Contract # CN60744/3600000504
Work Order #5

# VERTICAL CONTROL SURVEY REPORT

## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

## FINAL

February, 2008

# VERTICAL CONTROL SURVEY REPORT
## Monitoring Well Reference Elevations

for:
**South Florida Water Management District**
3301 Gun Club Road
West Palm Beach, FL 33406
by:
**WOOLPERT, INC.**
Florida Certificate of Authorization # 6777
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Prepared by:
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Florida Professional Surveyor and Mapper # 5994

## Summary of Contents

# Overview of the Project

This survey consisted of establishing or verifying elevations to third-order National Geodetic Survey (NGS) Standards at District Recorder Well Sites. This survey request is associated with the District's Vertical Datum Upgrade Project (VDUP).

There were two main tasks to this survey.

1. Set reference elevations and tags at each well using a local site benchmark (BM) referenced to the National Geodetic Vertical Datum of 1929 (NGVD29).
2. For those sites that did not have a local benchmark, set a concrete monument and establish elevations referencing the North American Vertical Datum of 1988 (NAVD88), and then compute a conversion NGVD29 elevation.

The following list of 25 well sites were included within this Work-Order #5.

| | | | | |
|---|---|---|---|---|
| BOGAFB | LCYP19 | LKISSP | S65A-SCA | TIGER |
| KENAN | LHAT11 | MARIC | S-65GW | TURLAK |
| KUB009 | LHATCH3 | ORF61 | SEBRING | WR11 |
| KUB012 | LJACK | RATHAM | SKYLAK | WR15 |
| LAKWEO | LKIS5B | S63A-SCA | SNIVLY | WR16 |

Also a part of this report, and the delivery of Work-Order #5 are the following sites: BFARM, KISSFS, WRLGTE. These sites could not be completed during Work-Order #4 for various reasons, so their information is being delivered along with Work-Order #5.

# List of Project Deliverables

In addition to four signed and sealed hard copies of this survey report, the following deliverables were also a part of this project.

1. The survey report in Adobe Acrobat format.
2. Digital photos named by sites.
3. Scanned copies of field notes.
4. Any other digital files associated with the survey.
5. Completed District benchmark description sheet for all set marks.

These digital deliverables will be delivered on CD along with the final signed and sealed copy of this report.

# Date of Survey

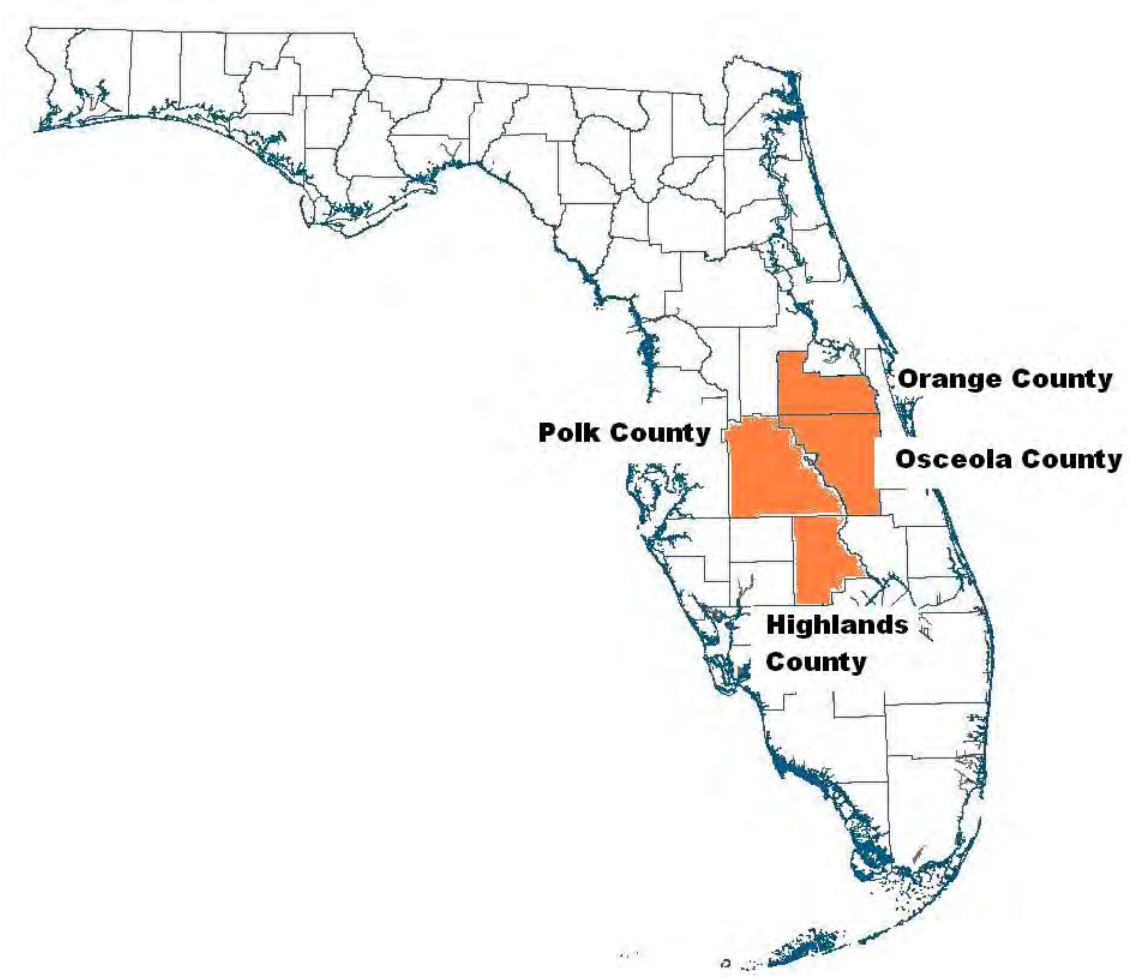
All site field operations took place between December 3, 2007 and January 22, 2008.

# Equipment Used

Wild NA2002 digital levels were used for all leveling. Latitude and Longitudes were determined for each site using Trimble Pro-XR sub-meter GPS equipment. These Latitudes and Longitudes were then converted to Florida State Plane Coordinates, East Zone, using the United States Army Corps of Engineers software CORPSCON version 6.0.1.

# Project Location

All well site locations were in Orange, Osceola, Highlands and Polk Counties, Florida.




# Survey Methodology

Woolpert began by setting concrete monuments at each of the locations that did not have a benchmark on site. Monuments consisted of an 8 inch PVC pipe, 40 inches long, filled with poured concrete with an aluminum South Florida Water Management District survey cap.

Following building the concrete monuments, reconnaissance was done to find existing NGS control stations. Once found, elevation were established by using two NGS stations, performing closed level loops ensuring that NGS monument published elevations matched.

At each site, Woolpert used the local site benchmark to set reference elevations for each found well. Woolpert used the local benchmark to perform a closed loop level run from the benchmark to the reference mark to establish a NGVD29 elevation on the well reference point. If the local benchmark did not have a published NGVD29 elevation, Woolpert used the latitude, longitude, and NAVD88 elevation to find a NGVD29 elevation using the United States Army Corps of

Engineers software CORPSCON version 6.0.1. To determine the sites benchmark latitude and longitude, Woolpert used a Trimble Pro-XR GPS receiver. This GPS receiver obtains differential GPS corrections from Coast Guard stations, resulting in horizontal accuracies of approximately 1 meter, at one sigma.

If a staff gauge existed at the site, Woolpert obtained the water level, the staff gauge reading, and recorded the time and date of those measurements.

Following all leveling and positioning, Woolpert then attached metal tags to each found well. Each tag was stamped with: Site name, well designation, elevation, date, firm name, and reference datum (NGVD29 in all cases).

## Summary of Leveling Results

BFARM was set using NGS station G354, a First-Order Class II benchmark with published elevation of 66.85 feet (NAVD88), and NGS station OSF WELLS BM1, a South Florida Water Management District benchmark with published elevation of 67.514 feet (NAVD88). Leveling began at station G354, passed through BFARM, and ended on OSF WELLS BM1 with a leveled elevation of 67.472. Total leveling distance was 6.63 miles resulting in a closure of 0.042 (0.077 allowable). Resulting elevation for BFARM was 64.09 feet NAVD88. This was converted using the United States Army Corps of Engineers software CORPSCON version 6.0.1 to derive a NGVD29 elevation of 65.02 feet.

WR11 was set using NGS station OS134, a Second-Order Class I benchmark with published elevation of 70.65 feet (NAVD88), and NGS station OS135, a Second-Order Class I benchmark with published elevation of 64.75 feet (NAVD88). Leveling began at station OS134, passed through WR11, and ended on OS135 with a leveled elevation of 64.65. Total leveling distance was 18.99 miles resulting in a closure of 0.10 (0.13 allowable). Resulting elevation for WR11 was 67.59 feet NAVD88. This was converted using the United States Army Corps of Engineers software CORPSCON version 6.0.1 to derive a NGVD29 elevation of 68.66 feet.

WR15 was set using NGS station OS134, a Second-Order Class I benchmark with published elevation of 70.65 feet (NAVD88), and NGS station OS135, a Second-Order Class I benchmark with published elevation of 64.75 feet (NAVD88). Leveling began at station OS134, passed through WR15, and ended on OS135 with a leveled elevation of 64.65. Total leveling distance was 18.99 miles resulting in a closure of 0.10 (0.13 allowable). Resulting elevation for WR15 was 62.01 feet NAVD88. This was converted using the United States Army Corps of Engineers software CORPSCON version 6.0.1 to derive a NGVD29 elevation of 63.09 feet.

For Well Site WR16, there existed a BM “WR11 1996” but it only had a published NGVD29 elevation of 66.19 feet. It did not have a published NAVD88 elevation. To establish an NAVD88 elevation, Woolpert used NGS station OS134, a Second-Order Class I benchmark with published elevation of 70.65 feet (NAVD88), and NGS station OS135, a Second-Order Class I benchmark with published elevation of 64.75 feet (NAVD88). Leveling began at station OS134, passed through “WR11 1996”, and ended on OS135 with a leveled elevation of 64.65. Total leveling distance was 18.99 miles resulting in a closure of 0.10 (0.13 allowable). Resulting elevation for “WR11 1996” was 65.14 feet NAVD88. As a check, the NAVD88 elevation was converted to NGVD29 using CORPSCON which yielded a value of 66.23 feet.

WRLGTE was set using NGS station L-715-003, a Second-Order Class I benchmark with published elevation of 91.44 feet (NAVD88), and NGS station L-659-024, a Second-Order Class I benchmark with published elevation of 102.44 feet (NAVD88). Leveling began at station L-715-003, passed through WRLGTE, and ended on L-659-024 with a leveled elevation of 102.43. Total leveling distance was 3.91 miles resulting in a closure of 0.01 (0.06 allowable). Resulting elevation for WRLGTE was 93.14 feet NAVD88. This was converted using the United States Army Corps of Engineers software CORPSCON version 6.0.1 to derive a NGVD29 elevation of 94.03 feet.

TURLAK was set using NGS station GOTHA RESET, a Second-Order Class I benchmark with published elevation of 136.56 feet (NAVD88), and NGS station ORA30, a Second-Order Class I benchmark with published elevation of 110.95 feet (NAVD88). Leveling began at station GOTHA RESET, passed through TURLAK, and ended on ORA30 with a leveled elevation of 111.030. Total leveling distance was 10.0 miles resulting in a closure of 0.08 (0.09 allowable). Resulting elevation for TURLAK was 123.39 feet NAVD88. This was converted using the United States Army Corps of Engineers software CORPSCON version 6.0.1 to derive a NGVD29 elevation of 124.28 feet.

## Well Site Notes and Changes

On January 9th, 2008 the District removed the following sites from the project. However, since four of the sites were already completed, Woolpert has included them within this report.

| Well Designation | Notes |
|---|---|
| SKYLAK | |
| MARIC | ~ had already been completed. |
| LHATCH3 | ~ had already been completed. |
| LHAT11 | ~ decommissioned. |
| SNIVLY | ~ visited but not complete due to BM. |
| KUB009 | ~ visited but not complete. Tag existed, and BM was not at site. |
| KUB012 | |
| LKISSP | ~ visited to find BM, but not completed. |
| TIGER | ~ had already been completed. |
| LKIS5B | |
| KENAN | ~ had already been completed. |

The following are project notes pertaining to specific well sites:

BOGAFB:
This site was completed however the well box was empty at the time of measurements.

LAKWEO:
The supplied BM from the District (P-13) did not have a published NAVD88 elevation, and could not be found in the field. According to a NGS BM search, the two nearest BM's with NAVD88 elevations would require approximately 20 miles of levels if they were found (BM's L64 and KR122 RESET). It would also require the construction of another concrete monument close to the LAKWEO site. These services could not be performed under this work-order since it would exceed the maximum fee allowed.

ORF61:
The BM provided by the District for this site was R627, and was not on-site. It required approximately 1.2 miles of leveling.

SEBRING:
Two NGS BM's with NAVD88 elevations could not be found within 5 miles of the SEBRING well site. Woolpert used the on-site BM (SEBRING MW2004) to verify the existing tag in NGVD29.

KISSFS:
Woolpert used the on-site BM (KISSFS 1983) supplied by the District to set a reference tag in NGVD29. Using the two nearest NGS BM's with NAVD88, if found (Q512 and P512), would require approximately six miles of levels and could not be completed under this work-order since it would exceed the maximum fee allowed.

WR11:
Only GW1 was measured at this site, not GW2. GW2 was missed because both wells share the same box and the field crews did not notice the second well.

WR15:
Only GW1 was measured at this site, not GW2. GW2 was missed because both wells share the same box and the field crews did not notice the second well.

WR16:
Only GW1 was measured at this site, not GW2. GW2 was missed because both wells share the same box and the field crews did not notice the second well.

Therefore, a final list of the Well Sites included within this report are:

| | | | |
|---|---|---|---|
| BOGAFB | MARIC | S-65GW | WR15 |
| KENAN1 | ORF61 | SEBRING (no NAVD88) | WR16 |
| LCYP19 | RATHAM | TIGER | BFARM |
| LHATCH3 | S63A-SCA | TURLAK | KISSFS (no NAVD88) |
| LJACK | S65A-SCA | WR11 | WRLGTE |

# Monitoring Well Site Information Summary

In Section 2, all well site information is presented in the same format.

***EXAMPLE:***

| Site Name | Sensor |
|---|---|
| Example | GW1 |

| Latitude | Longitude | Northing | Easting |
|---|---|---|---|
| 28° 23' 31.937" | 81° 22' 31.937" | 1472251 | 538267 |

| Section | Township | Range | County | Quad |
|---|---|---|---|---|
| 13 | 24 | 29 | Orange | Lake Jessamine |

**Benchmark Information:**

| Name | Existing / Set | NAVD88 | NGVD29 |
|---|---|---|---|
| BOG527 | Set | 80.851 | 81.876 |

**Reference Point Information:**

| Stamped Elevation (NGVD29) | Stamped Date | By Firm |
|---|---|---|
| 87.50 | 9-21-07 | Woolpert, Inc. |

Note: Reference mark at edge of wood as marked.

**Staff Gauge Information:**

| Water Elevation (NGVD29) | Gauge Reading | Time of Reading | Date of Reading |
|---|---|---|---|
| 79.928 | 80.05 | 09:25 | 9-21-07 |

## NOTES:

1. Latitude and longitude were derived at the benchmark location, and is given to assist in locating the site. It is not meant to accurately locate each well.
2. The Northing and Easting were obtained by using CORPSCON to convert the latitude and longitude to Florida State Plane Coordinates, East Zone, Adjustment of 1990 (NAD83/90) HARN.
3. All measurements and elevations are in feet unless otherwise noted.
4. Reference point elevations were determined by using the stated NGVD29 elevation.
5. The site bench mark NGVD29 elevations were calculated using CORPSCON to convert the published NAVD88 elevation if a published NGVD29 elevation was not available.
6. In some cases the local benchmark only had a NGVD29 elevation, so it was used and no NAVD88 elevation is stated.
7. For some well sites an existing tag was found with a stamped elevation from another source. For these sites, Woolpert verified the tag elevation by leveling from the local site bench mark to the reference point. If the stamped tag elevation was accurate based on the leveling, the tag was left alone.

## Surveyor's Notes:

**THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.**

**THIS REPORT OF SURVEY CONSISTS OF FOUR SECTIONS AS OUTLINED WITHIN THE SUMMARY OF CONTENTS AND IS NOT VALID UNLESS ATTACHED TO THE OTHERS IN THEIR ENTIRETY.**

**ADDITIONS OR DELETIONS TO SURVEY MAPS AND REPORTS BY OTHER THAN THE SIGNING PARTY OR PARTIES IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF THE SIGNING PARTY OR PARTIES.**

**Surveyor and Mapper in Responsible Charge:**
**John A. Cestnick**
Professional Surveyor and Mapper,
License Number: 5994

Signed: _____ Seal:
*(For, and on behalf of the firm Woolpert, Inc.)*

# Section 2: Monitoring Well Site Information

| Site Name | Sensor |
|---|---|
| ORF 61 | GW1 |

| Latitude | Longitude | Northing | Easting |
|---|---|---|---|
| 28° 28’ 09” | 81° 32’ 28” | 1503773 | 482382 |

| Section | Township | Range | County | Quad |
|---|---|---|---|---|
| 10 | 23 | 28 | Orange | Windermere |

**Benchmark Information:**

| Name | Existing / Set | NAVD88 | NGVD29 |
|---|---|---|---|
| R 627 | Existing | 107.77 | 108.71 |

**Reference Point Information:**

| Stamped Elevation (NGVD29) | Stamped Date | By Firm |
|---|---|---|
| 108.40 | 1-2-08 | Woolpert, Inc. |

Note: Reference point at top of PVC pipe as marked.

**Staff Gauge Information:**

| Water Elevation (NGVD29) | Gauge Reading | Time of Reading | Date of Reading |
|---|---|---|---|
| NA | NA | NA | NA |

**To Reach Description:**

From the intersection of SR535 and I-4 in Lake Buena Vista, FL proceed north on SR535 for 0.50mi to S. Apopka Vinland Rd. Turn left (west) and proceed on S. Apopka Vinland Rd. for 7.8 mi to Chase Rd. Turn right (east) onto Chase Rd. and proceed on Chase Rd. for 1.6 mi (Chase Rd. has a left turn at a "T" intersection) to entrance to public park and boat ramp on the right (east). Follow main east bound road in park for 0.50 mi where the paying station for the boat ramp is. Turn left (north) into parking lot to the north and proceed to the most north end of the parking lot. Wells are found about 250' north-northwest of the north end of the parking area in a black chain link fence.

Sensor Well Area:

Sensor Well:

Tag Close-up:


Bench Mark:

Bench Mark:

| Site Name | Sensor |
|---|---|
| ORF 61 | GW2 |

| Latitude | Longitude | Northing | Easting |
|---|---|---|---|
| 28° 28’ 09” | 81° 32’ 28” | 1503773 | 482382 |

| Section | Township | Range | County | Quad |
|---|---|---|---|---|
| 10 | 23 | 28 | Orange | Windermere |

**Benchmark Information:**

| Name | Existing / Set | NAVD88 | NGVD29 |
|---|---|---|---|
| R 627 | Existing | 107.77 | 108.71 |

**Reference Point Information:**

| Stamped Elevation (NGVD29) | Stamped Date | By Firm |
|---|---|---|
| 108.49 | 1-2-08 | Woolpert, Inc. |

Note: Reference point at top of PVC pipe as marked.

**Staff Gauge Information:**

| Water Elevation (NGVD29) | Gauge Reading | Time of Reading | Date of Reading |
|---|---|---|---|
| NA | NA | NA | NA |

**To Reach Description:**

From the intersection of SR535 and Interstate 4 in Lake Buena Vista, FL proceed north on SR535 for 0.50mi to S. Apopka Vinland Rd. Turn left (west) and proceed on S. Apopka Vinland Rd. for 7.8 mi to Chase Rd. Turn right (east) onto Chase Rd. and proceed on Chase Rd. for 1.6 mi (Chase Rd. has a left turn at a "T" intersection) to entrance to public park and boat ramp on the right (east). Follow main east bound road in park for 0.50 mi where the paying station for the boat ramp is. Turn left (north) into parking lot to the north and proceed to the most north end of the parking lot. Wells are found about 250' north-northwest of the north end of the parking area in a black chain link fence.

Sensor Well Area:

Sensor Well:

Tag Close-up:


Bench Mark:

Bench Mark:

| Site Name | Sensor |
|---|---|
| ORF 61 | GW3 |

| Latitude | Longitude | Northing | Easting |
|---|---|---|---|
| 28° 28’ 09” | 81° 32’ 28” | 1503773 | 482382 |

| Section | Township | Range | County | Quad |
|---|---|---|---|---|
| 10 | 23 | 28 | Orange | Windermere |

**Benchmark Information:**

| Name | Existing / Set | NAVD88 | NGVD29 |
|---|---|---|---|
| R 627 | Existing | 107.77 | 108.71 |

**Reference Point Information:**

| Stamped Elevation (NGVD29) | Stamped Date | By Firm |
|---|---|---|
| 108.49 | 1-2-08 | Woolpert, Inc. |

Note: Reference point at top of PVC pipe as marked.

**Staff Gauge Information:**

| Water Elevation (NGVD29) | Gauge Reading | Time of Reading | Date of Reading |
|---|---|---|---|
| NA | NA | NA | NA |

**To Reach Description:**

From the intersection of SR535 and Interstate 4 in Lake Buena Vista, FL proceed north on SR535 for 0.50mi to S. Apopka Vinland Rd. Turn left (west) and proceed on S. Apopka Vinland Rd. for 7.8 mi to Chase Rd. Turn right (east) onto Chase Rd. and proceed on Chase Rd. for 1.6 mi (Chase Rd. has a left turn at a "T" intersection) to entrance to public park and boat ramp on the right (east). Follow main east bound road in park for 0.50 mi where the paying station for the boat ramp is. Turn left (north) into parking lot to the north and proceed to the most north end of the parking lot. Wells are found about 250' north-northwest of the north end of the parking area in a black chain link fence.

Sensor Well Area:

Sensor Well:

Tag Close-up:


Bench Mark:

Bench Mark:

# Monitoring Well Field Data Sheet
# SFWMD #067411

Site/Station Designation: ORF 61 Date: 1-2-08

Crew: W. MILLER/A. ANTIONO

Bench Mark Used:

| Name stamp | Date stamp | Published NAVD 88 Elev. | Published NGVD 29 Elev. | Sign Present (Y/N) |
|---|---|---|---|---|
| R 627 | 2005 | 107.767 | 108.709 | Y |

(if needed) Conversion factor = _____ Converted NGVD29 = _____

Level Setup:

| STA | BS | HI | FS | NGVD29 EL | DIST & REM |
|---|---|---|---|---|---|
| | | | | | |
| SEE | FIELD | | GW1 | 108.40 | |
| BOOK | OL1 PAGE 53 | | GW2 | 108.49 | |
| FOR LEVEL | RUN | | GW3 | 108.49 | |
| | | | | | |
| | | | | | |

NGVD 29 Ground Elev. @ Well Site: 105.97 (CONC. PAD)

Tag Check List:

- Stamp Site/Station Designation ✓
- Stamp Elevation in NGVD 29 ✓
- Stamp Date ✓
- Stamp By Woolpert ✓
- Stamp Datum (NGVD 29) ✓
- Scratch Elev / Remove Tag ✓

Photo Check List:

| | | |
|---|---|---|
| Bench Mark close Up | Picture # | ✓ |
| Bench Mark standing | Picture # | ✓ |
| M. Well tag close Up | Picture # | ✓ |
| M. Well standing | Picture # | ✓ |
| M. Well Area | Picture # | ✓ |
| Staff Gauge | Picture # | N/A |

Staff Gauge:

| Site Name | Water Elev. | Gauge Reading | Time Meas. | Date Meas. |
|---|---|---|---|---|
| | | | | |

Latitude and Longitude Of Local Bench Mark:

| | |
|---|---|
| 28 28 09 | 81 32 28 |

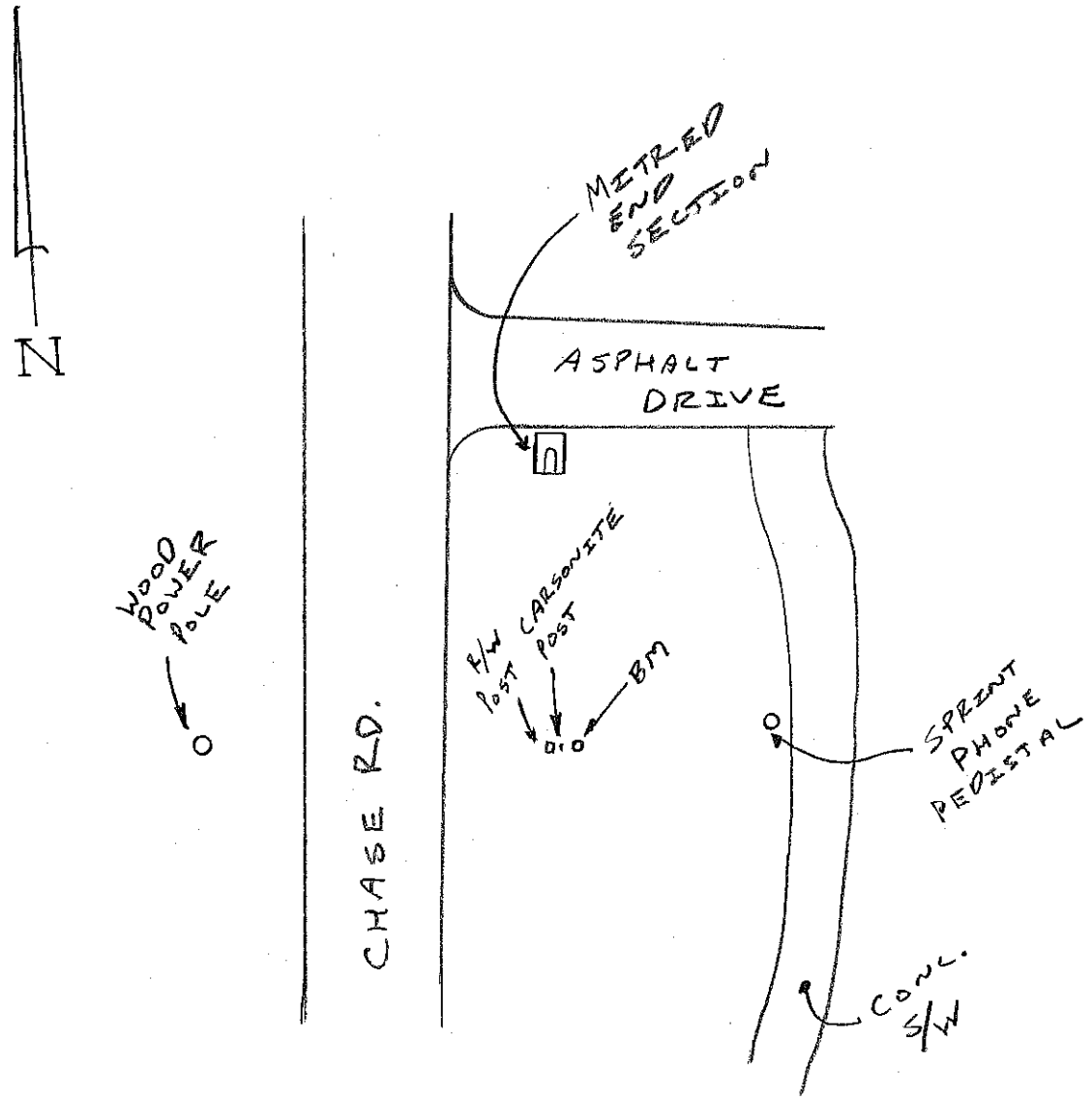
Site Description, Comments, or Remarks:

LAT 28 28 30

LONG 81 32 10

BMR627 LAT 28 28 08

LONG 81 32 28




| | TO BM AZ. | TO BM DIST. |
|---|---|---|
| CARSONITE POST | 95° | 0.80' |
| WOOD POWER POLE | 95° | 61' |
| SPRINT PHONE PED. | 307° | 10.70' |
| MITRED END SECTION | 175° | 26' |

# The NGS Data Sheet

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

```
PROGRAM = datasheet95, VERSION = 8.8
1        National Geodetic Survey,   Retrieval Date = NOVEMBER  2, 2015
 DI9116 ***********************************************************************
 DI9116  DESIGNATION -  R 627
 DI9116  PID         -  DI9116
 DI9116  STATE/COUNTY-  FL/ORANGE
 DI9116  COUNTRY     -  US
 DI9116  USGS QUAD   -  WINDERMERE (1980)
 DI9116
 DI9116                        *CURRENT SURVEY CONTROL
 DI9116
 DI9116* NAD 83(1986) POSITION- 28 28 09.     (N) 081 32 27.     (W)    SCALED
 DI9116* NAVD 88 ORTHO HEIGHT -    32.842 (meters)      107.75  (feet) ADJUSTED
 DI9116
 DI9116  GEOID HEIGHT    -        -27.544 (meters)                     GEOID12B
 DI9116  DYNAMIC HEIGHT  -         32.794 (meters)      107.59  (feet) COMP
 DI9116  MODELED GRAVITY -    979,193.0   (mgal)                       NAVD 88
 DI9116
 DI9116  VERT ORDER      -  FIRST     CLASS II
 DI9116
 DI9116.The horizontal coordinates were scaled from a topographic map and have
 DI9116.an estimated accuracy of +/- 6 seconds.
 DI9116.
 DI9116.The orthometric height was determined by differential leveling and
 DI9116.adjusted by the NATIONAL GEODETIC SURVEY
 DI9116.in April 2010.
 DI9116
 DI9116.Significant digits in the geoid height do not necessarily reflect accuracy.
 DI9116.GEOID12B height accuracy estimate available here.
 DI9116
 DI9116.Photographs are available for this station.
 DI9116
 DI9116.The dynamic height is computed by dividing the NAVD 88
 DI9116.geopotential number by the normal gravity value computed on the
 DI9116.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 DI9116.degrees latitude (g = 980.6199 gals.).
 DI9116
 DI9116.The modeled gravity was interpolated from observed gravity values.
 DI9116
 DI9116;                    North         East     Units  Estimated Accuracy
 DI9116;SPC FL E     -   458,320.      147,040.      MT  (+/- 180 meters Scaled)
 DI9116
 DI9116                          SUPERSEDED SURVEY CONTROL
 DI9116
 DI9116.No superseded survey control is available for this station.
 DI9116
 DI9116_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RMM470492(NAD 83)
 DI9116
 DI9116_MARKER: F = FLANGE-ENCASED ROD
 DI9116_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)
 DI9116_STAMPING: R 627 2005
 DI9116_MARK LOGO: NGS
 DI9116_PROJECTION: RECESSED 8 CENTIMETERS
 DI9116_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
 DI9116_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 DI9116_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 DI9116+SATELLITE: SATELLITE OBSERVATIONS - May 05, 2005
```

DI9116_ROD/PIPE-DEPTH: 5.0 meters
DI9116
DI9116 HISTORY - Date Condition Report By
DI9116 HISTORY - 20050505 MONUMENTED FLDEP
DI9116
DI9116 STATION DESCRIPTION
DI9116
DI9116'DESCRIBED BY FL DEPT OF ENV PRO 2005
DI9116'THE MARK IS ABOUT 5.3 MI (8.5 KM) SOUTH OF GOTHA, 2.0 MI (3.2 KM)
DI9116'SOUTH OF WINDERMERE, IN SECTION 20, TOWNSHIP 23 SOUTH, RANGE 28 EAST.
DI9116'
DI9116'TO REACH THE MARK FROM THE JUNCTION OF SIXTH AVENUE (COUNTY ROAD 439,
DI9116'CONROY WINDERMERE ROAD) AND MAIN STREET (COUNTY ROAD 439 NORTH) IN
DI9116'WINDERMERE, GO SOUTHEAST ON MAIN STREET FOR 0.55 MI (0.9 KM) TO THE
DI9116'JUNCTION OF 12TH STREET ON THE LEFT AND CHASE ROAD ON THE RIGHT, TURN
DI9116'RIGHT ON CHASE ROAD AND GO SOUTHWEST FOR 1.75 MI (2.8 KM) TO THE MARK
DI9116'ON THE LEFT, A STAINLESS STEEL ROD DRIVEN TO REFUSAL AT A DEPTH OF
DI9116'16.4 FT (5.0 M) WITH A NGS LOGO CAP RECESSED 0.3 FT (0.1 M) BELOW THE
DI9116'LEVEL OF THE GROUND AND ABOUT 1.0 FT (0.3 M) BELOW THE LEVEL OF CHASE
DI9116'ROAD, THE DATUM POINT IS RECESSED 0.3 FT (0.1 M) BELOW THE LEVEL OF
DI9116'THE NGS LOGO CAP.
DI9116'
DI9116'LOCATED 90.0 FT (27.4 M) SOUTH OF A OVERHEAD POWER LINE, 48.0 FT (14.6
DI9116'M) SOUTH OF THE APPROXIMATE CENTERLINE OF A DRIVEWAY AT 11101, 11124,
DI9116'32.0 FT (9.8 M) EAST OF THE CENTERLINE OF CHASE ROAD, 11.0 FT (3.4 M)
DI9116'NORTHWEST OF SPRINT CABLE BOX NUMBER 11261, 10.4 FT (3.2 M) WEST OF
DI9116'THE WEST THE WEST EDGE OF A SIDEWALK, 1.0 FT (0.3 M) EAST OF A
DI9116'RIGHT-OF-WAY MARKER AND 0.8 FT (0.2 M) EAST OF A CARSONITE WITNESS
DI9116'POST.
DI9116'
DI9116'NOTE A MAGNET WAS PLACED INSIDE OF THE NGS LOGO CAP.
DI9116'
DI9116'NOTE ACCESS TO THE DATUM POINT IS HAD THROUGH A 5-INCH (13 CM) NGS
DI9116'LOGO CAP.

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

# Monitoring Well Site Information in Table Format

| Well Designation | Well Type | County | Quadrangle | Section | Township | Range | Northing | Easting | Latitude of BM | Longitude of BM | Ref. Point Elev. (NGVD29) | Ref. Point Elev. (NAVD88) | Benchmark Name Used to Set Ref. Elev. | Benchmark Elev. (NGVD29) | Benchmark Elev. (NAVD88) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BOGAFB | NONE | ORANGE | PINE CASTLE | 33 | 23 | 30 | 1497078 | 556344 | 28 27 05.30 | 81 18 36.09 | 92.14 | 91.17 | GODWIN1 | 89.45 | 88.48 |
| KENAN1 | GW1 | OSCEOLA | LAKE MARIN NE | 10 | 30 | 33 | 1292324 | 650320 | 27 53 19.06 | 81 01 05.93 | 79.32 | 78.09 | KEEN5 | 75.83 | 74.61 |
| LCYPR19 | GW1 | OSCEOLA | CYPRESS LAKE | 4 | 28 | 30 | 1360051 | 549721 | 28 04 28.30 | 81 19 49.10 | 57.51 | 56.39 | LCYP19 | 54.53 | 53.41 |
| LHATCH3 | STG1 | POLK | HESPERIDES | 1 | 29 | 29 | 1327143 | 534579 | 27 59 02 | 81 22 37 | 59.27 | 58.06 | LHATCH3 | 54.50 | 53.29 |
| LJACK | STG1 | OSCEOLA | LAKE MARIAN NW | 31 | 29 | 32 | 1326984 | 607824 | 27 54 36 | 81 09 00 | 58.88 | 57.68 | TLWMA3 | 60.80 | 59.60 |
| MARIC | STG1 | POLK | LAKE HATCHINEHA | 18 | 28 | 29 | 1352657 | 507088 | 28 03 07.77 | 81 27 44.68 | 57.85 | 56.84 | POT 28518 | 54.34 | 53.33 |
| ORF 61 | GW1 | ORANGE | WINDERMERE | 10 | 23 | 28 | 1503773 | 482382 | 28 28 09 | 81 32 28 | 108.40 | 107.45 | R 627 | 108.71 | 107.77 |
| ORF 61 | GW2 | ORANGE | WINDERMERE | 10 | 23 | 28 | 1503773 | 482382 | 28 28 09 | 81 32 28 | 108.49 | 107.55 | R 627 | 108.71 | 107.77 |
| ORF 61 | GW3 | ORANGE | WINDERMERE | 10 | 23 | 28 | 1503773 | 482382 | 28 28 09 | 81 32 28 | 108.49 | 107.55 | R 627 | 108.71 | 107.77 |
| RATHAM | GW1 | POLK | FORT KISSIMMEE NW | 6 | 32 | 32 | 1231938 | 602118 | 27 43 20.72 | 81 10 02.20 | 53.17 | 51.94 | F 461 | 53.68 | 52.45 |
| S63A-SCA | HW | OSCEOLA | CYPRESS LAKE | 6 | 28 | 31 | 1361858 | 572373 | 28 04 47.8 | 81 15 35.5 | 67.95 | 67.05 | KR 1068 | 63.86 | 62.96 |
| S63A-SCA | TW | OSCEOLA | CYPRESS LAKE | 6 | 28 | 31 | 1361858 | 572373 | 28 04 47.8 | 81 15 35.5 | 67.96 | 67.06 | KR 1068 | 63.86 | 62.96 |
| S-65GW | GW1 | OSCEOLA | LAKE MARIAN SW | 11 | 31 | 31 | 1261327 | 592302 | 27 48 12.7 | 81 11 51.2 | 57.88 | 56.69 | KR 1013 | 63.00 | 61.81 |
| S-65GW | GW2 | OSCEOLA | LAKE MARIAN SW | 11 | 31 | 31 | 1261327 | 592302 | 27 48 12.7 | 81 11 51.2 | 57.98 | 56.79 | KR 1013 | 63.00 | 61.81 |
| S-65GW | GW3 | OSCEOLA | LAKE MARIAN SW | 11 | 31 | 31 | 1261327 | 592302 | 27 48 12.7 | 81 11 51.2 | 57.87 | 56.68 | KR 1013 | 63.00 | 61.81 |
| S 65A SCA | STG1 | OSCEOLA | FORT KISSIMMEE NW | 28 | 32 | 32 | 1363587 | 525045 | 27 39 33.2 | 81 08 07.2 | 57.57 | 56.38 | MACK 5-23-84 | 53.95 | 52.76 |
| SEBRING | GW1 | HIGHLANDS | LORIDA | 5 | 35 | 30 | 1136116 | 541350 | 27 27 30.54 | 81 21 15.34 | 66.35 | NA | SEBRING MW2004 | 63.04 | NA |
| TIGER | STG1 | POLK | LAKE WEOHYAKAPKA | 17 | 30 | 30 | 1286486 | 545269 | 27 52 19.72 | 81 20 36.48 | 58.12 | 56.92 | Z 504 | 56.24 | 55.04 |
| TURLAK | GW1 | ORANGE | LANDO WEST | 11 | 23 | 28 | 1515086 | 503067 | 28 30 02.9 | 81 28 36 00 | 127.13 | 126.24 | TURLAK 2008 | 124.28 | 123.39 |
| WR 11 | GW1 | OSCEOLA | LAKE HATCHINEHA | 3 | 28 | 29 | 1363587 | 525045 | 28 05 03.64 | 81 24 23.95 | 71.97 | 70.93 | WR11 2007 | 68.66 | 67.59 |
| WR 15 | GW1 | OSCEOLA | LAKE HATCHINEHA | 2 | 28 | 29 | 1363442 | 530369 | 28 05 02.38 | 81 23 24.51 | 67.86 | 66.82 | WR15 2007 | 63.09 | 62.01 |
| WR 16 | GW1 | OSCEOLA | LAKE HATCHINEHA | 2 | 28 | 29 | 1361365 | 529754 | 28 04 41.79 | 81 23 31.30 | 70.68 | 69.64 | WR11 1996 | 66.19 | 65.14 |
| BFARM | STG1 | OSCEOLA | KISSIMMEE | 35 | 25 | 28 | 1432592 | 503001 | 28 16 26.10 | 81 28 33.08 | 64.13 | 63.17 | BFARM 2007 | 65.02 | 64.09 |
| KISSFS | GW1 | OSCEOLA | KISSIMMEE | 19 | 25 | 29 | 1438580 | 511848 | 28 17 25.73 | 81 26 54.39 | 74.95 | NA | KISSFS 1983 | 75.84 | NA |
| KISSFS | GW2 | OSCEOLA | KISSIMMEE | 19 | 25 | 29 | 1438580 | 511848 | 28 17 25.73 | 81 26 54.39 | 74.36 | NA | KISSFS 1983 | 75.84 | NA |
| KISSFS | GW3 | OSCEOLA | KISSIMMEE | 19 | 25 | 29 | 1438580 | 511848 | 28 17 25.73 | 81 26 54.39 | 74.46 | NA | KISSFS 1983 | 75.84 | NA |
| WRLGTE | GW1 | ORANGE | INTERCESSION CITY | 34 | 24 | 28 | 1461558 | 494092 | 28 21 12.55 | 81 30 14.08 | 97.20 | 96.31 | WRLGTE 2007 | 94.03 | 93.14 |
| WRLGTE | GW2 | ORANGE | INTERCESSION CITY | 34 | 24 | 28 | 1461558 | 494092 | 28 21 12.55 | 81 30 14.08 | 97.18 | 96.29 | WRLGTE 2007 | 94.03 | 93.14 |

NOTES:

1. Latitude and longitude were derived at the benchmark location, and is given to assist in locating the site. It is not meant to accurately locate each well.
2. Northing and Eastings were obtained by using CORPSCON to convert the latitude and longitude to Florida State Plane Coordinates, East Zone, Adjustment of 1990 (NAD83/90) HARN.
3. All measurements and elevations are in feet unless otherwise noted.
4. Some Benchmarks used did not have a published NAVD88 elevation, and therefore have been left blank.