895(W) AD(       ) 1
KV0495  NAD 83(1996)-  40 53 31.48000(N)    074 02 12.27021(W) AD(       ) 1
KV0495  NAD 83(1992)-  40 53 31.47769(N)    074 02 12.27069(W) AD(       ) 1
KV0495  NAD 83(1986)-  40 53 31.47955(N)    074 02 12.27081(W) AD(       ) 1
KV0495  NAD 83(1986)-  40 53 31.48918(N)    074 02 12.26921(W) AD(       ) 2
KV0495  NAD 27      -  40 53 31.12659(N)    074 02 13.76941(W) AD(       ) 2
KV0495  NAVD 88 (12/13/06)    3.761  (m)           12.34   (f) SUPERSEDED  3 0
KV0495  NAVD 88 (09/24/01)    3.76   (m)           12.3    (f) LEVELING    3
KV0495  NAVD 88 (11/16/93)    3.8    (m)  UNKNOWN model used   GPS OBS
KV0495  NGVD 29 (??/??/??)    4.07   (m)           13.4    (f) RESET       3
KV0495
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KV0495.Superseded values are not recommended for survey control.
KV0495
KV0495.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
KV0495.See file dsdata.txt to determine how the superseded data were derived.
KV0495
KV0495_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TWL8114427223(NAD 83)
KV0495
KV0495_MARKER: DS = TRIANGULATION STATION DISK
KV0495_SETTING: 38 = SET IN THE ABUTMENT OR PIER OF A LARGE BRIDGE
KV0495_SP_SET: BRIDGE ABUTMENT
KV0495_STAMPING: W ANDERSON 2 1970
KV0495_MARK LOGO: NGS
KV0495_MAGNETIC: N = NO MAGNETIC MATERIAL
KV0495_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
KV0495_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
KV0495+SATELLITE: SATELLITE OBSERVATIONS - June 18, 2008
KV0495
KV0495  HISTORY     - Date     Condition        Report By
KV0495  HISTORY     - 1970     MONUMENTED       NGS
KV0495  HISTORY     - 1970     GOOD             NGS
KV0495  HISTORY     - 1984     MARK NOT FOUND   USE
KV0495  HISTORY     - 19920219 GOOD             NJGS
KV0495  HISTORY     - 19971029 GOOD             NJGS
KV0495  HISTORY     - 20001003 GOOD             NJGS
KV0495  HISTORY     - 20010501 GOOD             NGS
KV0495  HISTORY     - 20010725 GOOD             NJGS
KV0495  HISTORY     - 20010830 GOOD             TWT
KV0495  HISTORY     - 20021003 GOOD             INDIV
KV0495  HISTORY     - 20030131 GOOD             INDIV
KV0495  HISTORY     - 20060207 GOOD             AASCO
KV0495  HISTORY     - 20060403 GOOD             MACDEL
KV0495  HISTORY     - 20080618 GOOD             BOSWEL
KV0495
KV0495                          STATION DESCRIPTION
KV0495
KV0495'DESCRIBED BY NATIONAL GEODETIC SURVEY 1970 (LFS)
KV0495'THE STATION IS LOCATED IN HACKENSACK, NEW JERSEY, AT THE WEST END OF
KV0495'THE NEW ANDERSON STREET BRIDGE OVER THE HACKENSACK RIVER, 0.1 MILE
KV0495'EAST OF THE INTERSECTION OF ANDERSON STREET AND RIVER STREET ROAD.
KV0495'IT IS A STANDARD TRIANGULATION STATION MARK DISK SET IN A DRILL
KV0495'HOLE IN THE NORTHWEST ABUTMENT OF THE BRIDGE, 14 FEET NORTH OF THE
KV0495'CENTERLINE OF THE WEST BOUND TRAFFIC LANE, 4 FEET SOUTH OF
KV0495'WEST END OF THE BRIDGE, 1.0 FOOT NORTH OF THE CURBING, AND NEAR
KV0495'SOUTH EDGE OF THE SIDEWALK.  THE DISK IS STAMPED W ANDERSON 2 1970.
KV0495'
KV0495'REFERENCE MARK NO. 3 IS A STANDARD REFERENCE MARK DISK SET IN A
KV0495'DRILL HOLE IN THE CURBING ALONG THE NORTH SIDE OF THE WEST BOUND
KV0495'TRAFFIC LANES, BETWEEN THE TRAFFIC LANES AND SIDEWALK, AND IS
KV0495'STAMPED W ANDERSON 2 1970 NO 3.
KV0495'
KV0495'REFERENCE MARK NO. 4 IS A STANDARD REFERENCE MARK DISK CEMENTED
KV0495'IN A DRILL HOLE ON THE TOP OF THE ABUTMENT AT THE WEST END OF THE
KV0495'BRIDGE ON THE DEVIDER BETWEEN THE EAST AND WEST BOUND TRAFFIC
KV0495'LANES.  IT IS STAMPED W ANDERSON 2 NO 4 1970.
KV0495'
KV0495'NO AZIMUTH MARK WAS ESTABLISHED FOR THIS STATION.
KV0495
KV0495                          STATION RECOVERY (1970)
KV0495
KV0495'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1970
KV0495'AT HACKENSACK.
KV0495'AT HACKENSACK, 0.1 MILE EAST OF THE INTERSECTION OF ANDERSON
KV0495'STREET AND RIVER STREET ROAD, IN THE WEST END OF THE NEW
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KV0495'ANDERSON STREET BRIDGE OVER THE HACKENSACK RIVER.  IT IS SET IN
KV0495'A DRILL HOLE IN THE NORTHWEST ABUTMENT OF THE BRIDGE, 14 FEET
KV0495'NORTH OF THE CENTERLINE OF WEST BOUND TRAFFIC LANE, 4 FEET SOUTH
KV0495'OF WEST END OF BRIDGE, 1.0 FOOT NORTH OF CURBING, AND ABOUT 10
KV0495'INCHES ABOVE THE LEVEL OF THE ROAD.
KV0495
KV0495                          STATION RECOVERY (1984)
KV0495
KV0495'RECOVERY NOTE BY US ENGINEERS 1984 (RK)
KV0495'W ANDERSON 2 NO 4 1970 RECOVERED GOOD.
KV0495'
KV0495'RECOVERED BY TIES AS PER DESCRIPTION.
KV0495
KV0495                          STATION RECOVERY (1992)
KV0495
KV0495'RECOVERY NOTE BY NEW JERSEY GEODETIC SURVEY 1992
KV0495'THE STATION IS LOCATED IN THE CITY OF HACKENSACK ON THE TOP OF THE
KV0495'NORTHWEST END OF THE WEST ABUTMENT OF THE ANDERSON STREET BRIDGE OVER
KV0495'THE HACKENSACK RIVER.  TO REACH THE STATION FROM THE INTERSECTION OF
KV0495'ANDERSON STREET AND RIVER ROAD, A THREE STORY SEARS AND ROEBUCK
KV0495'BUILDING IS LOCATED ON THE NORTHWEST CORNER OF THE INTERSECTION, GO
KV0495'0.1 MI (0.2 KM) EAST ON ANDERSON STREET TO THE STATION ON THE LEFT.
KV0495'THE STATION IS 0.33 M (1.08 FT) NORTH FROM THE FACE OF THE NORTH
KV0495'CURB, 1.25 M (4.10 FT) SOUTHWEST FROM THE SOUTHWEST CORNER OF THE
KV0495'WEST END OF THE NORTH BRIDGE PARAPET, 3.25 M (10.66 FT) EAST FROM THE
KV0495'CENTER OF AN INLET ON THE NORTH CURB OF THE WESTBOUND LANES, 8.6 M
KV0495'(28.2 FT) NORTH FROM REFERENCE MARK NUMBER 4 AND 5.6 M (18.4 FT) WEST
KV0495'FROM REFERENCE MARK NUMBER 3 SET IN THE CURB.
KV0495
KV0495                          STATION RECOVERY (1997)
KV0495
KV0495'RECOVERY NOTE BY NEW JERSEY GEODETIC SURVEY 1997 (RJK)
KV0495'RECOVERED AS DESCRIBED.
