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SURVEYOR'S REPORT

Specific Purpose Survey of the United States
Geological Survey Well **PB 1723**
in
Palm Beach 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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Palm City, Florida 33491/33490
772-286-8083

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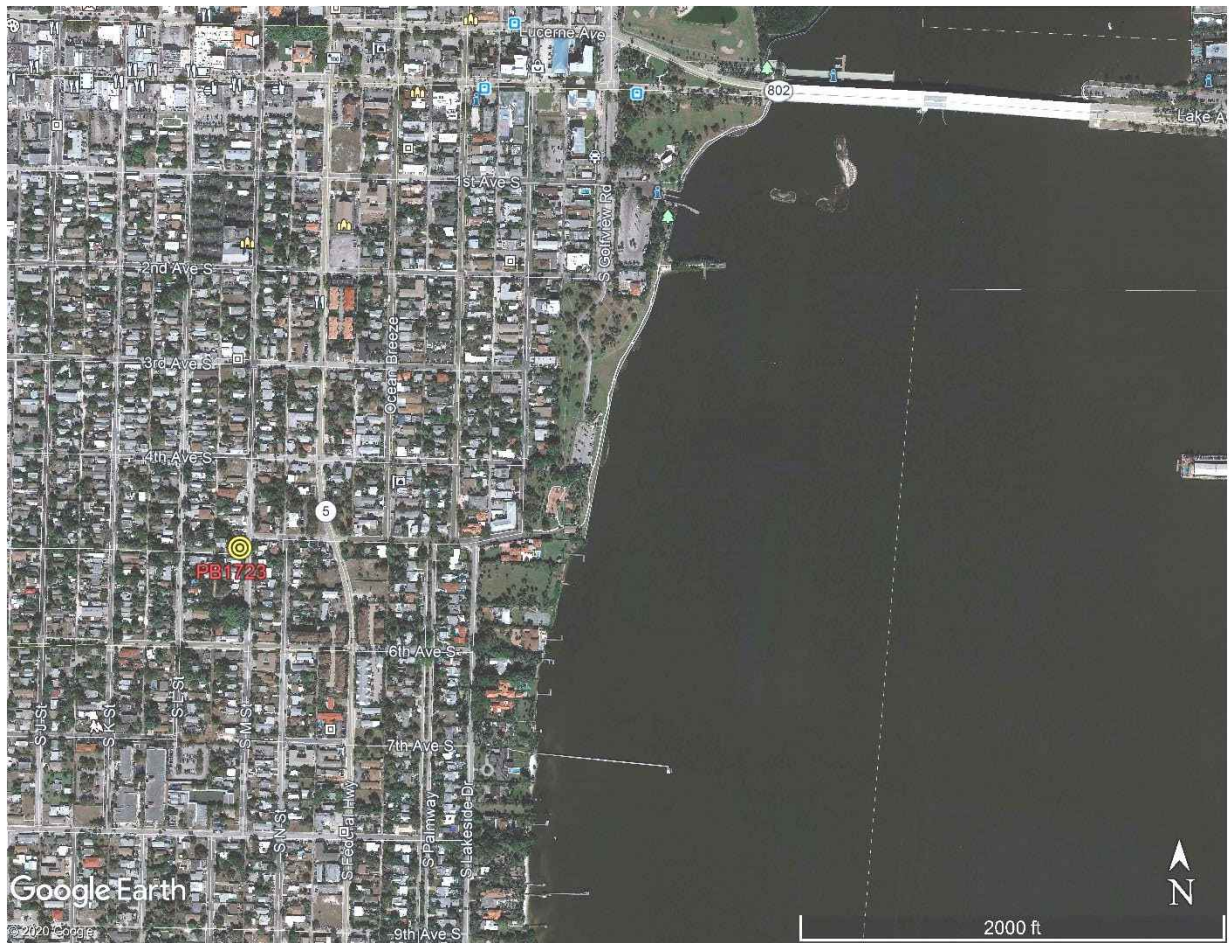
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PURPOSE

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 "PB 1723".

LOCATION OF PROJECT

The United States Geological Survey Well "PB 1723" is located in the Section 27, Township 44 South, Range 43 East, Palm Beach 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 PB 1723 add 1.539**. 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 "P 233" (NGS PID AD2758) through the site benchmark and closing on the Palm Beach County Benchmark "Dawson". Leveling was done using a Leica DNA 10 digital level S/N 331745

GPS METHODS

Latitude and longitude for the New Benchmark "PB 1723" were established by observing a 4.5-hour Static Sessions on March 30, 2020 using a Trimble 5700 dual frequency receiver S/N 0220381397. The data from these sessions was sent to the NGS "OPUS" site for post processing on May 6, 2020 and the reports were received from the "OPUS" site the same day.

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 1.539 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: March 30, 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: 1863 pages 27-31

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.

March 30, 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.





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U.S.G.S. Station Name: PB 1723	U.S.G.S. Station Number: 263633080031401	Agency: GCY, INC.	Date of Field Work: 3/30/2020
Party Chief: LAPOLLA	Field Book: GCY 1863	Page(s): 27-31	Report Prepared by: ANDERSEN

SITE SPECIFIC DATA

Site Benchmark: PB 1723	Benchmark Elevation(s) (NAVD88): 9.827	Corpscon 6.0.1 Conversion Factor (NAVD88 to NGVD29) + 1.539	
Well Reference Elevation (NAVD88): 9.772	DTW: 7.30 (03/ 30/ 2020 at 10:35 AM)	Ground Elevation (NAVD88): 10.1	Pad Elevation (NAVD88): N/A

GEOGRAPHIC DATA

Section 27	Township 44 S	Range 43 E
Well Latitude: 26° 36' 35.1525" N	Well Longitude: 80° 03' 13.5465" W	Location Source: RTK GPS
State Plane Coordinates:	Northing (Y) = 828465.87	Easting (X) = 965344.90

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





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New Aluminum Tag





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USGS RMs - NONE



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Site Benchmark

Site Benchmark Overall Photo



Site BM:



Latitude: 26° 36' 35.15504" N
Longitude: 80° 03' 13.52225" W
NAVD88 EL = 9.827





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Source Benchmarks



P 233, AD2758, 3NE, 20101212

Source BM – “P 233”



P 233, AD2758, 1, 20101212

Latitude: **26° 36' 15.1" N**
Longitude: **80° 03' 32.0" W**
NAVD88 EL = 14.977



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"P 233" Benchmark Datasheet (1 OF 3)

5/6/2020

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 = MAY 6, 2020

AD2758 *****

AD2758 DESIGNATION - P 233
AD2758 PID - AD2758
AD2758 STATE/COUNTY- FL/PALM BEACH
AD2758 COUNTRY - US
AD2758 USGS QUAD - LAKE WORTH (2018)

AD2758 *CURRENT SURVEY CONTROL

AD2758* NAD 83(1986) POSITION- 26 36 15.1 (N) 080 03 32.0 (W) HD_HELD2
AD2758* [NAVD 88](#) ORTHO HEIGHT - 4.565 (meters) 14.98 (feet) ADJUSTED

AD2758
AD2758 GEOID HEIGHT - -26.266 (meters) GEOID18
AD2758 DYNAMIC HEIGHT - 4.558 (meters) 14.95 (feet) COMP
AD2758 MODELED GRAVITY - 979,111.3 (mgal) NAVD 88

AD2758 VERT ORDER - FIRST CLASS II

AD2758.The horizontal coordinates were established by autonomous hand held GPS
AD2758.observations and have an estimated accuracy of +/- 10 meters.

AD2758.The orthometric height was determined by differential leveling and
AD2758.adjusted by the NATIONAL GEODETIC SURVEY
AD2758.in May 1994.

AD2758.Significant digits in the geoid height do not necessarily reflect accuracy.
AD2758.GEOID18 height accuracy estimate available [here](#).

AD2758.Click [photographs](#) - Photos may exist for this station.

AD2758.The dynamic height is computed by dividing the NAVD 88
AD2758.geopotential number by the normal gravity value computed on the
AD2758.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AD2758.degrees latitude (g = 980.6199 gals.).

AD2758.The modeled gravity was interpolated from observed gravity values.

AD2758;
AD2758; North East Units Estimated Accuracy
AD2758; SPC FL E - 251,896. 293,732. MT (+/- 10 meters HH2 GPS)

AD2758_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RNK9369942941(NAD 83)

AD2758 SUPERSEDED SURVEY CONTROL

AD2758
AD2758 NAVD 88 (06/15/91) 4.557 (m) 14.95 (f) SUPERSEDED 1 2
AD2758 NGVD 29 (??/??/92) 5.029 (m) 16.50 (f) SUPERSEDED 1 2
AD2758 NGVD 29 (09/01/92) 5.029 (m) 16.50 (f) ADJUSTED 1 2

AD2758.Superseded values are not recommended for survey control.

AD2758.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AD2758.See file [dsdata.pdf](#) to determine how the superseded data were derived.

https://www.ngs.noaa.gov/cgi-bin/ds_mark.pl?PidBox=AD2758

1/3



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"P 233" Benchmark Datasheet (2 OF 3)

5/6/2020

DATASHEETS

AD2758_MARKER: DB = BENCH MARK DISK
AD2758_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AD2758_STAMPING: P 233 1965
AD2758_MARK LOGO: CGS
AD2758_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AD2758+STABILITY: SURFACE MOTION
AD2758_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AD2758+SATELLITE: SATELLITE OBSERVATIONS - July 31, 2012

Table with columns: AD2758, HISTORY, Date, Condition, Report By. Rows include dates from 1965 to 2012 and various reporting agencies like CGS, NGS, USPSQD, JCLS, FA&MM.

AD2758 STATION DESCRIPTION

AD2758 DESCRIBED BY COAST AND GEODETIC SURVEY 1965
AD2758 AT LAKE WORTH.
AD2758 AT LAKE WORTH, IN SECTION 27, R 43 E, T 44 S, ABOUT 0.65 MILE
AD2758 SOUTH ALONG THE FLORIDA EAST COAST RAILWAY FROM THE STATION,
AD2758 ABOUT 0.15 MILE NORTH OF MILEPOST 307, 144.0 FEET NORTHEAST OF
AD2758 THE CENTER OF THE CROSSING OF 10TH AVENUE SOUTH, 156.0 FEET
AD2758 NORTH OF THE CENTER LINE OF THE AVENUE, 33.5 FEET EAST OF THE
AD2758 EAST RAIL OF THE NORTHBOUND MAIN TRACK, 43.5 FEET WEST OF THE
AD2758 CENTER LINE OF SOUTH H STREET, 1.5 FEET WEST OF THE WEST CURB OF
AD2758 A SMALL BLACK TOP AREA WEST OF SOUTH H STREET, 1.5 FEET SOUTH OF
AD2758 A METAL WITNESS POST, ABOUT 2 FEET BELOW THE LEVEL OF THE TRACK
AD2758 AND SET IN THE TOP OF A CONCRETE POST PROJECTING 0.3 FOOT.
AD2758 NOTE-- THE RAILWAY STATION NO LONGER EXISTS. THE METAL WITNESS
AD2758 POST HAS BEEN REMOVED.

AD2758 STATION RECOVERY (1973)

AD2758 RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1973
AD2758 RECOVERED IN GOOD CONDITION.

AD2758 STATION RECOVERY (1985)

AD2758 RECOVERY NOTE BY US POWER SQUADRON 1985 (BJS)
AD2758 RECOVERED IN GOOD CONDITION.

AD2758 STATION RECOVERY (1987)

AD2758 RECOVERY NOTE BY US POWER SQUADRON 1987 (RG)
AD2758 RECOVERED IN GOOD CONDITION.

AD2758 STATION RECOVERY (1987)

AD2758 RECOVERY NOTE BY US POWER SQUADRON 1987 (BJS)
AD2758 RECOVERED IN GOOD CONDITION.

AD2758 STATION RECOVERY (1988)



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"P 233" Benchmark Datasheet (3 OF 3)

5/6/2020

DATASHEETS

AD2758'RECOVERY NOTE BY US POWER SQUADRON 1988 (BJS)
AD2758'RECOVERED IN GOOD CONDITION.
AD2758
AD2758 STATION RECOVERY (1991)
AD2758
AD2758'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1991
AD2758'IN LAKE WORTH, AT THE INTERSECTION OF 10TH AVENUE SOUTH AND THE
AD2758'FLORIDA EAST COAST RAILROAD, 47.2 M (154.9 FT) NORTHWEST OF THE
AD2758'AVENUE CENTER, 13.2 M (43.3 FT) WEST OF AND LEVEL WITH THE CENTER OF
AD2758'SOUTH H STREET, 10.2 M (33.5 FT) NORTHEAST OF THE NEAR RAIL, 0.5 M
AD2758'(1.6 FT) SOUTHWEST OF A CURB, AND 0.3 M (1.0 FT) NORTHEAST OF A
AD2758'WITNESS POST, AND THE MONUMENT PROJECTS 0.1 M (0.3 FT) ABOVE THE
AD2758'GROUND SURFACE. NOTE--THE MONUMENT HAS BEEN HIT AND THE WEST SIDE IS
AD2758'BROKEN OFF, BUT IS SOLID IN PLACE.
AD2758
AD2758 STATION RECOVERY (2001)
AD2758
AD2758'RECOVERY NOTE BY US POWER SQUADRON 2001 (AAS)
AD2758'RECOVERED IN GOOD CONDITION.
AD2758
AD2758 STATION RECOVERY (2003)
AD2758
AD2758'RECOVERY NOTE BY US POWER SQUADRON 2003 (AAS)
AD2758'RECOVERED IN GOOD CONDITION.
AD2758
AD2758 STATION RECOVERY (2004)
AD2758
AD2758'RECOVERY NOTE BY US POWER SQUADRON 2004 (AAS)
AD2758'RECOVERED IN GOOD CONDITION.
AD2758
AD2758 STATION RECOVERY (2005)
AD2758
AD2758'RECOVERY NOTE BY US POWER SQUADRON 2005 (AAS)
AD2758'RECOVERED IN GOOD CONDITION.
AD2758
AD2758 STATION RECOVERY (2006)
AD2758
AD2758'RECOVERY NOTE BY US POWER SQUADRON 2006 (AAS)
AD2758'RECOVERED IN GOOD CONDITION.
AD2758
AD2758 STATION RECOVERY (2011)
AD2758
AD2758'RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2011
AD2758'RECOVERED IN GOOD CONDITION.
AD2758
AD2758 STATION RECOVERY (2012)
AD2758
AD2758'RECOVERY NOTE BY FUGRO AERIAL & MOBILE MAPPING INC 2012 (MRY)
AD2758'RECOVERED IN GOOD CONDITION.
AD2758
AD2758 STATION RECOVERY (2012)
AD2758
AD2758'RECOVERY NOTE BY FUGRO AERIAL & MOBILE MAPPING INC 2012
AD2758'RECOVERED IN GOOD CONDITION.

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



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"DAWSON" Benchmark Datasheet (1 OF 1)

CONTROL STATIONS REPORT

NAME: DAWSON **SEARCH DATE:** 03/12/2012
STAMPED: DAWSON **STATUS:** RECOVERED
TOWNSHIP: 44 **RANGE:** 43 **SECTION:** 34 **STABILITY:** C
FIELD BOOK: 1211KK **FIELD BOOK PAGE:** 52 **NAVD 88 ACCURACY:**
NGVD 29 FEET: 16.399 **NGVD 29 AGENCY:** PBCO **NGVD 29 LEVELING:** 05/08/1980 **VERTICAL 29 By:** Gary L. Beaty
NAVD 88 FEET: 14.834 **NAVD 88 AGENCY:** PBCO **NAVD 88 LEVELING:** 05/08/1980 **VERTICAL 88 By:** Gary L. Beaty
VERTICAL CONTROL SURVEY DRAWING NO.: S-3-02-1673 **VERTICAL DISK:** Y
HORIZONTAL ACCURACY: 21 **HORIZONTAL AGENCY:** PBCO **HORIZONTAL CONSTRAIN:** Y
Y72: 824480.5200 **X72:** 808298.5400 **N90:** 824645.4210 **E90:** 964537.8980
FIELD BOOK HORIZONTAL: **FIELD BOOK PAGE HORIZONTAL:** **HORIZONTAL DISK:** Y
CONVERGENCE 90: 0:25'21.223" **SCALE FACTOR 90:** 1.000050206 **POINT NO:** 43214
HORIZONTAL CONTROL SURVEY DRAWING NO: S-3-94-763 **HORIZONTAL 90 BY:** Gary L. Beaty
APPROXIMATE LATITUDE: 26 35 57.37866 **APPROXIMATE LONGITUDE:** 80 03 22.74732
MONUMENT TYPE: PBCO BRASS DISK/CM
GPS ACCURACY: **GPS NO:** **GPS HORIZONTAL AGENCY:**
DATE CREATED 98: **N98:** **SCALE FACTOR 98:**
CONVERGENCE 98: **E98:** **DATUM:** **ADJUSTMENT:**
STATION PAIR: **GPS HORIZONTAL 98 BY:**

N=No Y=Yes 10=First Order 20=Second Order 21=Second Order Class I 22=Second Order Class II 30=Third Order
 2=0.02m Local Accuracy 3=0.03m Local Accuracy

It is the responsibility of the user to verify the data by referring to the Certified Survey on file in the Office of the County Engineer.

MEMO

TO REACH THE STATION FROM THE INTERSECTION OF LAKE WORTH ROAD AND U.S.#1, GO SOUTH ON U.S.#1 A DISTANCE OF 1.2 MILES TO THE STATION ON THE RIGHT.
 THE STATION IS A PALM BEACH COUNTY BRASS DISK SET IN CONCRETE STAMPED "DAWSON".
 THE STATION IS LOCATED 48 FEET WEST OF THE CENTERLINE OF US-1, 16.9 FEET EAST OF THE RAIL OF THE FEC RAILWAY, 135 FEET NORTH OF A PROJECTED CENTERLINE OF 14TH AVENUE SOUTH, 18.3 FEET WEST OF THE BACK OF SIDEWALK, AND 11.3 FEET SOUTHWEST OF A 6 INCH LIVE OAK TREE WITH A WITNESS SIGN ATTACHED 2 FEET UP THE SOUTHWEST SIDE.
 RECOVERED 03/12/2012



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Field Notes (1 of 5)

570 AVE S. + 5.11 ST.
Loose Woods

SFWMD-USGS / P123 WELLS

BENCH RUN FOR NEW BM PB 1723 (NAD88)

PEG TEST:

Coll. ERR. OLD = 1.9" Coll. ERR. NEW = 2.2"

DEEP = 0.4" RETICLE = 4.54"

STA	TOTAL DIST	ELEV	ΔLT
P233	0	14.977'	
6	1684.67'	14.872'	
NEW BM PB 1723	4047.76'	9.827'	
77	6092.56'	16.756'	
K402	8167.33'	15.76'	

FOR NEW T.P.
32

1863 27

18-1026-07-02

8:30 Sunny 3. Up. 20 TWINS

LEVA DNO-10 M. LaPolla PC

JOB: WELL PB 1723 B. Gardner X

LINE: PB 1723

DESC

NGS BM P233 PID: AD2158

NAVD 88 = 14.977'

FIND MAG. NAIL + BRASS WASHER "TRAVERSE WEST SIDE OF D.W. 115' EAST LB 271" OF THE E OF EAST CURB ST., SOUTH SIDE OF 6TH AVE S. (BM 1803-27A)

NEW BM PB 1723 (BM 1803-27B) SET 1 1/2" (I.D.) IRON PIPE W/ ALUMINUM CAP 2.3' E OF WELL PB 1723. "SFWMD PB 1723 LAL102 2020".

(BM 1803-27C) FIND 1/2" I.R. + YELLOW CAP "M.L.S. INCL LB 6838" 75' S. OF THE E OF 3 AVE S ON E. SIDE OF PIXIE HWY

NGS BM K402 PID: AD8065

ERR: +0.078
(BUST) (SEE NOTE ON PG 28)

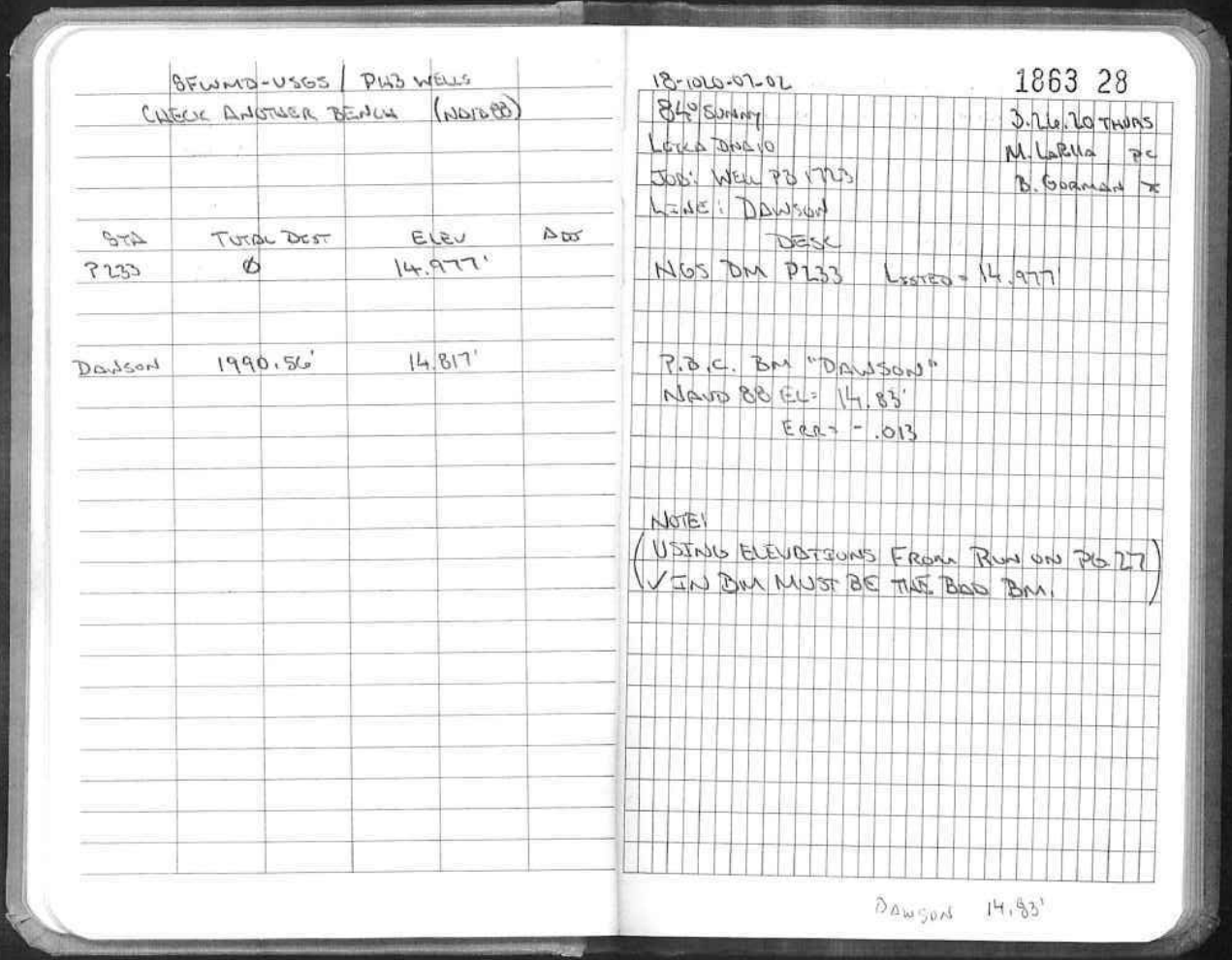
K402 AD 8035
15.682'



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Field Notes (2 of 5)

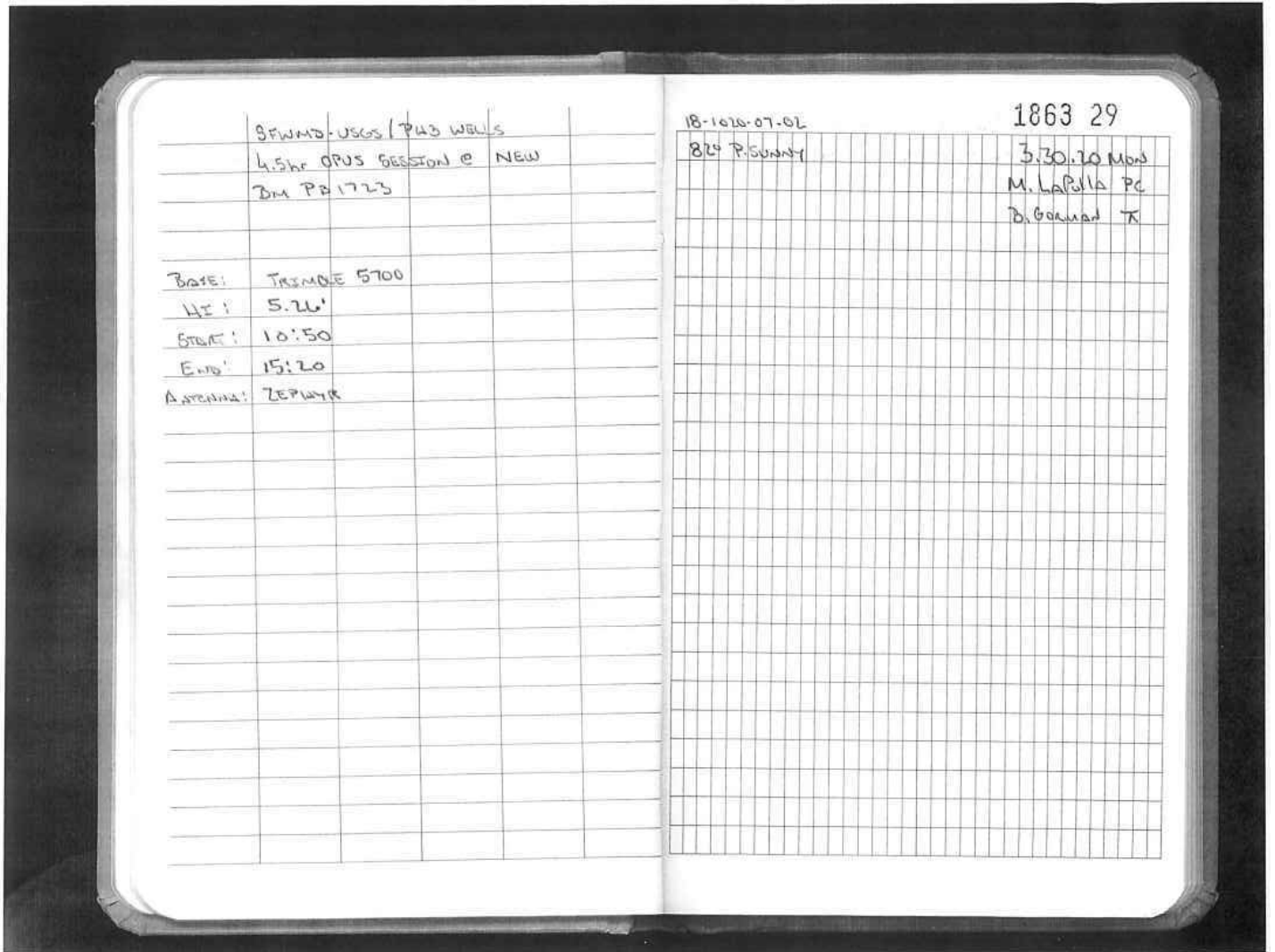




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Field Notes (3 of 5)





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Field Notes (4 of 5)

SFWMD-USGS / PWS WELLS		18-1016-07-02	1863 30
WELL DATA @ PB 1723 (NAD83)		82° P. Sunny	3:30.20 Mon
WELL DIAMETER: 2" PVC		Picture:	M. Labella PC
Pressure: 101-1174			D. Gorman T
D.T.W. = 7.30'	Time: 10:35 am	WELL:	
	Date: 03/30/2020	101-1175 BRASS TAG	
MEASURING POINT = 9.772		101-1176	
TOP OF WATER = 2.472'		101-1177	
WELL HEAD CASING:		101-1178	
2" CONC. SQUARE W/ A 8 3/4" METAL RODS		101-1179 Looking North	
LTD.		NEW ON PB 1723	
GPS: FILE: SFWMD USGS PWS WELLS 2 (TSC)		101-1171	
10040 WELL PB 1723		101-1172	
N- 828465.865		101-1173 Looking NE	
E- 965344.900			
0.5 = +1.539'			



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Field Notes (5 of 5)

BEFORE USGS / PWS WELLS					18-10-07-02	1863 31
"M.P." + NG BANK RUN @ WELL PD 1723 (NAD 83)					8:10 P. SUNNY	3:30-20 MON M. LARILLA PC B. GONZALEZ TA
Sta	+	HI	-	EL	ADJ	DESC
BM PD 1723	5.211			9.827'		NEW BM PD 1723 (BM 1863-270) NAD 83 EL = 9.827'
	5.256					
	5.20					
	(5.155)	15.082'				
S.S. 1			4.90	10.122'		NG @ WELL PD 1723
			5.378			
			5.31			
			5.243			
1			(5.31)	9.772'		MEASUREMENT POINT @ WELL PD 1723 BLACK MARKER MARK @ THE SOUTH SIDE OF A 2" PVC PIPE. (BM 1863-31A)
	5.083					
	5.017					
	4.949					
	(5.016)	14.788'	5.019			
			4.961			
			4.903			
2			(4.961)	9.827'		✓ CHECK TO BM PD 1723 (BM 1863-270) ERR: FLAT
						* END RUN *



South Florida Water Management District Benchmark Datasheet

Designation: PB 1723	Project Name: USGS PHASE 3 WELLS	Type: V	State Plane Zone: FL East
Stamping: PB 1723 LB4108 2020	Field Book Name: GCY 1863	Field Book Page: 27-31	
Established By: GCY, INC.	Recovered By: _____	Recovery Date: _____	
Surveyor: ANDERSEN	Established Date: 03/30/20	Status: New	

GEOGRAPHIC POSITION INFORMATION

Section: 27	Township: 44 SOUTH	Range: 43 EAST
County: PALM BEACH	Quadrangle: LAKE WORTH	Quad Index: 1281
NAD83 Adj. Year: 2011	Vertical Datum: NAVD1988	Horizontal Datum: NAD1983
NAVD88 Elevation (feet): 9.827	NGVD29 Elevation (feet): 11.366	2022 Elevation: _____
NAVD88 Class: _____	NGVD29 Class: _____	Other Elevation: _____
NAVD88 Order: 3RD	NGVD29 Order: 3RD	Other Elevation Type: _____
		NGS Source BM(s): P 233
		NGS PID(s): AD2758
		NGS NAVD88 Elev (ft): 14.977
		NGS NAVD88 Elev (m): 4.565
		NGS 2022 Elev (ft): _____

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: + 1.539	Actual NGS Elevation or ngvd29.txt file: _____	OPUS Ortho Height: 9.692
Northing (Y) (feet): 828466.138	Easting (X) (feet): 965347.095	Source of Latitude & Longitude: OPUS SOLUTION
Latitude: 26	36	35.15504
DD°	MM'	SS"
Longitude (Decimal Degrees): 26.60976529		Longitude (Decimal Degrees): -80.05375618
		DD°
		MM'
		SS"

RECOVERY DATA

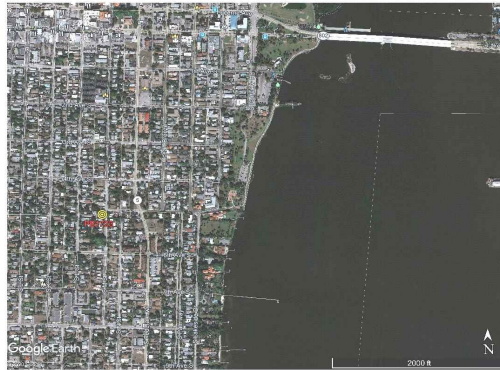
How to Reach: FROM THE INTERSECTION OF SOUTH FEDERAL HIGHWAY AND 6TH AVE. SOUTH, GO WEST ON 6TH AVE SOUTH TO SOUTH M STREET; GO NORTH ON SOUTH M STREET TO 5TH AVE SOUTH AND THE STATION IN THE NORTHWEST QUADRANT OF THE INTERSECTION. MARK IS 46.6' +/- WEST OF THE CENTERLINE OF PAVEMENT OF SOUTH M STREET, 19' +/- NORTH OF THE CENTERLINE OF PAVEMENT OF 5TH AVE SOUTH AND 2.3' EAST OF THE USGS WELL PB 1723. MARK IS A STANDARD SFWMD DISK SET IN A 1 1/2" IRON PIPE WITH A CONCRETE COLLAR AND IS RECESSED ABOUT 0.5 FEET BELOW GRADE.

Description/Notes:

Notable Landmarks:
Other Source Benchmarks:

PICTURES

Aerial View of Overall Site



PICTURES

Site Sketch



From: opus
To: Pete Andersen
Subject: OPUS solution : 13970900.t01 OP1588769871637
Date: Wednesday, May 06, 2020 9:02:08 AM

FILE: 13970900.t01 OP1588769871637

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: May 06, 2020
RINEX FILE: 13970900.20o TIME: 13:01:49 UTC

SOFTWARE: page5 1801.18 master56.pl 160321 START: 2020/03/30 14:49:00
EPHEMERIS: igs20991.eph [precise] STOP: 2020/03/30 19:21:00
NAV FILE: brdc0900.20n OBS USED: 7616 / 9341 : 82%
ANT NAME: TRM39105.00 NONE # FIXED AMB: 70 / 82 : 85%
ARP HEIGHT: 1.603 OVERALL RMS: 0.019(m)

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) ITRF2014 (EPOCH:2020.2451)

X: 985626.741(m) 0.008(m) 985625.913(m) 0.008(m)
Y: -5620598.535(m) 0.027(m) -5620596.946(m) 0.027(m)
Z: 2839613.065(m) 0.011(m) 2839612.902(m) 0.011(m)

LAT: 26 36 35.15504 0.006(m) 26 36 35.17517 0.006(m)
E LON: 279 56 46.47775 0.007(m) 279 56 46.45820 0.007(m)
W LON: 80 3 13.52225 0.007(m) 80 3 13.54180 0.007(m)
EL HGT: -23.345(m) 0.027(m) -24.945(m) 0.027(m)
ORTHO HGT: 2.954(m) 0.060(m) [NAVD88 (Computed using GEOID18)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)
Northing (Y) [meters] 2943562.808 252516.984
Easting (X) [meters] 594206.230 294238.383
Convergence [degrees] 0.42386389 0.42386389
Point Scale 0.99970957 1.00005078
Combined Factor 0.99971324 1.00005445

US NATIONAL GRID DESIGNATOR: 17RNK9420643562(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG4691	FMYR FORT MYERS CORS ARP	N263527.508	W0815150.972	180326.1
DP6859	FLF1 FL FOUNDATION 1 CORS ARP	N253655.240	W0802309.913	115074.8
DR4402	LBL LBL LABELLE CORS ARP	N264451.324	W0812712.291	140146.0

NEAREST NGS PUBLISHED CONTROL POINT

AD6673 LAKE WORTH 1ST BAP CH SPIRE N263648.732 W0800313.046 418.1

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+0000000000050120 331.21+0000000000004500
390...+0000000000000005 391.21+0000000000000000
*110002+00000000000000B1 32...1+00000000000100025 332.21+0000000000004746
390...+0000000000000005 391.21+0000000000000000
*110003+00000000000000B2 32...1+00000000000050128 336.21+0000000000004786
390...+0000000000000005 391.21+0000000000000000
*110004+00000000000000A2 32...1+00000000000100018 335.21+0000000000004541
390...+0000000000000005 391.21+0000000000000000
*410005+00000000?.....1
*110006+000000000000P233 83..51+0000000000014977
*110007+000000000000P233 32...1+00000000000123951 331.21+0000000000004280
390...+0000000000000005 391.21+0000000000000000
*110008+0000000000000001 32...1+00000000000123816 332.21+0000000000004430
390...+0000000000000005 391.21+0000000000000000
*110009+0000000000000001 573..1+000000000000135 574..1+0000000000247767
83..21+0000000000014827
*110010+0000000000000001 32...1+00000000000179294 331.21+0000000000005800
390...+0000000000000005 391.21+0000000000000001
*110011+0000000000000002 32...1+00000000000176461 332.21+0000000000004157
390...+0000000000000005 391.21+0000000000000001
*110012+0000000000000002 573..1+0000000000002969 574..1+0000000000603523
83..21+0000000000016469
*110013+0000000000000002 32...1+00000000000064817 331.21+0000000000003913
390...+0000000000000005 391.21+0000000000000000
*110014+0000000000000003 32...1+00000000000067755 332.21+0000000000005165
390...+0000000000000005 391.21+0000000000000000
*110015+0000000000000003 573..1+0000000000000031 574..1+0000000000736094
83..21+0000000000015218
*110016+0000000000000003 32...1+00000000000211424 331.21+0000000000005029
390...+0000000000000005 391.21+0000000000000000
*110017+0000000000000004 32...1+00000000000209652 332.21+0000000000005403
390...+0000000000000005 391.21+0000000000000000
*110018+0000000000000004 573..1+0000000000001803 574..1+0000000001157170
83..21+0000000000014843
*110019+0000000000000004 32...1+00000000000216633 331.21+0000000000005123
390...+0000000000000005 391.21+0000000000000001
*110020+0000000000000005 32...1+00000000000222184 332.21+0000000000003609
390...+0000000000000005 391.21+0000000000000001
*110021+0000000000000005 573..1-0000000000003748 574..1+0000000001595987
83..21+0000000000016358
*110022+0000000000000005 32...1+0000000000047131 331.21+0000000000004341
390...+0000000000000005 391.21+0000000000000000
*110023+0000000000000006 32...1+0000000000043556 332.21+0000000000005827
390...+0000000000000005 391.21+0000000000000000 71....+00000BM 1863 27A
*110024+0000000000000006 573..1-000000000000173 574..1+0000000001686674
83..21+0000000000014872
*110025+0000000000000006 32...1+00000000000137456 331.21+0000000000003850
390...+0000000000000005 391.21+0000000000000000
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390...+0000000000000005 391.21+0000000000000000
*110027+0000000000000007 573..1-0000000000003258 574..1+0000000001964671
83..21+0000000000014936
*110028+0000000000000007 32...1+00000000000173751 331.21+0000000000006099
390...+0000000000000005 391.21+0000000000000000
*110029+0000000000000008 32...1+00000000000195194 332.21+0000000000004555
390...+0000000000000005 391.21+0000000000000000

*110030+0000000000000008 573..1-0000000000024702 574..1+0000000002333616
83..21+0000000000016480
*110031+0000000000000008 32...1+0000000000156669 331.21+000000000004557
390...+0000000000000005 391.21+0000000000000000
*110032+0000000000000009 32...1+0000000000151739 332.21+000000000004596
390...+0000000000000005 391.21+0000000000000000
*110033+0000000000000009 573..1-000000000019772 574..1+0000000002642024
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83..21+0000000000015387
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*110043+0000000000000012 32...1+0000000000114532 331.21+000000000003425
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*110044+0000000000000013 32...1+0000000000110511 332.21+000000000004719
390...+0000000000000005 391.21+0000000000000000
*110045+0000000000000013 573..1-000000000005641 574..1+0000000003636291
83..21+0000000000009769
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390...+0000000000000005 391.21+0000000000000001
*110048+0000000000000014 573..1-000000000006976 574..1+0000000003844542
83..21+0000000000009743
*110049+0000000000000014 32...1+0000000000075737 331.21+000000000004940
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*110050+0000000000000015 32...1+0000000000071658 332.21+000000000004994
390...+0000000000000005 391.21+0000000000000000
*110051+0000000000000015 573..1-000000000002898 574..1+0000000003991936
83..21+0000000000009688
*110052+0000000000000015 32...1+0000000000028716 331.21+000000000004765
390...+0000000000000005 391.21+0000000000000000
*110053+000000BM PB 1723 32...1+0000000000027103 332.21+000000000004627
390...+0000000000000005 391.21+0000000000000000 71....+0000BM 1863 27B
*110054+000000BM PB 1723 573..1-000000000001285 574..1+0000000004047755
83..21+0000000000009827
*110055+000000BM PB 1723 32...1+0000000000068462 331.21+000000000004367
390...+0000000000000005 391.21+0000000000000000
*110056+0000000000000016 32...1+0000000000069181 332.21+000000000003810
390...+0000000000000005 391.21+0000000000000000
*110057+0000000000000016 573..1-000000000002004 574..1+0000000004185398
83..21+0000000000010383
*110058+0000000000000016 32...1+00000000000251458 331.21+000000000004359

390...+0000000000000005 391.21+0000000000000001
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390...+0000000000000005 391.21+0000000000000002
*110060+0000000000000017 573..1+000000000000791 574..1+0000000004685518
83..21+0000000000013089
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390...+0000000000000005 391.21+0000000000000001
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390...+000000000000005 391.21+000000000000000
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390...+000000000000005 391.21+000000000000000
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390...+000000000000005 391.21+000000000000000
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390...+000000000000005 391.21+000000000000000
*110102+000000000000031 573..1-000000000013887 574..1+000000008116969
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390...+000000000000005 391.21+000000000000000
*110104+000000000000K402 32...1+000000000022470 332.21+000000000005757
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*110107+000000000000P233 83..51+000000000014977
*110108+000000000000P233 32...1+000000000221855 331.21+000000000005511
390...+000000000000005 391.21+000000000000001
*110109+000000000000001 32...1+000000000219853 332.21+000000000004500
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*110111+000000000000001 32...1+000000000189806 331.21+000000000004902
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83..21+0000000000017020
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390...+000000000000005 391.21+000000000000001
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83..21+0000000000016925
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390...+0000000000000005 391.21+0000000000000000
*110118+000000000000004 32...1+0000000000253774 332.21+000000000004750
390...+0000000000000005 391.21+0000000000000002
*110119+000000000000004 573..1-000000000001072 574..1+0000000001799363
83..21+0000000000016126
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390...+0000000000000005 391.21+0000000000000000
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390...+0000000000000005 391.21+0000000000000000
*110122+000000000000005 573..1-000000000000175 574..1+0000000001931592
83..21+0000000000016424
*110123+000000000000005 32...1+0000000000032269 331.21+000000000003710
390...+0000000000000005 391.21+0000000000000000
*110124+0000000000DAWSON 32...1+0000000000026703 332.21+000000000005318
390...+0000000000000005 391.21+0000000000000000
*110125+0000000000DAWSON 573..1+000000000005391 574..1+0000000001990563
83..21+0000000000014817

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

PB 1723

1/1

Latitude: 26 36 35.2
Longitude: 080 03 13.5
Elevation/Z: 0

Northing/Y: 828470.694
Easting/X: 965349.082
Elevation/Z: 1.539
Convergence: 0 25 25.92381
Scale Factor: 1.000050781
Combined Factor: 1.000054832

Remark: