SURVEYOR'S REPORT

Specific Purpose Survey of the Monitoring Wells

OSF-66

Osceola County, Florida

South Florida Water Management District's

Purchase Order number PC P602214

Keith and Schnars project number 16434.07,

Task 22003

Report Date: August 15, 2006

Submittal: First

Prepared for:

South Florida Water Management District

Prepared by:

KEITH and SCHNARS, P.A.
ENGINEERS, PLANNERS, SURVEYORS

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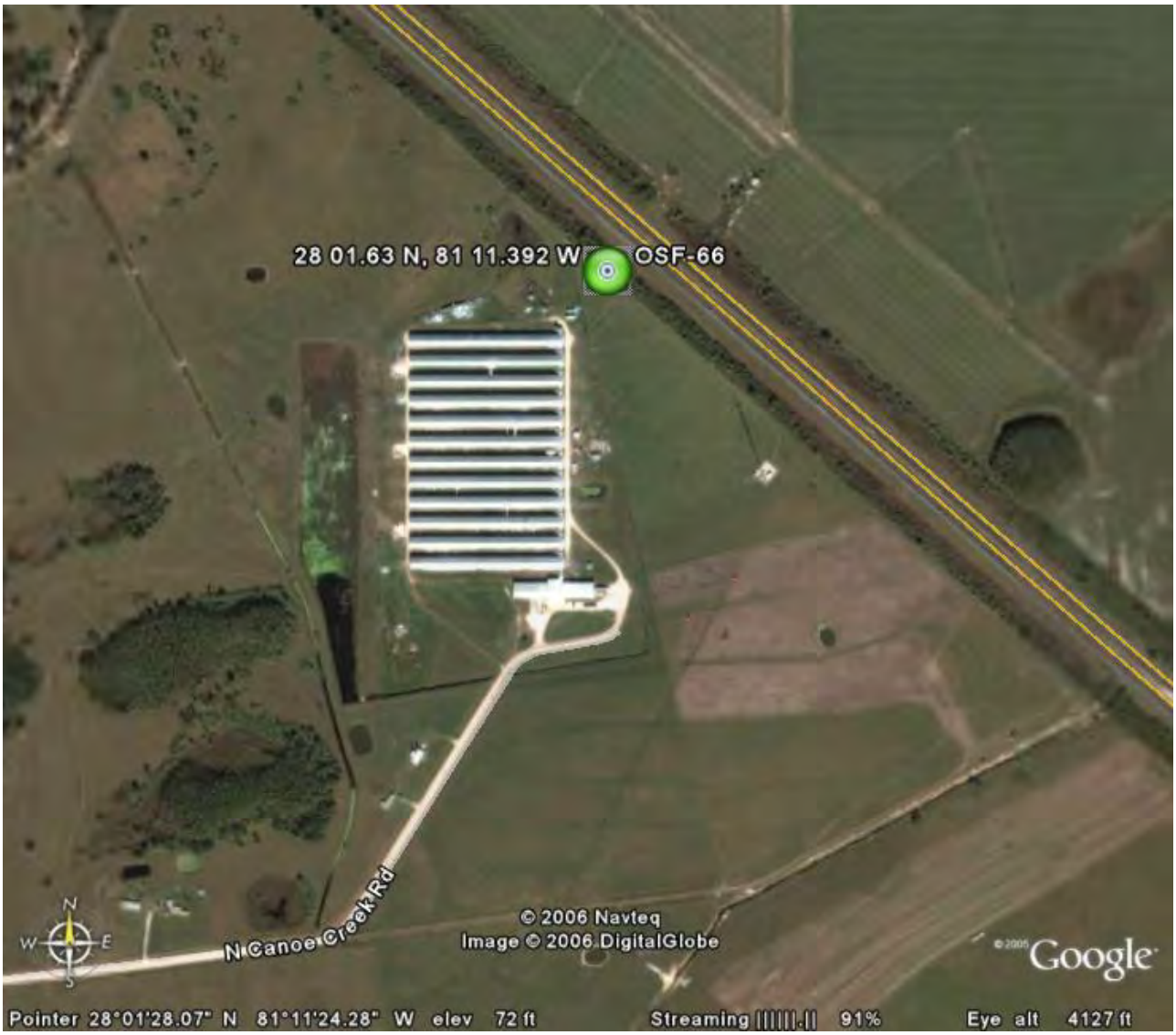
SURVEYOR'S REPORT

PURPOSE

To establish vertical data (NAVD 1988 and NGVD 1929) on the Monitoring Wells at the structure.

LOCATION OF PROJECT

The project is located in Osceola County.



SURVEYOR'S REPORT

ITEMS DELIVERED TO THE DISTRICT

1. **Electronic copy of field notes.**
2. **Electronic copy of all computation sheets.**
3. **CORPSMET 95 file.**
4. **Site photographs.**
5. **Surveyor's Report.**

DATUM FOR THE PROJECT

The vertical datum for the project is North American Datum of 1988 (NAVD '88). National Geodetic Survey vertical control monuments with published NAVD '88 elevations were used as the basis for this survey. The National Geodetic Vertical Datum of 1929 (NGVD '29) shown were computed using CORPSCON version 6.0 program.

LEVELING METHODS

Benchmark OSF-66 was constructed at the site. The elevations were established from Benchmark OS 61 SFLWMD using a Wild NA-2 conventional level and three-wire observation method.

SURVEYOR'S REPORT

VERTICAL CONTROL

BM OS 61 SFLWMD	Elevation:	**NAVD 1988**	**74.51'**	**NGVD 1929**	**75.72'**
Found in National Geodetic Survey Database	Latitude	27°59'06" (Scaled)			
State/County FL/Osceola	Longitude	81°10'04" (Scaled)			
USGS QUAD LAKE MARIAN NW (1972)					
Horiz. Order (Preliminary) Class (Preliminary)					

DESCRIBED BY FL DEPT OF NAT RES 1983
14.0 MI WNW FROM KENANSVILLE. BEGIN AT THE INTERSECTION OF U.S. HIGHWAY 441 AND STATE ROAD 523 (CANOE CREEK ROAD) IN KENANSVILLE, GO 14.0 MILES NORTH AND WEST ALONG STATE ROAD 523 TO THE MARK. THE MARK IS SET FLUSH IN A CONCRETE CULVERT. THE MARK BEARS 20.4 FEET NORTHEAST OF THE CENTERLINE OF STATE ROAD 523, 8.2 FEET NORTHWEST OF THE SOUTHWEST END OF THE CULVERT, AND 7.8 FEET SOUTHWEST OF THE NORTHWEST END OF THE CULVERT. THE SURVEY DISK IS 1.25 INCHES IN DIAMETER.

STATION RECOVERY (2005)

RECOVERY NOTE BY GEOCACHING 2005 (MAG)
RECOVERED IN GOOD CONDITION.

SURVEYOR'S REPORT

PROJECT RESULTS

Monitoring Well (GW-1)	**Monitoring Well (GW-2)**
Monitoring Well OSF-66: Reference mark: **Set mark on N. side PVC pipe** **With initials K&S.** New Reference Mark El. **80.781'** (NGVD '29) **(Wrote -1.21' to NAVD 1988).** Initials**:** **K&S** **B.M., R.F.** Date: **7/26/06** **written at the mark:** El. **80.71'** Date: **None** By: **None** Reference Mark location: **Top of PVC Pipe**	Monitoring Well OSF-66: Reference mark: **Set mark on N. side PVC pipe** **With initials K&S.** New Reference Mark El. **81.054'** (NGVD '29) **(Wrote -1.21' to NAVD 1988).** Initials**:** **K&S** **B.M., R.F.** Date: **7/26/06** **written at the mark:** El. **81.01'** Date: **None** By: **None** Reference Mark location: **Top of PVC Pipe**

SURVEYOR'S REPORT

PROJECT RESULTS

Monitoring Well (GW-3)

Monitoring Well OSF-66:
Reference mark:
Set mark on S. side PVC pipe
With initials K&S.

New Reference
Mark El. **79.261'**
(NGVD '29)
(Wrote -1.21' to NAVD 1988).

Initials**:**

K&S
B.M., R.F.

Date:
7/26/06

written at the mark:

El. **79.20'**
Date: **None**
By: **None**

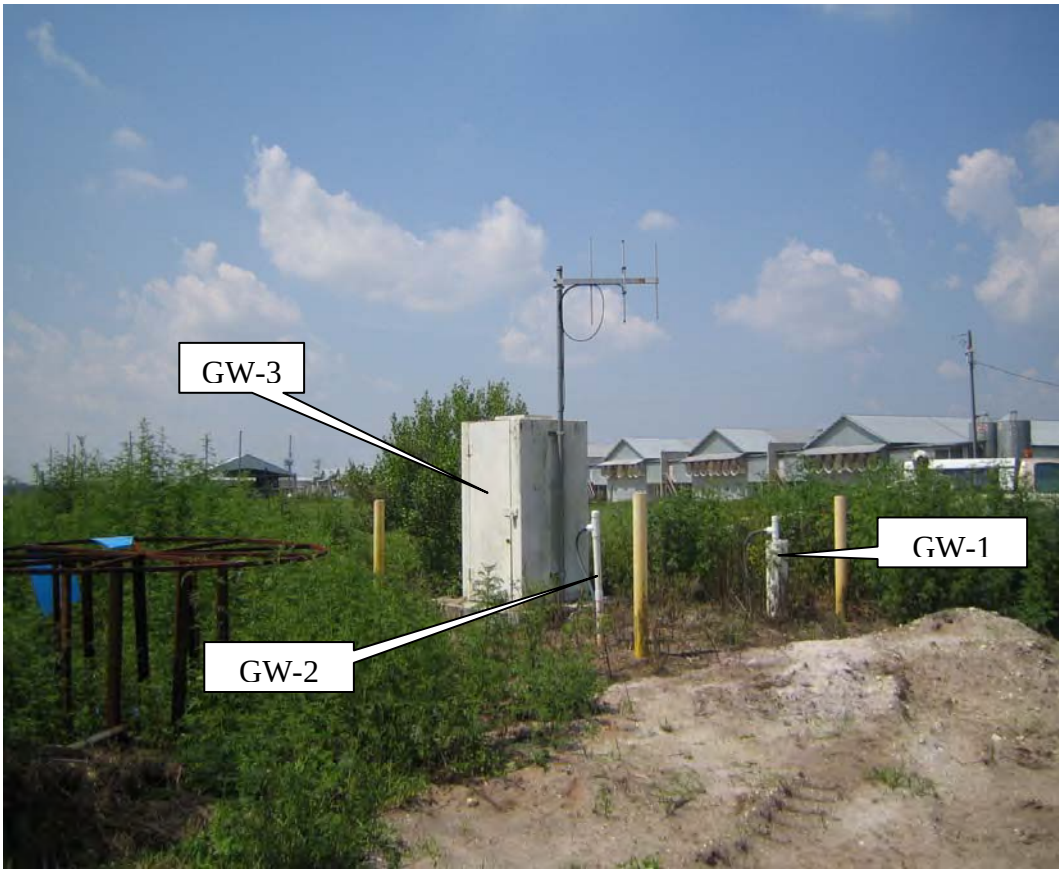
Reference Mark location:

Top of PVC Pipe

SURVEYOR'S REPORT

PROJECT PHOTO

OSF-66



SURVEYOR'S REPORT

PROJECT PHOTO

MONITORING WELL (GW-1)

OSF-66

SURVEYOR'S REPORT

PROJECT PHOTO

MONITORING WELL (GW-2)

