0009

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Date: 2/8/2006 3:57:11 PM
Subject: Grassy Trail Dam- Monitoring January 2006

The PDF attachments include charts and tables showing piezometer, inclinometer and accelerometer readings take on 1/27 and 1/31/06.

It will be noted that inclinometer 2A shows some apparent deflection in an easterly direction along the axis of the dam. We have discussed this issue in the past with a specialist in inlinometer readings. After evaluating the data, he indicated that this apparent deflection was likely a result of the casing being installed on a significant angle from vertical, and not indicative of true deflection of the casing. If the inclinometer indicates apparent deflection greater than 0.5 inches, we will consult this specialist again for further review and correction of the data.

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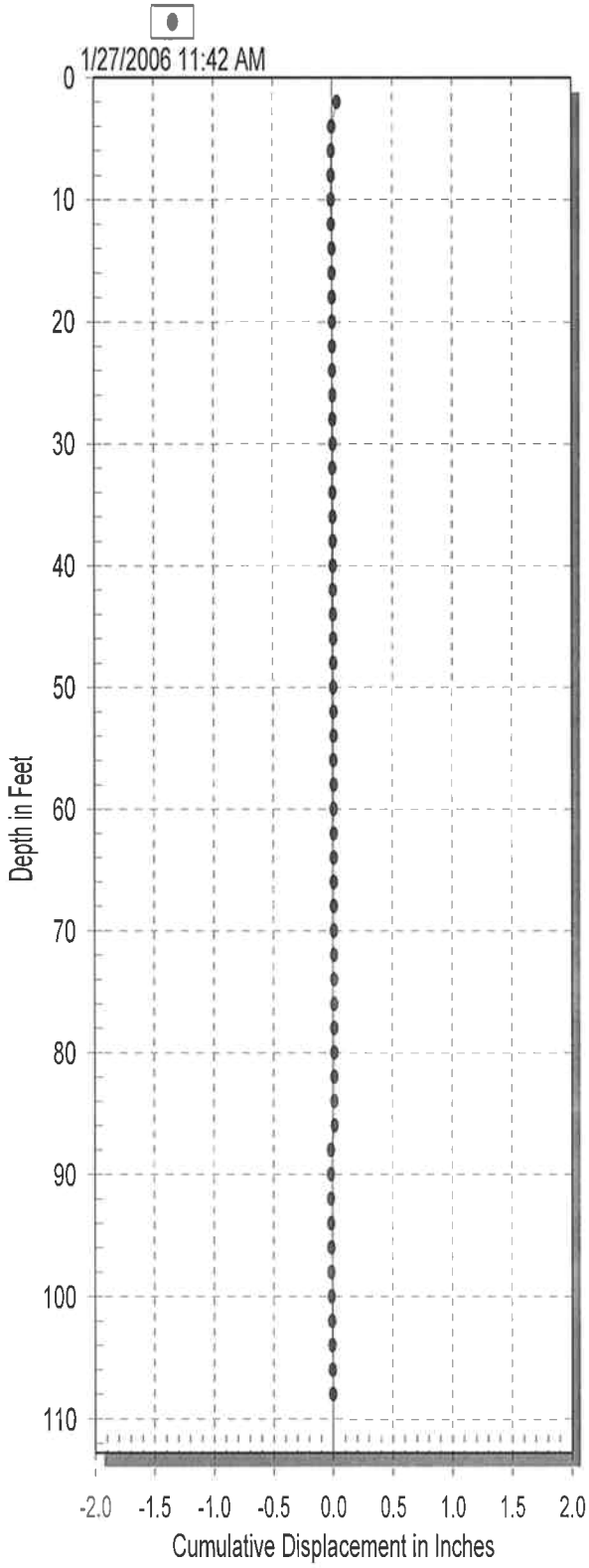
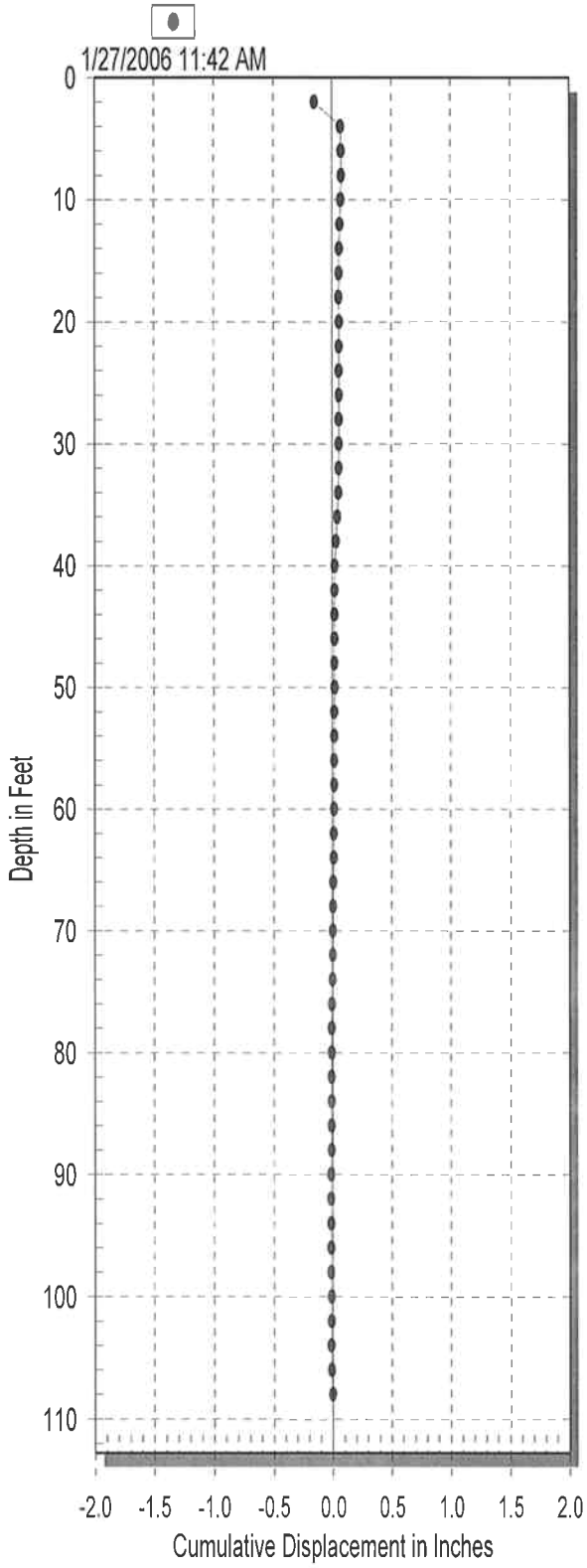
GRASSY:1A - A Axis

