0040

From: "Michael Hansen" <Mhansen@rbgengineering.com>
To: <dshaver@andalex.com>, <jlewis@andalex.com>, <jsorensen@andalex.com>, <James_Kohler@blm.gov>, <Jeff_McKenzie@blm.gov>, <Stan_Perkes@blm.gov>, <Steve_Falk@blm.gov>, <steve_rigby@blm.gov>, <ecc@emerytelcom.net>, <suncity@emerytelcom.net>, "Brad Price" <bprice@rbgengineering.com>, "Rob johnson" <robj@rbgengineering.com>, <bretdixon@utah.gov>, <davemarble@utah.gov>, <karlhouskeeper@utah.gov>, <marcstilson@utah.gov>, <pamgrubaughlittig@utah.gov>, <petehess@utah.gov>, <waynehedberg@utah.gov>
Date: 5/1/2006 9:36:13 AM
Subject: Grassy Trail update 4/28/06

seismic and inclinometer update

Michael Hansen
Engineering Geologist

RB&G ENGINEERING Inc.
1435 West 820 North
Provo Ut. 84601

Ph 801-374-5771
SLC 801-521-5771
Fax 801-374-5773

email mhansen@rbgengineering.com

RB&G ENGINEERING
Grassy Trail Dam, Seismic Summary for April 28, 2006

For the one-week period between April 21 and, April 28, 2006 the number of MIS (Mining Induced Seismicity) micro earthquakes recorded near the site by the UUSS increased significantly from 15 to **24**. These MIS earthquakes ranged in magnitude from 1.2 to a high of 1.9. The increase in events is likely due the increasing overburden as mining advances to the north.

The number of events recorded on the Hillside seismic unit increased during the past week from 45 to **67** seismic events with no PGA values of 0.1g or greater. MIS events on the Dam unit increased from 48 to **66** events with only one PGA value greater than 0.1g (0.118g). It should be noted that 4 events recorded on the dam were generated by people or other movement directly on the dam.

During the week Peak Ground Acceleration (PGA) values decreased slightly on the Hillside from last weeks high of 0.0945g to **0.0878g**. PGA values on the Dam decreased from 0.121g to **0.118g**. Both of these PGA values occurred during a magnitude 1.9 MIS earthquake on April 24.

Inclinometers 2, and 4 continue to show movement. As shown on the Time Displacement Curves the rate of movement for the A-axis on inclinometers I-2 has been about the same since the March 17 readings. I-2 shows some backward movement along the B-axis. I-4 also shows some backward movement above about 45 feet. These movements are within the accuracy of the instrument and may move back on the next reading.

During the past week additional surficial mud flows have come down from the hillside just above inclinometer I-4.

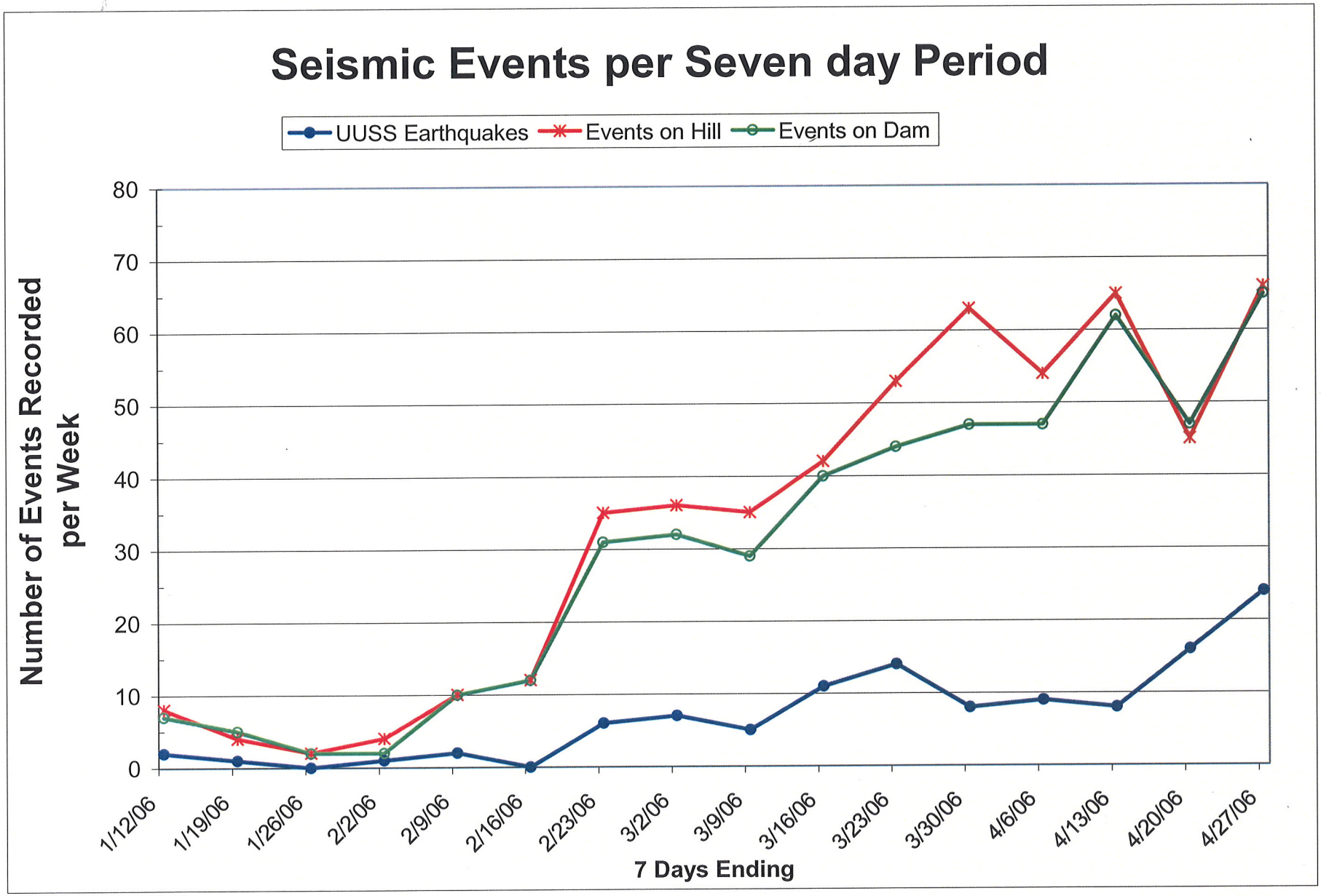
No cracks or signs of movement were noted on the dam or abutments above the dam.

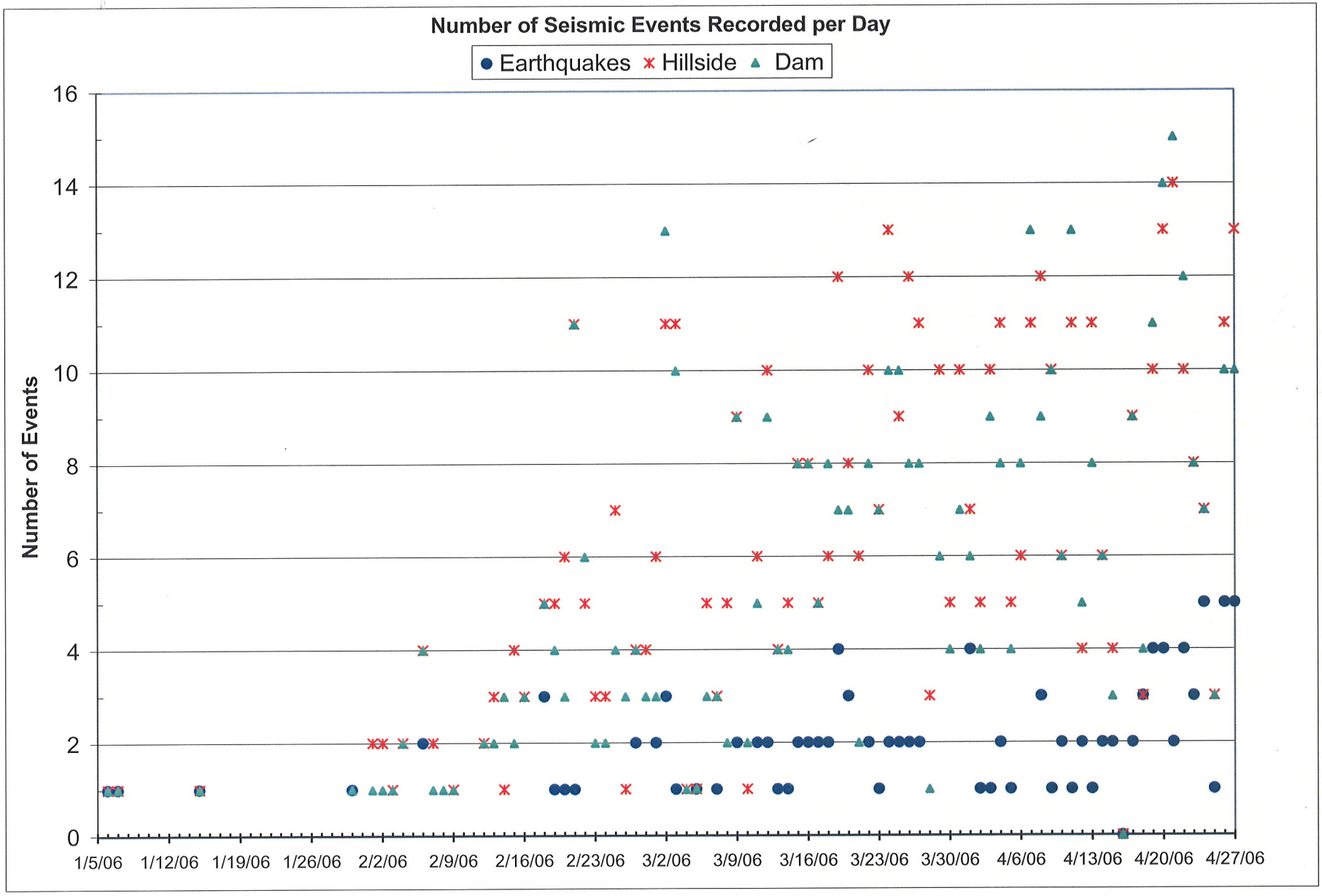
Michael Hansen
RB&G ENGINEERING

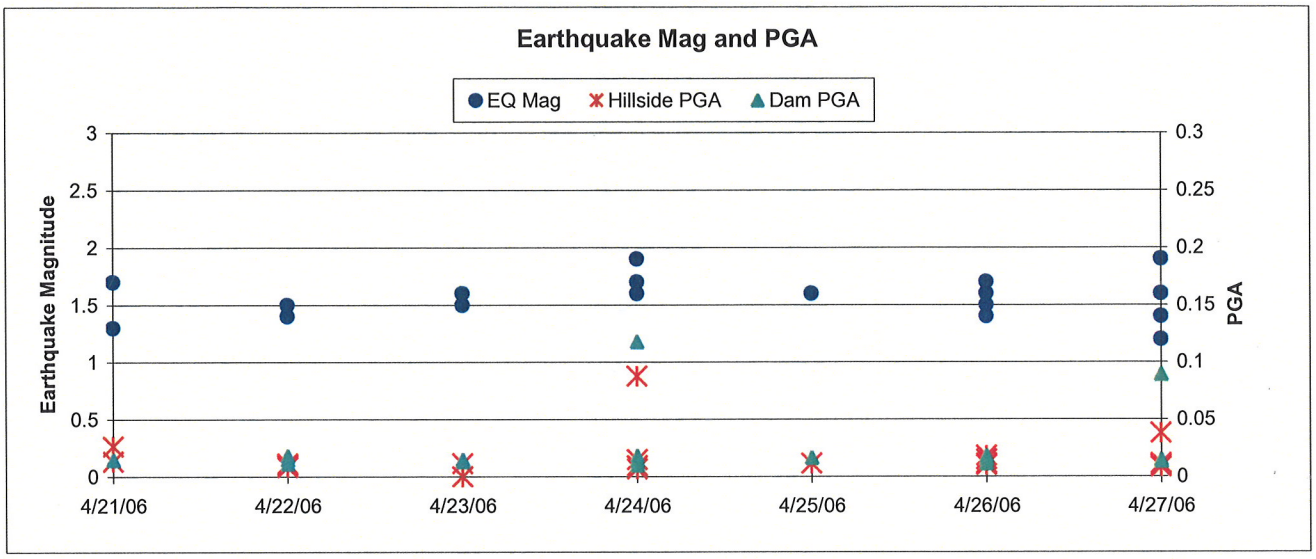
Grassy Trail Dam, Carbon County, Utah
2006, Hillside unit #9690 Dam #9689
Event Report

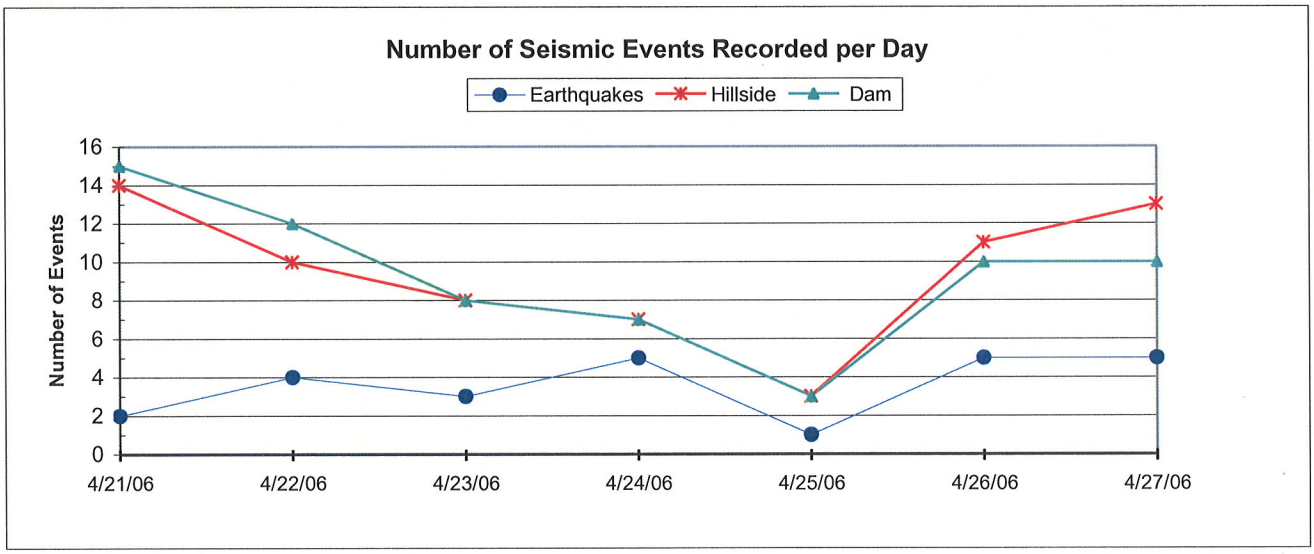
Type	Serial No.	Date	Time	Tran Peak (mm/s)	Vert Peak (mm/s)	Long Peak (mm/s)	PVS1 (mm/s)	Trigger	Tran Accel (g)	Vert Accel (g)	Long Accel (g)	Description	Post Event Note first line
LOG	BE9689	4/21/06	10:11:43	***	***	***	***	***	***	***	***	Start Monitoring	Start Monitoring
LOG	BE9690	4/21/06	10:42:28	***	***	***	***	***	***	***	***	Start Monitoring	Start Monitoring
W	BE9689	4/21/06	13:21:43	0.635	0.317	0.444	0.641	Tran	0.00829	0.00829	0.01660	Grassy Tr. Dam	
W	BE9690	4/21/06	13:21:44	0.587	0.222	0.651	0.703	Long	0.00663	0.00663	0.00829	Hillside	
W	BE9689	4/21/06	15:44:18	0.571	0.429	0.746	0.934	Long	0.00994	0.00663	0.01490	Grassy Tr. Dam	
W	BE9690	4/21/06	15:44:18	0.508	0.365	0.683	0.760	Long	0.00663	0.00663	0.00829	Hillside	
W	BE9689	4/21/06	16:52:58	0.508	0.365	0.619	0.715	Long	0.00663	0.00663	0.01820	Grassy Tr. Dam	
W	BE9690	4/21/06	16:52:58	0.444	0.27	0.683	0.739	Long	0.00663	0.00497	0.00829	Hillside	
W	BE9689	4/21/06	18:04:00	0.73	0.333	0.429	0.847	Tran	0.00829	0.00663	0.01490	Grassy Tr. Dam	
W	BE9689	4/21/06	18:25:22	1.98	1	1.21	2.190	Vert	0.01330	0.00829	0.01490	Grassy Tr. Dam	Earthquake Magnitude 1.7
W	BE9690	4/21/06	18:25:22	2.81	1.16	1.87	2.890	Vert	0.02650	0.01160	0.01820	Hillside	Earthquake Magnitude 1.7
W	BE9689	4/21/06	18:25:30	6.97	3.03	2.11	6.990	Vert	0.05470	0.01820	0.02320	Grassy Tr. Dam	
W	BE9690	4/21/06	18:25:31	4.38	2.02	3.24	5.640	Vert	0.03150	0.02320	0.03310	Hillside	
W	BE9689	4/21/06	19:26:09	0.778	0.651	0.873	1.110	Vert	0.00829	0.00663	0.01490	Grassy Tr. Dam	
W	BE9690	4/21/06	19:26:10	0.762	0.492	0.81	0.948	Tran	0.00829	0.00663	0.00829	Hillside	
W	BE9689	4/21/06	20:15:56	0.825	0.698	1.08	1.330	Vert	0.01160	0.00829	0.01490	Grassy Tr. Dam	
W	BE9690	4/21/06	20:15:57	0.762	0.476	1.03	1.170	Long	0.00829	0.00829	0.00994	Hillside	
W	BE9689	4/21/06	21:51:57	1.41	0.603	0.746	1.500	Tran	0.01330	0.00829	0.01490	Grassy Tr. Dam	
W	BE9690	4/21/06	21:51:58	1.13	0.365	1	1.390	Tran	0.00994	0.00663	0.00829	Hillside	
W	BE9689	4/21/06	22:22:11	0.556	0.413	0.683	0.866	Long	0.00829	0.00663	0.01660	Grassy Tr. Dam	
W	BE9690	4/21/06	22:22:12	0.46	0.381	0.603	0.693	Long	0.00663	0.00663	0.00829	Hillside	
W	BE9689	4/21/06	22:40:48	1.02	0.81	1.32	1.580	Vert	0.00994	0.00663	0.01490	Grassy Tr. Dam	
W	BE9690	4/21/06	22:40:49	0.952	0.571	1.35	1.490	Long	0.00829	0.00829	0.01160	Hillside	
W	BE9689	4/21/06	23:03:30	0.825	0.651	1	1.130	Vert	0.00994	0.00663	0.01490	Grassy Tr. Dam	
W	BE9690	4/21/06	23:03:31	0.905	0.603	0.857	0.995	Vert	0.00829	0.00829	0.00829	Hillside	
W	BE9689	4/21/06	23:18:03	0.54	0.492	0.619	0.712	Long	0.00829	0.00663	0.01660	Grassy Tr. Dam	
W	BE9690	4/21/06	23:18:03	0.667	0.349	0.714	0.814	Tran	0.00829	0.00663	0.00663	Hillside	
W	BE9689	4/22/06	7:28:32	0.746	0.302	0.365	0.772	Tran	0.00829	0.00663	0.01160	Grassy Tr. Dam	
W	BE9689	4/22/06	8:19:42	0.698	0.492	0.841	1.100	Long	0.00829	0.00663	0.01490	Grassy Tr. Dam	
W	BE9690	4/22/06	8:19:43	0.683	0.381	0.619	0.788	Long	0.00663	0.00663	0.00663	Hillside	
W	BE9689	4/22/06	9:15:08	1.56	1.06	1.59	2.060	Vert	0.01660	0.00829	0.01490	Grassy Tr. Dam	Eq Mag 1.4
W	BE9690	4/22/06	9:15:09	1.37	0.667	1.65	1.720	Tran	0.00994	0.00829	0.01160	Hillside	Eq Mag 1.4
W	BE9689	4/22/06	9:20:16	1.13	0.984	1.41	1.710	Vert	0.01160	0.00829	0.01490	Grassy Tr. Dam	
W	BE9690	4/22/06	9:20:16	1.06	0.667	1.19	1.550	Vert	0.01160	0.00829	0.00994	Hillside	
W	BE9689	4/22/06	10:39:23	0.857	0.635	0.841	1.150	Vert	0.00994	0.00663	0.01660	Grassy Tr. Dam	
W	BE9690	4/22/06	10:39:24	0.873	0.524	0.778	0.968	Tran	0.00994	0.00663	0.00829	Hillside	
W	BE9689	4/22/06	11:49:17	1.3	1.14	1.51	1.760	Vert	0.00994	0.00994	0.01820	Grassy Tr. Dam	Eq Mag 1.4
W	BE9690	4/22/06	11:49:17	1.54	0.825	1.67	1.950	Vert	0.01160	0.01160	0.01160	Hillside	Eq Mag 1.4
W	BE9689	4/22/06	13:43:11	0.286	0.222	0.635	0.675	Long	0.00663	0.00663	0.01330	Grassy Tr. Dam	
W	BE9689	4/22/06	16:11:00	0.873	0.365	0.476	0.946	Tran	0.00994	0.00829	0.01660	Grassy Tr. Dam	
W	BE9690	4/22/06	16:11:01	0.508	0.27	0.603	0.668	Long	0.00663	0.00663	0.00663	Hillside	
W	BE9689	4/22/06	20:01:17	0.603	0.349	0.619	0.854	Long	0.00663	0.00663	0.01660	Grassy Tr. Dam	
W	BE9690	4/22/06	20:01:18	0.524	0.302	0.651	0.672	Long	0.00663	0.00663	0.00663	Hillside	
W	BE9689	4/22/06	21:24:33	1.1	0.937	1.17	1.330	Vert	0.00829	0.00663	0.01820	Grassy Tr. Dam	Eq Mag 1.5
W	BE9690	4/22/06	21:24:34	1.38	0.778	1.43	1.750	Vert	0.01160	0.00994	0.00994	Hillside	Eq Mag 1.5
W	BE9689	4/22/06	21:41:37	0.762	0.603	0.952	1.210	Vert	0.01160	0.00663	0.01660	Grassy Tr. Dam	
W	BE9690	4/22/06	21:41:37	0.889	0.492	0.81	1.050	Tran	0.00994	0.00829	0.00829	Hillside	
W	BE9689	4/22/06	22:52:14	0.508	0.492	0.873	0.888	Long	0.00663	0.00663	0.01490	Grassy Tr. Dam	Eq Mag 1.5
W	BE9690	4/22/06	22:52:15	0.683	0.397	0.778	0.858	Tran	0.00663	0.00829	0.00663	Hillside	Eq Mag 1.5
W	BE9689	4/23/06	2:23:51	0.365	0.286	0.778	0.785	Long	0.00663	0.00663	0.01490	Grassy Tr. Dam	
W	BE9690	4/23/06	2:23:51	0.825	0.413	0.508	0.957	Tran	0.00994	0.00663	0.00829	Hillside	
W	BE9690	4/23/06	3:51:08	0.397	0.365	0.762	0.772	Long	0.00663	0.00497	0.00829	Hillside	
W	BE9689	4/23/06	8:13:09	1.35	1.22	1.64	1.920	Vert	0.00994	0.00994	0.01330	Grassy Tr. Dam	Eq Mag 1.6
W	BE9690	4/23/06	8:13:10	1.33	0.619	1.41	1.900	Vert	0.01160	0.00829	0.00994	Hillside	Eq Mag 1.6
W	BE9689	4/23/06	8:41:32	0.683	0.508	0.603	0.844	Long	0.00663	0.00663	0.00663	Grassy Tr. Dam	
W	BE9690	4/23/06	8:41:32	0.651	0.381	0.698	0.765	Tran	0.00829	0.00663	0.00829	Hillside	
W	BE9689	4/23/06	9:55:44	1.29	1.22	1.57	1.750	Vert	0.01330	0.00829	0.01330	Grassy Tr. Dam	Eq Mag 1.6
W	BE9690	4/23/06	9:55:44	1.27	0.698	1.54	1.730	Vert	0.00994	0.00663	0.01160	Hillside	Eq Mag 1.6
W	BE9689	4/23/06	14:31:52	0.222	0.19	0.635	0.662	Long	0.01330	0.01160	0.02490	Grassy Tr. Dam	man made
W	BE9689	4/23/06	19:27:29	0.746	0.492	0.73	0.937	Long	0.00829	0.00829	0.01490	Grassy Tr. Dam	
W	BE9690	4/23/06	19:27:29	0.714	0.333	0.794	0.811	Long	0.00663	0.00663	0.00663	Hillside	
W	BE9689	4/23/06	19:31:46	0.619	0.429	0.683	0.901	Long	0.00663	0.00663	0.01490	Grassy Tr. Dam	Eq Mag 1.5, on dam only
W	BE9689	4/23/06	21:13:33	0.651	0.508	0.746	0.983	Long	0.00829	0.00663	0.01490	Grassy Tr. Dam	
W	BE9690	4/23/06	21:13:34	0.635	0.238	0.556	0.705	Tran	0.00994	0.00497	0.00829	Hillside	
W	BE9689	4/23/06	21:19:40	0.651	0.54	0.714	0.781	Long	0.00829	0.00663	0.00663	Grassy Tr. Dam	
W	BE9690	4/23/06	21:19:40	0.825	0.46	0.921	1.000	Tran	0.00663	0.00829	0.00829	Hillside	
W	BE9689	4/24/06	1:39:24	0.603	0.413	0.587	0.797	Tran	0.00829	0.00663	0.01820	Grassy Tr. Dam	
W	BE9690	4/24/06	1:39:24	0.635	0.365	0.683	0.793	Tran	0.00663	0.00663	0.00829	Hillside	
W	BE9689	4/24/06	9:30:17	1.1	0.952	1.24	1.610	Vert	0.00994	0.00829	0.01330	Grassy Tr. Dam	Eq Mag 1.7
W	BE9690	4/24/06	9:30:17	1.16	0.683	1.03	1.490	Vert	0.00994	0.00829	0.00829	Hillside	Eq Mag 1.7

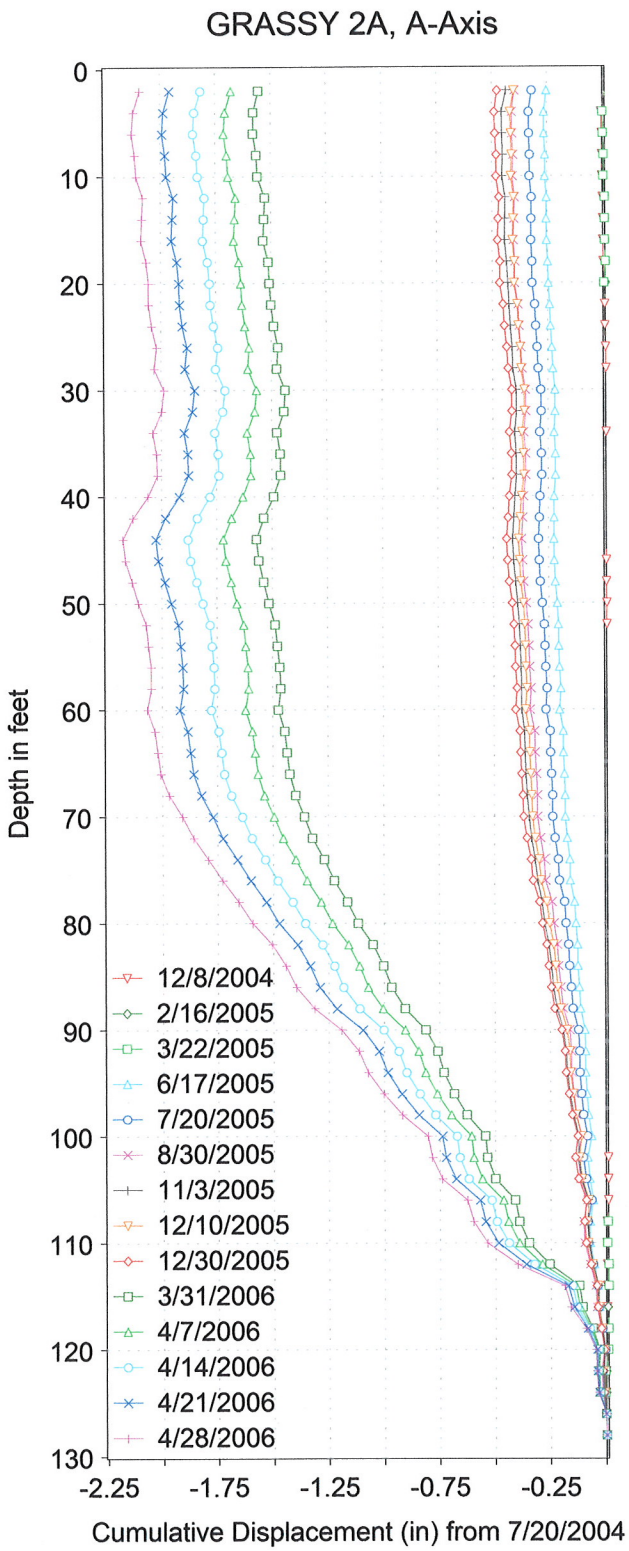
W	BE9689	4/24/06	10:45:01	0.825	0.603	0.746	0.931	Vert	0.00663	0.00829	0.00994	Grassy Tr. Dam	Eq Mag 1.6
W	BE9690	4/24/06	10:45:01	0.587	1.06	1.79	1.910	Vert	0.00829	0.01160	0.01490	Hillside	Eq Mag 1.6
W	BE9689	4/24/06	12:03:08	2.21	1.84	2.43	2.670	Long	0.01490	0.00994	0.01490	Grassy Tr. Dam	Eq Mag 1.7
W	BE9690	4/24/06	12:03:08	2.25	1.17	2.67	2.840	Vert	0.01490	0.00994	0.01490	Hillside	Eq Mag 1.7
W	BE9689	4/24/06	21:34:32	0.778	0.683	1.17	1.410	Vert	0.00994	0.00829	0.01330	Grassy Tr. Dam	Eq Mag 1.7
W	BE9690	4/24/06	21:34:32	0.825	0.571	0.778	0.981	Long	0.00994	0.00663	0.00663	Hillside	Eq Mag 1.7
W	BE9689	4/24/06	22:14:43	0.54	0.333	0.714	0.764	Long	0.00663	0.00663	0.01820	Grassy Tr. Dam	
W	BE9690	4/24/06	22:14:43	0.714	0.397	0.873	0.914	Long	0.00663	0.00663	0.00663	Hillside	
W	BE9689	4/24/06	22:20:11	14.2	5.79	5.41	14.200	Vert	0.11800	0.03650	0.03310	Grassy Tr. Dam	Eq Mag 1.9, PGA 0.118
W	BE9690	4/24/06	22:20:11	12.3	4.48	8.67	15.100	Vert	0.08780	0.03650	0.06130	Hillside	Eq Mag 1.9, PGA 0.0878
W	BE9689	4/25/06	9:59:14	0.571	0.444	0.619	0.832	Long	0.00829	0.00663	0.01160	Grassy Tr. Dam	
W	BE9690	4/25/06	21:40:42	0.619	0.492	0.651	0.733	Tran	0.00829	0.00663	0.00663	Hillside	Eq Mag 1.6
W	BE9689	4/25/06	21:40:43	0.587	0.508	0.635	0.856	Long	0.00663	0.00829	0.01330	Grassy Tr. Dam	Eq Mag 1.6
W	BE9690	4/25/06	21:44:33	1.44	0.683	1.64	1.910	Vert	0.00994	0.00663	0.01160	Hillside	
W	BE9689	4/25/06	21:44:34	1.16	0.841	1.56	1.660	Vert	0.00829	0.00663	0.01660	Grassy Tr. Dam	
W	BE9690	4/25/06	23:17:31	0.571	0.27	0.651	0.767	Long	0.00829	0.00497	0.00663	Hillside	
W	BE9690	4/26/06	5:12:33	1.38	0.698	1.4	1.700	Vert	0.01160	0.00829	0.01160	Hillside	Eq Mag 1.6
W	BE9689	4/26/06	5:12:34	1.33	1.11	1.32	1.540	Vert	0.01160	0.00829	0.01820	Grassy Tr. Dam	Eq Mag 1.6
W	BE9689	4/26/06	11:44:23	1.62	1.21	1.76	2.020	Vert	0.01490	0.00829	0.01160	Grassy Tr. Dam	Eq Mag 1.5
W	BE9690	4/26/06	11:44:23	1.86	0.825	2.02	2.320	Vert	0.01330	0.00829	0.01490	Hillside	Eq Mag 1.5
W	BE9690	4/26/06	14:29:10	0.698	0.476	0.54	0.784	Tran	0.00829	0.00663	0.00663	Hillside	
W	BE9689	4/26/06	14:29:11	0.683	0.476	0.698	0.956	Long	0.00994	0.00663	0.01490	Grassy Tr. Dam	
W	BE9690	4/26/06	15:36:30	0.429	0.46	1.3	1.360	Long	0.00829	0.00994	0.01490	Hillside	
W	BE9690	4/26/06	15:55:36	1.54	0.857	1.79	1.880	Vert	0.01820	0.01160	0.00994	Hillside	Eq Mag 1.7
W	BE9689	4/26/06	15:55:37	1.49	0.968	1.33	1.920	Vert	0.01660	0.00829	0.01490	Grassy Tr. Dam	Eq Mag 1.7
W	BE9690	4/26/06	16:40:53	1.25	0.698	1.38	1.490	Vert	0.00994	0.00829	0.00994	Hillside	Eq Mag 1.4
W	BE9689	4/26/06	16:40:54	1.3	1.03	1.38	1.900	Vert	0.01160	0.00829	0.01820	Grassy Tr. Dam	Eq Mag 1.4
W	BE9690	4/26/06	16:43:42	4.1	1.94	4.19	6.100	Vert	0.04310	0.02490	0.04310	Hillside	
W	BE9689	4/26/06	16:43:43	6.05	2.95	2	6.060	Vert	0.05630	0.01820	0.01990	Grassy Tr. Dam	
W	BE9690	4/26/06	16:44:06	2.11	0.841	2.46	2.940	Vert	0.01330	0.01160	0.01820	Hillside	
W	BE9689	4/26/06	16:44:07	2.21	1.22	1.89	2.750	Vert	0.01490	0.01160	0.01660	Grassy Tr. Dam	
W	BE9689	4/26/06	16:44:39	4.59	1	1.67	4.600	Tran	0.01660	0.00994	0.01490	Grassy Tr. Dam	Eq Mag 1.6
W	BE9690	4/26/06	16:44:39	1.71	0.603	1.98	2.390	Tran	0.00994	0.00829	0.01160	Hillside	Eq Mag 1.6
W	BE9690	4/26/06	21:04:16	1.4	0.762	1.33	1.670	Vert	0.00994	0.00994	0.01160	Hillside	
W	BE9689	4/26/06	21:04:17	1.19	1.03	1.3	1.760	Vert	0.01160	0.00829	0.01660	Grassy Tr. Dam	
W	BE9690	4/26/06	21:32:29	1.02	0.429	0.952	1.190	Tran	0.01160	0.00663	0.01160	Hillside	
W	BE9689	4/26/06	21:32:30	0.524	0.635	0.873	1.020	Vert	0.00663	0.00829	0.01490	Grassy Tr. Dam	
W	BE9690	4/27/06	6:58:15	0.667	0.381	0.603	0.779	Long	0.00663	0.00663	0.00829	Hillside	
W	BE9689	4/27/06	6:58:16	0.841	0.556	0.825	1.180	Long	0.00994	0.00663	0.01820	Grassy Tr. Dam	
W	BE9690	4/27/06	7:54:59	1.16	0.746	1.22	1.370	Vert	0.00994	0.00994	0.00829	Hillside	Eq Mag 1.2
W	BE9689	4/27/06	7:55:00	1.06	0.857	0.968	1.200	Vert	0.00829	0.00829	0.01490	Grassy Tr. Dam	Eq Mag 1.2
W	BE9690	4/27/06	10:16:05	0.794	0.619	0.714	1.010	Vert	0.00994	0.00663	0.00663	Hillside	
W	BE9689	4/27/06	10:16:06	1.11	0.698	0.984	1.480	Vert	0.00994	0.00829	0.01660	Grassy Tr. Dam	
W	BE9690	4/27/06	12:17:38	1.59	0.667	1.81	1.950	Vert	0.01160	0.00829	0.01160	Hillside	Eq Mag 1.6
W	BE9689	4/27/06	12:17:39	1.6	1.05	1.76	2.010	Vert	0.00994	0.00829	0.01330	Grassy Tr. Dam	Eq Mag 1.6
W	BE9690	4/27/06	14:51:28	1.87	0.54	2.05	2.580	Tran	0.01330	0.00829	0.01330	Hillside	
W	BE9689	4/27/06	14:51:29	2.05	1.14	1.41	2.360	Long	0.01330	0.00994	0.01490	Grassy Tr. Dam	
W	BE9690	4/27/06	14:56:59	0.952	0.619	1.19	1.230	Vert	0.00829	0.00829	0.00829	Hillside	
W	BE9689	4/27/06	14:57:00	0.698	0.603	0.825	0.952	Vert	0.00829	0.00663	0.01330	Grassy Tr. Dam	
W	BE9690	4/27/06	14:58:53	0.952	0.444	0.698	1.080	Tran	0.00829	0.00663	0.00663	Hillside	
W	BE9689	4/27/06	14:58:54	0.889	0.619	0.794	1.100	Vert	0.00829	0.00663	0.01490	Grassy Tr. Dam	
W	BE9690	4/27/06	15:30:35	0.683	0.302	0.619	0.785	Tran	0.00994	0.00663	0.00829	Hillside	
W	BE9690	4/27/06	15:52:58	0.619	0.46	0.571	0.639	Tran	0.01160	0.00829	0.00829	Hillside	
W	BE9690	4/27/06	17:53:48	10.8	3.51	6.49	12.900	Vert	0.08120	0.03810	0.05470	Hillside	Eq Mag 1.9
W	BE9689	4/27/06	17:53:50	11.5	5.27	3.51	11.500	Vert	0.08950	0.02980	0.02820	Grassy Tr. Dam	Eq Mag 1.9 PGA 0.895
W	BE9690	4/27/06	18:20:59	0.524	0.429	0.762	0.796	Long	0.00829	0.00829	0.00994	Hillside	
W	BE9690	4/27/06	21:52:17	0.952	0.492	1	1.190	Tran	0.00829	0.00663	0.00829	Hillside	Eq Mag 1.6
W	BE9689	4/27/06	21:52:18	0.952	0.619	1.03	1.340	Vert	0.01160	0.00829	0.01490	Grassy Tr. Dam	Eq Mag 1.6
W	BE9690	4/27/06	22:08:48	0.984	0.683	0.841	1.140	Vert	0.00994	0.00829	0.00829	Hillside	Eq Mag 1.4
W	BE9689	4/27/06	22:08:49	1.03	0.73	1.11	1.480	Vert	0.00994	0.00829	0.01490	Grassy Tr. Dam	Eq Mag 1.4
W	BE9689	4/28/06	9:32:06	0.841	0.619	0.317	1.000	Tran	0.03310	0.03650	0.01490	Grassy Tr. Dam	man made
W	BE9689	4/28/06	10:56:33	0.19	0.635	0.508	0.665	Vert	0.00829	0.02320	0.01490	Grassy Tr. Dam	man made
W	BE9690	4/28/06	11:36:46	0.667	0.46	0.714	0.826	Tran	0.00829	0.00663	0.00994	Hillside	
W	BE9689	4/28/06	11:36:48	0.556	0.365	0.667	0.680	Long	0.00829	0.00663	0.01490	Grassy Tr. Dam	
W	BE9689	4/28/06	11:43:04	0.206	0.73	0.476	0.773	Vert	0.00829	0.02490	0.01990	Grassy Tr. Dam	man made
W	BE9690	4/28/06	13:43:44	0.921	0.667	1.05	1.190	Vert	0.00994	0.00994	0.00994	Hillside	
W	BE9689	4/28/06	13:43:45	1.48	0.857	1.25	1.690	Vert	0.01160	0.00829	0.01490	Grassy Tr. Dam	
W	BE9690	4/28/06	13:45:49	1.02	0.683	1.24	1.260	Vert	0.00829	0.00829	0.00994	Hillside	
W	BE9689	4/28/06	13:45:51	0.889	0.651	0.905	0.963	Vert	0.00829	0.00663	0.01490	Grassy Tr. Dam	
LOG	BE9689	4/28/06	14:00:29	***	***	***	***	***	***	***	***	Keyboard Stop	
LOG	BE9690	4/28/06	14:54:48	***	***	***	***	***	***	***	***	Keyboard Stop	

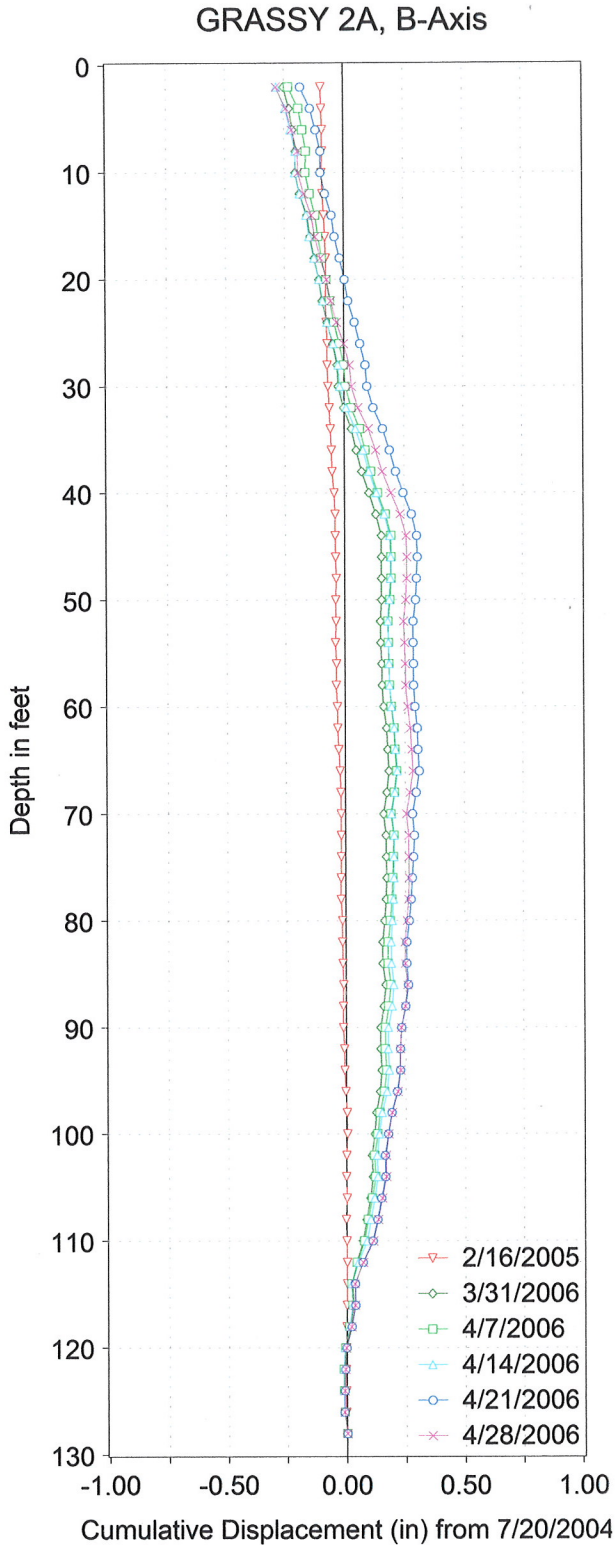

Seismic Events per Seven day Period
UUSS Earthquakes
Events on Hill
Events on Dam
Number of Events Recorded per Week
80
70
60
50
40
30
20
10
0
1/12/06
1/19/06
1/26/06
2/2/06
2/9/06
2/16/06
2/23/06
3/2/06
3/9/06
3/16/06
3/23/06
3/30/06
4/6/06
4/13/06
4/20/06
4/27/06
7 Days Ending

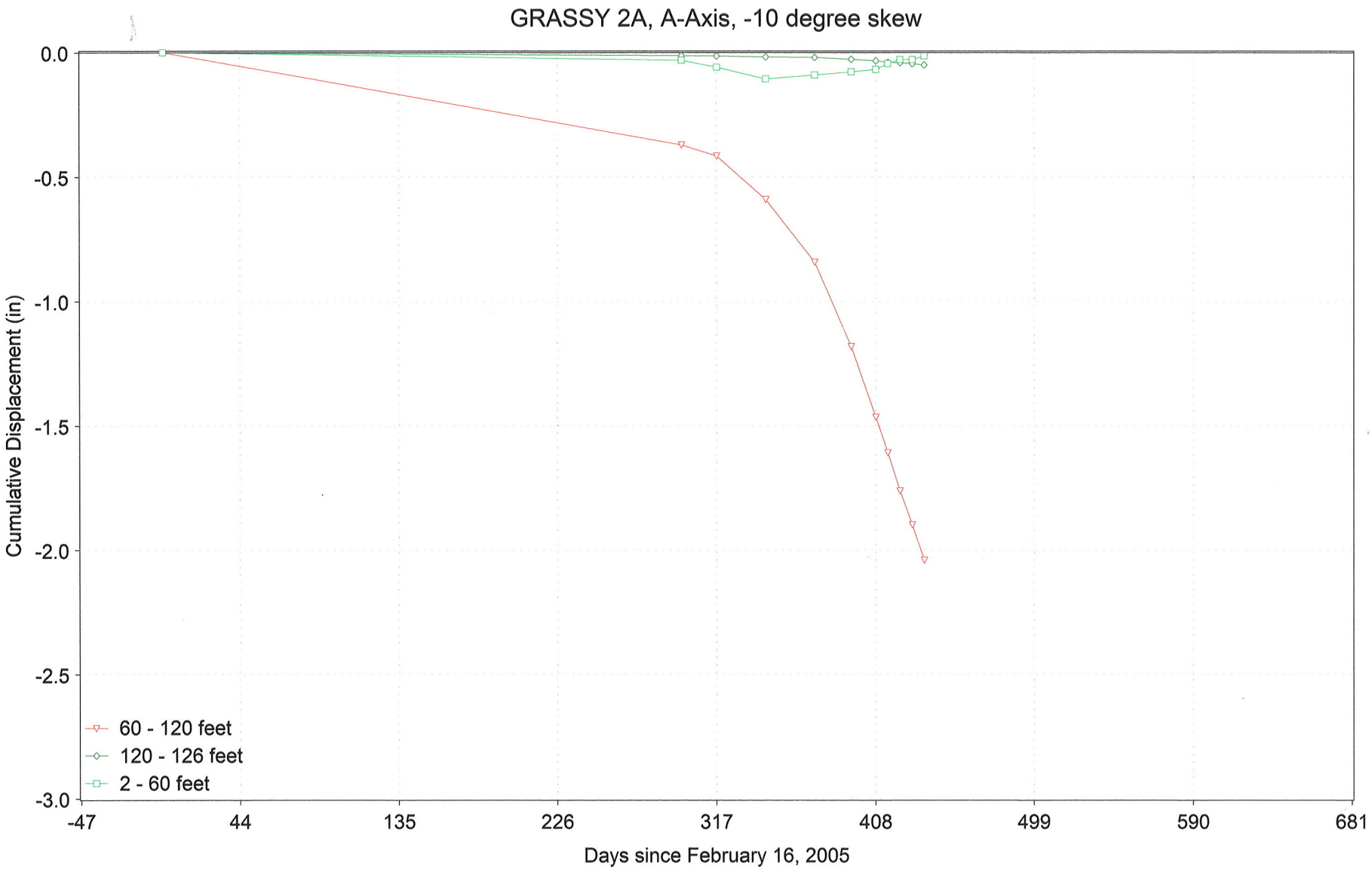

Number of Seismic Events Recorded per Day
Earthquakes
Hillside
Dam
Number of Events
0
2
4
6
8
10
12
14
16
1/5/06
1/12/06
1/19/06
1/26/06
2/2/06
2/9/06
2/16/06
2/23/06
3/2/06
3/9/06
3/16/06
3/23/06
3/30/06
4/6/06
4/13/06
4/20/06
4/27/06

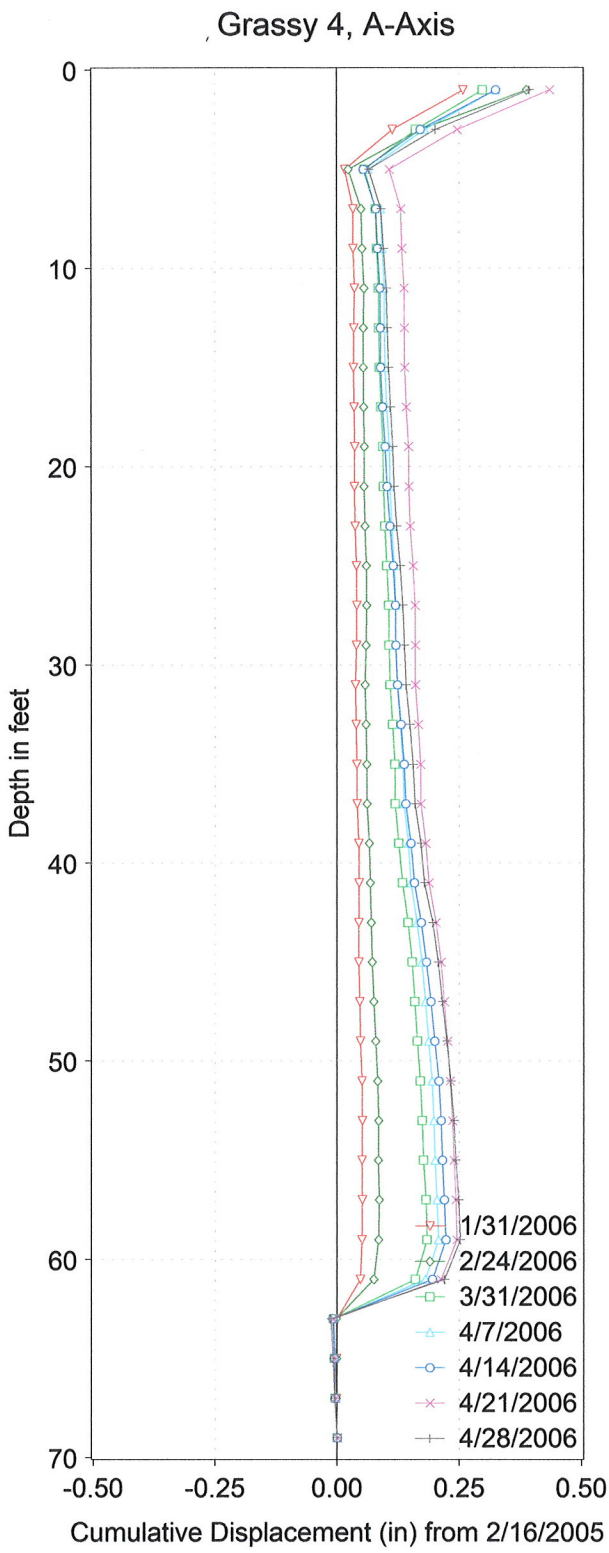

Earthquake Mag and PGA
EQ Mag
Hillside PGA
Dam PGA
Earthquake Magnitude
PGA
3
2.5
2
1.5
1
0.5
0
0.3
0.25
0.2
0.15
0.1
0.05
0
4/21/06
4/22/06
4/23/06
4/24/06
4/25/06
4/26/06
4/27/06

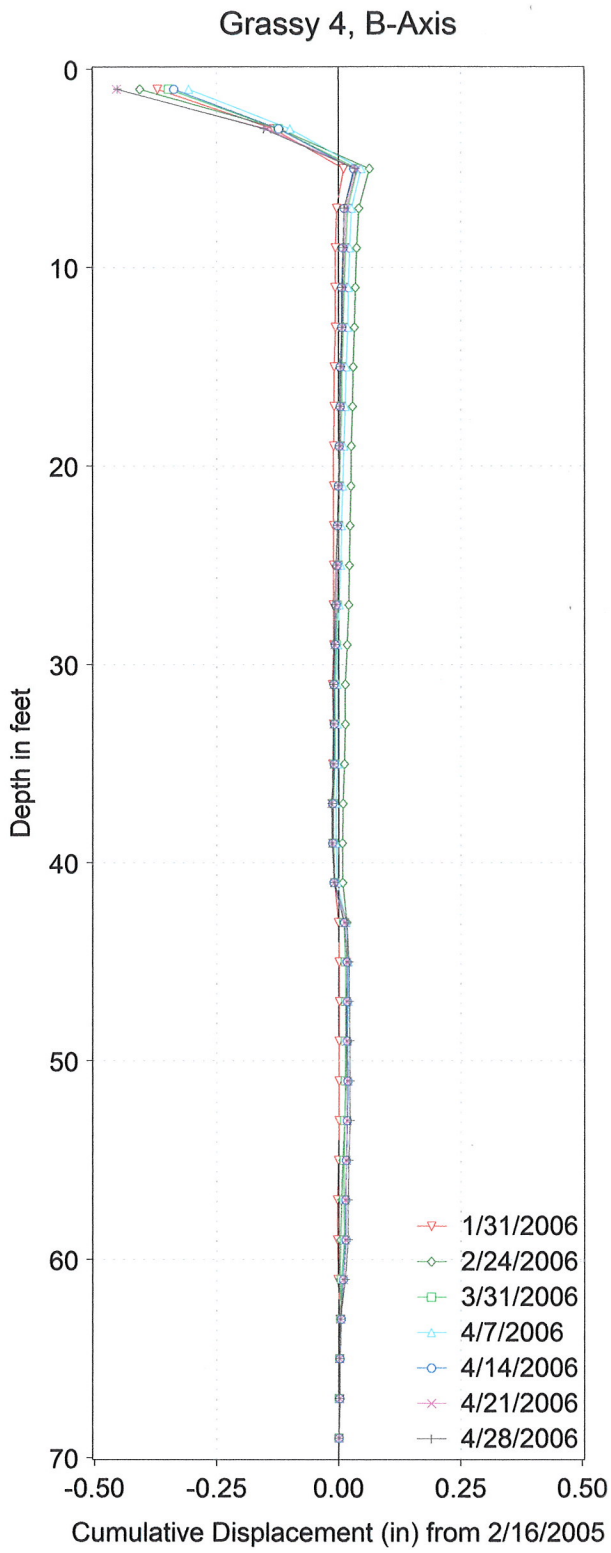

Number of Seismic Events Recorded per Day
Earthquakes
Hillside
Dam
Number of Events
16
14
12
10
8
6
4
2
0
4/21/06
4/22/06
4/23/06
4/24/06
4/25/06
4/26/06
4/27/06

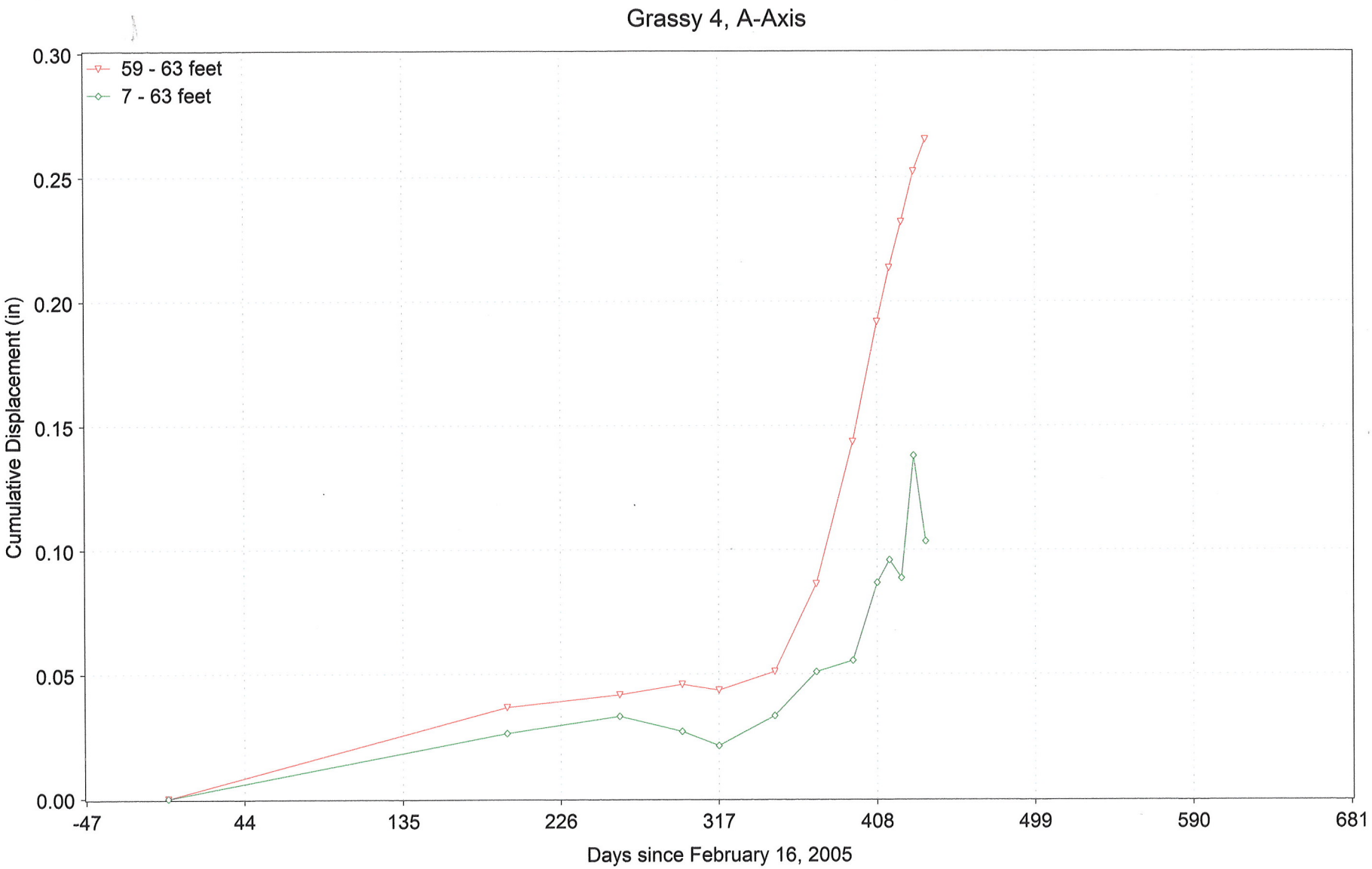

GRASSY 2A, A-Axis
Depth in feet
Cumulative Displacement (in) from 7/20/2004
0
10
20
30
40
50
60
70
80
90
100
110
120
130
-2.25
-1.75
-1.25
-0.75
-0.25
12/8/2004
2/16/2005
3/22/2005
6/17/2005
7/20/2005
8/30/2005
11/3/2005
12/10/2005
12/30/2005
3/31/2006
4/7/2006
4/14/2006
4/21/2006
4/28/2006


GRASSY 2A, B-Axis
Depth in feet
Cumulative Displacement (in) from 7/20/2004
0
10
20
30
40
50
60
70
80
90
100
110
120
130
-1.00
-0.50
0.00
0.50
1.00
2/16/2005
3/31/2006
4/7/2006
4/14/2006
4/21/2006
4/28/2006


GRASSY 2A, A-Axis, -10 degree skew
Cumulative Displacement (in)
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-47
44
135
226
317
408
499
590
681
Days since February 16, 2005
60 - 120 feet
120 - 126 feet
2 - 60 feet


Grassy 4, A-Axis
Depth in feet
0
10
20
30
40
50
60
70
-0.50
-0.25
0.00
0.25
0.50
Cumulative Displacement (in) from 2/16/2005
1/31/2006
2/24/2006
3/31/2006
4/7/2006
4/14/2006
4/21/2006
4/28/2006


Grassy 4, B-Axis
Depth in feet
0
10
20
30
40
50
60
70
-0.50
-0.25
0.00
0.25
0.50
Cumulative Displacement (in) from 2/16/2005
1/31/2006
2/24/2006
3/31/2006
4/7/2006
4/14/2006
4/21/2006
4/28/2006


Grassy 4, A-Axis
59 - 63 feet
7 - 63 feet
Cumulative Displacement (in)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
-47
44
135
226
317
408
499
590
681
Days since February 16, 2005