

**Minimum Technical Standards Report
Control Survey &
Specific Purpose Survey for LiDAR**



**PREPARED FOR:
UNITED STATES GEOLOGICAL SURVEY
& FEDERAL EMERGENCY MANAGEMENT AGENCY**



2011 FEMA VI-McKINNEY POSTEN BAYOU WATERSHED LIDAR
DATE: 27 FEBUARY 2012

**Technical Standards Report
Control Survey & Specific Purpose Survey for LiDAR**

2011 FEMA VI-McKinney Posten Bayou Watershed

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Introduction & Specification

The purpose of this project was to provide ground truth data which will be used to validate LiDAR data of the McKinney Posten Bayou Watershed LiDAR project located in South West Arkansas. The ground surveys were conducted utilizing the CORS network to collect checkpoints of 10% of the predominant vegetation within the AOI. The vertical accuracy requirements meet or exceed the required RMSEz of 12.5cm and the vertical accuracy of 24.5cm at the 95% confidence level as specified by the SOW using NSSDA accuracy standards.

Ground Truth Survey

Ground Truth data was collected of the five major land cover classes representing 10% of the predominate vegetation dispersed within the area of interest. 20 points were collected in each of the five predominate vegetation classes, bare earth, urban, tall weeds/ crops, brush lands, and forested/fully grown, all were collected with a Total Station. A pair of points was surveyed using the CORS network once completed the total station is used to collect the all vegetation ground classes. A Leica 1103 TCR+ total station was used to collect all the shots collected in all the classes surveyed, due to the limited GPS signal when working in and around tree canopy.

Datum & Coordinate Systems

The survey data and coordinate values associated with this project are referenced to the Universal Transverse Mercator Coordinate System, Zone 15 units of Meters, North Americas Datum of 1983, in units of Meters. Geoid 09 was used to determine the NAVD88 heights.

Survey Area

The project area is approximately 64 square miles and the AOI lies in a portion of Hempstead and Miller Counties in Arkansas.

Survey

The GPS survey was tied into the CORS Network located in Arkansas, Texas and Oklahoma. The CORS network is a network of continuously operating GPS reference stations. This allows post processing of the GPS points. Six (6) CORS stations were used (ARCM, ARHP, CSAL, OKHV, TXCR, TXMA)

As a quality control measure differential levels using a Leica DNA 10 level were run between the pair of GPS points used to collect field data, also random points were collected to confirm that the project will meet the 5cm local network accuracy at the 95% confidence level.

Survey field work was performed on 2-06-12 thru 2-12-12 by Maptech Inc. field crews using Leica 1203 Global Positioning System with Leica ATX1230 and Leica ATX1230GG antennas.

Appendix A

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

```

DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.5
1      National Geodetic Survey,  Retrieval Date = FEBRUARY 10, 2012
DH7101 *****
DH7101  CORS           -   This is a GPS Continuously Operating Reference Station.
DH7101  DESIGNATION  -   CAMDEN CORS ARP
DH7101  CORS_ID      -   ARCM
DH7101  PID          -   DH7101
DH7101  STATE/COUNTY-   AR/OUACHITA
DH7101  USGS QUAD    -   CAMDEN SW (1985)
DH7101
DH7101                                     *CURRENT SURVEY CONTROL
DH7101
DH7101* NAD 83(CORS)-  33 32 32.63551(N)    092 52 57.80425(W)    ADJUSTED
DH7101* NAVD 88      -                               *(meters)                *(feet)
DH7101
DH7101  EPOCH DATE   -           2002.00
DH7101  X            -   -267,627.504 (meters)                                COMP
DH7101  Y            -   -5,314,760.860 (meters)                                COMP
DH7101  Z            -   3,504,269.527 (meters)                                COMP
DH7101  ELLIP HEIGHT-           26.719 (meters)                                (11/??/05) ADJUSTED
DH7101  GEOID HEIGHT-          -26.28 (meters)                                GEOID09
DH7101  HORZ ORDER  -   SPECIAL (CORS)
DH7101  ELLP ORDER  -   SPECIAL (CORS)
DH7101
DH7101. ITRF positions are available for this station.
DH7101
DH7101.The coordinates were established by GPS observations
DH7101.and adjusted by the National Geodetic Survey in November 2005.
DH7101
DH7101.The datum tag of NAD 83(CORS) is equivalent to NAD 83(CORS96).
DH7101
DH7101.The coordinates are valid at the epoch date displayed above
DH7101.which is a decimal equivalence of Year/Month/Day.
DH7101
DH7101.The PID for the CORS L1 Phase Center is DH7102.
DH7101
DH7101.The XYZ, and position/ellipsoidal ht. are equivalent.
DH7101
DH7101.The ellipsoidal height was determined by GPS observations
DH7101.and is referenced to NAD 83.
DH7101
DH7101.The geoid height was determined by GEOID09.
DH7101
DH7101;
DH7101;          North          East          Units Scale Factor Converg.
DH7101;SPC AR S  -   497,483.380   318,019.804   MT   0.99995510   -0 29 38.6
DH7101;SPC AR S  -   1,632,160.06   1,043,369.97   sFT  0.99995510   -0 29 38.6
DH7101
DH7101!
DH7101!          Elev Factor   x   Scale Factor =   Combined Factor
DH7101!SPC AR S  -   0.99999581   x   0.99995510   =   0.99995091
DH7101
DH7101                                     SUPERSEDED SURVEY CONTROL