OSF-66

SURVEYOR'S REPORT

PROJECT PHOTO

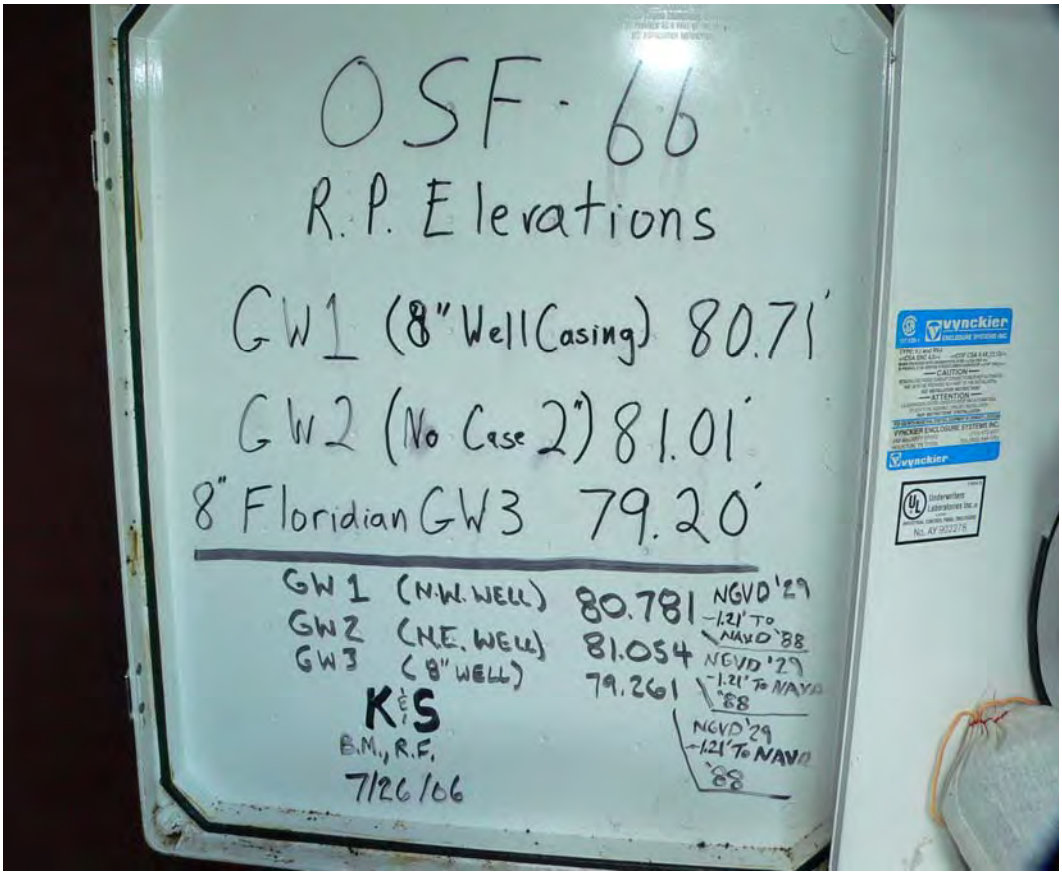
MONITORING WELL (GW-3)

OSF-66

SURVEYOR'S REPORT

PROJECT PHOTO

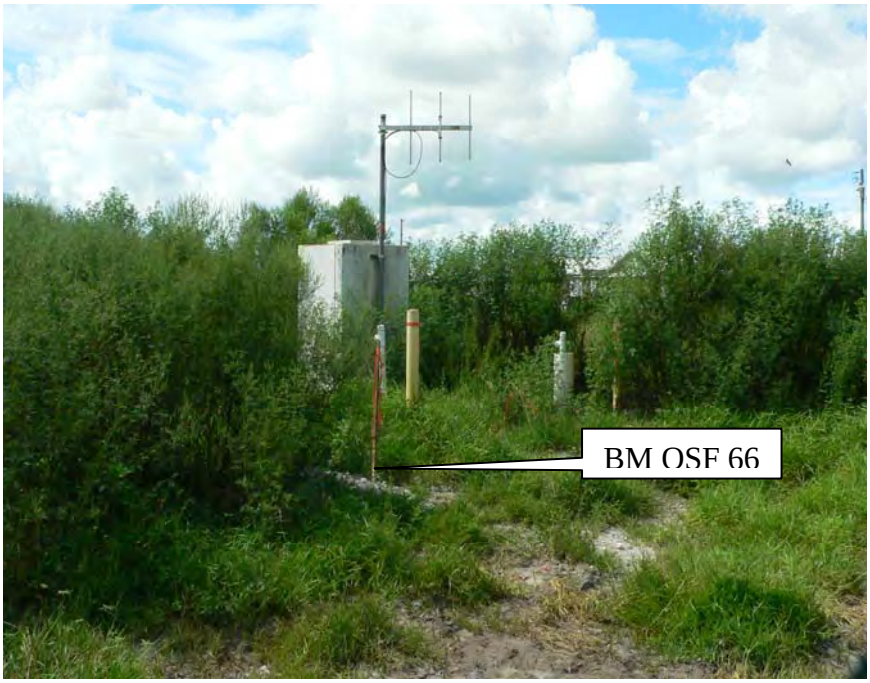
OSF-66



SURVEYOR'S REPORT

PROJECT PHOTO

OSF-66



SURVEYOR'S REPORT

Comments:

Party Chief: D. SULLIVAN Field Book: 1156 Page 65-72 , Field Book: 1163 Page 60-67
Bench Mark: "OS 61 SFLWMD" El. 74.51', Vertical Datum: NAVD1988
Offset: 1.210' SFWMD VALUE (add this value to convert to NGVD 1929)
Offset: 1.210' NGS VALUE (add this value to convert to NGVD 1929)
NAVD 88 - North American Vertical Datum of 1988
NGVD29 -National Geodetic Vertical Datum of 1929
NAD 83-99 (Horizontal Datum) North American Datum
NGS- National Geodetic Survey
SFWMD- South Florida Water Management District
PVC- Polyvinyl Chloride

SURVEYOR'S CERTIFICATION

I hereby certify that this Specific Purpose Survey meets applicable portions of the Minimum Technical Standards set forth by the Florida Board of Professional Surveyors and Mappers in Chapter 61-G17, Florida Administrative Code. This report is prepared for the sole and specific use of the South Florida Water Management District and is not assignable.

KEITH and SCHNARS, PA.
L.B. number 1337

By:

Date of Survey
July 26, 2006

Kenneth T. Glass, PSM
Professional Surveyor and Mapper
State of Florida
Certificate No. 5713

SAME CREW
7/26/2006
OSF-66

BM	BS		MEAN	HI	FS		MEAN	ELEV.	ADJ. ELEV.	REMARKS
	6.21									
BM OSF 66	6.15	1'	6.150	81.2761				75.111 NAVD 88		POURED CONC. MON. W/ S.F.W.M.D. BRASS DISK NGVD 29 = 76.321
	6.09									
	18.45									
GW-3					3.27					
WELL PIPE 1					3.21	N'	3.210	78.051		8" PVC PIPE IN ABOVE GROUND VAULT NGVD 29: 79.261 -1.21 TO NAVD 88
					3.15					
					9.68					
GW-2					1.46					
WELL PIPE 2					1.42	0'	1.417	79.844		2" PVC PIPE NE OF ABOVE GROUND VAULT NGVD 29: 81.054 -1.21 TO NAVD 88
					1.37					
					4.25					
	1.96				1.77					
GW-1	1.88	1'	1.877	81.448	1.69	1'	1.680	79.571		2" PVC-PIPE NW OF ABOVE GROUND VAULT NGVD 29: 80.781 -1.21 TO NAVD 88
WELL PIPE 3	1.79				1.61					
	5.63				5.07					
					1.65					
WELL PIPE 2					1.60	10'	1.600	79.848		2" PVC PIPE NE OF ABOVE GROUND VAULT
					1.55					
					4.80					
					3.47					
WELL PIPE 1					3.41	2'	3.410	78.038		8" PVC PIPE IN ABOVE GROUND VAULT
					3.35					
					10.23					
					6.39					
BM OSF 66					6.34	1'	6.337	75.111 FLAT	75.111	POURED CONC. MON. W/ S.F.W.M.D. BRASS DISK
					6.28					
					19.01					

OSF-66 BENCHRUN

JOB NO	16434.07
DATE	08-02-06
FOR	SFWMD
LOCATION	OSF-66
EQUIPMENT	WILD NA2 # 596939
WEATHER	HAZY, 96°
CREW	D. SULLIVAN W. MILLER R. CRUMP

RERUN OF BENCH LINE TO OSF-66

BM	BS		MN	HI	FS		MN
	6.68						
OS-61	5.80	219'	5.503				
	4.41						
	6.18				5.41		
TBM1	5.00	234'	5.000		4.32	219'	4.317
	3.82				3.22		
	5.85				5.90		
TBM2	4.72	227'	4.717		4.12	236'	4.720
	3.58				3.54		
	5.84				5.42		
TBM3	4.66	237'	4.657		4.28	228'	4.280
	3.47				3.14		
	6.41				5.80		
TBM4	5.21	240'	5.210		4.61	237'	4.613
	4.01				3.43		
	1159'		25.087		920'		17.930

THIS BENCHRUN WAS BASED ON NAVD 1988 VERTICAL DATUM

ELEV	ADJ ELEV	REMARKS
		N.G.S DATA SHEET OS 61 SFLWMD
		PUBLISHED NAVD88 ELEV= 74.51 ADJUSTED
		PUBLISHED NGVD 29 ELEV = 75.72 ADJUSTED
		N 27-59-06, W 081-10-04
74.51		1'2" ALUMINUM DISC ON HEADWALL
		STAMPED SFMWD OS-61
		NAIL E. EP CR523

JOB 16434.07
DATE 08-02-06
CREW SAME

RETURN BENCHLINE TO OSF66 (CONT)

BM	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
TBM5	6.08 4.85 3.61	247'	4.847		6.65 5.45 4.25	240'	5.450	76.217		NAIL @ EP CR623
TBM6	5.43 4.29 3.15	228'	4.290		6.05 4.81 3.58	247'	4.813	"	"	"
TBM7	5.82 4.67 3.52	230'	4.670		5.36 4.22 3.08	228'	4.220	"	"	"
TBM8	6.79 5.60 4.40	239'	5.597		5.70 4.55 3.40	230'	4.550	"	"	"
TBM9	5.74 4.72 3.70	204'	4.720		6.36 5.16 3.97	239'	5.163	"	"	"
TBM10	5.74 4.49 3.24	250'	4.490		5.90 4.87 3.85	205'	4.873	"	"	"
	2557 1299		28.614		2309 1299		29.069			

JOB NO 16434.01
DATE 96-02-06
CREW SAME

RERUN BENCH LINE TO OSF66 (CONT)

BM	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
TBM 11	5.59 4.46 3.34	225'	4.463		5.96 4.71 3.46	250'	4.710	76.502		NAIL E EP CR523
TBM 12	5.82 4.66 3.50	232'	4.660		5.67 4.55 3.43	224'	4.550			
TBM 13	5.49 4.35 3.20	229'	4.347		5.79 4.63 3.47	232'	4.630			
TBM 14	6.10 4.92 3.73	237'	4.917		5.60 4.41 3.22	238'	4.410			
TBM 15	5.32 4.19 2.95	237'	4.137		5.63 4.45 3.27	236'	4.450			
TBM 16	5.32 4.08 2.84	248'	4.080		6.22 5.04 3.86	236'	5.040			
	3965 ~~1408'~~		26.604		3725 ~~1416'~~		27.790			

JOB NO 16434.07
DATE 08-02-06
CREW SAME

RERUN BENCHLINE TO OSF 66 (CONT)

BM	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
	5.27				6.08					
TBM 17	4.09	237'	4.087		4.85	247'	4.847	75.179		NAIL & ED GR523
	2.90				3.61					
	5.43				5.86					" " " "
TBM 18	4.21	244'	4.210		4.67	238'	4.670			
	2.99				3.48					
	5.64				6.10					" " " "
TBM 19	4.44	240'	4.440		4.88	244'	4.880			
	3.24				3.66					
	5.68				6.44					" " "
TBM 20	4.54	227'	4.543		5.24	240'	5.240			
	3.41				4.04					
	5.49				6.21					" " " "
TBM 21	4.30	239'	4.297		5.07	227'	5.073			
	3.10				3.94					
	5.93				6.15					" " " "
TBM 22	4.68	249'	4.683		4.95	240'	4.950			
	3.44				3.75					
	5401				5161					
	~~1436'~~		26.260		~~1436'~~		29.660			

JOB NO 16434.07
DATE 08-02-06
CREW SAME

RERUN BENCH LINE TO OSF66 (CONT)

BM	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
	5.76				5.96					
TBM23	4.59	233'	4.593		4.72	249'	4.717	71.909		NAIL E EP CR66B
	3.43				3.47					
	5.82				5.84					
TBM24	4.50	263'	4.503		4.68	232'	4.680			
	3.19				3.52					
	5.77				5.85					
TBM25	4.54	247'	4.537		4.53	263'	4.533			
	3.30				3.22					
	5.73				5.68					
TBM26	4.53	239'	4.533		4.45	246'	4.450			
	3.34				3.22					
	5.61				5.76					
TBM27	4.39	244'	4.390		4.56	239'	4.563			
	3.17				3.37					
	5.52				6.10					
TBM28	4.39	226'	4.390		4.88	244'	4.880			
	3.26				3.66					
	6853				6634					
	~~1452'~~		26.946		~~1478'~~		27.823			

JOB NO 16434.07
DATE 08-02-06
CREW SAME

RERUN BENCHLINE TO OSFK6 (CONT)

BM	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
	5.92				6.04					
TBM29	4.70	245'	4.697		4.91	226'	4.910	70.839		NAIL E EP CR523
	3.47				3.78					
	5.63				6.17					" " " "
TBM30	4.49	228'	4.490		4.94	245'	4.993			
	3.35				3.72					
	5.37				5.94					
TBM31	4.26	232'	4.260		4.79	229'	4.793			" " " "
	3.15				3.65					
	5.70				5.62					
TBM32	4.58	224'	4.580		4.50	223'	4.503			" " " "
	3.46				3.39					
	7.18				7.77					
TBM33	6.08	220'	6.080		6.65	224'	6.650			TOED HUB, ENTRANCE TO HALLANDALE FARMS S.E. QUADRANT
	4.98				5.53					
1139										
	6.98				5.99					
TBM34	5.92	213'	5.917		4.89	220'	4.890			TOED HUB NO. SIDE HALLANDALE FARMS DR.
	4.85				3.79					
	8205'				8001'					
	~~1353~~		30.024		~~1314~~		30.689			

JOB NO 16+34.07 WEATHER SUNNY, 95°
DATE 08-03-06
CREW SAME

RERUN BENCH LINE TO OSE66 (CONT)

BM	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
	6.86				5.93					
IBM 35	5.71	230'	5.710		4.87	213'	4.867	70.217		HUB, NE SIDE HILLANDALE FARMS DRIVE
	4.56				3.80					
	6.46				5.86					
TBM 36	5.27	238'	5.270		4.72	228'	4.720			" " " " " "
	4.08				3.58					
	5.92				5.98					
TBM 37	4.75	234'	4.750		4.80	237'	4.797			" " " " " "
	3.58				3.61					
	6.55				5.48					
TBM 38	5.33	244'	5.330		4.31	234'	4.310			" " " " " "
	4.11				3.14					
	6.85				5.24					
TBM 39	5.61	247'	5.613		4.02	244'	4.020			" " " " " "
	4.38				2.80					
	6.01				5.99					
TBM 40	4.75	251'	4.753		4.76	247'	4.757			" " " " " "
	3.50				3.52					
	9649,				9404					
	~~1444~~		31.426		~~1463'~~		27.471			

JOB NO 16434.07
DATE 08-03-06
CREW SAME

RERUN BENCHLINE TO OSF66 (CONT)

BM	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
TBM41	7.86 6.65 5.43	243'	6.647		5.79 4.53 3.27	252'	4.530	74.509		HUB, N.E. SIDE HILLANDDALE FARMS DR.
TBM42	5.98 4.80 3.61	237'	4.797		5.52 4.31 3.10	242'	4.310			HUB, PASTURE EAST OF HILLANDALE FARMS
TBM43	5.53 4.87 4.21	132'	4.870		6.04 4.85 3.66	238'	4.850			" " " " " "
OSF66					7.12 6.52 5.91	121'	6.519	75.146	75.111 NAVD 88 73.901 NGVD 1929	POURED MONUMENT W/SFWMD BRASS DISC STAMPED OSF66 DIST = 20518
	10261 644		16.314		10257 853		20.207			

BENCHRUN CONTINUED IN BOOK 1156 PAGE 65

JOB NO 16434.07
DATE 07-07-06
CREW SAME

BENCH RUN OSF66 (CONT)

Bm	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
~~TBM42~~	6.51 ~~5.32~~ ~~4.12~~	230'	5.317		6.10 ~~4.93~~ 6.76	24'	4.930			TOED HUB PASTURE AT HILLANDALE FARMS
~~TBM43~~	~~5.27~~ ~~5.19~~ 5.12	16'	5.190		6.24 ~~5.04~~ 5.84	240'	5.040			BENCHRUN CONTINUED FROM BOOK 1163 PAGE 67
OSF66	7.26 6.65 6.04	122'	6.650		6.84 6.76 6.68	16'	~~6.760~~	75.146	75.111 NAVD 88 73.901 NGVD 1929	1" DIA CAST MON W/ SFWMD BRASS DISC OSF66
TBM44	6.73 5.32 4.31	242'	5.520		6.19 5.53 4.91	123'	5.527			TOED HUB PASTURE AT HILLANDALE FARMS
TBM45	6.13 4.97 3.80	233'	4.967		6.56 5.35 4.14	242'	5.350			" " " " " "
TBM46	5.63 4.45 3.27	236'	4.450		8.14 6.97 5.81	233'	6.973			" " " " " "
	11094 ~~1089~~		32.094		10855 ~~1086~~		34.580			

JOB NO 16434.07
DATE 07-07-06
CREW SAME

BENCH RUN OSF66 (CONT)

BM	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
TBM 47	6.13 4.96 3.80	233'	4.963		5.76 4.54 3.36	235'	4.537	74.346		TOED HUB SO. SIDE HILLANDALE FARMS DWY
TBM 48	6.10 4.93 3.76	234'	4.930		6.76 5.60 4.44	232'	5.600			
TBM 49	6.37 5.16 3.95	242'	5.160		7.36 6.19 5.02	234'	6.190			
TBM 50	6.15 4.93 3.70	245'	4.927		6.92 5.72 4.51	241'	5.717			
TBM 51	6.01 4.79 3.59	244'	4.790		6.52 5.29 4.06	246'	5.290			
TBM 52	6.10 4.93 3.77	233'	4.933		6.98 5.76 4.54	244'	5.760			
	12525 ~~1431~~		29.703		12287 ~~1432~~		33.094			

JOB NO 16434.07
DATE 07-10-06
CREW D. SULLIVAN, J. MIMS, R. CRUM, T. BIBIAN

BENCH RUN OSF-66 (CONT)

BM	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
	5.65				6.85					
TBM 53	4.52	226'	4.520		5.69	232'	5.687	69.805		TOED HUB SO. SIDE HILLANDALE FARMS DWY
	3.39				4.52					
	6.56				5.73					
TBM 54	5.48	217'	5.477		4.63	220'	4.630			TOED HUB SO SIDE ENTR TO HILLANDALE FARMS
	4.39				2.53					
	6.43				6.11					
TBM 55	5.29	228'	5.290		5.02	218'	5.020			PK NAIL W EP CR523
	4.15				3.93					
	6.37				6.12					
TBM 56	5.19	236'	5.190		4.97	229'	4.973			" " " " "
	4.01				3.83					
	6.49				6.28					
TBM 57	5.34	230'	5.340		5.09	238'	5.090			" " " " "
	4.19				3.98					
	6.68				6.22					
TBM 58	5.52	232'	5.520		5.07	231'	5.067			" " " " "
	4.36				3.91					
	13894				13656					
	~~1369~~		31,338		~~1369~~		30,467			

JOB NO 16434.07
DATE 07-10-06
CREW SAME

BENCH RUN OSF166 (CONT)

BM	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
TBM 59	6.40 6.25 4.11	229'	5.253		6.10 4.94 3.78	232'	4.940	71.422		PK NAIL W EP ER523
TBM 60	6.18 4.98 3.78	240'	4.980		6.03 4.89 3.75	228'	4.890			" " " " "
TBM 61	6.33 5.14 3.94	239'	5.137		6.19 4.98 3.78	240'	4.980			" " " " "
TBM 62	6.26 5.10 3.95	231'	5.105 ~~5.100~~		6.28 5.10 3.92	236'	5.100			" " " " "
TBM 63	6.52 5.33 4.14	238'	5.330		6.24 5.10 3.95	229'	5.097			" " " " "
TBM 64	6.32 5.12 3.94	241'	5.117		6.53 5.34 4.15	238'	5.340			" " " " "
	15312 ~~1515~~		30.917		15059 ~~1403~~		30.347			

JOB NO 16434.07
DATE 07-10-06
CREW SAME

BENCH RUN OSF 66 (CONT)

BM	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
TBM 65	6.65 5.44 4.22	243'	5.437		6.36 5.15 3.95	~~243'~~ 241'	5.153	71-782		PK NAIL E EP CR 523
TBM 66	6.73 5.50 4.28	245'	5.503		6.02 4.81 3.60	242'	4.810			" " " " "
TBM 67	6.69 5.47 4.25	244'	5.470		5.94 4.71 3.48	246'	4.710			" " " " "
TBM 68	6.74 5.52 4.30	244'	5.520		6.02 4.80 3.58	244'	4.800			" " " " "
TBM 69	7.36 6.13 4.89	247'	6.127		6.37 5.15 3.94	243'	5.153			" " " " "
TBM 70	6.52 5.44 4.35	217'	5.437		5.67 4.44 3.21	246'	4.440			
	16752 ~~1440~~		33.494		16521 ~~1464~~		29.066			

JOB NO 16434.07
DATE 07-10-06
CREW SAMG

BENCH TUN 05F66 (CONT)

BM	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
	6.62 ~~6.84~~				5.98					
TBM71	5.37	251'	5.367		4.89	218'	4.890	76.473		PK NAIL W LP CR523
	4.11 ~~4.24~~				3.80					
	6.48				6.21					
TBM72	5.26	245'	5.257		4.96	250'	4.960			PK " " " "
	4.03				3.71					
	5.96				6.68					
TBM73	4.79	233'	4.793		5.45	245'	5.453			" " " " "
	3.63				4.23					
	6.34				6.35					
TBM74	5.14	240'	5.140		5.19	232'	5.190			" " " " "
	3.94				4.03					
	6.04				6.34					
TBM75	4.83	241'	4.833		5.14	240'	5.140			" " " " "
	3.63				3.94					
	6.09				6.04					
TBM76	4.89	237'	4.889		4.83	241'	4.833			" " " " "
	3.70				3.63					
	18199				17947					
	~~1441~~		30.277		~~1426~~		30.466			

JOB NO 16434.07
DATE 07-10-06
CREW SAME

BENCH RUN OSF66 (CONT)

BM	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
TBM77	6.39 5.17 3.95	244'	5.170		6.46 5.22 4.03	238'	5.220	75.954		PK NAIL W EP CR523
TBM78	4.70 4.19 3.67	103'	4.187		6.25 5.04 3.82	243'	5.037			" " " "
	18546									TOTAL DISTANCE = 37,072 37,072 ÷ 5280 = 7.021 MILES √7.021 X 0.03 = 0.079 ALLOWABLE ERR
OSC-1	6.91 5.77 4.62	229'	5.767		5.29 4.80 4.31	98'	4.800	75.474 +0.064	75.41	CONC MON W/ BRASS DISC NGS DATA SHEET OSC 1 FLDNR PUBLISHED NAVD 88 ELEV = 75.41 ADJUSTED PUBLISHED NGVD 29 ELEV = 76.62 ADJUSTED N27-59-38.5, W081-10-35.0 PK NAIL W EP CR523
					18,526		END RUN			
TBM79	6.48 5.32 4.15	233'	5.317		6.09 4.94 3.80	229'	4.943			
TBM80	6.36 5.17 3.98	238'	5.170		6.48 5.32 4.16	232'	5.320			" " " "
TBM81	6.13 5.10 4.06	207'	5.097		6.21 5.02 3.83	238'	5.020			" " " "
	907 ~~1654~~		30.708		649 ~~1278~~		30.340			

JOB NO 16434.07
DATE 07-10-06
CREW SAME

BENCH RUN 0SF66 (CONT)

BM	BS		MN	HI	FS		MN	ELEV	ADJ ELEV	REMARKS
	6.47				6.39					
TBM 82	5.22	250'	5.220		5.35	207'	5.353	76.125		PK NAIL W EP CR523
	3.97				4.32					
	6.47				6.49					
TBM 83	5.27	240'	5.270		5.25	249'	5.247			
	4.07				4.00					
	6.28				6.56					
TBM 84	5.13	230'	5.130		5.36	240	5.360			
	3.98				4.16					
	6.17				6.59					
TBM 85	4.90	254'	4.900		5.44	230'	5.440			
	3.63				4.29					
	5.66				6.41					
TBM 86	5.10	112'	5.100		5.14	255'	5.137			
	4.54				3.86					
					6.64					
0561					6.01	114'	6.070	74.491	74.51	ALUM DISC ON HEADWALL STAMPED 0561
					5.50			-0.019		NGS DATA SHEET 0561 SFLWMD
										PUBLISHED NAVD 88 ELEV. = 74.51 ADJUSTED
										PUBLISHED NGVD 29 ELEV = 75.72 ADJUSTED
										N 27-59-06, W 081-10-04
	1993				1994					
	~~1086~~		25.620		~~1295~~		32.607			

TOTAL DISTANCE = 3,987'
3,987' ÷ 5280 = 0.755 MILES
√0.755 X .03 = 0.026 ALLOWABLE ERR

```
Identification_Information:
        Citation:
                Citation_Information:
                        Originator: Kenneth T. Glass, P.S.M.(ed.)
                        Publication_Date: 20060726
                        Publication_Time: Unknown
                        Title: S.F.W.M.D. Monitoring Well
                        Edition: OSF-66
                        Series_Information:
                        Publication_Information:
                                Publication_Place: Not Published
                                Publisher: None
                        Online_Linkage: kglass@keithandschnars.com
                        Larger_Work_Citation:
                                Citation_Information:
                                        Series_Information:
                                        Publication_Information:
        Description:
                Abstract:
                        South Florida Water Management District
                        Structure OSF-66
                Purpose:
                        To establish reference elevations in NAVD 1988 and
                        NGVD 1929 datum at the Monitoring Well(s).
        Time_Period_of_Content:
                Time_Period_Information:
                        Single_Date/Time:
                                Calendar_Date: 20060726
                        Range_of_Dates/Times:
                        Multiple_Dates/Times:
                Currentness_Reference: Publication Date
        Status:
                Progress: Complete
                Maintenance_and_Update_Frequency: Unknown
        Spatial_Domain:
                Bounding_Coordinates:
                        West_Bounding_Coordinate: 81°11'23.5"
                        East_Bounding_Coordinate: 81°11'23.5"
                        North_Bounding_Coordinate: 28°01'37.8"
                        South_Bounding_Coordinate: 28°01'37.8"
        Keywords:
                Theme:
                        Theme_Keyword_Thesaurus: Specific Purpose Survey
                        Theme_Keyword: Monitoring Well(s)
                Place:
                        Place_Keyword_Thesaurus: Osceola County
                        Place_Keyword: S.F.W.M.D. Monitoring Well OSF-66
                        Place_Keyword: SEC. 23 - T28S - R31E
                Stratum:
                Temporal:
        Access_Constraints: Key needed to gain access to Monitoring Wells.
        Use_Constraints: Call South Florida Water Management District for key.
        Point_of_Contact:
                Contact_Information:
                        Contact_Person_Primary:
                                Contact_Person: Howard J. Ehmke
                                Contact_Organization: South Florida Water Management
District
                        Contact_Organization_Primary:
                        Contact_Position: P.S.M.
                        Contact_Address:
                                Address_Type: mailing and physical address
                                Address:
                                        Acceler 8
                                        Suite 150
                                        2301 Centerpark West Drive
                                City: West Palm Beach
                                State_or_Province: Florida
                                Postal_Code: 33409
                                Country: USA
```

Kenneth T. Glass
Keith & Schnars P.A.

Purpose

Survey Date

Howard Ehmke
SFWMD

Contact_Voice_Telephone: (561) 242-5520 ext 4064
Contact_Electronic_Mail_Address: hehmke@sfwmd.gov
Hours_of_Service: 8:00 am to 5:00 pm EST
Security_Information:
Cross_Reference:
Citation_Information:
Series_Information:
Publication_Information:
Data_Quality_Information:
Attribute_Accuracy:
Attribute_Accuracy_Report:

Equipment Used

The horizontal location of the benchmark was taken from a hand held G.P.S. unit. The vertical data was collected using a Wild NA-2 Level. Coordinates are based on the Florida State Plane Coordinate System, East Zone, NAD 83/90. Elevations are based on NAVD 1988 with an offset supplied to convert to NGVD 1929.

Logical_Consistency_Report:
Vertical data on the monitoring well was established using the site bench mark.
Completeness_Report:

Project Results

80.781' (NGVD 1929) OSF-66 Well (GW-1) .
Offset written at wells (-) 1.21' to NAVD 1988.
81.054' (NGVD 1929) OSF-66 Well (GW-2) .
Offset written at wells (-) 1.21' to NAVD 1988.
79.261' (NGVD 1929) OSF-66 Well (GW-3) .
Offset written at wells (-) 1.21' to NAVD 1988.
OSF-64 2006 was the site benchmark used for this survey. NAVD 1988 elevation 75.111'

Positional_Accuracy:
Horizontal_Positional_Accuracy:

Horizontal

Horizontal_Positional_Accuracy_Report:
The horizontal position of the benchmark was established using a hand held GPS.
Quantitative_Horizontal_Positional_Accuracy_Assessment:
Horizontal_Positional_Accuracy_Value: Lat. 28°01'37.8" Long. 81°11'23.5"
Horizontal_Positional_Accuracy_Explanation: Value derived by hand-held GPS unit.
Vertical_Positional_Accuracy:
Vertical_Positional_Accuracy_Report:
The onsite benchmark was used to establish the elevations on the monitoring well(s) in this report.
Quantitative_Vertical_Positional_Accuracy_Assessment:
Vertical_Positional_Accuracy_Value: 0.064 ft. NAVD88
Vertical_Positional_Accuracy_Explanation: Better than 0.03ft. x sq. root of miles of the level loop.
Lineage:
Source_Information:
Source_Citation:
Citation_Information:
Series_Information:
Publication_Information:
Larger_Work_Citation:
Citation_Information:
Series_Information:
Publication_Information:
Source_Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Range_of_Dates/Times:
Multiple_Dates/Times:
Process_Step:
Process_Description:

Level Line

Differential leveling was performed using a Wild N-2 level. The onsite bench mark OSF66 2006 was used to determine the monitoring well elevation. Elevations were written at the wells in NGVD 1929 with an offset provided to convert the elevations to NAVD 1988.
Process_Date: 20060726

```
                                        OSF 66.gen
                        Process_Contact:
                                Contact_Information:
                                        Contact_Person_Primary:
                                        Contact_Organization_Primary:
                                        Contact_Address:
Spatial_Data_Organization_Information:
        Spatial_Reference_Information:
                Horizontal_Coordinate_System_Definition:
                        Geographic:
                                Latitude_Resolution: 28°01'37.8"
                                Longitude_Resolution: 81°11'23.5"
                                Geographic_Coordinate_Units: Degrees, minutes, and decimal
seconds
                        Geodetic_Model:
                Vertical_Coordinate_System_Definition:
                        Altitude_System_Definition:
                        Depth_System_Definition:
Entity_and_Attribute_Information:
        Detailed_Description:
                Entity_Type:
                Attribute:
                        Attribute_Domain_Values:
                        Attribute_Value_Accuracy_Information:
        Overview_Description:
Distribution_Information:
        Distributor:
                Contact_Information:
                        Contact_Person_Primary:
                        Contact_Organization_Primary:
                                Contact_Organization: Keith and Schnars, P.A.
                                Contact_Person: Kenneth T. Glass, P.S.M.
                        Contact_Position: Director of Surveying and Mapping Lakeland
                        Contact_Address:
                                Address_Type: mailing and physical address
                                Address: 2525 Drane Field Rd., Suite 7
                                City: Lakeland
                                State_or_Province: Florida
                                Postal_Code: 33811
                                Country: Polk
                        Contact_Voice_Telephone: (863)-646-4771
                        Contact_Facsimile_Telephone: (863)-646-3378
                        Contact_Electronic_Mail_Address: kglass@keithandschnars.com
                        Hours_of_Service: 8:00-5:00 est.
        Distribution_Liability: None
        Standard_Order_Process:
                Digital_Form:
                        Digital_Transfer_Information:
                        Digital_Transfer_Option:
                                Online_Option:
                                        Computer_Contact_Information:
                                                Network_Address:
                                                Dialup_Instructions:
                                OffLine_Option:
                                        Recording_Capacity:
        Available_Time_Period:
                Time_Period_Information:
                        Single_Date/Time:
                        Range_of_Dates/Times:
                        Multiple_Dates/Times:
Metadata_Reference_Information:
        Metadata_Date: 20060809
        Metadata_Contact:
                Contact_Information:
                        Contact_Person_Primary:
                                Contact_Person: Kenneth T. Glass, P.S.M.
                                Contact_Organization: Keith and Schnars, P.A.
                        Contact_Organization_Primary:
                        Contact_Position: Director of Surveying and Mapping Lakeland
                        Contact_Address:
                                Address_Type: mailing and physical address
```

Address: 2525 Drane Field Rd., Suite 7
City: Lakeland
State_or_Province: FL
Postal_Code: 33811
Country: USA
Contact_Voice_Telephone: (863) 646-4771
Contact_Facsimile_Telephone: (863) 646-3378
Contact_Electronic_Mail_Address: kglass@keithandschnars.com
Hours_of_Service: 8:00 am to 5:00 pm EST
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: 19940608
Metadata_Security_Information:

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 4/01

COUNTY **OSCEOLA**	**PROJECT**	**DESIGNATION** **Structure OSF-66**
SECTION 23	**TOWNSHIP 28 SOUTH**	**RANGE 31 EAST**

GEOGRAPHIC INDEX OF QUAD

Established by KEITH AND SCHNARS **Recovered by** **SET CLASS "C" MONUNENT WITH SFWMD BRASS DISK.**	**NAME OF QUADRANGLE** **HOLOPAW SW**
SURVEYOR D. SULLIVAN (Keith and Schnars) **DATE 07/07/2006**	**FIELD BOOK, 1163, pgs. 60-67,** **FIELD BOOK, 1156, pgs. 65-72**

HORIZONTAL DATUM: **1983 with 1999 correction,** ZONE **East**

VERTICAL DATUM: **NGVD 1929 and NAVD 1988**

CONTROL ACCURACY: **HORIZONTAL HAND-HELD GPS**, **3rd Order VERTICAL**

STATE PLANE COORDINATES	**X = 594914**	**Y = 1342629**	**EL. (NGVD 1929)** ~~**73.901'**~~ ***76.321'*** **EL. (NAVD 1988)** **75.111'**

LATITUDE **28° 01' 37.8"** LONGITUDE **81° 11' 23.5"**

DESCRIPTION

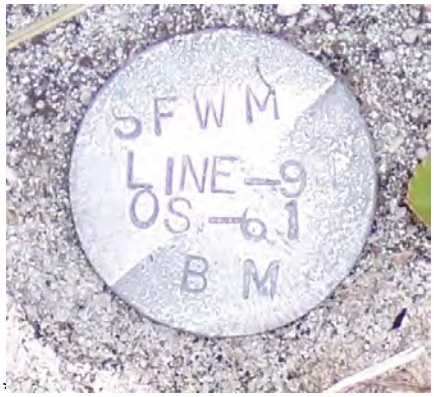
South Florida Water Management District brass disk set in concrete monument stamped OSF 66 / 2006

The benchmark is located 16.3 miles northwest of Kenansville

To reach the mark from the intersection of SR 60 and the Florida Turnpike travel north along the Turnpike a Distance of 29.8 miles to mile marker 224.8. The mark is 50' east of a 5' hog wire fence, 170' west of the west Edge of pavement of the south bound lane, and 30' north east of the north east corner of the well station.

Notable Land marks:

SKETCH



The NGS Data Sheet

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

```
DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 7.35
1        National Geodetic Survey,   Retrieval Date = APRIL 28, 2006
 AF7104 ***********************************************************************
 AF7104  DESIGNATION -  OS 61 SFLWMD
 AF7104  PID         -  AF7104
 AF7104  STATE/COUNTY-  FL/OSCEOLA
 AF7104  USGS QUAD   -  LAKE MARIAN NW (1972)
 AF7104
 AF7104                          *CURRENT SURVEY CONTROL
 AF7104 ______________________________________________________________________
 AF7104* NAD 83(1986)-  27 59 06.     (N)    081 10 04.     (W)     SCALED
 AF7104* NAVD 88     -        22.710  (meters)      74.51   (feet)  ADJUSTED
 AF7104 ______________________________________________________________________
 AF7104  GEOID HEIGHT-         -27.53  (meters)                      GEOID03
 AF7104  DYNAMIC HT  -          22.676 (meters)      74.40  (feet)  COMP
 AF7104  MODELED GRAV-     979,146.6   (mgal)                        NAVD 88
 AF7104
 AF7104  VERT ORDER  -  SECOND    CLASS II
 AF7104
 AF7104.The horizontal coordinates were scaled from a topographic map and have
 AF7104.an estimated accuracy of +/- 6 seconds.
 AF7104
 AF7104.The orthometric height was determined by differential leveling
 AF7104.and adjusted by the National Geodetic Survey in June 1991..
 AF7104
 AF7104.The geoid height was determined by GEOID03.
 AF7104
 AF7104.The dynamic height is computed by dividing the NAVD 88
 AF7104.geopotential number by the normal gravity value computed on the
 AF7104.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 AF7104.degrees latitude (g = 980.6199 gals.).
 AF7104
 AF7104.The modeled gravity was interpolated from observed gravity values.
 AF7104
 AF7104;                     North         East     Units  Estimated Accuracy
 AF7104;SPC FL E     -   404,560.      183,500.      MT  (+/- 180 meters Scaled)
 AF7104
 AF7104                           SUPERSEDED SURVEY CONTROL
 AF7104
 AF7104  NGVD 29 (09/01/92)   23.078  (m)            75.72   (f) ADJUSTED    2 2
 AF7104
 AF7104.Superseded values are not recommended for survey control.
 AF7104.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 AF7104.See file dsdata.txt to determine how the superseded data were derived.
 AF7104
 AF7104_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RML835955(NAD 83)
 AF7104_MARKER: DB = BENCH MARK DISK
 AF7104_SETTING: 32 = SET IN A RETAINING WALL OR CONCRETE LEDGE
 AF7104_SP_SET: CONCRETE CULVERT
 AF7104_STAMPING: SFWM LINE-9 OS-61 BM
 AF7104_MARK LOGO: SFLWMD
 AF7104_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 AF7104+STABILITY: SURFACE MOTION
 AF7104_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 AF7104+SATELLITE: SATELLITE OBSERVATIONS - July 16, 2005
 AF7104
 AF7104  HISTORY     - Date     Condition        Report By
 AF7104  HISTORY     - UNK      MONUMENTED       SFLWMD
 AF7104  HISTORY     - 1983     GOOD             FLDNR
 AF7104  HISTORY     - 20050716 GOOD             GEOCAC
 AF7104
 AF7104                           STATION DESCRIPTION
 AF7104
 AF7104'DESCRIBED BY FL DEPT OF NAT RES 1983
 AF7104'14.0 MI WNW FROM KENANSVILLE.
 AF7104'BEGIN AT THE INTERSECTION OF U.S. HIGHWAY 441 AND STATE
 AF7104'ROAD 523 (CANOE CREEK ROAD) IN KENANSVILLE, GO 14.0 MILES
 AF7104'NORTH AND WEST ALONG STATE ROAD 523 TO THE MARK.
 AF7104'THE MARK IS SET FLUSH IN A CONCRETE CULVERT.  THE MARK BEARS
```

AF7104'20.4 FEET NORTHEAST OF THE CENTERLINE OF STATE ROAD 523,
AF7104'8.2 FEET NORTHWEST OF THE SOUTHWEST END OF THE CULVERT, AND
AF7104'7.8 FEET SOUTHWEST OF THE NORTHWEST END OF THE CULVERT. THE
AF7104'SURVEY DISK IS 1.25 INCHES IN DIAMETER.
AF7104
AF7104   STATION RECOVERY (2005)
AF7104
AF7104'RECOVERY NOTE BY GEOCACHING 2005 (MAG)
AF7104'RECOVERED IN GOOD CONDITION.

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

```
**************     B E N C H   M A R K   D E S C R I P T I O N     **************
DESIGNATION:SFWMD LINE 9 O S 61 BM     STATE:FL   COUNTY:OSCEOLA
ALIAS:                              AREA:
QUAD:N27081114  APPROX LAT:275915N  APPROX LON:0811015W
SECTION: 1 TOWNSHIP:29 RANGE:31
LOCATED 21.1 MI SE     FROM THE CITY OR TOWN OF SAINT CLOUD
*********************************************************************************
MONUMENT BY:S FL WATER MGMT DIST                    YEAR:1983   CHIEF OF PARTY:PWR
RECOVERY BY:                                        YEAR:       CHIEF OF PARTY:
SETTING CLASSIFICATION:CONCRETE HEADWALL
STAMPING:SFWMD LINE 9 O S 61 BM
MONUMENTATION:SURVEY DISK              DISK TYPE:SURVEY DISK-NOT LISTED
CONDITION OF MARK:                   OTHER CONTROL:
*********************************************************************************
* FROM THE INTERSECTION OF U S HIGHWAY 192 AND COUNTY HIGHWAY 523 IN            *
* SAINT CLOUD GO SOUTH ALONG COUNTY HIGHWAY 523 (CANOE CREEK ROAD)              *
* 20.6 MILES TO THE STATION LOCATION STATION IS LOCATED ON THE EAST             *
* HEADWALL OF BOX CULVERT NUMBER 0927 8.2 FEET NORTH OF THE SOUTH END           *
* OF THE HEADWALL 7.9 FEET SOUTH OF THE NORTH END OF THE HEADWALL 20.5          *
* FEET EAST OF THE CENTERLINE OF HIGHWAY 523 AND 69.5 FEET SOUTH OF A           *
* FENCE LINE RUNNING EAST                                                       *
* A DISK SET INTO THE TOP OF A CONCRETE POST FLUSH WITH THE GROUND              *
*********************************************************************************
```

The NGS Data Sheet

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

```
DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 7.35
1        National Geodetic Survey,   Retrieval Date = APRIL 28, 2006
 AF7103 ***********************************************************************
 AF7103  DESIGNATION -  OSC 1 FLDNR
 AF7103  PID         -  AF7103
 AF7103  STATE/COUNTY-  FL/OSCEOLA
 AF7103  USGS QUAD   -  LAKE MARIAN NW (1972)
 AF7103
 AF7103                          *CURRENT SURVEY CONTROL
 AF7103  ______________________________________________________________________
 AF7103* NAD 83(1999)-  27 59 38.54536(N)    081 10 34.97932(W)     ADJUSTED
 AF7103* NAVD 88     -         22.984  (meters)      75.41   (feet)  ADJUSTED
 AF7103  ______________________________________________________________________
 AF7103  X           -     864,527.837 (meters)                      COMP
 AF7103  Y           -  -5,569,324.859 (meters)                      COMP
 AF7103  Z           -   2,975,919.976 (meters)                      COMP
 AF7103  LAPLACE CORR-           -1.16  (seconds)                     DEFLEC99
 AF7103  ELLIP HEIGHT-           -4.58  (meters)          (01/28/04) GPS OBS
 AF7103  GEOID HEIGHT-          -27.55  (meters)                     GEOID03
 AF7103  DYNAMIC HT  -           22.950 (meters)      75.30  (feet)  COMP
 AF7103  MODELED GRAV-      979,146.9   (mgal)                       NAVD 88
 AF7103
 AF7103  HORZ ORDER  -  FIRST
 AF7103  VERT ORDER  -  SECOND    CLASS II
 AF7103  ELLP ORDER  -  THIRD     CLASS I
 AF7103
 AF7103.The horizontal coordinates were established by GPS observations
 AF7103.and adjusted by the FL DEPT OF ENV PRO in January 2004..
 AF7103
 AF7103.The orthometric height was determined by differential leveling
 AF7103.and adjusted by the National Geodetic Survey in June 1991..
 AF7103
 AF7103.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AF7103
 AF7103.The Laplace correction was computed from DEFLEC99 derived deflections.
 AF7103
 AF7103.The ellipsoidal height was determined by GPS observations
 AF7103.and is referenced to NAD 83.
 AF7103
 AF7103.The geoid height was determined by GEOID03.
 AF7103
 AF7103.The dynamic height is computed by dividing the NAVD 88
 AF7103.geopotential number by the normal gravity value computed on the
 AF7103.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 AF7103.degrees latitude (g = 980.6199 gals.).
 AF7103
 AF7103.The modeled gravity was interpolated from observed gravity values.
 AF7103
 AF7103;                     North         East      Units Scale Factor Converg.
 AF7103;SPC FL E     -   405,561.118   182,650.675   MT  0.99994489   -0 04 58.0
 AF7103;SPC FL E     - 1,330,578.43    599,246.42    sFT  0.99994489   -0 04 58.0
 AF7103;UTM  17      - 3,096,554.723   482,656.595   MT  0.99960371   -0 04 58.0
 AF7103
 AF7103!             -  Elev Factor  x  Scale Factor =   Combined Factor
 AF7103!SPC FL E     -   1.00000072  x   0.99994489  =   0.99994561
 AF7103!UTM  17      -   1.00000072  x   0.99960371  =   0.99960443
 AF7103
 AF7103                          SUPERSEDED SURVEY CONTROL
 AF7103
 AF7103  NAVD 88 (01/28/04)   22.98   (m)           75.4    (f) LEVELING    3
 AF7103  NGVD 29 (09/01/92)   23.353  (m)           76.62   (f) ADJUSTED    2 2
 AF7103
 AF7103.Superseded values are not recommended for survey control.
 AF7103.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 AF7103.See file dsdata.txt to determine how the superseded data were derived.
 AF7103
 AF7103_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RML8265796555(NAD 83)
 AF7103_MARKER: DB = BENCH MARK DISK
 AF7103_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
```

