MINIMUM TECHNICAL STANDARDS, VOL. 1
FINAL REPORT OF LIDAR CONTROL AND QA/QC CHECKPOINT SURVEY

PROJECT AREA E

STATE OF FLORIDA
DIVISION OF EMERGENCY MANAGEMENT

TASK ORDER NO. 20070525-492720
CONTRACT NO. 07-HS-34-14-00-22-469

JANUARY 20, 2009
REVISED

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PREPARED BY:
WOOLPERT, INC.
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LB 0006777

JANUARY 20, 2009
REVISED

QUALITY

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NOTICE OF PROPRIETARY INFORMATION

MINIMUM TECHNICAL STANDARDS REPORT OF LiDAR GROUND CONTROL SURVEY

Task Order No. 20070525-492720
Contract No. 07-HS-34-14-00-22-469

PROJECT AREA E

For:
State of Florida, Division of Emergency Management
"State Emergency Response Team"
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Florida Certificate of Authorization LB 6777

Prepared by:
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Florida Professional Surveyor and Mapper PSM 5670

Summary of Contents

LiDAR Ground Control Survey and QA/QC Survey Report Page

REPORT OF LiDAR GROUND CONTROL SURVEY
PROJECT AREA E
FOR THE
FLORIDA DIVISION OF EMERGENCY MANGEMENT

Introduction

This report contains an outline of the QA/QC Survey that supported LiDAR Data Acquisition in the general area of:

- Project Area E – Southwest Charlotte County and the Western part of Lee County.

Project Area

Project Area E encompassed approximately +/-517 square miles of the approximately +/-3,774 square miles of the FY2007 State of Florida Division of Emergency Management Ground Control QA/QC Survey Mapping Project.

Purpose

The purpose of this survey was to acquire a minimum of twenty (20) independently surveyed LiDAR Control Points and a minimum of one-hundred twenty (120) three-dimensional LiDAR QA/QC Checkpoints per 500 square miles of project area. To the extent allowed by the terrain, the LiDAR Control Points and Checkpoints were distributed so that points were spaced at intervals of at least 10% of the diagonal distance across the dataset and at least 20% of the points were located in each quadrant of the +/-517 square-mile project area. All field surveying and related activities conformed to the *FEMA Flood Hazard Mapping Program, Guidelines and Specifications for Flood Hazard Mapping Partners Appendix A.*

LiDAR Control Points were defined as observations made on unobstructed, relatively flat, light-colored, hard uniform surfaces. Three-dimensional coordinate values were calculated for these points and then incorporated in the initial processing of the LiDAR data to ensure the proper horizontal and vertical geographical location of the LiDAR data set.

LiDAR QA/QC Checkpoints were ground truth observations distributed within the land cover classes of urban, bare-earth/low grass, brush land/sparse trees and dense trees/forested. These QA/QC Checkpoints were used to verify the accuracy of the LiDAR missions for final DTM and contour deliverables.

Date of Survey

All LiDAR Control Point and LiDAR QA/QC Checkpoint field operations took place between December 4, 2007 and December 11, 2007.

Map Reference

Maps illustrating project boundaries, LiDAR QA/QC Checkpoints, LiDAR Control Points and GPS control stations for this project area can be found in Appendix E of this report.

Name of Responsible Surveyor

David Bruno, PSM
Woolpert, Inc.
Laurel Building
3504 Lake Lynda Drive, Suite 400
Orlando, Florida 32817-1484
Professional Surveyor and Mapper Number 5670

Name of Company

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Laurel Building
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Orlando, Florida 32817-1484
Florida Certificate of Authorization No. LB-0006777

Field and Office Personnel

Matthew Brown
Dave Bruno
Scott Lamb
Ben Messer
Wes Miller
Steve Roberts

Abbreviations

1-D – One-Dimensional
2-D – Two-Dimensional
3-D – Three-Dimensional
cm – Centimeter
CP – Certified Photogrammetrist
DOI – Digital Orthophoto Imagery
FAC – Florida Administrative Code
FDEM – Florida Division of Emergency Mapping
FGDC – Federal Geodetic Control Committee
FL – Florida
GPS – Global Positioning System
Inc. – Incorporated
LiDAR – Light Detecting and Ranging
MTS – Florida Minimum Technical Standards (FAC 61G17)
NAD 83/99-HARN – North American Datum 1983 High Accuracy Reference Network 1999 adjustment
NAVD 88 – North American Vertical Datum of 1988
NGS – National Geodetic Survey
NOAA – National Oceanic and Atmospheric Administration
NSSDA – National Standards for Spatial Data Accuracy
PID – Photo Identifiable Point (feature)

QC – Quality Control
RMSE – Root Mean Square Error
RTK – Real-Time Kinematics
STD – Standard Deviations
TGO – Trimble Geomatics Office
TTC – Trimble Total Control
U.S. – United States
Woolpert – Woolpert, Inc

Data Sources

Existing Control Point Coordinates:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282
Phone: (301) 713-3242
Fax: (301) 713-4172
Email: info_center@ngs.noaa.gov
http://www.ngs.noaa.gov/

Monumentation

Woolpert field crews performed a field reconnaissance to verify the existence and suitability of pre-selected existing National Geodetic Survey (NGS) control stations. These existing control stations were utilized to insure that quality X, Y, and Z coordinate values were computed for each of the newly established QA/QC Checkpoints throughout the project area. During the field reconnaissance, field crews recovered and verified six (6) existing NGS control stations suitable for GPS observations: **FLGPS 60, GPS HOLT, HAVOLINE 2, I75 81 A13, LORAN, and W 247.** These NGS Data Sheets, which contain information such as coordinates, error estimates and to-reach descriptions, can be found in Appendix A of this report.

Woolpert installed one (1) new semi-permanent control stations in a pre-determined location for both GPS checkpoint observations and to ensure for a uniform GPS network triangulation consisting of a minimum of 3 GPS base stations. This newly established geodetic control station, **BOCA**, consisted of an 18-inch long, 5/8-inch diameter rebar with a plastic Woolpert survey cap (LB6777) and was set flush with the ground. The station recovery information sheet for this point can be found in Appendix B of this report.

Woolpert established a total of 29 LiDAR Control Points, 125 LiDAR QA/QC Checkpoints and 12 intermediate (traverse) control stations to be used for conventional surveying of the dense trees/forested LiDAR QA/QC Checkpoints. All of these stations consisted of one of the following: a PK Nail, 6” spike with a plastic washer, a paint mark, a railroad spike, a hub and tack or a scribe mark.

Note that two of these points were later found to be under water at the time the LiDAR mission was flown – BARE EARTH AND LOW GRASS Point LEE5055 and BRUSH LANDS AND LOW TREES Point LEE5056. So while 125 points were collected, these two points were removed and only 123 points were considered in the accuracy calculations. It is appropriate that they be considered as part of the survey, but understood that they were later removed.

Methodology

All field reconnaissance, monumentation, observations, data adjustments, and final report development was performed under the direct supervision of David Bruno, PSM 5670, Professional Surveyor and Mapper in Charge. Rapid Static GPS survey techniques, along with conventional survey methods were utilized in collecting the LiDAR Control Points and the LiDAR QA/QC Checkpoints for this project. Woolpert's ISO 9001 2000 certified QA/QC process for ground control and GPS surveys was used as a guideline for this project.

All surveying was performed in such a way as to conform to the *Standards and Specifications for Geodetic Control Networks (1984),* published by the Federal Geodetic Control Committee (FGCC). All GPS measurements pertaining to horizontal photogrammetric ground control were performed to meet or exceed Second Order Horizontal Control as set forth by the FGCC, *Geometric Geodetic Accuracy Standards and Specifications for using GPS Relative Positioning Techniques*, Version 5.0, August 1989. All GPS measurements for establishing vertical control were performed to meet or exceed Third Order Vertical Control Accuracy Standards and Specifications. Furthermore, the procedures used for GPS-Derived elevation differences met or exceeded the *Guidelines for Establishing GPS-Derived Ellipsoidal Heights (Standards: 2 centimeters and 5 centimeters), NGS-58*, November 1977, and/or *Guidelines for Establishing GPS-Derived Orthometric Heights (Standards: 2 centimeters and 5 centimeters), NGS-59*, October 2005.

Rapid Static GPS

Woolpert field crews utilized Rapid Static GPS surveying techniques for measuring 89 of the 125 LiDAR QA/QC Checkpoints, the LiDAR Control Points and the intermediate (traverse) control stations. Rapid Static GPS surveying required a minimum of two receivers to occupy NGS Control Stations and LiDAR QA/QC Checkpoints or LiDAR Control Points for a minimum of 30 minutes, depending upon baseline length, number of satellites, and satellite geometry. This method is compareable in accuracy to static surveying; however, shorter observation time is made possible due to advancements in hardware and software. The final coordinates for the LiDAR Control Points, LiDAR QA/QC Checkpoints and intermediate (traverse) control stations can be found in Appendix C of this report.

For this survey, Woolpert field crews utilized three (3) Woolpert-owned, Trimble Navigation R8 model 2 GNSS dual-frequency geodetic GPS receivers as base stations and up to four (4) Woolpert-owned, Trimble Navigation R8 model 2 GNSS dual-frequency geodetic GPS receivers as rovers. Each observation session utilized a 5-second sync rate, lasting between 30-45 minutes each depending on distance from the furthest base station.

Using rapid-static GPS techniques, the field crews also observed six (6) existing NGS Control Stations and one (1) newly established control station in the GPS network in an effort to establish survey quality control coordinates throughout the project. The Rapid Static GPS control network consisted of the following NGS and newly established stations: **FLGPS 60, GPS HOLT, HAVOLINE 2, I75 81 A13, LORAN, W 247 and BOCA.**

Conventional Surveying

Using the paired intermediate (traverse) control stations set with Rapid-Static GPS along with twelve (12) QA/QC Checkpoints, Woolpert field crews used a Woolpert-owned Topcon GTS-701 Total Station or a Woolpert-owned Topcon GTS-711 Total Station to acquire thirty-six (36) LiDAR QA/QC Checkpoints in obscured areas (dense trees/forested) where GPS observations were limited. The final coordinates for the LiDAR QA/QC Checkpoints can be found in Appendix C of this report.

Datum Reference and Final Coordinates

All horizontal GPS control was based on the Florida State Plane Coordinate System (West Zone), referenced to North American Datum 1983, adjustment of 1999 (NAD83/99) HARN, expressed in U.S. Survey Feet. All vertical control was based on the North American Vertical Datum of 1988 (NAVD88), also expressed in U.S. Survey Feet.

GPS Data Analysis and Processing

The field crew chief processed all session baselines each day using *Trimble Navigation's* Trimble Geomatics Office (TGO) Version 1.63 baseline processor with the broadcast ephemeris. *Trimble Navigation's* Trimble Geomatics Office (TGO) Wave Software User's Guide (November 1999) was used as a reference. The ratio and root-mean-square error (RMSE) criteria on pages 3-4 to 3-6 of the guide were followed. Other criteria used a maximum of 10.5 percent rejections, along with float-versus-fixed deltas of 10 cm. All cases that failed to meet any of these criteria were rejected and not used. Fixed solutions were obtained for all vector baselines.

Daily processing allowed the 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. Any baselines that failed this analysis were either reprocessed or removed from the network.

Rapid Static Adjustment

Upon completion of all field data processing, Woolpert performed a minimally constrained and fully constrained least-squares adjustments using *Trimble Navigation's* Trimble Total Control (TTC) version 2.73. After an acceptable minimally constrained least-squares adjustment was obtained, a fully constrained least-squares adjustment was performed by fixing the GPS networks to existing NGS/County control stations. Geoid 03 was used to convert ellipsoidal heights to orthometric heights. For this survey the following stations were held fixed:

DIMENSIONS	EXISTING NGS CONTROL STATIONS
3-D Control Stations	**FLGPS 60 (AG9365), HAVOLINE 2 (AG1868), LORQAN (AG7631), W 247 (AD1509)**
2-D Control Station	**GPS HOLT (AD8700)**
1-D Control Station	**I75 81 A13 (AD5969)**

Accuracy Statement

The positional accuracy of the LiDAR Control Points was 0.08-feet (avg. 0.04-feet) horizontally and 0.19-feet (avg. 0.09-feet) vertically at the 95% confidence level. The positional accuracy of the LiDAR QA/QC checkpoints was 0.08-feet (avg. 0.04-feet) horizontally and 0.18-feet (avg. 0.08-feet) vertically at the 95% confidence level.

The ground control survey meets positional accuracies necessary to support a DTM to meet or exceed a 3.8-foot horizontal accuracy and 0.6-foot fundamental vertical accuracy at the 95% confidence level.

The positional accuracies information can be found in Appendix D of this report.

Notes

1. THIS REPORT OF SURVEY IS PART OF THE LiDAR MAPPING QA/QC GROUND CONTROL SURVEY. SEVEN (7) GROUND CONTROL LAYOUT MAPS SHALL ACCOMPANY THE SURVEY REPORT. NEITHER THE MAPS NOR THIS REPORT OF SURVEY IS FULL AND COMPLETE WITHOUT THE OTHER. THIS REPORT OF SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER IN RESPONSIBLE CHARGE.

2. THIS REPORT OF SURVEY CONSISTS OF FIFTY-FIVE (55) PAGES AND EACH PAGE SHALL NOT BE CONSIDERED FULL OR COMPLETE UNLESS ATTACHED TO THE OTHER(S). ADDITIONS OR DELETIONS TO SURVEY MAPS AND REPORTS BY OTHER THAN THE SIGNING PARTY OR PARTIES IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF THE SIGNING PARTY OR PARTIES.

3. THIS LiDAR MAPPING QA/QC GROUND CONTROL SURVEY DATA AND REPORT IS CERTIFIED TO THE FLORIDA DIVISION OF EMERGENCY MANAGEMENT AS MEETING OR EXCEEDING, IN QUALITY AND PRECISION, THE STANDARDS APPLICABLE FOR THIS WORK, AS SET FORTH IN CHAPTER 61G17, FLORIDA ADMINISTRATIVE CODE & FEMA GUIDELINES AND SPECIFICATIONS FOR FLOOD HAZARD MAPPING PARTNERS.

Surveyor and Mapper in Responsible Charge:
David Bruno PSM
Professional Surveyor and Mapper
License Number: LS 5670

Signed: _____

Seal:

APPENDIX A: EXISTING GROUND CONTROL INFORMATION

This appendix contains the published National Geodetic Survey (NGS) data sheets for the geodetic control utilized in Project Area E of the FY2007 State of Florida Division of Emergency Management Ground Control QA/QC Survey Mapping Project.

The NGS Data Sheet

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

```
DATABASE =  ,PROGRAM = datasheet, VERSION = 7.61
1        National Geodetic Survey,   Retrieval Date = AUGUST 14, 2008
 AG9365 ***********************************************************************
 AG9365  CBN         -  This is a Cooperative Base Network Control Station.
 AG9365  DESIGNATION -  FLGPS 60
 AG9365  PID         -  AG9365
 AG9365  STATE/COUNTY-  FL/LEE
 AG9365  USGS QUAD   -  BOKEELIA (1994)
 AG9365
 AG9365                        *CURRENT SURVEY CONTROL
 AG9365  ______________________________________________________________________
 AG9365* NAD 83(2007)-  26 42 08.29582(N)    082 09 18.95954(W)     ADJUSTED
 AG9365* NAVD 88     -         4.348  (meters)      14.27   (feet)  ADJUSTED
 AG9365  ______________________________________________________________________
 AG9365  EPOCH DATE  -        2002.00
 AG9365  X           -     778,228.848 (meters)                     COMP
 AG9365  Y           -  -5,648,407.948 (meters)                     COMP
 AG9365  Z           -   2,848,778.237 (meters)                     COMP
 AG9365  LAPLACE CORR-          -0.46  (seconds)                   DEFLEC99
 AG9365  ELLIP HEIGHT-         -19.352 (meters)          (02/10/07) ADJUSTED
 AG9365  GEOID HEIGHT-         -23.74  (meters)                    GEOID03
 AG9365  DYNAMIC HT  -           4.341 (meters)      14.24  (feet)  COMP
 AG9365
 AG9365  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 AG9365  Type    PID    Designation                       North   East  Ellip
 AG9365  ----------------------------------------------------------------------
 AG9365  NETWORK AG9365 FLGPS 60                           0.78   0.96   2.20
 AG9365  ----------------------------------------------------------------------
 AG9365  MODELED GRAV-     979,099.8   (mgal)                      NAVD 88
 AG9365
 AG9365  VERT ORDER  -  SECOND    CLASS II
 AG9365
 AG9365.The horizontal coordinates were established by GPS observations
 AG9365.and adjusted by the National Geodetic Survey in February 2007.
 AG9365
 AG9365.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 AG9365.See National Readjustment for more information.
 AG9365.The horizontal coordinates are valid at the epoch date displayed above.
 AG9365.The epoch date for horizontal control is a decimal equivalence
 AG9365.of Year/Month/Day.
 AG9365
 AG9365.The orthometric height was determined by differential leveling
 AG9365.and adjusted in May 2001.
 AG9365
 AG9365.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AG9365
 AG9365.The Laplace correction was computed from DEFLEC99 derived deflections.
 AG9365
 AG9365.The ellipsoidal height was determined by GPS observations
 AG9365.and is referenced to NAD 83.
 AG9365
 AG9365.The geoid height was determined by GEOID03.
```

```
AG9365
AG9365.The dynamic height is computed by dividing the NAVD 88
AG9365.geopotential number by the normal gravity value computed on the
AG9365.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AG9365.degrees latitude (g = 980.6199 gals.).
AG9365
AG9365.The modeled gravity was interpolated from observed gravity values.
AG9365
AG9365;                    North         East     Units Scale Factor Converg.
AG9365;SPC FL W     -   262,430.373   184,549.561   MT  0.99994412   -0 04 11.2
AG9365;SPC FL W     -   860,990.32    605,476.35   sFT  0.99994412   -0 04 11.2
AG9365;UTM  17      - 2,953,984.092   385,075.056   MT  0.99976306   -0 31 09.1
AG9365
AG9365!             -  Elev Factor  x  Scale Factor =   Combined Factor
AG9365!SPC FL W     -   1.00000304  x   0.99994412  =   0.99994716
AG9365!UTM  17      -   1.00000304  x   0.99976306  =   0.99976610
AG9365
AG9365:                Primary Azimuth Mark                    Grid Az
AG9365:SPC FL W     -  FLGPS 60 AZ MK                         155 37 34.8
AG9365:UTM  17      -  FLGPS 60 AZ MK                         156 04 32.7
AG9365
AG9365|---------------------------------------------------------------------|
AG9365| PID    Reference Object                    Distance      Geod. Az   |
AG9365|                                                          dddmmss.s |
AG9365| AG9376 FLGPS 60 AZ MK                   APPROX. 1.4 KM 1553323.6 |
AG9365|---------------------------------------------------------------------|
AG9365
AG9365                          SUPERSEDED SURVEY CONTROL
AG9365
AG9365  NAD 83(1999)-  26 42 08.29607(N)    082 09 18.96020(W) AD(       ) B
AG9365  ELLIP H (05/31/01)  -19.338  (m)                       GP(       ) 5 1
AG9365  NAD 83(1990)-  26 42 08.29444(N)    082 09 18.95948(W) AD(       ) B
AG9365  ELLIP H (09/13/90)  -19.308  (m)                       GP(       ) 4 1
AG9365  NAVD 88 (05/20/05)    4.35   (m)          14.3    (f) LEVELING    3
AG9365  NGVD 29 (09/01/92)    4.710  (m)          15.45   (f) ADJUSTED    2 2
AG9365
AG9365.Superseded values are not recommended for survey control.
AG9365.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AG9365.See file dsdata.txt to determine how the superseded data were derived.
AG9365
AG9365_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RLK8507553984(NAD 83)
AG9365_MARKER: DH = HORIZONTAL CONTROL DISK
AG9365_SETTING: 30 = SET IN A LIGHT STRUCTURE
AG9365_SP_SET: CONCRETE BRIDGE GUARDRAIL
AG9365_STAMPING: FLGPS 60 1989
AG9365_MARK LOGO: NGS
AG9365_MAGNETIC: N = NO MAGNETIC MATERIAL
AG9365_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
AG9365_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AG9365+SATELLITE: SATELLITE OBSERVATIONS - June 17, 2008
AG9365
AG9365  HISTORY     - Date     Condition        Report By
AG9365  HISTORY     - 1989     MONUMENTED       NGS
AG9365  HISTORY     - 19890714 GOOD             FLDNR
AG9365  HISTORY     - 19901218 GOOD
AG9365  HISTORY     - 19920901 GOOD             DENI
AG9365  HISTORY     - 20050215 GOOD             FLDEP
```

```
AG9365  HISTORY     - 20080617 GOOD             INDIV
AG9365
AG9365                          STATION DESCRIPTION
AG9365
AG9365'DESCRIBED BY NATIONAL GEODETIC SURVEY 1989
AG9365'THE STATION IS LOCATED IN THE NORTHEAST END OF BRIDGE OVER JUG CREEK
AG9365'OF COUNTY ROAD 767 (H. STRING FELLOW ROAD) IN BOKEELIA, 29 KM
AG9365'(18.00 MI) NORTHWEST OF FORT MYERS, ON THE NORTH END OF PINE ISLAND,
AG9365'IN SECTION 30, T 44 S, R 22 E.  OWNERSHIP--LEE COUNTY.
AG9365'TO REACH THE STATION FROM THE COUNTY ROAD 767 BRIDGE OVER JUG CREEK IN
AG9365'BOKEELIA, GO TO THE NORTHEAST END OF BRIDGE AND THE STATION SET IN THE
AG9365'HEADWALL.
AG9365'LOCATED 6.6 M (21.7 FT) NORTHEAST OF THE CENTERLINE OF COUNTY ROAD
AG9365'767, 20.1 M (65.9 FT) SOUTH OF POWERLINE POLE NO. 251, 20.8 M
AG9365'(68.2 FT) SOUTH OF BOKEELIA ROAD SIGN AND 0.61 M (2.0 FT) SOUTH OF A
AG9365'CARSONITE WITNESS POST.
AG9365'DESCRIBED BY R.L. MALLOY.
AG9365
AG9365                          STATION RECOVERY (1989)
AG9365
AG9365'RECOVERY NOTE BY FL DEPT OF NAT RES 1989
AG9365'RECOVERED IN GOOD CONDITION.
AG9365
AG9365                          STATION RECOVERY (1990)
AG9365
AG9365'RECOVERED 1990
AG9365'RECOVERED IN GOOD CONDITION.
AG9365
AG9365                          STATION RECOVERY (1992)
AG9365
AG9365'RECOVERY NOTE BY DENI ASSOCIATES INCORPORATED 1992
AG9365'RECOVERED IN GOOD CONDITION.
AG9365
AG9365                          STATION RECOVERY (2005)
AG9365
AG9365'RECOVERY NOTE BY FL DEPT OF ENV PRO 2005 (RWH)
AG9365'RECOVERED IN GOOD CONDITION, WITH THE FOLLOWING CHANGE, THE MARK IS
AG9365'SET ATOP  THE NORTHEAST CONCRETE BRIDGE GUARDRAIL, NOT IN THE BRIDGE
AG9365'HEADWALL, THE MARK IS 3 FT  ABOVE THE ROADWAY.
AG9365
AG9365                          STATION RECOVERY (2008)
AG9365
AG9365'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2008 (SU)
AG9365'RECOVERED IN GOOD CONDITION.

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

The NGS Data Sheet

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

```
DATABASE =  ,PROGRAM = datasheet, VERSION = 7.61
1        National Geodetic Survey,   Retrieval Date = AUGUST 14, 2008
 AD8700 ***********************************************************************
 AD8700  DESIGNATION -  GPS HOLT
 AD8700  PID         -  AD8700
 AD8700  STATE/COUNTY-  FL/LEE
 AD8700  USGS QUAD   -  FORT MYERS NW (1987)
 AD8700
 AD8700                        *CURRENT SURVEY CONTROL
 AD8700  ______________________________________________________________________
 AD8700* NAD 83(2007)-  26 41 50.77906(N)    081 59 24.69543(W)     ADJUSTED
 AD8700* NAVD 88     -         4.02   (meters)      13.2    (feet)  LEVELING
 AD8700  ______________________________________________________________________
 AD8700  EPOCH DATE  -        2002.00
 AD8700  X           -     794,532.757 (meters)                     COMP
 AD8700  Y           -  -5,646,381.735 (meters)                     COMP
 AD8700  Z           -   2,848,296.343 (meters)                     COMP
 AD8700  LAPLACE CORR-          -2.33  (seconds)                    DEFLEC99
 AD8700  ELLIP HEIGHT-         -19.930 (meters)          (02/10/07) ADJUSTED
 AD8700  GEOID HEIGHT-         -23.96  (meters)                     GEOID03
 AD8700
 AD8700  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 AD8700  Type    PID    Designation                      North   East  Ellip
 AD8700  ----------------------------------------------------------------------
 AD8700  NETWORK AD8700 GPS HOLT                          0.98   0.98   2.06
 AD8700  ----------------------------------------------------------------------
 AD8700  VERT ORDER  -  THIRD ?
 AD8700
 AD8700.The horizontal coordinates were established by GPS observations
 AD8700.and adjusted by the National Geodetic Survey in February 2007.
 AD8700
 AD8700.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 AD8700.See National Readjustment for more information.
 AD8700.The horizontal coordinates are valid at the epoch date displayed above.
 AD8700.The epoch date for horizontal control is a decimal equivalence
 AD8700.of Year/Month/Day.
 AD8700
 AD8700.The orthometric height was determined by differential leveling.
 AD8700.The vertical network tie was performed by a horz. field party for horz.
 AD8700.obs reductions. Reset procedures were used to establish the elevation.
 AD8700
 AD8700.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AD8700
 AD8700.The Laplace correction was computed from DEFLEC99 derived deflections.
 AD8700
 AD8700.The ellipsoidal height was determined by GPS observations
 AD8700.and is referenced to NAD 83.
 AD8700
 AD8700.The geoid height was determined by GEOID03.
 AD8700
 AD8700;                    North         East     Units Scale Factor Converg.
 AD8700;SPC FL W     -   261,881.914   200,975.909   MT  0.99994119   +0 00 15.9
```

```
AD8700;SPC FL W     -   859,190.91    659,368.46   sFT  0.99994119   +0 00 15.9
AD8700;UTM  17      - 2,953,306.958   401,493.294   MT  0.99971980   -0 26 41.7
AD8700
AD8700!             -  Elev Factor  x  Scale Factor =   Combined Factor
AD8700!SPC FL W     -   1.00000313  x   0.99994119  =   0.99994432
AD8700!UTM  17      -   1.00000313  x   0.99971980  =   0.99972293
AD8700
AD8700                          SUPERSEDED SURVEY CONTROL
AD8700
AD8700  NAD 83(1999)-  26 41 50.77927(N)    081 59 24.69582(W) AD(       ) 1
AD8700  ELLIP H (07/06/01)  -19.924  (m)                       GP(       ) 4 2
AD8700  NAD 83(1990)-  26 41 50.77761(N)    081 59 24.69500(W) AD(       ) 1
AD8700  ELLIP H (11/12/93)  -19.866  (m)                       GP(       ) 4 1
AD8700
AD8700.Superseded values are not recommended for survey control.
AD8700.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AD8700.See file dsdata.txt to determine how the superseded data were derived.
AD8700
AD8700_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RMK0149353307(NAD 83)
AD8700_MARKER: DO = NOT SPECIFIED OR SEE DESCRIPTION
AD8700_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AD8700_SP_SET: CONCRETE POST
AD8700_STAMPING: GPS HOLT 9033 1990
AD8700_MARK LOGO: DENI
AD8700_MAGNETIC: R = STEEL ROD IMBEDDED IN MONUMENT
AD8700_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AD8700+STABILITY: SURFACE MOTION
AD8700_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AD8700+SATELLITE: SATELLITE OBSERVATIONS - May 25, 2006
AD8700
AD8700  HISTORY     - Date     Condition        Report By
AD8700  HISTORY     - 1990     MONUMENTED       DENI
AD8700  HISTORY     - 19971009 GOOD             USPSQD
AD8700  HISTORY     - 20060525 GOOD             HOLE
AD8700
AD8700                          STATION DESCRIPTION
AD8700
AD8700'DESCRIBED BY DENI ASSOCIATES INCORPORATED 1990
AD8700'STATION IS LOCATED NEAR THE SOUTHEAST CORNER OF SEC.27, TWP 43S, RGE
AD8700'23E, IN CAPE CORAL, 8.4 MI (13.5 KM) NORTHWEST OF FORT MYERS, 5.1 MI
AD8700'(8.2 KM) SOUTH OF THE LEE/CHARLOTTE COUNTY LINE, 3.0 MI (4.8 KM) EAST
AD8700'OF BURNT STORE ROAD/COUNTY ROAD 765.
AD8700'TO REACH STATION FROM THE JUNCTION OF U.S.HIGHWAY 41 AND PINE ISLAND
AD8700'ROAD/STATE ROUTE 78, GO WEST AND SOUTHWEST ON PINE ISLAND ROAD FOR
AD8700'6.1 MI (9.8 KM) TO NELSON ROAD, THEN NORTH ON NELSON ROAD 3.6 MI
AD8700'(5.8 KM) TO KISMET PARKWAY AND THE STATION IN THE MEDIAN NORTH OF THE
AD8700'INTERSECTION OF NELSON ROAD AND KISMET PARKWAY.
AD8700'STATION IS 19.2 FT (5.9 M) EAST OF THE CENTERLINE OF THE SOUTHBOUND
AD8700'THRU LANES OF NELSON ROAD, 21.1 FT (6.4 M) WEST OF THE CENTERLINE OF
AD8700'THE NORTHBOUND LANES OF NELSON ROAD, 172 FT (52.4 M) NORTH OF THE
AD8700'CENTERLINE OF THE WESTBOUND THRU LANES OF KISMET PARKWAY, 150.0 FT
AD8700'(45.7 M) NORTH OF THE SOUTH MOST END OF THE MEDIAN STRIP OF NELSON
AD8700'ROAD, 2.0 FT (0.6 M) SOUTH OF A WITNESS POST.
AD8700'STATION MARK IS A LEE CO/DENI ASSOC 3.25 INCH ALUMINUM SURVEY MARK
AD8700'DISK SET IN THE TOP OF AN 11 INCH ROUND CONCRETE MONUMENT, 1 INCH
AD8700'BELOW GROUND LEVEL.
AD8700
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AD8700                          STATION RECOVERY (1997)
AD8700
AD8700'RECOVERY NOTE BY US POWER SQUADRON 1997
AD8700'RECOVERED IN GOOD CONDITION.
AD8700
AD8700                          STATION RECOVERY (2006)
AD8700
AD8700'RECOVERY NOTE BY HOLE MONTES AND ASSOCIATES INC 2006 (BRH)
AD8700'WITNESS POST MISSING.

*** retrieval complete.
Elapsed Time = 00:00:01
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The NGS Data Sheet

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

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DATABASE =  ,PROGRAM = datasheet, VERSION = 7.61
1        National Geodetic Survey,   Retrieval Date = AUGUST 14, 2008
 AG1868 ***********************************************************************
 AG1868  CBN         -  This is a Cooperative Base Network Control Station.
 AG1868  DESIGNATION -  HAVOLINE 2
 AG1868  PID         -  AG1868
 AG1868  STATE/COUNTY-  FL/SARASOTA
 AG1868  USGS QUAD   -  MYAKKA RIVER (1987)
 AG1868
 AG1868                        *CURRENT SURVEY CONTROL
 AG1868  ______________________________________________________________________
 AG1868* NAD 83(2007)-  27 02 48.34216(N)    082 15 52.23318(W)     ADJUSTED
 AG1868* NAVD 88     -         1.994  (meters)       6.54   (feet)  ADJUSTED
 AG1868  ______________________________________________________________________
 AG1868  EPOCH DATE  -        2002.00
 AG1868  X           -     765,135.424 (meters)                     COMP
 AG1868  Y           -  -5,632,783.600 (meters)                     COMP
 AG1868  Z           -   2,882,821.282 (meters)                     COMP
 AG1868  LAPLACE CORR-          -0.89  (seconds)                   DEFLEC99
 AG1868  ELLIP HEIGHT-         -21.942 (meters)          (02/10/07) ADJUSTED
 AG1868  GEOID HEIGHT-         -23.90  (meters)                   GEOID03
 AG1868  DYNAMIC HT  -           1.991 (meters)       6.53  (feet)  COMP
 AG1868
 AG1868  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 AG1868  Type    PID    Designation                      North   East  Ellip
 AG1868  ----------------------------------------------------------------------
 AG1868  NETWORK AG1868 HAVOLINE 2                        0.96   1.06   3.51
 AG1868  ----------------------------------------------------------------------
 AG1868  MODELED GRAV-     979,129.9   (mgal)                     NAVD 88
 AG1868
 AG1868  VERT ORDER  -  SECOND    CLASS II
 AG1868
 AG1868.The horizontal coordinates were established by GPS observations
 AG1868.and adjusted by the National Geodetic Survey in February 2007.
 AG1868
 AG1868.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 AG1868.See National Readjustment for more information.
 AG1868.The horizontal coordinates are valid at the epoch date displayed above.
 AG1868.The epoch date for horizontal control is a decimal equivalence
 AG1868.of Year/Month/Day.
 AG1868
 AG1868.The orthometric height was determined by differential leveling
 AG1868.and adjusted in June 1991.
 AG1868
 AG1868.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AG1868
 AG1868.The Laplace correction was computed from DEFLEC99 derived deflections.
 AG1868
 AG1868.The ellipsoidal height was determined by GPS observations
 AG1868.and is referenced to NAD 83.
 AG1868
 AG1868.The geoid height was determined by GEOID03.
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AG1868
AG1868.The dynamic height is computed by dividing the NAVD 88
AG1868.geopotential number by the normal gravity value computed on the
AG1868.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AG1868.degrees latitude (g = 980.6199 gals.).
AG1868
AG1868.The modeled gravity was interpolated from observed gravity values.
AG1868
AG1868;                    North         East     Units Scale Factor Converg.
AG1868;SPC FL W     -   300,612.670   173,758.524   MT  0.99994967   -0 07 13.0
AG1868;SPC FL W     -   986,260.07    570,072.76   sFT  0.99994967   -0 07 13.0
AG1868;UTM  17      - 2,992,243.908   374,587.402   MT  0.99979416   -0 34 30.3
AG1868
AG1868!             -  Elev Factor  x  Scale Factor =   Combined Factor
AG1868!SPC FL W     -   1.00000345  x   0.99994967  =   0.99995312
AG1868!UTM  17      -   1.00000345  x   0.99979416  =   0.99979761
AG1868
AG1868|----------------------------------------------------------------------|
AG1868| PID    Reference Object                    Distance      Geod. Az   |
AG1868|                                                          dddmmss.s  |
AG1868| AG1871 HAVOLINE RESET                     41.707 METERS 00406      |
AG1868| AG1869 HAVOLINE 2 RM 7                    15.262 METERS 09500      |
AG1868| AG7344 HAVOLINE 2 RM 8                    29.998 METERS 27518      |
AG1868| AG1867 HAVOLINE 2 AZ MK                  495.509 METERS 2754233.9  |
AG1868| AG1873 HAVOLINE 2 RM 6                     8.678 METERS 35825      |
AG1868|----------------------------------------------------------------------|
AG1868
AG1868                          SUPERSEDED SURVEY CONTROL
AG1868
AG1868  NAD 83(1999)-  27 02 48.34214(N)    082 15 52.23382(W) AD(       ) B
AG1868  ELLIP H (05/31/01)  -21.946  (m)                       GP(       ) 5 1
AG1868  NAD 83(1990)-  27 02 48.34061(N)    082 15 52.23322(W) AD(       ) B
AG1868  ELLIP H (09/13/90)  -21.922  (m)                       GP(       ) 4 1
AG1868  NAD 83(1986)-  27 02 48.34063(N)    082 15 52.24656(W) AD(       ) 2
AG1868  NAD 27      -  27 02 47.13459(N)    082 15 52.91223(W) AD(       ) 2
AG1868  NAVD 88 (11/12/93)    1.99   (m)            6.5    (f) LEVELING    3
AG1868  NGVD 29 (09/01/92)    2.335  (m)            7.66   (f) ADJUSTED    2 2
AG1868
AG1868.Superseded values are not recommended for survey control.
AG1868.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AG1868.See file dsdata.txt to determine how the superseded data were derived.
AG1868
AG1868_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RLK7458792244(NAD 83)
AG1868_MARKER: DH = HORIZONTAL CONTROL DISK
AG1868_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AG1868_SP_SET: CONCRETE POST
AG1868_STAMPING: HAVOLINE 2 1974
AG1868_MARK LOGO: NGS
AG1868_PROJECTION: RECESSED 15 CENTIMETERS
AG1868_MAGNETIC: N = NO MAGNETIC MATERIAL
AG1868_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AG1868+STABILITY: SURFACE MOTION
AG1868_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AG1868+SATELLITE: SATELLITE OBSERVATIONS - October 04, 2005
AG1868
AG1868  HISTORY     - Date     Condition        Report By
AG1868  HISTORY     - 1974     MONUMENTED       NGS
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AG1868  HISTORY     - 1974     GOOD             NGS
AG1868  HISTORY     - 1977     GOOD             NGS
AG1868  HISTORY     - 1977     GOOD             NGS
AG1868  HISTORY     - 1983     GOOD             FLDT
AG1868  HISTORY     - 19890327 GOOD             NGS
AG1868  HISTORY     - 19920922 GOOD             DENI
AG1868  HISTORY     - 19921016 GOOD             FL-115
AG1868  HISTORY     - 20020104 GOOD             USPSQD
AG1868  HISTORY     - 20040512 GOOD             DEWDAV
AG1868  HISTORY     - 20051004 GOOD             FLDEP
AG1868
AG1868                          STATION DESCRIPTION
AG1868
AG1868'DESCRIBED BY NATIONAL GEODETIC SURVEY 1974 (CLN)
AG1868'STATION IS ABOUT 15-1/2 MILES NORTHWEST OF PUNTA GORDA, 12-1/2
AG1868'MILES EAST-SOUTHEAST OF VENICE, 9 MILES NORTHEAST OF
AG1868'ENGLEWOOD, 1 MILE WEST OF NORTH PORT CHARLOTTE AND ON THE SOUTH
AG1868'SIDE OF U.S. HIGHWAY 41 ON THE RIGHT-OF-WAY LINE.
AG1868'
AG1868'TO REACH THE STATION FROM THE JUNCTION OF U.S. HIGHWAY 41
AG1868'AND SOUTH BISCAYNE DRIVE IN NORTH PORT CHARLOTTE, GO WESTERLY
AG1868'ON U.S. HIGHWAY 41 FOR 1.05 MILES TO POWER LINE POLE 15N9 ON
AG1868'LEFT AND STATION.
AG1868'
AG1868'STATION MARKS ARE STANDARD DISKS STAMPED HAVOLINE 2 1974, THE
AG1868'SURFACE MARK IS A STANDARD DISK SET IN THE TOP OF A 12-INCH
AG1868'CYLINDRICAL CONCRETE MONUMENT THAT IS SET FLUSH WITH THE
AG1868'GROUND SURFACE.  IT IS 273 FEET EAST-SOUTHEAST OF POWER LINE
AG1868'POLE 15N10, 127 WEST-SOUTHWEST OF POWER LINE POLE 15N9, 75 FEET
AG1868'SOUTH OF THE CENTER OF U.S. HIGHWAY 41 (EAST BOUND LANE), 2.4
AG1868'FEET EAST OF A METAL WITNESS POST, 2.4 FEET WEST OF A METAL
AG1868'WITNESS POST AND ABOUT 2.5 FEET LOWER IN ELEVATION THAN THE
AG1868'HIGHWAY.  THE UNDERGROUND STATION MARK IS SET IN THE TOP OF AN
AG1868'IRREGULAR MASS OF CONCRETE 42-INCHES BELOW THE GROUND
AG1868'SURFACE.
AG1868'
AG1868'REFERENCE MARK 6, A STANDARD DISK STAMPED HAVOLINE 2 NO 6
AG1868'1974, IS SET IN THE TOP OF A 12-INCH CYLINDRICAL CONCRETE
AG1868'MONUMENT THAT IS SET FLUSH WITH THE GROUND SURFACE.  IT IS 126.5
AG1868'FEET WEST OF POWER LINE POLE 15N9, 46.5 FEET SOUTH OF
AG1868'THE CENTER OF U.S. HIGHWAY 41, 2.1 FEET EAST OF A METAL WITNESS
AG1868'POST, 2 FEET WEST OF A METAL WITNESS POST, IN LINE WITH A ROW OF
AG1868'POWER LINE POLES AND ABOUT 1 FOOT HIGHER IN ELEVATION THAN THE
AG1868'STATION.
AG1868'
AG1868'REFERENCE MARK 7, A STANDARD DISK STAMPED HAVOLINE 2 NO 7
AG1868'1974, IS SET IN THE TOP OF A 12-INCH CYLINDRICAL CONCRETE
AG1868'MONUMENT THAT IS SET FLUSH WITH THE GROUND SURFACE.  IT IS 75.5
AG1868'FEET SOUTH OF THE CENTER OF U.S. HIGHWAY 41, 80.5 FEET SOUTHWEST
AG1868'OF POWER LINE POLE 15N9, 2.9 FEET WEST OF A METAL WITNESS
AG1868'POST AND 6-INCHES HIGHER THAN THE STATION.
AG1868'
AG1868'AZIMUTH MARK, A STANDARD DISK STAMPED HAVOLINE 2 1974, IS
AG1868'SET IN THE TOP OF A 12-INCH CYLINDRICAL CONCRETE MONUMENT THAT IS
AG1868'SET FLUSH WITH THE GROUND SURFACE.  IT IS 80 FEET WEST OF THE
AG1868'CENTER OF A PROJECTED LINE OF ORTEGA PLACE STREET, 46 FEET SOUTH OF
AG1868'THE CENTER OF U.S. HIGHWAY 41 (EAST BOUND LANE), 44 FEET
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AG1868'WEST OF THE CENTER OF GRASS MEDIAN OF BLACKBURN BOULEVARD, 2
AG1868'FEET EAST OF POWER LINE POLE 102 AND 1.2 FEET SOUTHEAST OF
AG1868'A METAL WITNESS POST.
AG1868'
AG1868'TO REACH THE AZIMUTH MARK FROM THE STATION, GO WESTERLY ON
AG1868'U.S. HIGHWAY 41 FOR 0.3 MILE TO MARK ON LEFT AT BLACKBURN
AG1868'BOULEVARD.
AG1868'
AG1868'HEIGHT OF LIGHT ABOVE STATION MARK 1 METER.
AG1868
AG1868                          STATION RECOVERY (1974)
AG1868
AG1868'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1974
AG1868'1 MI W FROM NORTH PORT CHARLOTTE.
AG1868'1.05 MILES WEST ALONG U.S. HIGHWAY 41 FROM ITS JUNCTION WITH
AG1868'S. BISCAYNE DRIVE IN NORTH PORT CHARLOTTE, 273 FEET EAST-SOUTHEAST
AG1868'OF POWER LINE POLE 15N10, 127 FEET WEST-SOUTHWEST OF POWER LINE
AG1868'POLE 15N9, 75 FEET SOUTH OF THE CENTER OF U.S. HIGHWAY 41 (EAST
AG1868'BOUND LANE), 2.4 FEET WEST OF A METAL WITNESS POST, 2.4 FEET
AG1868'EAST OF A METAL WITNESS POST, 2.5 FEET LOWER THAN THE SURFACE
AG1868'OF THE HIGHWAY, ON HIGHWAY RIGHT-OF-WAY AND A DISK SET IN THE
AG1868'TOP OF A 12-INCH ROUND CONCRETE MONUMENT THAT IS SET FLUSH
AG1868'WITH THE GROUND SURFACE.
AG1868
AG1868                          STATION RECOVERY (1977)
AG1868
AG1868'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1977 (CLN)
AG1868'THE STATION MARK, REFERENCE MARK 6 AND AZIMUTH MARK WERE
AG1868'RECOVERED AND FOUND IN GOOD CONDITION.  REFERENCE MARK 7
AG1868'WAS DESTROYED WHEN THE ENTRANCE ROAD WAS CONSTRUCTED FOR LA
AG1868'CASA ADULT MOBILE COMMUNITY.  REFERENCE MARK 8 WAS ESTABLISHED
AG1868'AT THIS TIME.  DUE TO CHANGES, A COMPLETE NEW DESCRIPTION
AG1868'FOLLOWS.
AG1868'
AG1868'STATION IS LOCATED ABOUT 1 MILE WEST OF NORTH PORT, ON THE SOUTH
AG1868'SIDE OF U.S. HIGHWAY 41 AND ON THE WEST SIDE OF THE ENTRANCE
AG1868'ROAD TO LA CASA MOBILE COMMUNITY.
AG1868'
AG1868'TO REACH THE STATION FROM THE JUNCTION OF U.S. HIGHWAY 41 AND
AG1868'BISCAYNE DRIVE AT THE STOP LIGHT IN NORTH PORT, GO WEST ON
AG1868'U.S. HIGHWAY 1 FOR 1.05 MILES TO LA CASA MOBILE COMMUNITY
AG1868'AND STATION ON LEFT.
AG1868'
AG1868'STATION MARKS ARE STANDARD DISKS STAMPED HAVOLINE 2 1974.  THE
AG1868'SURFACE MARK IS SET IN A 12-INCH ROUND CONCRETE MONUMENT
AG1868'THAT IS 3-INCHES BELOW THE GROUND SURFACE.  IT IS 129.5 FEET
AG1868'EAST OF POWER LINE POLE 15N9A, 99 FEET WEST OF POWER LINE
AG1868'POLE 15N9, 75 FEET SOUTH OF THE CENTER OF THE EAST BOUND LANE
AG1868'OF HIGHWAY 41, 61 FEET WEST OF THE CENTER OF THE ENTRANCE
AG1868'ROAD TO LA CASA, 25.5 FEET WEST-SOUTHWEST OF THE WEST END OF
AG1868'A CONCRETE CULVERT, 2.4 FEET WEST OF A METAL WITNESS POST,
AG1868'2.4 FEET EAST OF A METAL WITNESS POST AND ABOUT 3 FEET LOWER
AG1868'THAN THE HIGHWAY.  THE UNDERGROUND MARK IS SET IN THE TOP OF
AG1868'AN IRREGULAR MASS OF CONCRETE.
AG1868'
AG1868'REFERENCE MARK 6 IS A STANDARD DISK STAMPED HAVOLINE 2 NO 6
AG1868'1974, IS SET IN THE TOP OF A 12-INCH ROUND CONCRETE MONUMENT
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AG1868'THAT IS 6-INCHES BELOW THE GROUND SURFACE. IT IS 129 FEET
AG1868'EAST-NORTHEAST OF POWER LINE POLE 15N9A, 64 FEET WEST OF THE
AG1868'CENTER OF THE ENTRANCE ROAD TO LA CASA, 47 FEET SOUTH OF THE
AG1868'CENTER OF HIGHWAY 41 EAST BOUND LANE AND 36.5 FEET NORTHWEST
AG1868'OF THE WEST END OF A CONCRETE CULVERT.
AG1868'
AG1868'REFERENCE MARK 8 IS A STANDARD DISK STAMPED HAVOLINE 2 1974
AG1868'NO 8 1977, IS SET IN THE TOP OF A 12-INCH ROUND CONCRETE
AG1868'MONUMENT THAT IS SET FLUSH WITH THE GROUND. IT IS 159 FEET
AG1868'WEST OF THE CENTER OF THE ENTRANCE ROAD TO LA CASA, 73.5 FEET
AG1868'SOUTH OF THE CENTER OF HIGHWAY 41 EAST, 31 FEET EAST OF POWER LINE
AG1868'POLE 15N9A, 30.5 FEET EAST OF A METAL WITNESS POST AND ABOUT 2.5
AG1868'FEET LOWER THAN THE HIGHWAY.
AG1868'
AG1868'AZIMUTH MARK IS LOCATED 0.35 MILE WEST ALONG HIGHWAY 41 FROM
AG1868'STATION, AT ENTRANCE TO HARBOR COVE AT U.S. HIGHWAY 41 12000 SOUTH
AG1868'AND IS A STANDARD DISK STAMPED HAVOLINE 2 AZ 1974 THAT IS SET
AG1868'IN THE TOP OF A 12 INCH ROUND CONCRETE MONUMENT THAT IS 4-INCHES
AG1868'BELOW THE GROUND SURFACE. IT IS 45.5 FEET SOUTH OF CENTER OF
AG1868'HIGHWAY 41 EAST BOUND LANE. 44 FEET WEST OF THE CENTER OF
AG1868'MEDIAN OF BLACKBURN BOULEVARD 29 FEET NORTH-NORTHEAST OF A
AG1868'UNDERGROUND TELEVISION CABLE JUNCTION BOX, 10 FEET NORTH OF
AG1868'THE WEST END OF A CULVERT AND 1 FOOT EAST OF A METAL WITNESS
AG1868'POST.
AG1868'
AG1868'AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN
AG1868'1 MILE WEST OF NORTH PORT.
AG1868
AG1868   STATION RECOVERY (1977)
AG1868
AG1868'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1977
AG1868'1.05 MILES WEST ALONG U.S. HIGHWAY 41 FROM ITS JUNCTION WITH BISCAYNE
AG1868'DRIVE AT THE STOP LIGHT IN NORTH PORT, 129.5 FEET EAST OF POWER LINE
AG1868'1.0 MILES WEST ALONG U.S. HIGHWAY 41 FROM ITS JUNCTION WITH BISCAYNE
AG1868'DRIVE AT THE STOP LIGHT IN NORTH PORT, 129.5 FEET EAST OF POWER LINE
AG1868'POLE 15 N 9 A, 99.0 FEET WEST OF POWER LINE POLE 15 N 9, 75.0 FEET
AG1868'SOUTH OF THE CENTER OF THE EAST BOUND LANE OF U.S. HIGHWAY 41, 61.0
AG1868'FEET WEST OF THE CENTER OF ENTRANCE ROAD TO LA CASA ADULT MOBILE
AG1868'COMMUNITY, 25.5 FEET WEST-SOUTHWEST OF THE WEST END OF A CONCRETE
AG1868'CULVERT, AND ON RIGHT-OF-WAY HIGHWAY LINE.
AG1868
AG1868   STATION RECOVERY (1983)
AG1868
AG1868'RECOVERY NOTE BY FLORIDA DEPARTMENT OF TRANSPORTATION 1983
AG1868'RECOVERED IN GOOD CONDITION.
AG1868
AG1868   STATION RECOVERY (1989)
AG1868
AG1868'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1989
AG1868'THE STATION IS LOCATED ABOUT 25.8 KM (16.05 MI) NORTHWEST OF PUNTA
AG1868'GORDA, 20.2 KM (12.55 MI) EAST-SOUTHEAST OF VENICE, 14.5 KM (9.00 MI)
AG1868'NORTHEAST OF ENGLEWOOD AND ABOUT 1.6 KM (1.00 MI) WEST OF NORTH PORT,
AG1868'ON THE SOUTH RIGHT-OF-WAY OF U.S. HIGHWAY 41 EASTBOUND, AND AT THE
AG1868'ENTRANCE TO THE LACASA MOBILE COMMUNITY. OWNERSHIP--STATE OF FLORIDA.
AG1868'TO REACH THE STATION FROM THE JUNCTION OF U.S. HIGHWAY 41 AND BISCAYNE
AG1868'BLVD. AT THE WEST EDGE OF NORTH PORT, GO WESTERLY ALONG U.S. HIGHWAY
AG1868'41 WESTBOUND FOR 1.6 KM (1.00 MI) TO THE ENTRANCE TO LA CASA MOBILE

AG1868'COMMUNITY AND THE STATION ON THE LEFT, ABOUT 0.24 KM (0.15 MI) WEST OF
AG1868'THE HOT MINERAL SPRINGS MOTEL.
AG1868'THE STATION IS RECESSED 8 CM BELOW GROUND. LOCATED 23.2 M (76.1 FT)
AG1868'SOUTH OF THE CENTERLINE OF THE EASTBOUND LANES OF HIGHWAY, 18.8 M
AG1868'(61.7 FT) WEST OF THE CENTER OF PAVED ENTRANCE ROAD TO LA CASA MOBILE
AG1868'COMMUNITY, 7.7 M (25.3 FT) WEST OF THE WEST END OF A 30-INCH CONCRETE
AG1868'PIPE CULVERT, 39.6 M (129.9 FT) EAST OF A CONCRETE POWERLINE POLE, 0.8
AG1868'M (2.6 FT) EAST OF A METAL WITNESS POST, 0.7 M (2.3 FT) WEST OF A
AG1868'METAL WITNESS POST AND ABOUT 0.61 M (2.0 FT) BELOW THE LEVEL OF THE
AG1868'HIGHWAY.
AG1868'DESCRIBED BY G.F. SMITH.
AG1868
AG1868   STATION RECOVERY (1992)
AG1868
AG1868'RECOVERY NOTE BY DENI ASSOCIATES INCORPORATED 1992
AG1868'RECOVERED IN GOOD CONDITION.
AG1868
AG1868   STATION RECOVERY (1992)
AG1868
AG1868'RECOVERY NOTE BY SARASOTA COUNTY FLORIDA 1992
AG1868'TO REACH THE STATION FROM THE INTERSECTION OF RIVER ROAD AND U.S.
AG1868'HIGHWAY 41 (TAMIAMI TRAIL) IN SARASOTA COUNTY, GO EASTERLY ON U.S.
AG1868'HIGHWAY 41 (TAMIAMI TRAIL), 2.2 MI (3.54 KM) TO THE STATION ON THE
AG1868'RIGHT.
AG1868'THE STATION IS A NATIONAL GEODETIC SURVEY (N.G.S.) HORIZONTAL CONTROL
AG1868'DISK STAMPED ---HAVOLINE 2 1974--- SET IN A ROUND CONCRETE MONUMENT
AG1868'5-INCHES BELOW THE GROUND. IT IS 47.7 FT (14.54 M) SOUTHERLY OF THE
AG1868'SOUTHERLY EDGE OF ASPHALT PAVEMENT ROAD BED FOR THE SOUTH BOUND LANES
AG1868'OF U.S. HIGHWAY 41 (TAMIAMI TRAIL), 40.9 FT (12.47 M) WESTERLY OF THE
AG1868'WESTERLY EDGE OF ASPHALT PAVEMENT ROAD BED FOR THE ENTRANCE TO LA
AG1868'CASA MOBILE HOME PARK.
AG1868'REFERENCES--
AG1868'REFERENCE MARK NUMBER 6 IS A NATIONAL GEODETIC SURVEY (N.G.S.)
AG1868'REFERENCE DISK STAMPED ---HAVOLINE 2 NO 6 1974--- SET IN A ROUND
AG1868'CONCRETE MONUMENT THAT IS 6-INCHES BELOW THE GROUND. IT IS 28.53 FT
AG1868'(8.70 M)NORTHERLY OF N.G.S. HORIZONTAL CONTROL STATION HAVOLINE 2.
AG1868'REFERENCE MARK NUMBER 8 IS A NATIONAL GEODETIC SURVEY (N.G.S.)
AG1868'REFERENCE DISK STAMPED ---HAVOLINE 2 NO 8 1974 1977--- SET IN A ROUND
AG1868'CONCRETE MONUMENT THAT IS FLUSH WITH THE GROUND. IT IS 98.48 FT
AG1868'(30.02 M)WESTERLY OF N.G.S. HORIZONTAL CONTROL STATION HAVOLINE 2.
AG1868
AG1868   STATION RECOVERY (2002)
AG1868
AG1868'RECOVERY NOTE BY US POWER SQUADRON 2002 (MDB)
AG1868'RECOVERED IN GOOD CONDITION.
AG1868
AG1868   STATION RECOVERY (2004)
AG1868
AG1868'RECOVERY NOTE BY DEWBERRY DAVIS 2004 (KEC)
AG1868'RECOVERED IN GOOD CONDITION.
AG1868
AG1868   STATION RECOVERY (2005)
AG1868
AG1868'RECOVERY NOTE BY FL DEPT OF ENV PRO 2005 (BPJ)
AG1868'RECOVERED IN GOOD CONDITION WITH A NEW TO REACH AS FOLLOWS,
AG1868'
AG1868'TO REACH THE MARK FROM THE JUNCTION OF U.S. HIGHWAY 41 AND STATE ROAD

AG1868'776 SOUTH IN PORT CHARLOTTE, GO WEST ON U.S. HIGHWAY 41 FOR 6.85 MI TO
AG1868'THE INTERSECTION OF SOUTH BISCAYNE DRIVE, CONTINUE WEST ON U.S.
AG1868'HIGHWAY 41 FOR 1.0 MI TO THE JUNCTION OF EL PRADO STREET ON THE LEFT
AG1868'AND THE MARK ON THE LEFT, SET IN THE TOP OF A CONCRETE MONUMENT
AG1868'RECESSED 6 INCHES BELOW THE LEVEL OF THE GROUND AND ABOUT 0.5 FT BELOW
AG1868'THE LEVEL OF U.S. HIGHWAY 41.

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

The NGS Data Sheet

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

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DATABASE =  ,PROGRAM = datasheet, VERSION = 7.61
1        National Geodetic Survey,   Retrieval Date = AUGUST 14, 2008
 AD5969 ***********************************************************************
 AD5969  DESIGNATION -  I75 81 A13
 AD5969  PID         -  AD5969
 AD5969  STATE/COUNTY-  FL/LEE
 AD5969  USGS QUAD   -  BONITA SPRINGS (1987)
 AD5969
 AD5969                        *CURRENT SURVEY CONTROL
 AD5969  ______________________________________________________________________
 AD5969* NAD 83(1990)-  26 21 49.83433(N)    081 45 49.69415(W)     ADJUSTED
 AD5969* NAVD 88     -         4.723  (meters)      15.50   (feet)  ADJUSTED
 AD5969  ______________________________________________________________________
 AD5969  LAPLACE CORR-          -1.52  (seconds)                    DEFLEC99
 AD5969  GEOID HEIGHT-         -23.98  (meters)                     GEOID03
 AD5969  DYNAMIC HT  -           4.715 (meters)      15.47  (feet)  COMP
 AD5969  MODELED GRAV-     979,051.4   (mgal)                       NAVD 88
 AD5969
 AD5969  HORZ ORDER  -  SECOND
 AD5969  VERT ORDER  -  SECOND    CLASS II
 AD5969
 AD5969.The horizontal coordinates were established by classical geodetic methods
 AD5969.and adjusted by the National Geodetic Survey in May 1991.
 AD5969
 AD5969.The orthometric height was determined by differential leveling
 AD5969.and adjusted in June 1991.
 AD5969
 AD5969.The Laplace correction was computed from DEFLEC99 derived deflections.
 AD5969
 AD5969.The geoid height was determined by GEOID03.
 AD5969
 AD5969.The dynamic height is computed by dividing the NAVD 88
 AD5969.geopotential number by the normal gravity value computed on the
 AD5969.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 AD5969.degrees latitude (g = 980.6199 gals.).
 AD5969
 AD5969.The modeled gravity was interpolated from observed gravity values.
 AD5969
 AD5969;                    North         East     Units Scale Factor Converg.
 AD5969;SPC FL W     -   224,944.491   223,572.744   MT  0.99994803   +0 06 17.6
 AD5969;SPC FL W     -   738,005.38    733,504.91   sFT  0.99994803   +0 06 17.6
 AD5969;SPC FL E     -   225,148.558   123,769.904   MT  1.00001290   -0 20 21.1
 AD5969;SPC FL E     -   738,674.89    406,068.43   sFT  1.00001290   -0 20 21.1
 AD5969;UTM  17      - 2,916,203.720   423,795.914   MT  0.99967169   -0 20 21.1
 AD5969
 AD5969!             -  Elev Factor  x  Scale Factor =   Combined Factor
 AD5969!SPC FL W     -   1.00000303  x   0.99994803  =   0.99995106
 AD5969!SPC FL E     -   1.00000303  x   1.00001290  =   1.00001593
 AD5969!UTM  17      -   1.00000303  x   0.99967169  =   0.99967471
 AD5969
 AD5969|----------------------------------------------------------------------|
 AD5969| PID    Reference Object                        Distance      Geod. Az  |
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AD5969|                                                              dddmmss.s |
AD5969| AD5970 I75 81 A13 RM 1                        23.744 METERS 03056     |
AD5969| AD5968 I75 81 A13 RM 2                        23.269 METERS 06903     |
AD5969|--------------------------------------------------------------------|
AD5969
AD5969                          SUPERSEDED SURVEY CONTROL
AD5969
AD5969  NAD 83(1986)-  26 21 49.83257(N)    081 45 49.70672(W) AD(       ) 2
AD5969  NGVD 29 (09/01/92)    5.088  (m)           16.69   (f) ADJUSTED    2 2
AD5969
AD5969.Superseded values are not recommended for survey control.
AD5969.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AD5969.See file dsdata.txt to determine how the superseded data were derived.
AD5969
AD5969_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RMK2379616204(NAD 83)
AD5969_MARKER: DD = SURVEY DISK
AD5969_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AD5969_SP_SET: CONCRETE POST
AD5969_STAMPING: I75 81 A13
AD5969_MARK LOGO: FLDT
AD5969_PROJECTION: RECESSED 13 CENTIMETERS
AD5969_MAGNETIC: N = NO MAGNETIC MATERIAL
AD5969_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AD5969+STABILITY: SURFACE MOTION
AD5969
AD5969  HISTORY     - Date     Condition        Report By
AD5969  HISTORY     - 1981     MONUMENTED       FLDT
AD5969  HISTORY     - 1981     GOOD             FLDT
AD5969  HISTORY     - 1990     GOOD             USPSQD
AD5969  HISTORY     - 19971225 MARK NOT FOUND   USPSQD
AD5969
AD5969                          STATION DESCRIPTION
AD5969
AD5969'DESCRIBED BY FLORIDA DEPARTMENT OF TRANSPORTATION 1981 (CBM)
AD5969'STATION IS LOCATED ABOUT 1-3/4 MILES NORTHEAST OF BONITA SPRINGS AND
AD5969'3 MILES NORTH OF THE LEE-COLLIER COUNTY LINE, ON INTERSTATE ROUTE 75
AD5969'HIGHWAY RIGHT-OF-WAY.
AD5969'
AD5969'TO REACH STATION FROM THE INTERSECTION OF COUNTY ROAD 887 AND STATE
AD5969'ROAD 865 IN BONITA SPRINGS, GO EAST ON STATE ROAD 865 FOR 1.8 MILES
AD5969'TO INTERSECTION OF INTERSTATE ROUTE 75.  GO NORTH ON INTERSTATE ROUTE
AD5969'75 FOR 2.6 MILES TO STATION ON RIGHT, EAST SHOULDER OF NORTHBOUND LANE
AD5969'IT IS ABOUT 400 FEET NORTHWEST OF AN OLD CANAL THAT CAN BE SEEN
AD5969'RUNNING NORTH.
AD5969'
AD5969'STATION MARK IS A STANDARD FLORIDA, DEPARTMENT OF TRANSPORTATION BRASS
AD5969'DISK, STAMPED---I75 81 A13---, SET IN THE TOP OF A ROUND CONCRETE
AD5969'MONUMENT THAT IS 5 INCHES BELOW THE GROUND.  IT IS 29.0 FEET NORTHEAST
AD5969'OF THE CENTER OF THE NORTH BOUND LANE OF INTERSTATE ROUTE 75,
AD5969'74.5 FEET SOUTHWEST OF A METAL WITNESS POST AND 76.5 FEET SOUTHWEST
AD5969'OF A DOUBLE BRACE POST.
AD5969'
AD5969'REFERENCE MARK NUMBER 1 IS A STANDARD FLORIDA DEPARTMENT OF
AD5969'TRANSPORTATION BRASS DISK, STAMPED---I75 A13 RM 1---, SET IN THE TOP
AD5969'OF A ROUND CONCRETE MONUMENT THAT IS FLUSH WITH THE GROUND.  IT IS
AD5969'2.0 FEET SOUTHWEST OF A METAL WITNESS POST, 4.3 FEET SOUTHWEST OF
AD5969'THE RIGHT-OF-WAY FENCE, 100.7 FEET NORTHEAST OF THE CENTER OF THE
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AD5969'NORTHBOUND LANE AND 20.6 FEET NORTHWEST OF THE NORTHERN MOST POST OF
AD5969'DOUBLE BRACED FENCEPOSTS.
AD5969'
AD5969'REFERENCE MARK NUMBER 2 IS A STANDARD FLORIDA DEPARTMENT OF
AD5969'TRANSPORTATION BRASS DISK, STAMPED---I75 A13 RM 2---, SET IN THE TOP
AD5969'OF A ROUND CONCRETE MONUMENT THAT IS FLUSH WITH THE GROUND.  IT IS
AD5969'1.3 FEET SOUTHWEST OF A METAL WITNESS POST, 2.7 FEET SOUTHWEST OF THE
AD5969'RIGHT-OF-WAY FENCE, 14.2 FEET SOUTH OF THE SOUTHERN MOST ONE OF DOUBLE
AD5969'FENCE BRACE POSTS AND 102.0 FEET NORTHEAST OF THE CENTER OF THE
AD5969'NORTHBOUND LANE.
AD5969
AD5969                          STATION RECOVERY (1981)
AD5969
AD5969'RECOVERY NOTE BY FLORIDA DEPARTMENT OF TRANSPORTATION 1981
AD5969'4.35 MI NE FROM BONITA SPRINGS.
AD5969'FROM THE INTERSECTION OF INTERSTATE ROUTE 75 AND STATE ROAD 865, ABOUT
AD5969'1.8 MILES SOUTHEAST OF BONITA SPRINGS, GO NORTHERLY ON INTERSTATE
AD5969'ROUTE 75 FOR ABOUT 1.0 MILE TO THE E TERRY ROAD OVERPASS, CONTINUE
AD5969'NORTHERLY FOR ABOUT 1.55 MILES TO THE MARK.  IT IS 76.5 FEET SOUTHWEST
AD5969'OF THE SOUTH POST OF A DOUBLE POST BRACE IN THE EAST RIGHT OF WAY
AD5969'FENCE AND 29.0 FEET NORTHEAST OF THE CENTER OF THE NORTHBOUND LANES.
AD5969'THE MARK IS 74.5 FT  SW FROM A WITNESS POST.
AD5969
AD5969                          STATION RECOVERY (1990)
AD5969
AD5969'RECOVERY NOTE BY US POWER SQUADRON 1990 (HEA)
AD5969'RECOVERED IN GOOD CONDITION.
AD5969
AD5969                          STATION RECOVERY (1997)
AD5969
AD5969'RECOVERY NOTE BY US POWER SQUADRON 1997
AD5969'MARK NOT FOUND.

*** retrieval complete.
Elapsed Time = 00:00:01
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The NGS Data Sheet

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

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DATABASE =  ,PROGRAM = datasheet, VERSION = 7.61
1        National Geodetic Survey,   Retrieval Date = AUGUST 14, 2008
 AG7631 ***********************************************************************
 AG7631  CBN         -  This is a Cooperative Base Network Control Station.
 AG7631  TIDAL BM    -  This is a Tidal Bench Mark.
 AG7631  DESIGNATION -  LORAN
 AG7631  PID         -  AG7631
 AG7631  STATE/COUNTY-  FL/SARASOTA
 AG7631  USGS QUAD   -  VENICE (1987)
 AG7631
 AG7631                        *CURRENT SURVEY CONTROL
 AG7631  ______________________________________________________________________
 AG7631* NAD 83(2007)-  27 04 38.92549(N)    082 27 01.59084(W)     ADJUSTED
 AG7631* NAVD 88     -         3.672  (meters)      12.05   (feet)  ADJUSTED
 AG7631  ______________________________________________________________________
 AG7631  EPOCH DATE  -        2002.00
 AG7631  X           -     746,649.012 (meters)                     COMP
 AG7631  Y           -  -5,633,703.261 (meters)                     COMP
 AG7631  Z           -   2,885,853.007 (meters)                     COMP
 AG7631  LAPLACE CORR-           0.05  (seconds)                    DEFLEC99
 AG7631  ELLIP HEIGHT-         -20.314 (meters)          (02/10/07) ADJUSTED
 AG7631  GEOID HEIGHT-         -23.89  (meters)                     GEOID03
 AG7631  DYNAMIC HT  -           3.666 (meters)      12.03  (feet)  COMP
 AG7631
 AG7631  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 AG7631  Type    PID    Designation                       North   East  Ellip
 AG7631  ----------------------------------------------------------------------
 AG7631  NETWORK AG7631 LORAN                              2.16   2.20   6.17
 AG7631  ----------------------------------------------------------------------
 AG7631  MODELED GRAV-     979,126.2   (mgal)                      NAVD 88
 AG7631
 AG7631  VERT ORDER  -  SECOND    CLASS I
 AG7631
 AG7631.The horizontal coordinates were established by GPS observations
 AG7631.and adjusted by the National Geodetic Survey in February 2007.
 AG7631
 AG7631.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 AG7631.See National Readjustment for more information.
 AG7631.The horizontal coordinates are valid at the epoch date displayed above.
 AG7631.The epoch date for horizontal control is a decimal equivalence
 AG7631.of Year/Month/Day.
 AG7631
 AG7631.The orthometric height was determined by differential leveling
 AG7631.and adjusted in June 1991.
 AG7631
 AG7631.This Tidal Bench Mark is designated as VM 11358
 AG7631.by the Center for Operational Oceanographic Products and Services.
 AG7631
 AG7631.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AG7631
 AG7631.The Laplace correction was computed from DEFLEC99 derived deflections.
 AG7631
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AG7631.The ellipsoidal height was determined by GPS observations
AG7631.and is referenced to NAD 83.
AG7631
AG7631.The geoid height was determined by GEOID03.
AG7631
AG7631.The dynamic height is computed by dividing the NAVD 88
AG7631.geopotential number by the normal gravity value computed on the
AG7631.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AG7631.degrees latitude (g = 980.6199 gals.).
AG7631
AG7631.The modeled gravity was interpolated from observed gravity values.
AG7631
AG7631;                    North         East     Units Scale Factor Converg.
AG7631;SPC FL W     -   304,068.512   155,324.477   MT  0.99996581   -0 12 18.2
AG7631;SPC FL W     -   997,598.11    509,593.72   sFT  0.99996581   -0 12 18.2
AG7631;UTM  17      - 2,995,845.566   356,183.831   MT  0.99985533   -0 39 37.3
AG7631
AG7631!             -  Elev Factor  x  Scale Factor =   Combined Factor
AG7631!SPC FL W     -   1.00000319  x   0.99996581  =   0.99996900
AG7631!UTM  17      -   1.00000319  x   0.99985533  =   0.99985852
AG7631
AG7631                          SUPERSEDED SURVEY CONTROL
AG7631
AG7631  NAD 83(1999)-  27 04 38.92532(N)    082 27 01.59240(W) AD(       ) B
AG7631  ELLIP H (05/31/01)  -20.210  (m)                       GP(       ) 5 1
AG7631  NAD 83(1990)-  27 04 38.92392(N)    082 27 01.59185(W) AD(       ) B
AG7631  ELLIP H (09/13/90)  -20.183  (m)                       GP(       ) 4 1
AG7631  NAD 27      -  27 04 37.71000(N)    082 27 02.27200(W) AD(       ) 3
AG7631  NAVD 88 (06/02/94)    3.67   (m)           12.0    (f) LEVELING    3
AG7631  NAVD 88 (05/09/94)    3.63   (m)           11.9    (f) LEVELING    3
AG7631  NGVD 29 (09/13/90)    4.02   (m)           13.2    (f) LEVELING    3
AG7631
AG7631.Superseded values are not recommended for survey control.
AG7631.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AG7631.See file dsdata.txt to determine how the superseded data were derived.
AG7631
AG7631_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RLK5618495846(NAD 83)
AG7631_MARKER: DE = TRAVERSE STATION DISK
AG7631_SETTING: 9 = SET IN PREFABRICATED CONCRETE POST IMBEDDED IN GROUND
AG7631_SP_SET: PREFAB CONC. POST IN EARTH
AG7631_STAMPING: LORAN 1954
AG7631_MARK LOGO: CGS
AG7631_PROJECTION: PROJECTING 15 CENTIMETERS
AG7631_MAGNETIC: N = NO MAGNETIC MATERIAL
AG7631_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
AG7631_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AG7631+SATELLITE: SATELLITE OBSERVATIONS - September 16, 1992
AG7631
AG7631  HISTORY     - Date     Condition        Report By
AG7631  HISTORY     - 1954     MONUMENTED       CGS
AG7631  HISTORY     - 1978     GOOD             NGS
AG7631  HISTORY     - 1982     GOOD             FLDNR
AG7631  HISTORY     - 1983     GOOD             FLDNR
AG7631  HISTORY     - 1984     GOOD             FLDNR
AG7631  HISTORY     - 1989     GOOD             NGS
AG7631  HISTORY     - 19900616 GOOD             FLDNR
AG7631  HISTORY     - 19920916 GOOD             FL-115
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AG7631  HISTORY     - 20020215 GOOD             USPSQD
AG7631
AG7631                          STATION DESCRIPTION
AG7631
AG7631'DESCRIBED BY COAST AND GEODETIC SURVEY 1954 (IRR)
AG7631'THE STATION IS LOCATED AT THE U.S.A.F. LORAN STATION SITUATED IN THE
AG7631'NW CORNER OF THE VENICE MUNICIPAL AIRPORT.  IT IS EXACTLY MIDWAY AND
AG7631'ON LINE BETWEEN THE LORAN TRANSMISSION ANTENNAS, 170 FEET NE OF THE SE
AG7631'CORNER OF A CONCRETE BLOCK BUILDING (THE MOST N BUILDING AT THE
AG7631'STATION) AND 212 FEET NORTH-NORTHEAST OF THE NORTHEAST CORNER OF A
AG7631'CONCRETE BLOCK BUILDING (THE MOST SOUTH BUILDING AT THE STATION).
AG7631'
AG7631'IT IS A STANDARD DISK, STAMPED LORAN 1954, SET IN TOP OF AN 8-INCH
AG7631'SQUARE CONCRETE POST APPROXIMATELY 0.05 FOOT UNDERGROUND.
AG7631'
AG7631'TO REACH THE STATION FROM THE POST OFFICE IN VENICE, GO SOUTH ONE
AG7631'BLOCK TO VENICE AVENUE, THEN TURN LEFT AND GO EAST ONE BLOCK, TURN
AG7631'RIGHT AND GO SOUTH FOR 1.5 MILES TO A T-INTERSECTION.  TURN RIGHT AT
AG7631'THE INTERSECTION AND GO WEST FOR 0.4 MILE TO THE LORAN STATION AND THE
AG7631'STATION SITE AS DESCRIBED.
AG7631
AG7631                          STATION RECOVERY (1978)
AG7631
AG7631'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1978 (RST)
AG7631'STATION WAS RECOVERED AS DESCRIBED.
AG7631
AG7631                          STATION RECOVERY (1982)
AG7631
AG7631'RECOVERY NOTE BY FL DEPT OF NAT RES 1982
AG7631'IN VENICE.
AG7631'BEGIN AT THE VENICE AIRPORT, GO 0.8 MILE WESTERLY ON AVENUE E TO
AG7631'HARBOR DRIVE, THENCE 0.2 MILE SOUTH ALONG HARBOR DRIVE TO THE ENTRANCE
AG7631'OF THE OLD VENICE COAST GUARD STATION.  THE MARK BEARS 98.7 FEET NORTH
AG7631'OF THE CENTERLINE OF THE ENTRANCE DRIVE TO THE OLD COAST GUARD
AG7631'STATION, 20.2 FEET NORTHEAST OF THE NORTHEAST CORNER OF A CONCRETE PAD
AG7631'FOR A FORMER HIGH VOLTAGE TRANSFORMER, 156 FEET NORTHEAST OF A
AG7631'FLAGPOLE, 77.5 FEET WEST-NORTHWEST OF BENCH MARK IWSA 1 1950, AND 0.3
AG7631'FOOT EAST OF A WITNESS POST.
AG7631
AG7631                          STATION RECOVERY (1983)
AG7631
AG7631'RECOVERY NOTE BY FL DEPT OF NAT RES 1983
AG7631'RECOVERED IN GOOD CONDITION.
AG7631
AG7631                          STATION RECOVERY (1984)
AG7631
AG7631'RECOVERY NOTE BY FL DEPT OF NAT RES 1984 (JGC)
AG7631'LORAN 1954 RECOVERED GOOD.
AG7631
AG7631                          STATION RECOVERY (1989)
AG7631
AG7631'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1989
AG7631'THE STATION IS LOCATED ABOUT 0.96 KM (0.60 MI) WEST OF THE VENICE
AG7631'MUNICIPAL AIRPORT, AT AN OPEN GRASSY AREA, AT THE SITE OF THE OLD
AG7631'VENICE COAST GUARD STATION.  ABOUT 0.08 KM (0.05 MI) WEST OF HARBOR
AG7631'DRIVE, AND ABOUT 0.16 KM (0.10 MI) SOUTH OF THE JUNCTION OF HARBOR
AG7631'DRIVE AND AIRPORT AVE. E (BEACH ROAD).  OWNERSHIP--U.S. GOVERNMENT.
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AG7631'TO REACH THE STATION FROM THE JUNCTION OF U.S. HIGHWAY 41 BUSINESS
AG7631'ROUTE AND AVE DEL CIRCO, LOCATED ABOUT 1.3 KM (0.80 MI) WEST OF THE
AG7631'JUNCTION OF U.S. HIGHWAY 41 AND U.S. HIGHWAY 41 BUSINESS ROUTE, AT THE
AG7631'SOUTH EDGE OF VENICE, GO SOUTH ALONG AVENUE DEL CIRCO FOR 0.48 KM
AG7631'(0.30 MI) TO THE JUNCTION OF AIRPORT ROAD, THEN GO RIGHT, WEST ALONG
AG7631'AIRPORT ROAD FOR 0.48 KM (0.30 MI) TO DANTES RESTAURANT ON THE LEFT
AG7631'AND THE AIRPORT MANAGERS OFFICE, THEN CONTINUE WEST ALONG AIRPORT
AG7631'AVE. E AND BEACH ROAD FOR 0.96 KM (0.60 MI) TO THE JUNCTION OF HARBOR
AG7631'DRIVE, THEN GO LEFT, SOUTH ALONG HARBOR DRIVE FOR 0.16 KM (0.10 MI) TO
AG7631'THE ENTRANCE TO THE OLD COAST GUARD STATION ON THE RIGHT, THEN GO
AG7631'RIGHT, WEST ALONG AN ASPHALT ROAD FOR 0.08 KM (0.05 MI) TO THE STATION
AG7631'ON THE RIGHT, IN AN OPEN GRASSY AREA.
AG7631'THE STATION IS RECESSED 13 CM BELOW GROUND.  LOCATED 47.6 M
AG7631'(156.2 FT) NORTHEAST OF A FLAGPOLE, 6.2 M (20.3 FT) NORTHEAST OF THE
AG7631'NORTHEAST EDGE OF A 10 FT BY 20 FT CONCRETE PAD, 47 M (154.2 FT) EAST
AG7631'OF THE SOUTHEAST CORNER OF A WHITE BLOCK OFFICE BUILDING, 30 M
AG7631'(98.4 FT) NORTH OF THE APPROXIMATE CENTER OF AN ASPHALT ROAD, 0.09 M
AG7631'(0.3 FT) EAST OF A METAL WITNESS POST AND LEVEL WITH THE ASPHALT ROAD.
AG7631'DESCRIBED BY G.F. SMITH.
AG7631
AG7631                          STATION RECOVERY (1990)
AG7631
AG7631'RECOVERY NOTE BY FL DEPT OF NAT RES 1990
AG7631'RECOVERED IN GOOD CONDITION.
AG7631
AG7631                          STATION RECOVERY (1992)
AG7631
AG7631'RECOVERY NOTE BY SARASOTA COUNTY FLORIDA 1992
AG7631'TO REACH THE STATION FROM THE INTERSECTION OF BEACH ROAD AND HARBOR
AG7631'DRIVE IN THE CITY OF VENICE IN SARASOTA COUNTY, GO SOUTHERLY ON
AG7631'HARBOR DRIVE 650 FT (198.12 M) TO THE INTERSECTION OF HARBOR DRIVE
AG7631'AND THE ENTRANCE TO THE FORMER LORAN COAST GUARD STATION, TURN
AG7631'RIGHT AND GO SOUTHWEST ON THE ENTRANCE ROAD, 250 FT (76.20 M) TO THE
AG7631'STATION ON THE RIGHT. THE STATION IS A U.S. COAST AND GEODETIC SURVEY
AG7631'(C.G.S.) TRAVERSE STATION DISK STAMPED ---LORAN 1954--- SET IN A
AG7631'10-INCH SQUARE CONCRETE MONUMENT THAT IS 5-INCHES BELOW THE GROUND.
AG7631'IT IS 77.40 FT (23.59 M) SOUTHWESTERLY OF A NATIONAL OCEANIC SURVEY
AG7631'(N.O.S.) CONCRETE MONUMENT I WSA NO 1 1950, AND 20.25 FT (6.17 M)
AG7631'NORTHEASTERLY OF THE NORTHEASTERLY CORNER OF A CONCRETE SLAB.
AG7631'THE NATIONAL OCEANIC SURVEY (N.O.S.) CONCRETE MONUMENT STAMPED ---I
AG7631'WSA NO 1 1950--- IS 65.0 FT (19.81 M) NORTHWESTERLY OF THE CENTERLINE
AG7631'OF THE ENTRANCE OF THE FORMER LORAN COAST GUARD STATION, 180.36 FT
AG7631'(54.97 M) SOUTHWESTERLY OF A N.O.S. DISK 5858 C 1977, 190.20 FT
AG7631'(57.97 M) NORTHEASTERLY OF A N.O.S. DISK 5858 C 1977 SET IN A
AG7631'CONCRETE SLAB FOR A FLAG POLE, AND 87.18 FT (26.57 M) SOUTHEASTERLY
AG7631'OF THE SOUTHEASTERLY CORNER OF A CONCRETE SLAB.
AG7631
AG7631                          STATION RECOVERY (2002)
AG7631
AG7631'RECOVERY NOTE BY US POWER SQUADRON 2002
AG7631'RECOVERED IN GOOD CONDITION.

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

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

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DATABASE =  ,PROGRAM = datasheet, VERSION = 7.61
1        National Geodetic Survey,   Retrieval Date = AUGUST 14, 2008
 AD1509 ***********************************************************************
 AD1509  SACS        -  This is a Secondary Airport Control Station.
 AD1509  DESIGNATION -  W 247
 AD1509  PID         -  AD1509
 AD1509  STATE/COUNTY-  FL/LEE
 AD1509  USGS QUAD   -  FORT MYERS SE (1987)
 AD1509
 AD1509                        *CURRENT SURVEY CONTROL
 AD1509  ______________________________________________________________________
 AD1509* NAD 83(2007)-  26 35 09.63330(N)    081 51 22.32828(W)     ADJUSTED
 AD1509* NAVD 88     -         4.846  (meters)      15.90   (feet)  ADJUSTED
 AD1509  ______________________________________________________________________
 AD1509  EPOCH DATE  -        2002.00
 AD1509  X           -     808,519.411 (meters)                     COMP
 AD1509  Y           -  -5,649,989.043 (meters)                     COMP
 AD1509  Z           -   2,837,261.325 (meters)                     COMP
 AD1509  LAPLACE CORR-          -2.07  (seconds)                    DEFLEC99
 AD1509  ELLIP HEIGHT-         -19.322 (meters)          (02/10/07) ADJUSTED
 AD1509  GEOID HEIGHT-         -24.15  (meters)                     GEOID03
 AD1509  DYNAMIC HT  -           4.838 (meters)      15.87  (feet)  COMP
 AD1509
 AD1509  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 AD1509  Type    PID    Designation                       North   East  Ellip
 AD1509  ----------------------------------------------------------------------
 AD1509  NETWORK AD1509 W 247                               0.92   0.88   3.25
 AD1509  ----------------------------------------------------------------------
 AD1509  MODELED GRAV-     979,067.5   (mgal)                     NAVD 88
 AD1509
 AD1509  VERT ORDER  -  FIRST     CLASS I
 AD1509
 AD1509.This mark is at Page Field Airport (FMY)
 AD1509
 AD1509.The horizontal coordinates were established by GPS observations
 AD1509.and adjusted by the National Geodetic Survey in February 2007.
 AD1509
 AD1509.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 AD1509.See National Readjustment for more information.
 AD1509.The horizontal coordinates are valid at the epoch date displayed above.
 AD1509.The epoch date for horizontal control is a decimal equivalence
 AD1509.of Year/Month/Day.
 AD1509
 AD1509.The orthometric height was determined by differential leveling
 AD1509.and adjusted in September 1992.
 AD1509
 AD1509.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AD1509
 AD1509.The Laplace correction was computed from DEFLEC99 derived deflections.
 AD1509
 AD1509.The ellipsoidal height was determined by GPS observations
 AD1509.and is referenced to NAD 83.
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AD1509
AD1509.The geoid height was determined by GEOID03.
AD1509
AD1509.The dynamic height is computed by dividing the NAVD 88
AD1509.geopotential number by the normal gravity value computed on the
AD1509.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AD1509.degrees latitude (g = 980.6199 gals.).
AD1509
AD1509.The modeled gravity was interpolated from observed gravity values.
AD1509
AD1509;                    North         East     Units Scale Factor Converg.
AD1509;SPC FL W     -   249,544.505   214,323.685   MT  0.99994371   +0 03 51.7
AD1509;SPC FL W     -   818,713.93    703,160.29   sFT  0.99994371   +0 03 51.7
AD1509;UTM  17      - 2,940,868.415   414,740.950   MT  0.99968974   -0 22 59.6
AD1509
AD1509!             -  Elev Factor  x  Scale Factor =   Combined Factor
AD1509!SPC FL W     -   1.00000304  x   0.99994371  =   0.99994675
AD1509!UTM  17      -   1.00000304  x   0.99968974  =   0.99969277
AD1509
AD1509                          SUPERSEDED SURVEY CONTROL
AD1509
AD1509  NAD 83(1999)-  26 35 09.63344(N)    081 51 22.32906(W) AD(       ) 1
AD1509  ELLIP H (01/17/02)  -19.277  (m)                       GP(       ) 4 2
AD1509  NAD 83(1990)-  26 35 09.63156(N)    081 51 22.32816(W) AD(       ) 1
AD1509  ELLIP H (01/05/98)  -19.236  (m)                       GP(       ) 4 2
AD1509  NAVD 88 (06/15/91)    4.829  (m)          15.84   (f) UNKNOWN     1 1
AD1509  NGVD 29 (09/01/92)    5.205  (m)          17.08   (f) ADJUSTED    1 1
AD1509
AD1509.Superseded values are not recommended for survey control.
AD1509.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AD1509.See file dsdata.txt to determine how the superseded data were derived.
AD1509
AD1509_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RMK1474140868(NAD 83)
AD1509_MARKER: DB = BENCH MARK DISK
AD1509_SETTING: 34 = SET IN THE FOOTINGS OF SMALL/MEDIUM STRUCTURES
AD1509_SP_SET: OLD BEACON TOWER FOOTING
AD1509_STAMPING: W 247 1965
AD1509_MARK LOGO: CGS
AD1509_MAGNETIC: O = OTHER; SEE DESCRIPTION
AD1509_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AD1509+STABILITY: SURFACE MOTION
AD1509_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AD1509+SATELLITE: SATELLITE OBSERVATIONS - September 12, 2005
AD1509
AD1509  HISTORY     - Date     Condition        Report By
AD1509  HISTORY     - 1965     MONUMENTED       CGS
AD1509  HISTORY     - 1976     GOOD             NGS
AD1509  HISTORY     - 1981     GOOD             USGS
AD1509  HISTORY     - 19920407 GOOD             NGS
AD1509  HISTORY     - 19960209 SEE DESCRIPTION  NGS
AD1509  HISTORY     - 20031105 GOOD             USPSQD
AD1509  HISTORY     - 20031107 GOOD             USPSQD
AD1509  HISTORY     - 20050912 GOOD             MCKIM
AD1509
AD1509                          STATION DESCRIPTION
AD1509
AD1509'DESCRIBED BY COAST AND GEODETIC SURVEY 1965
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AD1509'5.8 MI S FROM FORT MYERS.
AD1509'ABOUT 0.15 MILE SOUTHWEST ALONG MAIN STREET AND MC GREGOR
AD1509'BOULEVARD FROM THE COURTHOUSE AT FORT MYERS, THENCE ABOUT 4.3
AD1509'MILES SOUTH ALONG U.S. HIGHWAY 41, THENCE ABOUT 1.3 MILES EAST
AD1509'AND NORTH ALONG AIRPORT ROAD, AT PAGE FIELD AIRPORT, IN SECTION
AD1509'1, R 24 E, T 45 S, ALONG THE EAST SIDE OF THE AIRFIELD, ABOUT
AD1509'1.0 MILE BY ROAD NORTHEAST OF THE ADMINISTRATION BUILDING, AT
AD1509'A SLIGHT CURVE IN THE ROAD THAT FOLLOWS ALONG THE EAST SIDE OF
AD1509'THE FIELD, SET IN THE TOP AND AT THE WEST CORNER OF THE CONCRETE
AD1509'BASE FOR THE NORTHWEST LEG OF THE PRESENT DAY BEACON LIGHT, 63
AD1509'FEET EAST OF THE CENTER LINE OF THE ROAD LEADING TO THE NORTH AND
AD1509'25 FEET NORTH OF THE CENTER LINE OF THE ROAD LEADING EAST AND
AD1509'ABOUT 2 FEET ABOVE THE LEVEL OF THE ROAD.
AD1509
AD1509                          STATION RECOVERY (1976)
AD1509
AD1509'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1976
AD1509'RECOVERED IN GOOD CONDITION.
AD1509
AD1509                          STATION RECOVERY (1981)
AD1509
AD1509'RECOVERY NOTE BY US GEOLOGICAL SURVEY 1981
AD1509'RECOVERED IN GOOD CONDITION.
AD1509
AD1509                          STATION RECOVERY (1992)
AD1509
AD1509'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1992
AD1509'IN FORT MYERS, AT THE INTERSECTION OF IDLEWILD ROAD AND SIXTH STREET,
AD1509'IN TOP OF AND 0.2 M (0.7 FT) EAST OF THE WEST EDGE OF THE MOST
AD1509'NORTHWESTERLY OF 4 CONCRETE FOOTINGS FOR AN AIRPORT BEACON (BEACON
AD1509'REMOVED), IN THE SOUTHWEST CORNER OF THE LAWN OF THE LEE COUNTY
AD1509'DEPARTMENT OF TRANSPORTATION, 34.5 M (113.2 FT) WEST OF THE EXTENDED
AD1509'CENTERLINE OF THE STREET, 19.1 M (62.7 FT) EAST OF THE CENTER OF A
AD1509'PAVED ROAD, 12.9 M (42.3 FT) NORTH OF THE CENTERLINE OF THE ROAD, 6.3
AD1509'M (20.7 FT) SOUTH OF THE SOUTH CURB OF A PARKING LOT, 0.3 M (1.0 FT)
AD1509'ABOVE THE LEVEL OF THE ROAD, 0.3 M (1.0 FT) SOUTH OF A WITNESS POST,
AD1509'0.2 M (0.7 FT) SOUTH OF THE NORTH EDGE OF THE CONCRETE BASE, AND THE
AD1509'FOOTING IS 0.06 M (0.20 FT) BELOW THE GROUND SURFACE.
AD1509
AD1509                          STATION RECOVERY (1996)
AD1509
AD1509'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1996 (CFS)
AD1509'THE STATION IS LOCATED OUTSIDE THE EASTERN BOUNDARY OF PAGE FIELD ON
AD1509'THE SOUTH SIDE OF FORT MYERS.  IT IS SET ON THE NORTH SIDE OF IDLEWILD
AD1509'ROAD IN FRONT OF THE LEETRAN (LEE COUNTY TRANSIT) FACILITY BETWEEN 6TH
AD1509'STREET AND EAST AIRPORT ROAD.  OWNERSHIP -- LEETRAN, 10715 EAST
AD1509'AIRPORT ROAD, FORT MYERS, FL 33907.  TRANSIT MANAGER MR. LARRY
AD1509'RALSTON, TELEPHONE (941) 275-8726 TO REACH THE STATION FROM THE
AD1509'JUNCTION OF INTERSTATE HIGHWAY 75 AND STATE HIGHWAY 884 AT INTERSTATE
AD1509'HIGHWAY 75 EXIT 22 EAST OF FORT MYERS, GO WEST ON STATE HIGHWAY 884
AD1509'(COLONIAL BLVD) FOR 3.25 MI (5.23 KM) TO STATE HIGHWAY 739 (METO
AD1509'PARKWAY) ON THE LEFT, TURN LEFT AND GO SOUTHERLY ON THE METOR PARKWAY
AD1509'FOR 0.85 MI (1.37 KM) TO IDLEWILD ROAD ON THE RIGHT.  TURN RIGHT ON
AD1509'IDLEWILD ROAD AND GO WEST FOR 0.1 MI (0.2 KM) CROSSING A RAILROAD
AD1509'TRACK AND TEN MILE CANAL TO A FOUR WAY STOP WITH 6TH STREET ON THE
AD1509'LEFT.  CONTINUE STRAIGHT AHEAD FOR 0.05 MI (0.08 KM) TO THE STATION ON
AD1509'THE RIGHT NEAR THE CORNER OF IDLEWILD ROAD AND EAST AIRPORT ROAD. THE
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AD1509'STATION IS A STANDARD U.S.C.  AND G.S.  BENCH MARK DISK SET IN THE
AD1509'NORTHWEST CORNER OF AN OLD 3-FT SQUARE CONCRETE FOOTING FOR A BEACON
AD1509'TOWER WHICH IS 4-INCHED BELOW THE SURFACE.  THERE IS A SCRATCH THRU
AD1509'THE 24 IN 247.  THE STATION IS WITHIN 0.2 MI (0.3 KM) OF PAGE FIELD
AD1509'GATES 4, 5, AND 6B.  IT IS 20.0 M (65.6 FT) EAST OF THE PROJECTED
AD1509'CENTERLINE OF EAST AIRPORT ROAD, 13.55 M (44.46 FT) EAST OF THE CENTER
AD1509'OF DRAIN GRATE IN EAST AIRPORT ROAD, 12.8 M (42.0 FT) NORTH OF THE
AD1509'CENTERLINE OF IDLEWILD ROAD, 9.59 M (31.46 FT) SOUTHEAST OF THE
AD1509'SOUTHWEST CORNER OF PARKING LOT, 8.88 M (29.13 FT) EAST-SOUTHEAST OF
AD1509'IDLEWILD ROAD AND EAST AIRPORT ROAD STREET SIGN, 6.41 M (21.03 FT)
AD1509'SOUTH OF SOUTH CURB OF PARKING LOT, 2.87 M (9.42 FT) NORTH OF THE
AD1509'NORTHWEST CORNER OF OLD 3-FT SQUARE CONCRETE FOOTING, AND 0.27 M (0.89
AD1509'FT) SOUTH OF A WITNESS POST.  THIS IS A SECONDARY AIRPORT CONTROL
AD1509'STATION.  WJR
AD1509
AD1509                          STATION RECOVERY (2003)
AD1509
AD1509'RECOVERY NOTE BY US POWER SQUADRON 2003
AD1509'RECOVERED IN GOOD CONDITION.
AD1509
AD1509                          STATION RECOVERY (2003)
AD1509
AD1509'RECOVERY NOTE BY US POWER SQUADRON 2003
AD1509'RECOVERED IN GOOD CONDITION.
AD1509
AD1509                          STATION RECOVERY (2005)
AD1509
AD1509'RECOVERY NOTE BY MCKIM AND CREED 2005 (BRH)
AD1509'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:00
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APPENDIX B: NEW GROUND CONTROL STATION INFORMATION

This appendix contains the recovery information sheet for the newly established GPS control station utilized in Project Area E of the FY2007 State of Florida Division of Emergency Management Ground Control QA/QC Survey Mapping Project.

GPS Station Recovery - GPS Log Sheet

WOOLPERT

Project Name:	Florida Coastal Mapping Project	Operator Name	S. LAMB	Job No.	66517
Station Name:	BOCA	Date of Survey:	07 DEC 07	Julian Day	341
		File Name:	BOCA	Session #	#1
WGS-84 Coordinates		Type of Reciever:	TRIMBLE		
Latitude	N 26° 50' 16.00	Type of Antenna:	5800		
Longitude	W 082° 16' 14.23			Ellipsoid	Chrono
Ellip. Height	-95.602'	Antenna Height:	2.0m	USFT / Meters	ARP / Phase Center
Type of Mark:	#5 DIN/CAP				
Stamping on Mark:	WOOLPERT	Start Time (local):	8:30 AM		
		Weather Condition:	+/- 80° / SUNNY		

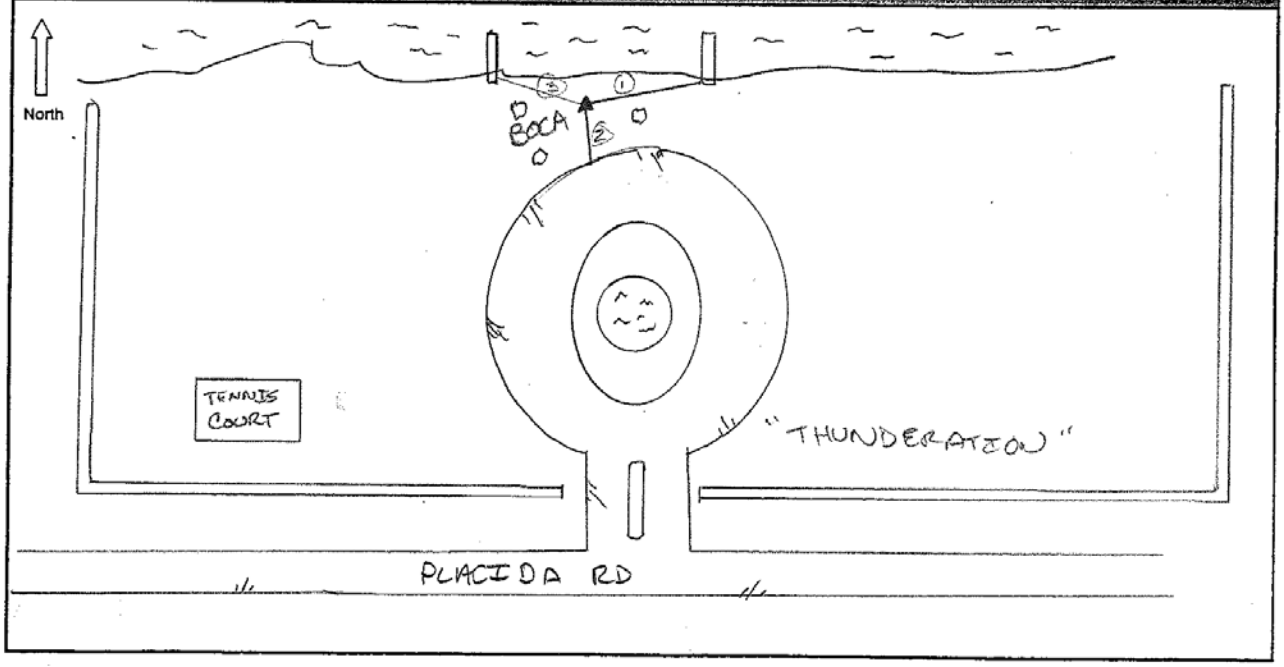
Text Recon Description

STATION BOCA IS NORTH OF PLACIDA RD IN THE REAR OF THUNDERATION

Witness Ties

Reference Object	Distance	Azimuth
1) TO E WOODEN DOCK/WALK	26'	
2) TO E ED of	101'	
3) TO W. WOODEN DOCK/WALK	56'	
4)		

Sketch



APPENDIX C: FINAL GROUND QA/QC AND GEODETIC CONTROL COORDINATE LISTING

This appendix contains the final coordinate listings for the LiDAR QA/QC Checkpoints, LiDAR Control Points and the geodetic control stations utilized in Project Area E of the FY2007 State of Florida Division of Emergency Management Ground Control QA/QC Survey Mapping Project.

PROJECT AREA 'E'

HORIZONTAL DATUM: NAD83(1999)
VERTICAL DATUM: NAVD88
UNITS: US SURVEY FEET
STATE PLANE ZONE: FLORIDA WEST 0902
GEOID MODEL: GEOID03
COORDINATE SYSTEM: GRID

****NOTE: ALL ELEVATIONS ARE STATION ELEVATIONS****

STATIONS IN BLUE = CONVENTIONAL SURVEY METHODS
STATIONS IN RED = RAPID STATIC GPS METHODS

LiDAR QA/QC CHECKPOINTS AND LiDAR CONTROL POINTS

GPS Station Name	Grid Northing (US FT)	Grid Easting (US FT)	Station Elevation (US FT)	Y Std. Dev. (US FT)	X Std. Dev. (US FT)	Z Std. Dev. (US FT)	Station Description
5147	941723.07	559448.12	10.71	0.03	0.03	0.10	URBAN
5148	941501.95	559388.80	12.80	0.03	0.03	0.09	LOW GRASS OR BARE EARTH
5149	940037.07	556948.44	13.86	0.04	0.04	0.07	BRUSH
5710	930343.14	560469.73	5.67	N/A	N/A	N/A	FORESTED
5711	930189.73	560404.85	5.69	N/A	N/A	N/A	FORESTED
5712	922921.56	555232.40	3.89	N/A	N/A	N/A	FORESTED
5713	923041.20	555231.25	4.58	N/A	N/A	N/A	FORESTED
5714	915327.58	564104.55	3.40	N/A	N/A	N/A	FORESTED
5715	915331.11	564012.55	3.61	N/A	N/A	N/A	FORESTED
5716	840847.35	659791.49	10.02	N/A	N/A	N/A	FORESTED
5717	840678.78	659874.09	10.00	N/A	N/A	N/A	FORESTED
5718	840544.48	659682.98	10.68	N/A	N/A	N/A	FORESTED
5719	783382.78	689415.43	2.71	N/A	N/A	N/A	FORESTED
5720	783401.79	689386.18	2.78	N/A	N/A	N/A	FORESTED
5721	783474.38	689379.87	3.41	N/A	N/A	N/A	FORESTED
5722	790778.86	677355.44	5.22	N/A	N/A	N/A	FORESTED
5723	790765.11	677325.82	5.87	N/A	N/A	N/A	FORESTED
5724	790760.25	677289.06	6.31	N/A	N/A	N/A	FORESTED
5728	781268.24	596203.09	5.38	N/A	N/A	N/A	FORESTED
5729	781369.46	596257.35	2.23	N/A	N/A	N/A	FORESTED
5730	781567.75	596106.99	6.54	N/A	N/A	N/A	FORESTED
5731	769649.72	650616.91	5.19	N/A	N/A	N/A	FORESTED
5732	769772.56	650691.30	3.61	N/A	N/A	N/A	FORESTED
5733	769749.68	650764.45	6.03	N/A	N/A	N/A	FORESTED
5850	830282.98	677747.63	4.70	N/A	N/A	N/A	FORESTED
5851	830416.83	678042.16	4.26	N/A	N/A	N/A	FORESTED

GPS Station Name	Grid Northing (US FT)	Grid Easting (US FT)	Station Elevation (US FT)	Y Std. Dev. (US FT)	X Std. Dev. (US FT)	Z Std. Dev. (US FT)	Station Description
5852	830304.40	678114.04	4.01	N/A	N/A	N/A	FORESTED
5854	820945.93	651635.12	5.75	N/A	N/A	N/A	FORESTED
5855	820839.42	651637.57	5.62	N/A	N/A	N/A	FORESTED
5856	820710.38	651631.96	5.94	N/A	N/A	N/A	FORESTED
5857	817172.96	620513.64	7.04	N/A	N/A	N/A	FORESTED
5858	817123.73	620395.02	6.67	N/A	N/A	N/A	FORESTED
5859	817200.18	620092.59	5.82	N/A	N/A	N/A	FORESTED
5863	854952.82	647039.73	6.34	N/A	N/A	N/A	FORESTED
5864	854949.43	647202.98	6.43	N/A	N/A	N/A	FORESTED
5865	854985.82	647574.16	6.11	N/A	N/A	N/A	FORESTED
5866	861322.68	675117.20	14.05	N/A	N/A	N/A	FORESTED
5867	861248.72	675064.32	14.10	N/A	N/A	N/A	FORESTED
5868	861149.37	675096.98	13.94	N/A	N/A	N/A	FORESTED
LEE1051	804473.29	592231.98	4.28	0.02	0.02	0.05	BRUSH
LEE5001	794831.11	683412.39	5.32	0.02	0.03	0.05	URBAN
LEE5003	794760.02	683405.29	4.60	0.03	0.04	0.11	LOW GRASS OR BARE EARTH
LEE5005	794839.43	683319.75	4.20	0.02	0.03	0.05	BRUSH
LEE5007	790791.68	671482.14	5.19	0.03	0.03	0.09	BRUSH
LEE5009	790883.07	671344.78	8.88	0.03	0.03	0.09	URBAN
LEE5011	791104.99	671279.46	9.04	0.02	0.03	0.09	LOW GRASS OR BARE EARTH
LEE5015	782593.25	674484.84	5.82	0.11	0.06	0.28	TRAVERSE POINT
LEE5017	781395.80	673855.67	3.69	0.04	0.03	0.11	BRUSH
LEE5023	790528.31	689116.13	2.93	0.03	0.04	0.08	BRUSH
LEE5025	815179.48	688911.52	5.04	0.02	0.03	0.05	LIDAR CONTROL POINT
LEE5026	814457.15	689029.70	6.17	0.02	0.03	0.05	BRUSH
LEE5027	813381.09	688673.48	7.07	0.02	0.03	0.06	URBAN
LEE5028	813318.00	688658.40	5.55	0.02	0.02	0.05	LOW GRASS OR BARE EARTH
LEE5031	790749.57	677218.17	6.32	0.03	0.04	0.10	TRAVERSE POINT
LEE5032	790754.59	677122.42	5.71	0.03	0.04	0.09	BRUSH
LEE5034	783787.96	689287.29	4.54	0.04	0.04	0.08	URBAN
LEE5035	783285.18	689297.66	3.91	0.05	0.04	0.10	LOW GRASS OR BARE EARTH
LEE5036	783427.14	689346.44	2.34	0.03	0.03	0.10	TRAVERSE POINT
LEE5039	773840.37	667340.56	4.16	0.03	0.05	0.09	URBAN
LEE5040	773843.75	667208.67	3.73	0.04	0.05	0.12	LOW GRASS OR BARE EARTH
LEE5041	774259.19	667173.32	9.59	0.03	0.04	0.07	BRUSH
LEE5042	773726.76	667376.69	4.29	0.05	0.05	0.13	LIDAR CONTROL POINT
LEE5043	760559.85	687113.95	3.78	0.03	0.04	0.11	URBAN
LEE5044	760264.09	687159.39	2.56	0.04	0.05	0.11	LOW GRASS OR BARE EARTH
LEE5045	760806.98	687087.97	2.81	0.03	0.04	0.10	BRUSH
LEE5047	760057.46	686930.70	3.72	0.05	0.04	0.12	LIDAR CONTROL POINT
LEE5048	804787.40	591977.25	4.68	0.02	0.03	0.09	URBAN

GPS Station Name	Grid Northing (US FT)	Grid Easting (US FT)	Station Elevation (US FT)	Y Std. Dev. (US FT)	X Std. Dev. (US FT)	Z Std. Dev. (US FT)	Station Description
LEE5050	804526.86	592066.11	6.61	0.02	0.02	0.04	LOW GRASS OR BARE EARTH
LEE5054	781289.29	596262.74	7.02	0.02	0.03	0.06	TRAVERSE POINT
LEE5055	781180.90	596346.51	2.44	0.03	0.03	0.06	LOW GRASS OR BARE EARTH
LEE5056	781295.58	596434.27	0.49	0.02	0.01	0.05	BRUSH
LEE5057	776557.10	605275.51	6.68	0.02	0.01	0.06	URBAN
LEE5058	775012.17	606272.85	3.10	0.02	0.03	0.06	LOW GRASS OR BARE EARTH
LEE5059	776526.37	605155.53	6.66	0.02	0.02	0.06	BRUSH
LEE5060	774838.91	606303.23	4.05	0.02	0.03	0.06	LIDAR CONTROL POINT
LEE5062	764381.40	629833.24	4.18	0.02	0.03	0.10	URBAN
LEE5063	764573.02	629864.20	2.35	0.02	0.03	0.10	LOW GRASS OR BARE EARTH
LEE5064	765291.88	630289.28	4.94	0.03	0.04	0.10	BRUSH
LEE5065	765293.97	630085.12	3.57	0.03	0.04	0.10	LIDAR CONTROL POINT
LEE5067	769759.72	650586.85	3.58	0.03	0.04	0.06	URBAN
LEE5068	769853.53	651098.60	3.54	0.03	0.03	0.07	LOW GRASS OR BARE EARTH
LEE5069	769820.46	651199.38	3.56	0.03	0.03	0.06	BRUSH
LEE5070	769692.31	650733.91	3.47	0.03	0.03	0.05	TRAVERSE POINT
LEE5085	817238.03	620556.57	7.70	0.04	0.02	0.09	URBAN
LEE5088	817283.06	620875.95	7.62	0.04	0.02	0.09	LIDAR CONTROL POINT
LEE5090	787532.27	629892.45	2.38	0.03	0.04	0.09	URBAN
LEE5091	787535.89	629756.54	3.53	0.03	0.03	0.09	LOW GRASS OR BARE EARTH
LEE5092	786934.30	630366.62	2.94	0.02	0.03	0.09	BRUSH
LEE5093	786831.08	630310.77	4.31	0.02	0.03	0.09	LIDAR CONTROL POINT
LEE5095	837803.61	641076.10	4.81	0.03	0.03	0.06	BRUSH
LEE5096	837739.77	641023.40	4.71	0.03	0.03	0.06	BRUSH
LEE5098	828408.36	679280.05	4.29	0.02	0.03	0.10	URBAN
LEE5099	828505.56	679767.39	3.82	0.02	0.03	0.09	LOW GRASS OR BARE EARTH
LEE5100	830233.45	678000.12	4.10	0.03	0.03	0.08	BRUSH
LEE5101	830135.83	677912.28	4.62	0.03	0.03	0.08	TRAVERSE POINT
LEE5103	802327.94	663431.35	4.14	0.05	0.04	0.17	URBAN
LEE5104	802260.29	663330.40	4.92	0.05	0.04	0.16	LOW GRASS OR BARE EARTH
LEE5105	804986.42	662206.34	8.19	0.04	0.03	0.10	BRUSH
LEE5106	805070.53	662047.03	4.76	0.04	0.03	0.11	LIDAR CONTROL POINT
LEE5107	820903.41	651253.83	6.87	0.02	0.02	0.05	URBAN
LEE5108	820824.23	651516.74	8.77	0.02	0.02	0.04	LOW GRASS OR BARE EARTH
LEE5109	819768.89	651091.76	7.36	0.02	0.02	0.05	BRUSH
LEE5110	819710.92	651095.79	7.67	0.02	0.02	0.05	LIDAR CONTROL POINT
LEE5112	840417.50	660065.87	11.41	0.06	0.05	0.17	TRAVERSE POINT
LEE5113	840415.13	660565.59	9.92	0.05	0.03	0.12	LOW GRASS OR BARE EARTH
LEE5120	854478.49	688457.57	12.14	0.03	0.04	0.07	URBAN
LEE5121	854511.75	688537.86	11.02	0.04	0.04	0.09	LOW GRASS OR BARE EARTH
LEE5122	854567.39	688521.94	11.71	0.03	0.04	0.07	BRUSH

GPS Station Name	Grid Northing (US FT)	Grid Easting (US FT)	Station Elevation (US FT)	Y Std. Dev. (US FT)	X Std. Dev. (US FT)	Z Std. Dev. (US FT)	Station Description
LEE5123	854178.29	688433.45	11.16	0.04	0.04	0.09	LIDAR CONTROL POINT
LEE5125	860334.35	675125.25	16.62	0.02	0.02	0.07	URBAN
LEE5126	860390.30	675220.37	18.55	0.02	0.02	0.07	LOW GRASS OR BARE EARTH
LEE5127	860814.58	675364.74	13.67	0.02	0.04	0.09	TRAVERSE POINT
LEE5128	861253.70	675154.05	16.18	0.02	0.03	0.09	LIDAR CONTROL POINT
LEE5129	855075.35	647399.93	7.31	0.03	0.02	0.07	URBAN
LEE5130	854942.88	647376.96	6.94	0.03	0.02	0.07	LOW GRASS OR BARE EARTH
LEE5131	856777.56	647645.70	7.25	0.02	0.02	0.09	BRUSH
LEE5132	856939.23	647724.51	5.99	0.02	0.02	0.09	LIDAR CONTROL POINT
LEE5134	882656.29	643577.32	12.23	0.04	0.04	0.09	URBAN
LEE5135	882812.56	643565.12	11.06	0.04	0.04	0.09	LOW GRASS OR BARE EARTH
LEE5136	882425.35	643684.67	8.79	0.04	0.04	0.13	BRUSH
LEE5137	874897.26	684971.76	20.57	0.03	0.04	0.10	URBAN
LEE5138	880321.05	680517.34	19.62	0.05	0.05	0.16	LOW GRASS OR BARE EARTH
LEE5140	874670.49	684723.82	19.44	0.03	0.04	0.09	LIDAR CONTROL POINT
LEE5142	944083.08	577709.96	7.69	0.03	0.03	0.11	LIDAR CONTROL POINT
LEE5143	943083.29	578642.40	6.53	0.04	0.03	0.12	URBAN
LEE5144	943661.89	579159.85	6.89	0.03	0.03	0.08	LOW GRASS OR BARE EARTH
LEE5145	943382.88	578112.95	6.95	0.04	0.03	0.10	BRUSH
LEE5151	942598.56	538312.59	4.78	0.03	0.03	0.06	URBAN
LEE5152	942665.82	538133.67	5.88	0.03	0.03	0.07	LOW GRASS OR BARE EARTH
LEE5153	941329.43	538816.00	7.49	0.03	0.04	0.10	BRUSH
LEE5154	941427.48	539190.04	5.35	0.03	0.03	0.12	LIDAR CONTROL POINT
LEE5155	930268.68	560466.13	5.06	0.04	0.05	0.13	LOW GRASS OR BARE EARTH
LEE5156	930271.14	560564.02	5.26	0.05	0.04	0.12	URBAN
LEE5157	930088.53	557102.40	5.43	0.04	0.04	0.10	BRUSH
LEE5160	922856.92	555227.75	5.39	0.03	0.04	0.07	TRAVERSE POINT
LEE5161	922999.61	555328.49	5.21	0.04	0.04	0.08	TRAVERSE POINT
LEE5163	925466.55	555395.78	2.21	0.05	0.06	0.17	BRUSH
LEE5166	915324.10	563903.08	4.57	0.02	0.02	0.06	URBAN
LEE5167	915343.75	563894.70	3.73	0.02	0.01	0.05	TRAVERSE POINT
LEE5168	915307.92	564390.92	4.16	0.02	0.01	0.05	BRUSH
LEE5169	883664.03	569985.89	4.60	0.02	0.02	0.08	URBAN
LEE5170	883035.96	570046.05	5.42	0.03	0.03	0.06	LIDAR CONTROL POINT
LEE5171	883851.05	570273.03	1.34	0.02	0.02	0.07	BRUSH
LEE5172	883337.76	570000.37	3.92	0.03	0.03	0.06	LOW GRASS OR BARE EARTH
LEE5173	923245.12	597070.50	6.40	0.02	0.02	0.04	URBAN
LEE5174	923253.88	598004.17	5.03	0.02	0.02	0.05	LOW GRASS OR BARE EARTH
LEE5175	923257.42	598108.80	5.96	0.02	0.02	0.05	BRUSH
LEE5176	923555.12	597067.69	5.59	0.02	0.02	0.04	LIDAR CONTROL POINT
LEE5178	924563.11	578650.31	5.12	0.02	0.02	0.07	URBAN

GPS Station Name	Grid Northing (US FT)	Grid Easting (US FT)	Station Elevation (US FT)	Y Std. Dev. (US FT)	X Std. Dev. (US FT)	Z Std. Dev. (US FT)	Station Description
LEE5179	924479.88	578536.09	5.49	0.02	0.02	0.06	LOW GRASS OR BARE EARTH
LEE5180	924341.65	578696.27	4.97	0.02	0.02	0.06	BRUSH
LEE5181	924906.50	578653.35	5.58	0.02	0.02	0.07	LIDAR CONTROL POINT
LEE5184	910680.31	570222.19	7.93	0.02	0.02	0.05	URBAN
LEE5185	895863.95	566673.11	4.19	0.02	0.03	0.07	URBAN
LEE5700	804747.97	592131.43	3.49	0.02	0.02	0.08	LIDAR CONTROL POINT
LEE5701	781260.10	596317.62	8.79	0.02	0.01	0.06	LIDAR CONTROL POINT
LEE5702	794766.92	683526.43	5.26	0.03	0.03	0.09	LIDAR CONTROL POINT
LEE5703	786726.96	677282.98	5.67	0.05	0.05	0.16	LIDAR CONTROL POINT
LEE5704	783176.33	689348.21	5.10	0.03	0.03	0.10	LIDAR CONTROL POINT
LEE5705	782578.02	674726.36	6.00	0.03	0.05	0.13	LIDAR CONTROL POINT
LEE5706	923292.84	555323.85	5.74	0.03	0.03	0.10	LIDAR CONTROL POINT
LEE5800	883043.05	642809.05	10.89	0.05	0.04	0.13	LIDAR CONTROL POINT
LEE5802	791181.74	671505.23	9.01	0.02	0.03	0.09	LIDAR CONTROL POINT
LEE5803	895943.79	566814.88	5.61	0.02	0.03	0.08	LIDAR CONTROL POINT
LEE5804	910789.75	569569.09	5.48	0.02	0.02	0.05	LIDAR CONTROL POINT
LEE5805	915335.86	563704.63	5.01	0.02	0.02	0.06	TRAVERSE POINT

EXISTING NGS CONTROL STATIONS:

GPS Station Name	Grid Northing (US FT)	Grid Easting (US FT)	Station Elevation (US FT)	Y Std. Dev. (US FT)	X Std. Dev. (US FT)	Z Std. Dev. (US FT)	Station Description
FLGPS60	860990.34	605476.29	14.27	0.00	0.00	0.00	NGS CONTROL STATION
GPSHOLT	859190.94	659368.43	13.13	0.00	0.00	0.02	NGS CONTROL STATION
HAVOLINE	986260.06	570072.70	6.54	0.00	0.00	0.00	NGS CONTROL STATION
I75 81 A13	738005.56	733505.32	15.50	0.01	0.01	0.00	NGS CONTROL STATION
LORAN	997598.09	509593.58	12.05	0.00	0.00	0.00	NGS CONTROL STATION
W247	818713.94	703160.22	15.90	0.00	0.00	0.00	NGS CONTROL STATION

NEW WOOLPERT CONTROL STATIONS:

GPS Station Name	Grid Northing (US FT)	Grid Easting (US FT)	Station Elevation (US FT)	Y Std. Dev. (US FT)	X Std. Dev. (US FT)	Z Std. Dev. (US FT)	Station Description
BOCA	910288.70	567922.18	4.13	0.01	0.01	0.02	GPS BASE STATION

APPENDIX D: POSITIONAL ACCURACIES

This appendix contains the final positional accuracies for the LiDAR QA/QC Checkpoints (except the forest points) and the LiDAR Control Points for Project Area E of the FY2007 State of Florida Division of Emergency Management Ground Control QA/QC Survey Mapping Project.

QA/QA POINTS (NO FOREST POINTS)

CALCULATED ACCURACY:

0.01	Meters RMSEx
0.01	Meters RMSEy
0.01	Meters RMSExy
0.02	Meters at 95% C.I.
0.03	RMSEz
0.05	Meters at 95% C.I.

CALCULATED ACCURACY:

0.03	Feet RMSEx
0.03	Feet RMSEy
0.05	Feet RMSExy
0.08	Feet at 95% C.I.
0.09	RMSEz
0.18	Feet at 95% C.I.

METERS

STATION	Vx	Vy	Vxy	Vz
5147	0.0103	0.0078	0.01	0.0312
5148	0.0094	0.0089	0.01	0.0266
5149	0.0113	0.011	0.02	0.022
LEE1051	0.007	0.0068	0.01	0.0149
LEE5001	0.0082	0.0074	0.01	0.0156
LEE5003	0.0109	0.01	0.01	0.0321
LEE5005	0.0078	0.0075	0.01	0.016
LEE5007	0.0097	0.0091	0.01	0.028
LEE5009	0.0093	0.0085	0.01	0.0272
LEE5011	0.0091	0.0069	0.01	0.0279
LEE5015	0.0176	0.0326	0.04	0.0847
LEE5017	0.0083	0.0136	0.02	0.0329
LEE5023	0.0133	0.0097	0.02	0.0238
LEE5026	0.009	0.0069	0.01	0.0157
LEE5027	0.0077	0.0058	0.01	0.0181
LEE5028	0.0068	0.0052	0.01	0.0155
LEE5031	0.0121	0.0092	0.02	0.0301
LEE5032	0.0114	0.0085	0.01	0.0284
LEE5034	0.0123	0.012	0.02	0.0259
LEE5035	0.0137	0.0139	0.02	0.031
LEE5036	0.0099	0.0088	0.01	0.0304
LEE5039	0.0144	0.0104	0.02	0.0271
LEE5040	0.0159	0.012	0.02	0.0352
LEE5041	0.012	0.0105	0.02	0.0219
LEE5043	0.0131	0.0099	0.02	0.0325
LEE5044	0.015	0.0136	0.02	0.0349
LEE5045	0.0116	0.008	0.01	0.0308
LEE5048	0.0079	0.0063	0.01	0.0263
LEE5050	0.0066	0.0063	0.01	0.0136
LEE5054	0.0077	0.0075	0.01	0.0183

US FEET

STATION	Vx	Vy	Vxy	Vz
5147	0.03	0.03	0.04	0.10
5148	0.03	0.03	0.04	0.09
5149	0.04	0.04	0.05	0.07
LEE1051	0.02	0.02	0.03	0.05
LEE5001	0.03	0.02	0.04	0.05
LEE5003	0.04	0.03	0.05	0.11
LEE5005	0.03	0.02	0.04	0.05
LEE5007	0.03	0.03	0.04	0.09
LEE5009	0.03	0.03	0.04	0.09
LEE5011	0.03	0.02	0.04	0.09
LEE5015	0.06	0.11	0.12	0.28
LEE5017	0.03	0.04	0.05	0.11
LEE5023	0.04	0.03	0.05	0.08
LEE5026	0.03	0.02	0.04	0.05
LEE5027	0.03	0.02	0.03	0.06
LEE5028	0.02	0.02	0.03	0.05
LEE5031	0.04	0.03	0.05	0.10
LEE5032	0.04	0.03	0.05	0.09
LEE5034	0.04	0.04	0.06	0.08
LEE5035	0.04	0.05	0.06	0.10
LEE5036	0.03	0.03	0.04	0.10
LEE5039	0.05	0.03	0.06	0.09
LEE5040	0.05	0.04	0.07	0.12
LEE5041	0.04	0.03	0.05	0.07
LEE5043	0.04	0.03	0.05	0.11
LEE5044	0.05	0.04	0.07	0.11
LEE5045	0.04	0.03	0.05	0.10
LEE5048	0.03	0.02	0.03	0.09
LEE5050	0.02	0.02	0.03	0.04
LEE5054	0.03	0.02	0.04	0.06

STATION	Vx	Vy	Vxy	Vz	STATION	Vx	Vy	Vxy	Vz
LEE5055	0.0077	0.0077	0.01	0.0186	LEE5055	0.03	0.03	0.04	0.06
LEE5056	0.004	0.0053	0.01	0.015	LEE5056	0.01	0.02	0.02	0.05
LEE5057	0.0042	0.0057	0.01	0.0183	LEE5057	0.01	0.02	0.02	0.06
LEE5058	0.0078	0.0076	0.01	0.0183	LEE5058	0.03	0.02	0.04	0.06
LEE5059	0.0046	0.006	0.01	0.019	LEE5059	0.02	0.02	0.02	0.06
LEE5062	0.0101	0.0075	0.01	0.0313	LEE5062	0.03	0.02	0.04	0.10
LEE5063	0.0099	0.0072	0.01	0.0308	LEE5063	0.03	0.02	0.04	0.10
LEE5064	0.0113	0.0081	0.01	0.0292	LEE5064	0.04	0.03	0.05	0.10
LEE5067	0.0113	0.0093	0.01	0.0194	LEE5067	0.04	0.03	0.05	0.06
LEE5068	0.0081	0.0083	0.01	0.0207	LEE5068	0.03	0.03	0.04	0.07
LEE5069	0.0078	0.0079	0.01	0.0198	LEE5069	0.03	0.03	0.04	0.06
LEE5070	0.009	0.0077	0.01	0.0162	LEE5070	0.03	0.03	0.04	0.05
LEE5085	0.0069	0.0114	0.01	0.0275	LEE5085	0.02	0.04	0.04	0.09
LEE5090	0.0109	0.0082	0.01	0.0269	LEE5090	0.04	0.03	0.04	0.09
LEE5091	0.0106	0.008	0.01	0.026	LEE5091	0.03	0.03	0.04	0.09
LEE5092	0.0096	0.0067	0.01	0.027	LEE5092	0.03	0.02	0.04	0.09
LEE5095	0.0106	0.0091	0.01	0.019	LEE5095	0.03	0.03	0.05	0.06
LEE5096	0.0103	0.0087	0.01	0.0184	LEE5096	0.03	0.03	0.04	0.06
LEE5098	0.0096	0.0073	0.01	0.029	LEE5098	0.03	0.02	0.04	0.10
LEE5099	0.0097	0.0073	0.01	0.0289	LEE5099	0.03	0.02	0.04	0.09
LEE5100	0.0105	0.008	0.01	0.0259	LEE5100	0.03	0.03	0.04	0.08
LEE5101	0.0105	0.0079	0.01	0.0259	LEE5101	0.03	0.03	0.04	0.08
LEE5103	0.0133	0.0148	0.02	0.0506	LEE5103	0.04	0.05	0.07	0.17
LEE5104	0.0136	0.0148	0.02	0.0474	LEE5104	0.04	0.05	0.07	0.16
LEE5105	0.0078	0.0128	0.01	0.0317	LEE5105	0.03	0.04	0.05	0.10
LEE5107	0.0067	0.005	0.01	0.0138	LEE5107	0.02	0.02	0.03	0.05
LEE5108	0.0066	0.0048	0.01	0.0135	LEE5108	0.02	0.02	0.03	0.04
LEE5109	0.007	0.0066	0.01	0.0142	LEE5109	0.02	0.02	0.03	0.05
LEE5112	0.014	0.0196	0.02	0.0529	LEE5112	0.05	0.06	0.08	0.17
LEE5113	0.0094	0.0152	0.02	0.0361	LEE5113	0.03	0.05	0.06	0.12
LEE5120	0.0123	0.0093	0.02	0.0216	LEE5120	0.04	0.03	0.05	0.07
LEE5121	0.0126	0.0123	0.02	0.0268	LEE5121	0.04	0.04	0.06	0.09
LEE5122	0.0122	0.0092	0.02	0.0214	LEE5122	0.04	0.03	0.05	0.07
LEE5125	0.0065	0.0056	0.01	0.0216	LEE5125	0.02	0.02	0.03	0.07
LEE5126	0.0062	0.0053	0.01	0.0204	LEE5126	0.02	0.02	0.03	0.07
LEE5127	0.0108	0.0076	0.01	0.0287	LEE5127	0.04	0.02	0.04	0.09
LEE5129	0.0054	0.009	0.01	0.0221	LEE5129	0.02	0.03	0.03	0.07
LEE5130	0.0055	0.0092	0.01	0.0224	LEE5130	0.02	0.03	0.04	0.07
LEE5131	0.0069	0.0066	0.01	0.0265	LEE5131	0.02	0.02	0.03	0.09
LEE5134	0.0122	0.0111	0.02	0.0279	LEE5134	0.04	0.04	0.05	0.09
LEE5135	0.0124	0.0113	0.02	0.0284	LEE5135	0.04	0.04	0.06	0.09
LEE5136	0.012	0.0133	0.02	0.0398	LEE5136	0.04	0.04	0.06	0.13
LEE5137	0.0133	0.0101	0.02	0.0294	LEE5137	0.04	0.03	0.05	0.10
LEE5138	0.0143	0.014	0.02	0.0491	LEE5138	0.05	0.05	0.07	0.16
LEE5143	0.0092	0.0136	0.02	0.0357	LEE5143	0.03	0.04	0.05	0.12
LEE5144	0.0086	0.0095	0.01	0.0244	LEE5144	0.03	0.03	0.04	0.08
LEE5145	0.0079	0.0123	0.01	0.0296	LEE5145	0.03	0.04	0.05	0.10
LEE5151	0.0088	0.0086	0.01	0.019	LEE5151	0.03	0.03	0.04	0.06

STATION	Vx	Vy	Vxy	Vz
LEE5152	0.0087	0.0088	0.01	0.0202
LEE5153	0.0122	0.0091	0.02	0.031
LEE5155	0.0144	0.0126	0.02	0.0385
LEE5156	0.0127	0.014	0.02	0.0363
LEE5157	0.0111	0.0119	0.02	0.0319
LEE5160	0.0125	0.0094	0.02	0.0222
LEE5161	0.011	0.0114	0.02	0.0254
LEE5163	0.0189	0.0139	0.02	0.0511
LEE5166	0.0055	0.005	0.01	0.0188
LEE5167	0.0042	0.0061	0.01	0.0159
LEE5168	0.0042	0.0061	0.01	0.0158
LEE5169	0.0069	0.0058	0.01	0.0229
LEE5171	0.0069	0.0058	0.01	0.0226
LEE5172	0.0093	0.0084	0.01	0.0183
LEE5173	0.0071	0.0054	0.01	0.013
LEE5174	0.0065	0.005	0.01	0.0151
LEE5175	0.0064	0.0049	0.01	0.0149
LEE5178	0.007	0.0054	0.01	0.0217
LEE5179	0.0065	0.0064	0.01	0.0174
LEE5180	0.0066	0.0064	0.01	0.0173
LEE5184	0.0051	0.0054	0.01	0.0142
LEE5185	0.0085	0.0064	0.01	0.0219
LEE5805	0.0055	0.0049	0.01	0.0185
SUMSQ	**0.01**	**0.01**	**0.02**	**0.08**
COUNT	**101.00**	**101.00**	**101.00**	**101.00**
AVG ERROR	**0.01**	**0.01**	**0.01**	**0.03**
MAX ERROR	**0.03**	**0.02**	**0.04**	**0.08**
MIN ERROR	**0.00**	**0.00**	**0.01**	**0.01**
RMSE	**0.01**	**0.01**	**0.01**	**0.03**

STATION	Vx	Vy	Vxy	Vz
LEE5152	0.03	0.03	0.04	0.07
LEE5153	0.04	0.03	0.05	0.10
LEE5155	0.05	0.04	0.06	0.13
LEE5156	0.04	0.05	0.06	0.12
LEE5157	0.04	0.04	0.05	0.10
LEE5160	0.04	0.03	0.05	0.07
LEE5161	0.04	0.04	0.05	0.08
LEE5163	0.06	0.05	0.08	0.17
LEE5166	0.02	0.02	0.02	0.06
LEE5167	0.01	0.02	0.02	0.05
LEE5168	0.01	0.02	0.02	0.05
LEE5169	0.02	0.02	0.03	0.08
LEE5171	0.02	0.02	0.03	0.07
LEE5172	0.03	0.03	0.04	0.06
LEE5173	0.02	0.02	0.03	0.04
LEE5174	0.02	0.02	0.03	0.05
LEE5175	0.02	0.02	0.03	0.05
LEE5178	0.02	0.02	0.03	0.07
LEE5179	0.02	0.02	0.03	0.06
LEE5180	0.02	0.02	0.03	0.06
LEE5184	0.02	0.02	0.02	0.05
LEE5185	0.03	0.02	0.03	0.07
LEE5805	0.02	0.02	0.02	0.06
SUMSQ	**0.10**	**0.11**	**0.21**	**0.84**
COUNT	**101.00**	**101.00**	**101.00**	**101.00**
AVG ERROR	**0.03**	**0.03**	**0.04**	**0.08**
MAX ERROR	**0.11**	**0.06**	**0.12**	**0.28**
MIN ERROR	**0.02**	**0.01**	**0.02**	**0.04**
RMSE	**0.03**	**0.03**	**0.05**	**0.09**

LiDAR CONTROL POINTS ONLY

CALCULATED ACCURACY:

0.01	Meters RMSEx
0.01	Meters RMSEy
0.01	Meters RMSExy
0.02	Meters at 95% C.I.
0.03	RMSEz
0.06	Meters at 95% C.I.

CALCULATED ACCURACY:

0.03	Feet RMSEx
0.03	Feet RMSEy
0.05	Feet RMSExy
0.08	Feet at 95% C.I.
0.09	RMSEz
0.19	Feet at 95% C.I.

METERS

STATION	Vx	Vy	Vxy	Vz
LEE5025	0.009	0.007	0.01	0.0160
LEE5042	0.015	0.015	0.02	0.0401
LEE5047	0.013	0.015	0.02	0.0375
LEE5060	0.008	0.008	0.01	0.0185
LEE5065	0.012	0.008	0.01	0.0296
LEE5088	0.007	0.011	0.01	0.0274
LEE5093	0.010	0.007	0.01	0.0287
LEE5106	0.008	0.012	0.01	0.0322
LEE5110	0.008	0.007	0.01	0.0154
LEE5123	0.013	0.013	0.02	0.0275
LEE5128	0.010	0.007	0.01	0.0279
LEE5132	0.007	0.007	0.01	0.0272
LEE5140	0.012	0.009	0.01	0.0265
LEE5142	0.009	0.008	0.01	0.0321
LEE5154	0.010	0.008	0.01	0.0357
LEE5170	0.009	0.008	0.01	0.0179
LEE5176	0.007	0.005	0.01	0.0128
LEE5181	0.007	0.005	0.01	0.0218
LEE5700	0.007	0.006	0.01	0.0241
LEE5701	0.005	0.006	0.01	0.0168
LEE5702	0.010	0.010	0.01	0.0284
LEE5703	0.015	0.017	0.02	0.0480
LEE5704	0.010	0.009	0.01	0.0291
LEE5705	0.015	0.010	0.02	0.0392
LEE5706	0.011	0.010	0.01	0.0315
LEE5800	0.013	0.014	0.02	0.0408
LEE5802	0.009	0.007	0.01	0.0271
LEE5803	0.009	0.007	0.01	0.0238
LEE5804	0.005	0.006	0.01	0.0148

US FEET

STATION	Vx	Vy	Vxy	Vz
LEE5025	0.03	0.02	0.04	0.05
LEE5042	0.05	0.05	0.07	0.13
LEE5047	0.04	0.05	0.06	0.12
LEE5060	0.03	0.02	0.04	0.06
LEE5065	0.04	0.03	0.05	0.10
LEE5088	0.02	0.04	0.04	0.09
LEE5093	0.03	0.02	0.04	0.09
LEE5106	0.03	0.04	0.05	0.11
LEE5110	0.02	0.02	0.03	0.05
LEE5123	0.04	0.04	0.06	0.09
LEE5128	0.03	0.02	0.04	0.09
LEE5132	0.02	0.02	0.03	0.09
LEE5140	0.04	0.03	0.05	0.09
LEE5142	0.03	0.03	0.04	0.11
LEE5154	0.03	0.03	0.04	0.12
LEE5170	0.03	0.03	0.04	0.06
LEE5176	0.02	0.02	0.03	0.04
LEE5181	0.02	0.02	0.03	0.07
LEE5700	0.02	0.02	0.03	0.08
LEE5701	0.01	0.02	0.02	0.06
LEE5702	0.03	0.03	0.05	0.09
LEE5703	0.05	0.05	0.07	0.16
LEE5704	0.03	0.03	0.04	0.10
LEE5705	0.05	0.03	0.06	0.13
LEE5706	0.03	0.03	0.05	0.10
LEE5800	0.04	0.05	0.06	0.13
LEE5802	0.03	0.02	0.04	0.09
LEE5803	0.03	0.02	0.04	0.08
LEE5804	0.02	0.02	0.03	0.05

SUMSQ	0.00	0.00	0.01	0.02
COUNT	29.00	29.00	29.00	29.00
AVG ERROR	0.01	0.01	0.01	0.03
MAX ERROR	0.02	0.02	0.02	0.05
MIN ERROR	0.01	0.00	0.01	0.01
RMSE	0.01	0.01	0.01	0.03

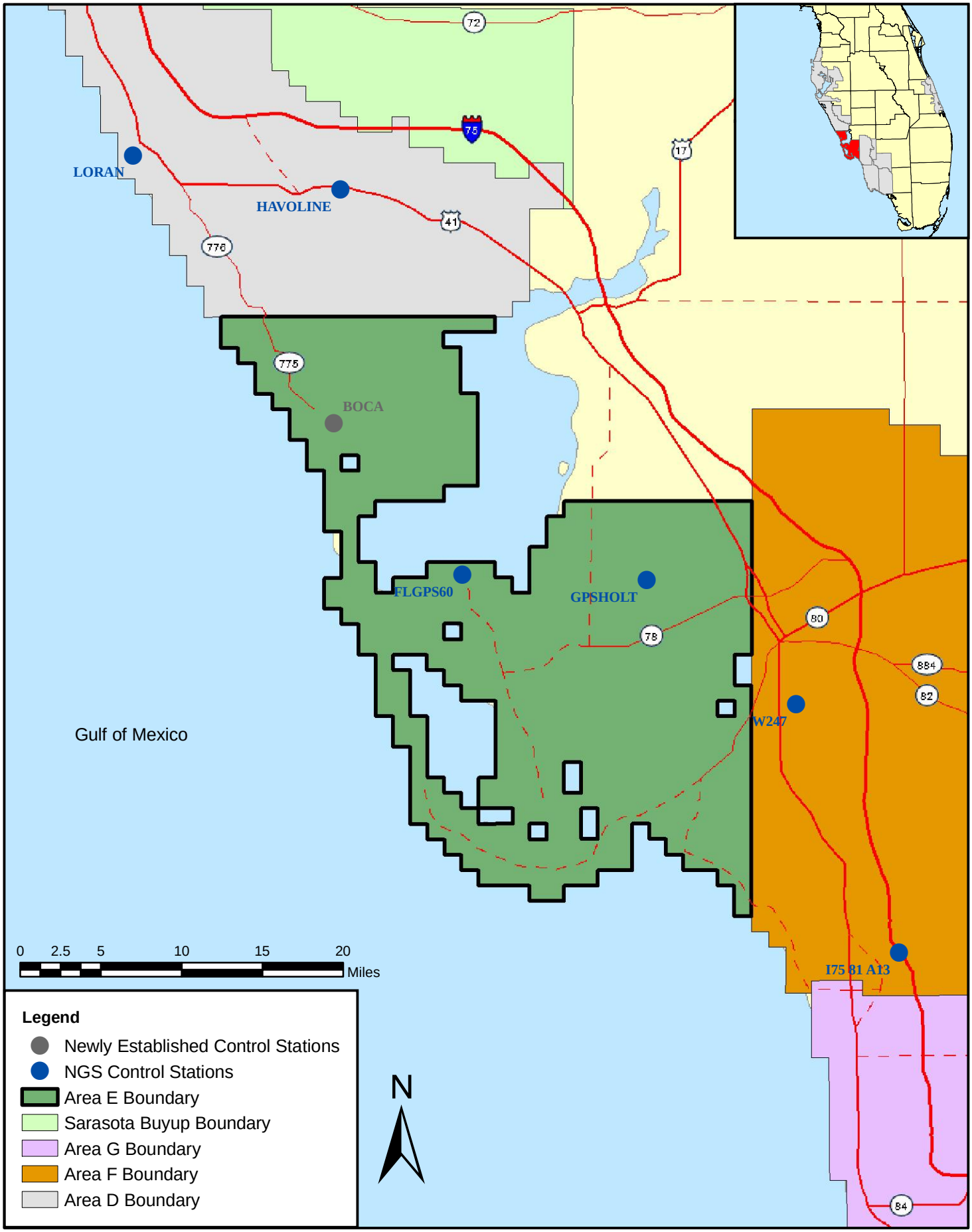
SUMSQ	0.03	0.03	0.06	0.26
COUNT	29.00	29.00	29.00	29.00
AVG ERROR	0.03	0.03	0.04	0.09
MAX ERROR	0.05	0.05	0.07	0.16
MIN ERROR	0.02	0.01	0.02	0.04
RMSE	0.03	0.03	0.05	0.09

APPENDIX E: LAYOUT MAPS

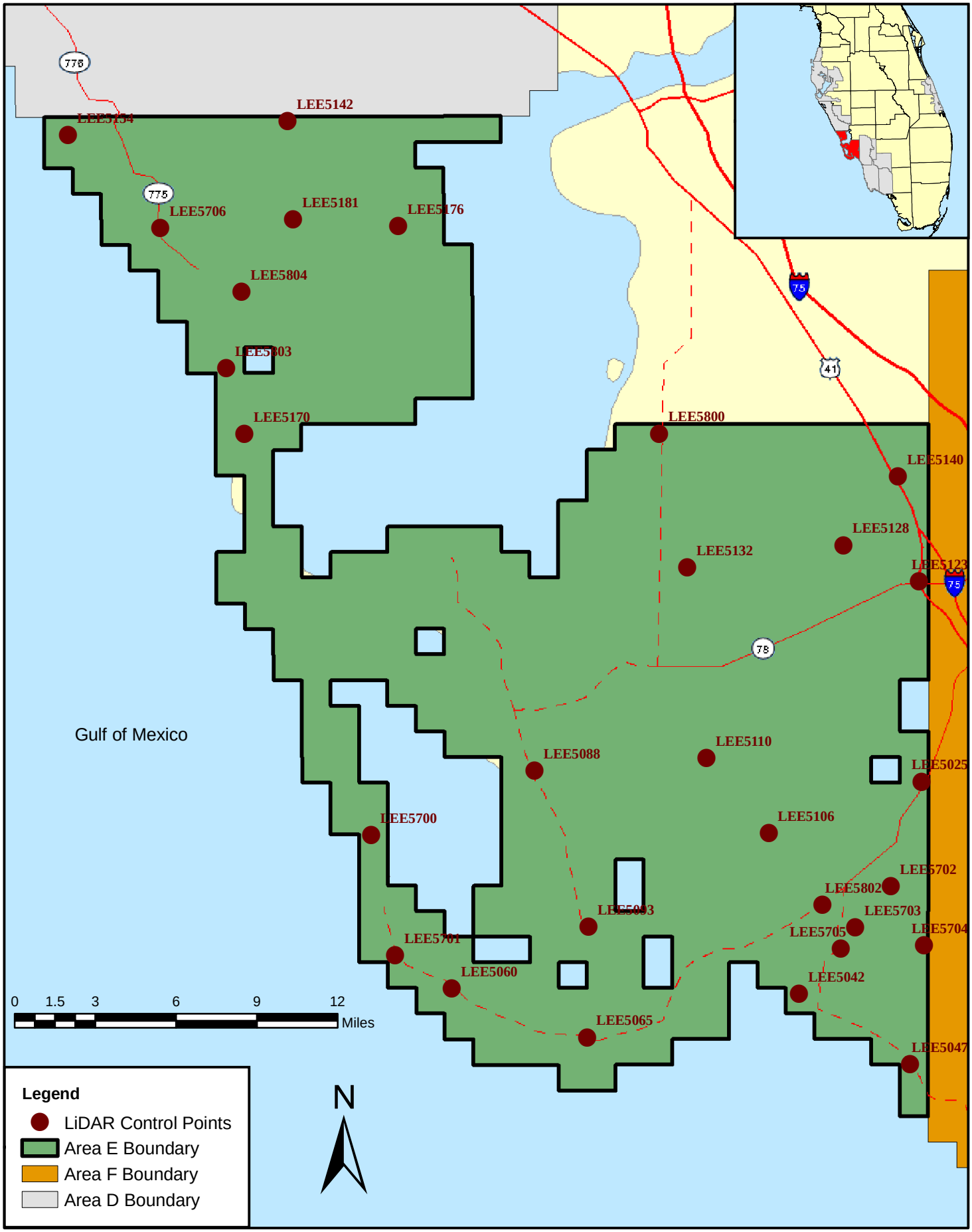
This appendix contains layout maps of the GPS ground control stations, LiDAR Control Points and LiDAR QA/QC Checkpoints (see below) for the Project Area E of the FY2007 State of Florida Division of Emergency Management Ground Control QA/QC Survey Mapping Project.

- GPS Control Stations
- LiDAR Control Points
- Brush Observations
- Forested Observations
- Low Grass or Bare Earth Observations
- Urban Observations
- GPS Network Diagram

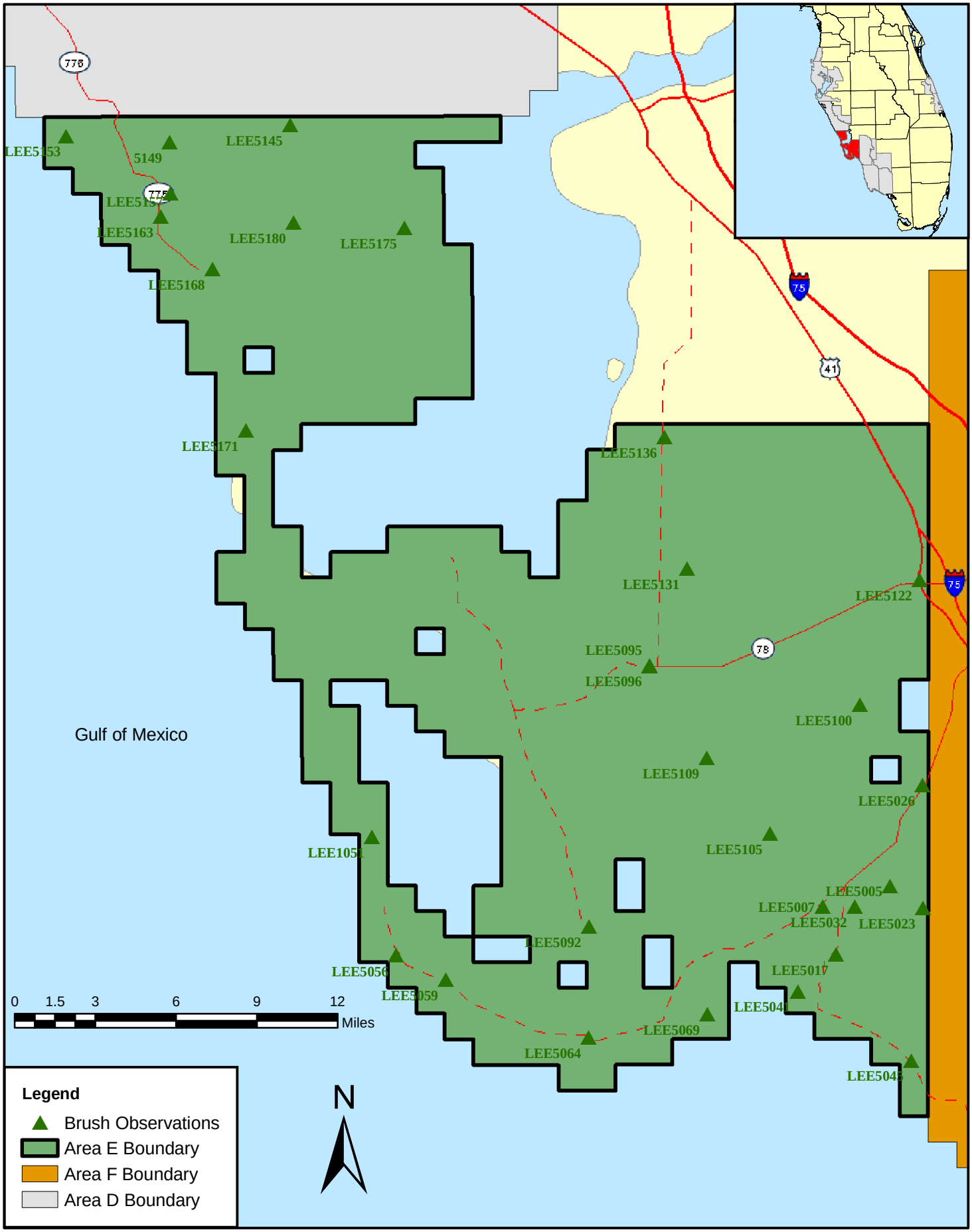
AREA E - GPS CONTROL STATIONS



AREA E - LiDAR CONTROL POINTS



AREA E - BRUSH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LEE5017
LEE504
LEE5069
LEE5064
LEE5043
75
41
78
Gulf of Mexico
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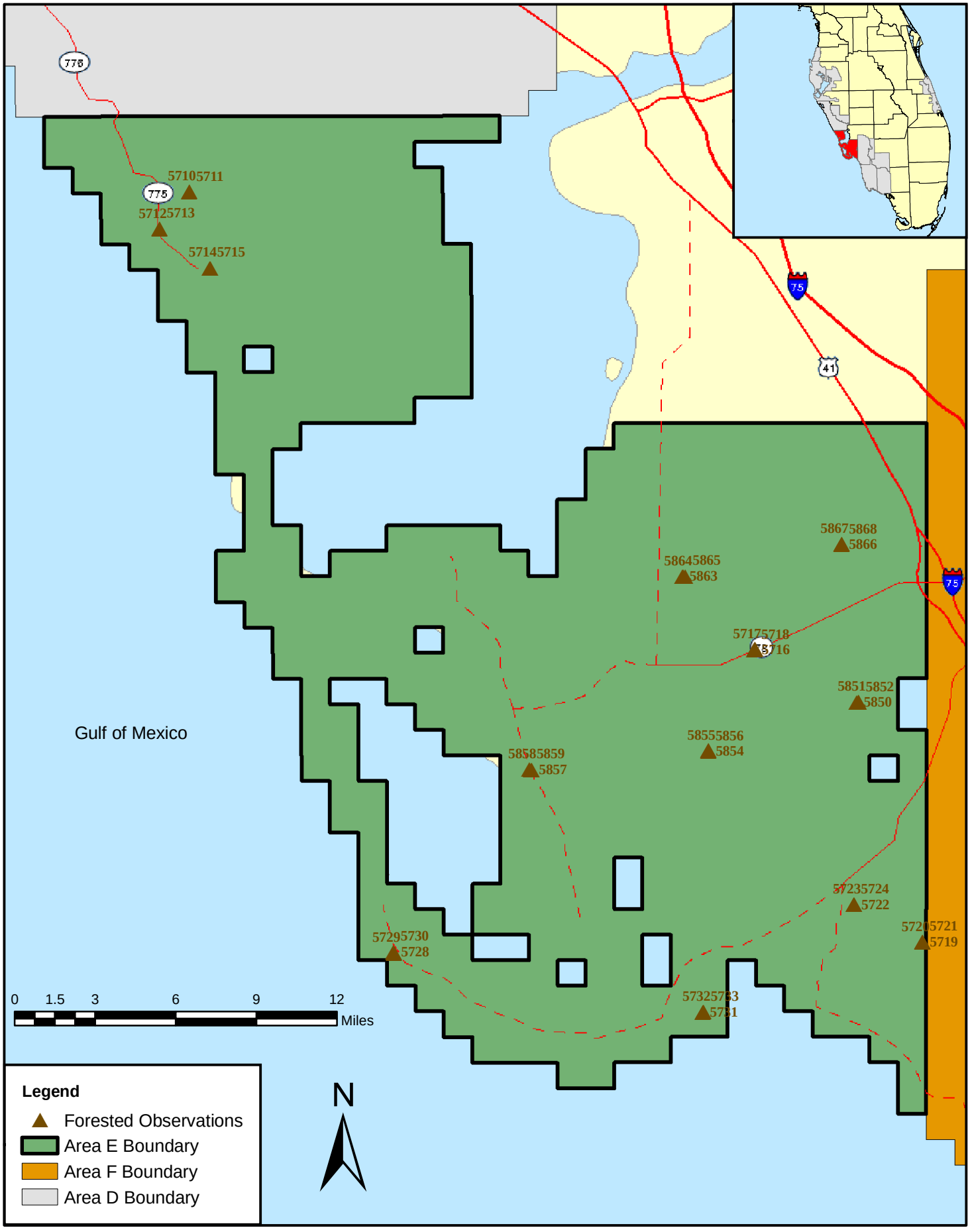
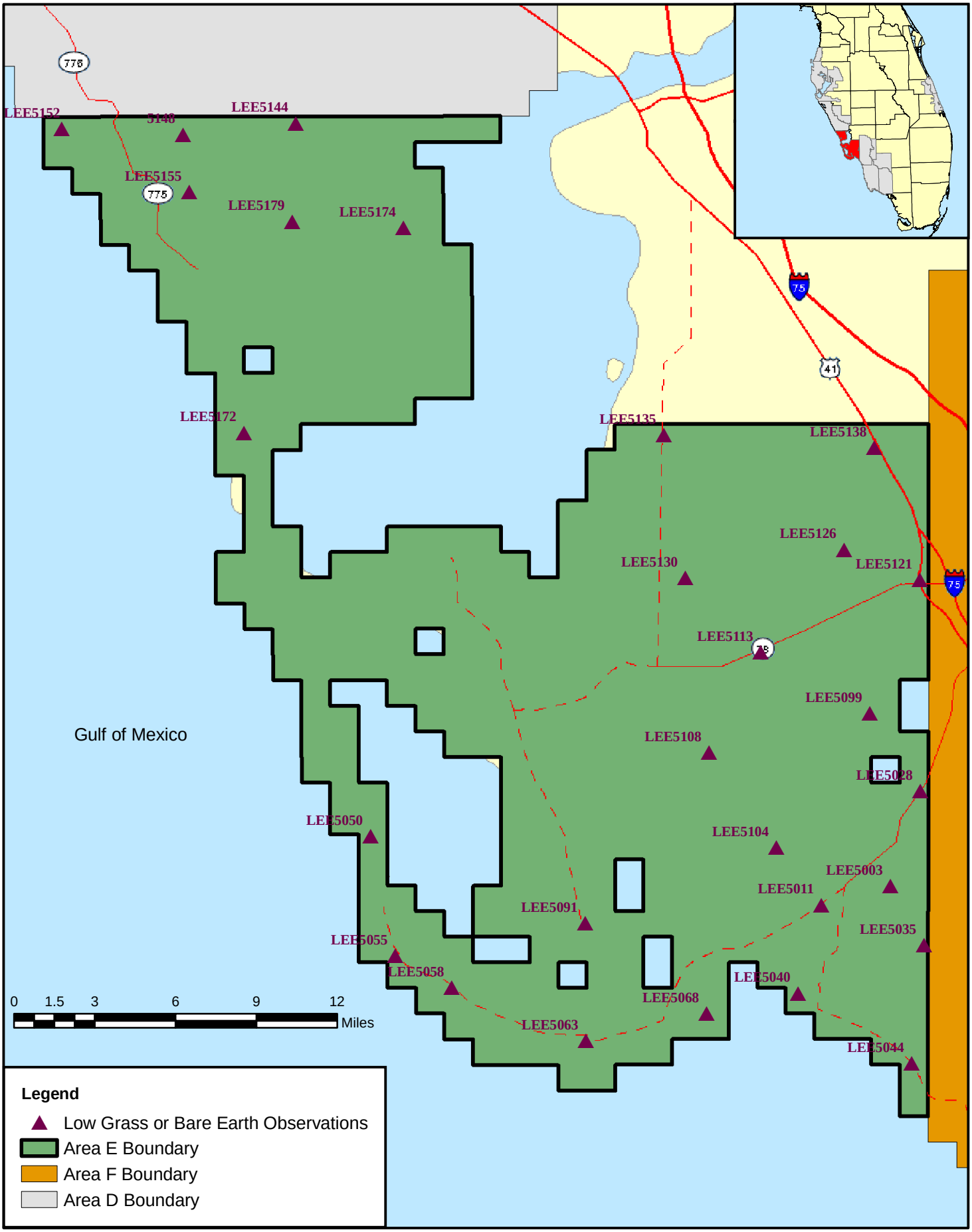
Miles
N
Legend
Brush Observations
Area E Boundary
Area F Boundary
Area D Boundary

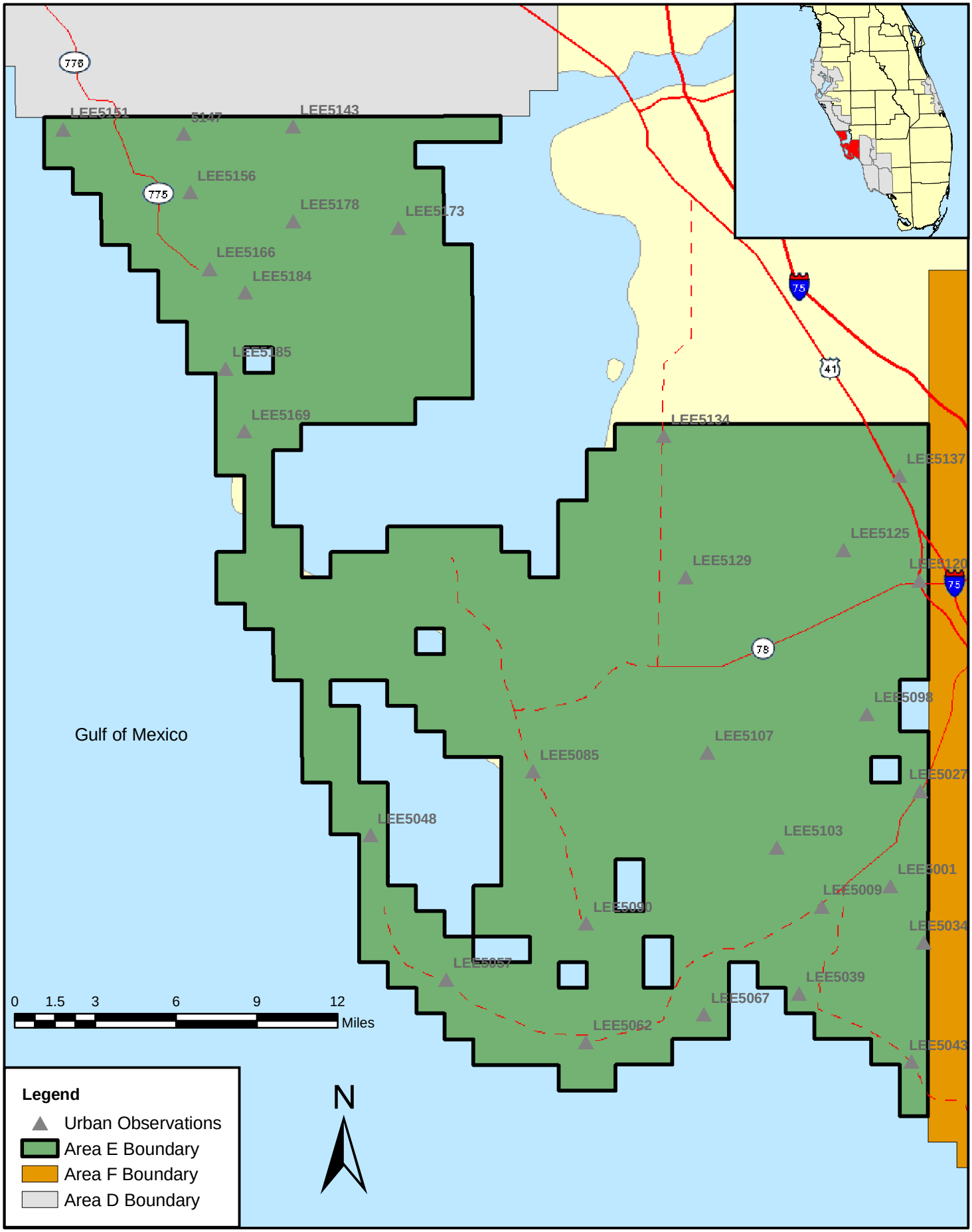
AREA E - FORESTED



AREA E - LOW GRASS OR BARE EARTH



AREA E - URBAN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Gulf of Mexico
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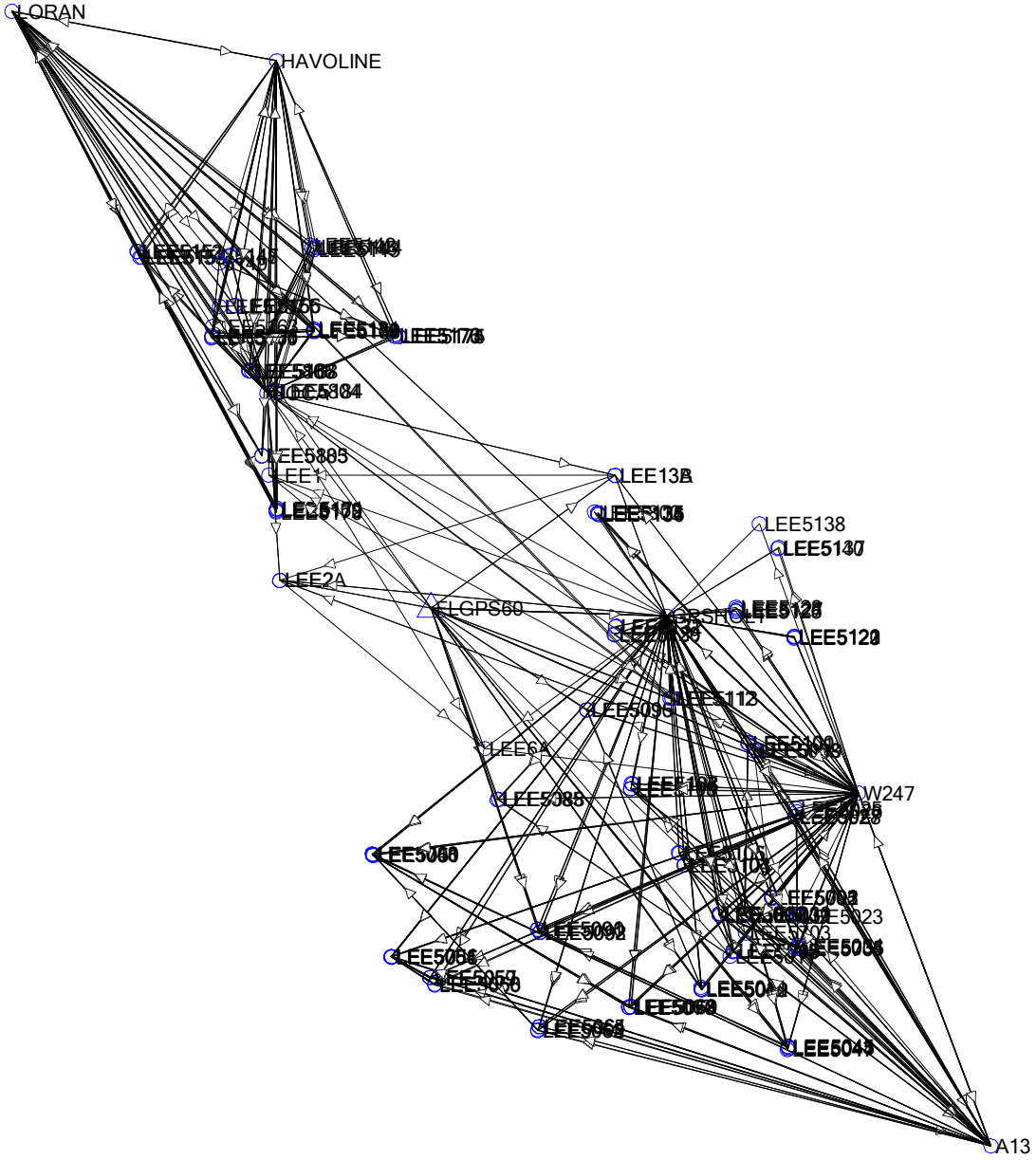
Miles
N
Legend
Urban Observations
Area E Boundary
Area F Boundary
Area D Boundary



Field surveyor:
Woolpert, Inc.
Computer operator:
MBrown
Reference:
FDEM

Scale 1:500000
0 75000 sft
US survey feet

0°00'00"

Plot Scale: 1:500000
Printed on 12/15/2008, at 7:41:25 AM
Printed from Trimble Geomatics Office

System: US State Plane 1983
Zone: Florida West 0902, Datum: NAD 1983 (Conus)

Project: Area E
USFeet Template