Initial survey: 12/9/2005 02:30 PM



GRASSY:1A - B Axis

Initial survey: 12/9/2005 02:30 PM

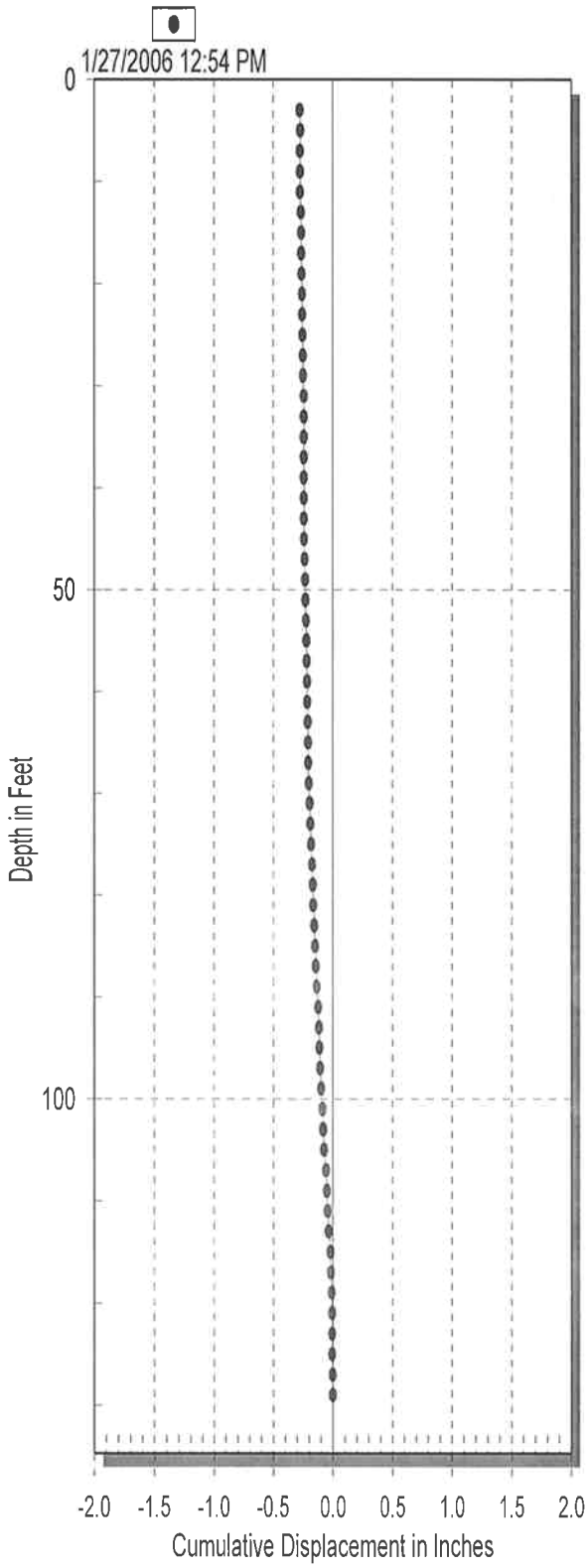


Uncorrected

"A-Axis" is West

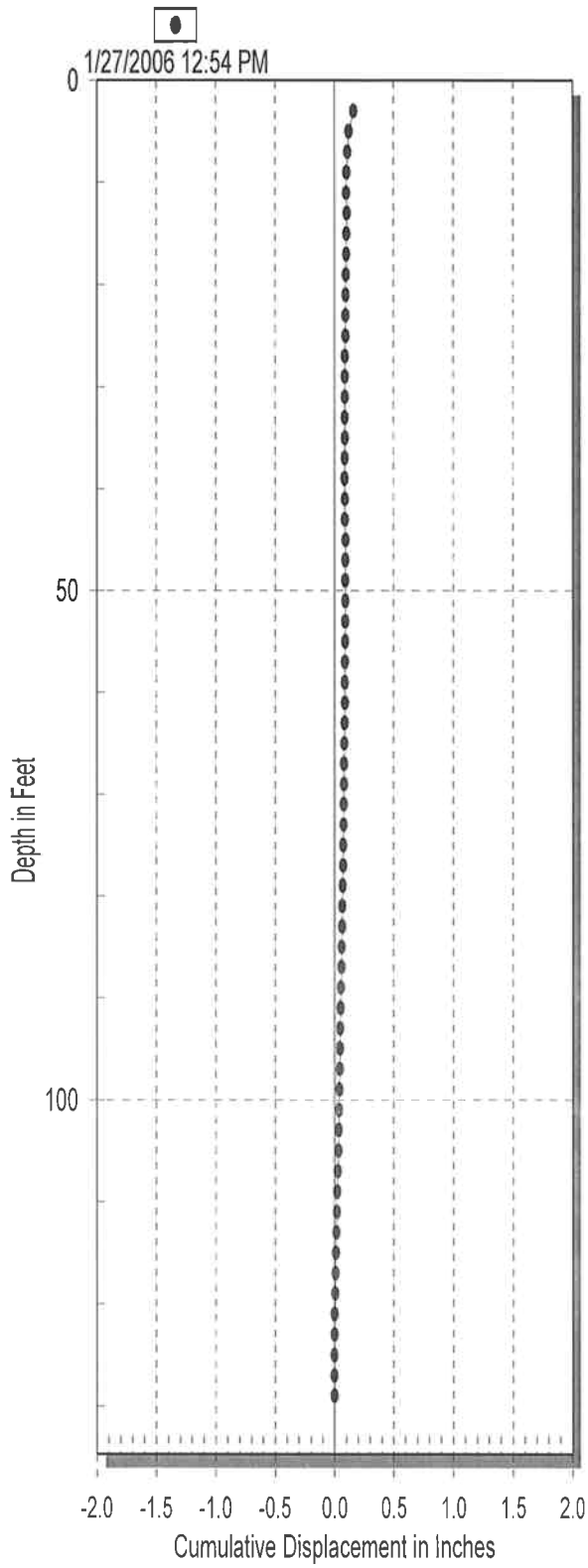
GRASSY:2A - A Axis

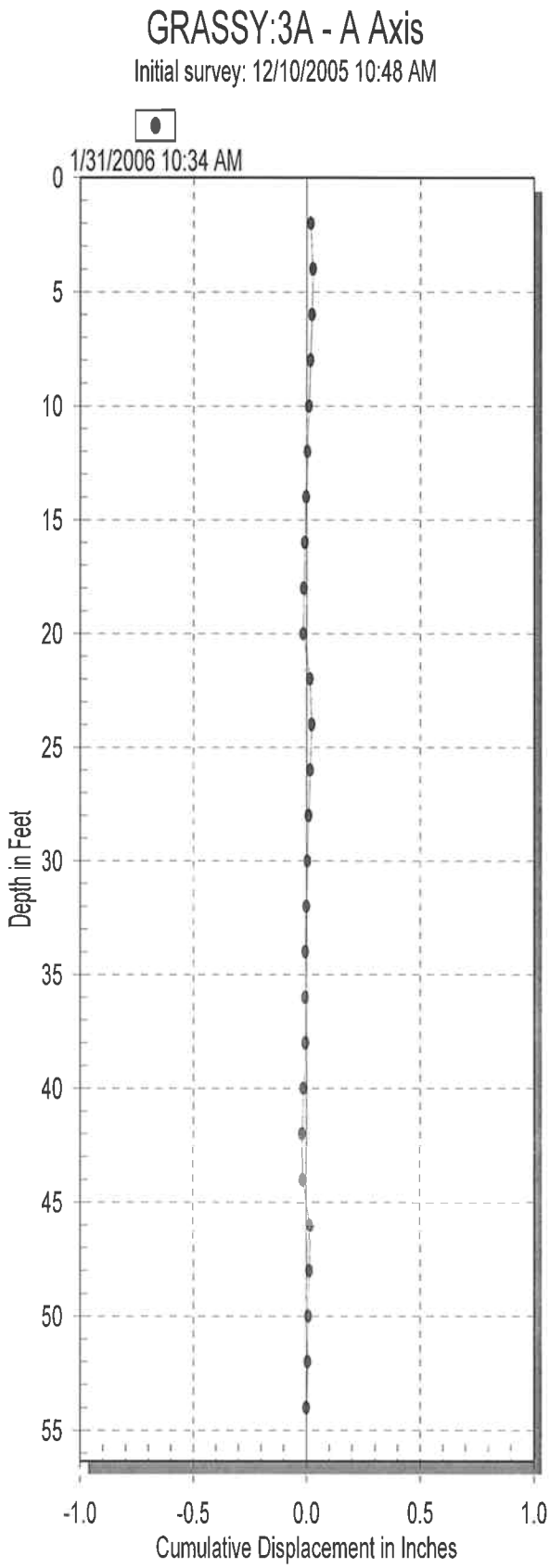
Initial survey: 12/10/2005 09:50 AM

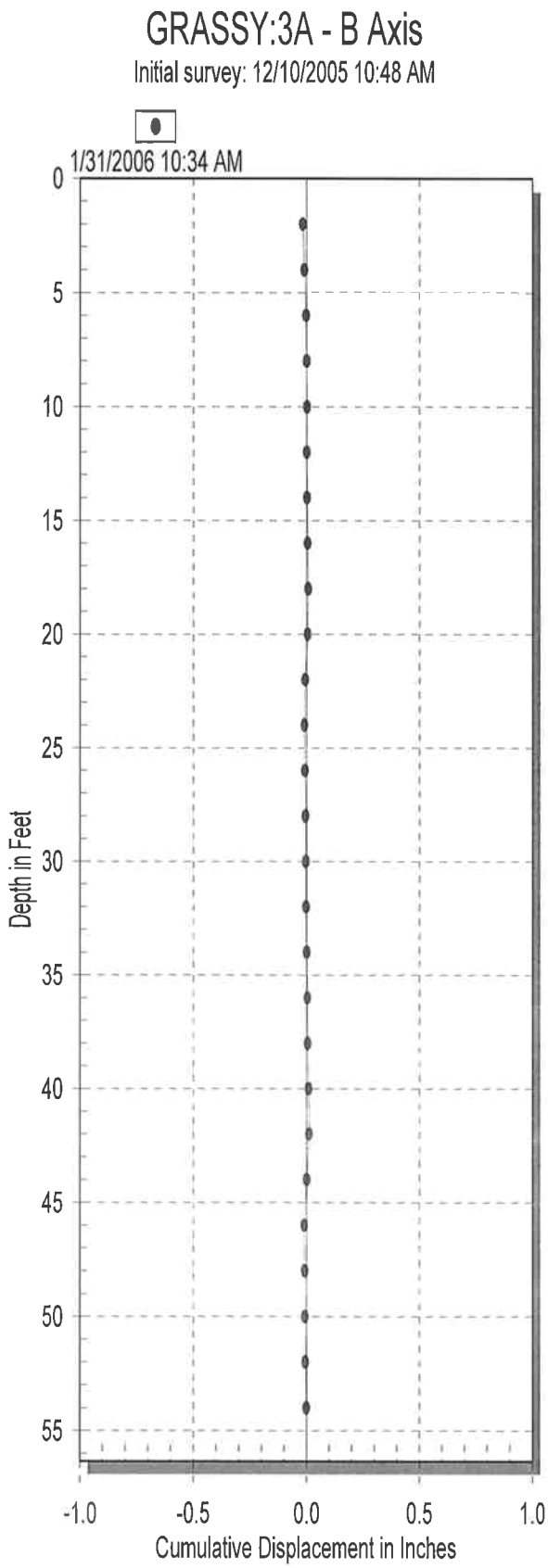


GRASSY:2A - B Axis

Initial survey: 12/10/2005 09:50 AM

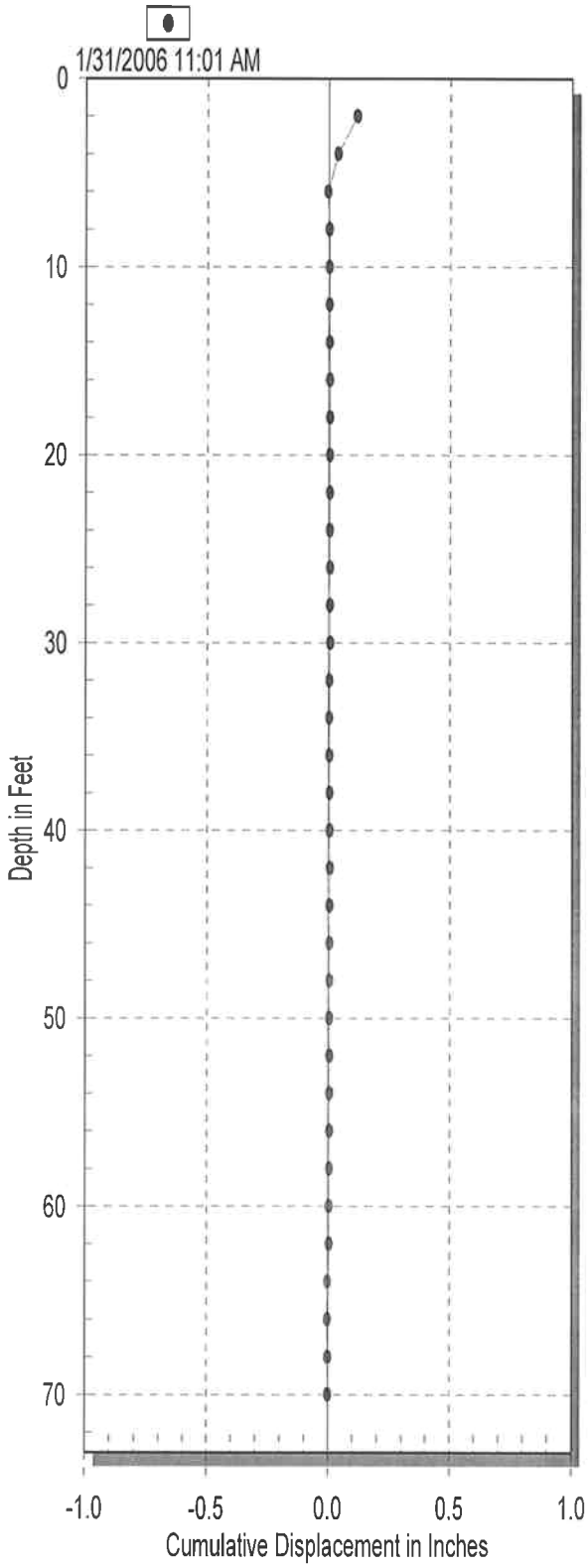



GRASSY:3A - A Axis
Initial survey: 12/10/2005 10:48 AM
1/31/2006 10:34 AM
Depth in Feet
0
5
10
15
20
25
30
35
40
45
50
55
-1.0
-0.5
0.0
0.5
1.0
Cumulative Displacement in Inches


GRASSY:3A - B Axis
Initial survey: 12/10/2005 10:48 AM
1/31/2006 10:34 AM
Depth in Feet
0
5
10
15
20
25
30
35
40
45
50
55
-1.0
-0.5
0.0
0.5
1.0
Cumulative Displacement in Inches