```

DH7101
DH7101.No superseded survey control is available for this station.
DH7101
DH7101_U.S. NATIONAL GRID SPATIAL ADDRESS: 15SWT1088711426(NAD 83)
DH7101
DH7101_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DH7101
DH7101 STATION DESCRIPTION
DH7101
DH7101'DESCRIBED BY NATIONAL GEODETIC SURVEY 2005
DH7101'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
DH7101'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DH7101'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DH7101' ftp://cors.ngs.noaa.gov/cors/README.txt
DH7101' ftp://cors.ngs.noaa.gov/cors/coord/coord_08
DH7101' ftp://cors.ngs.noaa.gov/cors/station_log
DH7101' http://geodesy.noaa.gov/CORS

*** retrieval complete.
Elapsed Time = 00:00:01

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

```

DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.5
1      National Geodetic Survey,  Retrieval Date = FEBRUARY 10, 2012
DH7103 *****
DH7103 CORS          - This is a GPS Continuously Operating Reference Station.
DH7103 DESIGNATION - HOPE CORS ARP
DH7103 CORS_ID      - ARHP
DH7103 PID          - DH7103
DH7103 STATE/COUNTY- AR/HEMPSTEAD
DH7103 USGS QUAD    - HOPE (1978)
DH7103
DH7103                      *CURRENT SURVEY CONTROL
DH7103
DH7103* NAD 83(CORS)- 33 41 45.77881(N)    093 36 01.95741(W)    ADJUSTED
DH7103* NAVD 88      -                      *(meters)              *(feet)
DH7103
DH7103 EPOCH DATE   -          2002.00
DH7103 X            -    -333,600.337 (meters)                      COMP
DH7103 Y            -    -5,301,622.674 (meters)                    COMP
DH7103 Z            -    3,518,494.006 (meters)                    COMP
DH7103 ELLIP HEIGHT-          85.694 (meters)                      (11/??/05) ADJUSTED
DH7103 GEOID HEIGHT-         -26.95 (meters)                      GEOID09
DH7103 HORZ ORDER  - SPECIAL (CORS)
DH7103 ELLP ORDER  - SPECIAL (CORS)
DH7103
DH7103. ITRF positions are available for this station.
DH7103
DH7103. The coordinates were established by GPS observations
DH7103. and adjusted by the National Geodetic Survey in November 2005.
DH7103
DH7103. The datum tag of NAD 83(CORS) is equivalent to NAD 83(CORS96).
DH7103
DH7103. The coordinates are valid at the epoch date displayed above
DH7103. which is a decimal equivalence of Year/Month/Day.
DH7103
DH7103. The PID for the CORS L1 Phase Center is DI3468.
DH7103
DH7103. The XYZ, and position/ellipsoidal ht. are equivalent.
DH7103
DH7103. The ellipsoidal height was determined by GPS observations
DH7103. and is referenced to NAD 83.
DH7103
DH7103. The geoid height was determined by GEOID09.
DH7103
DH7103;
DH7103; SPC AR S      -          North          East          Units Scale Factor Converg.
DH7103; SPC AR S      -    515,331.191    251,625.111    MT    0.99993580    -0 53 44.9
DH7103; SPC AR S      -    1,690,715.75    825,540.05    sFT    0.99993580    -0 53 44.9
DH7103
DH7103!
DH7103! SPC AR S      -    Elev Factor x Scale Factor = Combined Factor
DH7103! SPC AR S      -    0.99998655 x 0.99993580 = 0.99992235
DH7103
DH7103                      SUPERSEDED SURVEY CONTROL

```


DH7103
DH7103.No superseded survey control is available for this station.
DH7103
DH7103_U.S. NATIONAL GRID SPATIAL ADDRESS: 15SVT4434328617(NAD 83)
DH7103
DH7103_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DH7103
DH7103 STATION DESCRIPTION
DH7103
DH7103'DESCRIBED BY NATIONAL GEODETIC SURVEY 2005
DH7103'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
DH7103'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DH7103'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DH7103' ftp://cors.ngs.noaa.gov/cors/README.txt
DH7103' ftp://cors.ngs.noaa.gov/cors/coord/coord_08
DH7103' ftp://cors.ngs.noaa.gov/cors/station_log
DH7103' http://geodesy.noaa.gov/CORS

*** retrieval complete.
Elapsed Time = 00:00:02

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

```

DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.6
1      National Geodetic Survey,  Retrieval Date = FEBRUARY 20, 2012
DF3567 *****
DF3567 CORS          - This is a GPS Continuously Operating Reference Station.
DF3567 DESIGNATION - MONTICELLO COOP CORS ARP
DF3567 CORS_ID      - CSAL
DF3567 PID          - DF3567
DF3567 STATE/COUNTY- AR/DREW
DF3567 USGS QUAD    - MONTICELLO SOUTH (1966)
DF3567
DF3567                      *CURRENT SURVEY CONTROL
DF3567
DF3567* NAD 83(CORS)- 33 35 31.13684(N)    091 48 53.23042(W)    ADJUSTED
DF3567* NAVD 88      -                      ** (meters)          ** (feet)
DF3567
DF3567 EPOCH DATE   -          2002.00
DF3567 X            -    -168,429.579 (meters)                    COMP
DF3567 Y            -    -5,315,819.822 (meters)                  COMP
DF3567 Z            -     3,508,874.174 (meters)                  COMP
DF3567 ELLIP HEIGHT-          66.824 (meters)                    (01/??/03) ADJUSTED
DF3567 GEOID HEIGHT-         -25.75 (meters)                    GEOID09
DF3567 HORZ ORDER  - SPECIAL (CORS)
DF3567 ELLP ORDER  - SPECIAL (CORS)
DF3567
DF3567. ITRF positions are available for this station.
DF3567
DF3567.The coordinates were established by GPS observations
DF3567.and adjusted by the National Geodetic Survey in January 2003.
DF3567
DF3567.The datum tag of NAD 83(CORS) is equivalent to NAD 83(CORS96).
DF3567
DF3567.The coordinates are valid at the epoch date displayed above
DF3567.which is a decimal equivalence of Year/Month/Day.
DF3567
DF3567.The PID for the CORS L1 Phase Center is DF3568.
DF3567
DF3567.The XYZ, and position/ellipsoidal ht. are equivalent.
DF3567
DF3567.The ellipsoidal height was determined by GPS observations
DF3567.and is referenced to NAD 83.
DF3567
DF3567.The geoid height was determined by GEOID09.
DF3567
DF3567;
DF3567;          North          East          Units Scale Factor Converg.
DF3567;SPC AR S  -    502,644.769    417,191.408    MT  0.99994809    +0 06 13.2
DF3567;SPC AR S  -  1,649,093.71    1,368,735.48    sFT 0.99994809    +0 06 13.2
DF3567
DF3567!          Elev Factor  x  Scale Factor =  Combined Factor
DF3567!SPC AR S  -    0.99998951  x  0.99994809 =  0.99993760
DF3567
DF3567                      SUPERSEDED SURVEY CONTROL

```

DF3567
DF3567.No superseded survey control is available for this station.
DF3567
DF3567_U.S. NATIONAL GRID SPATIAL ADDRESS: 15SXT0997517546(NAD 83)
DF3567
DF3567_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DF3567
DF3567 STATION DESCRIPTION
DF3567
DF3567'DESCRIBED BY NATIONAL GEODETIC SURVEY 2003
DF3567'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
DF3567'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DF3567'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DF3567' ftp://cors.ngs.noaa.gov/cors/README.txt
DF3567' ftp://cors.ngs.noaa.gov/cors/coord/coord_08
DF3567' ftp://cors.ngs.noaa.gov/cors/station_log
DF3567' http://geodesy.noaa.gov/CORS

*** retrieval complete.
Elapsed Time = 00:00:01

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

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DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.5
1      National Geodetic Survey,  Retrieval Date = FEBRUARY 10, 2012
DF7475 *****
DF7475 CORS          - This is a GPS Continuously Operating Reference Station.
DF7475 DESIGNATION - HEAVENER CORS ARP
DF7475 CORS_ID      - OKHV
DF7475 PID          - DF7475
DF7475 STATE/COUNTY- OK/LE FLORE
DF7475 USGS QUAD    - HEAVENER (1981)
DF7475
DF7475                      *CURRENT SURVEY CONTROL
DF7475
DF7475* NAD 83(CORS)- 34 54 47.37873(N)    094 37 05.09292(W)    ADJUSTED
DF7475* NAVD 88      -                      ** (meters)          ** (feet)
DF7475
DF7475 EPOCH DATE   -          2002.00
DF7475 X            -      -421,573.977 (meters)                    COMP
DF7475 Y            -      -5,219,068.024 (meters)                  COMP
DF7475 Z            -      3,630,054.941 (meters)                    COMP
DF7475 ELLIP HEIGHT-          146.534 (meters)                    (08/??/03) ADJUSTED
DF7475 GEOID HEIGHT-          -31.56 (meters)                      GEOID09
DF7475 HORZ ORDER  - SPECIAL (CORS)
DF7475 ELLP ORDER  - SPECIAL (CORS)
DF7475
DF7475. ITRF positions are available for this station.
DF7475
DF7475. The coordinates were established by GPS observations
DF7475. and adjusted by the National Geodetic Survey in August 2003.
DF7475
DF7475. The datum tag of NAD 83(CORS) is equivalent to NAD 83(CORS96).
DF7475
DF7475. The coordinates are valid at the epoch date displayed above
DF7475. which is a decimal equivalence of Year/Month/Day.
DF7475
DF7475. The PID for the CORS L1 Phase Center is DF7476.
DF7475
DF7475. The XYZ, and position/ellipsoidal ht. are equivalent.
DF7475
DF7475. The ellipsoidal height was determined by GPS observations
DF7475. and is referenced to NAD 83.
DF7475
DF7475. The geoid height was determined by GEOID09.
DF7475
DF7475;
DF7475; SPC OK S      -      North      East      Units Scale Factor Converg.
DF7475; SPC OK S      -      180,418.240  908,982.439  MT  0.99995237  +1 55 10.7
DF7475; SPC OK S      -      591,922.18  2,982,219.89  sFT 0.99995237  +1 55 10.7
DF7475
DF7475!
DF7475! SPC OK S      -      Elev Factor x  Scale Factor =  Combined Factor
DF7475! SPC OK S      -      0.99997700 x  0.99995237 =  0.99992937
DF7475
DF7475                      SUPERSEDED SURVEY CONTROL

```

DF7475

DF7475.No superseded survey control is available for this station.

DF7475

DF7475_U.S. NATIONAL GRID SPATIAL ADDRESS: 15SUU5218464607(NAD 83)

DF7475

DF7475_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA

DF7475

DF7475

STATION DESCRIPTION

DF7475

DF7475'DESCRIBED BY NATIONAL GEODETIC SURVEY 2003

DF7475'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND

DF7475'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE

DF7475'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.

DF7475' <ftp://cors.ngs.noaa.gov/cors/README.txt>

DF7475' ftp://cors.ngs.noaa.gov/cors/coord/coord_08

DF7475' ftp://cors.ngs.noaa.gov/cors/station_log

DF7475' <http://geodesy.noaa.gov/CORS>

*** retrieval complete.

Elapsed Time = 00:00:01

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

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DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.6
1      National Geodetic Survey,  Retrieval Date = FEBRUARY 20, 2012
DL3492 *****
DL3492  CORS           -  This is a GPS Continuously Operating Reference Station.
DL3492  DESIGNATION  -  CLARKSVILLE CORS ARP
DL3492  CORS_ID      -  TXCR
DL3492  PID          -  DL3492
DL3492  STATE/COUNTY-  TX/RED RIVER
DL3492  USGS QUAD    -  CLARKSVILLE (1964)
DL3492
DL3492                      *CURRENT SURVEY CONTROL
DL3492
DL3492  _____
DL3492*  NAD 83(CORS)-  33 36 39.31956(N)    095 04 18.55650(W)    ADJUSTED
DL3492*  NAVD 88      -                      ** (meters)          ** (feet)
DL3492  _____
DL3492  EPOCH DATE   -          2002.00
DL3492  X           -      -470,077.933 (meters)                    COMP
DL3492  Y           -      -5,296,538.493 (meters)                  COMP
DL3492  Z           -          3,510,645.700 (meters)                COMP
DL3492  ELLIP HEIGHT-          106.248 (meters)                    (06/??/09) ADJUSTED
DL3492  GEOID HEIGHT-          -26.97 (meters)                      GEOID09
DL3492  HORZ ORDER  -  SPECIAL (CORS)
DL3492  ELLP ORDER  -  SPECIAL (CORS)
DL3492
DL3492. ITRF positions are available for this station.
DL3492
DL3492. The coordinates were established by GPS observations
DL3492. and adjusted by the National Geodetic Survey in June 2009.
DL3492
DL3492. The datum tag of NAD 83(CORS) is equivalent to NAD 83(CORS96).
DL3492
DL3492. The coordinates are valid at the epoch date displayed above
DL3492. which is a decimal equivalence of Year/Month/Day.
DL3492
DL3492. The PID for the CORS L1 Phase Center is DL3493.
DL3492
DL3492. The XYZ, and position/ellipsoidal ht. are equivalent.
DL3492
DL3492. The ellipsoidal height was determined by GPS observations
DL3492. and is referenced to NAD 83.
DL3492
DL3492. The geoid height was determined by GEOID09.
DL3492
DL3492;
DL3492;          North          East          Units Scale Factor Converg.
DL3492; SPC TXNC  -  2,220,792.691  918,066.341  MT  0.99992014  +1 52 11.0
DL3492; SPC TXNC  -  7,286,050.69  3,012,022.65  sFT 0.99992014  +1 52 11.0
DL3492
DL3492!
DL3492! SPC TXNC  -  Elev Factor  x  Scale Factor =  Combined Factor
DL3492! SPC TXNC  -  0.99998332  x  0.99992014 =  0.99990346
DL3492
DL3492                      SUPERSEDED SURVEY CONTROL

```

DL3492
DL3492.No superseded survey control is available for this station.
DL3492
DL3492_U.S. NATIONAL GRID SPATIAL ADDRESS: 15SUT0778720941(NAD 83)
DL3492
DL3492_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DL3492
DL3492 STATION DESCRIPTION
DL3492
DL3492'DESCRIBED BY NATIONAL GEODETIC SURVEY 2009
DL3492'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
DL3492'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DL3492'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DL3492' ftp://cors.ngs.noaa.gov/cors/README.txt
DL3492' ftp://cors.ngs.noaa.gov/cors/coord/coord_08
DL3492' ftp://cors.ngs.noaa.gov/cors/station_log
DL3492' http://geodesy.noaa.gov/CORS

*** retrieval complete.
Elapsed Time = 00:00:02

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

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DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.6
1      National Geodetic Survey,  Retrieval Date = FEBRUARY 23, 2012
DH3772 *****
DH3772 CORS          - This is a GPS Continuously Operating Reference Station.
DH3772 DESIGNATION - MARSHALL TX CORS ARP
DH3772 CORS_ID      - TXMA
DH3772 PID          - DH3772
DH3772 STATE/COUNTY- TX/HARRISON
DH3772 USGS QUAD    - MARSHALL EAST (1978)
DH3772
DH3772                      *CURRENT SURVEY CONTROL
DH3772
DH3772 * NAD 83(CORS)- 32 32 07.12507(N)    094 17 19.08282(W)    ADJUSTED
DH3772 * NAVD 88      -                      ** (meters)          ** (feet)
DH3772
DH3772 EPOCH DATE   -          2002.00
DH3772 X            -      -402,503.351 (meters)                    COMP
DH3772 Y            -      -5,367,363.518 (meters)                    COMP
DH3772 Z            -      3,410,668.477 (meters)                    COMP
DH3772 ELLIP HEIGHT-          80.370 (meters)          (06/??/05) ADJUSTED
DH3772 GEOID HEIGHT-         -26.27 (meters)                    GEOID09
DH3772 HORZ ORDER  - SPECIAL (CORS)
DH3772 ELLP ORDER  - SPECIAL (CORS)
DH3772
DH3772. ITRF positions are available for this station.
DH3772
DH3772. The coordinates were established by GPS observations
DH3772. and adjusted by the National Geodetic Survey in June 2005.
DH3772
DH3772. The datum tag of NAD 83(CORS) is equivalent to NAD 83(CORS96).
DH3772
DH3772. The coordinates are valid at the epoch date displayed above
DH3772. which is a decimal equivalence of Year/Month/Day.
DH3772
DH3772. The PID for the CORS L1 Phase Center is DH3773.
DH3772
DH3772. The XYZ, and position/ellipsoidal ht. are equivalent.
DH3772
DH3772. The ellipsoidal height was determined by GPS observations
DH3772. and is referenced to NAD 83.
DH3772
DH3772. The geoid height was determined by GEOID09.
DH3772
DH3772;
DH3772; SPC TXNC      -      North      East      Units Scale Factor Converg.
DH3772; SPC TXNC      - 2,104,252.608  995,475.412  MT  0.99991295  +2 17 48.7
DH3772; SPC TXNC      - 6,903,702.10  3,265,988.91  sFT 0.99991295  +2 17 48.7
DH3772
DH3772!
DH3772! SPC TXNC      - Elev Factor x Scale Factor = Combined Factor
DH3772! SPC TXNC      - 0.99998738 x 0.99991295 = 0.99990033
DH3772
DH3772                      SUPERSEDED SURVEY CONTROL

```


DH3772
DH3772.No superseded survey control is available for this station.
DH3772
DH3772_U.S. NATIONAL GRID SPATIAL ADDRESS: 15SUS7898900505(NAD 83)
DH3772
DH3772_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DH3772
DH3772 STATION DESCRIPTION
DH3772
DH3772'DESCRIBED BY NATIONAL GEODETIC SURVEY 2005
DH3772'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
DH3772'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DH3772'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DH3772' ftp://cors.ngs.noaa.gov/cors/README.txt
DH3772' ftp://cors.ngs.noaa.gov/cors/coord/coord_08
DH3772' ftp://cors.ngs.noaa.gov/cors/station_log
DH3772' http://geodesy.noaa.gov/CORS

*** retrieval complete.
Elapsed Time = 00:00:01

Appendix B

LiDAR Accuracy Assessment Summary

LC Type	# of Points	FVA	SVA	CVA
DEM				
ALL	80			0.295
Bare-earth	20	0.129		
Fully Forested	20		0.409	
Brush Low Trees	20		0.430	
Tall Weeds Crops	20		0.308	
Total	80			

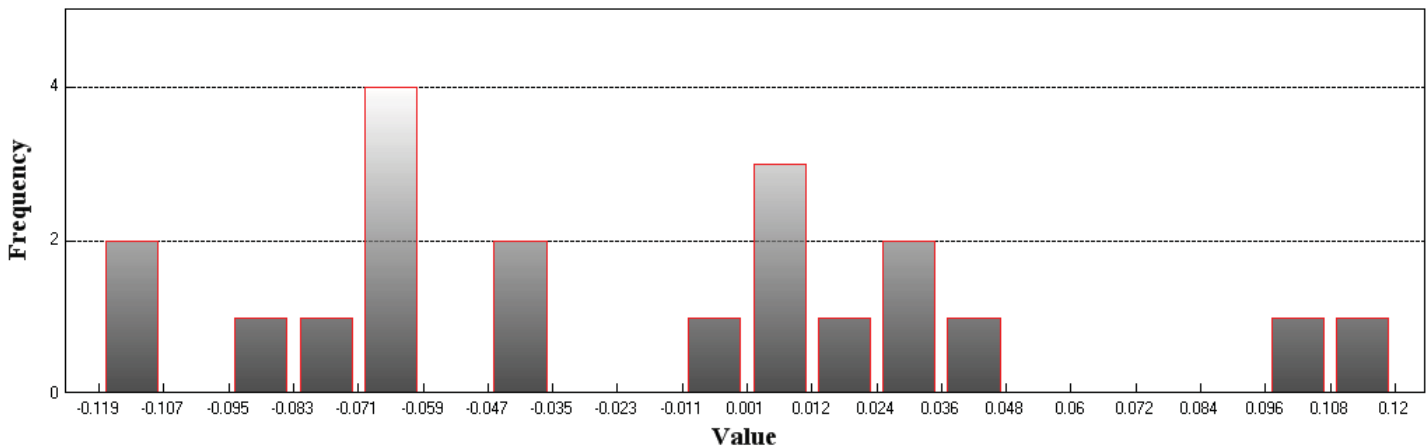
Units: Meters

DEM

Fundamental Vertical Accuracy

LandCover Type: Bare-earth
Minimum DZ: -0.119
Maximum DZ: 0.12
Mean DZ: -0.019
Mean Magnitude DZ: 0.235
Number Observations: 20
Standard Deviation DZ: 0.065
RMSE Z: 0.066
95% Confidence Level Z: 0.129
Units: Meters

Histogram



Min: -0.119

Max: 0.12

Number Of Bins: 20

Bin Interval: 0.012

DEM (Continued)

Supplemental Vertical Accuracy

LandCover Type: Fully Forested

Minimum DZ: -0.137

Maximum DZ: 0.42

Mean DZ: 0.087

Mean Magnitude DZ: 0.342

Number Observations: 20

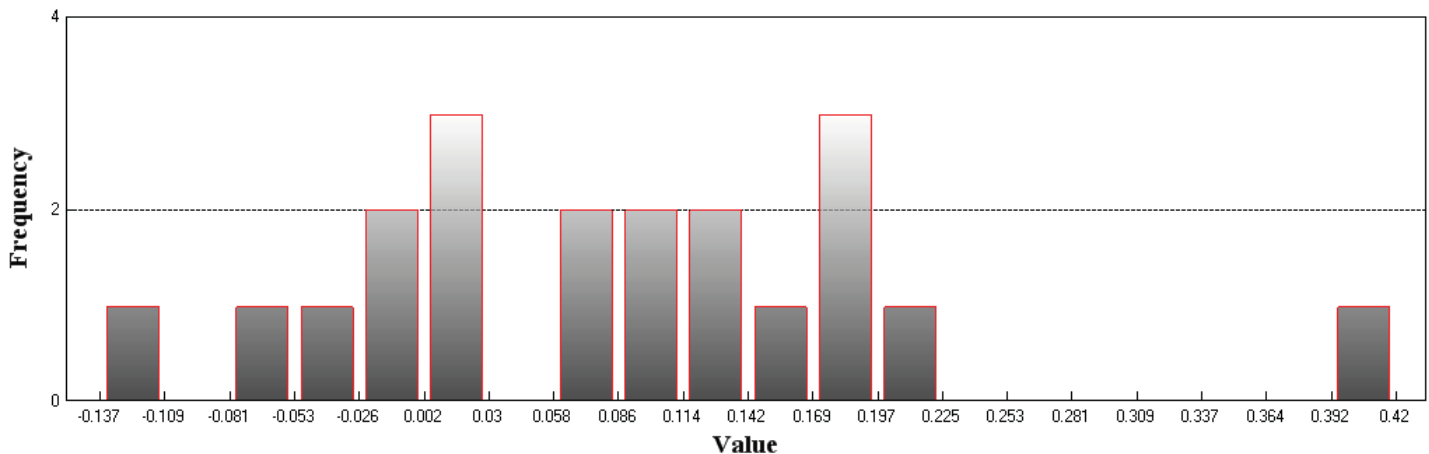
Standard Deviation DZ: 0.124

RMSE Z: 0.149

95th Percentile: 0.409

Units: Meters

Histogram



Min: -0.137

Max: 0.42

Number Of Bins: 20

Bin Interval: 0.028

DEM (Continued)

Supplemental Vertical Accuracy

LandCover Type: Brush Low Trees

Minimum DZ: -0.145

Maximum DZ: 0.441

Mean DZ: 0.085

Mean Magnitude DZ: 0.345

Number Observations: 20

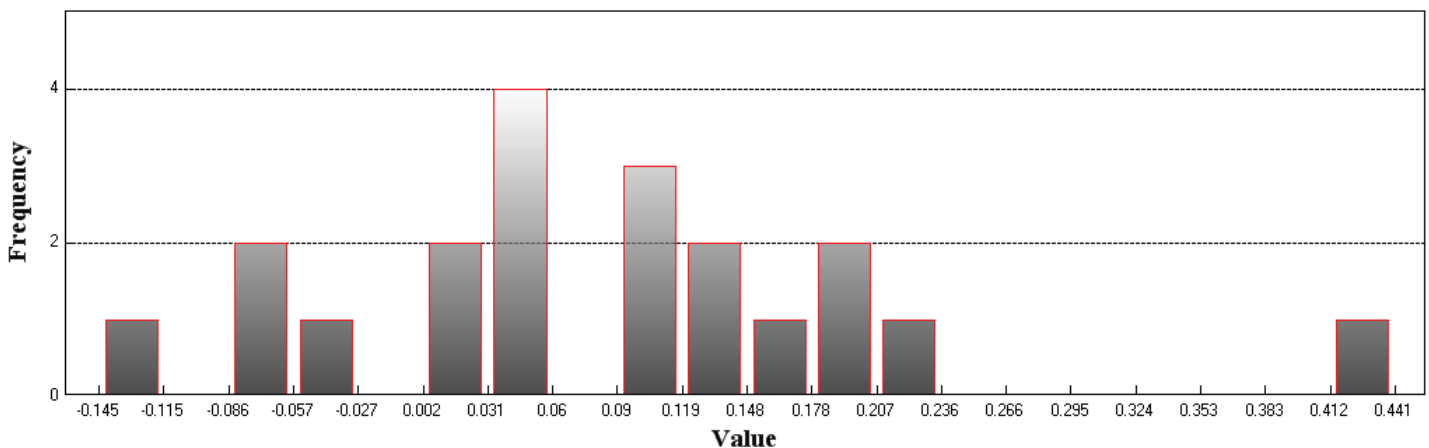
Standard Deviation DZ: 0.13

RMSE Z: 0.153

95th Percentile: 0.43

Units: Meters

Histogram



Min: -0.145

Max: 0.441

Number Of Bins: 20

Bin Interval: 0.029

DEM (Continued)

Supplemental Vertical Accuracy

LandCover Type: Tall Weeds Crops

Minimum DZ: -0.17

Maximum DZ: 0.308

Mean DZ: 0.092

Mean Magnitude DZ: 0.341

Number Observations: 20

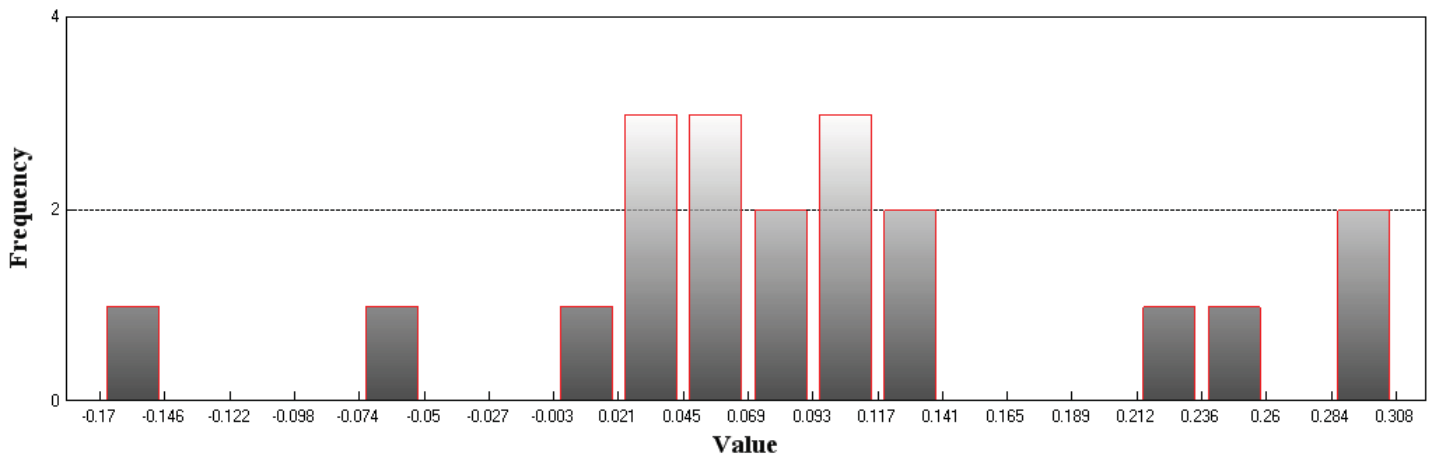
Standard Deviation DZ: 0.116

RMSE Z: 0.146

95th Percentile: 0.308

Units: Meters

Histogram



Min: -0.17

Max: 0.308

Number Of Bins: 20

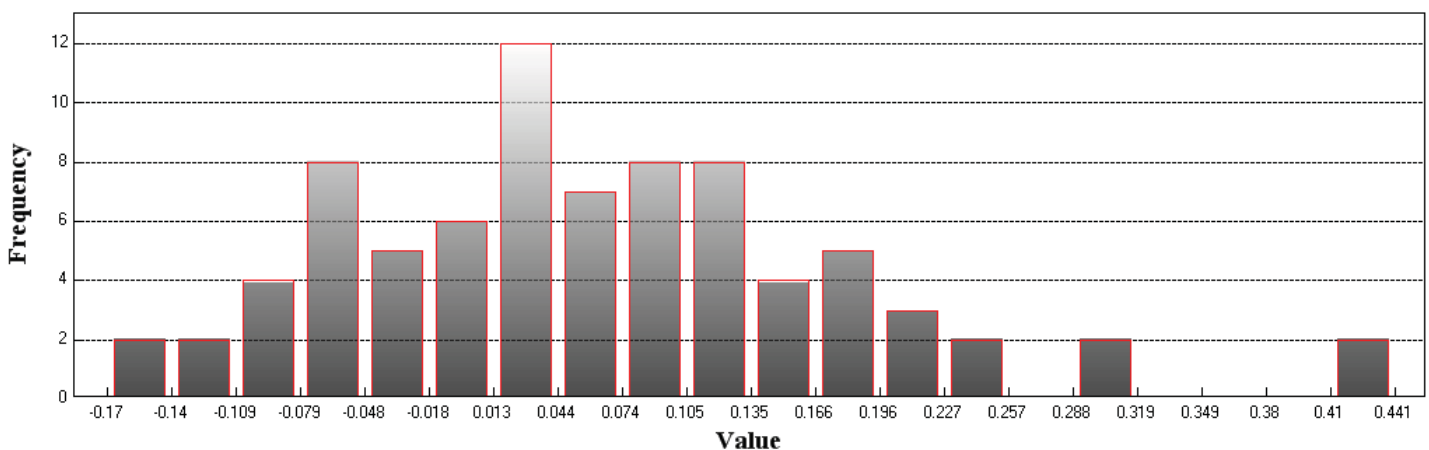
Bin Interval: 0.024

DEM (Continued)

Consolidated Vertical Accuracy

LandCover Type: ALL
 Minimum DZ: -0.17
 Maximum DZ: 0.441
 Mean DZ: 0.061
 Mean Magnitude DZ: 0.319
 Number Observations: 80
 Standard Deviation DZ: 0.119
 RMSE Z: 0.133
 95th Percentile: 0.295
 Units: Meters

Histogram



Min: -0.17
 Max: 0.441
 Number Of Bins: 20
 Bin Interval: 0.031

Appendix C

Tiled-Data Area

