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2023-06-23

Willow Rock Monthly Geotechnical Update – April 2023

Status

The table below overviews the status of the various activities that have been initiated during the geotechnical program at the Willow Rock project site as of 2023/04/30. No drilling activities at the Willow Rock project site were completed in April 2023.

Activity	Status	Notes
Shallow Borehole Program	Complete	Shallow borehole program was completed June - August 2022 with 8 shallow borehole and CPT testing.
Seismic Testing Round 1	Complete	Seismic testing was completed in Q1 to provide early insight on bedrock depth and stratigraphy before selecting borehole locations.
Deep Borehole #1	Complete	Drilling, downhole testing, and lab analysis has been completed on borehole #1.
Deep Borehole #2	Complete	Deep borehole #2 has completed drilling, geophysical logging, and pump & packer testing. In-situ stress testing (sigra) was attempted but no successful tests were completed.
Deep Borehole #3	Complete	Deep borehole #3 has finished drilling to a total depth of 2313' BGL and has completing downhole testing. In-situ stress testing was completed, and 2 successful tests were gathered. Geophysical logging and downhole water samples were gathered. Pump & packer testing was completed in December before the hole was closed.

Monthly Update

The data from the Willow Rock project site geotechnical testing that has been generated from the lab testing completed by Agapito Associates Inc. (AAI) was transmitted to Hydrostor from Lane Power & Energy Solutions, Inc..

The lab testing indicates that the geotechnical conditions at the Willow Rock project site are non-optimal for a cavern at the target depth of 1,800-2,000 feet. The ranges of rock quality and durability for a cavern at this depth would potentially require additional engineering solutions. Initial evaluation of the lab testing indicates that the site may be more optimal for the construction of a shallower cavern. Hydrostor is currently assessing the next steps for the geotechnical testing and is evaluating whether another borehole should be drilled on this site.

New Data Transmittals

This month, Lane submitted a summary report with all of rock mechanics testing results generated from the lab testing program for the Willow Rock project site. The analysis covers the full suite of tests performed by Agapito Associates, including uniaxial compressive strength, splitting tensile strength, point load strength and slake durability.

June 8, 2023 951-16

Mr. Stephen Cormier
Vice President - Construction
Lane Power & Energy Solutions
16000 Park Ten Place, #703
Houston, TX 77084

Re: **Geotechnical Characterization Summary of the Willow Rock Site**

Dear Mr. Cormier:

This letter report provides a summary of the geotechnical characterization of the ground conditions at the Willow Rock site, near Willow Springs, California (Figure 1). The exploration program involved the drilling of three boreholes and collecting and testing rock core from the targeted quartz monzonite formation. The location of the boreholes is shown in Figure 2.

Figure 1. Willow Springs General Location Map

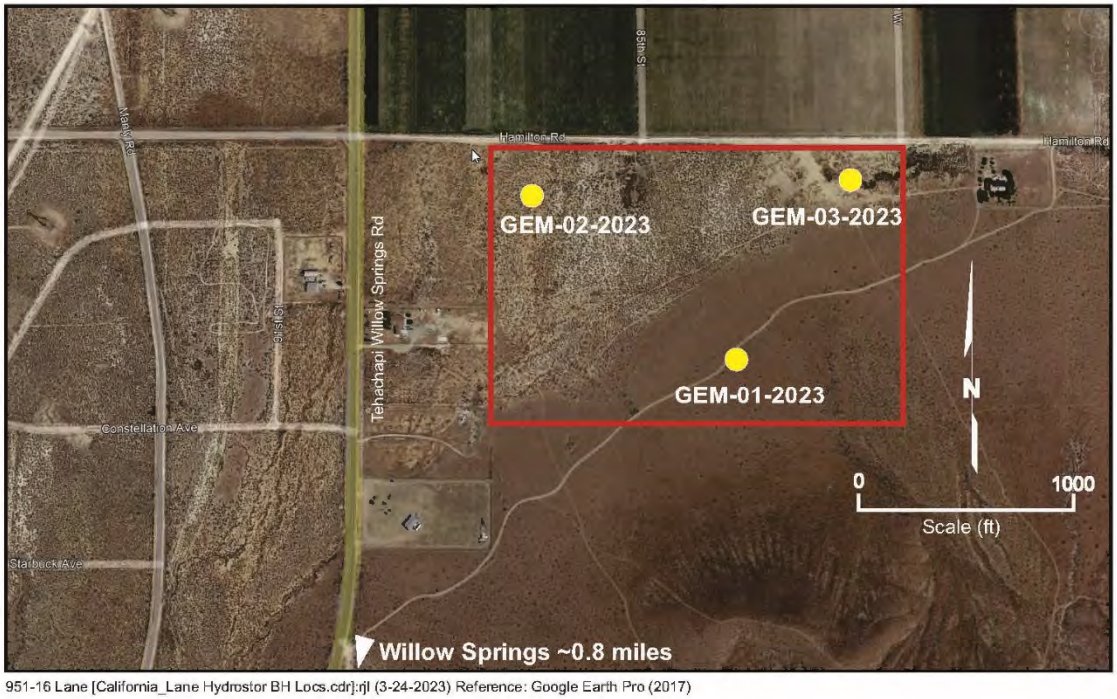

Figure 2. Location of the Boreholes at the Willow Rock Site

LOCAL GEOLOGY

The three exploration boreholes are located at the base of Willow Springs Mountain. The geologic map and sections of the Willow Springs and Rosamond quadrangles, California (see Figure 3) indicate the following rock types are exposed at the site.

Fiss Fanglomerate

The Fiss Fanglomerate is Miocene Age and forms the upper unit of the Tropico group. It is comprised of coarse, crudely stratified, poorly sorted material characteristic of coarse alluvial fans deposited at the base of rugged mountains.[1] Fragments in the unit are generally between 6 and 15 inches in diameter and are generally comprised of felsite and porphyry. The fragments are embedded in a poorly sorted fragmental to sandy matrix.

Gem Hill Formation

The Gem Hill formation is a light colored sequence of lithic tuff, tuff breccia, tuffaceous sandstone, conglomerate and associated volcanic rocks that form the lower part of the Tropico group, which is Miocene age.[1] The formation is of volcanic origin and represents a period of great volcanic

[1] Dibblee, T.W. (1963), "Geology of the Willow Springs and Rosamond Quadrangles, California," U.S. Geological Survey, Bulletin 1089-C, scale 1:62,500.

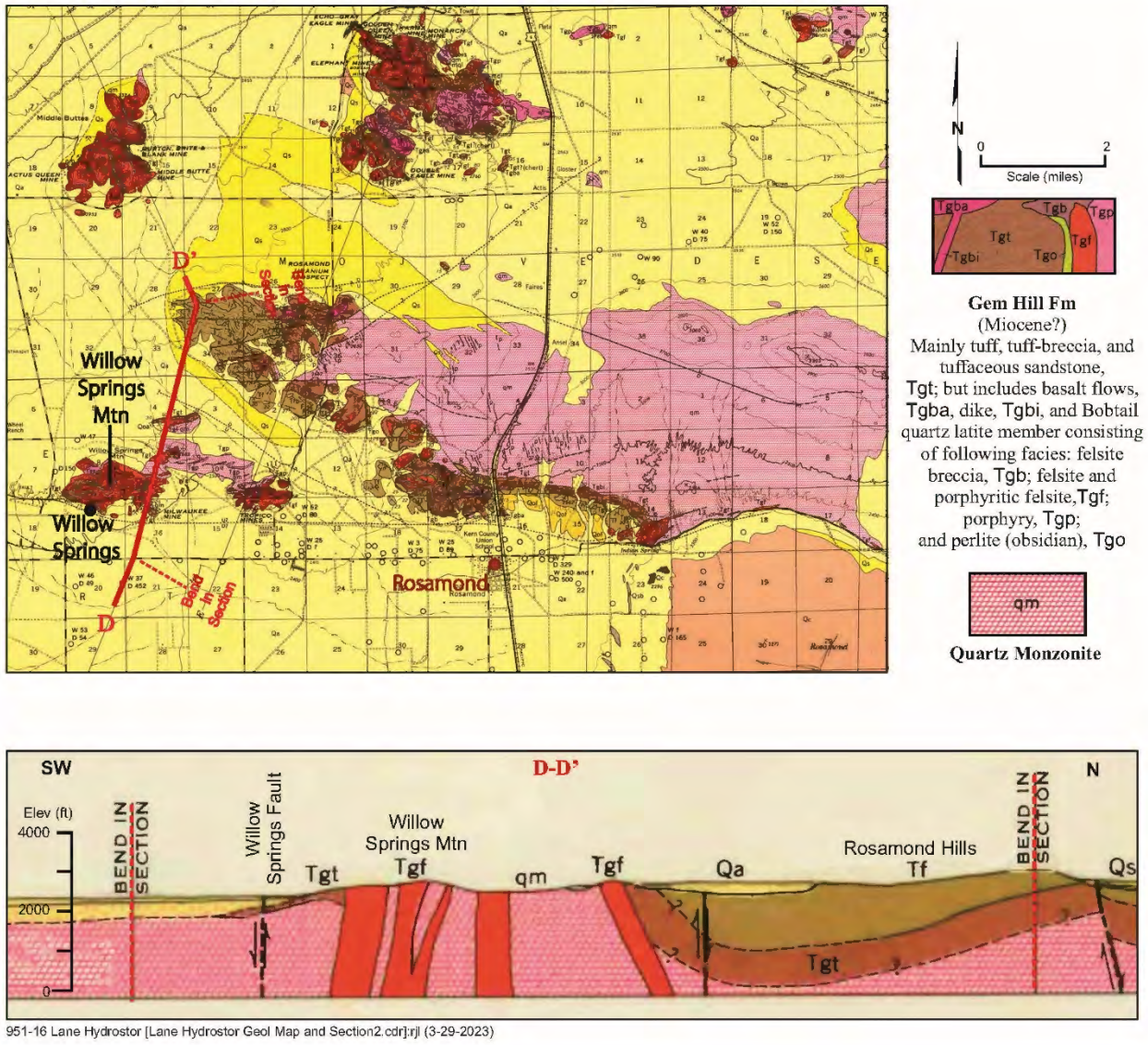

Figure 3. Geological Map and Section of the Willow Springs and Rosamond Quadrangles, California (United States Department of the Interior Geological Survey)

activity in the western Mojave Desert. Around Willow Springs Mountain, the formation is divided into the following units:

- Tgt—mainly tuff, tuff-breccia and tuffaceous sandstone
- Tgf—felsite and porphyritic felsite
- Tgp—porphyry

Exposures of the formation on Willow Springs Mountain indicates that most of the tuff is altered, or partly altered, either to a hard siliceous rock or to a soft clayey bentonitic material, probably by hydrothermal solutions accompanying or following the intrusions.[1]

Quartz Monzonite

The intrusive, Jurassic Age quartz monzonite is a medium to coarse grained holocrystalline granitic rock that is gray-white when fresh but commonly buff white on weathering.[1] It is composed of more or less equal parts of quartz, potassium feldspar, and plagioclase, and also a small percentage of biotite and locally a little hornblende.

BOREHOLE LITHOLOGY

A summary of the borehole lithology encountered in the three exploration boreholes is provided in Table 1. The top of the quartz monzonite was encountered between the depths of 1,485 ft and 1,721 ft in the boreholes.

Table 1. Summery Geological Formations in the Exploration Boreholes

Unit	GEM-01-2022 Depth (ft)		GEM-02-2022 Depth (ft)		GEM-03-2022 Depth (ft)	
	From	To	From	To	From	To
Alluvium	0	306	0	611	0	479
Fiss Fanglomerate	306	339	611	656	479	649
Gem Hill Formation	339	1,539	656	1,721	649	1,485
Quartz Monzonite	1,539	2,378.5	1,721	2,380	1,485	2,313

ALTERATION

Most of the quartz monzonite logged in the boreholes has been altered, probably by hydrothermal solutions accompanying or following the nearby intrusions. The degree of alteration ranges between slightly altered to completely altered. The effect on the rock mass ranges from slight alteration around discontinuities, which has had little impact on rock strength, to complete disintegration of the rock mass to soil like properties. The alteration is more pronounced in Borehole GEM-CH-01-2022, which is expected due to its close proximity to the Willow Springs Mountain intrusion.

ROCK MASS QUALITY

The rock mass quality of the core from the exploration boreholes was classified using the Rock Quality Designation (RQD).[2] RQD signifies the degree of jointing and fracturing in a rock mass. Most of the RQDs in the quartz monzonite range between 20 and 70, which suggests very poor to fair rock quality (see Figures 4 to 6).

[2] Deere, D. U. (1989), "Rock Quality Designation (RQD) after 20 years," U.S. Army Corp of Engineers Contract Report GL-89-1,Vicksburg, MS: Waterways Experimental Station.

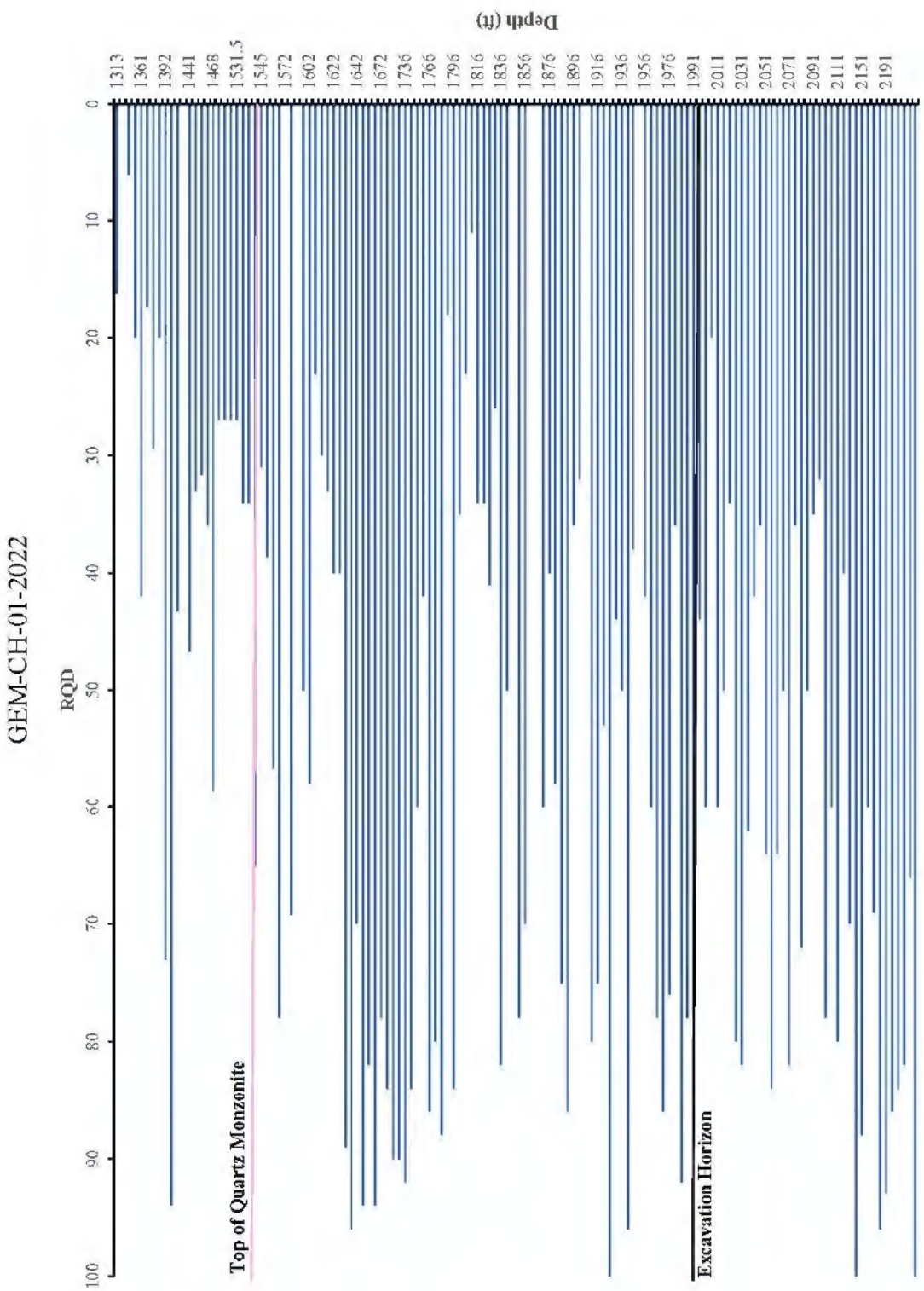

Figure 4. RQDs Logged in Borehole GEM-01-22

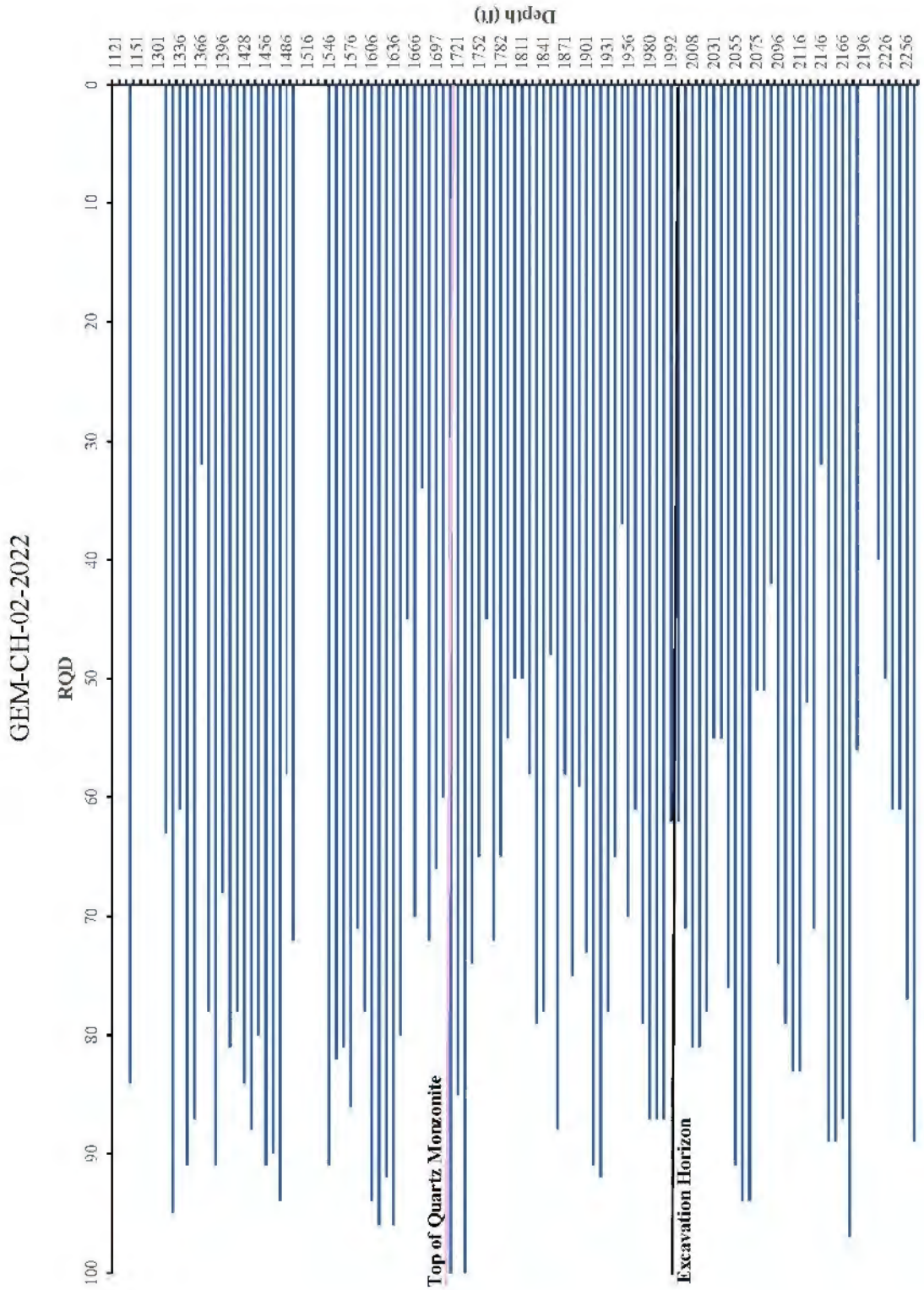

Figure 5. RQDs Logged in Borehole GEM-02-22

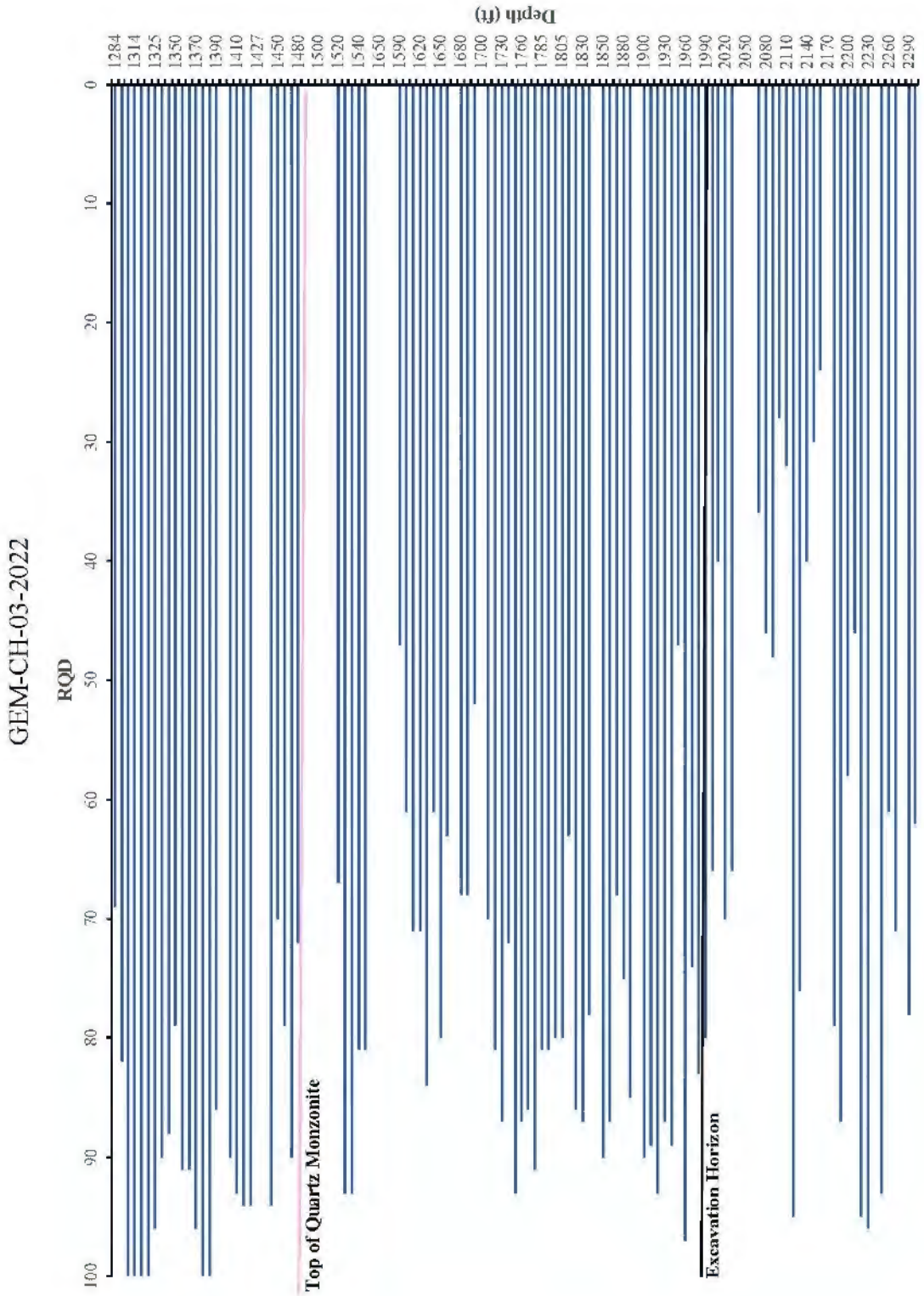

Figure 6. RQDs Logged in Borehole GEM-03-22

PHYSICAL PROPERTIES

The detailed lab test results for each borehole are provided in Appendix A. The Unconfined Compressive Strength (UCS) of the quartz monzonite was highly variable, ranging from 107 pounds per square inch (psi) to 17,625 psi in boreholes GEM-01-2022, GEM-02-2022 and GEM-03-2022. In the boreholes, the combined average UCS was around 4,500 psi. In terms of the ISRM classification, the rock ranges between soft and very hard, with an average of moderately hard.[3] The highly variable strength is attituded to the various degrees of alteration in the rock mass. Table 2 provides a summary of the USC laboratory test data. Core from the quartz monzonite in Borehole GEM-03-2022 was only tested near the top of the unit.

Table 2. Summary of UCS Lab Testing Results

Borehole	Unit Weight (pcf)			UCS (psi)		
	Minimum	Maximum	Average	Minimum	Maximum	Average
GEM-01-2022	139	166	157	107	12,358	4,642
GEM-02-2022	111	160	149	363	17,625	4,984
GEM-03-2022	153	165	158	1,149	6,667	3,679

pcf = pounds per cubic foot; psi = pounds per square inch

Table 3 summarizes the lab testing results for axial point load index tests in the quartz monzonite in boreholes GEM-01-2022 and GEM-03-2022. Core from the quartz monzonite in Borehole GEM-03-2022 was only tested near the top of the unit.