KV0495
KV0495                          STATION RECOVERY (2000)
KV0495
KV0495'RECOVERY NOTE BY NEW JERSEY GEODETIC SURVEY 2000 (RJK)
KV0495'RECOVERED AS DESCRIBED.
KV0495'
KV0495'
KV0495
KV0495                          STATION RECOVERY (2001)
KV0495
KV0495'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2001 (AJL)
KV0495'RECOVERED AS DESCRIBED.
KV0495'
KV0495
KV0495                          STATION RECOVERY (2001)
KV0495
KV0495'RECOVERY NOTE BY NEW JERSEY GEODETIC SURVEY 2001 (RJK)
KV0495'RECOVERED AS DESCRIBED.
KV0495'
KV0495
KV0495                          STATION RECOVERY (2001)
KV0495
KV0495'RECOVERY NOTE BY TWT CONS ENG 2001 (BSJ)
KV0495'RECOVERED IN GOOD CONDITION.
KV0495
KV0495                          STATION RECOVERY (2002)
KV0495
KV0495'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2002 (FP)
KV0495'RECOVERED AS DESCRIBED BY MACDEL ENGINEERING, P.C.
KV0495
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KV0495                          STATION RECOVERY (2003)
KV0495
KV0495'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2003 (FP)
KV0495'RECOVERED AS DESCRIBED BY MACDEL ENGINEERING, P.C.
KV0495'
KV0495
KV0495                          STATION RECOVERY (2006)
KV0495
KV0495'RECOVERY NOTE BY ATLANTIS AERIAL SURVEY COMPANY 2006 (GLB)
KV0495'RECOVERED IN GOOD CONDITION.
KV0495
KV0495                          STATION RECOVERY (2006)
KV0495
KV0495'RECOVERY NOTE BY MACDEL ENGINEERING 2006 (JM)
KV0495'RECOVERED AS DESCRIBED
KV0495
KV0495                          STATION RECOVERY (2008)
KV0495
KV0495'RECOVERY NOTE BY BOSWELL ENGINEERING 2008 (AB)
KV0495'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:06
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

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PROGRAM = datasheet95, VERSION = 8.3
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 12, 2014
 KU1133 ***********************************************************************
 KU1133  DESIGNATION -  Z 340
 KU1133  PID         -  KU1133
 KU1133  STATE/COUNTY-  NY/QUEENS
 KU1133  COUNTRY     -  US
 KU1133  USGS QUAD   -  FLUSHING (1979)
 KU1133
 KU1133                         *CURRENT SURVEY CONTROL
 KU1133  ______________________________________________________________________
 KU1133* NAD 83(2011) POSITION- 40 45 48.85746(N) 073 45 05.77349(W)   ADJUSTED
 KU1133* NAD 83(2011) ELLIP HT-   -26.143 (meters)        (06/27/12)   ADJUSTED
 KU1133* NAD 83(2011) EPOCH   -  2010.00
 KU1133* NAVD 88 ORTHO HEIGHT -     5.281  (meters)      17.33  (feet) ADJUSTED
 KU1133  ______________________________________________________________________
 KU1133  NAD 83(2011) X  -  1,353,614.381 (meters)                      COMP
 KU1133  NAD 83(2011) Y  - -4,644,524.464 (meters)                      COMP
 KU1133  NAD 83(2011) Z  -  4,142,555.169 (meters)                      COMP
 KU1133  LAPLACE CORR    -          0.71  (seconds)                     DEFLEC12A
 KU1133  GEOID HEIGHT    -        -31.42  (meters)                      GEOID12A
 KU1133  DYNAMIC HEIGHT  -          5.279 (meters)       17.32  (feet) COMP
 KU1133  MODELED GRAVITY -    980,242.8   (mgal)                        NAVD 88
 KU1133
 KU1133  VERT ORDER      -  FIRST     CLASS II
 KU1133
 KU1133  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 KU1133  Type                                           Horiz  Ellip  Dist(km)
 KU1133  ----------------------------------------------------------------------
 KU1133  NETWORK                                         1.70   3.14
 KU1133  ----------------------------------------------------------------------
 KU1133  MEDIAN LOCAL ACCURACY AND DIST (002 points)   1.11   2.32      3.27
 KU1133  ----------------------------------------------------------------------
 KU1133  NOTE: Click here for information on individual local accuracy
 KU1133  values and other accuracy information.
 KU1133
 KU1133
 KU1133.The horizontal coordinates were established by GPS observations
 KU1133.and adjusted by the National Geodetic Survey in June 2012.
 KU1133
 KU1133.NAD 83(2011) refers to NAD 83 coordinates where the reference
 KU1133.frame has been affixed to the stable North American tectonic plate. See
 KU1133.NA2011 for more information.
 KU1133
 KU1133.The horizontal coordinates are valid at the epoch date displayed above
 KU1133.which is a decimal equivalence of Year/Month/Day.
 KU1133
 KU1133.The orthometric height was determined by differential leveling and
 KU1133.adjusted by the NATIONAL GEODETIC SURVEY
 KU1133.in August 1995.
 KU1133
 KU1133.WARNING-Repeat measurements at this control monument indicate possible
 KU1133.vertical movement.
 KU1133
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KU1133.Photographs are available for this station.
KU1133
KU1133.The X, Y, and Z were computed from the position and the ellipsoidal ht.
KU1133
KU1133.The Laplace correction was computed from DEFLEC12A derived deflections.
KU1133
KU1133.The ellipsoidal height was determined by GPS observations
KU1133.and is referenced to NAD 83.
KU1133
KU1133.The dynamic height is computed by dividing the NAVD 88
KU1133.geopotential number by the normal gravity value computed on the
KU1133.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
KU1133.degrees latitude (g = 980.6199 gals.).
KU1133
KU1133.The modeled gravity was interpolated from observed gravity values.
KU1133
KU1133. The following values were computed from the NAD 83(2011) position.
KU1133
KU1133;                    North         East     Units Scale Factor Converg.
KU1133;SPC NY L     -    66,313.638   320,973.254   MT  0.99999604   +0 09 44.9
KU1133;SPC NY L     -   217,563.99  1,053,059.75   sFT  0.99999604   +0 09 44.9
KU1133;UTM  18      - 4,513,261.375   605,367.557   MT  0.99973665   +0 48 54.7
KU1133
KU1133!             -  Elev Factor  x  Scale Factor =   Combined Factor
KU1133!SPC NY L     -   1.00000410  x   0.99999604  =   1.00000014
KU1133!UTM  18      -   1.00000410  x   0.99973665  =   0.99974075
KU1133
KU1133                          SUPERSEDED SURVEY CONTROL
KU1133
KU1133  NAD 83(2007)-  40 45 48.85784(N)    073 45 05.77426(W) AD(2002.00) 0
KU1133  ELLIP H (02/10/07)  -26.129  (m)                       GP(2002.00)
KU1133  ELLIP H (12/03/02)  -26.120  (m)                       GP(       ) 4 2
KU1133  NAD 83(1996)-  40 45 48.85743(N)    073 45 05.77406(W) AD(       ) 1
KU1133  ELLIP H (01/11/99)  -26.117  (m)                       GP(       ) 4 1
KU1133  NAD 83(1996)-  40 45 48.86046(N)    073 45 05.77296(W) AD(       ) 1
KU1133  NAD 83(1992)-  40 45 48.86032(N)    073 45 05.77278(W) AD(       ) 1
KU1133  NAD 83(1986)-  40 45 48.86044(N)    073 45 05.77441(W) AD(       ) 1
KU1133  NAVD 88 (06/15/91)    5.358  (m)           17.58   (f) SUPERSEDED  1 2
KU1133  NGVD 29 (??/??/92)    5.687  (m)           18.66   (f) ADJ UNCH    1 2
KU1133
KU1133.Superseded values are not recommended for survey control.
KU1133
KU1133.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
KU1133.See file dsdata.txt to determine how the superseded data were derived.
KU1133
KU1133_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TXL0536713261(NAD 83)
KU1133
KU1133_MARKER: DB = BENCH MARK DISK
KU1133_SETTING: 0 = UNSPECIFIED SETTING
KU1133_STAMPING: Z 340 1952
KU1133_MARK LOGO: CGS
KU1133_MAGNETIC: N = NO MAGNETIC MATERIAL
KU1133_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
KU1133+STABILITY: SURFACE MOTION
KU1133_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
KU1133+SATELLITE: SATELLITE OBSERVATIONS - December 05, 1990
KU1133
KU1133  HISTORY     - Date     Condition        Report By
KU1133  HISTORY     - 1952     MONUMENTED       CGS
KU1133  HISTORY     - 1973     GOOD             NGS
KU1133  HISTORY     - 1989     GOOD             USPSQD
KU1133  HISTORY     - 1990     GOOD             USPSQD
KU1133  HISTORY     - 19901205 GOOD             SBAS
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KU1133  HISTORY     - 19910320 GOOD             USPSQD
KU1133  HISTORY     - 20040428 GOOD             GEOCAC
KU1133  HISTORY     - 20060517 GOOD             GEOCAC
KU1133  HISTORY     - 20100418 GOOD             JCLS
KU1133
KU1133                          STATION DESCRIPTION
KU1133
KU1133'DESCRIBED BY COAST AND GEODETIC SURVEY 1952
KU1133'AT NEW YORK.
KU1133'AT NEW YORK, IN BOROUGH OF QUEENS, AT THE EAST END OF NORTHERN
KU1133'BOULEVARD BRIDGE OVER LITTLE NECK BAY, SET IN THE TOP OF THE
KU1133'CENTER OF ORNAMENTAL STONE POST OF NORTH GRANITE RAIL AT EAST
KU1133'END OF BRIDGE, 9 FEET NORTH OF NORTH CURB OF BRIDGE AND 2.7
KU1133'FEET ABOVE SIDE WALK.
KU1133
KU1133                          STATION RECOVERY (1973)
KU1133
KU1133'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1973
KU1133'RECOVERED IN GOOD CONDITION.
KU1133
KU1133                          STATION RECOVERY (1989)
KU1133
KU1133'RECOVERY NOTE BY US POWER SQUADRON 1989 (SM)
KU1133'RECOVERED IN GOOD CONDITION.
KU1133
KU1133                          STATION RECOVERY (1990)
KU1133
KU1133'RECOVERY NOTE BY US POWER SQUADRON 1990 (SM)
KU1133'RECOVERED IN GOOD CONDITION.
KU1133
KU1133                          STATION RECOVERY (1990)
KU1133
KU1133'RECOVERY NOTE BY SIDNEY B BOWNE AND SON 1990
KU1133'RECOVERED IN GOOD CONDITION.
KU1133
KU1133                          STATION RECOVERY (1991)
KU1133
KU1133'RECOVERY NOTE BY US POWER SQUADRON 1991 (RB)
KU1133'RECOVERED IN GOOD CONDITION.
KU1133
KU1133                          STATION RECOVERY (2004)
KU1133
KU1133'RECOVERY NOTE BY GEOCACHING 2004 (CAG)
KU1133'BETWEEN FENCE AND GUARDRAIL - MAY BE HARD TO GET GPS UNIT IN PLACE
KU1133
KU1133                          STATION RECOVERY (2006)
KU1133
KU1133'RECOVERY NOTE BY GEOCACHING 2006 (RG)
KU1133'RECOVERED IN GOOD CONDITION AS DESCRIBED.
KU1133
KU1133                          STATION RECOVERY (2010)
KU1133
KU1133'RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2010
KU1133'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:03
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SECTION 5: GPS CONTROL POINTS

This section contains a graphical representation of the new quality control check points and existing ground control stations used for this lidar project.


Bridgeport
Long Island Sound
Stamford
White Plains
Newton
H103 CK
KP14
Paterson
W ANDERSON2 CHK
1008
269
5008
Parsippany-Troy Hills
270
3009
272
5010
1010
East Patch
Levittown
Union
6015
5015
2015
5016
PRS36652789504
3013A
3013
273
215
ROG1
MARCZUK CHK
1014
2014
5014
276
275
277
3012
NELSON CK
Edison
2017
211
Middletown
FORRESTAL CHK
4010
TWDA
PRS7795813199
12 F 3 CHK
KIMCOB CHK
Trenton
HAMBONE CHK
PRS5325792914O4
Hudson Shelf Valley
New Jersey
Brick
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