





VERTICAL CONTROL SURVEY REPORT

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

FINAL

December, 2007

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 2121 Ponce de León Blvd., Suite 200 Coral Gables, Florida 33134 (305) 567-9900/fax: (305) 567-9009

Prepared by:

John A. Cestnick, PSM

Florida Professional Surveyor and Mapper # 5994

Summary of Contents

Section 1: Vertical Control Survey Report	8 Pages
Summary of Contents	
Overview of the Project	
List of Project Deliverables	
Date of Survey	
Equipment Used	
Project Location	
Survey Methodology	
Summary of Leveling Results	
Monitoring Well Site Information Summary	
Surveyor's Notes:	
Section 2: Monitoring Well Site Information	Pages 9-85
Section 3: Monitoring Well Site Information in Table Format	Pages 86-88
Section 4: New Benchmark Data Sheets	Pages 89-98

Overview of the Project

This survey request 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 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 project began requiring a total of six sites that needed a new local benchmark, and a total of 59 separate sites requiring tags to be placed on wells. As the project was being completed, changes to the scope of services was required due to situation found in the field. For example, some sites were identified to have missing or destroyed benchmarks, additional leveling was required, and some sites were found to have additional wells than were identified.

To address these changes, a second work-order has been assigned for these additional tasks, as well as to perform similar services at additional site locations. The original list of sites to complete include the following.

2. 3. 4. 5. 6. 7. 8. 9. 10.	AIR19 ALL1 ALL2 BFARM * BLACK ** BOG527 * C31SW CAST * EXOTFI * INRCTY KIRCOF KISSD * KISSFS	15. MOSSPK * 16. OAKISL * 17. OS181 ** 18. OSF53 19. REDYCK 20. REEDC 21. S57-SCA 22. S58-SCA 23. S59-SCA 24. S59W 25. S60-SCA 26. S61-SCA 27. S61W	29. S63-SCA 30. SCBR 31. SCPE 32. SCPN 33. SCPS 34. SCSS 35. SW15 36. TAFTOR ** 37. TMRNCH 38. TB1 39. TB2 40. TB3 41. TOHO1	43. TOHO4 44. TOHO5 45. TOHO6 46. TOHO7 47. TOHO8 48. TOHO10 49. TOHO12 50. TOHO13 51. TOHO14 52. TOHO15 53. TOHO16 54. TOHOE 55. TOHOW	57. WR8 * 58. WR9 * 59. WRLGTE *
	KISSFS MAKO	27. S61W 28. S62-SCA	41. TOHO1 42. TOHO2	55. TOHOW 56. WR6 *	
		20. 002 007	12. 13.132	000	

^{*} Benchmark was set at site (11 total).

Not part of this report are the following sites for the following reasons.

Site	Notes:
BFARM	 Incorrect elevation was set on tag. This site will be included with the second work-order deliverable.
BLACK	Site was decommissioned.
KISSFS	 Incorrect elevation was set on tag. This site will be included with the second work-order deliverable.
OS181	Site was decommissioned.
REEDC	 REEDC was removed from the project after the District was informed that it was completed under a different contract.
S61W	 Site was overlooked. This site will be included with the second work-order deliverable.
TAFTOR	Site was decommissioned.
TMRNCH	 Site was found to have existing tag, and tag elevations were verified. Tags were set by "EE &

^{**} Site was decommissioned / destroyed (3 total).

Site	Notes:
TB1	 COON". GW1 was set on 5-18-05 with a verified reference elevation of 72.17, and GW2 was set on 1-6-06 with a verified reference elevation of 71.89 feet. Site was found to have existing tag, and tag elevations were verified. Tags were set by "K&S"
	dated "8-8-06". The east well was verified at 104.35 feet. The west well was verified at 104.02 feet.
TB2	 Site was found to have existing tag, and tag elevations were verified. Tags were set by "K&S" dated "8-9-06". GW1 well was verified at 104.09 feet. GW2 well was verified at 105.24 feet.
TB3	• TB3 was inaccessible due to high water. After discussing this with the District, it was assumed to also be completed by "K&S" as were TB1 and TB2.
TOHO13	 Site was found to have existing tag, and tag elevations were verified. Tag was set by "K&S" dated "8-9-07". Stamped elevation was 65.099 feet.
WRLGTE	 Incorrect elevation was set on tag. This site will be included with the second work-order deliverable.

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 August 28 and October 19, 2007.

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 Osceola and Orange 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. Rebar rods were also added to the mixture for durability.

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. All well sites had a previously marked reference point on the 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 sites 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

BOG527 was set using NGS station L715017, a Second-Order Class I benchmark with published elevation of 92.90 feet (NAVD88), and NGS station L715018, a Second-Order Class I benchmark with published elevation of 91.84 feet (NAVD88). Leveling began at station L715017, passed through BOG527, and ended on L715018 with a leveled elevation of 91.88. Total leveling distance was 5.8 miles resulting in a closure of 0.04 (0.07 allowable). Resulting elevation for BOG527 was 80.95 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 81.88 feet.

CAST was set using NGS station Q507, a Second-Order Class I benchmark with published elevation of 73.65 feet (NAVD88), and NGS station P507, a Second-Order Class I benchmark with published elevation of 76.01 feet (NAVD88). Leveling began at station Q507, passed through CAST, and ended on P507 with a leveled elevation of 76.01. Total leveling distance was 1.65 miles resulting in a closure of 0.04 (0.04 allowable). Resulting elevation for CAST was 70.65 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 71.85 feet.

EXOFTI was set using NGS station S507, a Second-Order Class I benchmark with published elevation of 73.08 feet (NAVD88), and NGS station R507, a Second-Order Class I benchmark with published elevation of 70.67 feet (NAVD88). Leveling began at station S507, passed through EXOFTI, and ended on R507 with a leveled elevation of 70.65. Total leveling distance was 1.54 miles resulting in a closure of 0.02 (0.04 allowable). Resulting elevation for EXOFTI was 70.92 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 72.14 feet.

KISSD was set using NGS station F514, a Second-Order Class I benchmark with published elevation of 74.41 feet (NAVD88), and NGS station N512, a Second-Order Class I benchmark with published elevation of 65.69 feet (NAVD88). Leveling began at station F514, passed through KISSD, and ended on N512 with a leveled elevation of 65.69. Total leveling distance was 1.46 miles resulting in a closure of 0.00 (0.04 allowable). Resulting elevation for KISSD was 60.48 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 61.42 feet.

MOSSPK was set using NGS station R575, a Second-Order Class I benchmark with published elevation of 66.29 feet (NAVD88), and NGS station C802-008, a Second-Order Class I benchmark with published elevation of 66.88 feet (NAVD88). Leveling began at station R575, passed through MOSSPK, and ended on C802-008 with a leveled elevation of 66.91. Total leveling distance was 0.98 miles resulting in a closure of 0.03 (0.03 allowable). Resulting elevation for MOSSPK was 67.49 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 68.53 feet.

OAKISL was set using NGS station D466, a Second-Order Class I benchmark with published elevation of 155.80 feet (NAVD88), and NGS station I4-72A42E RM2, a Second-Order Class I benchmark with

published elevation of 189.29 feet (NAVD88). Leveling began at station D466, passed through OAKISL, and ended on I4-72A42E RM2 with a leveled elevation of 189.33. Total leveling distance was 6.7 miles resulting in a closure of 0.04 (0.08 allowable). Resulting elevation for OAKISL was 108.24 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 109.10 feet.

WR6 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 WR6, and ended on OS135 with a leveled elevation of 64.71. Total leveling distance was 12.8 miles resulting in a closure of 0.06 (0.11 allowable). Resulting elevation for WR6 was 63.78 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 64.82 feet.

WR8 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 WR8, and ended on OS135 with a leveled elevation of 64.71. Total leveling distance was 11.6 miles resulting in a closure of 0.06 (0.10 allowable). Resulting elevation for WR8 was 69.79 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 70.83 feet.

WR9 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 WR9, and ended on OS135 with a leveled elevation of 64.71. Total leveling distance was 11.6 miles resulting in a closure of 0.06 (0.10 allowable). Resulting elevation for WR9 was 69.32 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 70.36 feet.

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 28° 23' 31.937"	Longitude 81° 22' 31.937"		Northing 1472251	Easting 538267	
Section 13	Township 24	Range 29	County Orange	Quad Lake Jessamine	
Benchmark Informat	tion:				
Name	Existing / Set		NAVD88	NGVD29	
BOG527	Set		80.851	81.876	
Reference Point Information: Stamped Elevation (NGVD29) 87.50 9-21-07 Stamped Date 87.50 9-21-07 Woolpert, Inc.					
Staff Gauge Informa Water Elevation (NGVD29)	tion: Gauge Reading	g Tim	ne of Reading	Date of Reading	

NOTES:

79.928

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.

09:25

- 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.

80.05

4. Reference point elevations were determined by using the stated NGVD29 elevation. NGVD29 elevations were calculated using CORPSCON to convert the stated NAVD88 elevation. In some cases the local benchmark only had a NGVD29 elevation, so it was used and no NAVD88 elevation is stated.

9-21-07

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

Section 2: Monitoring Well Site Information

Latitude Longitude Northing Easting 28° 15' 21.33" 81° 30' 13.704" 1426088 493978

SectionTownshipRangeCountyQuad32628OsceolaIntercession City

Benchmark Information:

NameExisting / SetNAVD88NGVD29OSF WELLS BM1ExistingNA68.470

Reference Point Information:

Stamped Elevation (NGVD29) Stamped Date By Firm 71.13 9-20-07 Woolpert, Inc.

Note: Reference mark 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 US192 and US17 in the town of Kissimmee, head south on US17 for 7.80 miles to Nocatee Street. Turn left and head south on Nocatee Street for .23 of a mile to Wile Avenue. Turn left and head east on Wile Avenue for 0.12 of a mile to the iron gate, go through the gate and head south for 241 feet. Well site is on the east side of dirt path in the open field.



Sensor Well:



Tag: @ base of pole.



Bench Mark:



Bench Mark:



Tag Close Up:



Latitude Longitude Northing Easting 28° 15' 21.33" 81° 30' 13.704" 1426088 493978

SectionTownshipRangeCountyQuad32628OsceolaIntercession City

Benchmark Information:

NameExisting / SetNAVD88NGVD29OSF WELLS BM1ExistingNA68.470

Reference Point Information:

Stamped Elevation (NGVD29) Stamped Date By Firm 71.98 9-20-07 Woolpert, Inc.

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

Staff Gauge Information:

To Reach Description:

From the intersection of US192 and US17 in the town of Kissimmee, head south on US17 for 7.80 miles to Nocatee Street. Turn left and head south on Nocatee Street for .23 of a mile to Wile Avenue. Turn left and head east on Wile Avenue for 0.12 of a mile to the iron gate, go through the gate and head south for 241 feet. Well site is on the east side of dirt path in the open field.



Sensor Well:



Tag:



Bench Mark:



Bench Mark:



Tag Close Up:



Latitude Longitude Northing Easting 28° 15' 21.33" 81° 30' 13.704" 1426088 493978

SectionTownshipRangeCountyQuad32628OsceolaIntercession City

Benchmark Information:

NameExisting / SetNAVD88NGVD29OSF WELLS BM1ExistingNA68.470

Reference Point Information:

Stamped Elevation (NGVD29) Stamped Date By Firm 72.53 9-20-07 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 US192 and US17 in the town of Kissimmee, head south on US17 for 7.80 miles to Nocatee Street. Turn left and head south on Nocatee Street for .23 of a mile to Wile Avenue. Turn left and head east on Wile Avenue for 0.12 of a mile to the iron gate, go through the gate and head south for 241 feet. Well site is on the east side of dirt path in the open field.



Sensor Well:



Tag:



Bench Mark:



Bench Mark:



Tag Close Up:



 Latitude
 Longitude
 Northing
 Easting

 28° 15' 21.338"
 81° 30' 13.704"
 1426088
 493978

SectionTownshipRangeCountyQuad32628OsceolaIntercession City

Benchmark Information:

NameExisting / SetNAVD88NGVD29OSF WELLS BM1ExistingNA68.470

Reference Point Information:

Stamped Elevation (NGVD29) Stamped Date By Firm 72.10 9-20-07 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 US192 and US17 in the town of Kissimmee, head south on US17 for 7.80 miles to Nocatee Street. Turn left and head south on Nocatee Street for .23 of a mile to Wile Avenue. Turn left and head east on Wile Avenue for 0.12 of a mile to the iron gate, go through the gate and head south for 241 feet. Well site is on the east side of dirt path in the open field.



Sensor Well:



Tag:



Bench Mark:



Bench Mark:



Tag Close Up:



 Latitude
 Longitude
 Northing
 Easting

 28° 15' 21.338"
 81° 30' 13.704"
 1426088
 493978

SectionTownshipRangeCountyQuad32628OsceolaIntercession City

Benchmark Information:

NameExisting / SetNAVD88NGVD29OSF WELLS BM1ExistingNA68.470

Reference Point Information:

Stamped Elevation (NGVD29) Stamped Date By Firm 71.23 9-20-07 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 US192 and US17 in the town of Kissimmee, head south on US17 for 7.80 miles to Nocatee Street. Turn left and head south on Nocatee Street for .23 of a mile to Wile Avenue. Turn left and head east on Wile Avenue for 0.12 of a mile to the iron gate, go through the gate and head south for 241 feet. Well site is on the east side of dirt path in the open field.



Sensor Well:



Tag: @ base of pole.



Bench Mark:

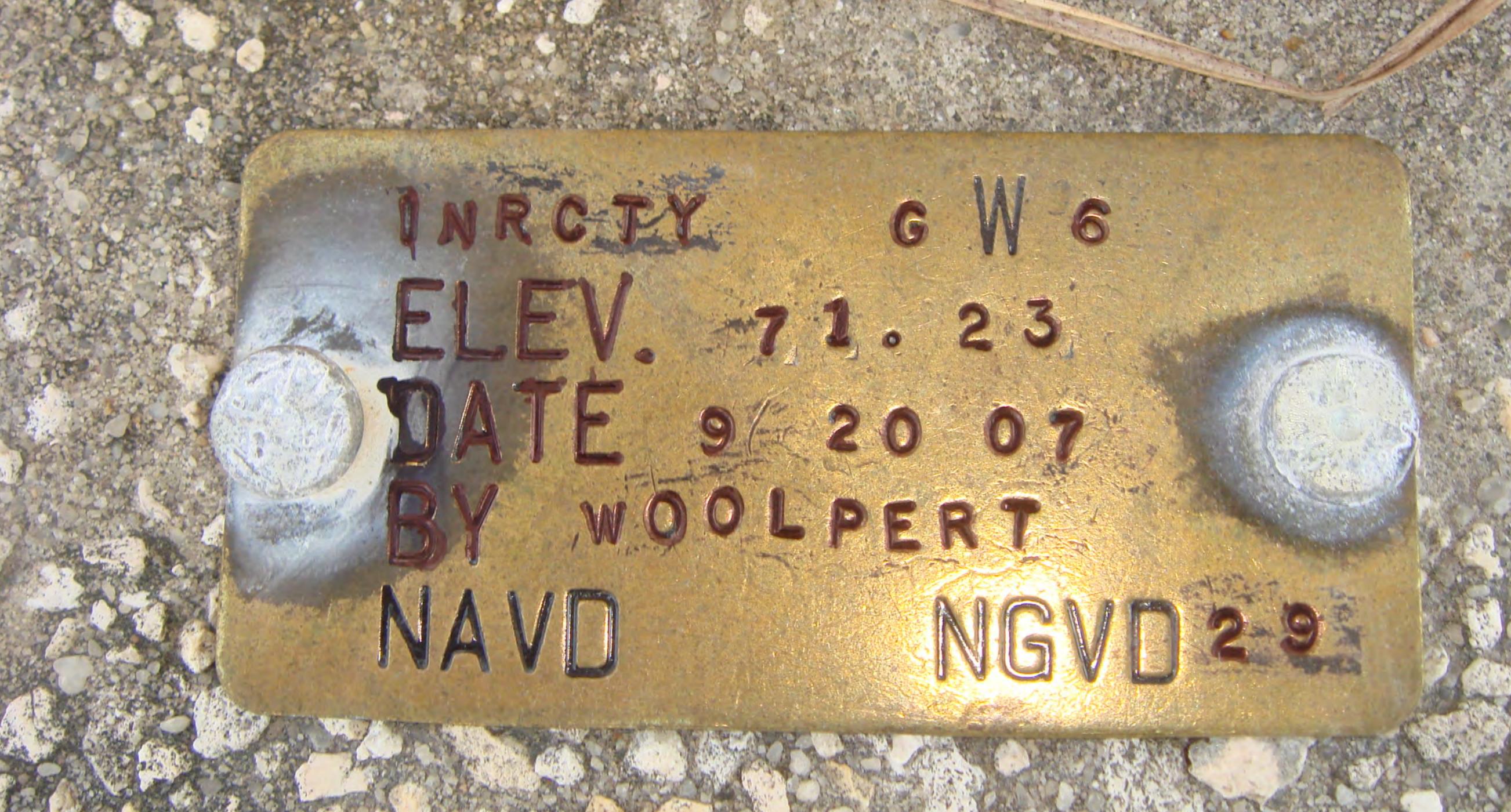


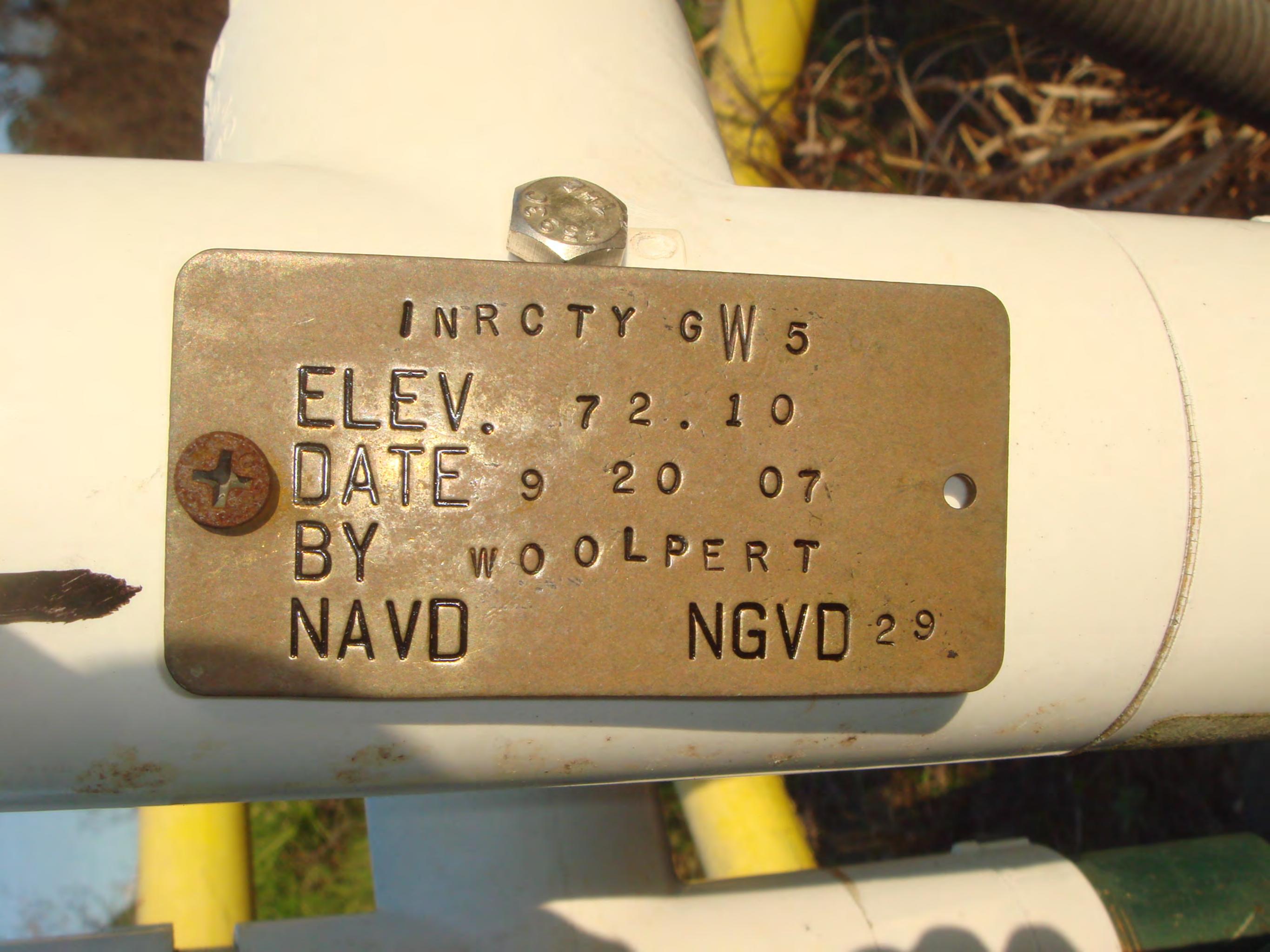
Bench Mark:

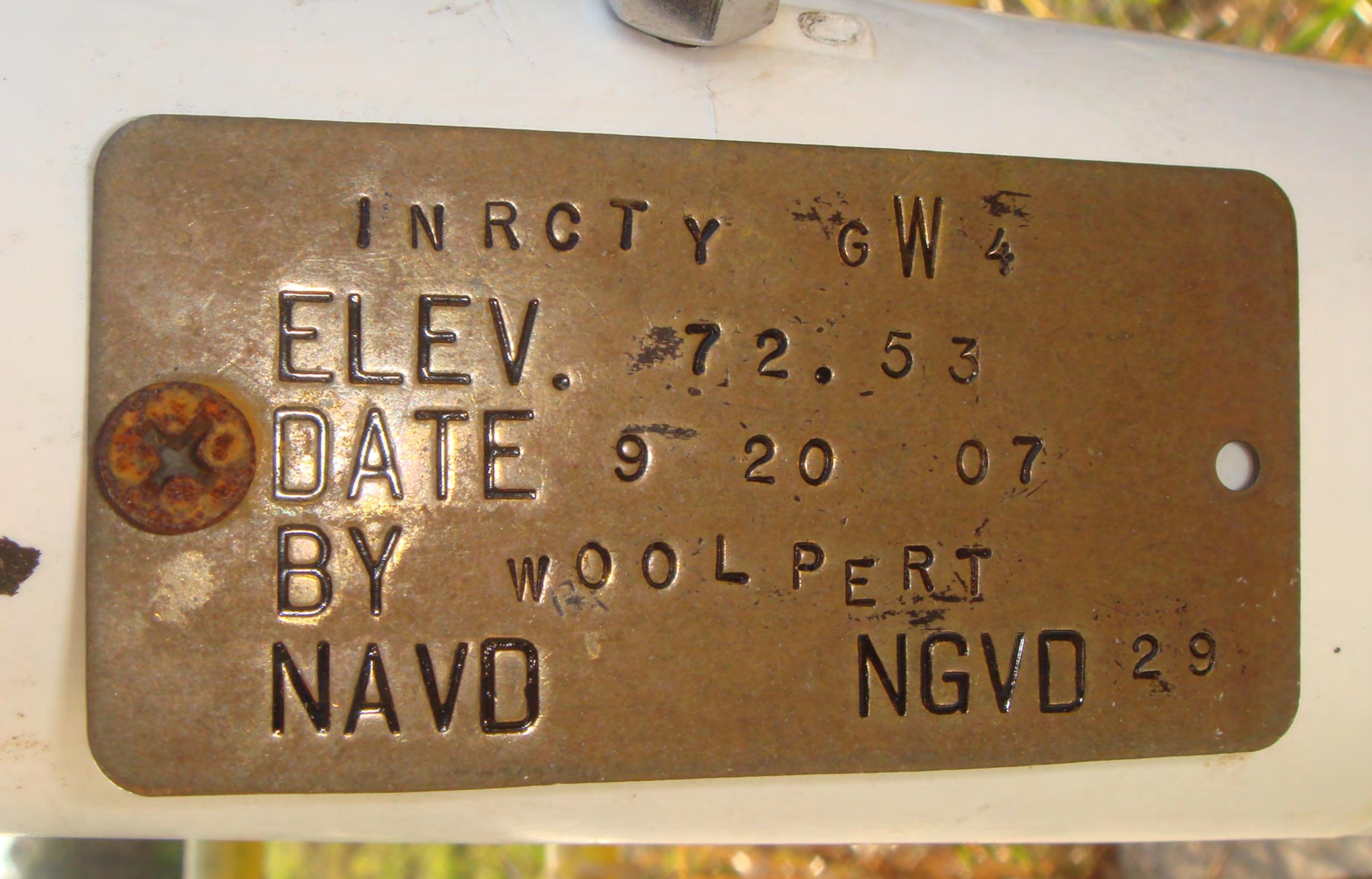


Tag Close Up:









EUNRCTY NGVD29 NAVO

INR GTY GW2 NAVO

































Monitoring Well Field Data Sheet SFWMD #067411

Site/Station Designation: INRCTY 6W 1

Date: 9-20-07

Crew: RODRIGUZ/MCLARINEY

Bench Mark Used:

Name stamp	Date stamp	EL NAVD 88	EL NGVD 29	Sign Present
OSF WELL SBMI	2003		68,470	NO

Level Setup:

STA	BS	HI	FS	NGVD29 EL	DIST & REM
OSFWELLS BMI				68,470	
	4,427	73,297			14,91
6W1			2,124	71.169	17.74
	2.096	73. 265			14.52
OSFWELLS BMI			4,793	68.472	15.63

Tag Check List:

Photo Check List:

•	Stamp Site/Station Designation	INRCTY GWI	Bench Mark close	
•	Stamp Elevation in NGVD 29	71, 17	Bench Mark standing	
• 1	Stamp Date	9 20 07	M. Well tag close	r
•	Stamp By Woolpert		M. Well standing	H
•	Stamp Datum (NGVD 29)	/	M. Well Area	}
•	Scratch Old Tag	/	-	L

Photo#	1480
Photo#	1481
Photo#	1482
Photo#	1483
Photo#	1494

Staff Gauge:

Site Name	Water Elev.	Gauge Reading	Time Meas.	Date Meas.
				N

Latitude and Longitude:

1426087,41

493977,82

Site Description, Comments, or Remarks:

DOES NOT MATCH OLD WELL PEFERANCE ELEV.

Monitoring Well Field Data Sheet SFWMD #067411

Site/Station Designation: INRCTY

GWZ

Date: 9-20-07

Crew: RODRIGUZ/MCLARINEY

Bench Mark Used:

Name stamp	Date stamp	EL NAVD 88	EL NGVD 29	Sign Present
OSFWELLS BMI	2003		68,470	NO

Level Setup:

STA	BS	HI	FS	NGVD29 EL	DIST & REM
OS FWELLS BMI				68.470	
	4,896	73.368			14.47
6w2			2,231	71,1387	17,92
	2,160	73,2967			17.88
OSFWELLSBIM			4,825	68,47/2	14.93

Tag Check List:

Photo Check List:

	•				
•	Stamp Site/Station Designation	INRCTY GWZ	Bench Mark close	Photo#	1480
•	Stamp Elevation in NGVD 29	71.13	Bench Mark standing	Photo#	1481
•	Stamp Date	92007	M. Well tag close	Photo#	14 84
•	Stamp By Woolpert	/	M. Well standing	Photo#	14 45
. •	Stamp Datum (NGVD 29)		_ M. Well Area	Photo#	1494
•	Scratch Old Tag	. ✓		L	

Staff Gauge:

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

Latitude and Longitude:

1426087,91

493977.82

Site Description, Comments, or Remarks:

DOES NOT MATCH OLD WELL REFERANCE

Monitoring Well Field Data Sheet SFWMD #067411

Site/Station Designation: INRCTY GW3 05F99

Date: 4-20-07

Crew: RODRIGUZ /MCCARTNEY

Bench Mark Used:

Name stamp	Date stamp	EL NAVD 88	EL NGVD 29	Sign Present
OSWELLS BMI	2003	_	68.470	ND

Level Setup:

STA	BS	HI	FS	NGVD29 EL	DIST & REM
OS WELLS BAL				68.470	
	4,965	73.375		-	15.05
GW3			1,394	71,98%	15.85
	1.368	73,349			15.62
BMI			4,884	68.4685	15.02

Tag Check List:

Photo Check List:

•	Stamp Site/Station Designation	INRCTY GW3	Bench Mark close
•	Stamp Elevation in NGVD 29	71.98	Bench Mark standing
•	Stamp Date	9 20 07	M. Well tag close
•	Stamp By Woolpert		M. Well standing
	Stamp Datum (NGVD 29)		M. Well Area
•	Scratch Old Tag	1	

Photo#	1480
Photo#	1461
Photo#	14 % 6
Photo#	1467
Photo#	1494
L	

Staff Gauge:

Site Name	Water Elev.	Gauge Reading	Time Meas.	Date Meas.
The state of the s	arms demanded to the second	The state of the s	We state of the last of the state of the sta	Maries in Assessment Color State (Color Stat

Latitude and Longitude:

1426087,91

493977.62

Site Description, Comments, or Remarks:

DOES NOT MATCH OLD WELL REFERANCE

Monitoring Well Field Data Sheet SFWMD #067411

Site/Station Designation: INRCTY 6W4 05F 98

Date: 9-20-07

Crew: RODRIGUZ/MCCARTNEY

Bench Mark Used:

Name stamp	Date stamp	EL NAVD 88	EL NGVD 29	Sign Present
DSNELLSBMI	2003		68.470	Nd

Level Setup:

STA	BS	HI	FS	NGVD29 EL	DIST & REM
OSWELLS BMI				68,470	
	4,485	73,355			15.04
GW4			. 823	72,532	15.86
	. 434	73,37			15,70
OSWELLSBM1			4.898	68,472	14.84

Tag Check List:

Photo Check List:

•					
	e/Station Designation	INRCTY 6WG	Bench Mark close	Photo#	1480
_	evation in NGVD 29	72.53	_ Bench Mark standing	Photo#	1481
• Stamp Da		9 20 07	M. Well tag close	Photo#	14 88
	Woolpert		_ M. Well standing	Photo#	1469
Stamp DaScratch O	tum (NGVD 29) ld Tag		_ M. Well Area	Photo#	1494
		•			

Staff Gauge:

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

Latitude and Longitude:

1426087.91

493977.82

Site Description, Comments, or Remarks:

DOES NOT MATCH OLD WELL REFERENCE ELEX

Monitoring Well Field Data Sheet SFWMD #067411

Site/Station Designation: INRCTY GW5 05F 97

Date: 9-20-07

Crew: RODRIGUZ/MCCARTNEY

Bench Mark Used:

Name stamp	Date stamp	EL NAVD 88	EL NGVD 29	Sign Present
OSWELLS BM!	2003		68.470	N9

Level Setup:

STA	BS	HI	FS	NGVD29 EL	DIST & REM
OSWELLS BM)				68.470	
	4.900	73.370			14.83
GW5			1,272	72,098	16.00
	1,271	73,369			16.10
05WELLSBM			4.898	68.471	14.64

Tag Check List:

Photo Check List:

•				
• Stamp Site/Station Designation	INRCTY GWS	Eench Mark close	Photo#	1480
 Stamp Elevation in NGVD 29 	72.10	Bench Mark standing	Photo#	1481
• Stamp Date	920 07	M. Well tag close	Photo#	1490
 Stamp By Woolpert 		_ M. Well standing	Photo#	1441
• Stamp Datum (NGVD 29)	/	_ M. Well Area	Photo#	1494
 Scratch Old Tag 	<i>)</i>		11101011	1477

Staff Gauge:

Site Name	Water Elev.	Gauge Reading	Time Meas.	Date Meas.
	Annahar San Park San	pull being carbon carbon parties of the	en sommale and definition and all all and an extension of the contract of the	ANSWERS SERVICE SERVICE SERVICES

Latitude and Longitude:

1426087.91

493977,82

Site Description, Comments, or Remarks:

DOES NOT MATCH OLD WELL REFERENCE

Monitoring Well Field Data Sheet SFWMD #067411

Site/Station Designation: INRCTY GW6 OSF 100

Date: 9-20-07

Crew: RODRIGUZ/MYLARTNEY

Bench Mark Used:

Name stamp	Date stamp	EL NAVD 88	EL NGVD 29	Sign Present
05WELL 5BH1	2003	_	64.470	NO

Level Setup:

STA	BS	HI	FS	NGVD29 EL	DIST & REM
OSWELLSBYN				68,470	
	4.793	73, 263			15.57
6W6			Z.037	71,226	21,95
	2.088	73.314			22.31
OSWELLS BM 1			4.840	68.474	16.10

Tag Check List:

Photo Check List:

•	Stamp Site/Station Designation	INRCTY GWE	Bench Mark close
•	Stamp Elevation in NGVD 29	71.23	Bench Mark standing
•	Stamp Date	9-20-07	M. Well tag close
•	Stamp By Woolpert		M. Well standing
•	Stamp Datum (NGVD 29)		M. Well Area
•	Scratch Old Tag	/	

Photo#	1480
Photo#	1481
Photo#	1492
Photo#	1493
Photo#	1494

Staff Gauge:

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

Latitude and Longitude:

28 15 21, 3382 81 30113. 7048

1426087.91

493977.62

Site Description, Comments, or Remarks:

DOES NOT MATCH OLD ELEV FOR WELL REFERENCE



South Florida Water Management District Benchmark Database

Report run on: December 5, 2007 9:06 AM

Designation: OSFWELLSBM1

County: OSCEOLA

USGS Quad: INTERCESSION CITY
Project: INRCTY WELL SITE

Sec: 3 Twp: 26 Rge: 28

Status:

NAD 1927 Coordinates:

N =

E =

Adjustment:

NAD 1983 Coordinates:

X = 493984.844

Y = 1426091.818

Adjustment:

Order: Class: Latitude: 281521.300

Longitude: 813013.600

Scaled values only

Monument By: SFWMD

Year: 2003

Type: V

Stamping: OSF WELLS BM 1 2003

Party Chief: ART HOLLIN

Field Book OSCWELLS 17

Page: 34

NGVD 1929

Elevation: 68.470

Order: 3 Class:

NAVD 1988

Elevation: 67.514

Order: 3 Class:

Description:

FROM THE INTERSECTION OF UNITED STATES HIGHWAY 17/92 (US 17/92) AND TALLAHASSEE BOULEVARD IN INTERCESSION CITY, GO EAST ON US 17/92 A DISTANCE OF 0.25 OF A MILE TO A ROAD INTERSECTION SHEPHERD LANE TO THE SOUTH AND NOCATEE STREET TO THE NORTH. THEN GO SOUTH ON SHEPHERD LANE 0.25 OF A MILE TO WILE ROAD. THEN GO EAST ON WILE ROAD 0.125 OF A MILE TO A FENCE WITH A GATE. GO THROUGH THE GATE AND GO SOUTH ALONG THE FENCE, 250 FEET MORE OR LESS TO THE STATIONS LOCATION.

THE STATION IS SET ON THE NORTH END OF A CONCRETE SLAB. THE STATION IS 93.6 FEET SOUTH OF THE FENCE CORNER.

THE STATION IS A BRASS DISK STAMPED "OSF WELLS BM 1 2003".

NGS SOURCE MONUMENTS: G354 AND H354

Section 3: Monitoring Well Site Information in Table Format

Monitoring Well Site Information in Table Format

Well	Well								Latitude	Longitude	Ref. Point Elev.	Ref. Point Elev.	Benchmark Name	Benchmark	Benchmark
Designation	Type	County	Quadrangle	Section	Township	Range	Northing	Easting	of BM	of BM	(NGVD29)	(NAVD88)	Used to Set Ref.	Elev.	Elev.
													Elev.	(NGVD29)	(NAVD88)
AIR19	GW1	Orange	Pine Castle	18	24	30	1479505	542444	28 24 11.94	81 21 13.49	89.41	88.48	AIR19	84.80	83.87
AIR19	GW2	Orange	Pine Castle	18	24	30	1479505	542444	28 24 11.94	81 21 13.49	90.05	89.12	AIR19	84.80	83.87
ALL1	GW1	Osceola	Ashton	29	26	31	1404991	577718	28 11 55	81 14 36.8	76.52	75.59	ALLIGATOR WELL #2	71.77	70.85
ALL1	GW2	Osceola	Ashton	29	26	31	1404991	577718	28 11 55	81 14 36.8	76.27	75.35	ALLIGATOR WELL #2	71.77	70.85
ALL2 ALL2	GW1 GW2	Osceola	Ashton Ashton	29 29	26 26	31	1404988 1404988	578899 578899	28 11 55 28 11 55	81 14 23.6 81 14 23.6	74.16	73.24	ALLIGATOR WELL #2 ALLIGATOR WELL #2	71.77 71.77	70.85 70.85
BOG527	STG1	Osceola Orange	Lake Jessamine	13	24	31 29	1475481	535428	28 23 31.94	81 22 31.9	73.80 87.50	72.88 86.58	BOG 527	81.88	70.85 80.95
C31SW	STG1	Osceola	St Cloud South	8	26	30	1418598	547434	28 14 09.02	81 20 15.7	62.77	61.83	C31 GFS	57.70	56.76
CAST	GW1	Osceola	Ashton	5	27	32	1395463	612548	28 10 21.4	81 08 07.4	74.54	73.34	CAST	71.85	70.65
CAST	GW2	Osceola	Ashton	5	27	32	1395463	612548	28 10 21.4	81 08 07.4	74.07	72.87	CAST	71.85	70.65
EXOTFI	GW1	Osceola	Holopaw	9	27	32	1389346	619075	28 09 20.7	81 06 54.4	75.39	74.17	EXOTFI	72.14	70.92
INRCTY	GW1	Osceola	Intercession City	3	26	28	1426088	493978	28 15 21.34	81 30 13.70	71.17	70.21	OSFWELLS BM1	68.47	67.51
INRCTY	GW2	Osceola	Intercession City	3	26	28	1426088	493978	28 15 21.34	81 30 13.70	71.14	70.18	OSFWELLS BM1	68.47	67.51
INRCTY	GW3	Osceola	Intercession City	3	26	28	1426088	493978	28 15 21.34	81 30 13.70	71.98	71.02	OSFWELLS BM1	68.47	67.51
INRCTY	GW4	Osceola	Intercession City	3	26	28	1426088	493978	28 15 21.34	81 30 13.70	72.53	71.57	OSFWELLS BM1	68.47	67.51
INRCTY	GW5	Osceola	Intercession City	3	26	28	1426088	493978	28 15 21.34	81 30 13.70	72.10	71.14	OSFWELLS BM1	68.47	67.51
INRCTY	GW6	Osceola	Intercession City	3	26	28	1426088	493978	28 15 21.34	81 30 13.70	71.23	70.27	OSFWELLS BM1	68.47	67.51
KIRCOF	GW1	Osceola	Lake Tohopekaliga	9	27	29	1389279	519428	28 09 17.84	81 25 27.67	74.83	73.82	OS 134	71.66	70.65
KIRCOF	GW2	Osceola	Lake Tohopekaliga	9	27	29	1389279	519428	28 09 17.84	81 25 27.67	73.93	72.92	OS 134	71.66	70.65
KISSD	STG1	Osceola	Kissimmee	28	25	29	1436371	521494	28 17 04.2	81 25 06.4	65.19	64.25	KISSD	61.42	60.48
MAKO	GW1	Osceola	Narcoossee	32	25	31	1432570	582808	28 16 28.18	81 13 40.49	80.19		MAKO 3	76.39	L
MOSSPK	GW1	Orange	Narcoossee NW	23	24	31	1470369	594673	28 22 42.65	81 11 28.46	72.64	71.60	MOSSPK	68.53	67.49
MOSSPK	GW2	Orange	Narcoossee NW	23	24	31	1470369	594673	28 22 42.65	81 11 28.46	72.30	71.26	MOSSPK	68.53	67.49
OAKISL	GW1	Osceola	Lake Louisa SW	5 5	25 25	27	1454680	452311	28 20 02.49	81 38 01.31	111.46	110.60	OAKISL	109.10	108.24 108.24
OAKISL OAKISL	GW2 GW3	Osceola Osceola	Lake Louisa SW Lake Louisa SW	5	25	27 27	1454680 1454680	452311 452311	28 20 02.49 28 20 02.49	81 38 01.31 81 38 01.31	111.60 111.55	110.74 110.69	OAKISL OAKISL	109.10 109.10	108.24
OAKISL	GW4	Osceola	Lake Louisa SW	5	25	27	1454680	452311	28 20 02.49	81 38 01.31	110.01	109.15	OAKISL	109.10	108.24
OSF53	GW4	Osceola	St Cloud South	18	27	30	1383756	542986	28 08 23.9	81 21 04.3	62.77	61.73	OSF 53	61.41	60.37
OSF53	GW1	Osceola	St Cloud South	18	27	30	1383756	542986	28 08 23.9	81 21 04.3	63.68	62.63	OSF 53	61.41	60.37
OSF53	GW3	Osceola	St Cloud South	18	27	30	1383756	542986	28 08 23.9	81 21 04.3	63.69	62.65	OSF 53	61.41	60.37
REDYCK	GW1	Orange	Intercession City	23	24	27	1470874	467168	28 22 43.57	81 35 15.94	101.54	100.60	REDYCK	99.09	98.15
REDYCK	GW2	Orange	Intercession City	23	24	27	1470874	467168	28 22 43.57	81 35 15.94	103.64	102.70	REDYCK	99.09	98.15
S57-SCA	STG1	Osceola	Narcoossee	1	25	31	1455933	600071	28 20 19.8	81 10 27.79	71.38	70.33	Y 577	68.78	67.73
S57-SCA	STG2	Osceola	Narcoossee	1	25	31	1455933	600071	28 20 19.8	81 10 27.79	71.37	70.32	Y 577	68.78	67.73
S58-SCA	STG1	Osceola	Narcoossee	36	25	31	1431567	604364	28 16 18.59	81 09 39.38	72.40	71.35	OS 100	70.17	69.12
S58-SCA	STG2	Osceola	Narcoossee	36	25	31	1431567	604364	28 16 18.59	81 09 39.38	72.41	71.36	OS 100	70.17	69.12
S59-SCA	HW	Osceola	St Cloud North	33	25	30	1429037	555707	28 15 52.6	81 18 43.5	66.83	65.83	KR 908	61.69	60.69
S59-SCA	TW	Osceola	St Cloud North	33	25	30	1429037	555707	28 15 52.6	81 18 43.5	66.80	65.81	KR 908	61.69	60.69
S59W	GW1	Osceola	St Cloud North	33	25	30	1429076	555692	28 15 52.99	81 18 43.67	62.52	61.63	OS 81 1980	65.02	64.13
S60-SCA	HW	Osceola	Ashton	32	26	31	1397057	580727	28 10 36.5	81 14 03	75.57	74.48	KR 1066	71.01	70.14
S60-SCA	TW	Osceola	Ashton	32	26	31	1397057	580727	28 10 36.5	81 14 03	74.58	73.49	KR 1066	71.01	70.14
S61-SCA	HW	Osceola	St Cloud South	18	27	30	1383797	542852	28 08 24.3	81 21 05.8	65.58	64.54	OSF 53	61.40	60.37
S61-SCA	TW	Osceola	St Cloud South	18	27	30	1382797	542852	28 08 24.3	81 21 05.8	65.56	64.53	OSF 53	61.40	60.37
S62-SCA	HW	Orange	Narcoossee	33	24	31	1464776	586085	28 21 47.13	81 13 04.49	72.51	71.48	OR 91	68.60	67.57
S62-SCA	TW	Orange	Narcoossee	33 19	24 27	31 31	1464776 1376003	586085 574258	28 21 47.13 28 07 07.9	81 13 04.49 81 15 14.8	72.53 71.75	71.50 70.85	OR 91 KR 1067	68.60 68.33	67.57 67.43
S63-SCA S63-SCA	TW	Osceola Osceola	Cypress Lake Cypress Lake	19	27	31	1376003	574258	28 07 07.9	81 15 14.8	71.78	70.88	KR 1067 KR 1067	68.33	67.43
SCBR	GW1	Orange	Lake Jessamine	8	24	29	1478382	516853	28 24 36.17	81 26 01.71	86.28	85.37	C 1286 036	87.57	86.66
SCPE	GW1	Orange	Kissimmee	29	24	29	1468791	514892	28 22 24.96	81 26 21.57	81.44	80.53	SCPE	78.19	77.28
SCPN	HW	Orange	Lake Jessamine	19	24	29	1474814	510500	28 23 24.27	81 27 11.51	83.15	82.24	SCPN	78.53	77.62
SCPN	TW	Orange	Lake Jessamine	19	24	29	1474814	510500	28 23 24.27	81 27 11.51	83.04	82.13	SCPN	78.53	77.62
SCPS	HW	Orange	Kissimmee	30	24	29	1468563	510520	28 22 22.55	81 27 10.50	82.64	81.73	L 715 008	79.23	78.32
SCPS	TW	Orange	Kissimmee	30	24	29	1468563	510520	28 22 22.55	81 27 10.50	82.47	81.56	L 715 008	79.23	78.32
SCSS	STG1	Orange	Lake Jessamine	13	24	28	1477281	508089	28 23 48.78	81 27 38.09	85.09	84.20	SCSS	80.72	79.83
SW15	GW1	Orange	Lake Louisa SW	16	24	27	1475682	456994	28 23 30.67	81 37 10.11	111.05	110.11	SW15-9	108.93	107.99
SW15	GW2	Orange	Lake Louisa SW	16	24	27	1475682	456994	28 23 30.67	81 37 10.11	112.34	111.40	SW15-9	108.93	107.99
TOHO 1	GW1	Osceola	St Cloud South	33	26	30	1396053	555533	28 10 26	81 18 44.5	68.01		TOHO 1	64.46	
TOHO 1	GW2	Osceola	St Cloud South	33	26	30	1396053	555533	28 10 26	81 18 44.5	67.81		TOHO 1	64.46	
TOHO 2	GW1	Osceola	St Cloud South	3	27	30	1395292	557196	28 10 18.5	81 18 25.9	69.40	68.37	TOHO 2	65.66	64.63

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)
TOHO 4	GW1	Osceola	Lake Tohopekaliga	10	27	29	1386180	530170	28 08 47.51	81 23 27.55	63.71	62.68	TOHO 4	59.62	58.59
TOHO 5	GW1	Osceola	Lake Tohopekaliga	29	26	29	1405464	514584	28 11 57.92	81 26 22.44	74.36	73.38	TOHO 5	70.33	69.35
TOHO 5	GW2	Osceola	Lake Tohopekaliga	29	26	29	1405464	514584	28 11 57.92	81 26 22.44	74.10	73.12	TOHO 5	70.33	69.35
TOHO 6	GW1	Osceola	St Cloud South	29	26	29	1403532	540917	28 11 39.66	81 21 28.06	70.44	69.45	TOHO 6	67.01	66.02
TOHO 7	GW1	Osceola	Kissimmee	21	25	29	1440606	519669	28 17 46.06	81 25 26.98	74.21	73.25	BMWELL 7	70.84	69.88
TOHO 8	GW1	Osceola	Kissimmee	21	25	29	1440342	523931	28 17 43.6	81 24 39.3	68.95	67.99	BMWELL 8	65.40	64.44
TOHO 10	GW1	Osceola	St Cloud South	19	26	30	1406499	543294	28 12 09.1	81 21 01.6	74.67	73.67	TOHO 10	70.58	69.58
TOHO 12	GW1	Osceola	St Cloud North	10	25	30	1453807	561663	28 19 58.01	81 17 37.57	77.82	76.62	BMWELL12	73.92	72.72
TOHO 14	GW1	Osceola	St Cloud South	13	27	30	1385263	569855	28 08 39.5	81 16 04.2	72.84		WELL 14	69.09	
TOHO 15	GW1	Osceola	St Cloud South	30	26	31	1401062	572717	28 11 16	81 15 32.6	78.40	77.38	TOHO 15	75.05	74.02
TOHO 16	GW1	Osceola	St Cloud South	1	27	30	1393537	568710	28 10 01.4	81 16 17.2	72.77	71.73	TOHO 16A	69.12	68.08
TOHO 16	GW2	Osceola	St Cloud South	1	27	30	1393537	568710	28 10 01.4	81 16 17.2	72.60	71.56	TOHO 16A	69.12	68.08
TOHO E	STG1	Osceola	St Cloud North	2	26	30	1427170	565475	28 15 34.35	81 16 54.22	61.93	60.94	TOHOE	61.63	60.64
TOHO W	STG1	Osceola	Kissimmee	32	25	29	1438045	525426	28 17 20.9	81 24 22.49	62.07	61.13	TOHOW	57.93	56.98
WR6	GW1	Osceola	Lake Hatchineha	28	27	29	1374487	523000	28 06 51.5	81 24 47.2	69.05	68.01	WR 6	64.82	63.78
WR8	GW1	Osceola	Lake Hatchineha	28	27	29	13711644	521486	28 06 23.3	81 25 04.0	72.89	71.85	WR 8	70.83	69.79
WR9	GW1	Osceola	Lake Hatchineha	28	27	29	1372605	520934	28 06 32.8	81 25 10.2	70.65	69.61	WR 9	70.36	69.32

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.
- 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.
- 5. In a few cases a Benchmark did not have superseded NGVD29 values so CORPSCON was used to derive a NGVD29 elevation.

Section 4: Benchmark Data Sheets