Table 3. Summary of Axial Point Load Index Lab Testing Results

Borehole	Point Load Index, $I_{S(50)}$ (psi)			$I_{S(50)}$ Correlation to UCS (psi)		
	Minimum	Maximum	Average	Minimum	Maximum	Average
GEM-01-2022	39.9	430.0	176.4	838	9,030	3,654
GEM-03-2022	56.7	83.9	70.6	1,191	1,762	1,483

Table 4 summarizes the lab testing results for elastic properties in the quartz monzonite in boreholes GEM-01-2022 and GEM-02-2022.

Table 4. Summary of Elastic Properties Lab Testing Results

Borehole	Young's Modulus ($x10^6$ psi)			Poisson's Ratio		
	Minimum	Maximum	Average	Minimum	Maximum	Average
GEM-01-2022	0.10	5.95	1.16	0.07	0.38	0.20
GEM-02-2022	0.07	6.90	1.70	0.05	0.33	0.20

[3] ISRM (1981), *Rock Characterization Testing and Monitoring*, Brown, E., Ed., Pergamon Press, Oxford, 211 p.

Table 5 summarizes the lab testing results for tensile strength in the quartz monzonite in boreholes GEM-01-2022 and GEM-03-2022.

Table 5. Summary of Brazilian Lab Testing Results

Borehole	Tensile Strength (psi)		
	Minimum	Maximum	Average
GEM-01-2022	46	602	277
GEM-03-2022	66	236	150

Table 6 summarizes the lab testing results for two-cycle slake durability index in the quartz monzonite in boreholes GEM-01-2022 and GEM-03-2022. The durability of the rock can be classed as very low to very high.[4] The variation in durability is attituded to the various degrees of alteration in the rock mass.

Table 6. Summary of Slake Durability Lab Testing Results

Borehole	Two Slake Durability Index			Durability Classification[3]		
	Minimum	Maximum	Average	Minimum	Maximum	Average
GEM-01-2022	37.5	96.1	70.5	Low	High	Medium
GEM-03-2022	11.9	95.1	55.5	Very Low	High	Low

ROCK MASS DEFECTS

The discontinuities in the quartz monzonite have been obtained from Acoustic Televiewer (ATV) surveys of boreholes GEM-01-2022, GEM-02-2022, and GEM-03-2022. The recorded defects for each borehole are shown on pole plots in Figures 7 to 9 and summarized in Table 7. The primary set strikes between 350° and 355° and dips to the east at a 56° to 6° angle. The secondary set strikes between 303° and 325° and dips to the northeast at a 54° to 68° angle. Two tertiary sets were recorded, the first striking 050° and dipping to the southeast at a 50° angle, and the second striking between 220° and 228° and dipping to the northwest at a 44° to 51° angle.

Table 7. Summary of Rock Mass Defects from ATV Surveys

Defects	GEM-01-2023		GEM-02-2023		GEM-03-2023	
	Dip (°)	Dip Direction	Dip (°)	Dip Direction	Dip (°)	Dip Direction
Primary set	56	East	60	East	59	East
Secondary set	54	Northeast	58	Northeast	68	Northeast
Tertiary set	50	Southeast	44	Northwest	51	Northwest

[4] Gamble, J. C. (1971), "Durability-Plasticity Classification of Shales and Other Argillaceous Rocks," Ph.D. Thesis, University of Illinois at Urbana-Champaign.

GENERAL COMMENTS

From a geotechnical perspective, the alteration zones within the quartz monzonite would result in difficult cavern construction conditions around the target depth of 2,000 ft. The soft and moderately soft zones would require high levels of ground support to maintain cavern stability. In addition, large pillars would be required to accommodate the overburden loads in the variable strength rock. This would, in turn, require a larger cavern footprint to achieve the volumetric requirements of the facility.

From a long-term serviceability perspective, the very low to low durability rock would degrade over time from the wetting and drying conditions that would be experienced in the cavern. This would impact pillar and cavern stability. As such, it is recommended that if cavern construction is pursued at this site, a shallower horizon where rock durability is higher should be targeted.

Best regards,

Ry Stone

Ry Stone, CPEng.
Senior Associate
ry.stone@agapito.com

RS:kw/klg
Attachment: Appendix A Lab Results
Transmitted in PDF format via email to spcormier@lanepes.com

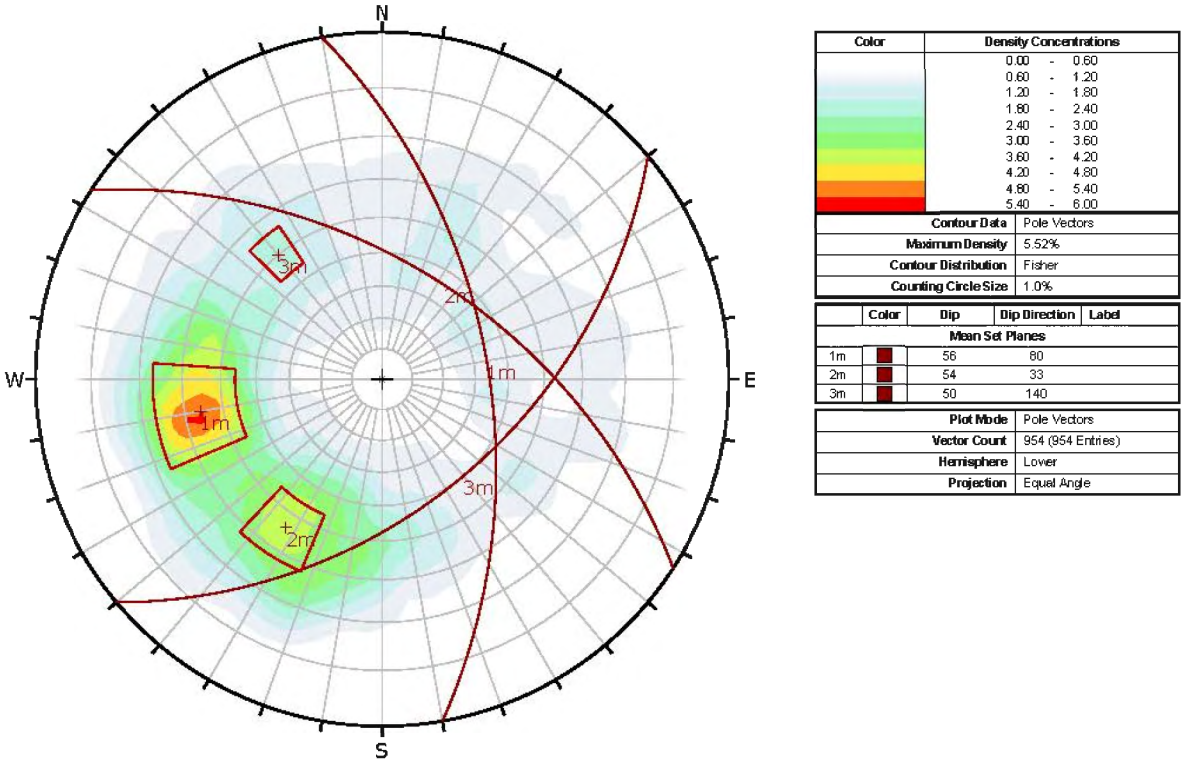

Figure 7. Pole Plots for Borehole GEM-01-2023

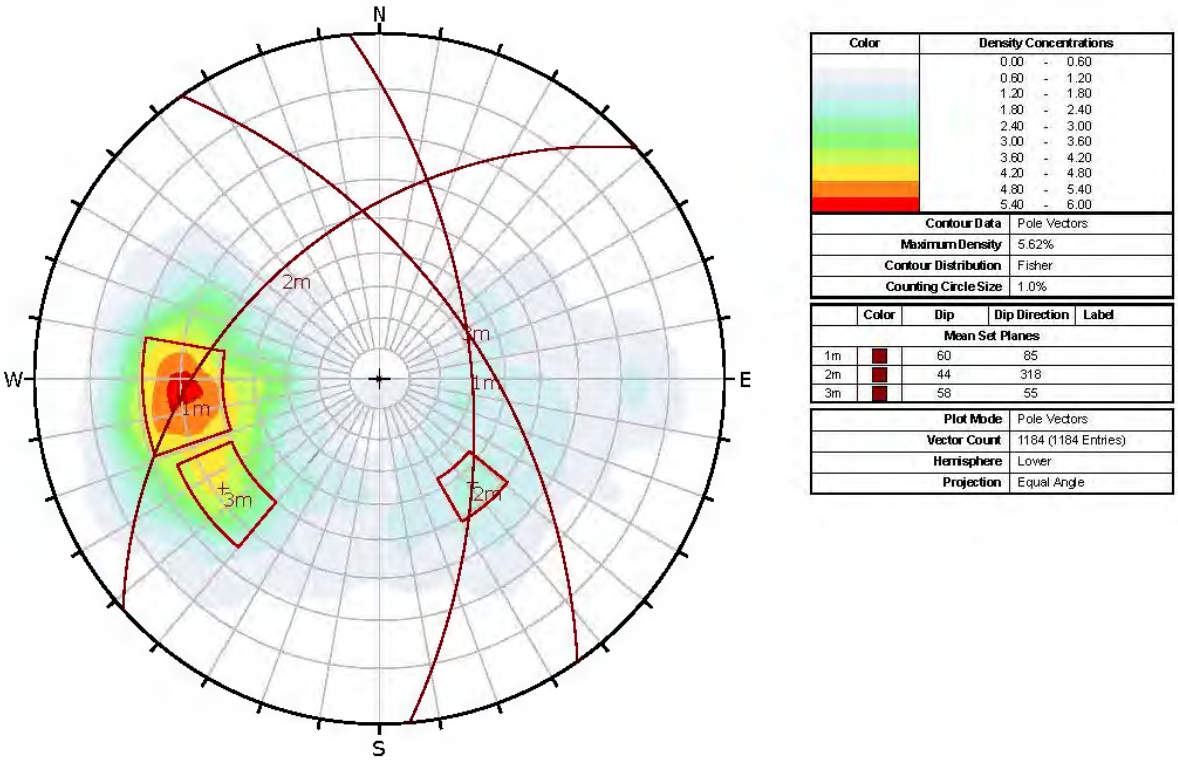

Figure 8. Pole Plots for Borehole GEM-02-2023

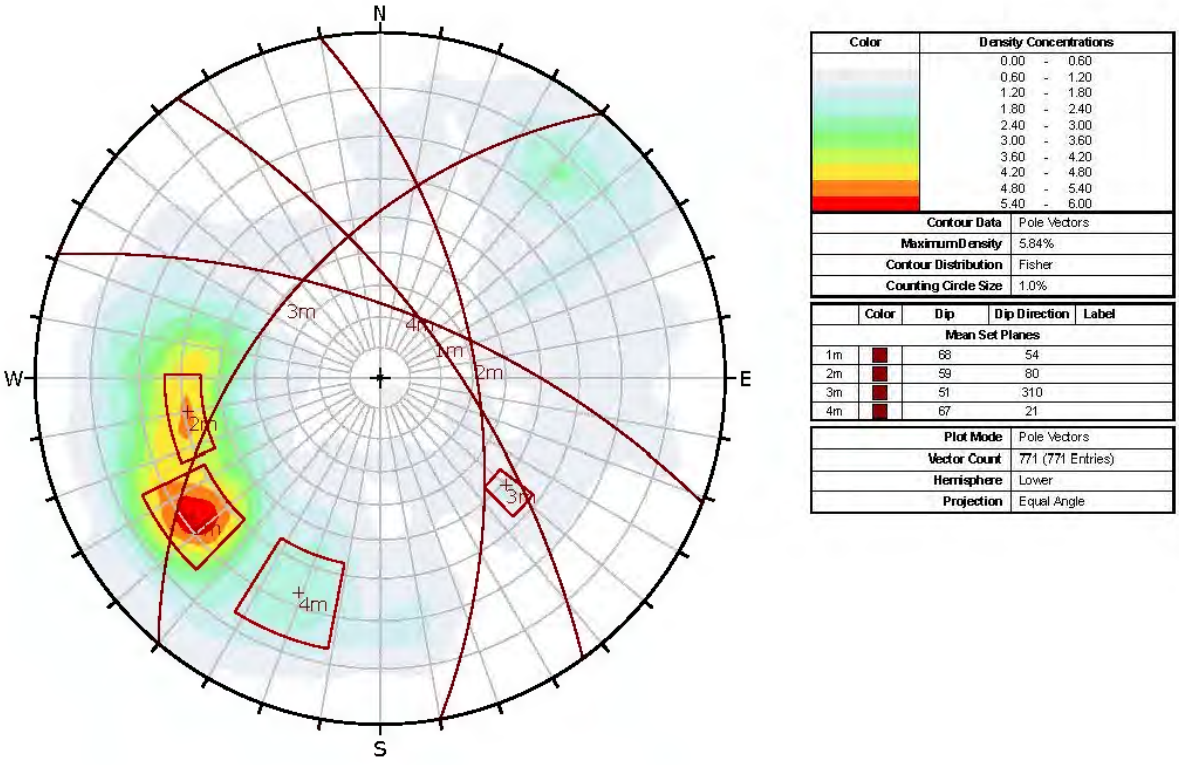

Figure 9. Pole Plots for Borehole GEM-03-2023

951-14

ROCK MECHANICS TESTING RESULTS FOR GEM-CH-01-22, GEM-CH-02-22, AND GEM-CH-03-22 AT THE WILLOW SPRINGS SITE IN ROSAMOND, CALIFORNIA

Prepared for

LANE POWER AND ENERGY SOLUTIONS, INC.

June 8, 2023

Prepared by

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ROCK MECHANICS TESTING RESULTS FOR CORE HOLES GEM-CH-01-22, GEM-CH-02-22, AND GEM-CH-03-22 AT THE WILLOW SPRINGS SITE IN ROSAMOND, CALIFORNIA

TABLE OF CONTENTS

LIST OF TABLES

1.0 INTRODUCTION

Lane Power and Energy Solutions, Inc. (Lane) commissioned Agapito Associates, Inc. (Agapito) to complete a rock mechanics laboratory study to determine the mechanical properties of rock samples from core holes GEM-CH-01-22 (Hole 1), GEM-CH-02-22 (Hole 2), and GEM-CH-03-22 (Hole 3) originating from the Willow Springs area in Rosamond, California. Shipments of core were delivered to Agapito's Grand Junction, Colorado laboratory from July 2022 to November 2022. This laboratory report provides results of the rock mechanics core testing performed by Agapito on behalf of Lane.

2.0 LABORATORY PROCEDURES

Prior to testing, specimens were prepared according to ASTM International (ASTM) standard D4543-08.[1] The following test types were performed by Agapito according to ASTM standards where applicable:

- Uniaxial (unconfined) Compressive Strength (UCS) test: D7012-13[2]
- Splitting tensile strength test (Brazilian): D3967-08[3]
- Point Load Strength (Point Load) test: D5731-08[4]
- Slake Durability test: D4644-08[5]

3.0 TEST RESULTS

The laboratory results for the UCS tests for Holes 1, 2, and 3 are summarized in Tables 1, 2, and 3, respectively. Brazilian test results are presented in Tables 4, 5, and 6. Point Load results are presented in Tables 7, 8, and 9, and Slake Durability test results are presented in Tables 10, 11, and 12. Point Load testing has been shown to provide an approximation of compressive strength, and using a conversion factor of 21.0 to convert the Corrected Point Load Index ($I_{S(50)}$) into approximate UCS provides the best approximation over a variety of rock types.[6]

Elastic properties are normally calculated from sample data collected between 0% and 55% of the ultimate strength of a sample as this is where most competent rock experiences its most-linear zone of elastic deformation. There were large numbers of samples where the zone of elastic deformation occurred during percentages of ultimate strength lower than expected, and some which did not enter elastic deformation for long enough to collect elastic properties. Elastic properties therefore

[1] ASTM, "Standard Practice for Preparing Rock Core as Cylindrical Test Specimens and Verifying Conformance to Dimensional Shape Tolerances," Designation D4543-08.

[2] ASTM, "Standard Test Method for Compressive Strength and Elastic Moduli of Intact Rock Core Specimens under Varying States of Stress and Temperature," Designation D7012-13 (Methods C and D).

[3] American Society for Testing and Materials (ASTM), "Standard Test Method for Splitting Tensile Strength of Intact Rock Core Specimens," Designation D3967-08.

[4] ASTM, "Standard Test Method for Determination of the Point Load Strength Index of Rock and Application to Rock Strength Classification," Designation D5731-08.

[5] ASTM, "Standard Test Method for Slake Durability of Shales and Similar Weak Rocks," Designation D4644-08.

[6] Rusnak, J. and Mark, C. (2000), "Using the Point Load Test to Determination the Uniaxial Compressive Strength of Coal Measure Rock," *19th Ground Control Conference in Mining*, West Virginia University, pp. 362–371.

had to be calculated individually based on data from zones of elastic deformation present for each specimen rather than the standard 0–55% of ultimate strength.

Datasheets for the UCS tests with failure mode descriptions are presented in Appendix A. Stress-strain plots for UCS tests where elastic properties were collected are in Appendix B. The before and after photographs of UCS test specimens are displayed in Appendix C. The Brazilian test datasheets are presented in Appendix D and the Point Load test datasheets are presented in Appendix E. The Slake Durability test datasheets are presented in Appendix F, with the before and after photographs of the Slake Durability test specimens presented in Appendix G.