AF7103_SP_SET: SET IN TOP OF CONCRETE MONUMENT
AF7103_STAMPING: OSC 1 1983 BSM
AF7103_MARK LOGO: FLDNR
AF7103_PROJECTION: FLUSH
AF7103_MAGNETIC: O = OTHER; SEE DESCRIPTION
AF7103_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AF7103+STABILITY: SURFACE MOTION
AF7103_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AF7103+SATELLITE: SATELLITE OBSERVATIONS - March 06, 2005
AF7103
AF7103 HISTORY   - Date   Condition   Report By
AF7103 HISTORY   - 1983   MONUMENTED   FLDNR
AF7103 HISTORY   - 20030429 GOOD   FLDEP
AF7103 HISTORY   - 20050306 GOOD   GEOCAC
AF7103
AF7103   STATION DESCRIPTION
AF7103
AF7103'DESCRIBED BY FL DEPT OF NAT RES 1983
AF7103'14.75 MI WNW FROM KENANSVILLE.
AF7103'BEGIN AT THE INTERSECTION OF U.S. HIGHWAY 441 AND STATE ROAD 523
AF7103'(CANOE CREEK ROAD) IN KENANSVILLE, GO 14.75 MILES NORTH AND WEST
AF7103'ALONG STATE ROAD 523 TO THE
AF7103'INTERSECTION OF JOE OVERSTREET ROAD AND THE MARK. THE MARK BEARS
AF7103'26.0 FEET SOUTHEAST OF THE CENTERLINE OF JOE OVERSTREET ROAD, 48.0
AF7103'FEET SOUTHWEST OF THE CENTERLINE OF STATE ROAD 523, 8.1 FEET
AF7103'SOUTHEAST OF A STOP SIGN/STREET SIGN, AND 2.0 FEET EAST OF A CORNER
AF7103'FENCE POST WITH A WITNESS SIGN ATTACHED.
AF7103'THE MARK IS 0.2 FT BELOW GROUND.
AF7103
AF7103   STATION RECOVERY (2003)
AF7103
AF7103'RECOVERY NOTE BY FL DEPT OF ENV PRO 2003 (BPJ)
AF7103'THE MARK IS ABOUT 18.0 MI SOUTH-SOUTHEAST OF ST. CLOUD IN SECTION 1,
AF7103'TOWNSHIP 29 SOUTH,
AF7103'RANGE 31 EAST.
AF7103'
AF7103'TO REACH THE MARK FROM THE INTERSECTION OF THE FLORIDA TURNPIKE (STATE
AF7103'ROAD 91)
AF7103'UNDERPASS AND STATE ROAD 523, ABOUT 11.0 MI SOUTH OF ST. CLOUD, GO
AF7103'SOUTHEAST ON STATE ROAD 523(CANOE CREEK ROAD) FOR 8.0 MI TO THE
AF7103'JUNCTION OF JOE OVERSTREET ROAD ON THE RIGHT AND THE MARK ON THE
AF7103'RIGHT, SET IN THE TOP OF A ROUND CONCRETE MONUMENT FLUSH WITH THE
AF7103'GROUND AND ABOUT 1.0 FT BELOW THE LEVEL OF JOE OVERSTREET ROAD.
AF7103'
AF7103'LOCATED 47.7 FT WEST-SOUTHWEST OF THE APPROXIMATE CENTERLINE OF STATE
AF7103'ROAD 523, 28.8 FT SOUTHEAST OF THE APPROXIMATE CENTERLINE OF JOE
AF7103'OVERSTREET ROAD, 10.2 FT SOUTH OF A STOP SIGN, 2.5 FT NORTHWEST OF A
AF7103'CARSONITE WITNESS POST, 1.8 FT SOUTH OF A WOODEN FENCE CORNER POST AND
AF7103'1.5 FT SOUTH-SOUTHWEST OF A CARSONITE WITNESS POST.
AF7103'
AF7103'NOTE UNKNOWN MAGNETISM.
AF7103'
AF7103'
AF7103
AF7103   STATION RECOVERY (2005)
AF7103
AF7103'RECOVERY NOTE BY GEOCACHING 2005 (MAG)
AF7103'RECOVERED IN GOOD CONDITION.

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

```
**********      B E N C H   M A R K   D E S C R I P T I O N      **********
DESIGNATION:D S C 1                          STATE:FL   COUNTY:OSCEOLA
ALIAS:                                  AREA:
QUAD:N27081114  APPROX LAT:275938N  APPROX LON:0811031W
SECTION: 1 TOWNSHIP:29 RANGE:31
LOCATED 20.4 MI SE      FROM THE CITY OR TOWN OF SAINT CLOUD
*****************************************************************************
MONUMENT BY:FL DNR                                    YEAR:1983   CHIEF OF PARTY:
RECOVERY BY:S FL WATER MGMT DIST                      YEAR:1983   CHIEF OF PARTY:PWR
SETTING CLASSIFICATION:CONCRETE POST
STAMPING:D S C 1 BM
MONUMENTATION:SURVEY DISK                  DISK TYPE:BENCH MARK DISK
CONDITION OF MARK:                        OTHER CONTROL:
*****************************************************************************
* FROM THE INTERSECTION OF U S HIGHWAY 192 AND COUNTY HIGHWAY 523 IN          *
* SAINT CLOUD GO SOUTH ALONG COUNTY HIGHWAY 523 (CANOE CREEK ROAD)            *
* 19.9 MILES TO THE STATION LOCATION STATION IS LOCATED 26.0 FEET             *
* SOUTHEAST OF THE INTERSECTION OF JOE OVERSTREET ROAD 48.0 FEET              *
* SOUTHWEST OF THE CENTERLINE OF HIGHWAY 523 8.1 FEET SOUTHEAST OF A          *
* STOP SIGN/STREET SIGN AND 2.0 FEET EAST OF A CORNER FENCE POST WITH A       *
* WITNESS SIGN ATTACHED                                                       *
* A DISK SET INTO THE TOP OF A CONCRETE POST RECESSED  3 INCHES               *
*         2.00 FEET  E  FROM A WITNESS POST                                   *
*         1.20 MILES  S  OF BENCH MARK SFWMD LINE 9 D S 63 BM                 *
*****************************************************************************
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ADJUSTMENT OF LEVELS #5

PROJECT OSCEOLA CO. WELLS FIELD BOOK OSC. CO. WELLS ORDER _____ ADJ. BY P.L.H

LINE FROM U.S.C.&G.S. JACKSON TO BM-748-051-01 (LINE #9) PARTY CHIEF P. RANKIN COUNTY OSCEOLA DATE 5-3-79

SECTION	DISTANCE	F or B	SUM ROD READINGS BACK +	SUM ROD READINGS FWD. -	DIFF. ELEV.	MEAN DIFF.	ELEVATIONS UNADJ.	ELEVATIONS CORR.	ELEVATIONS ADJ.	REMARKS
U.S.C.&G.S. JACKSON									70.065	OSC. CO. WELLS #5 PG. 1
	7920'	F	104.22	99.39	+4.83					
		B	99.22	104.09	-4.87					
OS-59						+4.85	74.915			" " " " " 4
	6336'	F	85.21	84.777	+.433					
		B	78.64	79.11	-.470					
OS-60						+.451	75.366			" " " " " 10
	5808'	F	70.66	70.38	+.28					
		B	68.38	68.66	-.28					
OS-61						+.28	75.646			" " " " " 16
	4224'	F	50.62	48.53	+2.09					
		B	49.65	51.74	-2.09					
OS-61-A						+2.09	77.736			" " " " " 21
	2640'	F	33.94	34.384	-.444					
		B	34.65	34.21	+.440					
OS-62						-.442	77.294			" " " " " 22
	3696'	F	42.04	47.127	-5.087					
		B	47.17	42.10	+5.07					
OS-63						-5.078	72.216			" " " " " 27
	5392'	F	92.97	86.80	+6.17					
		B	87.11	93.275	-6.165	+6.167	78.383			
BM 748-051-01										" " " " " 32

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES (LINE 10) DATE= 83/11/21
LINE ST. CLOUD TO KR-1068 P. RANKIN (P.C.)

BENCH MARK	DIST. (METERS)		DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
ST. CLOUD						22.86090
	1559.80	F	.47937			
	1563.60	B	-.47860	.47898		
OS-82	1.6				23.33988	23.34117
	1036.60	F	-.60605			
	1034.60	B	.60750	-.60678		
OS-83	2.6				22.73311	22.73525
	1554.00	F	1.40575			
	1544.00	B	-1.40280	1.40428		
OS-106	4.1				24.13738	24.14081
	1564.80	F	-.74095			
	1550.80	B	.74090	-.74093		
OS-107	5.7				23.39646	23.40117
	1838.80	F	.07845			
	1822.20	B	-.07710	.07778		
OS-108	7.5				23.47423	23.48045
	1601.60	F	-1.84860			
	1599.60	B	1.85310	-1.85085		
OS-109	9.1				21.62338	21.63093
	1513.80	F	.57665			
	1516.60	B	-.57340	.57502		
OS-110	10.7				22.19841	22.20720
	1563.20	F	-.33175			
	1565.80	B	.33305	-.33240		
OS-112	12.2				21.86601	21.87609
	2194.20	F	1.05765			
	2195.60	B	-1.05095	1.05430		
OS-113	14.4				22.92031	22.93220
	1859.20	F	-2.09070			
	1859.40	B	2.09380	-2.09225		
OS-114	16.3				20.82806	20.84149

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE ST. CLOUD TO KR-1068

DATE= 83/11/21
P. RANKIN (P.C.)

BENCH MARK	DIST. (METERS)		DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
	1634.80	F	.88855			
	1634.40	B	-.88255	.88555		
OS-115	17.9				21.71361	21.72839
	1570.40	F	-.55710			
	1550.20	B	.55820	-.55765		
OS-116	19.5				21.15596	21.17203
	1058.00	F	.10900			
	1056.40	B	-.10900	.10900		
OS-117	20.5				21.26496	21.28190
	1752.20	F	-.43925			
	1750.80	B	.44150	-.44038		
KR-1067	22.3				20.82458	20.84297
	1749.60	F	-1.72495			
	1749.00	B	1.72660	-1.72578		
OS-118	24.0				19.09881	19.11864
	1189.40	F	.15605			
	1192.60	B	-.15480	.15543		
OS-119	25.2				19.25423	19.27505
	1578.60	F	.20710			
	1579.00	B	-.20800	.20755		
KR-1068	26.8				19.46178	19.48390

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
ACCEPTED ERROR OF CLOSURE IS 6 X SQR. ROOT(KM)= 31.05648 MM
YOUR ERROR OF CLOSURE IS 22.11500 MM
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE POL-16 TO OS-127 (LINE 7)

DATE= 83/11/04
P. RANKIN (P.C.)

BENCH MARK	DIST. (METERS)	DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
POL-16					19.64500
	1325.20 F	.77385			
	1327.60 B	-.77606	.77495		
PO-T29-S9	1.3			20.41995	20.41868
	1272.60 F	-2.37603			
	1272.40 B	2.37732	-2.37667		
PO-T29-S9A	2.6			18.04328	18.04079
	1346.40 F	-.30541			
	1346.20 B	.31041	-.30791		
PO-T29-S4	3.9			17.73537	17.73159
	1398.00 F	-.45081			
	1396.20 B	.45062	-.45071		
PO-T28-S33	5.3			17.28466	17.27954
	798.00 F	.12785			
	796.80 B	-.12743	.12764		
PO-T28-S32	6.1			17.41230	17.40642
	1207.00 F	-.59541			
	1208.40 B	.59483	-.59512		
PO-T28-S29	7.3			16.81717	16.81014
	1715.40 F	.34495			
	1714.00 B	-.34422	.34459		
PO-T28-S29A	9.1			17.16176	17.15308
	1715.00 F	.09347			
	1706.60 B	-.09510	.09428		
PO-T28-S30	10.8			17.25604	17.24573
	1867.40 F	.16460			
	1867.80 B	-.16372	.16416		
PO-T28-S24	12.6			17.42020	17.40809
	1411.20 F	-.85251			
	1411.20 B	.85040	-.85145		
PO-T28-S18	14.1			16.56874	16.55529

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE POL-16 TO OS-127

DATE= 83/11/04
P. RANKIN (P.C.)

BENCH MARK	DIST. (METERS)		DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
	1665.20	F	-.24925			
	1658.80	B	.24760	-.24853		
PO-T28-S17	15.7				16.32022	16.30517
	1500.80	F	2.61910			
	1504.60	B	-2.62280	2.62095		
PO-T28-S6	17.2				18.94117	18.92468
	1028.40	F	-.20900			
	1063.40	B	.20645	-.20772		
PO-T28-S4A	18.3				18.73344	18.71596
	1314.20	F	1.15610			
	1315.60	B	-1.15880	1.15745		
PO-T28-S9 ✓	19.6				19.89089	19.87215
	810.20	F	.38210			
	813.80	B	-.38555	.38383		
PO-T28-S10 ✓	20.4				20.27472	20.25519
	1636.00	F	.25000			
	1638.60	B	-.25580	.25290		
PO-T28-S14 ✓	22.0				20.52762	20.50653
	1631.90	F	-1.35392			
	1632.50	B	1.35210	-1.35301		
PO-T28-S14A	23.7				19.17461	19.15195
	990.00	F	-1.95865			
	990.60	B	1.95926	-1.95896		
PO-T28-S13	24.7				17.21565	17.19205
	1396.90	F	-.49713			
as	1396.90	B	.49469	-.49591		
PO-T28-S18	26.0				16.71974	16.69480
	1411.80	F	.35966			
as	1412.70	B	-.35966	.35966		
PO-T28-S17	27.5				17.07940	17.05311

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE PUL-16 TO OS-127

DATE= 83/11/04
P. RANKIN (P.C.)

BENCH MARK	DIST. (METERS)	DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
OS	1533.10 F	-1.10185			
	1533.40 B	1.10155	-1.10170		
~~PU~~-T28-S8	29.0			15.97770	15.94994
	692.50 F	.54803			
	691.60 B	-.54895	.54849		
PU-T28-GL-1	29.7			16.52619	16.49777
	1485.30 F	.10942			
	1484.70 B	-.11278	.11110		
PU-T27-GL-2	31.2			16.63729	16.60745
	1097.30 F	.19477			
	1097.30 B	-.19660	.19569		
OS-T27-S36	32.3			16.83298	16.80208
	1771.80 F	1.07534			
	1772.40 B	-1.07717	1.07626		
OS-T27-S30	34.0			17.90923	17.87664
	1081.40 F	-1.35789			
	1082.00 B	1.35636	-1.35712		
OS-T27-S30A	35.1			16.55211	16.51848
	1180.20 F	.32583			
	1180.20 B	-.32827	.32705		
OS-127	36.3			16.87916	16.84440

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
ACCEPTED ERROR OF CLOSURE IS 6 X SQR. ROOT(KM)= 36.15056 MM
YOUR ERROR OF CLOSURE IS -34.75600 MM
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE PDL-16 TO KLS-30W-4A (LINE 6)

DATE= 83/11/04
P. RANKIN (P.C.)

BENCH MARK	DIST. (METERS)	DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
PDL-16					19.64500
	1801.80 F	.21187			
PD-9-SFWMD	1818.20 B	-.21019	.21103		
	1.8			19.85603	19.85673
	1972.80 F	-.32709			
PD-10-SFWMD	1968.60 B	.32985	-.32847		
	3.8			19.52756	19.52901
	1160.80 F	.23312			
KLS-29W-13A	1160.80 B	-.23222	.23267		
	4.9			19.76023	19.76213
	1367.20 F	-.78987			
KLS-29W-13B	1366.40 B	.79040	-.79013		
	6.3			18.97010	18.97252
	1332.60 F	-2.13411			
KLS-29W-19A	1330.60 B	2.13402	-2.13407		
	7.6			16.83603	16.83897
	1282.40 F	-.47519			
KLS-29W-20A	1266.20 B	.47644	-.47582		
	8.9			16.36021	16.36364
	564.00 F	.23784			
KLS-29W-20C	590.20 B	-.23890	.23837		
	9.5			16.59858	16.60223
	[illegible] F	.11267			
KLS-29W-19B	[illegible] B	-.11024	.11145		
	10.6			16.71003	16.71412
	491.60 F	.74086			
KLS-29W-30A	489.40 B	-.74037	.74062		
	11.1			17.45065	17.45492
	701.40 F	1.16832			
KLS-29W-30B	700.40 B	-1.16760	1.16796		
	11.8			18.61861	18.62315

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE POL-16 TO KLS-30W-4A

DATE= 83/11/04
P. RANKIN (P.C.)

BENCH MARK	DIST. (METERS)	DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
	2195.80 F	-2.64297			
	2195.80 B	2.64376	-2.64336		
16-728-03 DOT	14.0			15.97524	15.98063
	1276.60 F	.71141			
	1272.80 B	-.70858	.71000		
KLS-29W-28A	15.3			16.68524	16.69112
	842.60 F	-.06726			
	839.20 B	.06760	-.06743		
KLS-29W-33A	16.1			16.61781	16.62401
	454.60 F	.56690			
	450.40 B	-.56803	.56747		
KR-KEEN-USE	16.6			17.18528	17.19166
	1261.00 F	-.15744			
	1266.80 B	.15484	-.15614		
KLS-30W-3A	17.8			17.02914	17.03600
	1106.80 F	-.26246			
	1106.80 B	.26320	-.26283		
KLS-30W-4A	16.9			16.76631	16.77360

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
ACCEPTED ERROR OF CLOSURE IS 6 X SQR. ROOT(KM)= 26.11875 MM
YOUR ERROR OF CLOSURE IS 7.26750 MM
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE KR-1068 TO P-63 (LINE 11)

DATE= 83/11/07
P. RANKIN (P.C.)

BENCH MARK	DIST. (METERS)	DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
KR-1068					19.48390
	1526.60 F	-1.15469			
OS-144	1527.40 B	1.15560	-1.15515		
	1.5			18.32876	18.32933
	1539.80 F	1.44297			
OS-145	1537.40 B	-1.44480	1.44388		
	3.1			19.77264	19.77380
	1563.80 F	.72837			
OS-146	1561.80 B	-.72653	.72745		
	4.6			20.50009	20.50183
	1596.60 F	.85693			
OS-147	1606.80 B	-.85187	.85440		
	6.2			21.35449	21.35684
	1713.80 F	-.53457			
OS-148	1713.80 B	.53186	-.53321		
	7.9			20.82127	20.82427
	1871.00 F	1.24035			
OS-149	1869.40 B	-1.24190	1.24112		
	9.8			22.06240	22.06610
	773.60 F	-.05400			
OS-63	774.20 B	.05370	-.05385		
	10.6			22.00855	22.01254
	1875.60 F	1.32245			
OSC-1 (2945)	1875.60 B	-1.32169	1.32207		
	12.5			23.33062	23.33532
	1233.60 F	-.27385			
2944 OS61	1226.80 B	.27426	-.27406		
	13.7			23.05656	23.06173
	1746.20 F	-.18730			
2943	1747.20 B	.18680	-.18705		
	15.4			22.86951	22.87534

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE KR-1068 TO F-63

DATE= 83/11/07
P. RANKIN (P.C.)

BENCH MARK	DIST. (METERS)	DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
	1939.60 F	-.03455			
	1935.00 B	.03536	-.03495		
2942	17.4			22.83456	22.84111
	1437.20 F	-.90109			
	1434.20 B	.89921	-.90015		
2941	18.8			21.93441	21.94150
	1146.80 F	-.59736			
	1148.20 B	.59916	-.59826		
JACKSON (2940)	20.0			21.33615	21.34367
	750.20 F	.36926			
	749.80 B	-.36926	.36926		
2939	20.7			21.70541	21.71322
	876.60 F	-.28344			
	877.80 B	.28163	-.28253		
2938	21.6			21.42287	21.43101
	2059.80 F	-.60266			
	2056.60 B	.60014	-.60140		
2937	23.6			20.82147	20.83039
	1228.20 F	-1.99848			
	1232.80 B	1.99757	-1.99802		
2936	24.9			18.82345	18.83283
	2105.60 F	-.26946			
	2106.60 B	.26184	-.26565		
2935	27.0			18.55780	18.56797
	1938.40 F	.31703			
	1940.20 B	-.31913	.31808		
2933	28.9			18.87588	18.88678
	1497.60 F	-1.89598			
	1500.80 B	1.89460	-1.89529		
2930 (OS-27-6)	30.4			16.98059	16.99206

1

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE KR-1068 TO F-63

DATE= 83/11/07
P. RANKIN (P.C.)

BENCH	DIST.	DIFF.	MEAN	UNADJ.	ADJ.

MARK	(METERS)	ELEV. (METERS)	DIFF. ELEV.	ELEV.	ELEV. (METERS)
	1346.00 F	.97496			
	1347.00 B	-.97752	.97624		
2952 (OS-27-5)	31.8			17.95683	17.96880
	1729.20 F	-.23876			
	1729.60 B	.23800	-.23838		
2995 (OS-27-4)	33.5			17.71845	17.73108
	1887.00 F	-.90470			
	1887.00 B	.90200	-.90335		
2996 (OS-27-3)	35.4			16.81510	16.82844
	1657.20 F	.61209			
	1660.40 B	-.61808	.61509		
2998 (OS-27-2)	37.0			17.43018	17.44415
	1528.40 F	.01705			
	1527.00 B	-.02048	.01876		
OS-27-1 (2997)	38.6			17.44895	17.46349
	904.20 F	5.02195			
	910.20 B	-5.02049	5.02122		
3042	39.5			22.47017	22.48505
	180.60 F	.01011			
	180.00 B	-.00992	.01002		
3044	39.7			22.48018	22.49513
	640.00 F	-4.74011			
	645.60 B	4.74099	-4.74055		
3045	40.3			17.73963	17.75483
	487.20 F	-1.56043			
	490.00 B	1.56179	-1.56111		
F-63 (3046)	40.8			16.17852	16.19390

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
ACCEPTED ERROR OF CLOSURE IS 6 X SQR. ROOT(KM)= 38.32018 MM
YOUR ERROR OF CLOSURE IS 15.37500 MM
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE KLS-30W-4A TO ~~NGS F 63~~ POL Z (LINE 5)

DATE= 83/11/08 DNR
GEODETIC LEVEL ~~(P.G.)~~

BENCH MARK	DIST. (METERS)		DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
KLS-30W-4A						16.77360
	839.60	F	.05937			
	841.00	B	-.06133	.06035		
3069	.8				16.83395	16.83427
	874.40	F	.07912			
	878.00	B	-.08092	.08002		
3068	1.7				16.91397	16.91462
	1005.00	F	.11663			
	1005.20	B	-.11816	.11739		
3067	2.7				17.03136	17.03240
	864.00	F	-.21596			
	844.00	B	.21449	-.21522		
3066	3.6				16.81614	16.81750
	1062.80	F	.44531			
	1025.40	B	-.44671	.44601		
3065	4.6				17.26215	17.26390
	598.60	F	-.37716			
	613.60	B	.37795	-.37756		
2982	5.2				16.88459	16.88658
	755.40	F	.17863			
	755.40	B	-.17849	.17856		
3064	6.0				17.06315	17.06543
	838.20	F	.19150			
	840.40	B	-.19229	.19190		
3063	6.8				17.25505	17.25764
	873.60	F	-.31242			
	885.40	B	.31395	-.31319		
3062	7.7				16.94186	16.94479
	848.80	F	.36801			
	843.20	B	-.36634	.36718		
3061	8.5				17.30904	17.31229

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE KLS-30W-4A TO ~~NGS F 63~~ POL - 2

DATE= 83/11/08
GEODETIC LEVEL ~~(P.C.)~~ DNR

BENCH MARK	DIST. (METERS)		DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
	647.00	F	-.66302			
	648.00	B	.66215	-.66259		
3060	9.2				16.64645	16.64995
	370.00	F	.10029			
	368.80	B	-.09995	.10012		
3059	9.6				16.74657	16.75021
	695.80	F	.26772			
	696.00	B	-.26792	.26782		
3058	10.3				17.01439	17.01829
	679.20	F	-.17911			
	681.40	B	.17929	-.17920		
3057	10.9				16.83519	16.83935
	1201.00	F	.27679			
	1210.40	B	-.27792	.27736		
3056	12.1				17.11255	17.11716
	810.00	F	.59413			
	804.00	B	-.59457	.59435		
3055	13.0				17.70690	17.71182
	1187.80	F	-1.32491			
	1184.60	B	1.32363	-1.32427		
3054	14.1				16.38263	16.38800
	858.80	F	.75494			
	858.20	B	-.75444	.75469		
3053	15.0				17.13732	17.14302
	938.90	F	-.62740			
	938.90	B	.62613	-.62677		
3052	15.9				16.51055	16.51661
	986.00	F	-.15682			
	984.60	B	.15658	-.15670		
3051	16.9				16.35385	16.36028

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE KLS-3OW-4A TO ~~NGS F 63~~ POL-2

DATE= 83/11/08 DNR
GEODETIC LEVEL(~~P.C.~~)

BENCH MARK	DIST. (METERS)	DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
	963.40 F	.99118			
	945.40 B	-.99025	.99071		
3050	17.9			17.34457	17.35136
	1590.80 F	.11871			
	1593.40 B	-.12042	.11956		
3048	19.5			17.46413	17.47153
	1235.40 F	-.38550			
	1240.60 B	.38170	-.38360		
POL-2 (3047)	20.7			17.08053	17.08840

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
ACCEPTED ERROR OF CLOSURE IS 6 X SQR. ROOT(KM)= 27.30178 MM
YOUR ERROR OF CLOSURE IS 7.86500 MM
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

COMPUTATION OF LEVELS

PROJECT ST CLOUD LEVELS — DATE= 84/03/14
LINE ST CLOUD TO KISS. — P. RANKIN (P.C.)

BENCH MARK	DIST. (METERS)	DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
ST CLOUD 1934					22.86100
	1002.00 F	.33555			
	1002.40 B	-.33545	.33550		
P-59 1971 RESET	1.0			23.19650	23.19652
	1741.40 F	-4.51395			
	1734.00 B	4.51370	-4.51382		
CS-80	2.7			18.68267	18.68273
	1762.80 F	1.13465			
	1757.40 B	-1.13640	1.13553		
CS-81	4.5			19.81820	19.81829
	1770.00 F	-.45577			
	1766.00 B	.45927	-.45752		
CS-150	6.3			19.36068	19.36080
	1778.40 F	7.44930			
	1778.20 B	-7.44612	7.44771		
CS-151	8.0			26.80839	26.80855
	1728.40 F	-7.06290			
	1725.20 B	7.06692	-7.06491		
CS-152	9.8			19.74348	19.74367
	823.40 F	-.60627			
	823.40 B	.60840	-.60734		
CS-153	10.6			19.13614	19.13635
	2193.80 F	-1.07490			
	2196.00 B	1.07745	-1.07618		
CS-154	12.8			18.05997	18.06022
	1292.20 F	.17585			
	1293.40 B	-.17525	.17555		
CS-155	14.1			18.23552	18.23580
	1134.20 F	-.41528			
	1128.60 B	.41430	-.41479		
EDA 33	15.2			17.82073	17.82103

COMPUTATION OF LEVELS

PROJECT ST CLOUD LEVELS
LINE ST CLOUD TO KISS.

DATE= 84/03/14
P. RANKIN (P.C.)

BENCH MARK	DIST. (METERS)	DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
	578.00 F	3.04322			
	547.60 B	-3.04270	3.04296		
NGS C-17	15.8			20.86369	20.86400

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
ACCEPTED ERROR OF CLOSURE IS 6 X SQR. ROOT(KM)= 23.83322 MM
YOUR ERROR OF CLOSURE IS .31000 MM
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE POL-2 TO PO-26-2 (LINE 2)

DATE= 83/11/10 DNR
GEO. LEV. ABS. ~~(P.C.)~~

BENCH MARK	DIST. (METERS)	DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
POL-2 (3047)					17.08840
	1249.60 F	.76776			
	1242.80 B	-.76738	.76757		
3084	1.2			17.85597	17.85522
	1656.60 F	1.91545			
	1658.20 B	-1.91675	1.91610		
3085	2.9			19.77207	19.77032
	1402.40 F	.17751			
	1405.20 B	-.17816	.17783		
3086	4.3			19.94990	19.94731
	817.60 F	.23854			
	816.80 B	-.23783	.23819		
3087	5.1			20.18809	20.18501
	1820.40 F	3.93101			
	1841.80 B	-3.93337	3.93219		
3088	7.0			24.12028	24.11610
	1762.80 F	7.23175			
	1774.90 B	-7.23490	7.23332		
3089	8.7			31.35360	31.34836
	1711.00 F	-5.40199			
	1689.60 B	5.40246	-5.40223		
3090	10.4			25.95138	25.94511
	1802.20 F	-3.55716			
	1808.20 B	3.55519	-3.55617		
3091	12.2			22.39520	22.38785
	1604.00 F	-1.16084			
	1591.20 B	1.16304	-1.16194		
3092	13.8			21.23326	21.22495
	1225.80 F	-.15998			
	1223.80 B	.15772	-.15885		
3093	15.1			21.07441	21.06536

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE POL-2 TO PO-26-2

DATE= 83/11/10
GEO. LEV. ABS.(P.C.)

BENCH MARK	DIST. (METERS)	DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
	910.20 F	-.90161			
	918.40 B	.90001	-.90081		
PO-26-2 (2986)	16.0			20.17360	20.16400

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
✓ACCEPTED ERROR OF CLOSURE IS 6 X SQR. ROOT(KM)= 23.97505 MM
YOUR ERROR OF CLOSURE IS -9.60500 MM
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE PC-26-2 TO PCL-16 (LINE 3)

DATE= 83/11/08
GEODETIC LEVEL (~~P.C.~~ DNR)

BENCH MARK	DIST. (METERS)	DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
PC-26-2 (2986)					20.16400
	173.40 F	.81646			
	174.00 B	-.81670	.81658		
3094	.2			20.98058	20.98048
	1418.80 F	.70366			
	1417.00 B	-.70272	.70319		
3095	1.6			21.68377	21.68286
	939.40 F	.65280			
	939.80 B	-.65260	.65270		
3096	2.5			22.33647	22.33502
	1059.00 F	-1.91416			
	1065.80 B	1.91294	-1.91355		
3097	3.6			20.42292	20.42086
	92.40 F	-.01075			
	90.00 B	.01096	-.01085		
3098	3.7			20.41206	20.40995
	924.20 F	-.69394			
	918.40 B	.69402	-.69398		
3099	4.6			19.71808	19.71545
	1715.20 F	.78417			
	1714.40 B	-.78284	.78351		
3100	6.3			20.50159	20.49797
	1320.40 F	5.11498			
	1276.60 B	-5.11416	5.11457		
3101	7.6			25.61616	25.61179
	1111.60 F	8.48258			
	1122.40 B	-8.48087	8.48172		
PCL-14 (2990)	8.7			34.09788	34.09288
	1876.00 F	1.44250			
	1862.40 B	-1.44613	1.44431		
2991	10.6			35.54220	35.53612

COMPUTATION OF LEVELS

PROJECT UPPER CHAIN OF LAKES
LINE PO-26-2 TO POL-16

DATE= 83/11/08 DNR
GEODETIC LEVEL (~~P.G.~~)

BENCH MARK	DIST. (METERS)	DIFF. ELEV. (METERS)	MEAN DIFF. ELEV.	UNADJ. ELEV.	ADJ. ELEV. (METERS)
	1162.20 F	-2.11952			
	1165.60 B	2.11859	-2.11905		
2992	11.8			33.42314	33.41640
	1381.20 F	.17157			
	1381.20 B	-.17254	.17206		
2993	13.2			33.59520	33.58767
	1399.20 F	-2.17022			
	1400.80 B	2.16796	-2.16909		
2999	14.6			31.42611	31.41777
	1207.80 F	-12.82417			
	1211.80 B	12.82417	-12.82417		
3107	15.8			18.60194	18.59291
	1509.00 F	.28418			
	1511.80 B	-.28354	.28386		
3104 POL 15	17.3			18.88580	18.87590
	1656.20 F	.77097			
	1859.80 B	-.76935	.77016		
POL-16 (3105)	19.1			19.65596	19.64500

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
ACCEPTED ERROR OF CLOSURE IS 6 X SQR. ROOT(KM)= 26.24196 MM
YOUR ERROR OF CLOSURE IS -10.96000 MM ✓
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX