FY24/25 Maintenance and Monitoring

AD98-3, Malibu Road

City of Malibu, California

Yeh Project No.: 220-278

March 6, 2026



Prepared for:

City of Malibu
23825 Stuart Ranch Rd.
Malibu, California 90265
Attn: Mr. Travis Hart

Prepared by:

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March 6, 2026

Project No. 220-278

City of Malibu
23825 Stuart Ranch Rd.
Malibu, California 90265

Attn: Mr. Travis Hart, Interim Assistant Public Works Director

Subject: **Annual Monitoring and Maintenance Report FY24/25, City of Malibu Assessment District 98-3, Malibu Road, Malibu, CA**

Dear Mr. Hart:

Yeh and Associates, Inc. is pleased to submit this monitoring and maintenance report FY24/25 for the City of Malibu Assessment District AD-3, Malibu Road in Malibu, California. This report was prepared in accordance with our Agreement for Professional Services, dated June 22, 2020, between the City of Malibu and Yeh and Associates, Inc. and Amendment Nos. 1 and 2, dated June 10, 2024, and June 9, 2025. This report provides a geotechnical and annual summary of monitoring and maintenance for the project over fiscal year July 1, 2024, to June 30, 2025.

The geotechnical services consisted of monitoring and maintenance, data management, public outreach, reporting, and capital improvements. A map showing the location of the maintenance and monitoring facilities are provided on Plate 1. Table 6 provides a summary of maintenance activities performed during the monitoring year.

We appreciate the opportunity to be of service. Please contact Loree Berry at 805-440-0966 or Lberry@yeh-eng.com if you have questions or require additional information.

Sincerely,
YEH AND ASSOCIATES, INC.

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1. Purpose and Scope of Study

Yeh and Associates (Yeh) was retained by the City of Malibu (City) to perform maintenance and monitoring of the existing geotechnical instrumentation and dewatering facilities within the City of Malibu's Malibu Road Landslide Assessment District, 98-3. The project location is shown by the polygon in Figure 1. This report presents monitoring results, a maintenance summary, and facilities status for the (monitoring year) July 2024 through June 2025. Yeh monitors groundwater levels, surveys slope inclinometers, and measures the dewatering flow from dewatering wells and horizontal drains. Yeh also oversees and maintains the function of the monitoring and dewatering facilities. Plate 1 shows the approximate locations of the specific assessment district facilities. Table 1 summarizes the equipment inventory and the approximate frequency of monitoring and maintenance over the monitoring year. Section 5.0 of this report provides a detailed summary of the maintenance activities performed during this monitoring period.

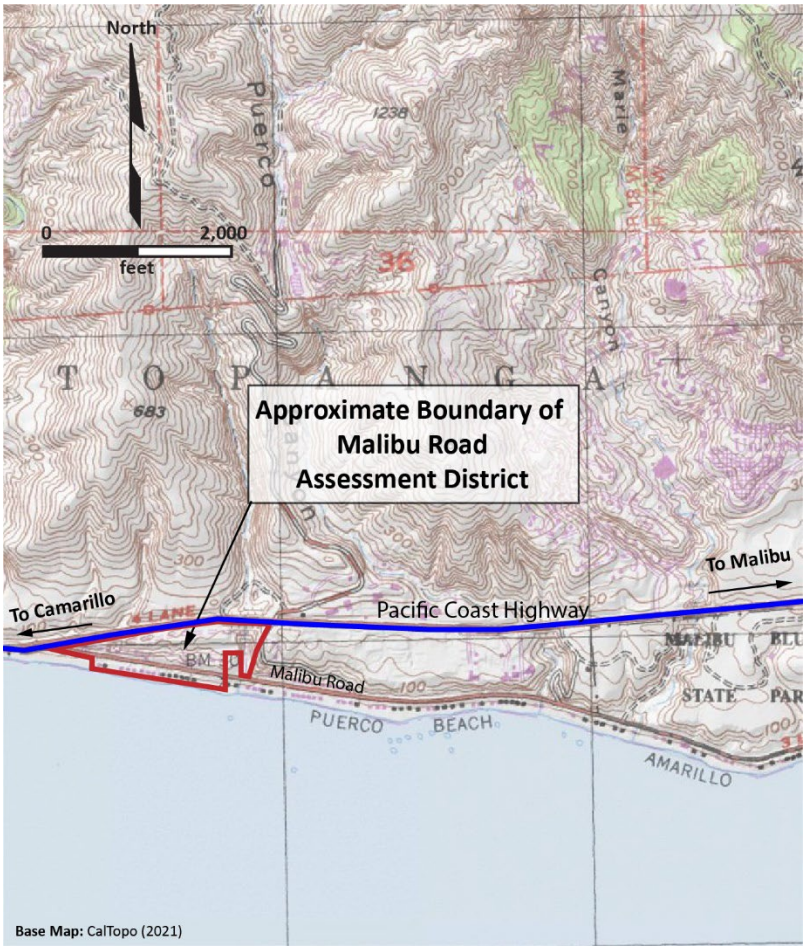


Figure 1: Project Location Map

Table 1. Summary of Annual Monitoring and Maintenance

Type of Monitoring Instrument or Dewatering Device	Number of Locations	Brief Description	Monitoring Frequency	Maintenance Effort[2]
Standpipe piezometer	9[1]	2.75-inch PVC, or other casing, used to measure depth to groundwater using electric sounder or by a transducer/datalogger	monthly; hourly data from pressure transducer	low
Inclinometer survey casings	5[1]	2.75-inch diameter grooved casings made of PVC, used to survey shear displacement by an inclinometer probe	quarterly	low
Shape Array (SAA)	1	A chain of in-place, 2-foot long sensorized segments installed in existing inclinometer casing. Each segment measures tilt in two directions. Sensor string is programmed to average 1,000 readings once per day and record to onsite datalogger	Programmed to record once per day, downloaded as needed	medium
Dewatering wells	14	6-inch or 12-inch diameter steel or PVC casings equipped with 0.5 to 1/3 HP submersible pump and connected to electrical controls, pumped water flows through meter and into conveyance piping to discharge	monthly	high
Horizontal Drains (hydraugers)	19	1-inch to 1.5-inch perforated PVC casings drilled slightly higher than horizontal into the slope along Malibu Road for up to 180 feet and used to drain groundwater that intercepts the casing. Flow rates are measured along Malibu Road.	monthly	medium
Big Rock Mesa Rain Gauge #1239	1	Documented Rainfall, Data obtained from Los Angeles County Public Works	monthly	N/A

Notes:
[1] - SI-5 and SI-6 are used as both inclinometers and standpipe piezometers.
[2] - maintenance effort (generalized): "high" – services monthly, "medium" – services quarterly, "low" – services annually

2. MONITORING

The following provides the result of water level monitoring in standpipe piezometers and the results of inclinometer surveys performed. For the purposes of discussion and context throughout the report, the monitoring results are discussed with respect to two areas within the 1978 landslide boundaries: Malibu Road and Bayshore Drive:

- **Malibu Road Area:** The southern portion of landslide including Malibu Road. The toe of the 1978 landslide is mapped to the south of Malibu Road, obscured beneath shoreline development and residences. The east and west boundaries of the landslide are visible as topographic changes across Malibu Road. Active district monitoring and dewatering facilities are located on the north side of Malibu Road.

- **Bayshore Drive Area:** The northern portion of the 1978 landslide that includes the headscarp is still mostly visible along the north side of the vacant parcels east of 25377 Malibu Road and in the vacant parcel east of 25315 Malibu Road. Active district monitoring and dewatering facilities are located to the north of the 1978 headscarp.

2.1 Groundwater Levels

Groundwater levels were measured approximately monthly in 8 standpipe piezometers shown on Plate 1. Water levels are acquired by lowering an electric probe into the standpipe to contact the groundwater surface and manually recording the depth to water.

Pneumatic piezometers were installed with some of the inclinometers prior to 1998. Existing pneumatic piezometers either no longer function or the reliability of remaining locations are not certain. Pneumatic piezometers were not measured during the monitoring year. Appendix A includes historic pneumatic piezometer results.

Table 2 summarizes the average groundwater levels over the monitoring year for standpipe water levels within the two areas, their change from the prior monitoring year average, and their change from the historical average. The average annual groundwater elevation for the Malibu Road Area decreased by 1.1 feet and the Bayshore Drive Area average groundwater elevation increased by 5.2 feet. In general, water levels in most individual standpipes in both areas decreased over the year, with a small increase following the January 2025 through March 2025 rainfall and are discussed by area in the following sections:

Table 2: Summary of Average Groundwater Elevations

Area Averaged	Total No. of Locations Monitored	2024-2025 Averaged Groundwater Elevation (ft)	Change in Averaged Groundwater Elevation from Prior Monitoring Period (ft)	2024-2025 Average Annual Groundwater Elevation (ft) Vs Historical Mean Average Annual Groundwater Elevation
Malibu Road	7	9.0	-1.1	+1.0
Bayshore Drive	2	31.8	+5.2	+6.2

2.1.1 Malibu Road Area

Five standpipes and two abandoned dewatering wells along the north shoulder of Malibu Road are used for groundwater level monitoring in the Malibu Road Area. The monitored standpipe water levels were essentially static or declining through the beginning of the monitoring year and each measured increases after the January 2025 through March 2025 rainfall that remained elevated through the end of monitoring year. PZ-D was covered and had a stuck monitoring well cover so data was unable to be obtained this monitoring year. Water level information for individual Malibu Road

Area standpipes are included in Table 3. Groundwater hydrographs for individual standpipes from historic through the end of the current monitoring year are presented in Appendix A.

Table 3: Malibu Road Area Water Level Monitoring

Standpipe ID	Change in Groundwater Elevation between last and first measurements of monitoring year (ft)	2024-2025 Average Groundwater Elevation (ft)	Change in Average Groundwater Elevation from Prior Monitoring Year (ft)	1991-2025 Historical Mean Groundwater Elevation (ft)	2024-2025 Average Groundwater Elevation from Historical Mean Groundwater Elevation (ft)
PZ-A	-0.2	10.4	-0.4	9.5	+0.9
PZ-B	+1.9	4.2	-1.3	2.7	+1.6
PZ-C	-0.7	3.7	-1.1	3.9	-0.2
PZ-D	--	--	--	5.2	--
PZ-E	-2.6	11.3	-3.9	12.5	-1.1
W-2A	-0.8	12.7	-0.4	N/A	N/A
W-13	-1.1	11.7	-1.9	N/A	N/A

2.1.2 Bayshore Drive Area

Two standpipes are used for groundwater level monitoring in the Bayshore Drive Area. Water levels in Standpipe SI-5 continued to decline since November 2021 until rising abruptly in response to rainfall in February 2025. The water level in SI-5 began to decline by the March 2025 reading. Water level measurements in Standpipe SI-6 declined throughout the entire monitoring year. Table 4 presents groundwater change data for individual standpipes in the Bayshore Drive Area. Groundwater hydrographs for individual standpipes from historic through the end of the current monitoring year are presented in Appendix A.

Table 4: Bayshore Drive Area Water Level Monitoring

Standpipe ID	Change in Groundwater Elevation between last and first measurements of monitoring year (ft)	2024-2025 Average Groundwater Elevation (ft)	Change in Average Groundwater Elevation from Prior Monitoring Year (ft)	1991-2025 Historical Mean Groundwater Elevation (ft)	2024-2025 Average Groundwater Elevation from Historical Mean Groundwater Elevation (ft)
SI-5	+17.5	36.6	+11.5	24.2	+12.4
SI-6	-3.2	27.0	-1.1	27.1	+0.0

2.2 Slope Inclinometers

2.2.1 Summary of Slope Inclinometer Monitoring Events

Yeh surveyed five inclinometers during the monitoring year. Inclinometers are surveyed approximately quarterly or on an accelerated schedule if movement is interpreted. Inclinometers were surveyed using a vertical traversing probe that measures the tilt of the casing at 2-foot intervals. Inclinometer data were collected via Bluetooth onto a field tablet and processed by comparing each tilt measurement to previous surveys.

Inclinometer data processing and presentation utilized DigiPro2 software (Slope Indicator, 2014). Updated baselines are generally used following a change or repair to the cable and/or servicing of the inclinometer probe sensors and carriage. Appendix B includes an inventory of District inclinometers with a summary of past movements as well as annotated plots of cumulative change and incremental change in the A and B directions for each inclinometer surveyed during the monitoring year.

No new shear-type movement was interpreted on any of the inclinometers during this monitoring year. Previous episodes of movement recorded during and after the high rainfall winters of 22/23 and 23/24 appear to have ceased by February 2024.

3. Water Budget Tracking

3.1 Rainfall Data

Yeh obtained rainfall data for the monitoring year from the Big Rock Mesa Rain Gauge #1239 operated by the Los Angeles County Department of Public Works (LADPW). Prior to 1984, rainfall data was obtained from the Carbon Canyon Rain Gauge #447C and after 1984 from the onsite Big Rock Mesa Rain Gauge #1239. For this report, a 41-year rainfall average of 16.13 inches from the Big Rock Mesa Rain Gauge is used as an annual average.

Plate 2 - Rainfall Graph displays historical monthly and rain season annual rainfall for the Malibu area from October 1968 through September 2025. Recorded rainfall for the Malibu area over the monitoring year from July 1, 2024, to June 30, 2025, totaled 8.50 inches, which is 7.63 inches below the 41-year Big Rock Mesa Rain Gauge running average of 16.13 inches. The recorded rainfall total for the rain season year from October 1, 2024, to September 30, 2025, totaled 8.52 inches. This year was the first monitoring and rain season year of below average rainfall after two consecutive years of above average rainfall.

Plate 4 – Discharge vs Rainfall, shows rainfall deviation from the 41-year mean and compares rainfall amounts to changes in the annual sum of monthly dewatering output.

3.2 DEWATERING

Yeh tracks dewatering production for the pumping dewatering wells installed across the district and the horizontal gravity drains (hydraugers) installed in the slope face along Malibu Road. The 2024-2025 monitoring year total dewatering production averaged 1,487 gpd, which is a decrease of 64-percent from the previous monitoring years' average production of 4,138 gpd. The decrease in production was due to the below average rainfall amount over the monitoring year following the previous two years of above average rainfall. Eighty-three percent of the total dewatering production was pumped from dewatering wells and seventeen percent was from hydraugers.

3.2.1 DEWATERING WELL PRODUCTION

Yeh performed monthly monitoring for discharge rates of the 14 active district dewatering wells. Well production is measured approximately monthly for each well by reading flow totalizers that are installed along the discharge line. A summary of well status for individual wells is included on Page C-1 and graphs of historical production and of this year's annual production versus daily rainfall totals are included in Pages C-2 through C-3. A graph showing total production since 1992 is included on Plate 3.

During the monitoring year, the average total well production was 1,242 gpd which is 57-percent lower than last year's average production of 2,898 gpd and 2-percent lower than the historical production average of 1,262 gpd calculated from 1991 to present.

Dewatering well production typically varies in response to rainfall totals. The dewatering well production decrease from the last monitoring year is consistent with the below average rainfall totals this monitoring year.

3.3 HYDRAUGER PRODUCTION

Hydrauger production is measured directly from a sampling port installed on each hydrauger. Yeh performed monthly monitoring to measure flow from 19 hydraugers. Most of the hydraugers flow intermittently in response to rainfall. An inventory and status for individual hydraugers is included in Appendix C-1 and graphs of historical production and of this year's annual production versus daily rainfall totals are included in Pages C-4 through C-5. A graph showing total hydrauger production since 1992 is included on Plate 4.

During the monitoring year, the average monthly hydrauger production was 245 gpd which is approximately 80-percent less than last year's average monthly production of 1,241 gpd and 68-percent less than the historical production average of 761 gpd calculated from 1991 to present. Over the monitoring year, 91-percent of all hydrauger production was from two hydraugers with three

other hydraugers producing only intermittently. Hydrauger production was highest in February in response to December 2024 and early February 2025 rainfall.

4. Seismic Events Summary

Twenty-four (24) earthquakes with a magnitude of M3.0 or higher occurred with epicentral distances within 25-miles of the project area and five earthquakes with a magnitude of M4.0 or greater were recorded between 25 to 100-miles of the project area (See Figure 2). The largest event was an M5.2 located 79 miles northwest, near Lamont, CA which was followed by a cluster of three aftershocks exceeding M4.0. For the M5.2 event, the USGS shake map reported a Modified Mercalli Intensity (MMI) of 2 with weak shaking felt at the Malibu Road area. On September 12, 2024, an M4.7 event occurred approximately 5.2 miles northwest of the Malibu Road area, the USGS shake map reported an MMI of 4.0 to 4.5 with light shaking felt at the Malibu Road area, six aftershocks with magnitudes ranging from M3.1 to 3.7 were associated with the main quake. The closest event to the project site was an M3.0 with an epicenter offshore approximately 3.2 miles southeast of the project site with the USGS shake map reporting MMI of 2 to 2.5 and weak shaking.

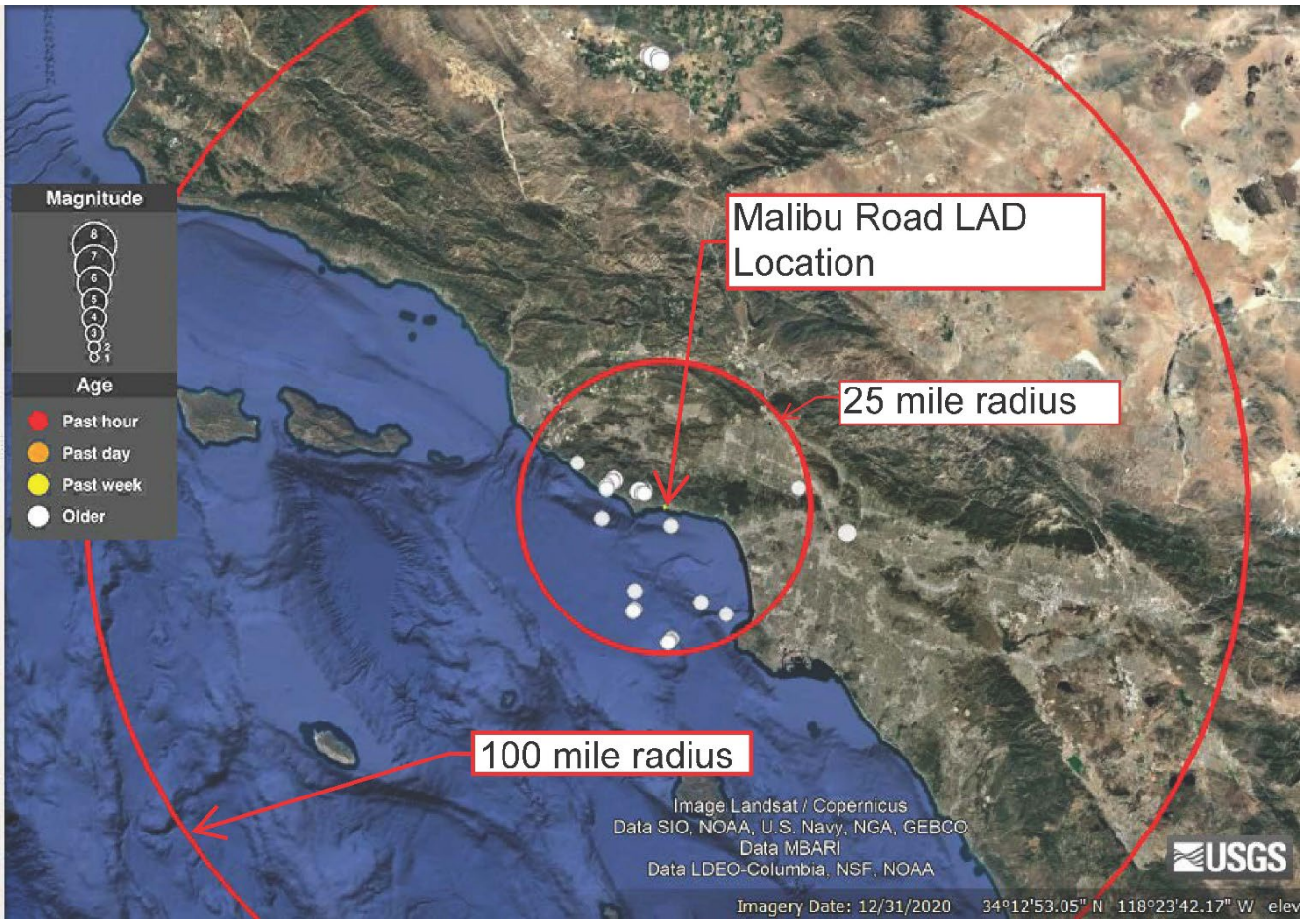


Figure 2: Earthquake Events Relative to Project Site

Yeh personnel performed post-earthquake observations and measurements that included surveying of key inclinometers and/or field observations of the ground surface made during scheduled monitoring and maintenance before and after the earthquake events. Yeh staff did not observe surface displacements or inclinometer deformations in response to the earthquakes and is unaware of any reports of damage local to the Malibu Road Landslide AD resulting from the earthquakes.

5. Maintenance and Capital Improvements

Typical maintenance activities to dewatering wells include assessing and replacing or repairing dewatering well pumps, well plumbing, pump electronics and pump controls; Typical maintenance to hydraugers included PVC repairs within the conveyance piping for discharge. Capital improvements include replacement and rehabilitation of existing facilities and special projects to improve the monitoring and maintenance capabilities.

6. Capital Improvements and Special Projects

The following improvement projects have been identified and are being tracked and planned for future consideration.

- Upgrade dewatering well flow meters with data logging and transmission capability.
- Install transmitting or logging pressure transducers in the piezometers along the north shoulder of Malibu Road so water levels can be continuously recorded and to resolve the issue of restricted access to the vaults due to parked vehicles.
- Replace Inclinometer SI-3, install new inclinometer with a vibrating wire piezometer and a time domain refractometry cable.
- Plan and design for stormwater improvements to reduce infiltration into the undeveloped parcels between Malibu Road and Highway 1.
- Coordinate a solution to repair or replace the obstructed and damaged storm drain on Bayshore Drive.
- A modern form of repeatable surface survey should be re-introduced and continued for the project as a consistent means to observe and evaluate potential land movement throughout the extent of the assessment district area and more specifically in-between inclinometer casing locations.

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MALIBU ROAD LANDSLIDE ASSESSMENT DISTRICT MALIBU, CALIFORNIA

MONITORING INSTRUMENTATION AND DEWATERING FACILITIES MAP

Yeh and Associates, Inc.
Geotechnical • Geological • Construction Services



Bayshore Drive

Malibu Road

HD-1 HD-2 HD-3 HD-4 HD-5 HD-6 HD-7 HD-8 HD-9 HD-10 HD-11 HD-12 HD-13 HD-14 HD-15 HD-16 HD-17 HD-18 HD-19 HD-20 HD-21 HD-22 HD-23

SI-6 SI-5 SI-4 SI-4A SI-3 SI-2 SI-2A SI-1 SI-1A

W-12 W-14 W-11 W-3A W-13 W-2A W-3 W-10 W-4 W-5 W-9 W-6 W-8

NW-1 NW-2 NW-3

MTD-9 MTD-10

PZ-A PZ-B PZ-C PZ-D PZ-E

NHD-A NHD-B NHD-C

- Dewatering Well
- Dewatering Well (out of service)
- Slope Inclinometer/Standpipe Piezometer
- Slope Inclinometer/Standpipe Piezometer (standpipe only, not usable for inclinometer)
- Standpipe Piezometer
- Standpipe Piezometer (buried)
- Pneumatic Piezometer
- Pneumatic Piezometer (nonfunctioning)
- Nonproducing Hydrauger
- Private Hydrauger
- Producing Hydrauger
- Hydrauger (unable to locate)
- Hydrauger Installed Length
- Shape Array
- Storm Drain Outfall
- District Boundary
- Recent Landslide of 1978 (Boundary from Leighton, 1979)
- Ancient Landslide (Boundary from Leighton, 1979)

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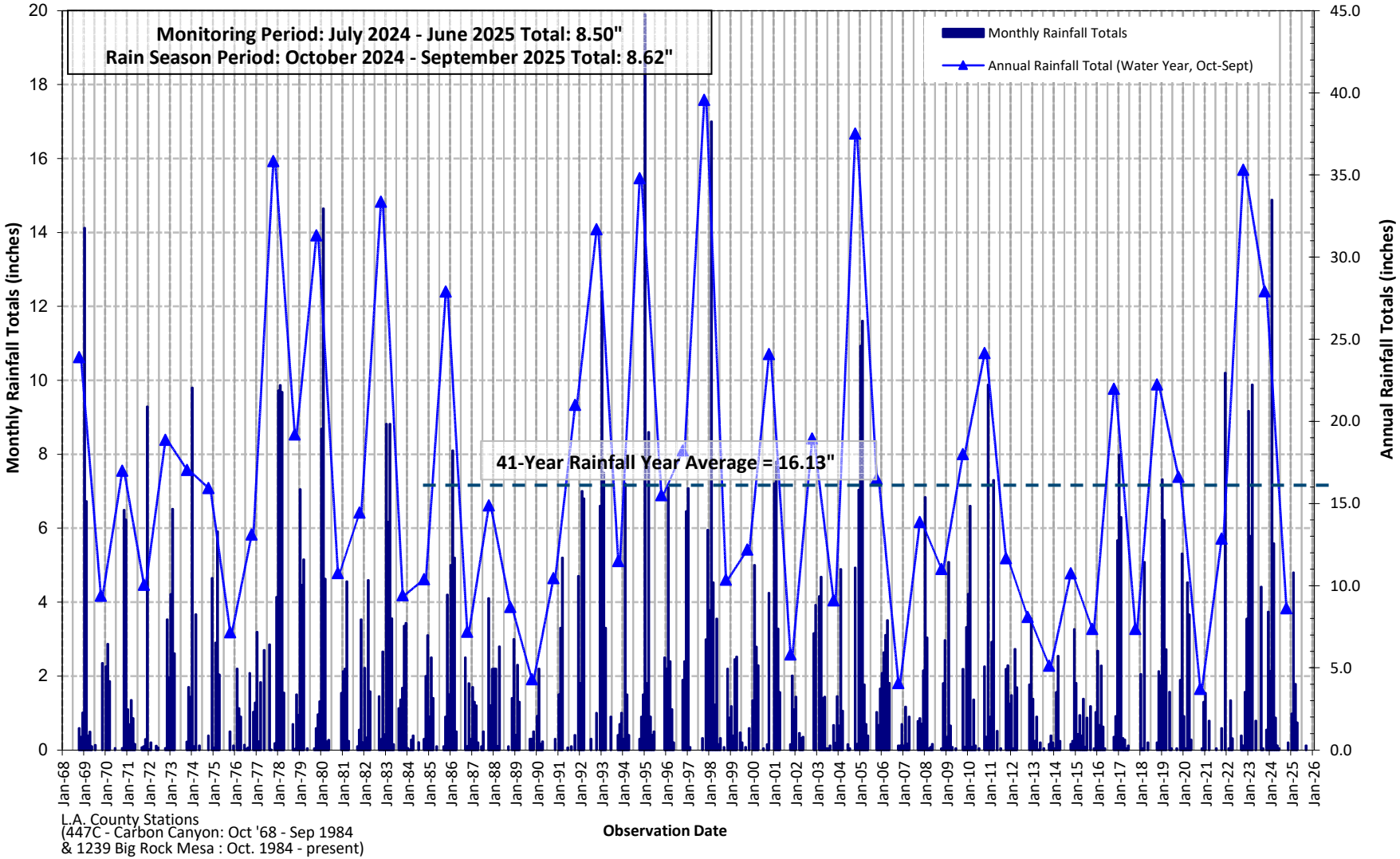
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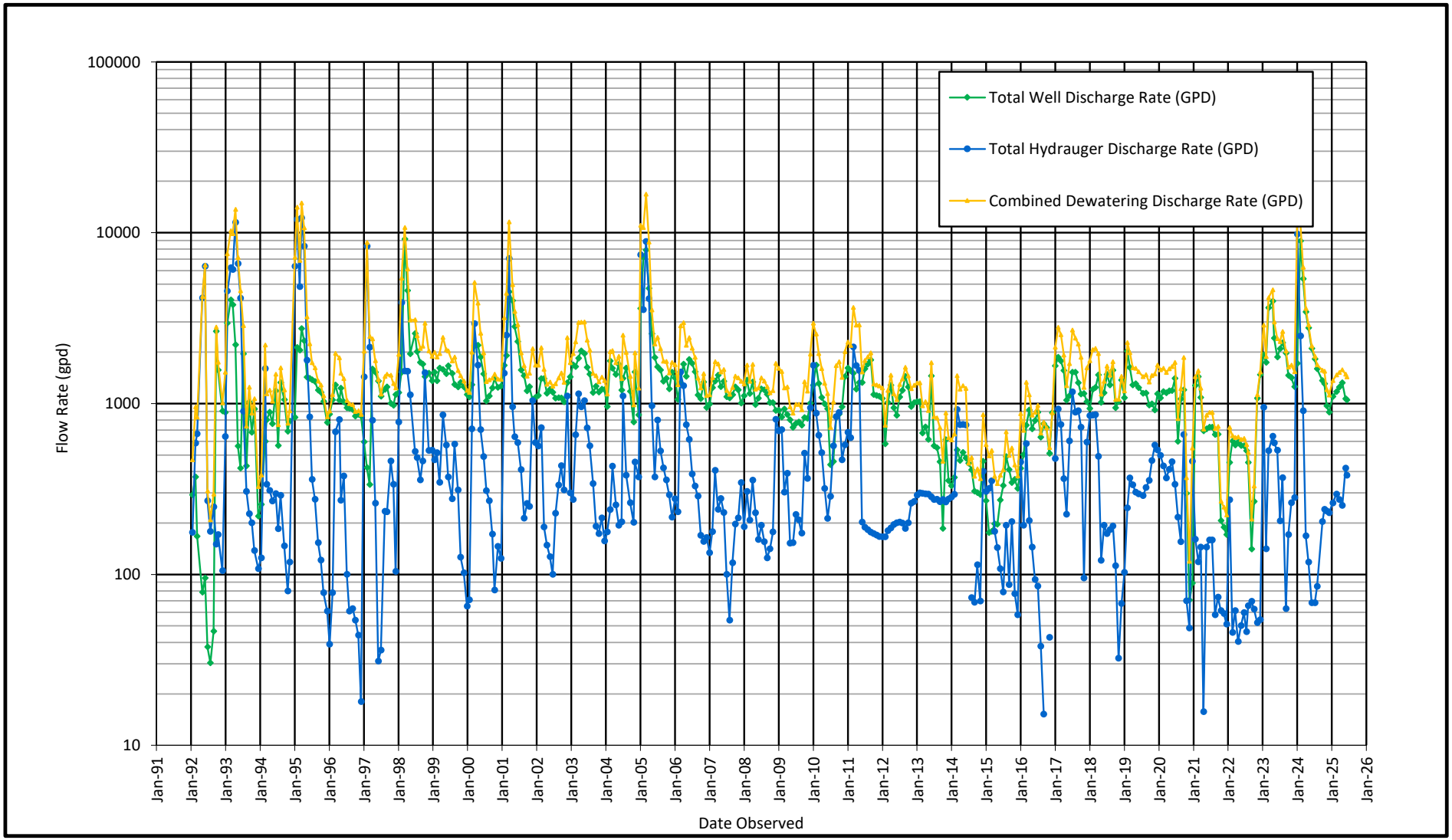
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RAINFALL GRAPH
Landslide Assessment Districts
Malibu, California

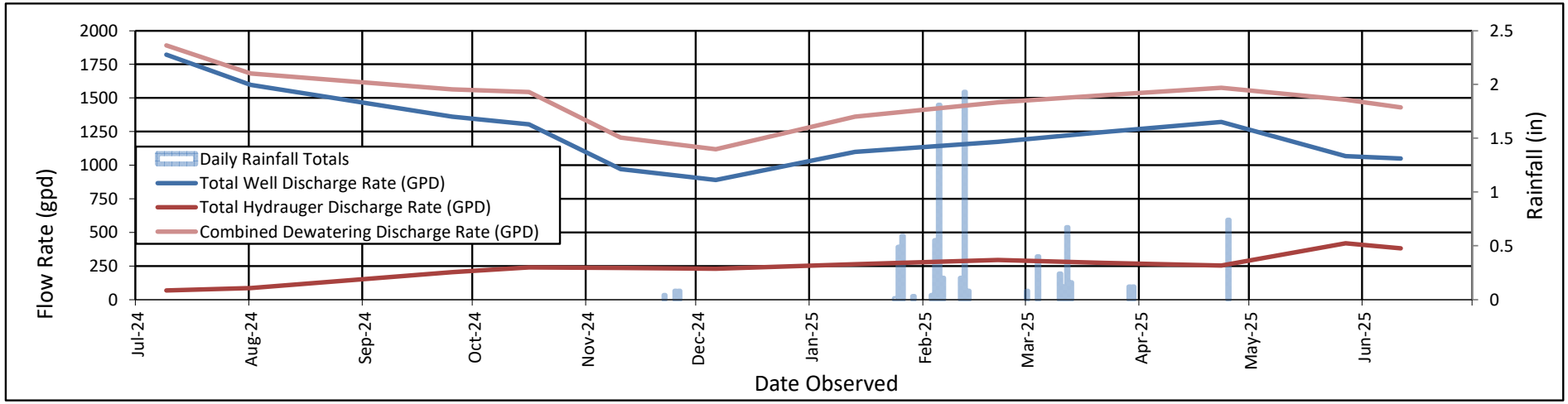
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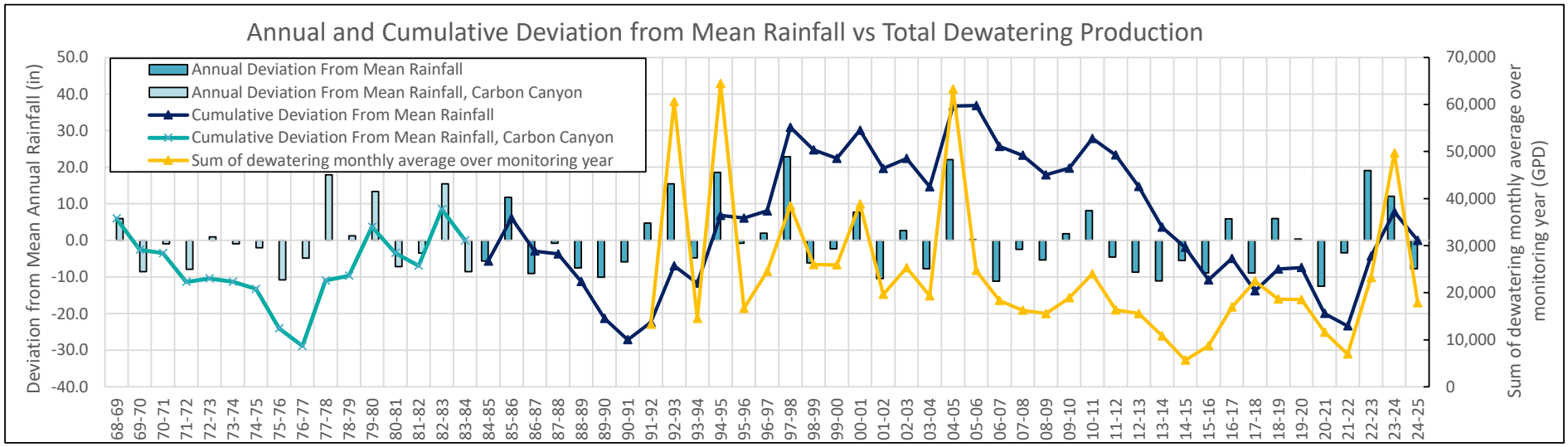


TOTAL DISCHARGE - WELLS AND HYDRAUGERS (HISTORIC)
Malibu Road Landslide Assessment District
Malibu, California

Plate 3

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DISCHARGE VS RAINFALL
Malibu Road Landslide Assessment District
Malibu, California

APPENDIX A - GROUNDWATER LEVELS

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MALIBU ROAD LAD - Standpipe Piezometer Information						
Standpipe ID	**Previous Reference Elevation (8/91)**	**Updated Reference Elevation (4/00)**	**Casing Total Depth (ft)**	**Perforation Interval**	**Installed By**	**Notes**
W-2A	22.6	20.6	9.0	Unknown	LA COUNTY	Dry from 2014 until January 2023
W-3A	22.0	20.5	32.5	Unknown	LA COUNTY	Buried
W-13	--	20.0	48.0	Unknown	Fugro	Measurements resumed 2/2024
PZ-A	20.0	19.8	17.2	Unknown	LA COUNTY	
PZ-B	20.0	19.1	27.9	Unknown	LA COUNTY	
PZ-C	20.0	19.4	29.7	Unknown	LA COUNTY	
PZ-D	20.0	19.2	24.7	Unknown	LA COUNTY	
PZ-E	20.0	21.4	15.8	Unknown	LA COUNTY	
SI-5[+]	59.0	59.3	78.0	-19.0 to -14.0	BYA	
SI-6[++]	57.0	58.0	78.0	-21.0 to -16.0	BYA	

Note: + Formerly designated as MR-5
++ Formerly designated as MR-6

MALIBU ROAD LAD - Pneumatic Piezometer Information						
Well Identification	**Previous Reference Elevation (8/91)**	**Updated Reference Elevation (4/00)**	**Tip Depth (ft.)**	**Tip El. (ft)**	**Installed By**	**Notes**
SI-1*	20.0	20.1	34.6	-14.6	BYA	leaking
SI-2	20.0	19.7	65.1	-45.1	BYA	functioning as of 2020, not measured
SI-3*	20.0	20.3	49.8	-29.8	BYA	clogged
SI-4	22.0	18.9	43.9	-21.9	BYA	functioning as of 2020, not measured
SI-5 Tip 1	59.0	59.3	60	-1	BYA	functioning as of 2020, not measured
SI-5 Tip 2	59.0	59.3	40	19	BYA	functioning as of 2020, not measured
SI-6 Tip 1	57.0	58.0	60	-3	BYA	functionality uncertain since install, not measured
SI-6 Tip 2	57.0	58.0	40	17	BYA	functioning as of 2020, not measured
SI-1A	20.0	20.0	50	-30	FUGRO	functioning as of 2020, not measured

Note: SI-1 thru SI-4 were previously designated MR98-1 thru MR98-4
SI-5 and SI-6 were previously designated MR-5 and MR-6
* Peizometer not functioning

PIEZOMETER INFORMATION
Malibu Road Landslide Assessment District
Malibu, California

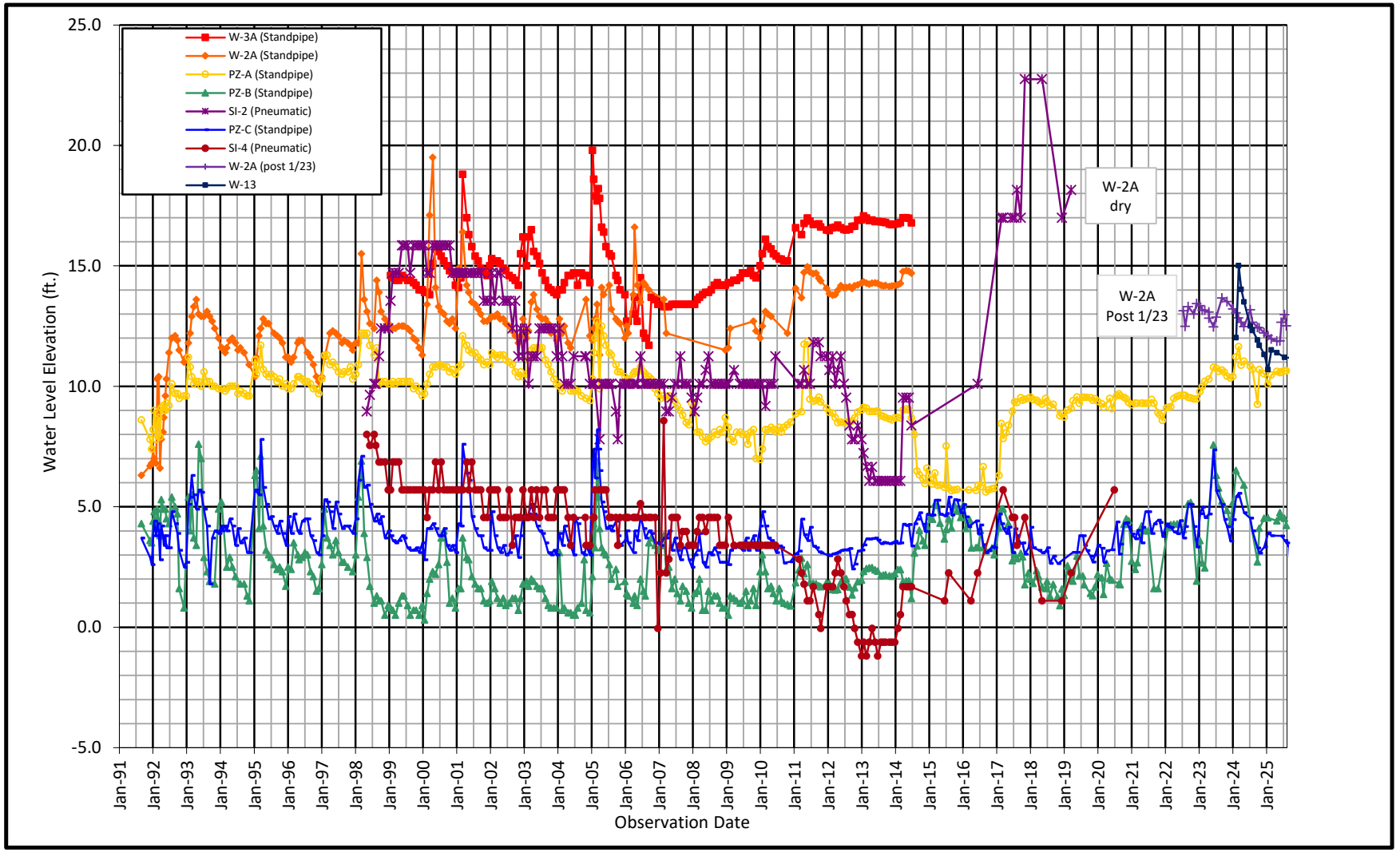
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MALIBU ROAD LANDSLIDE ASSESSMENT DISTRICT - SUMMARY OF GROUNDWATER DATA

Standpipe / Piezometer I.D.		91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25	Mean '91-'25	Stand Dev.	24-25 vs. 97-98	24-25 vs. mean
MALIBU ROAD - Standpipe Piezometers																																							
W-2A	Mean El.	8.3	12.3	12.1	11.8	11.7	11.2	12.4	12.8	13.5	13.7	12.9	12.6	12.3	12.8	13.4	13.7	--	--	--	14.1	14.2	14.2	14.4	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	13.1	13.1	12.7				
	Highest El.	11.4	13.6	13.1	12.8	12.2	12.3	15.5	14.4	19.5	16.4	13.4	13.8	12.8	14.1	16.6	14.3	--	--	--	15.0	14.7	14.3	14.8	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	13.4	13.7	13.2				
W-3A	Mean El.								14.5	14.4	15.5	15.0	15.3	14.3	16.4	13.9	13.1	13.6	14.3	15.2	16.1	16.6	16.8	16.8	UTL	UTL	UTL	UTL	UTL	UTL	UTL	UTL	UTL	UTL					
	Highest El.								14.6	15.7	18.8	15.4	16.5	14.7	19.8	15.5	13.7	13.9	14.7	16.1	17.0	16.7	17.1	17.0	UTL	UTL	UTL	UTL	UTL	UTL	UTL	UTL	UTL	UTL					
W-13	Mean El.																																	13.6	11.7	*12.7*	*1.4*	*11.7*	*-1.0*
	Highest El.																																	15.0	12.5	*13.8*	*1.8*	*12.5*	*-1.3*
PZ-A	Mean El.	8.6	10.1	10.0	10.4	10.2	10.5	11.1	10.4	10.2	11.1	11.2	11.0	10.3	10.8	10.7	9.9	8.5	8.1	7.9	9.2	9.0	8.9	8.8	6.3	6.0	6.9	9.4	9.1	9.4	9.4	9.2	9.8	10.8	10.4	*9.5*	*1.3*	*-0.7*	*0.9*
	Highest El.	9.3	11.2	10.6	11.7	10.5	11.3	12.2	11.6	10.9	12.1	11.4	11.6	11.6	12.7	11.4	10.6	9.3	8.7	8.3	11.9	9.6	9.1	9.1	8.0	7.5	9.0	9.6	9.6	9.6	9.7	9.6	10.8	11.7	10.8	*10.4*	*1.3*	*-1.4*	*0.5*
PZ-B	Mean El.	4.4	4.5	2.9	3.7	2.6	2.9	3.4	1.0	1.3	2.3	1.3	1.5	1.0	2.8	1.7	2.7	1.3	1.0	1.6	1.8	1.7	2.1	2.1	4.1	4.2	3.8	2.3	1.8	1.9	3.4	3.5	4.1	5.5	4.2	*2.7*	*1.2*	*0.9*	*1.6*
	Highest El.	5.3	7.6	5.2	7.1	3.5	4.9	6.9	1.3	2.6	4.0	1.9	2.0	3.1	6.9	2.6	3.8	2.0	1.3	3.0	2.9	2.0	2.5	2.4	5.1	5.1	4.9	3.1	3.0	2.7	4.5	4.3	7.6	6.5	4.8	*4.0*	*1.9*	*-2.1*	*0.8*
PZ-C	Mean El.	3.6	4.6	3.9	4.7	4.2	4.2	5.1	4.0	3.6	4.5	3.6	4.1	3.4	5.2	3.9	3.7	3.0	3.0	3.7	3.4	3.1	3.3	3.7	4.6	4.8	3.7	3.5	3.1	3.2	4.0	4.2	4.7	4.8	3.7	*3.9*	*0.6*	*-1.3*	*-0.2*
	Highest El.	4.4	6.3	4.9	7.8	4.7	5.3	7.1	4.7	4.3	7.6	4.8	5.1	4.2	8.2	4.6	4.1	3.9	3.4	4.8	4.5	3.4	3.7	4.3	5.3	5.4	4.7	4.2	3.8	3.8	4.8	4.8	7.4	5.7	4.5	*5.0*	*1.3*	*-2.6*	*-0.5*
PZ-D	Mean El.	4.4	6.9	5.1	7.6	5.0	5.9	7.8	4.7	4.0	4.8	4.2	4.3	4.1	7.0	4.7	4.2	4.0	4.4	5.1	5.2	5.3	5.8	5.9	5.0	5.1	4.8	4.5	4.2	4.4	4.7	5.0	5.8	7.6	UTL	*5.2*	*1.1*		
	Highest El.	5.8	11.4	6.7	13.1	5.8	15.2	18.1	5.9	4.9	8.4	5.3	5.3	4.6	15.3	5.6	4.7	4.9	4.9	6.4	7.1	5.9	6.1	8.0	5.8	5.6	6.1	5.1	4.8	5.0	5.4	6.5	7.3	8.5	UTL	*7.3*	*3.4*		
PZ-E	Mean El.	13.0	14.3	13.9	14.5	14.2	14.6	15.2	12.8	12.7	13.3	12.5	14.1	13.8	15.6	12.1	10.5	10.4	10.4	11.6	13.5	11.9	11.2	11.4	9.3	9.1	11.4	11.4	11.9	13.0	11.3	10.1	11.8	15.2	11.3	*12.5*	*1.7*	*-3.9*	*-1.1*
	Highest El.	14.5	16.0	15.0	16.3	14.9	16.5	16.3	14.4	15.6	16.2	14.3	15.6	14.9	17.9	14.0	13.1	12.8	11.8	14.5	15.4	14.1	11.4	11.8	9.6	10.3	16.1	12.7	15.3	15.7	9.7	9.6	10.8	16.7	13.3	*14.0*	*2.3*	*-3.0*	*-0.7*
Area Average	Mean El.	7.0	8.8	8.0	8.8	8.0	8.2	9.2	8.6	8.5	9.3	8.7	9.0	8.5	10.1	8.6	8.2	6.8	6.9	7.5	9.0	8.8	8.9	9.0	5.9	5.8	6.1	6.2	6.0	6.4	6.6	6.4	8.2	10.1	9.0	*8.0*	*1.2*	*-0.2*	*1.0*
	Highest El.	8.5	11.0	9.3	11.5	8.6	10.9	12.7	9.6	10.5	11.9	9.5	10.0	9.4	13.6	10.0	9.2	7.8	7.5	8.9	10.5	9.5	9.2	9.6	6.8	6.8	8.2	6.9	7.3	7.3	6.8	7.0	9.5	11.1	9.9	*9.3*	*1.8*	*-2.8*	*0.5*
Change vs. Prior	Mean El.		1.7	-0.8	0.8	-0.8	0.3	0.9	-0.6	-0.1	0.8	-0.6	0.3	-0.5	1.6	-1.5	-0.4	-1.4	0.1	0.6	1.5	-0.2	0.1	0.1	-3.1	-0.1	0.3	0.1	-0.2	0.4	0.2	-0.2	1.8	1.9	-1.1				
	Highest El.		2.6	-1.8	2.2	-2.9	2.3	1.8	-3.1	0.9	1.4	-2.4	0.5	-0.6	4.1	-3.5	-0.9	-1.4	-0.3	1.4	1.7	-1.0	-0.3	0.5	-2.9	0.0	1.4	-1.3	0.4	0.1	-0.5	0.2	2.6	1.6	-1.2				
Bayshore Drive - Standpipe Piezometers																																							
SI-5	Mean El.								35.5	32.2	30.7	30.1	29.3	29.0	28.6	28.2	27.8	27.3	26.3	22.6	18.8	16.5	16.4	18.0	17.4	14.3	12.2	11.2	11.1	26.5	30.0	28.7	23.4	25.1	36.6	*24.2*	*7.4*		*12.4*
	Highest El.								37.8	33.4	31.2	30.4	29.7	29.2	29.0	28.4	28.0	27.5	27.0	24.3	20.5	17.6	17.2	19.4	18.3	15.6	12.9	11.5	15.6	30.4	30.8	30.1	25.6	31.0	57.1	*26.3*	*9.2*		*30.8*
SI-6	Mean El.								38.8	32.6	31.2	29.9	27.9	27.7	27.2	27.9	26.0	25.7	25.4	25.3	26.1	26.4	26.7	26.8	24.8	25.1	25.2	24.8	24.5	24.7	24.7	24.3	25.8	28.1	27.0	*27.1*	*3.1*		*0.0*
	Highest El.								42.4	34.6	31.9	31.2	28.4	28.2	28.8	29.0	26.5	25.9	25.7	25.8	26.7	26.8	27.1	27.2	25.1	25.4	25.5	25.0	24.8	25.0	24.9	25.1	29.9	29.6	29.0	*28.0*	*3.8*		*1.0*
Area Average	Mean El.								37.2	32.4	31.0	30.0	28.6	28.3	27.9	28.0	26.9	26.5	25.8	23.9	22.4	21.5	21.6	22.4	21.1	19.7	18.7	18.0	17.8	25.6	27.3	26.5	24.6	26.6	31.8	*25.6*	*4.7*		*6.2*
	Highest El.								40.1	34.0	31.5	30.8	29.1	28.7	28.9	28.7	27.3	26.7	26.4	25.1	23.6	22.2	22.2	23.3	21.7	20.5	19.2	18.2	20.2	27.7	27.9	27.6	27.7	30.3	43.0	*27.1*	*5.8*		*15.9*
Change vs. Prior	Mean El.									-4.7	-1.5	-1.0	-1.3	-0.3	-0.4	0.2	-1.2	-0.4	-0.6	-1.9	-1.5	-0.9	0.1	0.8	-1.3	-1.4	-1.0	-0.7	-0.2	7.8	1.7	-0.8	-1.9	2.0	5.2				
	Highest El.									-6.1	-2.5	-0.7	-1.8	-0.4	0.2	-0.2	-1.5	-0.6	-0.3	-1.3	-1.5	-1.4	0.0	1.1	-1.6	-1.2	-1.3	-1.0	2.0	7.5	0.2	-0.2	0.1	2.5	12.8				
MALIBU ROAD - Pneumatic Piezometers																																							
SI-1	Mean El.								Piezometer Not Functioning																															
	Highest El.								Piezometer Not Functioning																															
SI-1A	Mean El.																5.8	6.9	6.5	6.9	Piezometer Not Functioning				8.6	13.8	15.7	16.1	19.6							*11.1*	*5.2*	*19.6*	*8.5*
	Highest El.																7.5	6.9	6.9	6.9	Piezometer Not Functioning				11.5	13.8	18.4	16.1	19.6							*12.0*	*5.2*	*19.6*	*7.6*
SI-2	Mean El.								9.3	13.2	15.6	15.1	14.1	11.9	11.5	10.1	9.9	9.9	10.1	10.2	10.1	10.2	11.0	7.4	7.1			10.1	17.0	19.5	17.6							*11.9*	*3.3*		
	Highest El.								9.6	15.9	15.9	15.9	14.7	13.6	12.4	11.3	11.3	10.1	11.3	10.7	11.3	10.7	11.8	9.5	9.5			10.1	17.0	22.8	18.2							*13.0*	*3.5*		
SI-3	Mean El.								Piezometer Not Functioning																															
	Highest El.								Piezometer Not Functioning																															
SI-4	Mean El.								7.8	6.6	5.7	6.0	5.2	4.8	5.0	4.9	4.5	4.0	4.0	3.9	3.4	1.8	1.6	-0.3	0.3			1.7	5.1	3.4	1.7	5.7						*3.9*	*2.1*	*-2.1*	*1.8*
	Highest El.								8.0	8.0	6.9	6.9	5.7	5.7	5.7	5.7	5.1	8.6	4.6	4.6	3.4	2.8	2.8	1.1	1.7			2.3	5.7	4.6	2.3	5.7						*4.9*	*2.1*	*-2.3*	*0.8*
Bayshore Drive - Pneumatic Piezometers																																							
SI-5 Tip 1	Mean El.								34.2	34.7	36.3	34.2	33.9	32.7	37.6	33.6	31.8	31.7	26.9	25.1	22.9	21.7	18.9	19.0			20.6	27.6	26.7	23.2	24.4						*28.5*	*6.0*		*-4.1*
	Highest El.								34.8	39.4	45.1	35.9	37.1	35.9	44.0	34.8	33.6	34.8	30.1	26.7	24.4	22.6	20.9	20.9			22.1	29.0	26.7	24.4	24.4						*30.8*	*7.4*		*-6.5*
SI-5 Tip 2	Mean El.								35.4	36.1	39.1	35.8	36.5	34.0	39.5	33.7	29.8	29.2	26.0	25.2	26.8	26.3	24.3	25.1			24.8	30.5	29.8	27.1	23.6						*30.4*	*5.2*		*-6.8*
	Highest El.								37.5	42.1	51.3	37.5	40.9	37.5	49.0	37.5	35.1	40.9	27.1	26.5	27.7	28.8	24.8	26.5			25.9	30.5	30.5	28.2	23.6						*33.8*	*8.0*		*-10.2*
SI-6 Tip 1	Mean El.								42.4	Piezometer Not Functioning											25.7	25.9	23.8	24.6			27.1	34.8	35.6	34.9	36.1						*31.1*	*6.4*		*5.0*
	Highest El.								44.1	Piezometer Not Functioning											26.8	27.4	24.0	26.3			30.3	36.1	38.4	34.9	36.1						*32.4*	*6.5*		*3.6*
SI-6 Tip 2	Mean El.								44.5	44.6	46.0	44.4	43.0	42.0	43.8	41.0	39.5	39.0	39.0	41.4	40.0	37.7	34.9	35.9			34.5	52.2	42.5	41.1	41.1						*41.3*	*4.1*		*-0.3*
	Highest El.								45.7	48.0	51.5	45.7	45.7	43.4	49.1	42.2	42.2	42.8	39.9	42.8	41.6	39.3	35.9	38.2			36.5	56.1	44.5	41.1	41.1						*43.5*	*4.9*		*-2.4*

SUMMARY OF GROUNDWATER DATA
Malibu Road Landslide Assessment District
Malibu, California

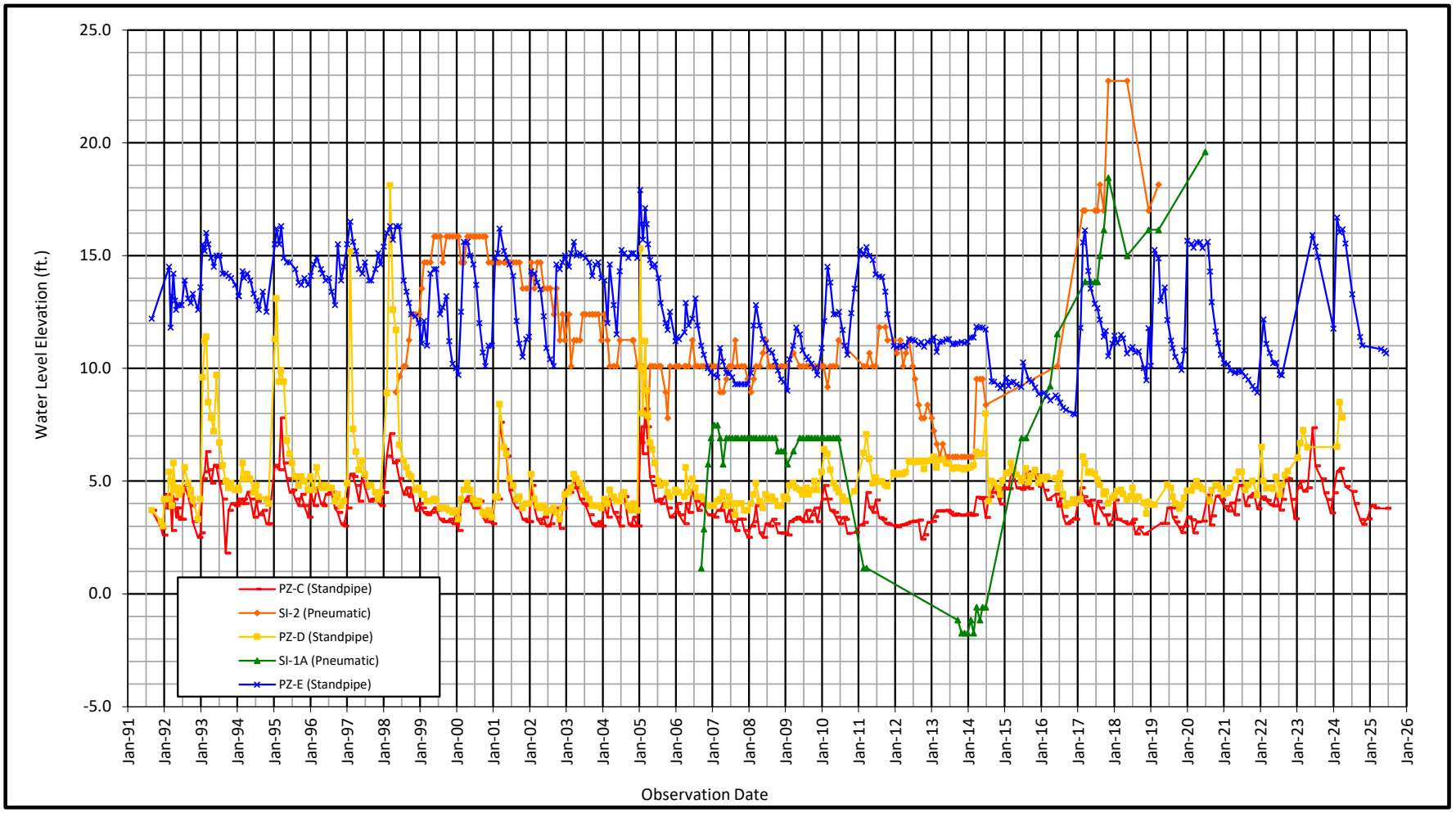
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GROUNDWATER HYDROGRAPH
Malibu Road (West End)
Malibu Road Landslide Assessment District
Malibu, California

PLATE A-3

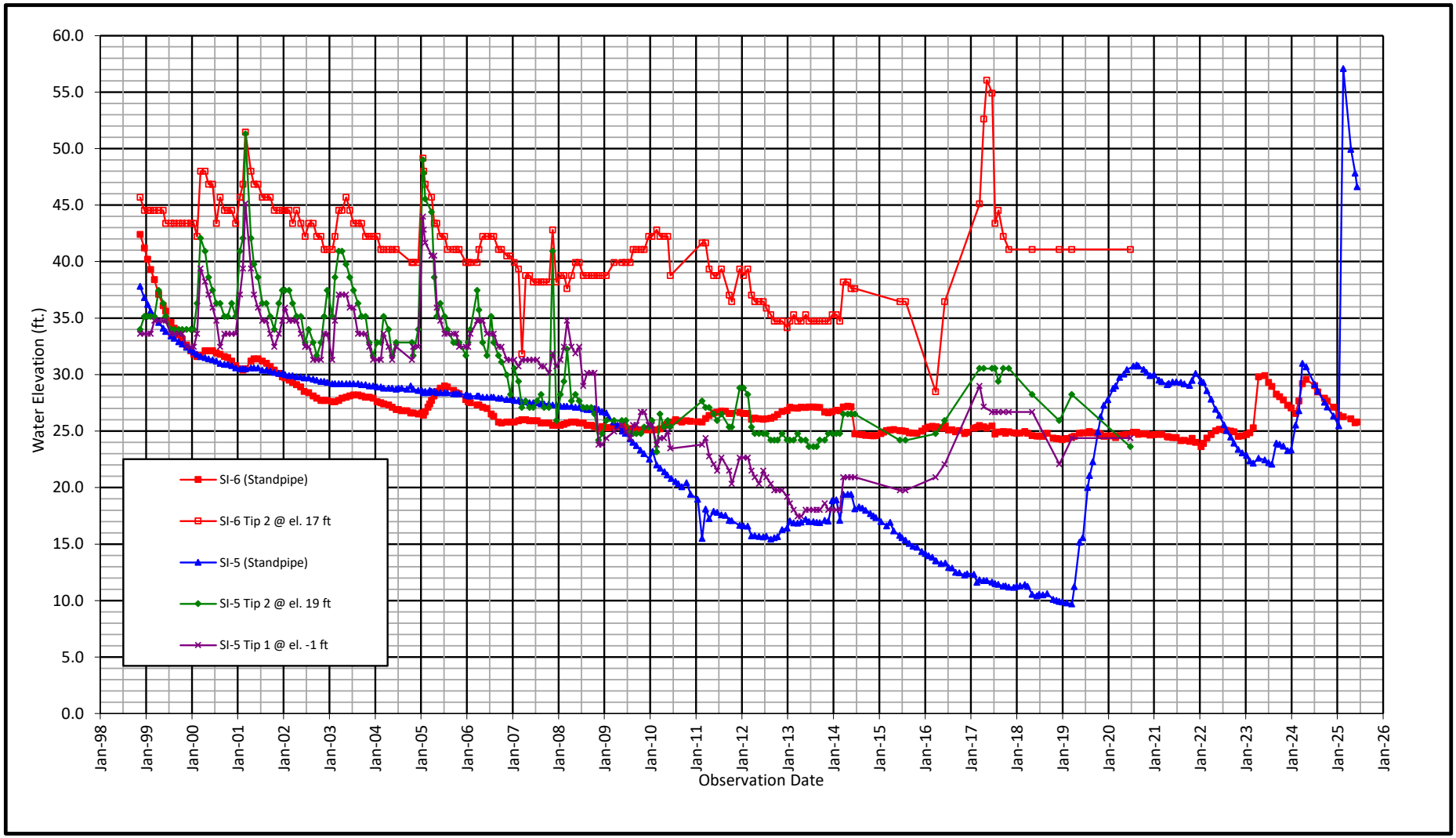
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GROUNDWATER HYDROGRAPH
Malibu Road (East End)
Malibu Road Landslide Assessment District
Malibu, California

PLATE A-4

Yeh and Associates, Inc.
Geotechnical • Geological • Construction Services



GROUNDWATER HYDROGRAPH
Bayshore Drive
Malibu Road Landslide Assessment District
Malibu, California

PLATE A-5

APPENDIX B - SLOPE INCLINOMETERS

MALIBU ROAD LAD - Slope Inclinometer Interpretation Summary									
	SI-1 (MR98-1)	**SI-1A**	**SI-2** (MR98-2)	**SI-2A**	**SI-3** (MR98-3)	**SI-4** (MR98-4)	**SI-4A**	**SI-5**	**SI-6**
Installation Details									
Previous Ref.Elev.(8/91)	20.0	20.0	20.0	20.0	20.0	22.0	N/A	59.0	57.0
Updated Ref.Elev.(4/00)	20.1	20.0	19.7	19.7	20.3	18.9	18.9	59.3	58.0
Depth (ft.)	34	50	64	64	49	43	50	78	78
Install Date	Apr-98	Aug-06	Apr-98	Sep-10	Apr-98	Apr-98	Aug-12	Apr-98	Apr-98
A+ Axis orientation (deg)	184	197	201	200	190	204	204	176	186
Casing	RST	SI	RST	RST	RST	RST	SI	SI	SI
Installer	BYA	Fugro	BYA	Fugro	BYA	BYA	Fugro	BYA	BYA
Interpreted Rupture Depth (ft)	30-32	23-30	28-32	28-34	35-38	32-34	32-34	unknown	unknown
Status	D	F	D	F	D	D	F	F	F
Reading Interval	Quaterly	Quaterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Qaurerly	Quarterly
Interpretation Movement (inches)									
2024-2025	**NR**	--	**NR**	--	**NR**	**NR**	--	--	--
2023-2024	**NR**	0.02	**NR**	0.16	**NR**	**NR**	0.20	--	--
2022-2023	**NR**	0.12	**NR**	0.20	**NR**	**NR**	0.28	--	--
2021-2022	**NR**	--	**NR**	--	**NR**	**NR**	--	--	--
2020-2021	**NR**	--	**NR**	--	**NR**	**NR**	--	--	--
2019-2020	**NR**	--	**NR**	--	**NR**	**NR**	--	--	--
2018-2019	**NR**	--	**NR**	--	**NR**	**NR**	--	--	--
2017-2018	**NR**	--	**NR**	--	**NR**	**NR**	--	--	--
2016-2017	**NR**	0.1	**NR**	0.15	**NR**	**NR**	0.15	--	--
2015-2016	**NR**	--	**NR**	--	**NR**	**NR**	--	--	--
2014-2015	**NR**	<0.1	**NR**	--	**NR**	**NR**	--	--	--
2013-2014	**NR**	0.1	**NR**	--	**NR**	**NR**	--	--	--
2012-2013	**NR**	<0.1	**NR**	<0.1	**NR**	**NR**	--	0.1	0.1
2011-2012	**NR**	<0.1	**NR**	--	**NR**	--	NR	--	<0.1
2010-2011	**NR**	<0.1	**NR**	--	**NR**	0.6	NR	--	<0.1
2009-2010	**NR**	<0.1	**NR**	--	**NR**	--	NR	--	<0.1
2008-2009	**NR**	<0.1	<0.1 **(4)**	**NR**	**NR**	--	NR	--	<0.1
2007-2008	**NR**	<0.1	--	**NR**	**NR**	--	NR	--	<0.1
2006-2007	**NR**	**NR**	--	**NR**	**NR**	--	NR	--	0.1
2004-2005	0.5 **(3)**	**NR**	0.4	**NR**	>1 **(3)**	0.4 to 0.5	NR	~ 0.2 *	--
2003-2004 **(1)**	--	**NR**	--	**NR**	--	--	NR	--	--
2002-2003	~ 0.2 *	**NR**	~ 0.1 *	**NR**	--	--	NR	--	--
2001-2002	--	**NR**	--	**NR**	--	--	NR	--	--
2000-2001	0.5	**NR**	0.4	**NR**	0.3	0.6	NR	--	--
1999-2000	--	**NR**	--	**NR**	--	--	NR	--	--
1998-1999	3.1	**NR**	1.5	**NR**	4.1	1.3 **(2)**	NR	--	--

NOTES:

D Destroyed

F Functioning

NI No information

(1) Readings only through March 2004

(2) Readings are through 2000, although majority of movement occurred in 1998

(3) Inclinometer sheared off in January, 2005.

(4) Inclinometer sheared off winter of 2009.

NR No reading

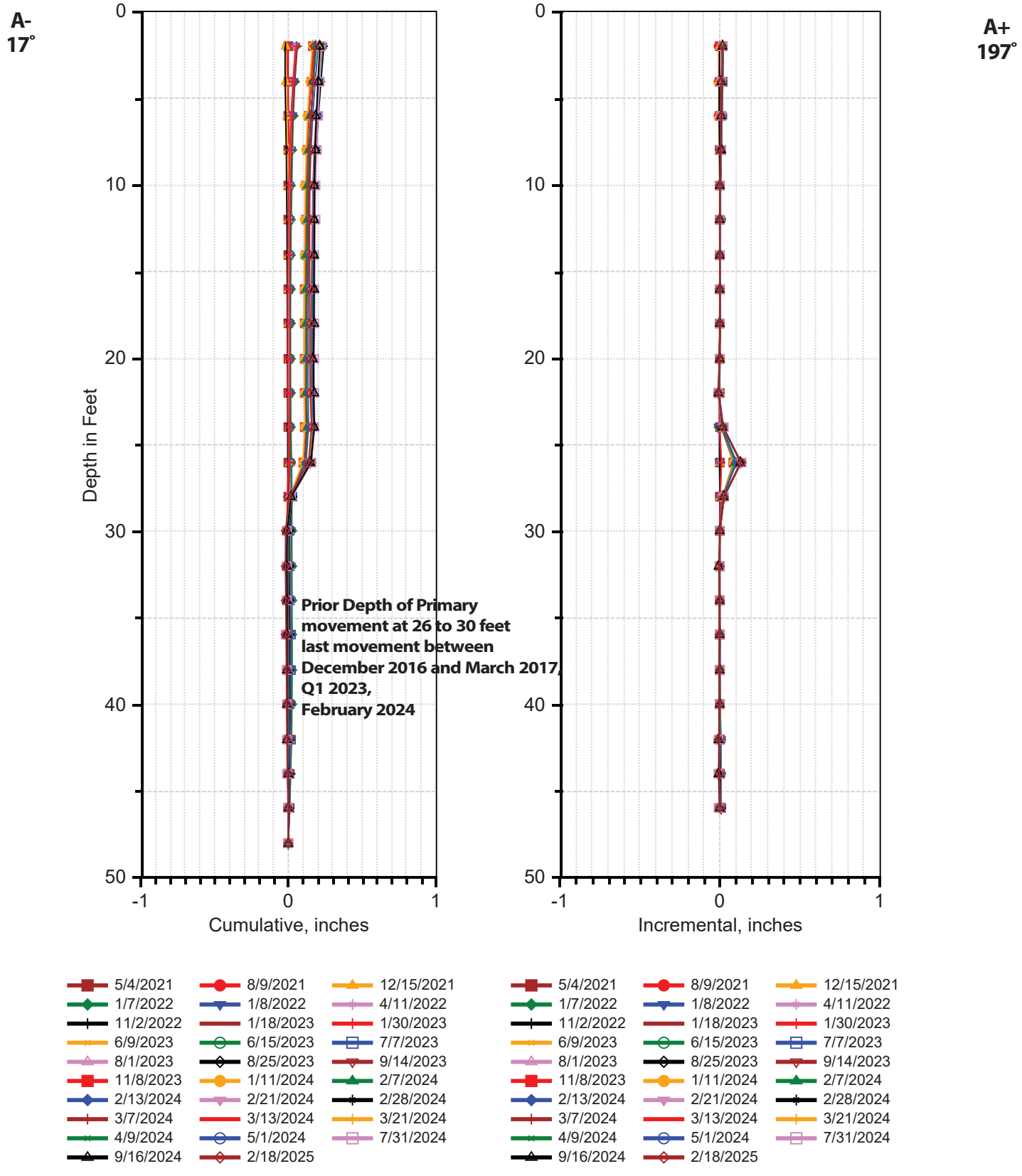
-- No clearly defined interpreted movement.

~ 0.1 * Indicated displacement is less than reliable instrument accuracy. Interpreted movement is theoretical.

SUMMARY OF SLOPE INCLINOMETERS

Malibu Road Landslide Assessment District

Malibu, California



Plot of Slope Inclinometer

SI-1A

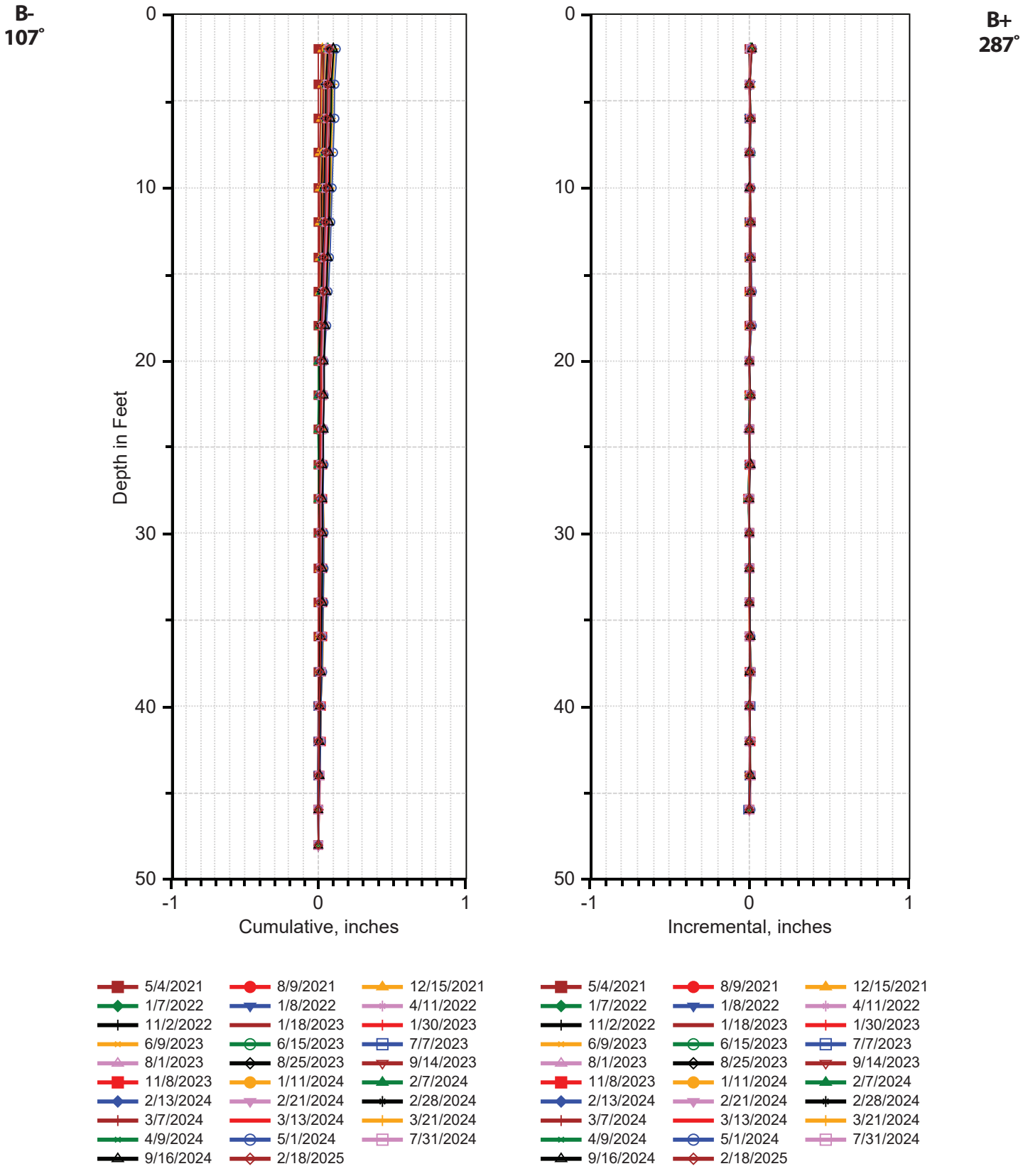
Plot Type: Cumulative and Incremental			Plot Direction: A-Direction
Depth of Survey (ft): 46		Baseline Date: 5/04/2021	Corrections: None
Install Date: 8/2006	Installed Depth (ft): 50	Interpreted Movement Since Baseline (in): 0.12	Interpreted Movement Monitoring Year (in): 0

Yeh and Associates, Inc.
Geotechnical • Geological • Construction Services

PROJECT: Malibu Road LAD
Malibu, CA

PROJECT NUMBER: 220-278

REVISION DATE: 10/13/2025



Plot of Slope Inclinometer

SI-1A

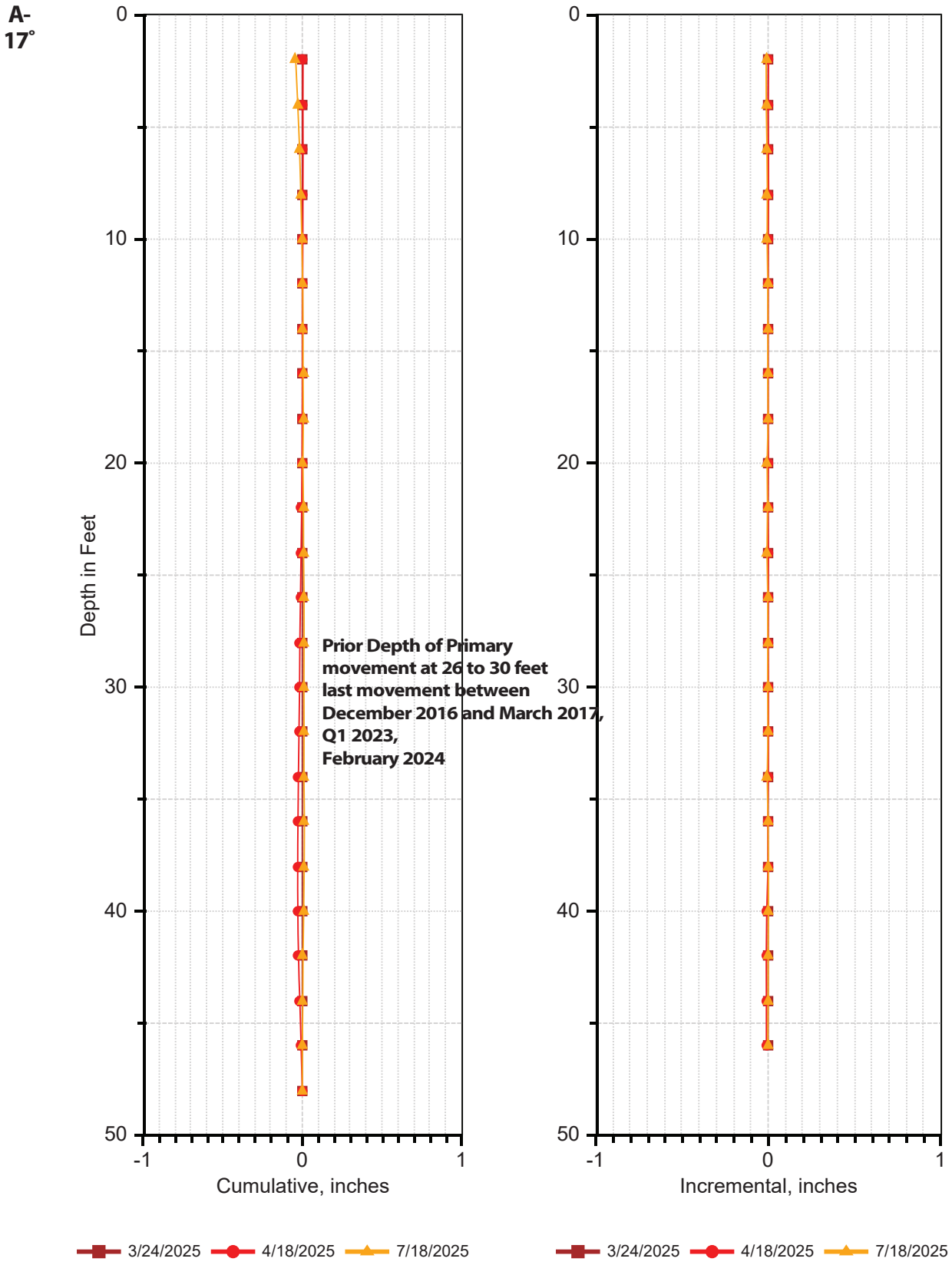
Plot Type: Cumulative and Incremental			Plot Direction: B-Direction
Depth of Survey (ft): 46		Baseline Date: 5/04/2021	Corrections: None
Install Date: 8/2006	Installed Depth (ft): 50	Interpreted Movement Since Baseline (in): 0.12	Interpreted Movement Monitoring Year (in): 0

Yeh and Associates, Inc.
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PROJECT: Malibu Road LAD
Malibu, CA

PROJECT NUMBER: 220-278

REVISION DATE: 10/13/2025



Plot of Slope Inclinometer

SI-1A

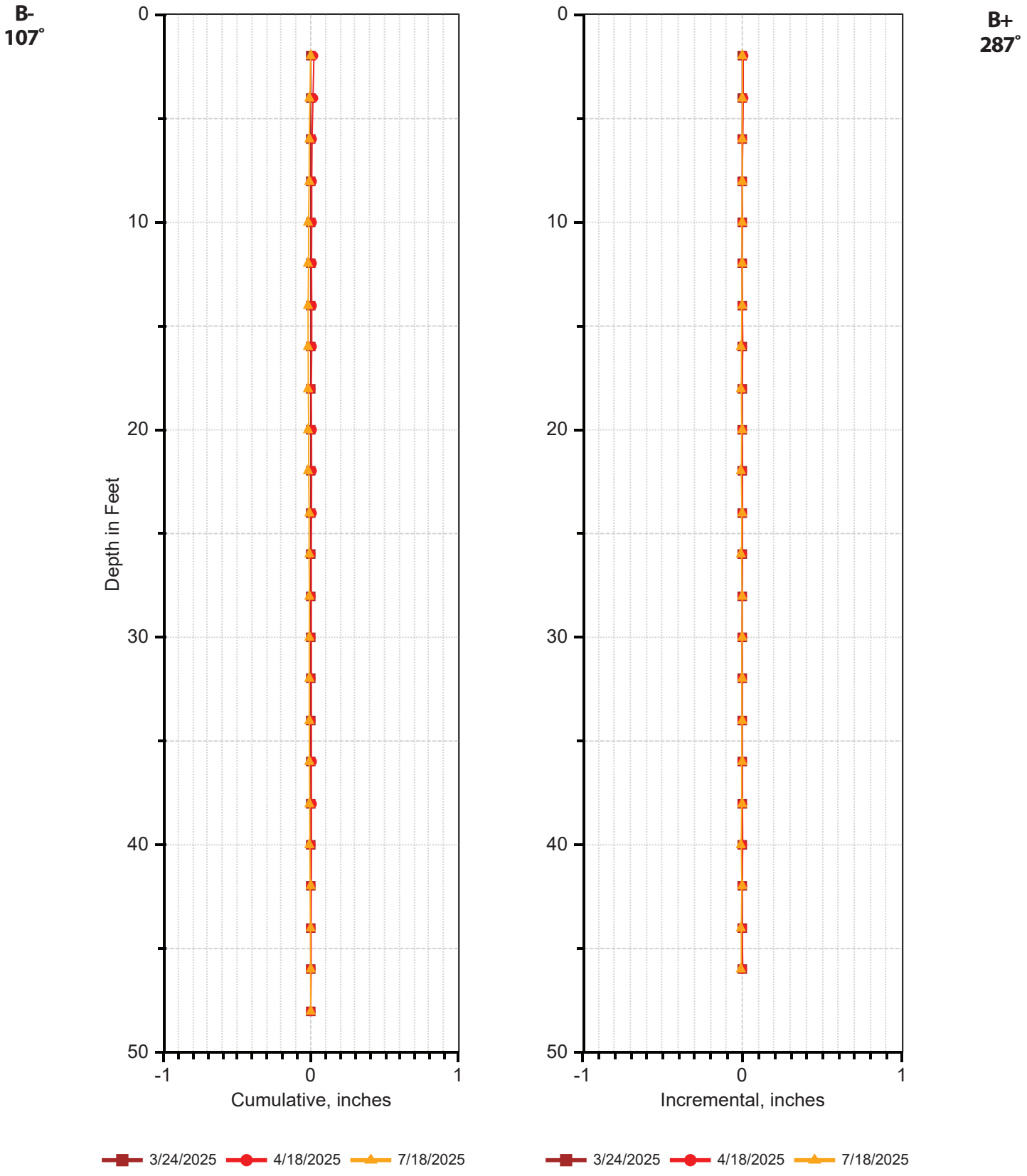
Plot Type: Cumulative and Incremental			Plot Direction: A-Direction
Depth of Survey (ft): 46		Baseline Date: 3/24/2025	Corrections: None
Install Date: 8/2006	Installed Depth (ft): 50	Interpreted Movement Since Baseline (in): 0.12	Interpreted Movement Monitoring Year (in): 0

Yeh and Associates, Inc.
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PROJECT: Malibu Road LAD
Malibu, CA

PROJECT NUMBER: 220-278

REVISION DATE: 10/14/2025



Plot of Slope Inclinometer

SI-1A

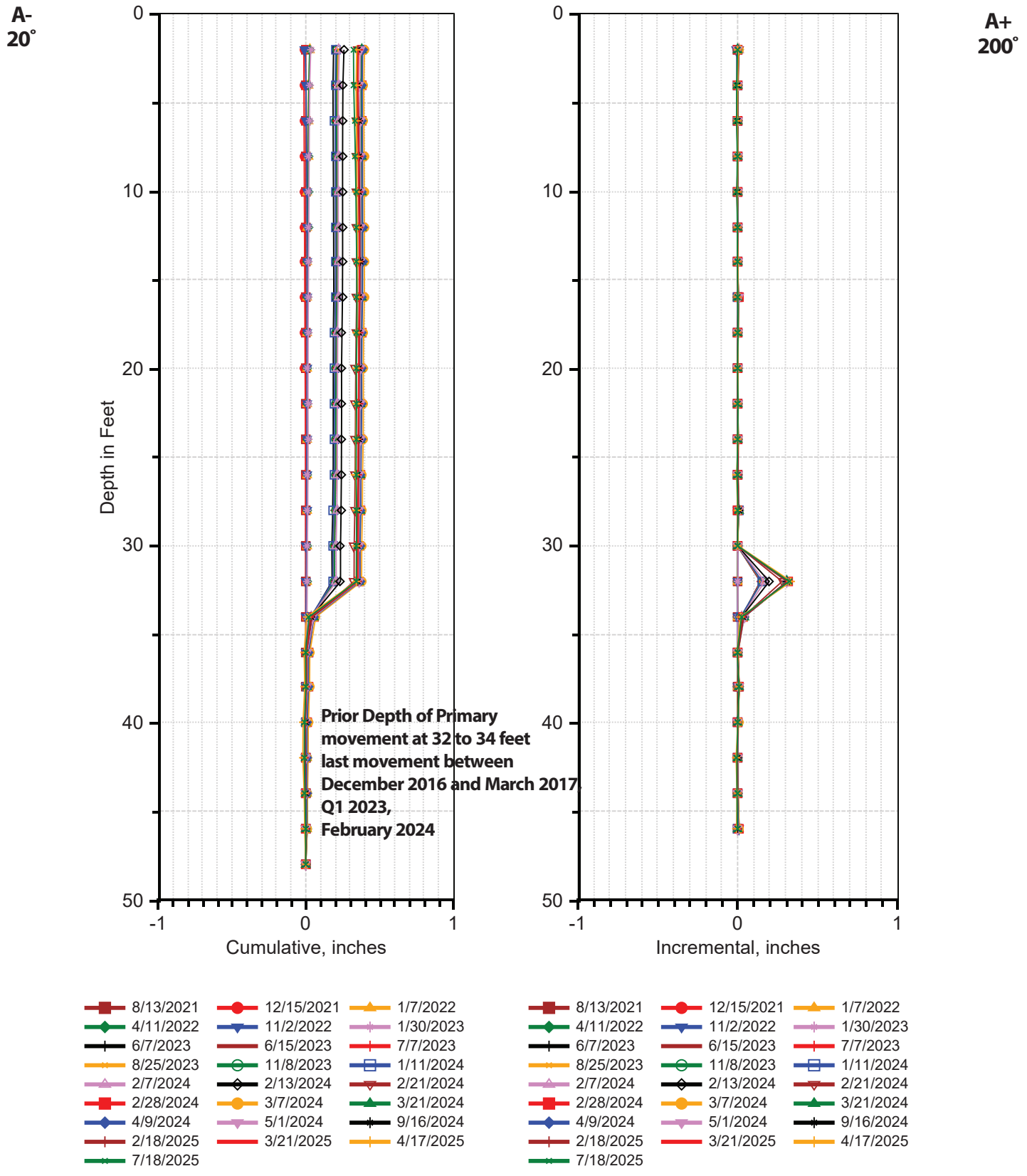
Plot Type: Cumulative and Incremental			Plot Direction: B-Direction
Depth of Survey (ft): 46		Baseline Date: 3/24/2025	Corrections: None
Install Date: 8/2006	Installed Depth (ft): 50	Interpreted Movement Since Baseline (in): 0.12	Interpreted Movement Monitoring Year (in): 0

Yeh and Associates, Inc.
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PROJECT: Malibu Road LAD
Malibu, CA

PROJECT NUMBER: 220-278

REVISION DATE: 10/14/2025



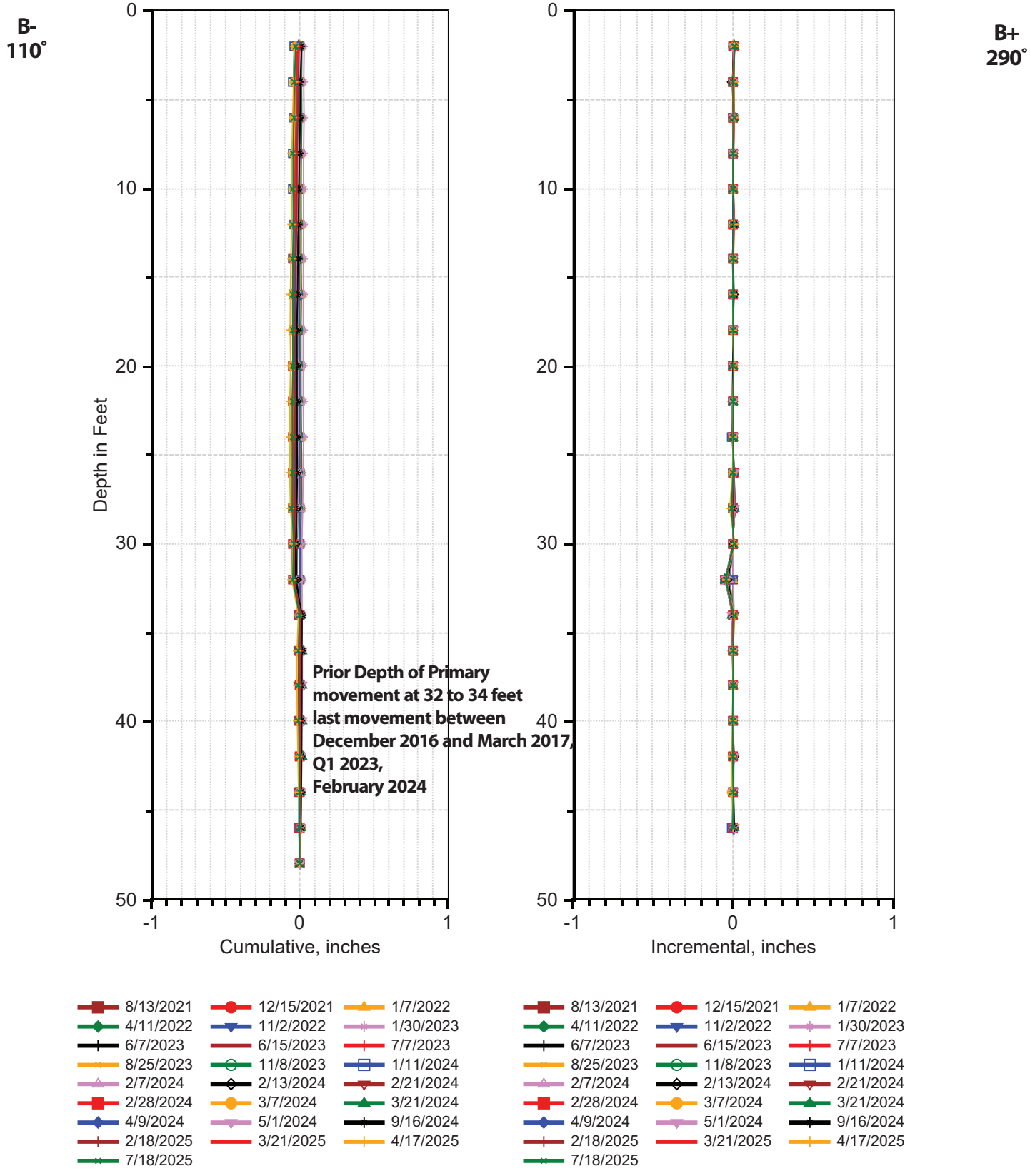
Plot of Slope Inclinometer	Plot Type: Cumulative and Incremental			Plot Direction: A-Direction
SI-2A	Depth of Survey (ft): 48		Baseline Date: 8/13/2021	Corrections: None
	Install Date: 9/2010	Installed Depth (ft): 64	Interpreted Movement Since Baseline (in): 0.36	Interpreted Movement Monitoring Year (in): 0

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PROJECT: Malibu Road LAD
Malibu, CA

PROJECT NUMBER: 220-278

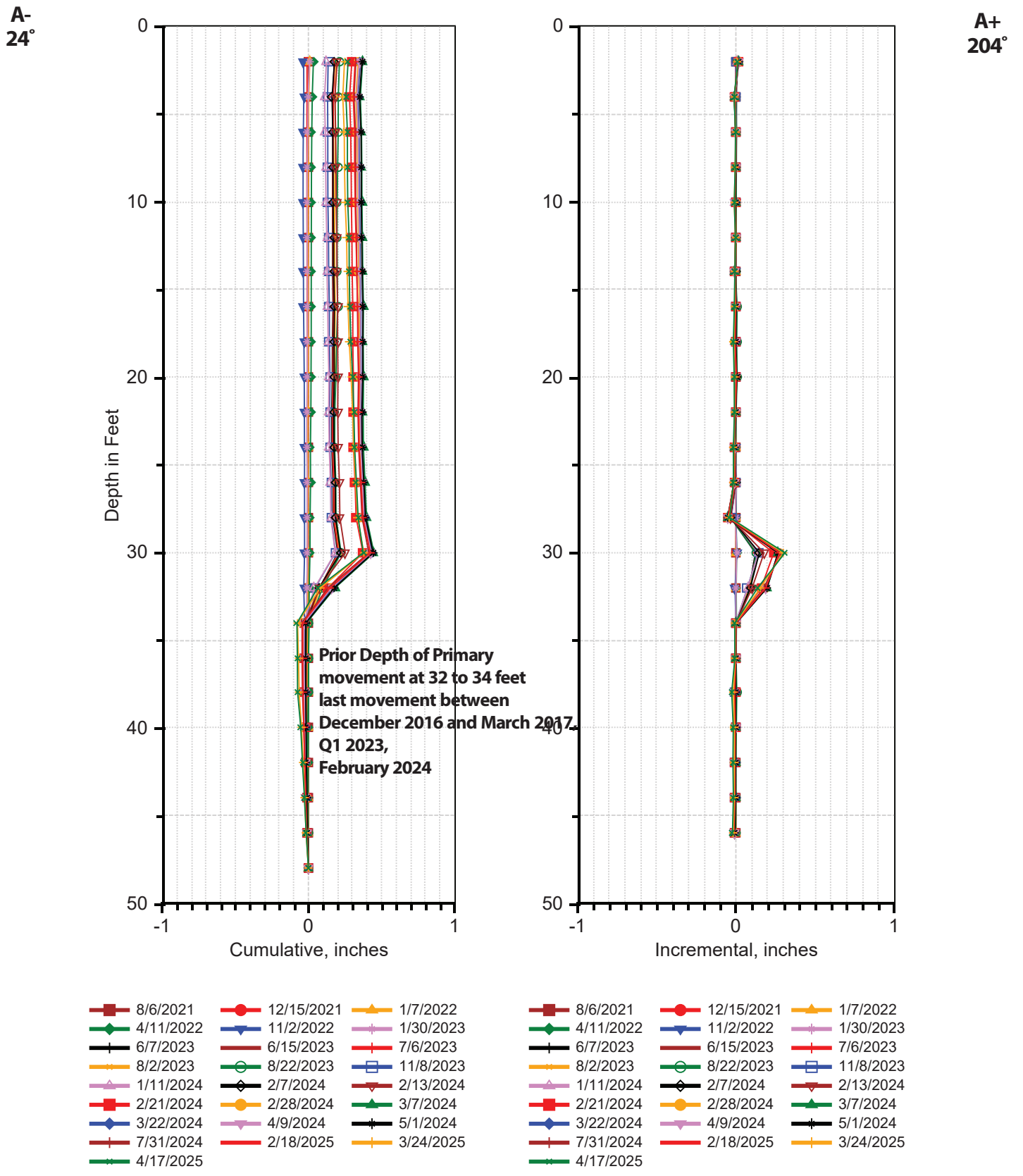
REVISION DATE: 10/14/2025



Plot of Slope Inclinometer SI-2A	Plot Type: Cumulative and Incremental		Plot Direction: B-Direction
	Depth of Survey (ft): 48	Baseline Date: 8/13/2021	Corrections: None
	Install Date: 9/2010 / Installed Depth (ft): 64	Interpreted Movement Since Baseline (in): 0.36	Interpreted Movement Monitoring Year (in): 0

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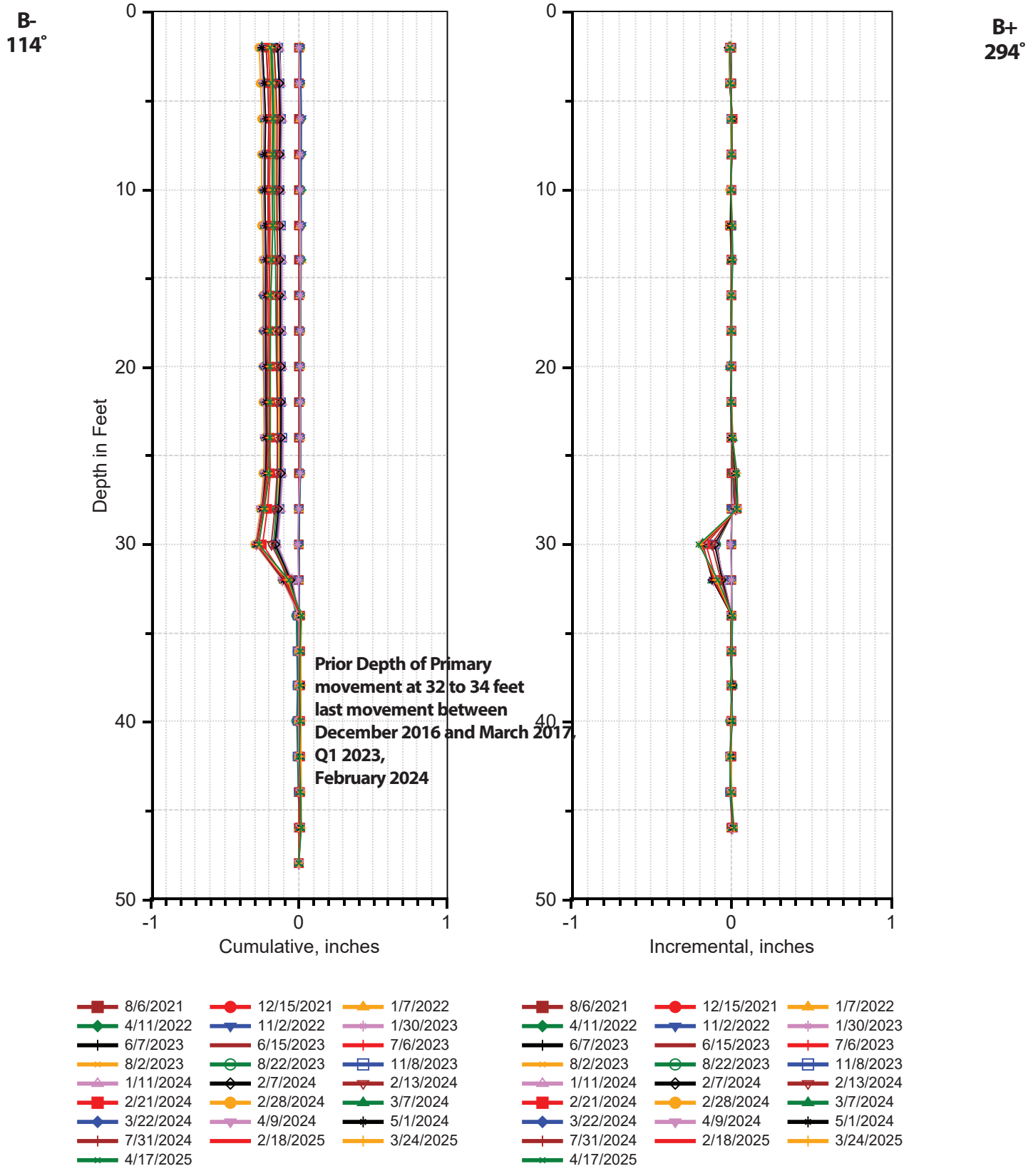
PROJECT: Malibu Road LAD, Malibu, CA
PROJECT NUMBER: 220-278
REVISION DATE: 10/14/2025



Plot of Slope Inclinometer	Plot Type: Cumulative and Incremental		Plot Direction: A-Direction
SI-4A	Depth of Survey (ft): 48	Baseline Date: 8/06/2021	Corrections: None
	Install Date: 8/2012 / Installed Depth (ft): 50	Interpreted Movement Since Baseline (in): 0.28	Interpreted Movement Monitoring Year (in): 0

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PROJECT: Malibu Road LAD, Malibu, CA
PROJECT NUMBER: 220-278
REVISION DATE: 10/14/2025



Plot of Slope Inclinometer

SI-4A

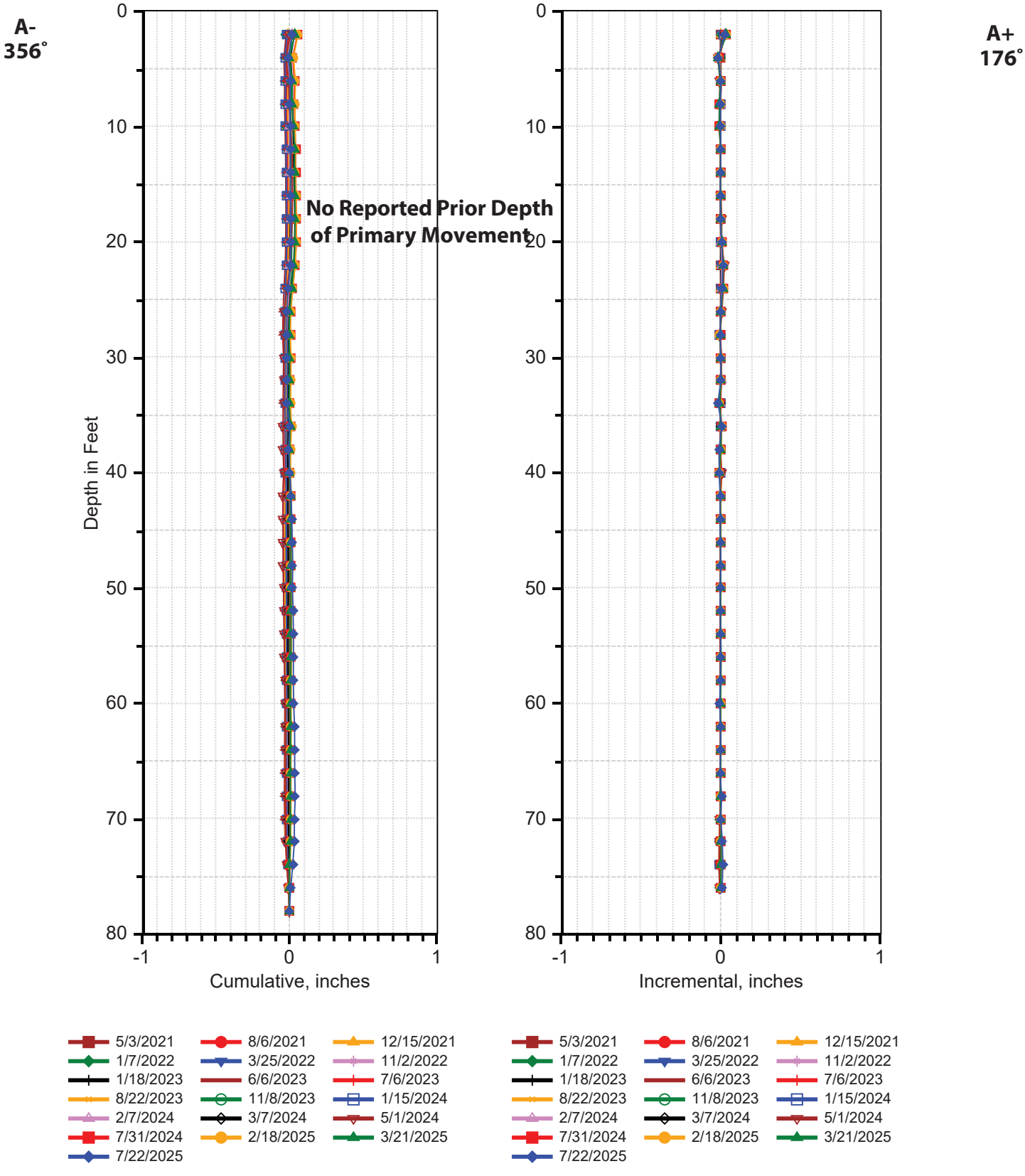
Plot Type: Cumulative and Incremental			Plot Direction: B-Direction
Depth of Survey (ft): 48		Baseline Date: 8/6/2021	Corrections: None
Install Date: 8/2012	Installed Depth (ft): 50	Interpreted Movement Since Baseline (in): 0.28	Interpreted Movement Monitoring Year (in): 0

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PROJECT: Malibu Road LAD
Malibu, CA

PROJECT NUMBER: 220-278

REVISION DATE: 10/14/2025



Plot of Slope Inclinometer

SI-5

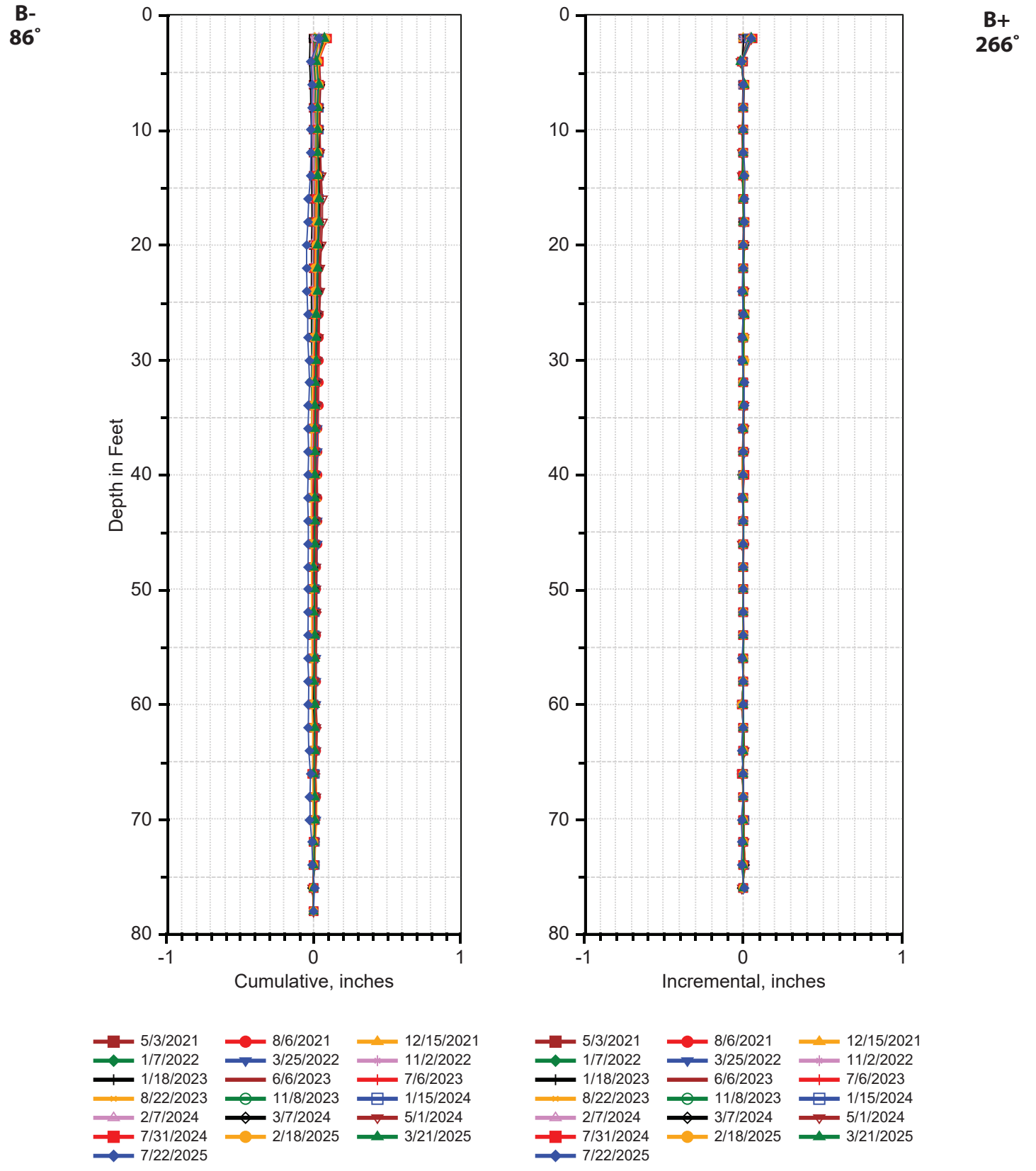
Plot Type: Cumulative and Incremental			Plot Direction: A-Direction
Depth of Survey (ft): 78		Baseline Date: 5/3/2021	Corrections: None
Install Date: 4/1998	Installed Depth (ft): 78	Interpreted Movement Since Baseline (in): 0	Interpreted Movement Monitoring Year (in): 0

Yeh and Associates, Inc.
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PROJECT: Malibu Road LAD
Malibu, CA

PROJECT NUMBER: 220-278

REVISION DATE: 10/14/2025



Plot of Slope Inclinometer

SI-5

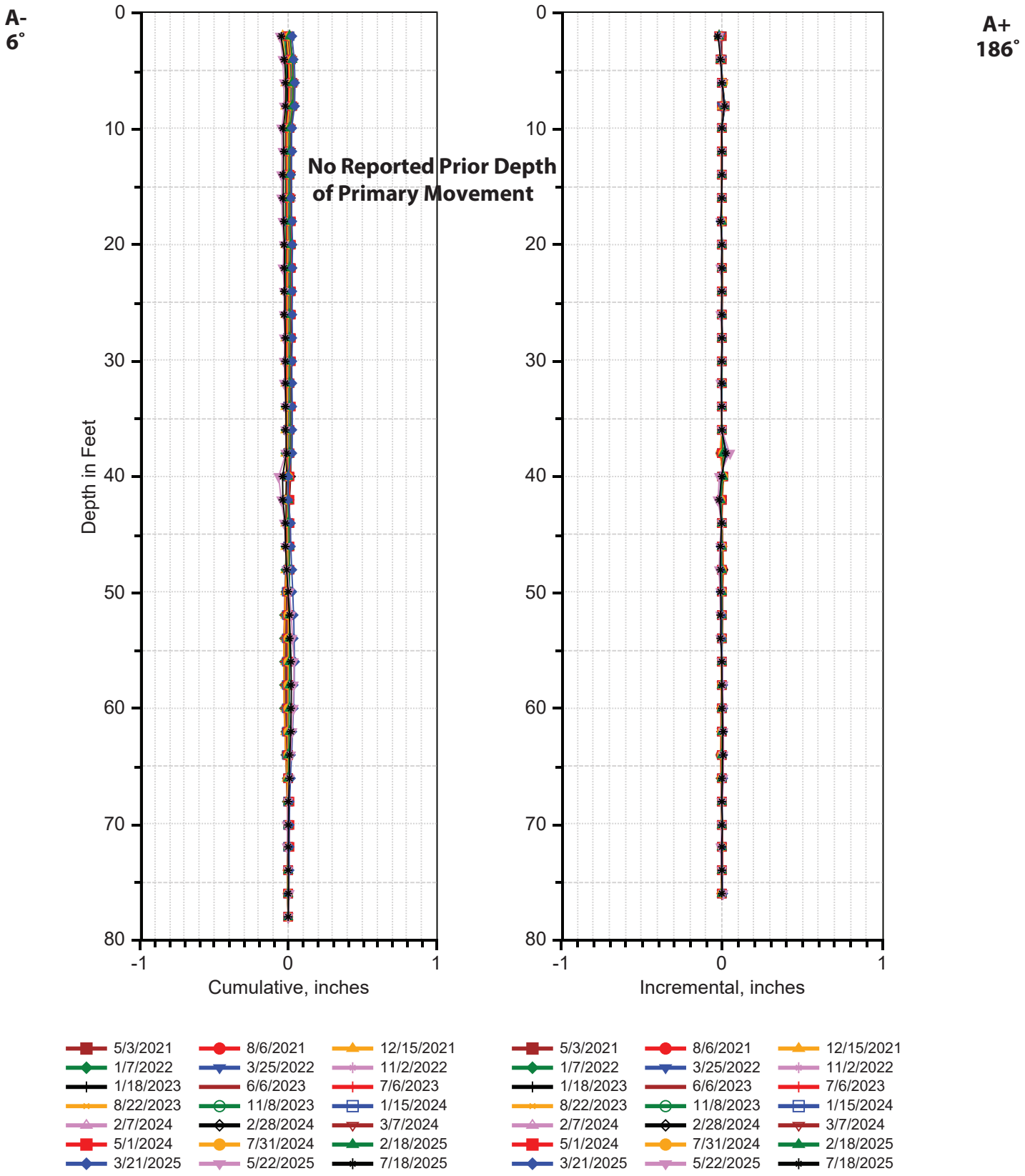
Plot Type: Cumulative and Incremental			Plot Direction: B-Direction
Depth of Survey (ft): 78		Baseline Date: 5/3/2021	Corrections: None
Install Date: 4/1998	Installed Depth (ft): 78	Interpreted Movement Since Baseline (in): 0	Interpreted Movement Monitoring Year (in): 0

Yeh and Associates, Inc.
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PROJECT: Malibu Road LAD
Malibu, CA

PROJECT NUMBER: 220-278

REVISION DATE: 10/14/2025



Plot of Slope Inclinometer

SI-6

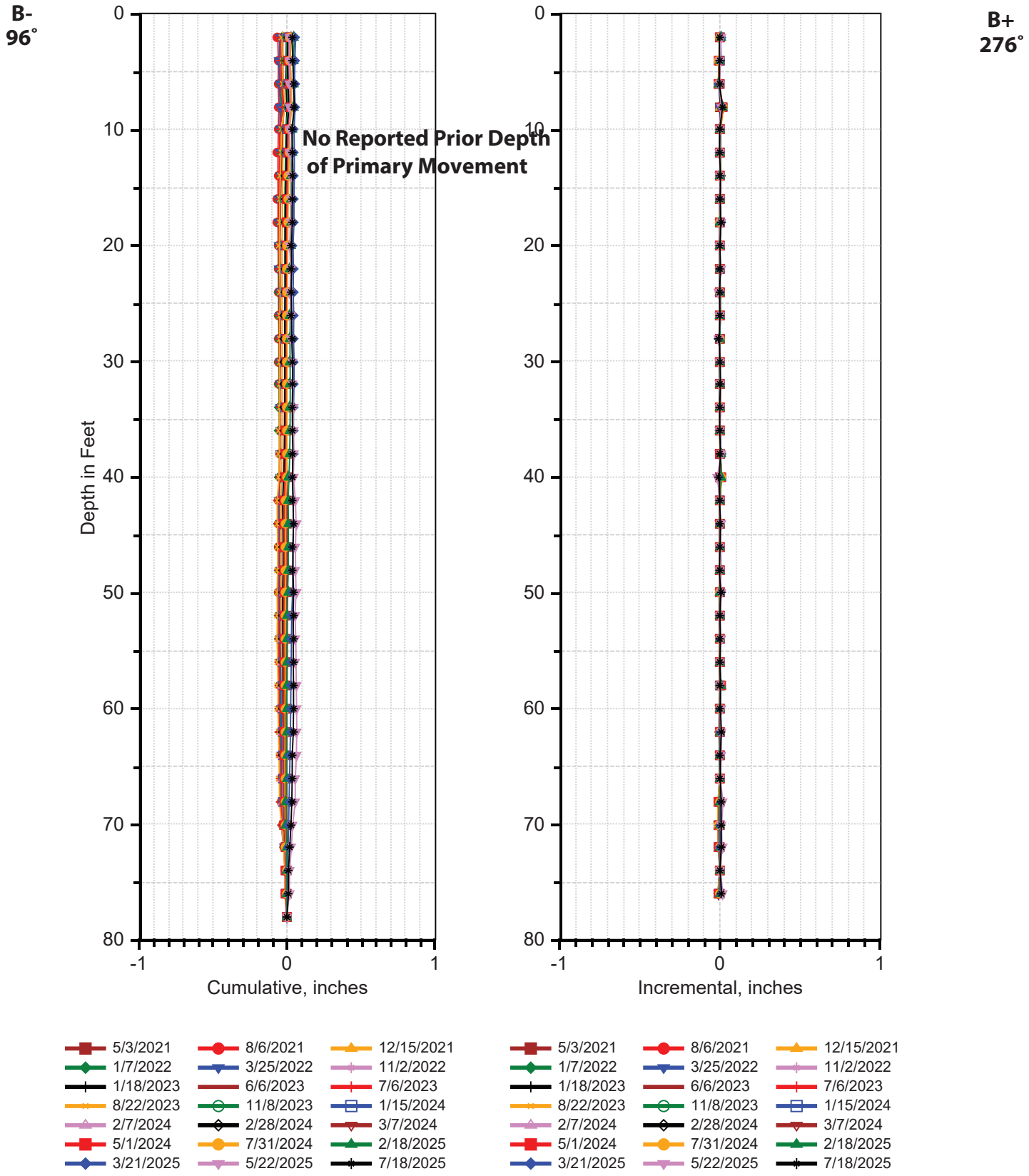
Plot Type: Cumulative and Incremental			Plot Direction: A-Direction
Depth of Survey (ft): 78		Baseline Date: 5/3/2021	Corrections: None
Install Date: 4/1998	Installed Depth (ft): 78	Interpreted Movement Since Baseline (in): 0	Interpreted Movement Monitoring Year (in): 0

Yeh and Associates, Inc.
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PROJECT: Malibu Road LAD
Malibu, CA

PROJECT NUMBER: 220-278

REVISION DATE: 10/14/2025



Plot of Slope Inclinometer

SI-6

Plot Type: Cumulative and Incremental			Plot Direction: B-Direction
Depth of Survey (ft): 78		Baseline Date: 5/3/2021	Corrections: None
Install Date: 4/1998	Installed Depth (ft): 78	Interpreted Movement Since Baseline (in): 0	Interpreted Movement Monitoring Year (in): 0

Yeh and Associates, Inc.
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PROJECT: Malibu Road LAD
Malibu, CA

PROJECT NUMBER: 220-278

REVISION DATE: 10/14/2025

APPENDIX C - DEWATERING

Yeh and Associates, Inc.
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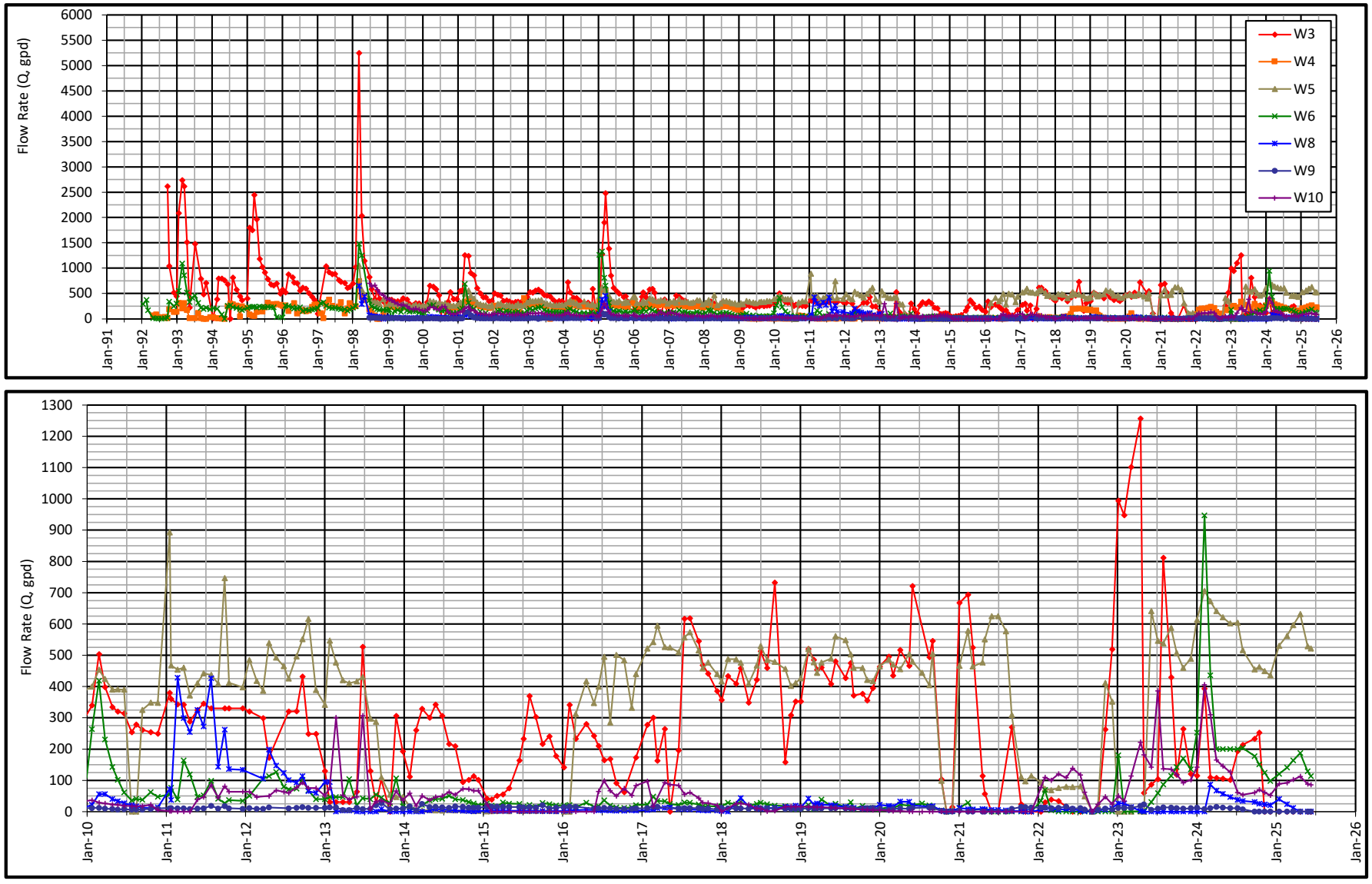
MALIBU ROAD LAD - Dewatering Well Information							
Well ID	Vault Elevation (ft.)	Bottom Elevation (ft.)	Pump Elevation (ft.)	Pump Size (hp)	2024-2025 Mean Pumping Rate (gpd)	% of Total Well Production	Installed By
W-3	19.5	-4.0	Unknown	1/2	74	6%	LA Co.
W-4	20.0	-9.0	-4.0	1/2	207	17%	LA Co.
W-5	19.0	-9.5	Unknown	1/2	525	42%	LA Co.
W-6	20.0	-4.5	0.0	1/2	151	12%	LA Co.
W-8	27.5	11.0	Unknown	1/2	21	2%	LA Co.
W-9	20.0	-40.0	-35.0	1/3	2	0%	LA Co.
W-10	19.0	-26.0	-21.0	1/3	78	6%	LA Co.
W-11	61.0	1.0	13.0	1/3	13	1%	BYA
W-12	58.0	-2.0	8.0	1/3	83	7%	BYA
W-13	20.0	-28.0	N/A	N/A	0	0%	Fugro
W-14	60.0	-20.0	Unknown	1/3	90	7%	Fugro
NW-1	Unknown	Unknown	Unknown	Unknown	0	0%	Homeowner
NW-2	Unknown	Unknown	Unknown	Unknown	0	0%	Homeowner
NW-3	Unknown	Unknown	Unknown	Unknown	0	0%	Homeowner

MALIBU ROAD LAD- Hydrauger Information						
Hydrauger ID	Installed Length (ft.)	Bearing	Functional Length* (ft)	2024-2025 Mean Flow Rate (gpd)	% of Total Production	Installed By
HD-1**	Unknown	N05E	74	0	0%	LA County
HD-2**	Unknown	N21E	34	0	0%	LA County
HD-3**	Unknown	N06E	13	0	0%	LA County
HD-4	Unknown	N29E	53	0	0%	LA County
HD-5A	Unknown	N13E	41	30	12%	LA County
HD-6	Unknown	N08W	55	0	0%	LA County
HD-7	Unknown	N26E	87	0	0%	LA County
HD-8	Unknown	N19E	92	0	0%	LA County
HD-8A	Unknown	Unknown	Unknown	192	78%	Unknown
HD-9	Unknown	N34E	76	0	0%	LA County
HD-10	Unknown	N19E	55	0	0%	LA County
HD-11	Unknown	N11E	78	0	0%	LA County
HD-12	Unknown	N08E	70	0	0%	LA County
HD-13	Unknown	N09E	79	0	0%	LA County
HD-14	Unknown	N08E	80	0	0%	LA County
HD-15	Unknown	N14E	82	0	0%	LA County
HD-16	Unknown	N15E	69	0	0%	LA County
HD-17**	150	N15E	150	0	0%	BYA
HD-18	150	N18E	150	0	0%	BYA
HD-19	150	N10E	150	4	2%	BYA
HD-20	150	N09W	150	0	0%	BYA
HD-21	150	N22E	150	13	5%	BYA
HD-22	180	N13E	180	0	0%	Fugro West
HD-23	160	N01E	160	6	2%	Fugro West

*Note: * Measured on 4/1/98 (except HD-22 and HD-23 installed 1/22/05)*
*** buried/unable to locate*

DEWATERING WELL / HYDRAUGER INFORMATION
Malibu Road Landslide Assessment District
Malibu, California

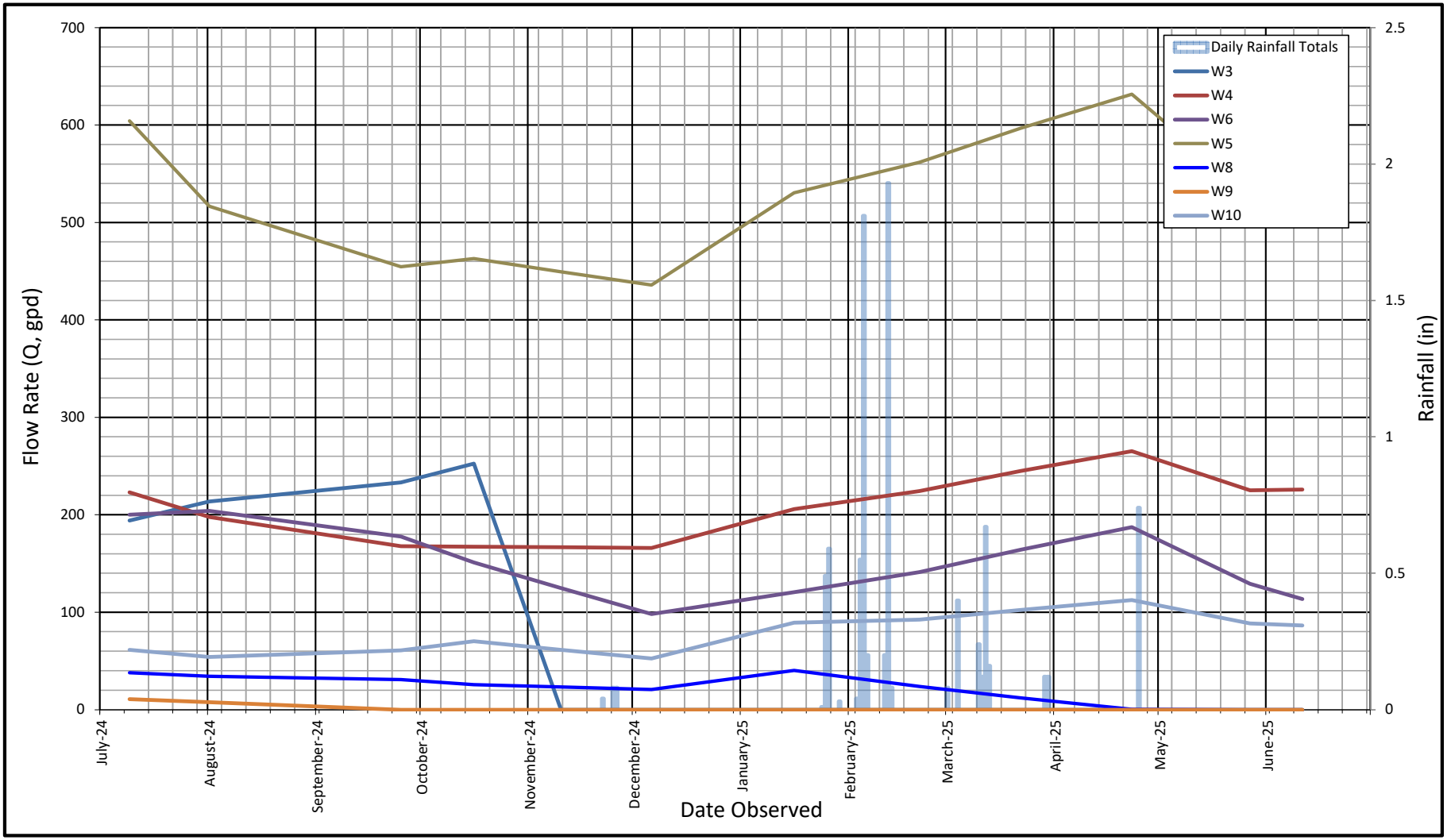
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DEWATERING WELL DISCHARGE RATE GRAPH (HISTORIC)
Malibu Road
Malibu Road Landslide Assessment District
Malibu, California

PLATE C-2

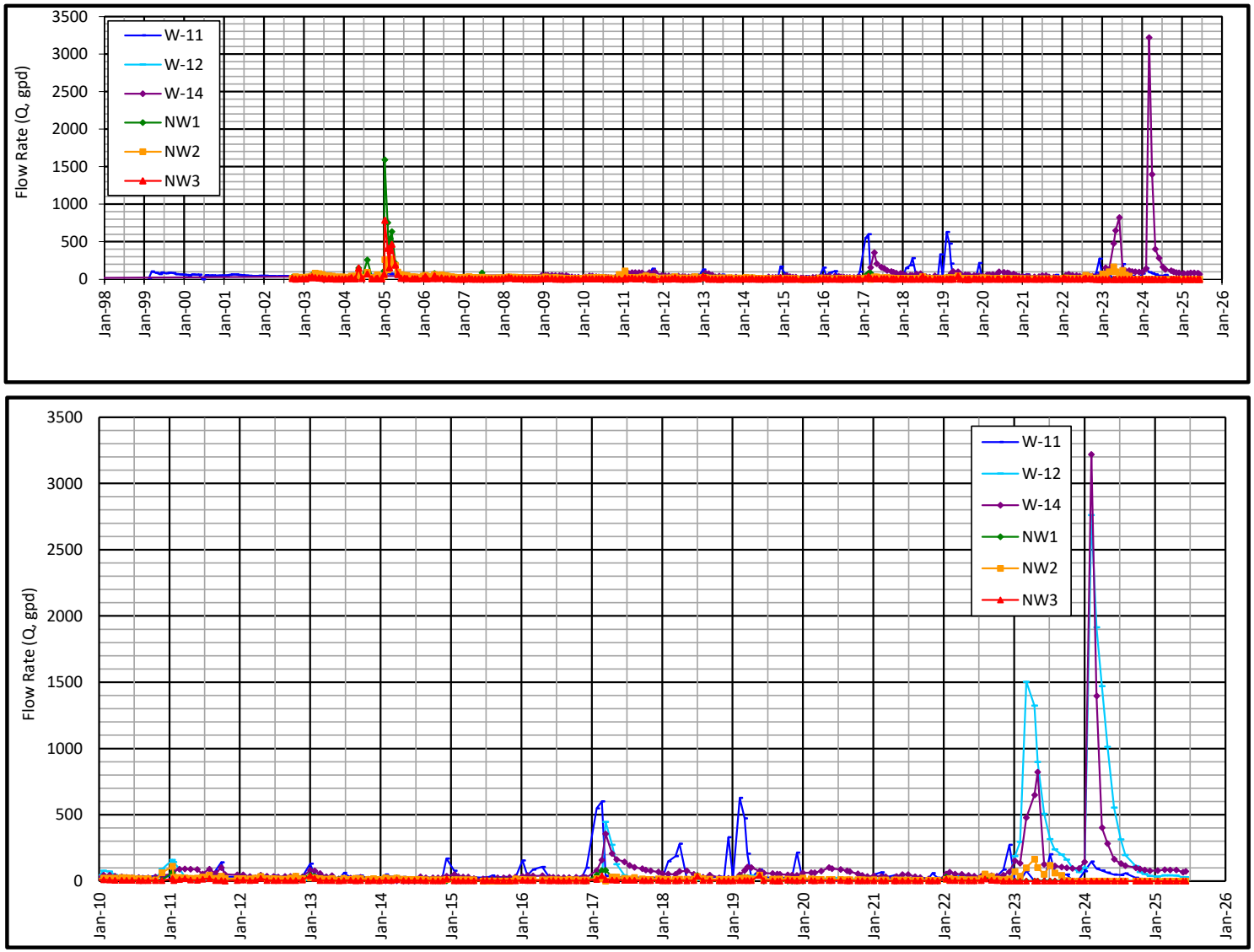
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DEWATERING WELL DISCHARGE RATE GRAPH (MONITORING YEAR)
Malibu Road
Malibu Road Landslide Assessment District
Malibu, California

PLATE C-2a

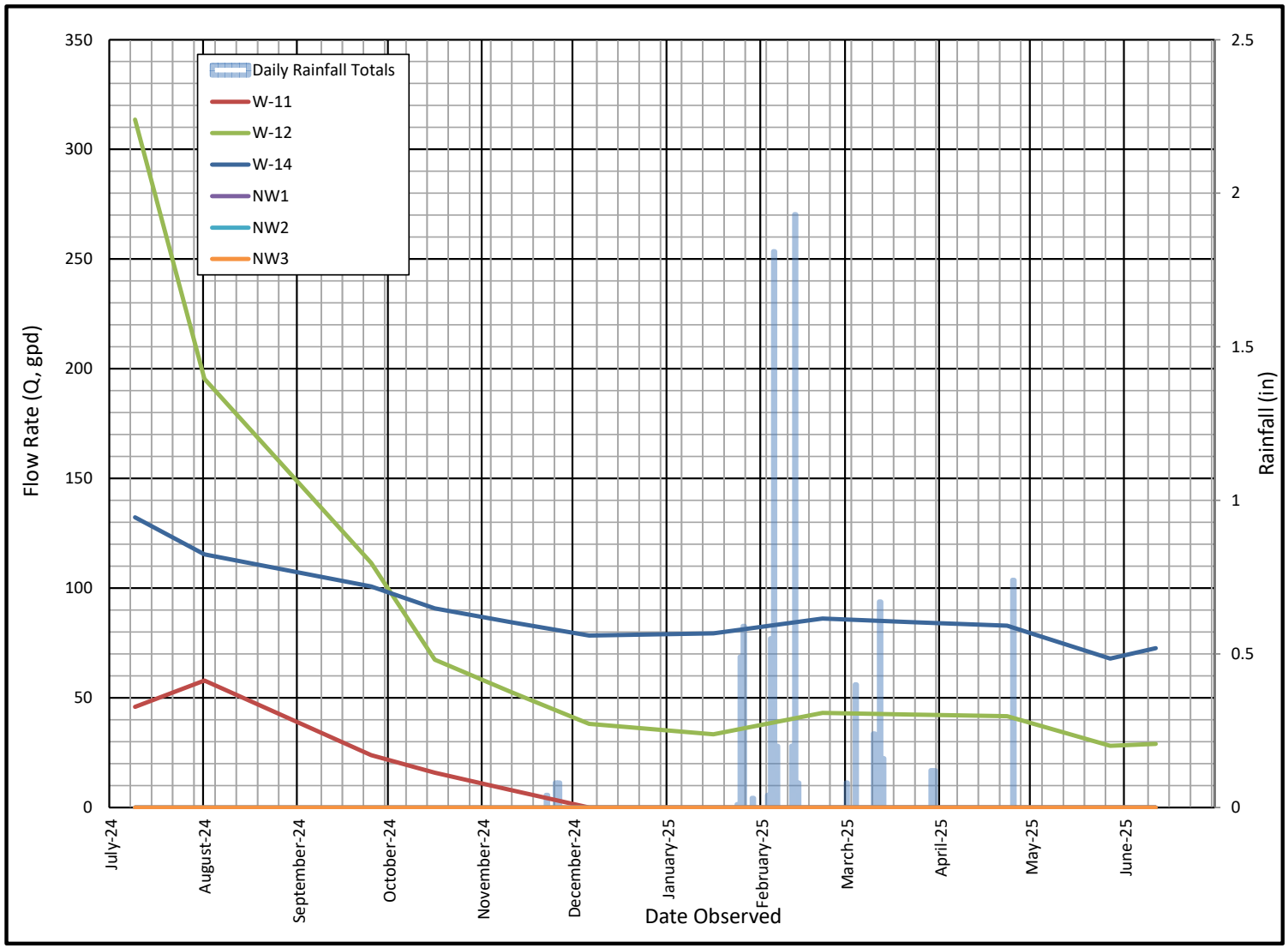
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DEWATERING WELL DISCHARGE RATE GRAPH (HISTORIC)
Bayshore Drive
Malibu Road Landslide Assessment District
Malibu, California

PLATE C-3

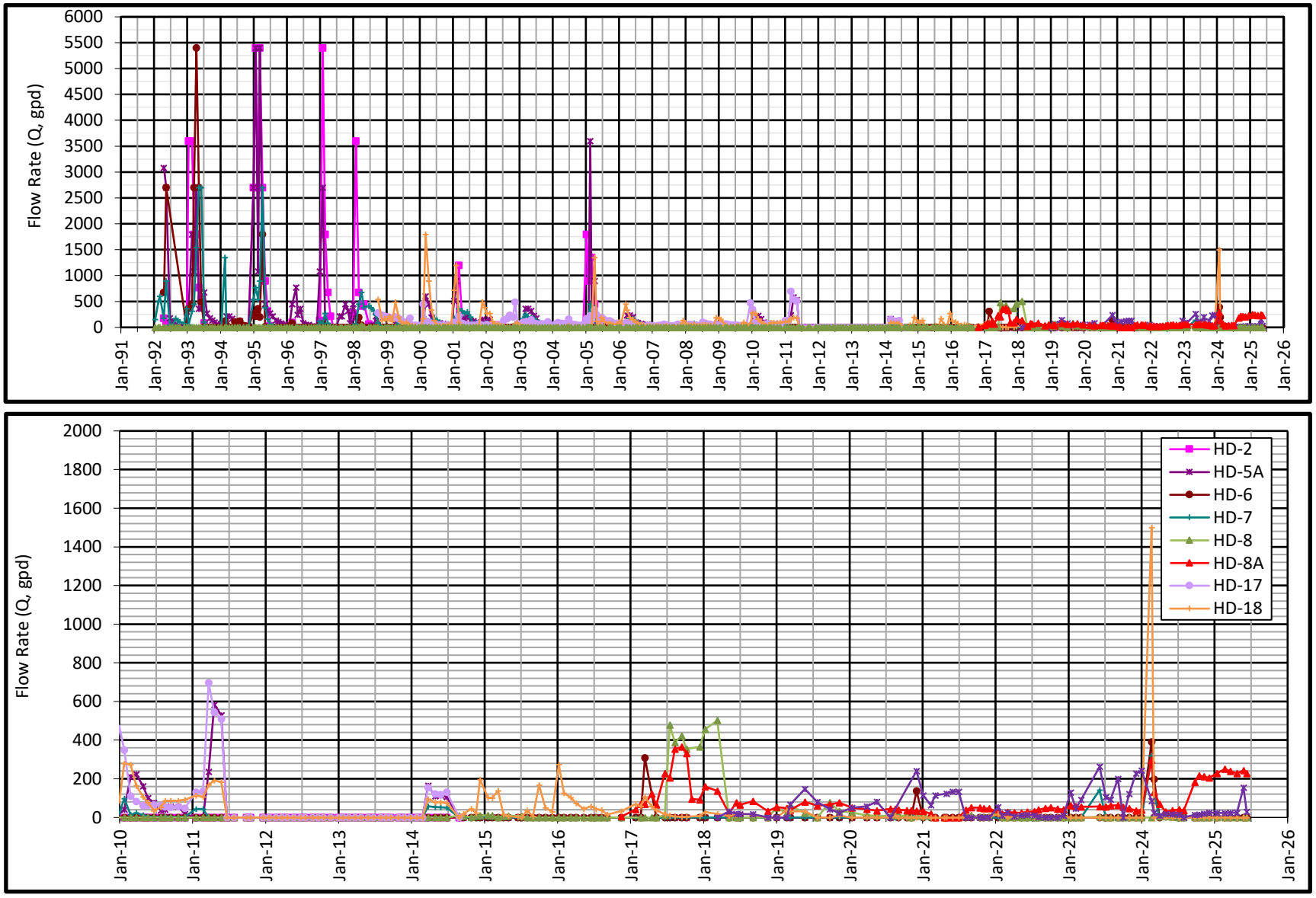
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DEWATERING WELL DISCHARGE RATE GRAPH (MONITORING YEAR)
Bayshore Drive
Malibu Road Landslide Assessment District
Malibu, California

PLATE C-3a

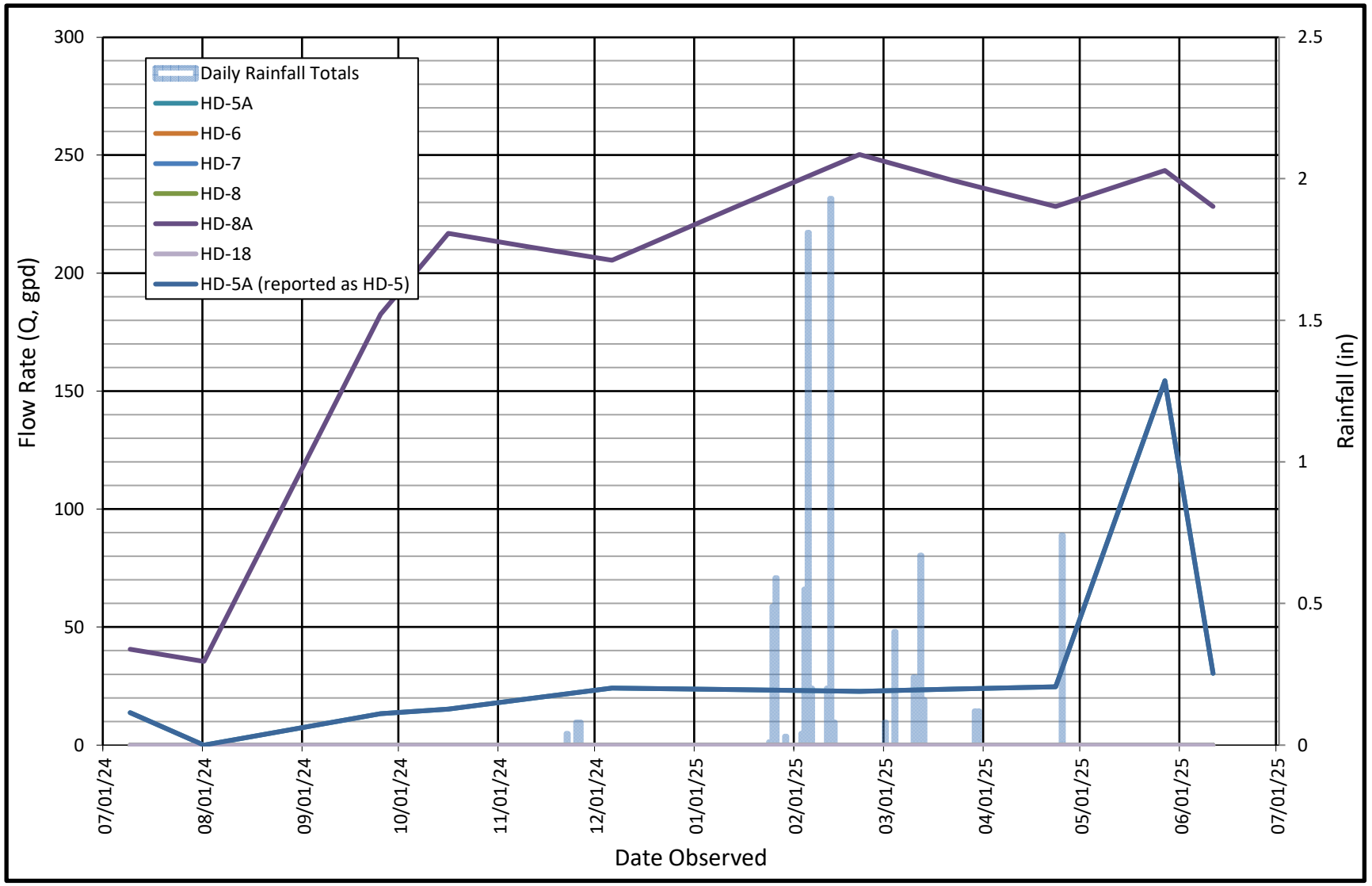
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HYDRAUGER DISCHARGE RATE GRAPH (HISTORIC)
Malibu Road (West End)
Malibu Road Landslide Assessment District
Malibu, California

PLATE C-4

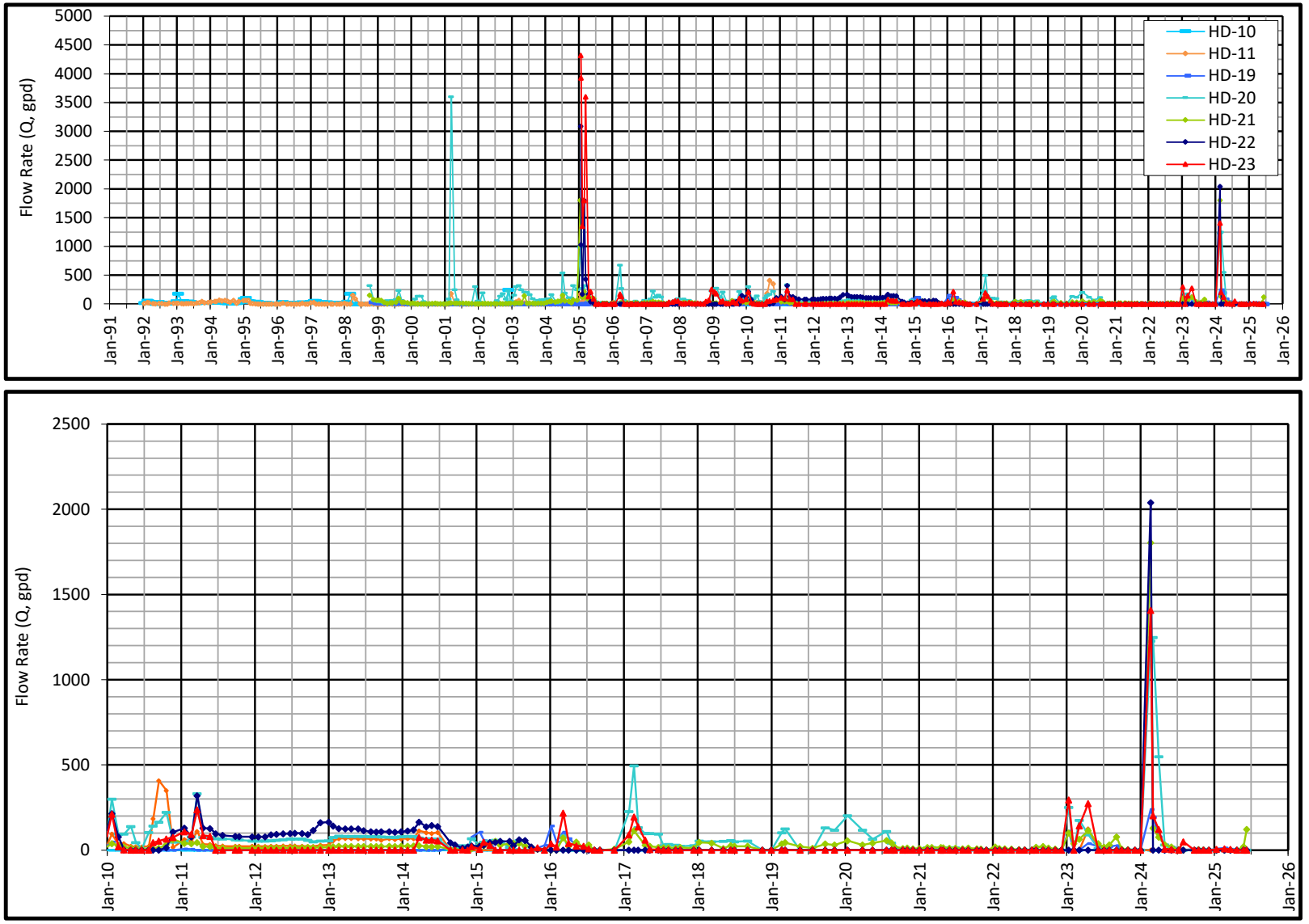
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HYDRAUGER DISCHARGE RATE GRAPH (MONITORING YEAR)
Malibu Road (West End)
Malibu Road Landslide Assessment District
Malibu, California

PLATE C-4a

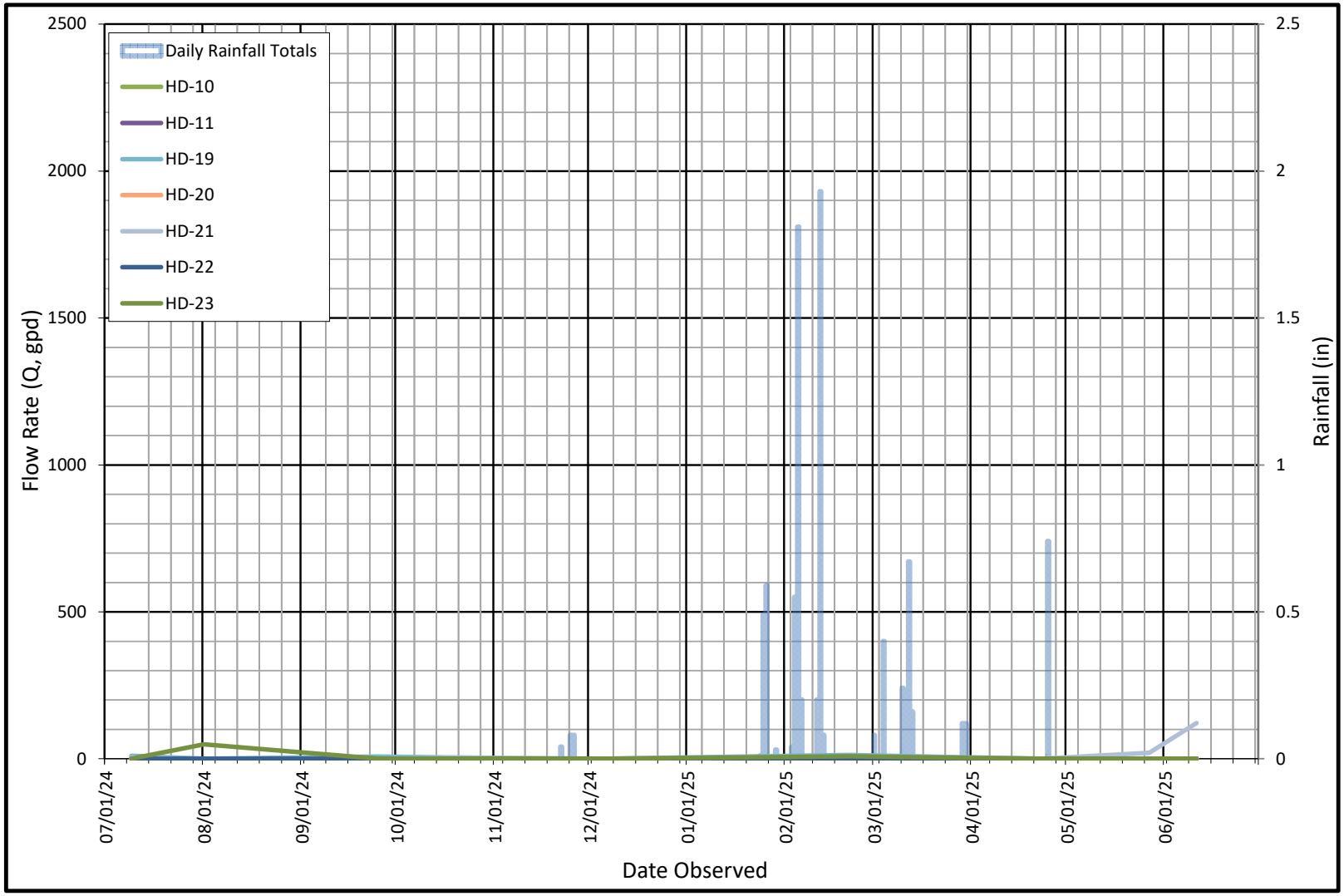
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HYDRAUGER DISCHARGE RATE GRAPH (HISTORIC)
Malibu Road (East End)
Malibu Road Landslide Assessment District
Malibu, California

PLATE C-5

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HYDRAUGER DISCHARGE RATE GRAPH (HISTORIC)
Malibu Road (East End)
Malibu Road Landslide Assessment District
Malibu, California

PLATE C-5a