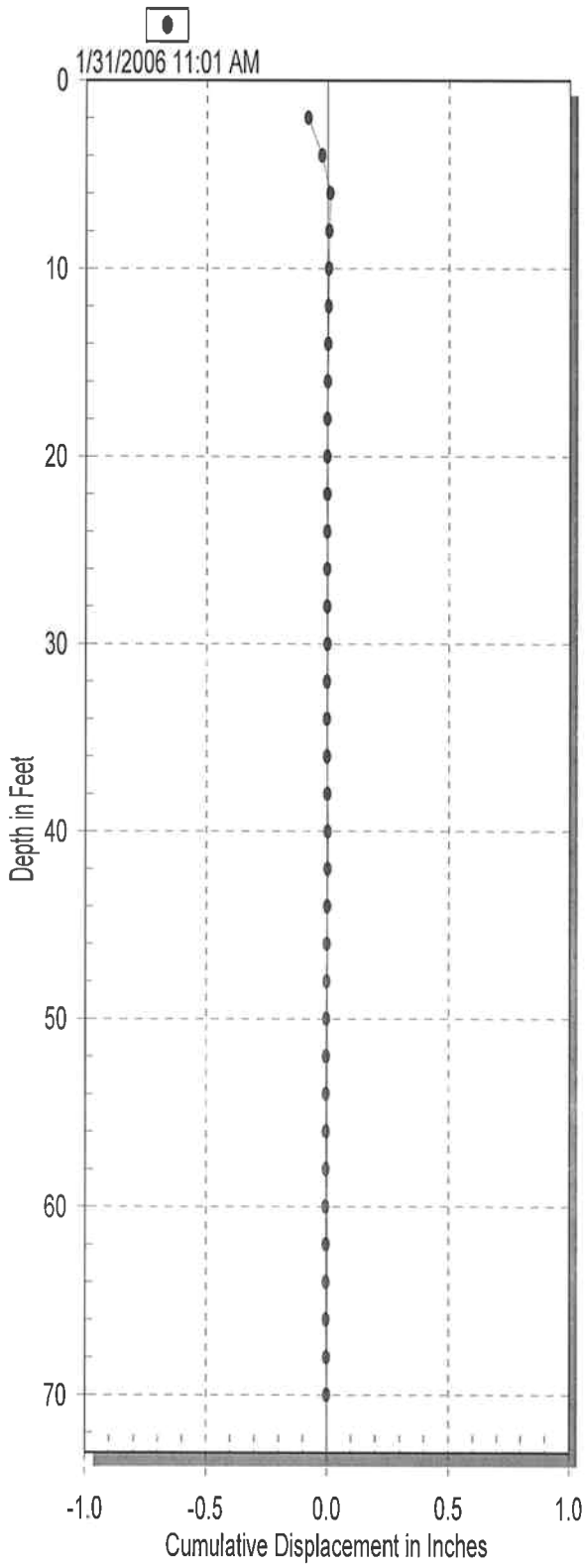
Grassy:4 - A Axis

Initial survey: 12/9/2005 12:20 PM



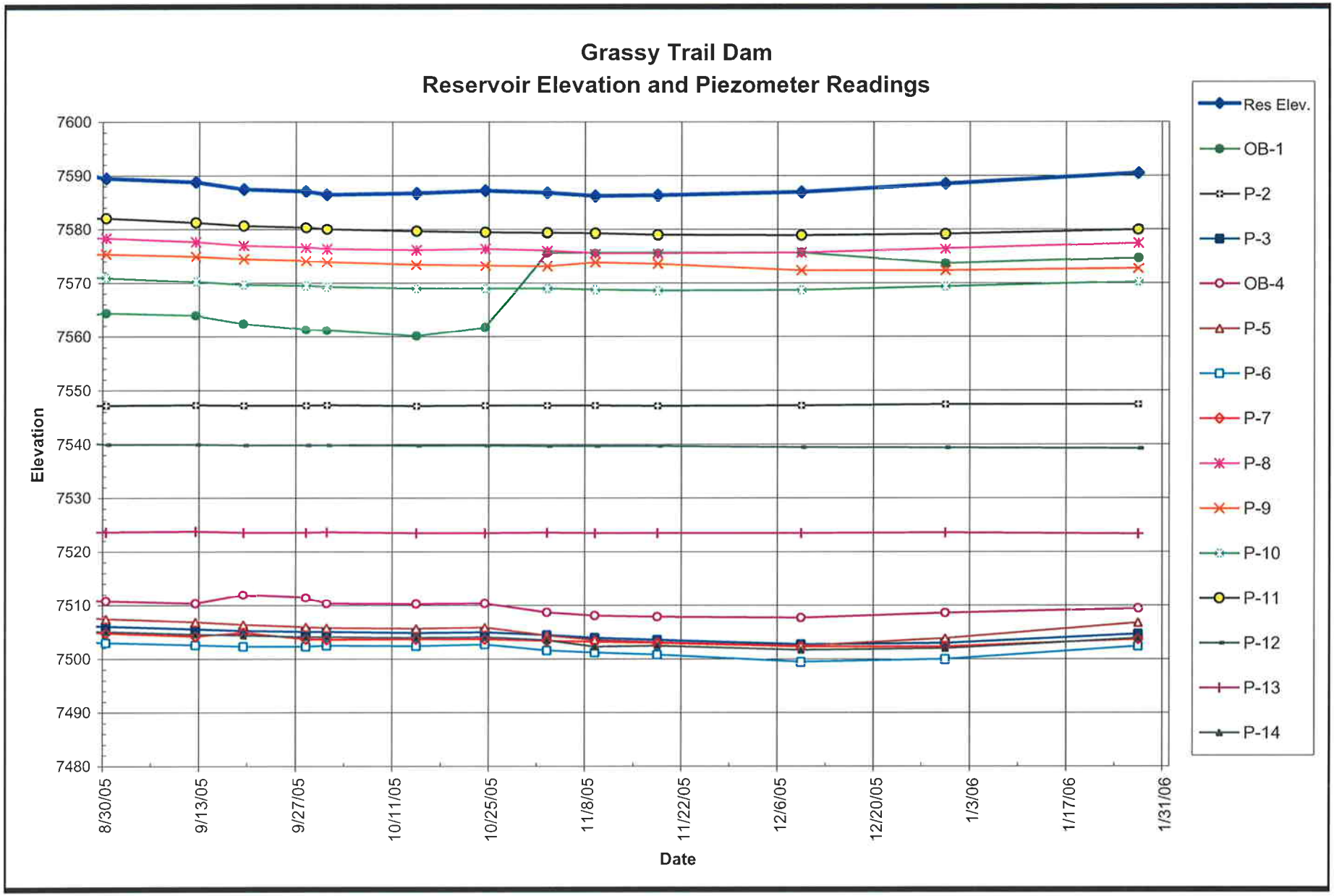
Grassy:4 - B Axis

Initial survey: 12/9/2005 12:20 PM



GRASSY TRAIL DAM PIEZOMETER & OBSERVATION WELL READINGS

TAKE READINGS AT RIM ELEV.			05-2		79-4	98-3		05-4		79-3	05-3A	05-3		98-2	98-4	98-6
			5+62		5+15	4+14		~4+14		3+63	2+77	2+71				
Dam Crest Elev. (ft)		7600.0	PIEZ.	PIEZ.	O.W.	PIEZ.		PIEZ.		O.W.	PIEZ	PIEZ	PIEZ	PIEZ	PIEZ	PIEZ
Spillway Elev. (ft)		7592.5	8	9	1	2	3	13	14	4	10	11	12	5	6	7
Rim Elev. (ft)			7601.5		7601.8	7601.7		7558.9	7558.9	7601.7	7601.8	7601.7	7601.7	7528.8	7512.0	7519.5
Tip Elev. (ft)		(actual)	7554.5	7535.1	7491.8	7525.4	7491.0	7521.0	7499.5	7491.7	7550.8	7572.0	7529.5	7501.5	7479.5	7493.0
Piezometer Location:			CREST EMBANK.	CREST FOUND.	CREST EMBANK/FOUND	CREST EMBANK.	CREST FOUND.	D.S. SLOPE EMBANK.	D.S. SLOPE FOUND.	EMBANK/FOUND	CREST EMBANK.	CREST EMBANK.	CREST FOUND.	TOE FOUND.	TOE FOUND.	TOE FOUND.
Date	Initials	Reservoir Elevation	45.75' (47')	65' (66.4')	110'	76.2' (76.3')	110.7'	36.5' (37.9')	58.8' (59.4')	110'	49.5' (51')	28.5' (29.7')	84.0' (72.2')	27.3'	32.5'	26.5'
8/30/2005	LW	-36"	23.2	26.2	37.4	54.5	95.6	35.2	53.8	90.9	30.8	19.6	61.7	21.3	9.0	14.6
9/12/2005	LW	-44"	23.9	26.6	37.8	54.4	96.1	35.1	54.3	91.3	31.5	20.4	61.7	21.9	9.4	15.2
9/19/2005	DC	-59"	24.6	27.1	39.3	54.5	96.4	35.3	54.5	89.7	32.1	21.0	61.8	22.4	9.7	14.5
9/28/2005	LW	-65"	24.9	27.4	40.4	54.5	96.6	35.3	54.8	90.2	32.3	21.3	61.8	22.8	9.7	15.7
10/7/2005	WD	-72"	25.2	27.6	40.5	54.4	96.6	35.2	54.8	91.3	32.5	21.6	61.8	23.0	9.5	15.8
10/14/2005	LW	-69"	25.4	28.1	41.6	54.6	96.8	35.4	54.9	91.4	32.8	22.0	61.9	23.1	9.6	15.7
10/24/2005	WD	-63"	25.2	28.3	40.0	54.5	96.7	35.4	54.8	91.3	32.8	22.2	61.8	22.9	9.3	15.7
11/2/2005	WD	-68"	25.5	28.4	26.2	54.5	97.2	35.3	55.4	93.0	32.8	22.3	62.0	24.4	10.4	16.0
11/7/2005	LW	-75"	26.0	27.7	26.7	54.5	97.7	35.4	56.6	93.6	33.0	22.4	62.0	25.2	10.8	16.2
11/18/2005	WD	-73.5"	26.0	28.0	26.1	54.6	98.1	35.4	56.4	93.8	33.2	22.7	62.0	25.7	11.2	16.4
12/9/2005	MKS	-66.5" ice	25.9	29.2	26.1	54.5	98.9	35.4	57.2	94.0	33.1	22.8	62.2	26.3	12.5	17.1
12/30/2005	MKS	-48" ice	25.1	29.2	28.1	54.3	98.7	35.3	56.9	93.1	32.4	22.5	62.3	24.9	12.0	17.1
1/27/2006	MKS	-24" ice	24.1	28.8	27.0	54.3	97.0	35.5	55.0	92.2	31.5	21.7	62.4	22.0	9.6	15.7



RB&G ENGINEERING INC.
Provo, Utah

Figure Reservoir Elevation and Piezometer Readings
August 30, 2004 to January 27, 2006

Grassy Trail Dam and Reservoir

Between December 30, 2005 and January 27, 2006 twenty-two events were recorded on the hillside accelerometer (BE96090). The highest PGA recorded was on the hillside unit at 0.0215g on Jan 7, 2006. Nineteen events were recorded on the dam with a the highest PGA of 0.0182g on Dec 31, 2005.

One earthquake was recorded near the site by the UUSS. This event occurred on January 15 at 12:41. PM (MST) with a magnitude of 1.5 (Md). This event was not recorded on the dam or hillside units.

Grassy Trail Dam, Carbon County, Utah
2006 Hillside unit #9690 Dam #9689
Printed: February 8, 2006 (V 4.37 - 4.37) Event Report: Event List - c:\blast\event\jansei~1

Type	Serial No.	Date/Time		Tran Peak (mm/s)	Vert Peak (mm/s)	Long Peak (mm/s)	PVS1 (mm/s)	Trigger	Tran Accel (g)	Vert Accel (g)	Long Accel (g)	Description	Post Event Note first line
W	BE9689	Dec 30 /05	21:16:57	0.778	0.317	0.238	0.779	Tran	0.00829	0.00663	0.0166		
W	BE9690	Dec 30 /05	21:16:57	1.06	0.619	0.492	1.10	Tran	0.00829	0.00663	0.00663	Instantel Inc.	
W	BE9689	Dec 31 /05	15:43:35	0.825	0.556	0.397	0.829	Tran	0.00829	0.00829	0.0182		
W	BE9690	Dec 31 /05	15:43:35	1.11	0.524	0.571	1.26	Tran	0.0149	0.00829	0.00994	Instantel Inc.	
W	BE9690	Jan 1 /06	14:15:44	0.921	0.381	0.317	0.954	Tran	0.00994	0.00829	0.00663	Instantel Inc.	
W	BE9689	Jan 1 /06	14:15:45	0.651	0.302	0.381	0.652	Tran	0.00663	0.00663	0.0133		
W	BE9690	Jan 2 /06	14:09:34	0.746	0.333	0.397	0.782	Tran	0.00994	0.00829	0.00663	Instantel Inc.	ok
W	BE9690	Jan 3 /06	15:30:09	1.00	0.365	0.603	1.08	Tran	0.00994	0.00994	0.00663	Instantel Inc.	ok
W	BE9690	Jan 3 /06	17:34:41	0.698	0.333	0.317	0.709	Tran	0.00994	0.00663	0.00663	Instantel Inc.	ok
W	BE9690	Jan 5 /06	19:58:04	0.794	0.444	0.365	0.799	Tran	0.00829	0.00663	0.00663	Instantel Inc.	
W	BE9689	Jan 5 /06	19:58:05	0.667	0.254	0.413	0.672	Tran	0.00663	0.00829	0.0116		
W	BE9690	Jan 6 /06	12:20:46	1.46	0.635	0.810	1.52	Vert	0.0182	0.00994	0.00829	Instantel Inc.	
W	BE9689	Jan 6 /06	12:20:47	0.905	0.762	0.778	1.26	Vert	0.00994	0.00829	0.00994		
W	BE9690	Jan 6 /06	22:04:41	2.05	0.651	1.11	2.12	Vert	0.0149	0.0116	0.00663	Instantel Inc.	
W	BE9689	Jan 6 /06	22:04:42	1.24	1.02	0.857	1.70	Vert	0.00994	0.00829	0.0133		
W	BE9690	Jan 7 /06	11:49:47	1.06	0.317	0.571	1.09	Tran	0.00829	0.00663	0.00663	Instantel Inc.	
W	BE9689	Jan 7 /06	11:49:48	0.714	0.524	0.460	0.845	Tran	0.00829	0.00663	0.00994		
W	BE9690	Jan 7 /06	16:29:04	1.48	0.556	0.714	1.53	Tran	0.0149	0.00829	0.00829	Instantel Inc.	
W	BE9689	Jan 7 /06	16:29:06	0.825	0.635	0.603	1.08	Vert	0.00994	0.00829	0.0149		
W	BE9690	Jan 7 /06	17:06:50	1.40	0.698	0.635	1.43	Vert	0.0215	0.0133	0.00994	Instantel Inc.	Highest PGA January 06
W	BE9689	Jan 7 /06	17:06:51	0.937	0.762	0.873	1.28	Vert	0.0116	0.00829	0.0133		
W	BE9690	Jan 8 /06	09:40:09	1.73	0.714	1.06	1.92	Vert	0.0116	0.0116	0.0116	Instantel Inc.	
W	BE9689	Jan 8 /06	09:40:11	1.06	0.857	0.746	1.33	Vert	0.0116	0.00829	0.00829		
W	BE9690	Jan 8 /06	15:18:00	1.25	0.524	0.730	1.28	Tran	0.00994	0.00829	0.00829	Instantel Inc.	
W	BE9689	Jan 8 /06	15:18:02	0.810	0.619	0.365	0.852	Vert	0.00829	0.00663	0.0149		
W	BE9690	Jan 12 /06	17:42:18	0.683	0.365	0.381	0.692	Tran	0.00994	0.00663	0.00663	Instantel Inc.	ok
W	BE9690	Jan 14 /06	18:36:32	1.92	0.857	1.14	2.16	Vert	0.0166	0.0149	0.0116	Instantel Inc.	
W	BE9689	Jan 14 /06	18:36:35	1.29	1.03	1.22	1.75	Vert	0.0116	0.00829	0.0149		
W	BE9690	Jan 14 /06	23:12:41	0.651	0.286	0.397	0.654	Tran	0.00994	0.00663	0.00663	Instantel Inc.	ok
W	BE9690	Jan 15 /06	13:36:51	1.27	0.571	0.873	1.54	Tran	0.0116	0.00994	0.00829	Instantel Inc.	Both EQ Mag 1.5
W	BE9689	Jan 15 /06	13:36:54	0.937	0.746	0.857	1.29	Vert	0.00994	0.00829	0.00994		Both EQ Mag 1.5
W	BE9689	Jan 17 /06	09:42:51	0.667	0.397	0.206	0.725	Tran	0.00994	0.00663	0.00663		may be man made??
W	BE9689	Jan 18 /06	11:12:20	0.429	0.333	0.635	0.765	Long	0.00663	0.00663	0.0149		ok???
W	BE9690	Jan 19 /06	18:59:24	1.24	0.603	0.905	1.50	Vert	0.0133	0.0116	0.00829	Instantel Inc.	
W	BE9689	Jan 19 /06	18:59:28	0.857	0.762	0.873	1.30	Vert	0.0116	0.00663	0.0133		
W	BE9690	Jan 21 /06	14:58:24	1.03	1.00	0.460	1.04	Vert	0.00994	0.0182	0.00663	Instantel Inc.	
W	BE9689	Jan 21 /06	14:58:27	1.78	1.05	0.810	1.90	Vert	0.0149	0.00994	0.00829		
W	BE9689	Jan 26 /06	16:29:06	0.667	0.365	0.365	0.738	Tran	0.00663	0.00663	0.0149		may be man made??
W	BE9690	Jan 26 /06	20:58:04	0.683	0.365	0.587	0.824	Tran	0.00663	0.00829	0.00663	Instantel Inc.	
W	BE9689	Jan 26 /06	20:58:07	0.619	0.460	0.556	0.877	Tran	0.00663	0.00663	0.0149		
W	BE9689	Jan 27 /06	00:41:53	1.10	0.254	0.540	1.11	Tran	0.00829	0.00663	0.00829		different wave form ?
W	BE9690	Jan 27 /06	03:48:09	0.651	0.476	1.06	1.10	Long	0.00829	0.00829	0.00994	Instantel Inc.	
W	BE9689	Jan 27 /06	03:48:13	0.603	0.540	0.365	0.677	Tran	0.00663	0.00663	0.0116		
W	BE9689	Jan 27 /06	12:26:22	0.317	1.06	0.810	1.32	Vert	0.0398	0.174	0.121		Man made