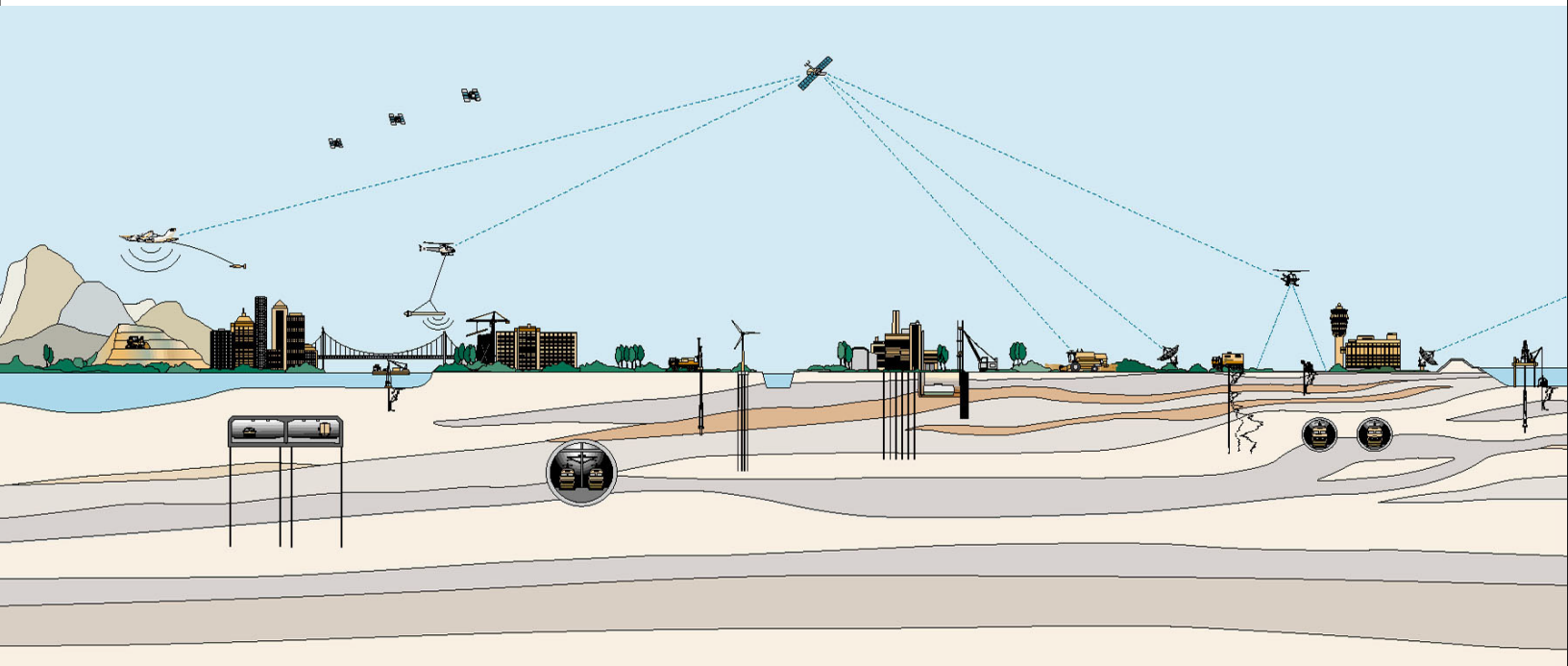
FUGRO CONSULTANTS, INC.

ANNUAL REPORT
JULY 2011 THROUGH JUNE 2012
BIG ROCK MESA LANDSLIDE
ASSESSMENT DISTRICT
MALIBU, CALIFORNIA

Prepared for:
City of Malibu

September 2012
Fugro Job No. 04.B3399006



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September 26, 2012
Project No. 04.B3399006

City of Malibu
23825 Stuart Ranch Road
Malibu, California 90265

Attention: Mr. Rob Duboux

Subject: Annual Report, July 2011 through June 2012, Big Rock Mesa Landslide Assessment District, Malibu, California

Dear Mr. Duboux:

Fugro is pleased to present the annual report for the Big Rock Mesa Landslide Assessment District. This report summarizes the monitoring and maintenance activities completed during the period of July 2011 through June 2012.

Fugro appreciates this opportunity to serve the City of Malibu and the District homeowners. Please contact Danya Pollard at (805) 289-3813 if you have any questions regarding this report.

Sincerely,

FUGRO CONSULTANTS, INC.

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1.0 INTRODUCTION

1.1 AUTHORIZATION

Fugro Consultants, Inc. (Fugro), performed the work summarized in this report in accordance with our contract with the City of Malibu (City) and consistent with the cost estimate document "Exhibit A - FY 2011-2012 Maintenance Cost Estimate" presented in the Annual Assessment Report (Taussig, 2011).

1.2 BACKGROUND

The Big Rock Mesa Landslide Assessment District (Assessment District) was established in 1989 by the County of Los Angeles (County) following the activation of the Big Rock Mesa landslide in 1983. The Assessment District provides permanent funding to maintain and monitor dewatering facilities with the purpose of reducing landslide movements. The County administered the Assessment District until 1991 when the City of Malibu (City) incorporated. The Assessment District was reauthorized in June 1998 under Resolution AD No. 98-1. The City has administered the Assessment District, utilizing consultants to maintain and monitor the district facilities.

1.3 SCOPE OF WORK

This annual report summarizes the current monitoring and maintenance of the geotechnical instrumentation and dewatering facilities for the period between July 1, 2011, and June 30, 2012 (hereinafter, the "monitoring period"). Fugro completed monitoring and maintenance activities summarized in this report.

Data collected during this monitoring period included the following:

- Annual Rainfall data from a local rain gauge at Big Rock Mesa, operated by the County;
- Monthly groundwater level measurements from 28 standpipes and 16 pneumatic piezometers;
- Twice-monthly dewatering production readings from 23 dewatering wells;
- Monthly dewatering production readings from 36 horizontal drains (hydraugers);
- Quarterly ground deformation readings from 18 slope inclinometers (geotechnical instrumentation);
- Twice yearly ground deformation readings from 10 slope inclinometers;
- Monthly readings of water usage data from the Mesa's master flow meter; and
- Quarterly water-quality sampling and analysis for National Pollution Discharge Elimination System (NPDES) compliance.

The operating condition of the instrumentation and dewatering facilities was checked during each field monitoring/observation event and by evaluating preliminary data in the office as they were received. Maintenance was performed as needed based upon the field observations and preliminary data evaluation.

The scope of services includes monitoring and maintenance of the Assessment District facilities and annual reporting. The services provided on an annual basis for the Assessment District do not include an engineering evaluation of the stability of the landslide.

1.4 REPORT ORGANIZATION

This report summarizes the monitoring data collected during the current monitoring period and presents conclusions regarding the annual monitoring results. The location of the Assessment District is illustrated on Plate 1, Site Location Map. Locations of the geotechnical instrumentation and dewatering facilities are shown on Plate 2, Assessment District Map. Tabulated and graphic summaries of monitoring data are presented in Appendices A through E.

1.5 REPORT AVAILABILITY

The annual Assessment District reports are available for review at Malibu City Hall. Reports may also be viewed on the City's website at http://www.malibucity.org.

2.0 MONITORING

2.1 RAINFALL DATA

Rainfall totals were tabulated based on recorded values from the Los Angeles County Rainfall Station 1239 - located at Big Rock Mesa. A graph of historical monthly rainfall and average annual rainfall is shown on Plate 3, Rainfall Graph.

Rainfall data indicate that approximately 11.71 inches of precipitation fell during the monitoring period from July 2011 through June 2012. The average annual rainfall from 1968 to 2012 in the Malibu area for the monitoring period July through June is approximately 16.1 inches.

Rainfall data are usually analyzed in terms of the annual "rain season" that covers the time period October 1 through September 30. Rainfall for October 1, 2011, through June 30, 2012, was approximately 11.67 inches. This is approximately 72 percent of the average annual rainfall of 16.1 inches for the rain seasons of 1968 through 2012.

2.2 MASTER WATER METER

Water usage data are collected by performing monthly readings at the master water meter near the intersection of Rockport Way and Big Rock Drive. The master water meter measures all imported water supplied to the Big Rock Mesa area by Los Angeles County Waterworks District 29. Processed readings are shown as a plot of flow rate versus time on Plate 4. Analysis of the data indicates the following:

- The recorded water usage rates are cyclic throughout the monitoring year reflecting higher levels of usage during the summer months.
- The trend of increased water consumption since about 1995 was interrupted with the reduced landscape irrigation during the extended high rainfall in the spring of 2005, 2006, and again in the winter of 2011.
- As illustrated on Plate 4, there has been a general increasing trend in water usage since about 1995. Average water usage during the 2011 through 2012 monitoring year, approximately 164,300 gallons per day (gpd), is approximately 7.4 percent more than the 2010 through 2011 monitoring year average of 153,000 gpd.

2.3 GROUNDWATER MONITORING

The groundwater monitoring data collected during the current monitoring period are summarized in Appendix A. Groundwater levels fluctuate throughout the year, and from year to year, in response to natural and man-made influences. The primary natural influence is varying precipitation. Man-made influences include:

- Percolation from septic systems;
- Percolation from irrigation;
- Alterations to surface drainage by grading, landscaping, storm drains, and rain gutters;
- Inadvertent water discharges from leaking utilities (water, irrigation, sewer, storm drain) and swimming pools; and
- Dewatering activities including pumping dewatering wells and hydraugers.

Groundwater levels were typically measured in monitoring wells and pneumatic piezometers on a monthly basis. Monitoring data and graphs illustrating groundwater levels recorded in monitoring wells and pneumatic piezometers for the six physiographic regions of the Big Rock Mesa landslide are presented in Appendix A. Contour maps representing groundwater elevations for the month of May in 1995 and 2012 are shown on Plate 5a. A contour map of the difference in ground water elevation from May of 1995 and 2012 is shown on Plate 5b.

Typically, groundwater levels rise relatively quickly following significant rainfall and gradually lower after the wet season ends. Groundwater levels recorded in the Assessment District typically peak around late-March to mid-April and gradually decline through late September to November.

The groundwater data were analyzed by evaluating changes that occurred during the monitoring period as well as changes in groundwater levels compared to historical averages (1984 through 2011). To analyze trends in seasonal groundwater fluctuations, the average (mean) annual and highest annual recorded groundwater elevation for each piezometer were calculated (Appendix A) and summarize on the following table:

Table 1. Summary of Average Groundwater Elevations by Area

	No. of Wells w/ High* Groundwater	Total No. of Wells	Area Average Groundwater Elevation (ft)	Change from Prior (Area Average) (ft)	Average Peak Groundwater Elevation (ft)	Change from Prior Year (Area Average) (ft)
PCH Region	1	8	8.5	-0.3	9.8	-0.3
Bluff Region	1	4	56.8	-1.2	85.3	+22.8
Eastern Mesa	0	4	90.7	+1.2	97.5	+6.7
Central Mesa	2	8	190.9	-4.9	208.3	+7.9
Western Extension	1	4	393.1	+1.4	408.9	+8.9
Headscarp Region	0	1	551.9	-0.6	552.9	-2.8

*Wells are reported with "High" groundwater when either the Mean or Peak groundwater elevation was greater than one foot higher than the mean of the long-term average elevations (See Appendix A for data).

A summary graph of normalized peak groundwater elevations of each of the six regions in Big Rock Mesa is presented on the bottom graph of Plate 6. The top graph on Plate 6 shows the average dewatering output (gpd) and the cumulative departure from the mean rainfall. The average annual rainfall used for the chart was computed using all of the data from 1988 through the present. This graph illustrates that although annual rainfall has been generally increasing since 2008, the average dewatering output has been decreasing.

2.3.1 Pacific Coast Highway (PCH) Region

The PCH Region parallels the coastal highway at the base of the bluff, including the area between the bluff and the Pacific Ocean. The PCH Region includes the southern boundary of the 1983 landslide. The Shoreline fault and landslide rupture surface define both a zone of weakness and a groundwater barrier, extending approximately along the same alignment as the highway.

Groundwater in most of the PCH Region was close to or below average levels during the monitoring period. As noted in previous monitoring reports, standpipe SP-30 continues to show rising groundwater levels since the 1998 monitoring year. While SP-11 showed significantly higher than normal groundwater levels in the previous monitoring period, levels have decreased during the current monitoring period.

2.3.2 Bluff Region

Along the Bluff Region, where intense ground cracking was observed during the 1983 landslide, the subsurface materials generally have a relatively high secondary permeability due to the level of fracturing.

Groundwater in the Bluff Region was somewhat lower than average during the monitoring period. Groundwater levels at SP-32 have varied between 88.1 to 105.1 feet since the 2002 to 2003 monitoring period. Groundwater levels at SP-34 are significantly lower due to the installation of FW-2 in February 2010; current groundwater levels are approximately 8.5 feet

below the previous monitoring period and approximately 30.4 feet below average, and are continuing to lower. Groundwater levels increased at only one location, SP-28.

2.3.3 Eastern Mesa Region

The Eastern Mesa Region lies between the Bluff and Big Rock Mesa Drive east of the Piedra Chica cul-de-sac. Groundwater within this area occurs within low permeability deposits of the Sespe Formation.

The levels for PC-1 and SP-33 were lower than average and generally decreasing during the monitoring period, while SP-3 and SP-3A, showed an increase in levels compared to the previous monitoring period but has been generally decreasing since the installation of FW-1 in May 2008.

2.3.4 Central Mesa Region

The Central Mesa Region lies between the Bluff and Big Rock Mesa Drive and to the west of the Piedra Chica cul-de-sac. Groundwater within this area generally occurs within moderately permeable landslide deposits derived from the Topanga Formation.

The groundwater levels were somewhat higher than long-term average during the monitoring period for SP-9, SP-16, SP-24, SP-35, and SP-36. SP-16A has shown a significant decrease in groundwater levels which may be attributed to the installation of FW-2 in February 2010.

2.3.5 Western Extension Region

The Western Extension Region encompasses approximately 79 acres, from PCH on the south to the upper ridgeline on the north, immediately west of the 1983 Big Rock Mesa landslide area.

Groundwater levels in this area remained significantly higher than average during the monitoring period as they have been since the 2004 through 2005 rains, and slightly increasing from the previous monitoring period. The groundwater level at SP-23 has showed an increasing trend since the 2003 through 2004 monitoring period and a dramatic spike upward during the current monitoring period. Also, SP-20 shows a dramatic spike downward during the current monitoring period. These dramatic changes in groundwater elevations are currently unexplained, but appear to be localized events that will be closely observed in the upcoming monitoring period. Overall, water levels in the Western Extension are still high compared to average historical levels (1984 through 2011).

2.3.6 Headscarp Region

The ground surface elevation in the Headscarp Region is higher than other regions in Big Rock Mesa, and groundwater is relatively deep. The average groundwater elevation in SP-26 is higher than the historical average (1986 through 2011) but is approximately 0.6 lower than the previous monitoring period.

2.4 DEWATERING WELL PRODUCTION

The total production rate for all dewatering wells from 1984 through June 2012 is depicted on Plate 4. Dewatering well production rates for individual wells are presented on Plates B-1 through B-4 (Appendix B).

The average total well production rate for the monitoring period was approximately 47,539 gpd. This is approximately 7.5 percent less than the previous year's monitoring period value of 51,406 gpd, and below historical average production.

2.5 HYDRAUGER PRODUCTION

The total production rate for all hydraugers from 1993 through June 2012 is depicted on Plate 4. Additional data regarding hydraugers and production rates are presented in Appendix C, Plates C-1 through C-4.

The average hydrauger production rate over the monitoring period was approximately 17,303 gpd. This represents a 12 percent decrease in production relative to the previous monitoring period. Hydraugers produced below historical average volumes of water throughout the monitoring period. Because hydraugers rely on gravity and water pressure (related to elevating groundwater table) for water production, generally hydraugers produce lower volumes during lower rainfall periods.

2.6 SLOPE INCLINOMETERS

Fugro monitored 18 slope inclinometers on a quarterly basis and 10 additional inclinometers on a semi-annual basis to measure subsurface ground deformation through June 2012.

Slope inclinometer measurement plots are presented in Appendix D. Two slope inclinometer plots are prepared for all inclinometer installations. The first data plot for each slope inclinometer presents readings recorded during the monitoring period. The date of the baseline reading is generally the last reading of the previous monitoring period (May or June 2010) and is indicated on each plot. The second data plot has a baseline reading from May or June 2005 to show historical readings since the movement indicated in the 2004 through 2005 monitoring year.

Interpretation of inclinometer data shows measurable ground movement in 7 of the 28 inclinometers monitored during the 2011 through 2012 monitoring period. SP-32 shows a change of 0.2 inches from a depth of 110 feet; SP-3A shows a change of approximately 0.2 inches from depth of about 42 feet; SP-17 shows a change of 0.25 inches from a depth of 140 feet; and SP-17A, shows a change of approximately 0.1 inches from a depth of about 196 feet; SP-36 shows a change of 0.3 inches from a depth of 78 feet; and SP-20 shows a change of approximately 0.2 inches from a depth of 142 feet; SP-26 shows a change of 0.1 feet from a depth of 130 feet. SP-11, SP-27A and PC-1 show some change, but the potential movement magnitude and orientation is not clear and is within the reliable accuracy of the instrument.

There have been technical problems with SP-16A throughout the current monitoring period that are apparent in the data plot (Appendix D-18a); these technical problems are currently being resolved.

A brief summary of each region is presented below and is summarized on Plate D-1. It is important to keep in mind the high sensitivity of the inclinometer probes and the magnitude of the interpreted movements when reviewing the inclinometer data presented in this report. Plate D-1 notes the depths at which movement has been interpreted in the past, as well as whether the inclinometer penetrates the basal rupture surface. Shallower depths of interpreted movement above the base of the Big Rock Mesa Landslide have also been noted.

- **PCH Region.** The PCH Region extends along PCH in proximity of the southern boundary of the 1983 landslide. SP-11 and SP-27A show initial slight offsets between the baseline reading and the first reading of the monitoring year, at depths from 22 to 25 feet and 26 to 30 feet respectively. These slight offsets are below the level of instrument accuracy. Subsequent readings did not show any offset trends that would indicate movement.
- **Bluff Region.** The Bluff Region extends along the top of the slope immediately to the north of the PCH Region where intense ground cracking was observed during the 1983 landslide. SP-32 shows a change of 0.2 inches from a depth of 110 feet.
- **Eastern Mesa Region.** The Eastern Mesa Region extends west to the ends of Inland Lane and Piedra Chica cul-de-sac. This area is bordered to the north by Big Rock Drive and to the south by the Bluff Region. No distinct offsets within the four inclinometers in the Eastern Mesa Region were observed except for SP-3A, which showed movement of about 0.2 inches from a depth of about 42 feet.
- **Central Mesa Region.** The Central Mesa Region is located between the Bluff and Big Rock Mesa Drive and to the west of the Piedra Chica cul-de-sac. SP-17 shows a change of 0.25 inches from a depth of 140 feet; and SP-17A, shows a change of approximately 0.1 inches from a depth of about 196 feet; SP-36 shows a change of 0.3 inches from a depth of 78 feet. No distinct offsets within the other five inclinometers in the Central Mesa Region were observed.
- **Western Extension Region.** The Western Extension Area encompasses approximately 79 acres, from PCH on the south to the upper ridgeline on the north, immediately west of the 1983 Big Rock Mesa landslide area. SP-20 shows a change of approximately 0.2 inches from a depth of 142 feet; No distinct offsets within the other three inclinometers in the Western Extension Region were observed.
- **Headscarp Region.** The Headscarp Region borders the Central Mesa Region to the north. Typically within the Assessment District SP-26, the only inclinometer in this region is first to move and the last to cease movement in response to heavy rainfall. SP-26 shows a change of 0.1 feet from a depth of 130 feet. Past movement has occurred along the identified slide plane between a depth of 120 and 130 feet and from shallow depths of 25 and 45 feet reflecting a smaller "headscarp" landslides.

3.0 WATER QUALITY MONITORING

3.1 REGIONAL BOARD REQUIREMENTS

Water quality monitoring was completed in general compliance with the NPDES permit, as required by the California Regional Water Quality Control Board (RWQCB).

On March 2, 2004, the RWQCB issued a new NPDES permit (CAG994004, CI-6896). On October 3, 2008, Order No. R4-2008-0032 superseded Order No. R4-2003-0111 and provided revised sampling and analysis requirements. Residual chlorine was not sampled until the end of the second quarter 2010, due to a difference in the permit originally issued to the City and the permit kept on file with the RWQCB. A revised permit was issued to the City in October 2010 requiring all sites to be sampled monthly for all constituents, except for Acute Toxicity, which is sampled annually.

Fugro completed quarterly sampling under the revised permit. The data collected and reports submitted are presented in Appendix E.

Water produced by dewatering wells and hydraugers is discharged to one of several storm-drain conveyance lines. Usually, several wells and hydraugers discharge to each storm-drain line. Other sources of water are also collected by the storm-drain system including stormwater runoff (during and following precipitation), irrigation runoff, domestic use surface runoff from car washing and hosing off of driveways, illicit discharges, groundwater seepage, and other possible unidentified sources.

Prior to 2004, samples were collected from storm drain outlets. In November 2004, sampling locations were changed prior to fourth quarter collection of the 2004 monitoring year because the samples collected from storm drains represent discharge from uncontrolled sources in addition to dewatering discharge. The samples are currently collected directly from the dewatering system discharge lines (wells and hydraugers). This change in sampling methodology should be noted when comparing recent water quality data to data collected before the 2004 through 2005 monitoring period.

3.2 WATER-QUALITY RESULTS

Results of water quality sampling and analyses are presented in Appendix E. Water quality monitoring, conducted in general conformance with the requirements of the RWQCB NPDES Permit, indicates that discharges from the dewatering wells and hydraugers generally meet discharge requirements; however, they have been periodically out of compliance for pH, residual chlorine, acute toxicity, and settleable solids.

4.0 CAPITAL IMPROVEMENTS

4.1 DEWATERING WELLS

No dewatering wells were installed during the monitoring period. No hydraugers were installed during the monitoring period.

5.0 FACILITY MAINTENANCE

5.1 FACILITY MAINTENANCE

The operating status of each dewatering well and hydrauger was checked monthly. When necessary, repair work was scheduled and undertaken as expeditiously as reasonable - typically within a matter of a few hours to a few days of identifying a problem. Generally, repairs and maintenance consisted of well pump and electrical repairs. These repairs are summarized on the following table:

Table 2. Maintenance Activities

Date	Facility	Work Performed
July 5, 2011	FW-1	Repair water meter
July 13-14, 2011	Hydraugers	Outlet and conveyance line repair
August 8, 2011	HD-43, 10, 11	Fix leaking pipes
August 9, 2011	BYA-6, 12	Well service
August 11, 2011	HD-9	Fixed leaking pipes
August 18, 2011	HD-7	Reconnecting pipes
Sept - Oct 2011	DWW	Cleaning, painting and rust-proofing well boxes
September 7, 2011	HD-25, 26	Fixed leaking pipes
September 28, 2011	HD-43	Fixed broken pipes
September 29, 2011	BYA-7	Fixed broken handle and lock
October 6, 2011	HD-10, 11	Fixed hydraugers broken by fallen rocks during rain storm
October 11, 2011	Hydraugers	Repaired broken conveyance lines
October 27, 2011	HD-5, 6, 23	Hydrauger Service
November 28, 2011	BYA-H10	General Service
November 30, 2011	BYA-9	General Maintenance
December 6-7, 2011	HD-5, 42	General Maintenance
January 5, 2012	HD-5	Fixed leak
January 10, 2012	HD-42	Reconnected broken pipes
January 11, 2012	HD-H10	Fix leaking caps
January 23, 2012	W-18	Observation of pump replacement
January 24, 2012	W-16, 18	Cleaned out meter screens
January 25, 2012	BYA-H10	Fixed broken pipe
February 2012	DWW	Clean out of meter screens
February 1, 2012	HD-12	Fixed leaking pipe
March 13, 2012	SP-28	Repaired broken protective cover
March 16, 2012	W-18	Meter repair

Table 2. Maintenance Activities (Continued)

Date	Facility	Work Performed
March 21, 2012	W-18	Replace meter
April 12, 2012	HD-9	Cover repair
April 16, 2012	HD-11	Fix pipes from damage caused by falling rocks
April 18, 2012	Hydraugers	Fix leaking pipes
April 30, 2012	HD-9	Fix broken board on protective cover
May 2012	DWW	Painted well boxes
May 14, 2012	BYA-6	Repaired broken pipe at wheel box
June 5, 2012	HD-23	Brush clearance and cover repair

6.0 SUMMARY AND CONCLUSIONS

6.1 ANNUAL SUMMARY

- The groundwater level in the Big Rock Mesa landslide is the primary factor controlling the stability of the landslide mass. Rises in groundwater level tend to destabilize the landslide. Previous episodes of movement of the landslide have been directly related to high groundwater levels. Therefore, controlling the long-term average and peak groundwater levels in the landslide mass is the primary means available to reduce future movements of the landslide. The primary factors influencing recharge of groundwater to the landslide are: 1) Septic discharge, 2) Rainfall, 3) Irrigation, and 4) Water-line and pool leakage.
- Monitoring data related to rainfall and imported water usage indicate the following:
    - This year's rainfall was below average with 11.71 inches of precipitation. Rainfall during the monitoring period was below the historical average of 16.2 inches per year measured from 1968 through 2012.
    - Use of imported water increased approximately 7.4 percent from the previous monitoring year and is 40 percent above the average usage in 1984.
- Groundwater levels in 29 monitoring wells were measured regularly during the monitoring period. High groundwater levels were recorded in 12 of the 29 piezometers.
- The average total well production rate for the monitoring period was approximately 47,539 gpd. This is approximately 7.5 percent less than the previous year's monitoring period value of 51,406 gpd, and below historical average production.
- Interpretation of inclinometer data shows measurable ground movement in 7 of the 28 inclinometers monitored during the 2011 through 2012 monitoring period. SP-32 shows a change of 0.2 inches from a depth of 110 feet; SP-3A shows a change of approximately 0.2 inches from depth of about 42 feet; SP-17 shows a change of 0.25

inches from a depth of 140 feet; and SP-17A, shows a change of approximately 0.1 inches from a depth of about 196 feet; SP-36 shows a change of 0.3 inches from a depth of 78 feet; and SP-20 shows a change of approximately 0.2 inches from a depth of 142 feet; SP-26 shows a change of 0.1 feet from a depth of 130 feet. SP-11, SP-27A and PC-1 show some offset, but the potential movement magnitude and orientation is not clear and is within the reliable accuracy of the instrument.

- Water quality monitoring, conducted in general conformance with the requirements of the RWQCB NPDES Permit, indicate that discharges from the dewatering wells and hydraugers were generally in compliance with discharge permit limits.
- Routine maintenance was conducted throughout the year on the dewatering wells and hydraugers. Ongoing maintenance and repair work is essential to maintaining the capacity of the dewatering system. No unusual maintenance issues were encountered.

6.2 CONCLUDING COMMENTS

It is important to recognize that the dewatering facilities installed over the preceding decades are aging and require increasing maintenance and regular replacement. The anticipated lifespan of an average hydrauger is measured in years, not decades. Dewatering wells may last from a few years to several decades. In order to maintain peak efficiency of the horizontal drains and wells, cleaning and re-development of the dewatering system should be conducted on a regular basis.

The geology throughout the Assessment District is not uniform and varies from one location to another. Areas of low permeability, such as in the Eastern Mesa Region, can limit the dewatering production of individual facilities.

Water conservation throughout the Big Rock Mesa area is essential to reduce groundwater recharge. As previously stated, rainfall and imported (household) water usage are the primary sources of groundwater recharge and are the primary factors controlling the movement of the landslide. Seasonal rainfall is beyond the control of homeowners and the City, therefore, water conservation is the most critical remaining means of controlling groundwater recharge on the Mesa.

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PLATES

BASE MAP SOURCE: USGS 1:100,000-scale Metric Topographic Map of Los Angeles, California (1979).

NORTH

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FEET

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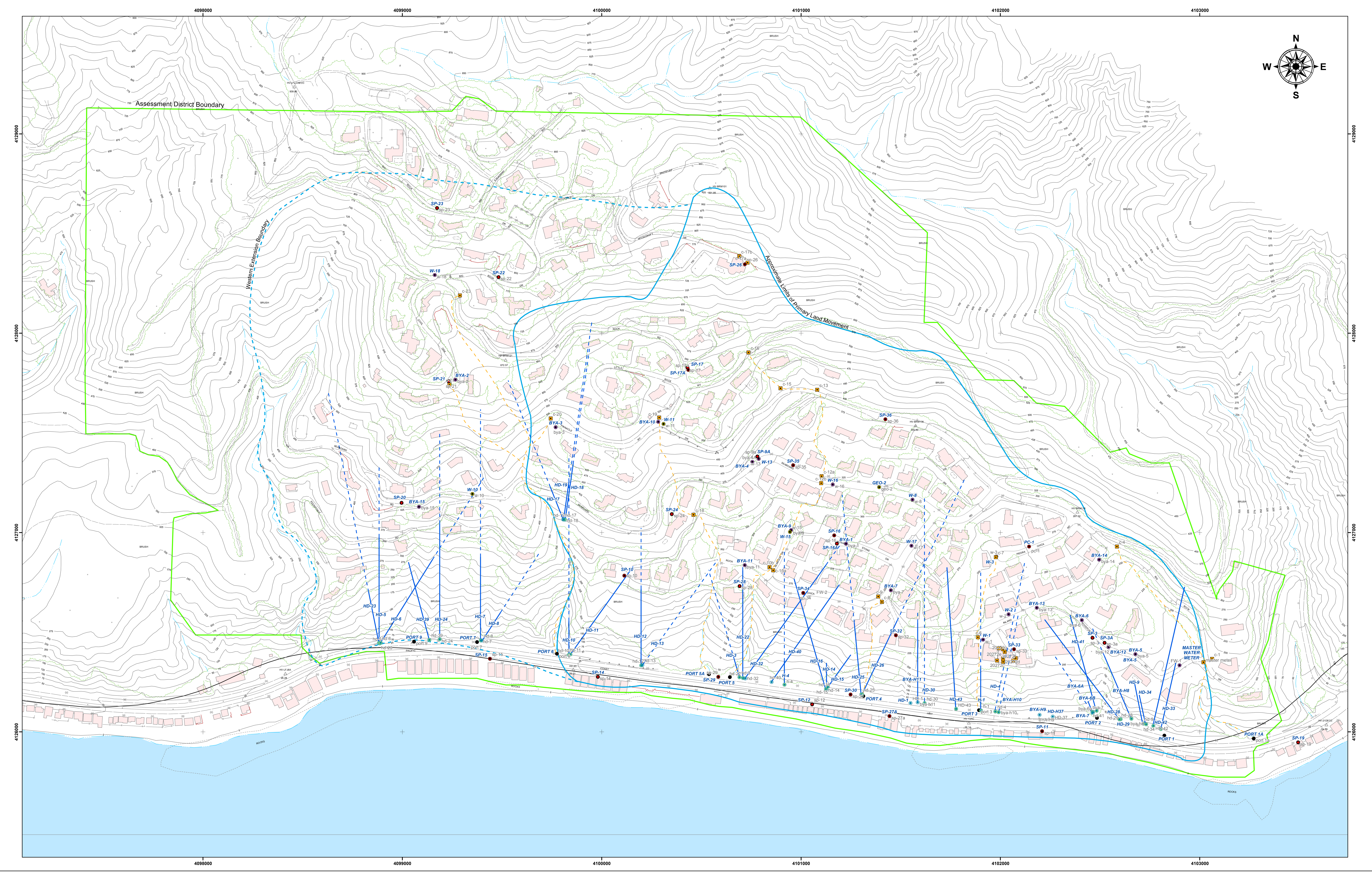
SITE LOCATION MAP

Big Rock Mesa Landslide Assessment District
Malibu, California

PLATE 1



BIG ROCK MESA LANDSLIDE ASSESSMENT DISTRICT MALIBU, CALIFORNIA

ASSESSMENT DISTRICT MAP

July 2012

FUGRO CONSULTANTS, INC.
4820 McGrath St., Suite 100, Ventura, California 93003
Tel: (805) 650-7000, Fax: (805) 650-7010

LEGEND

Current Facilities

- Active Dewatering Well
- Slope Inclinometer Does not penetrate rupture surface.
- Slope Inclinometer Does penetrate rupture surface.
- Standpipe
- GPS Monument
- Producing Hydrauger
- Nonproducing Hydrauger
- Storm Drain Outfall
- Destroyed Hydrauger
- Peisometer
- Storm Drain Catch Basin
- Hydrauger

Inactive Facilities

- Dewatering Well
- Slope Inclinometer Does not penetrate rupture surface.
- Slope Inclinometer Does penetrate rupture surface.
- Standpipe
- GPS Monument
- Producing Hydrauger
- Nonproducing Hydrauger
- Storm Drain Outfall
- Destroyed Hydrauger
- Storm Drain Catch Basin

Site Map

- Approximate Limits of Primary Land Movement
- Western Extension Boundary
- Big Rock Mesa Landslide Assessment District Boundary
- Storm Drain
- Building
- Coordinate Grid: California State Plane, Zone 7, NAD 27, Feet

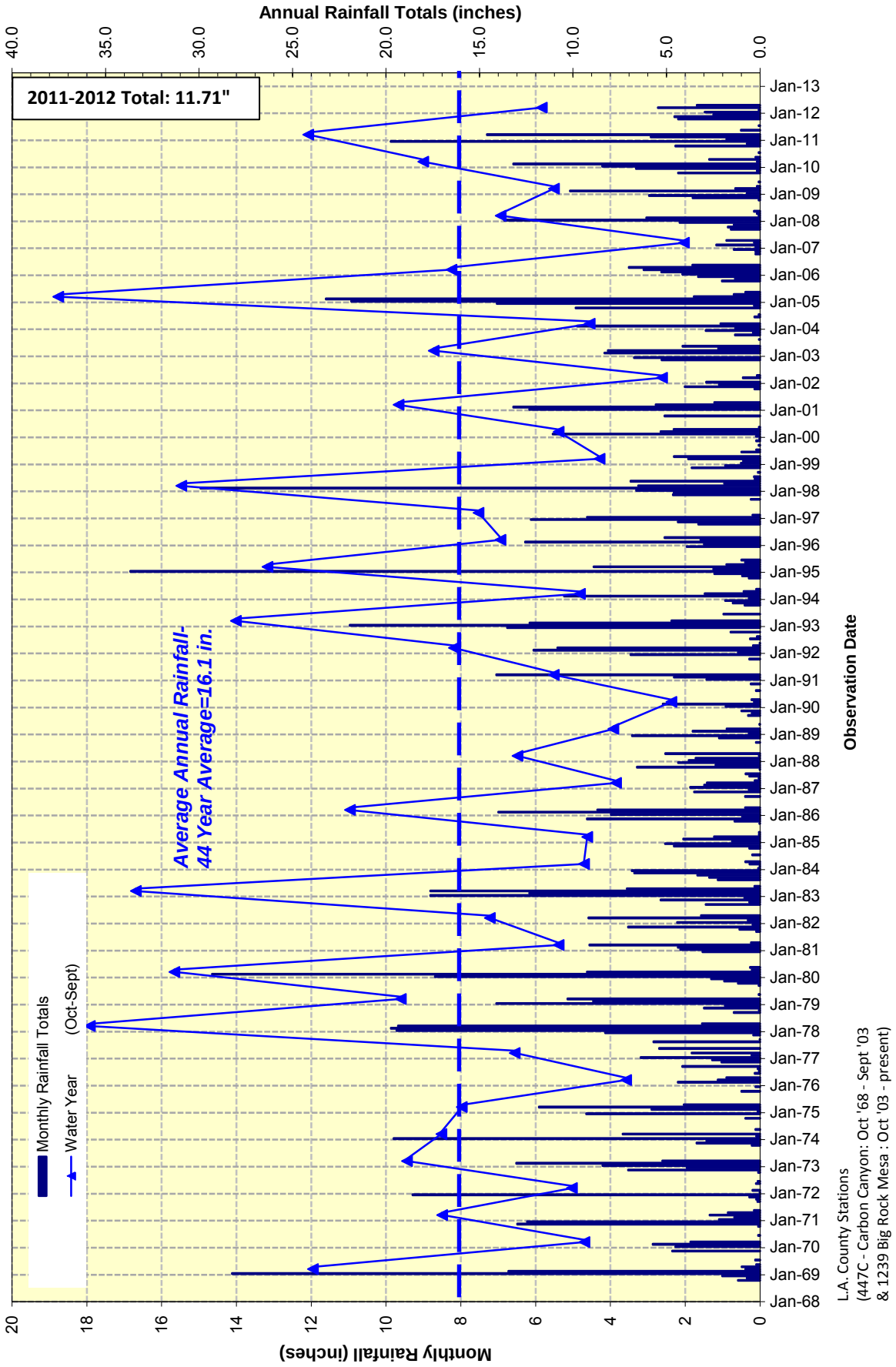
HORIZONTAL SCALE: 1:2,400

200 100 0 200 Feet

REVISIONS

No.	DATE	DESCRIPTION	BY		No.	DATE	DESCRIPTION	BY
1	08/11/04	GPS Field Results	KRS		4	04/22/11	Update Wells	CBD
2	08/18/04	GPS Field Results	KRS					
3	09/19/06	Hydraugers	CAB					

DATE:	WORK ORDER:		PLATE NO.:
8/01/2012	04.B3399006		2
DRAWN BY:	CHECKED BY:	APPROVED BY:	
CBD	AS	SM	

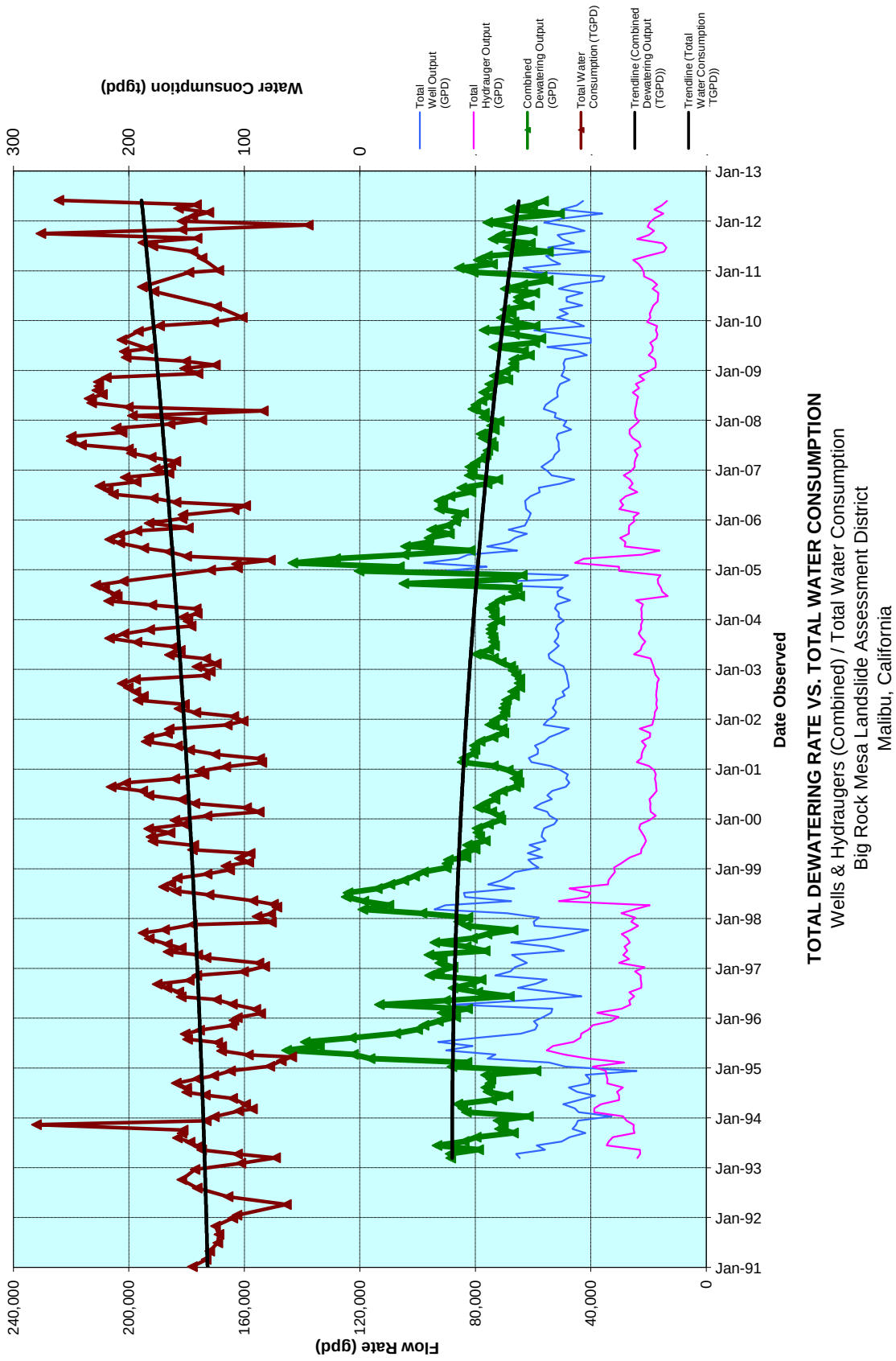


MALIBU AREA MONTHLY & AVERAGE ANNUAL RAINFALL

Big Rock Mesa Landslide Assessment District

Malibu, California

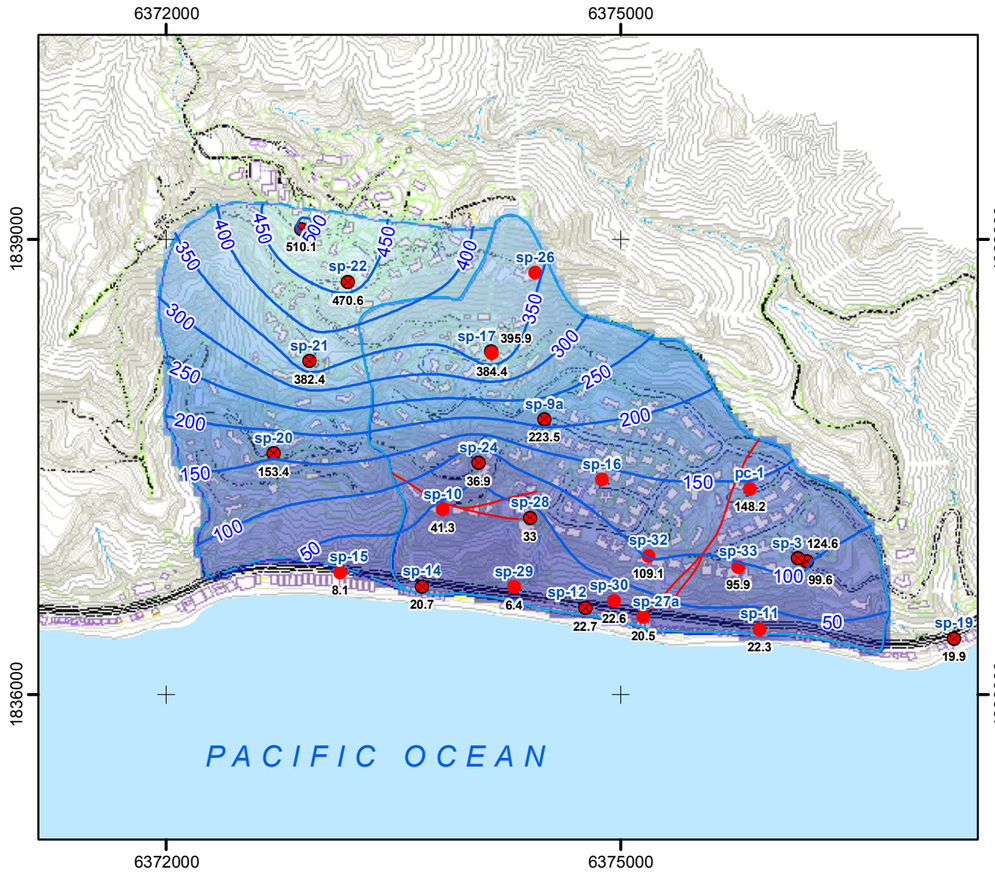
PLATE 3



TOTAL DEWATERING RATE VS. TOTAL WATER CONSUMPTION
Wells & Hydraugers (Combined) / Total Water Consumption
Big Rock Mesa Landslide Assessment District
Malibu, California

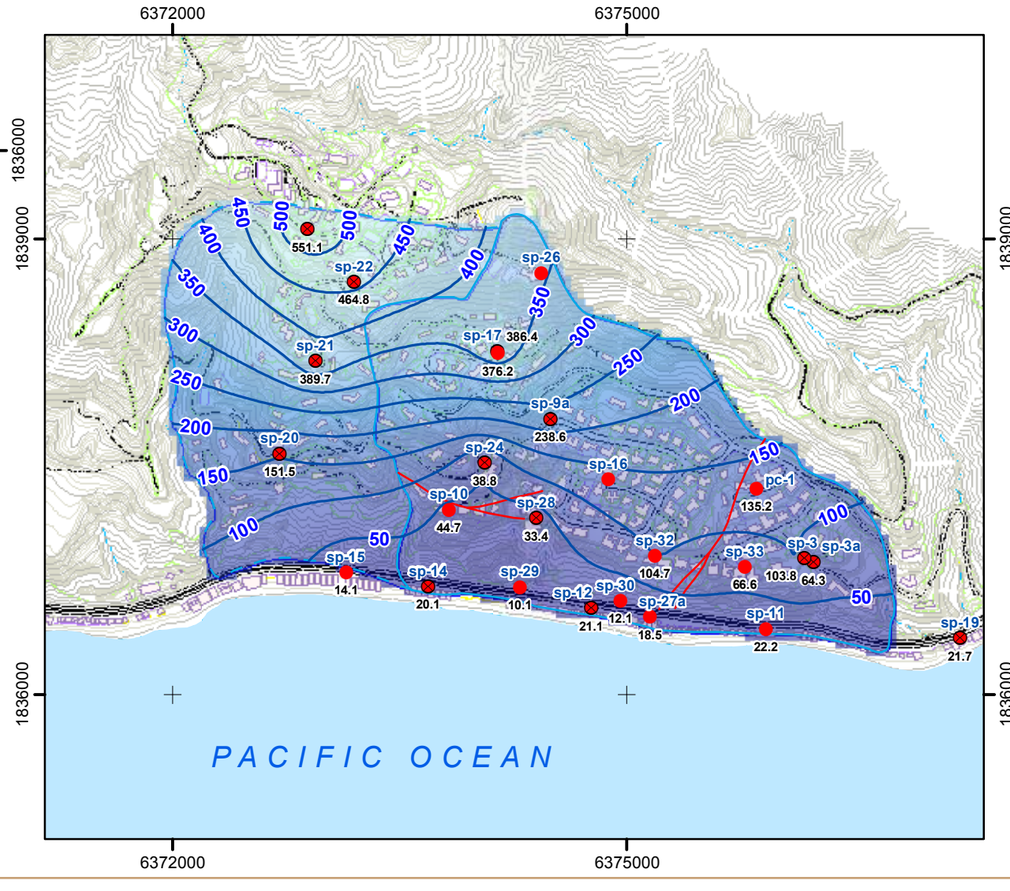
PLATE 4

City of Mailbu
Project No. 04.B3399006



1995 Groundwater Elevation

2012 Groundwater Elevation



Legend

Instrumentation

- Slope Inclinometer, does not Penetrate Rupture Surface
- Slope Inclinometer, does Penetrate Rupture Surface
- sp-16 / 400 — Instrument Label and Ground Water Elevation in feet

Site Map Features

- Faults
- Approximate Landslide Limits
- Buildings

Groundwater Elevation (Feet)

- Groundwater Elevation Contours (C.I. = 50 ft)
- High : 550 ft
- Low : 0 ft

N

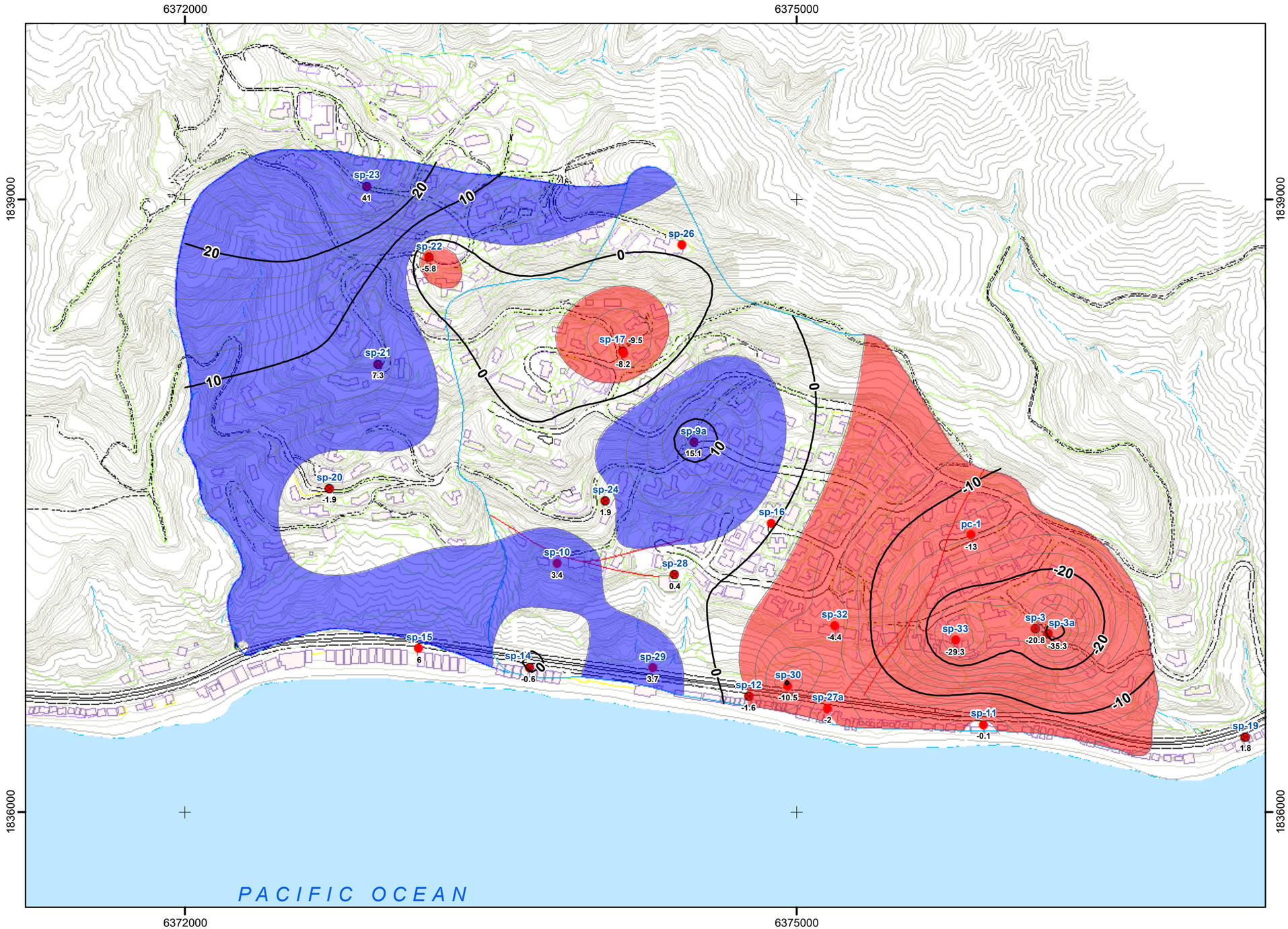
500 250 0 500
Feet

GROUNDWATER ELEVATION MAP
MAY 1995 AND MAY 2012
Big Rock Mesa Assessment District
Malibu, California

PLATE 5a

N:\Projects\3399_CityofMalibu\3399-006_BigRockMesa\Outputs\2012_06_25_AnnualReport\mxd\Plate-05a_WaterLevel_95_12.mxd, 07/19/12, dpollard

City of Mailbu
Project No. 04.B3399006



Legend

Instrumentation

- Slope Inclinometer, does not Penetrate Rupture Surface
- Slope Inclinometer, does Penetrate Rupture Surface
- sp-16 / 400 — Instrument Label and Ground Water Elevation in feet

Site Map Features

- Faults
- Approximate Landslide Limits
- Buildings

Groundwater Elevation Difference (Feet)

- Major Groundwater Elevation Difference Contours (C.I. = 10 ft)
- Minor Groundwater Elevation Difference Contours (C.I. = 2 ft)
- Area where groundwater elevation has increased more than 2 feet.
- Area where groundwater elevation has decreased more than 2 feet.

N

1:6,000

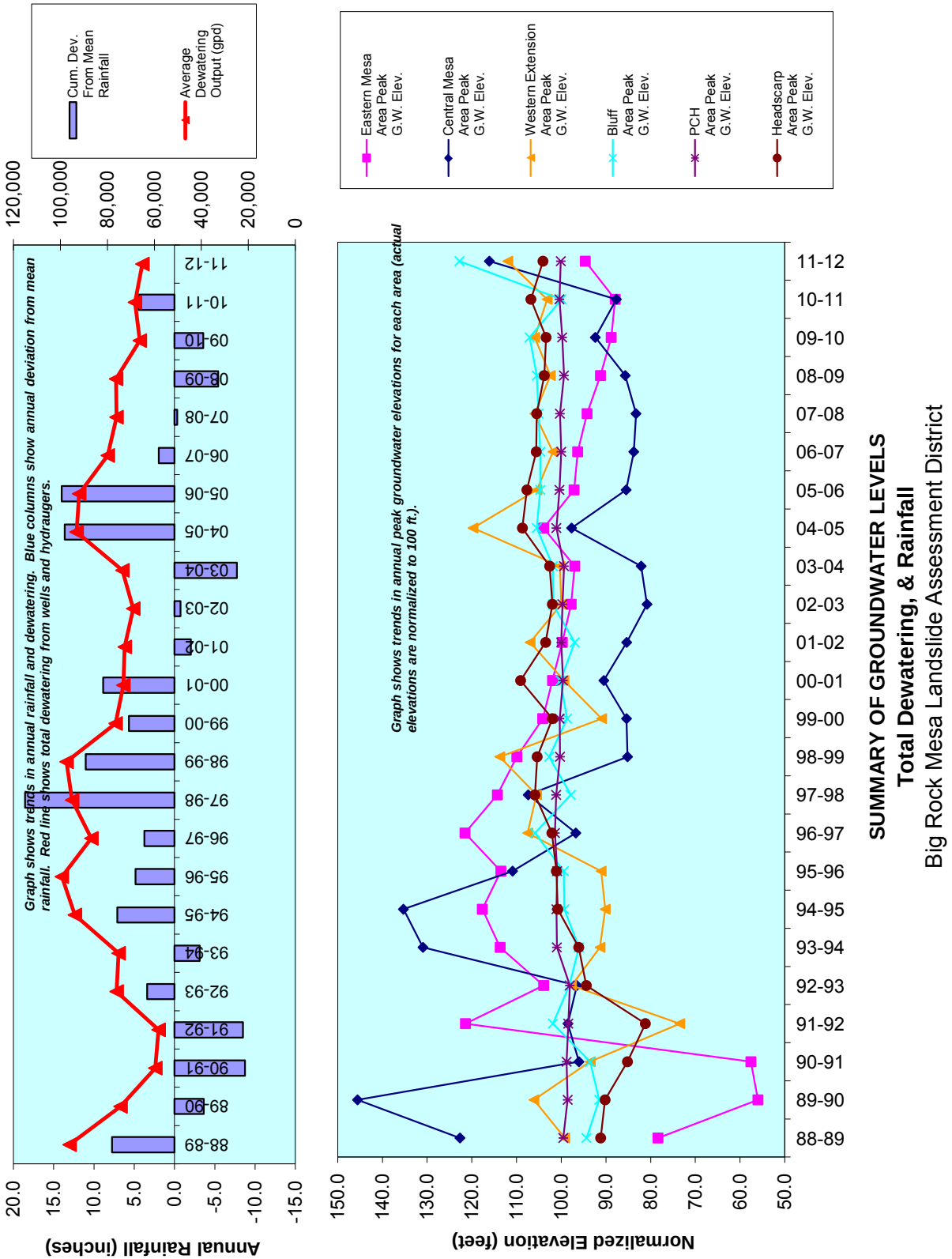
0 125 250 500 750 1,000 Feet

DIFFERENCE IN GROUNDWATER ELEVATION CONTOUR MAP

MAY 1995 / MAY 2012
Big Rock Mesa Assessment District
Malibu, California

PLATE 5b

N:\Projects\3399_CityofMalibu\3399-006_BigRockMesa\Outputs\2012_06_25_AnnualReport\mxd\Plate-05b_WaterLevelChange_95_12.mxd, 7/19/2012, dpollard



SUMMARY OF GROUNDWATER LEVELS
Total Dewatering, & Rainfall
Big Rock Mesa Landslide Assessment District
Malibu, California

PLATE 6

APPENDIX A
GROUNDWATER LEVEL DATA

Big Rock Mesa: Piezometer Information					
Piezometer ID	**Surface Elev. (ft)**	**Tip No.**	**TIP DEPTH (ft.)**	**INSTALL BY**	**STATUS**
W-10*	432	230	230	BYA	Malfunctioning
W-11*	507	214	214	BYA	Malfunctioning
W-15*	295	164	164	BYA	Malfunctioning
PC-1	250	TIP-1 TIP-2 TIP-3 TIP-4 TIP-5	120 90 70 40 20	BYA	Functioning
SP-5A*	NA	TIP-1 TIP-2 TIP-3	NA	BYA	Non-functioning - Covered by asphalt pavement
SP-8A*	NA	TIP-1 TIP-2 TIP-3	NA	BYA	Non-functioning - Covered by landslide
SP-17A	540	TIP-1 TIP-2 TIP-3 TIP-4 TIP-5	Unknown Unknown Unknown Unknown Unknown	BYA	Functioning, results questionable, data not presented
SP-34	270	TIP-1 TIP-2 TIP-3 TIP-4	381 282 182 82	BYA	Functioning
SP-35	345	TIP-1 TIP-2 TIP-3 TIP-4	393 293 193 98	BYA	Functioning
SP-36	380	TIP-1 TIP-2 TIP-3	255 195 95	BYA	Functioning
BYA-2*	665	TIP-1 TIP-2 TIP-3	Unknown Unknown Unknown	BYA	Malfunctioning
BYA-3A*	NA	TIP-1 TIP-2 TIP-3 TIP-4	NA	BYA	Malfunctioning
BYA-4A*	NA	TIP-1 TIP-2 TIP-3 TIP-4 TIP-5 TIP-6	NA	BYA	Malfunctioning
BYA-5A*	NA	TIP-1 TIP-2 TIP-3 TIP-4	NA	BYA	Malfunctioning
GEO-2 (OB-2)*	305	TIP-1 TIP-2 TIP-3	NA	GS	Malfunctioning
GEO-1*	NA	TIP-1 TIP-2 TIP-3	NA	GS	Restricted Access (possibly malfunctioning)

NOTE: * Not functioning or no longer monitored peizometer
Additional data for standpipe peizometers is presented in Appendix D, PLATE D-1

PIEZOMETER INFORMATION
Big Rock Mesa Landslide Assessment District
Malibu, California

PLATE A-1

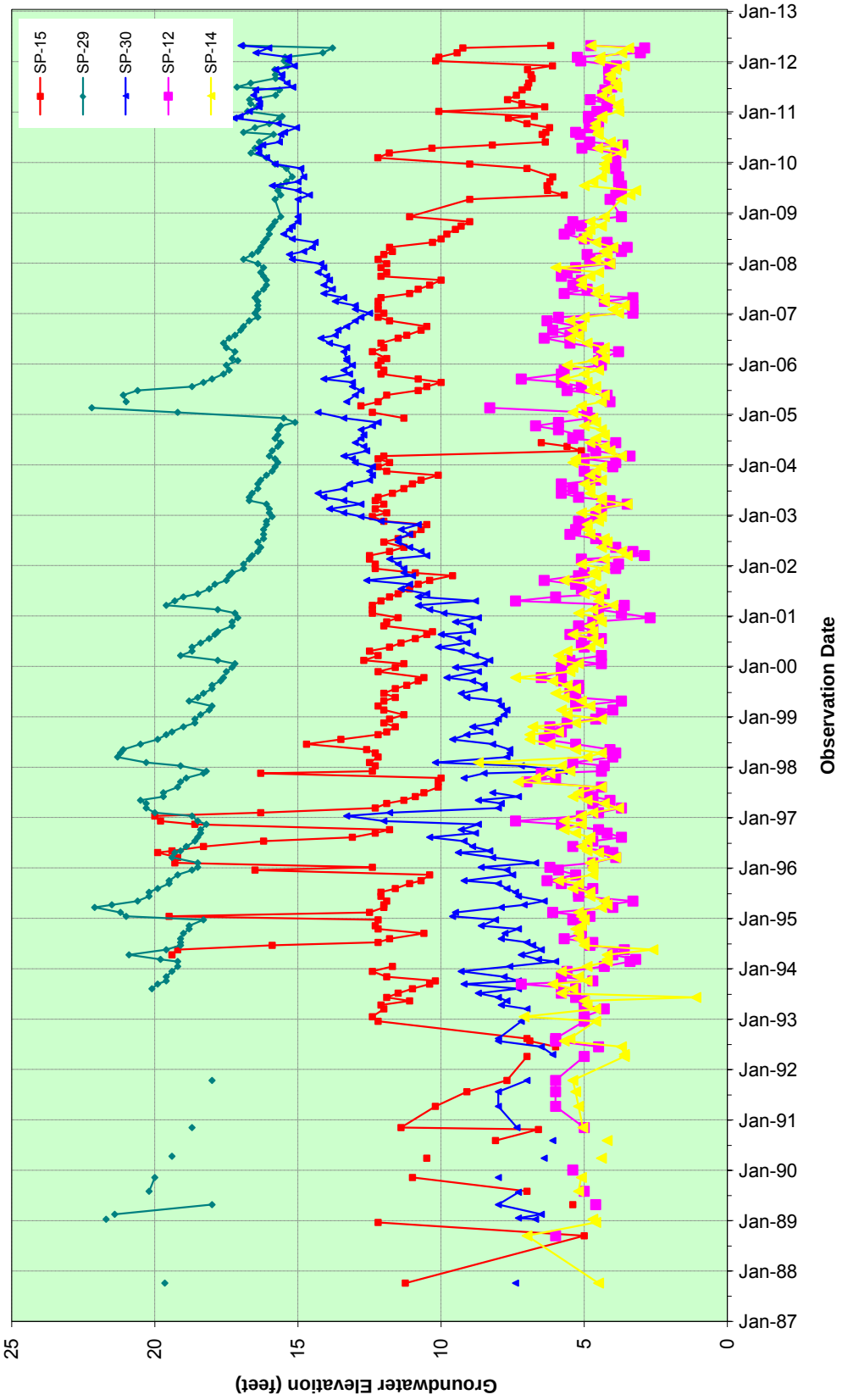
Piezometer I.D.		1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-2009	2009-2010	2010-2011	**2011-2012**	Highest Recorded	Mean '91 - '12	Stand Dev.	11-12 vs 97-98	11-12 vs 10-11	11-12 vs mean
PCH REGION																																				
SP-11	Mean El.						5.7	5.3	4.7	4.5	5.7	5.7	5.5	5.8	5.5	5.8	6.3	5.5	4.8	5.4	5.4	5.2	5.3	5.1	5.4	4.9	4.6	5.1	8.4	7.8	Feb-11	*5.6*	*0.9*	*2.0*	*-0.6*	*2.2*
	Highest El.						6.4	5.8	5.5	5.0	6.0	7.4	6.9	7.5	6.7	7.3	8.1	6.5	5.5	8.3	7.0	5.7	5.8	5.9	7.6	5.9	5.2	5.6	11.8	8.8	11.8	*6.9*	*1.5*	*1.5*	*-3.0*	*1.9*
SP-12	Mean El.						4.6	5.4	5.5	5.4	5.2	4.8	4.9	5.1	4.8	5.0	5.3	5.3	4.7	4.5	4.8	4.6	5.5	5.2	4.9	4.8	4.7	4.0	4.7	4.2	Feb-05	*4.9*	*0.4*	*-0.8*	*-0.5*	*-0.7*
	Highest El.						4.6	5.4	6.0	6.0	6.0	7.2	6.1	6.3	7.4	7.0	6.4	6.5	7.4	6.4	6.4	6.4	8.3	7.2	6.4	5.8	5.7	5.1	5.3	5.2	8.30	*6.4*	*0.8*	*-1.8*	*-0.1*	*-1.2*
SP-14	Mean El.					4.5	4.7	4.4	4.8	4.3	4.8	4.9	4.9	4.9	5.0	5.9	5.8	5.6	4.7	4.5	4.6	4.6	4.7	4.8	4.7	4.7	4.3	4.3	4.3	4.1	Feb-98	*4.8*	*0.5*	*-1.8*	*-0.2*	*-0.7*
	Highest El.					4.5	4.7	4.4	5.2	5.4	7.1	6.1	5.3	5.9	5.7	8.7	6.9	7.4	5.4	5.7	5.1	5.4	5.4	5.7	5.5	6.0	5.1	5.0	4.6	4.9	8.7	*5.8*	*1.0*	*-3.8*	*0.2*	*-1.0*
SP-15	Mean El.					11.3	8.8	10.5	9.1	7.5	10.7	13.4	12.6	15.1	14.5	12.2	12.0	11.7	11.6	11.5	11.7	10.0	11.9	11.6	11.6	11.4	8.9	8.4	7.2	7.6	Jan-97	*11.1*	*2.2*	*-4.5*	*0.5*	*-3.5*
	Highest El.					11.3	12.2	10.5	11.4	9.1	12.4	19.4	19.5	19.9	20.0	16.3	13.5	12.7	12.4	12.5	12.4	12.2	12.8	12.4	12.2	12.2	11.1	12.2	10.1	10.2	20.0	*13.6*	*3.3*	*-6.1*	*0.1*	*-3.4*
SP-19	Mean El.							3.6	3.6	3.1	4.5	4.4	4.7	4.6	4.3	4.4	4.5	3.8	3.4	3.7	3.5	3.4	3.9	3.6	3.6	3.5	3.1	3.6	3.7	3.6	Mar-95	*3.8*	*0.5*	*-0.8*	*-0.1*	*-0.3*
	Highest El.							4.1	4.0	3.4	5.0	5.0	5.9	5.4	4.9	5.2	5.0	4.5	3.9	4.3	4.1	4.0	4.2	4.5	4.4	4.1	3.6	4.6	4.0	4.3	5.9	*4.5*	*0.6*	*-0.9*	*0.3*	*-0.2*
SP-27A	Mean El.						7.1	9.1	8.8	8.7	9.3	9.4	9.7	9.5	9.5	9.7	9.6	10.1	9.2	9.0	9.5	9.3	10.2	9.7	9.5	10.0	9.5	10.0	10.0	9.7	Ap-00/Fe-08	*9.6*	*0.4*	*-0.1*	*-0.3*	*0.1*
	Highest El.						7.1	10.1	9.2	10.2	10.0	10.2	10.8	10.3	10.4	10.7	10.4	13.7	9.6	9.7	9.9	9.8	13.5	12.5	10.2	13.7	10.1	10.6	10.5	10.5	13.7	*10.8*	*1.3*	*-0.2*	*0.1*	*-0.3*
SP-29	Mean El.					19.7	20.4	19.4	18.7	18.0		19.7	20.0	19.2	19.2	19.7	18.8	18.0	18.1	17.0	16.2	16.0	18.0	17.7	16.7	16.3	15.8	15.9	16.2	15.8	Feb-05	*17.6*	*1.5*	*-4.0*	*-0.4*	*-1.8*
	Highest El.					19.7	21.7	19.4	18.7	18.0		20.9	22.1	20.2	20.5	21.3	19.9	19.1	19.6	18.1	16.7	16.4	22.2	18.7	17.4	16.9	16.1	16.6	16.9	17.1	22.2	*18.7*	*2.0*	*-4.2*	*0.2*	*-1.6*
SP-30	Mean El.					7.4	7.1	6.4	7.2	6.9	7.7	7.3	7.9	8.1	9.6	8.0	8.5	9.0	9.7	11.3	12.6	12.9	13.0	13.4	13.4	14.4	15.1	15.7	16.2	15.8	Nov-10	*11.3*	*3.2*	*7.8*	*-0.4*	*4.5*
	Highest El.					7.4	8.0	6.4	8.0	8.0	8.0	9.3	9.6	9.4	13.3	10.2	9.6	10.1	10.8	12.6	14.3	13.4	14.3	14.1	14.2	15.3	15.5	16.4	17.2	17.0	17.2	*12.5*	*3.0*	*6.8*	*-0.2*	*4.5*
Area Average	Mean El.					10.7	8.3	8.0	7.8	7.3	6.8	8.7	8.8	9.1	9.1	8.8	8.8	8.6	8.3	8.4	8.5	8.2	9.1	8.9	8.7	8.7	8.2	8.4	8.8	8.6		*8.5*	*0.5*	*-0.3*	*-0.3*	*0.1*
	Highest El.					10.7	9.2	8.3	8.5	8.1	7.8	10.7	10.8	10.6	11.1	10.8	10.0	10.1	9.3	9.7	9.5	9.2	10.8	10.1	9.7	10.0	9.1	9.5	10.1	9.8		*9.8*	*0.9*	*-1.1*	*-0.3*	*-0.1*
Change vs Prior	Mean El.						-2.4	-0.3	-0.2	-0.5	-0.4	1.8	0.1	0.3	0.0	-0.2	0.0	-0.2	-0.3	0.1	0.2	-0.3	0.8	-0.2	-0.2	0.0	-0.5	0.2	0.4	-0.3						
	Highest El.						-1.5	-1.0	0.2	-0.4	-0.4	2.9	0.1	-0.2	0.5	-0.3	-0.9	0.1	-0.7	0.4	-0.2	-0.3	1.7	-0.7	-0.4	0.3	-0.9	0.5	0.5	-0.3						
BLUFF REGION																																				
SP-10	Mean El.	144.7	76.0	50.0	50.5	49.2	47.4	45.9	48.8	55.3	44.6	42.9	41.6	42.0	41.6	41.3	42.4	42.8	42.9	43.3	43.7	44.3	45.5	45.2	45.2	44.8	43.7	44.0	43.9	42.6	Dec-83	*44.0*	*2.9*	*1.3*	*-1.3*	*-1.4*
	Highest El.	174.2	130.0	50.0	50.5	50.0	52.0	46.0	55.5	74.0	45.9	44.4	42.2	42.6	41.9	41.6	44.8	43.4	43.3	43.6	44.1	44.4	47.2	45.4	45.4	45.2	44.9	44.6	46.0	44.7	174.2	*45.7*	*6.6*	*3.1*	*-1.3*	*-1.0*
SP-28	Mean El.						36.4	33.7	37.5	33.7	33.6	33.7	33.0	32.7	32.2	31.9	32.6	33.2	33.1	33.0	32.9	32.9	34.9	34.7	33.3	33.1	32.8	33.1	32.8	35.2	Jan-12	*33.3*	*0.8*	*3.4*	*2.4*	*2.0*
	Highest El.						40.5	33.8	40.0	36.0	35.2	35.2	33.1	33.1	32.4	32.2	34.9	33.6	33.2	33.3	33.0	32.9	36.1	36.0	33.6	33.1	33.1	33.4	33.8	42.0	42.0	*34.2*	*2.1*	*9.8*	*8.2*	*7.8*
SP-32	Mean El.						75.3	79.1	72.6	76.1	90.1	85.9	92.5	92.5	94.9	76.5	84.2	79.7	88.2	70.1	89.9	91.1	99.9	100.2	102.3	102.4	104.4	105.1	102.3	88.1	Apr-96	*91.2*	*10.1*	*11.6*	*-14.2*	*-3.2*
	Highest El.						78.2	82.3	72.8	83.2	101.0	96.2	110.2	110.2	130.9	107.4	95.3	88.4	97.0	83.6	106.0	105.8	106.7	105.9	105.9	105.8	105.8	105.8	105.9	105.8	130.9	*103.0*	*10.3*	*-1.6*	*-0.1*	*2.8*
SP-34	Mean El.																74.4	77.6	76.2	76.4	73.5	73.8	80.0	79.7	82.8	84.5	86.0	88.6	53.2	44.7	Nov-09	*75.1*	*12.1*	*44.7*	*-8.5*	*-30.4*
	Highest El.																85.9	79.5	77.3	77.7	74.4	74.5	82.1	81.4	83.8	86.1	88.0	94.5	64.5	48.8	94.5	*78.5*	*11.2*	*48.8*	*-15.7*	*-29.7*
Area Average	Mean El.	144.7	76.0	50.0	50.5	49.2	53.0	52.9	53.0	55.0	56.1	54.2	55.7	55.7	56.2	49.9	58.4	58.3	60.1	55.7	60.0	60.5	65.1	64.9	65.9	66.2	66.7	67.7	58.0	52.6		*59.2*	*5.1*	*2.7*	*-5.4*	*-6.5*
	Highest El.	174.2	130.0	50.0	50.5	50.0	56.9	54.0	56.1	64.4	60.7	58.6	61.8	62.0	68.4	60.4	65.2	61.2	62.7	59.6	64.4	64.4	68.0	67.2	67.2	67.6	68.0	69.6	62.5	60.3		*64.0*	*3.3*	*-0.1*	*-2.2*	*-3.7*
Change vs Prior	Mean El.		-68.7	-26.0	0.5	-1.3	3.8	-0.2	0.1	2.0	1.1	-1.9	1.5	0.1	0.5	-6.3	8.5	-0.1	1.8	-4.4	4.3	0.5	4.6	-0.1	0.9	0.3	0.5	0.9	-9.6	-5.4						
	Highest El.		-44.2	-80.0	0.5	-0.5	6.9	-2.9	2.1	8.3	-3.7	-2.1	3.2	0.1	6.4	-8.0	4.8	-4.0	1.5	-3.2	4.8	0.0	3.6	-0.8	0.0	0.4	0.4	1.6	-7.0	-2.2						
HEADSCARP REGION																																				
SP-26	Mean El.				541.9	540.2	538.9	535.8	532.4	527.0	532.6	543.6	543.3	547.8	547.1	549.9	551.9	549.8	550.7	550.6	549.1	550.7	553.1	554.7	553.8	552.9	551.4	551.2	552.5	551.9	Apr-01	*548.4*	*6.9*	*2.0*	*-0.6*	*3.6*
	Highest El.				542.0	540.2	540.0	539.0	534.0	530.0	543.2	544.9	549.6	549.9	550.9	554.7	554.2	550.8	557.9	552.3	550.8	551.4	557.5	556.5	554.4	554.3	552.6	552.2	555.6	552.9	557.9	*551.3*	*6.1*	*-1.8*	*-2.8*	*1.6*
Change vs Prior	Mean El.		0.0	0.0	541.9	-1.6	-1.4	-3.1	-3.3	-5.4	5.6	11.0	-0.3	4.4	-0.7	2.8	2.1	-2.1	0.9	-0.1	-1.5	1.6	2.5	1.5	-0.9	-0.9	-1.5	-0.2	1.4	-0.6						
	Highest El.		0.0	0.0	542.0	-1.8	-0.2	-1.0	-5.0	-4.0	13.2	1.7	4.7	0.3	1.0	3.8	-0.5	-3.4	7.1	-5.6	-1.5	0.6	6.1	-1.0	-2.1	-0.1	-1.7	-0.4	3.4	-2.8						

GROUNDWATER ELEVATION DATA ANALYSIS

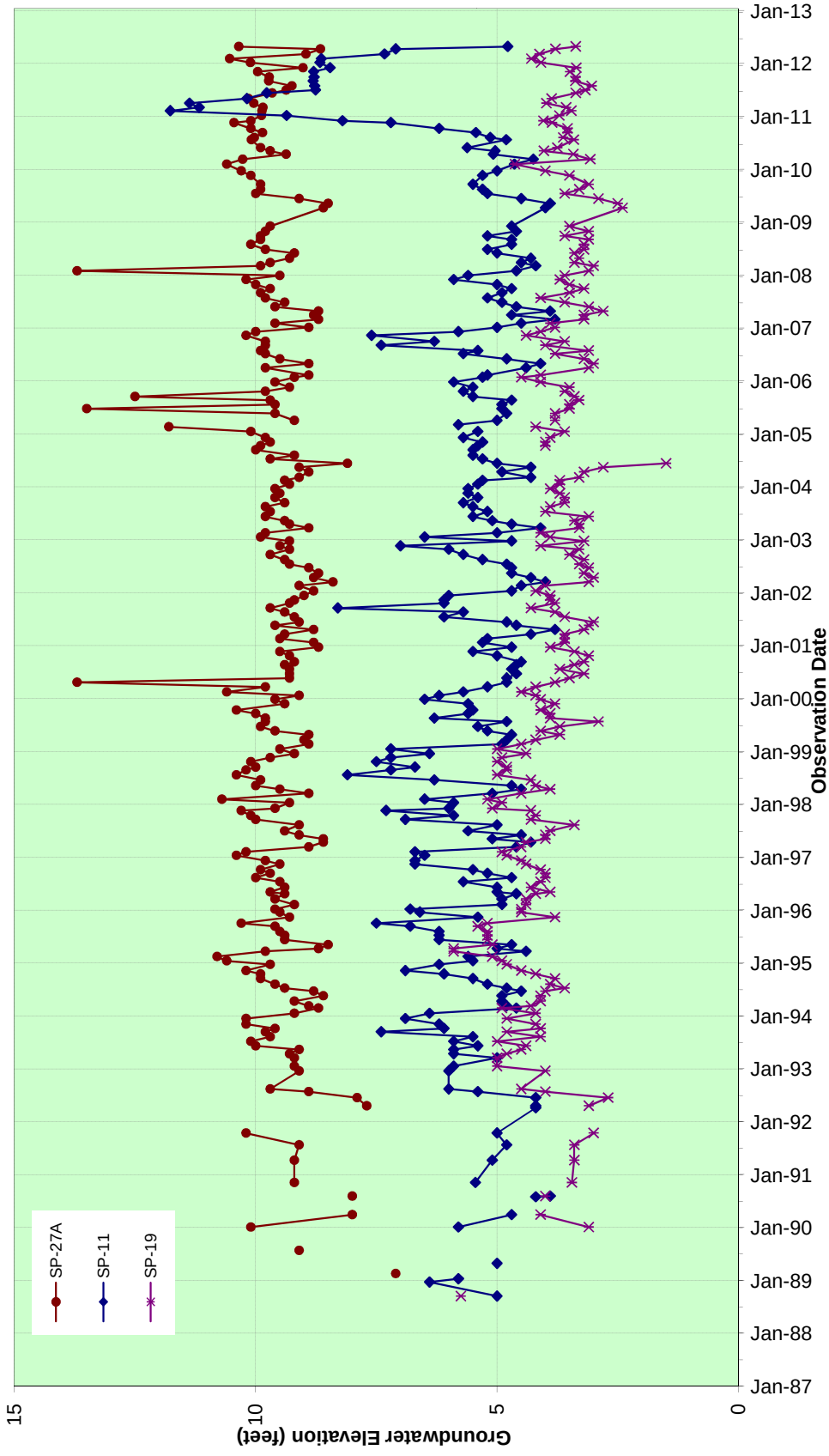
CENTRAL MESA																																				
SP-9A	Mean El.	254.7	232.0	232.0	227.5	236.3	222.2	220.0	233.3	215.1	221.9	226.8	220.8	222.0	222.0	224.6	226.8	226.4	228.0	229.3	229.5	230.0	229.7	229.9	228.3	227.5	227.1	227.7	226.6	230.6	Dec-83	*226.2*	*3.9*	*6.0*	*4.0*	*4.3*
	Highest El.	270.0	232.0	232.0	232.0	236.3	224.0	222.2	235.2	222.9	228.5	228.5	225.5	223.8	223.7	231.1	229.0	226.9	231.0	230.6	232.3	231.5	232.5	231.9	229.7	229.7	228.4	229.2	227.5	238.6	270.0	*229.2*	*3.6*	*7.5*	*11.1*	*9.4*
SP-16	Mean El.	226.5	195.4	174.3	171.9	171.5	161.8	113.0	86.5	95.7				68.2	47.9	48.0	46.5	48.4	53.1	47.9	46.0	46.6	87.0	51.6	50.1	50.1	53.7	107.8	117.4	81.8	Mar-84	*63.8*	*23.5*	*33.9*	*-35.6*	*18.1*
	Highest El.	226.5	214.7	180.3	174.2	177.1	182.5	147.8	89.5	121.0				117.8	61.3	66.5	53.5	78.7	89.7	64.4	46.6	49.2	124.0	57.7	50.9	61.8	79.4	121.3	121.1	120.5	226.5	*82.5*	*30.0*	*54.0*	*-0.6*	*38.0*
SP-16A	Mean El.					181.2	153.3	122.0	108.4	108.3	122.2	125.7	147.9	127.6	113.4	126.0	126.8	149.2	180.8	146.0	105.0	133.0	185.1	182.1	180.1	165.8	173.7	166.3	136.0	106.3	Jan-05	*143.2*	*27.1*	*-19.7*	*-29.6*	*-36.9*
	Highest El.					181.2	180.3	148.8	124.5	124.5	184.5	169.1	186.3	182.3	154.9	185.5	182.4	189.4	184.5	183.9	170.0	183.0	196.2	183.8	182.8	184.4	181.8	183.1	153.7	131.9	196.2	*175.1*	*18.7*	*-53.6*	*-21.8*	*-43.3*
SP-17	Mean El.	406.0	401.8	395.3	399.1	398.3	393.3	392.0	385.1	382.7		385.5	390.1	389.3	388.3	393.6	390.0	385.6	389.1	386.9	387.9	388.6	393.8	393.6	391.9	388.4	386.8	386.1	387.5	385.4	Jan-84	*388.5*	*3.0*	*-8.1*	*-2.1*	*-3.1*
	Highest El.	410.0	403.0	395.3	400.1	400.0	401.0	394.1	386.0	383.2		389.8	404.3	396.5	396.5	408.8	395.5	386.9	399.2	389.1	396.4	392.0	406.5	398.1	401.5	392.5	394.8	397.0	393.0	388.0	410.0	*395.5*	*6.6*	*-20.8*	*-5.0*	*-7.5*
SP-17A	Mean El.						360.1	377.4	376.6	374.5	379.2	379.8	377.8	379.3	377.2	379.1	379.1	375.3	376.6	375.6	374.9	376.0	378.0	379.4	378.4	375.3	374.2	372.8	373.4	374.6	Feb-94	*376.7*	*2.2*	*-4.5*	*1.2*	*-2.1*
	Highest El.						372.4	378.5	377.7	375.7	385.0	389.8	384.4	381.6	380.5	386.7	382.9	376.4	381.1	377.3	376.5	377.2	385.2	383.4	380.7	376.3	376.3	373.7	375.0	376.2	389.8	*380.1*	*4.5*	*-10.5*	*1.2*	*-3.9*
SP-24	Mean El.	195.3	102.1	49.0	49.2		49.0		35.1	38.6	38.5	38.9	37.2	39.0	39.1	40.0	41.6	41.4	41.7	42.3	41.4	43.3	46.3	47.6	46.1	45.3	45.6	47.0	46.7	43.0	Mar-84	*42.4*	*3.3*	*3.0*	*-3.7*	*0.6*
	Highest El.	220.6	170.0	50.0	52.0		52.0		39.6	40.0	38.9	41.0	39.6	39.6	39.8	42.0	43.3	42.2	43.0	43.7	41.8	44.0	51.0	50.2	48.2	46.0	46.0	49.0	47.5	45.1	220.6	*43.9*	*3.7*	*3.1*	*-2.3*	*1.2*
SP-35	Mean El.																92.2	88.3	93.6	97.4	90.5	89.4	90.8	88.2	86.8	85.9	86.0	89.4	88.1	104.1	Jul-11	*90.8*	*4.9*		*16.0*	*13.3*
	Highest El.																101.3	91.0	104.0	102.9	92.7	90.6	95.2	89.0	87.2	86.4	90.2	95.8	94.1	112.9	112.9	*95.2*	*7.5*		*18.7*	*17.6*
SP-36	Mean El.																193.3	193.0	192.8	192.3	191.4	191.0	191.4	191.3	191.0	190.7	190.1	190.4	190.6	201.3	Jun-12	*192.2*	*2.8*		*10.7*	*9.1*
	Highest El.																195.2	193.4	193.0	192.7	191.9	191.2	192.2	191.8	191.3	190.9	190.5	191.4	191.3	253.0	253.0	*196.4*	*16.3*		*61.8*	*56.6*
Area Average	Mean El.	270.6	232.8	212.6	211.9	246.8	223.3	244.9	204.1	202.5	190.4	231.3	234.7	204.2	198.0	201.9	187.0	188.4	194.5	189.7	183.3	187.2	200.3	195.4	194.1	191.1	192.1	198.4	195.8	190.9		*197.7*	*13.0*	*-11.0*	*-4.9*	*-6.8*
	Highest El.	281.8	254.9	214.4	214.6	248.7	235.4	258.3	208.8	211.2	209.2	243.6	248.0	223.6	209.5	220.1	197.9	198.1	203.2	198.1	193.5	194.8	210.4	198.2	196.5	196.0	198.4	205.1	200.4	208.3		*207.8*	*15.0*	*-11.8*	*7.9*	*0.5*
Change vs Prior	Mean El.		-37.8	-20.2	-0.7	34.9	-23.5	21.6	-40.8	-1.7	-12.0	40.9	3.4	-30.5	-6.2	3.9	-14.8	1.4	6.0	-4.7	-6.4	3.9	13.0	-4.8	-1.4	-3.0	1.0	6.3	-2.7	-4.9						
	Highest El.		-26.9	-40.5	0.2	34.1	-13.3	22.9	-49.5	2.5	-2.0	34.4	4.4	-24.4	-14.2	10.7	-22.2	0.2	5.1	-5.1	-4.6	1.3	15.5	-12.1	-1.7	-0.5	2.4	6.6	-4.7	7.9						
WESTERN EXTENSION																																				
SP-20	Mean El.	317.0	254.6	220.5	213.3	194.5	217.5	186.2	198.8	160.3	184.9	175.1	149.8	155.0	162.1	165.5	231.8	196.9	204.6	195.8	186.4	183.1	219.7	228.8	230.9	237.6	221.0	215.9	214.3	202.2	Feb-84	*196.3*	*27.7*	*36.7*	*-12.2*	*5.9*
	Highest El.	350.0	277.0	224.0	216.7	194.5	231.0	214.5	202.4	165.5	233.0	223.3	159.4	158.6	211.6	224.7	290.1	202.4	221.4	247.1	187.6	196.3	248.2	234.7	235.8	245.6	237.3	234.4	226.0	219.0	350.0	*219.1*	*32.2*	*-5.7*	*-7.0*	*-0.2*
SP-21	Mean El.		436.7	407.0		404.0	403.1	402.2	390.5	351.1	353.5	356.0	369.8	368.9	368.7	372.4	374.6	379.5	388.5	387.7	379.4	378.6	390.4	394.0	391.2	388.1	383.9	385.8	386.3	392.3	Apr-94	*378.1*	*12.9*	*19.9*	*6.0*	*14.2*
	Highest El.		450.9	407.0		405.0	407.0	410.4	399.1	358.9	361.2	358.0	393.9	374.3	377.1	396.4	379.3	389.6	401.2	393.0	385.5	381.9	408.9	403.3	396.4	393.2	387.5	392.5	394.7	395.0	450.9	*386.8*	*14.2*	*-1.4*	*0.3*	*8.3*
SP-22	Mean El.		461.1	450.5	451.9	447.5	450.5	451.4	451.0	454.3	457.5	455.3	463.9	462.1	468.9	466.0	468.6	468.8	469.2	470.8	473.0	471.2	471.9	470.2	469.9	469.1	467.9	470.0	470.7	466.9	Dec-96	*467.0*	*5.4*	*0.9*	*-3.8*	*0.0*
	Highest El.		493.5	450.5	454.1	450.9	455.7	451.4	451.3	468.0	471.3	464.5	477.0	469.6	501.5	470.4	470.7	471.0	474.2	471.1	476.6	475.1	475.1	471.0	470.9	470.9	469.7	470.9	472.8	470.6	501.5	*473.0*	*7.1*	*0.2*	*-2.2*	*-2.4*
SP-23	Mean El.					514.2	491.0	499.2	495.6	486.0	496.6	500.8	508.6	511.6	501.5	500.4	486.7	478.0	473.9	476.2	488.9	486.1	496.1	490.7	489.8	494.1	499.8	503.6	495.4	511.1	May-12	*494.1*	*10.7*	*10.7*	*15.6*	*17.0*
	Highest El.					514.2	491.0	536.0	509.1	489.4	513.1	507.3	518.2	549.6	527.6	518.4	502.7	488.7	488.6	504.5	538.1	535.7	534.6	500.5	492.0	502.0	503.1	514.0	506.7	551.1	551.1	*513.6*	*19.3*	*32.7*	*44.4*	*37.5*
Area Average	Mean El.	317.0	384.2	359.3	332.6	390.0	390.5	384.7	384.0	362.9	373.1	371.8	373.0	374.4	375.3	376.1	390.4	380.8	384.0	382.6	381.9	379.8	394.5	395.9	395.5	397.2	393.1	393.9	391.7	393.1		*383.9*	*10.1*	*17.1*	*1.4*	*9.3*
	Highest El.	350.0	407.1	360.5	335.4	391.2	396.2	403.1	390.5	370.5	394.7	388.3	387.1	388.0	404.5	402.5	410.7	387.9	396.4	403.9	397.0	397.3	416.7	402.4	398.8	402.9	399.4	402.9	400.1	408.9		*398.1*	*10.0*	*6.4*	*8.9*	*10.8*
Change vs Prior	Mean El.		67.2	-24.8	-26.7	57.4	0.5	-5.8	-0.8	-21.0	10.2	-1.4	1.2	1.4	0.9	0.8	14.4	-9.6	3.2	-1.4	-0.7	-2.2	14.8	1.4	-0.5	1.7	-4.1	0.7	-2.2	1.4						
	Highest El.		57.1	-46.6	-25.1	55.8	5.0	6.9	-12.6	-20.0	24.2	-6.4	-1.1	0.9	16.4	-2.0	8.2	-22.8	8.4	7.6	-7.0	0.3	19.4	-14.3	-3.6	4.1	-3.5	3.5	-2.9	8.9						
EASTERN MESA																																				
PC-1	Mean El.												148.0	142.4	148.1	139.4	138.4	136.6	137.6	138.4	138.3	139.1	140.2	141.9	139.8	136.2	136.7	138.9	139.1	137.4	Dec-96	*139.8*	*3.4*	*-2.0*	*-1.7*	*-2.4*
	Highest El.												148.2	145.2	190.0	153.5	138.9	137.5	138.8	138.9	139.2	139.6	142.4	142.5	141.5	137.2	138.1	140.4	140.0	140.2	190.0	*144.0*	*12.2*	*-13.3*	*0.2*	*-3.8*
SP-3	Mean El.	125.5	119.8	118.5	121.3	122.0	118.3			117.7		119.7	120.6	121.6	118.7	119.2	119.1	117.9	118.0	117.1	111.4	111.7	109.0	116.2	115.4	110.3	94.0	87.0	87.7	108.6	Nov-83	*112.0*	*10.5*	*-10.6*	*20.9*	*-3.5*
	Highest El.	126.1	120.0	118.5	121.5	125.9	120.0			118.4		120.7	124.6	123.7	120.7	120.6	120.2	118.4	118.4	118.5	114.8	114.9	117.9	117.1	116.9	115.5	100.6	91.7	91.0	113.2	126.1	*114.9*	*9.4*	*-7.4*	*22.2*	*-1.7*
SP-3A	Mean El.		105.0	74.0	79.5	75.7	79.2	80.5	82.5	89.5	86.3	88.6	87.6	99.1	94.1	96.1	96.8	79.2	77.0	75.1	72.3	62.5	67.8	68.7	68.5	67.1	65.7	64.7	64.1	67.0	Apr-85	*78.0*	*12.5*	*-29.0*	*2.9*	*-11.0*
	Highest El.		105.0	74.0	81.4	78.4	80.0	81.0	85.4	99.0	90.5	94.0	100.3	101.2	95.6	103.6	101.4	83.0	82.2	76.1	74.1	72.0	93.5	70.2	69.7	68.2	66.7	66.8	65.1	69.8	105.0	*83.0*	*14.0*	*-33.8*	*4.7*	*-13.2*
SP-33	Mean El.						151.6	149.0	148.3	144.4	118.7	126.5	100.2	93.8	89.2	88.7	87.1	84.4	78.2	75.7	73.8	72.1	71.2	69.5	68.1	66.8	67.9	67.4	66.9	49.6	May-92	*83.8*	*22.8*	*-39.1*	*-17.3*	*-34.2*
	Highest El.						156.7	149.8	148.5	155.5	123.1	134.9	109.0	95.4	91.3	90.9	90.7	89.2	79.9	77.0	74.5	72.9	73.5	70.1	68.7	67.5	70.9	67.9	67.1	67.0	156.7	*87.5*	*24.5*	*-23.9*	*-0.1*	*-20.5*
Area Average	Mean El.	125.5	112.4	96.3	100.4	98.8	116.3	114.8	115.4	117.2	102.5	111.6	114.1	114.2	112.6	110.8	110.3	104.6	102.7	101.6	98.9	96.4	97.1	99.1	98.0	95.1	91.1	89.5	89.4	90.7		*102.3*	*8.9*	*-20.2*	*1.2*	*-11.6*
	Highest El.	126.1	112.5	96.3	101.5	102.2	118.9	115.4	117.0	124.3	106.8	116.5	120.5	116.4	124.4	117.2	112.8	107.0	104.8	102.6	100.7	99.9	106.8	100.0	99.2	97.1	94.1	91.7	90.8	97.5		*106.2*	*10.4*	*-19.6*	*6.7*	*-8.7*
Change vs Prior	Mean El.		-13.1	-16.1	4.1	-1.6	17.5	-1.6	0.6	1.8	-14.7	9.1	2.5	0.1	-1.6	-1.7	-0.5	-5.8	-1.8	-1.2	-2.6	-2.6	0.7	2.0	-1.1	-2.9	-4.0	-1.6	-0.1	1.2						
	Highest El.		-13.6	-16.3	5.2	0.7	16.8	-3.5	1.6	7.3	-17.5	9.7	4.0	-4.1	8.0	-7.2	-4.4	-5.8	-2.2	-2.2	-2.0	-0.8	7.0	-6.9	-0.8	-2.1	-3.0	-2.4	-0.9	6.7						

GROUNDWATER ELEVATION DATA ANALYSIS

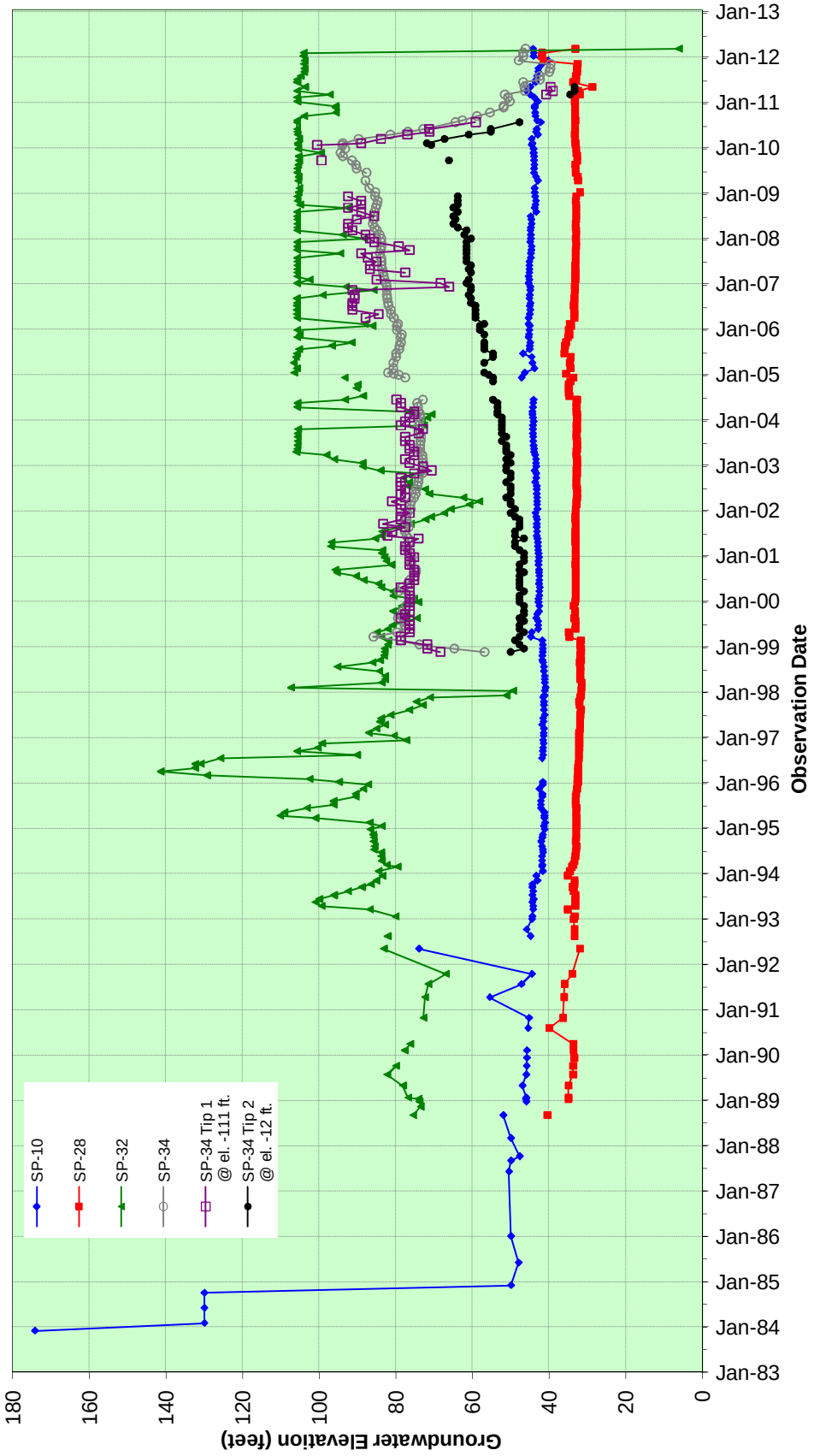
Piezometer Not Installed   No Data Recorded



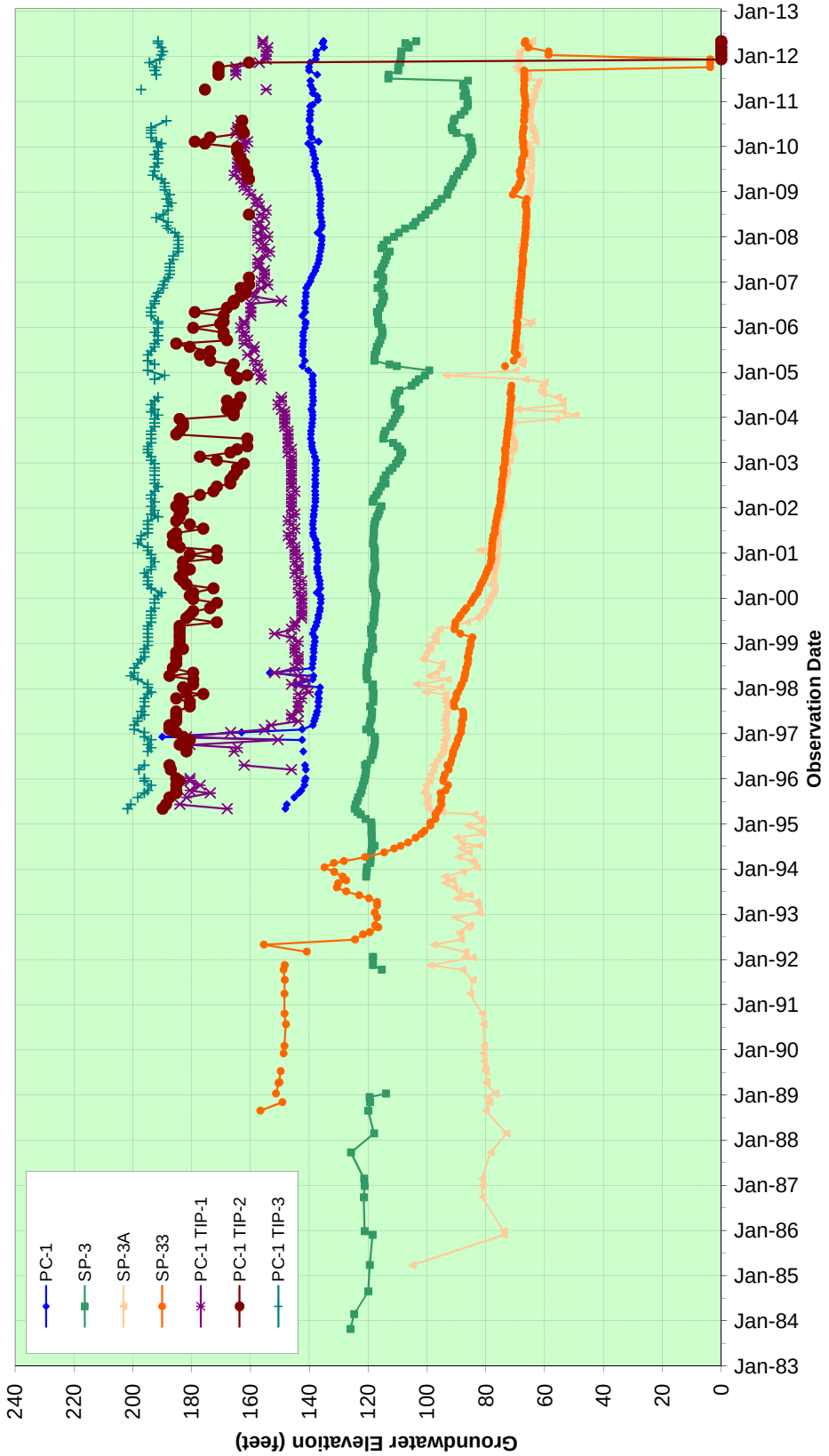
GROUNDWATER ELEVATION DATA
PCH Region
Big Rock Mesa Landslide Assessment District
Malibu, California



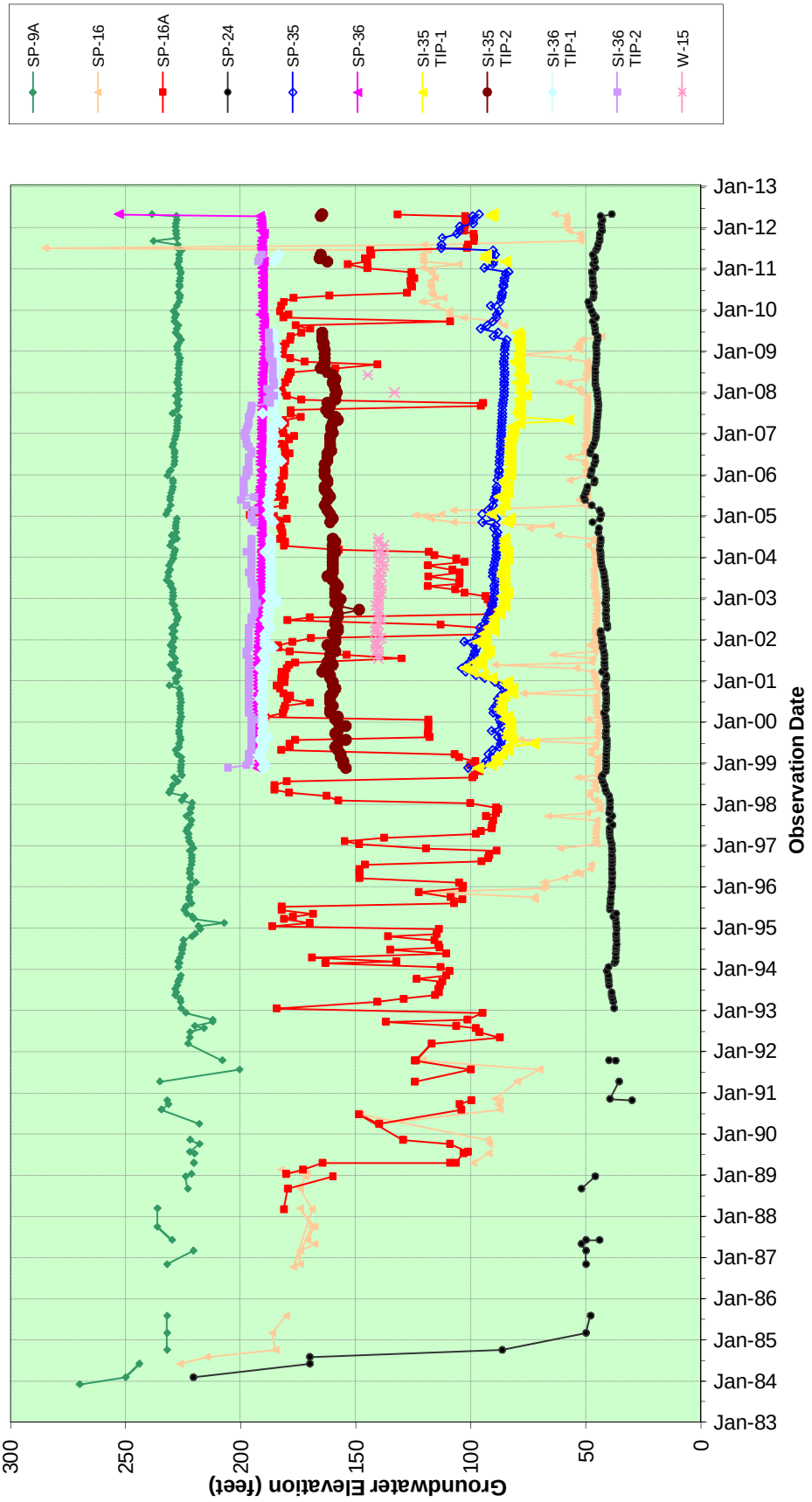
GROUNDWATER ELEVATION DATA
PCH Region
Big Rock Mesa Landslide Assessment District
Malibu, California



GROUNDWATER ELEVATION DATA
Bluff Region
Big Rock Mesa Landslide Assessment District
Malibu, California

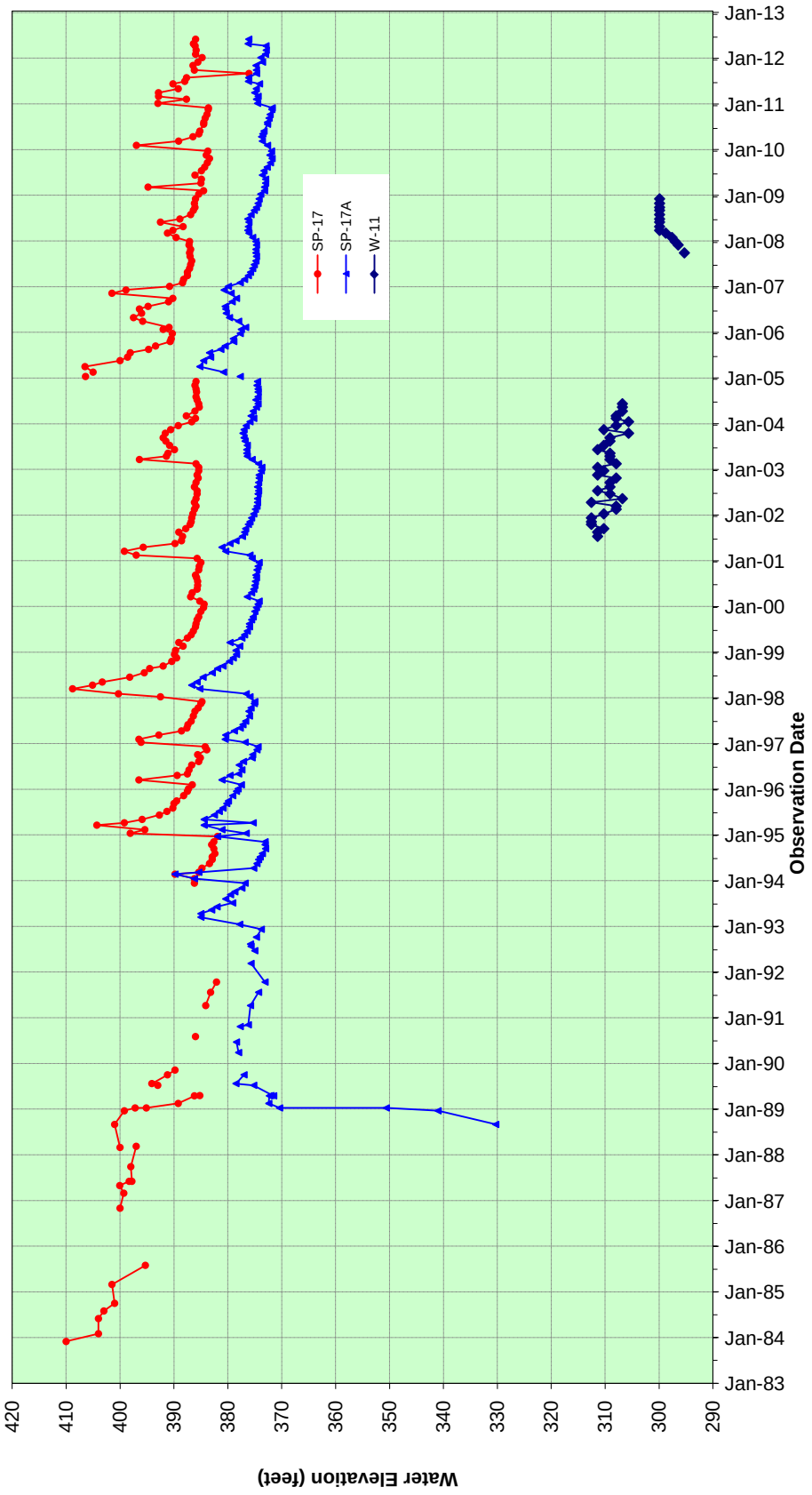


GROUNDWATER ELEVATION DATA
Eastern Mesa Region
Big Rock Mesa Landslide Assessment District
Malibu, California

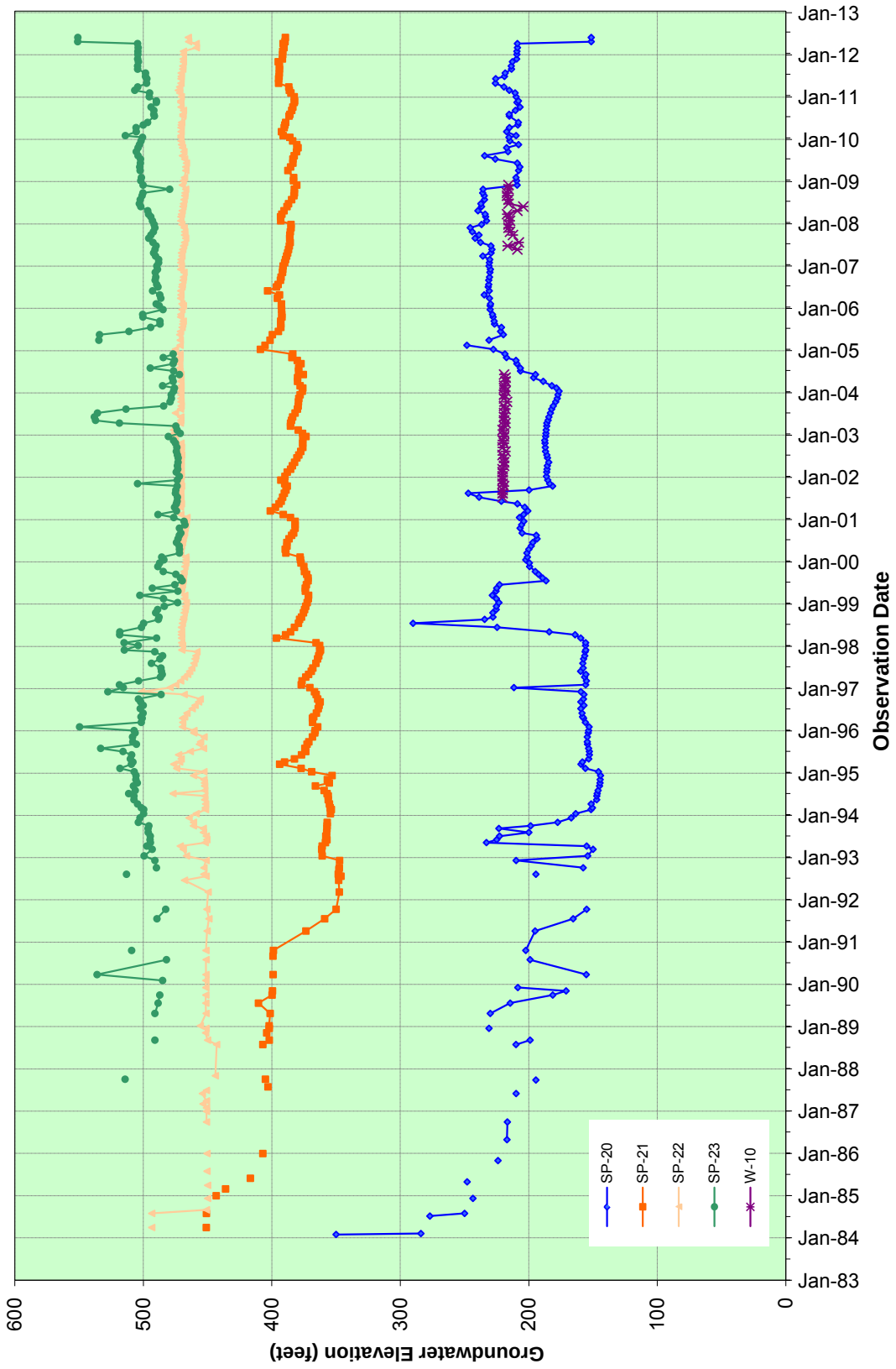


GROUNDWATER ELEVATION DATA
Central Mesa Region
Big Rock Mesa Landslide Assessment District
Malibu, California

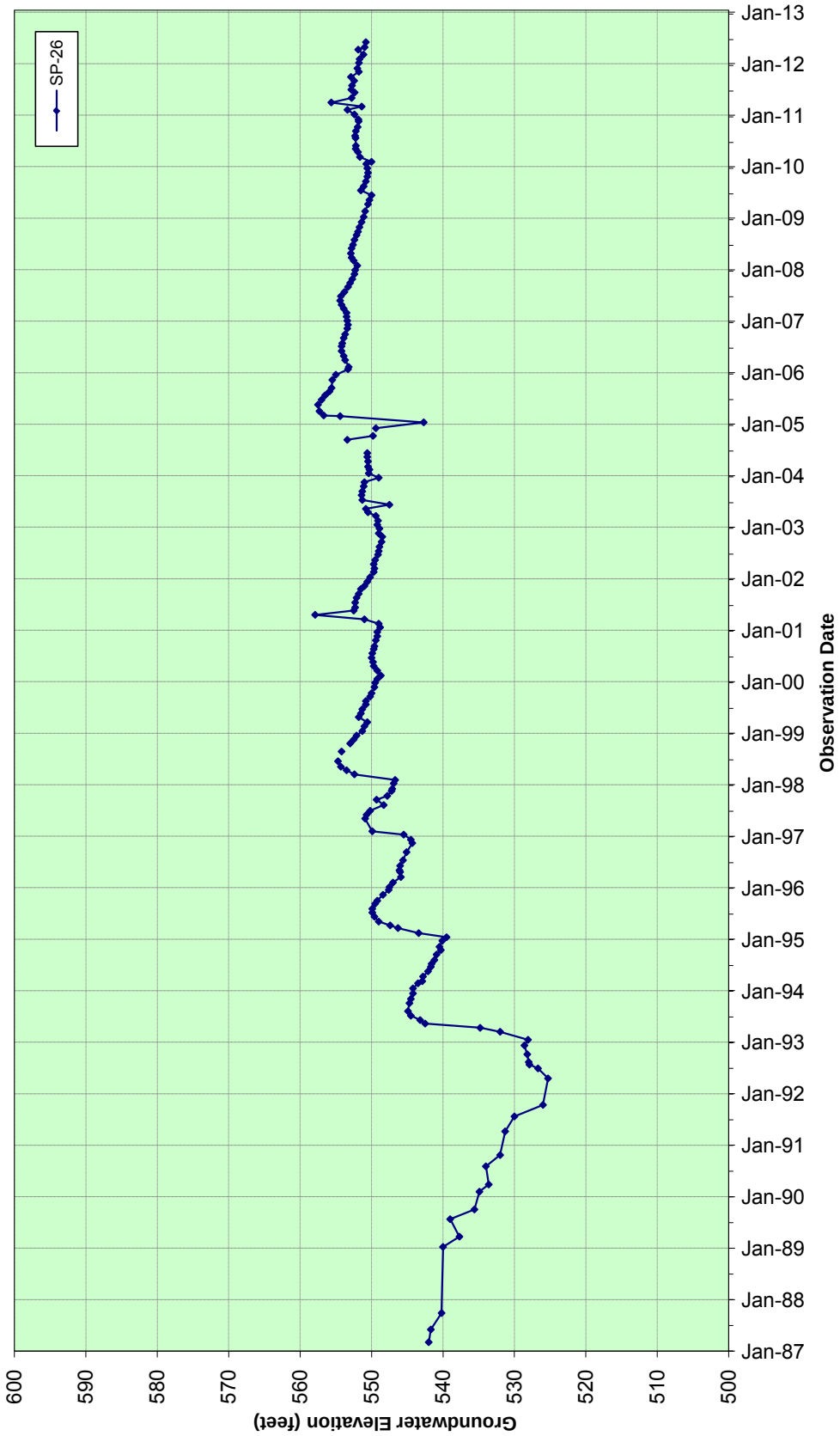
PLATE A-6a



GROUNDWATER ELEVATION DATA
Central Mesa Region
Big Rock Mesa Landslide Assessment District
Malibu, California



GROUNDWATER ELEVATION DATA
Western Extension
Big Rock Mesa Landslide Assessment District
Malibu, California



GROUNDWATER ELEVATION DATA
Headscarp Area
Big Rock Mesa Landslide Assessment District
Malibu, California

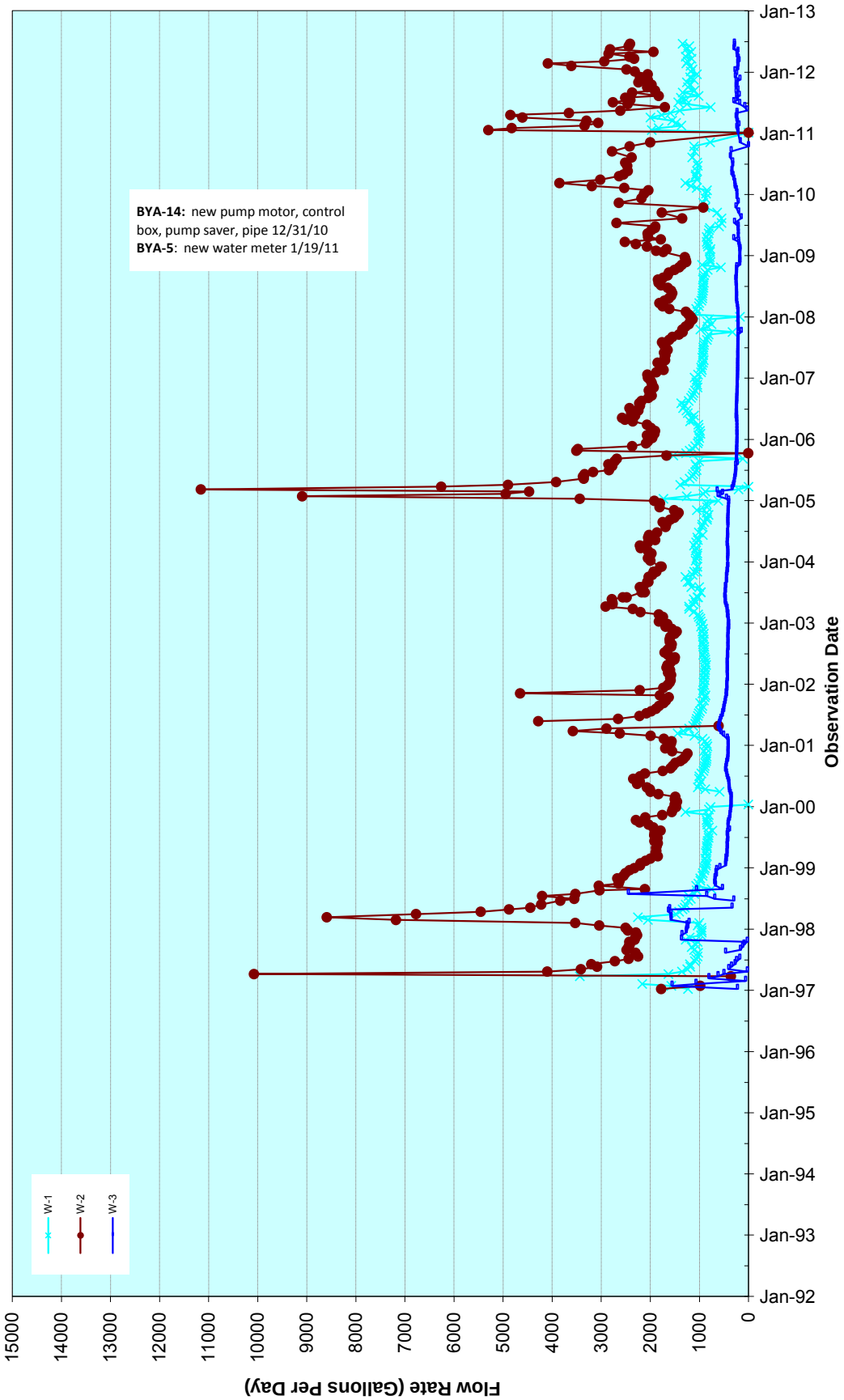
APPENDIX B
DEWATERING WELL DATA

Big Rock Mesa: Dewatering Well Information								
Well I.D.	TOP ELEV. (ft.)	BOTTOM ELEV. (ft.)	PUMP ELEV. (ft.)	PUMP SIZE (HP)	2011-12 PUMPING RATE (GPD)	% of TOTAL PRODUCTION	Rank	COMMENT
W-1	210.5	-30	14.5	1.5	1,218	2%	16	
W-2	219	41	44	1.5	2,461	4%	9	
W-3	243.5	65.5	70.5	3/4	2,339	4%	10	
W-4*	248	-10	N/A	N/A	0	0%	24	Casing Perforations closed due to siltation
W-5*	280	252	N/A	N/A	0	0%	24	Capped 4/4/84
W-6*	174	80	N/A	N/A	0	0%	24	Static water level at bottom of casing
W-7*	257	171	N/A	N/A	0	0%	24	Static water level at bottom of casing
W-8	287	93	98	1	6,642	10%	3	
W-9*	282	87	N/A	N/A	0	0%	24	Static water level at bottom of casing
W-10*	432	192	194	3/4	0	0%	24	Static water level
W-11*	507	285	292	3/4	0	0%	24	
W-12*	375	195	N/A	N/A	0	0%	24	Casing sheared at static water level
W-13	361	184	193	1	1,376	2%	15	
W-14*	283	131	N/A	N/A	0	0%	24	Static water level at bottom of casing
W-15*	295	121	130	3/4	0	0%	24	Static water level at bottom of casing
W-16	325	107	113	3/4	6,207	10%	4	
W-17	270	41	50	3/4	2,562	4%	8	
W-18	750	179	225	3	5,858	9%	5	
BYA-1	281	-162	-128	3	1,666	3%	12	
BYA-2	665	215	242	1.5	704	1%	19	
BYA-3	510	-40	29	3	1,796	3%	11	
BYA-4	372	-68	-28	1.5	3,811	6%	7	
BYA-5	189	-231	-211	1.5	438	1%	22	
BYA-6	220	-280	-275	0.75	523	1%	21	
BYA-7	280	-120	-115	0.75	8,586	13%	1	
BYA-9	295	-105	-100	7.5(5)	4,438	7%	6	
BYA-10	510	210	215	1	8,343	13%	2	
BYA-11	275	-125	-120	0.75	1,585	2%	13	
BYA-12	207	-140	-137	0.5	172	0%	23	Installed 4/99
BYA-13	329	-14	-18	0.5	1,135	2%	17	Installed 4/99
BYA-14	340	38	40	0.5	967	1%	18	Installed 4/99
BYA-15*					0	0%	24	
FW-1					674	1%	20	Installed 5/08
FW-2	270	-130			1,393	2%	14	Installed 2/10

Note:
* Not functioning or no longer monitored dewatering well

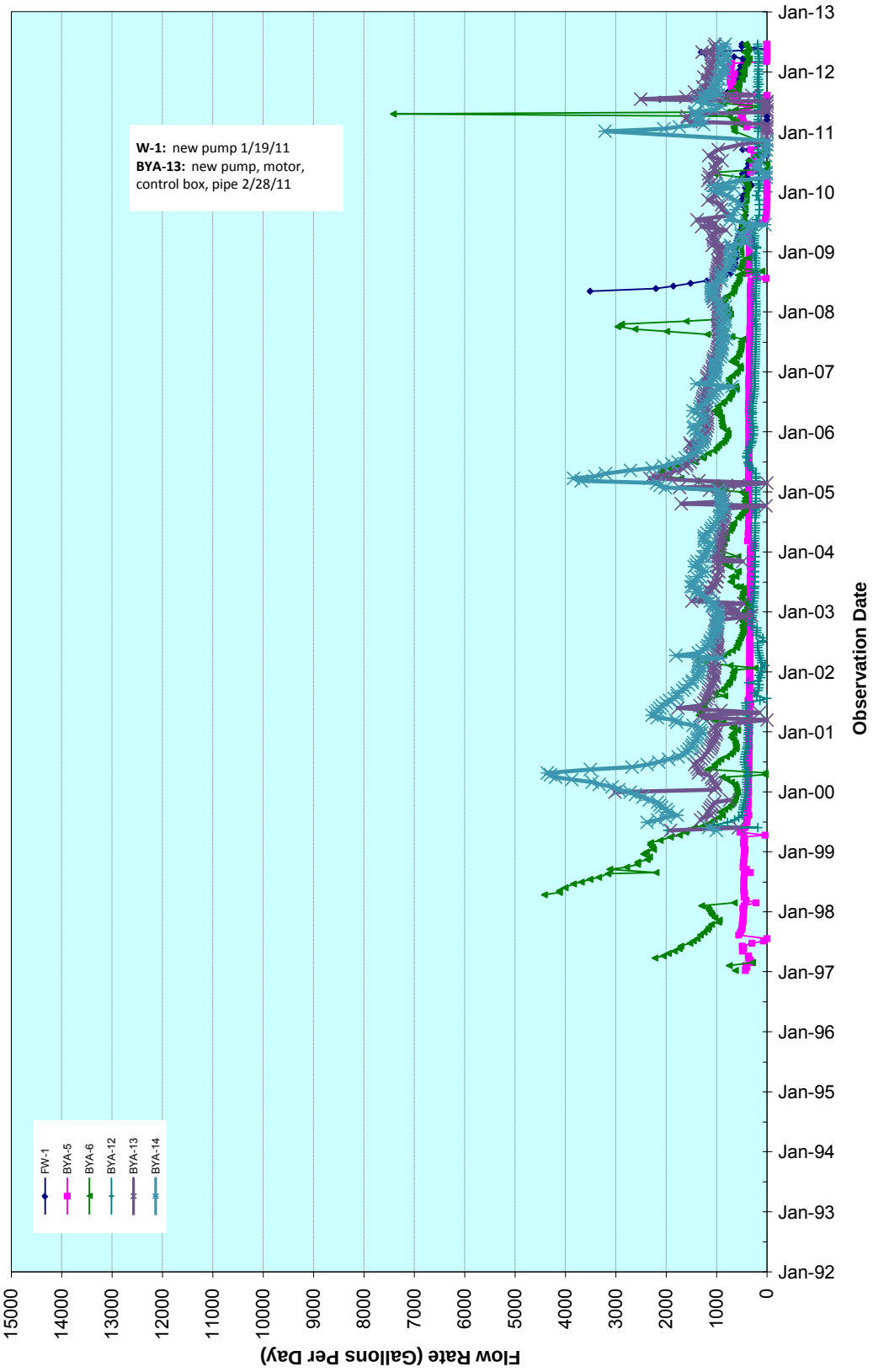
DEWATERING WELL INFORMATION
Big Rock Mesa Landslide Assessment District
Malibu, California

PLATE B-1

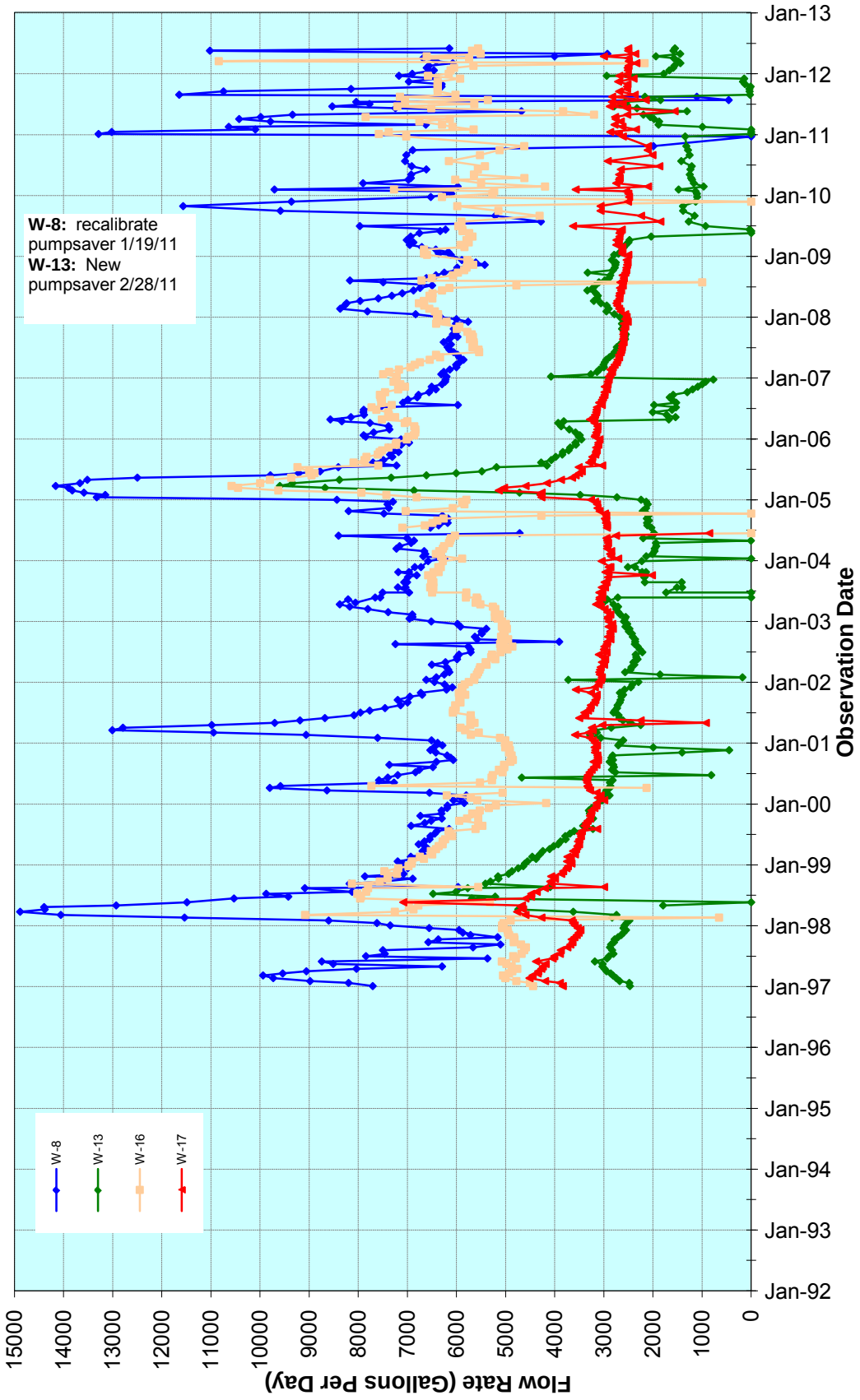


DISCHARGE RATE FOR DEWATERING WELLS
Eastern Mesa Region
Big Rock Mesa Landslide Assessment District
Malibu, California

PLATE B-2a

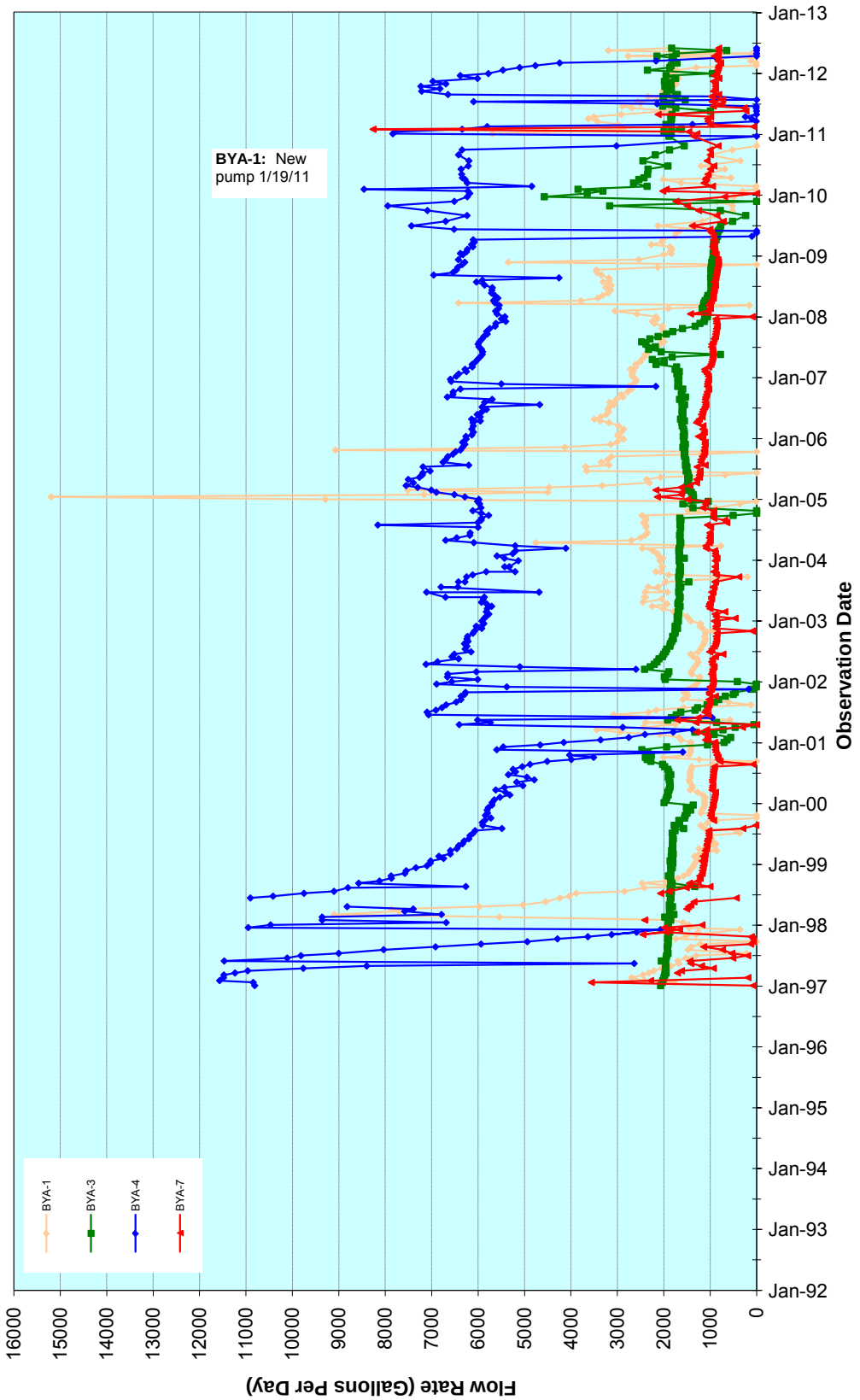


DISCHARGE RATE FOR DEWATERING WELLS
Eastern Mesa Region
Big Rock Mesa Landslide Assessment District
Malibu, California



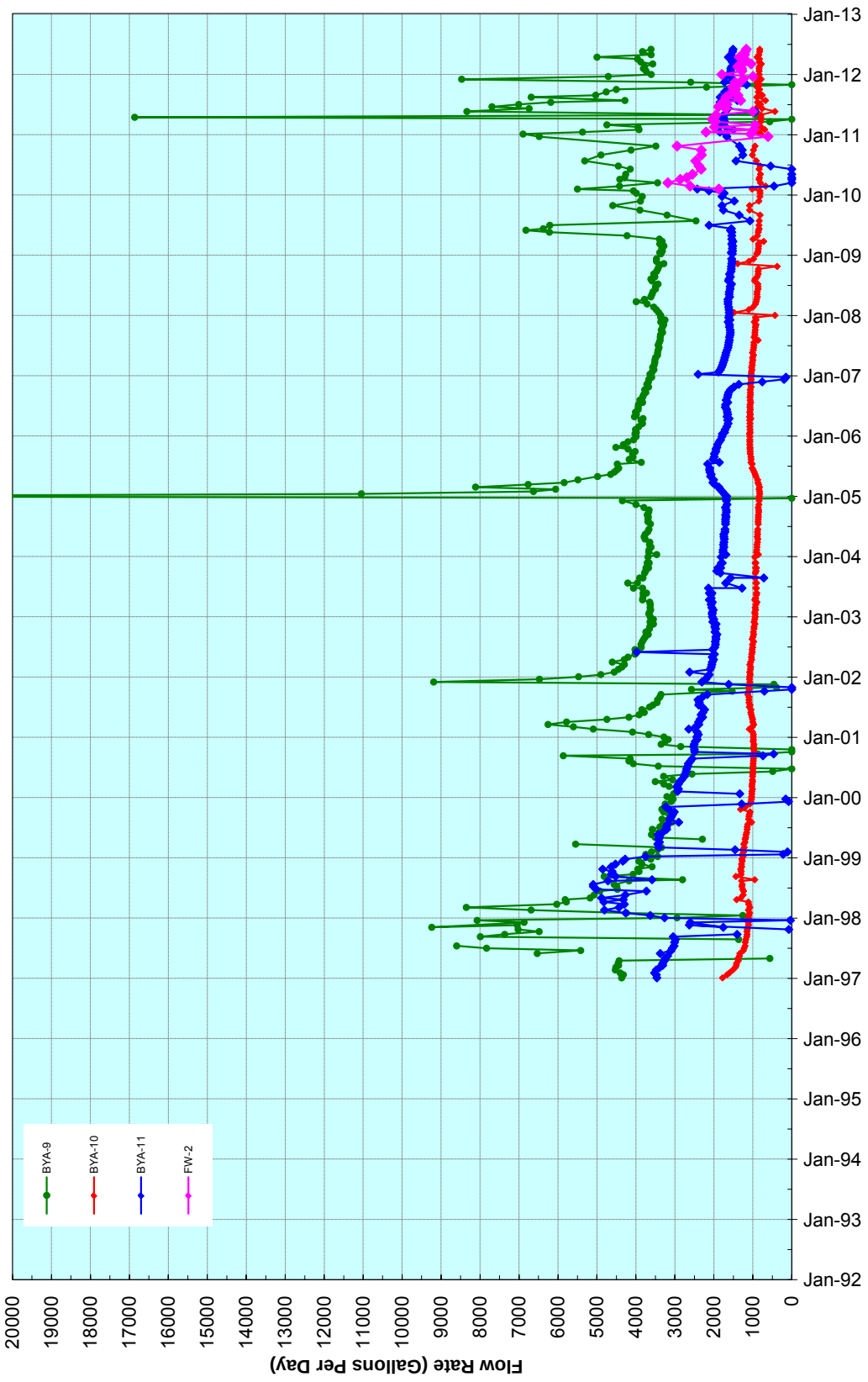
DISCHARGE RATE FOR DEWATERING WELLS
Central Mesa Region
Big Rock Mesa Landslide Assessment District
Malibu, California

PLATE B-3a



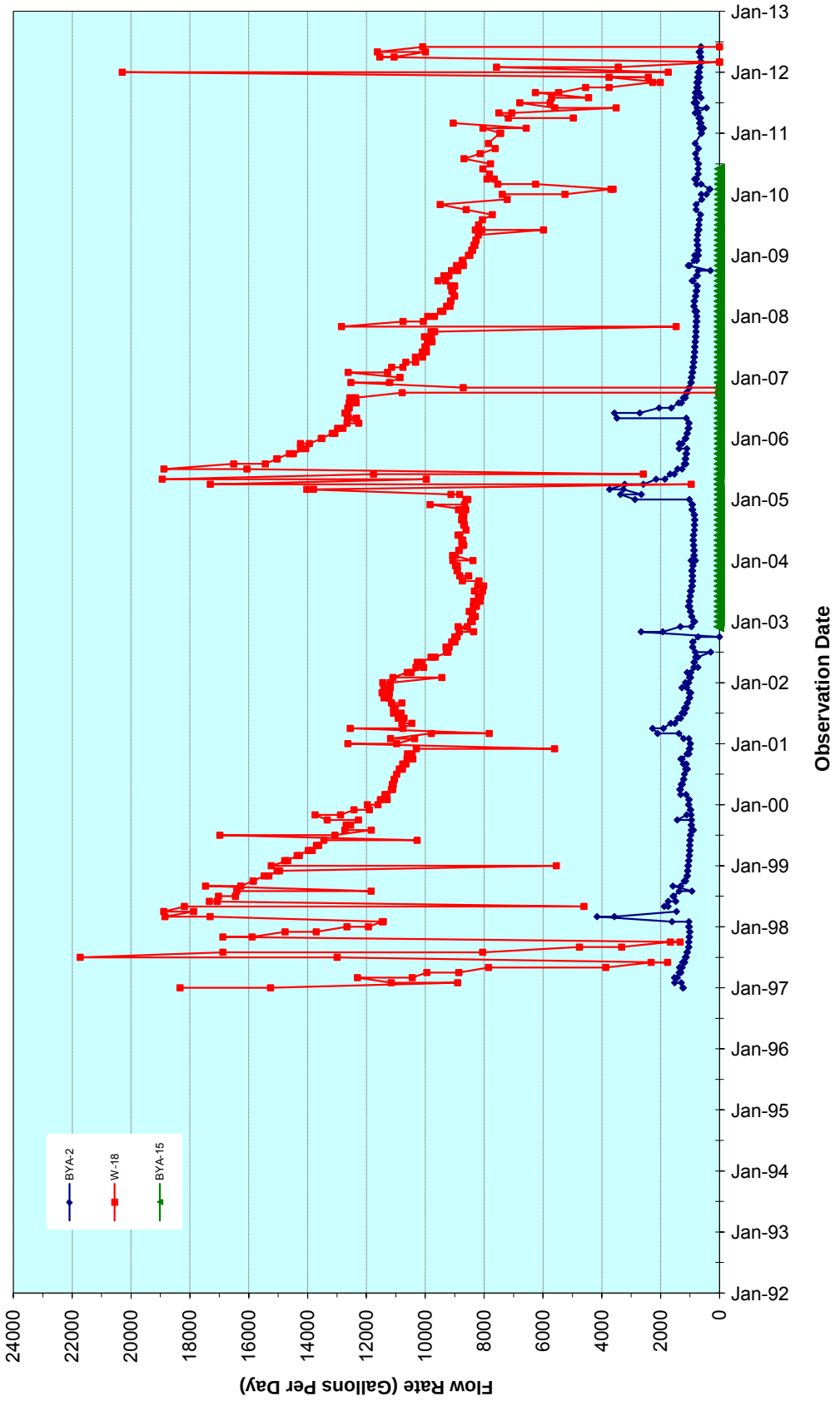
DISCHARGE RATE FOR DEWATERING WELLS
Central Mesa Region
Big Rock Mesa Landslide Assessment District
Malibu, California

PLATE B-3b



DISCHARGE RATE FOR DEWATERING WELLS
Central Mesa Region
Big Rock Mesa Landslide Assessment District
Malibu, California

PLATE B-3c



DISCHARGE RATE FOR DEWATERING WELLS
Western Extension
Big Rock Mesa Landslide Assessment District
Malibu, California

APPENDIX C
HYDRAUGER DATA

Big Rock Mesa: Hydrauger Data							
HYDRAUGER ID	INSTALLED LENGTH (ft.)	OPEN LENGTH (ft.)**	Orientation/ Slope	2011-2012 Average Flow (GPD)	% OF TOTAL PRODUCTION	Rank	INSTALLED BY
H-1	700	210**	S115W / 3	57	0.3%	21	MT
H-2*	Unknown	0	-	0	--	32	MT
H-3a*	Unknown	0	-	0	--	32	MT
H-3b*	Unknown	0	-	0	--	32	MT
H-3c*	Unknown	0	-	0	--	32	MT
H-4	680	115**	-	5	0.0%	26	MT
H-5a*	Unknown	0	-	0	--	32	MT
H-5b*	Unknown	0	-	0	--	32	MT
H-6a*	100	96	-	0	--	32	CT
H-6b*	100	96	-	0	--	32	CT
H-7a*	100	100	-	0	--	32	CT
H-7b*	100	96	-	0	--	32	CT
H-7c*	50	0	-	0	--	32	CT
H-8*	Unknown	0	-	0	--	32	CT
HD-1*	350	340**	-	0	--	32	D.E.
HD-2a*	70	33	-	0	--	32	D.E.
HD-2b*	Unknown	0	-	0	--	32	D.E.
HD-2c*	460	0	-	0	--	32	D.E.
HD-3	560	90**	-	0	--	32	D.E.
HD-4	760	10	-	820	4.7%	10	D.E.
HD-5	890	530**	-	1078	6.2%	6	D.E.
HD-6	980	490**	-	839	4.8%	8	D.E.
HD-7	1160	420**	-	214	1.2%	17	D.E.
HD-8*	530	170**	-	125	0.7%	18	D.E.
HD-9	205	205**	-	850	4.9%	7	D.E.
HD-10	990	170**	-	357	2.1%	14	D.E.
HD-11	540	540**	-	74	0.4%	20	D.E.
HD-12	690	385**	-	1892	10.9%	3	D.E.
HD-13*	650	14	-	0	--	32	D.E.
HD-14*	130	130**	-	0	--	32	D.E.
HD-15	200	200**	-	615	3.5%	12	D.E.
HD-16	575	575**	-	0	0.0%	31	D.E.
HD-17*	750	176	-	0	--	32	D.E.
HD-18*	870	285	-	0	0.0%	30	D.E.
HD-19*	1000	182	-	0	--	32	D.E.
HD-20*	1000	446	-	0	--	32	D.E.
HD-21*	1560	147	-	0	--	32	D.E.
HD-22	568	540**	-	1215	7.0%	4	D.E.
HD-23	1280	260**	-	3063	17.6%	1	D.E.
HD-24	1030	580**	-	353	2.0%	15	D.E.
HD-25	1005	360**	-	119	0.7%	19	D.E.
HD-26	1200	410**	S37W / 1	484	2.8%	13	D.E.
HD-27*	700	327	-	0	--	32	D.E.
HD-28	1420	595**	-	23	0.1%	24	D.E.
HD-29	1150	450**	-	53	0.3%	22	D.E.
HD-30	1040	10**	S13W / 7	2221	12.7%	2	D.E.
HD-31*	140	113	-	0	--	32	D.E.
HD-32	835	700**	-	0	--	32	D.E.
HD-33	340	340	S23W / 5	20	0.1%	25	BYA
HD-34	150	150	S40W / 10	30	0.2%	23	BYA
HD-35*	40	40	-	0	--	32	BYA
HD-36*	150	150	-	0	--	32	BYA
HD-37*	430	50	-	0	--	32	BYA
HD-38A*	140	140	S23W / 5	0	--	32	BYA
HD-38B*	140	140	S18W / 6	0	--	32	BYA
HD-39	400	400	S15E / 5	0	--	32	BYA
HD-40*	595	595	S25W / 6	0	--	32	BYA
HD-41	500	500	S18E / 3	326	1.9%	16	BYA
BYA-6a	350	20**	-	0	--	32	BYA
BYA-6b	60	60	-	4	0.0%	27	BYA
BYA-7	400	375**	-	1	0.0%	29	BYA
BYA-H8	500	345**	-	2	0.0%	28	BYA
BYA-H9*	550	550**	-	0	--	32	BYA
BYA-H10	500	10**	-	828	4.7%	9	BYA
BYA-H11*	450	400**	S7E / 3	0	--	32	BYA
HD-42	700	700		1112	6.4%	5	FWI
HD-43	700	700		656	3.8%	11	FWI

** Not functioning or no longer monitored hydrauger*

*** Open Length is Measured on 10-1997 by BYA*

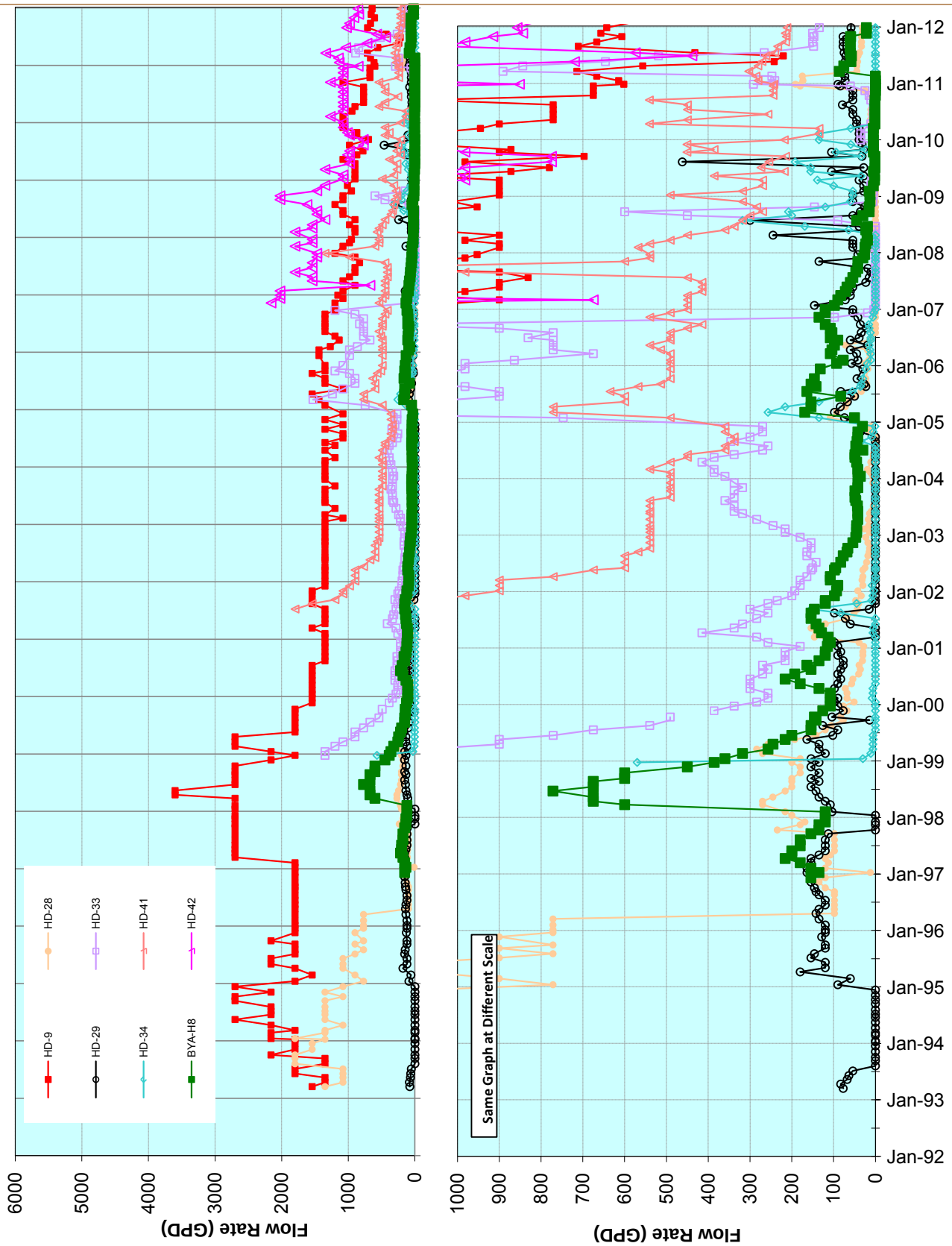
Installed by: MT = Moore & Taber; CT = Caltrans; D.E. = D.A. Evans; BYA = Bing Yen & Associates; FWI = Fugro West, Inc.

SUMMARY OF HYDRAUGERS

Big Rock Mesa Landslide Assessment District

Malibu, California

PLATE C-1



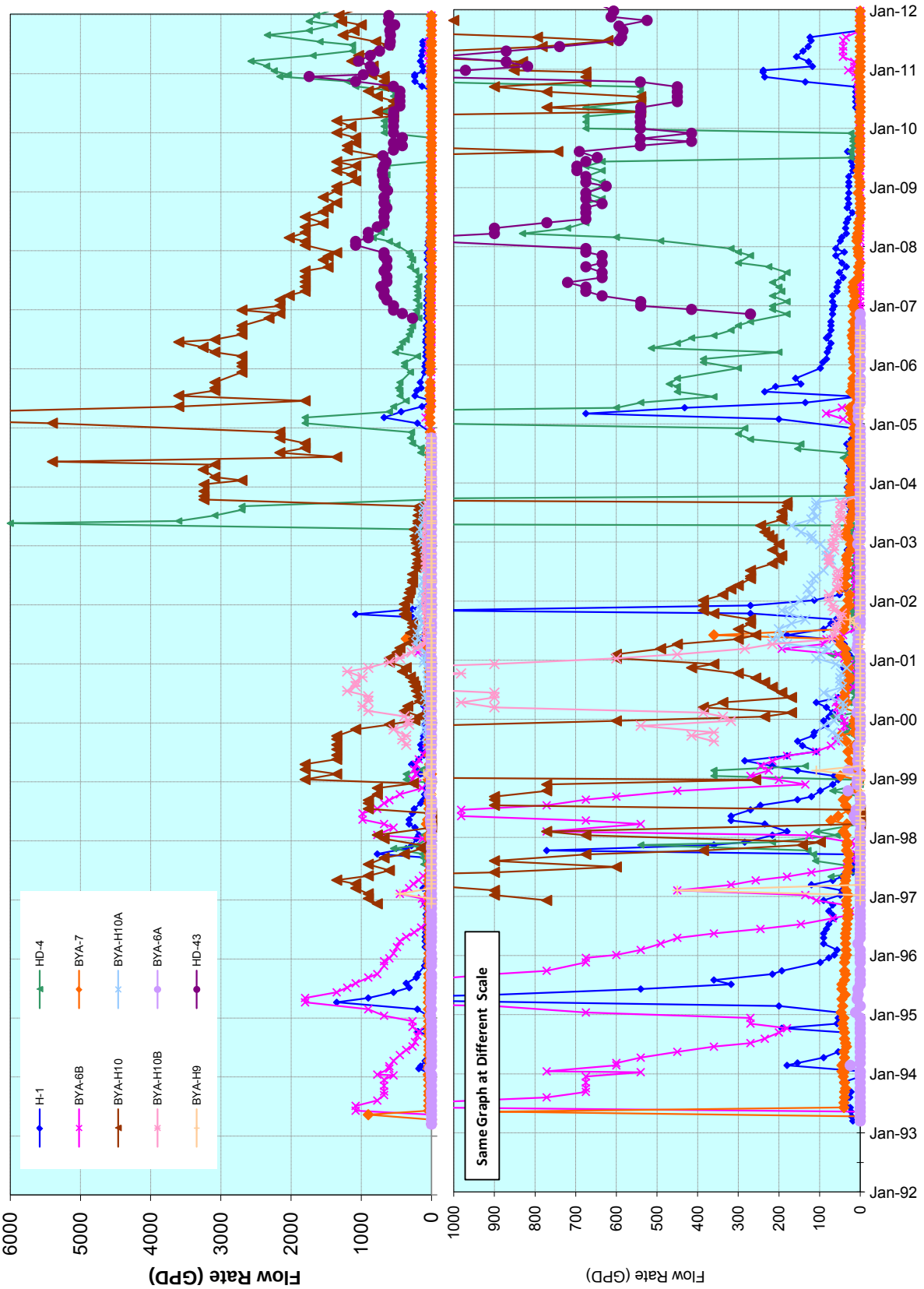
DISCHARGE RATE FOR HYDRAUGERS

Eastern Mesa Region

Big Rock Mesa Landslide Assessment District

Malibu, California

PLATE C-2a



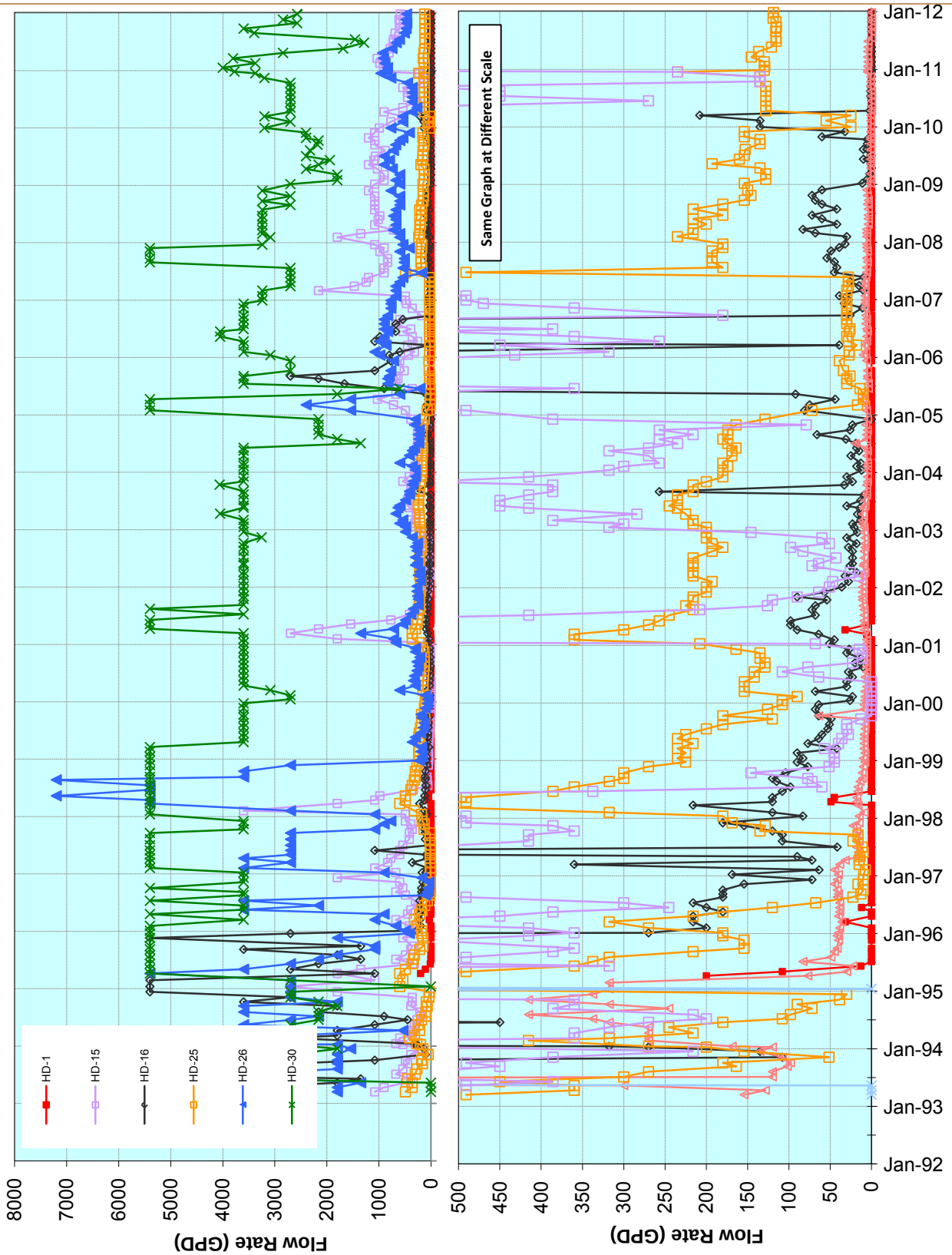
DISCHARGE RATE FOR HYDRAUGERS

Eastern Mesa Region

Big Rock Mesa Landslide Assessment District

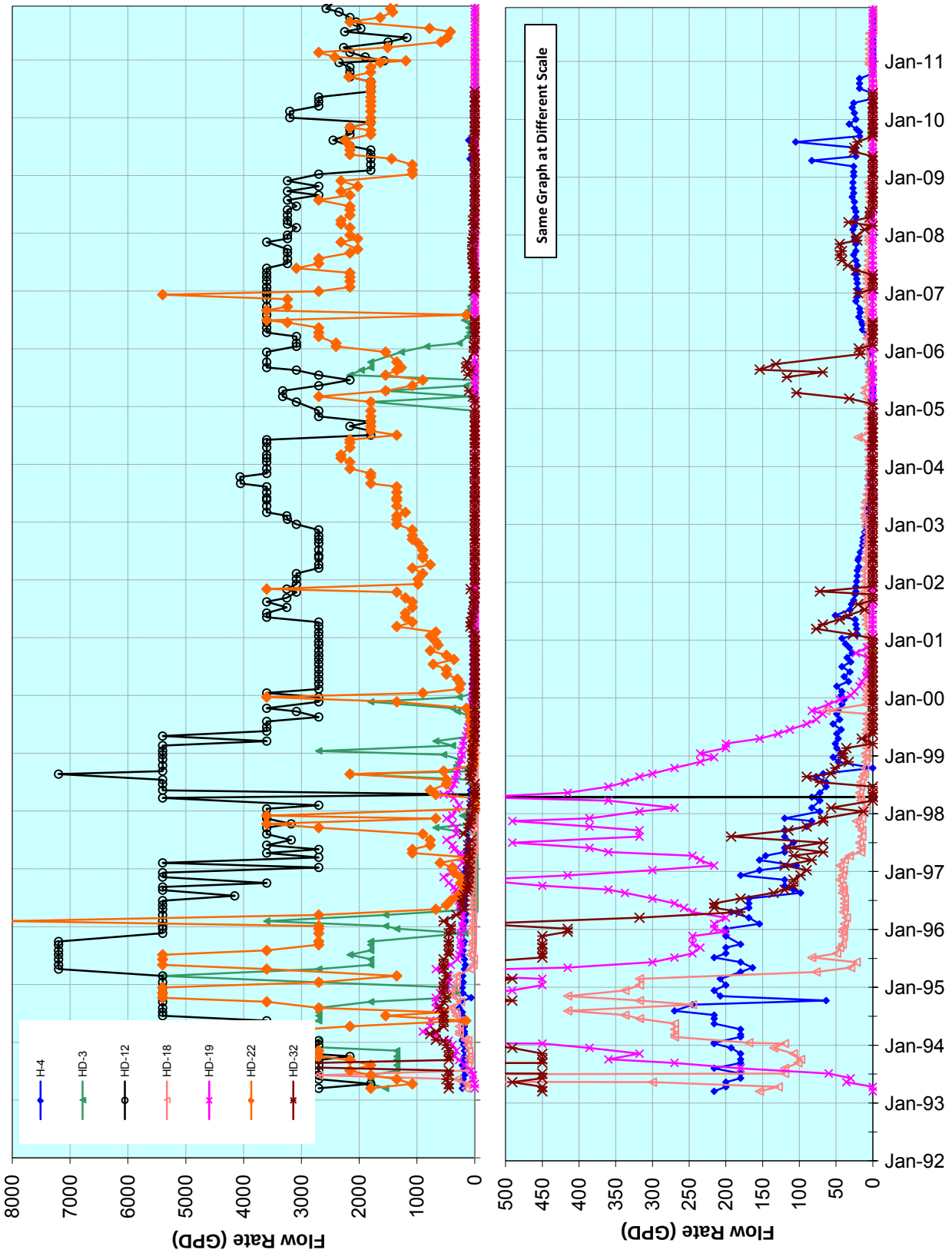
Malibu, California

PLATE C-2b



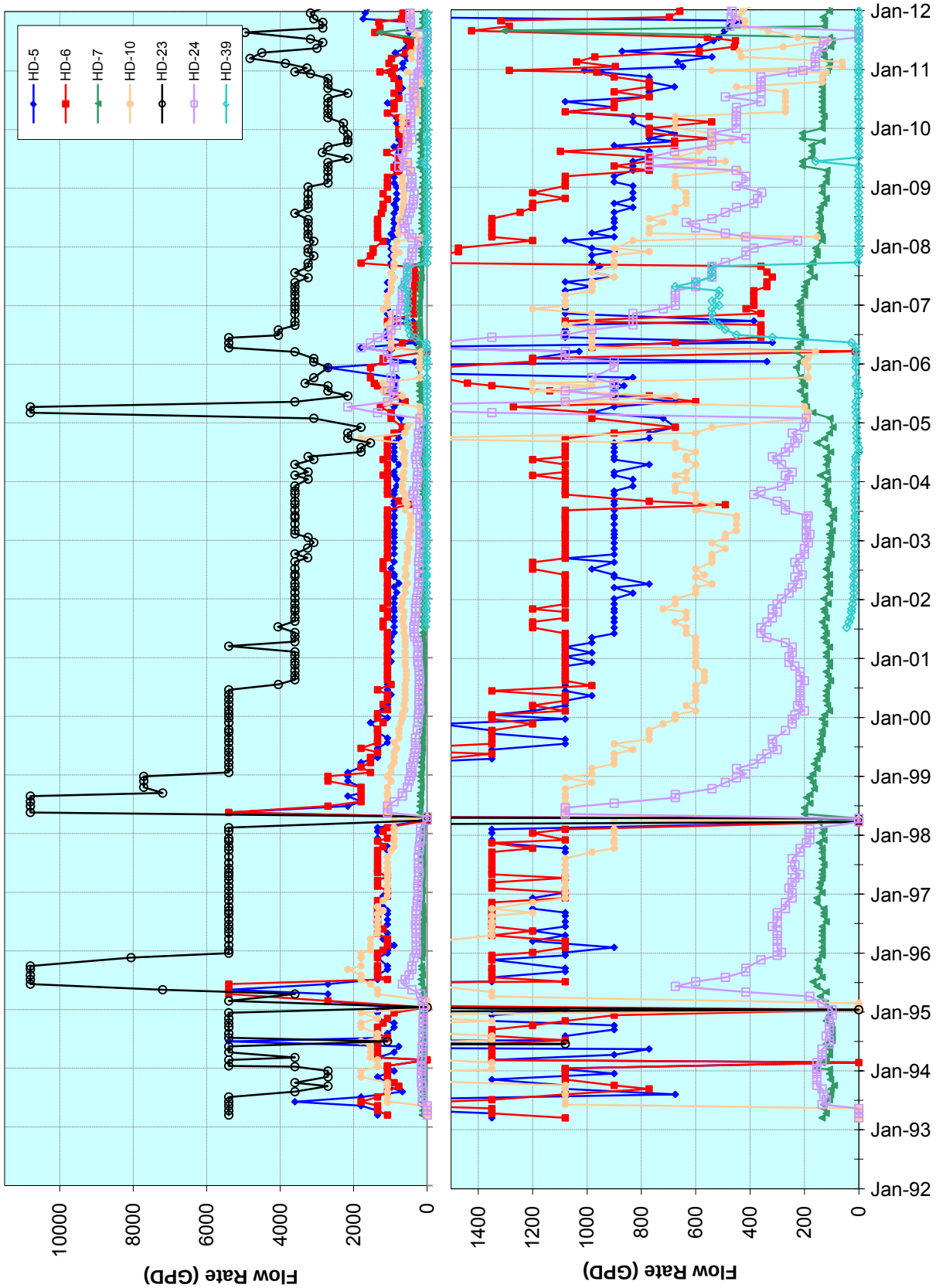
DISCHARGE RATE FOR HYDRAUGERS
Central Mesa Region
Big Rock Mesa Landslide Assessment District
Malibu, California

PLATE C-3a



DISCHARGE RATE FOR HYDRAUGERS
Central Mesa Region
Big Rock Mesa Landslide Assessment District
Malibu, California

PLATE C-3b



DISCHARGE RATE FOR HYDRAUGERS

Western Extension

Big Rock Mesa Landslide Assessment District

Malibu, California

PLATE C-4

APPENDIX D
SLOPE INCLINOMETER PLOT/DATA

Big Rock Mesa: Slope Inclinometer Interpretation Summary

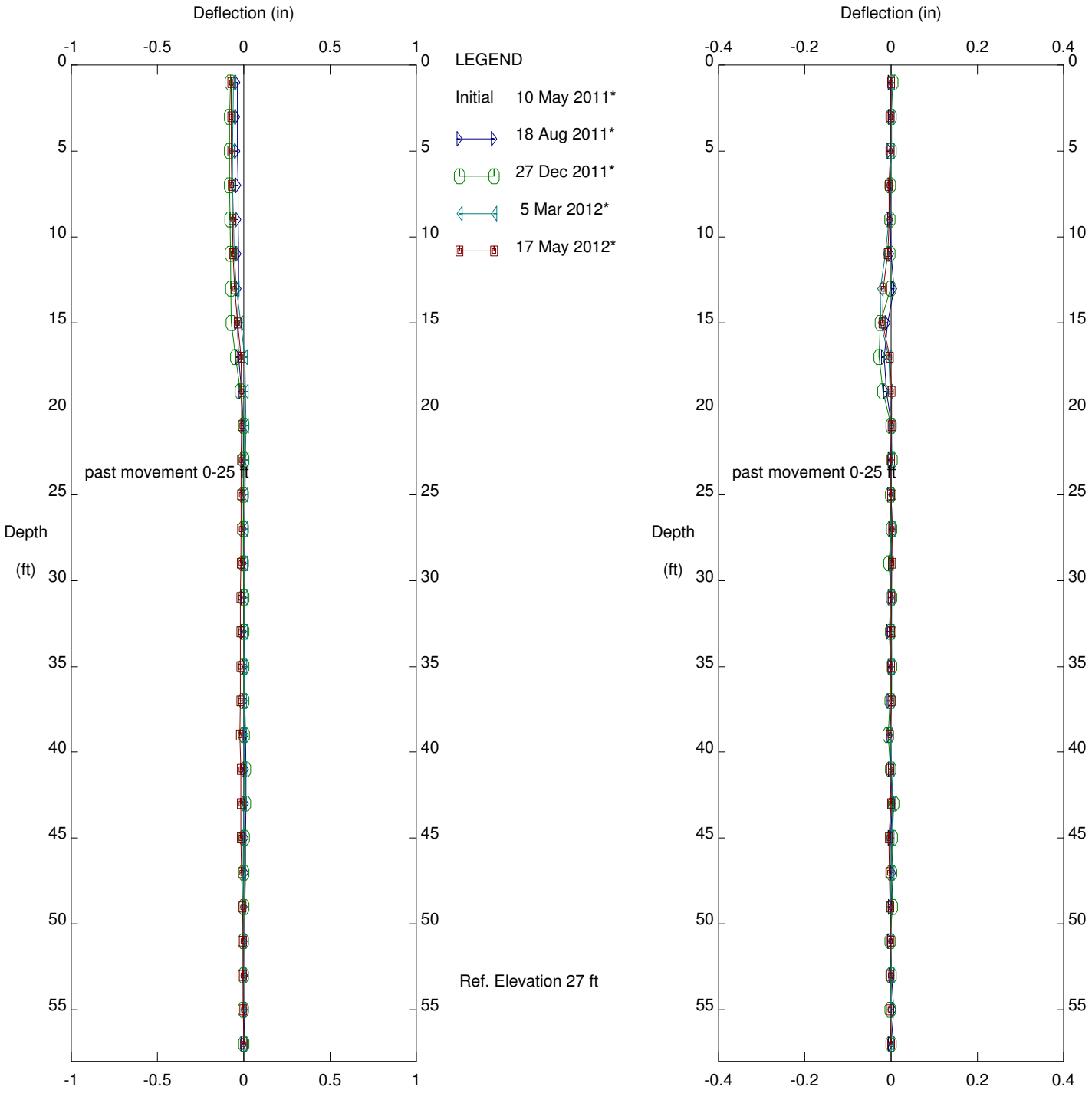
	PCH																		BLUFF			EAST						CENTRAL										WESTERN				HEAD	
	SP-1	SP-11	SP-12	SP-14	SP-15	SP-19	SP-27A	SP-29	SP-30	SP-2	SP-5	SP-5A	SP-6	SP-7	SP-8	SP-8A	SP-31	SP-37	SP-10	SP-28	SP-32	PC-1	SP-3	SP-3A	SP-33	BYA-5A	SP-18	SP-9A	SP-16A	SP-17	SP-17A	SP-24	SP-34	SP-35	SP-36	SP-4	SP-16	SP-20	SP-21	SP-22	SP-23	SP-26	SP-38
Installation Details																																											
Surface Elev.	NI	27	26	25	20	25	29	27	29	NI	NI	NI	NI	NI	NI	NI	NI	NI	295	270	233	250	212	203	318	NI	NI	365	285	540	540	370	270	345	380	NI	285	430	660	780	860	745	NI
Original Depth (ft)	43	59	95	32	88	95	100	140	155	32	98	146	102	Unknown	Unknown	106	140	336	330	365	360	160	240	295	375	300	78	378	390	192	325	390	360	360	200	245	380	330	380	335	390	350	Unknown
Measured Depth (ft)	NI	56	38	30	80	82	92	138	126	NI	NI	146	NI	NI	NI	106	NI	NI	332	250	350	158	132	244	374	186	NI	298	392	190	238	384	380	394	254	96	240	322	280	330	396	342	NI
Casing Diameter	NI	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	NI	NI	2.75	NI	NI	NI	2.75	NI	NI	2.75	2.75	2.75	2.75	2.75	2.75	2.75	NI	NI	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	NI	NI	3.5	2.75	2.75	3.5	3.5	NI
Casing Type		SI/cc	Alum/cc	SI/cc	Alum/cc	Alum/cc	Alum/cc	SI	SI										Alum/cc	Alum	Alum/cc/ mod	SI/1.5"	Alum/cc	Alum/cc	Alum/cc/ mod			Alum	Alum/cc	SI/cc	SI	Alum	SI	SI	SI			Alum/3.5 "/cc	Alum/cc	Alum	Alum/3.5 "	Alum/3.5 "	
Perforated interval	NI	-31 to -26	-14 to -9	-5 to 0	-62 to -57	-57 to -52	-65 to -60	-111 to -106	-99 to -94	NI	NI	bottom	NI	NI	NI	bottom	NI	NI	-37 to -32	-88 to -83	-121 to -116	92 to 97	80 to 85	-43 to -38	-56 to -51	NI	NI	65 to 70	-107 to -102	348 to 353	302 to 307	NI	-112 to -107	-51 to -46	126 to 131	NI	45 to 50	104 to 204	380 to 385	448 to 453	462 to 562	NI	NI
Backfill	NI	Sand	NI	NI	NI	NI	NI	NI	NI	NI	NI	Grout	NI	NI	NI	Grout	NI	NI	NI	NI	NI	Grout	Sand	Sand	NI	NI	NI	NI	NI	NI	Grout	NI	Grout	Grout	Grout	NI	NI	Filter	NI	NI	NI	Sand	NI
Installed By	KB	EVANS	EVANS	EVANS	EVANS	EVANS	EVANS	EVANS	EVANS	KB	CT	BYA	CT	CT	CT	BYA	EVANS	CT	EVANS	EVANS	EVANS	BYA	EVANS	EVANS	EVANS	BYA	LS	EVANS	EVANS	EVANS	BYA	CONV	BYA	BYA	BYA	EVANS	EVANS	CONV	EVANS	CONV	CONV	CONV	EVANS
Reading Interval	NR	Quart	Quart	Quart	Semi.	Semi.	Quart	Quart	Quart	NR	NR	NR	NR	NR	NR	NR	NR	NR	Quart	Quart	Quart	Quart	Semi.	Quart	Quart	NR	NR	Semi.	Semi.	Quart	Quart	Semi.	Quart	Quart	Quart	NR	NR	Semi.	Semi.	Semi.	Semi.	Quart	NR
Status	D	F	F	F	F	F	F	F	F	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	F	D	D	F	F	F	F	F	F	F	F	D	D	F	F	F	F	F	D
Date 1st Base Reading	######	9/13/88	9/13/88	9/13/88	3/10/88	9/3/89	12/10/87	10/19/88											11/5/87	9/8/88	9/7/88	6/8/95	9/7/88		6/3/87			3/10/88	3/10/88		2/10/89	9/8/88	2/19/99	11/24/98	11/20/98	######		11/5/87	7/2/87	7/2/87	9/8/88	9/13/88	
Displacement Depth		0 to 25	23, 43		58	60	25-30	48-54	39										>330	245	110,250	143, 50	132, 170, 220	247, 200	210, 50			305	380	140,184	196				78		251	142				45,130	
A+ axis direction	NI	34	44	35	20	30	350	64	10	NI	NI	NI	NI	NI	NI	NI	NI	NI	39	204	18	190	32	60	20	NI	NI	340	330	10	60	326	210	184	164	NI	NI	1	300	345	5	45	NI
Region	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	BLUFF	BLUFF	BLUFF	EAST	EAST	EAST	EAST	EAST	EAST	CENT.	CENT.	CENT.	CENT.	CENT.	CENT.	CENT.	CENT.	CENT.	CENT.	WEST.	WEST.	WEST.	WEST.	HEAD	HEAD
Basal Surf. Penetrated		YES	NO	NO	NO	NO	YES	YES	YES										NO	NO	YES	YES	NO	NO	YES			NO	NO	NO	YES	YES	YES	YES	YES			NO	NO	NO	NO	YES	
Interpretation Movement (inches)																																											
2011-2012	NA	<0.05	--	--	--	--	<0.05	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	0.2	0.05	--	0.2	--	NA	NA	--	--	0.25	0.1	--	--	--	0.3	NA	NA	0.2	--	--	--	0.1	NA
2010-2011	NA	<0.05	--	--	--	--	<0.05	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	0.2	--	NA	NA	--	--	0.5	--	--	--	--	--	NA	NA	--	--	--	--	--	NA
2009-2010	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	<0.05	NA
2008-2009	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	NA
2007-2008	NA	--	--	--	--	--	0.05	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	NA
2006-2007	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	NA
2005-2006	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	NA	--	--	--	--	--	NA	NA	--	--	--	0.1	--	--	--	--	NA	NA	--	--	--	--	0.22	NA
2004-2005	NA	0.09	0.03	--	0.03	0.01	0.04	0.04	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	0.05	0.02	--	--	0.10	0.06	NA	NA	?	0.06	0.09	0.09	0.15	--	--	--	NA	NA	--	--	--	--	0.35	NA
2003-2004	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	NA
2002-2003	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	NA
2001-2002	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	NA
2000-2001	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	~0.02-0.04*	--	--	--	--	~0.05*	NA	NA	--	--	--	0.02-0.04*	--	--	--	--	NA	NA	--	--	--	--	0.2	NA
1999-2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	NA	NA
1998-1999	NA	~0.1	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	<0.5	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	1.9	NA
1997-1998	NA	0.3	--	--	--	--	0.08	0.04	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	0.08	--	0.02	0.08	NA	NA	--	--	--	0.03	--				NA	NA	--	--	--	--	1	NA
1996-1997	NA	<0.1	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	<0.1	--	0.5	--	NA	NA	--	--	--	--	--				NA	NA	--	--	--	--	0.7	NA
1995-1996	NA	0.08	<0.1	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	0.07	--	--	--	NA	NA	--	--	--	0.04	--				NA	NA	--	--	--	--	3.5	NA
1994-1995	NA	0.1	0.08	--	--	--	0.15	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	0.04, 0.05	--	--	0.1, 0.2	NA	NA	--	--	--	--	--				NA	NA	--	--	--	--	5	NA
1993-1994	NA									NA	NA	NA	NA	NA	NA	NA	NA	NA								NA	NA									NA	NA						NA
1/1993-7/1993	NA	0.08	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--		--	0.2	--	NA	NA	--	--	--	--	--				NA	NA	--	--	--	--	1.1	NA
7/1992-12/1992	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1988-1991	NA	0.2	0.05	--	0.08	--	0.15	0.1	0.14	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--		--	0.3	0.05	NA	NA	--	--	--	--	0.1				NA	NA	--	--	--	--	0.3	NA
1983-1984	2.28	3.4					1.4																8.4							4.8						4.7							

NI	No Information	--	No quanitifiable measurement	Installation Designations:	KB	Kovacs-Byer, Inc.	GS	GeoSoils	--	Shaded Blue to indicate inclinometer does NOT penetrate the basal rupture
Semi	Semi-Annually	NA	Data not available		EVANS	D.A. Evans	BYA	Bing Yen & Associates	--	Shaded yellow to indicated inclinometer does penetrate basal rupture
Quart	Quarterly	NR	No Reading		CT	Caltrans	LS	Lockwood-Singh	--	Shaded gray to indicated inclinometer is no longer monitored
F	Functioning				CONV	Converse Consultants				
D	Destroyed									

SUMMARY OF SLOPE INCLINOMETERS
Big Rock Mesa
Landslide Assessment District,
Malibu, California

PLATE D-1

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BIG ROCK MESA, Inclinometer SP-11

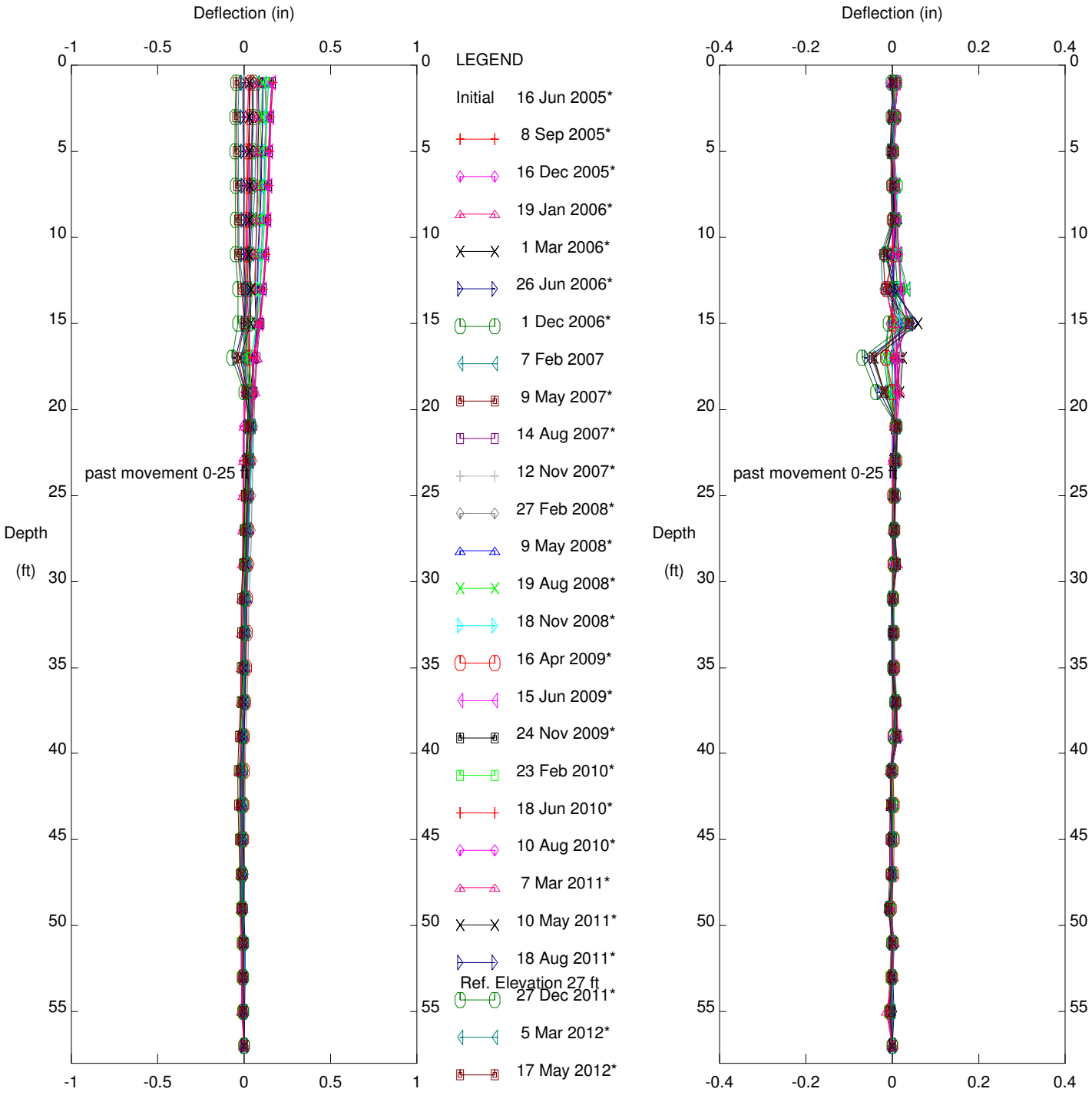
PCH REGION

Sets marked * include zero shift and/or rotation corrections.

O:\Management\3399_Malibu\3399-006_Big_Rock_Mesa\03_DATA\SI_Data\2011-2012\SP11.gtl

PLATE D-2a

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

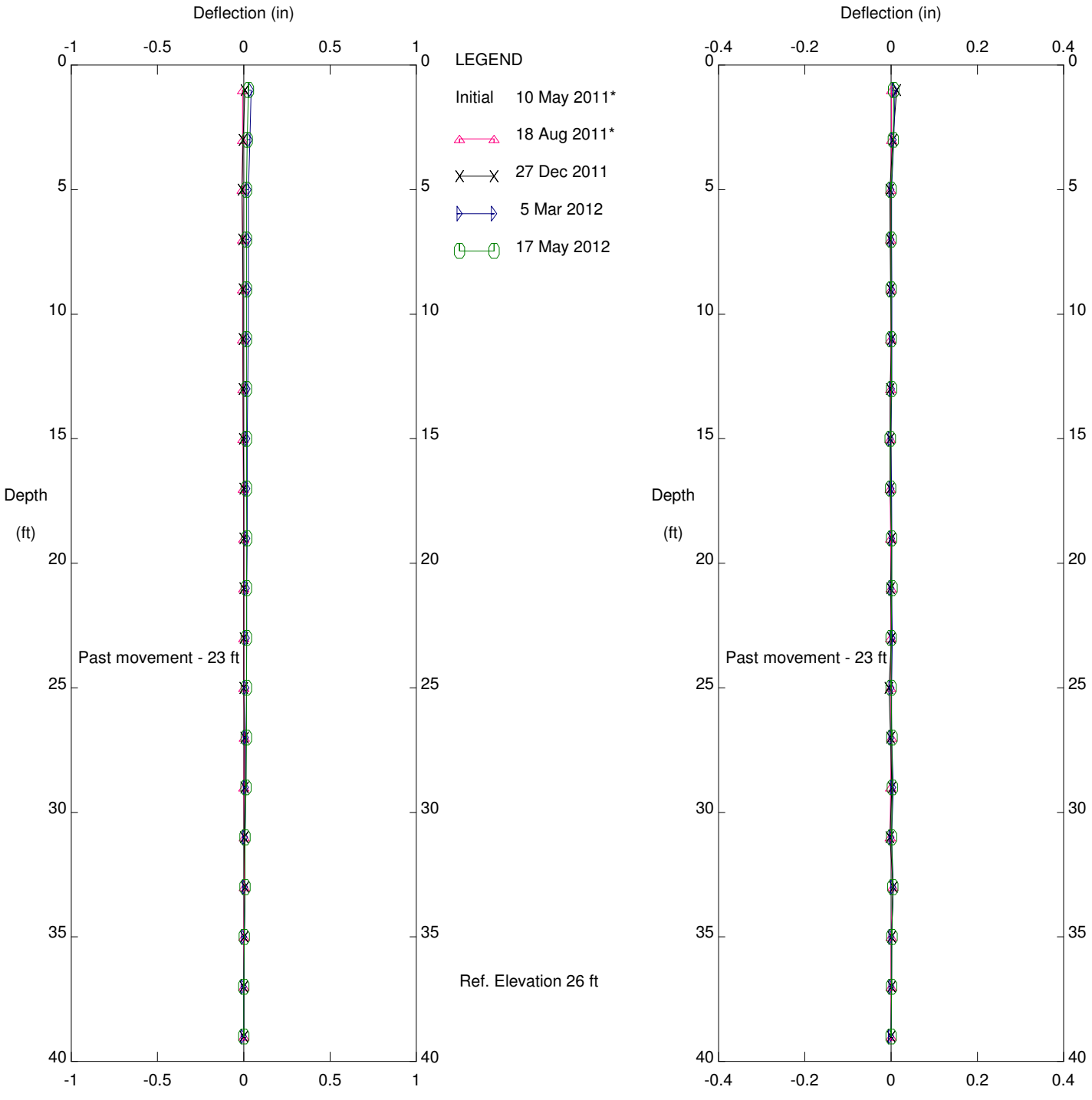
Direction A

BIG ROCK MESA, Inclinometer SP-11

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BIG ROCK MESA, Inclinometer SP-12

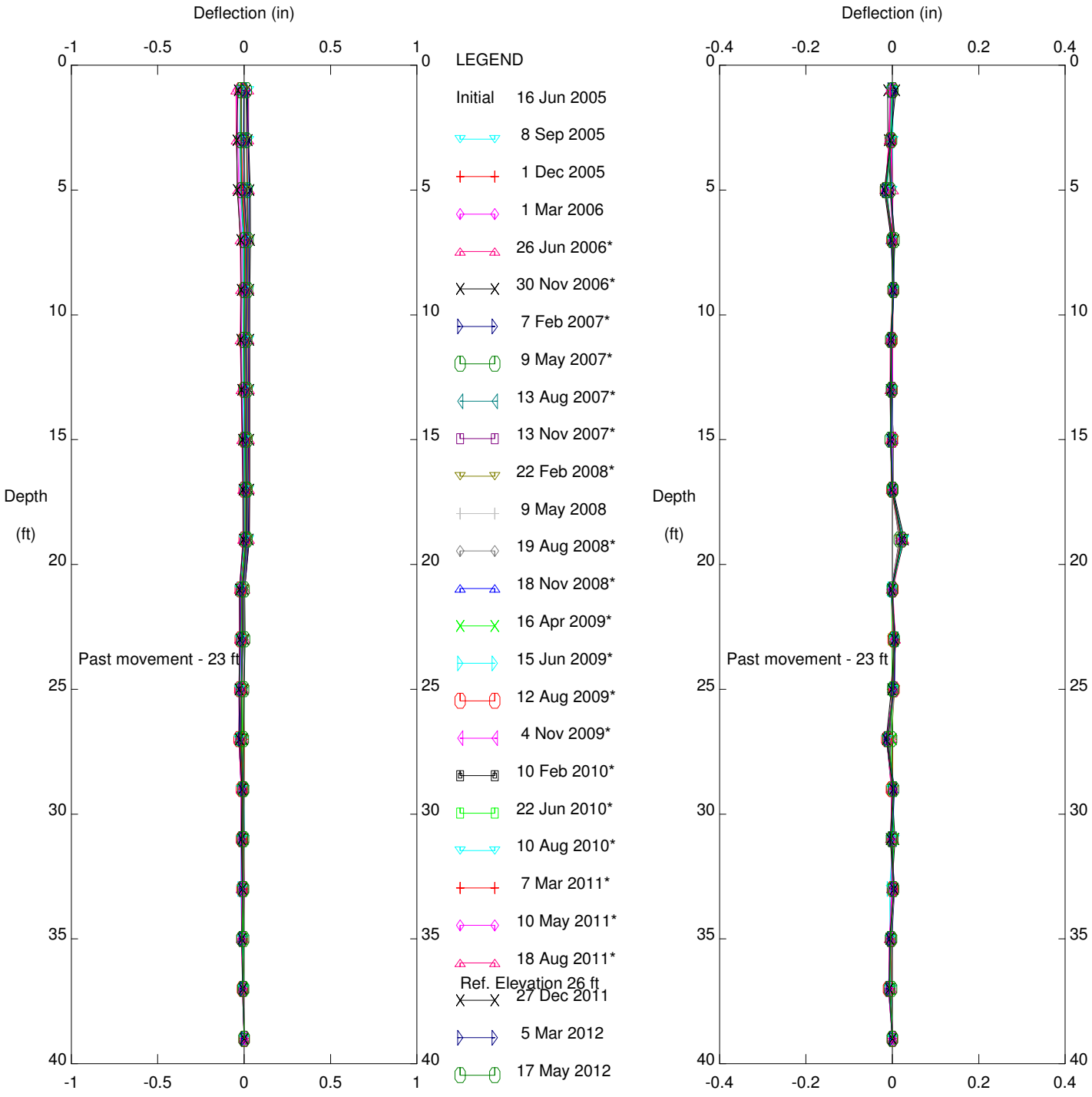
PCH REGION

Sets marked * include zero shift and/or rotation corrections.

O:\Management\3399_Malibu\3399-006_Big_Rock_Mesa\03_DATA\SI_Data\2011-2012\SP12.gtl

PLATE D-3a

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

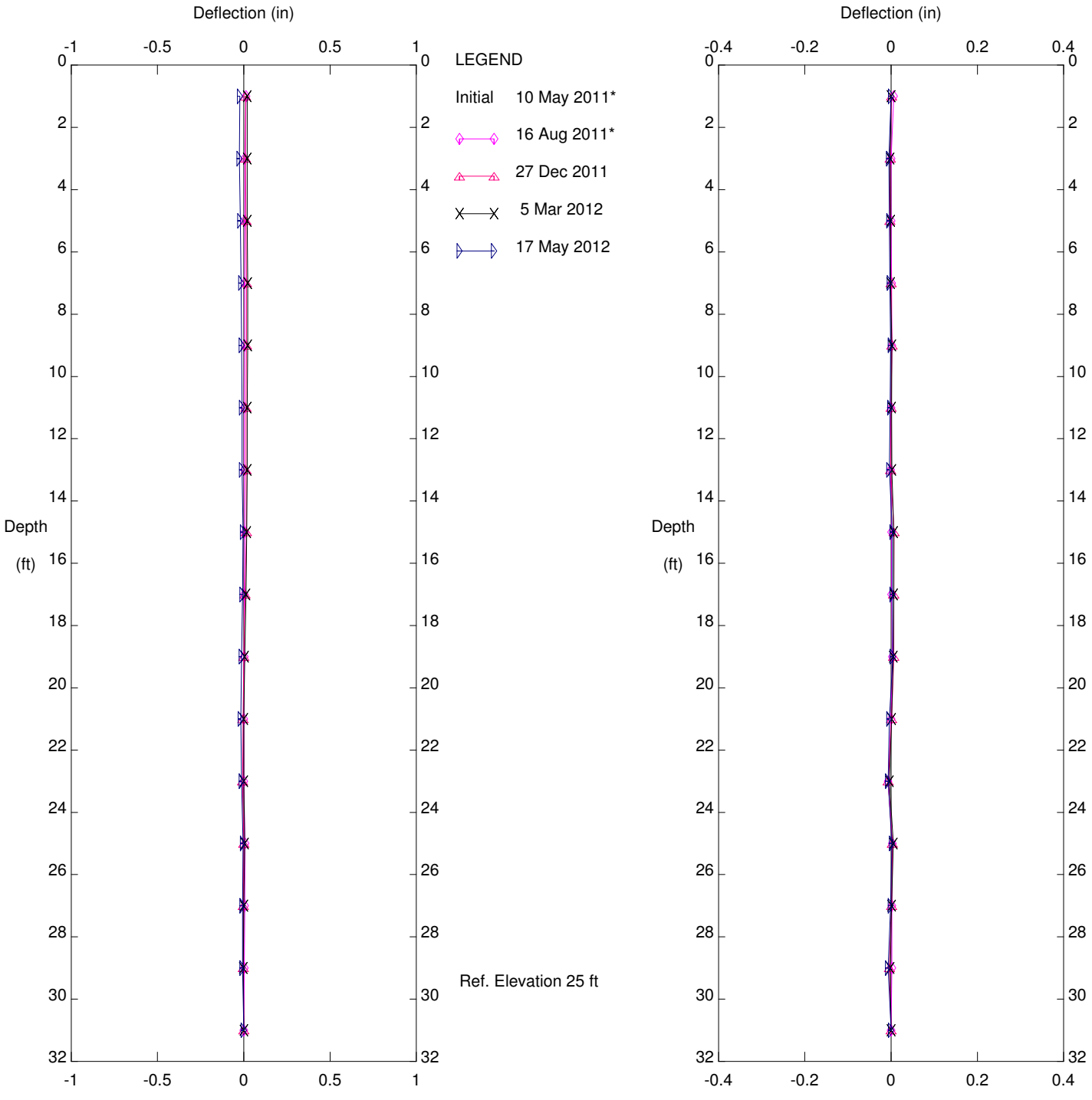
Direction A

BIG ROCK MESA, Inclinometer SP-12

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BIG ROCK MESA, Inclinometer SP-14

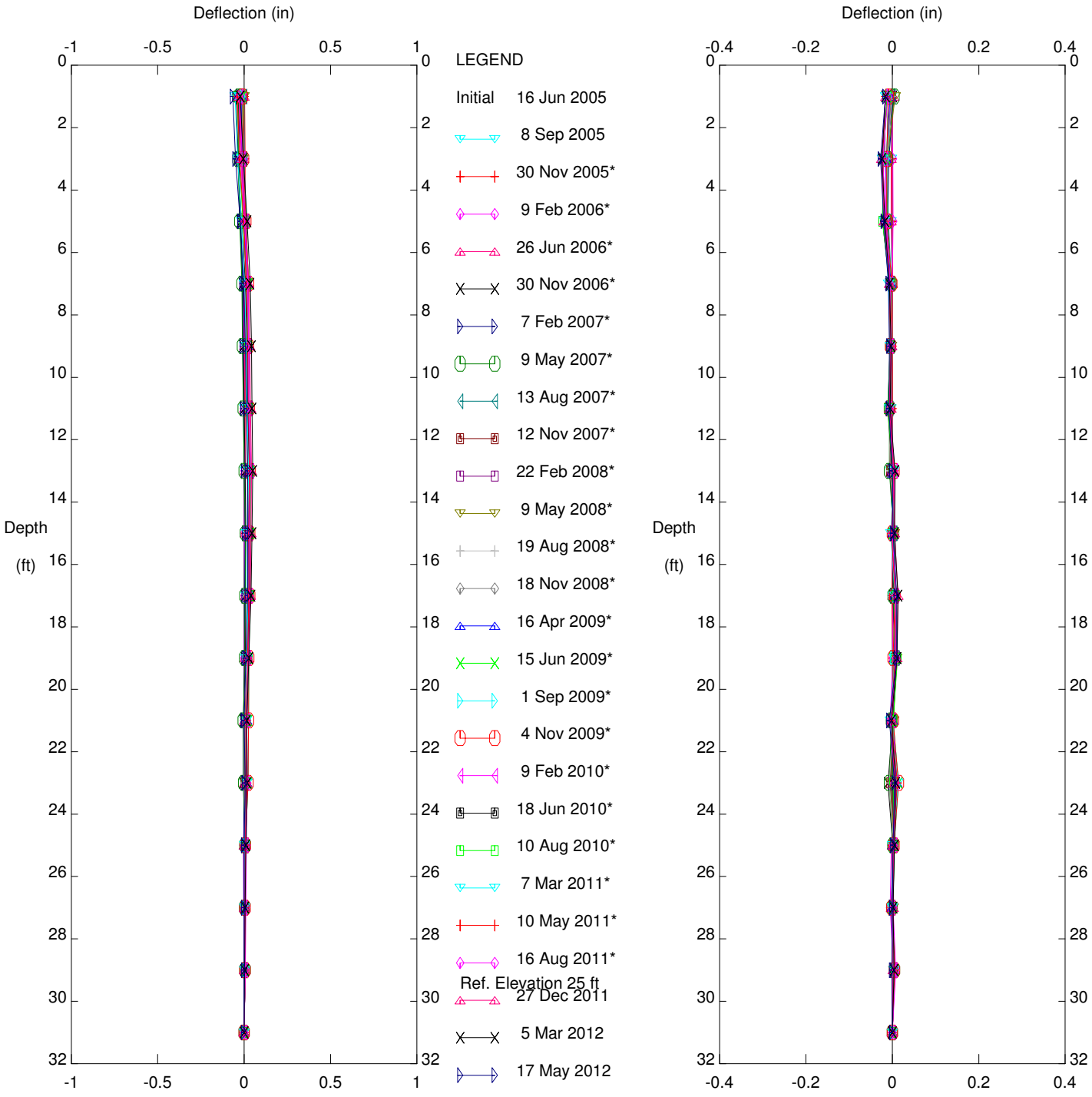
PCH REGION

Sets marked * include zero shift and/or rotation corrections.

O:\Management\3399_Malibu\3399-006_Big_Rock_Mesa\03_DATA\SI_Data\2011-2012\SP14.gtl

PLATE D-4a

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

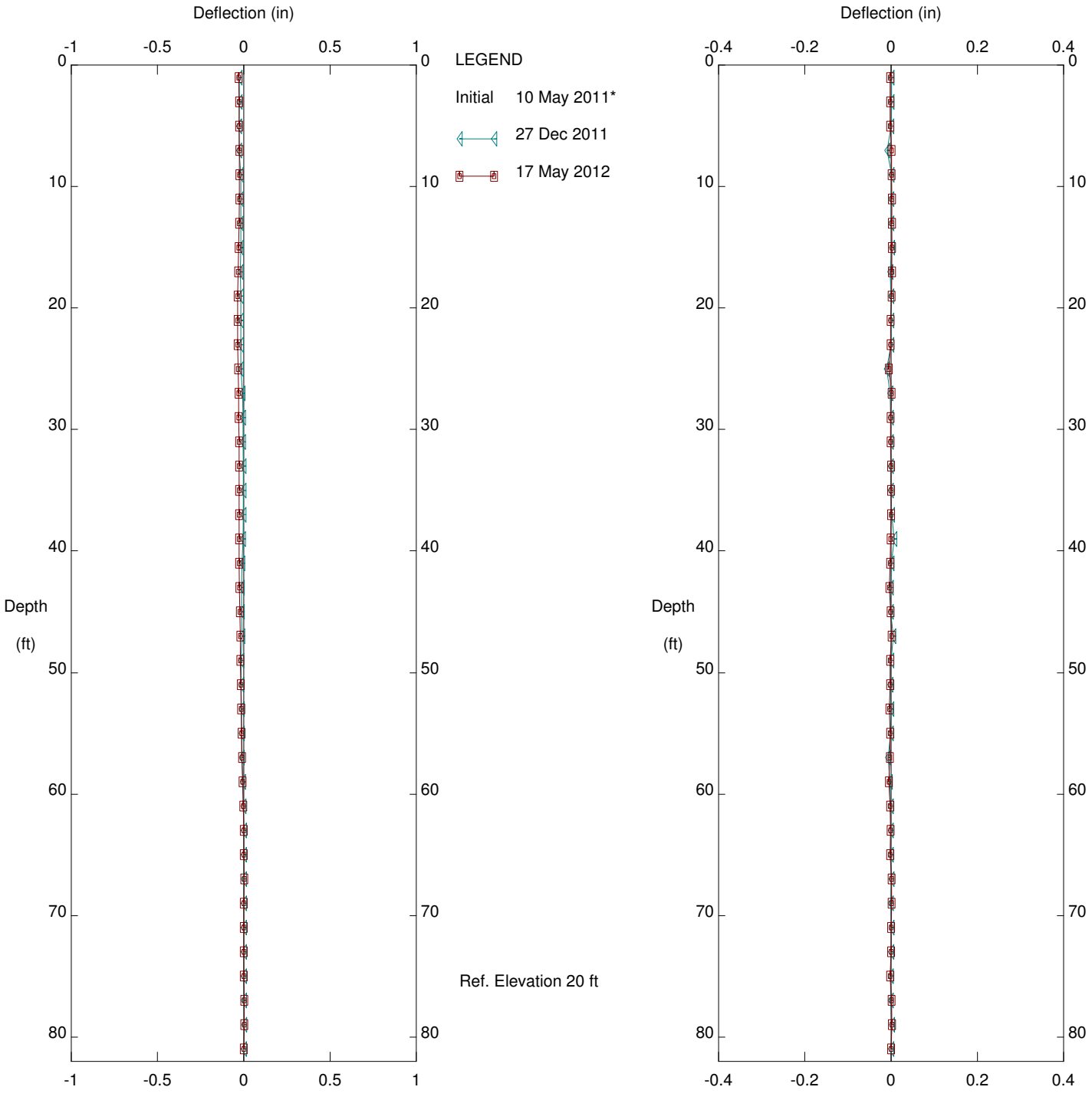
Direction A

BIG ROCK MESA, Inclinometer SP-14

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

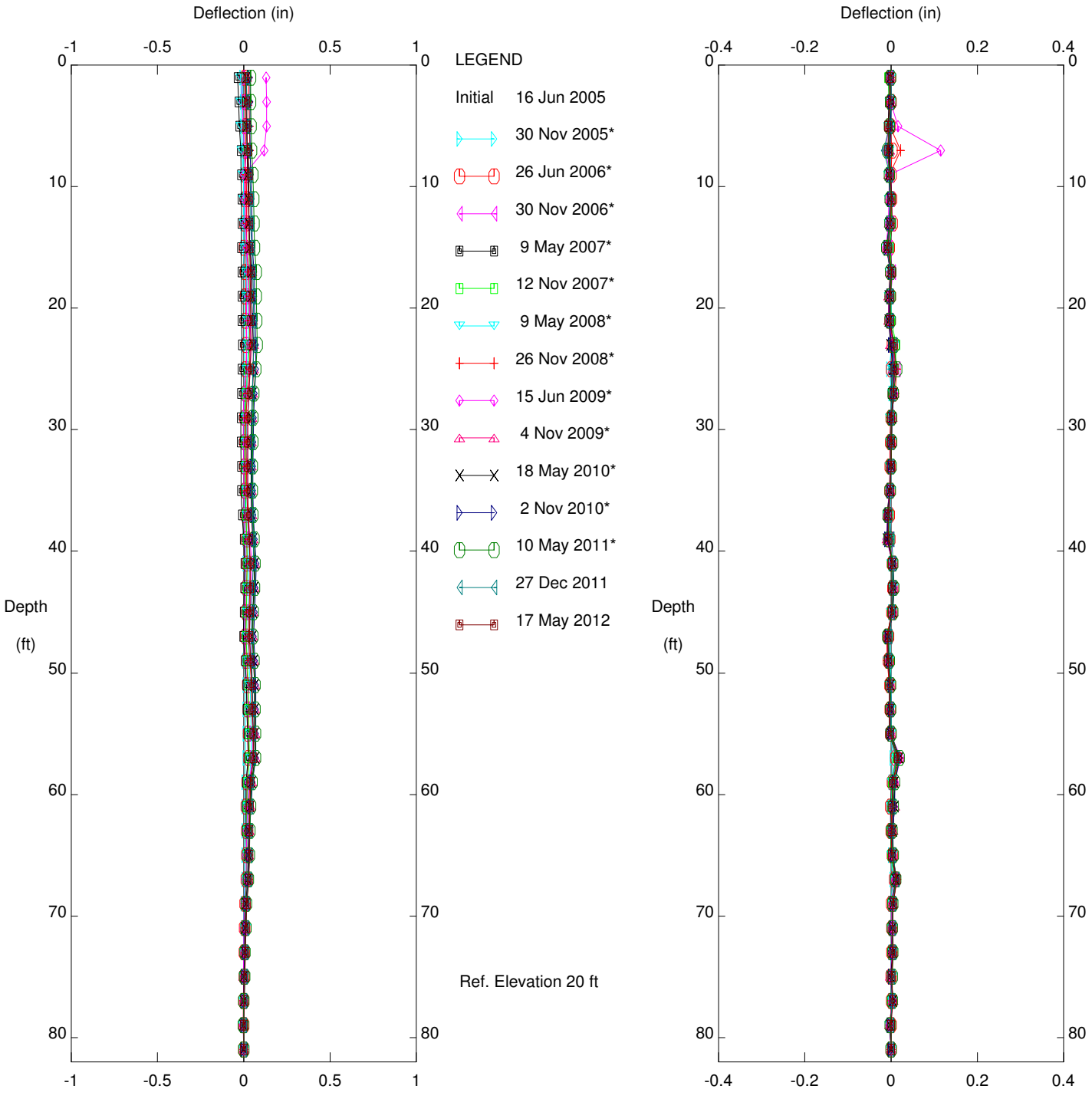
Direction A

BIG ROCK MESA, Inclinometer SP-15

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

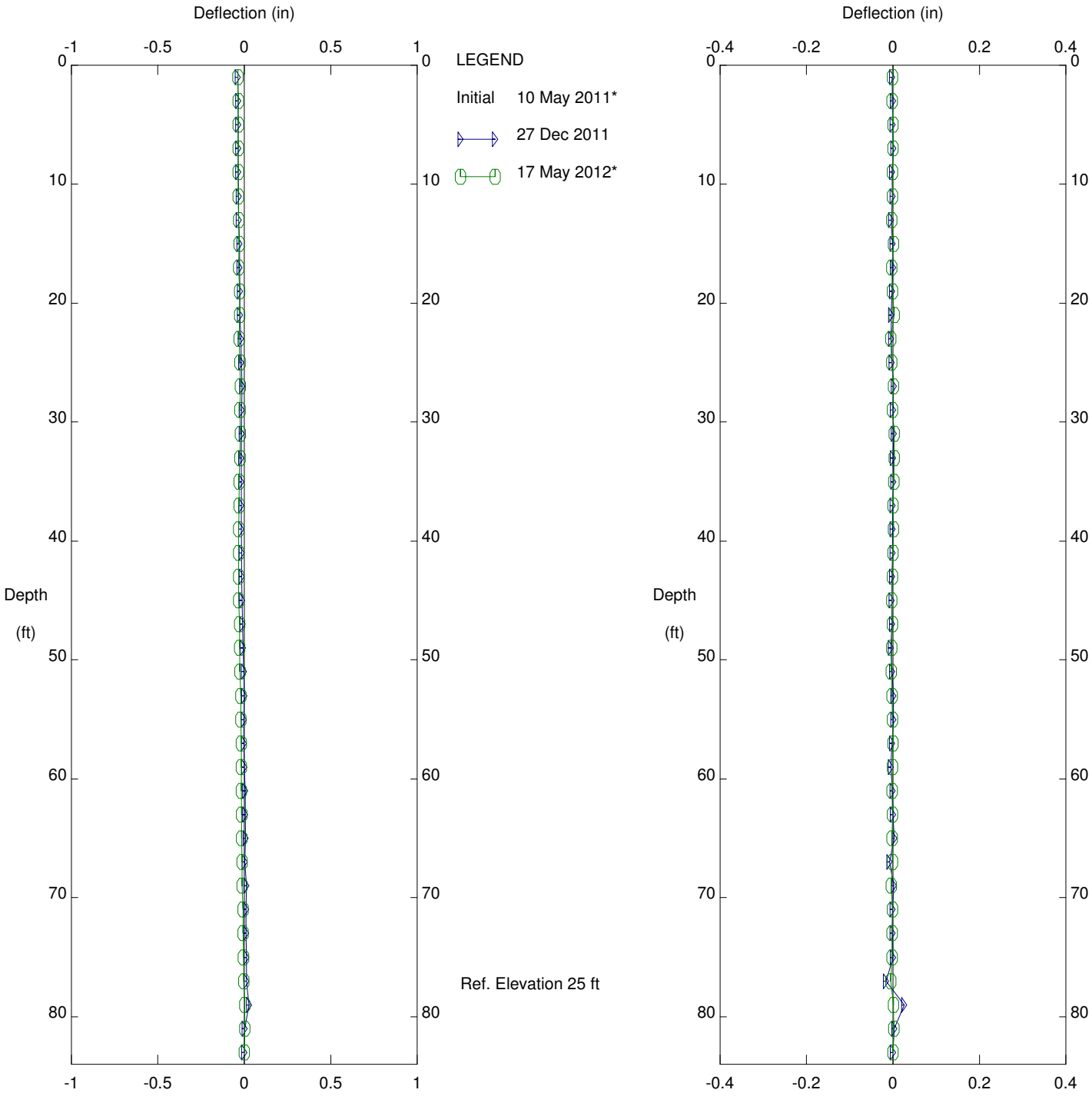
Direction A

BIG ROCK MESA, Inclinometer SP-15

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

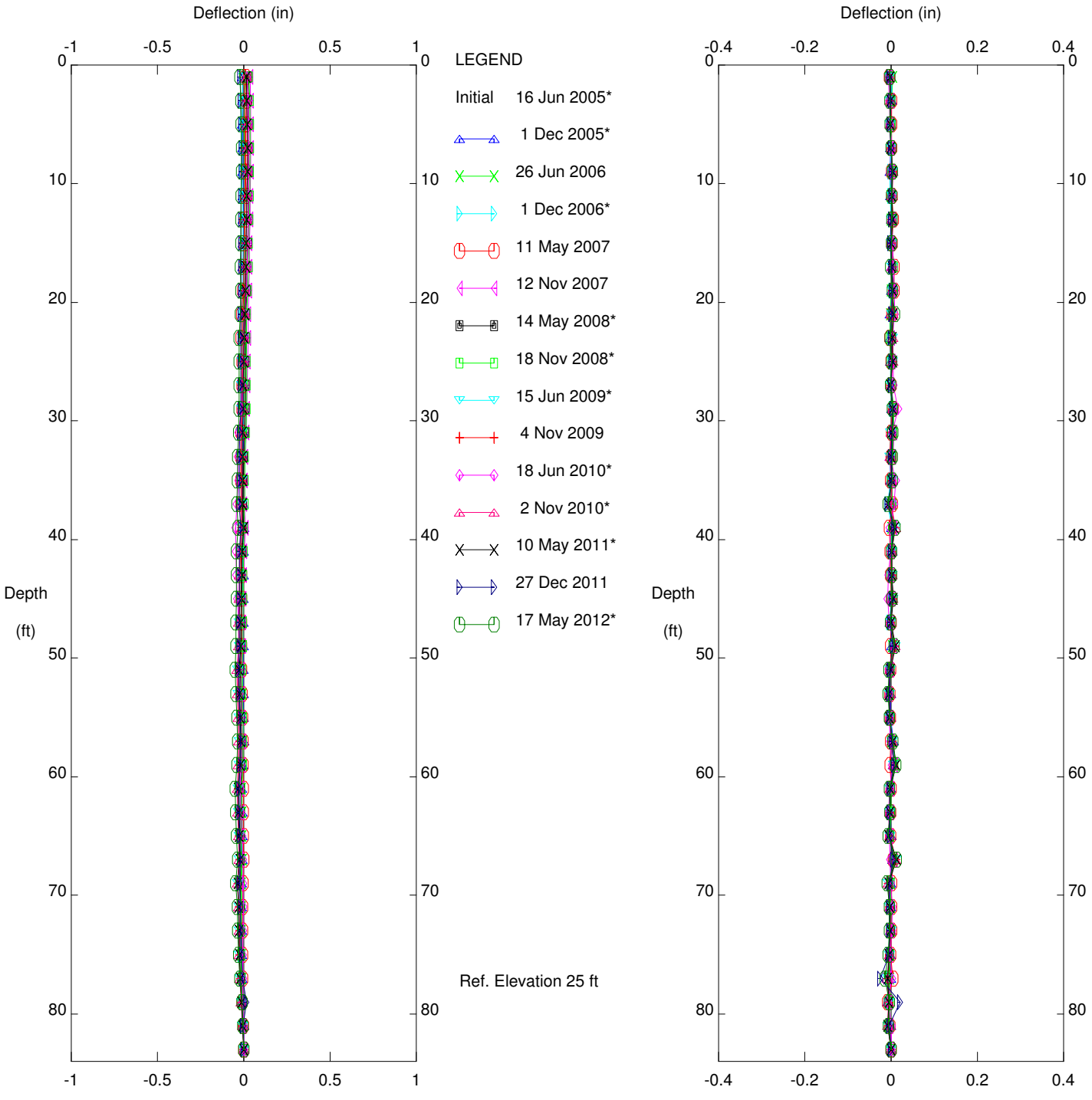
Direction A

BIG ROCK MESA, Inclinometer SP-19

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

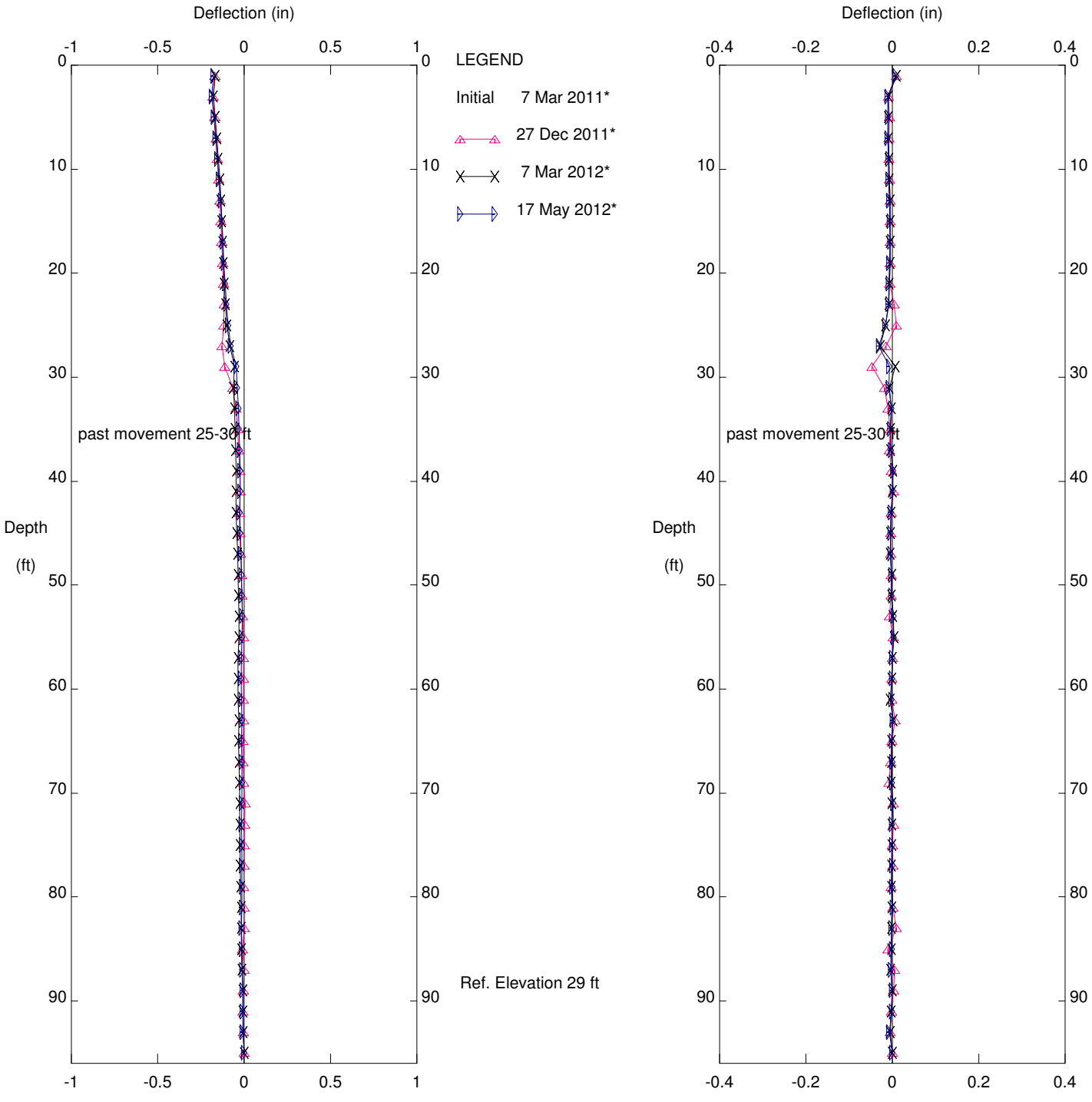
Direction A

BIG ROCK MESA, Inclinometer SP-19

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

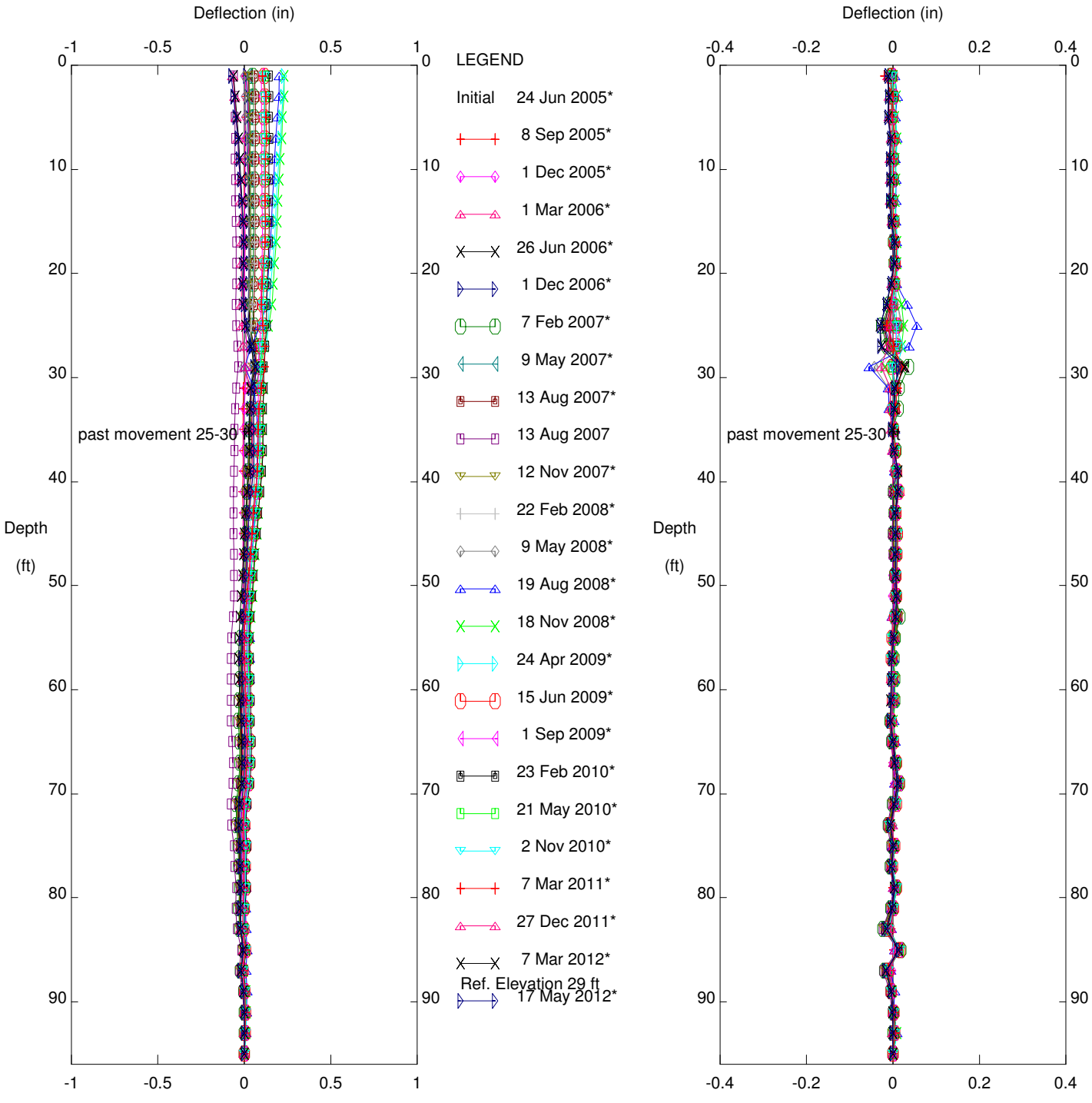
Direction A

BIG ROCK MESA, Inclinometer SP-27A

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

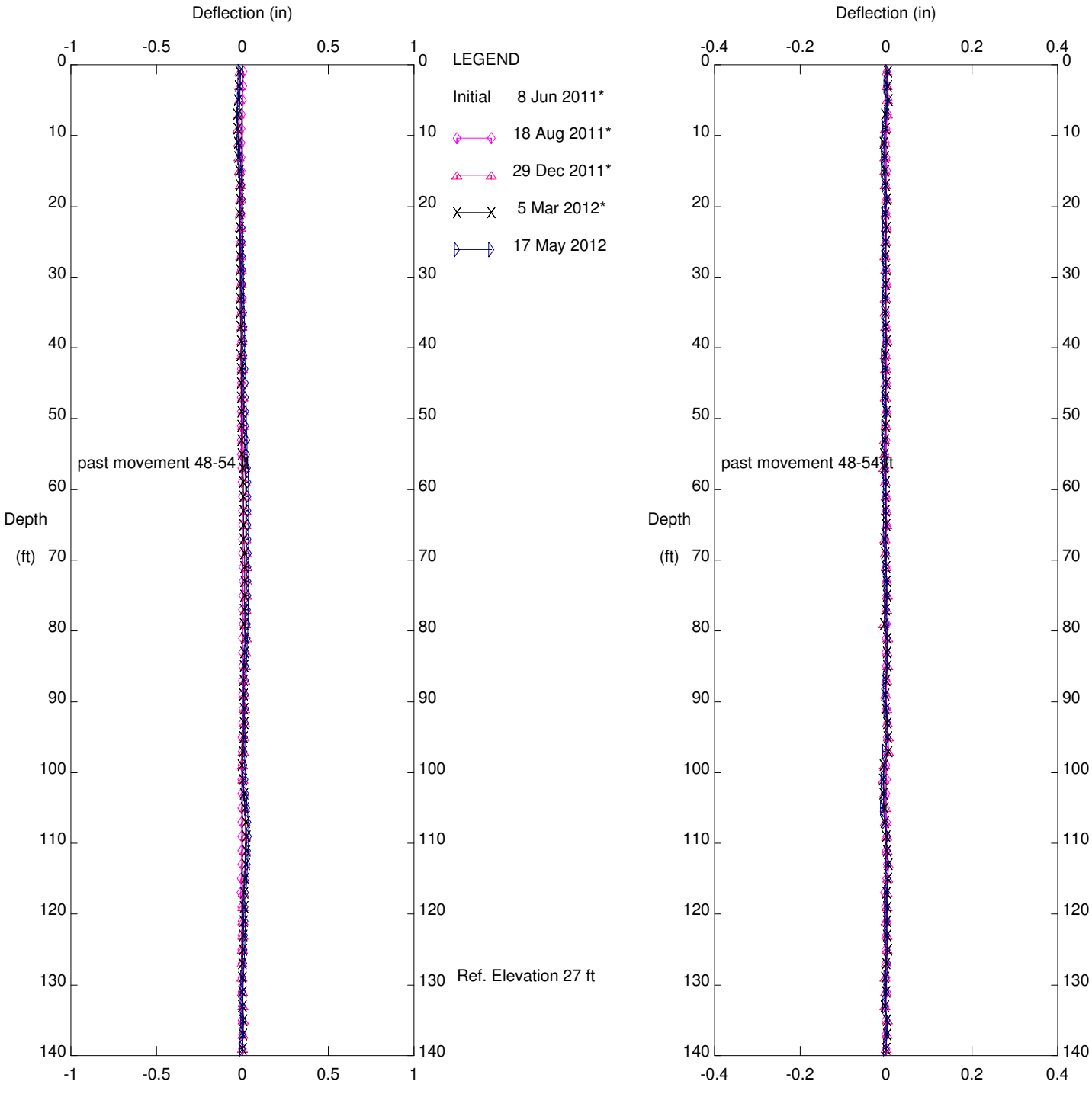
Direction A

BIG ROCK MESA, Inclinometer SP-27A

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

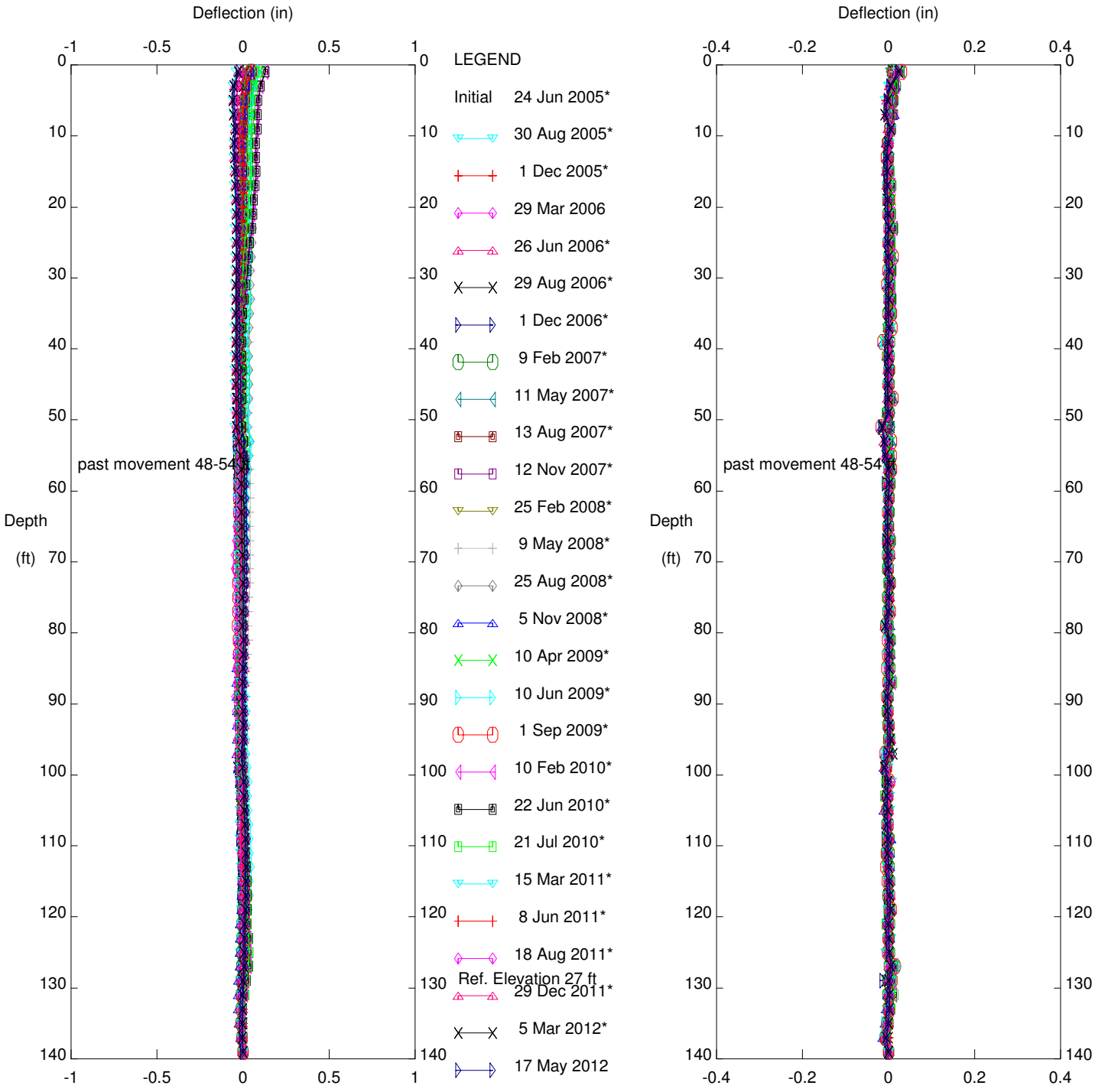
Direction A

BIG ROCK MESA, Inclinometer SP-29

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

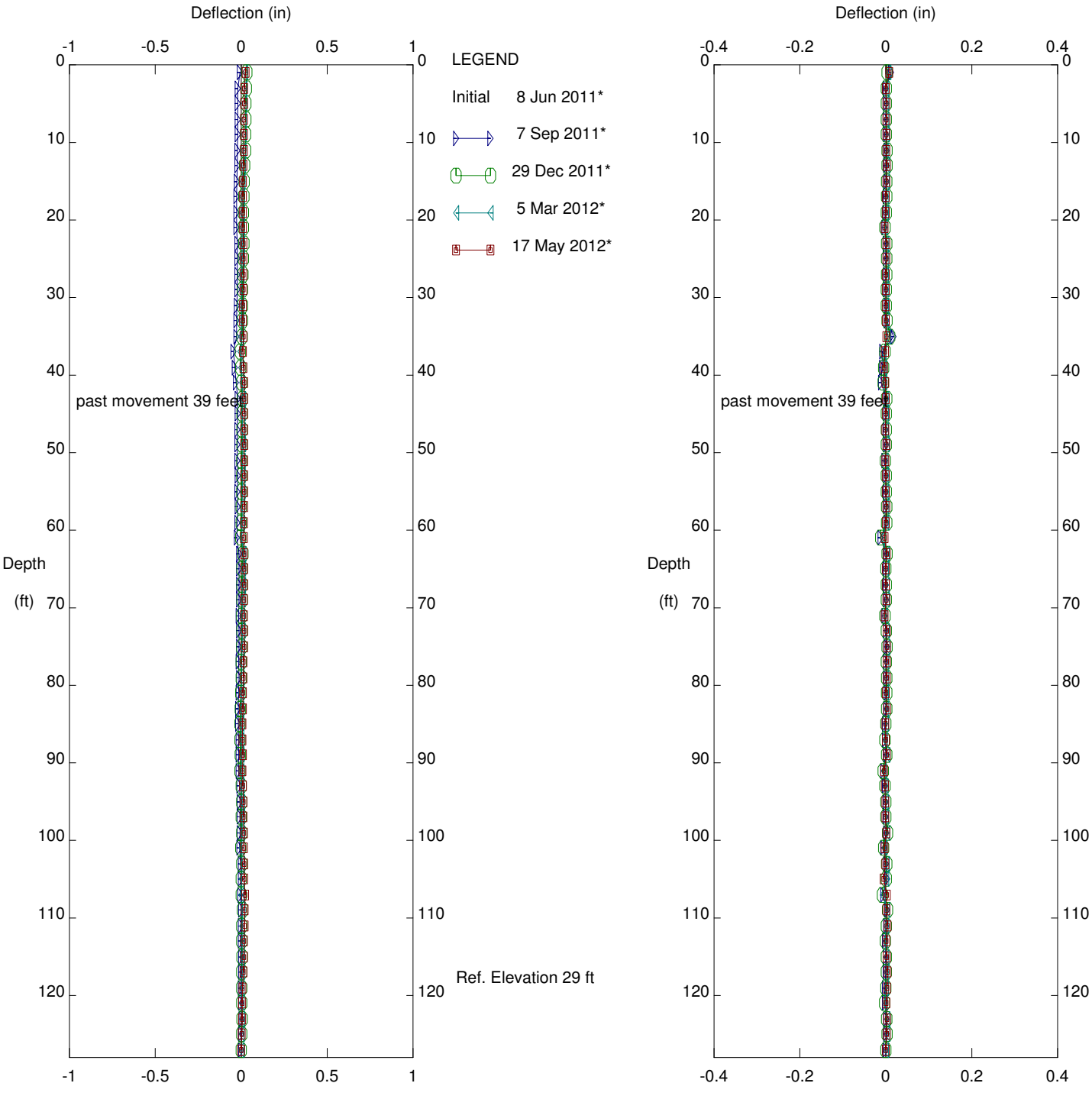
Direction A

BIG ROCK MESA, Inclinometer SP-29

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

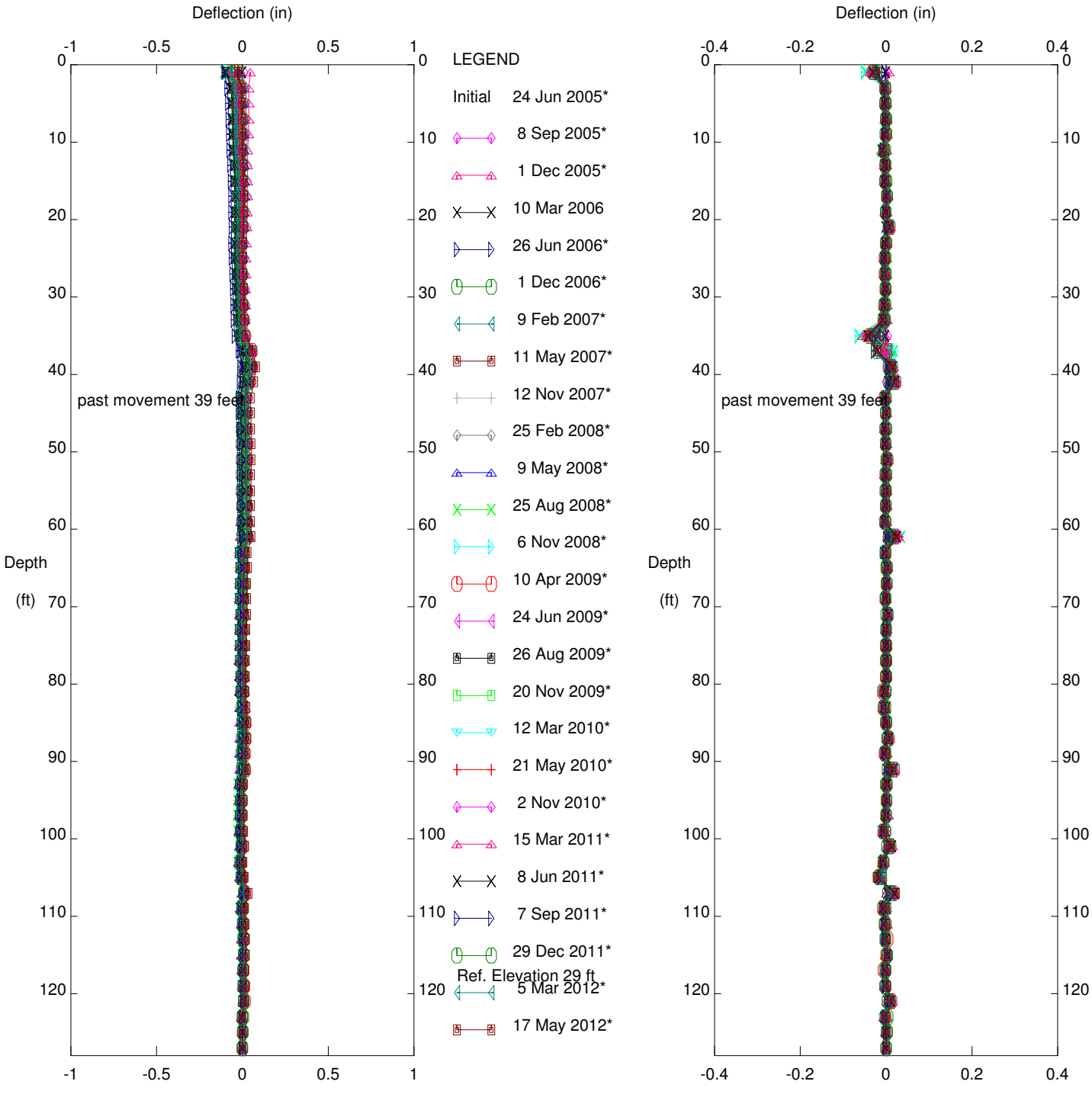
Direction A

BIG ROCK MESA, Inclinometer SP-30

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

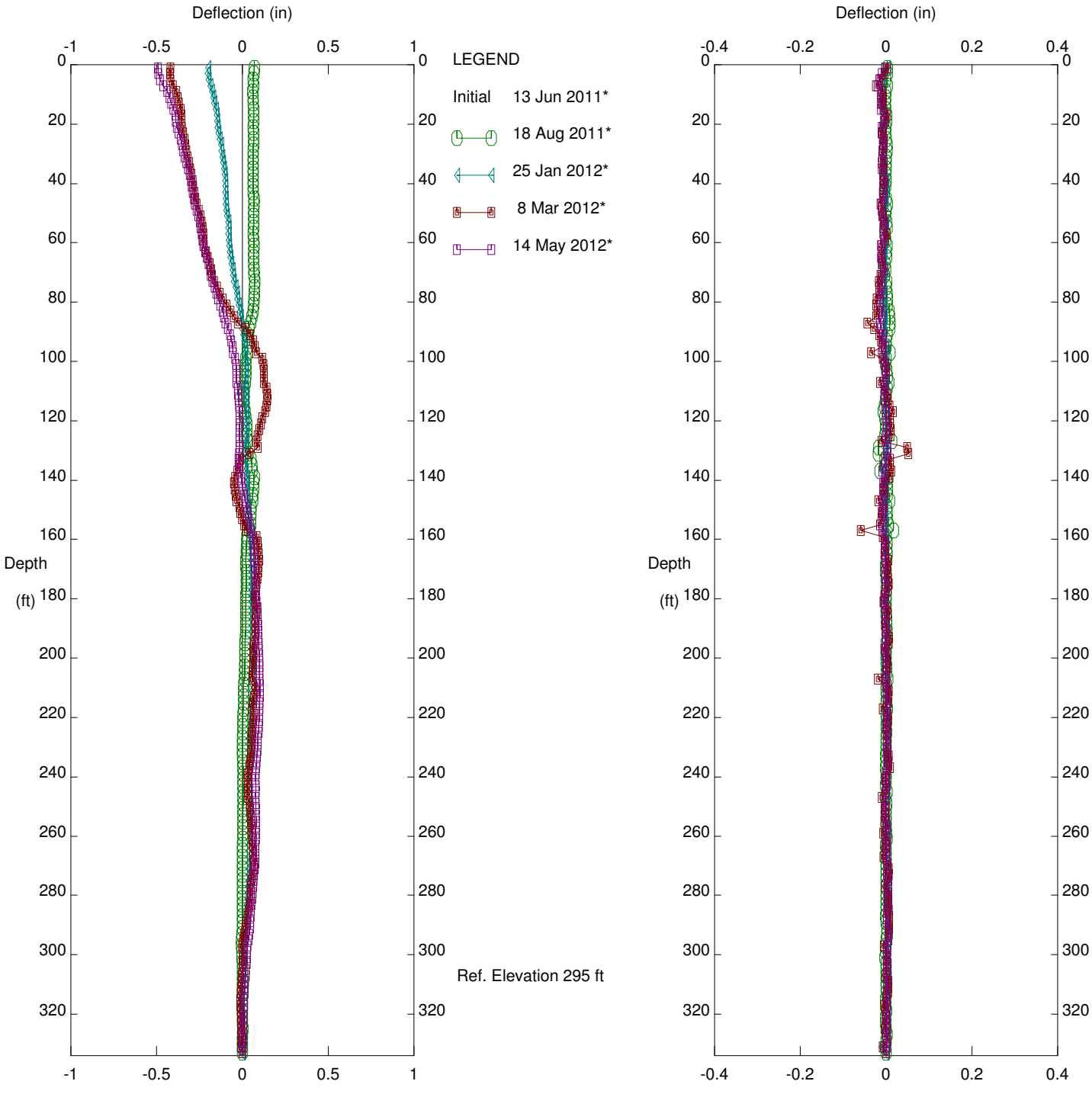
Direction A

BIG ROCK MESA, Inclinometer SP-30

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BIG ROCK MESA, Inclinometer SP-10

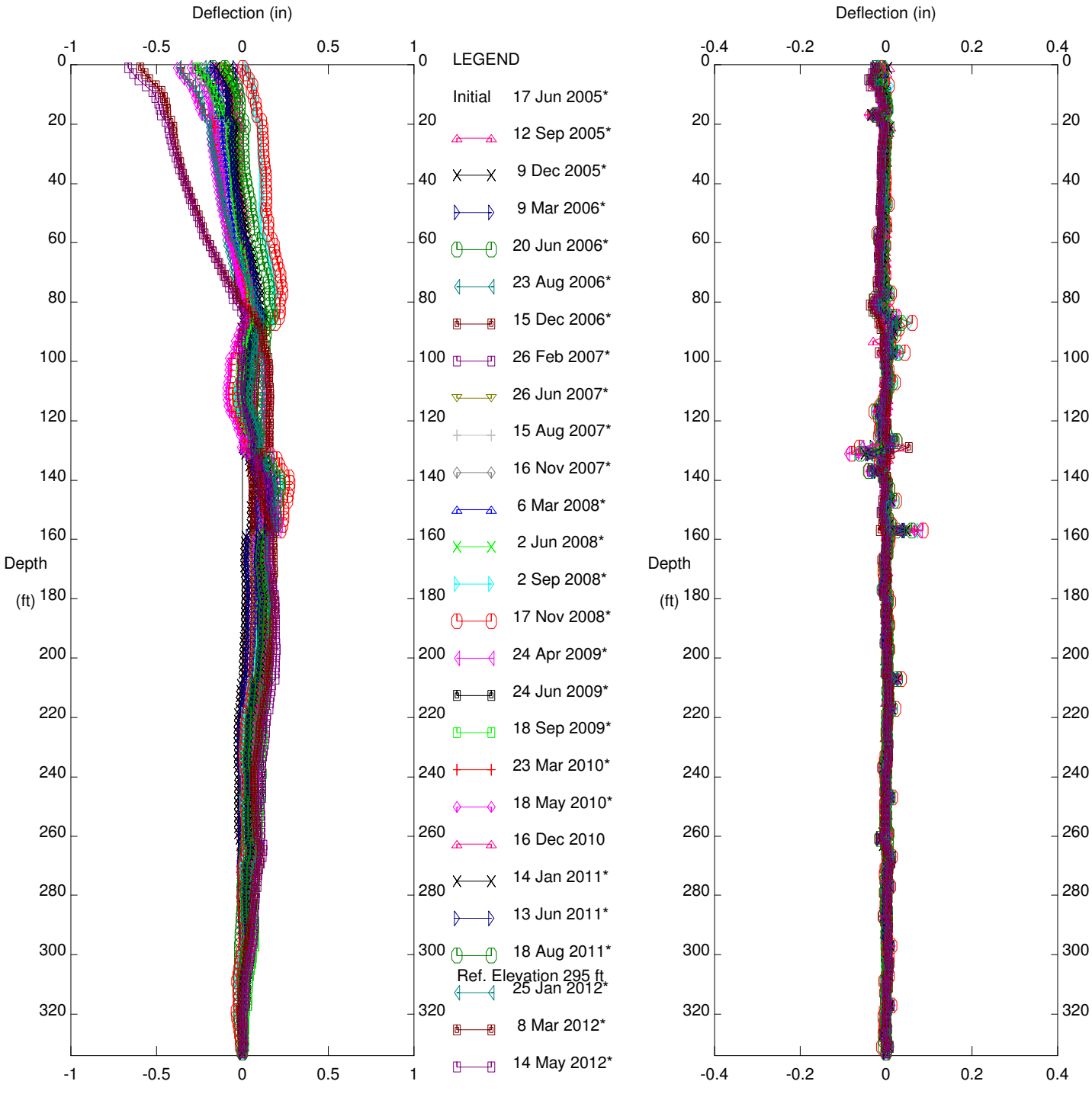
BLUFF REGION

Sets marked * include zero shift and/or rotation corrections.

O:\Management\3399_Malibu\3399-006_Big_Rock_Mesa\03_DATA\SI_Data\2011-2012\SP10.gtl

PLATE D-10a

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BIG ROCK MESA, Inclinometer SP-10

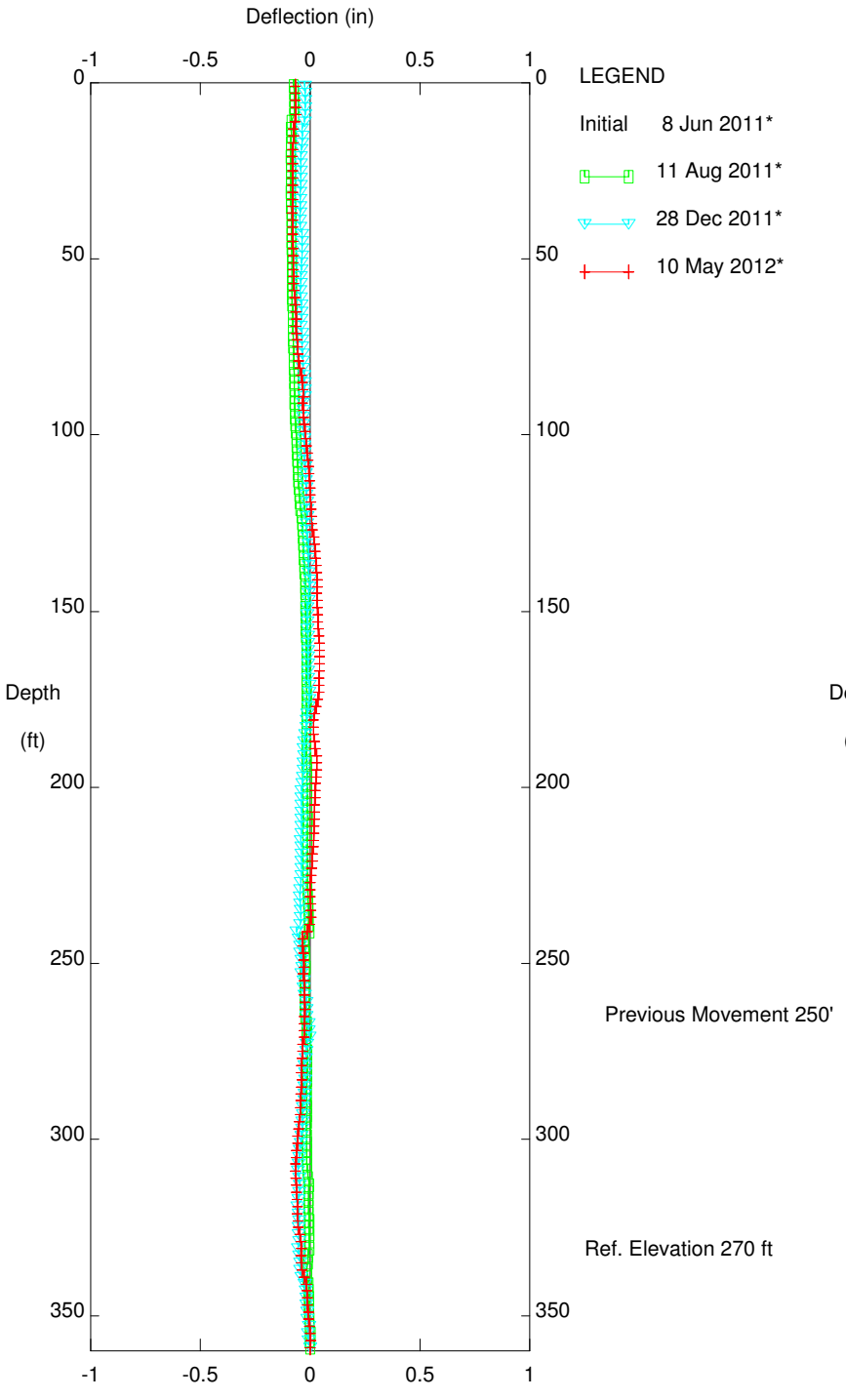
BLUFF REGION

Sets marked * include zero shift and/or rotation corrections.

O:\Management\3399_Malibu\3399-006_Big_Rock_Mesa\03_DATA\SI_Data\2011-2012\SP10.gtl

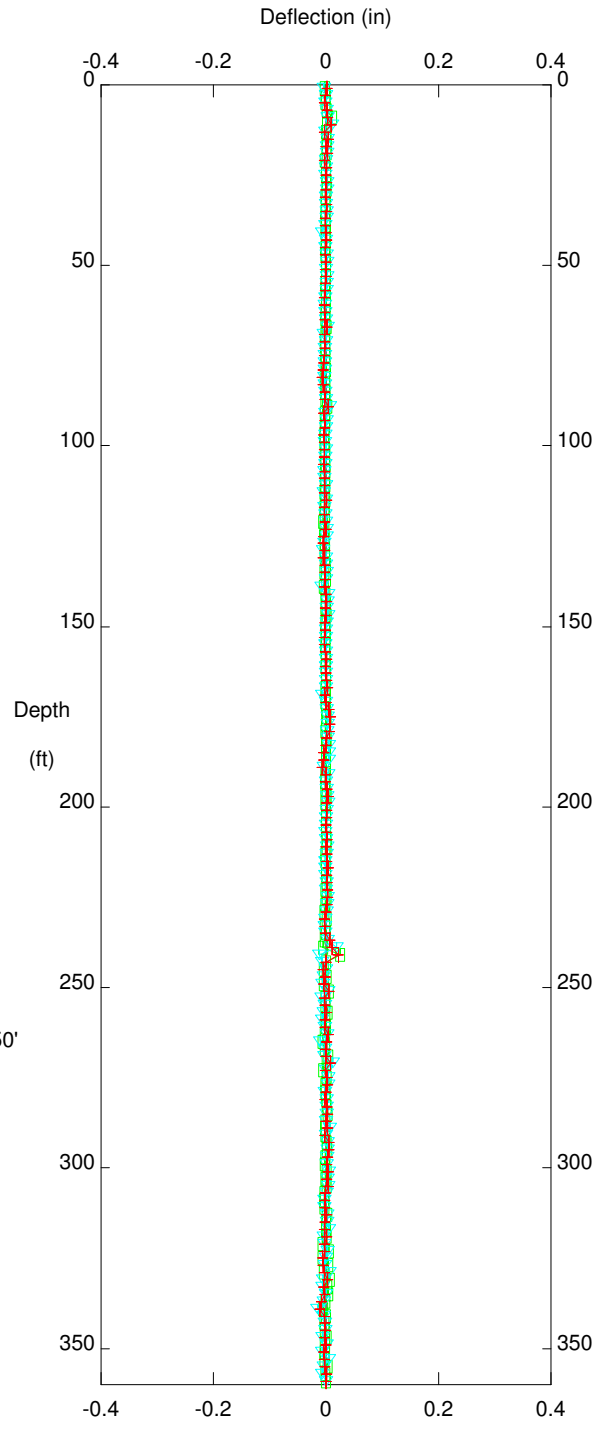
PLATE D-10b

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A



Incremental Deflection

Direction A

BIG ROCK MESA, Inclinometer SP-28

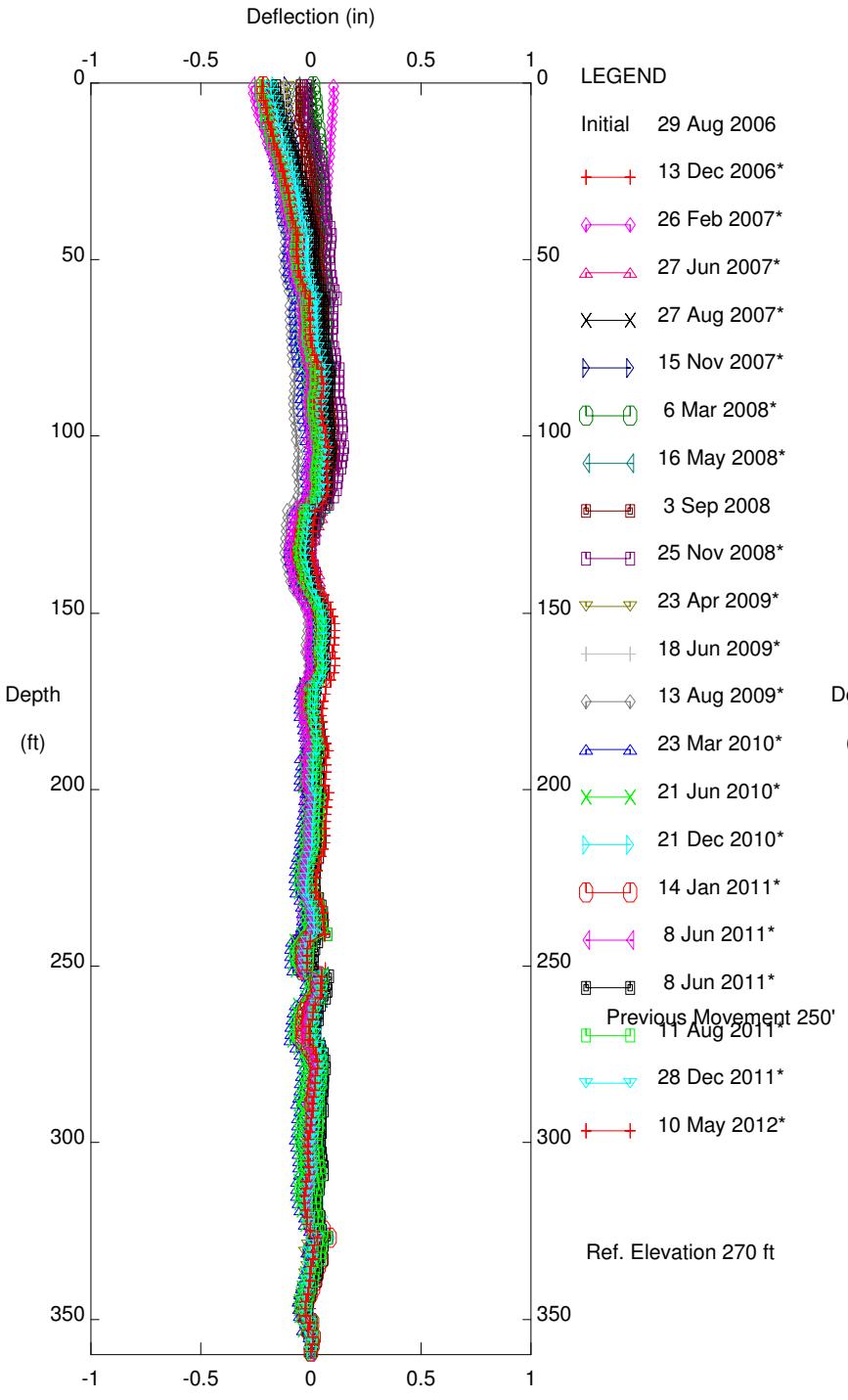
BLUFF REGION

Sets marked * include zero shift and/or rotation corrections.

O:\Management\3399_Malibu\3399-006_Big_Rock_Mesa\03_DATA\SI_Data\2011-2012\SP28.gtl

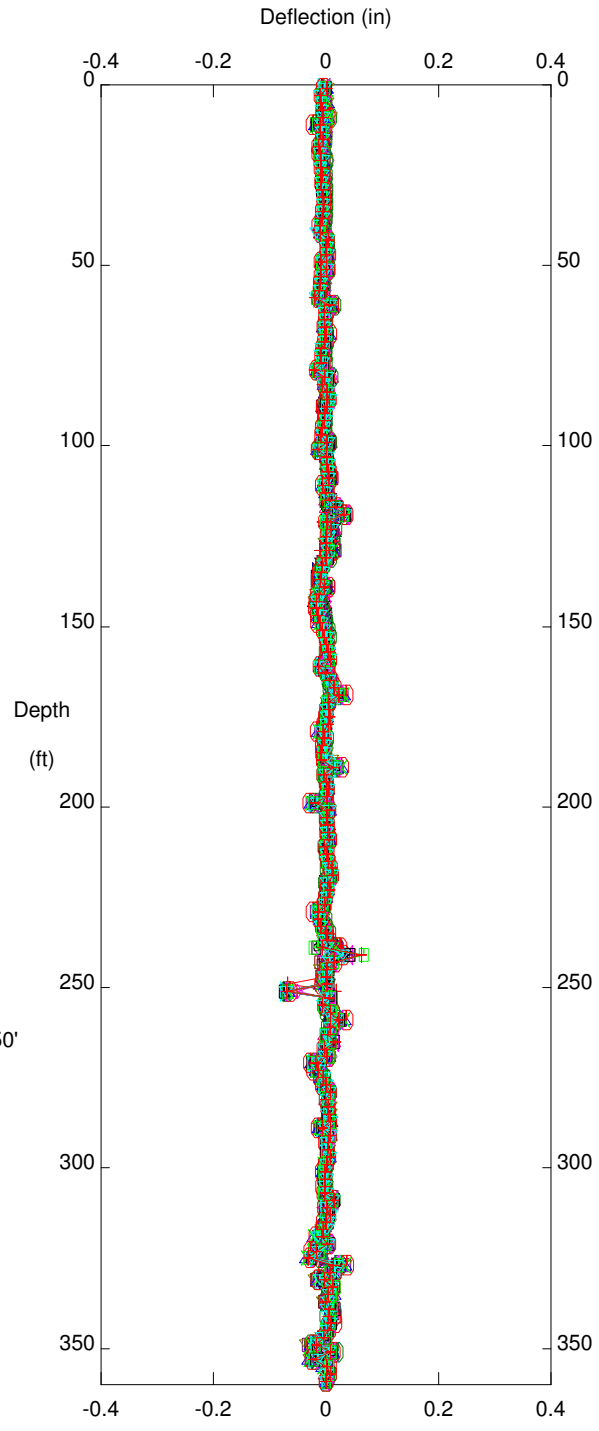
PLATE D-11a

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A



Incremental Deflection

Direction A

BIG ROCK MESA, Inclinometer SP-28

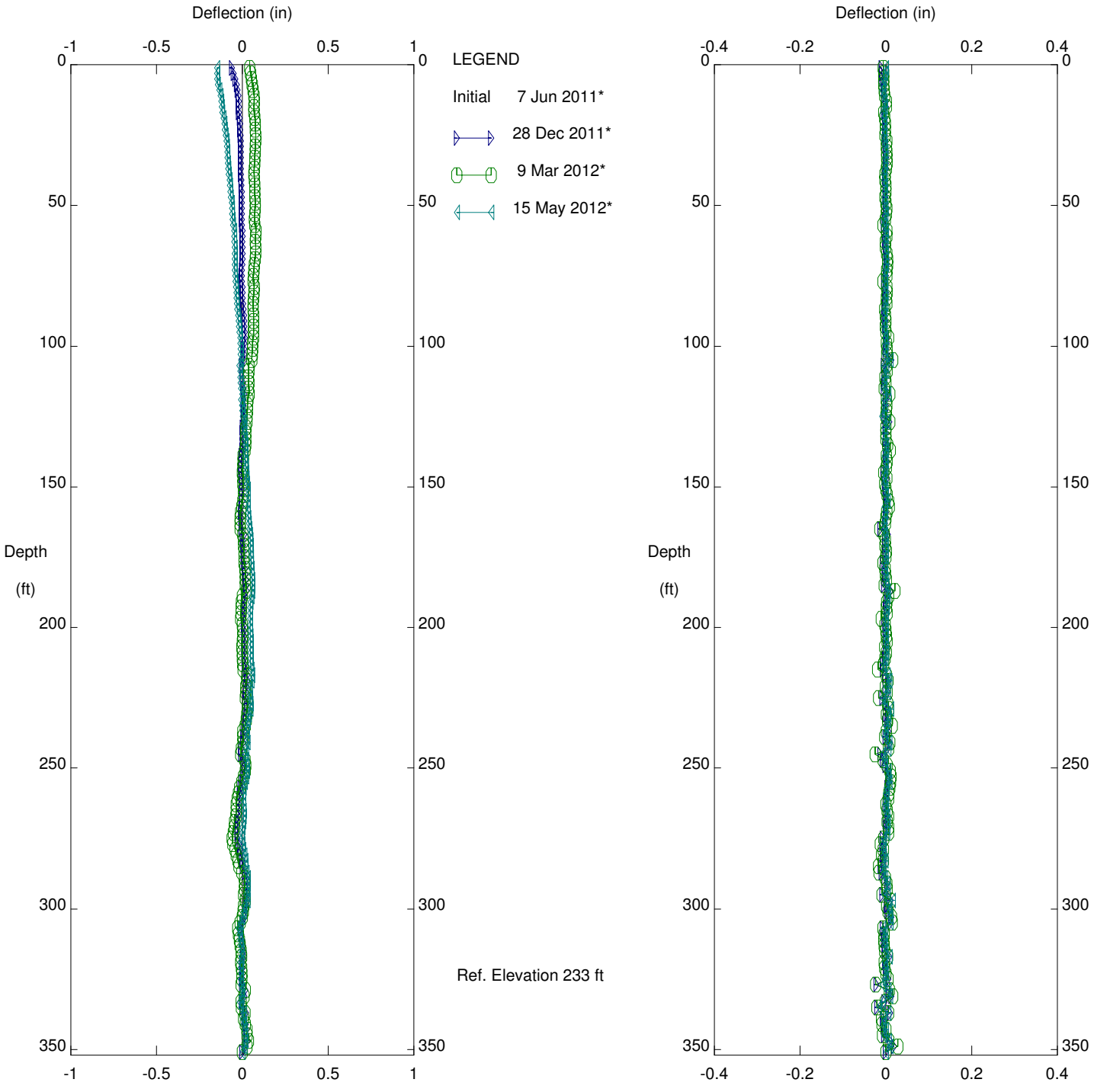
BLUFF REGION

Sets marked * include zero shift and/or rotation corrections.

O:\Management\3399_Malibu\3399-006_Big_Rock_Mesa\03_DATA\SI_Data\2011-2012\SP28.gtl

PLATE D-11b

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BIG ROCK MESA, Inclinometer SP-32

BLUFF REGION

Sets marked * include zero shift and/or rotation corrections.

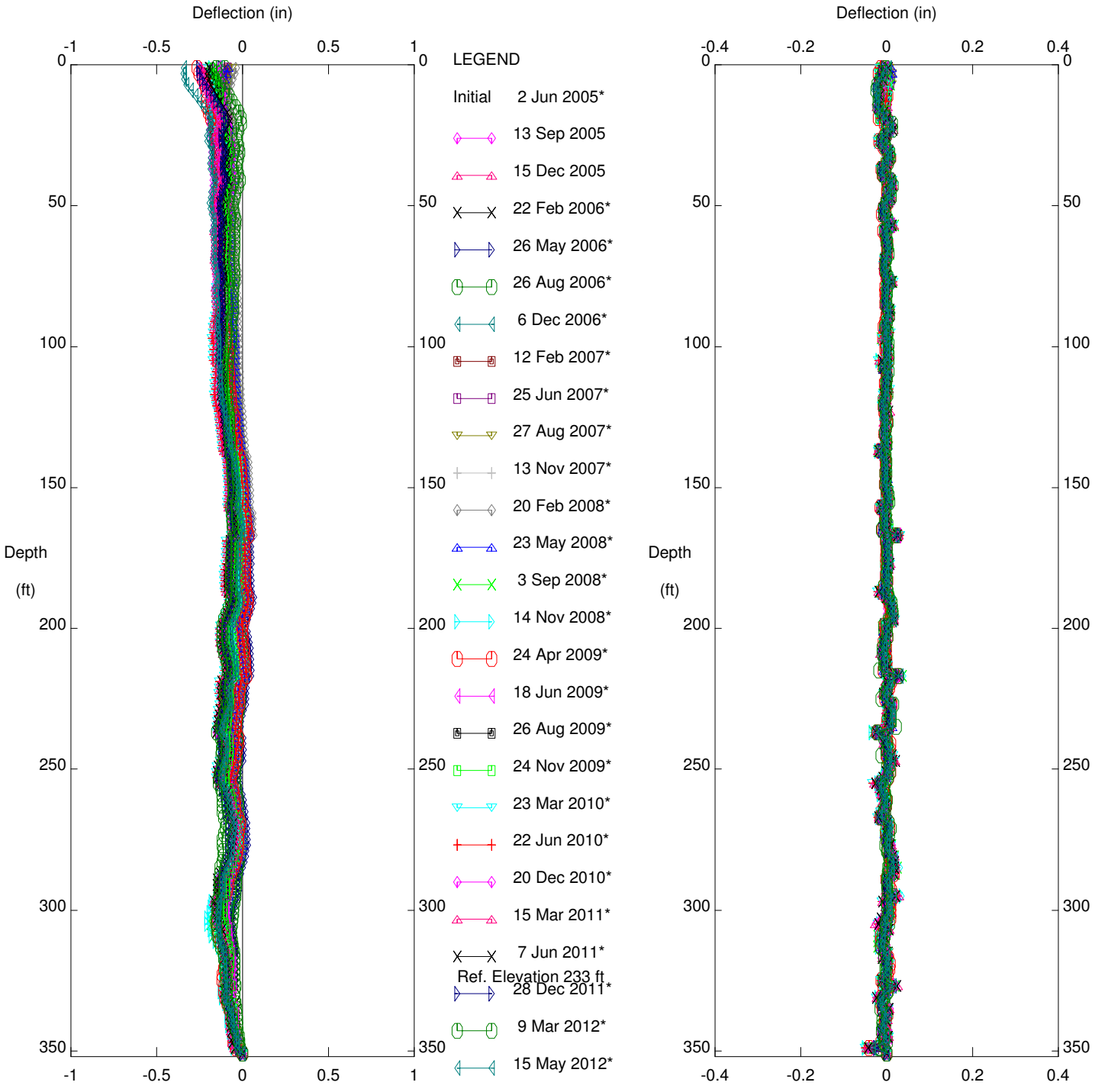
O:\Management\3399_Malibu\3399-006_Big_Rock_Mesa\03_DATA\SI_Data\2011-2012\SP32.gtl

PLATE D-12a

past movement 250 feet

past movement 250 feet

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BIG ROCK MESA, Inclinometer SP-32

BLUFF REGION

Sets marked * include zero shift and/or rotation corrections.

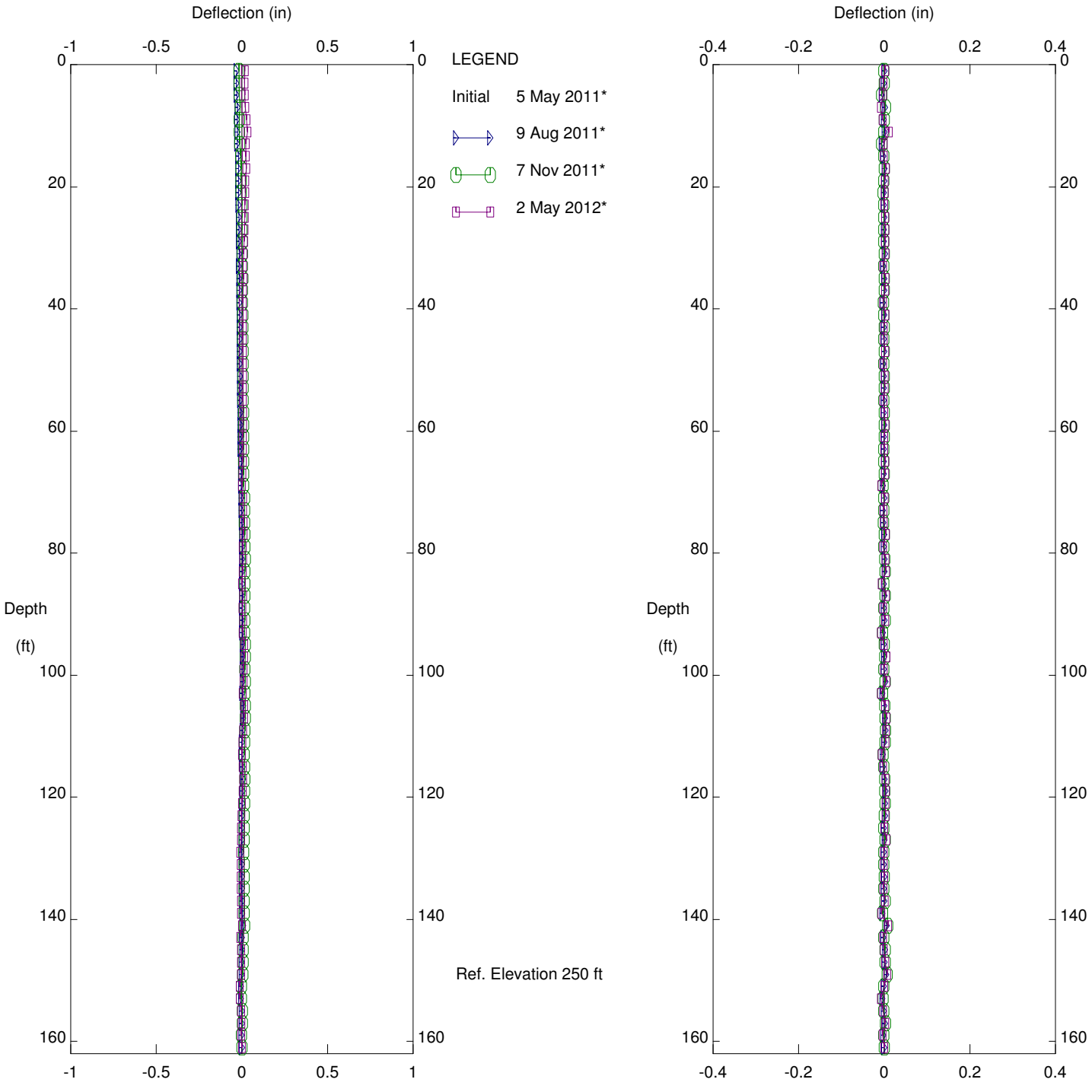
O:\Management\3399_Malibu\3399-006_Big_Rock_Mesa\03_DATA\SI_Data\2011-2012\SP32.gtl

PLATE D-12b

past movement 250 feet

past movement 250 feet

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

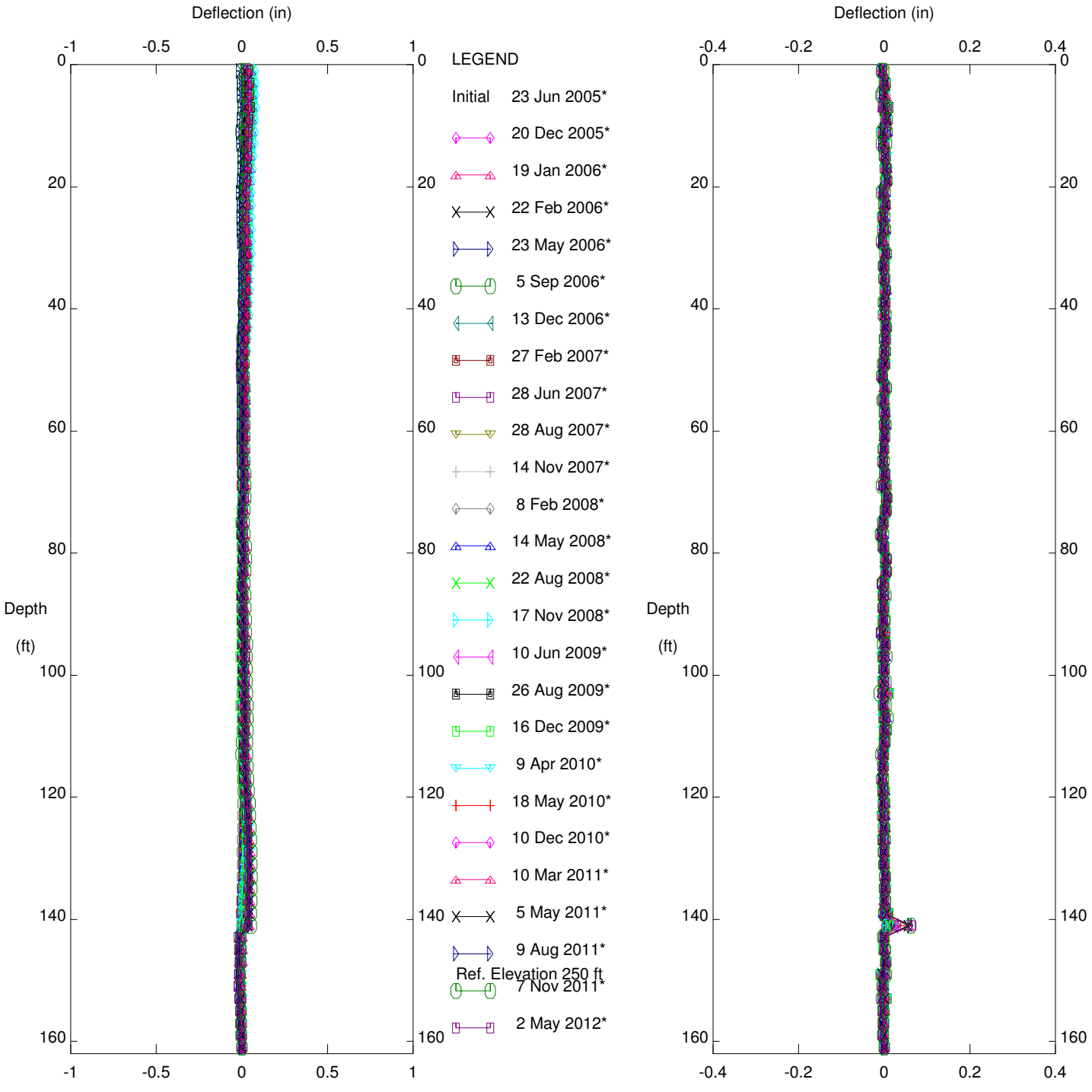
Direction A

BIG ROCK MESA, Inclinometer PC-1

EASTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

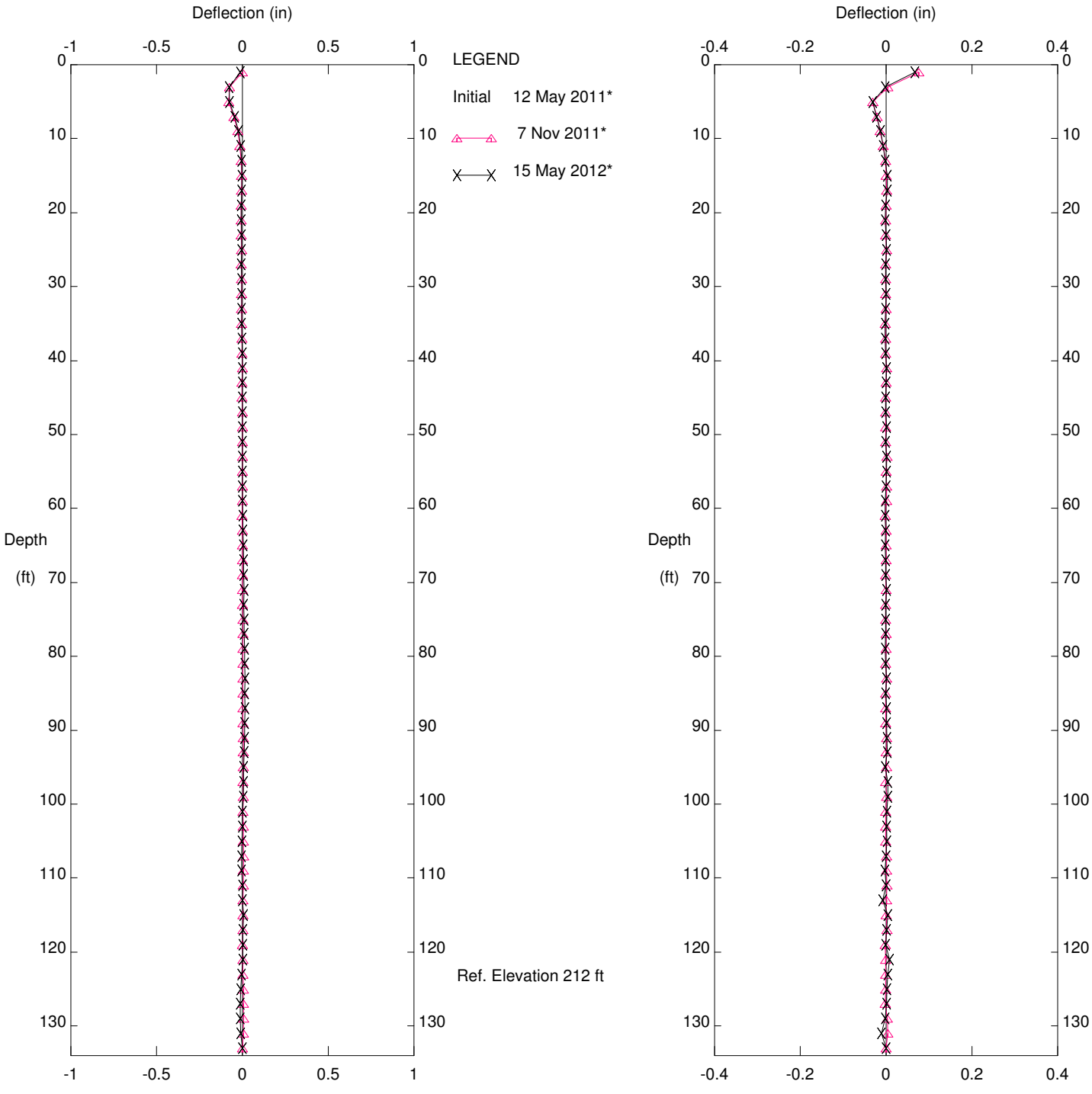
Direction A

BIG ROCK MESA, Inclinometer PC-1

EASTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

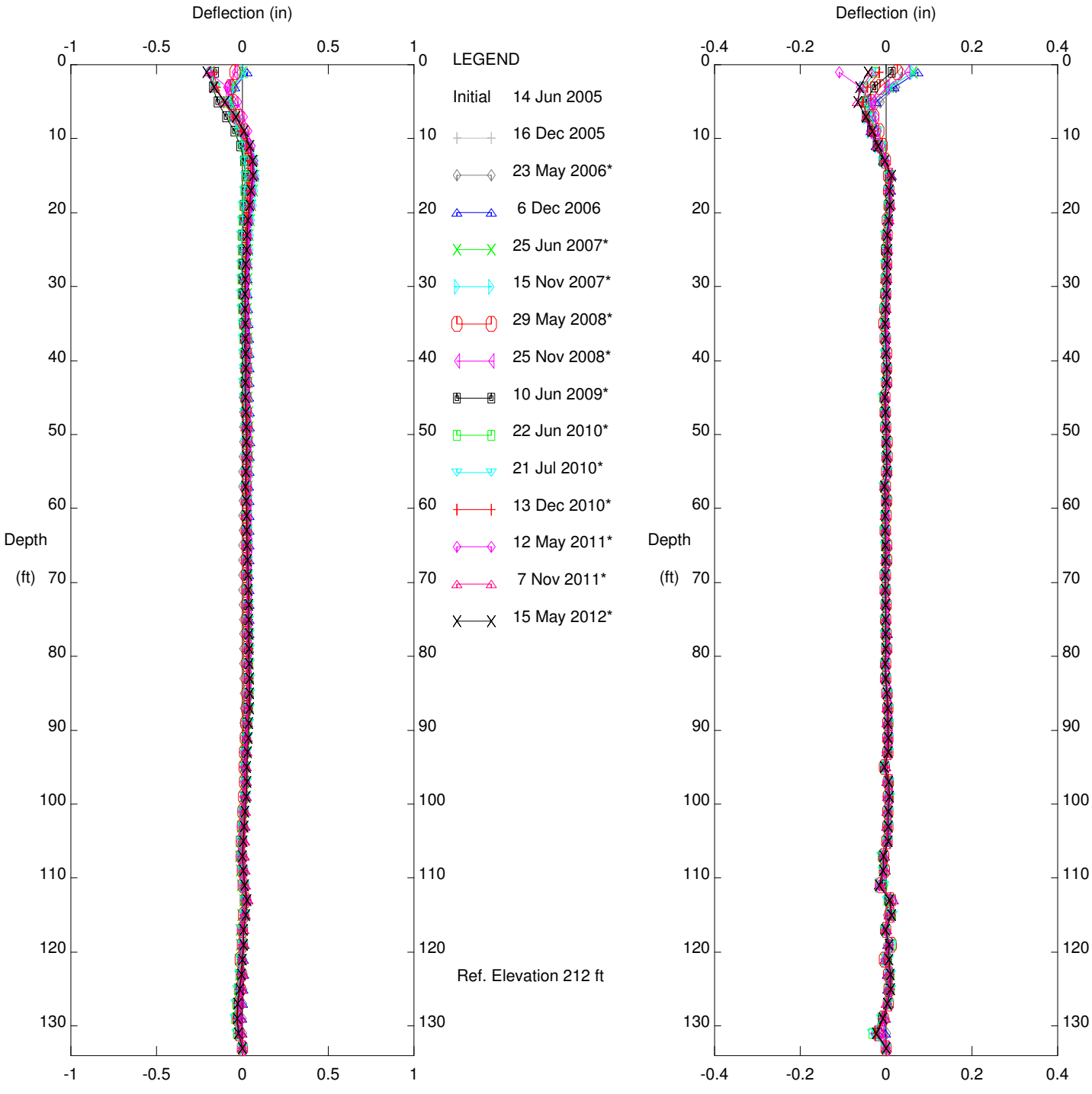
Direction A

BIG ROCK MESA, Inclinometer SP-3

EASTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

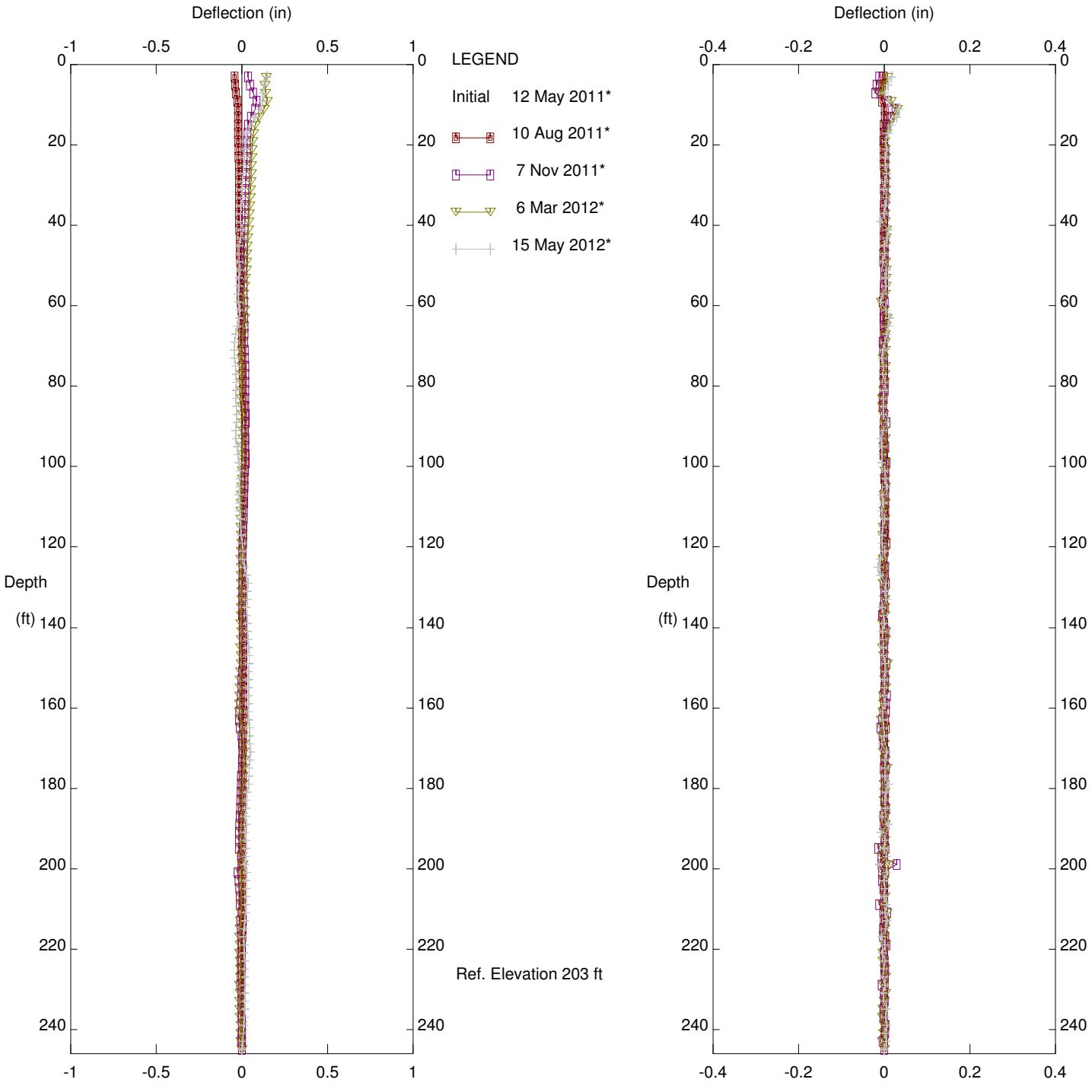
Direction A

BIG ROCK MESA, Inclinometer SP-3

EASTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

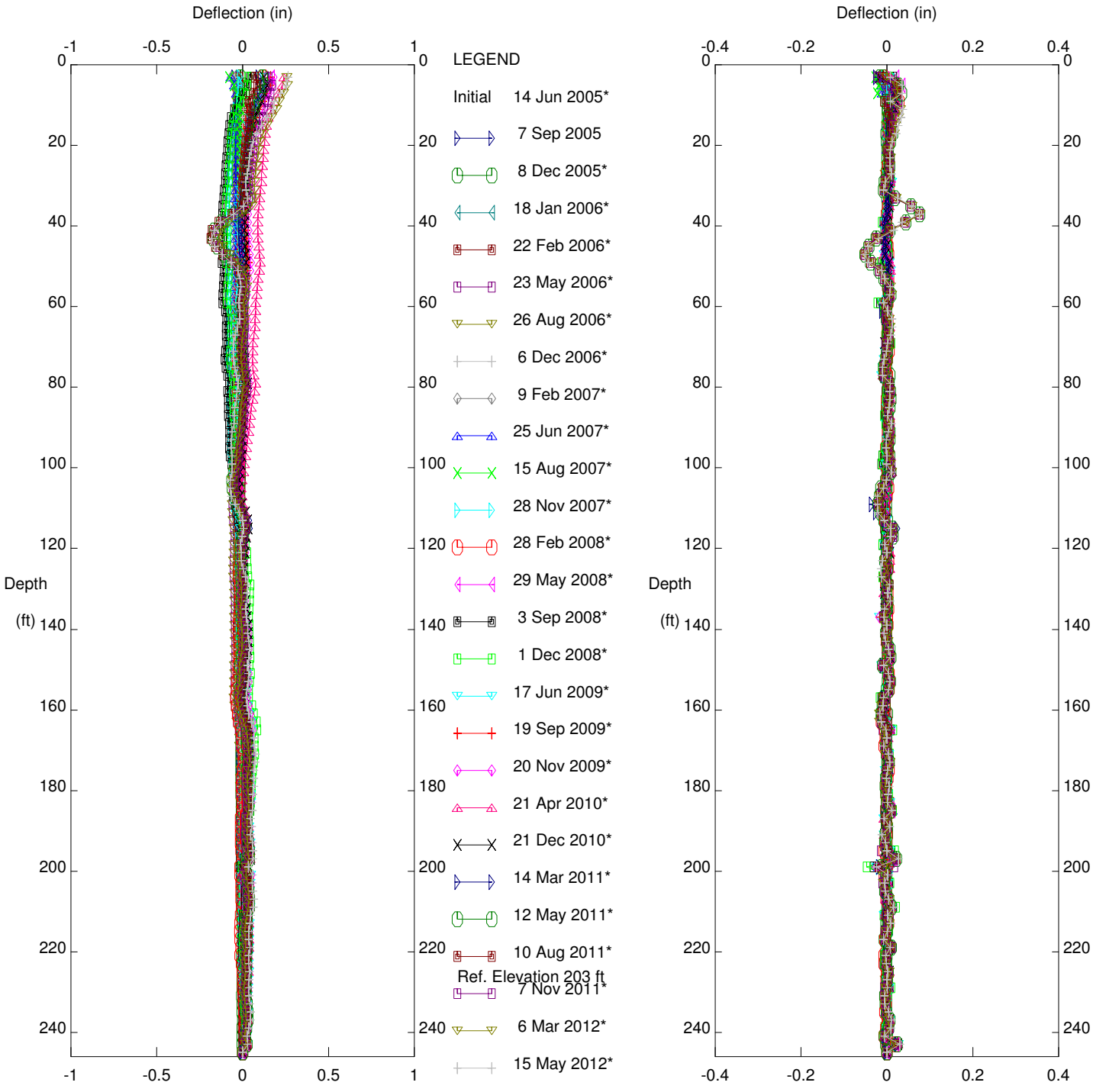
Direction A

BIG ROCK MESA, Inclinometer SP-3A

EASTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

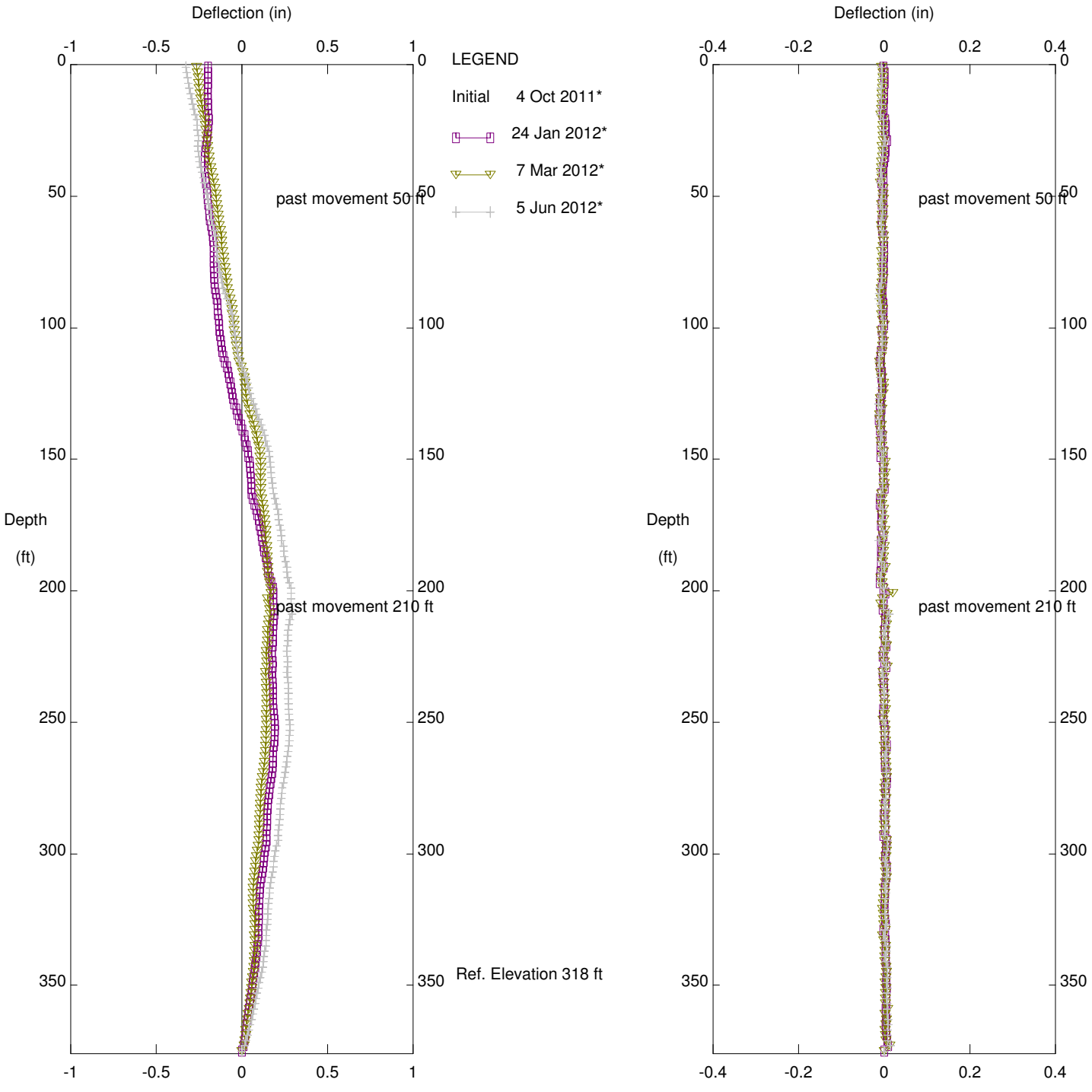
Direction A

BIG ROCK MESA, Inclinometer SP-3A

EASTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

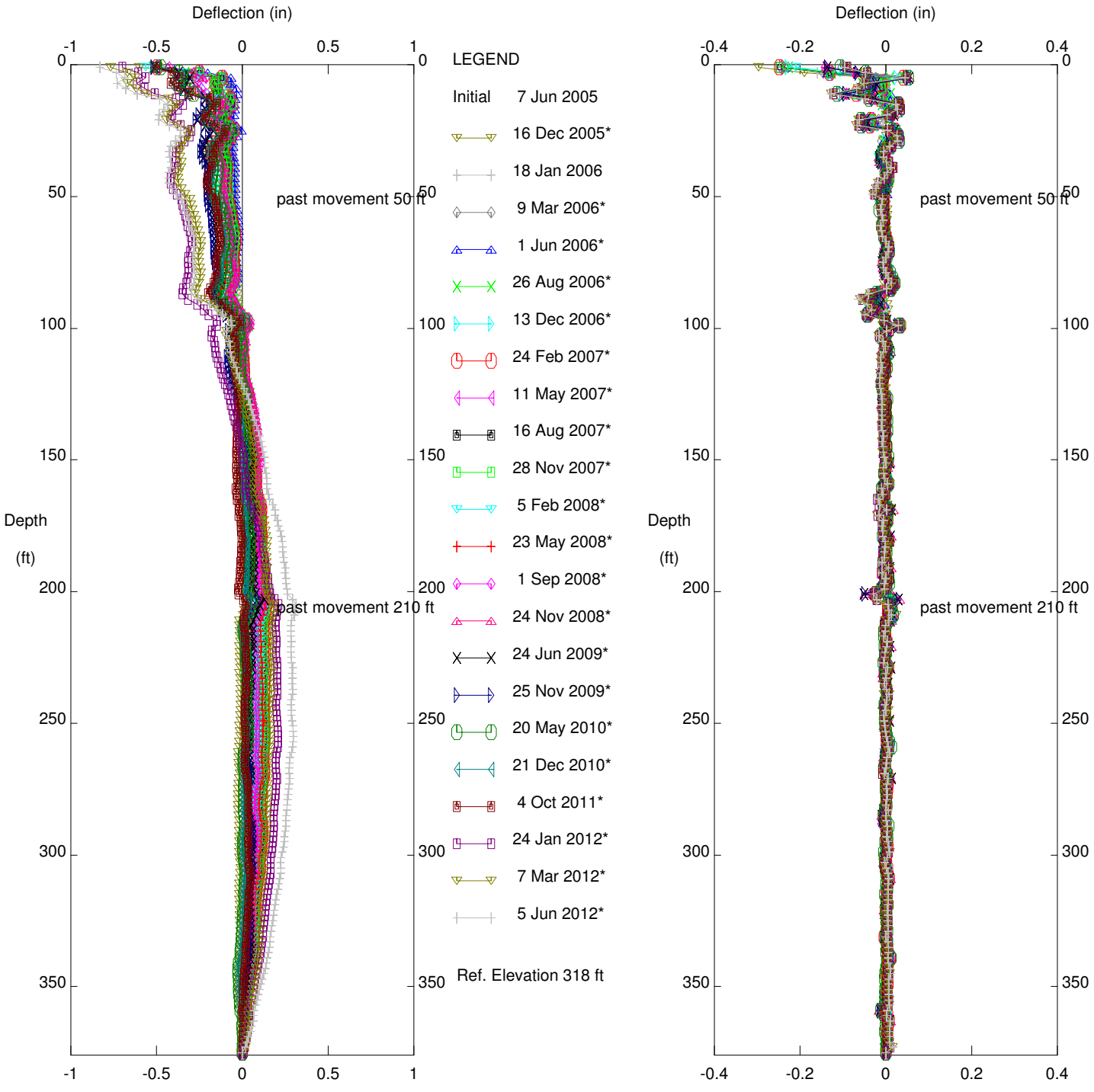
Direction A

BIG ROCK MESA, Inclinometer SP-33

EASTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

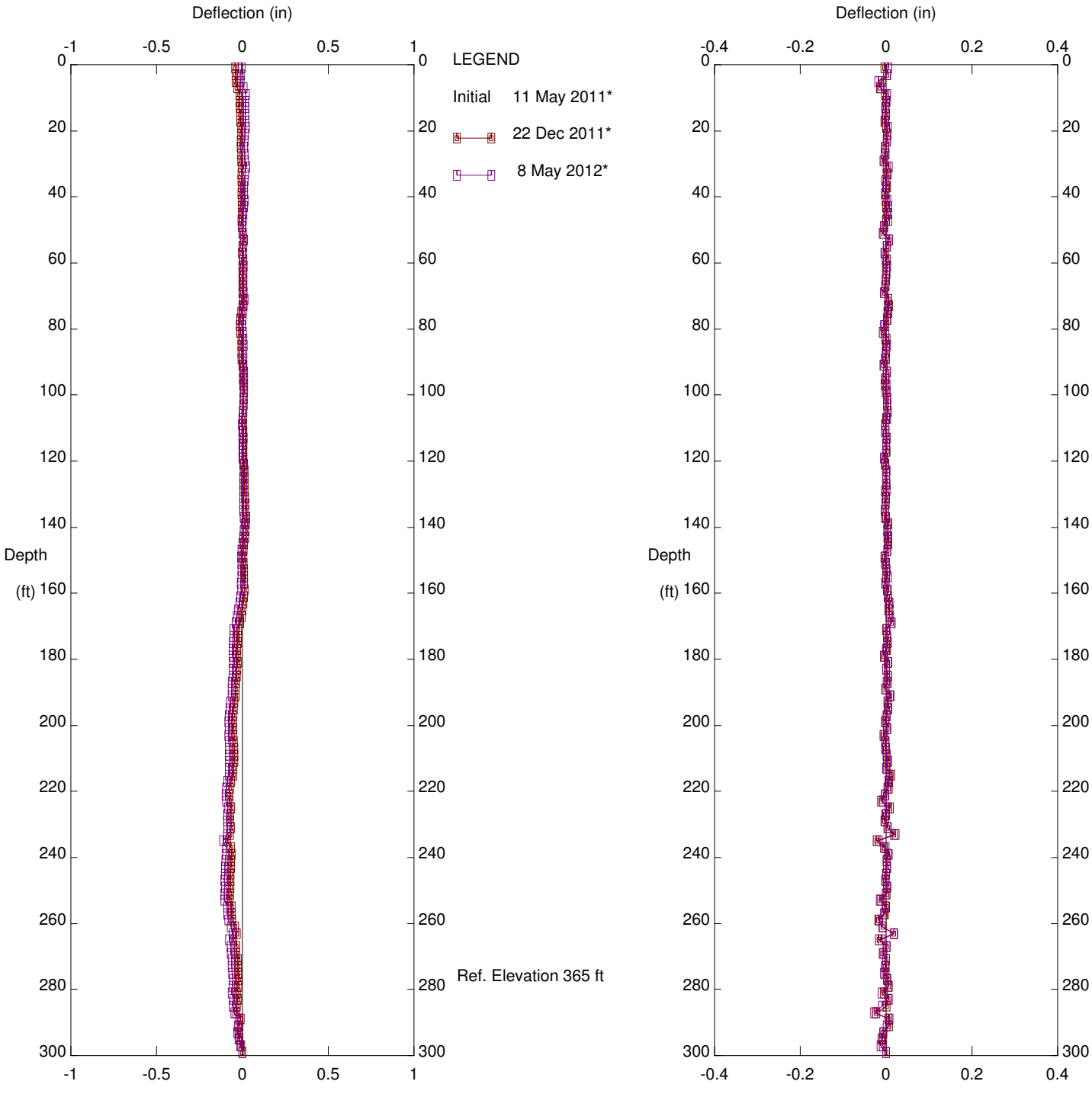
Direction A

BIG ROCK MESA, Inclinometer SP-33

EASTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

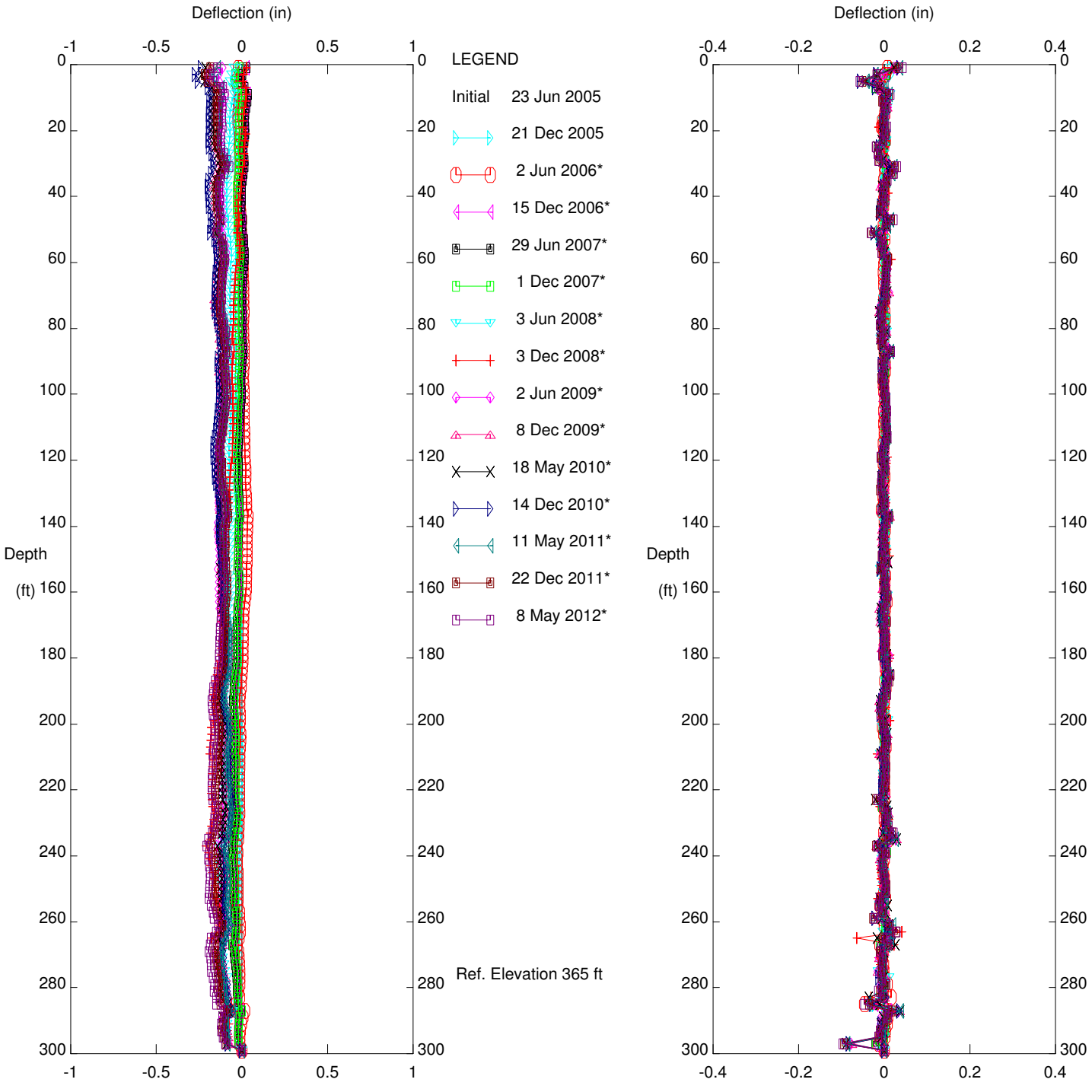
Direction A

BIG ROCK MESA, Inclinometer SP-9A

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

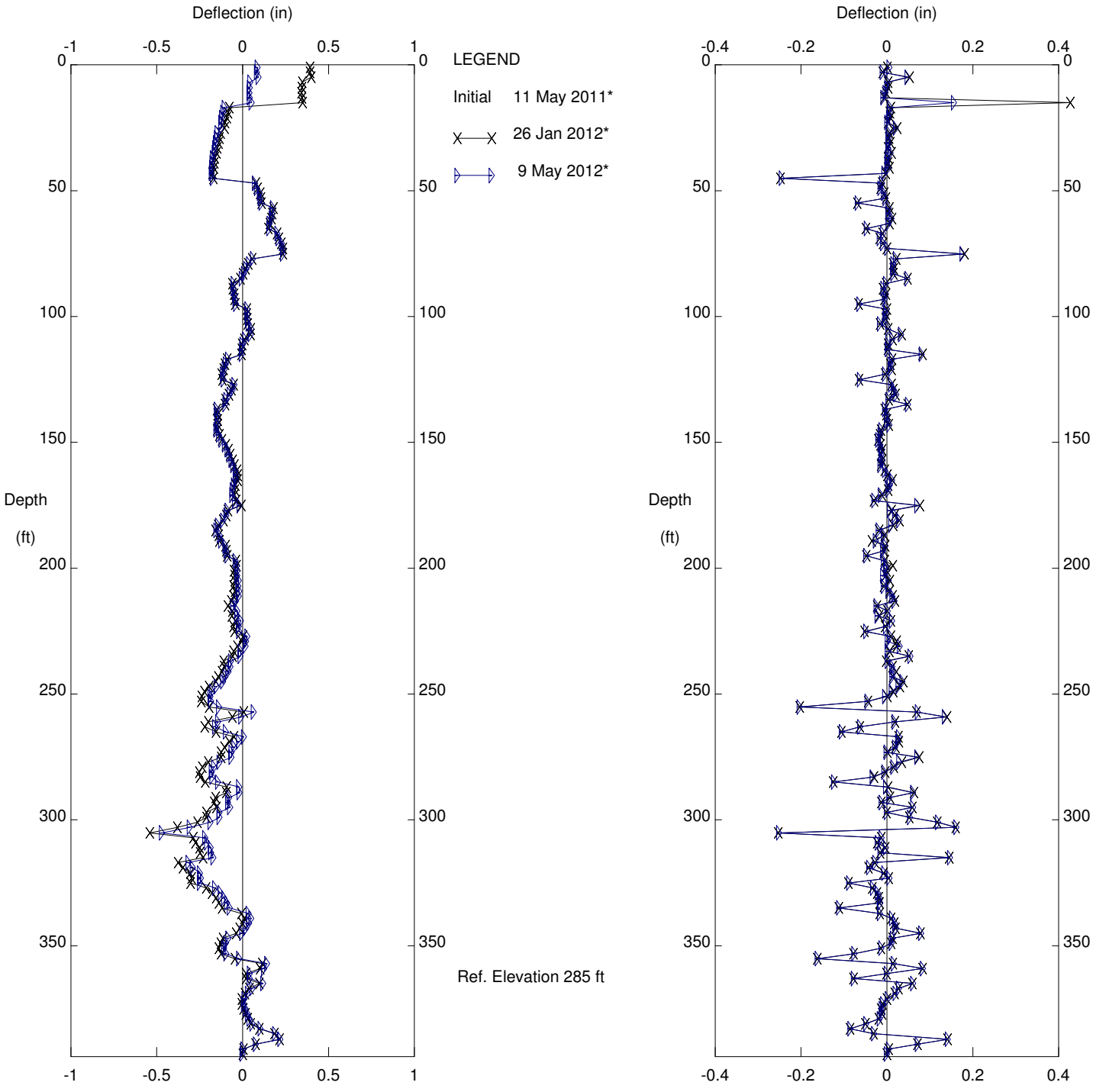
Direction A

BIG ROCK MESA, Inclinometer SP-9A

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

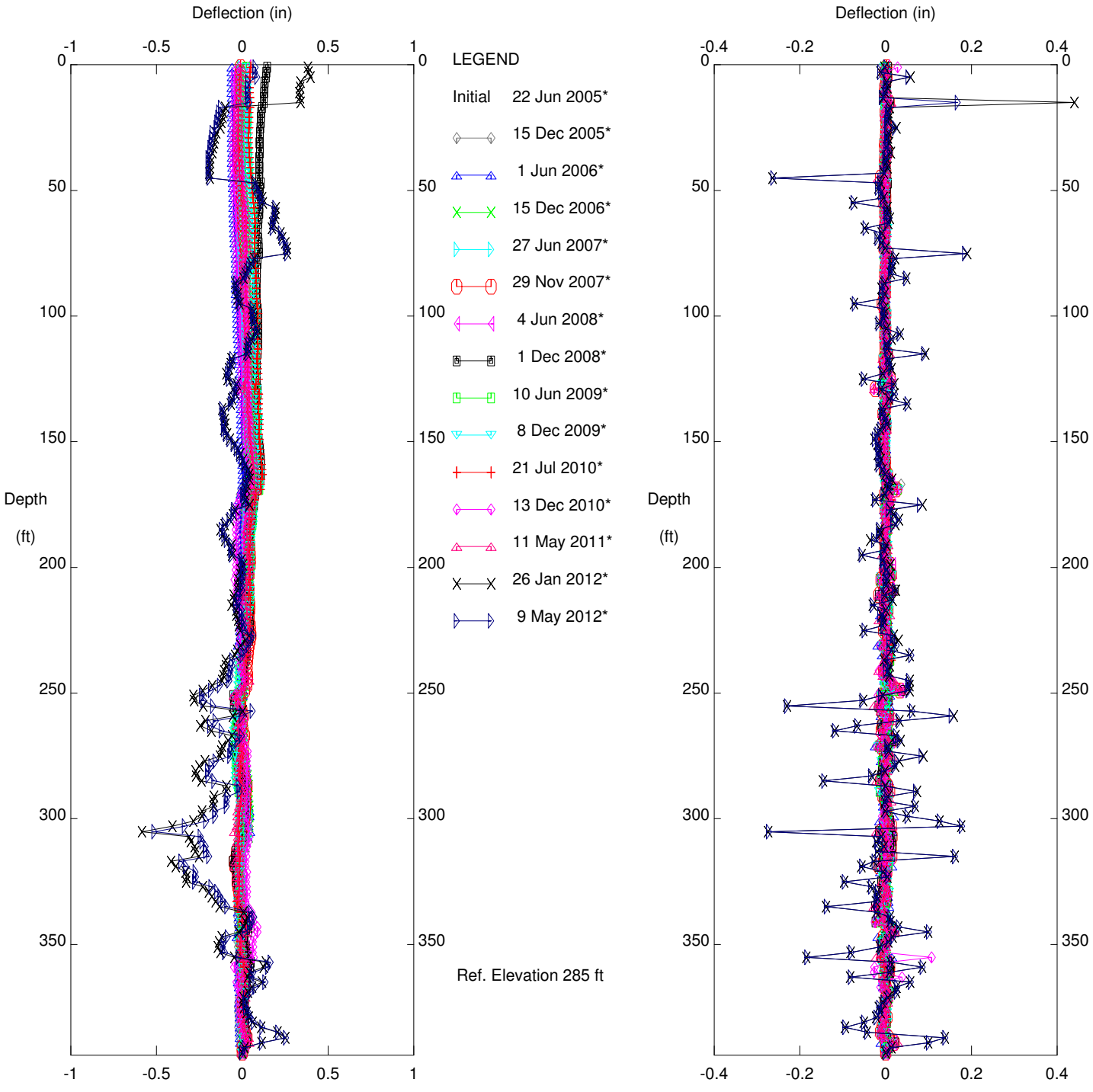
Direction A

BIG ROCK MESA, Inclinometer SP-16A

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

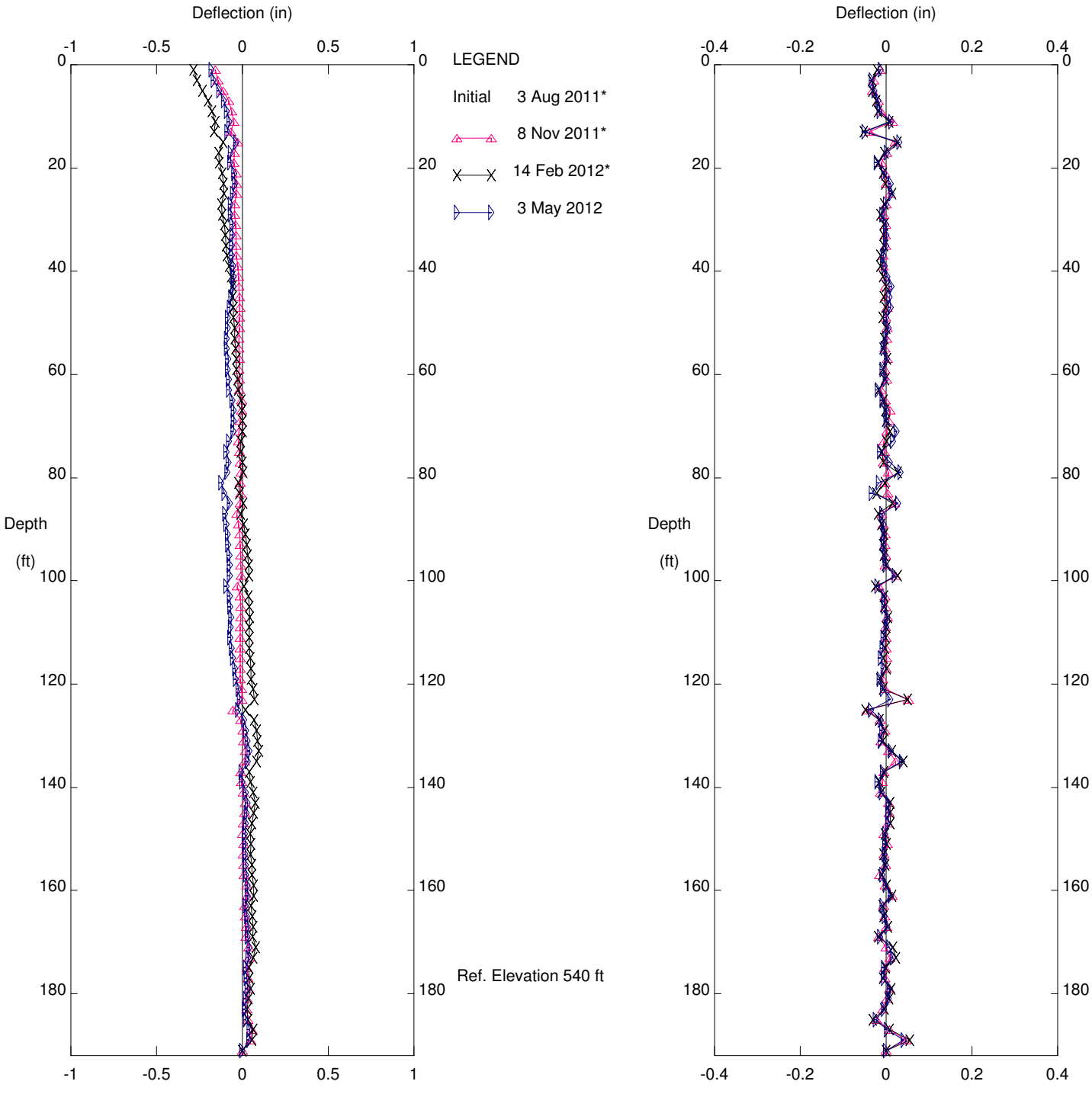
Direction A

BIG ROCK MESA, Inclinometer SP-16A

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

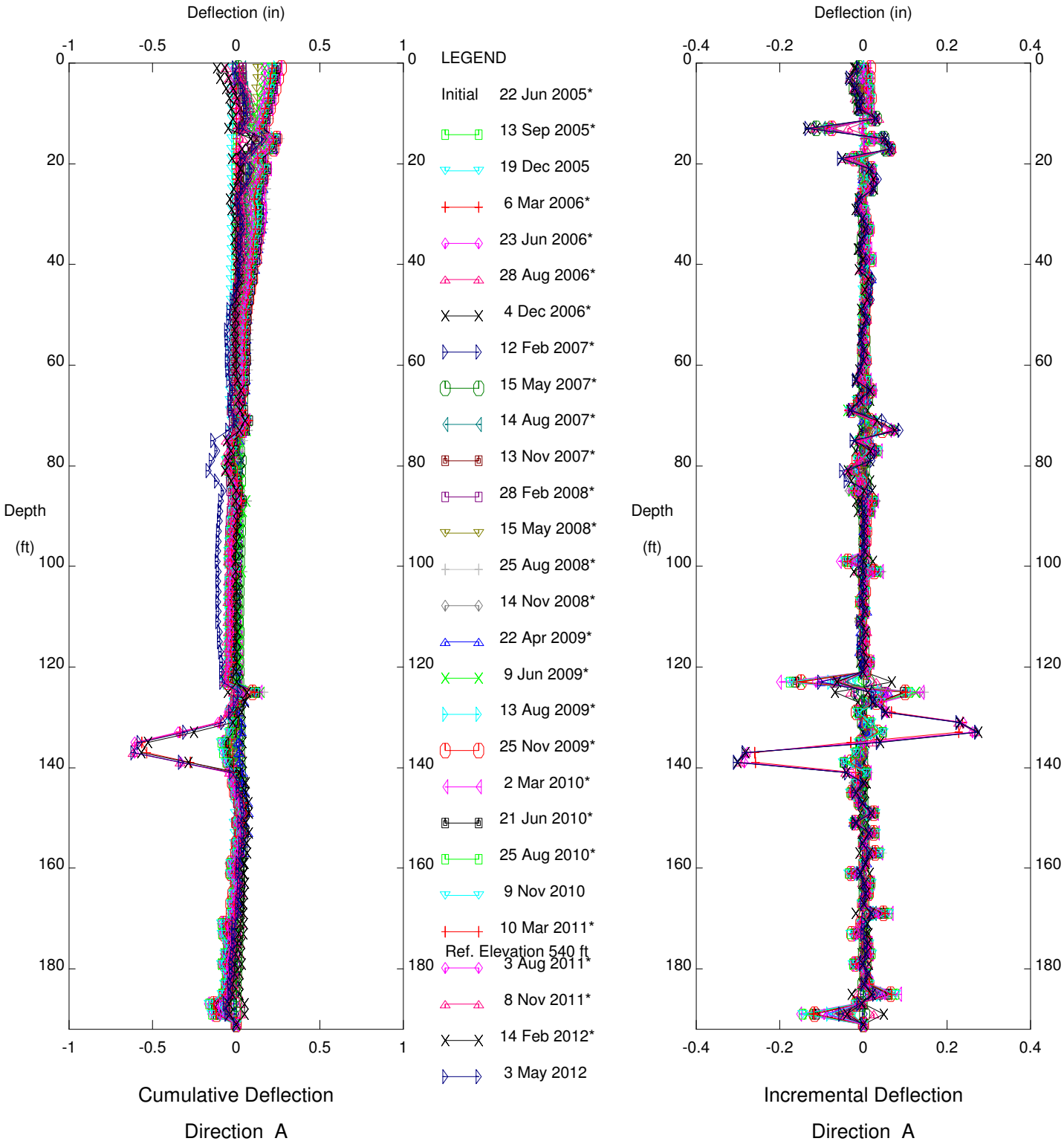
Direction A

BIG ROCK MESA, Inclinometer SP-17

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

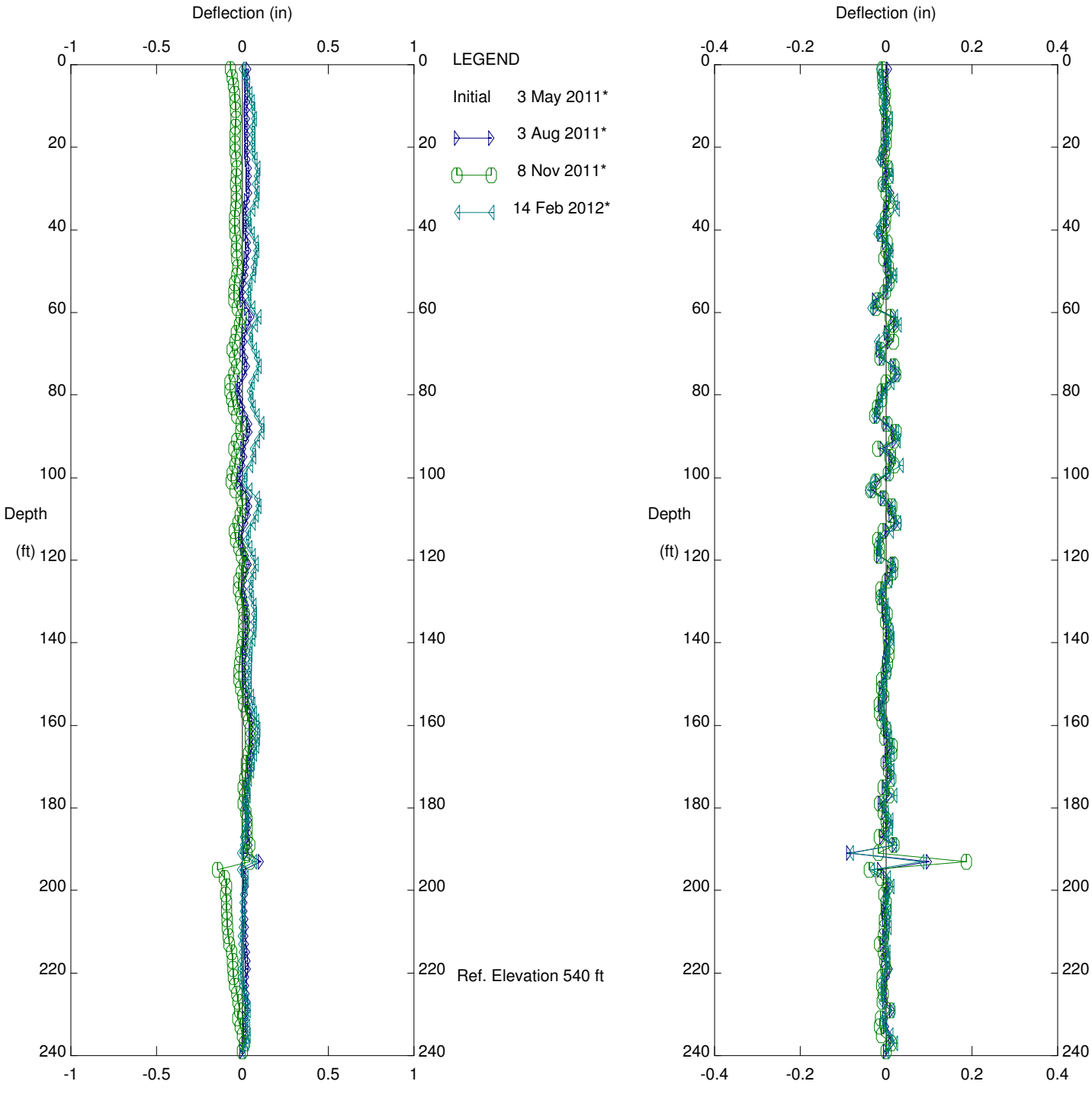
Direction A

BIG ROCK MESA, Inclinometer SP-17

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BIG ROCK MESA, Inclinometer SP-17A

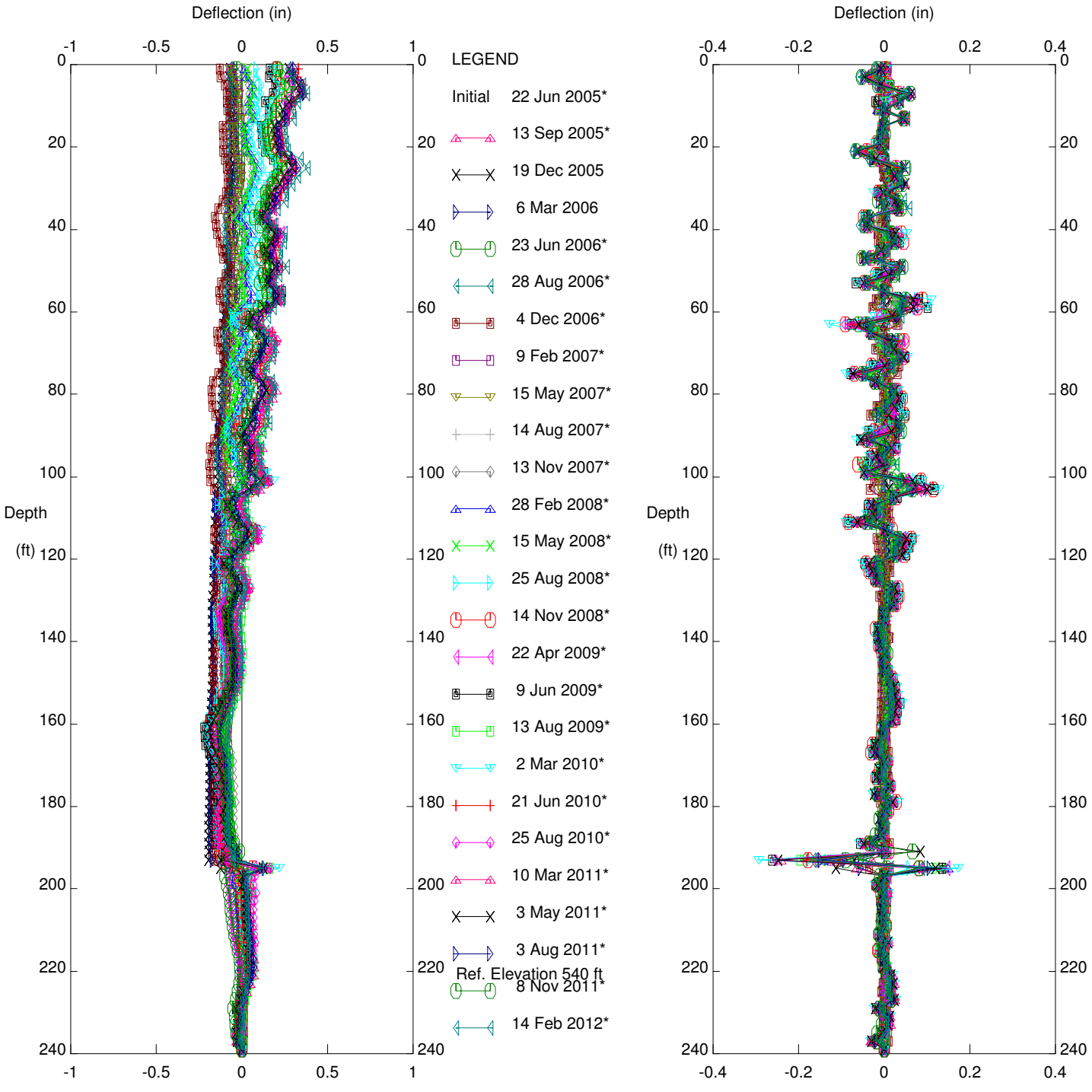
CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

O:\Management\3399_Malibu\3399-006_Big_Rock_Mesa\03_DATA\SI_Data\2011-2012\SP17A.gtl

PLATE D-20a

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

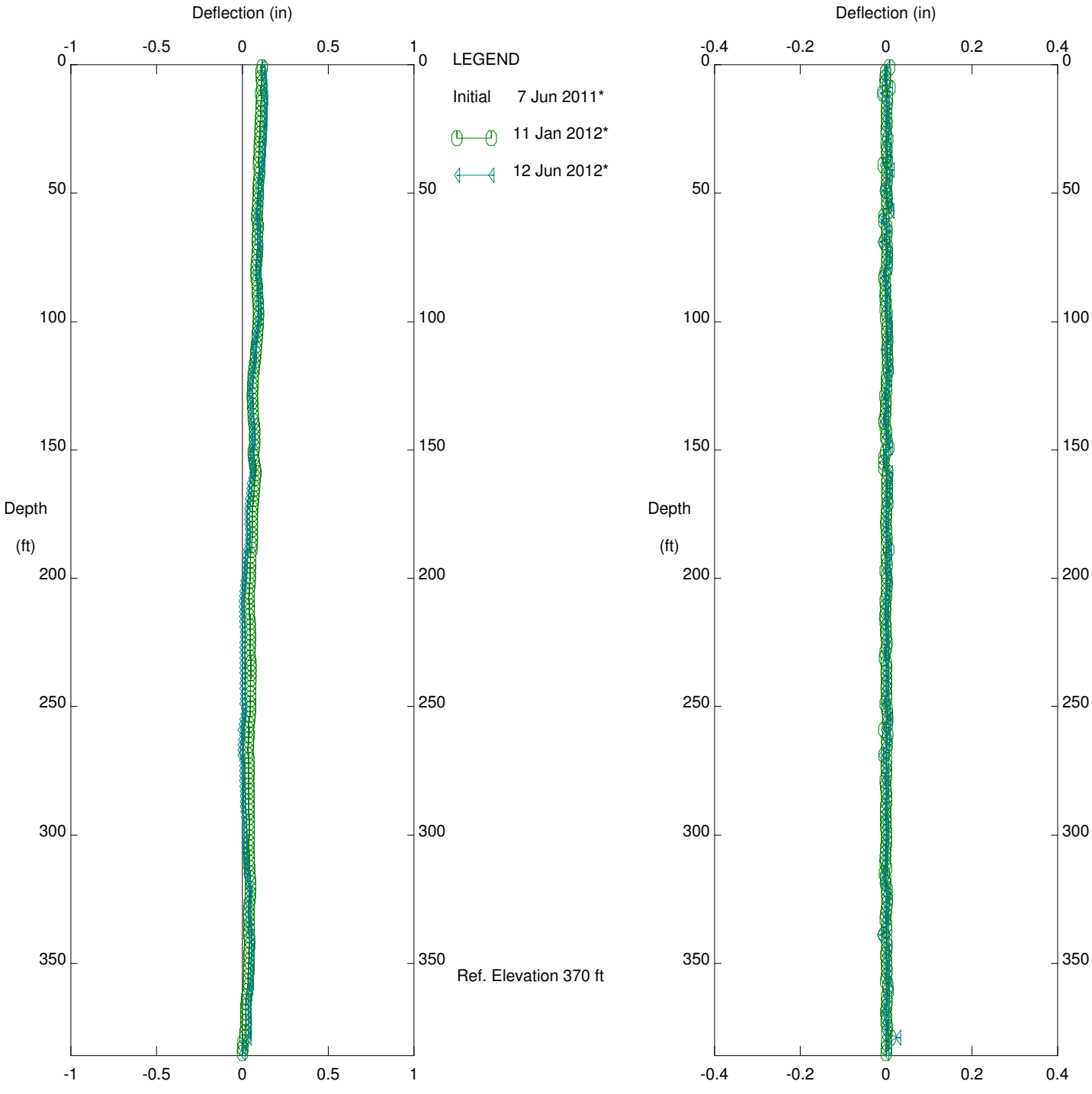
Direction A

BIG ROCK MESA, Inclinometer SP-17A

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

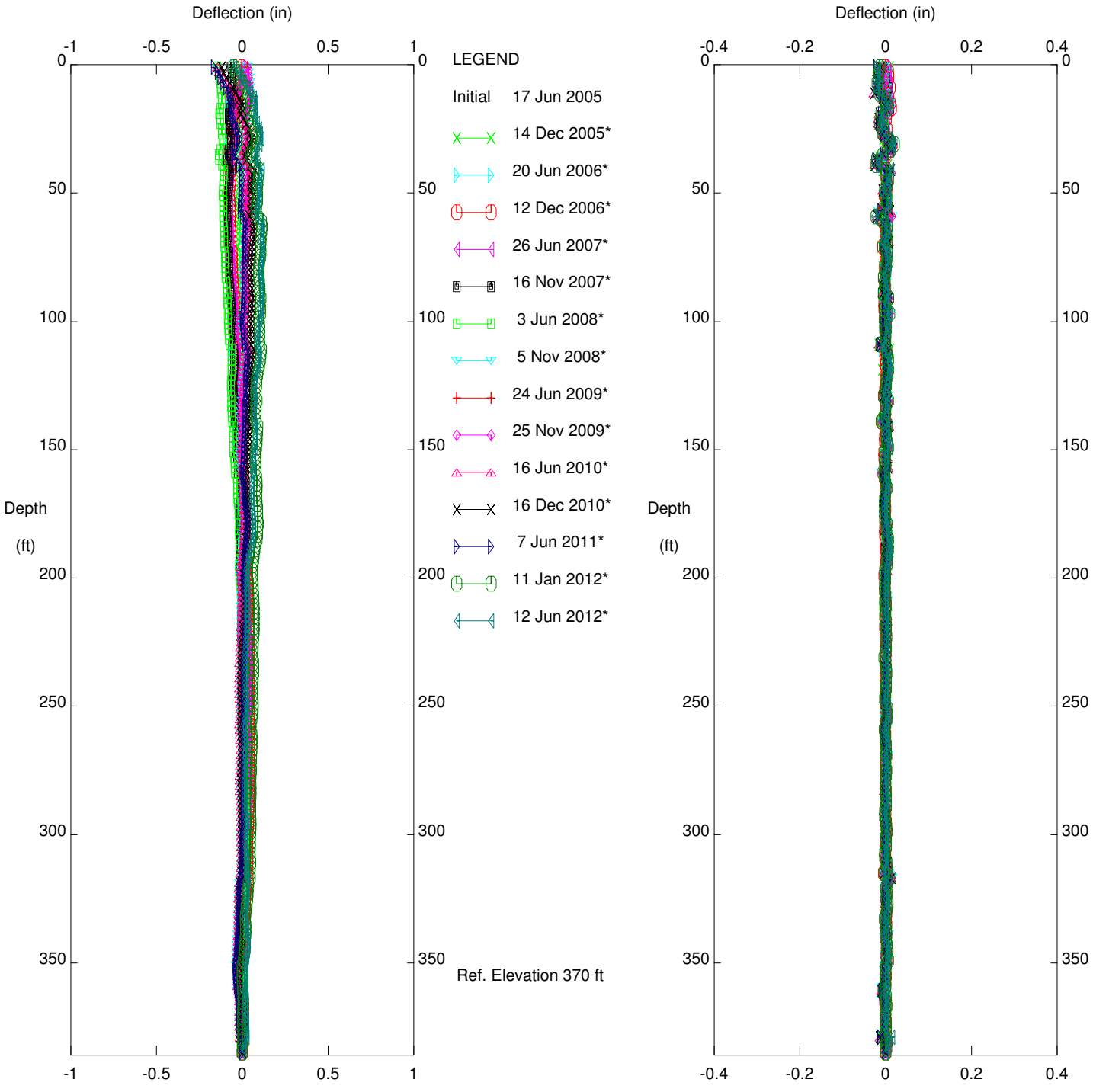
Direction A

BIG ROCK MESA, Inclinometer SP-24

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

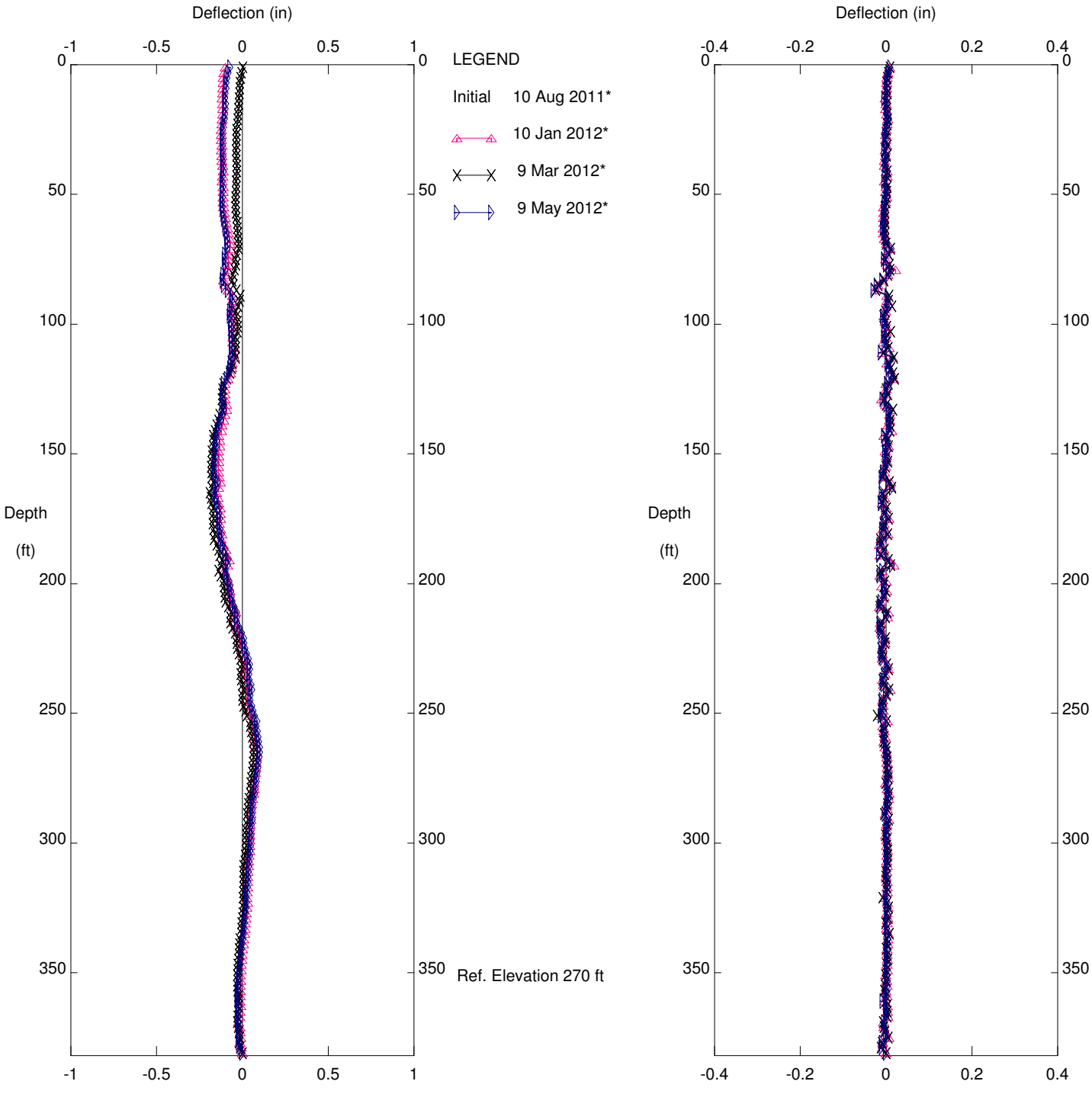
Direction A

BIG ROCK MESA, Inclinometer SP-24

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

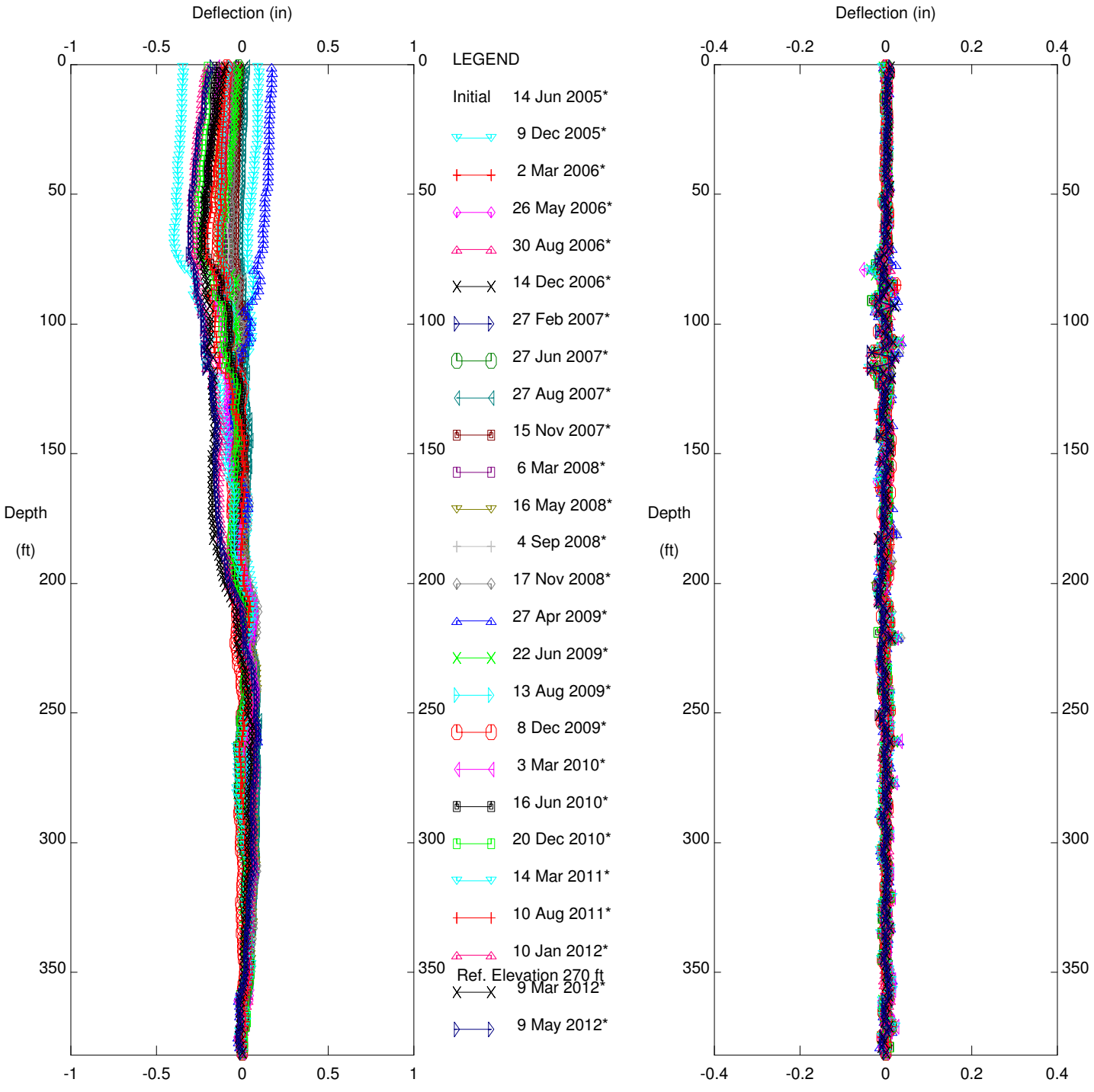
Direction A

BIG ROCK MESA, Inclinometer SP-34

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

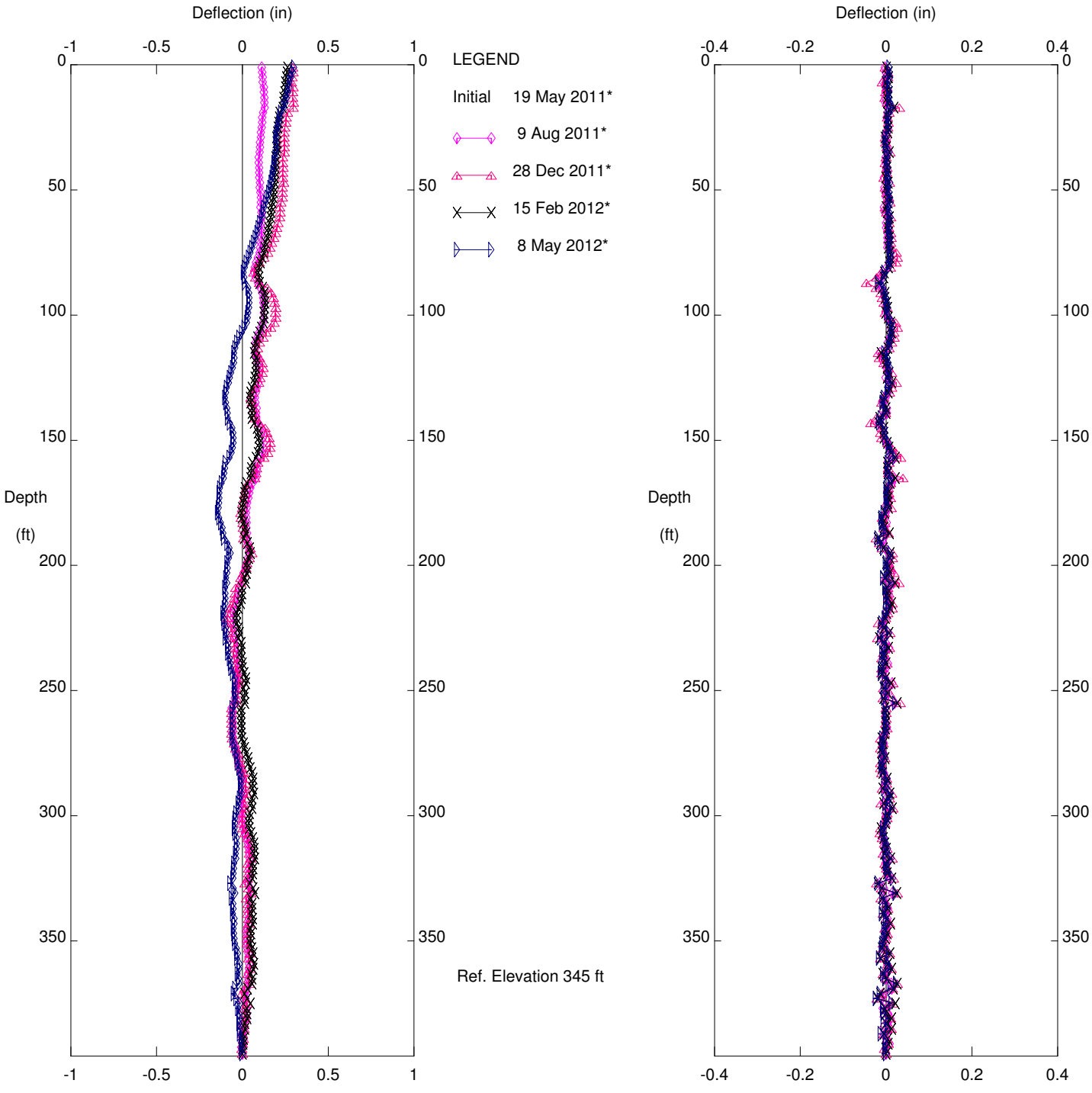
Direction A

BIG ROCK MESA, Inclinometer SP-34

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

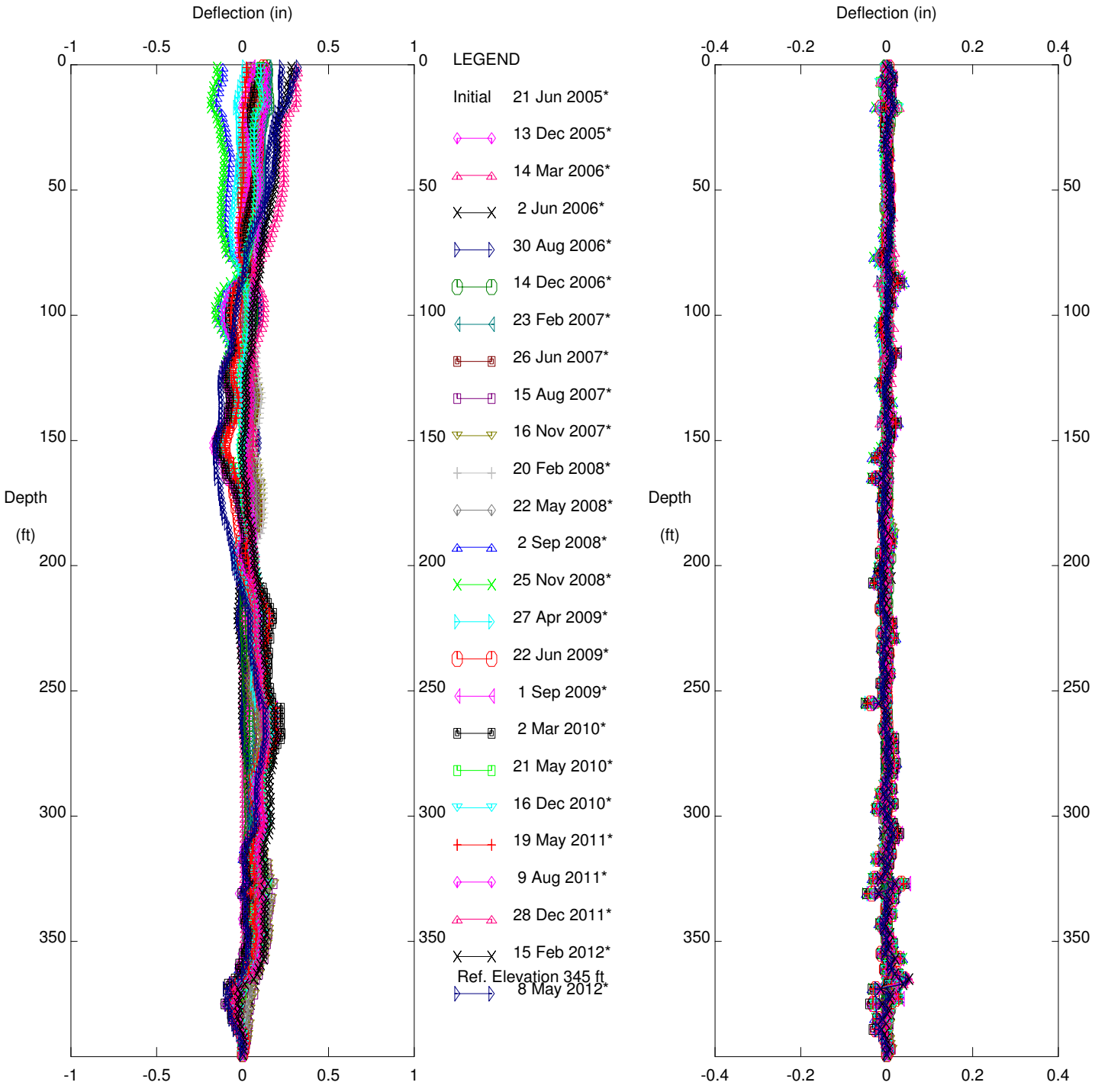
Direction A

BIG ROCK MESA, Inclinometer SP-35

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

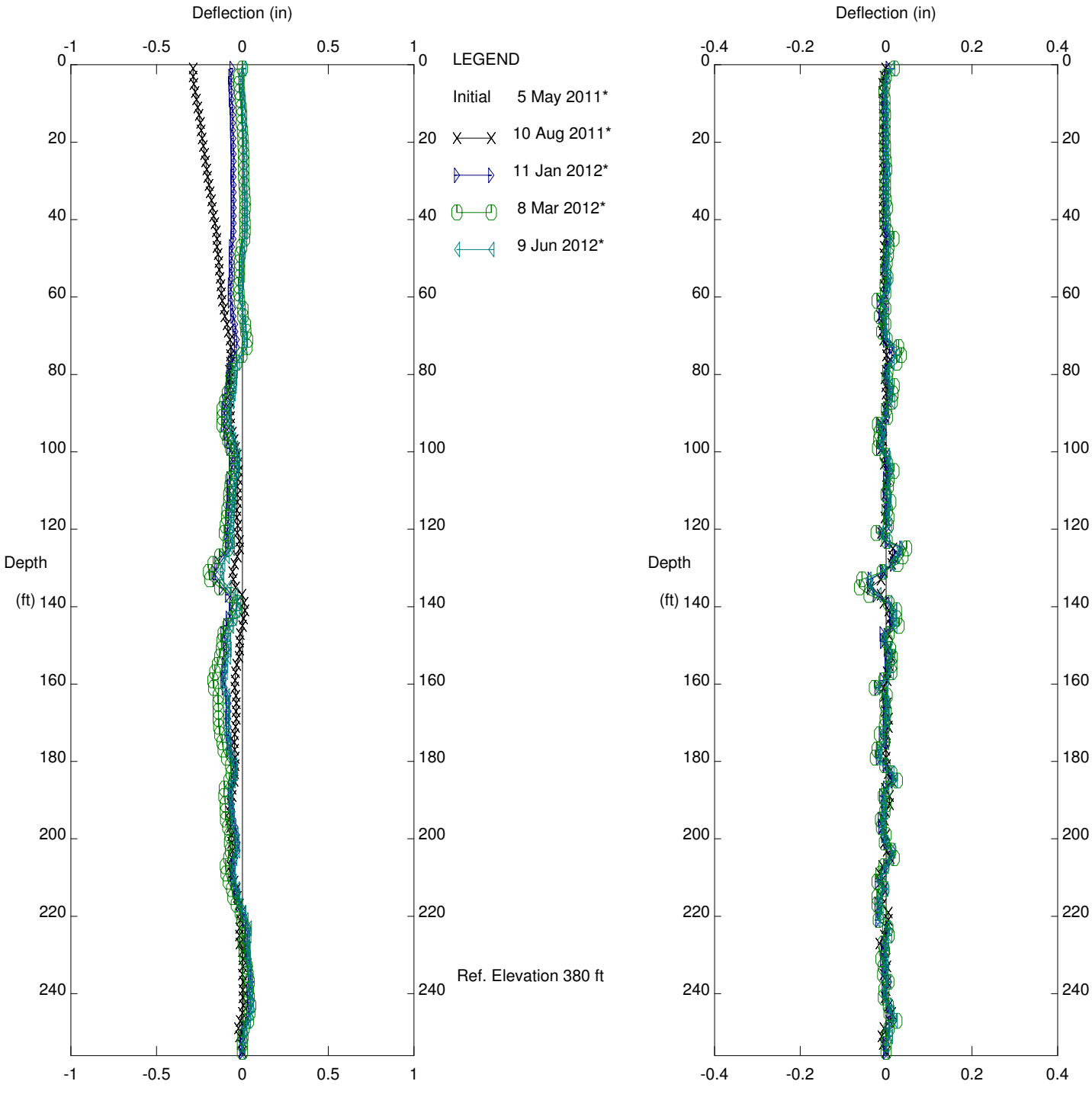
Direction A

BIG ROCK MESA, Inclinometer SP-35

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BIG ROCK MESA, Inclinometer SP-36

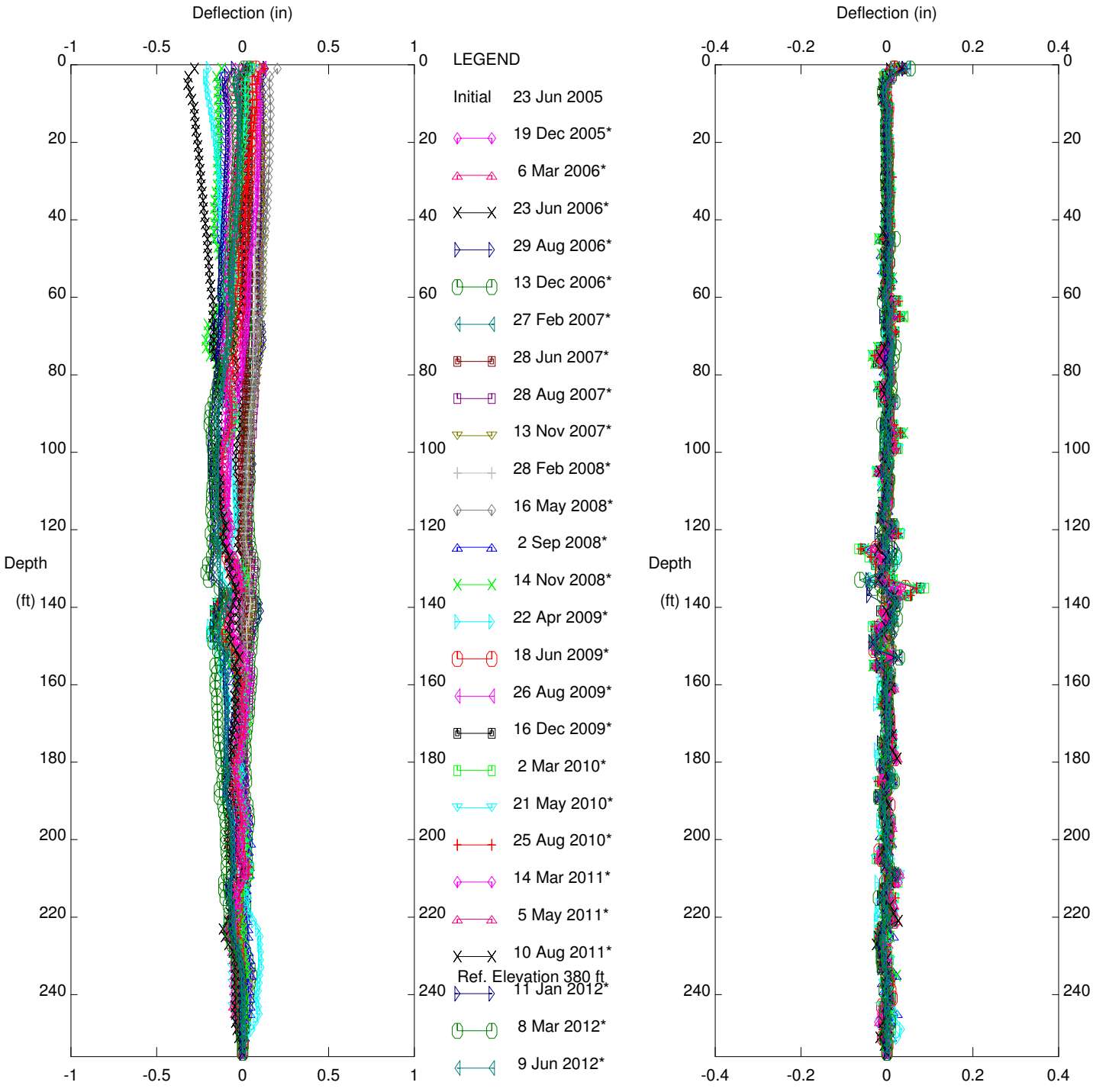
CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

O:\Management\3399_Malibu\3399-006_Big_Rock_Mesa\03_DATA\SI_Data\2011-2012\SP36.gtl

PLATE D-24a

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

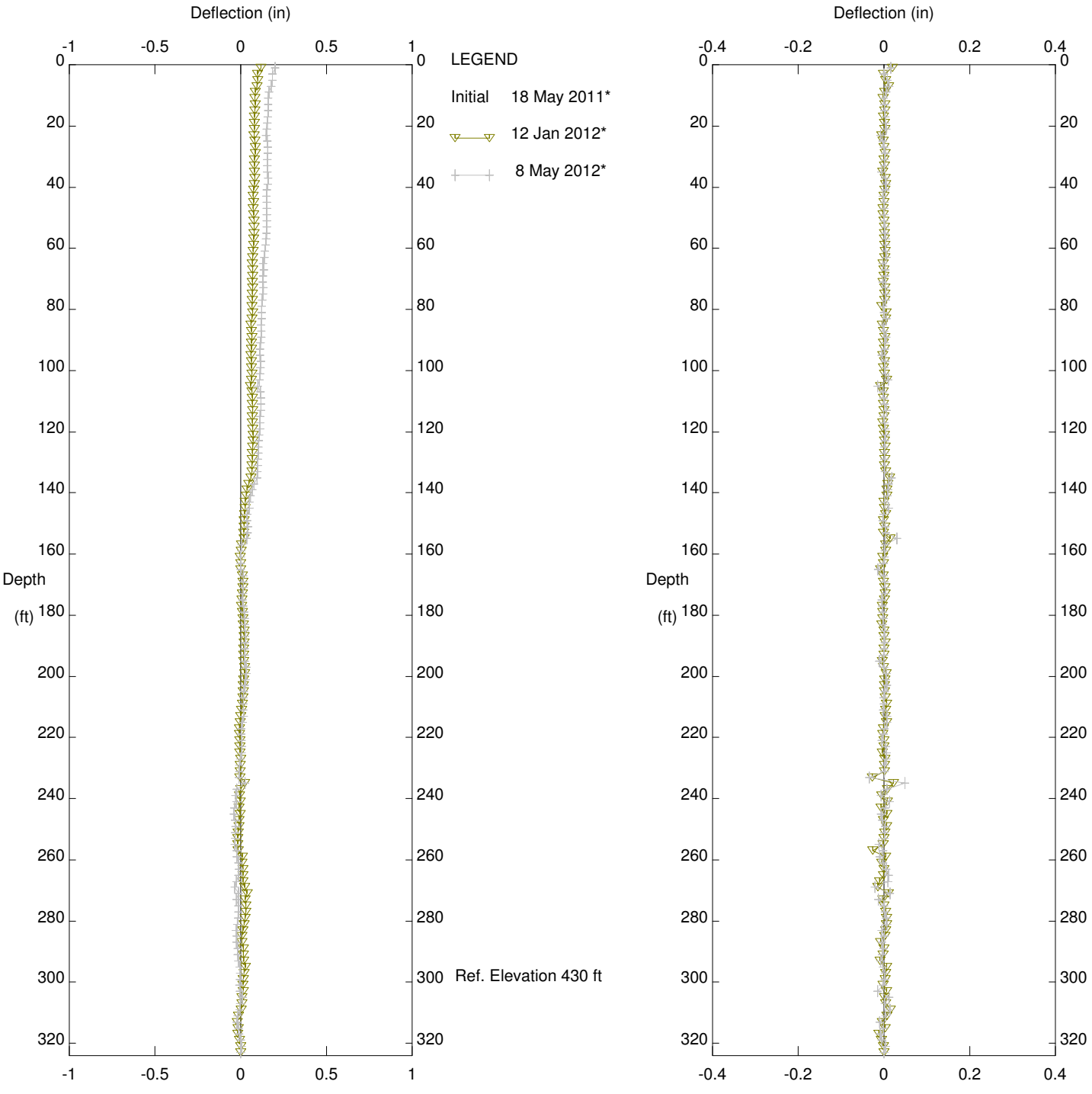
Direction A

BIG ROCK MESA, Inclinometer SP-36

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

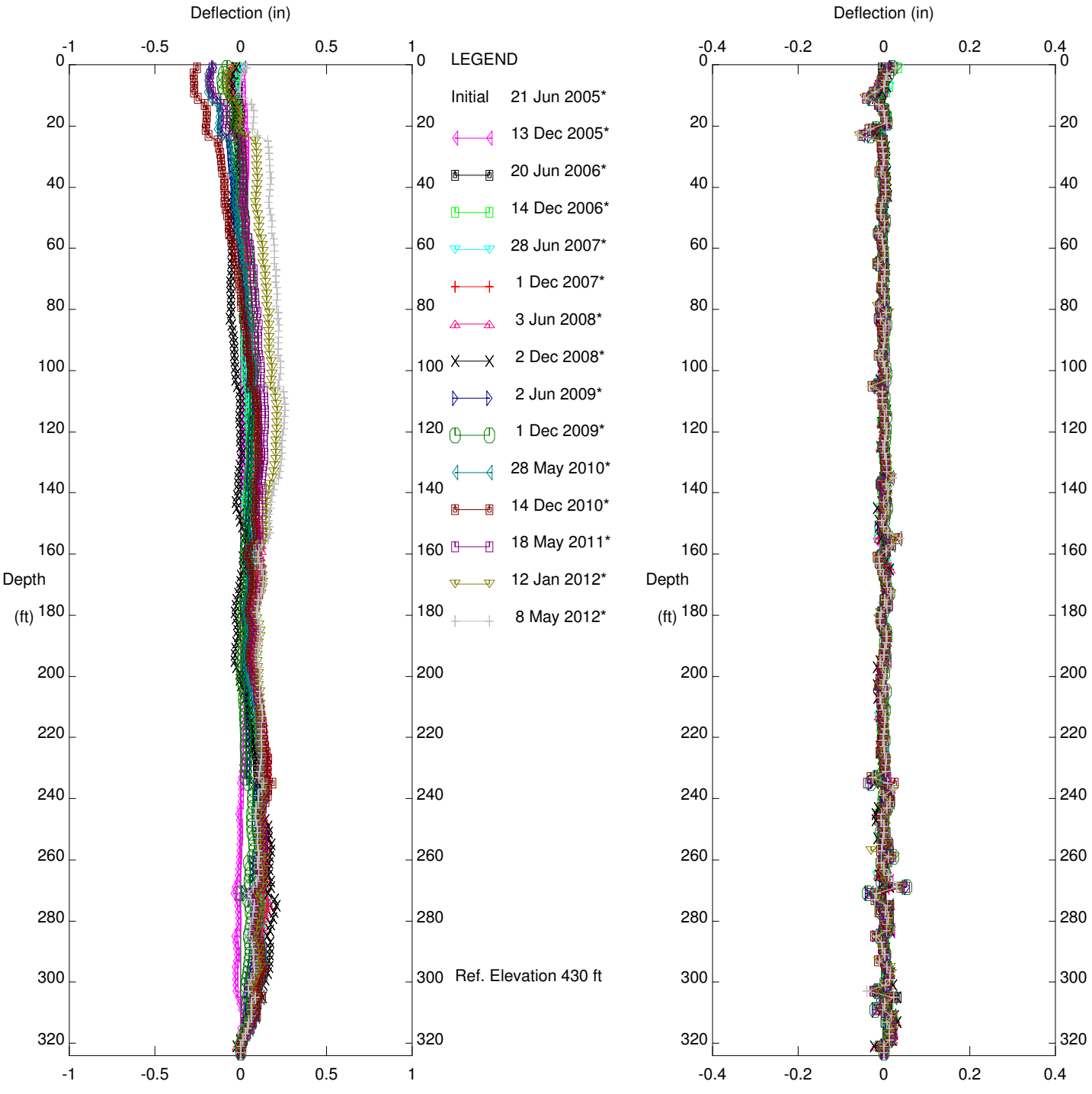
Direction A

BIG ROCK MESA, Inclinometer SP-20

WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

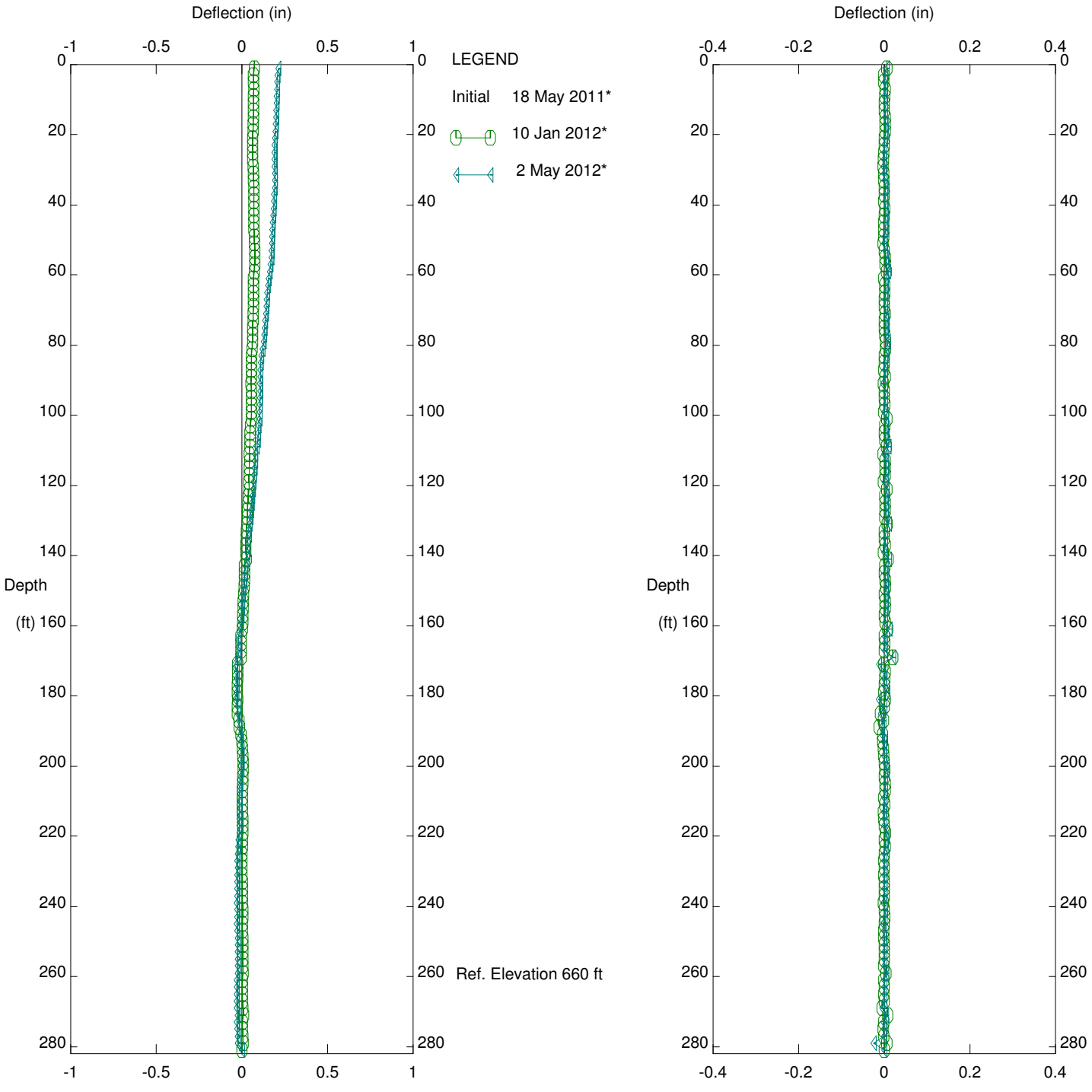
Direction A

BIG ROCK MESA, Inclinometer SP-20

WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

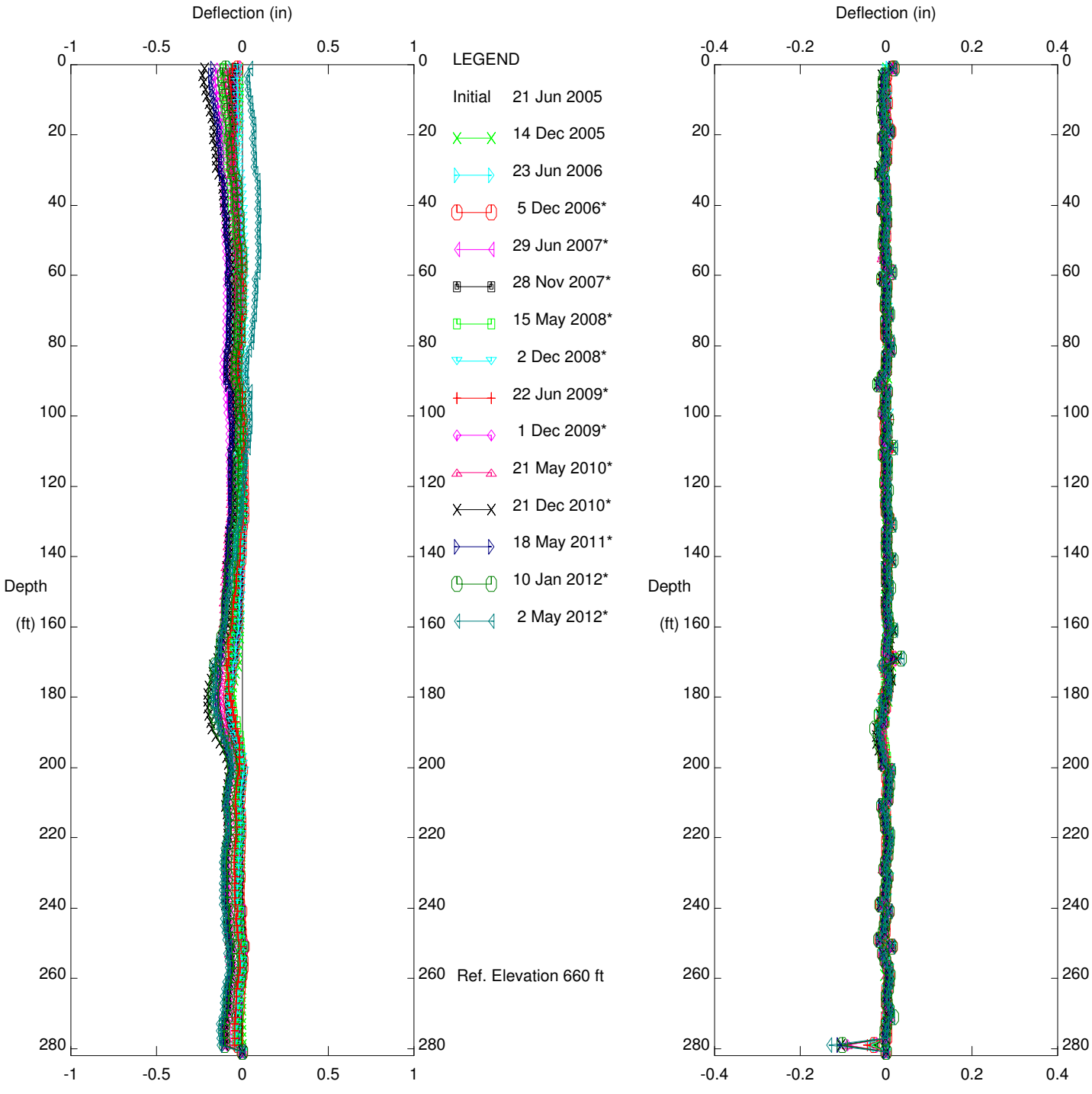
Direction A

BIG ROCK MESA, Inclinometer SP-21

WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

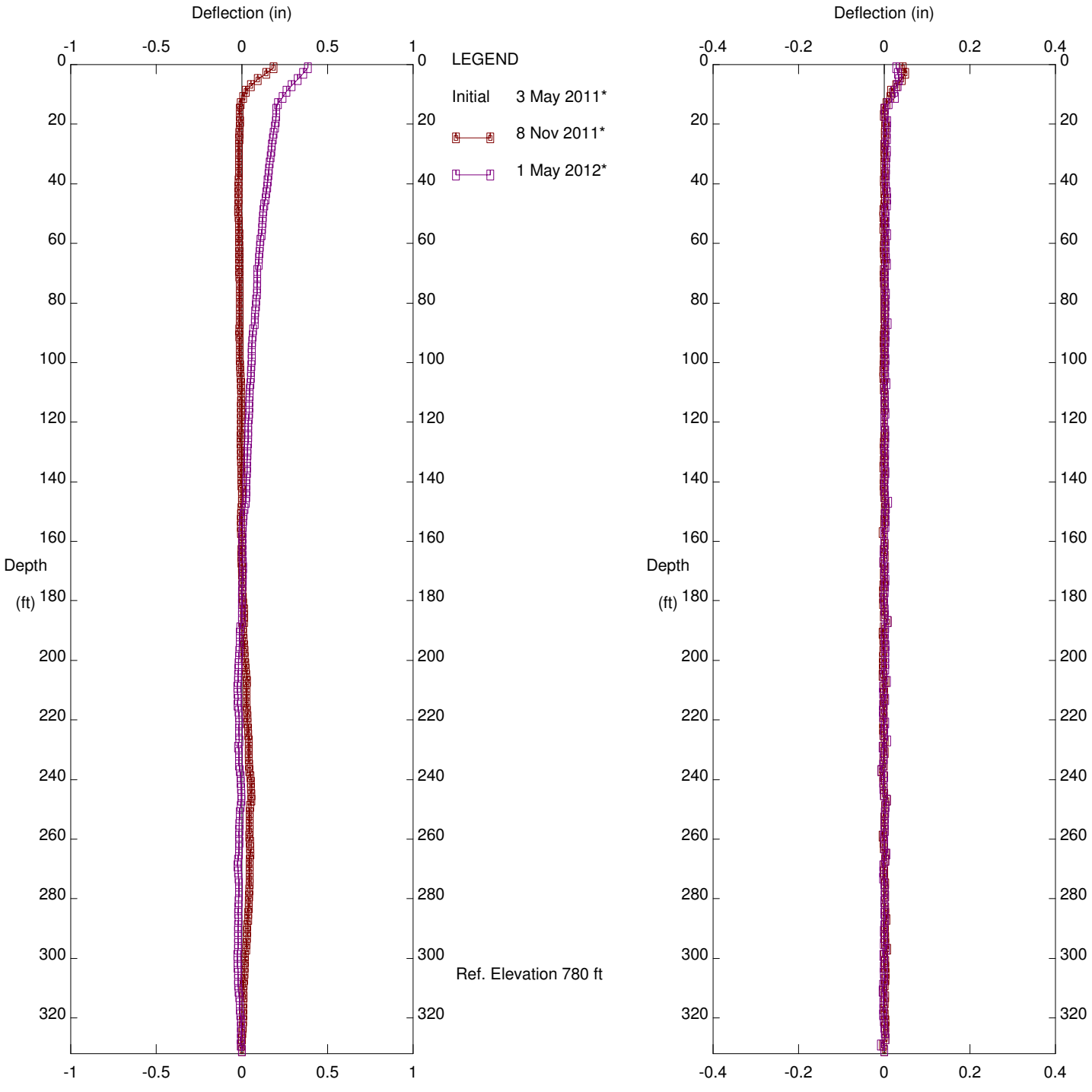
Direction A

BIG ROCK MESA, Inclinometer SP-21

WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BIG ROCK MESA, Inclinometer SP-22

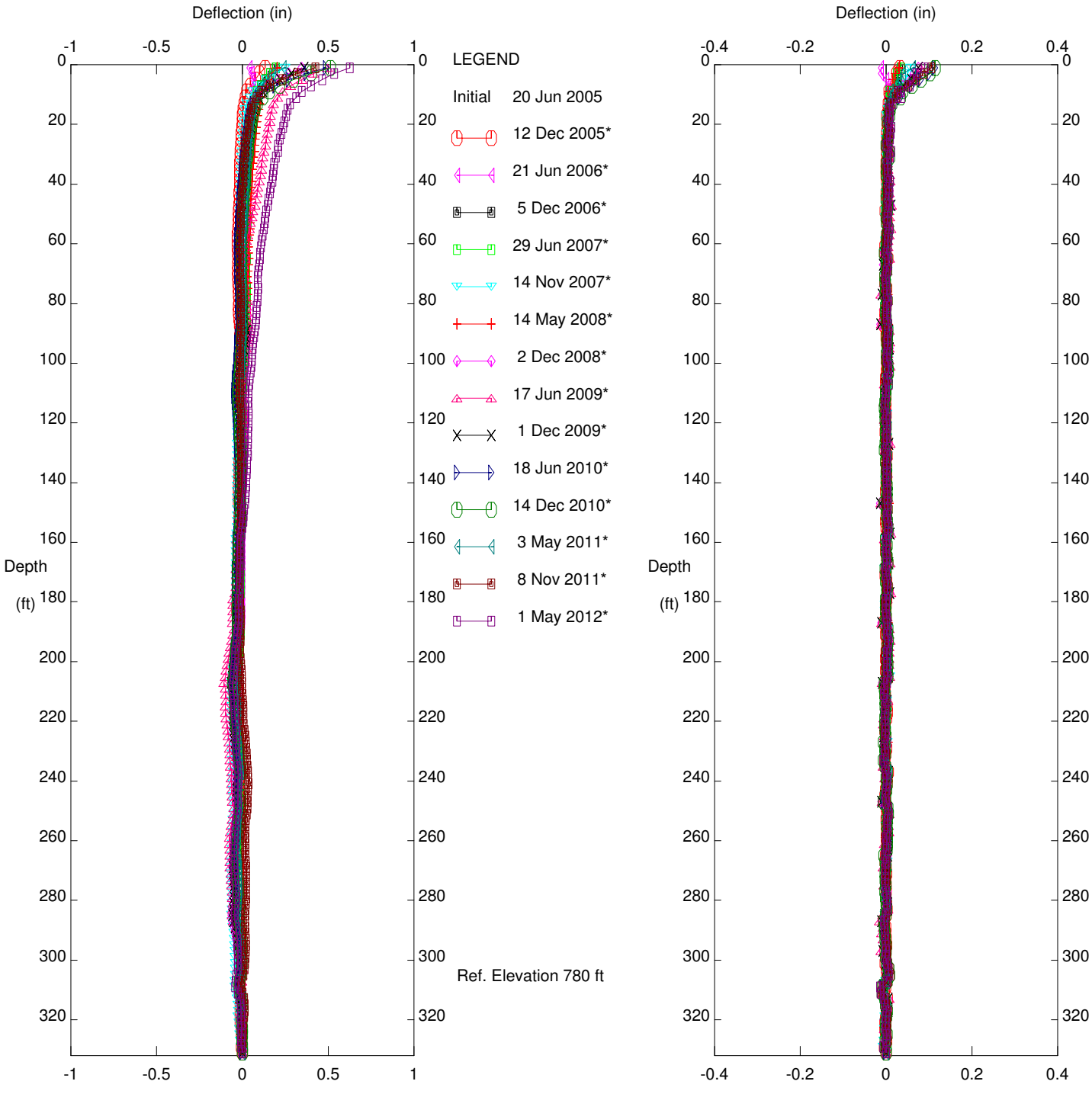
WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

O:\Management\3399_Malibu\3399-006_Big_Rock_Mesa\03_DATA\SI_Data\2011-2012\SP22.gtl

PLATE D-27a

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

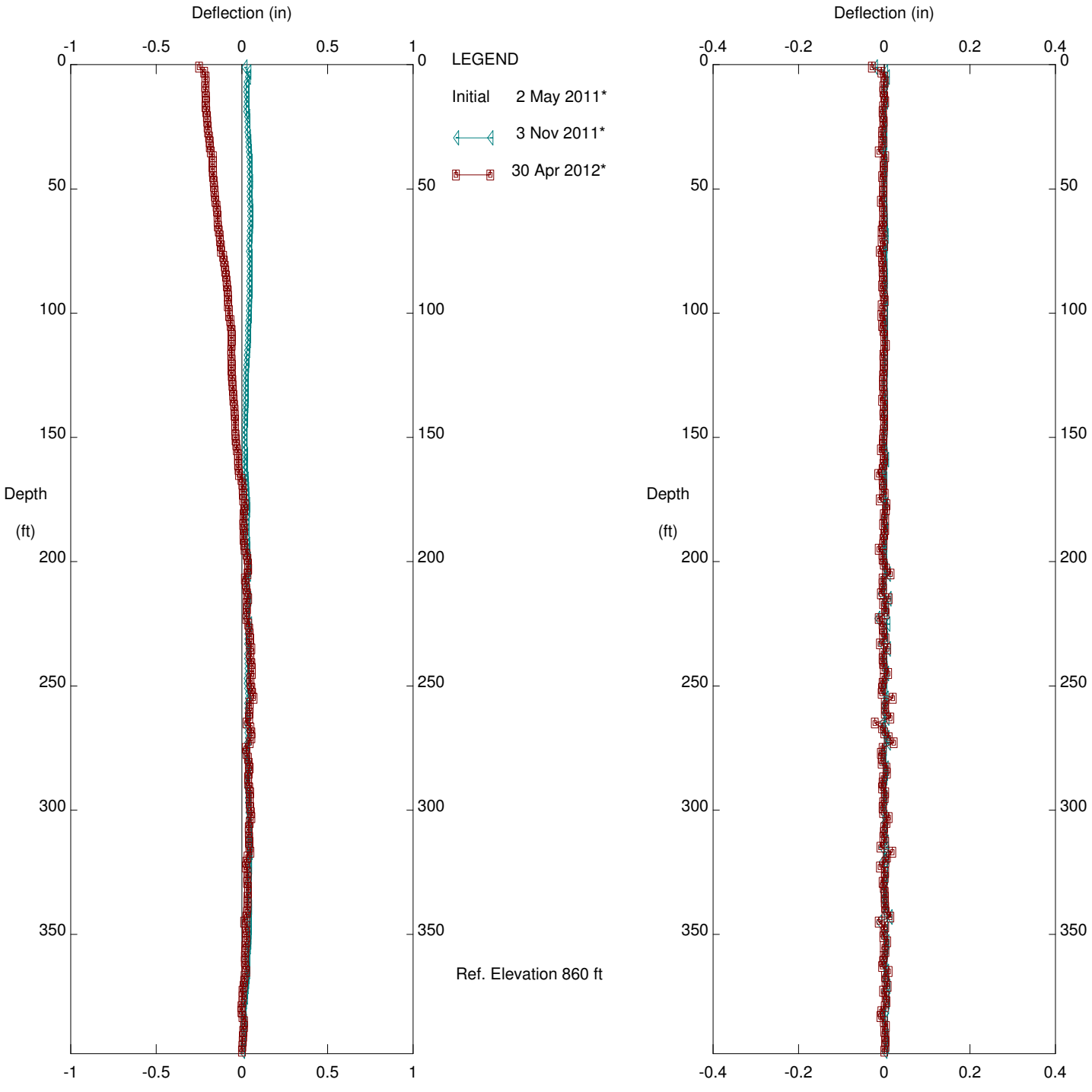
Direction A

BIG ROCK MESA, Inclinometer SP-22

WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

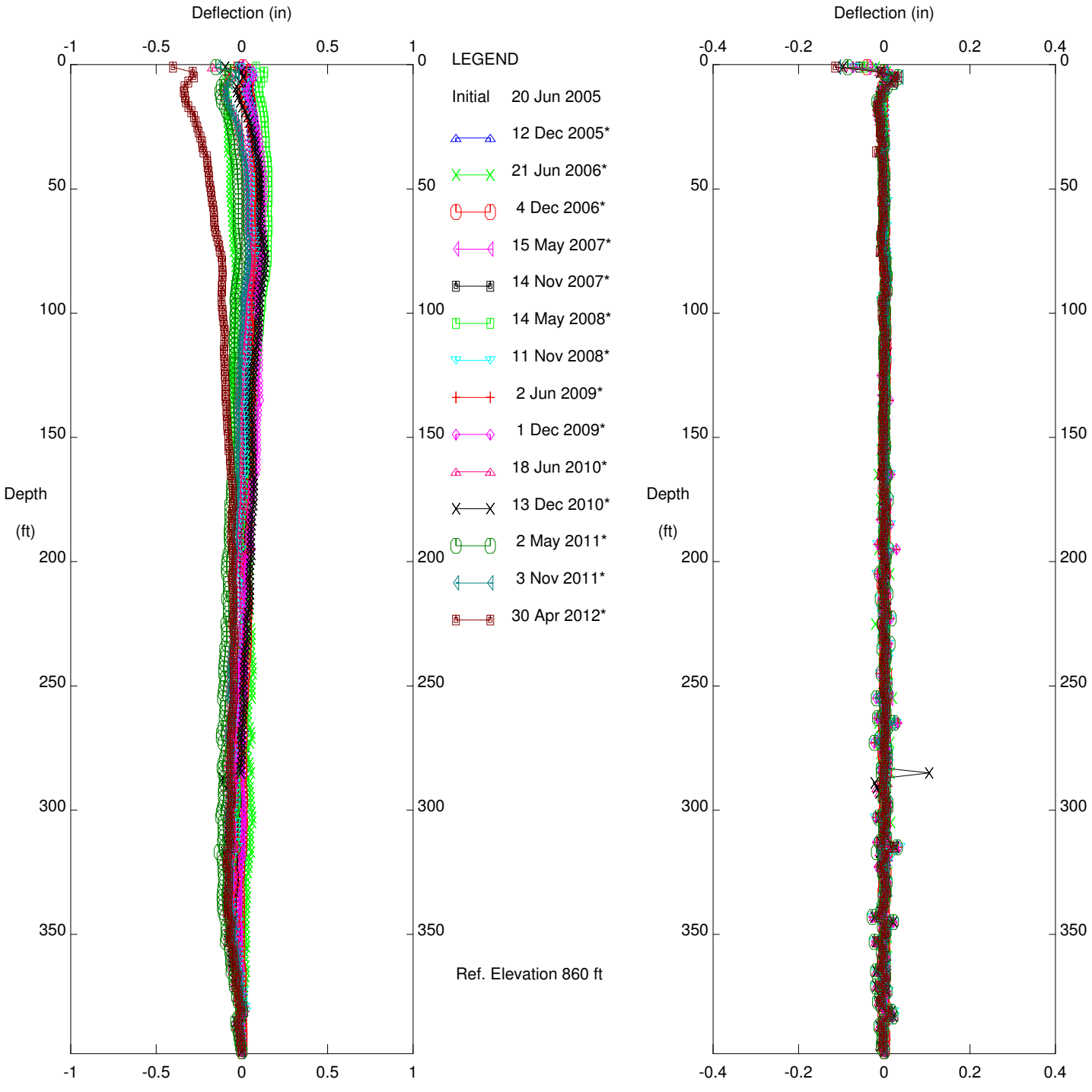
Direction A

BIG ROCK MESA, Inclinometer SP-23

WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

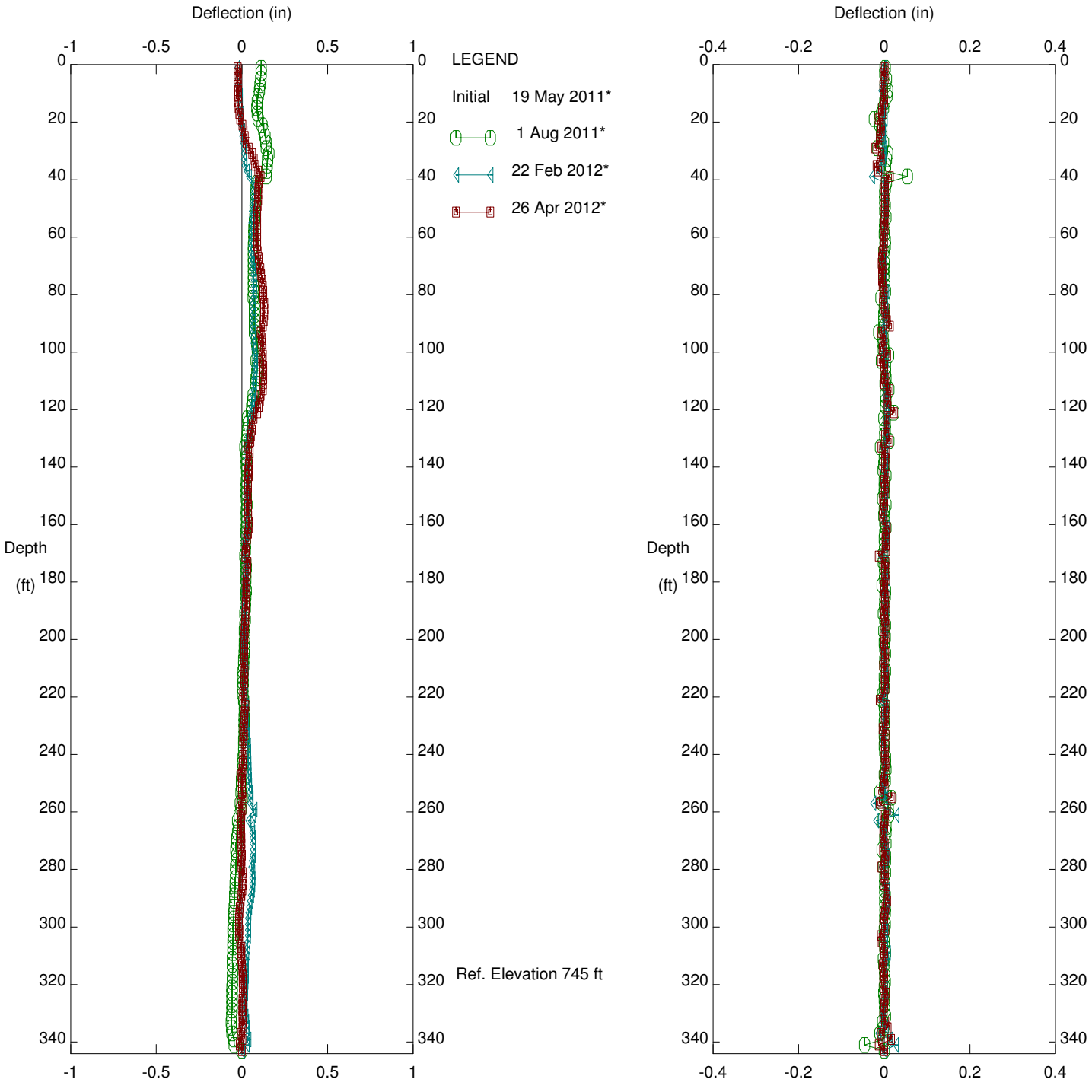
Direction A

BIG ROCK MESA, Inclinometer SP-23

WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BIG ROCK MESA, Inclinometer SP-26

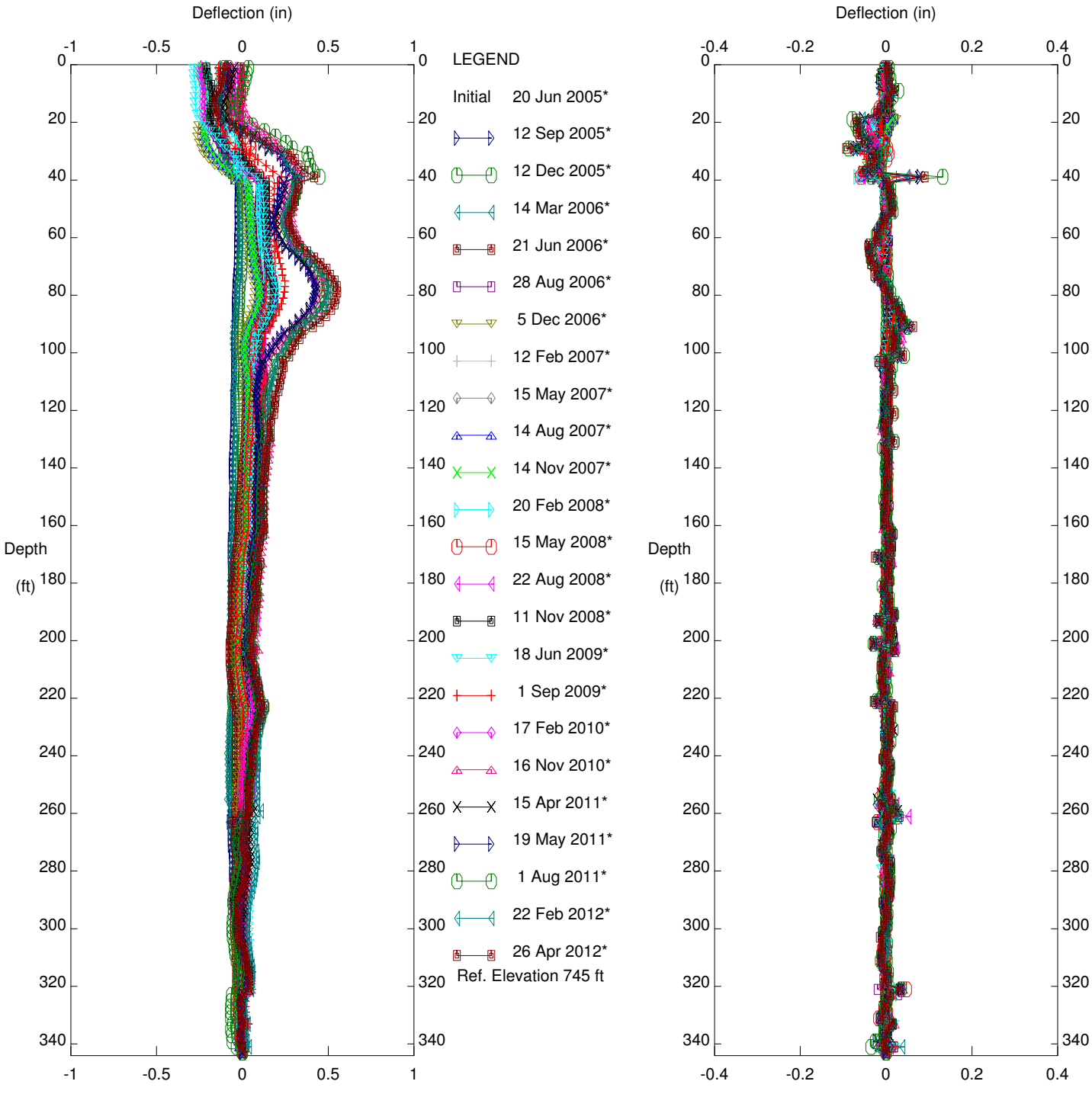
HEADSCARP REGION

Sets marked * include zero shift and/or rotation corrections.

O:\Management\3399_Malibu\3399-006_Big_Rock_Mesa\03_DATA\SI_Data\2011-2012\SP26.gtl

PLATE D-29a

Fugro Consultants, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BIG ROCK MESA, Inclinometer SP-26

HEADSCARP REGION

Sets marked * include zero shift and/or rotation corrections.

APPENDIX E
WATER QUALITY TESTING

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	Ph (field)	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Sulfides	Phenols	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{o}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*NTU*	*% Survival*
Discharges to Port 1													
9/20/2011	BYA-6	6.7	70.5	ND	ND	ND	BQL	ND	ND	BQL	1.6	0.46	--
8/23/2011	BYA-6	6.9	71.2	ND	ND	ND	BQL	ND	ND	BQL	ND	0.33	--
7/18/2011	BYA-6	6.8	70.9	ND	ND	ND	BQL	ND	ND	BQL	3.2	1.10	--
Discharges to Port 2													
9/20/2011	HD-9	7.2	70.5	ND	ND	ND	BQL	ND	ND	BQL	ND	0.31	--
8/23/2011	HD-9	6.8	71.2	ND	ND	ND	BQL	ND	ND	BQL	ND	0.4	--
7/18/2011	HD-9	7.2	77.0	ND	ND	ND	BQL	ND	ND	BQL	ND	0.87	--
Discharges to Port 3													
9/20/2011	HD-30	7.2	70.3	ND	ND	ND	BQL	ND	ND	BQL	ND	0.21	--
8/23/2011	HD-30	6.7	71.1	ND	ND	ND	BQL	ND	ND	BQL	ND	0.18	--
7/18/2011	HD-30	7.04	73.0	ND	ND	ND	BQL	ND	ND	BQL	ND	0.43	--
Discharges to Port 4													
9/20/2011	W-8	6.7	71.6	ND	ND	ND	BQL	ND	ND	BQL	ND	0.23	--
8/23/2011	W-17	6.5	71.6	ND	ND	ND	BQL	ND	ND	BQL	ND	0.17	--
7/18/2011	W-8	6.8	73.0	ND	ND	ND	BQL	ND	ND	BQL	ND	0.35	--
Discharges to Port 4													
9/20/2011	HD-26	70.4	70.3	ND	ND	ND	BQL	ND	ND	BQL	1.2	0.65	--
8/23/2011	HD-26	6.7	70.9	ND	ND	ND	BQL	ND	ND	BQL	ND	0.30	--
7/18/2011	HD-26	7.0	74.7	ND	ND	ND	BQL	ND	ND	BQL	4.8	1.50	--
Discharges to Port 5													
9/20/2011	BYA-4	6.7	73.2	ND	ND	ND	BQL	ND	ND	BQL	ND	0.22	--
8/23/2011	BYA-4	6.5	72.1	ND	ND	ND	BQL	ND	ND	BQL	ND	0.2	--
7/18/2011	BYA-4	6.8	75.7	ND	ND	ND	BQL	ND	ND	BQL	1.2	2.0	--
Discharges to Port 5													
9/20/2011	BYA-11	7.1	71.6	ND	ND	ND	BQL	ND	ND	BQL	ND	0.22	--
8/23/2011	BYA-11	6.6	73.2	1.1	ND	ND	BQL	ND	ND	BQL	ND	0.14	--
7/18/2011	BYA-11	7.1	78.6	ND	ND	ND	BQL	ND	ND	BQL	ND	0.20	--
Discharges to Port 6													
9/20/2011	BYA-2	6.9	71.2	1.3	ND	ND	BQL	ND	ND	BQL	4.8	1.80	--
8/23/2011	BYA-2	6.8	73.4	1.8	ND	ND	BQL	ND	ND	BQL	3.2	1.20	--
7/18/2011	BYA-2	6.8	75.9	3.7	ND	ND	**0.5**	ND	ND	BQL	36.0	46.00	--
Discharges to Port 6													
9/20/2011	HD-12	7.2	72.0	ND	ND	ND	BQL	ND	ND	BQL	ND	0.21	--
8/23/2011	HD-12	6.7	70.9	1.3	ND	ND	BQL	ND	ND	BQL	ND	0.12	--
7/18/2011	HD-12	7.0	74.3	0.84	ND	ND	BQL	ND	ND	BQL	ND	0.15	--
Discharges to Port 7													
9/20/2011	HD-7	7.5	71.2	ND	ND	ND	BQL	ND	ND	BQL	1.6	0.36	--
8/23/2011	HD-7	6.9	70.5	ND	ND	ND	BQL	ND	ND	BQL	3.2	0.68	--
7/18/2011	HD-7	7.7	74.1	1.2	ND	ND	BQL	ND	ND	BQL	9.6	2.10	--
Effluent Limit (Daily Max.)		6.5-8.5	--	30	0.5	15	0.3	0.1	1	0.1	150	150	---
Effluent Limit (Monthly Avg.)		6.5-8.5	--	20	---	10	0.1	---	---	---	50	50	---

* -- = Not tested for during monthly monitoring period

**BQL = Below Practical Quantitation Limit (see attached wet chemistry analysis summary)

TABLE 1. SUMMARY OF MONTORING DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)													
	Well/Hydrauger Identification	pH (field)	pH (lab)	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Sulfides	Phenols	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity***
Units:		*pH units*		*^{o}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*	*mg/L*	*mg/L*	*mg/l*	*mg/L*	*NTU*	*% Survival*
Discharges to Port 1A														
10/13/2011	BYA-14	6.8		76.5	ND	ND	ND	BQL	ND	ND	BQL	ND	0.32	--
11/21/2011	BYA-14		7.0		ND	ND	ND	BQL	ND	ND	BQL	ND	0.25	100
12/13/2011														--
Discharges to Port 3														
10/13/2011	W-2	6.9		71.2	ND	ND	ND	BQL	ND	ND	BQL	2	0.78	
11/21/2011	W-2		6.9		0.62	ND	ND	BQL	ND	ND	BQL	ND	0.34	100
12/13/2011														
Discharges to Port 3														
10/13/2011	BYA-H10	7.0		72.7	ND	ND	ND	BQL	ND	ND	BQL	9.6	2.30	--
11/21/2011	BYA-H10				ND	ND	ND	BQL	ND	ND	BQL	2.5	0.49	100
12/13/2011														--
Discharges to Port 3														
10/13/2011	HD-43	7.2		72.0	ND	ND	ND	BQL	ND	ND	BQL	ND	0.25	--
11/21/2011	HD-43		8.0		ND	ND	ND	BQL	ND	ND	BQL	ND	0.25	95
12/13/2011														--
Discharges to Port 5														
10/13/2011	BYA-9	6.7		75.0	ND	ND	ND	BQL	ND	ND	BQL	16.0	32.0	--
11/21/2011	BYA-9		6.8		ND	ND	ND	BQL	ND	ND	BQL	17.0	28.0	100
12/13/2011														--
Discharges to Port 5														
10/13/2011	W-16	6.6		73.6	ND	ND	ND	BQL	ND	ND	BQL	ND	0.14	--
11/21/2011	W-16		6.7		0.53	ND	ND	BQL	ND	ND	BQL	ND	0.20	50
12/13/2011														--
Discharges to Port 5														
10/13/2011	HD-22	7.2		72.0	ND	ND	ND	BQL	ND	ND	BQL	6.4	14.0	--
11/21/2011	HD-22		7.3		0.40	ND	ND	BQL	ND	ND	BQL	5.2	7.22	95
12/13/2011														--
Discharges to Port 6														
10/13/2011	W-18	7.0		75.4	ND	ND	ND	BQL	ND	ND	BQL	ND	0.78	--
11/21/2011	W-18		7.1		ND	ND	ND	BQL	ND	ND	BQL	1.2	2.30	100
12/13/2011														--
Discharges to Port 9														
10/13/2011	HD-5	7.5		72.5	1.75	ND	ND	BQL	ND	ND	BQL	15.6	8.84	--
11/21/2011	HD-5		7.8		5.70	ND	ND	BQL	ND	ND	BQL	ND	0.47	100
12/13/2011														--
Discharges to Port 9														
10/13/2011	HD-23	7.5		72.5	ND	ND	ND	BQL	ND	ND	BQL	1.6	1.10	--
11/21/2011	HD-23		7.1		0.42	ND	ND	BQL	ND	ND	BQL	ND	0.20	100
12/13/2011														--
Effluent Limit (Daily Max.)		6.5-8.5		--	30	0.5	15	0.3	0.1	1	0.1	150	150	--
Effluent Limit (Monthly Avg.)		6.5-8.5		--	20	---	10	0.1	---	---	---	50	50	--

* -- = Not tested for during monthly monitoring period
**BQL = Below Practical Quantitation Limit (see attached wet chemistry analysis summary)
***Acute Toxicity Samples were collected on 11/27/11

TABLE 1. SUMMARY OF MONTORING DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Sulfides	Phenols	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity***
Units:			*°F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*	*mg/L*	*mg/L*	*mg/l*	*mg/L*	*NTU*	*% Survival*
Discharges to Port 1													
1/19/2012	HD-42	7.3	70.3	ND	ND	ND	BQL	ND	ND	BQL	1.2	1.10	--
2/21/2012	HD-42	7.2	71.4	2.8	ND	ND	BQL	ND	ND	BQL	20.8	35.00	--
3/20/2012	HD-42	6.9	69.4	ND	ND	ND	BQL	ND	ND	BQL	ND	0.2	--
Discharges to Port 3													
1/19/2012	W-1	6.8	68.5	ND	ND	ND	BQL	ND	ND	BQL	ND	0.50	--
2/21/2012	W-1	6.8	70.7	ND	ND	ND	BQL	ND	ND	BQL	ND	0.58	--
3/20/2012	W-1	6.8	69.1	ND	ND	ND	BQL	ND	ND	BQL	ND	0.3	--
Discharges to Port 3													
1/19/2012	HD-30	7.3	71.1	ND	ND	ND	BQL	ND	ND	BQL	ND	0.32	--
2/21/2012	HD-30	7.2	71.8	ND	ND	ND	BQL	ND	ND	BQL	ND	0.12	--
3/20/2012	HD-30	7.1	70.3	ND	ND	ND	BQL	ND	ND	BQL	ND	0.3	--
Discharges to Port 4													
1/19/2012	W-8	6.7	70.5	ND	ND	ND	BQL	ND	ND	BQL	ND	0.25	--
2/21/2012	W-8	6.7	71.4	ND	ND	ND	BQL	ND	ND	BQL	ND	0.10	--
3/20/2012	W-8	6.6	71.6	ND	ND	ND	BQL	ND	ND	BQL	ND	0.1	--
Discharges to Port 4													
1/19/2012	W-17	7.1	71.1	ND	ND	ND	BQL	ND	ND	BQL	1.2	1.3	--
2/21/2012	W-17	7.1	71.1	ND	ND	ND	BQL	ND	ND	BQL	ND	0.1	--
3/20/2012	W-17	7.2	71.4	ND	ND	ND	BQL	ND	ND	BQL	ND	0.1	--
Discharges to Port 5													
1/19/2012	BYA-4	7.0	70.5	ND	ND	ND	BQL	ND	ND	BQL	3.2	1.60	--
2/21/2012	BYA-4	6.8	72.7	ND	ND	ND	BQL	ND	ND	BQL	2	0.60	--
3/20/2012	BYA-4	6.9	71.6	ND	ND	ND	BQL	ND	ND	BQL	1.6	1.8	--
Discharges to Port 5													
1/19/2012	W-13	6.7	71.2	ND	ND	ND	BQL	ND	ND	BQL	ND	0.10	--
2/21/2012	W-13	6.7	71.2	ND	ND	ND	BQL	ND	ND	BQL	ND	0.29	--
3/20/2012	W-13	6.6	70.7	ND	ND	ND	BQL	ND	ND	BQL	ND	0.1	--
Discharges to Port 5													
1/19/2012	W-16	--	--	--	--	--	--	--	--	--	--	--	95
2/21/2012	W-16	--	--	--	--	--	--	--	--	--	--	--	95
3/20/2012	W-16	--	--	--	--	--	--	--	--	--	--	--	--
Discharges to Port 6													
1/19/2012	BYA-3	7.2	72.7	ND	ND	ND	BQL	ND	ND	BQL	ND	0.56	--
2/21/2012	BYA-3	7.2	72.3	ND	ND	ND	BQL	ND	ND	BQL	ND	0.46	--
3/20/2012	BYA-3	7.3	74.1	ND	ND	ND	BQL	ND	ND	BQL	ND	0.3	--
Discharges to Port 6													
1/19/2012	HD-12	7.3	71.2	0.87	ND	ND	BQL	ND	ND	BQL	ND	2.90	--
2/21/2012	HD-12	7.4	71.8	0.99	ND	ND	BQL	ND	ND	BQL	2.4	0.63	--
3/20/2012	HD-12	7.1	71.4	ND	ND	ND	BQL	ND	ND	BQL	1.6	0.8	--
Discharges to Port 9													
1/19/2012	HD-6	7.9	70.0	5.8	ND	ND	BQL	ND	ND	BQL	14.8	0.69	--
2/21/2012	HD-6	7.5	72.9	5.8	ND	ND	BQL	ND	ND	BQL	3.2	0.79	--
3/20/2012	HD-6	7.8	69.4	7.1	ND	ND	BQL	ND	ND	BQL	ND	0.4	--
Effluent Limit (Daily Max.)			--	30	0.5	15	0.3	0.1	1	0.1	150	150	--
Effluent Limit (Monthly Avg.)			--	20	---	10	0.1	---	---	---	50	50	--

* -- = Not tested for during monthly monitoring period
**BQL = Below Practical Quantitation Limit (see attached wet chemistry analysis summary)
***Acute Toxicity Samples were collected on 11/27/11

TABLE 1. SUMMARY OF MONTORING DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Sulfides	Phenols	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity***
Units:			*^{o}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*	*mg/L*	*mg/L*	*mg/l*	*mg/L*	*NTU*	*% Survival*
Discharges to Port 1A													
4/17/2012	FW-1	7.6	69.3	9.5	ND	ND	BQL	**9.4**	ND	BQL	1.2	34	--
5/2/2012	FW-1	7.6	68.9	--	--	--	--	**25**	--	--	--	--	--
5/9/2012	FW-1	7.1	70.2	--	--	--	--	**10**	--	--	--	--	--
5/16/2012	FW-1	7.4	68.7	--	--	--	--	**17**	--	--	--	--	--
5/30/2012	FW-1	7.6	70.2	13.2	ND	ND	BQL	**11.5**	ND	BQL	1	22	--
6/13/2012	FW-1	7.5	70.0	--	--	--	--	**15.6**	--	--	--	--	--
6/19/2012	FW-1	7.6	76.1	26	ND	ND	BQL	**0.13**	ND	BQL	ND	0.7	--
Discharges to Port 3													
4/17/2012	HD-4	7.0	70.9	1.2	ND	ND	BQL	ND	ND	BQL	8	4.1	--
5/30/2012	HD-4	7.1	70.5	ND	ND	ND	BQL	ND	ND	B	ND	0.3	--
6/19/2012	HD-4	7.1	71.4	1.7	ND	ND	BQL	ND	ND	BQL	ND	0.1	--
Discharges to Port 4													
4/17/2012	HD-26	7.1	70.5	0.91	ND	ND	BQL	ND	ND	BQL	ND	0.3	--
5/30/2012	HD-26	7.1	70.3	ND	ND	ND	BQL	ND	ND	BQL	2.4	1.8	--
6/19/2012	HD-26	7.1	70.0	ND	ND	ND	BQL	ND	ND	BQL	ND	0.1	--
Discharges to Port 4													
4/17/2012	BYA-1	7.2	71.2	ND	ND	ND	**0.1**	0.008	ND	BQL	29	**130**	--
5/2/2012	BYA-1	7.1	70.3	--	--	--	BQL	--	--	--	--	**195**	--
5/9/2012	BYA-1	7.6	68.5	--	--	--	**0.1**	--	--	--	--	**210**	--
5/16/2012	BYA-1	7.1	70.3	--	--	--	BQL	--	--	--	--	13	--
5/30/2012	BYA-1	7.1	72.0	ND	ND	ND	BQL	0.016	ND	BQL	8	18	--
6/13/2012	BYA-1	7.1	71.6	--	--	--	BQL	--	--	--	--	35	--
6/19/2012	BYA-1	6.9	71.4	ND	ND	ND	BQL	ND	ND	BQL	12	41	--
Discharges to Port 5A													
4/17/2012	BYA-10	7.1	72.9	ND	ND	ND	BQL	ND	ND	BQL	ND	0.4	--
5/30/2012	BYA-10	7.1	72.5	ND	ND	ND	BQL	ND	ND	BQL	ND	0.5	--
6/19/2012	BYA-10	7.1	72.3	ND	ND	ND	BQL	ND	ND	BQL	ND	0.4	--
Discharges to Port 4													
4/17/2012	FW-2	7.2	72.0	ND	ND	ND	BQL	0.005	ND	BQL	1.2	0.5	--
5/30/2012	FW-2	7.2	71.8	ND	ND	ND	BQL	ND	ND	BQL	1.6	0.8	--
6/19/2012	FW-2	7.2	72.3	ND	0.02	ND	BQL	ND	ND	BQL	1.2	0.9	--
Discharges to Port 5													
4/17/2012	BYA-9	6.6	73.6	ND	ND	ND	BQL	0.008	ND	BQL	8.4	18.2	--
5/30/2012	BYA-9	6.6	74.1	ND	ND	ND	BQL	ND	ND	BQL	1.6	4.6	--
6/19/2012	BYA-9	6.6	74.1	ND	ND	ND	BQL	ND	ND	BQL	1.6	4.5	--
Discharges to Port 5													
4/17/2012	W-16	6.8	74.5	ND	ND	ND	BQL	ND	ND	BQL	ND	0.4	--
5/30/2012	W-16	6.8	73.4	ND	ND	ND	BQL	ND	ND	BQL	ND	0.1	--
6/19/2012	W-16	6.8	73.6	ND	ND	ND	BQL	ND	ND	BQL	ND	0.5	--
Discharges to Port 6													
4/17/2012	W-18	6.9	73.9	ND	ND	ND	BQL	0.006	ND	BQL	3.2	5.8	--
5/30/2012	W-18	6.9	73.6	ND	ND	ND	BQL	ND	ND	BQL	ND	1.6	--
6/19/2012	W-18	6.9	73.2	ND	ND	ND	BQL	ND	ND	BQL	3.6	4.0	--
Discharges to Port 9													
4/17/2012	HD-23	7.0	71.1	0.97	ND	ND	BQL	ND	ND	BQL	2.4	0.6	--
5/30/2012	HD-23	7.0	71.1	ND	ND	ND	BQL	ND	ND	BQL	ND	0.5	--
6/19/2012	HD-23	7.0	71.1	1.9	ND	ND	BQL	ND	ND	BQL	ND	0.1	--
Effluent Limit (Daily Max.)		6.5-8.5	--	30	0.5	15	0.3	0.1	1	0.1	150	150	--
Effluent Limit (Monthly Avg.)		6.5-8.5	--	20	---	10	0.1	---	---	---	50	50	--

* -- = Not tested for during monthly monitoring period

**BQL = Below Practical Quantitation Limit (see attached wet chemistry analysis summary)

***Acute Toxicity Samples were collected on 11/27/11

TABLE 1. SUMMARY OF MONTORING DATA

CAPCO
Analytical Services, Inc.

Environmental and Analytical Services-Since 1994
California State Accredited Laboratory in Accordance with ELAP Certificate # 2332

Prepared for: Fugro West, Inc.
4820 McGrath St. Suite 100
Ventura, CA 93003
Attn: Alexis Spencer

Report Date: October 21, 2011
Laboratory Number: 112928
Project Name: Malibu NPDES
Project No: 3399.06
Sampled by: Client

On October 13, 2011, Capco Analytical Services, Inc.(CAS), received ten(10) samples to be analyzed. The samples were identified and assigned the laboratory ID numbers listed below:

SAMPLE DESCRIPTION	CAS LAB NUMBER ID
BYA-9	112928-01
W-18	112928-02
W-16	112928-03
BYA-14	112928-04
W-2	112928-05
BYA-H10	112928-06
HD-43	112928-07
HD-22	112928-08
HD-23	112928-09
HD-5	112928-10

By my signature below, I certify that the results contained in this laboratory report comply with applicable standards for certification by the California Department of Public Health's Environmental Laboratories Accreditation Program (ELAP), both technically and for completeness, and that, based on my inquiry of the person or persons directly responsible for performing the analyses, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Alin E. Repede, MS
Director - Analytical Operations

If you have any further questions or concerns, please contact me at your convenience. This report consists of 10 pages excluding the cover letter and the Chain of Custody.

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 112928
Analyst: GM

Date Sampled: 10/13/11
Date Received: 10/13/11
Date Analyzed: 10/17/11
Sample Matrix: Water

OIL & GREASE
EPA Method 1664

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
112928-01	BYA-9	ND	1	1	5
112928-02	W-18	ND	1	1	5
112928-03	W-16	ND	1	1	5
112928-04	BYA-14	ND	1	1	5
112928-05	W-2	ND	1	1	5
112928-06	BYA-H10	ND	1	1	5
112928-07	HD-43	ND	1	1	5
112928-08	HD-22	ND	1	1	5
112928-09	HD-23	ND	1	1	5
112928-10	HD-5	ND	1	1	5

mg/L: Milligrams/Liter(ppm)
MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 112928
Analyst: AN

Date Sampled: 10/13/11
Date Received: 10/13/11
Date Analyzed: 10/14/11
Sample Matrix: Water

TOTAL SUSPENDED SOLIDS
SM 2540 D

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
112928-01	BYA-9	16	1	1	5
112928-02	W-18	ND	1	1	5
112928-03	W-16	ND	1	1	5
112928-04	BYA-14	ND	1	1	5
112928-05	W-2	2.0	1	1	5
112928-06	BYA-H10	9.6	1	1	5
112928-07	HD-43	ND	1	1	5
112928-08	HD-22	6.4	1	1	5
112928-09	HD-23	1.6	1	1	5
112928-10	HD-5	15.6	1	1	5

mg/L: Milligrams/Liter(ppm)
MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 112928
Analyst: AN

Date Sampled: 10/13/11
Date Received: 10/13/11
Date Analyzed: 10/13/11
Sample Matrix: Water

BIOCHEMICAL OXYGEN DEMAND
SM 5210 B

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
112928-01	BYA-9	ND	1	0.4	2
112928-02	W-18	ND	1	0.4	2
112928-03	W-16	ND	1	0.4	2
112928-04	BYA-14	ND	1	0.4	2
112928-05	W-2	ND	1	0.4	2
112928-06	BYA-H10	ND	1	0.4	2
112928-07	HD-43	ND	1	0.4	2
112928-08	HD-22	ND	1	0.4	2
112928-09	HD-23	ND	1	0.4	2
112928-10	HD-5	1.75	1	0.4	2

mg/L: Milligrams/Liter(ppm)
MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 112928
Analyst: AN

Date Sampled: 10/13/11
Date Received: 10/13/11
Date Analyzed: 10/18/11
Sample Matrix: Water

TOTAL PHENOL
EPA METHOD 420.1

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/L)	PQL (mg/L)
112928-01	BYA-9	ND	1	0.02	0.1
112928-02	W-18	ND	1	0.02	0.1
112928-03	W-16	ND	1	0.02	0.1
112928-04	BYA-14	ND	1	0.02	0.1
112928-05	W-2	ND	1	0.02	0.1
112928-06	BYA-H10	ND	1	0.02	0.1
112928-07	HD-43	ND	1	0.02	0.1
112928-08	HD-22	ND	1	0.02	0.1
112928-09	HD-23	ND	1	0.02	0.1
112928-10	HD-5	ND	1	0.02	0.1

mg/L: Milligrams/Liter(ppm)
MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 112928
Analyst: GM

Date Sampled: 10/13/11
Date Received: 10/13/11
Date Analyzed: 10/14/11
Sample Matrix: Water

MBAS
SM 5540 C

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/L)	PQL (mg/L)
112928-01	BYA-9	ND	1	0.02	0.1
112928-02	W-18	ND	1	0.02	0.1
112928-03	W-16	ND	1	0.02	0.1
112928-04	BYA-14	ND	1	0.02	0.1
112928-05	W-2	ND	1	0.02	0.1
112928-06	BYA-H10	ND	1	0.02	0.1
112928-07	HD-43	ND	1	0.02	0.1
112928-08	HD-22	ND	1	0.02	0.1
112928-09	HD-23	ND	1	0.02	0.1
112928-10	HD-5	ND	1	0.02	0.1

mg/L: Milligrams/Liter(ppm)
MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 112928
Analyst: AN

Date Sampled: 10/13/11
Date Received: 10/13/11
Date Analyzed: 10/13/11
Sample Matrix: Water

SETTLEABLE SOLIDS
SM 2540 F

CAS Lab #	Sample ID	RESULTS (ml/L)	Dilution Factor	PQL (ml/L)
112928-01	BYA-9	BQL	1	0.1
112928-02	W-18	BQL	1	0.1
112928-03	W-16	BQL	1	0.1
112928-04	BYA-14	BQL	1	0.1
112928-05	W-2	BQL	1	0.1
112928-06	BYA-H10	BQL	1	0.1
112928-07	HD-43	BQL	1	0.1
112928-08	HD-22	BQL	1	0.1
112928-09	HD-23	BQL	1	0.1
112928-10	HD-5	BQL	1	0.1

PQL: Practical Quantitation Limit
BQL: Below Practical Quantitation Limit

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 112928
Analyst: AN

Date Sampled: 10/13/11
Date Received: 10/13/11
Date Analyzed: 10/13/11
Sample Matrix: Water

TURBIDITY
EPA Method 180.1

CAS Lab #	Sample ID	RESULTS (NTU)	Dilution Factor	PQL (NTU)
112928-01	BYA-9	32.0	1	0.1
112928-02	W-18	0.78	1	0.1
112928-03	W-16	0.14	1	0.1
112928-04	BYA-14	0.32	1	0.1
112928-05	W-2	0.78	1	0.1
112928-06	BYA-H10	2.3	1	0.1
112928-07	HD-43	0.25	1	0.1
112928-08	HD-22	14.0	1	0.1
112928-09	HD-23	1.1	1	0.1
112928-10	HD-5	8.84	1	0.1

PQL: Practical Quantitation Limit

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 112928
Analyst: AN

Date Sampled: 10/13/11
Date Received: 10/13/11
Date Analyzed: 10/13/11
Sample Matrix: Water

TOTAL RESIDUAL CHLORINE
SM 4500CL G

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	PQL (mg/L)
112928-01	BYA-9	BQL	1	0.1
112928-02	W-18	BQL	1	0.1
112928-03	W-16	BQL	1	0.1
112928-04	BYA-14	BQL	1	0.1
112928-05	W-2	BQL	1	0.1
112928-06	BYA-H10	BQL	1	0.1
112928-07	HD-43	BQL	1	0.1
112928-08	HD-22	BQL	1	0.1
112928-09	HD-23	BQL	1	0.1
112928-10	HD-5	BQL	1	0.1

mg/L: Milligrams/Liter(ppm)
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 112928
Analyst: AN

Date Sampled: 10/13/11
Date Received: 10/13/11
Date Analyzed: 10/17/11
Sample Matrix: Water

TOTAL SULFIDE
SM 4500-S^{-2}D

CAS LAB #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/L)	PQL (mg/L)
112928-01	BYA-9	ND	1	0.004	0.02
112928-02	W-18	ND	1	0.004	0.02
112928-03	W-16	ND	1	0.004	0.02
112928-04	BYA-14	ND	1	0.004	0.02
112928-05	W-2	ND	1	0.004	0.02
112928-06	BYA-H10	ND	1	0.004	0.02
112928-07	HD-43	ND	1	0.004	0.02
112928-08	HD-22	ND	1	0.004	0.02
112928-09	HD-23	ND	1	0.004	0.02
112928-10	HD-5	ND	1	0.004	0.02

ND: Not Detected
MDL: Method Detection Limit
BQL: Below Practical Quantitation Limit
mg/L: Milligrams/Liter(ppm)

QUALITY CONTROL SECTION

Client: Fugro West, Inc. Sample Matrix: Water
CAS LAB NO: 112928
Analyst: AN/GM

COMPOUND	RESULT	UNITS	DF	MDL	PQL	METHOD	ANALYZED
B.O.D.	ND	mg/L	1	0.4	2	5210 B	10/13/11
Oil and Grease	ND	mg/L	1	1	5	1664	10/17/11
MBAS	ND	mg/L	1	0.02	0.1	5540 C	10/14/11
Phenol (Total)	ND	mg/L	1	0.02	0.1	420.1	10/18/11
Residual Chlorine	ND	mg/L	1	0.02	0.1	4500CL G	10/13/11
Settleable Solid	BQL	ml/L	1	--	0.1	2540 F	10/13/11
Sulfide (Total)	ND	mg/L	1	0.004	0.02	4500S^{2-}D	10/17/11
T.S.S.	ND	mg/L	1	1	5	2540 D	10/14/11

mg/L: Milligrams/Liter(ppm)
BQL: Below Practical Quantitation Limit
MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

CAPCO ANALYTICAL SERVICES

1536 Eastman Avenue
Ventura, CA 93003
(805) 644-1095 Fax 644-9947

CHAIN OF CUSTODY RECORD

REPORT Fax 805-650-7010
Company Fugro Consultants
Address 4820 McGrath Street, Suite 100
Ventura,CA93003
Phone 850-7000 Contact Alexis Spencer

BILL TO: P.O.#
Company same
Address
Phone Contact

PROJ. NO | PROJECT NAME: Malibu-NPDES

SAMPLERS: (Signature)

CONTAINER TYPES
A = AMBER B = BRASS G = GLASS
P = PLASTIC V = VOA VIAL O = OTHER

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	COMP	GRAB	SAMPLE DESCRIPTION	MATRIX: WATER	SOIL	SLUDGE	OTHER	CONTAINER #: #	TYPE	ANALYSIS: TSS, Settleable Solids	BOD	Oil & Grease	MBAS	Sulfide	Phenols	Residual Chlorine	Turbidity	pH	REMARKS
1	10/13/14	10:15			BYA-9	x				5	P+G									6.65	23.9
2		10:30			W-18	x														6.98	24.1
3		10:45			W-16	x														6.60	23.1
4		11:00			BYA-14	x														6.82	24.7
5		11:20			W-2	x														6.86	21.8
6		11:35			BYA-H10	x														7.02	22.6
7		11:45			HD-43	x														7.24	22.2
8		12:15			HD-22	x														7.18	22.2
9		12:30			HD-23	x														7.50	22.5
10		12:45			HD-5	x														7.50	22.5

112928

CHECK ONE BOX:
DISPOSE SAMPLES
RETURN SAMPLES

The undersigned hereby acknowledges having received a copy of the Fee Schedule/General Information and Conditions, the provisions of which are a part of this agreement.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	10/13 1409				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time		

TURN AROUND TIME

24 Hr.		5 Day	
48 Hr.		Standard	
72 Hr.		Other	

WHITE COPY CANARY COPY PINK COPY

Prepared for: Fugro West, Inc.
4820 McGrath St. Suite 100
Ventura, CA 93003
Attn: Alexis Spencer

Report Date: November 30, 2011
Laboratory Number: 113278
Project Name: Big Rock Mesa-NPDES
Sampled by: Client

On November 21, 2011, Capco Analytical Services, Inc.(CAS), received ten(10) samples to be analyzed. The samples were identified and assigned the laboratory ID numbers listed below:

SAMPLE DESCRIPTION	CAS LAB NUMBER ID
W-2	113278-01
W-16	113278-02
W-18	113278-03
BYA-14	113278-04
BYA-H10	113278-05
HD-43	113278-06
HD-22	113278-07
HD-23	113278-08
HD-5	113278-09
BYA-9	113278-10

By my signature below, I certify that the results contained in this laboratory report comply with applicable standards for certification by the California Department of Public Health's Environmental Laboratories Accreditation Program (ELAP), both technically and for completeness, and that, based on my inquiry of the person or persons directly responsible for performing the analyses, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Alin E. Repede, MS
Director - Analytical Operations

If you have any further questions or concerns, please contact me at your convenience. This report consists of 11 pages excluding the cover letter and the Chain of Custody.

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113278
Analyst: AN

Date Sampled: 11/21/11
Date Received: 11/21/11
Date Analyzed: 11/30/11
Sample Matrix: Water

TOTAL PHENOL
EPA METHOD 420.1

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/L)	PQL (mg/L)
113278-01	W-2	ND	1	0.02	0.1
113278-02	W-16	ND	1	0.02	0.1
113278-03	W-18	ND	1	0.02	0.1
113278-04	BYA-14	ND	1	0.02	0.1
113278-05	BYA-H10	ND	1	0.02	0.1
113278-06	HD-43	ND	1	0.02	0.1
113278-07	HD-22	ND	1	0.02	0.1
113278-08	HD-23	ND	1	0.02	0.1
113278-09	HD-5	ND	1	0.02	0.1
113278-10	BYA-9	ND	1	0.02	0.1

mg/L: Milligrams/Liter(ppm)
MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113278
Analyst: GM

Date Sampled: 11/21/11
Date Received: 11/21/11
Date Analyzed: 11/23/11
Sample Matrix: Water

MBAS
SM 5540 C

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/L)	PQL (mg/L)
113278-01	W-2	ND	1	0.02	0.1
113278-02	W-16	ND	1	0.02	0.1
113278-03	W-18	ND	1	0.02	0.1
113278-04	BYA-14	ND	1	0.02	0.1
113278-05	BYA-H10	ND	1	0.02	0.1
113278-06	HD-43	ND	1	0.02	0.1
113278-07	HD-22	ND	1	0.02	0.1
113278-08	HD-23	ND	1	0.02	0.1
113278-09	HD-5	ND	1	0.02	0.1
113278-10	BYA-9	ND	1	0.02	0.1

mg/L: Milligrams/Liter(ppm)
MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113278
Analyst: AN

Date Sampled: 11/21/11
Date Received: 11/21/11
Date Analyzed: 11/21/11
Sample Matrix: Water

TOTAL RESIDUAL CHLORINE
SM 4500CL G

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	PQL (mg/L)
113278-01	W-2	BQL	1	0.1
113278-02	W-16	BQL	1	0.1
113278-03	W-18	BQL	1	0.1
113278-04	BYA-14	BQL	1	0.1
113278-05	BYA-H10	BQL	1	0.1
113278-06	HD-43	BQL	1	0.1
113278-07	HD-22	BQL	1	0.1
113278-08	HD-23	BQL	1	0.1
113278-09	HD-5	BQL	1	0.1
113278-10	BYA-9	BQL	1	0.1

mg/L: Milligrams/Liter(ppm)
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113278
Analyst: AN

Date Sampled: 11/21/11
Date Received: 11/21/11
Date Analyzed: 11/22/11
Sample Matrix: Water

TOTAL SUSPENDED SOLIDS
SM 2540 D

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
113278-01	W-2	ND	1	1	5
113278-02	W-16	ND	1	1	5
113278-03	W-18	1.2	1	1	5
113278-04	BYA-14	ND	1	1	5
113278-05	BYA-H10	2.5	1	1	5
113278-06	HD-43	ND	1	1	5
113278-07	HD-22	5.2	1	1	5
113278-08	HD-23	ND	1	1	5
113278-09	HD-5	ND	1	1	5
113278-10	BYA-9	17	1	1	5

mg/L: Milligrams/Liter(ppm)
MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113278
Analyst: GM

Date Sampled: 11/21/11
Date Received: 11/21/11
Date Analyzed: 11/28/11
Sample Matrix: Water

OIL & GREASE
EPA Method 1664

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
113278-01	W-2	ND	1	1	5
113278-02	W-16	ND	1	1	5
113278-03	W-18	ND	1	1	5
113278-04	BYA-14	ND	1	1	5
113278-05	BYA-H10	ND	1	1	5
113278-06	HD-43	ND	1	1	5
113278-07	HD-22	ND	1	1	5
113278-08	HD-23	ND	1	1	5
113278-09	HD-5	ND	1	1	5
113278-10	BYA-9	ND	1	1	5

mg/L: Milligrams/Liter(ppm)
MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113278
Analyst: AN

Date Sampled: 11/21/11
Date Received: 11/21/11
Date Analyzed: 11/28/11
Sample Matrix: Water

TOTAL SULFIDE
SM 4500-S^{-2}D

CAS LAB #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/L)	PQL (mg/L)
113278-01	W-2	ND	1	0.004	0.02
113278-02	W-16	ND	1	0.004	0.02
113278-03	W-18	ND	1	0.004	0.02
113278-04	BYA-14	ND	1	0.004	0.02
113278-05	BYA-H10	ND	1	0.004	0.02
113278-06	HD-43	ND	1	0.004	0.02
113278-07	HD-22	ND	1	0.004	0.02
113278-08	HD-23	ND	1	0.004	0.02
113278-09	HD-5	ND	1	0.004	0.02
113278-10	BYA-9	ND	1	0.004	0.02

ND: Not Detected
MDL: Method Detection Limit
BQL: Below Practical Quantitation Limit
mg/L: Milligrams/Liter(ppm)

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113278
Analyst: AN

Date Sampled: 11/21/11
Date Received: 11/21/11
Date Analyzed: 11/22/11
Sample Matrix: Water

BIOCHEMICAL OXYGEN DEMAND
SM 5210 B

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
113278-01	W-2	0.62	1	0.4	2
113278-02	W-16	0.53	1	0.4	2
113278-03	W-18	ND	1	0.4	2
113278-04	BYA-14	ND	1	0.4	2
113278-05	BYA-H10	ND	1	0.4	2
113278-06	HD-43	ND	1	0.4	2
113278-07	HD-22	0.40	1	0.4	2
113278-08	HD-23	0.42	1	0.4	2
113278-09	HD-5	5.7	1	0.4	2
113278-10	BYA-9	ND	1	0.4	2

mg/L: Milligrams/Liter(ppm)
MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113278
Analyst: AN

Date Sampled: 11/21/11
Date Received: 11/21/11
Date Analyzed: 11/21/11
Sample Matrix: Water

pH ANALYSIS
SM 4500-$^{H+}$ B

CAS Lab #	Sample ID	RESULTS (S.U.)
113278-01	W-2	6.9
113278-02	W-16	6.7
113278-03	W-18	7.1
113278-04	BYA-14	7.0
113278-05	BYA-H10	7.2
113278-06	HD-43	8.0
113278-07	HD-22	7.3
113278-08	HD-23	7.1
113278-09	HD-5	7.8
113278-10	BYA-9	6.8

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113278
Analyst: AN

Date Sampled: 11/21/11
Date Received: 11/21/11
Date Analyzed: 11/22/11
Sample Matrix: Water

SETTLEABLE SOLIDS
SM 2540 F

CAS Lab #	Sample ID	RESULTS (ml/L)	Dilution Factor	PQL (ml/L)
113278-01	W-2	BQL	1	0.1
113278-02	W-16	BQL	1	0.1
113278-03	W-18	BQL	1	0.1
113278-04	BYA-14	BQL	1	0.1
113278-05	BYA-H10	BQL	1	0.1
113278-06	HD-43	BQL	1	0.1
113278-07	HD-22	BQL	1	0.1
113278-08	HD-23	BQL	1	0.1
113278-09	HD-5	BQL	1	0.1
113278-10	BYA-9	BQL	1	0.1

PQL: Practical Quantitation Limit
BQL: Below Practical Quantitation Limit

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113278
Analyst: AN

Date Sampled: 11/21/11
Date Received: 11/21/11
Date Analyzed: 11/21/11
Sample Matrix: Water

TURBIDITY
EPA Method 180.1

CAS Lab #	Sample ID	RESULTS (NTU)	Dilution Factor	PQL (NTU)
113278-01	W-2	0.34	1	0.1
113278-02	W-16	0.20	1	0.1
113278-03	W-18	2.3	1	0.1
113278-04	BYA-14	0.25	1	0.1
113278-05	BYA-H10	0.49	1	0.1
113278-06	HD-43	0.25	1	0.1
113278-07	HD-22	7.22	1	0.1
113278-08	HD-23	0.20	1	0.1
113278-09	HD-5	0.47	1	0.1
113278-10	BYA-9	28	1	0.1

PQL: Practical Quantitation Limit

CAPCO ANALYTICAL SERVICES

1536 Eastman Avenue
Ventura, CA 93003
(805) 644-1095 Fax 644-9947

CHAIN OF CUSTODY RECORD

REPORT Fax 805-650-7010
Company Fugro Consultants
Address 4820 McGrath Street, Suite 100
Ventura, CA93003
Phone 850-7000 Contact Alexis Spencer

BILL TO: P.O.#
Company same
Address
Phone Contact

PROJ. NO

PROJECT NAME: Big Rock Mesa-NPDES

SAMPLERS: (Signature)

CONTAINER TYPES
A = AMBER B = BRASS G = GLASS
P = PLASTIC V = VOA VIAL O = OTHER

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	COMP	GRAB	SAMPLE DESCRIPTION	MATRIX: WATER	SOIL	SLUDGE	OTHER	CONTAINER #: #	TYPE	ANALYSIS: TSS, Settleable Solids*	BOD	Oil & Grease	MBAS	Sulfide	Phenols	Residual Chlorine	Turbidity	REMARKS
1	11/21/11	10:00/12:55			W-2	X				6	P+G	/	/	/	/	/	/	/	/	113278 pH also test pH*
2					W-16	X						/	/	/	/	/	/	/	/	
3					W-18	X						/	/	/	/	/	/	/	/	
4					B4A-4	X						/	/	/	/	/	/	/	/	
5					B4A-H10	X						/	/	/	/	/	/	/	/	
6					HD-43	X						/	/	/	/	/	/	/	/	
7					HD-22	X						/	/	/	/	/	/	/	/	
8					HD-B 23	X						/	/	/	/	/	/	/	/	
9					HD-5	X						/	/	/	/	/	/	/		
10	↓	↓			B4A-9	X						/	/	/	/	/	/	/	/	

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Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	11/21 1408	Roberto Sandoval			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time		

TURN AROUND TIME

24 Hr.		5 Day	
48 Hr.		Standard	
72 Hr.		Other	

WHITE COPY CANARY COPY PINK COPY

aquatic bioassay & consulting laboratories, inc

December 6, 2011

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	113339-07
DATE RECEIVED:	29 Nov - 11
ABC LAB. NO.:	CAP1111.286

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50	=	95 % Survival in 100% Sample
TU(a)	=	0.41

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Test Code: 08-4743-5314/CAP1111.286

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	00-4076-7483	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:55	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:55	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	10-6939-9594	**Code:**	CAP1111.286	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-07		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
14-7131-0059	96h Survival Rate	100	>100	N/A	7.09%	1	Unequal Variance t Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
09-0893-7604	96h Survival Rate	EC5	100	20	N/A	1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
09-0893-7604	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits
14-7131-0059	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	0.95	0.9284	0.9716	0.9	1	0.01054	0.05774	6.08%	5.0%

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		0.9	1	0.9	1

CETIS Analytical Report

Test Code: 08-4743-5314/CAP1111.286

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	14-7131-0059	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	00-4076-7483	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:55	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:55	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	10-6939-9594	**Code:**	CAP1111.286	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-07		

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	100	>100	N/A	1	7.09%

Unequal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Negative Control		100	1.732	2.353	0.1107	0.0908	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision
Extreme Value	Grubbs Single Outlier	1.323	2.127	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.01327967	0.01327967	1	3	0.1340	Non-Significant Effect
Error	0.02655933	0.004426555	6			
Total	0.039839	0.01770622	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65540	13.75	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.8489		0.0929	Normal Distribution
Distribution	Kolmogorov-Smirnov	0.25	0.3313	0.1599	Normal Distribution

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	0.95	0.928	0.972	0.9	1	0.01072	0.05773	6.08%	5.0%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Contro	4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
100		4	1.331	1.295	1.366	1.249	1.412	0.01747	0.09409	7.07%	5.77%

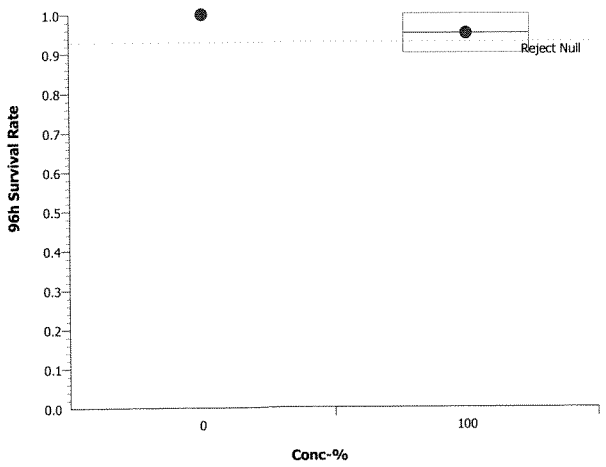
Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

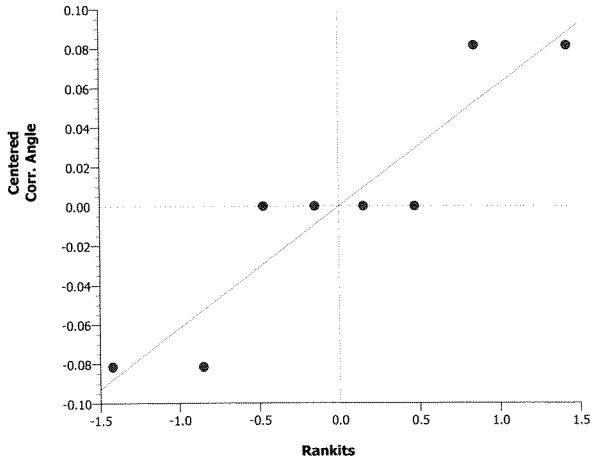
Analysis ID:	14-7131-0059	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:05	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		0.9	1	0.9	1

Graphics





CETIS Analytical Report

Test Code: 08-4743-5314/CAP1111.286

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	09-0893-7604	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:05	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	00-4076-7483	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:55	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:55	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	10-6939-9594	**Code:**	CAP1111.286	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-07		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7607236	280	Yes	Two-Point Interpolation

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(5%)
Extreme Value	Grubbs Extreme Value	1.323	2.127	1.0000	No Outliers Detected

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	100	20	N/A	1	N/A	5
EC10	>100	N/A	N/A	<1	N/A	N/A
EC15	>100	N/A	N/A	<1	N/A	N/A
EC20	>100	N/A	N/A	<1	N/A	N/A
EC25	>100	N/A	N/A	<1	N/A	N/A
EC40	>100	N/A	N/A	<1	N/A	N/A
EC50	>100	N/A	N/A	<1	N/A	N/A

96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Negative Control	4	1	1	1	0	0	0.0%	0.0%	40	40
100		4	0.95	0.9	1	0.01054	0.05773	6.08%	5.0%	38	40

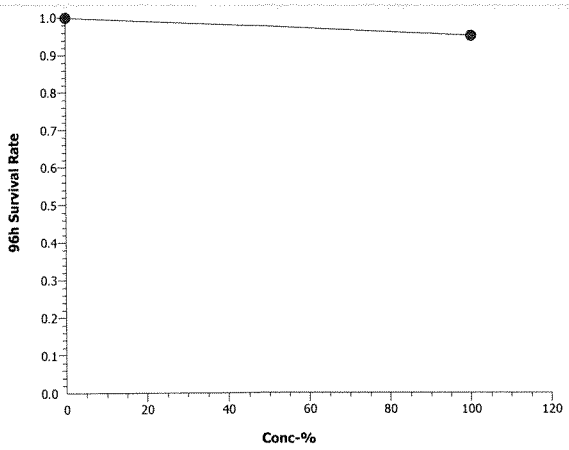
96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		0.9	1	0.9	1

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	09-0893-7604	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:05	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



CETIS Measurement Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	00-4076-7483	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:55	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:55	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	10-6939-9594	**Code:**	CAP1111.286	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-07		

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	64	64	64	64	64	0	0	0.0%	0
100		3	409	409	409	409	409	0	0	0.0%	0
Overall		6	236.5			64	409				0 (0%)

Conductivity-µmhos

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	347.3	343.6	351.1	339	360	1.858	11.15	3.21%	0
100		3	2266	2260	2271	2254	2285	2.81	16.86	0.74%	0
Overall		6	1307			339	2285				0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	7.2	6.788	7.612	5.8	8	0.2028	1.217	16.9%	0
100		3	7.333	6.796	7.871	5.5	8.3	0.2648	1.589	21.66%	0
Overall		6	7.267			5.5	8.3				0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	91	91	91	91	91	0	0	0.0%	0
100		3	843	843	843	843	843	0	0	0.0%	0
Overall		6	467			91	843				0 (0%)

pH-Units

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	8.033	7.982	8.085	7.9	8.2	0.02546	0.1528	1.9%	0
100		3	8.167	8.115	8.218	8	8.3	0.02546	0.1527	1.87%	0
Overall		6	8.1			7.9	8.3				0 (0%)

Temperature-°C

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	24.03	24.01	24.05	24	24.1	0.009607	0.05764	0.24%	0
100		3	24	24	24	24	24	0	0	0.0%	0
Overall		6	24.02			24	24.1				0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	64	64	64
100		409	409	409

Conductivity-µmhos

Conc-%	Control Type	1	2	3
0	Negative Contr	339	343	360
100		2258	2254	2285

Dissolved Oxygen-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	7.8	8	5.8
100		8.2	8.3	5.5

Hardness (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	91	91	91
100		843	843	843

pH-Units

Conc-%	Control Type	1	2	3
0	Negative Contr	8.2	8	7.9
100		8	8.2	8.3

Temperature-°C

Conc-%	Control Type	1	2	3
0	Negative Contr	24	24.1	24
100		24	24	24

aquatic bioassay & consulting laboratories, inc

December 6, 2011

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	113339-08
DATE RECEIVED:	29 Nov - 11
ABC LAB. NO.:	CAP1111.287

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50	=	95 % Survival in 100% Sample
TU(a)	=	0.41

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	06-2758-6767	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:56	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:56	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	19-1639-4259	**Code:**	CAP1111.287	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h	**Station:**	113339-08		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
03-3932-7012	96h Survival Rate	100	>100	N/A	7.09%	1	Unequal Variance t Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
19-0429-8747	96h Survival Rate	EC5	100	20	N/A	1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
03-3932-7012	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits
19-0429-8747	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	0.95	0.9284	0.9716	0.9	1	0.01054	0.05774	6.08%	5.0%

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	0.9	1	0.9

CETIS Analytical Report

Test Code: 05-9731-0658/CAP1111.287

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	03-3932-7012	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:08	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	06-2758-6767	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:56	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:56	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	19-1639-4259	**Code:**	CAP1111.287	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h	**Station:**	113339-08		

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	100	>100	N/A	1	7.09%

Unequal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Negative Control		100	1.732	2.353	0.1107	0.0908	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision
Extreme Value	Grubbs Single Outlier	1.323	2.127	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.01327967	0.01327967	1	3	0.1340	Non-Significant Effect
Error	0.02655933	0.004426555	6			
Total	0.039839	0.01770622	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65540	13.75	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.8489		0.0929	Normal Distribution
Distribution	Kolmogorov-Smirnov	0.25	0.3313	0.1599	Normal Distribution

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	0.95	0.928	0.972	0.9	1	0.01072	0.05773	6.08%	5.0%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Contro	4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
100		4	1.331	1.295	1.366	1.249	1.412	0.01747	0.09409	7.07%	5.77%

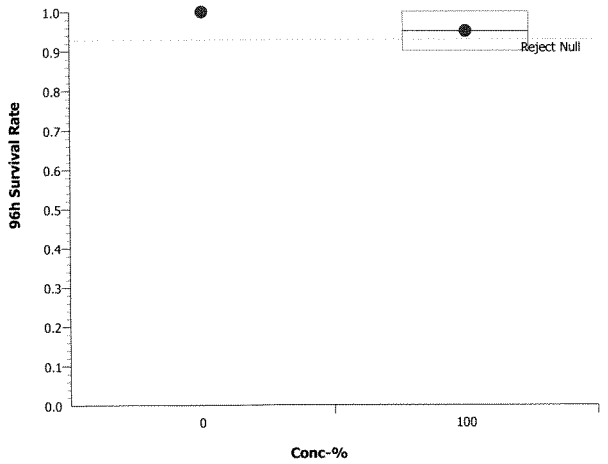
Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

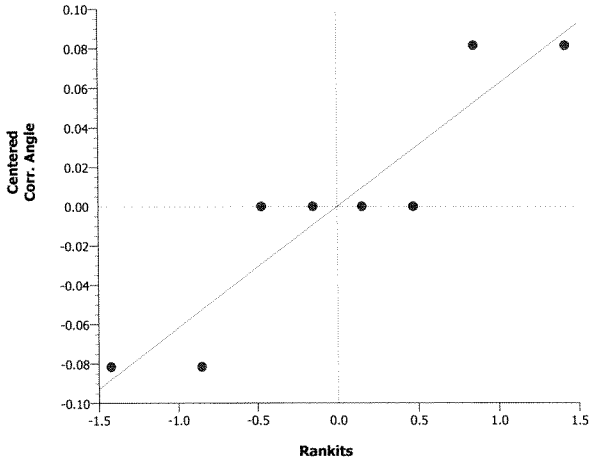
Analysis ID:	03-3932-7012	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:08	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	0.9	1	0.9

Graphics





CETIS Analytical Report

Test Code: 05-9731-0658/CAP1111.287

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	19-0429-8747	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:08	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	06-2758-6767	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:56	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:56	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	19-1639-4259	**Code:**	CAP1111.287	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h	**Station:**	113339-08		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	8144900	280	Yes	Two-Point Interpolation

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(5%)
Extreme Value	Grubbs Extreme Value	1.323	2.127	1.0000	No Outliers Detected

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	100	20	N/A	1	N/A	5
EC10	>100	N/A	N/A	<1	N/A	N/A
EC15	>100	N/A	N/A	<1	N/A	N/A
EC20	>100	N/A	N/A	<1	N/A	N/A
EC25	>100	N/A	N/A	<1	N/A	N/A
EC40	>100	N/A	N/A	<1	N/A	N/A
EC50	>100	N/A	N/A	<1	N/A	N/A

96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Negative Control	4	1	1	1	0	0	0.0%	0.0%	40	40
100		4	0.95	0.9	1	0.01054	0.05773	6.08%	5.0%	38	40

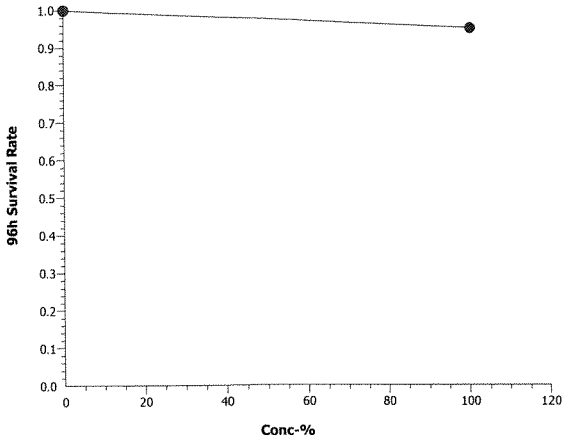
96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	0.9	1	0.9

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	19-0429-8747	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:08	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



CETIS Measurement Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	06-2758-6767	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:56	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:56	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	19-1639-4259	**Code:**	CAP1111.287	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h	**Station:**	113339-08		

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	64	64	64	64	64	0	0	0.0%	0
100		3	320	320	320	320	320	0	0	0.0%	0
Overall		6	192			64	320				0 (0%)

Conductivity-µmhos

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	347.3	343.6	351.1	339	360	1.858	11.15	3.21%	0
100		3	2867	2864	2870	2857	2875	1.512	9.074	0.32%	0
Overall		6	1607			339	2875				0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	7.2	6.788	7.612	5.8	8	0.2028	1.217	16.9%	0
100		3	6.5	6.088	6.912	5.7	7.9	0.2028	1.217	18.72%	0
Overall		6	6.85			5.7	8				0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	91	91	91	91	91	0	0	0.0%	0
100		3	672	672	672	672	672	0	0	0.0%	0
Overall		6	381.5			91	672				0 (0%)

pH-Units

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	8.033	7.982	8.085	7.9	8.2	0.02546	0.1528	1.9%	0
100		3	7.733	7.615	7.852	7.4	8.1	0.05853	0.3512	4.54%	0
Overall		6	7.883			7.4	8.2				0 (0%)

Temperature-°C

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	24.03	24.01	24.05	24	24.1	0.009607	0.05764	0.24%	0
100		3	24	24	24	24	24	0	0	0.0%	0
Overall		6	24.02			24	24.1				0 (0%)

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	64	64	64
100		320	320	320

Conductivity-µmhos

Conc-%	Control Type	1	2	3
0	Negative Contr	339	343	360
100		2868	2857	2875

Dissolved Oxygen-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	7.8	8	5.8
100		5.7	7.9	5.9

Hardness (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	91	91	91
100		672	672	672

pH-Units

Conc-%	Control Type	1	2	3
0	Negative Contr	8.2	8	7.9
100		7.4	7.7	8.1

Temperature-°C

Conc-%	Control Type	1	2	3
0	Negative Contr	24	24.1	24
100		24	24	24

aquatic bioassay & consulting laboratories, inc

December 6, 2011

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	113339-09
DATE RECEIVED:	29 Nov - 11
ABC LAB. NO.:	CAP1111.288

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50	=	100 % Survival in 100% Sample
TU(a)	=	0.00

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	18-5157-7766	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:57	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:57	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	00-5879-8187	**Code:**	CAP1111.288	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-09		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
07-7186-5815	96h Survival Rate	100	>100	N/A	2.5%	1	Wilcoxon Rank Sum Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
03-7119-6673	96h Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
03-7119-6673	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits
07-7186-5815	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

CETIS Analytical Report

Test Code: 02-3764-0567/CAP1111.288

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	07-7186-5815	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:14	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes
Batch ID:	18-5157-7766	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:57	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:57	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	00-5879-8187	**Code:**	CAP1111.288	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-09		

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	100	>100	N/A	1	2.5%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Negative Control		100	18		1	0.4429	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0	0	1	65540	<0.0001	Significant Effect
Error	0	0	6			
Total	0	0	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65540	13.75	<0.0001	Unequal Variances

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Contro	4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
100		4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%

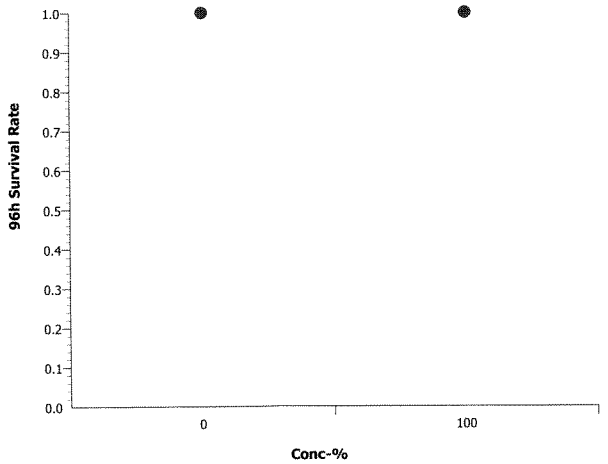
Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

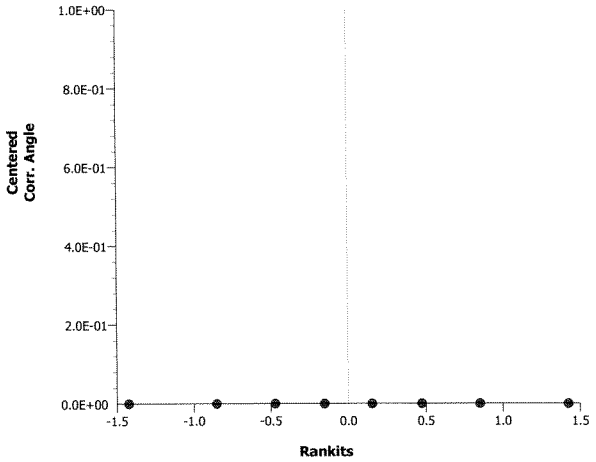
Analysis ID:	07-7186-5815	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:14	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Graphics





CETIS Analytical Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	03-7119-6673	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:14	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	18-5157-7766	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:57	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:57	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	00-5879-8187	**Code:**	CAP1111.288	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-09		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7090379	280	Yes	Two-Point Interpolation

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	N/A	N/A
EC10	>100	N/A	N/A	<1	N/A	N/A
EC15	>100	N/A	N/A	<1	N/A	N/A
EC20	>100	N/A	N/A	<1	N/A	N/A
EC25	>100	N/A	N/A	<1	N/A	N/A
EC40	>100	N/A	N/A	<1	N/A	N/A
EC50	>100	N/A	N/A	<1	N/A	N/A

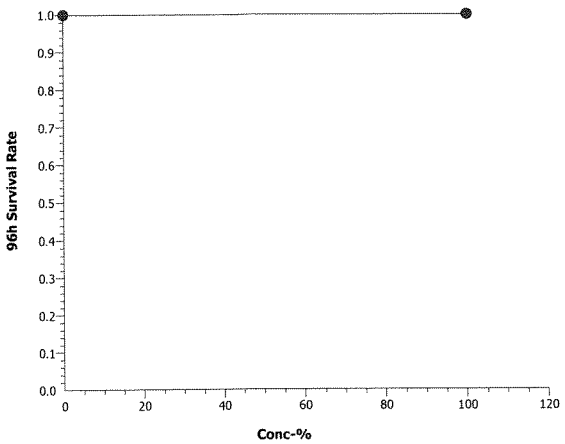
96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Negative Control	4	1	1	1	0	0	0.0%	0.0%	40	40
100		4	1	1	1	0	0	0.0%	0.0%	40	40

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Graphics



CETIS Measurement Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	18-5157-7766	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:57	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:57	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	00-5879-8187	**Code:**	CAP1111.288	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-09		

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	64	64	64	64	64	0	0	0.0%	0
100		3	351	351	351	351	351	0	0	0.0%	0
Overall		6	207.5			64	351				0 (0%)

Conductivity-µmhos

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	347.3	343.6	351.1	339	360	1.858	11.15	3.21%	0
100		3	3310	3297	3322	3280	3350	6.033	36.2	1.09%	0
Overall		6	1829			339	3350				0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	7.2	6.788	7.612	5.8	8	0.2028	1.217	16.9%	0
100		3	6.267	5.764	6.769	5	7.9	0.2474	1.484	23.69%	0
Overall		6	6.733			5	8				0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	91	91	91	91	91	0	0	0.0%	0
100		3	833	833	833	833	833	0	0	0.0%	0
Overall		6	462			91	833				0 (0%)

pH-Units

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	8.033	7.982	8.085	7.9	8.2	0.02546	0.1528	1.9%	0
100		3	7.567	7.482	7.652	7.3	7.8	0.04194	0.2517	3.33%	0
Overall		6	7.8			7.3	8.2				0 (0%)

Temperature-°C

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	24.03	24.01	24.05	24	24.1	0.009607	0.05764	0.24%	0
100		3	24	24	24	24	24	0	0	0.0%	0
Overall		6	24.02			24	24.1				0 (0%)

Fathead Minnow 96-h Acute Survival Test — Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	64	64	64
100		351	351	351

Conductivity-µmhos

Conc-%	Control Type	1	2	3
0	Negative Contr	339	343	360
100		3299	3280	3350

Dissolved Oxygen-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	7.8	8	5.8
100		5	7.9	5.9

Hardness (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	91	91	91
100		833	833	833

pH-Units

Conc-%	Control Type	1	2	3
0	Negative Contr	8.2	8	7.9
100		7.3	7.6	7.8

Temperature-°C

Conc-%	Control Type	1	2	3
0	Negative Contr	24	24.1	24
100		24	24	24

aquatic bioassay & consulting laboratories, inc

December 6, 2011

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	113339-10
DATE RECEIVED:	29 Nov - 11
ABC LAB. NO.:	CAP1111.289

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50	=	100 % Survival in 100% Sample
TU(a)	=	0.00

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	04-1353-9316	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:58	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:58	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	12-3543-9169	**Code:**	CAP1111.289	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-10		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
12-4328-8121	96h Survival Rate	100	>100	N/A	2.5%	1	Wilcoxon Rank Sum Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
17-4447-6325	96h Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
12-4328-8121	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits
17-4447-6325	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

CETIS Analytical Report

Test Code: 00-6136-3103/CAP1111.289

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	12-4328-8121	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:17	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes
Batch ID:	04-1353-9316	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:58	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:58	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	12-3543-9169	**Code:**	CAP1111.289	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-10		

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	100	>100	N/A	1	2.5%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Negative Control		100	18		1	0.4429	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0	0	1	65540	<0.0001	Significant Effect
Error	0	0	6			
Total	0	0	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65540	13.75	<0.0001	Unequal Variances

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Contro	4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
100		4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%

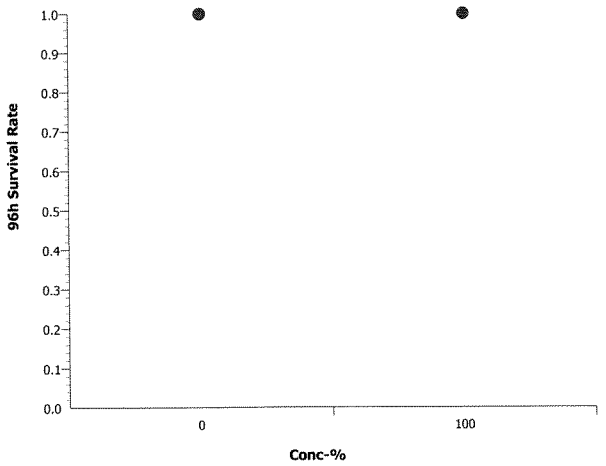
Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

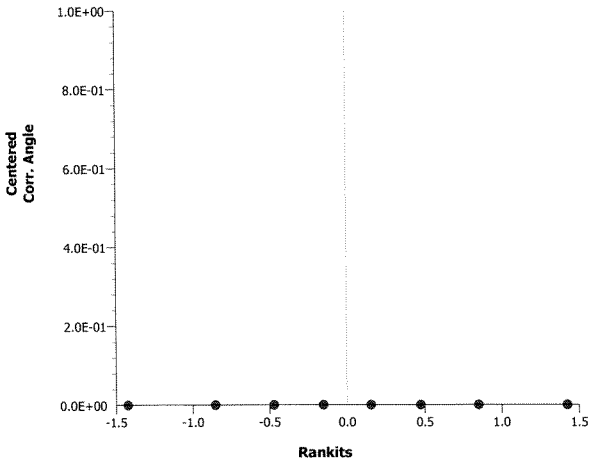
Analysis ID:	12-4328-8121	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:17	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Graphics





CETIS Analytical Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	17-4447-6325	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:17	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	04-1353-9316	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:58	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:58	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	12-3543-9169	**Code:**	CAP1111.289	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-10		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	453528	280	Yes	Two-Point Interpolation

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	N/A	N/A
EC10	>100	N/A	N/A	<1	N/A	N/A
EC15	>100	N/A	N/A	<1	N/A	N/A
EC20	>100	N/A	N/A	<1	N/A	N/A
EC25	>100	N/A	N/A	<1	N/A	N/A
EC40	>100	N/A	N/A	<1	N/A	N/A
EC50	>100	N/A	N/A	<1	N/A	N/A

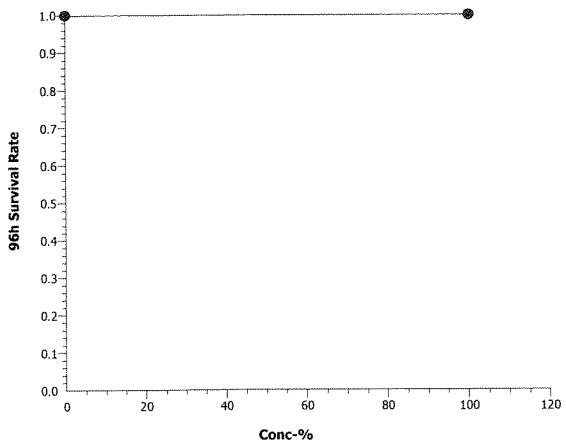
96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Negative Control	4	1	1	1	0	0	0.0%	0.0%	40	40
100		4	1	1	1	0	0	0.0%	0.0%	40	40

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Graphics



CETIS Measurement Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	04-1353-9316	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:58	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:58	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	12-3543-9169	**Code:**	CAP1111.289	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-10		

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	64	64	64	64	64	0	0	0.0%	0
100		3	415	415	415	415	415	0	0	0.0%	0
Overall		6	239.5			64	415				0 (0%)

Conductivity-µmhos

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	347.3	343.6	351.1	339	360	1.858	11.15	3.21%	0
100		3	2880	2879	2882	2875	2884	0.7876	4.726	0.16%	0
Overall		6	1614			339	2884				0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	7.2	6.788	7.612	5.8	8	0.2028	1.217	16.9%	0
100		3	6.167	5.922	6.411	5.7	7	0.1206	0.7234	11.73%	0
Overall		6	6.683			5.7	8				0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	91	91	91	91	91	0	0	0.0%	0
100		3	326	326	326	326	326	0	0	0.0%	0
Overall		6	208.5			91	326				0 (0%)

pH-Units

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	8.033	7.982	8.085	7.9	8.2	0.02546	0.1528	1.9%	0
100		3	7.9	7.866	7.934	7.8	8	0.01667	0.1	1.27%	0
Overall		6	7.967			7.8	8.2				0 (0%)

Temperature-°C

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	24.03	24.01	24.05	24	24.1	0.009607	0.05764	0.24%	0
100		3	24	24	24	24	24	0	0	0.0%	0
Overall		6	24.02			24	24.1				0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	64	64	64
100		415	415	415

Conductivity-µmhos

Conc-%	Control Type	1	2	3
0	Negative Contr	339	343	360
100		2884	2882	2875

Dissolved Oxygen-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	7.8	8	5.8
100		5.8	7	5.7

Hardness (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	91	91	91
100		326	326	326

pH-Units

Conc-%	Control Type	1	2	3
0	Negative Contr	8.2	8	7.9
100		7.8	7.9	8

Temperature-°C

Conc-%	Control Type	1	2	3
0	Negative Contr	24	24.1	24
100		24	24	24

Certificate of Analysis

Notes:

The Chain of Custody document is part of the analytical report.
Any remaining sample(s) for testing will be disposed of one month from the final report date unless other arrangements are made in advance.
All results are expressed on wet weight basis unless otherwise specified.

Authorized Signature

Keith Chang, Ph.D. (QA/QC Supervisor)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Capco Analytical certifies that the test results meet all requirements of ELAP unless noted in the Case Narrative. This analytical report must be reproduced in its entirety.

Legend for Abbreviations:

PQL	Practical Quantitation Limit
BQL	Below Practical Quantitation Limit
ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL).
MDL	Method Detection Limit
MRL	Method Reporting Limit
MDA	Minimum Detectable Activity
MCL	Maximum Contamination Level

CAPCO ANALYTICAL SERVICES

1536 Eastman Avenue, Suite B
Ventura, CA 93003
(805) 644-1095 Fax 644-9947
www.capcoenv.com

CHAIN OF CUSTODY RECORD

REPORT
Fax
Company FUGRO
Address
Email
Phone Contact

BILL TO: P.O.#
Company SAME
Address
Phone Contact

PROJ. NO | PROJECT NAME

SAMPLERS: (Signature)

CONTAINER TYPES
A = AMBER B = BRASS G = GLASS
P = PLASTIC V = VOA VIAL O = OTHER

ANALYSIS: Acute Toxicity

113339

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	COMP	GRAB	SAMPLE IDENTIFICATION	MATRIX: WATER	SOIL	SLUDGE	OTHER	CONTAINER #/TYPE	ANALYSIS	REMARKS
1	11/29/11				W-18	X				1 P	X	
2	↓				W-16	↓				↓ ↓	X	
3					BYA-9						X	
4					BYA-14						X	
5					W-2						X	
6					BYA-H10						X	
7					HD-43						X	
8					HD-22						X	
9					HD-23						X	
10	↓				HD-5	↓				↓ ↓	X	

The undersigned hereby acknowledges having received a copy of the Fee Schedule/General Information and Conditions, the provisions of which are a part of this agreement.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature]	11/29 1322	[signature]
Relinquished by: (Signature)	Date/Time	Received by: (Signature)

TURN AROUND TIME
STANDARD ☒ OTHER
24 HOURS ☐
48 HOURS ☐
72 HOURS ☐

CHECK ONE BOX:
DISPOSE SAMPLES ☐
RETURN SAMPLES ☐

WHITE COPY CANARY COPY PINK COPY

aquatic bioassay & consulting laboratories, inc

December 6, 2011

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	113339-03
DATE RECEIVED:	29 Nov - 11
ABC LAB. NO.:	CAP1111.282

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50	=	100 % Survival in 100% Sample
TU(a)	=	0.00

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	06-3706-8248	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:51	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:51	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	04-5314-5121	**Code:**	CAP1111.282	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h	**Station:**	113339-03		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
17-1316-2961	96h Survival Rate	100	>100	N/A	2.5%	1	Wilcoxon Rank Sum Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
02-5408-9785	96h Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
02-5408-9785	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits
17-1316-2961	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

CETIS Analytical Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	17-1316-2961	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 11:45	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes
Batch ID:	06-3706-8248	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:51	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:51	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	04-5314-5121	**Code:**	CAP1111.282	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h	**Station:**	113339-03		

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	100	>100	N/A	1	2.5%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Negative Control		100	18		1	0.4429	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0	0	1	65540	<0.0001	Significant Effect
Error	0	0	6			
Total	0	0	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65540	13.75	<0.0001	Unequal Variances

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Contro	4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
100		4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%

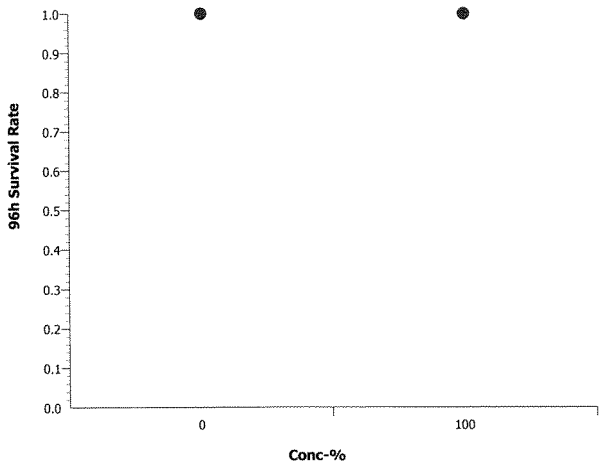
Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

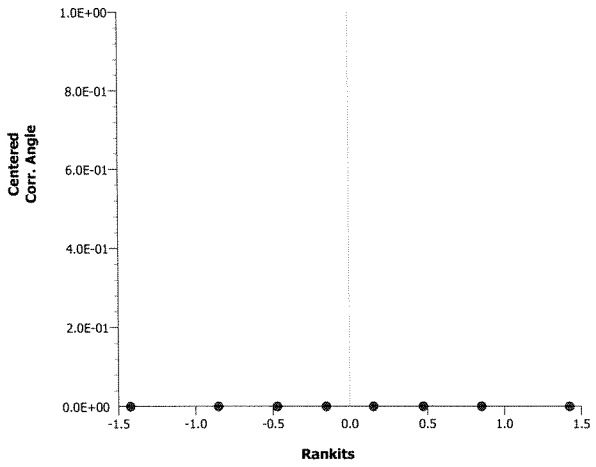
Analysis ID:	17-1316-2961	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 11:45	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Graphics





CETIS Analytical Report

Test Code: 09-5270-3647/CAP1111.282

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	02-5408-9785	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 11:45	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	06-3706-8248	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:51	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:51	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	04-5314-5121	**Code:**	CAP1111.282	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h	**Station:**	113339-03		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2895625	280	Yes	Two-Point Interpolation

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	N/A	N/A
EC10	>100	N/A	N/A	<1	N/A	N/A
EC15	>100	N/A	N/A	<1	N/A	N/A
EC20	>100	N/A	N/A	<1	N/A	N/A
EC25	>100	N/A	N/A	<1	N/A	N/A
EC40	>100	N/A	N/A	<1	N/A	N/A
EC50	>100	N/A	N/A	<1	N/A	N/A

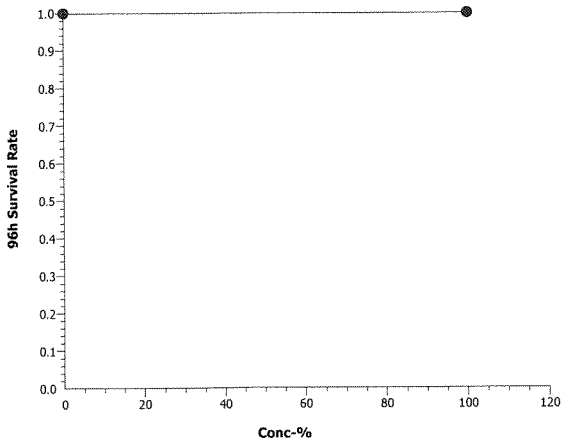
96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Negative Control	4	1	1	1	0	0	0.0%	0.0%	40	40
100		4	1	1	1	0	0	0.0%	0.0%	40	40

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Graphics



CETIS Measurement Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	06-3706-8248	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:51	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:51	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	04-5314-5121	**Code:**	CAP1111.282	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h	**Station:**	113339-03		

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	64	64	64	64	64	0	0	0.0%	0
100		3	370	370	370	370	370	0	0	0.0%	0
Overall		6	217			64	370				0 (0%)

Conductivity-µmhos

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	348.3	344	352.7	339	363	2.143	12.86	3.69%	0
100		3	2443	2433	2452	2423	2475	4.703	28.22	1.16%	0
Overall		6	1396			339	2475				0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	7.3	6.947	7.653	6.1	8	0.174	1.044	14.3%	0
100		3	6.1	5.626	6.574	4.7	7.5	0.2333	1.4	22.95%	0
Overall		6	6.7			4.7	8				0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	91	91	91	91	91	0	0	0.0%	0
100		3	698	698	698	698	698	0	0	0.0%	0
Overall		6	394.5			91	698				0 (0%)

pH-Units

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	8.067	8.028	8.106	8	8.2	0.01925	0.1155	1.43%	0
100		3	7.433	7.315	7.552	7.1	7.8	0.05853	0.3512	4.73%	0
Overall		6	7.75			7.1	8.2				0 (0%)

Temperature-°C

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	24.03	24.01	24.05	24	24.1	0.009607	0.05764	0.24%	0
100		3	24	24	24	24	24	0	0	0.0%	0
Overall		6	24.02			24	24.1				0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	64	64	64
100		370	370	370

Conductivity-µmhos

Conc-%	Control Type	1	2	3
0	Negative Contr	339	343	363
100		2430	2423	2475

Dissolved Oxygen-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	7.8	8	6.1
100		4.7	7.5	6.1

Hardness (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	91	91	91
100		698	698	698

pH-Units

Conc-%	Control Type	1	2	3
0	Negative Contr	8.2	8	8
100		7.1	7.4	7.8

Temperature-°C

Conc-%	Control Type	1	2	3
0	Negative Contr	24	24.1	24
100		24	24	24

aquatic bioassay & consulting laboratories, inc

December 6, 2011

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	113339-04
DATE RECEIVED:	29 Nov - 11
ABC LAB. NO.:	CAP1111.283

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50	=	100 % Survival in 100% Sample
TU(a)	=	0.00

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	15-3783-8973	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:52	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:52	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	01-0087-4479	**Code:**	CAP1111.283	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-04		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
20-4521-1603	96h Survival Rate	100	>100	N/A	2.5%	1	Wilcoxon Rank Sum Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
03-6106-9727	96h Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
03-6106-9727	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits
20-4521-1603	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

CETIS Analytical Report

Test Code: 17-9238-9036/CAP1111.283

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	20-4521-1603	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 11:50	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes
Batch ID:	15-3783-8973	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:52	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:52	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	01-0087-4479	**Code:**	CAP1111.283	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-04		

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	100	>100	N/A	1	2.5%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Negative Control		100	18		1	0.4429	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0	0	1	65540	<0.0001	Significant Effect
Error	0	0	6			
Total	0	0	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65540	13.75	<0.0001	Unequal Variances

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Contro	4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
100		4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%

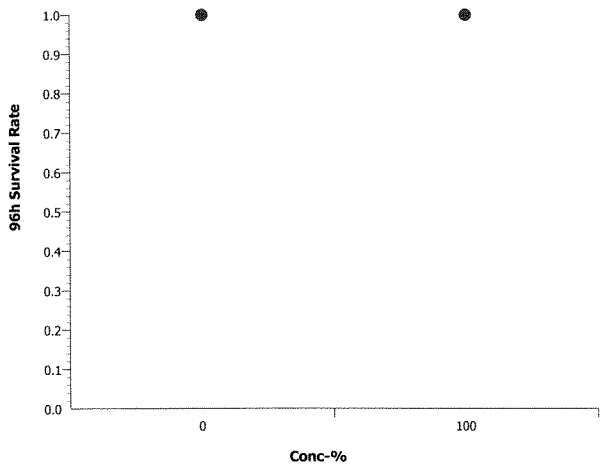
Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

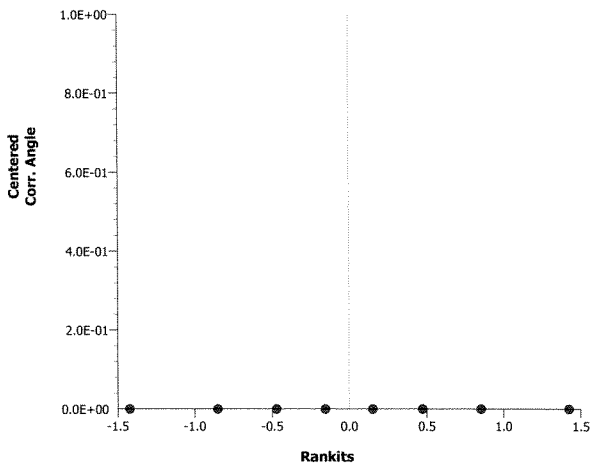
Analysis ID:	20-4521-1603	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 11:50	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Graphics





CETIS Analytical Report

Test Code: 17-9238-9036/CAP1111.283

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	03-6106-9727	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 11:50	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	15-3783-8973	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:52	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:52	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	01-0087-4479	**Code:**	CAP1111.283	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-04		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	3019480	280	Yes	Two-Point Interpolation

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	N/A	N/A
EC10	>100	N/A	N/A	<1	N/A	N/A
EC15	>100	N/A	N/A	<1	N/A	N/A
EC20	>100	N/A	N/A	<1	N/A	N/A
EC25	>100	N/A	N/A	<1	N/A	N/A
EC40	>100	N/A	N/A	<1	N/A	N/A
EC50	>100	N/A	N/A	<1	N/A	N/A

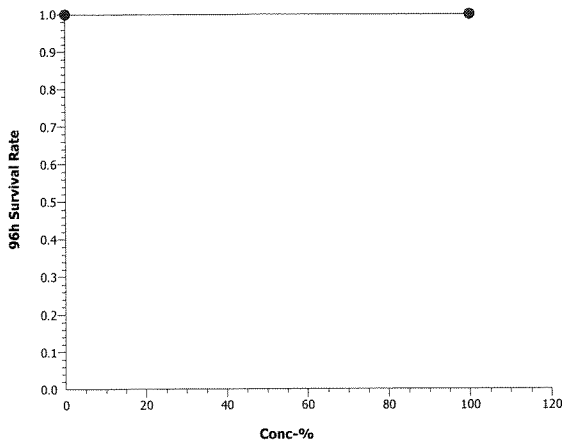
96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Negative Control	4	1	1	1	0	0	0.0%	0.0%	40	40
100		4	1	1	1	0	0	0.0%	0.0%	40	40

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Graphics



CETIS Measurement Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	15-3783-8973	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:52	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:52	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	01-0087-4479	**Code:**	CAP1111.283	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-04		

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	64	64	64	64	64	0	0	0.0%	0
100		3	422	422	422	422	422	0	0	0.0%	0
Overall		6	243			64	422				0 (0%)

Conductivity-µmhos

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	348.3	344	352.7	339	363	2.143	12.86	3.69%	0
100		3	2890	2884	2897	2870	2906	3.075	18.45	0.64%	0
Overall		6	1619			339	2906				0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	7.3	6.947	7.653	6.1	8	0.174	1.044	14.3%	0
100		3	6.7	6.347	7.053	6	7.9	0.174	1.044	15.58%	0
Overall		6	7			6	8				0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	91	91	91	91	91	0	0	0.0%	0
100		3	481	481	481	481	481	0	0	0.0%	0
Overall		6	286			91	481				0 (0%)

pH-Units

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	8.067	8.028	8.106	8	8.2	0.01925	0.1155	1.43%	0
100		3	7.533	7.392	7.674	7.2	8	0.06939	0.4163	5.53%	0
Overall		6	7.8			7.2	8.2				0 (0%)

Temperature-°C

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	24.03	24.01	24.05	24	24.1	0.009607	0.05764	0.24%	0
100		3	24	24	24	24	24	0	0	0.0%	0
Overall		6	24.02			24	24.1				0 (0%)

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	64	64	64
100		422	422	422

Conductivity-µmhos

Conc-%	Control Type	1	2	3
0	Negative Contr	339	343	363
100		2906	2895	2870

Dissolved Oxygen-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	7.8	8	6.1
100		6.2	7.9	6

Hardness (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	91	91	91
100		481	481	481

pH-Units

Conc-%	Control Type	1	2	3
0	Negative Contr	8.2	8	8
100		7.2	7.4	8

Temperature-°C

Conc-%	Control Type	1	2	3
0	Negative Contr	24	24.1	24
100		24	24	24

aquatic bioassay & consulting laboratories, inc

December 6, 2011

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	113339-05
DATE RECEIVED:	29 Nov - 11
ABC LAB. NO.:	CAP1111.284

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50	=	100 % Survival in 100% Sample
TU(a)	=	0.00

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	20-5162-5158	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:53	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:53	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	14-8050-6805	**Code:**	CAP1111.284	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-05		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
18-3494-8377	96h Survival Rate	100	>100	N/A	2.5%	1	Wilcoxon Rank Sum Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
15-7085-5524	96h Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
15-7085-5524	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits
18-3494-8377	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

CETIS Analytical Report

Test Code: 19-2078-3093/CAP1111.284

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	18-3494-8377	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 11:57	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes
Batch ID:	20-5162-5158	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:53	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:53	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	14-8050-6805	**Code:**	CAP1111.284	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-05		

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	100	>100	N/A	1	2.5%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Negative Control		100	18		1	0.4429	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0	0	1	65540	<0.0001	Significant Effect
Error	0	0	6			
Total	0	0	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65540	13.75	<0.0001	Unequal Variances

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Contro	4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
100		4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%

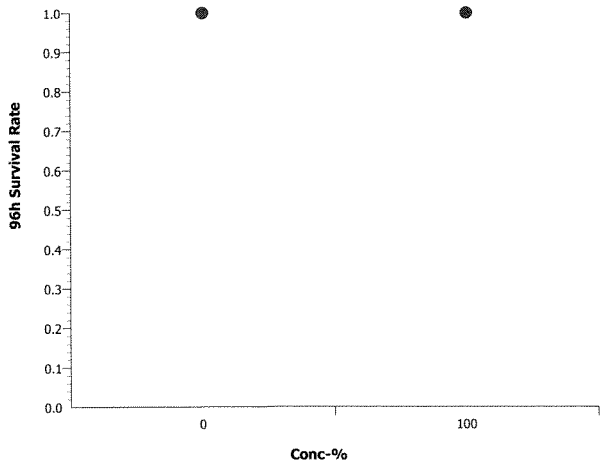
Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

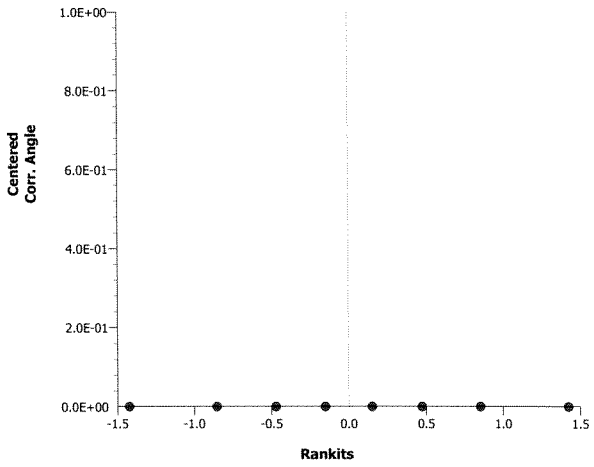
Analysis ID:	18-3494-8377	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 11:57	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Graphics





CETIS Analytical Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	15-7085-5524	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 11:57	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	20-5162-5158	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:53	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:53	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	14-8050-6805	**Code:**	CAP1111.284	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-05		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7747401	280	Yes	Two-Point Interpolation

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	N/A	N/A
EC10	>100	N/A	N/A	<1	N/A	N/A
EC15	>100	N/A	N/A	<1	N/A	N/A
EC20	>100	N/A	N/A	<1	N/A	N/A
EC25	>100	N/A	N/A	<1	N/A	N/A
EC40	>100	N/A	N/A	<1	N/A	N/A
EC50	>100	N/A	N/A	<1	N/A	N/A

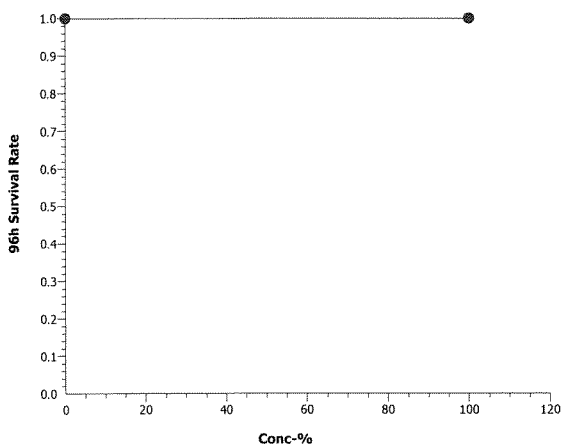
96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Negative Control	4	1	1	1	0	0	0.0%	0.0%	40	40
100		4	1	1	1	0	0	0.0%	0.0%	40	40

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Graphics



CETIS Measurement Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	20-5162-5158	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:53	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:53	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	14-8050-6805	**Code:**	CAP1111.284	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-05		

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	64	64	64	64	64	0	0	0.0%	0
100		3	365	365	365	365	365	0	0	0.0%	0
Overall		6	214.5			64	365				0 (0%)

Conductivity-µmhos

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	348.3	344	352.7	339	363	2.143	12.86	3.69%	0
100		3	2862	2857	2866	2854	2877	2.213	13.28	0.46%	0
Overall		6	1605			339	2877				0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	7.3	6.947	7.653	6.1	8	0.174	1.044	14.3%	0
100		3	6.667	6.305	7.028	6	7.9	0.1782	1.069	16.04%	0
Overall		6	6.983			6	8				0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	91	91	91	91	91	0	0	0.0%	0
100		3	527	527	527	527	527	0	0	0.0%	0
Overall		6	309			91	527				0 (0%)

pH-Units

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	8.067	8.028	8.106	8	8.2	0.01925	0.1155	1.43%	0
100		3	7.6	7.445	7.755	7.2	8.1	0.07638	0.4583	6.03%	0
Overall		6	7.833			7.2	8.2				0 (0%)

Temperature-°C

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	24.03	24.01	24.05	24	24.1	0.009607	0.05764	0.24%	0
100		3	24	24	24	24	24	0	0	0.0%	0
Overall		6	24.02			24	24.1				0 (0%)

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	64	64	64
100		365	365	365

Conductivity-µmhos

Conc-%	Control Type	1	2	3
0	Negative Contr	339	343	363
100		2854	2854	2877

Dissolved Oxygen-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	7.8	8	6.1
100		6.1	7.9	6

Hardness (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	91	91	91
100		527	527	527

pH-Units

Conc-%	Control Type	1	2	3
0	Negative Contr	8.2	8	8
100		7.2	7.5	8.1

Temperature-°C

Conc-%	Control Type	1	2	3
0	Negative Contr	24	24.1	24
100		24	24	24

aquatic bioassay & consulting laboratories, inc

December 6, 2011

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	113339-06
DATE RECEIVED:	29 Nov - 11
ABC LAB. NO.:	CAP1111.285

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50	=	100 % Survival in 100% Sample
TU(a)	=	0.00

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	00-2404-5723	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:54	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:54	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-7935-4566	**Code:**	CAP1111.285	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-06		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
06-5113-2597	96h Survival Rate	100	>100	N/A	2.5%	1	Wilcoxon Rank Sum Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
16-5655-2345	96h Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
06-5113-2597	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits
16-5655-2345	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

CETIS Analytical Report

Test Code: 05-2268-7944/CAP1111.285

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	06-5113-2597	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:01	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes
Batch ID:	00-2404-5723	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:54	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:54	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-7935-4566	**Code:**	CAP1111.285	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-06		

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	100	>100	N/A	1	2.5%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Negative Control		100	18		1	0.4429	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0	0	1	65540	<0.0001	Significant Effect
Error	0	0	6			
Total	0	0	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65540	13.75	<0.0001	Unequal Variances

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Contro	4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
100		4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%

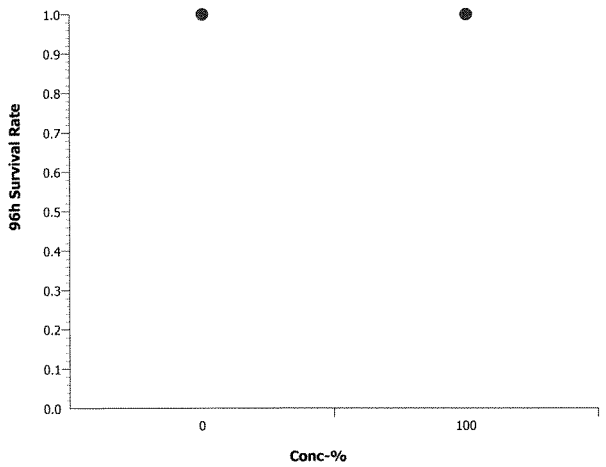
Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

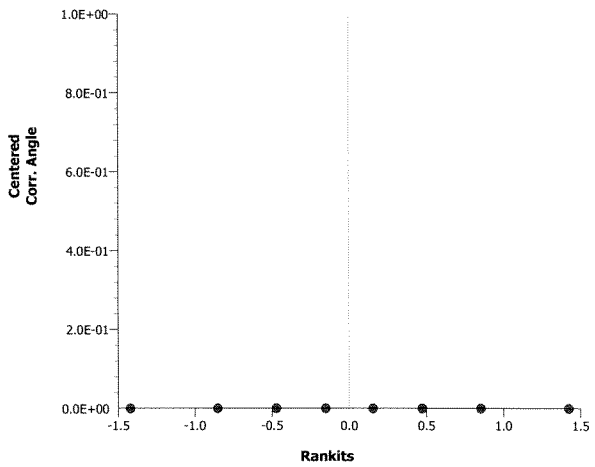
Analysis ID:	06-5113-2597	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:01	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Graphics





CETIS Analytical Report

Test Code: 05-2268-7944/CAP1111.285

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	16-5655-2345	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 12:01	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	00-2404-5723	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:54	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:54	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-7935-4566	**Code:**	CAP1111.285	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-06		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	140176	280	Yes	Two-Point Interpolation

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	N/A	N/A
EC10	>100	N/A	N/A	<1	N/A	N/A
EC15	>100	N/A	N/A	<1	N/A	N/A
EC20	>100	N/A	N/A	<1	N/A	N/A
EC25	>100	N/A	N/A	<1	N/A	N/A
EC40	>100	N/A	N/A	<1	N/A	N/A
EC50	>100	N/A	N/A	<1	N/A	N/A

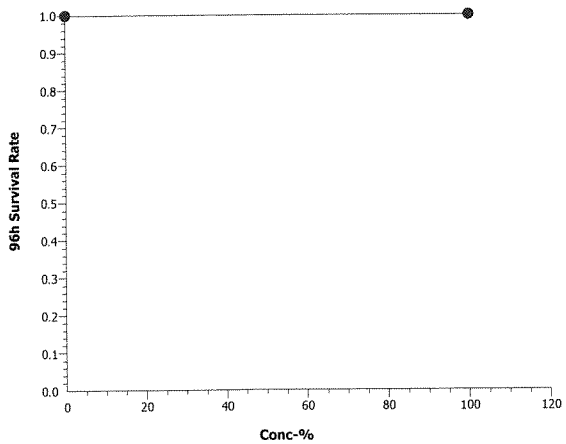
96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Negative Control	4	1	1	1	0	0	0.0%	0.0%	40	40
100		4	1	1	1	0	0	0.0%	0.0%	40	40

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Graphics



 Analyst:_____ QA:_____

CETIS Measurement Report

Test Code: 05-2268-7944/CAP1111.285

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	00-2404-5723	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:54	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:54	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	15-7935-4566	**Code:**	CAP1111.285	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-06		

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	64	64	64	64	64	0	0	0.0%	0
100		3	347	347	347	347	347	0	0	0.0%	0
Overall		6	205.5			64	347				0 (0%)

Conductivity-µmhos

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	347.3	343.6	351.1	339	360	1.858	11.15	3.21%	0
100		3	2077	2056	2098	2040	2148	10.3	61.78	2.98%	0
Overall		6	1212			339	2148				0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	7.2	6.788	7.612	5.8	8	0.2028	1.217	16.9%	0
100		3	6.367	5.874	6.86	5.2	8	0.2429	1.457	22.89%	0
Overall		6	6.783			5.2	8				0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	91	91	91	91	91	0	0	0.0%	0
100		3	705	705	705	705	705	0	0	0.0%	0
Overall		6	398			91	705				0 (0%)

pH-Units

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	8.033	7.982	8.085	7.9	8.2	0.02546	0.1528	1.9%	0
100		3	7.7	7.545	7.855	7.3	8.2	0.07638	0.4583	5.95%	0
Overall		6	7.867			7.3	8.2				0 (0%)

Temperature-°C

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	24.03	24.01	24.05	24	24.1	0.009607	0.05764	0.24%	0
100		3	24	24	24	24	24	0	0	0.0%	0
Overall		6	24.02			24	24.1				0 (0%)

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	64	64	64
100		347	347	347

Conductivity-µmhos

Conc-%	Control Type	1	2	3
0	Negative Contr	339	343	360
100		2040	2042	2148

Dissolved Oxygen-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	7.8	8	5.8
100		5.9	8	5.2

Hardness (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	91	91	91
100		705	705	705

pH-Units

Conc-%	Control Type	1	2	3
0	Negative Contr	8.2	8	7.9
100		7.3	7.6	8.2

Temperature-°C

Conc-%	Control Type	1	2	3
0	Negative Contr	24	24.1	24
100		24	24	24

CAPCO
Analytical Services, Inc.

Environmental and Analytical Services-Since 1994
California State Accredited Laboratory in Accordance with ELAP Certificate # 2332

Prepared for: Fugro West, Inc.
4820 McGrath St. Suite 100
Ventura, CA 93003
Attn: Alexis Spencer

Report Date: December 12, 2011
Laboratory Number: 113339
Project Name: N/A
Sampled by: Client

On November 29, 2011, Capco Analytical Services, Inc.(CAS), received ten(10) samples to be analyzed. The samples were identified and assigned the laboratory ID numbers listed below:

SAMPLE DESCRIPTION	CAS LAB NUMBER ID
W-18	113339-01
W-16	113339-02
BYA-9	113339-03
BYA-14	113339-04
W-2	113339-05
BYA-H10	113339-06
HD-43	113339-07
HD-22	113339-08
HD-23	113339-09
HD-5	113339-10

By my signature below, I certify that the results contained in this laboratory report comply with applicable standards for certification by the California Department of Public Health's Environmental Laboratories Accreditation Program (ELAP), both technically and for completeness, and that, based on my inquiry of the person or persons directly responsible for performing the analyses, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Alin E. Repede, MS
Director - Analytical Operations

If you have any further questions or concerns, please contact me at your convenience. This report consists of 71 pages excluding the cover letter and the Chain of Custody.

aquatic bioassay & consulting laboratories, inc

December 6, 2011

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	113339-01
DATE RECEIVED:	29 Nov - 11
ABC LAB. NO.:	CAP1111.280

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50	=	100 % Survival in 100% Sample
TU(a)	=	0.00

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Test Code: 02-4597-5768/CAP1111.280

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	00-1085-9094	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:49	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:49	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	14-0083-1474	**Code:**	CAP1111.280	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-01		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
00-6101-8676	96h Survival Rate	100	>100	N/A	2.5%	1	Wilcoxon Rank Sum Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
13-5639-4246	96h Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
00-6101-8676	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits
13-5639-4246	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

CETIS Analytical Report

Test Code: 02-4597-5768/CAP1111.280

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	00-6101-8676	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 9:42	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes
Batch ID:	00-1085-9094	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:49	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:49	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	14-0083-1474	**Code:**	CAP1111.280	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-01		

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	100	>100	N/A	1	2.5%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Negative Control		100	18		1	0.4429	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0	0	1	65540	<0.0001	Significant Effect
Error	0	0	6			
Total	0	0	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65540	13.75	<0.0001	Unequal Variances

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Contro	4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
100		4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%

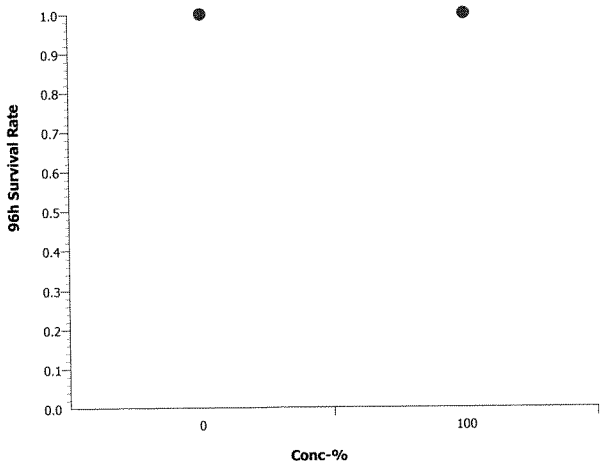
Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

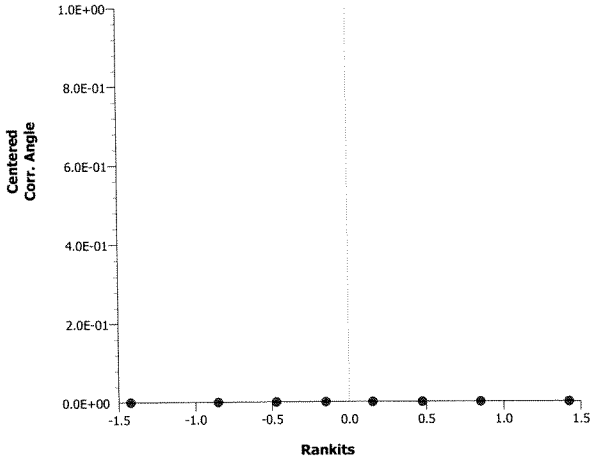
Analysis ID:	00-6101-8676	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 9:42	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Graphics





CETIS Analytical Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	13-5639-4246	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 9:42	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	00-1085-9094	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:49	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:49	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	14-0083-1474	**Code:**	CAP1111.280	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-01		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	5334240	280	Yes	Two-Point Interpolation

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	N/A	N/A
EC10	>100	N/A	N/A	<1	N/A	N/A
EC15	>100	N/A	N/A	<1	N/A	N/A
EC20	>100	N/A	N/A	<1	N/A	N/A
EC25	>100	N/A	N/A	<1	N/A	N/A
EC40	>100	N/A	N/A	<1	N/A	N/A
EC50	>100	N/A	N/A	<1	N/A	N/A

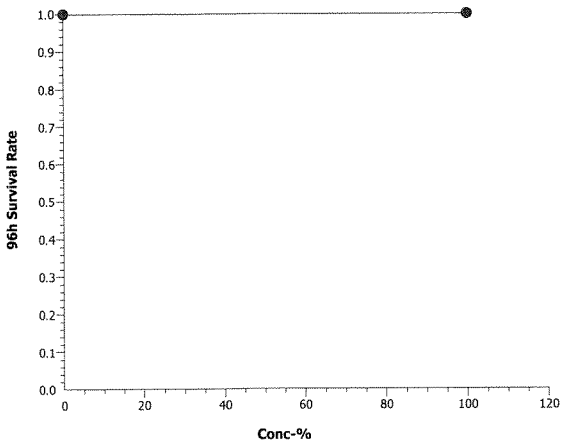
96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Negative Control	4	1	1	1	0	0	0.0%	0.0%	40	40
100		4	1	1	1	0	0	0.0%	0.0%	40	40

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Graphics



CETIS Measurement Report

Test Code: 02-4597-5768/CAP1111.280

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	00-1085-9094	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:49	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:49	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	14-0083-1474	**Code:**	CAP1111.280	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-01		

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	64	64	64	64	64	0	0	0.0%	0
100		3	320	320	320	320	320	0	0	0.0%	0
Overall		6	192			64	320				0 (0%)

Conductivity-µmhos

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	348.3	344	352.7	339	363	2.143	12.86	3.69%	0
100		3	2696	2695	2696	2694	2698	0.3469	2.082	0.08%	0
Overall		6	1522			339	2698				0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	7.3	6.947	7.653	6.1	8	0.174	1.044	14.3%	0
100		3	7.433	7.037	7.83	6.1	8.3	0.1953	1.172	15.77%	0
Overall		6	7.367			6.1	8.3				0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	91	91	91	91	91	0	0	0.0%	0
100		3	1126	1126	1126	1126	1126	0	0	0.0%	0
Overall		6	608.5			91	1126				0 (0%)

pH-Units

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	8.067	8.028	8.106	8	8.2	0.01925	0.1155	1.43%	0
100		3	7.867	7.782	7.952	7.6	8.1	0.04194	0.2517	3.2%	0
Overall		6	7.967			7.6	8.2				0 (0%)

Temperature-°C

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	24.03	24.01	24.05	24	24.1	0.009607	0.05764	0.24%	0
100		3	24	24	24	24	24	0	0	0.0%	0
Overall		6	24.02			24	24.1				0 (0%)

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	64	64	64
100		320	320	320

Conductivity-µmhos

Conc-%	Control Type	1	2	3
0	Negative Contr	339	343	363
100		2694	2695	2698

Dissolved Oxygen-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	7.8	8	6.1
100		7.9	8.3	6.1

Hardness (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	91	91	91
100		1126	1126	1126

pH-Units

Conc-%	Control Type	1	2	3
0	Negative Contr	8.2	8	8
100		7.6	7.9	8.1

Temperature-°C

Conc-%	Control Type	1	2	3
0	Negative Contr	24	24.1	24
100		24	24	24

aquatic bioassay & consulting laboratories, inc

December 6, 2011

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	113339-02
DATE RECEIVED:	29 Nov - 11
ABC LAB. NO.:	CAP1111.281

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50	=	50 % Survival in 100% Sample
TU(a)	=	1.00

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	09-6283-9525	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:50	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:50	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	13-9021-8162	**Code:**	CAP1111.281	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-02		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
05-6875-5799	96h Survival Rate	100	>100	N/A	71.73%	1	Unequal Variance t Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
16-8151-3787	96h Survival Rate	EC5	10	2	N/A	10	Linear Interpolation (ICPIN)
		EC10	20	4	N/A	5	
		EC15	30	6	N/A	3.333	
		EC20	40	8	N/A	2.5	
		EC25	50	10	N/A	2	
		EC40	80	16	N/A	1.25	
		EC50	100	20	N/A	1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
05-6875-5799	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits
16-8151-3787	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	0.5	0.2844	0.7156	0	1	0.1054	0.5774	115.5%	50.0%

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		0	1	0	1

CETIS Analytical Report

Test Code: 20-5671-7984/CAP1111.281

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	05-6875-5799	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 9:55	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	09-6283-9525	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:50	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:50	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	13-9021-8162	**Code:**	CAP1111.281	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-02		

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	100	>100	N/A	1	71.73%

Unequal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Negative Control		100	1.732	2.353	0.8514	0.0908	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision
Extreme Value	Grubbs Single Outlier	1.323	2.127	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.7853001	0.7853001	1	3	0.1340	Non-Significant Effect
Error	1.5706	0.2617667	6			
Total	2.3559	1.047067	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65540	13.75	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.8489		0.0929	Normal Distribution
Distribution	Kolmogorov-Smirnov	0.25	0.3313	0.1599	Normal Distribution

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	0.5	0.2804	0.7196	0	1	0.1072	0.5774	115.5%	50.0%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Contro	4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
100		4	0.7854	0.5102	1.061	0.1588	1.412	0.1344	0.7236	92.13%	44.38%

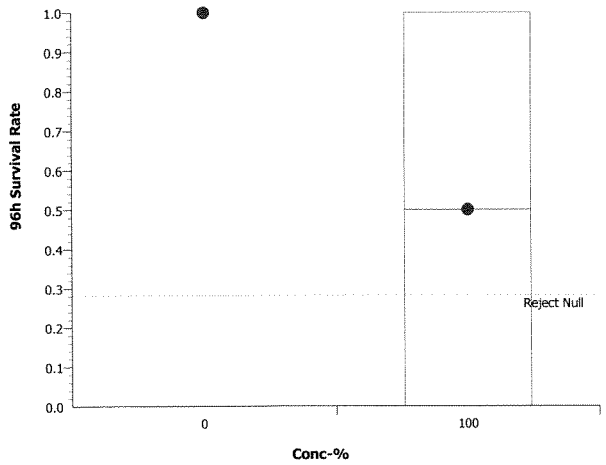
Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

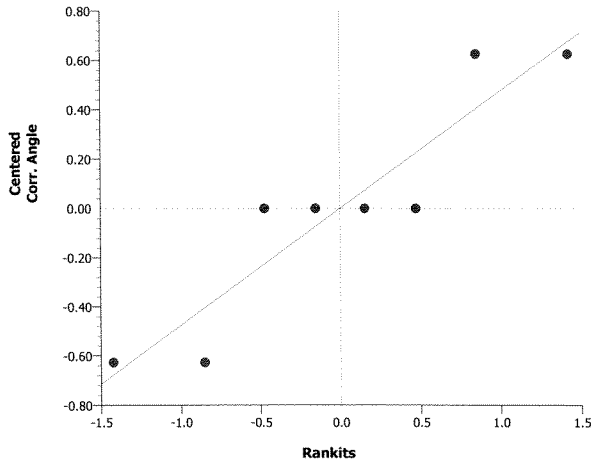
Analysis ID:	05-6875-5799	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 9:55	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		0	1	0	1

Graphics





CETIS Analytical Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	16-8151-3787	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 9:55	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	09-6283-9525	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:50	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:50	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	13-9021-8162	**Code:**	CAP1111.281	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-02		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	5795186	280	Yes	Two-Point Interpolation

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(5%)
Extreme Value	Grubbs Extreme Value	1.323	2.127	1.0000	No Outliers Detected

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	10	2	N/A	10	N/A	50
EC10	20	4	N/A	5	N/A	25
EC15	30	6	N/A	3.333	N/A	16.67
EC20	40	8	N/A	2.5	N/A	12.5
EC25	50	10	N/A	2	N/A	10
EC40	80	16	N/A	1.25	N/A	6.25
EC50	100	20	N/A	1	N/A	5

96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Negative Control	4	1	1	1	0	0	0.0%	0.0%	40	40
100		4	0.5	0	1	0.1054	0.5774	115.5%	50.0%	20	40

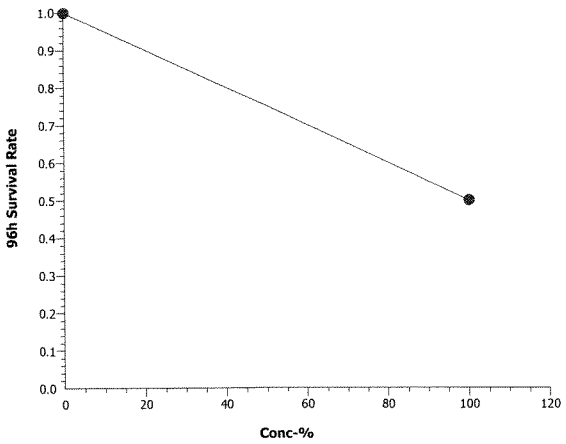
96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		0	1	0	1

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	16-8151-3787	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	06 Dec-11 9:55	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



CETIS Measurement Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	09-6283-9525	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	30 Nov-11 15:50	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	04 Dec-11 13:50	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	13-9021-8162	**Code:**	CAP1111.281	**Client:**	Capco Analytical Services
Sample Date:	29 Nov-11	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 112911
Receive Date:	29 Nov-11 16:00	**Source:**	Bioassay Report		
Sample Age:	40h (19 °C)	**Station:**	113339-02		

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	64	64	64	64	64	0	0	0.0%	0
100		3	489	489	489	489	489	0	0	0.0%	0
Overall		6	276.5			64	489				0 (0%)

Conductivity-µmhos

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	348.3	344	352.7	339	363	2.143	12.86	3.69%	0
100		3	2310	2305	2316	2300	2328	2.562	15.37	0.67%	0
Overall		6	1329			339	2328				0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	7.3	6.947	7.653	6.1	8	0.174	1.044	14.3%	0
100		3	6.767	6.46	7.074	6.1	7.8	0.1512	0.9074	13.41%	0
Overall		6	7.033			6.1	8				0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	91	91	91	91	91	0	0	0.0%	0
100		3	796	796	796	796	796	0	0	0.0%	0
Overall		6	443.5			91	796				0 (0%)

pH-Units

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	8.067	8.028	8.106	8	8.2	0.01925	0.1155	1.43%	0
100		3	7.433	7.348	7.518	7.2	7.7	0.04194	0.2517	3.39%	0
Overall		6	7.75			7.2	8.2				0 (0%)

Temperature-°C

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	24.03	24.01	24.05	24	24.1	0.009607	0.05764	0.24%	0
100		3	24.03	24.01	24.05	24	24.1	0.009607	0.05764	0.24%	0
Overall		6	24.03			24	24.1				0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	64	64	64
100		489	489	489

Conductivity-µmhos

Conc-%	Control Type	1	2	3
0	Negative Contr	339	343	363
100		2303	2300	2328

Dissolved Oxygen-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	7.8	8	6.1
100		6.4	7.8	6.1

Hardness (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	91	91	91
100		796	796	796

pH-Units

Conc-%	Control Type	1	2	3
0	Negative Contr	8.2	8	8
100		7.2	7.4	7.7

Temperature-°C

Conc-%	Control Type	1	2	3
0	Negative Contr	24	24.1	24
100		24	24.1	24

CAPCO
Analytical Services, Inc.

Environmental and Analytical Services-Since 1994
California State Accredited Laboratory in Accordance with ELAP Certificate # 2332

Prepared for: Fugro West, Inc.
4820 McGrath St. Suite 100
Ventura, CA 93003
Attn: Alexis Spencer

Report Date: December 21, 2011
Laboratory Number: 113509
Project Name: Big Rock Mesa-NPDES
Sampled by: Client

On December 13, 2011, Capco Analytical Services, Inc.(CAS), received ten(10) samples to be analyzed. The samples were identified and assigned the laboratory ID numbers listed below:

SAMPLE DESCRIPTION	CAS LAB NUMBER ID
W-18	113509-01
W-16	113509-02
BYA-9	113509-03
BYA-H10	113509-04
HD-43	113509-05
HD-22	113509-06
HD-23	113509-07
HD-5	113509-08
BYA-4 14	113509-09
W-2	113509-10

By my signature below, I certify that the results contained in this laboratory report comply with applicable standards for certification by the California Department of Public Health's Environmental Laboratories Accreditation Program (ELAP), both technically and for completeness, and that, based on my inquiry of the person or persons directly responsible for performing the analyses, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Alin E. Repede, MS
Director - Analytical Operations

If you have any further questions or concerns, please contact me at your convenience. This report consists of 11 pages excluding the cover letter and the Chain of Custody.

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113509
Analyst: GM

Date Sampled: 12/13/11
Date Received: 12/13/11
Date Analyzed: 12/14/11
Sample Matrix: Water

OIL & GREASE
EPA Method 1664

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
113509-01	W-18	ND	1	1	5
113509-02	W-16	ND	1	1	5
113509-03	BYA-9	ND	1	1	5
113509-04	BYA-H10	ND	1	1	5
113509-05	HD-43	ND	1	1	5
113509-06	HD-22	ND	1	1	5
113509-07	HD-23	ND	1	1	5
113509-08	HD-5	ND	1	1	5
113509-09	BYA-~~4~~ 14	ND	1	1	5
113509-10	W-2	ND	1	1	5

mg/L: Milligrams/Liter(ppm)
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113509
Analyst: AN

Date Sampled: 12/13/11
Date Received: 12/13/11
Date Analyzed: 12/15/11
Sample Matrix: Water

TOTAL SUSPENDED SOLIDS
SM 2540 D

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
113509-01	W-18	2.0	1	1	5
113509-02	W-16	ND	1	1	5
113509-03	BYA-9	ND	1	1	5
113509-04	BYA-H10	ND	1	1	5
113509-05	HD-43	ND	1	1	5
113509-06	HD-22	13	1	1	5
113509-07	HD-23	ND	1	1	5
113509-08	HD-5	ND	1	1	5
113509-09	BYA-4 14	ND	1	1	5
113509-10	W-2	ND	1	1	5

mg/L: Milligrams/Liter(ppm)
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113509
Analyst: AN

Date Sampled: 12/13/11
Date Received: 12/13/11
Date Analyzed: 12/16/11
Sample Matrix: Water

TOTAL PHENOL
EPA METHOD 420.1

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/L)	PQL (mg/L)
113509-01	W-18	ND	1	0.02	0.1
113509-02	W-16	ND	1	0.02	0.1
113509-03	BYA-9	ND	1	0.02	0.1
113509-04	BYA-H10	ND	1	0.02	0.1
113509-05	HD-43	ND	1	0.02	0.1
113509-06	HD-22	ND	1	0.02	0.1
113509-07	HD-23	ND	1	0.02	0.1
113509-08	HD-5	ND	1	0.02	0.1
113509-09	BYA-A-14	ND	1	0.02	0.1
113509-10	W-2	ND	1	0.02	0.1

mg/L: Milligrams/Liter(ppm)
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113509
Analyst: GM

Date Sampled: 12/13/11
Date Received: 12/13/11
Date Analyzed: 12/15/11
Sample Matrix: Water

MBAS
SM 5540 C

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/L)	PQL (mg/L)
113509-01	W-18	ND	1	0.02	0.1
113509-02	W-16	ND	1	0.02	0.1
113509-03	BYA-9	ND	1	0.02	0.1
113509-04	BYA-H10	ND	1	0.02	0.1
113509-05	HD-43	ND	1	0.02	0.1
113509-06	HD-22	ND	1	0.02	0.1
113509-07	HD-23	ND	1	0.02	0.1
113509-08	HD-5	ND	1	0.02	0.1
113509-09	BYA-~~4~~ -14	ND	1	0.02	0.1
113509-10	W-2	ND	1	0.02	0.1

mg/L: Milligrams/Liter(ppm)
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113509
Analyst: AN

Date Sampled: 12/13/11
Date Received: 12/13/11
Date Analyzed: 12/13/11
Sample Matrix: Water

TOTAL RESIDUAL CHLORINE
SM 4500CL G

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	PQL (mg/L)
113509-01	W-18	BQL	1	0.1
113509-02	W-16	BQL	1	0.1
113509-03	BYA-9	BQL	1	0.1
113509-04	BYA-H10	BQL	1	0.1
113509-05	HD-43	BQL	1	0.1
113509-06	HD-22	BQL	1	0.1
113509-07	HD-23	BQL	1	0.1
113509-08	HD-5	BQL	1	0.1
113509-09	BYA~~-4~~ -14	BQL	1	0.1
113509-10	W-2	BQL	1	0.1

mg/L: Milligrams/Liter(ppm)

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113509
Analyst: AN

Date Sampled: 12/13/11
Date Received: 12/13/11
Date Analyzed: 12/14/11
Sample Matrix: Water

SETTLEABLE SOLIDS
SM 2540 F

CAS Lab #	Sample ID	RESULTS (ml/L)	Dilution Factor	PQL (ml/L)
113509-01	W-18	BQL	1	0.1
113509-02	W-16	BQL	1	0.1
113509-03	BYA-9	BQL	1	0.1
113509-04	BYA-H10	BQL	1	0.1
113509-05	HD-43	BQL	1	0.1
113509-06	HD-22	BQL	1	0.1
113509-07	HD-23	BQL	1	0.1
113509-08	HD-5	BQL	1	0.1
113509-09	BYA~~-4~~ -14	BQL	1	0.1
113509-10	W-2	BQL	1	0.1

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113509
Analyst: AN

Date Sampled: 12/13/11
Date Received: 12/13/11
Date Analyzed: 12/14/11
Sample Matrix: Water

TURBIDITY
EPA Method 180.1

CAS Lab #	Sample ID	RESULTS (NTU)	Dilution Factor	PQL (NTU)
113509-01	W-18	2.5	1	0.1
113509-02	W-16	BQL	1	0.1
113509-03	BYA-9	0.93	1	0.1
113509-04	BYA-H10	0.25	1	0.1
113509-05	HD-43	0.16	1	0.1
113509-06	HD-22	24	1	0.1
113509-07	HD-23	0.18	1	0.1
113509-08	HD-5	0.37	1	0.1
113509-09	BYA~~-4~~ -14	0.77	1	0.1
113509-10	W-2	0.90	1	0.1

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113509
Analyst: AN

Date Sampled: 12/13/11
Date Received: 12/13/11
Date Analyzed: 12/14/11
Sample Matrix: Water

TOTAL SULFIDE
SM 4500-S^{-2}D

CAS LAB #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/L)	PQL (mg/L)
113509-01	W-18	ND	1	0.004	0.02
113509-02	W-16	ND	1	0.004	0.02
113509-03	BYA-9	ND	1	0.004	0.02
113509-04	BYA-H10	ND	1	0.004	0.02
113509-05	HD-43	ND	1	0.004	0.02
113509-06	HD-22	ND	1	0.004	0.02
113509-07	HD-23	ND	1	0.004	0.02
113509-08	HD-5	ND	1	0.004	0.02
113509-09	BYA-~~4~~ -14	ND	1	0.004	0.02
113509-10	W-2	ND	1	0.004	0.02

mg/L: Milligrams/Liter(ppm)

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 113509
Analyst: AN

Date Sampled: 12/13/11
Date Received: 12/13/11
Date Analyzed: 12/13/11
Sample Matrix: Water

BIOCHEMICAL OXYGEN DEMAND
SM 5210 B

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
113509-01	W-18	ND	1	0.4	2
113509-02	W-16	ND	1	0.4	2
113509-03	BYA-9	ND	1	0.4	2
113509-04	BYA-H10	ND	1	0.4	2
113509-05	HD-43	ND	1	0.4	2
113509-06	HD-22	0.94	1	0.4	2
113509-07	HD-23	1.5	1	0.4	2
113509-08	HD-5	8.3	1	0.4	2
113509-09	BYA~~4~~ -101	ND	1	0.4	2
113509-10	W-2	ND	1	0.4	2

mg/L: Milligrams/Liter(ppm)

QUALITY CONTROL SECTION

Client: Fugro West, Inc. Sample Matrix: Water
CAS LAB NO: 113509
Analyst: AN/GM

COMPOUND	RESULT	UNITS	DF	MDL	PQL	METHOD	ANALYZED
B.O.D.	ND	mg/L	1	0.4	2	5210 B	12/13/11
Oil and Grease	ND	mg/L	1	1	5	1664	12/14/11
MBAS	ND	mg/L	1	0.02	0.1	5540 C	12/15/11
Phenol (Total)	ND	mg/L	1	0.02	0.1	420.1	12/16/11
Residual Chlorine	ND	mg/L	1	0.02	0.1	4500CL G	12/13/11
Settleable Solid	BQL	ml/L	1	--	0.1	2540 F	12/14/11
Sulfide (Total)	ND	mg/L	1	0.004	0.02	4500S^{2-}D	12/14/11
T.S.S.	ND	mg/L	1	1	5	2540 D	12/15/11

mg/L: Milligrams/Liter(ppm)

Certificate of Analysis

Notes:

The Chain of Custody document is part of the analytical report.
Any remaining sample(s) for testing will be disposed of one month from the final report date unless other arrangements are made in advance.
All results are expressed on wet weight basis unless otherwise specified.

Authorized Signature

Keith Chang, Ph.D. (QA/QC Supervisor)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Capco Analytical certifies that the test results meet all requirements of ELAP unless noted in the Case Narrative. This analytical report must be reproduced in its entirety.

Legend for Abbreviations:

PQL	Practical Quantitation Limit
BQL	Below Practical Quantitation Limit
ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL).
MDL	Method Detection Limit
MRL	Method Reporting Limit
MDA	Minimum Detectable Activity
MCL	Maximum Contamination Level

CAPCO ANALYTICAL SERVICES

1536 Eastman Avenue
Ventura, CA 93003
(805) 644-1095 Fax 644-9947

CHAIN OF CUSTODY RECORD

REPORT Fax 805-650-7010
Company Fugro Consultants
Address 4820 McGrath Street, Suite 100
Ventura,CA93003
Phone 850-7000 Contact Alexis Spencer

BILL TO: P.O.#
Company same
Address
Phone Contact

PROJ. NO | PROJECT NAME: Big Rock Mesa-NPDES

SAMPLERS: (Signature)

CONTAINER TYPES
A = AMBER B = BRASS G = GLASS
P = PLASTIC V = VOA VIAL O = OTHER

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	COMP	GRAB	SAMPLE DESCRIPTION	MATRIX: WATER	SOIL	SLUDGE	OTHER	CONTAINER #	CONTAINER TYPE	ANALYSIS: TSS, Setteable Solids	BOD	Oil & Grease	MBAS	Sulfide	Phenols	Residual Chlorine	Turbidity	REMARKS: pH	TEMP°C
1	12/13/11	10:20			W-18	x				5	P+G	/	/	/	/	/	/	/	/	7.14	18.1
2		10:35			W-16	x						/	/	/	/	/	/	/	/	6.65	21.9
3		10:45			BYA-9	x						/	/	/	/	/	/	/	/	6.57	23.9
4		11:00			BYA-H10	x						/	/	/	/	/	/	/	/	6.98	21.2
5		11:15			HD-43	x						/	/	/	/	/	/	/	/	7.67	21.8
6		11:25			HD-22	x						/	/	/	/	/	/	/	/	7.14	20.5
7		11:35			HD-23	x						/	/	/	/	/	/	/	/	7.14	21.8
8		11:40			HD-5	x						/	/	/	/	/	/	/	/	7.65	21.7
9		12:30			BYA-4 BYA-14	x						/	/	/	/	/	/	/	/	6.91	21.3
10		12:50			W-2	x						/	/	/	/	/	/	/	/	6.96	21.4

113509

CHECK ONE BOX:
DISPOSE SAMPLES
RETURN SAMPLES

The undersigned hereby acknowledges having received a copy of the Fee Schedule/General Information and Conditions, the provisions of which are a part of this agreement.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	12/13/11 1400.				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time		

TURN AROUND TIME

24 Hr.		5 Day		
48 Hr.		Standard		
72 Hr.		Other		

WHITE COPY CANARY COPY PINK COPY

CAPCO
Analytical Services, Inc.

Environmental and Analytical Services-Since 1994
California State Accredited Laboratory in Accordance with ELAP Certificate # 2332

Prepared for: Fugro West, Inc.
4820 McGrath St. Suite 100
Ventura, CA 93003
Attn: Alexis Spencer

Report Date: January 3, 2012
Laboratory Number: 113564
Project Name: N/A
Sampled by: Client

On December 19, 2011, Capco Analytical Services, Inc.(CAS), received one(1) sample to be analyzed. The sample was identified and assigned the laboratory ID number listed below:

SAMPLE DESCRIPTION	CAS LAB NUMBER ID
W-16	113564-01

By my signature below, I certify that the results contained in this laboratory report comply with applicable standards for certification by the California Department of Public Health's Environmental Laboratories Accreditation Program (ELAP), both technically and for completeness, and that, based on my inquiry of the person or persons directly responsible for performing the analyses, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Alin E. Repede, MS
Director - Analytical Operations

If you have any further questions or concerns, please contact me at your convenience. This report consists of 9 pages excluding the cover letter and the Chain of Custody.

aquatic bioassay & consulting laboratories, inc

December 28, 2011

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	113564-01
DATE RECEIVED:	19 Dec - 11
ABC LAB. NO.:	CAP1211.161

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50	=	95 % Survival in 100% Sample
TU(a)	=	0.41

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	01-4157-5165	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	20 Dec-11 13:25	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	24 Dec-11 14:00	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	00-9603-9670	**Code:**	CAP1211.161	**Client:**	Capco Analytical Services
Sample Date:	19 Dec-11 11:00	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 121911
Receive Date:	19 Dec-11 15:15	**Source:**	Bioassay Report		
Sample Age:	26h (16.2 °C)	**Station:**	113564-01		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
20-7656-3021	96h Survival Rate	100	>100	N/A	7.09%	1	Unequal Variance t Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
17-6214-5265	96h Survival Rate	EC5	100	20	N/A	1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
17-6214-5265	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits
20-7656-3021	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	0.95	0.9284	0.9716	0.9	1	0.01054	0.05774	6.08%	5.0%

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		0.9	1	0.9	1

CETIS Analytical Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	20-7656-3021	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Dec-11 12:24	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	01-4157-5165	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	20 Dec-11 13:25	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	24 Dec-11 14:00	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	00-9603-9670	**Code:**	CAP1211.161	**Client:**	Capco Analytical Services
Sample Date:	19 Dec-11 11:00	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 121911
Receive Date:	19 Dec-11 15:15	**Source:**	Bioassay Report		
Sample Age:	26h (16.2 °C)	**Station:**	113564-01		

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	100	>100	N/A	1	7.09%

Unequal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Negative Control		100	1.732	2.353	0.1107	0.0908	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision
Extreme Value	Grubbs Single Outlier	1.323	2.127	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.01327967	0.01327967	1	3	0.1340	Non-Significant Effect
Error	0.02655933	0.004426555	6			
Total	0.039839	0.01770622	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65540	13.75	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.8489		0.0929	Normal Distribution
Distribution	Kolmogorov-Smirnov	0.25	0.3313	0.1599	Normal Distribution

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	0.95	0.928	0.972	0.9	1	0.01072	0.05773	6.08%	5.0%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Contro	4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
100		4	1.331	1.295	1.366	1.249	1.412	0.01747	0.09409	7.07%	5.77%

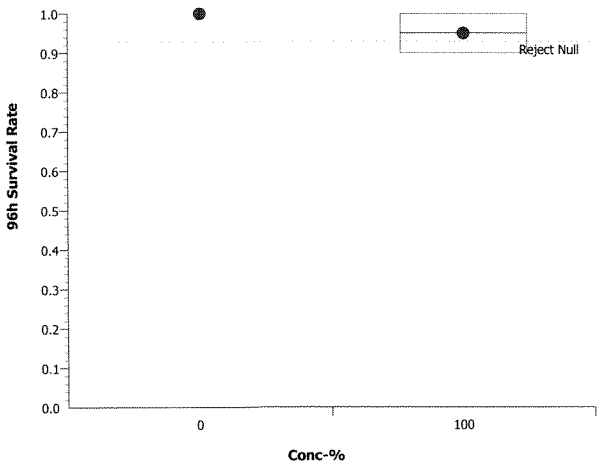
Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

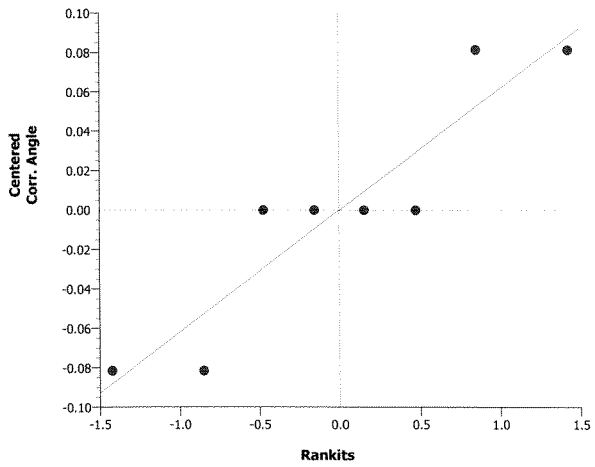
Analysis ID:	20-7656-3021	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Dec-11 12:24	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		0.9	1	0.9	1

Graphics





CETIS Analytical Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	17-6214-5265	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Dec-11 12:24	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	01-4157-5165	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	20 Dec-11 13:25	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	24 Dec-11 14:00	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	00-9603-9670	**Code:**	CAP1211.161	**Client:**	Capco Analytical Services
Sample Date:	19 Dec-11 11:00	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 121911
Receive Date:	19 Dec-11 15:15	**Source:**	Bioassay Report		
Sample Age:	26h (16.2 °C)	**Station:**	113564-01		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	453528	280	Yes	Two-Point Interpolation

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(5%)
Extreme Value	Grubbs Extreme Value	1.323	2.127	1.0000	No Outliers Detected

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	100	20	N/A	1	N/A	5
EC10	>100	N/A	N/A	<1	N/A	N/A
EC15	>100	N/A	N/A	<1	N/A	N/A
EC20	>100	N/A	N/A	<1	N/A	N/A
EC25	>100	N/A	N/A	<1	N/A	N/A
EC40	>100	N/A	N/A	<1	N/A	N/A
EC50	>100	N/A	N/A	<1	N/A	N/A

96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Negative Control	4	1	1	1	0	0	0.0%	0.0%	40	40
100		4	0.95	0.9	1	0.01054	0.05773	6.08%	5.0%	38	40

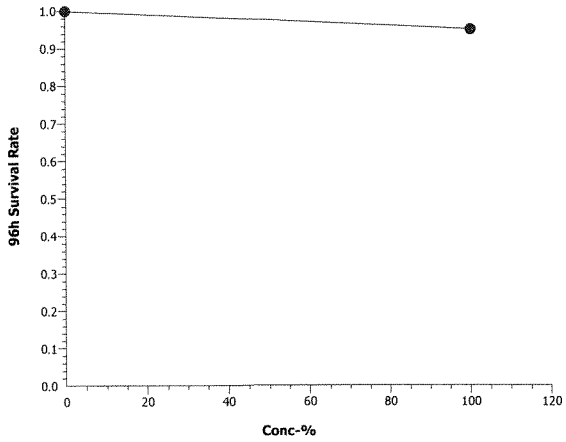
96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		0.9	1	0.9	1

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	17-6214-5265	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Dec-11 12:24	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



CETIS Measurement Report

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	01-4157-5165	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	20 Dec-11 13:25	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	24 Dec-11 14:00	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	00-9603-9670	**Code:**	CAP1211.161	**Client:**	Capco Analytical Services
Sample Date:	19 Dec-11 11:00	**Material:**	Sample Water	**Project:**	ABC Labs Acute Toxicity 121911
Receive Date:	19 Dec-11 15:15	**Source:**	Bioassay Report		
Sample Age:	26h (16.2 °C)	**Station:**	113564-01		

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	62	62	62	62	62	0	0	0.0%	0
100		3	335	335	335	335	335	0	0	0.0%	0
Overall		6	198.5			62	335				0 (0%)

Conductivity-µmhos

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	337	334.1	339.9	328	345	1.424	8.544	2.54%	0
100		3	2266	2261	2272	2252	2283	2.605	15.63	0.69%	0
Overall		6	1302			328	2283				0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	7.267	6.954	7.579	6.2	7.8	0.154	0.9238	12.71%	0
100		3	6.8	6.467	7.133	6	7.9	0.1641	0.9849	14.48%	0
Overall		6	7.033			6	7.9				0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	88	88	88	88	88	0	0	0.0%	0
100		3	1075	1075	1075	1075	1075	0	0	0.0%	0
Overall		6	581.5			88	1075				0 (0%)

pH-Units

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	8.033	7.994	8.072	7.9	8.1	0.01925	0.1155	1.44%	0
100		3	7.5	7.432	7.568	7.3	7.7	0.03333	0.2	2.67%	0
Overall		6	7.767			7.3	8.1				0 (0%)

Temperature-°C

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	24	24	24	24	24	0	0	0.0%	0
100		3	24.67	24.28	25.06	24	26	0.1925	1.155	4.68%	0
Overall		6	24.33			24	26				0 (0%)

Fathead Minnow 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Alkalinity (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	62	62	62
100		335	335	335

Conductivity-µmhos

Conc-%	Control Type	1	2	3
0	Negative Contr	338	328	345
100		2264	2252	2283

Dissolved Oxygen-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	7.8	7.8	6.2
100		6.5	7.9	6

Hardness (CaCO3)-mg/L

Conc-%	Control Type	1	2	3
0	Negative Contr	88	88	88
100		1075	1075	1075

pH-Units

Conc-%	Control Type	1	2	3
0	Negative Contr	7.9	8.1	8.1
100		7.3	7.5	7.7

Temperature-°C

Conc-%	Control Type	1	2	3
0	Negative Contr	24	24	24
100		26	24	24

Certificate of Analysis

Notes:

The Chain of Custody document is part of the analytical report.
Any remaining sample(s) for testing will be disposed of one month from the final report date unless other arrangements are made in advance.
All results are expressed on wet weight basis unless otherwise specified.

Authorized Signature

Keith Chang, Ph.D. (QA/QC Supervisor)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Capco Analytical certifies that the test results meet all requirements of ELAP unless noted in the Case Narrative. This analytical report must be reproduced in its entirety.

Legend for Abbreviations:

PQL	Practical Quantitation Limit
BQL	Below Practical Quantitation Limit
ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL).
MDL	Method Detection Limit
MRL	Method Reporting Limit
MDA	Minimum Detectable Activity
MCL	Maximum Contamination Level

CAPCO ANALYTICAL SERVICES

1536 Eastman Avenue, Suite B
Ventura, CA 93003
(805) 644-1095 Fax 644-9947
www.capcoenv.com

CHAIN OF CUSTODY RECORD

REPORT
Company Fugro
Address
Email
Phone Contact
Fax

BILL TO: P.O.#
Company
Address
Phone Contact

PROJ. NO | PROJECT NAME

SAMPLERS: (Signature)

CONTAINER TYPES
A = AMBER B = BRASS G = GLASS
P = PLASTIC V = VOA VIAL O = OTHER

ANALYSIS: Acute Toxicity

113564

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	COMP	GRAB	SAMPLE IDENTIFICATION	MATRIX: WATER	SOIL	SLUDGE	OTHER	CONTAINER #/TYPE	ANALYSIS: Acute Toxicity	REMARKS
1	12/19/11	11:30am			W 16	X					X	pH=6.65 temp=21.9C

The undersigned hereby acknowledges having received a copy of the Fee Schedule/General Information and Conditions, the provisions of which are a part of this agreement.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	12/19/11 1:30pm	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)

TURN AROUND TIME
STANDARD ☒ OTHER
24 HOURS ☐
48 HOURS ☐
72 HOURS ☐

CHECK ONE BOX:
DISPOSE SAMPLES ☐
RETURN SAMPLES ☐

WHITE COPY CANARY COPY PINK COPY

121505

Capco: Sample Receiving Log

Date/Time of receipt:	5/16/12	1339
Client:	Fugro	
Received by:	HS	
Sample temperature on arrival/ Number of samples/containers:	24 °C	2 samples
Preservative:	(yes) ZnAc NaOH	no
Condition of samples/comments:	NO ICE	
Priority of analysis:	(Standard)	Same day
	24 hour	48 hour
	72 hour	4 day
	5 day	

5123

CAPCO ANALYTICAL SERVICES

1536 Eastman Avenue, Suite B
Ventura, CA 93003
(805) 644-1095 Fax 644-9947
www.capcoenv.com

CHAIN OF CUSTODY RECORD

REPORT
Fax
Company FUGRO
Address 4820 MCGRATH ST
VENTURA, CA Email JREEVES@FUGRO.COM
Phone (805) 650-7000 Contact ALEXIS

BILL TO: **P.O.#**
Company
Address SAME
Phone Contact

PROJ. NO | PROJECT NAME

SAMPLERS: (Signature)

CONTAINER TYPES
A = AMBER B = BRASS G = GLASS
P = PLASTIC V = VOA VIAL O = OTHER

121505

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	COMP	GRAB	SAMPLE IDENTIFICATION	MATRIX: WATER	SOIL	SLUDGE	OTHER	CONTAINER #/TYPE	ANALYSIS: SEE SOW	TVH/BTEX	SULFIDES	REMARKS
1	5/14/12	11:00			FW-1	X				P			X	
2	5/14/2	11:15			BKA-1	X				P	X	X		

The undersigned hereby acknowledges having received a copy of the Fee Schedule/General Information and Conditions, the provisions of which are a part of this agreement.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	5/16/12 1340	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)

TURN AROUND TIME
STANDARD ☒ OTHER
24 HOURS ☐
48 HOURS ☐
72 HOURS ☐

CHECK ONE BOX:
DISPOSE SAMPLES ☐
RETURN SAMPLES ☐

WHITE COPY CANARY COPY PINK COPY

CAPCO
Analytical Services, Inc.

Environmental and Analytical Services-Since 1994
California State Accredited Laboratory in Accordance with ELAP Certificate # 2332

Prepared for: Fugro West, Inc.
4820 McGrath St. Suite 100
Ventura, CA 93003
Attn: Alexis Spencer

Report Date: May 23, 2012
Laboratory Number: 121505
Project Name: N/A
Sampled by: Client

On May 16, 2012, Capco Analytical Services, Inc.(CAS), received two(2) samples to be analyzed. The samples were identified and assigned the laboratory ID numbers listed below:

SAMPLE DESCRIPTION	CAS LAB NUMBER ID
BYA-1	121505-01
FW-1	121505-02

By my signature below, I certify that the results contained in this laboratory report comply with applicable standards for certification by the California Department of Public Health's Environmental Laboratories Accreditation Program (ELAP), both technically and for completeness, and that, based on my inquiry of the person or persons directly responsible for performing the analyses, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Alin E. Repede, MS
Director - Analytical Operations

If you have any further questions or concerns, please contact me at your convenience. This report consists of 3 pages excluding the cover letter and the Chain of Custody.

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121505
Analyst: AN

Date Sampled: 05/16/12
Date Received: 05/16/12
Sample Matrix: Water

WET CHEMISTRY SUMMARY

COMPOUND	RESULT	UNITS	DF	PQL	METHOD	ANALYZED
CAS Lab #: 121505-01						
Sample ID: FW-1						
Sulfide	17	mg/L	20	4.0	4500S$_{-2}$D	05/21/12
CAS Lab #: 121505-02						
Sample ID: BYA-1						
Settleable Solids	BQL	ml/L	1	0.1	2540 F	05/16/12
Turbidity	13.3	N.T.U.	1	0.10	180.1	05/17/12

mg/L: Milligrams/Liter(ppm)
DF: Dilution Factor

Certificate of Analysis

Notes:

The Chain of Custody document is part of the analytical report.
Any remaining sample(s) for testing will be disposed of one month from the final report date unless other arrangements are made in advance.
All results are expressed on wet weight basis unless otherwise specified.

Authorized Signature

Keith Chang, Ph.D. (QA/QC Supervisor)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Capco Analytical certifies that the test results meet all requirements of ELAP unless noted in the Case Narrative. This analytical report must be reproduced in its entirety.

Legend for Abbreviations:

PQL	Practical Quantitation Limit
BQL	Below Practical Quantitation Limit
ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL).
MDL	Method Detection Limit
MRL	Method Reporting Limit
MDA	Minimum Detectable Activity
MCL	Maximum Contamination Level

QUALITY CONTROL SECTION

Client: Fugro Consultants
CAS LAB NO: 121505-MB
Sample ID: Method Blank

Sample Matrix: Water
Analyst: AN

WET CHEMISTRY SUMMARY

COMPOUND	RESULT	UNITS	DF	PQL	METHOD	ANALYZED
Sulfide	BQL	mg/L	1	0.02	4500S-2D	05/21/12
Settleable Solids	BQL	ml/L	1	0.1	2540 F	05/16/12

mg/L: Milligrams/Liter(ppm)
DF: Dilution Factor

Wet Chemistry Water/Wastewater Analysis Result

Lab No.: 121505 Client: FUGRO Sample ID: _____

Analysis	Sample Concentration	Unit	Dilution Factor	PQL	EPA Method	Date Analyzed	Analyst	Blank Concentration	Duplicate Result	Analyst Review	Supervisor Review
Alkalinity		mg/L		10	SM2320B						
Ammonia (as N)		mg/L		0.1	SM 4500NH_3 D						
B.O.D.		mg/L		2	SM 5210B						
Chloride		mg/L		0.1	300.0						
Chlorine (Residual)		mg/L		0.1	SM 4500CL^- B						
C.O.D.		mg/L		20	SM 5220 D						
Cyanide (Total)		mg/L		0.02	SM 4500CN^- E						
Flouride		mg/L		0.05	300						
Hardness		mg/l		10	SM2340 C						
MBAS		mg/L		0.1	SM 5540 C						
Nitrite (as N)		mg/L		0.01	SM 4500 $N0_2$ B						
Nitrate (as N)		mg/L		0.05	300.0						
Oil and Grease		mg/L		5	1664						
Oil and Grease (SGT)		mg/L		5	1664						
pH		S.U.		--	SM4500H^+ B						
Phenol (Total)		mg/L		0.1	420.1						
Settleable Solids	BQL	ml/L		0.1	SM 2540 F	5/16/2012	AN	BQL		AN	
Specific Conductivity		umho/cm		1	120.1						
Sulfate		mg/L		0.5	300.0						
Sulfide	17	mg/L	20	0.2	SM 4500S^{-2} F	5/21/2012	AN			AN	
T.D.S.		mg/L		10	SM 2540 C						
TKN		mg/L		1	SM 4500NorgB						
Total Solids		mg/L		10	SM 2540 B						
T.S.S.		mg/L		5	SM 2540 D						
Turbidity	13.3	N.T.U.		0.10	180.1	5/17/2012	AN	BQL	13.6	AN	

Comments: _____

CAPCO ANALYTICAL SERVICES

1536 EASTMAN AVE., SUITE B
VENTURA, CA 93003-7717
(805) 644-1095 Fax: (805) 644-9947

Invoice

Date	Invoice #
5/10/2012	121355

Bill To
FUGRO CONSULTANTS 4820 McGRATH ST. SUITE 100 VENTURA, CA 93003

: Yuk for 5 weeks
O: Big Nopes.

Terms	Due Date	Purchase Order No / Project No	Contract / Agreement No.
NET 30 D	6/9/2012	N/A	

Qty	Description	Rate	Amount
	DATE RECEIVED: MAY 2, 2012 CONTACT: ALEXIS SPENCER LAB NO.: 121355 PROJECT: N/A		
1	SETTLEABLE SOLIDS	20.00	20.00
1	SULFIDES, DISSOLVED OR TOTAL	25.00	25.00
1	TURBIDITY	15.00	15.00

Vendor # 8091 Acct.No _____
Project/Phase
_____
Invoice No. 121355 Auth. _____

Dany P.

Thank you for your business

Total $60.00

CAPCO
Analytical Services, Inc.

Environmental and Analytical Services-Since 1994
California State Accredited Laboratory in Accordance with ELAP Certificate # 2332

Prepared for: Fugro West, Inc.
4820 McGrath St. Suite 100
Ventura, CA 93003
Attn: Tim Nicely

Report Date: June 7, 2012
Laboratory Number: 121619
Project Name: Big Rock Mesa-NPDES
Project No: 3399006
Sampled by: Client

On May 30, 2012, Capco Analytical Services, Inc.(CAS), received ten(10) samples to be analyzed. The samples were identified and assigned the laboratory ID numbers listed below:

SAMPLE DESCRIPTION	CAS LAB NUMBER ID
W-16	121619-01
FW-1	121619-02
W-18	121619-03
HD-26	121619-04
BYA-10	121619-05
BYA-9	121619-06
BYA-1	121619-07
HD-4	121619-08
HD-23	121619-09
FW-2	121619-10

By my signature below, I certify that the results contained in this laboratory report comply with applicable standards for certification by the California Department of Public Health's Environmental Laboratories Accreditation Program (ELAP), both technically and for completeness, and that, based on my inquiry of the person or persons directly responsible for performing the analyses, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Alin E. Repede, MS
Director - Analytical Operations

If you have any further questions or concerns, please contact me at your convenience. This report consists of 11 pages excluding the cover letter and the Chain of Custody.

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121619
Analyst: AN

Date Sampled: 05/30/12
Date Received: 05/30/12
Date Analyzed: 05/30/12
Sample Matrix: Water

BIOCHEMICAL OXYGEN DEMAND
SM 5210 B

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
121619-01	W-16	ND	1	0.4	2
121619-02	FW-1	13.2	3	1.2	6
121619-03	W-18	ND	1	0.4	2
121619-04	HD-26	ND	1	0.4	2
121619-05	BYA-10	ND	1	0.4	2
121619-06	BYA-9	ND	1	0.4	2
121619-07	BYA-1	ND	1	0.4	2
121619-08	HD-4	ND	1	0.4	2
121619-09	HD-23	ND	1	0.4	2
121619-10	FW-2	ND	1	0.4	2

mg/L: Milligrams/Liter(ppm)

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121619
Analyst: AN

Date Sampled: 05/30/12
Date Received: 05/30/12
Date Analyzed: 05/31/12
Sample Matrix: Water

TOTAL SUSPENDED SOLIDS
SM 2540 D

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
121619-01	W-16	ND	1	1.0	5.0
121619-02	FW-1	1.0	1	1.0	5.0
121619-03	W-18	ND	1	1.0	5.0
121619-04	HD-26	2.4	1	1.0	5.0
121619-05	BYA-10	ND	1	1.0	5.0
121619-06	BYA-9	1.6	1	1.0	5.0
121619-07	BYA-1	8.0	1	1.0	5.0
121619-08	HD-4	ND	1	1.0	5.0
121619-09	HD-23	ND	1	1.0	5.0
121619-10	FW-2	1.6	1	1.0	5.0

mg/L: Milligrams/Liter(ppm)
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121619
Analyst: AN

Date Sampled: 05/30/12
Date Received: 05/30/12
Date Analyzed: 06/01/12
Sample Matrix: Water

TOTAL SULFIDE
SM 4500-S^{-2}D

CAS LAB #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/L)	PQL (mg/L)
121619-01	W-16	ND	1	0.004	0.02
121619-02	FW-1	11.5	25	0.1	0.5
121619-03	W-18	ND	1	0.004	0.02
121619-04	HD-26	ND	1	0.004	0.02
121619-05	BYA-10	ND	1	0.004	0.02
121619-06	BYA-9	ND	1	0.004	0.02
121619-07	BYA-1	0.016	1	0.004	0.02
121619-08	HD-4	ND	1	0.004	0.02
121619-09	HD-23	ND	1	0.004	0.02
121619-10	FW-2	ND	1	0.004	0.02

mg/L: Milligrams/Liter(ppm)

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121619
Analyst: AN

Date Sampled: 05/30/12
Date Received: 05/30/12
Date Analyzed: 05/30/12
Sample Matrix: Water

TOTAL RESIDUAL CHLORINE
SM 4500CL G

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	PQL (mg/L)
121184-01	W-16	BQL	1	0.05
121184-02	FW-1	BQL	1	0.05
121184-03	W-18	BQL	1	0.05
121184-04	HD-26	BQL	1	0.05
121184-05	BYA-10	BQL	1	0.05
121184-06	BYA-9	BQL	1	0.05
121184-07	BYA-1	BQL	1	0.05
121184-08	HD-4	BQL	1	0.05
121184-09	HD-23	BQL	1	0.05
121184-10	FW-2	BQL	1	0.05

mg/L: Milligrams/Liter(ppm)

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121619
Analyst: AN

Date Sampled: 05/30/12
Date Received: 05/30/12
Date Analyzed: 05/31/12
Sample Matrix: Water

TURBIDITY
EPA Method 180.1

CAS Lab #	Sample ID	RESULTS (NTU)	Dilution Factor	PQL (NTU)
121619-01	W-16	0.13	1	0.1
121619-02	FW-1	22.3	1	0.1
121619-03	W-18	1.6	1	0.1
121619-04	HD-26	1.8	1	0.1
121619-05	BYA-10	0.47	1	0.1
121619-06	BYA-9	4.6	1	0.1
121619-07	BYA-1	17.6	1	0.1
121619-08	HD-4	0.28	1	0.1
121619-09	HD-23	0.50	1	0.1
121619-10	FW-2	0.84	1	0.1

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121619
Analyst: AN

Date Sampled: 05/30/12
Date Received: 05/30/12
Date Analyzed: 06/05/12
Sample Matrix: Water

TOTAL PHENOL
EPA METHOD 420.1

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	PQL (mg/L)	MDL (mg/L)
121619-01	W-16	ND	1	0.1	0.02
121619-02	FW-1	ND	1	0.1	0.02
121619-03	W-18	ND	1	0.1	0.02
121619-04	HD-26	ND	1	0.1	0.02
121619-05	BYA-10	ND	1	0.1	0.02
121619-06	BYA-9	ND	1	0.1	0.02
121619-07	BYA-1	ND	1	0.1	0.02
121619-08	HD-4	ND	1	0.1	0.02
121619-09	HD-23	ND	1	0.1	0.02
121619-10	FW-2	ND	1	0.1	0.02

mg/L: Milligrams/Liter(ppm)
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121619
Analyst: GM

Date Sampled: 05/30/12
Date Received: 05/30/12
Date Analyzed: 06/01/12
Sample Matrix: Water

MBAS
SM 5540 C

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	PQL (mg/L)	MDL (mg/L)
121619-01	W-16	ND	1	0.1	0.02
121619-02	FW-1	ND	1	0.1	0.02
121619-03	W-18	ND	1	0.1	0.02
121619-04	HD-26	ND	1	0.1	0.02
121619-05	BYA-10	ND	1	0.1	0.02
121619-06	BYA-9	ND	1	0.1	0.02
121619-07	BYA-1	ND	1	0.1	0.02
121619-08	HD-4	ND	1	0.1	0.02
121619-09	HD-23	ND	1	0.1	0.02
121619-10	FW-2	ND	1	0.1	0.02

mg/L: Milligrams/Liter(ppm)
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 121619
Analyst: AN

Date Sampled: 05/30/12
Date Received: 05/30/12
Date Analyzed: 05/30/12
Sample Matrix: Water

SETTLEABLE SOLIDS
SM 2540 F

CAS Lab #	Sample ID	RESULTS (ml/L)	Dilution Factor	PQL (ml/L)
121619-01	W-16	BQL	1	0.1
121619-02	FW-1	BQL	1	0.1
121619-03	W-18	BQL	1	0.1
121619-04	HD-26	BQL	1	0.1
121619-05	BYA-10	BQL	1	0.1
121619-06	BYA-9	BQL	1	0.1
121619-07	BYA-1	BQL	1	0.1
121619-08	HD-4	BQL	1	0.1
121619-09	HD-23	BQL	1	0.1
121619-10	FW-2	BQL	1	0.1

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121619
Analyst: GM

Date Sampled: 05/30/12
Date Received: 05/30/12
Date Analyzed: 05/31/12 & 06/04/12
Sample Matrix: Water

OIL & GREASE
EPA Method 1664

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
121619-01	W-16	ND	1	1.0	5.0
121619-02	FW-1	ND	1	1.0	5.0
121619-03	W-18	ND	1	1.0	5.0
121619-04	HD-26	ND	1	1.0	5.0
121619-05	BYA-10	ND	1	1.0	5.0
121619-06	BYA-9	ND	1	1.0	5.0
121619-07	BYA-1	ND	1	1.0	5.0
121619-08	HD-4	ND	1	1.0	5.0
121619-09	HD-23	ND	1	1.0	5.0
121619-10	FW-2	ND	1	1.0	5.0

mg/L: Milligrams/Liter(ppm)
ND: Not Detected

QUALITY CONTROL SECTION

Client: Fugro Consultants
CAS LAB NO: 121619
Analyst: AN/GM

Sample Matrix: Water

COMPOUND	RESULT	UNITS	DF	MDL	PQL	METHOD	ANALYZED
B.O.D.	ND	mg/L	1	0.4	2	5210 B	05/30/12
Oil and Grease	ND	mg/L	1	1	5	1664	05/31/12 06/04/12
MBAS	ND	mg/L	1	0.02	0.1	5540 C	06/01/12
Phenol (Total)	ND	mg/L	1	0.02	0.1	420.1	06/05/12
Residual Chlorine	BQL	mg/L	1	--	0.05	4500CLG	05/30/12
Settleable Solid	BQL	ml/L	1	--	0.1	2540 F	05/30/12
Sulfide (Total)	ND	mg/L	1	0.004	0.02	4500S^{2-}D	06/01/12
T.S.S.	ND	mg/L	1	1	5	2540 D	05/31/12

mg/L: Milligrams/Liter(ppm)

Certificate of Analysis

Notes:

The Chain of Custody document is part of the analytical report.
Any remaining sample(s) for testing will be disposed of one month from the final report date unless other arrangements are made in advance.
All results are expressed on wet weight basis unless otherwise specified.

Authorized Signature

Keith Chang, Ph.D. (QA/QC Supervisor)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Capco Analytical certifies that the test results meet all requirements of ELAP unless noted in the Case Narrative. This analytical report must be reproduced in its entirety.

Legend for Abbreviations:

PQL	Practical Quantitation Limit
BQL	Below Practical Quantitation Limit
ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL).
MDL	Method Detection Limit
MRL	Method Reporting Limit
MDA	Minimum Detectable Activity
MCL	Maximum Contamination Level

CAPCO ANALYTICAL SERVICES

1536 Eastman Avenue
Ventura, CA 93003
(805) 644-1095 Fax 644-9947

CHAIN OF CUSTODY RECORD

REPORT
Fax 805-650-7010
Company Fugro Consultants
Address 4820 McGrath Street, Suite 100
Ventura,CA93003
Phone 850-7000 Contact Alexis Spencer

BILL TO: P.O.# 617
Company same
Address
Phone Contact

PROJ. NO: 3399006
PROJECT NAME: Big Rock Mesa-NPDES

SAMPLERS: (Signature)

CONTAINER TYPES
A = AMBER B = BRASS G = GLASS
P = PLASTIC V = VOA VIAL O = OTHER

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	COMP	GRAB	SAMPLE DESCRIPTION	MATRIX: WATER	SOIL	SLUDGE	OTHER	CONTAINER #:	CONTAINER TYPE:	ANALYSES: TSS, Setteable Solids	BOD	Oil & Grease	MBAS	Sulfide	Phenols	Residual Chlorine	Turbidity	REMARKS: pH	121619
1	5/30/12				W-16	x				5	P+G									6.75	23.0
2	↓				FW-1	x				↓	↓									7.55	21.2
3					W-18	x														6.86	23.1
4					HD-26	x														7.11	21.3
5					BYA-10	x														7.10	22.5
6					BYA-9	x														6.62	23.4
7					BYA-1	x														7.14	22.0
8					HD-4	x														7.06	21.4
9					HD-23	x														7.03	21.7
10	↓				FW-2	x				↓	↓									7.20	22.1

CHECK ONE BOX:
DISPOSE SAMPLES
RETURN SAMPLES

The undersigned hereby acknowledges having received a copy of the Fee Schedule/General Information and Conditions, the provisions of which are a part of this agreement.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	5/30/12 1500	Roberto Sandoval			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time		

TURN AROUND TIME

24 Hr.		5 Day	
48 Hr.		Standard	X
72 Hr.		Other	

WHITE COPY CANARY COPY PINK COPY

CAPCO
Analytical Services, Inc.

Environmental and Analytical Services-Since 1994
California State Accredited Laboratory in Accordance with ELAP Certificate # 2332

Prepared for: Fugro West, Inc.
4820 McGrath St. Suite 100
Ventura, CA 93003
Attn: Tim Nicely

Report Date: June 20, 2012
Laboratory Number: 121778
Project Name: N/A
Project No: 3399006
Sampled by: Client

On June 13, 2012, Capco Analytical Services, Inc.(CAS), received two(2) samples to be analyzed. The samples were identified and assigned the laboratory ID numbers listed below:

SAMPLE DESCRIPTION	CAS LAB NUMBER ID
BYA-1	121778-01
FW-1	121778-02

By my signature below, I certify that the results contained in this laboratory report comply with applicable standards for certification by the California Department of Public Health's Environmental Laboratories Accreditation Program (ELAP), both technically and for completeness, and that, based on my inquiry of the person or persons directly responsible for performing the analyses, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Alin E. Repede, MS
Director - Analytical Operations

If you have any further questions or concerns, please contact me at your convenience.
This report consists of 3 pages excluding the cover letter and the Chain of Custody.

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121778
Analyst: AN

Date Sampled: 06/15/12
Date Received: 06/13/12
Sample Matrix: Water

WET CHEMISTRY SUMMARY

COMPOUND	RESULT	UNITS	DF	PQL	METHOD	ANALYZED
CAS Lab #: 121778-01						
Sample ID: BYA-1						
Settleable Solids	BQL	ml/L	1	0.1	2540 F	06/14/12
Turbidity	35	N.T.U.	1	0.10	180.1	06/13/12
CAS Lab #: 121778-02						
Sample ID: FW-1						
Sulfide	15.6	mg/L	20	4.0	4500S-$_2$D	06/18/12

mg/L: Milligrams/Liter(ppm)
DF: Dilution Factor

QUALITY CONTROL SECTION

Client: Fugro Consultants
CAS LAB NO: 121778-MB
Sample ID: Method Blank

Sample Matrix: Water
Analyst: AN

WET CHEMISTRY SUMMARY

COMPOUND	RESULT	UNITS	DF	PQL	METHOD	ANALYZED
Sulfide	BQL	mg/L	1	0.02	4500S-$_2$D	06/18/12
Settleable Solids	BQL	ml/L	1	0.1	2540 F	06/14/12

mg/L: Milligrams/Liter(ppm)
DF: Dilution Factor

Certificate of Analysis

Notes:

The Chain of Custody document is part of the analytical report.
Any remaining sample(s) for testing will be disposed of one month from the final report date unless other arrangements are made in advance.
All results are expressed on wet weight basis unless otherwise specified.

Authorized Signature

Keith Chang, Ph.D. (QA/QC Supervisor)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Capco Analytical certifies that the test results meet all requirements of ELAP unless noted in the Case Narrative. This analytical report must be reproduced in its entirety.

Legend for Abbreviations:

PQL	Practical Quantitation Limit
BQL	Below Practical Quantitation Limit
ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL).
MDL	Method Detection Limit
MRL	Method Reporting Limit
MDA	Minimum Detectable Activity
MCL	Maximum Contamination Level

CAPCO ANALYTICAL SERVICES

1536 Eastman Avenue, Suite B
Ventura, CA 93003
(805) 644-1095 Fax 644-9947
www.capcoenv.com

CHAIN OF CUSTODY RECORD

REPORT

Fax (805) 650-7010
Company EVERS CONSULTANTS
Address 4820 MCGRATH ST. VENTURA
Email
Phone 650-7000 Contact ALGHS SPENLEY

BILL TO:

P.O.# 6120
Company
Address
Phone Contact

PROJ. NO: 3899006

PROJECT NAME:

SAMPLERS: (Signature)

CONTAINER TYPES
A = AMBER B = BRASS G = GLASS
P = PLASTIC V = VOA VIAL O = OTHER

121778

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	COMP	GRAB	SAMPLE IDENTIFICATION	MATRIX: WATER	SOIL	SLUDGE	OTHER	CONTAINER #/TYPE	ANALYSIS: TURBIDITY	T. SOLIDS	REMARKS
1	6/13/12	11:00			BUA - 1	X				P	X		
2	6/13/12	11:30			FW - 1	X				P		X	

The undersigned hereby acknowledges having received a copy of the Fee Schedule/General Information and Conditions, the provisions of which are a part of this agreement.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	6/13/12 1318	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)

TURN AROUND TIME

- STANDARD [X]
- 24 HOURS [ ]
- 48 HOURS [ ]
- 72 HOURS [ ]
- OTHER

CHECK ONE BOX:
- DISPOSE SAMPLES [ ]
- RETURN SAMPLES [ ]

WHITE COPY CANARY COPY PINK COPY

CAPCO
Analytical Services, Inc.

Environmental and Analytical Services-Since 1994
California State Accredited Laboratory in Accordance with ELAP Certificate # 2332

Prepared for: Fugro West, Inc.
4820 McGrath St. Suite 100
Ventura, CA 93003
Attn: Tim Nicely

Report Date: June 27, 2012
Laboratory Number: 121836
Project Name: Big Rock Mesa-NPDES
Project No: 3399006
Sampled by: Client

On June 19, 2012, Capco Analytical Services, Inc.(CAS), received ten(10) samples to be analyzed. The samples were identified and assigned the laboratory ID numbers listed below:

SAMPLE DESCRIPTION	CAS LAB NUMBER ID
W-18	121836-01
BYA-10	121836-02
W-16	121836-03
BYA-9	121836-04
FW-2	121836-05
BYA-1	121836-06
FW-1	121836-07
HD-26	121836-08
HD-4	121836-09
HD-23	121836-10

By my signature below, I certify that the results contained in this laboratory report comply with applicable standards for certification by the California Department of Public Health's Environmental Laboratories Accreditation Program (ELAP), both technically and for completeness, and that, based on my inquiry of the person or persons directly responsible for performing the analyses, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Alin E. Repede, MS
Director - Analytical Operations

If you have any further questions or concerns, please contact me at your convenience. This report consists of 11 pages excluding the cover letter and the Chain of Custody.

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121836
Analyst: GM

Date Sampled: 06/19/12
Date Received: 06/19/12
Date Analyzed: 06/21/12-06/22/12
Sample Matrix: Water

OIL & GREASE
EPA Method 1664

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
121836-01	W-18	ND	1	1.0	5.0
121836-02	BYA-10	ND	1	1.0	5.0
121836-03	W-16	ND	1	1.0	5.0
121836-04	BYA-9	ND	1	1.0	5.0
121836-05	FW-2	ND	1	1.0	5.0
121836-06	BYA-1	ND	1	1.0	5.0
121836-07	FW-1	ND	1	1.0	5.0
121836-08	HD-26	ND	1	1.0	5.0
121836-09	HD-4	ND	1	1.0	5.0
121836-10	HD-23	ND	1	1.0	5.0

mg/L: Milligrams/Liter(ppm)
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121836
Analyst: AN

Date Sampled: 06/19/12
Date Received: 06/19/12
Date Analyzed: 06/20/12
Sample Matrix: Water

BIOCHEMICAL OXYGEN DEMAND
SM 5210 B

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
121836-01	W-18	ND	1	0.4	2
121836-02	BYA-10	ND	1	0.4	2
121836-03	W-16	ND	1	0.4	2
121836-04	BYA-9	ND	1	0.4	2
121836-05	FW-2	ND	1	0.4	2
121836-06	BYA-1	ND	1	0.4	2
121836-07	FW-1	26	6	2.4	12
121836-08	HD-26	ND	1	0.4	2
121836-09	HD-4	1.7	1	0.4	2
121836-10	HD-23	1.9	1	0.4	2

mg/L: Milligrams/Liter(ppm)

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121836
Analyst: AN

Date Sampled: 06/19/12
Date Received: 06/19/12
Date Analyzed: 06/20/12
Sample Matrix: Water

TOTAL SUSPENDED SOLIDS
SM 2540 D

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
121836-01	W-18	3.6	1	1.0	5.0
121836-02	BYA-10	ND	1	1.0	5.0
121836-03	W-16	ND	1	1.0	5.0
121836-04	BYA-9	1.6	1	1.0	5.0
121836-05	FW-2	1.2	1	1.0	5.0
121836-06	BYA-1	12	1	1.0	5.0
121836-07	FW-1	ND	1	1.0	5.0
121836-08	HD-26	ND	1	1.0	5.0
121836-09	HD-4	ND	1	1.0	5.0
121836-10	HD-23	ND	1	1.0	5.0

mg/L: Milligrams/Liter(ppm)
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121836
Analyst: AN

Date Sampled: 06/19/12
Date Received: 06/19/12
Date Analyzed: 06/19/12
Sample Matrix: Water

TOTAL RESIDUAL CHLORINE
SM 4500CL G

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	PQL (mg/L)
121836-01	W-18	BQL	1	0.05
121836-02	BYA-10	BQL	1	0.05
121836-03	W-16	BQL	1	0.05
121836-04	BYA-9	BQL	1	0.05
121836-05	FW-2	BQL	1	0.05
121836-06	BYA-1	BQL	1	0.05
121836-07	FW-1	BQL	1	0.05
121836-08	HD-26	BQL	1	0.05
121836-09	HD-4	BQL	1	0.05
121836-10	HD-23	BQL	1	0.05

mg/L: Milligrams/Liter(ppm)

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121836
Analyst: AN

Date Sampled: 06/19/12
Date Received: 06/19/12
Date Analyzed: 06/22/12
Sample Matrix: Water

TOTAL SULFIDE
SM 4500-S^{-2}D

CAS LAB #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/L)	PQL (mg/L)
121836-01	W-18	ND	1	0.004	0.02
121836-02	BYA-10	ND	1	0.004	0.02
121836-03	W-16	ND	1	0.004	0.02
121836-04	BYA-9	ND	1	0.004	0.02
121836-05	FW-2	ND	1	0.004	0.02
121836-06	BYA-1	ND	1	0.004	0.02
121836-07	FW-1	0.13	1	0.004	0.02
121836-08	HD-26	ND	1	0.004	0.02
121836-09	HD-4	ND	1	0.004	0.02
121836-10	HD-23	ND	1	0.004	0.02

mg/L: Milligrams/Liter(ppm)

CERTIFICATE OF ANALYSIS

Client: Fugro West, Inc.
CAS LAB NO: 121836
Analyst: AN

Date Sampled: 06/19/12
Date Received: 06/19/12
Date Analyzed: 06/19/12
Sample Matrix: Water

SETTLEABLE SOLIDS
SM 2540 F

CAS Lab #	Sample ID	RESULTS (ml/L)	Dilution Factor	PQL (ml/L)
121836-01	W-18	BQL	1	0.1
121836-02	BYA-10	BQL	1	0.1
121836-03	W-16	BQL	1	0.1
121836-04	BYA-9	BQL	1	0.1
121836-05	FW-2	BQL	1	0.1
121836-06	BYA-1	BQL	1	0.1
121836-07	FW-1	BQL	1	0.1
121836-08	HD-26	BQL	1	0.1
121836-09	HD-4	BQL	1	0.1
121836-10	HD-23	BQL	1	0.1

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121836
Analyst: GM

Date Sampled: 06/19/12
Date Received: 06/19/12
Date Analyzed: 06/20/12
Sample Matrix: Water

MBAS
SM 5540 C

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	PQL (mg/L)	MDL (mg/L)
121836-01	W-18	ND	1	0.1	0.02
121836-02	BYA-10	ND	1	0.1	0.02
121836-03	W-16	ND	1	0.1	0.02
121836-04	BYA-9	ND	1	0.1	0.02
121836-05	FW-2	0.02	1	0.1	0.02
121836-06	BYA-1	ND	1	0.1	0.02
121836-07	FW-1	ND	1	0.1	0.02
121836-08	HD-26	ND	1	0.1	0.02
121836-09	HD-4	ND	1	0.1	0.02
121836-10	HD-23	ND	1	0.1	0.02

mg/L: Milligrams/Liter(ppm)
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121836
Analyst: AN

Date Sampled: 06/19/12
Date Received: 06/19/12
Date Analyzed: 06/26/12
Sample Matrix: Water

TOTAL PHENOL
EPA METHOD 420.1

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	PQL (mg/L)	MDL (mg/L)
121836-01	W-18	ND	1	0.1	0.02
121836-02	BYA-10	ND	1	0.1	0.02
121836-03	W-16	ND	1	0.1	0.02
121836-04	BYA-9	ND	1	0.1	0.02
121836-05	FW-2	ND	1	0.1	0.02
121836-06	BYA-1	ND	1	0.1	0.02
121836-07	FW-1	ND	1	0.1	0.02
121836-08	HD-26	ND	1	0.1	0.02
121836-09	HD-4	ND	1	0.1	0.02
121836-10	HD-23	ND	1	0.1	0.02

mg/L: Milligrams/Liter(ppm)
ND: Not Detected

CERTIFICATE OF ANALYSIS

Client: Fugro Consultants
CAS LAB NO: 121836
Analyst: AN

Date Sampled: 06/19/12
Date Received: 06/19/12
Date Analyzed: 06/20/12
Sample Matrix: Water

TURBIDITY
EPA Method 180.1

CAS Lab #	Sample ID	RESULTS (NTU)	Dilution Factor	PQL (NTU)
121836-01	W-18	4.0	1	0.1
121836-02	BYA-10	0.36	1	0.1
121836-03	W-16	0.5	1	0.1
121836-04	BYA-9	4.5	1	0.1
121836-05	FW-2	0.86	1	0.1
121836-06	BYA-1	41	1	0.1
121836-07	FW-1	0.72	1	0.1
121836-08	HD-26	0.12	1	0.1
121836-09	HD-4	0.14	1	0.1
121836-10	HD-23	0.1	1	0.1

QUALITY CONTROL SECTION

Client: Fugro Consultants
Sample Matrix: Water
CAS LAB NO: 121836
Analyst: AN/GM

COMPOUND	RESULT	UNITS	DF	MDL	PQL	METHOD	ANALYZED
B.O.D.	ND	mg/L	1	0.4	2	5210 B	06/19/12
Oil and Grease	ND	mg/L	1	1	5	1664	06/21/12 06/22/12
MBAS	ND	mg/L	1	0.02	0.1	5540 C	06/20/12
Phenol (Total)	ND	mg/L	1	0.02	0.1	420.1	06/26/12
Residual Chlorine	BQL	mg/L	1	--	0.05	4500CLG	06/19/12
Settleable Solid	BQL	ml/L	1	--	0.1	2540 F	06/19/12
Sulfide (Total)	ND	mg/L	1	0.004	0.02	4500S^{2-}D	06/22/12
T.S.S.	ND	mg/L	1	1	5	2540 D	06/20/12

mg/L: Milligrams/Liter(ppm)

Certificate of Analysis

Notes:

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Authorized Signature

Keith Chang, Ph.D. (QA/QC Supervisor)

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MRL	Method Reporting Limit
MDA	Minimum Detectable Activity
MCL	Maximum Contamination Level

6176

CAPCO ANALYTICAL SERVICES

1536 Eastman Avenue
Ventura, CA 93003
(805) 644-1095 Fax 644-9947

CHAIN OF CUSTODY RECORD

REPORT
Fax 805-650-7010
Company Fugro Consultants
Address 4820 McGrath Street, Suite 100
Ventura,CA93003
Phone 850-7000 Contact Alexis Spencer

BILL TO: P.O.#
Company same
Address
Phone Contact

PROJ. NO
PROJECT NAME: Big Rock Mesa-NPDES

SAMPLERS: (Signature)

CONTAINER TYPES
A = AMBER B = BRASS G = GLASS
P = PLASTIC V = VOA VIAL O = OTHER

REMARKS: 121836

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	COMP	GRAB	SAMPLE DESCRIPTION	MATRIX: WATER	SOIL	SLUDGE	OTHER	CONTAINER #/TYPE	ANALYSIS: TSS, Setteable Solids	BOD	Oil & Grease	MBAS	Sulfide	Phenols	Residual Chlorine	Turbidity	pH	Temp °C
1	6/14/12	10:15			W-18	x				6 P+G									6.93	22.9
2		10:50			BMA 10	x													7.09	22.4
3		11:00			W-16	x													6.79	23.1
4		11:10			BMA-9	x													6.64	23.4
5		11:20			Fan-2	x													7.21	22.4
6		11:35			BMA-1	x													6.86	21.9
7		11:50			Fan-1	x													7.56	24.5
8		12:10			HD-26	x													7.11	21.1
9		12:20			HD-4	x													7.06	21.9
10	↓	12:30			HD-23	x													7.04	21.7

CHECK ONE BOX:
DISPOSE SAMPLES
RETURN SAMPLES

The undersigned hereby acknowledges having received a copy of the Fee Schedule/General Information and Conditions, the provisions of which are a part of this agreement.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	6/19/12 2:13				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time		

TURN AROUND TIME

24 Hr.		5 Day	
48 Hr.		Standard	X
72 Hr.		Other	

WHITE COPY CANARY COPY PINK COPY

121836

Capco: Sample Receiving Log

Date/Time of receipt:	6/19/12	14:13
Received by:	HS	
Client:	FUGRO CONSULTANTS	
Sample temperature on arrival/ Number of samples:	-1 °C	10 SETS
Preservative:	(yes) HCl H_2SO_4	(no)
Condition of samples/comments:	ON ICE	

Priority of analysis:	(Standard)	Same day
	24 hour	48 hour
	72 hour	4 day
	5 day	