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SURVEYOR'S REPORT

Specific Purpose Survey of the United States
Geological Survey Well **M 1261**
in
Martin County, Florida

Prepared for:

South Florida Water Management District

3301 Gun Club Road
West Palm Beach, Florida 33406

Prepared by:

Peter Andersen, PSM, Vice President
Florida Professional Surveyor and Mapper
License Number 5199
State of Florida

GCY, Inc. LB 4108
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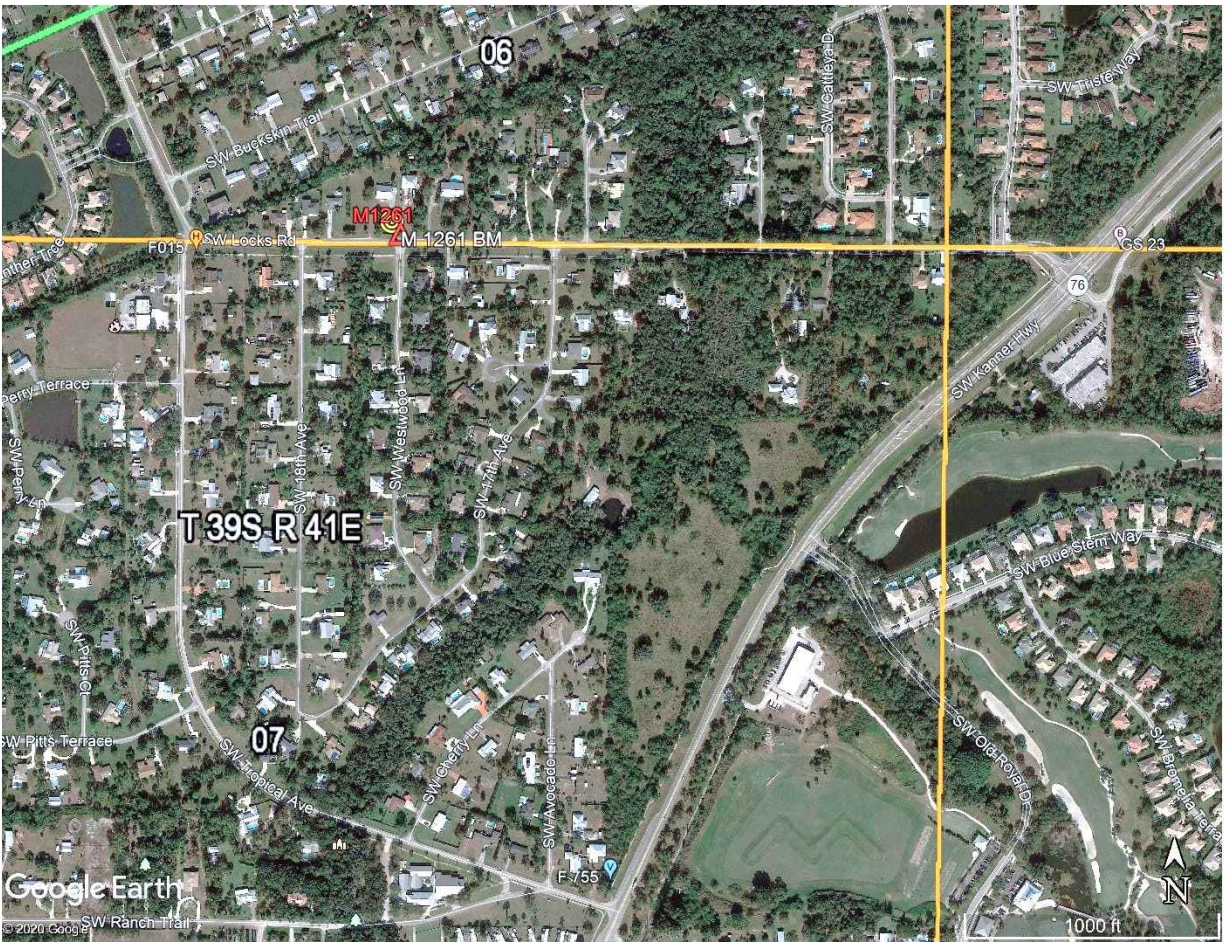
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PURPOSE

The Purpose of this survey is to set an Elevation Referenced Mark (Benchmark) using the guidelines for a National Geodetic Survey (NGS), Class "C" concrete monument and to establish a North American Vertical Datum of 1988 (NAVD 88) on said Benchmark and on an additional Reference Point with a Brass Plate, both at United States Geological Survey Well "M 1261".

LOCATION OF PROJECT

The United States Geological Survey Well "M 1261" is located in the Section 6, Township 39 South, Range 41 East, Martin County, Florida.



General Location (Not to Scale)



PROJECT VERTICAL DATUM

The project vertical datum is the North American Vertical Datum (NAVD) of 1988.

To convert the NAVD 88 elevation to the National Geodetic Vertical Datum (NGVD) of 1929 at **Station M-1261 add 1.463**. These values are based on Corpscon 6.0.1, a U.S. Army Corps of Engineers, Engineering Research and Development Center Windows based program to convert coordinates and elevations between datums using the updated vertcon05.txt and the vertcone.05 files supplied by the U.S Army Corps of Engineers. South Atlantic Division, Jacksonville, Florida.

PROJECT HORIZONTAL DATUM

The project horizontal datum is the State Plane Coordinate System, Florida East Zone, North American Datum 83, adjustment of 2011.

LEVELING METHODS

The leveling for this project was performed in accordance with standard survey practice using conventional third order methods, techniques and equipment.

The allowable error on this project meets or exceeds closures as required by SFWMD (.02 v miles) per executed SOW for 4600003703 WO07.

Leveling was run from National Geodetic Survey (NGS) monument "GS 23" (NGSPID AJ5270) to the well measuring point and closing on National Geodetic Survey (NGS) monument "F 755" (NGSPID DO7594) using a Leica DNA 10 digital level S/N 331745

GPS METHODS

Since a new benchmark was not established, there was not need for the OPUS session. Latitude and Longitude were taken directly from the NGS Datasheets available from the NGS website.

Surveyors' Notes:

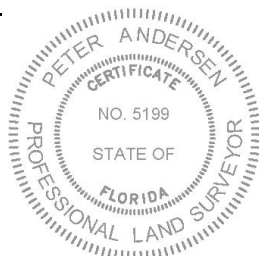
1. All measurements herein are in United States Survey feet and decimal thereof, unless otherwise specified.
2. Underground utilities were not located as part of this survey.
3. This survey report or copies thereof are not valid without the original signature and seal of a Florida licensed Surveyor and Mapper.
4. Additions or deletions to this survey report by other than the signing party (or parties) is prohibited without written consent of the signing party (or parties).
5. To convert from NAVD 88 to NGVD 29 add 1.463 feet. This value is based on Corpscon 6.0.1 a U.S. Army Corps of Engineers Engineering Research and Development Center Topographic Engineering Center Alexandria, Virginia Windows-based program to convert coordinates and elevations between datum's using vertcon05.txt and vertcon05.05 files supplied by the U.S. Army Corps of Engineers South Atlantic Division, Jacksonville Fl.
6. Date of last field work: February 7, 2020, GCY Job No. 18-1020-07.
7. SFWMD Data records (on file at the District's headquarters):
 - A. Electronic Data files:
Miscellaneous picture files
Digital level run
File names: XXXXXX.DAT
 - B. Conventional reporting
Field Book: 1862 pages 30-34

SURVEYOR'S CERTIFICATION

In my professional opinion this Specific Purpose Survey meets applicable portions of the Standards of Practice set forth by the Florida Board of Professional Surveyors and Mappers in Chapter 5J-17, Florida Administrative Code. This report is prepared for the sole and specific use of the South Florida Water Management District and is not assignable.

February 7, 2020

Last date of Survey



Peter Andersen, PSM, Vice President
Florida Professional Surveyor and Mapper
License Number 5199
State of Florida
GCY, Inc. LB No 4108

NOTE:

This is an electronically signed and sealed document pursuant to Chapter 5J-17.062, Florida Administrative Code. The printed survey map or report or copies thereof are not valid without the original signature and seal of a Florida licensed surveyor or mapper.



U.S.G.S. Station Name: M 1261	U.S.G.S. Station Number: 270609080163401	Agency: GCY, INC.	Date of Field Work: 2/7/2020
Party Chief: LAPOLLA	Field Book: GCY 1862	Page(s): 30-34	Report Prepared by: ANDERSEN

SITE SPECIFIC DATA

Site Benchmark: M 1261	Benchmark Elevation(s) (NAVD88): 12.302	Corpscon 6.0.1 Conversion Factor (NAVD88 to NGVD29) + 1.463	
Well Reference Elevation (NAVD88): 17.120	DTW: 7.99 (02/ 07/ 2020 at 13:48 PM)	Ground Elevation (NAVD88): 13.5	Pad Elevation (NAVD88): N/A

GEOGRAPHIC DATA

Section 6	Township 39 S	Range 41 E
Well Latitude: 27° 06' 10.2214" N	Well Longitude: 80° 16' 35.9302" W	Location Source: RTK GPS
State Plane Coordinates:	Northing (Y) = 1007231.27	Easting (X) = 891493.53

Notes: **NAVD88** – North American Vertical Datum of 1988; **NGVD29**- National Geodetic Vertical Datum of 1929; **Corpscon 6.0.1** - A U.S. Army Corps of Engineers Engineering Research and Development Center Topographic Engineering Center Alexandria, Virginia Windows-based program to convert coordinates and elevations between datum's using vertcon05.txt and vertcon05.05 files supplied by the U.S. Army Corps of Engineers South Atlantic Division, Jacksonville FL.

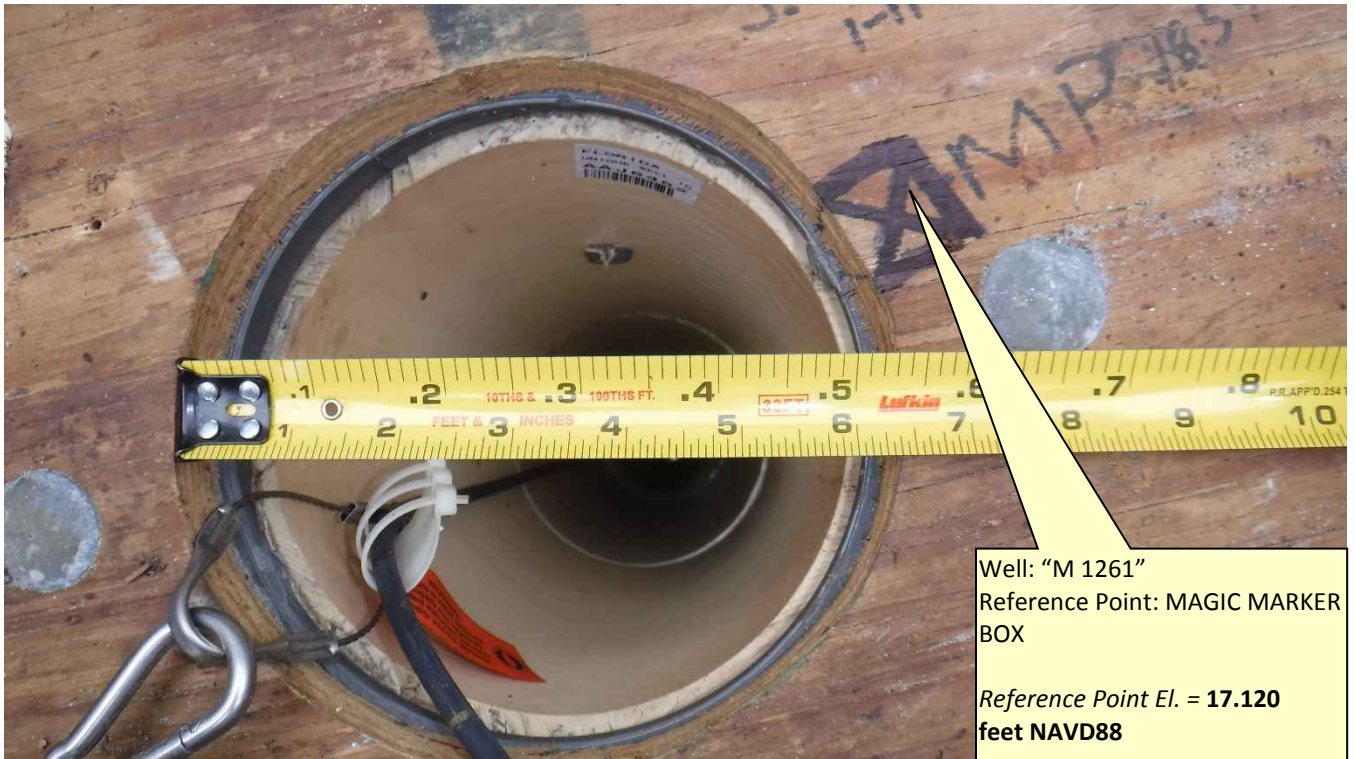
PICTURES

Aerial of Overall Well Site



Not to scale (GoogleEarth product)

Well Site and Well Head

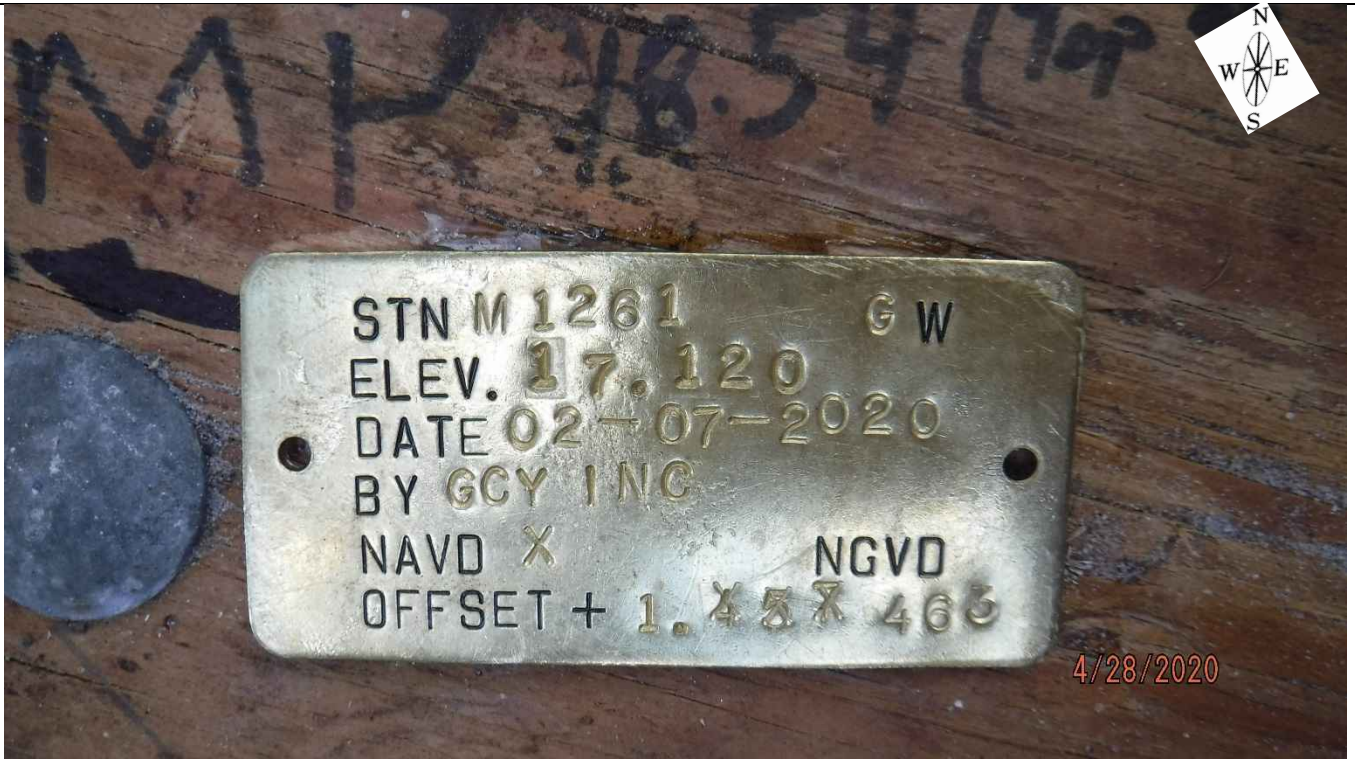


Well: "M 1261"
Reference Point: MAGIC MARKER
BOX

Reference Point El. = 17.120
feet NAVD88

Distance to Water = 7.99
feet from reference point
(02/ 07/ 2020 at 13:48 PM)

New Aluminum Tag



USGS RMs NONE

Site Benchmark

Site Benchmark Overall Photo



Site BM:

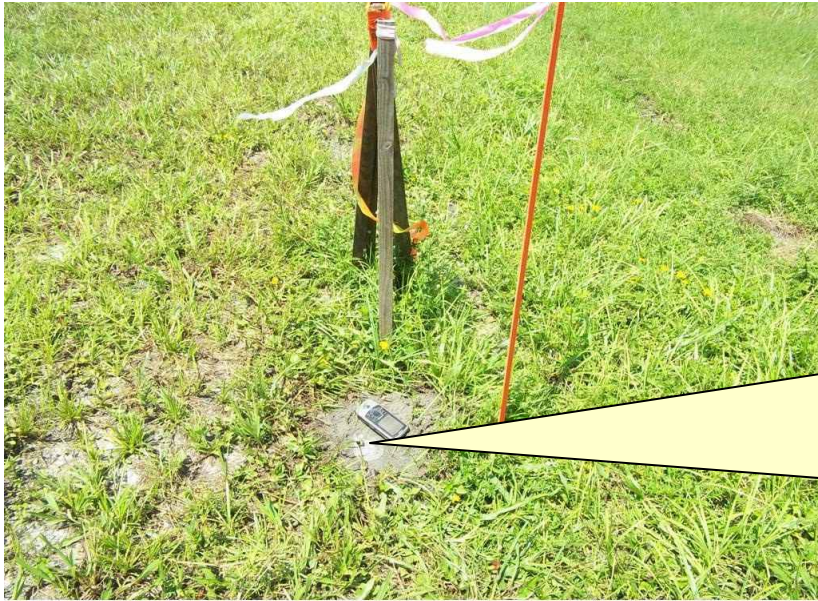


Latitude: 27° 06' 09.85154" N
Longitude: 80° 16' 35.92628" W
NAVD88 EL = 12.302



2/ 7/2020

Source Benchmarks



GS 23, AJ5270, 3, 20110803

NGS Benchmark "GS 23" (AJ5270)



Latitude: **27° 06' 09.24730" N**
Longitude: **80° 16' 04.62605" W**
NAVD88 EL = 11.493



F 755, DO7594, 3, 20110917

NGS Benchmark "F 755" (DO7594)



Latitude: **27° 05' 44.8" N**
Longitude: **80° 16' 26.8" W**
NAVD88 EL = 14.977

"GS 23" Benchmark Datasheet (1 of 3)

4/28/2020

DATASHEETS

The NGS Data Sheet

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

PROGRAM = datasheet95, VERSION = 8.12.5.7

Starting Datasheet Retrieval...

1 National Geodetic Survey, Retrieval Date = APRIL 28, 2020

```
AJ5270 *****
AJ5270 DESIGNATION - GS 23
AJ5270 PID - AJ5270
AJ5270 STATE/COUNTY- FL/MARTIN
AJ5270 COUNTRY - US
AJ5270 USGS QUAD - INDIANTOWN SE (2018)
AJ5270
AJ5270 *CURRENT SURVEY CONTROL
AJ5270
AJ5270 *-----*
AJ5270* NAD 83(2011) POSITION- 27 06 09.24730(N) 080 16 04.62605(W) ADJUSTED
AJ5270* NAD 83(2011) ELLIP HT- -23.793 (meters) (06/27/12) ADJUSTED
AJ5270* NAD 83(2011) EPOCH - 2010.00
AJ5270* NAVD 88 ORTHO HEIGHT - 3.503 (meters) 11.49 (feet) ADJUSTED
AJ5270 *-----*
AJ5270 GEOID HEIGHT - -27.304 (meters) GEOID18
AJ5270 NAD 83(2011) X - 960,437.972 (meters) COMP
AJ5270 NAD 83(2011) Y - -5,599,931.545 (meters) COMP
AJ5270 NAD 83(2011) Z - 2,888,326.451 (meters) COMP
AJ5270 LAPLACE CORR - -2.71 (seconds) DEFLEC18
AJ5270 DYNAMIC HEIGHT - 3.498 (meters) 11.48 (feet) COMP
AJ5270 MODELED GRAVITY - 979,104.9 (mgal) NAVD 88
AJ5270
AJ5270 VERT ORDER - FIRST CLASS II
AJ5270
AJ5270 Network accuracy estimates per FGDC Geospatial Positioning Accuracy
AJ5270 Standards:
AJ5270 FGDC (95% conf, cm) Standard deviation (cm) CorrNE
AJ5270 Horiz Ellip SD_N SD_E SD_h (unitless)
AJ5270 -----
AJ5270 NETWORK 0.90 1.90 0.40 0.33 0.97 -0.08642605
AJ5270 -----
AJ5270 Click here for local accuracies and other accuracy information.
AJ5270
AJ5270
AJ5270 The horizontal coordinates were established by GPS observations
AJ5270 and adjusted by the National Geodetic Survey in June 2012.
AJ5270
AJ5270 NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
AJ5270 been affixed to the stable North American tectonic plate. See
AJ5270 NA2011 for more information.
AJ5270
AJ5270 The horizontal coordinates are valid at the epoch date displayed above
AJ5270 which is a decimal equivalence of Year/Month/Day.
AJ5270
AJ5270 The orthometric height was determined by differential leveling and
AJ5270 adjusted by the NATIONAL GEODETIC SURVEY
AJ5270 in September 2013.
AJ5270
AJ5270 Significant digits in the geoid height do not necessarily reflect accuracy.
AJ5270 GE0ID18 height accuracy estimate available here.
AJ5270
AJ5270 Click photographs - Photos may exist for this station.
AJ5270
```

https://www.ngs.noaa.gov/cgi-bin/ds_mark.pl?PidBox=AJ5270

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"GS 23" Benchmark Datasheet (2 of 3)

4/28/2020

DATASHEETS

AJ5270.The X, Y, and Z were computed from the position and the ellipsoidal ht.
AJ5270

AJ5270.The Laplace correction was computed from DEFLEC18 derived deflections.

AJ5270

AJ5270.The ellipsoidal height was determined by GPS observations

AJ5270.and is referenced to NAD 83.

AJ5270

AJ5270.The dynamic height is computed by dividing the NAVD 88

AJ5270.geopotential number by the normal gravity value computed on the

AJ5270.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

AJ5270.degrees latitude (g = 980.6199 gals.).

AJ5270

AJ5270.The modeled gravity was interpolated from observed gravity values.

AJ5270

AJ5270. The following values were computed from the NAD 83(2011) position.

AJ5270

AJ5270;		North	East	Units	Scale Factor	Converg.
AJ5270;SPC FL E	-	306,979.714	272,590.230	MT	1.00000620	+0 20 00.7
AJ5270;SPC FL E	-	1,007,149.28	894,323.11	sFT	1.00000620	+0 20 00.7
AJ5270;UTM 17	-	2,998,006.956	572,565.463	MT	0.99966500	+0 20 00.7

AJ5270

AJ5270! - Elev Factor x Scale Factor = Combined Factor

AJ5270!SPC FL E - 1.00000374 x 1.00000620 = 1.00000994

AJ5270!UTM 17 - 1.00000374 x 0.99966500 = 0.99966874

AJ5270

AJ5270_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RNK7256598006(NAD 83)

AJ5270

SUPERSEDED SURVEY CONTROL

AJ5270

AJ5270	NAD 83(2007)-	27 06 09.24760(N)	080 16 04.62675(W)	AD(2002.00)	0
AJ5270	ELLIP H (02/10/07)	-23.773 (m)		GP(2002.00)	
AJ5270	NAD 83(1999)-	27 06 09.24768(N)	080 16 04.62689(W)	AD()	1
AJ5270	ELLIP H (09/27/01)	-23.772 (m)		GP()	4 2
AJ5270	NAVD 88	3.51 (m)		11.5 (f) LEVELING	3
AJ5270	NAVD 88 (08/02/02)	3.505 (m)		11.50 (f) SUPERSEDED	2 1

AJ5270

AJ5270.Superseded values are not recommended for survey control.

AJ5270

AJ5270.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

AJ5270.See file [dsdata.pdf](#) to determine how the superseded data were derived.

AJ5270

AJ5270_MARKER: DH = HORIZONTAL CONTROL DISK

AJ5270_SETTING: 9 = SET IN PREFABRICATED CONCRETE POST IMBEDDED IN GROUND

AJ5270_STAMPING: GS23 1992

AJ5270_MARK LOGO: FL-085

AJ5270_PROJECTION: FLUSH

AJ5270_MAGNETIC: N = NO MAGNETIC MATERIAL

AJ5270_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY

AJ5270_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

AJ5270+SATELLITE: SATELLITE OBSERVATIONS - August 03, 2011

AJ5270

AJ5270	HISTORY	- Date	Condition	Report By
AJ5270	HISTORY	- 1992	MONUMENTED	FL-085
AJ5270	HISTORY	- 20010730	GOOD	GCVI
AJ5270	HISTORY	- 20020418	GOOD	GCVI
AJ5270	HISTORY	- 20020418	GOOD	GCVI
AJ5270	HISTORY	- 20091022	GOOD	ESPPA
AJ5270	HISTORY	- 20110803	GOOD	FLDEP

AJ5270 HISTORY - 1992 MONUMENTED FL-085

AJ5270 HISTORY - 20010730 GOOD GCVI

AJ5270 HISTORY - 20020418 GOOD GCVI

AJ5270 HISTORY - 20020418 GOOD GCVI

AJ5270 HISTORY - 20091022 GOOD ESPPA

AJ5270 HISTORY - 20110803 GOOD FLDEP

AJ5270

STATION DESCRIPTION

AJ5270

AJ5270'DESCRIBED BY G.C.Y., INCORPORATED 2001 (PA)

AJ5270'THE STATION IS LOCATED 21.7 KM (13.5 MI) NORTHEAST OF INDIANTOWN, 10.7

AJ5270'KM (6.6

AJ5270'MI) SOUTH OF STUART AND 14.3 KM (8.9 MI) NORTHWEST OF HOBE SOUND NEAR

"GS 23" Benchmark Datasheet (3 of 3)

4/28/2020

DATASHEETS

AJ5270'THE
AJ5270'EAST RIGHT OF WAY OF C.R. 711, IN SECTION 5, TOWNSHIP 38 SOUTH, RANGE
AJ5270'41
AJ5270'EAST, MARTIN COUNTY, FLORIDA.
AJ5270'
AJ5270'TO REACH THE STATION FROM THE INTERSECTION OF FLORIDA'S TURNPIKE AND
AJ5270'S.R. 76, GO SOUTHWEST ALONG S.R. 76 A DISTANCE OF 0.4 KM (0.2 MI) TO
AJ5270'THE
AJ5270'INTERSECTION WITH SW LOCKS ROAD AND THE STATION ON THE LEFT.
AJ5270'
AJ5270'THE STATION IS LOCATED NORTHEAST OF THE CENTERLINE PROLONGATION OF
AJ5270'SW LOCKS ROAD, 4.1 M (13.5 FT) SOUTHEAST OF THE SOUTHEAST EDGE OF
AJ5270'PAVEMENT OF S.R.76, 6.5 M (21.5 FT) NORTHWESTERLY OF THE NORTHWESTERLY
AJ5270'EDGE OF PAVEMENT OF THAT PORTION OF KANSAS AVENUE THAT PARALLELS S.R
AJ5270'76 AND 0.3 M (1.0 FT) NORTHWEST OF A CARSONITE WITNESS POST.
AJ5270'REFERENCES -
AJ5270'PK NAIL AND WASHER IN SOUTHEASTERLY EDGE OF PAVEMENT OF S.R. 76 - 13
AJ5270'DEG.
AJ5270'MAG. AZ. - 10.09 M (33.11 FT)
AJ5270'PK NAIL AND WASHER IN SOUTHEASTERLY EDGE OF PAVEMENT OF S.R. 76 - 261
AJ5270'DEG.
AJ5270'MAG. AZ. - 10.91 M (35.79 FT)
AJ5270'PK NAIL AND WASHER IN SOUTHEASTERLY EDGE OF PAVEMENT OF S.R. 76 - 131
AJ5270'DEG.
AJ5270'MAG. AZ. - 6.61 M (21.70 FT)
AJ5270'
AJ5270'NOTE- STATION MONUMENTED BY MARTIN COUNTY SURVEY DEPARTMENT IN 1992.
AJ5270'
AJ5270'
AJ5270'
AJ5270'
AJ5270' STATION RECOVERY (2002)
AJ5270'
AJ5270'
AJ5270'RECOVERY NOTE BY G.C.Y., INCORPORATED 2002 (PA)
AJ5270'MARK RECOVERED AS DESCRIBED.
AJ5270'
AJ5270'
AJ5270' STATION RECOVERY (2002)
AJ5270'
AJ5270'
AJ5270'RECOVERY NOTE BY G.C.Y., INCORPORATED 2002 (DTB)
AJ5270'RECOVERY NOTE BY CREECH ENGINEERS, INCORPORATED. - MELBOURNE 2006
AJ5270'(DTB) RECOVERED AS DESCRIBED.
AJ5270'
AJ5270'
AJ5270' STATION RECOVERY (2009)
AJ5270'
AJ5270'
AJ5270'RECOVERY NOTE BY ENGINEERING SURVEYING 2009 (BRM)
AJ5270'RECOVERED AS DESCRIBED
AJ5270'
AJ5270'
AJ5270' STATION RECOVERY (2011)
AJ5270'
AJ5270'
AJ5270'RECOVERY NOTE BY FL DEPT OF ENV PRO 2011 (DLP)
AJ5270'RECOVERED AS DESCRIBED.

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

"F-755" Benchmark Datasheet (1 of 2)

4/28/2020

DATASHEETS

The NGS Data Sheet

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

PROGRAM = datasheet95, VERSION = 8.12.5.7

Starting Datasheet Retrieval...

1 National Geodetic Survey, Retrieval Date = APRIL 28, 2020

```
D07594 *****
D07594 DESIGNATION - F 755
D07594 PID - D07594
D07594 STATE/COUNTY- FL/MARTIN
D07594 COUNTRY - US
D07594 USGS QUAD - INDIANTOWN SE (2018)
D07594
D07594 +CURRENT SURVEY CONTROL
D07594
D07594* NAD 83(1986) POSITION- 27 05 44.8 (N) 080 16 26.8 (W) HD_HELD2
D07594* NAVD 88 ORTHO HEIGHT - 4.573 (meters) 15.00 (feet) ADJUSTED
D07594
D07594 GEOID HEIGHT - -27.272 (meters) GEOID18
D07594 DYNAMIC HEIGHT - 4.565 (meters) 14.98 (feet) COMP
D07594 MODELED GRAVITY - 979,104.3 (mgal) NAVD 88
D07594
D07594 VERT ORDER - FIRST CLASS II
D07594
```

D07594.The horizontal coordinates were established by autonomous hand held GPS observations and have an estimated accuracy of +/- 10 meters.

D07594.

D07594.The orthometric height was determined by differential leveling and adjusted by the NATIONAL GEODETIC SURVEY in September 2013.

D07594

D07594.Significant digits in the geoid height do not necessarily reflect accuracy. GEOID18 height accuracy estimate available [here](#).

D07594

D07594.Click [photographs](#) - Photos may exist for this station.

D07594

D07594.The dynamic height is computed by dividing the NAVD 88 geopotential number by the normal gravity value computed on the Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45 degrees latitude (g = 980.6199 gals.).

D07594

D07594.The modeled gravity was interpolated from observed gravity values.

D07594

	North	East	Units	Estimated Accuracy
D07594; SPC FL E -	306,224.	271,984.	MT	(+/- 10 meters HH2 GPS)

D07594

D07594_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RNK7195997251(NAD 83)

D07594

D07594 SUPERSEDED SURVEY CONTROL

D07594

D07594.No superseded survey control is available for this station.

D07594

D07594_MARKER: F = FLANGE-ENCASED ROD

D07594_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)

D07594_STAMPING: F 755 2011

D07594_MARK LOGO: NGS

D07594_PROJECTION: RECESSED 5 CENTIMETERS

D07594_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET

D07594_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL

https://www.ngs.noaa.gov/cgi-bin/ds_mark.pr?PidBox=D07594

1/2

"F 755" Benchmark Datasheet (2 of 2)

4/28/2020

DATASHEETS

D07594_SATELLITE: THE SITE LOCATION WAS REPORTED AS NOT SUITABLE FOR

D07594+SATELLITE: SATELLITE OBSERVATIONS - September 13, 2011

D07594_ROD/PIPE-DEPTH: 16.9 meters

D07594

D07594 HISTORY - Date Condition Report By

D07594 HISTORY - 20110913 MONUMENTED FLDEP

D07594

D07594

STATION DESCRIPTION

D07594

D07594'DESCRIBED BY FL DEPT OF ENV PRO 2011 (DLP)

D07594'THE MARK IS ABOUT 11.2 MI (18.0 KM) NORTH-NORTHWEST OF ROOD, 8.1 MI

D07594'(13.0 KM) WEST OF GOMEZ, 5.0 MI (8.0 KM) SOUTH OF PALM CITY, IN

D07594'SECTION 7, TOWNSHIP 39 SOUTH, RANGE 41 EAST.

D07594'

D07594'TO REACH THE MARK FROM THE INTERSECTION OF STATE ROAD 76 AND U.S.

D07594'HIGHWAY 1 IN STUART, GO SOUTHERLY ON KANNER HIGHWAY (STATE ROAD 76)

D07594'FOR 6.0 MI (9.7 KM) TO THE INTERSECTION OF INTERSTATE 95. CONTINUE

D07594'SOUTH ON KANNER HIGHWAY (STATE ROAD 76) FOR 1.2 MI (1.9 KM) TO THE

D07594'JUNCTION OF TROPICAL AVENUE ON THE RIGHT AND THE MARK ON THE RIGHT, A

D07594'STAINLESS STEEL ROD DRIVEN TO REFUSAL AT A DEPTH OF 55.3 FT (16.9 M)

D07594'WITH A NATIONAL GEODETIC SURVEY LOGO CAP RECESSED 0.2 FT (6 CM) BELOW

D07594'THE LEVEL OF THE GROUND AND 0.5 FT (15 CM) BELOW THE LEVEL OF KANNER

D07594'HIGHWAY (STATE ROAD 76).

D07594'

D07594'LOCATED 80.0 FT (24.4 M) NORTHEAST OF THE APPROXIMATE CENTERLINE OF

D07594'TROPICAL AVENUE, 65.5 FT (20.0 M) NORTHWEST OF THE APPROXIMATE

D07594'CENTERLINE OF KANNER HIGHWAY (STATE ROAD 76), 47.2 FT (14.4 M)

D07594'NORTHEAST OF A WOODEN UTILITY POLE NUMBER 66750-22189-04, 2.6 FT (0.8

D07594'M) SOUTHEAST OF A CYCLONE FENCE AND 2.5 FT (0.8 M) SOUTHEAST OF A

D07594'CARSONITE WITNESS POST.

D07594'

D07594'NOTE A MAGNET WAS PLACED INSIDE THE NATIONAL GEODETIC SURVEY LOGO CAP.

D07594'NOTE ACCESS TO THE DATUM POINT IS HAD THROUGH A 5-INCH (13 CM)

D07594'NATIONAL GEODETIC SURVEY LOGO CAP.

*** retrieval complete.

Elapsed Time = 00:00:02

Field Notes (1 of 5)

Locke RD

SFWMD-USGS PH3 WELLS
 BENCH RUN FOR NEW BM
 @ WELL M1261 (NAVA88)
 PEG TEST:
 COLL. ERR. OLD = 40" COLL. ERR. NEW = -0.1"
 DIFF = -4.1" RET. CLOS = 4.895'

STA	TOTAL DIST	GR HT	ADJ
GS-23	0	11.492'	

M1261	2849.13'	12.302'	
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MC BM TH-2	4897.66	13.942'	
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(CONT. ON PG. 31)

1862-30

18-1010-07-02
 45° CLOUDY 2.7 TO FINE
 LEECA DIAL 10 M. LaPolla PC
 FILE: WELL M1261 B. Gorman PC
 LINE: M1261

DESC
 NGS BM GS-23 PID: A35270
 LISTED NAVAL 88 EL = 11.492'

NEW BM "M1261" BM 1862-30A
 SET 1 1/2" (I.D.) IRON ROD + ALUMI CAP.
 *SFWMD M1261 LOC 108 2020 I.P. IS
 3' LONG W/ CONC. COLLAR + GROUTED CAP.
 37.3' S. OF THE E OF WELL M1261.
 7.5' SE OF THE WELL ANTENNA METAL POST
 N: E:

MC BM TH-2 LISTED NAVAL 88 EL =
 FAD MAG NAIL + BLUE WASHER SET ON TOP + IN
 THE MIDDLE OF A EAST-WEST DOUBLE CURVE X-ING
 ON WEST SIDE OF TROPICAL AVE. OPPOSITE OF, AND
 BETWEEN ADDRESSES #8669 + 8699.
 BM 1862-30B

E755
 15.003'

Field Notes (4 of 5)

Lowes Rd		SFVWD-USGS / P143 WELLS		18-1020-07-02		1862 33	
WELL DATA @	M1261	(NAD83)		TO PARTLY	SUNNY	2.7.20	FRE
WELL DIAMETER:	6" PVC			PICTURES:		M. Lapina	PC
PICTURE	100-0974					B. Gorman	T
D.T.W. =	7.99'	TIME:	13:48	WELL:			
		DATE:	02/07/2020	100-0975	LOOKING WEST		
"MEASURING POINT" =	17.12'			100-0976	LOOKING NORTH		
TOP OF WATER =	9.13'			100-0980	BRASS TAG		
WELL HEAD CASING:				100-0981	Box		
ALUM. Box w/ HINGED LTD				100-0982	" "		
(L) 2.68' x (W) 1.78' x (H) 1.78'				100-0983	" "		
GPS: FILE: SFVWD USGS P143 WELLS 1862				NEW BM "M1261"			
10009 WELL "M1261" (ALONG EAST SIDE OF Box)				100-0977			
N: 1007231.271				100-0978			
E: 891493.531				100-0979	LOOKING NORTH		

Field Notes (5 of 5)

Locust Rd						1862 34	
SFWMRD-USGS / P113 WELLS						18-10-20-07-02	
"M.P." + NG BENCH RUN @						TOP CLOUDY	
WELL "M 1261" (NAVD 88)						1.7.20 FRI	
						M. LoPolla PC	
						B. Gorman TX	
STA	+	HI	-	EL	ADJ	DESC	
Bm M1261	5.642			12.302'		NEW Bm "M1261" Bm 1862-30A	
	5.485					NAVD 88 EL = 12.302'	
	5.329						
	(5.485)	17.787'					
S.S.1			4.32	13.407'		NG @ WELL "M1261" (EAST SIDE OF WELL)	
			0.84				
			0.668				
			0.492				
1			(0.666)	17.120'		"MEASURING POINT" @ WELL M1261	
	0.643					USED OLD USGS BLACK MAGNIFIC MARKER BOX	
	0.47					NORTH SIDE OF WELL OPENING, ON TOP OF PLYWOOD.	
	0.298					(Bm 1862-34A)	
	(0.47)	17.59'	5.447				
			5.289				
			5.13				
Bm M1261			(5.288)	12.302'		✓ BACK TO NEW Bm "M1261" Bm 1862-30A	
						ERR = FLAT	
						★ End Run ★	



South Florida Water Management District Benchmark Datasheet

Designation: M 1261	Project Name: USGS PASE 3 WELLS	Type: V	State Plane Zone: FL East
Stamping: M 1261 LB4108 2020	Field Book Name: GCY-1862	Field Book Page: 30-34	
Established By: GCY, INC.	Recovered By: _____	Recovery Date: _____	
Surveyor: ANDERSEN	Established Date: 02/07/20	Status: _____	

GEOGRAPHIC POSITION INFORMATION

Section: 6	Township: 39 SOUTH	Range: 41 EAST
County: MARTIN	Quadrangle: INDIANTOWN SE	Quad Index: 1539
NAD83 Adj. Year: 2011	Vertical Datum: NAVD1988	Horizontal Datum: NAD1983
NAVD88 Elevation (feet): 12.302	NGVD29 Elevation (feet): 13.765	2022 Elevation: _____
NAVD88 Class: 3RD	NGVD29 Class: 3RD	Other Elevation: _____
NAVD88 Order: _____	NGVD29 Order: _____	Other Elevation Type: _____

CORPSCON 6.0.1 CONVERSION FACTOR (NAVD88 TO NGVD29): (A U.S. Army Corps of Engineers Engineering Research and Development Center Topographic Engineering Center Alexandria, Virginia Windows-based program to convert coordinates and elevations between datum's using vertcon05.txt and vertcon05.05 files supplied by the U.S. Army Corps of Engineers South Atlantic Division, Jacksonville FL)

Vertical Datum Offset: + 1.463	Actual NGS Elevation or ngvd29.txt file: _____	OPUS Ortho Height: 12.231
Northing (Y) (feet): 1007193.927	Easting (X) (feet): 891494.1	Source of Latitude & Longitude: OPUS SOLUTION
Latitude: 27	6	9.85154
DD°	MM'	SS"
Longitude (Decimal Degrees): 27.10273654	Longitude (Decimal Degrees): -80.27664619	

RECOVERY DATA

How to Reach: FROM THE INTERSECTION OF 1 95 AND SW KANNER HIGHWAY, GO SWLY ON SW KANNER HIGHWAY A DISTANCE OF 0.67 MILES TO SW LOCKS ROAD; THENCE GO WEST ON SW LOCKS ROAD FOR 0.50 MILES TO THE MARK ON THE RIGHT. MARK IS 20' +/- NORTH OF THE NORTH EDGE OF PAVEMENT OF SW LOCKS ROAD, 14' +/- WEST OF THE CENTERLINE OF A DIRT DRIVE TO #1703 SW KOCKS ROAD. MARK IS RECESSED 0.5 FEET +/-.

Description/Notes:

Notable Landmarks:
Other Source Benchmarks:

PICTURES

Aerial View of Overall Site



PICTURES

Site Sketch



From: opus
To: Pete Andersen
Subject: OPUS solution : 13970380.t01 OP1588084555808
Date: Tuesday, April 28, 2020 10:39:58 AM

FILE: 13970380.t01 OP1588084555808

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: <https://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: petea@gcyinc.com DATE: April 28, 2020
RINEX FILE: 1397038p.20o TIME: 14:39:42 UTC

SOFTWARE: page5 1801.18 master70.pl 160321 START: 2020/02/07 15:53:00
EPHEMERIS: igs20915.eph [precise] STOP: 2020/02/07 20:25:00
NAV FILE: brdc0380.20n OBS USED: 10267 / 11903 : 86%
ANT NAME: TRM39105.00 NONE # FIXED AMB: 80 / 86 : 93%
ARP HEIGHT: 1.536 OVERALL RMS: 0.018(m)

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) ITRF2014 (EPOCH:2020.1032)

X: 959586.788(m) 0.018(m) 959585.957(m) 0.018(m)
Y: -5600069.082(m) 0.023(m) -5600067.501(m) 0.023(m)
Z: 2888343.116(m) 0.009(m) 2888342.955(m) 0.009(m)

LAT: 27 6 9.85154 0.006(m) 27 6 9.87203 0.006(m)
E LON: 279 43 24.07372 0.016(m) 279 43 24.05366 0.016(m)
W LON: 80 16 35.92628 0.016(m) 80 16 35.94634 0.016(m)
EL HGT: -23.555(m) 0.026(m) -25.140(m) 0.026(m)
ORTHO HGT: 3.728(m) 0.058(m) [NAVD88 (Computed using GEOID18)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)
Northing (Y) [meters] 2998020.560 306993.323
Easting (X) [meters] 571703.472 271727.945
Convergence [degrees] 0.32956389 0.32956389
Point Scale 0.99966347 1.00000467
Combined Factor 0.99966717 1.00000837

US NATIONAL GRID DESIGNATOR: 17RNK7170398020(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DE9138	OKCB OKEECHOBEE CORS ARP	N271557.715	W0805119.181	60129.6
DF9225	ZMA1 MIAMI WAAS 1 CORS ARP	N254928.585	W0801909.066	141670.8
DF7050	MTNT MIAMI TNT CORS ARP	N255156.760	W0805425.186	150769.0

NEAREST NGS PUBLISHED CONTROL POINT

AF7692 F015 N270609.111 W0801644.803 245.6

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

*110001+00000000000000A1 32...1+0000000000049916 331.21+0000000000004794
390...+0000000000000005 391.21+0000000000000000
*110002+00000000000000A1 32...1+00000000000099894 331.21+0000000000004315
390...+0000000000000005 391.21+0000000000000000
*110003+00000000000000A1 32...1+00000000000049897 331.21+0000000000004793
390...+0000000000000005 391.21+0000000000000000
*110004+00000000000000B1 32...1+00000000000099904 332.21+0000000000004315
390...+0000000000000005 391.21+0000000000000000
*110005+00000000000000B2 32...1+00000000000050280 336.21+0000000000004417
390...+0000000000000005 391.21+0000000000000000
*110006+00000000000000A2 32...1+00000000000099524 335.21+0000000000004893
390...+0000000000000005 391.21+0000000000000000
*410007+00000000?.....1
*110008+000000000000GS 23 83..51+0000000000011492
*110009+000000000000GS 23 32...1+00000000000194616 331.21+0000000000005568
390...+0000000000000005 391.21+0000000000000000
*110010+0000000000000001 32...1+00000000000194635 332.21+0000000000004173
390...+0000000000000005 391.21+0000000000000000
*110011+0000000000000001 573..1-0000000000000019 574..1+00000000000389251
83..21+00000000000012887
*110012+0000000000000001 32...1+00000000000244482 331.21+0000000000004068
390...+0000000000000005 391.21+0000000000000001
*110013+0000000000000002 32...1+00000000000244368 332.21+0000000000004287
390...+0000000000000005 391.21+0000000000000001
*110014+0000000000000002 573..1+0000000000000096 574..1+00000000000878101
83..21+00000000000012668
*110015+0000000000000002 32...1+00000000000241080 331.21+0000000000004195
390...+0000000000000005 391.21+0000000000000001
*110016+0000000000000003 32...1+00000000000241430 332.21+0000000000004707
390...+0000000000000005 391.21+0000000000000001
*110017+0000000000000003 573..1-0000000000000255 574..1+00000000001360611
83..21+00000000000012156
*110018+0000000000000003 32...1+00000000000249875 331.21+0000000000004060
390...+0000000000000005 391.21+0000000000000001
*110019+0000000000000004 32...1+00000000000249578 332.21+0000000000005554
390...+0000000000000005 391.21+0000000000000000
*110020+0000000000000004 573..1+0000000000000042 574..1+00000000001860063
83..21+00000000000010661
*110021+0000000000000004 32...1+00000000000262594 331.21+0000000000005650
390...+0000000000000005 391.21+0000000000000000
*110022+0000000000000005 32...1+00000000000262730 332.21+0000000000004339
390...+0000000000000005 391.21+0000000000000000
*110023+0000000000000005 573..1-0000000000000093 574..1+00000000002385387
83..21+00000000000011972
*110024+0000000000000005 32...1+00000000000166120 331.21+0000000000004766
390...+0000000000000005 391.21+0000000000000000
*110025+0000000000000006 32...1+00000000000165832 332.21+0000000000003673
390...+0000000000000005 391.21+0000000000000000
*110026+0000000000000006 573..1+0000000000000195 574..1+00000000002717339
83..21+00000000000013065
*110027+0000000000000006 32...1+00000000000066197 331.21+0000000000004376
390...+0000000000000005 391.21+0000000000000000
*110028+00000000BM M1261 32...1+00000000000065589 332.21+0000000000005139
390...+0000000000000005 391.21+0000000000000000 71....+00000BM 1862 30A
*110029+00000000BM M1261 573..1+0000000000000803 574..1+00000000002849125
83..21+00000000000012302

*110030+00000000BM M1261 32...1+0000000000085818 331.21+0000000000005614
390...+0000000000000005 391.21+0000000000000000
*110031+0000000000000007 32...1+0000000000086587 332.21+0000000000003947
390...+0000000000000005 391.21+0000000000000000
*110032+0000000000000007 573..1+0000000000000034 574..1+0000000003021530
83..21+0000000000013969
*110033+0000000000000007 32...1+0000000000210932 331.21+0000000000004043
390...+0000000000000005 391.21+0000000000000000
*110034+0000000000000008 32...1+0000000000211026 332.21+0000000000004124
390...+0000000000000005 391.21+0000000000000001
*110035+0000000000000008 573..1-0000000000000060 574..1+0000000003443488
83..21+0000000000013889
*110036+0000000000000008 32...1+0000000000247601 331.21+0000000000005382
390...+0000000000000005 391.21+0000000000000000
*110037+0000000000000009 32...1+0000000000247462 332.21+0000000000004144
390...+0000000000000005 391.21+0000000000000000
*110038+0000000000000009 573..1+0000000000000079 574..1+0000000003938551
83..21+0000000000015127
*110039+0000000000000009 32...1+0000000000240833 331.21+0000000000004832
390...+0000000000000005 391.21+0000000000000000
*110040+0000000000000010 32...1+0000000000241155 332.21+0000000000004723
390...+0000000000000005 391.21+0000000000000000
*110041+0000000000000010 573..1-0000000000000242 574..1+0000000004420539
83..21+0000000000015235
*110042+0000000000000010 32...1+0000000000148148 331.21+0000000000004547
390...+0000000000000005 391.21+0000000000000000
*110043+0000000000000011 32...1+0000000000147893 332.21+0000000000004644
390...+0000000000000005 391.21+0000000000000000
*110044+0000000000000011 573..1+0000000000000013 574..1+0000000004716581
83..21+0000000000015139
*110045+0000000000000011 32...1+0000000000078858 331.21+0000000000003984
390...+0000000000000005 391.21+0000000000000000
*110046+0000000000000012 32...1+0000000000079043 332.21+0000000000004875
390...+0000000000000005 391.21+0000000000000000
*110047+0000000000000012 573..1-0000000000000171 574..1+0000000004874482
83..21+0000000000014248
*110048+0000000000000012 32...1+0000000000011800 331.21+0000000000004432
390...+0000000000000005 391.21+0000000000000000
*110049+0000000MC BM TH2 32...1+0000000000011375 332.21+0000000000004738
390...+0000000000000005 391.21+0000000000000000 71....+00000BM 1862 30B
*110050+0000000MC BM TH2 573..1+0000000000000254 574..1+0000000004897658
83..21+0000000000013942
*110051+0000000MC BM TH2 32...1+00000000000251063 331.21+0000000000005673
390...+0000000000000005 391.21+0000000000000002
*110052+0000000000000013 32...1+00000000000251248 332.21+0000000000003475
390...+0000000000000005 391.21+0000000000000001
*110053+0000000000000013 573..1+0000000000000069 574..1+0000000005399969
83..21+0000000000016140
*110054+0000000000000013 32...1+00000000000237952 331.21+0000000000004491
390...+0000000000000005 391.21+0000000000000001
*110055+0000000000000014 32...1+00000000000237877 332.21+0000000000005389
390...+0000000000000005 391.21+0000000000000001
*110056+0000000000000014 573..1+0000000000000144 574..1+0000000005875799
83..21+0000000000015241
*110057+0000000000000014 32...1+00000000000221920 331.21+0000000000002674
390...+0000000000000005 391.21+0000000000000001
*110058+0000000000000015 32...1+00000000000222025 332.21+0000000000004267

390...+0000000000000005 391.21+0000000000000001
*110059+0000000000000015 573..1+0000000000000039 574..1+0000000006319744
83..21+0000000000013648
*110060+0000000000000015 32...1+0000000000249534 331.21+000000000004932
390...+0000000000000005 391.21+0000000000000001
*110061+0000000000000016 32...1+0000000000249696 332.21+000000000003736
390...+0000000000000005 391.21+0000000000000001
*110062+0000000000000016 573..1-000000000000122 574..1+0000000006818973
83..21+0000000000014844
*110063+0000000000000016 32...1+0000000000241407 331.21+000000000004855
390...+0000000000000005 391.21+0000000000000000
*110064+0000000000000017 32...1+0000000000241370 332.21+000000000003816
390...+0000000000000005 391.21+0000000000000001
*110065+0000000000000017 573..1-000000000000086 574..1+0000000007301750
83..21+0000000000015883
*110066+0000000000000017 32...1+0000000000030612 331.21+000000000004490
390...+0000000000000005 391.21+0000000000000000
*110067+000000000000F755 32...1+0000000000034138 332.21+000000000005364
390...+0000000000000005 391.21+0000000000000000
*110068+000000000000F755 573..1-000000000003613 574..1+0000000007366500
83..21+0000000000015009

Palm City

28 April 2020

INPUT

Geographic, fhpgn - Florida HPGN
Vertical - NAVD88, U.S. Feet

OUTPUT

State Plane, fhpgn - Florida HPGN
0901 - Florida East, U.S. Feet
Vertical - NGVD29 (Custom), U.S. Feet

M-1261

1/1

Latitude: 27 6 9.85154
Longitude: 080 16 35.92628
Elevation/Z: 0

Northing/Y: 1007193.927
Easting/X: 891494.099
Elevation/Z: 1.463
Convergence: 0 19 46.43399
Scale Factor: 1.000004665
Combined Factor: 1.000008873

Remark: