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SURVEYOR'S REPORT

Specific Purpose Survey of the United States
Geological Survey Well **STL 214**
in
St Lucie 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
PO Box 1469/1505 SW Martin Highway
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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 STL 214 add 1.483**. 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 the National Geodetic Survey (NGS) monument "I 95 P 13" (NGS PID AF7195) through the site benchmark and closing on the National Geodetic Survey (NGS) monument "RONNIE TAYLOR" (NGS PID DL3224). Leveling was done using a Leica DNA 10 digital level S/N 331745

GPS METHODS

Latitude and longitude for the New Benchmark "**STL 214**" were established by observing a 4.5-hour Static Sessions on February 26, 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 15, 2020 and the reports were received from the "OPUS" site the same day.



Surveyors' Notes:

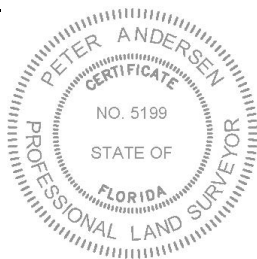
1. All measurements herein are in United States Survey feet and decimal thereof, unless otherwise specified.
2. Underground utilities were not located as part of this survey.
3. This survey report or copies thereof are not valid without the original signature and seal of a Florida licensed Surveyor and 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 1.483 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 26, 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 51-55

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 26, 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: STL 214	U.S.G.S. Station Number: 2716180890245801	Agency: GCY, INC.	Date of Field Work: 2/25/2020
Party Chief: LAPOLLA	Field Book: GCY 1862	Page(s): 51-55	Report Prepared by: ANDERSEN

SITE SPECIFIC DATA

Site Benchmark: STL 214	Benchmark Elevation(s) (NAVD88): 25.150	Corpscon 6.0.1 Conversion Factor (NAVD88 to NGVD29) + 1.483	
Well Reference Elevation (NAVD88): 26.832	DTW: 7.00 (02/ 25/ 2020 at 3:40 PM)	Ground Elevation (NAVD88): 25.9	Pad Elevation (NAVD88): N/A

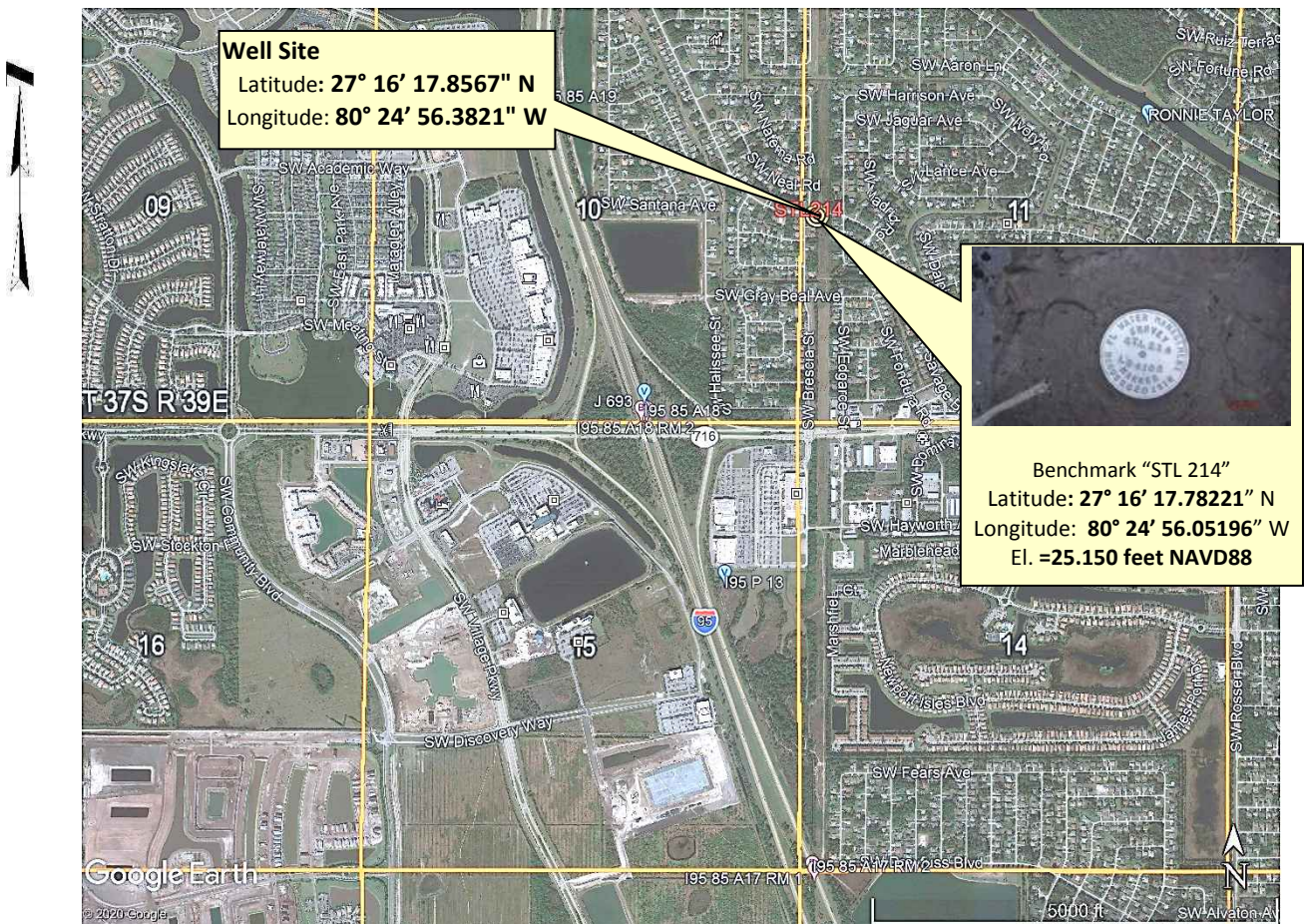
GEOGRAPHIC DATA

Section 11	Township 37 S	Range 39 E
Well Latitude: 27° 16' 17.8567" N	Well Longitude: 80° 24' 56.3821" W	Location Source: RTK GPS
State Plane Coordinates:	Northing (Y) = 1068355.02	Easting (X) = 845981.29

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: "STL 213"
Reference Point: MAGIC MARKER
BOX

Reference Point El. =**26.832**
feet NAVD88

Distance to Water =**7.00**
feet from reference point
(02/ 25/ 2020 at 3:40 PM)





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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: $27^{\circ} 16' 17.78221''$ N
Longitude: $80^{\circ} 24' 56.05196''$ W
NAVD88 EL = 25.150





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Source Benchmarks



I95 P 13, AF7195, 3, 20060817

Source BM – “I 95 P 13”



Latitude: 27° 15' 33.2" N
Longitude: 80° 25' 11.9" W
NAVD88 EL = 26.696



RONNIE TAYLOR, DL3224, 2, 20060817

Source BM – “RONNIE TAYLOR”



Latitude: 27° 16' 28.4" N
Longitude: 80° 24' 11.5" W
NAVD88 EL = 26.696



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"I 95 P 13" Benchmark Datasheet (1 OF 2)

5/15/2020

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 15, 2020

AF7195 *****

AF7195 DESIGNATION - I95 P 13
AF7195 PID - AF7195
AF7195 STATE/COUNTY- FL/ST LUCIE
AF7195 COUNTRY - US
AF7195 USGS QUAD - FORT PIERCE SW (2018)

AF7195 *CURRENT SURVEY CONTROL

AF7195* NAD 83(1986) POSITION- 27 15 33. (N) 080 25 09. (W) SCALED
AF7195* [NAVD 88](#) ORTHO HEIGHT - 8.137 (meters) 26.70 (feet) ADJUSTED

AF7195
AF7195 GEOID HEIGHT - -27.231 (meters) GEOID18
AF7195 DYNAMIC HEIGHT - 8.125 (meters) 26.66 (feet) COMP
AF7195 MODELED GRAVITY - 979,117.5 (mgal) NAVD 88

AF7195 VERT ORDER - FIRST CLASS II

AF7195 The horizontal coordinates were scaled from a map and have
AF7195 an estimated accuracy of +/- 6 seconds.

AF7195 The orthometric height was determined by differential leveling and
AF7195 adjusted by the NATIONAL GEODETIC SURVEY
AF7195 in August 2009.

AF7195 Significant digits in the geoid height do not necessarily reflect accuracy.
AF7195 GEOID18 height accuracy estimate available [here](#).

AF7195 Click [photographs](#) - Photos may exist for this station.

AF7195 The dynamic height is computed by dividing the NAVD 88
AF7195 geopotential number by the normal gravity value computed on the
AF7195 Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AF7195 degrees latitude (g = 980.6199 gals.).

AF7195 The modeled gravity was interpolated from observed gravity values.

AF7195;
AF7195; SPC FL E - 324,250. North East Units Estimated Accuracy
MT (+/- 180 meters Scaled)

AF7195 U.S. NATIONAL GRID SPATIAL ADDRESS: 17RML574152(NAD 83)

AF7195 SUPERSEDED SURVEY CONTROL

AF7195 NAVD 88 (06/15/91) 8.134 (m) 26.69 (f) SUPERSEDED 2 2
AF7195 NGVD 29 (09/01/92) 8.584 (m) 28.16 (f) ADJUSTED 2 2

AF7195 Superseded values are not recommended for survey control.

AF7195 NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

AF7195 See file [dsdata.pdf](#) to determine how the superseded data were derived.

AF7195

AF7195_MARKER: DD = SURVEY DISK

https://www.ngs.noaa.gov/cgi-bin/ds_mark.pl?PidBox=AF7195

1/2



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"I 95 P 13" Benchmark Datasheet (2 OF 2)

5/15/2020

DATASHEETS

AF7195_SETTING: 32 = SET IN A RETAINING WALL OR CONCRETE LEDGE
 AF7195_SP_SET: HEADWALL
 AF7195_STAMPING: BM I95 P 13
 AF7195_MARK LOGO: FLDT
 AF7195_MAGNETIC: N = NO MAGNETIC MATERIAL
 AF7195_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 AF7195+STABILITY: SURFACE MOTION
 AF7195_SATELLITE: THE SITE LOCATION WAS REPORTED AS NOT SUITABLE FOR
 AF7195+SATELLITE: SATELLITE OBSERVATIONS - June 09, 2007

AF7195	HISTORY	- Date	Condition	Report By
AF7195	HISTORY	- 1985	MONUMENTED	FLDT
AF7195	HISTORY	- 20070609	GOOD	FLDEP

AF7195
 AF7195 STATION DESCRIPTION
 AF7195

AF7195'DESCRIBED BY FLORIDA DEPARTMENT OF TRANSPORTATION 1985
 AF7195'25.8 KM (16.05 MI) NW FROM STUART.
 AF7195'FROM THE INTERSTATE ROUTE 95 AND STATE ROAD 714 INTERCHANGE, ABOUT 9.0
 AF7195'MILES SOUTHWEST OF STUART, GO NORTH ON INTERSTATE ROUTE 95 FOR 7.05
 AF7195'MILES TO A CONCRETE HEADWALL AND THE MARK, 71.0 FEET EAST OF THE EAST
 AF7195'EDGE OF THE NORTHBOUND LANES, 12.0 FEET SOUTH OF THE NORTH END OF THE
 AF7195'CONCRETE HEADWALL AND 8.0 FEET NORTH OF THE SOUTH END OF THE CONCRETE
 AF7195'HEADWALL.

AF7195
 AF7195 STATION RECOVERY (2007)
 AF7195

AF7195'RECOVERY NOTE BY FL DEPT OF ENV PRO 2007 (BPJ)
 AF7195'RECOVERED IN GOOD CONDITION WITH A NEW TO REACH AS FOLLOWS, TO REACH
 AF7195'THE MARK FROM THE INTERSECTION OF THE MARTIN-ST. LUCIE COUNTY LINE
 AF7195'AND THE INTERSTATE 95 BRIDGE OVER CANAL C-23 ABOUT 5.0 MI SOUTHWEST
 AF7195'OF PORT ST. LUCIE, GO NORTH ON INTERSTATE 95 FOR 3.95 MI TO THE
 AF7195'GATLIN BOULEVARD EXIT RAMP ON THE RIGHT AND THE MARK ON THE RIGHT, SET
 AF7195'FLUSH IN THE TOP OF A CONCRETE CULVERT HEADWALL AND ABOUT 1.0 FT
 AF7195'BELOW THE LEVEL OF I-95 NORTHBOUND LANES.

*** retrieval complete.
 Elapsed Time = 00:00:03



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“RONNIE TAYLOR” Benchmark Datasheet (1 OF 2)

5/15/2020

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 15, 2020

DL3224 *****

DL3224 DESIGNATION - RONNIE TAYLOR

DL3224 PID - DL3224

DL3224 STATE/COUNTY- FL/ST LUCIE

DL3224 COUNTRY - US

DL3224 USGS QUAD - FORT PIERCE SW (2018)

DL3224

DL3224 *CURRENT SURVEY CONTROL

DL3224

DL3224* NAD 83(1986) POSITION- 27 16 29. (N) 080 24 11. (W) SCALED

DL3224* [NAVD 88](#) ORTHO HEIGHT - 7.746 (meters) 25.41 (feet) ADJUSTED

DL3224

DL3224 GEOID HEIGHT - -27.266 (meters) GEOID18

DL3224 DYNAMIC HEIGHT - 7.734 (meters) 25.37 (feet) COMP

DL3224 MODELED GRAVITY - 979,120.8 (mgal) NAVD 88

DL3224

DL3224 VERT ORDER - FIRST CLASS II

DL3224

DL3224.The horizontal coordinates were scaled from a map and have

DL3224.an estimated accuracy of +/- 6 seconds.

DL3224.

DL3224.The orthometric height was determined by differential leveling and

DL3224.adjusted by the NATIONAL GEODETIC SURVEY

DL3224.in August 2009.

DL3224

DL3224.Significant digits in the geoid height do not necessarily reflect accuracy.

DL3224.GEOID18 height accuracy estimate available [here](#).

DL3224

DL3224.Click [photographs](#) - Photos may exist for this station.

DL3224

DL3224.The dynamic height is computed by dividing the NAVD 88

DL3224.geopotential number by the normal gravity value computed on the

DL3224.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

DL3224.degrees latitude (g = 980.6199 gals.).

DL3224

DL3224.The modeled gravity was interpolated from observed gravity values.

DL3224

DL3224; North East Units Estimated Accuracy

DL3224;SPC FL E - 325,980. 259,100. MT (+/- 180 meters Scaled)

DL3224

DL3224_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RNL590170(NAD 83)

DL3224

DL3224 SUPERSEDED SURVEY CONTROL

DL3224

DL3224.No superseded survey control is available for this station.

DL3224

DL3224_MARKER: DD = SURVEY DISK

DL3224_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

DL3224_STAMPING: RONNIE TAYLOR 2006

DL3224_MARK LOGO: FLDEP

DL3224_PROJECTION: RECESSED 5 CENTIMETERS

DL3224_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET

DL3224_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO



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"RONNIE TAYLOR" Benchmark Datasheet (2 OF 2)

5/15/2020

DATASHEETS

DL3224+STABILITY: SURFACE MOTION

DL3224_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

DL3224+SATELLITE: SATELLITE OBSERVATIONS - August 17, 2006

DL3224

DL3224	HISTORY	- Date	Condition	Report By
DL3224	HISTORY	- 20060817	MONUMENTED	FLDEP

DL3224

DL3224 STATION DESCRIPTION

DL3224

DL3224'DESCRIBED BY FL DEPT OF ENV PRO 2006 (BPJ)

DL3224'THE MARK IS IN PORT ST. LUCIE, IN SECTION 11, TOWNSHIP 37 SOUTH, RANGE

DL3224'39 EAST.

DL3224'

DL3224'TO REACH THE MARK FROM THE INTERSECTION OF THE FLORIDA TURNPIKE AND

DL3224'SOUTHWEST PORT ST. LUCIE BOULEVARD (STATE ROAD 710) IN PORT ST.

DL3224'LUCIE, GO SOUTHWEST ON SOUTHWEST PORT ST. LUCIE BOULEVARD FOR 1.0 MI

DL3224'TO THE SOUTH SIDE OF THE CANAL C-24 BRIDGE, TURN RIGHT ON THE CANAL

DL3224'C-24 LEVEE ROAD AND GO NORTHWEST PASSING THROUGH A LOCKED GATE FOR

DL3224'APPROXIMATELY 0.9 MI TO THE SAVONA BOULEVARD BRIDGE, CONTINUE

DL3224'NORTHWEST ON THE CANAL C-24 LEVEE ROAD FOR 1.1 MI TO THE MARK ON THE

DL3224'LEFT, SET IN THE TOP OF A ROUND CONCRETE MONUMENT RECESSED 0.2 FT

DL3224'BELOW THE LEVEL OF THE GROUND AND ABOUT 1.0 FT BELOW THE LEVEL OF THE

DL3224'LEVEE ROAD.

DL3224'

DL3224'LOCATED 240.0 FT WEST OF THE WEST HANDRAIL OF A PRIVATE DOCK, 39.0 FT

DL3224'SOUTHWEST OF THE SOUTHWEST EDGE OF THE CANAL BANK AND 1.5 FT

DL3224'NORTHEAST OF A CARSONITE WITNESS POST.

DL3224'

DL3224'NOTE A MAGNET WAS BURIED ON THE SOUTH SIDE OF THE MARK.

*** retrieval complete.

Elapsed Time = 00:00:01



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Field Notes (1 of 5)

SWAGE, PSL			
SFWM-D. USGS / PWS WELLS			
BENCH RUN FOR NEW BM "STL 214" (NAVD 88)			
PEG TEST:			
CON. ERR. OLD:	8.6"	CON. ERR. NEW:	1.5"
DIFF:	-7.1"	RETICLE:	5.083'
STA	TOTAL DIST	ELEV	ADJ
I95 P 13	0	26.696'	
9	2839.87'	26.213'	
BM STL214	5737.27'	25.15'	
(CONT. ON NEXT PG.)			

1862 51	
18-1020-07-02	2.75 LOTUS
70° SIGHT	M. LaPolla PC
LEICA DISTO	B. Gorman TR
FILE: WELL STL214	
LINE: STL214	
DESC	
NEW BM I95 P 13 PID: A77195	
LISTED NAVD 88 EL: 26.696'	
SET MAG NAIL + BRASS WASHER "GET TRIP PT"	
IN ASPHALT @ THE NW COR. OF A CATCH BASIN	
LOCATED @ THE SE PARKING LOT OF STARBUCKS	
ON BRESCHA ST + GOTHEN BLVD. (BM 1862 51A)	
NEW BM STL214	BM 1862 51B
SET 1 1/2" (I.D.) IRON PIPE + ALUMIN. CAP	
"SFWM-D STL214 LOTUS 2020" I.P. IS 3' LONG	' EAST
W/ CONC. COLLAR + GROUDED CAP BM IS	
OF WELL STL 214.	
N.	E.
ROUTING TRAVEL 20324 25.413'	



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Field Notes (2 of 5)

STA	TOTAL DIST	ELEV	ADJ
25	8523.20'	21.288'	
Ronnie Taylor	12197.28'	25.387'	

SFWD- USGS / PUB WELLS

BENCH RUN CONT. FROM PREVIOUS PG.
(Nov 88)

9:10A-07-02 1862 52

80° cloudy / windy
2.25.20 TUES
M. LaBella PC
B. Coonrad T

DESC

SEE MAG. MARK + BRASS HAMMER "GUY TROV. PT"
(BM 1891-52A) 3.25' S. OF THE N. EDGE OF
SW HARRISON AVE @ ADDRESS 2101. AT THE
SW COR OF A CONC. PATCH IN RD @ THE NW
Quad. OF HARRISON + TAMPA.

✓ TO NGS BM RONNIE TAYLOR PID: DL3224
LEVED Nov 88 ELEV 25.413'
FIELD 25.387'
ERR = 0.026

DIST. IN MILES = 2.81
MYS @ .02 PER MILE = .03

★ END RUN ★

39



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Field Notes (3 of 5)

SFWD - USGS / P43 WELLS		181020-07-02	1862 53
4.5 hr OPUS SESSION @		8 ¹⁰ M. Cloudy / Windy	2.28.20 TUES
NEW BM STL24			M. LaFallo PC
			B. Gordon
BASE: TRIMBLE 5700	} I.M.D. DEWIT PASS THE BLUE BUTEN NO DATA		
HZ: 4.87'			
START: 12:15 pm			
END: 10:45			
ANTENNA: ZEPHYR			
2nd Try:			
BASE: TRIMBLE 5700			
HZ: 4.76'			
START: 10:05			
END: 20:35			
ANTENNA: ZEPHYR			



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Field Notes (4 of 5)

<p style="text-align: center;">SFWDMD-USGS / PWS WELLS</p> <p style="text-align: center;">WELL DATA @ STL214 (NAVD 88)</p> <p>WELL DIAMETER: 6" PVC</p> <p>PICTURE: 101-1034</p> <p>D.T.W. = 7.00' TIME: 15:40</p> <p style="padding-left: 150px;">DATE: 02/25/2020</p> <p>MEASURING POINT = 26.832'</p> <p>TOP OF WATER = 19.832'</p> <p>WELL HEAD COSTING:</p> <p>ALUMINUM, DON W/ HANGING LED</p> <p>(L) 2.70' x (W) 1.80' = (U) 1.30'</p> <p>GPS: FILE: SFWDMD USGS PWS WELLS 2 (TSL2)</p> <p>WELL STL214</p> <p>10014 0/15 FT</p> <p>10015 0/15 FT</p>	<p style="text-align: right;">1862 54</p> <p>18-1020-07-02</p> <p>829 M. CLONK / WIZARD</p> <p style="text-align: right;">2.25.20 TUES</p> <p style="text-align: right;">M. LA RILLA PC</p> <p style="text-align: right;">B. GORMAN T</p> <p>FILTBAGS:</p> <p>WELL:</p> <p>101-1035 BRASS TAP</p> <p>101-1036</p> <p>101-1037</p> <p>101-1038</p> <p>101-1039</p> <p>101-1040 LOOKING WEST</p> <p>NEW BM STL214:</p> <p>101-1031</p> <p>101-1032</p> <p>101-1033 LOOKING WEST</p>
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WELL STL214

10014 0/15 FT

10015 0/15 FT



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Field Notes (5 of 5)

Savage, PSL					
SFWMD-USGS			PI13 WELLS		
"M.P." + NG Bench Run @					
WELL		STL 214	(NA 288)		
STA	+	HI	-	EL	ADJ
BM STL 214		5.231		25.115'	
		5.110			
		5.087			
		(5.159)	30.309'		
S.S.1			4.42'	25.889'	
			3.559		
			3.477		
			3.394		
1			(3.476)	26.832'	
		3.241			
		3.259			
		3.175			
		(3.258)	30.090'	5.012	
				4.94	
				4.868	
BM STL 214			(4.94)	25.15'	

1862 55

18-1020-07-02

80° M. CLOUDY, WINDY

2.25. 10 TUES

M. LaBella PC

B. Gorman T

DESC

Bm STL 214 (Bm 1862-513)

Listed NA 10 98 EL = 25.15'

NG @ WELL STL 214

"MEASURING POINT" @ WELL STL 214

USING OLD USGS BLACK MAJEX MARKER BOX

w/ "X" ON TOP OF PLYWOOD @ WEST SIDE OF

WELL OPENING.

✓ BACK TO Bm STL 214 Bm 1862-513

Listed = 25.15'

ERR: FLAT

* END RUN *



South Florida Water Management District Benchmark Datasheet

Designation: STL 214	Project Name: USGS PHASE 3 WELLS	Type: V	State Plane Zone: FL East
Stamping: STL 214 LB4108 2020	Field Book Name: GCY 1862	Field Book Page: 51-55	
Established By: GCY, INC.	Recovered By: _____	Recovery Date: _____	
Surveyor: ANDERSEN	Established Date: 02/26/20	Status: New	

GEOGRAPHIC POSITION INFORMATION

Section: 11	Township: 37 SOUTH	Range: 39 EAST
County: ST LUCIE	Quadrangle: FORT PIERCE SW	Quad Index: 1668
NAD83 Adj. Year: 2011	Vertical Datum: NAVD1988	Horizontal Datum: NAD1983
NAVD88 Elevation (feet): 25.150	NGVD29 Elevation (feet): 26.33	2022 Elevation: _____
NAVD88 Class: _____	NGVD29 Class: _____	Other Elevation: _____
NAVD88 Order: 3RD	NGVD29 Order: 3RD	Other Elevation Type: _____
		NGS Source BM(s): I 95 P 13
		NGS PID(s): AF7195
		NGS NAVD88 Elev (ft): 26.696
		NGS NAVD88 Elev (m): 8.137
		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: + 1.483	Actual NGS Elevation or ngvd29.txt file: _____	OPUS Ortho Height: 25.039
Northing (Y) (feet): 1068347.637	Easting (X) (feet): 846011.12	Source of Latitude & Longitude: OPUS SOLUTION
Latitude: 27	16	17.78221
DD°	MM'	SS"
Longitude (Decimal Degrees): 27.27160617		Longitude (Decimal Degrees): -80.41556999
		DD°
		MM'
		SS"

RECOVERY DATA

How to Reach: FROM THE INTERSECTION I95 AND SW GATLIN BLVD, GO EAST ON SW GATLIN BLVD FOR 0.37 +/- MILES TO THE INTERSECTION WITH SW BRESCIA STREET. GO NORTH ON SW BRESCIA STREET 0.52 MILES +/- TO SW SAVAGE BLVD. GO EAST ON SW SAVAGE BLVD A DISTANCE OF 160' +/- TO THE MARK ON THE LEFT. MARK IS ABOUT 68' +/- SOUTH OF THE SOUTH EDGE O9F PAVEMENT OF SW SAVAGE BLVD AND 31' +/- SOUTHEASTERLY OF USGS WELL STL 214. 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.

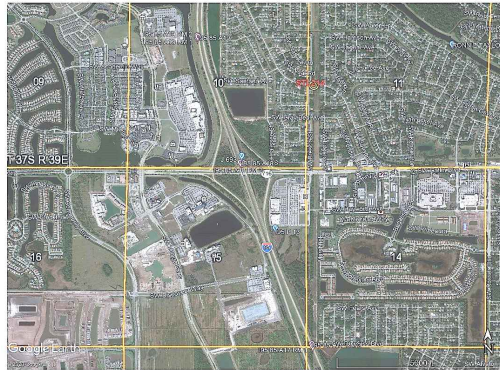
Description/Notes:

Notable Landmarks:

Other Source Benchmarks:

PICTURES

Aerial View of Overall Site



PICTURES

Site Sketch



From: opus
To: Pete Andersen
Subject: OPUS solution : 13970561.t01 OP1589541475850
Date: Friday, May 15, 2020 7:22:27 AM

FILE: 13970561.t01 OP1589541475850

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 15, 2020
RINEX FILE: 1397056v.20o TIME: 11:22:10 UTC

SOFTWARE: page5 1801.18 master52.pl 160321 START: 2020/02/25 21:05:00
EPHEMERIS: igs20942.eph [precise] STOP: 2020/02/26 01:36:00
NAV FILE: brdc0560.20n OBS USED: 10265 / 11022 : 93%
ANT NAME: TRM39105.00 NONE # FIXED AMB: 78 / 83 : 94%
ARP HEIGHT: 1.451 OVERALL RMS: 0.017(m)

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) ITRF2014 (EPOCH:2020.1529)

X: 944582.722(m) 0.005(m) 944581.889(m) 0.005(m)
Y: -5593952.714(m) 0.012(m) -5593951.136(m) 0.012(m)
Z: 2904989.393(m) 0.003(m) 2904989.232(m) 0.003(m)

LAT: 27 16 17.78221 0.005(m) 27 16 17.80280 0.005(m)
E LON: 279 35 3.94804 0.004(m) 279 35 3.92773 0.004(m)
W LON: 80 24 56.05196 0.004(m) 80 24 56.07227 0.004(m)
EL HGT: -19.613(m) 0.011(m) -21.193(m) 0.011(m)
ORTHO HGT: 7.632(m) 0.051(m) [NAVD88 (Computed using GEOID18)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)
Northing (Y) [meters] 3016653.888 325633.011
Easting (X) [meters] 557844.961 257864.705
Convergence [degrees] 0.26780000 0.26780000
Point Scale 0.99964130 0.99998249
Combined Factor 0.99964438 0.99998557

US NATIONAL GRID DESIGNATOR: 17RNL5784416653(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DE9138	OKCB OKEECHOBEE CORS ARP	N271557.715	W0805119.181	43548.0
DQ7965	FLWE WEDGEFIELD FL CORS ARP	N282626.477	W0810533.176	145701.3
DR4402	LBL LBL LABELLE CORS ARP	N264451.324	W0812712.291	118237.5

NEAREST NGS PUBLISHED CONTROL POINT

DL3228 J 693 N271555.000 W0802520.000 962.1

*110001+00000000000000A1 32...1+0000000000050262 331.21+0000000000005150
390...+0000000000000005 391.21+0000000000000000
*110002+00000000000000B1 32...1+00000000000100082 332.21+0000000000005354
390...+0000000000000005 391.21+0000000000000000
*110003+00000000000000B2 32...1+0000000000050057 336.21+0000000000005287
390...+0000000000000005 391.21+0000000000000000
*110004+00000000000000A2 32...1+00000000000100246 335.21+0000000000005080
390...+0000000000000005 391.21+0000000000000000
*410005+00000000?.....1
*110006+000000000I95 P13 83..51+0000000000026696
*110007+000000000I95 P13 32...1+0000000000026901 331.21+0000000000007470
390...+0000000000000005 391.21+0000000000000000
*110008+0000000000000001 32...1+0000000000028701 332.21+0000000000004094
390...+0000000000000005 391.21+0000000000000000
*110009+0000000000000001 573..1-000000000001800 574..1+0000000000055602
83..21+0000000000030072
*110010+0000000000000001 32...1+00000000000194806 331.21+0000000000002834
390...+0000000000000005 391.21+0000000000000001
*110011+0000000000000002 32...1+00000000000192900 332.21+0000000000003394
390...+0000000000000005 391.21+0000000000000001
*110012+0000000000000002 573..1+000000000000106 574..1+0000000000443308
83..21+0000000000029512
*110013+0000000000000002 32...1+00000000000202282 331.21+0000000000004052
390...+0000000000000005 391.21+0000000000000001
*110014+0000000000000003 32...1+00000000000202280 332.21+0000000000005667
390...+0000000000000005 391.21+0000000000000001
*110015+0000000000000003 573..1+000000000000108 574..1+0000000000847870
83..21+0000000000027897
*110016+0000000000000003 32...1+00000000000200682 331.21+0000000000004655
390...+0000000000000005 391.21+0000000000000001
*110017+0000000000000004 32...1+00000000000200493 332.21+0000000000003712
390...+0000000000000005 391.21+0000000000000001
*110018+0000000000000004 573..1+000000000000296 574..1+0000000001249046
83..21+0000000000028840
*110019+0000000000000004 32...1+00000000000202471 331.21+0000000000004333
390...+0000000000000005 391.21+0000000000000001
*110020+0000000000000005 32...1+00000000000203025 332.21+0000000000004047
390...+0000000000000005 391.21+0000000000000001
*110021+0000000000000005 573..1-000000000000257 574..1+0000000001654542
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*110022+0000000000000005 32...1+00000000000205998 331.21+0000000000005427
390...+0000000000000005 391.21+0000000000000001
*110023+0000000000000006 32...1+00000000000205538 332.21+0000000000003242
390...+0000000000000005 391.21+0000000000000001
*110024+0000000000000006 573..1+000000000000202 574..1+0000000002066078
83..21+0000000000031311
*110025+0000000000000006 32...1+00000000000218073 331.21+0000000000002600
390...+0000000000000005 391.21+0000000000000000
*110026+0000000000000007 32...1+00000000000218152 332.21+0000000000004104
390...+0000000000000005 391.21+0000000000000001
*110027+0000000000000007 573..1+000000000000124 574..1+0000000002502302
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*110028+0000000000000007 32...1+00000000000157053 331.21+0000000000002982
390...+0000000000000005 391.21+0000000000000001
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390...+0000000000000005 391.21+0000000000000000

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390...+0000000000000005 391.21+0000000000000000
*110032+0000000000000009 32...1+0000000000012080 332.21+000000000005172
390...+0000000000000005 391.21+0000000000000000 71....+00000BM 1862 51A
*110033+0000000000000009 573..1-0000000000000977 574..1+0000000002839869
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*110034+0000000000000009 32...1+00000000000166824 331.21+000000000005342
390...+0000000000000005 391.21+0000000000000001
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*110115+000000000000035 32...1+0000000000015063 331.21+000000000004597

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*110125+000RONNIE TAYLOR 32...1+0000000000021626 332.21+000000000005434
390...+0000000000000005 391.21+0000000000000000 71....+000000000DL3224
*110126+000RONNIE TAYLOR 573..1+000000000000665 574..1+0000000012199276
83..21+0000000000025387

Palm City

15 May 2020

INPUT

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

OUTPUT

Geographic, flhpgn - Florida HPGN
Vertical - NGVD29 (Custom), U.S. Feet

STL 214

1/1

Latitude: 27 16 17.78221
Longitude: 80 24 56.05196
Elevation/Z: 0

Latitude: 27 16 17.78221
Longitude: 80 24 56.05196
Elevation/Z: 1.483

Remark: