Surveyor's Report

Reference Elevation Audit Project
Lee, Monroe and Collier Counties, Florida

Cooner & Associates Project No. 070603.01

SFWMD Contract No. 4600000941 Work Order No. 1

Date of Last Field Work: May 12, 2008 in field book 228, pages 2-78; field book 230, pages 1-79; field book 233, pages 3-43, field book 234, pages 1-23, 27

Report Date: May 29, 2008

Submittal: Final

Prepared for:

South Florida Water Management District

COONER & ASSOCIATES, INC.
SURVEYING AND MAPPING
5670 ZIP DRIVE
FORT MYERS, FL 33905
TELEPHONE 239.277.0722 FAX 239.277.7179 WWW.COONER.COM

TABLE OF CONTENTS

CONTINUED ON NEXT PAGE

CONTINUED FROM PREVIOUS PAGE

LEGEND:

BM = benchmark
Elev. = elevation
Info = information
n/a = not applicable
Ref. = reference
HW = headwater
TW = tailwater
STG = stage
SUB-CM = sub-centimeter
SUB-M = sub-meter

OVERVIEW OF THE PROJECT

PURPOSE

The purpose of this survey is to establish or verify elevations to third order National Geodetic Survey (NGS) standards at sixty-three (63) South Florida Water Management District (SFWMD) Recorder Well Sites. This survey is associated with the District's Vertical Datum Upgrade Project (VDUP). Another objective of this Work Order is to establish NGS third order elevations referring to both the North American Vertical Datum of 1988 (NAVD 1988) and the National Geodetic Vertical Datum of 1929 (NGVD 1929) at each of the sites.

Elevations were established or verified using existing Recorder Well Site vertical control marks where possible. These vertical control marks are published in the South Florida Water Management District's ATLAS database as assigned by the District. Recorder Well reference elevations and staff gauges were also verified. Field measured NGVD 1929 reference elevations were posted on brass tags and left at each Recorder Well Site for mounting by the SFWMD.

Where existing monumentation was found to be disturbed or destroyed new vertical control points were established at Recorder Well Sites. All set monuments were constructed in accordance with the NGS, Class C, Pour-In-Place Concrete Monument standards and were referenced by a Carsonite witness post.

In some cases elevations of exiting vertical control points found to be in good condition were verified by ties to posted NGS benchmarks.

It was also the purpose of this project to establish GPS horizontal positions referring to North American Datum 1983 (NAD 1983), Florida East Zone, State Plane Coordinate System each site's vertical control point.

Also included in this report is summary methods used to establish NAVD 1988 and NGVD 1929 elevations established on vertical control point "CORK2A" at Recorder Well Site CORK2.

Note: Of the sixty-three (63) District Recorder Well sites identified by the SFWMD for this Work Order. Five (5) were found to have already been surveyed and did not require reference elevations. These sites were not resurveyed.
These sites are:

6MI82
CORK-SCA
GRDN
GOLD-W1
HENDSG

Pictures of existing brass tags have been included in the results section of this report. Two sites (FMBMW & BCA7) were removed from the scope during the course of this project by the SFWMD.

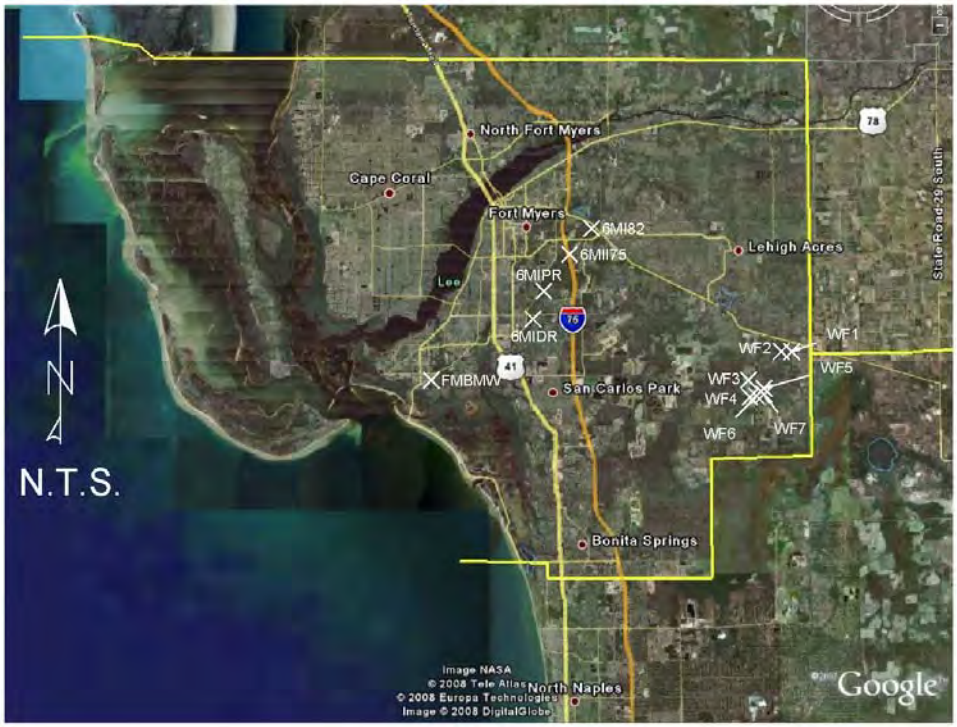
Site BCA14 was not resurveyed during this project due to access issues.

Pickett & Associates, Inc. was subcontracted by Cooner & Associates to complete this project. Please see report of survey by Pickett & Associates in Appendix "D". For a summary of tasks completed for each site, please refer to Appendix "C".

LOCATION OF PROJECT

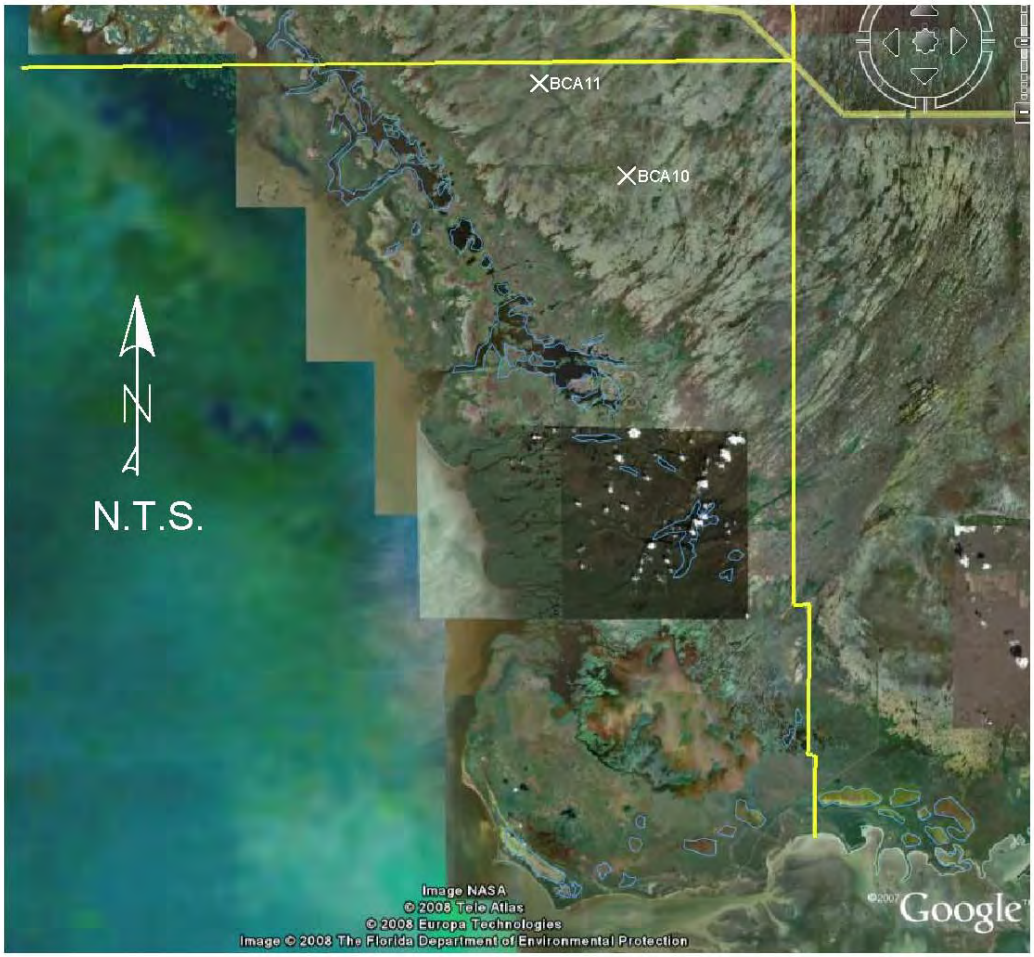
The Recorder Well Sites surveyed for this project are located in Lee, Monroe and Collier counties in the

state of Florida. The following vicinity maps depict the project Recorder Well Sites:



LEE COUNTY VICINITY MAP

COLLIER COUNTY VICINITY MAP



MONROE COUNTY VICINITY MAP

ITEMS DELIVERED TO THE CLIENT

The following items are delivered to the client in the CD accompanying this report. Neither the report nor the items listed below and copies thereof are complete without the other.

1. This Surveyor's Report in Adobe Acrobat format
2. Digital photos named by site
3. Digital copy of scanned field notes and files associated with this survey
4. Completed District benchmark description sheet for all set benchmarks
5. Updated SFWMD Registration Worksheets in Microsoft Excel format

Carsonite Witness Posts were installed at each set benchmark.

LEVELING METHODS

CONFIGURATION OF LEVEL RUNS

A total of ten level lines were run for this project to newly set vertical control points or to verify existing site control. For each level line, two existing NGS vertical marks were used. Each run was started at one of the NGS marks and continued through recovered or established benchmarks and closed on the second NGS mark. All runs were configured to be closed level loops. Appendix A contains a summary of each level run, control points used, length of loop and misclosure information, based on field notes. Appendix B contains the results of level runs made to verify existing control points.

EQUIPMENT USED

All leveling to newly set or existing vertical marks during the project was performed with a Leica NA3003 or DNA03 digital level and Leica two-section, fiberglass bar-code level rods. Information and technical specifications for these digital levels are available at http://www.leica-geosystems.com.

All leveling to establish reference elevations was performed using a Leica NA2 three-wire optical level.

VERTICAL DATUM FOR THE PROJECT

The vertical datum utilized for all level runs for the project is the North American Vertical Datum of 1988 (NAVD'88). For correlation with older data sets, the elevations of the benchmarks and reference tags are shown in NGVD'29. The NGVD'29 elevations were derived by one of the following methods. The methods are listed in order of priority:

1. Elevations posted in NGS or SFWMD benchmark recovery forms
2. Elevations posted in the file "NGVD29.txt" as provided by the SFWMD
3. Converted NAVD 1988 elevations using CORPSCON version 6.0.1

EXPECTED ACCURACY

The maximum allowable misclosure as specified in the project scope is 0.03 feet multiplied by the square root of the length of the level line in miles. Elevations derived from the methods outlined above meet Third-Order Accuracy Standards.

Note: See Appendix "D" for Pickett & Associates Leveling Methods.

HORIZONTAL METHODS

EQUIPMENT USED

Wherever possible, horizontal locations were performed with a Trimble 5800, dual-frequency Global Positioning Service (GPS) receiver. Control point positions were established by Real-Time Kinematic (RTK) GPS, or by Static GPS observations. Static GPS observations were post-processed using the Online Positional User Service (OPUS) provided by NGS. For areas where limited satellite accessibility was an issue, a Trimble mapping grade GPS receiver was used to establish GPS horizontal locations.

HORIZONTAL DATUM FOR THE PROJECT

The horizontal datum for the project is the Florida State Plane Coordinate System, East Zone, North American Datum of 1983 as verified by ties to the following National Geodetic Survey (NGS) high precision points:

"H 534"
"B 249"
"I75 U 32"
"M 250"
"X 534"
"F 533"
"E 533"

EXPECTED ACCURACY

Survey grade (RTK and Static) GPS methods outlined above have been tested and found by Cooner & Associates, Inc. to have a relative positional accuracy of less than 0.05 feet (SUB-CM). The expected accuracy for the mapping grade GPS method is at less than 3.28 feet (SUB-M).

Note: See Appendix "D" for Pickett & Associates Horizontal Methods.

PROJECT RESULTS

The following tables list the elevations established / verified at each Recorder Well Site in NAVD'88 and NGVD'29, the published elevations from the SFWMD or NGS Benchmark Databases, the Northing and Easting of the benchmarks (obtained from GPS observations), water elevations / staff gauge verification, observed staff gauge reading and photos of structures / reference marks/posted brass reference tags / benchmarks/staff gauges. Where applicable, we have also included benchmark recovery forms and site sketches for each set benchmark. Elevations and coordinates are in US Survey Feet and decimals thereof.

"RESULT LAYOUT EXAMPLE"

KEA846 (1)

BM INFO						
COLL32 (2)	Field Measured Elevation - if applicable		n/a (3)	(NAVD88)	n/a (4)	(NGVD29)
	SFWMD Database Elevation		22.60	(NAVD88)	23.91	(NGVD29)
SUB-CM (5)	Northing	739198.14 (6)	Monument found as described in the SFWMD Database.			
	Easting	497671.62				

BENCHMARK COLL32 **BM AREA LOOKING SOUTH**

(PICTURES SHOWN IN ACTUAL RESULT PAGES)

HW					
HW (8)	Tip of black marker arrow on well platform (7)	26.63	(NAVD88)	**27.64**	(NGVD29)

HW AREA LOOKING EAST **HW BRASS TAG AT REF. MARK**

(PICTURES SHOWN IN ACTUAL RESULT PAGES)

STAFF GAUGE INFO					
HW	Staff gauge was dry at 3:30pm, 03/10/08. Measured elevation at 22.50 mark on staff gauge. (9)			22.58 (10)	(NGVD29)

HW STAFF GAUGE LOOKING SOUTH

(PICTURES SHOWN IN ACTUAL RESULT PAGES)

1. Well name
2. Site Benchmark
3. Elevation of benchmark derived from this survey
4. Published elevation of benchmark based on SFWMD or NGS database
5. GPS method used Well type
6. Observed GPS coordinates of site benchmark
7. Reference mark
8. Well type
9. Observed conditions of staff gauge
10. Field measured water elevation or elevation of mark on staff gauge.

SITES AT WHICH BENCHMARKS WERE SET

IWSD

BM INFO						
IWSD	Field Measured Elevation - if applicable		29.28	(NAVD88)	30.59	(NGVD29)
	SFWMD Database Elevation		n/a	(NAVD88)	n/a	(NGVD29)
SUB-CM	Northing	756312.28	Set 3 1/2 inch brass SFWMD disk in poured-in-place class "C" monument.			
	Easting	514903.82				

BENCHMARK IWSD

BENCHMARK AREA LOOKING NORTH

WELL AREA LOOKING NORTH

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 8/07

DESIGNATION: IWSD	**PROJECT:** REFERENCE ELEVATION AUDIT PROJECT
ESTABLISHED BY: COONER & ASSOC., INC.	**SURVEYOR:** T. FOUTY
RECOVERED BY:	**DATE:** 03/1/2008

GEOGRAPHIC POSITION

SECTION: 4	**TOWNSHIP:** 47 S	**RANGE:** 29 E
COUNTY: COLLIER	**NAME OF QUADRANGLE:** IMMOKALEE (2012)	
	GEOGRAPHIC INDEX OF QUAD: SE	

HORIZONTAL DATUM: 1927 (1983) Other_____ (circle one) ZONE (E) or W

VERTICAL DATUM: MSL 1929 (1988) Other _____ (circle one)

CONTROL ACCURACY: HORIZONTAL 1 2 (3) _____(circle one) VERTICAL 1 2 (3)

STATE PLANE COORDINATES	**X:** 514903.82'	**Y:** 756312.28'	**NAVD 88 ELEV.** 29.28' **NGVD 29 ELEV.** 30.59'

LATITUDE: 26° 24' 49.51" N	**LONGITUDE:** 081° 25' 53.80" W

RECOVERY DESCRIPTION

Stamping: IWSD 2008

To Reach: FROM THE INTERSECTION OF STATE ROAD 29 (SR 29) AND STATE ROAD 82 (SR 82), GO SOUTH ON SR 29 FOR 4.4 +/- MILES INTO THE CITY OF IMMOKALEE TO N. 15TH STREET ON THE RIGHT. GO SOUTH ON N. 15TH STREET 0.2 +/- MILES TO A 90 DEGREE BEND TO THE EAST WHERE N. 15TH STREET BECOMES WEST MAIN STREET. CONTINUE EAST ON WEST MAIN STREET FOR 0.2 +/- MILES TO AN INTERSECTION WITH WHITE WAY. GO SOUTH ON WHITE WAY FOR 0.2 +/- MILES TO THE IMMOKALEE WATER & SEWER PLANT. FOLLOW THE DIRT ROAD IN BETWEEN THE HOLDING POOLS TO THE WESTERN EDGE OF THE PROPERTY AND THE MARK ON THE RIGHT. THE MARK IS LOCATED DUE WEST 11.2 +/- FEET OF THE IWSD WELL SITE. MARK IS A 3 ½ INCH BRASS DISK STAMPED " IWSD 2008 S. FLORIDA WATER MANAGEMENT DISTRICT SURVEY MARKER" AND IS 3 +/- INCHES BELOW THE GROUND.

Notable Land marks:

FIELD BOOK: 228 **PAGE:** 17-21, 25

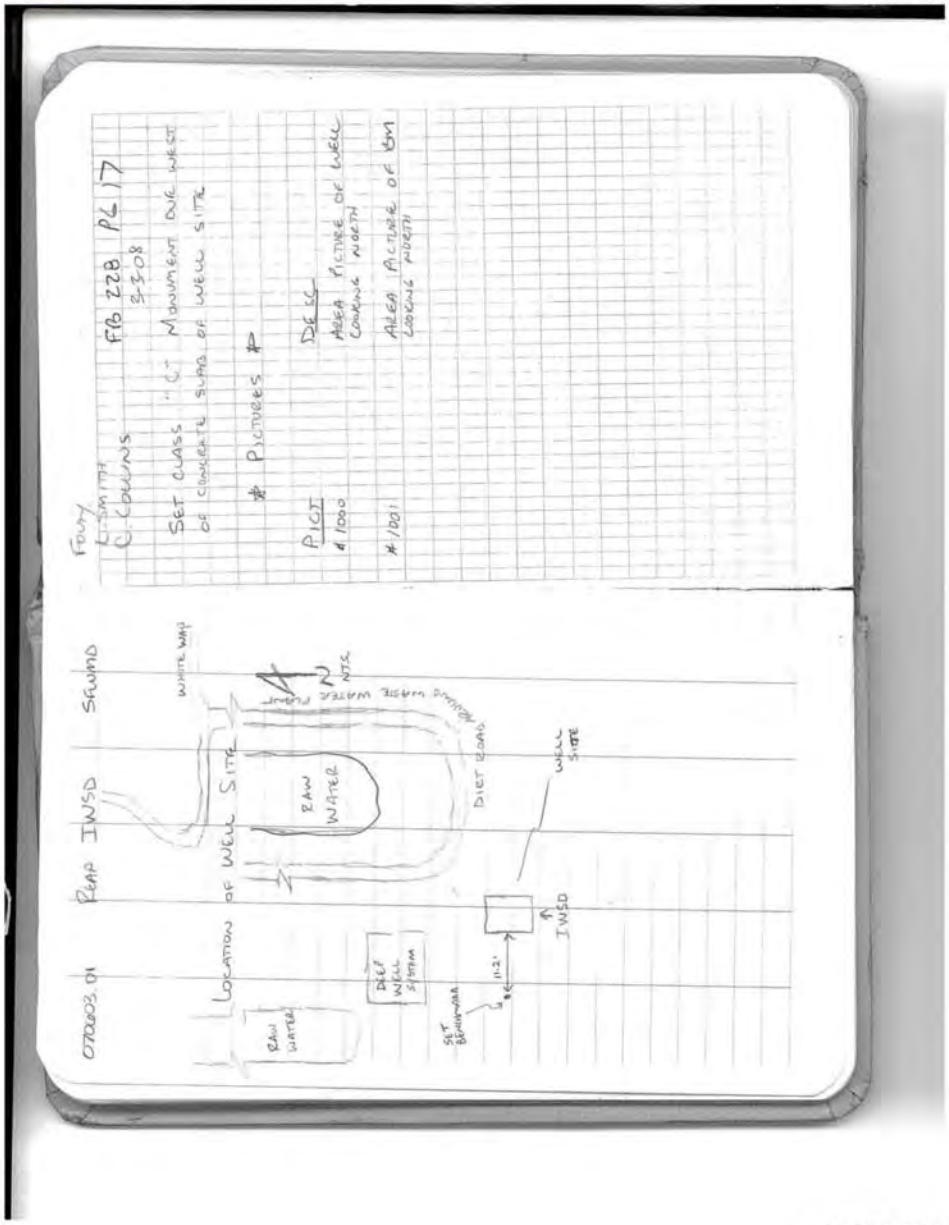
SKETCH

SEE PAGE 2 OF 2

PAGE 1 OF 2

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 8/07



PAGE 2 OF 2

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 = JUNE 26, 2008
 AJ7332 ***********************************************************************
 AJ7332  DESIGNATION -  F 533
 AJ7332  PID         -  AJ7332
 AJ7332  STATE/COUNTY-  FL/COLLIER
 AJ7332  USGS QUAD   -  IMMOKALEE (1987)
 AJ7332
 AJ7332                         *CURRENT SURVEY CONTROL
 AJ7332  ______________________________________________________________________
 AJ7332* NAD 83(2007)-  26 24 58.93542(N)    081 25 02.12678(W)     ADJUSTED
 AJ7332* NAVD 88     -         9.413  (meters)      30.88   (feet)  ADJUSTED
 AJ7332  ______________________________________________________________________
 AJ7332  EPOCH DATE  -        2002.00
 AJ7332  X           -     853,032.207 (meters)                     COMP
 AJ7332  Y           -  -5,651,925.847 (meters)                     COMP
 AJ7332  Z           -   2,820,443.028 (meters)                     COMP
 AJ7332  LAPLACE CORR-           -0.83  (seconds)                   DEFLEC99
 AJ7332  ELLIP HEIGHT-         -14.961 (meters)          (02/10/07) ADJUSTED
 AJ7332  GEOID HEIGHT-         -24.38  (meters)                     GEOID03
 AJ7332  DYNAMIC HT  -           9.398 (meters)      30.83  (feet)  COMP
 AJ7332
 AJ7332  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 AJ7332  Type    PID    Designation                       North   East  Ellip
 AJ7332  ---------------------------------------------------------------------
 AJ7332  NETWORK AJ7332 F 533                              0.67   0.69   1.29
 AJ7332  ---------------------------------------------------------------------
 AJ7332  MODELED GRAV-     979,058.3   (mgal)                     NAVD 88
 AJ7332
 AJ7332  VERT ORDER  -  FIRST     CLASS II
 AJ7332
 AJ7332.The horizontal coordinates were established by GPS observations
 AJ7332.and adjusted by the National Geodetic Survey in February 2007.
 AJ7332
 AJ7332.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 AJ7332.See National Readjustment for more information.
 AJ7332.The horizontal coordinates are valid at the epoch date displayed above.
 AJ7332.The epoch date for horizontal control is a decimal equivalence
 AJ7332.of Year/Month/Day.
 AJ7332
 AJ7332.The orthometric height was determined by differential leveling
 AJ7332.and adjusted in February 2002.
 AJ7332.No vertical observational check was made to the station.
 AJ7332
 AJ7332.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AJ7332
 AJ7332.The Laplace correction was computed from DEFLEC99 derived deflections.
 AJ7332
 AJ7332.The ellipsoidal height was determined by GPS observations
 AJ7332.and is referenced to NAD 83.
 AJ7332
 AJ7332.The geoid height was determined by GEOID03.
 AJ7332
 AJ7332.The dynamic height is computed by dividing the NAVD 88
 AJ7332.geopotential number by the normal gravity value computed on the
 AJ7332.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 AJ7332.degrees latitude (g = 980.6199 gals.).
 AJ7332
 AJ7332.The modeled gravity was interpolated from observed gravity values.
 AJ7332
 AJ7332;                    North         East     Units Scale Factor Converg.
 AJ7332;SPC FL E     -    230,809.799   158,375.728   MT  0.99996256   -0 11 08.3
 AJ7332;SPC FL E     -    757,248.48    519,604.37    sFT  0.99996256   -0 11 08.3
 AJ7332;UTM  17      - 2,921,863.029   458,389.930   MT  0.99962138   -0 11 08.3
 AJ7332
 AJ7332!             -  Elev Factor  x  Scale Factor =   Combined Factor
 AJ7332!SPC FL E     -   1.00000235  x   0.99996256  =   0.99996491
 AJ7332!UTM  17      -   1.00000235  x   0.99962138  =   0.99962373
 AJ7332
```

```
AJ7332:                Primary Azimuth Mark                     Grid Az
AJ7332:SPC FL E     -  E 533                                    178 13 29.8
AJ7332:UTM  17      -  E 533                                    178 13 29.8
AJ7332
AJ7332|---------------------------------------------------------------------|
AJ7332| PID    Reference Object                    Distance      Geod. Az   |
AJ7332|                                                          dddmmss.s  |
AJ7332| AJ7588 E 533                              APPROX. 0.6 KM 1780221.5  |
AJ7332|---------------------------------------------------------------------|
AJ7332
AJ7332                          SUPERSEDED SURVEY CONTROL
AJ7332
AJ7332  NAD 83(1999)-  26 24 58.93550(N)    081 25 02.12661(W) AD(       ) 1
AJ7332  ELLIP H (12/12/02)  -14.977  (m)                       GP(       ) 3 1
AJ7332  NAVD 88 (12/12/02)    9.41   (m)           30.9    (f) LEVELING    3
AJ7332
AJ7332.Superseded values are not recommended for survey control.
AJ7332.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AJ7332.See file dsdata.txt to determine how the superseded data were derived.
AJ7332
AJ7332_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RMK5839021863(NAD 83)
AJ7332_MARKER: F = FLANGE-ENCASED ROD
AJ7332_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
AJ7332_STAMPING: F 533 2001 CERP
AJ7332_MARK LOGO: NONE
AJ7332_PROJECTION: RECESSED 10 CENTIMETERS
AJ7332_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
AJ7332_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
AJ7332_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AJ7332+SATELLITE: SATELLITE OBSERVATIONS - July 26, 2007
AJ7332_ROD/PIPE-DEPTH: 24.2 meters
AJ7332_SLEEVE-DEPTH  : 0.46 meters
AJ7332
AJ7332  HISTORY     - Date     Condition        Report By
AJ7332  HISTORY     - 20010826 MONUMENTED       LDBLS
AJ7332  HISTORY     - 20020311 GOOD             MAPTEC
AJ7332  HISTORY     - 20070726 GOOD             INDIV
AJ7332
AJ7332                           STATION DESCRIPTION
AJ7332
AJ7332'DESCRIBED BY LD BRADLEY LAND SURVEYORS 2001 (JCH)
AJ7332'THE MARK IS ABOUT 64.5 KM (40.09 MI) NORTHEAST OF NAPLES IN SECTION 3,
AJ7332'TOWNSHIP 47 SOUTH, RANGE 29 EAST, IMMOKALEE, COLLIER COUNTY, FLORIDA.
AJ7332'OWNERSHIP - COLLIER COUNTY
AJ7332'
AJ7332'TO REACH THE MARK FROM THE INTERSECTION OF STATE ROAD 29 (MAIN STREET)
AJ7332'AND
AJ7332'COUNTY ROAD 846 (SOUTH 1ST STREET) IN IMMOKALEE, GO SOUTH ON COUNTY
AJ7332'ROAD 846
AJ7332'(SOUTH 1ST STREET) 0.2 KM (0.14 MI) TO THE MARK ON THE LEFT.
AJ7332'
AJ7332'THE MARK IS A STAINLESS STEEL ROD 42.06 M (138.0 FT) NORTHWEST OF THE
AJ7332'NORTHWEST CORNER OF A BUILDING AT 210 SOUTH 1ST STREET, 39.01 M (128.0
AJ7332'FT)
AJ7332'SOUTH OF AN EXTENDED CENTERLINE OF BOSTON AVE, 10.97 M (36.0 FT) EAST
AJ7332'OF THE
AJ7332'CENTERLINE OF COUNTY ROAD 846 (SOUTH 1ST STREET), 5.49 M (18.0 FT)
AJ7332'EAST OF THE
AJ7332'CENTERLINE OF THE EASTBOUND LANES OF COUNTY ROAD 846 (SOUTH 1ST
AJ7332'STREET) AND
AJ7332'0.30 M (1.0 FT) EAST OF THE EAST BACK OF A CONCRETE SIDEWALK. THE
AJ7332'DATUM POINT
AJ7332'IS SET 11 CM (0.37 FT) BELOW THE LEVEL OF THE GROUND, ABOUT THE SAME
AJ7332'LEVEL AS
AJ7332'COUNTY ROAD 846, BEING THE TOP OF A STAINLESS STEEL ROD DRIVEN 24.20 M
AJ7332'(79.40
AJ7332'FT) TO REFUSAL AND ENCASED IN A 5- INCH PVC PIPE WITH AN ACCESS COVER.
AJ7332'NOTE - A MAGNET WAS PLACED INSIDE THE SLEEVE, BELOW THE ACCESS COVE
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332
AJ7332                           STATION RECOVERY (2002)
AJ7332
AJ7332'RECOVERY NOTE BY MAPTECH INCORPORATED 2002 (CDP)
AJ7332'THE MARK IS ABOUT 64.5 KM (40.09 MI) NORTHEAST OF NAPLES IN SECTION 3,
AJ7332'TOWNSHIP 47 SOUTH, RANGE 29 EAST, IMMOKALEE, COLLIER COUNTY, FLORIDA.
AJ7332'OWNERSHIP - COLLIER COUNTY
AJ7332'
```

AJ7332'TO REACH THE MARK FROM THE INTERSECTION OF STATE ROAD 29 (MAIN STREET)
AJ7332'AND
AJ7332'COUNTY ROAD 846 (SOUTH 1ST STREET) IN IMMOKALEE, GO SOUTH ON COUNTY
AJ7332'ROAD 846
AJ7332'(SOUTH 1ST STREET) 0.2 KM (0.14 MI) TO THE MARK ON THE LEFT.
AJ7332'
AJ7332'THE MARK IS A STAINLESS STEEL ROD 42.06 M (138.0 FT) NORTHWEST OF THE
AJ7332'NORTHWEST CORNER OF A BUILDING AT 210 SOUTH 1ST STREET, 39.01 M (128.0
AJ7332'FT)
AJ7332'SOUTH OF AN EXTENDED CENTERLINE OF BOSTON AVE, 10.97 M (36.0 FT) EAST
AJ7332'OF THE
AJ7332'CENTERLINE OF COUNTY ROAD 846 (SOUTH 1ST STREET), 5.49 M (18.0 FT)
AJ7332'EAST OF THE
AJ7332'CENTERLINE OF THE EASTBOUND LANES OF COUNTY ROAD 846 (SOUTH 1ST
AJ7332'STREET) AND
AJ7332'0.30 M (1.0 FT) EAST OF THE EAST BACK OF A CONCRETE SIDEWALK. THE
AJ7332'DATUM POINT
AJ7332'IS SET 11 CM (0.37 FT) BELOW THE LEVEL OF THE GROUND, ABOUT THE SAME
AJ7332'LEVEL AS
AJ7332'COUNTY ROAD 846, BEING THE TOP OF A STAINLESS STEEL ROD DRIVEN 24.20 M
AJ7332'(79.40
AJ7332'FT) TO REFUSAL AND ENCASED IN A 5- INCH PVC PIPE WITH AN ACCESS COVER.
AJ7332'NOTE - A MAGNET WAS PLACED INSIDE THE SLEEVE, BELOW THE ACCESS COVE
AJ7332'
AJ7332'RECOVERED AS DESCRIBED 2002 MAPTECH INC (CP)
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332'
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AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332'
AJ7332
AJ7332 STATION RECOVERY (2007)
AJ7332
AJ7332'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2007 (AM)
AJ7332'KEITH AND ASSOCIATES

*** 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 = JUNE 26, 2008
 AJ7588 ***********************************************************************
 AJ7588  DESIGNATION -  E 533
 AJ7588  PID         -  AJ7588
 AJ7588  STATE/COUNTY-  FL/COLLIER
 AJ7588  USGS QUAD   -  IMMOKALEE (1987)
 AJ7588
 AJ7588                         *CURRENT SURVEY CONTROL
 AJ7588  ______________________________________________________________________
 AJ7588* NAD 83(2007)-  26 24 40.68921(N)    081 25 01.43309(W)     ADJUSTED
 AJ7588* NAVD 88     -         8.099  (meters)      26.57   (feet)  ADJUSTED
 AJ7588  ______________________________________________________________________
 AJ7588  EPOCH DATE  -        2002.00
 AJ7588  X           -     853,088.321 (meters)                     COMP
 AJ7588  Y           -  -5,652,168.826 (meters)                     COMP
 AJ7588  Z           -   2,819,939.520 (meters)                     COMP
 AJ7588  LAPLACE CORR-           -0.87  (seconds)                   DEFLEC99
 AJ7588  ELLIP HEIGHT-         -16.271 (meters)          (02/10/07) ADJUSTED
 AJ7588  GEOID HEIGHT-         -24.37  (meters)                     GEOID03
 AJ7588  DYNAMIC HT  -           8.086 (meters)      26.53  (feet)  COMP
 AJ7588
 AJ7588  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 AJ7588  Type    PID    Designation                      North   East  Ellip
 AJ7588  ----------------------------------------------------------------------
 AJ7588  NETWORK AJ7588 E 533                              1.20   1.23   2.47
 AJ7588  ----------------------------------------------------------------------
 AJ7588  MODELED GRAV-     979,058.0   (mgal)                     NAVD 88
 AJ7588
 AJ7588  VERT ORDER  -  FIRST     CLASS II
 AJ7588
 AJ7588.The horizontal coordinates were established by GPS observations
 AJ7588.and adjusted by the National Geodetic Survey in February 2007.
 AJ7588
 AJ7588.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 AJ7588.See National Readjustment for more information.
 AJ7588.The horizontal coordinates are valid at the epoch date displayed above.
 AJ7588.The epoch date for horizontal control is a decimal equivalence
 AJ7588.of Year/Month/Day.
 AJ7588
 AJ7588.The orthometric height was determined by differential leveling
 AJ7588.and adjusted in February 2002.
 AJ7588
 AJ7588.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AJ7588
 AJ7588.The Laplace correction was computed from DEFLEC99 derived deflections.
 AJ7588
 AJ7588.The ellipsoidal height was determined by GPS observations
 AJ7588.and is referenced to NAD 83.
 AJ7588
 AJ7588.The geoid height was determined by GEOID03.
 AJ7588
 AJ7588.The dynamic height is computed by dividing the NAVD 88
 AJ7588.geopotential number by the normal gravity value computed on the
 AJ7588.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 AJ7588.degrees latitude (g = 980.6199 gals.).
 AJ7588
 AJ7588.The modeled gravity was interpolated from observed gravity values.
 AJ7588
 AJ7588;                    North         East     Units Scale Factor Converg.
 AJ7588;SPC FL E     -   230,248.211   158,393.132   MT  0.99996254   -0 11 07.9
 AJ7588;SPC FL E     -   755,406.01    519,661.47    sFT  0.99996254   -0 11 07.9
 AJ7588;UTM  17      - 2,921,301.633   458,407.328   MT  0.99962136   -0 11 07.9
 AJ7588
 AJ7588!             -  Elev Factor  x  Scale Factor =   Combined Factor
 AJ7588!SPC FL E     -   1.00000256  x   0.99996254  =   0.99996510
 AJ7588!UTM  17      -   1.00000256  x   0.99962136  =   0.99962392
 AJ7588
 AJ7588:                Primary Azimuth Mark                     Grid Az
```

AJ7588:SPC FL E - F 533 358 13 29.7
AJ7588:UTM 17 - F 533 358 13 29.7
AJ7588
AJ7588|---|
AJ7588| PID Reference Object Distance Geod. Az |
AJ7588| dddmmss.s |
AJ7588| AJ7332 F 533 APPROX. 0.6 KM 3580221.8 |
AJ7588|---|
AJ7588
AJ7588 SUPERSEDED SURVEY CONTROL
AJ7588
AJ7588 NAD 83(1999)- 26 24 40.68930(N) 081 25 01.43296(W) AD( ) 1
AJ7588 ELLIP H (12/12/02) -16.285 (m) GP( ) 4 2
AJ7588 NAVD 88 (12/12/02) 8.10 (m) 26.6 (f) LEVELING 3
AJ7588
AJ7588.Superseded values are not recommended for survey control.
AJ7588.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AJ7588.See file dsdata.txt to determine how the superseded data were derived.
AJ7588
AJ7588_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RMK5840721302(NAD 83)
AJ7588_MARKER: F = FLANGE-ENCASED ROD
AJ7588_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
AJ7588_STAMPING: E 533 2001 CERP
AJ7588_MARK LOGO: NONE
AJ7588_PROJECTION: RECESSED 13 CENTIMETERS
AJ7588_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
AJ7588_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
AJ7588_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AJ7588+SATELLITE: SATELLITE OBSERVATIONS - July 26, 2007
AJ7588_ROD/PIPE-DEPTH: 20.6 meters
AJ7588_SLEEVE-DEPTH : 0.46 meters
AJ7588
AJ7588 HISTORY - Date Condition Report By
AJ7588 HISTORY - 20010826 MONUMENTED LDBLS
AJ7588 HISTORY - 20020311 GOOD MAPTEC
AJ7588 HISTORY - 20070726 GOOD INDIV
AJ7588
AJ7588 STATION DESCRIPTION
AJ7588
AJ7588'DESCRIBED BY LD BRADLEY LAND SURVEYORS 2001 (JCH)
AJ7588'THE MARK IS ABOUT 64.0 KM (39.74 MI) NORTHEAST OF NAPLES, IN SECTION
AJ7588'3,
AJ7588'TOWNSHIP 47 SOUTH, RANGE 29 EAST, IMMOKALEE, COLLIER COUNTY, FLORIDA.
AJ7588'OWNERSHIP - COLLIER COUNTY
AJ7588'
AJ7588'TO REACH THE MARK FROM THE INTERSECTION OF STATE ROAD 29 (MAIN STREET)
AJ7588'AND
AJ7588'COUNTY ROAD 846 (SOUTH 1ST STREET) IN IMMOKALEE, GO SOUTHWEST ON
AJ7588'COUNTY ROAD
AJ7588'846 (SOUTH 1ST STREET) 0.8 KM (0.5 MI) TO THE INTERSECTION WITH EUSTIS
AJ7588'AVENUE
AJ7588'AND THE MARK ON THE RIGHT.
AJ7588'
AJ7588'THE MARK IS A STAINLESS STEEL ROD 21.34 M (70.0 FT) EAST OF THE
AJ7588'CENTERLINE OF
AJ7588'COUNTY ROAD 846 (S. 1ST ST), 15.94 M (52.3 FT) EAST OF THE CENTERLINE
AJ7588'OF THE
AJ7588'EASTBOUND LANES OF COUNTY ROAD 846 (S. STREET ST), 15.97 M (52.4 FT)
AJ7588'NORTHEAST
AJ7588'OF WOOD POWER POLE NUMBER F5121C100, 12.92 M (42.4 FT) SOUTHEAST OF
AJ7588'THE
AJ7588'SOUTHEAST CORNER OF A BRICKED SIGN (WELCOME TO IMMOKALEE), 5.49 M
AJ7588'(18.0 FT)
AJ7588'NORTH OF THE CENTERLINE OF EUSTIS AVENUE AND 1.31 M (4.3 FT) SOUTH OF
AJ7588'A
AJ7588'CARSONITE WITNESS POST. THE DATUM POINT IS SET 13 CM (0.42 FT) BELOW
AJ7588'THE LEVEL
AJ7588'OF THE GROUND, ABOUT THE SAME LEVEL AS EUSTIS AVENUE, BEING THE TOP OF
AJ7588'A
AJ7588'STAINLESS STEEL ROD DRIVEN 20.58 M (67.51 FT) TO REFUSAL AND ENCASED
AJ7588'IN A 5-
AJ7588'INCH PVC PIPE WITH AN ACCESS COVER.
AJ7588'
AJ7588'NOTE - A MAGNET WAS PLACED INSIDE THE SLEEVE, BELOW THE ACCESS COVER.
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AJ7588
AJ7588 STATION RECOVERY (2002)
AJ7588
AJ7588'RECOVERY NOTE BY MAPTECH INCORPORATED 2002 (CDP)
AJ7588'THE MARK IS ABOUT 64.0 KM (39.74 MI) NORTHEAST OF NAPLES, IN SECTION
AJ7588'3,
AJ7588'TOWNSHIP 47 SOUTH, RANGE 29 EAST, IMMOKALEE, COLLIER COUNTY, FLORIDA.
AJ7588'OWNERSHIP - COLLIER COUNTY
AJ7588'
AJ7588'TO REACH THE MARK FROM THE INTERSECTION OF STATE ROAD 29 (MAIN STREET)
AJ7588'AND
AJ7588'COUNTY ROAD 846 (SOUTH 1ST STREET) IN IMMOKALEE, GO SOUTHWEST ON
AJ7588'COUNTY ROAD
AJ7588'846 (SOUTH 1ST STREET) 0.8 KM (0.5 MI) TO THE INTERSECTION WITH EUSTIS
AJ7588'AVENUE
AJ7588'AND THE MARK ON THE RIGHT.
AJ7588'
AJ7588'THE MARK IS A STAINLESS STEEL ROD 21.34 M (70.0 FT) EAST OF THE
AJ7588'CENTERLINE OF
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AJ7588'OF THE
AJ7588'EASTBOUND LANES OF COUNTY ROAD 846 (S. STREET ST), 15.97 M (52.4 FT)
AJ7588'NORTHEAST
AJ7588'OF WOOD POWER POLE NUMBER F5121C100, 12.92 M (42.4 FT) SOUTHEAST OF
AJ7588'THE
AJ7588'SOUTHEAST CORNER OF A BRICKED SIGN (WELCOME TO IMMOKALEE), 5.49 M
AJ7588'(18.0 FT)
AJ7588'NORTH OF THE CENTERLINE OF EUSTIS AVENUE AND 1.31 M (4.3 FT) SOUTH OF
AJ7588'A
AJ7588'CARSONITE WITNESS POST. THE DATUM POINT IS SET 13 CM (0.42 FT) BELOW
AJ7588'THE LEVEL
AJ7588'OF THE GROUND, ABOUT THE SAME LEVEL AS EUSTIS AVENUE, BEING THE TOP OF
AJ7588'A
AJ7588'STAINLESS STEEL ROD DRIVEN 20.58 M (67.51 FT) TO REFUSAL AND ENCASED
AJ7588'IN A 5-
AJ7588'INCH PVC PIPE WITH AN ACCESS COVER.
AJ7588'
AJ7588'NOTE - A MAGNET WAS PLACED INSIDE THE SLEEVE, BELOW THE ACCESS COVER.
AJ7588'
AJ7588'RECOVERED AS DESCRIBED 2002 MAPTECH INC (CP)
AJ7588'
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AJ7588
AJ7588 STATION RECOVERY (2007)
AJ7588

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   AJ7588'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2007 (AM)
   AJ7588'KEITH AND ASSOCIATES

   *** retrieval complete.
   Elapsed Time = 00:00:01
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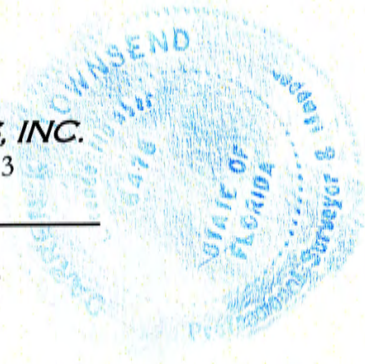
SURVEYOR'S CERTIFICATION

In my professional opinion, this report of survey meets applicable portions of the Minimum Technical Standards set forth by the Florida Board of Professional Surveyors and Mappers in Chapter 61-G17, Florida Administrative Code.

This report is not valid without the signature and original raised seal of a Florida Licensed Surveyor and Mapper. Additions or deletions to this report by anyone, other that the signing party, are prohibited without written consent of the signing party.



COONER & ASSOCIATES, INC.
DBPR Authorization Number 6773

5/29/08
Date of Survey

By: _____
Darren Townsend, PSM
Professional Surveyor and Mapper
State of Florida
Certificate Number 6476

APPENDIX "A"

Level run information

SITE NAME	SITE BM	NGS BM(S)	LINE LENGTH	MISCLOSURE	ALLOWABLE MISCLOSURE
BCA3	EC2	I75 90 A74 I75 90 A73	1.6 MILES	0.03'	0.04'
BCA4	MR "A"	CATHAM3 AZ MK CATHAM3 S 248	24.0 MILES	0.01'	0.15'
BCA5	RP12	N248 X527	11.4 MILES	0.03'	0.07'
BCA12	KB4	I75 J 35 I17 40 A 89	6.6 MILES	0.08'	0.08'
CORK2	CORK2A	Q 534	2.4 MILES	0.03'	0.05'
ECOCO	ECOCO	872 5222 A TIDAL 2604	5.5 MILES	0.03'	0.07'
FU4S	FU4S	A584 B584	5.1 MILES	0.02'	0.07'
BICY	DONA	OCHOBEE RMS B249	2.1 MILES	0.00'	0.04'
IWSD	IWSD	F533 E533	2.8 MILES	0.02'	0.05'
I75MZ *	I75MZ	COLL36 D27	0.1 MILES	0.00'	0.01'

* I75MZ was elevated using benchmarks provided by SFWMD.

APPENDIX "B"

Adjusted level run elevation compared to published elevations.

SITE NAME	BENCHMARK	NAVD88 ADJUSTED ELEV.	NAVD88 PUBLISHED ELEV.	DIFFERENCE	NGVD29 ADJUSTED ELEV.
BCA3	EC2	13.05'	12.97'	+0.08'	14.42'
BCA4	MR "A"	7.55'	8.57'	-1.02'	8.98'
BCA12	RP12	9.62'	9.62'	0.00'	11.08'
BICY	KB4	13.02'	12.81'	+0.21'	14.42'

APPENDIX "C"
Task Breakdown by company

COONER & ASSOCIATES, TASKS COMPLETED

NO.	SITE NAME	SET MONUMENT	LEVEL RUNS	PROCESS RUNS	REF. & TAG	STAFF GAUGE	COORDINATES	REPORT
		per mon	per mile	per site	per site	per site	per site	per site
7	BCA1	0	0.0	0	1	1	1	1
8	BCA2	0	0.0	0	1	1	1	1
9	BCA3	0	1.6	1	1	1	1	1
10	BCA4	0	0.0	0	1	1	1	1
11	BCA5	0	11.4	1	1	1	1	1
13	BCA10	0	0.0	0	1	1	1	1
14	BCA11	0	0.0	0	1	1	1	1
15	BCA12	0	6.6	1	1	1	1	1
16	BCA13	0	0.0	0	1	1	1	1
18	BCA15	0	0.0	0	1	1	1	1
19	BCYP7	0	0.0	0	1	1	1	1
20	BICY	0	2.1	1	0	0	1	1
21	COC951	0	0.0	0	1	1	1	1
22	COCO3	0	0.0	0	1	1	1	1
23	COCOPR	0	0.0	0	1	1	1	1
27	D2-8	0	0.0	0	1	1	1	1
28	ECOCO	1	6.0	1	1	1	1	1
29	FAKI75	0	0.0	0	1	1	1	1
32	FU4	0	0.0	0	1	1	1	1
33	FU4S	1	5.1	1	1	1	1	1
34	FU5	0	0.0	0	1	1	1	1
36	GOL951	0	0.0	0	1	1	1	1
37	GOLD4A	0	0.0	0	1	1	1	1
39	GOLDW3	0	0.0	0	1	1	1	1
40	GOLDW4	0	0.0	0	1	1	1	1
43	HALDEM	0	0.0	0	1	1	1	1
44	HC1	0	0.0	0	1	1	1	1
45	HEND84	0	0.0	0	1	1	1	1
47	HF1	0	0.0	0	1	1	1	1
48	HF2	0	0.0	0	1	1	1	1
49	HF3	0	0.0	0	1	1	1	1
50	HF4	0	0.0	0	1	1	1	1
51	HF7	0	0.0	0	1	0	1	1
52	I75MZ	1	0.1	1	0	0	1	1
53	I75W1	0	0.0	0	1	1	1	1
54	IWSD	1	2.8	1	0	0	1	1
55	KEA846	0	0.0	0	1	1	1	1
56	MLRI75	0	0.0	0	1	1	1	1
57	WF1	0	0.0	0	1	1	1	1
58	WF2	0	0.0	0	1	1	1	1
59	WF3	0	0.0	0	1	1	1	1
60	WF4	0	0.0	0	1	1	1	1
61	WF5	0	0.0	0	1	1	1	1
62	WF6	0	0.0	0	1	1	1	1
63	WF7	0	0.0	0	1	1	1	1
	NUMBER	4	35.7	8	42	41	45	45

PICKETT & ASSOCIATES - TASKS COMPLETED

NO.	SITE NAME	SET MONUMENT	LEVEL RUNS	PROCESS LEVELS	REF. & TAG	STAFF GAUGE	COORDINATES	PORT - BY COON
		per mon	per mile	per site	per site	per site	per site	per site
2	6MIDR	0	0.0	0	1	1	1	1
3	6MII75	0	0.0	0	1	1	1	1
4	6MIPR	0	0.0	0	1	1	1	1
5	BARW4	0	0.0	0	1	1	1	1
6	BARW6A	0	0.0	0	1	1	1	1
24	CORK3-SCA	0	0.0	0	1	1	1	1
31	FU1	0	0.0	0	1	1	1	1
35	GOL846	0	0.0	0	1	1	1	1
41	GOLDW5	0	0.0	0	1	1	1	1
25	CORK2	0	2.4	1	0	0	1	1
	BCA4	0	24.0	1	0	0	0	0
	NUMBER	0	26.43	2	9	9	10	10