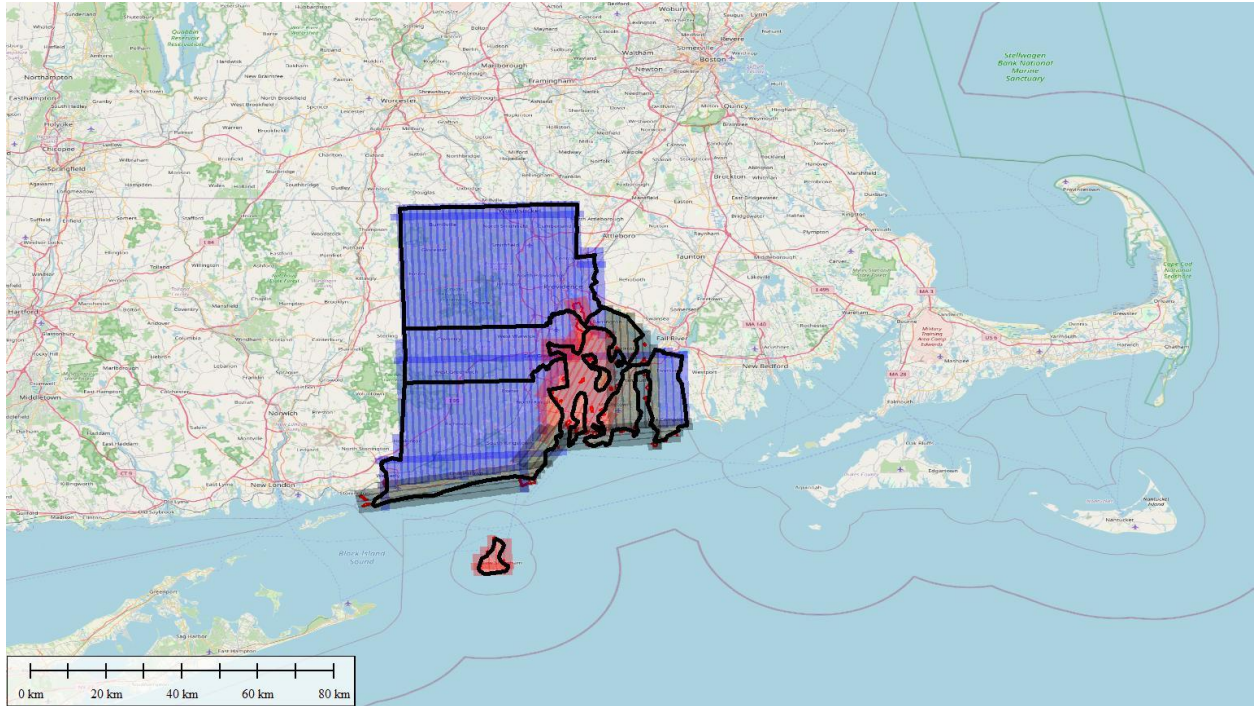


REPORT OF LIDAR SURVEY

Ground Control Report

Rhode Island



Performed by:

TerraSurv

For:

Fugro Geospatial

Terrasurv Project Number: 22029

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REPORT OF SURVEY

RHODE ISLAND

INTRODUCTION

Terrasurv, Inc of Pittsburgh, PA was tasked by Fugro Geospatial with performing a control survey in support of LiDAR data collection for the state of Rhode Island. The project consisted of two parts: 19 ground control (calibration) points (GCP) and 105 quality control (QC: NVA/VVA/VVA-F), for a total of 124 new stations. The map in figure 1 shows the location of the Ground Control (GCP) and figure 2 shows the location of the QC points. The control symbology for figures 1 and 2 are listed in table 1. Also shown are the Continuously Operating Reference Stations used in the project via the Keynet VRS/RTN Network.

Table 1 - Map Symbology and Control Quantity

Type	Symbol	VA Quantity
Ground Control (GCP)	Green Dot	19
Non-Vegetated (NVA)	Red Dot	58
Vegetated (VVA)	Red X	4
Woods (VVA-F)	Yellow X	43
CORS	White square with red "+"	4

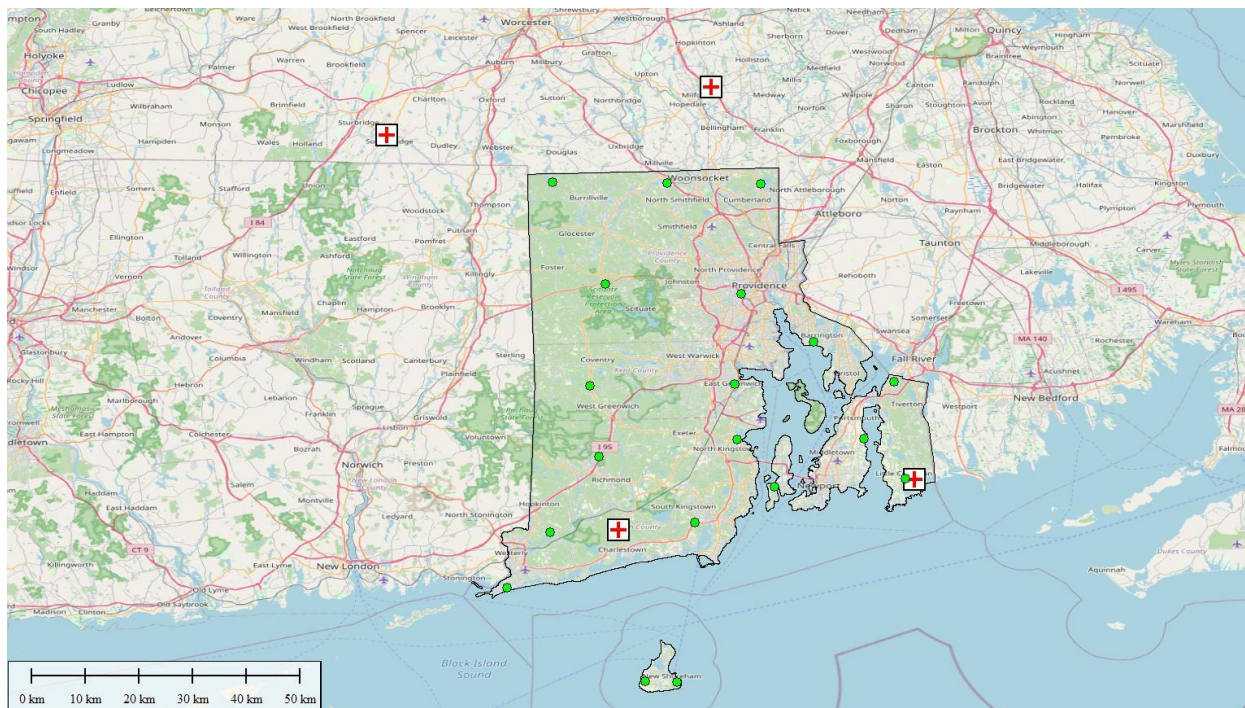


Figure 1 – GCP stations and CORS

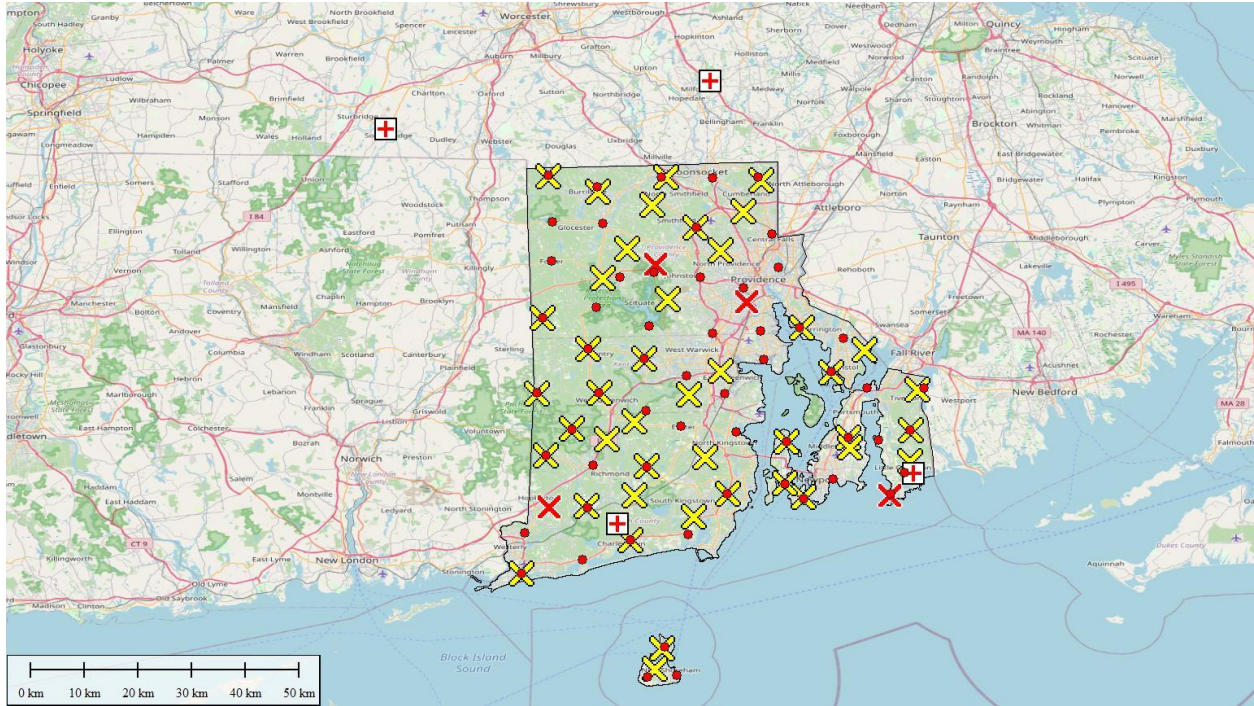


Figure 2 – Checkpoints

CONTROL

The National Spatial Reference System (NSRS) was used to provide control for the network. The Keynet real time network (RTN) was utilized. The horizontal datum for processing was the North American Datum of 1983 – NAD83 (2011), epoch 2010.0. The vertical datum was the North American Vertical Datum of 1988 (NAVD88), realized with the GEOID18 geoid model from the National Geodetic Survey (NGS).

STATIONS

Table 2 lists the GCP and CP stations established in this survey, including the GCP, NVA, VVA, and VVA-F, as well as the CORS.

Table 2 - Station List

Station Name	GPSID	USGS Quadrangle	Description
GCP01	22029AA	THOMPSON	asphalt pavement in parking lot for maintenance building on east side of Wallum Lake Road at hospital entrance
GCP02	22029AB	GEORGIAVILLE	gravel parking lot for tractor trailers on north side of Industrial Drive and east side of entrance road
GCP03	22029AC	PAWTUCKET	pavement in NB lane of Jason Grant just south of street left
GCP04	22029AD	COVENTRY CENTER	pavement on turn radius from Ambrose Knight Road WB to RI 102 NB
GCP05	22029AE	EAST GREENWICH	pavement on SW side of parking lot in north quadrant of intersection of Greene Street and Liberty Street
GCP06	22029AF	BRISTOL	pavement on NB lane of Devonshire Drive on south side of T intersection at Glenfield Road
GCP07	22029AG	FALL RIVER	pavement in NB lane of Short Street just north of Beardsworth Road

GCP08	22029AH	ASHAWAY	pavement in parking area for nursery on north side of Ashaway Road
GCP09	22029AI	KINGSTON	pavement on shoulder of US 1 NB between off ramp and on ramp for Post Road
GCP10	22029AJ	TIVERTON	pavement in T intersection in cemetery on east side of S Commons Road
GCP11	22029AK	NARRAGANSETT PIER	pavement in EB lane of Fort Getty Road at west side of Beavertail Road
GCP12	22029AL	BLOCK ISLAND	bare ground on north side of Cooneymus Road just west of West Side Road
GCP13	22029AM	BLOCK ISLAND	pavement in SB lane of Mohegan Trail
GCP14	22029AN	CLAYVILLE	pavement on drive to utility building on north side of Danielson Pike
GCP15	22029AO	PROVIDENCE	pavement in NB lane of Atwood Street just north of Union Avenue
GCP16	22029AP	HOPE VALLEY	gravel surface on north side of Nooseneck Hill Road and west side of W Bakers Pine Road
GCP17	22029AQ	WICKFORD	pavement in parking lot on NE side of Boston Neck Road and SE side of Reynolds Street
GCP18	22029AR	TIVERTON	pavement in cul-de-sac at south end of Vanderbilt Lane
GCP19	22029AS	WATCH HILL	pavement between entrance and exit to "Misquamicut Club" on north side of Ocean View Hwy
NVA01	22029AT	BRISTOL	BARE= northwest quadrant of an asphalt parking lot for St Matthew & Mark Episcopal Church on the south side of 2nd Street.
NVA02	22029AU	EAST GREENWICH	BARE= asphalt center of the Chapel Drive cul-de-sac.
NVA03	22029AV	NORTH SCITUATE	BARE= south center part of an asphalt parking lot for North Scituate Park on the east side of West Greenville Road.
NVA04	22029AW	NEWPORT	BARE= asphalt centerline of a pull off on the north side of Memorial Boulevard.
NVA05	22029AX	NORTH SCITUATE	BARE= asphalt center of exit for 1665 Plaza on the north side of Grand Army of the Republic Highway.
NVA06	22029AY	CHEPACHET	BARE= gravel centerline of a drive to the east of Sherman Farm Road.
NVA07	22029AZ	CAROLINA	BARE= asphalt centerline of O'Shay Lane and on the north side of O'Rieley Court.
NVA08	22029BA	BRISTOL	BARE= asphalt center of the Portside Drive cul-de-sac.
NVA09	22029BB	GEORGIAVILLE	BARE= asphalt center of a lot for trailers and storage containers on the northeast side of Providence Pike.
NVA10	22029BC	BRISTOL	BARE= south center of the asphalt parking lot for St Thomas the Apostle and at the southeast of the intersection of Libby Lane and Metacom Avenue.
NVA11	22029BD	HOPE VALLEY	BARE= north side of the southernmost drive lane in the parking lot for Ocean State Job Lot and in front of The Nutrition Barn.
NVA12	22029BE	BLOCK ISLAND	bare ground on south side of Cooneymus Road at drive to #983
NVA13	22029BF	PRUDENCE ISLAND	BARE= asphalt east lane of Acorn Drive and on the south edge of Union Street.
NVA14	22029BG	TIVERTON	BARE= asphalt centerline of Fogland Point Road and the north edge of Fogland Road.
NVA15	22029BH	EAST GREENWICH	BARE= southeast asphalt parking lot near Citizen's Bank.
NVA16	22029BI	PROVIDENCE	BARE= asphalt centerline of the southernmost parking lot for Butler Hospital.
NVA17	22029BJ	PROVIDENCE	BARE= asphalt southwest lane on Althea Street and on the northwest edge of Sorrento Street.
NVA18	22029BK	CHEPACHET	BARE= asphalt parking lot in front of the Purple Cat Diner and on the east side of Money Hill Road.

NVA19	22029BL	GEORGIAVILLE	BARE= asphalt centerline of the center drive of the parking lot on the south side of Neighborhood Health Plan of Rhode Island.
NVA20	22029BM	TIVERTON	BARE= asphalt centerline of the southwest parking lot for St Madeleine Catholic Church and on the east side of Lake Road.
NVA21	22029BN	SAKONNET POINT	BARE= asphalt centerline of Washington Road and on the southeast edge of Sonnet Point Road.
NVA22	22029BO	CROMPTON	SPARSE= sand/cut grass on the south side of Scituate Avenue and just east from Howard Avenue.
NVA23	22029BP	NEWPORT	BARE= asphalt at the north center end of a traffic island at Walcott Avenue and Highland Drive.
NVA24	22029BQ	HOPE VALLEY	BARE= asphalt centerline of Old Ten Rod Road and on the north edge of Ten Rod Road and opposite Mt Tom Road.
NVA25	22029BR	ASHAWAY	pavement in parking lot of Dunkin Donuts on east side of Narrow Lane and south side of US 1
NVA26	22029BS	WICKFORD	BARE= asphalt centerline of Matterson Street and the west edge of Gregory Avenue.
NVA27	22029BT	EAST GREENWICH	BARE= asphalt centerline of the southern drive to Little Rhody Boat Club on the west side of Sea View Drive.
NVA28	22029BU	PRUDENCE ISLAND	BARE= asphalt centerline of Columbia Lane and on the north edge of America Way.
NVA29	22029BV	COVENTRY CENTER	BARE= asphalt centerline intersection of Linden Lane and Regina Drive.
NVA30	22029BW	CLAYVILLE	BARE= asphalt centerline of the drive to the Clayville Stockpile on the north side of Plainfield Pike and east from Isthmus Road.
NVA31	22029BX	BLOCK ISLAND	sand/dirt road surface on EB lane of Southeast Road just west of Spring Street
NVA32	22029BY	PAWTUCKET	BARE= asphalt centerline of Fortin Drive and the east edge of Founders Drive.
NVA33	22029BZ	ONECO	BARE= asphalt centerline of Bailey Pond Road and the west edge of Hazard Road.
NVA34	22029CA	SLOCUM	BARE= north shoulder of Ten Rod Road and just west from #265.
NVA35	22029CB	QUONOCHONTAUG	paved parking area on south side of Old Post Road in front of Quonochontaug Grange
NVA36	22029CC	SLOCUM	BARE= asphalt center of the Fox Run cul-de-sac.
NVA37	22029CD	NARRAGANSETT PIER	paved shoulder on east side of US 1 just south of driveway east to #4144
NVA38	22029CE	COVENTRY CENTER	BARE= asphalt centerline of Victory Falls Road and east from Victory Highway.
NVA39	22029CF	CAROLINA	pavement in parking lot of Dunkin Donuts on east side of Narrow Lane and south side of US 1
NVA40	22029CG	PAWTUCKET	BARE= center of the Promontory Knolls cul-de-sac.
NVA41	22029CH	NEWPORT	BARE= asphalt centerline of Brenton Road and on the north edge of Ocean Avenue.
NVA42	22029CI	CROMPTON	BARE= asphalt center of the Regal Wood Drive cul-de-sac.
NVA43	22029CJ	WATCH HILL	pavement in NB lane of Seabury Street just north of Shore Road
NVA44	22029CK	TIVERTON	BARE= asphalt center intersection of drives in a cemetery on the east side of South Commons Road.
NVA45	22029CL	CROMPTON	BARE= asphalt center of the Arrow Court cul-de-sac.
NVA46	22029CM	EAST GREENWICH	BARE= asphalt centerline of a drive to a building on the north side of Squantum Drive and opposite the drive to Washington Federal.
NVA47	22029CN	CLAYVILLE	BARE= asphalt south shoulder of Danielson Pike at a culvert.
NVA48	22029CO	KINGSTON	pavement in NW corner of parking lot in park on NE side of Succotash Road
NVA49	22029CP	FALL RIVER	BARE= asphalt centerline of Rhode Island Boulevard and the east edge of Berkley Avenue.

NVA50	22029CQ	SLOCUM	BARE= asphalt centerline of a dead-end drive to the west side of Queens River Drive.
NVA51	22029CR	BLOCK ISLAND	pavement on east edge of Corn Neck Road at c/l of Clayhead Trail to the east
NVA52	22029CS	THOMPSON	asphalt centerline of a lane in the center of a parking lot for the State Hospital
NVA53	22029CT	VOLUNTOWN	BARE= center of an asphalt cul-de-sac for Gunther Drive.
NVA54	22029CU	THOMPSON	BARE= asphalt north shoulder of Putnam Pike (US44) and just east and opposite Cady's Tavern.
NVA55	22029CV	EAST KILLINGLY	BARE= asphalt north shoulder and a pull off along Hartford Pike and on the east side of Mt Hygeia Road.
NVA56	22029CW	EAST KILLINGLY	BARE= asphalt centerline of a drive to a cell tower on the southwest edge of Cucumber Hill Road.
NVA57	22029CX	FALL RIVER	BARE= asphalt northeast part of the Birdie Way cul-de-sac.
NVA58	22029CY	PAWTUCKET	BARE= southern centerline of boat ramp lane of the asphalt parking lot for Central Falls Landing
VVAF01	22029CZ	WATCH HILL	woods in NE quadrant of intersection of Shore Road and Seabury Drive
VVAF02	22029DA	BRISTOL	WOODS= west side of Allen Bicknell Park athletic fields and south from Alden Road and Bernard Avenue.
VVAF03	22029DB	FALL RIVER	WOODS= southeast from the intersection of Stafford Road and Windwood Drive.
VVAF04	22029DC	GEORGIAVILLE	WOODS= west from the Neighborhood Health Plan of Rhode Island office Building.
VVAF05	22029DD	PROVIDENCE	WOODS= east side of Ridge Road and opposite K&R Auto Salvage.
VVAF06	22029DE	FALL RIVER	WOODS= west side of Touisset Point Road and opposite Blackthorne Drive.
VVAF07	22029DF	KINGSTON	WOODS= north from Shannock Hill Road and west side of SR 2.
VVAF08	22029DG	CHEPACHET	WOODS= north side of Callahan School Street and west from a cemetery opposite the Harrisville Hose Company.
VVAF09	22029DH	BLOCK ISLAND	woods on south side of West Beach Road
VVAF10	22029DI	CLAYVILLE	WOODS= north side of Iroquois Trail opposite #28.
VVAF11	22029DJ	EAST GREENWICH	WOODS= trees in an island along Castle Rocks Road, opposite #167.
VVAF12	22029DK	PRUDENCE ISLAND	TREES= north side of Union Street and west from Acorn Lane.
VVAF13	22029DL	KINGSTON	woods on east side of on ramp from Post Road NB to US 1 NB on south side of US 1
VVAF14	22029DM	TIVERTON	WOODS= north side of Friendship Farm Lane cul-de-sac.
VVAF15	22029DN	CROMPTON	WOODS= west from the Regal Wood Drive cul-de-sac.
VVAF16	22029DO	SLOCUM	WOODS= east side of Queens River Drive and just north and opposite the intersection with a road to the west.
VVAF17	22029DP	SLOCUM	WOODS= south side of Sylvan Court.
VVAF18	22029DQ	ONECO	WOODS= southwest from the intersection of Bailey Pond Road and Hazard Road.
VVAF19	22029DR	CAROLINA	woods on east side of Dunkin Donuts parking lot and south side of US 1
VVAF20	22029DS	SLOCUM	WOODS= trees in between Victory Highway, New London Turnpike and Town Hall Road. North from Victory Highway, west from Town Hall Road and east from New London Turnpike.
VVAF21	22029DT	BRISTOL	WOODS= south side of Portside Drive at the 90-degree bend.
VVAF22	22029DU	VOLUNTOWN	WOODS= west side of Gunther Drive and opposite #8.
VVAF23	22029DV	CROMPTON	WOODS= southwest from the intersection of High Hawk Road and Sheep Farm Drive.

VVAF24	22029DW	THOMPSON	WOODS= south of the parking lot south off Lake Street at the State Hospital and west from a water tower.
VVAF25	22029DX	GEORGIAVILLE	WOODS= north side of Industrial Drive and on the south side of a trailer storage lot for N&D Transportation.
VVAF26	22029DY	HOPE VALLEY	WOODS= north side of Dawley Park Road and opposite the intersection with Tefft Hill Road and east from Nooseneck Hill Road.
VVAF27	22029DZ	PAWTUCKET	WOODS= west side of Diamond Hill Cemetery.
VVAF28	22029EA	TIVERTON	WOODS= east side of the parking lot for St Madeleine Catholic Church and on the east side of Lake Road.
VVAF29	22029EB	BLOCK ISLAND	woods on north side of Beacon Hill Road
VVAF30	22029EC	COVENTRY CENTER	WOODS= north side of Victory Falls Road and east from Victory Highway.
VVAF31	22029ED	PRUDENCE ISLAND	WOODS= northeast from the intersection of America Way and Columbia Lane.
VVAF32	22029EE	GEORGIAVILLE	WOODS= north from the Leonard Drive cul-de-sac.
VVAF33	22029EF	CLAYVILLE	WOODS= north side of Danielson Pike and west from a Dunkin and Chopmist Hill Road.
VVAF34	22029EG	NEWPORT	TREES= northern part of a traffic island at the intersection of Brenton Road and Hammersmith Road.
VVAF35	22029EH	COVENTRY CENTER	WOODS= north side of Regina Drive and on the west of Kings Daughters Court.
VVAF36	22029EI	NORTH SCITUATE	WOODS= north side of Plainfield Pike and east from Sivo Drive.
VVAF37	22029EJ	NEWPORT	WOODS= west side of Walcott Avenue and just north from the intersection with Highland Avenue and Fort Wetherill Road.
VVAF38	22029EK	EAST KILLINGLY	WOODS= southside of Cucumber Hill Road and on the northwest side of the drive access road to a cell tower.
VVAF39	22029EL	CAROLINA	WOODS= west side of O'Shay Lane at the dead end and opposite the intersection with O'Keefe Drive.
VVAF40	22029EM	PRUDENCE ISLAND	TREES= east side of Woodland Drive and south from the cul-de-sac.
VVAF41	22029EN	HOPE VALLEY	WOODS= north side of Ten Rod Road and west from Old Ten Rod Road and on top of a small hill.
VVAF42	22029EO	NARRAGANSETT PIER	woods on east side of US 1
VVAF43	22029EP	PAWTUCKET	WOODS= north side of George Washington Highway and west side of a gated dirt access to a stockpile.
VVANF01	22029EQ	PROVIDENCE	BRUSH= west side of Pontiac Avenue and east of a parking lot and north of an old building foundation.
VVANF02	22029ER	ASHAWAY	GRASS= field on the north side of Collins Road and north from the dirt parking lot for Kenyon Crossing trail Head.
VVANF03	22029ES	NORTH SCITUATE	BRUSH= field on the north side of West Greenville Road and southwest from the intersection with Pole Bridge Road.
VVANF04	22029ET	SAKONNET POINT	BRUSH= south side of Town Landing/RI77 and east of a parking lot.
	22029WA	EAST GREENWICH	Temporary Base for VVA-F
	22029WB	CROMPTON	Temporary Base for VVA-F
	22029WC	SLOCUM	Temporary Base for VVA-F
	22029WD	HOPE VALLEY	Temporary Base for VVA-F
	22029WE	CAROLINA	Temporary Base for VVA-F
	22029WF	KINGSTON	Temporary Base for VVA-F
	22029WG	SLOCUM	Temporary Base for VVA-F
	22029WH	SLOCUM	Temporary Base for VVA-F
	22029WI	PRUDENCE ISLAND	Temporary Base for VVA-F
	22029WJ	NEWPORT	Temporary Base for VVA-F
	22029WK	NEWPORT	Temporary Base for VVA-F
	22029WL	PRUDENCE ISLAND	Temporary Base for VVA-F

	22029WM	PRUDENCE ISLAND	Temporary Base for VVA-F
	22029WN	TIVERTON	Temporary Base for VVA-F
	22029WO	TIVERTON	Temporary Base for VVA-F
	22029WP	FALL RIVER	Temporary Base for VVA-F
	22029WQ	BRISTOL	Temporary Base for VVA-F
	22029WR	FALL RIVER	Temporary Base for VVA-F
	22029WS	BRISTOL	Temporary Base for VVA-F
	22029WT	PAWTUCKET	Temporary Base for VVA-F
	22029WU	PAWTUCKET	Temporary Base for VVA-F
	22029WV	GEORGIAVILLE	Temporary Base for VVA-F
	22029WW	GEORGIAVILLE	Temporary Base for VVA-F
	22029WX	CHEPACHET	Temporary Base for VVA-F
	22029WY	THOMPSON	Temporary Base for VVA-F
	22029WZ	CLAYVILLE	Temporary Base for VVA-F
	22029XA	CLAYVILLE	Temporary Base for VVA-F
	22029XB	PROVIDENCE	Temporary Base for VVA-F
	22029XC	GEORGIAVILLE	Temporary Base for VVA-F
	22029XD	NORTH SCITUATE	Temporary Base for VVA-F
	22029XE	EAST KILLINGLY	Temporary Base for VVA-F
	22029XF	COVENTRY CENTER	Temporary Base for VVA-F
	22029XG	ONECO	Temporary Base for VVA-F
	22029XH	VOLUNTOWN	Temporary Base for VVA-F
	22029XI	HOPE VALLEY	Temporary Base for VVA-F
	22029XJ	COVENTRY CENTER	Temporary Base for VVA-F
	22029XK	CROMPTON	Temporary Base for VVA-F
	22029YA	BLOCK ISLAND	Temporary Base for VVA-F
	22029YB	BLOCK ISLAND	Temporary Base for VVA-F
	22029YC	WATCH HILL	Temporary Base for VVA-F
	22029YD	CAROLINA	Temporary Base for VVA-F
	22029YE	KINGSTON	Temporary Base for VVA-F
	22029YF	NARRAGANSETT PIER	Temporary Base for VVA-F
ABL1	PRS641417248	TIVERTON	Keynet CORS
KP16	PRS904970163	SOUTHRIDGE	Keynet CORS
KP18	PRS913528573	CAROLINA	Keynet CORS
KPI6	PRS954132869	HOLLISTON	Keynet CORS

The stations were not permanently marked.

METHODOLOGY

The field survey was done by using a Trimble R10 and a Trimble R10-2 multi-frequency, multi-constellation GNSS receivers in a real time (RTK/VRS) mode. Corrections were obtained from the Keynet network with corrections delivered over the cellular network. These corrections are applied in real time and used by the rover receiver to converge to a cm level solution. Each station was occupied once for a minimum of 3 minutes (180 epochs), then re-initialized and occupied a second time immediately after the first occupation. Additional observations were made if necessary to ensure agreement at the 0.033 m level. The woods checkpoints (VVA-F) were surveyed by first establishing a temporary base station nearby and positioning it using the Keynet VRS. Then, a Real Time Kinematic (RTK) survey is performed using a radio link to transmit corrections to the receiver in the woods. The solutions are stored as vectors from the nearest physical CORS or temporary base. Table 3 summarizes the VRS/RTK occupations (precisions in meters). Observations which were rejected are shown in ~~red strikethrough~~ font.

Table 3 – VRS/RTK Occupation Summary

GPS BASE	GPSID	UTC Start	UTC End	Horz Prec	Vert Prec	# of SV's	PDOP
PRS904970163906	22029AA	04/06/2022 13:19:15	13:22:14	0.011	0.014	12	1.5
PRS904970163906	22029AA	04/06/2022 13:22:33	13:25:32	0.010	0.013	13	1.5
PRS954132869624	22029AB	04/06/2022 12:42:37	12:45:36	0.010	0.015	15	1.3
PRS954132869624	22029AB	04/06/2022 12:46:12	12:49:11	0.010	0.014	15	1.3
PRS954132869624	22029AC	04/06/2022 12:14:06	12:17:05	0.009	0.014	14	1.5
PRS954132869624	22029AC	04/06/2022 12:17:24	12:20:23	0.012	0.016	13	1.6
PRS91352857317	22029AD	04/06/2022 19:08:41	19:11:40	0.010	0.014	12	1.4
PRS91352857317	22029AD	04/06/2022 19:12:08	19:15:07	0.011	0.014	12	1.5
PRS641417248820	22029AE	04/06/2022 18:35:03	18:38:02	0.008	0.012	13	1.7
PRS641417248820	22029AE	04/06/2022 18:38:22	18:41:23	0.010	0.015	13	1.7
PRS641417248820	22029AE	04/06/2022 18:41:44	18:44:43	0.010	0.015	13	1.7
PRS641417248820	22029AF	04/06/2022 14:38:29	14:41:39	0.012	0.027	14	1.6
PRS641417248820	22029AF	04/06/2022 14:42:05	14:45:04	0.012	0.023	13	1.8
PRS641417248820	22029AG	04/06/2022 15:17:03	15:20:02	0.009	0.015	12	2.0
PRS641417248820	22029AG	04/06/2022 15:20:20	15:23:23	0.009	0.014	11	1.9
PRS91352857317	22029AH	04/06/2022 19:52:24	19:55:23	0.009	0.011	13	1.5
PRS91352857317	22029AH	04/06/2022 19:55:55	19:58:54	0.008	0.010	13	1.7
PRS91352857317	22029AI	04/06/2022 17:44:06	17:47:05	0.010	0.017	13	1.7
PRS91352857317	22029AI	04/06/2022 17:47:28	17:50:27	0.010	0.017	13	1.7
PRS641417248820	22029AJ	04/06/2022 15:45:21	15:48:20	0.005	0.007	13	1.5
PRS641417248820	22029AJ	04/06/2022 15:48:42	15:51:41	0.005	0.007	14	1.5
PRS641417248820	22029AK	04/06/2022 17:11:08	17:14:07	0.008	0.014	13	1.5
PRS641417248820	22029AK	04/06/2022 17:15:03	17:18:02	0.008	0.012	13	1.5
PRS91352857317	22029AL	04/07/2022 12:58:37	12:58:49	0.020	0.024	13	1.4
PRS91352857317	22029AL	04/07/2022 13:00:10	13:00:36	0.015	0.018	14	1.4
PRS91352857317	22029AL	04/07/2022 13:01:07	13:04:06	0.012	0.018	14	1.4
PRS91352857317	22029AL	04/07/2022 13:04:32	13:07:31	0.013	0.019	14	1.4
PRS91352857317	22029AM	04/07/2022 12:32:26	12:35:31	0.015	0.028	14	1.4
PRS91352857317	22029AM	04/07/2022 12:35:53	12:38:52	0.011	0.016	14	1.4
PRS954132869624	22029AN	04/06/2022 13:52:37	13:55:36	0.009	0.013	12	2.0
PRS954132869624	22029AN	04/06/2022 13:56:04	13:57:09	0.022	0.036	14	1.5
PRS954132869624	22029AO	04/06/2022 11:28:29	11:31:28	0.011	0.017	12	1.6
PRS954132869624	22029AO	04/06/2022 11:32:10	11:35:09	0.011	0.016	12	1.6
PRS91352857317	22029AP	04/06/2022 19:28:29	19:31:28	0.008	0.011	12	1.5
PRS91352857317	22029AP	04/06/2022 19:32:04	19:35:03	0.009	0.011	12	1.5
PRS91352857317	22029AQ	04/06/2022 18:09:51	18:12:50	0.010	0.017	13	1.5
PRS91352857317	22029AQ	04/06/2022 18:15:16	18:18:15	0.008	0.013	13	1.5
PRS641417248820	22029AR	04/06/2022 16:28:24	16:31:53	0.008	0.010	13	1.5
PRS641417248820	22029AR	04/06/2022 16:32:13	16:35:12	0.009	0.010	13	1.5
PRS91352857317	22029AS	04/06/2022 20:17:36	20:20:35	0.012	0.021	11	2.3
PRS91352857317	22029AS	04/06/2022 20:21:35	20:24:34	0.009	0.018	12	2.2
PRS91352857317	22029AS	04/06/2022 20:24:56	20:27:58	0.012	0.021	11	2.2
PRS641417248820	22029AT	04/28/2022 12:17:46	12:19:45	0.009	0.016	14	1.7
PRS641417248820	22029AT	04/28/2022 12:20:55	12:22:55	0.010	0.017	13	1.6
PRS91352857317	22029AU	04/26/2022 15:56:49	15:58:48	0.011	0.029	12	1.6
PRS91352857317	22029AU	04/26/2022 15:59:39	16:01:38	0.012	0.023	11	1.6
PRS954132869624	22029AV	04/28/2022 20:51:49	20:53:48	0.010	0.015	16	1.3
PRS954132869624	22029AV	04/28/2022 20:54:56	20:56:55	0.011	0.017	16	1.3
PRS641417248820	22029AW	04/27/2022 16:03:11	16:05:10	0.012	0.022	10	2.2
PRS641417248820	22029AW	04/27/2022 16:05:52	16:07:51	0.012	0.021	10	2.2
PRS641417248820	22029AW	04/27/2022 16:08:56	16:10:56	0.011	0.020	10	2.3
PRS954132869624	22029AX	04/28/2022 21:07:49	21:09:48	0.011	0.018	16	1.3
PRS954132869624	22029AX	04/28/2022 21:10:42	21:12:41	0.012	0.018	16	1.3
PRS954132869624	22029AY	04/28/2022 17:05:01	17:07:00	0.010	0.015	12	1.6
PRS954132869624	22029AY	04/28/2022 17:07:53	17:09:52	0.011	0.018	12	1.6
PRS91352857317	22029AZ	04/26/2022 20:55:27	20:57:26	0.007	0.009	15	1.4
PRS91352857317	22029AZ	04/26/2022 20:58:26	21:00:25	0.007	0.012	15	1.4
PRS641417248820	22029BA	04/27/2022 21:42:10	21:44:09	0.013	0.029	16	1.4
PRS641417248820	22029BA	04/27/2022 21:44:44	21:46:44	0.009	0.015	16	1.4
PRS641417248820	22029BA	04/27/2022 21:47:18	21:49:18	0.008	0.015	16	1.4
PRS954132869624	22029BB	04/28/2022 15:45:25	15:47:24	0.010	0.013	13	1.3
PRS954132869624	22029BB	04/28/2022 15:48:05	15:50:04	0.011	0.017	8	2.3
PRS641417248820	22029BC	04/27/2022 22:27:11	22:29:10	0.009	0.013	15	1.5

GPS BASE	GPSID	UTC Start	UTC End	Horz Prec	Vert Prec	# of SV's	PDOP
PRS641417248820	22029BC	04/27/2022 22:29:43	22:31:42	0.010	0.016	15	1.5
PRS91352857317	22029BD	04/26/2022 19:34:59	19:36:58	0.010	0.012	13	1.3
PRS91352857317	22029BD	04/26/2022 19:38:40	19:40:41	0.010	0.011	12	1.4
PRS91352857317	22029BE	04/07/2022 12:49:29	12:52:28	0.013	0.015	13	1.4
PRS91352857317	22029BE	04/07/2022 12:52:52	12:55:51	0.013	0.016	14	1.4
PRS641417248820	22029BF	04/27/2022 17:17:42	17:19:41	0.010	0.013	11	1.8
PRS641417248820	22029BF	04/27/2022 17:20:03	17:22:02	0.010	0.014	10	1.9
PRS641417248820	22029BF	04/27/2022 17:22:24	17:24:23	0.010	0.014	11	1.8
PRS641417248820	22029BG	04/27/2022 18:25:58	18:27:57	0.008	0.010	13	1.5
PRS641417248820	22029BG	04/27/2022 18:28:28	18:30:29	0.009	0.012	11	1.5
PRS91352857317	22029BH	04/26/2022 16:56:17	16:58:16	0.012	0.020	11	1.9
PRS91352857317	22029BH	04/26/2022 16:59:37	17:01:36	0.012	0.021	10	2.0
PRS954132869624	22029BI	04/28/2022 12:50:23	12:52:23	0.011	0.022	13	1.9
PRS954132869624	22029BI	04/28/2022 12:54:38	12:56:42	0.013	0.023	12	2.2
PRS954132869624	22029BJ	04/29/2022 19:54:05	19:56:05	0.010	0.017	14	1.5
PRS954132869624	22029BJ	04/29/2022 19:56:57	19:58:56	0.015	0.019	14	1.5
PRS954132869624	22029BK	04/28/2022 16:50:07	16:52:06	0.011	0.016	12	1.7
PRS954132869624	22029BK	04/28/2022 16:52:34	16:54:34	0.012	0.019	12	1.6
PRS954132869624	22029BL	04/28/2022 22:29:17	22:31:16	0.009	0.012	15	1.5
PRS954132869624	22029BL	04/28/2022 22:31:42	22:33:42	0.009	0.014	15	1.5
PRS641417248820	22029BM	04/27/2022 20:23:47	20:25:47	0.009	0.013	13	1.6
PRS641417248820	22029BM	04/27/2022 20:26:25	20:28:24	0.009	0.011	13	1.6
PRS641417248820	22029BN	04/27/2022 18:46:19	18:48:18	0.006	0.011	13	1.5
PRS641417248820	22029BN	04/27/2022 18:49:01	18:51:00	0.008	0.013	13	1.5
PRS91352857317	22029BO	04/29/2022 12:51:36	12:53:36	0.010	0.019	13	1.8
PRS91352857317	22029BO	04/29/2022 12:53:58	12:55:57	0.010	0.017	13	1.7
PRS91352857317	22029BO	04/29/2022 12:56:33	12:58:33	0.011	0.020	13	1.7
PRS641417248820	22029BP	04/27/2022 14:35:23	14:37:23	0.012	0.014	10	2.0
PRS641417248820	22029BP	04/27/2022 14:37:48	14:39:47	0.011	0.013	11	1.6
PRS91352857317	22029BQ	04/29/2022 16:51:36	16:53:36	0.009	0.015	13	1.6
PRS91352857317	22029BQ	04/29/2022 16:54:13	16:56:12	0.010	0.016	13	1.6
PRS91352857317	22029BR	04/26/2022 19:58:34	20:00:33	0.009	0.012	13	1.5
PRS91352857317	22029BR	04/26/2022 20:03:21	20:05:20	0.009	0.013	12	1.8
PRS91352857317	22029BS	04/27/2022 13:12:14	13:14:13	0.010	0.019	14	1.8
PRS91352857317	22029BS	04/27/2022 13:14:51	13:16:50	0.011	0.022	13	1.8
PRS641417248820	22029BT	04/26/2022 15:28:30	15:30:30	0.010	0.018	10	1.7
PRS641417248820	22029BT	04/26/2022 15:30:54	15:32:53	0.011	0.019	9	2.1
PRS641417248820	22029BU	04/27/2022 13:40:57	13:42:56	0.010	0.015	10	1.8
PRS641417248820	22029BU	04/27/2022 13:44:05	13:46:32	0.012	0.019	11	1.6
PRS91352857317	22029BV	04/29/2022 17:33:53	17:35:52	0.011	0.016	12	2.0
PRS91352857317	22029BV	04/29/2022 17:36:32	17:38:32	0.013	0.020	12	2.0
PRS91352857317	22029BW	04/29/2022 13:09:47	13:11:46	0.011	0.016	12	1.8
PRS91352857317	22029BW	04/29/2022 13:12:26	13:14:25	0.011	0.018	12	1.8
PRS91352857317	22029BX	04/07/2022 12:23:14	12:26:13	0.015	0.017	16	1.2
PRS91352857317	22029BX	04/07/2022 12:26:49	12:29:48	0.013	0.017	14	1.3
PRS954132869624	22029BY	04/28/2022 15:00:50	15:02:49	0.010	0.014	13	1.4
PRS954132869624	22029BY	04/28/2022 15:03:09	15:05:08	0.010	0.013	13	1.4
PRS91352857317	22029BZ	04/29/2022 14:58:39	15:00:39	0.009	0.011	12	1.6
PRS91352857317	22029BZ	04/29/2022 15:01:09	15:03:08	0.012	0.018	12	1.5
PRS91352857317	22029CA	04/26/2022 18:06:27	18:08:28	0.013	0.015	10	1.9
PRS91352857317	22029CA	04/26/2022 18:09:02	18:11:02	0.012	0.014	10	1.9
PRS91352857317	22029CB	04/07/2022 17:06:05	17:09:04	0.008	0.012	13	1.4
PRS91352857317	22029CB	04/07/2022 17:09:23	17:12:22	0.009	0.012	8	1.8
PRS91352857317	22029CC	04/26/2022 18:24:03	18:26:03	0.010	0.015	9	2.0
PRS91352857317	22029CC	04/26/2022 18:27:28	18:29:23	0.020	0.030	9	2.0
PRS91352857317	22029CC	04/26/2022 18:29:53	18:31:52	0.012	0.017	8	2.3
PRS91352857317	22029CD	04/07/2022 18:57:21	19:00:20	0.014	0.016	12	1.9
PRS91352857317	22029CD	04/07/2022 19:00:38	19:03:37	0.013	0.016	11	2.1
PRS91352857317	22029CE	04/29/2022 14:27:11	14:29:10	0.011	0.014	11	1.8
PRS91352857317	22029CE	04/29/2022 14:29:37	14:31:36	0.012	0.014	8	1.9
PRS91352857317	22029CF	04/07/2022 17:21:09	17:24:08	0.006	0.010	13	1.8
PRS91352857317	22029CF	04/07/2022 17:26:58	17:29:57	0.006	0.011	12	2.1
PRS954132869624	22029CG	04/28/2022 14:06:50	14:08:49	0.010	0.013	13	1.7
PRS954132869624	22029CG	04/28/2022 14:09:48	14:11:48	0.012	0.015	13	1.7

GPS BASE	GPSID	UTC Start	UTC End	Horz Prec	Vert Prec	# of SV's	PDOP
PRS954132869624	22029CG	04/28/2022 14:12:23	14:14:23	0.010	0.014	13	1.7
PRS641417248820	22029CH	04/27/2022 15:25:42	15:27:41	0.013	0.021	9	2.1
PRS641417248820	22029CH	04/27/2022 15:28:58	15:30:57	0.012	0.016	9	2.2
PRS91352857317	22029CI	04/29/2022 18:18:43	18:20:43	0.011	0.015	13	1.5
PRS91352857317	22029CI	04/29/2022 18:21:39	18:23:38	0.012	0.015	13	1.6
PRS91352857317	22029CJ	04/07/2022 16:27:39	16:30:38	0.010	0.013	13	1.4
PRS91352857317	22029CJ	04/07/2022 16:30:58	16:33:57	0.010	0.014	12	1.3
PRS641417248820	22029CK	04/27/2022 19:11:27	19:13:26	0.004	0.008	12	1.8
PRS641417248820	22029CK	04/27/2022 19:15:50	19:17:49	0.005	0.008	12	1.7
PRS91352857317	22029CL	04/29/2022 19:19:10	19:21:09	0.011	0.014	14	1.4
PRS91352857317	22029CL	04/29/2022 19:21:32	19:23:31	0.011	0.013	15	1.3
PRS641417248820	22029CM	04/26/2022 15:10:28	15:12:27	0.013	0.017	12	1.5
PRS641417248820	22029CM	04/26/2022 15:14:24	15:16:23	0.012	0.017	11	1.6
PRS954132869624	22029CN	04/28/2022 19:46:38	19:50:10	0.011	0.015	14	1.4
PRS954132869624	22029CN	04/28/2022 19:50:59	19:52:58	0.015	0.020	16	1.2
PRS91352857317	22029CO	04/07/2022 18:07:15	18:10:14	0.009	0.014	14	1.4
PRS91352857317	22029CO	04/07/2022 18:10:56	18:13:56	0.009	0.013	14	1.4
PRS641417248820	22029CP	04/27/2022 18:00:07	18:02:06	0.014	0.018	12	1.5
PRS641417248820	22029CP	04/27/2022 18:02:51	18:04:50	0.011	0.015	8	2.0
PRS91352857317	22029CQ	04/26/2022 22:29:58	22:31:58	0.010	0.014	15	1.4
PRS91352857317	22029CQ	04/26/2022 22:32:42	22:34:41	0.010	0.014	15	1.4
PRS91352857317	22029CR	04/07/2022 14:11:10	14:14:47	0.013	0.025	14	1.6
PRS91352857317	22029CR	04/07/2022 14:19:21	14:22:20	0.014	0.030	12	2.2
PRS91352857317	22029CR	04/07/2022 14:22:57	14:23:20	0.022	0.051	13	1.8
PRS904970163906	22029CS	04/28/2022 17:53:30	17:55:29	0.011	0.014	12	1.5
PRS904970163906	22029CS	04/28/2022 17:55:57	17:57:57	0.013	0.017	13	1.5
PRS91352857317	22029CT	04/29/2022 15:48:01	15:50:01	0.012	0.020	12	1.5
PRS91352857317	22029CT	04/29/2022 15:51:48	15:53:47	0.010	0.015	11	1.9
PRS91352857317	22029CT	04/29/2022 15:54:22	15:56:22	0.011	0.019	10	2.0
PRS904970163906	22029CU	04/28/2022 18:41:19	18:43:18	0.009	0.016	12	1.9
PRS904970163906	22029CU	04/28/2022 18:44:20	18:46:20	0.010	0.017	12	1.8
PRS904970163906	22029CV	04/28/2022 18:57:26	19:03:46	0.012	0.023	4	84.2
PRS904970163906	22029CV	04/28/2022 19:05:51	19:08:12	0.012	0.025	13	1.6
PRS91352857317	22029CW	04/29/2022 13:33:12	13:35:12	0.010	0.014	12	1.7
PRS91352857317	22029CW	04/29/2022 13:35:52	13:37:51	0.010	0.015	13	1.5
PRS641417248820	22029CX	04/27/2022 20:41:57	20:43:56	0.010	0.012	16	1.3
PRS641417248820	22029CX	04/27/2022 20:44:59	20:46:58	0.010	0.012	15	1.4
PRS954132869624	22029CY	04/28/2022 13:16:40	13:18:41	0.010	0.017	14	1.5
PRS954132869624	22029CY	04/28/2022 13:19:31	13:21:30	0.012	0.018	13	1.6
22029YC	22029CZ	04/07/2022 16:47:52	16:48:36	0.013	0.018	19	1.4
22029YC	22029CZ	04/07/2022 16:50:25	16:52:23	0.016	0.023	19	1.5
22029WS	22029DA	04/28/2022 11:59:25	12:02:25	0.005	0.014	20	1.8
22029WS	22029DA	04/28/2022 12:02:58	12:05:57	0.007	0.019	19	1.8
22029WP	22029DB	04/27/2022 21:06:02	21:09:01	0.008	0.020	22	1.6
22029WP	22029DB	04/27/2022 21:09:57	21:12:56	0.008	0.017	22	1.4
22029XC	22029DC	04/28/2022 22:16:22	22:19:21	0.004	0.006	26	1.1
22029XC	22029DC	04/28/2022 22:19:44	22:22:43	0.004	0.005	23	1.2
22029XB	22029DD	04/28/2022 21:42:52	21:45:51	0.007	0.010	25	1.2
22029XB	22029DD	04/28/2022 21:47:58	21:50:57	0.009	0.013	26	1.2
22029WR	22029DE	04/27/2022 22:55:21	22:58:20	0.008	0.010	21	1.3
22029WR	22029DE	04/27/2022 22:58:56	23:01:55	0.009	0.014	22	1.3
22029WF	22029DF	04/26/2022 22:03:58	22:06:57	0.008	0.018	20	1.8
22029WF	22029DF	04/26/2022 22:09:18	22:11:23	0.016	0.030	5	4.2
22029WF	22029DF	04/26/2022 22:11:53	22:14:04	0.007	0.014	22	1.4
22029WF	22029DF	04/26/2022 22:14:49	22:17:48	0.006	0.010	20	1.5
22029WX	22029DG	04/28/2022 17:30:32	17:33:31	0.012	0.015	21	1.3
22029WX	22029DG	04/28/2022 17:34:37	17:37:36	0.009	0.014	20	1.7
22029YB	22029DH	04/07/2022 14:00:16	14:03:15	0.005	0.008	23	1.3
22029YB	22029DH	04/07/2022 14:03:42	14:06:41	0.005	0.009	23	1.3
22029XA	22029DI	04/28/2022 20:21:14	20:24:13	0.008	0.016	17	1.6
22029XA	22029DI	04/28/2022 20:25:03	20:27:17	0.021	0.035	21	1.3
22029WA	22029DJ	04/26/2022 16:32:59	16:36:42	0.008	0.014	18	1.5
22029WA	22029DJ	04/26/2022 16:37:59	16:40:58	0.007	0.013	18	1.6
22029WM	22029DK	04/27/2022 17:35:32	17:38:32	0.006	0.007	22	1.2

GPS BASE	GPSID	UTC Start	UTC End	Horz Prec	Vert Prec	# of SV's	PDOP
22029WM	22029DK	04/27/2022 17:39:20	17:42:19	0.007	0.009	22	1.3
22029YE	22029DL	04/07/2022 18:34:53	18:37:52	0.007	0.010	20	1.3
22029YE	22029DL	04/07/2022 18:38:33	18:41:32	0.006	0.007	20	1.4
22029WN	22029DM	04/27/2022 19:33:11	19:36:10	0.003	0.004	28	1.0
22029WN	22029DM	04/27/2022 19:36:37	19:39:36	0.003	0.005	11	1.8
22029XK	22029DN	04/29/2022 18:46:35	18:47:39	0.012	0.034	19	1.4
22029XK	22029DN	04/29/2022 18:50:33	18:53:33	0.005	0.009	20	1.5
22029XK	22029DN	04/29/2022 18:54:09	18:57:08	0.005	0.013	20	1.4
22029WG	22029DO	04/27/2022 12:05:25	12:08:24	0.003	0.005	22	1.3
22029WG	22029DO	04/27/2022 12:09:05	12:12:06	0.004	0.007	12	2.2
22029WH	22029DP	04/27/2022 12:42:12	12:45:12	0.006	0.009	23	1.2
22029WH	22029DP	04/27/2022 12:45:45	12:48:44	0.007	0.008	22	1.4
22029XG	22029DQ	04/29/2022 15:15:11	15:18:10	0.009	0.009	20	1.3
22029XG	22029DQ	04/29/2022 15:18:44	15:21:43	0.007	0.009	20	1.3
22029YD	22029DR	04/07/2022 17:44:33	17:47:35	0.005	0.010	19	1.4
22029YD	22029DR	04/07/2022 17:47:59	17:51:04	0.007	0.017	16	2.1
22029WC	22029DS	04/26/2022 18:47:29	18:50:39	0.007	0.010	18	1.4
22029WC	22029DS	04/26/2022 18:51:11	18:54:11	0.006	0.010	16	1.6
22029WQ	22029DT	04/27/2022 22:03:41	22:06:40	0.005	0.009	23	1.3
22029WQ	22029DT	04/27/2022 22:07:12	22:10:11	0.005	0.008	22	1.3
22029XH	22029DU	04/29/2022 16:08:45	16:11:44	0.006	0.013	19	1.6
22029XH	22029DU	04/29/2022 16:12:08	16:15:07	0.006	0.014	18	1.6
22029WB	22029DV	04/26/2022 17:30:58	17:33:58	0.009	0.012	16	1.8
22029WB	22029DV	04/26/2022 17:35:29	17:35:44	0.023	0.035	19	1.6
22029WB	22029DV	04/26/2022 17:41:59	17:46:48	0.016	0.023	17	1.7
22029WY	22029DW	04/28/2022 18:15:29	18:18:28	0.007	0.010	20	1.4
22029WY	22029DW	04/28/2022 18:19:01	18:22:00	0.006	0.009	20	1.4
22029WV	22029DX	04/28/2022 15:32:58	15:35:57	0.007	0.008	18	1.5
22029WV	22029DX	04/28/2022 15:36:40	15:39:39	0.010	0.013	18	1.6
22029WD	22029DY	04/26/2022 19:18:48	19:21:47	0.012	0.018	16	1.6
22029WD	22029DY	04/26/2022 19:22:32	19:25:31	0.008	0.009	15	2.3
22029WU	22029DZ	04/28/2022 14:33:59	14:36:58	0.006	0.010	15	2.0
22029WU	22029DZ	04/28/2022 14:37:23	14:40:22	0.008	0.012	12	2.0
22029WO	22029EA	04/27/2022 20:06:34	20:09:35	0.011	0.017	18	1.6
22029WO	22029EA	04/27/2022 20:10:09	20:13:34	0.007	0.011	20	1.5
22029YA	22029EB	04/07/2022 13:32:30	13:35:29	0.007	0.008	24	1.3
22029YA	22029EB	04/07/2022 13:36:20	13:39:19	0.007	0.010	23	1.2
22029XF	22029EC	04/29/2022 14:18:10	14:21:10	0.005	0.006	22	1.3
22029XF	22029EC	04/29/2022 14:21:48	14:24:47	0.005	0.006	22	1.2
22029XI	22029ED	04/27/2022 13:59:43	13:59:30	0.016	0.028	20	1.4
22029WI	22029ED	04/27/2022 14:01:15	14:06:01	0.008	0.013	18	1.5
22029WI	22029ED	04/27/2022 14:11:12	14:14:11	0.006	0.009	20	1.5
22029WW	22029EE	04/28/2022 16:22:14	16:25:14	0.006	0.009	19	1.6
22029WW	22029EE	04/28/2022 16:26:35	16:29:34	0.004	0.007	19	1.6
22029WZ	22029EF	04/28/2022 19:30:56	19:33:56	0.004	0.007	23	1.3
22029WZ	22029EF	04/28/2022 19:34:24	19:37:23	0.006	0.009	23	1.2
22029WK	22029EG	04/27/2022 15:41:18	15:44:17	0.004	0.007	19	1.5
22029WK	22029EG	04/27/2022 15:44:44	15:47:43	0.006	0.009	19	1.5
22029XJ	22029EH	04/29/2022 17:49:28	17:52:27	0.004	0.006	19	1.5
22029XJ	22029EH	04/29/2022 17:52:51	17:55:50	0.005	0.006	20	1.4
22029XD	22029EI	04/29/2022 12:26:11	12:29:11	0.005	0.011	19	2.1
22029XD	22029EI	04/29/2022 12:29:44	12:32:43	0.006	0.014	20	1.8
22029WJ	22029EJ	04/27/2022 14:52:26	14:53:44	0.015	0.023	21	1.2
22029WJ	22029EJ	04/27/2022 14:54:37	14:57:36	0.007	0.010	21	1.2
22029WJ	22029EJ	04/27/2022 14:58:09	15:01:08	0.006	0.011	21	1.2
22029XE	22029EK	04/29/2022 13:47:24	13:50:23	0.006	0.010	18	1.6
22029XE	22029EK	04/29/2022 13:51:05	13:54:05	0.006	0.009	17	1.8
22029WE	22029EL	04/26/2022 21:13:41	21:16:40	0.008	0.021	22	1.3
22029WE	22029EL	04/26/2022 21:18:02	21:21:01	0.007	0.020	21	1.4
22029WE	22029EL	04/26/2022 21:21:45	21:24:44	0.007	0.016	22	1.4
22029WL	22029EM	04/27/2022 17:00:44	17:03:43	0.007	0.012	22	1.2
22029WL	22029EM	04/27/2022 17:04:13	17:07:12	0.007	0.013	21	1.3
22029XI	22029EN	04/29/2022 17:08:06	17:11:05	0.007	0.009	19	1.4

GPS BASE	GPSID	UTC Start	UTC End	Horz Prec	Vert Prec	# of SV's	PDOP
22029XI	22029EN	04/29/2022 17:11:39	17:14:38	0.007	0.009	20	1.4
22029YF	22029EO	04/07/2022 19:16:23	19:19:22	0.007	0.009	21	1.2
22029YF	22029EO	04/07/2022 19:19:48	19:22:47	0.009	0.010	21	1.2
22029WT	22029EP	04/28/2022 13:46:27	13:48:27	0.007	0.009	16	1.8
22029WT	22029EP	04/28/2022 13:48:51	13:51:00	0.008	0.012	17	1.5
PRS954132869624	22029EQ	04/29/2022 20:19:49	20:21:48	0.013	0.018	14	1.5
PRS641417248820	22029EQ	04/29/2022 20:29:19	20:31:18	0.012	0.015	16	1.3
PRS91352857317	22029ER	04/26/2022 20:29:20	20:31:19	0.009	0.011	13	1.5
PRS91352857317	22029ER	04/26/2022 20:31:45	20:33:48	0.011	0.015	8	1.7
PRS954132869624	22029ES	04/28/2022 20:40:18	20:42:17	0.012	0.016	15	1.4
PRS954132869624	22029ES	04/28/2022 20:42:44	20:44:44	0.013	0.016	15	1.4
PRS641417248820	22029ET	04/27/2022 18:54:40	18:56:39	0.007	0.010	12	1.5
PRS641417248820	22029ET	04/27/2022 18:57:29	18:59:28	0.008	0.014	13	1.5
PRS641417248820	22029WA	04/26/2022 16:22:13	16:24:13	0.012	0.026	10	2.4
PRS641417248820	22029WA	04/26/2022 16:25:47	16:27:46	0.012	0.031	9	2.6
PRS91352857317	22029WB	04/26/2022 17:22:42	17:24:41	0.014	0.022	11	1.9
PRS91352857317	22029WB	04/26/2022 17:25:39	17:27:38	0.013	0.018	11	1.9
PRS91352857317	22029WC	04/26/2022 18:37:31	18:39:30	0.012	0.019	11	1.5
PRS91352857317	22029WC	04/26/2022 18:41:57	18:43:56	0.010	0.016	10	1.9
PRS91352857317	22029WD	04/26/2022 19:07:25	19:09:24	0.014	0.021	10	2.0
PRS91352857317	22029WD	04/26/2022 19:10:44	19:13:16	0.010	0.017	9	1.9
PRS91352857317	22029WE	04/26/2022 21:03:57	21:05:56	0.010	0.015	14	1.5
PRS91352857317	22029WE	04/26/2022 21:07:26	21:09:26	0.008	0.011	14	1.5
PRS91352857317	22029WF	04/26/2022 21:53:30	21:58:56	0.008	0.014	13	1.7
PRS91352857317	22029WF	04/26/2022 21:59:21	22:01:20	0.011	0.023	14	1.5
PRS91352857317	22029WG	04/27/2022 11:57:25	11:59:24	0.009	0.014	12	1.8
PRS91352857317	22029WG	04/27/2022 12:00:05	12:02:04	0.009	0.015	13	1.8
PRS91352857317	22029WH	04/27/2022 12:31:32	12:33:32	0.009	0.016	13	1.5
PRS91352857317	22029WH	04/27/2022 12:34:54	12:36:54	0.009	0.015	13	1.6
PRS641417248820	22029WI	04/27/2022 13:49:34	13:51:36	0.012	0.022	12	1.6
PRS641417248820	22029WI	04/27/2022 13:52:14	13:55:00	0.010	0.017	12	1.7
PRS641417248820	22029WJ	04/27/2022 14:43:16	14:45:15	0.011	0.014	10	1.7
PRS641417248820	22029WJ	04/27/2022 14:46:42	14:48:41	0.011	0.014	11	1.6
PRS641417248820	22029WK	04/27/2022 15:34:26	15:36:26	0.014	0.019	9	2.3
PRS641417248820	22029WK	04/27/2022 15:37:04	15:39:04	0.014	0.023	9	2.3
PRS641417248820	22029WL	04/27/2022 16:52:18	16:54:17	0.010	0.014	11	1.8
PRS641417248820	22029WL	04/27/2022 16:54:52	16:56:52	0.011	0.016	10	2.1
PRS641417248820	22029WM	04/27/2022 17:26:24	17:28:23	0.008	0.011	12	1.5
PRS641417248820	22029WM	04/27/2022 17:28:53	17:30:52	0.011	0.015	8	2.1
PRS641417248820	22029WN	04/27/2022 19:24:46	19:26:46	0.005	0.008	12	1.6
PRS641417248820	22029WN	04/27/2022 19:27:53	19:29:53	0.005	0.007	14	1.3
PRS641417248820	22029WO	04/27/2022 19:50:51	19:52:50	0.009	0.014	13	1.4
PRS641417248820	22029WO	04/27/2022 19:53:24	19:55:24	0.010	0.016	13	1.4
PRS641417248820	22029WP	04/27/2022 20:55:39	20:57:39	0.011	0.013	16	1.3
PRS641417248820	22029WP	04/27/2022 21:00:13	21:02:12	0.014	0.018	15	1.5
PRS641417248820	22029WQ	04/27/2022 21:53:46	21:55:46	0.006	0.011	15	1.5
PRS641417248820	22029WQ	04/27/2022 21:56:51	21:58:51	0.006	0.011	15	1.5
PRS641417248820	22029WR	04/27/2022 22:47:12	22:49:11	0.006	0.009	13	1.6
PRS641417248820	22029WR	04/27/2022 22:49:48	22:51:48	0.006	0.008	12	1.6
PRS641417248820	22029WS	04/28/2022 11:50:28	11:52:27	0.007	0.011	13	1.7
PRS641417248820	22029WS	04/28/2022 11:53:10	11:55:09	0.007	0.011	13	1.7
PRS954132869624	22029WT	04/28/2022 13:38:34	13:40:34	0.006	0.012	12	1.7
PRS954132869624	22029WT	04/28/2022 13:41:31	13:43:30	0.006	0.012	11	2.3
PRS954132869624	22029WU	04/28/2022 14:19:03	14:21:03	0.011	0.014	12	2.0
PRS954132869624	22029WU	04/28/2022 14:22:00	14:24:00	0.012	0.015	12	2.0
PRS954132869624	22029WU	04/28/2022 14:26:10	14:28:09	0.007	0.011	10	2.0
PRS954132869624	22029WU	04/28/2022 14:29:03	14:31:02	0.007	0.010	11	1.9
PRS954132869624	22029WV	04/28/2022 15:24:48	15:26:47	0.006	0.011	11	1.8
PRS954132869624	22029WV	04/28/2022 15:27:11	15:29:10	0.007	0.012	10	1.9
PRS954132869624	22029WV	04/28/2022 16:05:47	16:07:50	0.011	0.018	10	2.3
PRS954132869624	22029WW	04/28/2022 16:09:11	16:12:09	0.009	0.019	11	2.1
PRS954132869624	22029WW	04/28/2022 16:13:27	16:15:26	0.010	0.019	11	2.1
PRS954132869624	22029WW	04/28/2022 16:16:24	16:18:23	0.009	0.017	11	2.1
PRS954132869624	22029WX	04/28/2022 17:15:50	17:17:49	0.012	0.016	12	1.7

GPS BASE	GPSID	UTC Start	UTC End	Horz Prec	Vert Prec	# of SV's	PDOP
PRS954132869624	22029WX	04/28/2022 17:18:19	17:20:18	0.012	0.016	13	1.6
PRS954132869624	22029WX	04/28/2022 17:22:14	17:24:14	0.007	0.011	12	1.6
PRS954132869624	22029WX	04/28/2022 17:25:34	17:27:33	0.007	0.011	11	1.8
PRS904970163906	22029WY	04/28/2022 18:04:14	18:06:15	0.015	0.020	13	1.5
PRS904970163906	22029WY	04/28/2022 18:06:40	18:12:40	0.010	0.013	13	1.5
PRS904970163906	22029WZ	04/28/2022 19:23:20	19:25:19	0.011	0.017	15	1.3
PRS904970163906	22029WZ	04/28/2022 19:25:45	19:27:46	0.012	0.018	15	1.3
PRS954132869624	22029XA	04/28/2022 20:07:51	20:09:50	0.011	0.015	12	1.6
PRS954132869624	22029XA	04/28/2022 20:11:25	20:14:18	0.013	0.018	12	1.8
PRS954132869624	22029XA	04/28/2022 20:14:45	20:16:47	0.012	0.016	13	1.6
PRS954132869624	22029XB	04/28/2022 21:34:12	21:36:11	0.010	0.019	14	1.6
PRS954132869624	22029XB	04/28/2022 21:37:41	21:39:40	0.009	0.018	14	1.6
PRS954132869624	22029XC	04/28/2022 22:08:17	22:10:17	0.008	0.013	16	1.4
PRS954132869624	22029XC	04/28/2022 22:10:52	22:12:52	0.009	0.015	16	1.4
PRS954132869624	22029XD	04/29/2022 12:17:10	12:19:09	0.010	0.021	12	2.2
PRS954132869624	22029XD	04/29/2022 12:19:39	12:21:39	0.011	0.021	13	1.7
PRS91352857317	22029XE	04/29/2022 13:39:47	13:41:46	0.014	0.022	13	1.5
PRS91352857317	22029XE	04/29/2022 13:42:25	13:44:24	0.012	0.019	11	2.0
PRS91352857317	22029XF	04/29/2022 14:08:57	14:10:56	0.010	0.014	14	1.6
PRS91352857317	22029XF	04/29/2022 14:11:15	14:13:14	0.010	0.014	14	1.6
PRS91352857317	22029XG	04/29/2022 15:05:20	15:07:34	0.010	0.015	10	1.8
PRS91352857317	22029XG	04/29/2022 15:09:49	15:11:49	0.010	0.015	10	1.8
PRS91352857317	22029XH	04/29/2022 15:59:14	16:01:13	0.010	0.019	11	2.0
PRS91352857317	22029XH	04/29/2022 16:01:38	16:03:37	0.012	0.019	11	2.0
PRS91352857317	22029XI	04/29/2022 16:58:48	17:00:47	0.009	0.013	12	1.9
PRS91352857317	22029XI	04/29/2022 17:01:58	17:03:57	0.010	0.015	12	1.9
PRS91352857317	22029XJ	04/29/2022 17:41:22	17:43:21	0.011	0.014	14	1.6
PRS91352857317	22029XJ	04/29/2022 17:44:29	17:46:30	0.012	0.015	13	1.9
PRS91352857317	22029XK	04/29/2022 18:38:04	18:40:04	0.012	0.019	13	1.4
PRS91352857317	22029XK	04/29/2022 18:41:30	18:43:29	0.011	0.017	13	1.4
PRS91352857317	22029YA	04/07/2022 13:21:48	13:25:27	0.008	0.013	13	1.7
PRS91352857317	22029YA	04/07/2022 13:25:58	13:28:57	0.006	0.010	13	1.7
PRS91352857317	22029YB	04/07/2022 13:50:07	13:53:14	0.005	0.010	11	2.3
PRS91352857317	22029YB	04/07/2022 13:53:56	13:56:55	0.006	0.011	13	1.7
PRS91352857317	22029YC	04/07/2022 16:35:04	16:38:03	0.006	0.010	11	1.8
PRS91352857317	22029YC	04/07/2022 16:39:09	16:42:08	0.015	0.026	10	2.3
PRS91352857317	22029YD	04/07/2022 17:32:42	17:35:42	0.005	0.012	6	6.8
PRS91352857317	22029YD	04/07/2022 17:36:10	17:39:09	0.003	0.009	11	2.1
PRS91352857317	22029YE	04/07/2022 18:20:56	18:23:55	0.006	0.010	8	2.1
PRS91352857317	22029YE	04/07/2022 18:24:58	18:27:57	0.005	0.008	12	1.6
PRS91352857317	22029YF	04/07/2022 19:06:00	19:08:59	0.008	0.011	11	2.0
PRS91352857317	22029YF	04/07/2022 19:09:28	19:12:27	0.006	0.008	9	2.1

As mentioned, each station was occupied twice (or more if needed) in succession. The Earth Centered Earth Fixed (ECEF) vector differences were rotated into a local horizon system (N, E, Up) for analysis. Stations which had observations that differed by more than 0.033 m in the vertical component were re-observed until agreement was achieved. Figure 3 summarizes the repeat baseline analysis (rejected observations not shown).

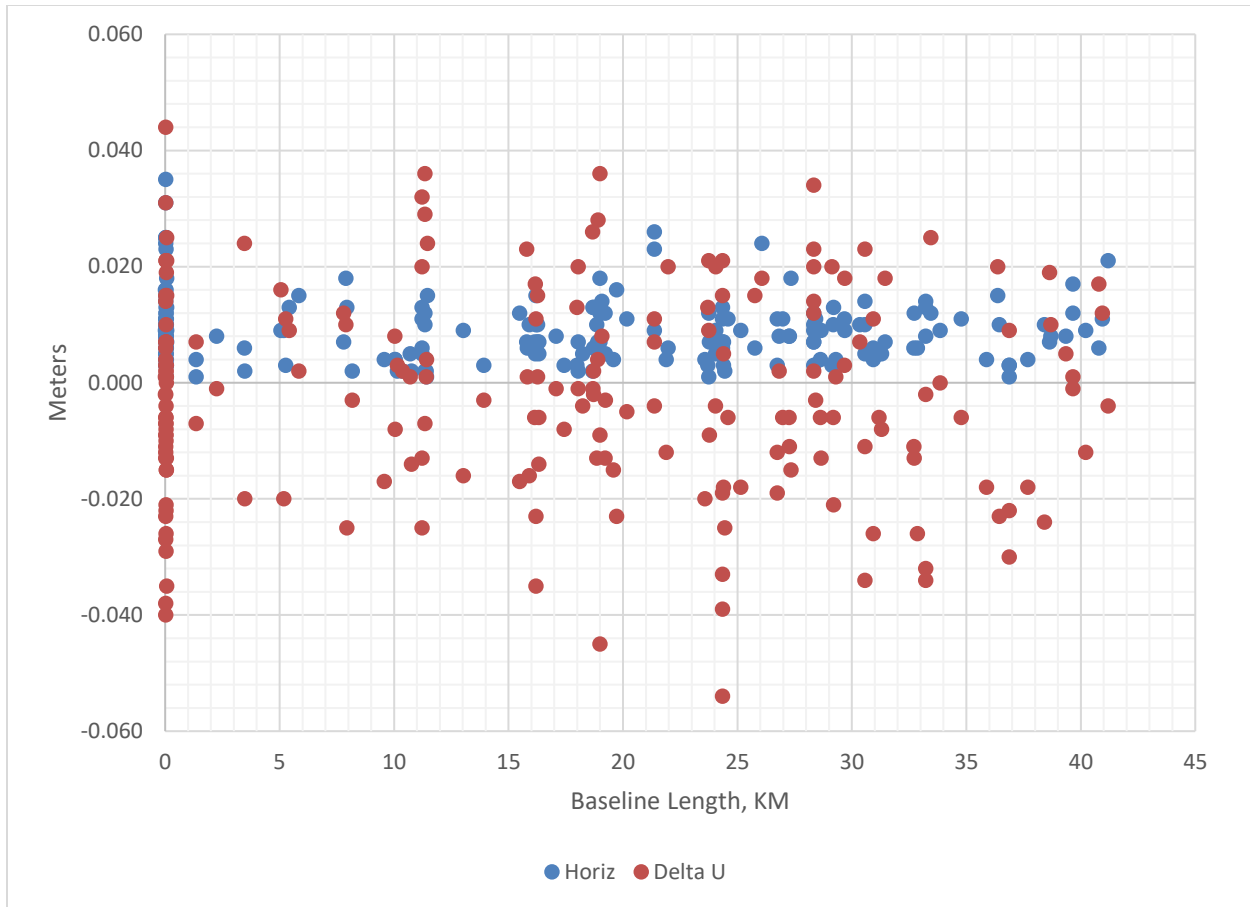


Figure 3 - Repeat Baseline Analysis

LEAST SQUARES ADJUSTMENTS

Geolab was used to adjust the VRS vectors. No scaling of the a priori GPS statistics was done. Station errors (centering, HI and HT) of 0.005 m were input. The GEOID18 model was used.

The adjustment constrained the VRS CORS positions (as computed and broadcast by the network) in all three dimensions (NAD83 (2011) latitude, longitude, and ellipsoidal height). The error factor was 0.33. This adjustment provided the adjusted positions (NAD83 (2011) epoch 2010.0) and GPS derived orthometric heights (NAVD88) for the stations in the network. The adjusted latitude/longitudes were transformed to UTM Zone 19 grid coordinates. Table 4 lists the error ellipses at the 95% level.

Table 4 - Station Error Ellipses - 95% meters

Station Name	Semi-Major Axis	Azimuth	Semi-Minor Axis	Vertical
22029AA	0.011	16	0.010	0.012
22029AB	0.010	158	0.009	0.013
22029AC	0.011	170	0.009	0.013
22029AD	0.010	175	0.010	0.012
22029AE	0.009	154	0.007	0.010

Station Name	Semi-Major Axis	Azimuth	Semi-Minor Axis	Vertical
22029AF	0.012	154	0.010	0.021
22029AG	0.010	174	0.009	0.013
22029AH	0.009	144	0.009	0.010
22029AI	0.011	161	0.009	0.015
22029AJ	0.008	27	0.008	0.008
22029AK	0.009	172	0.009	0.012
22029AL	0.009	4	0.008	0.011
22029AM	0.012	155	0.011	0.017
22029AN	0.012	171	0.011	0.016
22029AO	0.011	27	0.009	0.014
22029AP	0.010	139	0.009	0.010
22029AQ	0.010	159	0.009	0.013
22029AR	0.009	15	0.009	0.010
22029AS	0.011	152	0.009	0.016
22029AT	0.010	149	0.009	0.014
22029AU	0.011	176	0.010	0.021
22029AV	0.011	1	0.009	0.014
22029AW	0.009	173	0.008	0.014
22029AX	0.012	7	0.009	0.015
22029AY	0.011	162	0.009	0.014
22029AZ	0.009	9	0.008	0.010
22029BA	0.010	2	0.008	0.013
22029BB	0.010	24	0.009	0.013
22029BC	0.010	4	0.009	0.013
22029BD	0.011	148	0.009	0.011
22029BE	0.012	155	0.011	0.014
22029BF	0.009	164	0.007	0.010
22029BG	0.010	142	0.009	0.010
22029BH	0.012	158	0.010	0.017
22029BI	0.012	157	0.010	0.019
22029BJ	0.012	3	0.010	0.015
22029BK	0.012	167	0.010	0.015
22029BL	0.010	170	0.009	0.012
22029BM	0.010	11	0.009	0.011
22029BN	0.009	14	0.008	0.011
22029BO	0.009	152	0.007	0.013
22029BP	0.011	60	0.010	0.012
22029BQ	0.010	157	0.009	0.014
22029BR	0.010	165	0.009	0.011
22029BS	0.011	156	0.009	0.017
22029BT	0.010	161	0.010	0.016
22029BU	0.011	142	0.010	0.014
22029BV	0.012	154	0.010	0.015
22029BW	0.012	155	0.009	0.015
22029BX	0.013	151	0.011	0.015
22029BY	0.010	23	0.009	0.012
22029BZ	0.011	14	0.009	0.012
22029CA	0.012	157	0.010	0.013
22029CB	0.010	169	0.009	0.011
22029CC	0.010	163	0.009	0.013
22029CD	0.014	156	0.009	0.014
22029CE	0.012	175	0.010	0.013
22029CF	0.008	163	0.008	0.010
22029CG	0.009	179	0.008	0.010
22029CH	0.012	22	0.010	0.015
22029CI	0.011	162	0.010	0.013
22029CJ	0.010	22	0.010	0.012
22029CK	0.008	167	0.008	0.009
22029CL	0.011	156	0.009	0.012
22029CM	0.012	6	0.010	0.015
22029CN	0.013	153	0.009	0.014
22029CO	0.010	161	0.009	0.012
22029CP	0.013	159	0.010	0.014
22029CQ	0.011	17	0.009	0.012

Station Name	Semi-Major Axis	Azimuth	Semi-Minor Axis	Vertical
22029CR	0.014	158	0.014	0.030
22029CS	0.012	163	0.010	0.013
22029CT	0.009	28	0.008	0.012
22029CU	0.010	157	0.009	0.014
22029CV	0.012	166	0.010	0.020
22029CW	0.011	160	0.009	0.013
22029CX	0.011	9	0.009	0.011
22029CY	0.012	159	0.009	0.015
22029CZ	0.017	7	0.014	0.021
22029DA	0.012	1	0.011	0.017
22029DB	0.016	12	0.012	0.021
22029DC	0.013	177	0.011	0.014
22029DD	0.015	14	0.012	0.019
22029DE	0.013	153	0.012	0.014
22029DF	0.012	172	0.011	0.018
22029DG	0.014	154	0.012	0.017
22029DH	0.012	10	0.011	0.013
22029DI	0.014	2	0.013	0.020
22029DJ	0.015	169	0.013	0.026
22029DK	0.014	159	0.012	0.015
22029DL	0.012	5	0.011	0.013
22029DM	0.011	156	0.011	0.010
22029DN	0.014	164	0.013	0.019
22029DO	0.013	157	0.012	0.015
22029DP	0.013	163	0.012	0.016
22029DQ	0.015	22	0.012	0.016
22029DR	0.011	23	0.011	0.015
22029DS	0.014	168	0.013	0.018
22029DT	0.012	4	0.011	0.014
22029DU	0.014	30	0.013	0.020
22029DV	0.017	145	0.013	0.021
22029DW	0.015	177	0.013	0.017
22029DX	0.013	24	0.011	0.014
22029DY	0.016	55	0.013	0.019
22029DZ	0.013	29	0.011	0.014
22029EA	0.014	175	0.013	0.018
22029EB	0.013	2	0.012	0.014
22029EC	0.013	20	0.012	0.014
22029ED	0.014	165	0.013	0.019
22029EE	0.011	176	0.010	0.014
22029EF	0.014	162	0.012	0.017
22029EG	0.016	22	0.013	0.019
22029EH	0.014	163	0.012	0.015
22029EI	0.014	157	0.012	0.021
22029EJ	0.014	41	0.013	0.016
22029EK	0.016	160	0.013	0.020
22029EL	0.014	180	0.012	0.019
22029EM	0.014	154	0.012	0.017
22029EN	0.014	154	0.012	0.016
22029EO	0.013	171	0.012	0.013
22029EP	0.013	166	0.011	0.015
22029EQ	0.013	11	0.009	0.014
22029ER	0.010	159	0.009	0.012
22029ES	0.012	1	0.010	0.014
22029ET	0.009	176	0.009	0.011
22029WA	0.012	169	0.009	0.023
22029WB	0.013	151	0.010	0.017
22029WC	0.011	164	0.010	0.015
22029WD	0.011	31	0.011	0.016
22029WE	0.010	17	0.009	0.011
22029WF	0.010	174	0.009	0.015
22029WG	0.010	154	0.009	0.013
22029WH	0.010	161	0.009	0.013
22029WI	0.011	138	0.010	0.016

Station Name	Semi-Major Axis	Azimuth	Semi-Minor Axis	Vertical
22029WJ	0.011	41	0.010	0.012
22029WK	0.014	22	0.010	0.017
22029WL	0.011	156	0.009	0.013
22029WM	0.011	170	0.009	0.012
22029WN	0.008	162	0.008	0.008
22029WO	0.010	0	0.009	0.013
22029WP	0.013	8	0.009	0.013
22029WQ	0.008	177	0.008	0.010
22029WR	0.009	158	0.008	0.009
22029WS	0.009	0	0.008	0.011
22029WT	0.009	155	0.008	0.011
22029WU	0.009	31	0.008	0.010
22029WV	0.009	21	0.008	0.011
22029WW	0.007	180	0.007	0.011
22029WX	0.009	162	0.008	0.010
22029WY	0.012	2	0.010	0.014
22029WZ	0.012	164	0.009	0.015
22029XA	0.010	158	0.008	0.011
22029XB	0.011	14	0.009	0.016
22029XC	0.010	1	0.008	0.012
22029XD	0.011	162	0.009	0.018
22029XE	0.013	157	0.010	0.017
22029XF	0.011	42	0.010	0.012
22029XG	0.011	19	0.009	0.013
22029XH	0.011	28	0.010	0.016
22029XI	0.011	151	0.009	0.012
22029XJ	0.012	158	0.009	0.013
22029XK	0.011	157	0.010	0.016
22029YA	0.009	21	0.008	0.010
22029YB	0.008	177	0.008	0.010
22029YC	0.010	28	0.009	0.012
22029YD	0.008	169	0.007	0.010
22029YE	0.008	151	0.008	0.009
22029YF	0.009	160	0.008	0.009

SUMMARY

A LiDAR ground control network was established in Rhode Island. The estimated accuracy of the control network is ± 0.03 m with respect to the NAD83 (2011) epoch 2010.0 reference frame and the NAVD88 vertical datum (using GEOID18).

Horizontal Datum: NAD83 (2011) epoch 2010.0

Vertical Datum: NAVD88= Ellipsoidal Heights-GEOID18

UTM Zone: 19

Units: meters

Table 5– Adjusted Coordinates and Elevations (meters)

Station Name	GPSID	Latitude	Longitude	Ellipsoidal Height	NAVD 1988	UTM Northing	UTM Easting
GCP01	22029AA	41°59'42.83372" N	71°45'29.57211" W	142.662	172.064	4654332.041	768512.238
GCP02	22029AB	41°59'35.66997" N	71°33'57.79043" W	59.227	88.592	4654732.232	784439.525
GCP03	22029AC	41°59'34.40798" N	71°24'33.68912" W	42.182	71.280	4655226.367	797422.208
GCP04	22029AD	41°39'19.13515" N	71°41'40.10647" W	147.536	177.618	4616787.721	775246.208
GCP05	22029AE	41°39'28.89091" N	71°27'10.55047" W	-10.511	19.441	4617889.140	795349.680
GCP06	22029AF	41°43'46.69728" N	71°19'18.06460" W	-25.900	3.740	4626300.412	805939.666
GCP07	22029AG	41°39'43.80359" N	71°11'16.19749" W	56.508	86.089	4619292.879	817406.605
GCP08	22029AH	41°24'41.51714" N	71°45'41.82062" W	-17.092	13.387	4589505.261	770670.188
GCP09	22029AI	41°25'37.38889" N	71°31'12.76877" W	-9.341	20.982	4592012.123	790780.822
GCP10	22029AJ	41°30'04.37011" N	71°10'07.55352" W	-3.413	26.401	4601489.386	819788.917
GCP11	22029AK	41°29'14.15094" N	71°23'11.85922" W	-26.514	3.578	4599156.236	801665.924
GCP12	22029AL	41°09'43.50004" N	71°36'11.29564" W	-13.382	17.407	4562314.273	785002.919
GCP13	22029AM	41°09'42.20893" N	71°32'59.13108" W	-11.255	19.513	4562450.825	789483.822
GCP14	22029AN	41°49'32.11940" N	71°40'10.37014" W	169.751	199.504	4635775.783	776589.547
GCP15	22029AO	41°48'30.85566" N	71°26'33.12828" W	-6.344	23.241	4634642.710	795523.508
GCP16	22029AP	41°32'16.45282" N	71°40'47.40782" W	53.158	83.440	4603796.825	776967.431
GCP17	22029AQ	41°33'59.43504" N	71°26'57.84116" W	-26.800	3.263	4607738.759	796062.442
GCP18	22029AR	41°34'04.47061" N	71°14'16.91276" W	-0.838	28.946	4608641.471	813683.380
GCP19	22029AS	41°19'09.20355" N	71°49'59.67321" W	-27.743	2.929	4579033.791	765057.566
NVA01	22029AT	41°44'35.46985" N	71°20'34.05996" W	-22.063	7.578	4627729.980	804119.589
NVA02	22029AU	41°43'58.39991" N	71°29'21.04939" W	-15.109	14.730	4626078.790	791991.603
NVA03	22029AV	41°50'04.10239" N	71°35'09.94131" W	63.502	93.193	4637034.718	783481.814
NVA04	22029AW	41°29'23.47411" N	71°17'16.39403" W	-28.159	1.813	4599793.461	809898.400
NVA05	22029AX	41°49'35.81574" N	71°30'34.51125" W	17.831	47.460	4636417.819	789871.229
NVA06	22029AY	41°58'37.62930" N	71°40'53.75279" W	88.933	118.397	4652564.064	774937.023
NVA07	22029AZ	41°26'34.01135" N	71°41'49.79213" W	-9.532	20.887	4593178.768	775925.488
NVA08	22029BA	41°40'07.69559" N	71°17'25.13414" W	-21.560	8.146	4619656.959	808840.588
NVA09	22029BB	41°59'37.30631" N	71°34'26.88177" W	76.649	106.024	4654755.864	783768.063
NVA10	22029BC	41°43'30.61616" N	71°16'10.25441" W	-22.805	6.764	4625991.378	810301.031
NVA11	22029BD	41°30'46.61486" N	71°41'20.20362" W	6.470	36.794	4600996.567	776313.660
NVA12	22029BE	41°09'36.28264" N	71°35'49.78268" W	7.795	38.585	4562111.266	785513.093
NVA13	22029BF	41°33'34.58392" N	71°15'41.08883" W	39.056	68.874	4607634.749	811773.337
NVA14	22029BG	41°33'17.44841" N	71°12'39.98879" W	-26.195	3.582	4607289.283	815992.443
NVA15	22029BH	41°37'58.38970" N	71°28'07.24217" W	-17.455	12.547	4615043.594	794152.721
NVA16	22029BI	41°50'33.72696" N	71°22'44.08466" W	-11.398	18.022	4638654.003	800649.603
NVA17	22029BJ	41°48'30.92383" N	71°26'12.57909" W	-5.541	24.038	4634664.484	795997.670
NVA18	22029BK	41°54'56.82531" N	71°40'16.98029" W	101.511	131.094	4645785.872	776048.219
NVA19	22029BL	41°54'33.81895" N	71°30'54.58730" W	86.943	116.405	4645591.477	789034.415
NVA20	22029BM	41°34'15.64949" N	71°09'30.36059" W	20.346	50.034	4609278.999	820306.289

Station Name	GPSID	Latitude	Longitude	Ellipsoidal Height	NAVD 1988	UTM Northing	UTM Easting
NVA21	22029BN	41°27'54.64081" N	71°11'29.67734" W	-28.128	1.788	4597403.370	818060.922
NVA22	22029BO	41°44'40.88816" N	71°35'38.21413" W	90.063	119.939	4627038.808	783225.020
NVA23	22029BP	41°28'56.36644" N	71°22'03.02565" W	-5.535	24.541	4598674.618	803285.545
NVA24	22029BQ	41°34'24.61668" N	71°43'24.97753" W	18.169	48.428	4607610.497	773165.591
NVA25	22029BR	41°24'01.95448" N	71°48'06.29646" W	-20.535	9.976	4588160.204	767360.521
NVA26	22029BS	41°34'06.80530" N	71°26'59.83261" W	-26.926	3.135	4607964.204	796006.950
NVA27	22029BT	41°41'24.37007" N	71°24'11.35162" W	-27.155	2.688	4621623.293	799346.196
NVA28	22029BU	41°33'08.48448" N	71°21'55.61310" W	-4.994	24.970	4606458.771	803130.045
NVA29	22029BV	41°37'59.97180" N	71°40'42.80401" W	112.290	142.408	4614396.893	776665.965
NVA30	22029BW	41°46'33.86654" N	71°40'58.95160" W	115.501	145.358	4630233.968	775681.086
NVA31	22029BX	41°09'46.36515" N	71°32'54.98054" W	-18.777	11.988	4562582.861	789575.483
NVA32	22029BY	41°59'32.98440" N	71°29'17.89336" W	25.052	54.298	4654910.905	790883.864
NVA33	22029BZ	41°38'00.53141" N	71°46'54.49716" W	81.432	111.620	4614087.682	768063.984
NVA34	22029CA	41°34'42.85169" N	71°32'31.80112" W	28.766	58.898	4608763.651	788272.362
NVA35	22029CB	41°21'22.32071" N	71°42'20.90025" W	-19.408	11.148	4583537.261	775569.433
NVA36	22029CC	41°36'15.24865" N	71°36'01.52213" W	87.516	117.646	4611420.559	783302.616
NVA37	22029CD	41°27'55.55072" N	71°27'49.30451" W	12.953	43.172	4596465.422	795330.031
NVA38	22029CE	41°42'25.99353" N	71°41'48.79525" W	132.679	162.666	4622543.771	774823.999
NVA39	22029CF	41°23'18.04272" N	71°37'32.71241" W	-14.035	16.427	4587364.501	782127.923
NVA40	22029CG	41°59'39.65409" N	71°24'43.82045" W	55.115	84.214	4655378.414	797182.275
NVA41	22029CH	41°27'25.06398" N	71°20'13.73868" W	-24.465	5.621	4595965.323	805939.984
NVA42	22029CI	41°41'29.54375" N	71°36'09.32278" W	64.541	94.536	4621108.138	782739.544
NVA43	22029CJ	41°19'57.97877" N	71°48'29.14286" W	-20.534	10.102	4580615.415	767107.276
NVA44	22029CK	41°30'04.38269" N	71°10'07.53858" W	-3.406	26.409	4601489.790	819789.247
NVA45	22029CL	41°39'46.97588" N	71°31'54.43316" W	64.136	94.149	4618179.433	788760.218
NVA46	22029CM	41°44'12.15635" N	71°24'31.59810" W	-18.095	11.650	4626779.408	798661.923
NVA47	22029CN	41°49'38.60532" N	71°38'37.70355" W	138.169	167.909	4636059.141	778719.727
NVA48	22029CO	41°23'52.71918" N	71°31'45.99871" W	-22.300	8.076	4588752.554	790138.893
NVA49	22029CP	41°38'32.37591" N	71°13'49.72071" W	-27.716	1.957	4616933.106	813951.770
NVA50	22029CQ	41°30'39.80823" N	71°35'56.64757" W	7.025	37.294	4601078.167	783823.372
NVA51	22029CR	41°12'34.76394" N	71°34'07.01319" W	-11.452	19.245	4567710.558	787691.339
NVA52	22029CS	41°59'46.63660" N	71°45'46.33849" W	153.740	183.137	4654434.737	768121.996
NVA53	22029CT	41°31'47.49042" N	71°46'00.05317" W	77.731	108.055	4602628.404	769755.276
NVA54	22029CU	41°55'10.85920" N	71°45'24.34515" W	161.857	191.433	4645947.159	768950.353
NVA55	22029CV	41°51'14.22595" N	71°45'29.54950" W	185.403	215.120	4638643.394	769106.490
NVA56	22029CW	41°45'34.07422" N	71°46'20.23774" W	160.937	190.854	4628107.055	768331.984
NVA57	22029CX	41°38'29.90740" N	71°08'05.98900" W	14.517	44.059	4617209.596	821908.910
NVA58	22029CY	41°53'54.47383" N	71°23'24.50709" W	-10.138	19.148	4644807.219	799456.441
VVAF01	22029CZ	41°19'56.93522" N	71°48'27.90524" W	-22.097	8.539	4580584.288	767137.234
VVAF02	22029DA	41°44'34.63377" N	71°20'22.99097" W	-23.872	5.765	4627715.076	804376.410
VVAF03	22029DB	41°38'20.27305" N	71°08'44.83490" W	34.423	63.984	4616872.103	821023.331
VVAF04	22029DC	41°54'34.03372" N	71°31'01.86012" W	84.869	114.333	4645591.287	788866.564
VVAF05	22029DD	41°52'18.71187" N	71°28'31.13239" W	65.072	94.547	4641559.037	792511.338
VVAF06	22029DE	41°42'19.56840" N	71°14'05.01195" W	-25.731	3.832	4623925.918	813291.277
VVAF07	22029DF	41°27'48.04794" N	71°37'09.88212" W	14.801	45.149	4595713.507	782332.739
VVAF08	22029DG	41°58'09.43516" N	71°40'47.21269" W	73.099	102.581	4651700.206	775121.301

Station Name	GPSID	Latitude	Longitude	Ellipsoidal Height	NAVD 1988	UTM Northing	UTM Easting
VVAF09	22029DH	41°12'29.38160" N	71°34'23.91641" W	-20.331	10.371	4567529.000	787304.163
VVAF10	22029DI	41°52'25.94902" N	71°37'52.60634" W	111.476	141.120	4641261.869	779557.456
VVAF11	22029DJ	41°40'14.01795" N	71°28'30.13897" W	9.700	39.653	4619205.526	793451.570
VVAF12	22029DK	41°33'35.46585" N	71°15'42.83776" W	38.757	68.575	4607660.197	811731.638
VVAF13	22029DL	41°25'37.10450" N	71°31'09.83330" W	-10.168	20.155	4592006.093	790849.323
VVAF14	22029DM	41°31'11.54550" N	71°09'30.38914" W	-0.164	29.604	4603599.856	820558.542
VVAF15	22029DN	41°41'29.19275" N	71°36'10.59963" W	64.434	94.429	4621096.146	782710.451
VVAF16	22029DO	41°30'41.70317" N	71°35'55.98545" W	8.651	38.919	4601137.222	783836.421
VVAF17	22029DP	41°31'34.42198" N	71°30'01.16616" W	16.476	46.644	4603092.119	791997.030
VVAF18	22029DQ	41°37'59.62399" N	71°46'55.38912" W	80.582	110.770	4614058.922	768044.389
VVAF19	22029DR	41°23'19.69794" N	71°37'31.20008" W	-14.330	16.131	4587416.925	782161.062
VVAF20	22029DS	41°35'13.59481" N	71°37'09.16529" W	89.948	120.110	4609457.210	781811.143
VVAF21	22029DT	41°40'03.35256" N	71°17'23.90998" W	-24.594	5.113	4619524.209	808874.677
VVAF22	22029DU	41°31'46.67105" N	71°46'00.45367" W	78.838	109.163	4602602.783	769746.939
VVAF23	22029DV	41°37'54.12385" N	71°31'41.66729" W	56.253	86.308	4614710.287	789195.848
VVAF24	22029DW	41°59'45.07106" N	71°45'45.85492" W	154.962	184.360	4654386.866	768134.950
VVAF25	22029DX	41°59'35.60311" N	71°33'55.57238" W	56.278	85.642	4654732.219	784490.649
VVAF26	22029DY	41°33'24.97468" N	71°39'52.70936" W	115.979	146.215	4605959.278	778153.391
VVAF27	22029DZ	41°59'18.91111" N	71°24'27.55859" W	27.391	56.495	4654754.248	797583.364
VVAF28	22029EA	41°34'17.28788" N	71°09'28.37383" W	18.982	48.668	4609331.590	820350.060
VVAF29	22029EB	41°10'24.83873" N	71°35'06.11594" W	-7.875	22.889	4563648.849	786472.157
VVAF30	22029EC	41°42'26.35477" N	71°41'49.37018" W	132.130	162.116	4622554.404	774810.282
VVAF31	22029ED	41°33'09.49954" N	71°21'55.26028" W	-4.913	25.051	4606490.427	803136.901
VVAF32	22029EE	41°56'52.07473" N	71°35'22.25241" W	110.645	140.123	4649608.043	782697.034
VVAF33	22029EF	41°49'32.52097" N	71°40'18.59189" W	169.092	198.847	4635780.811	776399.375
VVAF34	22029EG	41°27'38.43017" N	71°20'09.24080" W	-17.904	12.174	4596382.044	806026.878
VVAF35	22029EH	41°38'00.36109" N	71°40'39.54052" W	106.050	136.167	4614411.813	776741.023
VVAF36	22029EI	41°47'23.23361" N	71°33'46.44117" W	84.942	114.700	4632149.373	785606.779
VVAF37	22029EJ	41°28'57.37450" N	71°22'03.91398" W	-6.449	23.626	4598704.846	803263.632
VVAF38	22029EK	41°45'34.23052" N	71°46'22.08946" W	160.776	190.693	4628110.270	768289.037
VVAF39	22029EL	41°26'42.57316" N	71°41'57.21391" W	-11.085	19.332	4593436.277	775743.153
VVAF40	22029EM	41°32'34.92969" N	71°15'35.26888" W	34.410	64.253	4605800.447	811987.969
VVAF41	22029EN	41°34'25.00837" N	71°43'25.96955" W	22.759	53.017	4607621.706	773142.154
VVAF42	22029EO	41°27'54.14050" N	71°27'48.34809" W	14.909	45.128	4596422.831	795354.002
VVAF43	22029EP	41°56'13.89090" N	71°26'11.71245" W	11.631	40.887	4648946.567	795424.046
VVANF01	22029EQ	41°47'10.92141" N	71°25'54.71236" W	-15.206	14.432	4632213.779	796512.576
VVANF02	22029ER	41°26'35.53853" N	71°45'41.34066" W	-1.746	28.689	4593022.606	770549.660
VVANF03	22029ES	41°50'55.41600" N	71°35'02.25020" W	76.317	105.977	4638624.630	783596.212
VVANF04	22029ET	41°27'48.45909" N	71°11'33.75865" W	-28.306	1.614	4597208.509	817974.627