0015

Document Information Form

Mine Number: C/007/0041 of

File Name: West Ridge Mine

To: Internal

From:

Person

Company

Date Sent: 10/25/07

Explanation:

Meeting Notes on Grassy Trail Dam

cc:

GRASSY TRAIL	UT00126	OCT. 25, 2007

NAME	REPRESENTING
TRET DIXON	UTAH DAM SAFETY
Orlando La Fontaine	East Carbon City
Bruce F. Andrews	Sunnyside City
Dave Shaver	West Ridge Resources
Peter Hess	Utah DOGM
Wayne Western	DOGM
DANA DEAN	OGM
PAMELA GRUBAUGH-LITTIG	DOGM
Rob Johnson	RB&G
Brad Price	RB&G
Stephen Falk	BLM- Price
Stan Perkes	~~DOGM~~ BLM-SO

TOPS. 35500

4/007/00

GRASSY TRAIL DAM & RESERVOIR

Monitoring Update

Thursday October 25, 2007

2006-07 Timeline

- November 8, 2006 – Last meeting
- Nov 11 – Dec 11, 2006
  - One possible MIS event at the hillside device
  - No MIS events on the dam
  - No reported events in Panel 7 area
  - Some MIS activity detected near current mining
- Dec 11, 2006 – May 12, 2007
  - No MIS events detected on hillside or dam
  - Some activity detected by UUSS near Panel 9 mining

2006-07 Timeline (continued)

- May 12 – June 11, 2007
  - One MIS event at the hillside device
    - May 12, PGA = 0.02g
  - No MIS events on the dam
  - Reservoir Full
    - Increasing seepage due to rising water level
    - Clear flow from toe drain
- June 11 – July 14, 2007
  - Two MIS events detected on hillside
    - July 10 and July 13, PGA = 0.008 to 0.01g
  - Accelerometer on dam no longer functional, sent for repair

2006-07 Timeline (continued)

- July 14 – Aug 18, 2007
  - One MIS event detected on hillside
    - July 15, PGA = 0.01g
  - Inclinometer No. 4 (west reservoir rim) damaged
  - Reservoir Level and seepage readings decreasing to previous year's late summer / early fall magnitudes
- Aug 18 – Oct 21, 2007
  - One MIS event detected on hillside
    - PGA = 0.006g
  - Seismic unit on dam back up and running as of 10/21
  - Unit on hillside should be sent for re-calibration

View along dam from left (east) abutment

West Rim of Reservoir

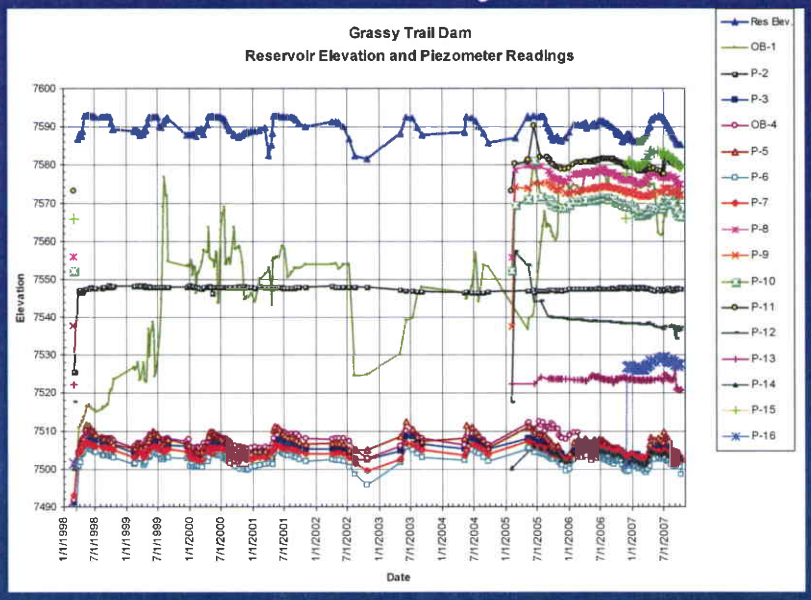
Spillway near left (east) abutment

View along dam from right (west) abutment

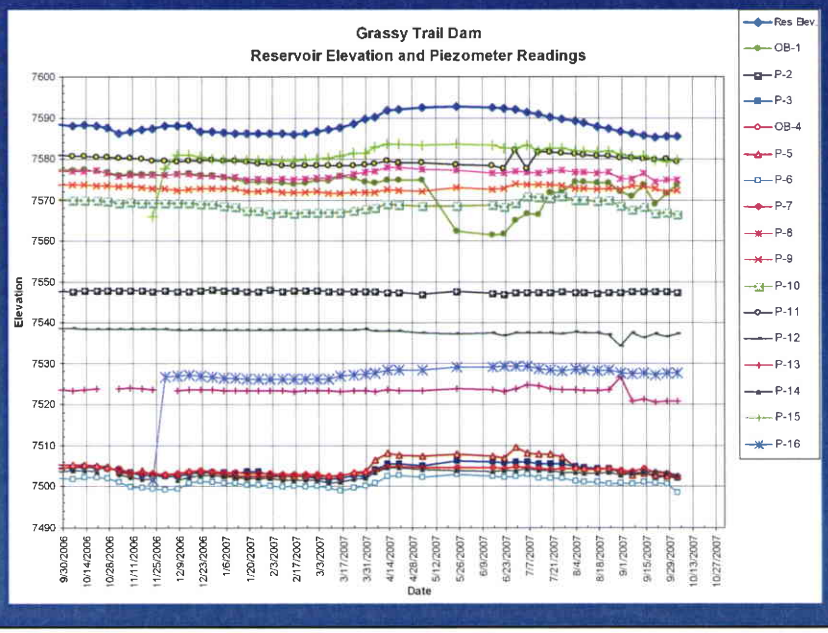
Downstream face – from west end

Downstream face – from south side of dam

Piezometers – May '98–Oct '07

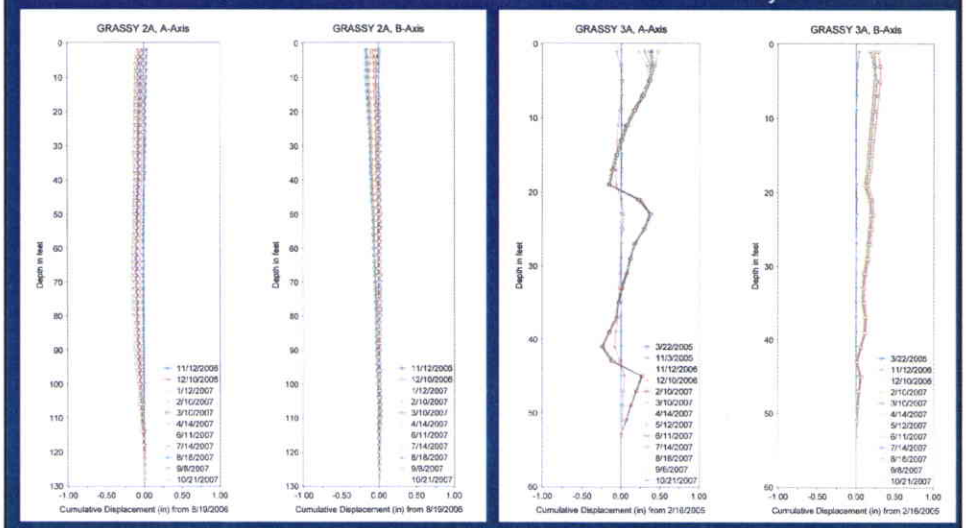


Piezometers – Oct '06–Oct '07

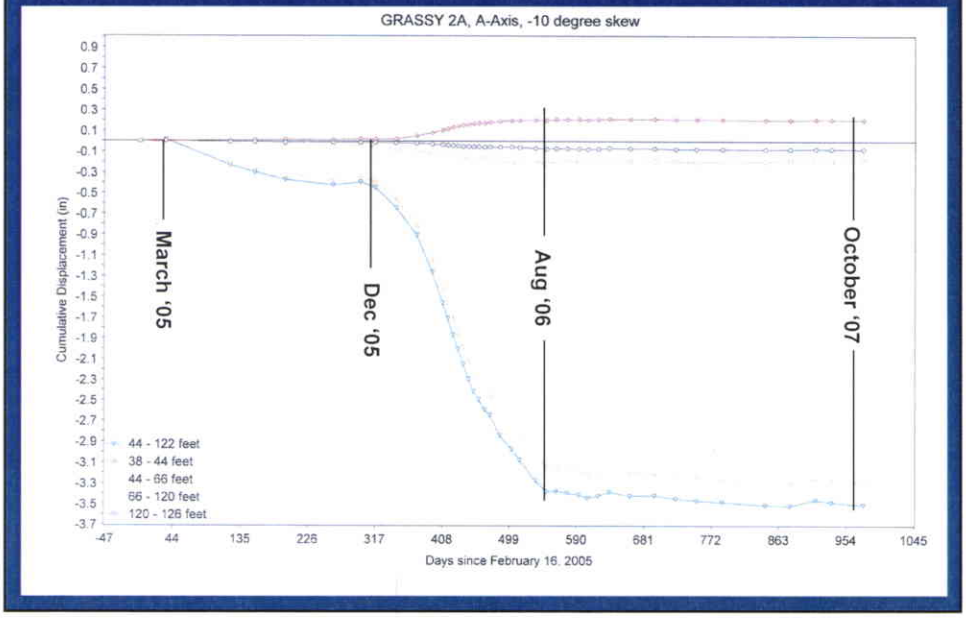


Inclinometer 2A West End of Dam Since September 2006

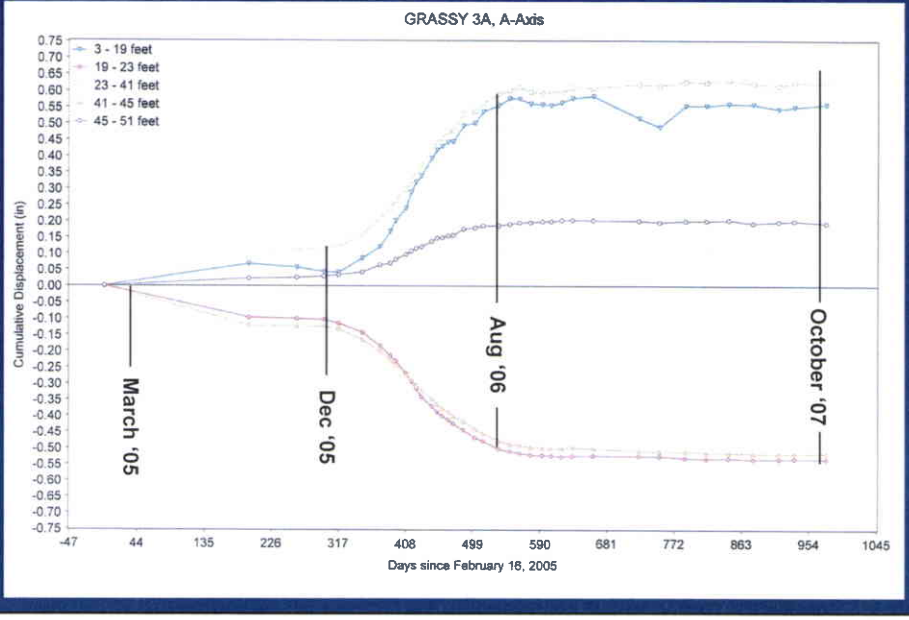
Inclinometer 3A West Abutment Since February 2005



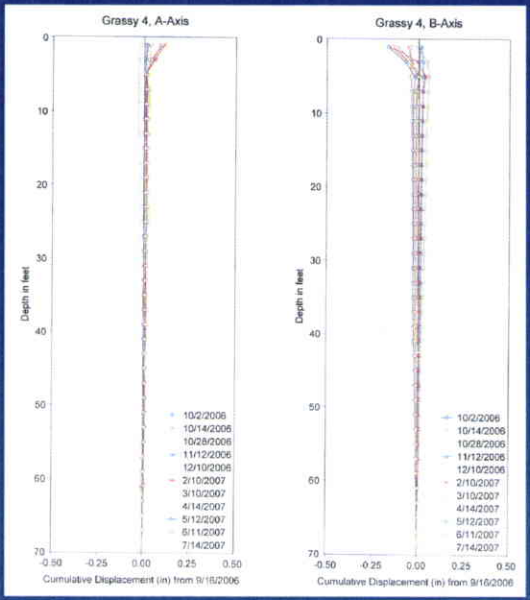
Inclinometer 2A – West End of Dam



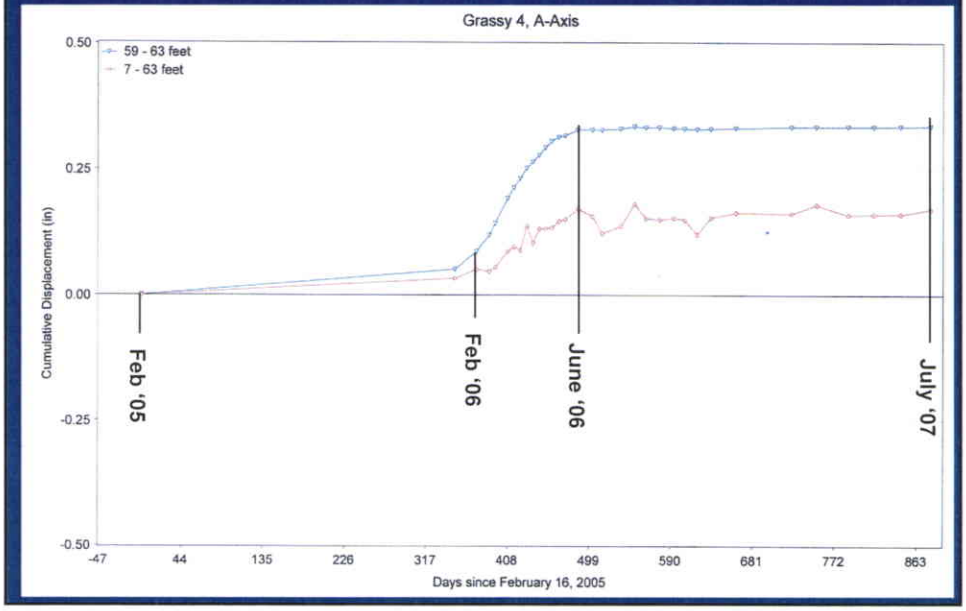
Inclinometer 3A – West Abutment



Inclinometer 4A – West Reservoir Rim Since November 2006



Inclinometer 4A – West Reservoir Rim



Inclinometer 4A – west rim of reservoir

Inclinometer 4A

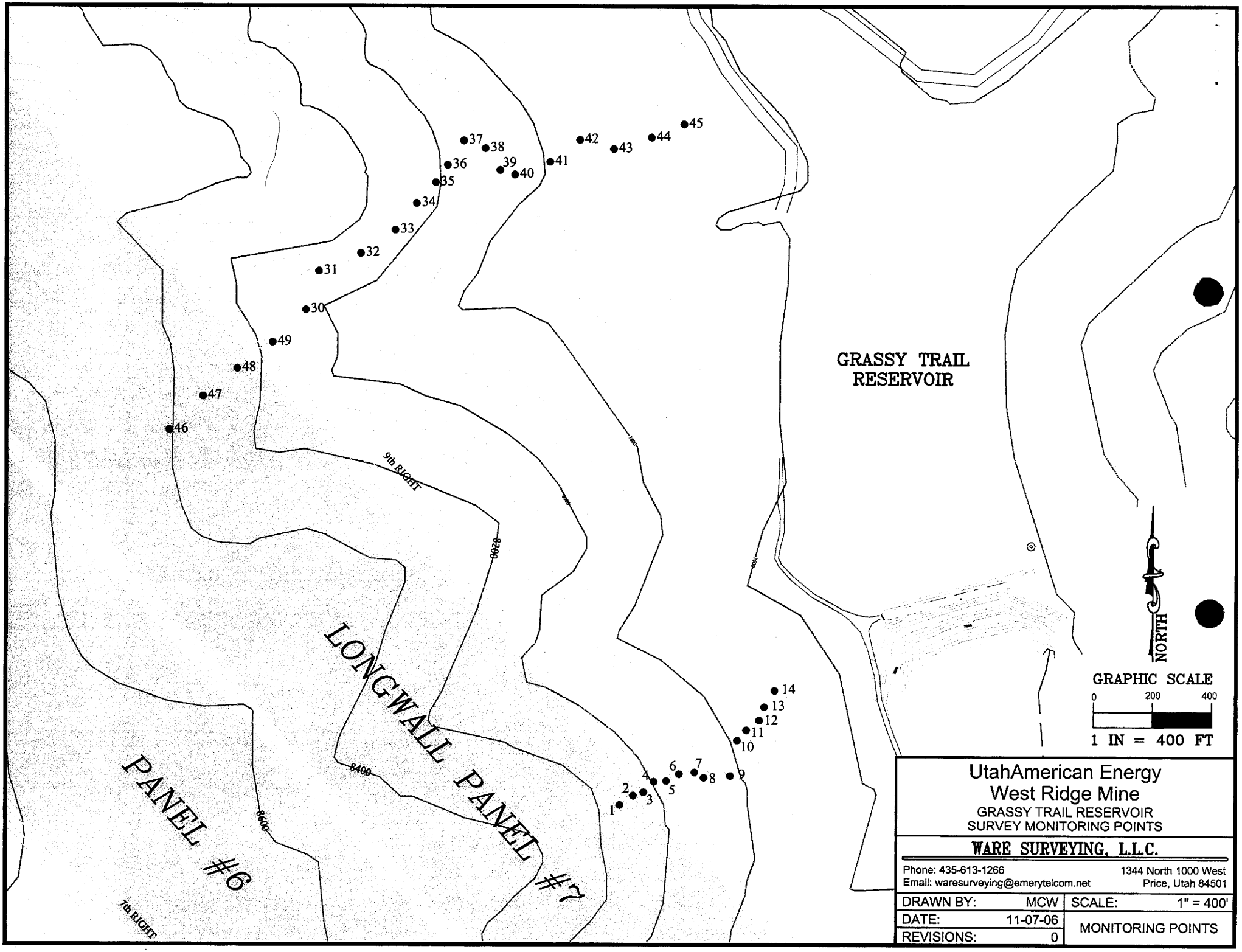
4/7/06

8/18/07

Damaged in July '07

Subsidence Points on West Slope

- Discuss Handout
  - Northing and Easting Coordinates moved toward reservoir during mining.
  - Elevations show downward trend during mining.
  - Changes in Northing, Easting, and Elevation generally in the order of 6 to 12 inches.
  - Both horizontal and vertical coordinates tend to stabilize after mining of Panel 7 complete.

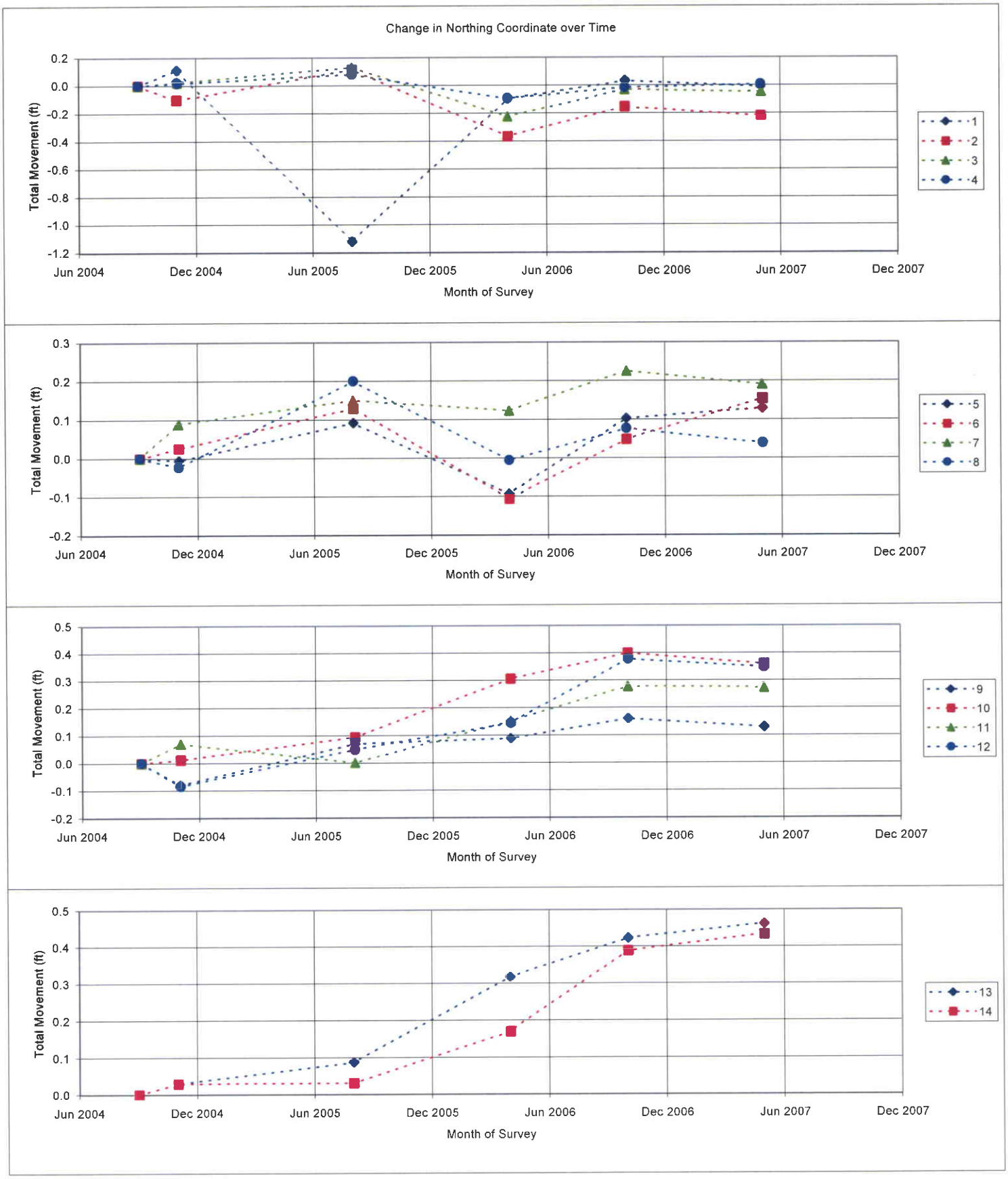

GRASSY TRAIL RESERVOIR
LONGWALL PANEL #7
PANEL #6
9th RIGHT
7th RIGHT
8200
8400
8600
1
2
3
4
5
6
7
8
9
10
11
12
13
14
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
NORTH
GRAPHIC SCALE
0
200
400
1 IN = 400 FT
UtahAmerican Energy
West Ridge Mine
GRASSY TRAIL RESERVOIR
SURVEY MONITORING POINTS
WARE SURVEYING, L.L.C.
Phone: 435-613-1266
Email: waresurveying@emerytelcom.net
1344 North 1000 West
Price, Utah 84501
DRAWN BY: MCW
DATE: 11-07-06
REVISIONS: 0
SCALE: 1" = 400'
MONITORING POINTS

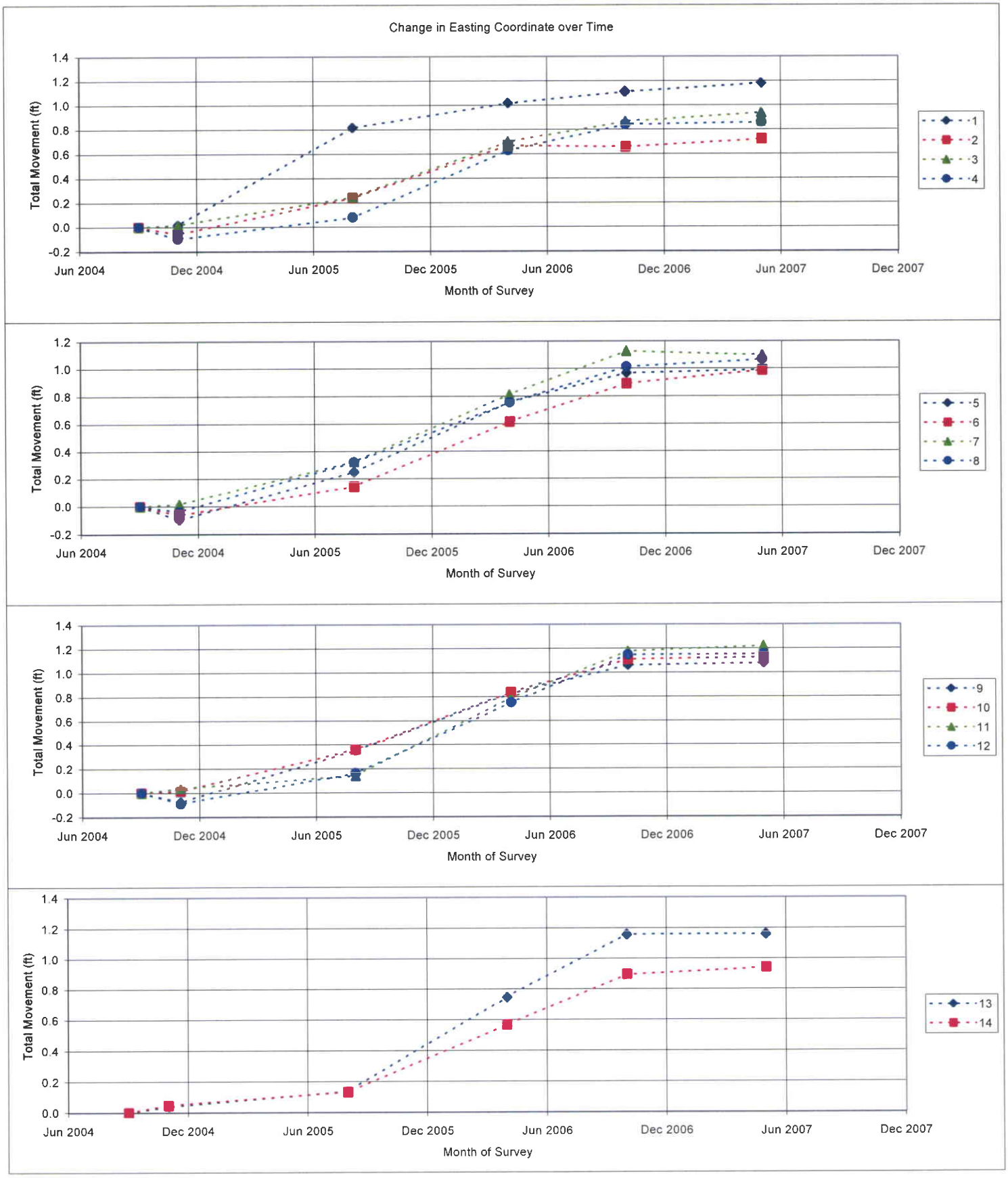
WEST RIDGE RESOURCES, INC.

GRASSY TRAIL RESERVOIR SUBSIDENCE SURVEY

STATION	NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
CALIBRATION CONTROL																			
1	38880.51	37416.3	7591.25																drill hole in stone
24	37041.51	39338.42	7453.47																aerial
2	40772.17	37689.12	7645.98																aerial
MEASURED		SEPT 2004			NOV 2004			AUG 2005			APRIL 2006			OCTOBER 2006			MAY 2007		
1	38219.95	36571.37	8172.50	38220.06	36571.39	8172.74	38218.83	36572.19	8172.48	38219.85	36572.39	8171.43	38219.98	36572.48	8170.75	38219.94	36572.55	8170.66	1/2" rebar w/cap
2	38252.72	36617.52	8129.70	38252.61	36617.46	8129.79	38252.84	36617.76	8129.43	38252.36	36618.19	8128.76	38252.57	36618.18	8128.12	38252.50	36618.24	8128.04	1/2" rebar w/cap
3	38263.93	36653.34	8094.67	38263.95	36653.36	8094.74	38264.06	36653.59	8094.52	38263.71	36654.04	8093.74	38263.90	36654.21	8093.38	38263.86	36654.28	8093.37	1/2" rebar w/cap
4	38299.57	36688.08	8059.73	38299.59	36687.98	8059.67	38299.65	36688.16	8059.50	38299.47	36688.71	8058.82	38299.55	36688.92	8058.41	38299.58	36688.94	8058.54	1/2" rebar w/cap
5	38301.95	36730.52	8023.64	38301.94	36730.42	8023.62	38302.04	36730.77	8023.47	38301.86	36731.28	8022.88	38302.05	36731.49	8022.58	38302.08	36731.51	8022.84	1/[illegible] w/cap
6	38325.65	36774.39	7987.63	38325.68	36774.33	7987.66	38325.78	36774.54	7987.57	38325.54	36775.01	7987.02	38325.70	36775.28	7986.69	38325.81	36775.38	7986.76	1/[illegible] w/cap
7	38331.28	36827.08	7949.99	38331.37	36827.10	7950.15	38331.43	36827.41	7949.84	38331.40	36827.89	7949.51	38331.51	36828.21	7949.29	38331.47	36828.18	7949.33	1/2" rebar w/cap
8	38313.55	36858.96	7935.33	38313.53	36858.92	7935.29	38313.75	36859.28	7935.07	38313.54	36859.72	7934.72	38313.63	36859.97	7934.48	38313.59	36860.02	7934.71	1/2" rebar w/cap
9	38319.30	36949.35	7883.24	38319.22	36949.28	7883.21	38319.37	36949.70	7883.16	38319.39	36950.18	7882.75	38319.46	36950.41	7882.55	38319.43	36950.43	7882.60	1/2" rebar w/cap
10	38440.86	36972.65	7844.41	38440.87	36972.67	7844.42	38440.95	36973.01	7844.41	38441.17	36973.49	7844.07	38441.26	36973.76	7843.91	38441.22	36973.78	7843.95	1/2" rebar w/cap
11	38476.43	37003.67	7816.06	38476.50	37003.71	7816.13	38476.43	37003.82	7816.01	38476.58	37004.46	7815.72	38476.71	37004.85	7815.59	38476.71	37004.89	7815.69	1/2" rebar w/cap
12	38509.85	37047.46	7789.87	38509.77	37047.37	7789.84	38509.90	37047.63	7789.75	38510.00	37048.21	7789.46	38510.23	37048.61	7789.39	38510.20	37048.61	7789.45	1/2" rebar w/cap
13	38555.42	37064.56	7771.43	38555.45	37064.60	7771.39	38555.51	37064.70	7771.30	38555.74	37065.31	7771.02	38555.84	37065.72	7770.95	38555.86	37065.72	7771.00	1/2" rebar w/cap
14	38610.87	37099.85	7739.26	38610.90	37099.90	7739.21	38610.90	37099.98	7739.13	38611.04	37100.42	7738.83	38611.26	37100.75	7738.66	38611.31	37100.79	7738.77	1/2" rebar w/cap
30	39908.69	35492.67	8123.71	39908.79	35492.68	8123.68	39908.67	35492.63	8123.62	39908.41	35492.61	8123.32	39908.64	35492.93	8123.12	39908.66	35492.95	8123.05	1/2" rebar w/cap
31	40040.26	35537.78	8074.27	40040.36	35537.75	8074.25	40040.27	35537.64	8074.14	40040.02	35537.59	8073.93	40040.30	35538.21	8073.60	40040.33	35538.25	8073.54	1/2" rebar w/cap
32	40101.53	35681.63	8079.63	40101.61	35681.70	8079.68	40101.53	35681.60	8079.54	40101.25	35681.55	8079.40	40101.64	35682.07	8079.14	40101.64	35682.09	8079.07	1/2" rebar w/cap
33	40180.47	35799.59	8075.64	40180.55	35799.62	8075.62	40180.37	35799.56	8075.47	40180.19	35799.45	8075.33	40180.57	35800.10	8075.22	40180.58	35800.14	8075.13	1/2" rebar w/cap
34	40271.72	35871.88	8066.59	40271.76	35871.89	8066.59	40271.50	35871.81	8066.29	40271.44	35871.72	8066.32	40271.82	35872.32	8066.21	40271.85	35872.35	8066.17	1/2" rebar w/cap
35	40342.59	35936.99	8042.84	40342.59	35937.05	8042.83	40342.42	35936.98	8042.64	40342.22	35936.90	8042.63	40342.62	35937.54	8042.51	40342.66	35937.58	8042.45	1/2" rebar w/cap
36	40401.33	35978.12	8013.00	40401.43	35978.06	8012.93	40401.29	35978.09	8012.85	40401.13	35977.98	8012.73	40401.48	35978.63	8012.60	40401.50	35978.68	8012.57	1/2" rebar w/cap
37	40483.53	36033.85	7961.94	40483.65	36033.83	7961.94	40483.47	36033.73	7961.81	40483.33	36033.65	7961.70	40483.66	36034.36	7961.62	40483.70	36034.44	7961.65	1/2" rebar w/cap
38	40457.48	36107.51	7911.64	40457.59	36107.55	7911.76	40457.46	36107.54	7911.50	40457.31	36107.48	7911.50	40457.65	36108.20	7911.33	40457.74	36108.17	7911.32	1/2" rebar w/cap
39	40384.66	36157.60	7870.68	40384.85	36157.61	7870.78	40384.53	36157.45	7870.28	40384.53	36157.40	7870.42	40384.82	36158.19	7870.35	40384.90	36158.24	7870.35	1/2" rebar w/cap
40	40369.45	36207.99	7835.48	40369.60	36208.01	7835.58	40369.37	36207.98	7835.12	40369.39	36207.89	7835.19	40369.65	36208.67	7835.13	40369.70	36208.64	7835.11	1/2" rebar w/cap
41	40412.36	36328.47	7786.41	40412.52	36328.41	7786.57	40412.33	36328.35	7786.31	40412.05	36328.34	7786.39	40412.32	36328.96	7786.16	40412.30	36328.95	7786.18	1/2" rebar w/cap
42	40486.98	36430.80	7766.77	40487.11	36430.79	7766.91	40486.87	36430.73	7766.64	40486.71	36430.69	7766.67	40486.86	36431.16	7766.58	40486.93	36431.23	7766.61	1/2" rebar w/cap
43	40456.36	36547.60	7739.37	40456.51	36547.56	7739.55	40456.34	36547.59	7739.41	40456.20	36547.44	7739.25	40456.23	36547.80	7739.20	40456.26	36547.82	7739.22	1/2" rebar w/cap
44	40495.04	36677.03	7720.64	40495.16	36676.98	7720.75	40495.05	36676.94	7720.69	40494.76	36676.73	7720.55	40494.91	36676.86	7720.47	40494.89	36676.89	7720.52	1/2" rebar w/cap
45	40539.96	36788.54	7710.28	40540.10	36788.58	7710.37	40539.93	36788.54	7710.27	40539.61	36788.30	7710.25	40539.70	36788.33	7710.16	40539.76	36788.33	7710.17	1/2" rebar w/cap
46	–	–	–	39499.87	35025.50	8431.39	39499.78	35025.57	8431.30	39499.59	35025.41	8431.07	39499.84	35025.94	8430.67	39499.85	35025.91	8430.66	1/2" rebar w/cap
47	–	–	–	39614.25	35140.80	8369.35	39614.13	35140.76	8369.16	39613.90	35140.71	8369.06	39614.14	35141.17	8368.69	39614.16	35141.11	8368.65	1/2" rebar w/cap
48	–	–	–	39708.67	35258.00	8284.45	39708.56	35257.99	8284.30	39708.25	35257.81	8283.96	39708.48	35258.21	8283.58	39708.45	35258.09	8283.50	1/2" rebar w/cap
49	–	–	–	39797.85	35379.02	8203.46	39797.67	35378.99	8203.35	39797.45	35378.99	8203.08	39797.61	35379.42	8202.74	39797.60	35379.34	8202.59	1/[illegible] w/cap

WARE SURVEYING, L.L.C.
1344 North 1000 West – Price, UT 84501
Office: 435-613-1266
Email: waresurveying@emerytelcom.net


Change in Northing Coordinate over Time
Total Movement (ft)
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
Jun 2004
Dec 2004
Jun 2005
Dec 2005
Jun 2006
Dec 2006
Jun 2007
Dec 2007
Month of Survey
1
2
3
4
Total Movement (ft)
0.3
0.2
0.1
0.0
-0.1
-0.2
Jun 2004
Dec 2004
Jun 2005
Dec 2005
Jun 2006
Dec 2006
Jun 2007
Dec 2007
Month of Survey
5
6
7
8
Total Movement (ft)
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
Jun 2004
Dec 2004
Jun 2005
Dec 2005
Jun 2006
Dec 2006
Jun 2007
Dec 2007
Month of Survey
9
10
11
12
Total Movement (ft)
0.5
0.4
0.3
0.2
0.1
0.0
Jun 2004
Dec 2004
Jun 2005
Dec 2005
Jun 2006
Dec 2006
Jun 2007
Dec 2007
Month of Survey
13
14


Change in Easting Coordinate over Time
Total Movement (ft)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
Jun 2004
Dec 2004
Jun 2005
Dec 2005
Jun 2006
Dec 2006
Jun 2007
Dec 2007
Month of Survey
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2
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4
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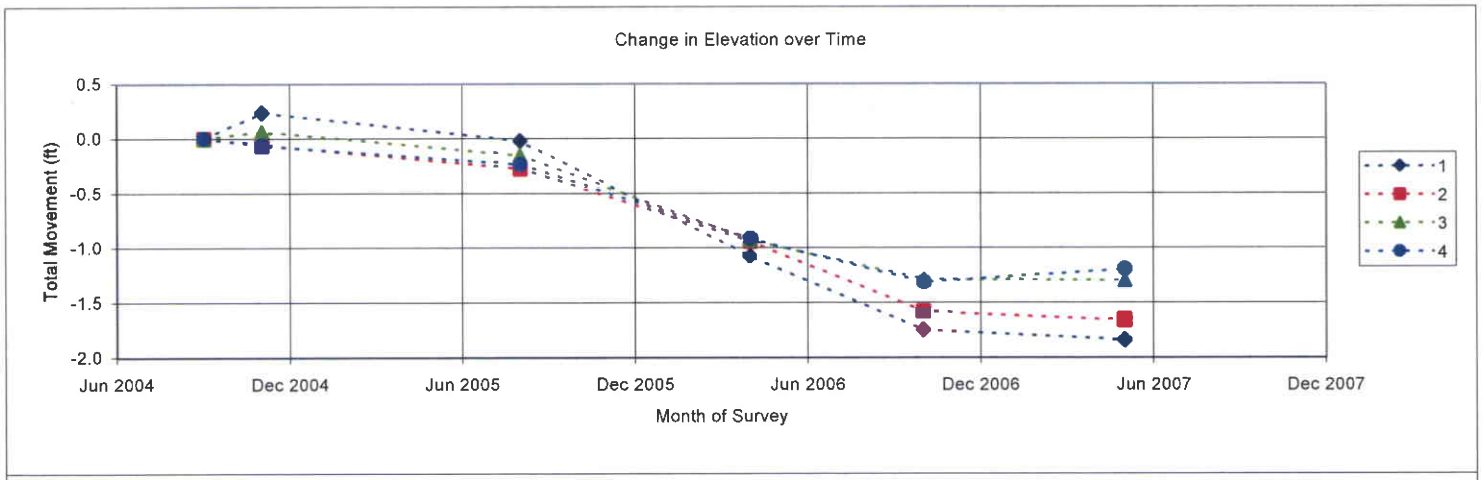
9
10
11
12
13
14


Change in Elevation over Time
Total Movement (ft)
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0.0
-0.5
-1.0
-1.5
-2.0
Jun 2004
Dec 2004
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Dec 2005
Jun 2006
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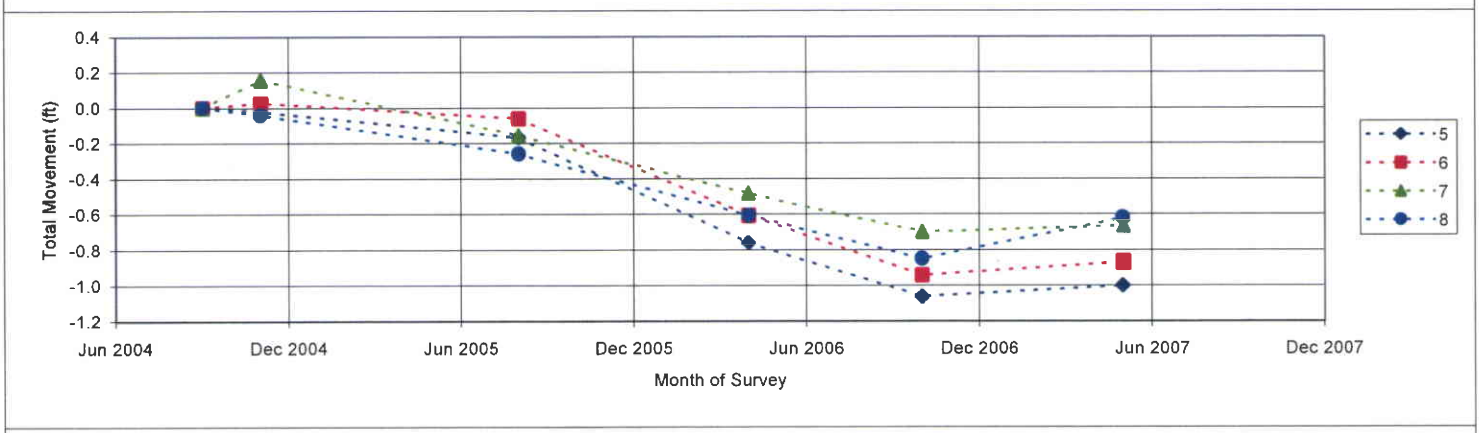
Jun 2007
Dec 2007
Month of Survey
1
2
3
4


Total Movement (ft)
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
Jun 2004
Dec 2004
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Dec 2005
Jun 2006
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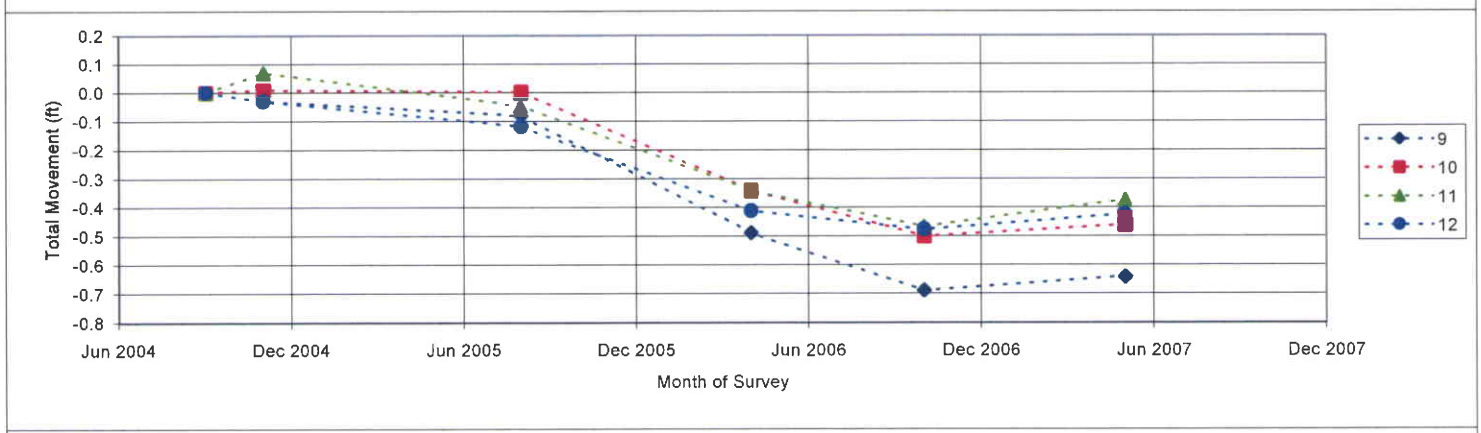
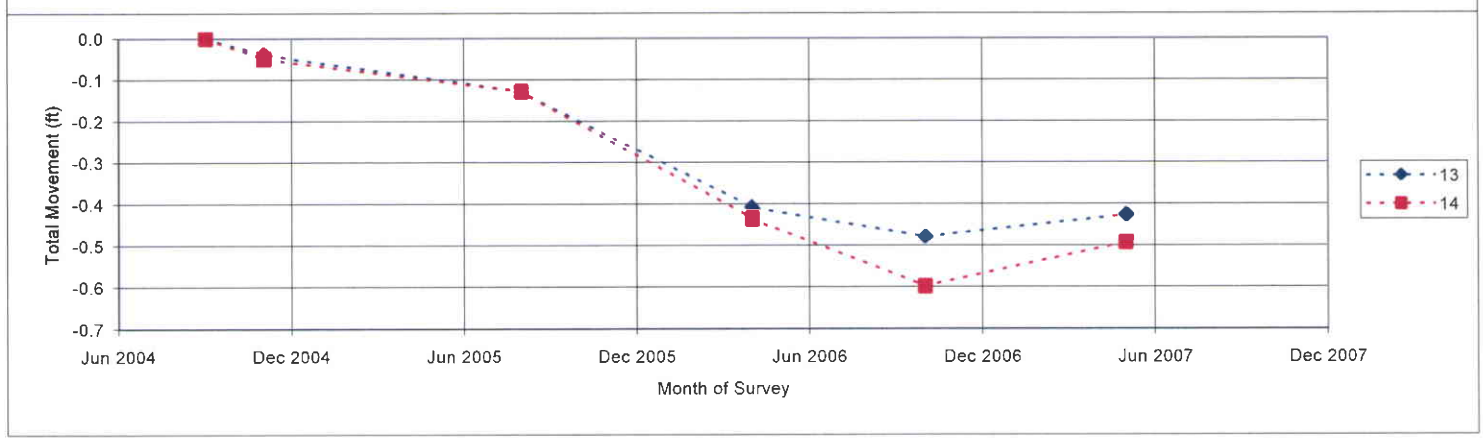
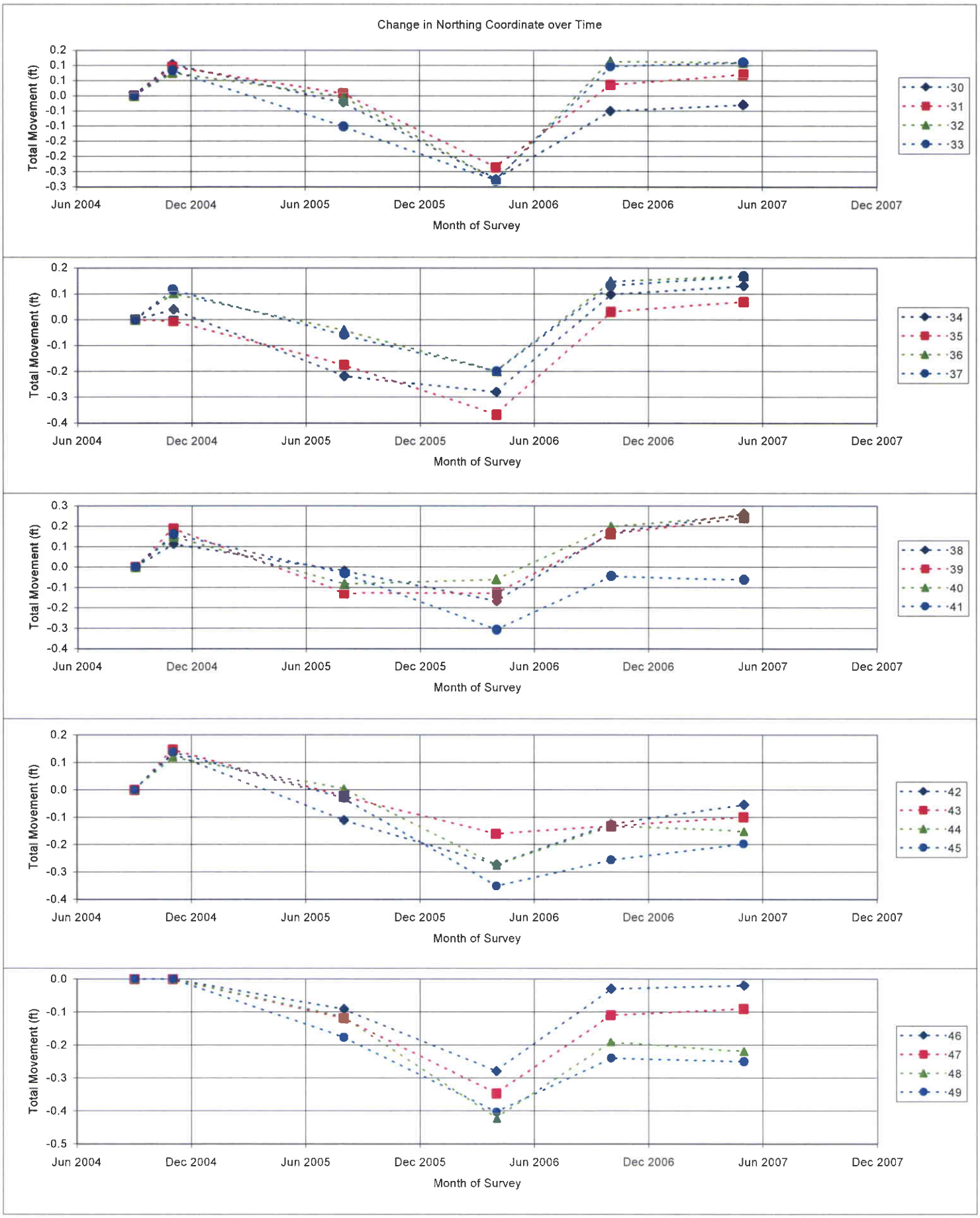
Jun 2007
Dec 2007
Month of Survey
5
6
7
8


Total Movement (ft)
0.2
0.1
0.0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
Jun 2004
Dec 2004
Jun 2005
Dec 2005
Jun 2006
Dec 2006
Jun 2007
Dec 2007
Month of Survey
9
10
11
12


Total Movement (ft)
0.0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
Jun 2004
Dec 2004
Jun 2005
Dec 2005
Jun 2006
Dec 2006
Jun 2007
Dec 2007
Month of Survey
13
14


Change in Northing Coordinate over Time
Total Movement (ft)
Month of Survey
Jun 2004
Dec 2004
Jun 2005
Dec 2005
Jun 2006
Dec 2006
Jun 2007
Dec 2007
30
31
32
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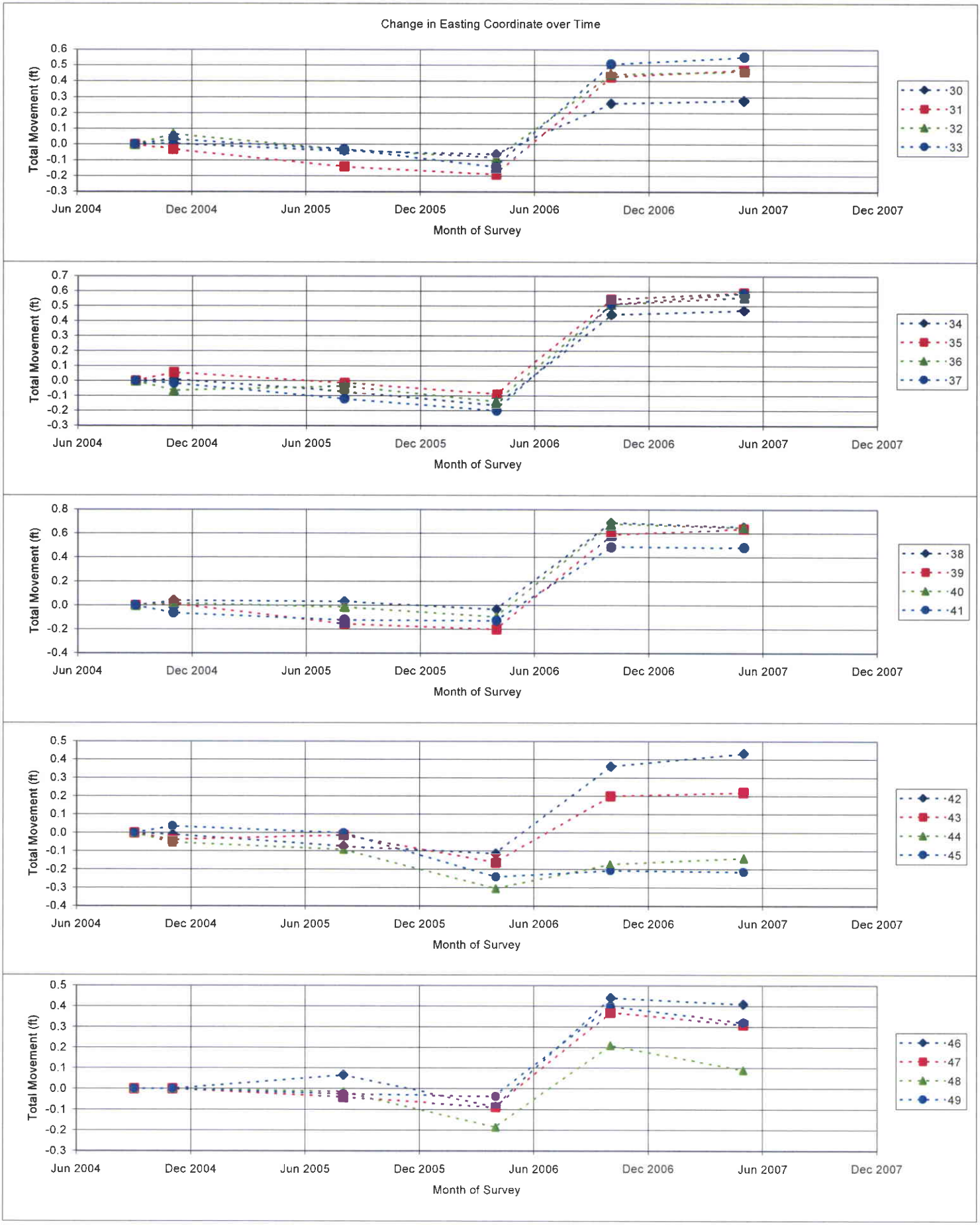
44
45
46
47
48
49


Change in Easting Coordinate over Time
Total Movement (ft)
Month of Survey
Jun 2004
Dec 2004
Jun 2005
Dec 2005
Jun 2006
Dec 2006
Jun 2007
Dec 2007
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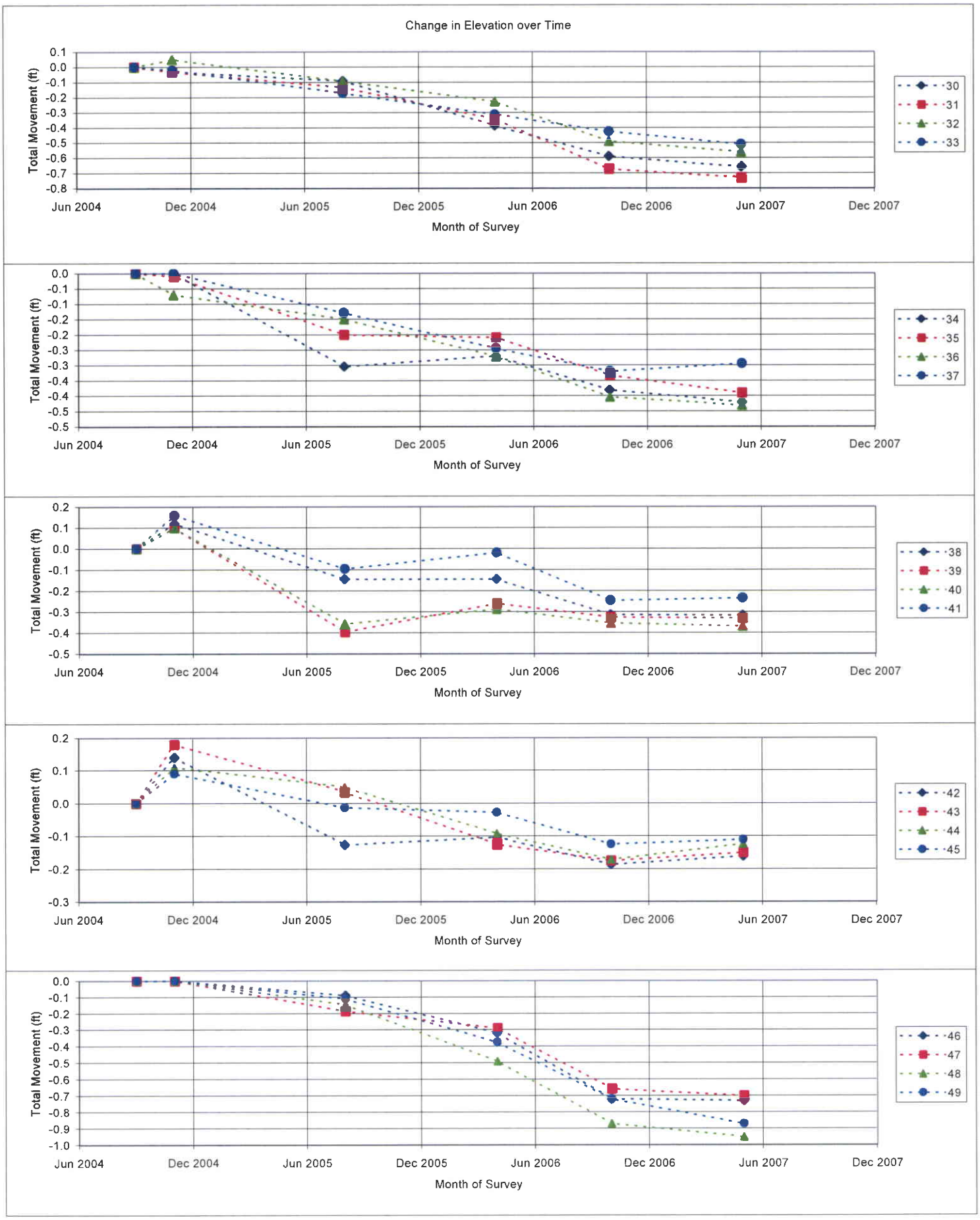
Change in Elevation over Time
Total Movement (ft)
Month of Survey
Jun 2004
Dec 2004
Jun 2005
Dec 2005
Jun 2006
Dec 2006
Jun 2007
Dec 2007
30
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32
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WARE SURVEYING, L.L.C.
1344 North 1000 West – Price, UT 84501
Office: 435-613-1266
Email: waresurveying@emerytelcom.net

August 6, 2007

UtahAmerican Energy
Attn: Dave Shaver

Dear Mr. Shaver,

The purpose of this letter is to document a portion of my involvement with the subsidence monitoring survey of the Grassy Trail Reservoir dam. My company was hired by the West Ridge Mine as a survey consultant to monitor the dam in October of 2005. My monitoring of the dam included GPS, Total Station, and Differential Level observations. In this letter I will summarize the "straight-line" observations that were made at the dam.

In May of 2006 Dave Shaver made the recommendation to perform a "straight-line" observation of a number of points along the surface of the dam. This observation consisted of setting up an optical survey instrument at one end of the dam and setting markers along the dam that are all on the same sight line. Once the marks were set any movement in a direction perpendicular to the sight line would be easily detected. On May 26, 2006 I set the marks along the dam and made the initial or base line survey. At the East end of the dam I pounded a 6-foot long roof bolt (1" diameter solid steel rod) to within 1 foot of the dam surface. I also placed concrete around the roof bolt to a depth of 30 inches. I then set up an optical survey instrument (a Sokkia Set 2 B 2 Total Station) over the roof bolt and sighted a straight line along the dam to the West. On this straight line I was able to line up with a number of the existing monitoring wells that are located along the dam. These wells are square metal tubing that are approximately 4" X 4" and stick out of the ground a couple of feet. I was then able to line up my survey helper who drew a vertical line on 4 of these monitoring wells that were all in a straight line with each other and the roof bolt that I was set up over. Since placing the marks and performing the initial survey I have made 12 subsequent observations of this straight line on the dates shown below. On every survey I set up the same instrument over the roof bolt on the East end of the dam and sighted a straight line to the West along the monitoring well marks. And on every survey all of the marks were on the same East-West sight line, which indicates there was no movement in a North-South direction for the duration of the survey. Beginning on December 14, 2006 we also started measuring distances from the control point on the East end to each of the monitoring wells. These distances were then checked on the subsequent observation dates, and have shown no movement in the East-West direction.

Straight-line survey observation dates:

- May 26, 2006
- May 30, 2006
- June 4, 2006
- June 12, 2006
- June 16, 2006
- June 20, 2006
- June 23, 2006
- June 30, 2006
- July 11, 2006
- July 20, 2006
- August 11, 2006
- September 18, 2006
- October 19, 2006
- December 14, 2006
- January 31, 2007
- March 1, 2007
- March 29, 2007
- May 30, 2007
- June 5, 2007
- July 1, 2007

Sincerely,

M. Cody Ware, PLS

UtahAmerican Energy
West Ridge Mine
Grassy Trail Reservoir
"Straight line" survey data

8/9/2007

	Distance from control point to face of Monitoring Well (MW) in feet						
STATION	**12/14/2006**	**1/31/2007**	**3/1/2007**	**3/29/2007**	**5/30/2007**	**6/5/2007**	**7/1/2007**
MW-1	94.21	94.21	94.21	94.21	94.20	94.20	94.20
MW-2	141.49	141.49	141.49	141.49	141.49	141.49	141.49
MW-3	245.90	245.90	245.90	245.90	245.89	245.89	245.89
MW-4	295.13	295.13	295.13	295.13	295.12	295.12	295.12
MW-5	394.71	394.71	394.71	394.71	394.70	394.69	394.69
MW-6	493.96	493.96	493.96	493.95	493.94	493.94	493.94
MW-7	556.71	556.71	556.71	556.70	556.70	556.68	556.69
MW-8	708.27	708.27	708.27	708.27	708.26	708.25	708.26
Movement in straight line survey	no	no	no	no	no	no	no

WARE SURVEYING, L.L.C.

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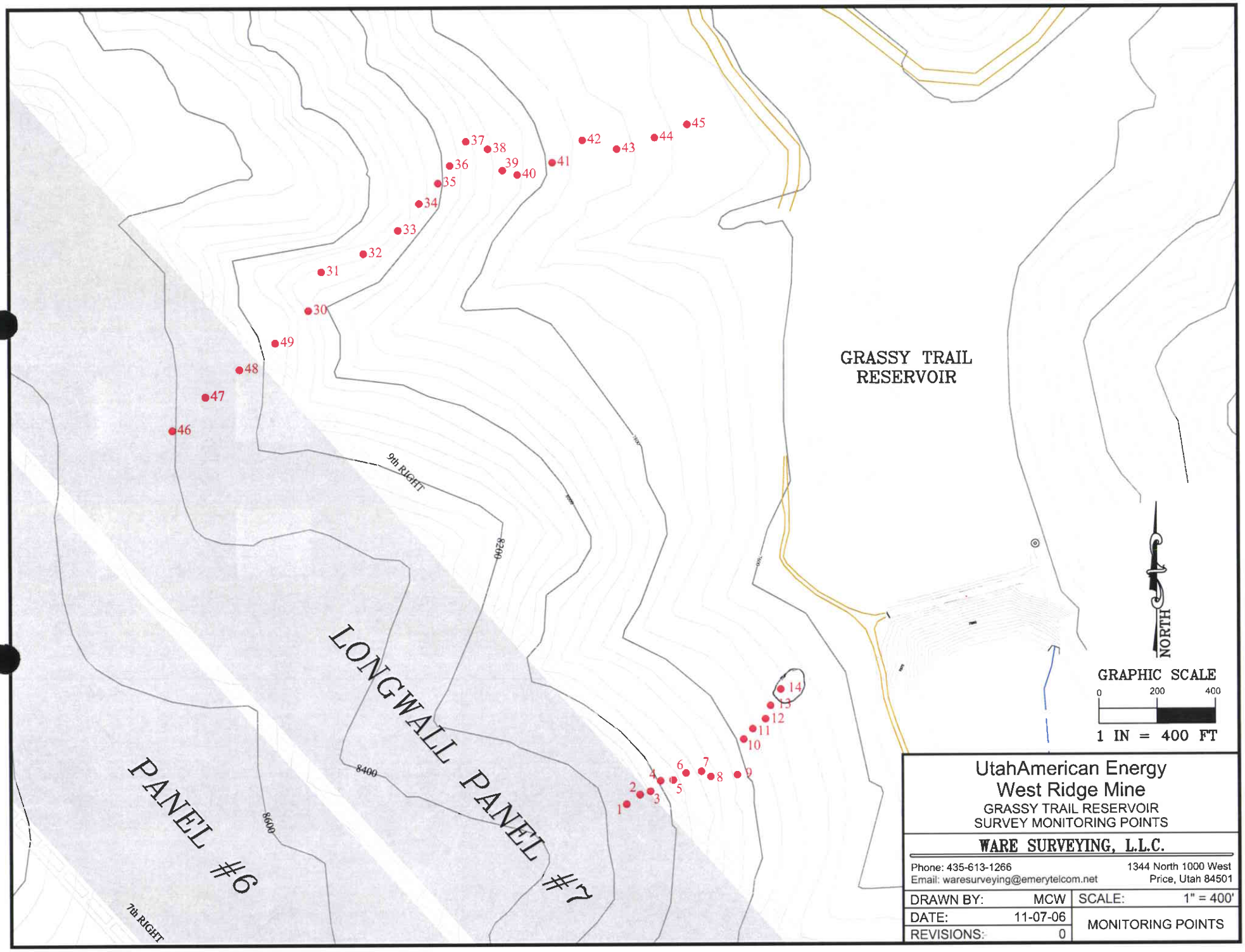
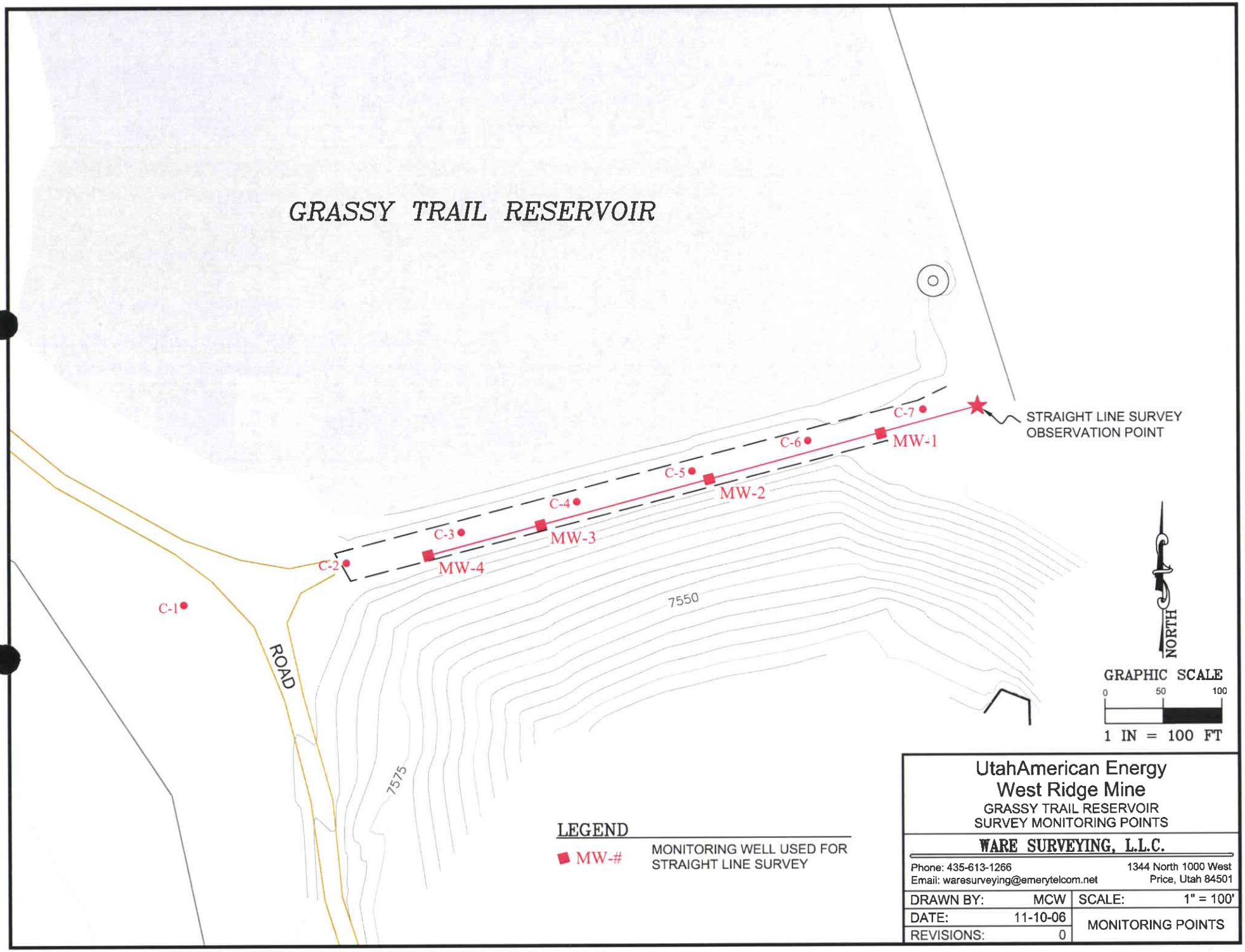
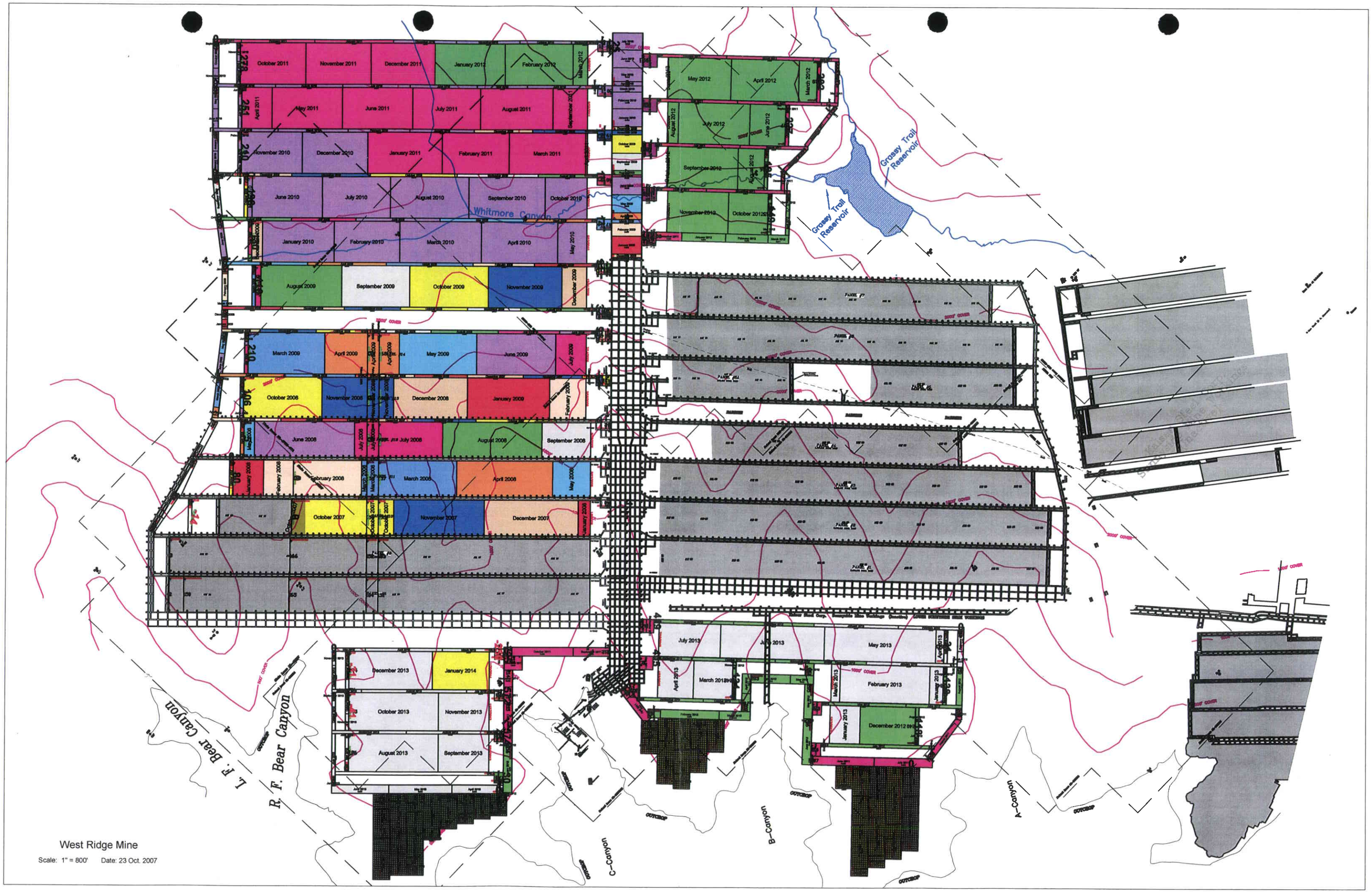

GRASSY TRAIL
RESERVOIR
LONGWALL PANEL #7
PANEL #6
9th RIGHT
7th RIGHT
8200
8400
8600
1
2
3
4
5
6
7
8
9
10
11
12
13
14
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
NORTH
GRAPHIC SCALE
0
200
400
1 IN = 400 FT
UtahAmerican Energy
West Ridge Mine
GRASSY TRAIL RESERVOIR
SURVEY MONITORING POINTS
WARE SURVEYING, L.L.C.
Phone: 435-613-1266
Email: waresurveying@emerytelcom.net
1344 North 1000 West
Price, Utah 84501
DRAWN BY: MCW
DATE: 11-07-06
REVISIONS: 0
SCALE: 1" = 400'
MONITORING POINTS


GRASSY TRAIL RESERVOIR
STRAIGHT LINE SURVEY OBSERVATION POINT
C-7
C-6
C-5
C-4
C-3
C-2
C-1
MW-1
MW-2
MW-3
MW-4
ROAD
7550
7575
NORTH
GRAPHIC SCALE
0
50
100
1 IN = 100 FT
LEGEND
MW-# MONITORING WELL USED FOR STRAIGHT LINE SURVEY
UtahAmerican Energy
West Ridge Mine
GRASSY TRAIL RESERVOIR
SURVEY MONITORING POINTS
WARE SURVEYING, L.L.C.
Phone: 435-613-1266
Email: waresurveying@emerytelcom.net
1344 North 1000 West
Price, Utah 84501
DRAWN BY: MCW
DATE: 11-10-06
REVISIONS: 0
SCALE: 1" = 100'
MONITORING POINTS



West Ridge Mine

Scale: 1" = 800' Date: 23 Oct. 2007

G:\Shared\Current Drawings\Mine Maps\West Ridge Mine\TIMING MAPS\WR007071102207 10-23-07.dwg, Layout1, 10/25/2007 8:59:12 AM

WEST RIDGE RESOURCES, INC.

GRASSY TRAIL RESERVOIR SUBSIDENCE SURVEY

STATION	NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION	NORTHING	EAST
CALIBRATION CONTROL											
1	38880.51	37416.3	7591.25								
24	37041.51	39338.42	7453.47								
2	40772.17	37689.12	7645.98								
MEASURED	SEPT 2004			NOV 2004			AUG 2005			APRIL	
1	38219.95	36571.37	8172.50	38220.06	36571.39	8172.74	38218.83	36572.19	8172.48	38219.85	3657
2	38252.72	36617.52	8129.70	38252.61	36617.46	8129.79	38252.84	36617.76	8129.43	38252.36	3661
3	38263.93	36653.34	8094.67	38263.95	36653.36	8094.74	38264.06	36653.59	8094.52	38263.71	3665
4	38299.57	36688.08	8059.73	38299.59	36687.98	8059.67	38299.65	36688.16	8059.50	38299.47	3668
5	38301.95	36730.52	8023.64	38301.94	36730.42	8023.62	38302.04	36730.77	8023.47	38301.86	3673
6	38325.65	36774.39	7987.63	38325.68	36774.33	7987.66	38325.78	36774.54	7987.57	38325.54	3677
7	38331.28	36827.08	7949.99	38331.37	36827.10	7950.15	38331.43	36827.41	7949.84	38331.40	3682
8	38313.55	36858.96	7935.33	38313.53	36858.92	7935.29	38313.75	36859.28	7935.07	38313.54	3685
9	38319.30	36949.35	7883.24	38319.22	36949.28	7883.21	38319.37	36949.70	7883.16	38319.39	3695
10	38440.86	36972.65	7844.41	38440.87	36972.67	7844.42	38440.95	36973.01	7844.41	38441.17	3697
11	38476.43	37003.67	7816.06	38476.50	37003.71	7816.13	38476.43	37003.82	7816.01	38476.58	3700
12	38509.85	37047.46	7789.87	38509.77	37047.37	7789.84	38509.90	37047.63	7789.75	38510.00	3704
13	38555.42	37064.56	7771.43	38555.45	37064.60	7771.39	38555.51	37064.70	7771.30	38555.74	3706
14	38610.87	37099.85	7739.26	38610.90	37099.90	7739.21	38610.90	37099.98	7739.13	38611.04	3710

NG	ELEVATION	NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
											drill hole in stone
											aerial
											aerial
2006		OCTOBER 2006			MAY 2007			OCTOBER 2007			
.39	8171.43	38219.98	36572.48	8170.75	38219.94	36572.55	8170.66	38219.96	36572.58	8170.68	1/2" rebar w/cap
.19	8128.76	38252.57	36618.18	8128.12	38252.50	36618.24	8128.04	38252.51	36618.25	8128.06	1/2" rebar w/cap
.04	8093.74	38263.90	36654.21	8093.38	38263.88	36654.28	8093.37	38263.90	36654.26	8093.36	1/2" rebar w/cap
.71	8058.82	38299.55	36688.92	8058.41	38299.58	36688.94	8058.54	38299.61	36688.94	8058.53	1/2" rebar w/cap
.28	8022.88	38302.05	36731.49	8022.58	38302.08	36731.51	8022.64	38302.09	36731.50	8022.62	1/2" rebar w/cap
.01	7987.02	38325.70	36775.28	7986.69	38325.81	36775.38	7986.76	38325.80	36775.37	7986.73	1/2" rebar w/cap
.89	7949.51	38331.51	36828.21	7949.29	38331.47	36828.18	7949.33	38331.47	36828.18	7949.28	1/2" rebar w/cap
.72	7934.72	38313.63	36859.97	7934.48	38313.59	36860.02	7934.71	38313.60	36860.01	7934.70	1/2" rebar w/cap
.18	7882.75	38319.46	36950.41	7882.55	38319.43	36950.43	7882.60	38319.41	36950.41	7882.61	1/2" rebar w/cap
.49	7844.07	38441.26	36973.76	7843.91	38441.22	36973.78	7843.95	38441.20	36973.77	7843.96	1/2" rebar w/cap
.46	7815.72	38476.71	37004.85	7815.59	38476.71	37004.89	7815.69	38476.68	37004.90	7815.68	1/2" rebar w/cap
.21	7789.46	38510.23	37048.61	7789.39	38510.20	37048.61	7789.45	38510.21	37048.62	7789.45	1/2" rebar w/cap
.31	7771.02	38555.84	37065.72	7770.95	38555.88	37065.72	7771.00	38555.88	37065.70	7771.01	1/2" rebar w/cap
.42	7738.83	38611.26	37100.75	7738.66	38611.31	37100.79	7738.77	38611.27	37100.75	7738.76	1/2" rebar w/cap

UtahAmerican Energy
West Ridge Mine
Grassy Trail Reservoir
Differential Level survey data

10/16/2007

STATION	C-1	C-2	C-3	C-4	C-5	C-6	C-7
NORTHING	38,830.55	38,865.88	38,892.13	38,917.88	38,943.74	38,969.37	38,996.01
EASTING	37,333.20	37,471.64	37,570.28	37,668.82	37,767.40	37,866.16	37,964.74
Differential level survey date.							
7/30/2002 Elevation	7593.49	7590.63	7590.29	7590.67	7590.44	7590.08	7590.08
8/29/2003 Elevation	7593.50	7590.65	7590.31	7590.69	7590.46	7590.08	7590.08
10/27/2004 Elevation	7593.50	7590.62	7590.30	7590.68	7590.45	7590.08	7590.08
8/12/2005 Elevation	7593.52	7590.66	7590.32	7590.69	7590.46	7590.09	7590.08
3/21/2006 Elevation	7593.50	7590.70	7590.30	7590.68	7590.45	7590.09	7590.08
4/14/2006 Elevation	7593.53	7590.73	7590.31	7590.67	7590.44	7590.08	7590.08
5/4/2006 Elevation	7593.54	7590.75	7590.31	7590.66	7590.43	7590.08	7590.08
5/30/2006 Elevation	7593.55	7590.78	7590.31	7590.65	7590.43	7590.07	7590.08
8/11/2006 Elevation	7593.49	7590.79	7590.31	7590.64	7590.43	7590.07	7590.08
9/18/2006 Elevation	7593.51	7590.82	7590.33	7590.66	7590.43	7590.08	7590.08
10/09/2007 Elevation	7593.54	7590.83	7590.33	7590.67	7590.44	7590.08	7590.08

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UtahAmerican Energy
West Ridge Mine
Grassy Trail Reservoir
"Straight line" survey data

10/16/2007

	Distance from control point to face of Monitoring Well (MW) in feet							
STATION	**12/14/2006**	**1/31/2007**	**3/1/2007**	**3/29/2007**	**5/30/2007**	**6/5/2007**	**7/1/2007**	**10/9/2007**
MW-1	94.21	94.21	94.21	94.21	94.20	94.20	94.20	94.21
MW-2	141.49	141.49	141.49	141.49	141.49	141.49	141.49	141.50
MW-3	245.90	245.90	245.90	245.90	245.89	245.89	245.89	245.90
MW-4	295.13	295.13	295.13	295.13	295.12	295.12	295.12	295.13
MW-5	394.71	394.71	394.71	394.71	394.70	394.69	394.69	394.71
MW-6	493.96	493.96	493.96	493.95	493.94	493.94	493.94	493.95
MW-7	556.71	556.71	556.71	556.70	556.70	556.68	556.69	556.70
MW-8	708.27	708.27	708.27	708.27	708.26	708.25	708.26	708.26
Movement in straight line survey	no	no	no	no	no	no	no	no

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