Table 1. Uniaxial Compressive Strength Test Results for Hole GEM-CH-01-22

Specimen No.	Hole ID	Depth From (ft)	Depth To (ft)	Rock Type	Weight (oz)	Average Diameter (inch)	Axial Length (inch)	Density (pcf)	Failure Load (lb)	UCS (psi)	Young's Modulus† ($\times 10^6$ psi)	Poisson's Ratio†	Young's Modulus‡ ($\times 10^6$ psi)	Poisson's Ratio‡
UCS-01	GEM-CH-01-22	1549.00	1549.66	Granite, decomposed	35.05	2.41	5.38	154	5,560	1,219	0.19	0.14	0.17	0.03
UCS-02	GEM-CH-01-22	1558.75	1559.25	Granite, decomposed	34.86	2.41	5.37	154	3,110	685	0.12	0.29	0.18	0.14
UCS-03	GEM-CH-01-22	1586.25	1587.00	Granite, decomposed	37.02	2.41	5.39	162	26,565	5,808	0.82	0.16	0.53	0.03
UCS-04	GEM-CH-01-22	1589.00	1589.75	Granite	35.94	2.41	5.29	160	10,360	2,265	-	-	-	-
UCS-05	GEM-CH-01-22	1616.00	1617.00	Granite	36.70	2.41	5.47	159	3,650	800	0.37	0.16	0.34	0.04
UCS-06	GEM-CH-01-22	1617.00	1617.83	Granite	36.37	2.41	5.49	157	1,085	238	0.40	0.34	0.39	0.14
UCS-07	GEM-CH-01-22	1670.50	1671.50	Granite, decomposed	31.25	2.42	5.27	139	490	107	-	-	-	-
UCS-08	GEM-CH-01-22	1706.58	1707.33	Granite, decomposed	32.31	2.40	5.29	146	550	122	-	-	-	-
UCS-09	GEM-CH-01-22	1728.00	1729.00	Granite, decomposed	-	-	-	-	-	-	-	-	-	-
UCS-10	GEM-CH-01-22	1961.00	1961.91	Granite	33.95	2.40	4.89	166	55,800	12,358	4.77	0.25	3.02	0.12
UCS-11	GEM-CH-01-22	1983.87	1984.62	Granite	-	-	-	-	-	-	-	-	-	-
UCS-12	GEM-CH-01-22	2003.75	2004.75	Granite	34.39	2.40	4.93	166	45,570	10,061	0.87	0.19	0.92	0.06
UCS-13	GEM-CH-01-22	2028.41	2029.00	Granite	33.30	2.40	4.87	163	17,505	3,858	-	-	-	-
UCS-14	GEM-CH-01-22	2042.08	2043.08	Granite	31.11	2.40	4.84	154	2,075	460	0.13	0.30	0.20	0.09
UCS-15	GEM-CH-01-22	2057.83	2058.58	Granite	33.81	2.40	4.90	164	24,500	5,409	0.43	0.24	0.36	0.22
UCS-16	GEM-CH-01-22	2098.00	2099.00	Granite	32.92	2.40	4.85	162	40,745	8,994	5.51	0.21	4.64	0.00
UCS-17	GEM-CH-01-22	2112.00	2112.66	Granite	32.33	2.40	4.74	162	21,750	4,790	-	-	-	-
UCS-18	GEM-CH-01-22	2131.00	2132.00	Granite	-	-	-	-	-	-	-	-	-	-
UCS-19	GEM-CH-01-22	2162.45	2163.00	Granite	33.51	2.40	4.85	166	44,645	9,906	3.23	0.42	1.75	0.13
UCS-20	GEM-CH-01-22	2170.37	2171.00	Granite	33.22	2.40	4.82	164	17,165	3,789	1.40	0.18	0.84	0.03
UCS-21	GEM-CH-01-22	2193.00	2193.65	Granite	27.82	2.39	4.53	148	1,575	350	-	-	-	-
UCS-22	GEM-CH-01-22	1966.16	1967.66	Granite	36.97	2.40	5.40	164	25,190	5,588	0.86	0.18	0.76	0.00
UCS-23	GEM-CH-01-22	1971.00	1972.00	Granite	30.07	2.40	4.36	165	32,885	7,199	1.65	0.07	1.11	0.01
UCS-24	GEM-CH-01-22	1986.25	1987.25	Granite	33.74	2.41	4.91	163	51,810	11,393	2.22	0.19	1.69	0.11
UCS-25	GEM-CH-01-22	1994.16	1994.83	Granite	34.81	2.41	5.38	154	1,815	399	-	-	-	-
UCS-26	GEM-CH-01-22	2005.58	2006.00	Granite	34.53	2.40	5.04	164	27,095	6,001	0.45	0.12	0.39	0.05
UCS-27	GEM-CH-01-22	2013.37	2013.87	Granite	34.72	2.40	5.01	165	40,340	8,921	1.73	0.18	1.31	0.05
UCS-28	GEM-CH-01-22	2034.37	2035.37	Granite	27.54	2.40	4.36	151	6,310	1,383	-	-	-	-
UCS-29	GEM-CH-01-22	2053.83	2054.33	Granite	35.73	2.41	5.20	163	30,565	6,724	-	-	-	-
UCS-30	GEM-CH-01-22	2061.00	2061.75	Granite	37.19	2.40	5.43	164	12,170	2,694	0.63	0.12	0.53	0.04
UCS-31	GEM-CH-01-22	2061.75	2063.08	Granite	35.63	2.40	5.24	162	13,855	3,062	0.59	0.08	0.49	0.01
UCS-32	GEM-CH-01-22	2076.00	2077.00	Granite	30.15	2.40	4.46	161	17,980	3,937	0.68	0.31	0.69	0.17
UCS-33	GEM-CH-01-22	2083.00	2084.00	Granite	33.73	2.40	5.03	160	10,440	2,311	-	-	-	-
UCS-34	GEM-CH-01-22	2099.00	2099.83	Granite	39.04	2.40	5.76	162	46,090	10,207	5.95	0.24	5.62	0.08
UCS-35	GEM-CH-01-22	2108.00	2108.95	Granite	33.54	2.40	5.21	153	6,375	1,407	0.25	0.23	0.30	0.04
UCS-36	GEM-CH-01-22	2117.00	2117.83	Granite	36.63	2.40	5.34	164	18,750	4,148	0.52	0.21	0.56	0.08
UCS-37	GEM-CH-01-22	2122.00	2122.91	Granite	36.49	2.40	5.42	161	10,375	2,295	-	-	-	-
UCS-38	GEM-CH-01-22	2126.00	2126.83	Granite	36.90	2.40	5.39	164	14,015	3,108	0.46	0.12	0.44	0.03
UCS-92	GEM-CH-01-22	1312.30	1313.00	Shale, sandy, tuffaceous	30.52	2.37	5.09	147	19,675	4,460	1.08	0.31	0.75	0.13
UCS-93	GEM-CH-01-22	1361.20	1361.90	Tuff, breccia in places, altered in places	29.88	2.38	4.79	152	54,825	12,365	5.43	0.25	4.04	0.11
UCS-94	GEM-CH-01-22	1383.70	1384.75	Tuff, breccia in places, altered in places	28.55	2.39	5.32	129	16,265	3,632	-	-	-	-
UCS-95	GEM-CH-01-22	1392.80	1393.90	Tuff	28.09	2.39	5.27	128	27,350	6,101	1.85	0.30	1.51	0.22
UCS-96	GEM-CH-01-22	1433.90	1434.70	Mudstone/shale, tuffaceous	29.98	2.39	5.62	128	20,645	4,593	1.25	0.17	0.98	0.03
UCS-97	GEM-CH-01-22	1455.10	1456.00	Tuff, welded	28.46	2.40	5.27	129	48,990	10,827	2.67	0.17	2.58	0.09
UCS-98	GEM-CH-01-22	1477.50	1478.10	Breccia, tuffaceous	29.54	2.40	5.18	136	26,635	5,888	1.27	0.21	0.83	0.07

†Tangent calculation method.
‡Secant calculation method.

Table 2. Uniaxial Compressive Strength Test Results for Hole GEM-CH-02-22

Specimen No.	Hole ID	Depth From (ft)	Depth To (ft)	Rock Type	Weight (oz)	Average Diameter (inch)	Axial Length (inch)	Density (pcf)	Failure Load (lb)	UCS (psi)	Young's Modulus† ($\times 10^6$ psi)	Poisson's Ratio†	Young's Modulus‡ ($\times 10^6$ psi)	Poisson's Ratio‡
UCS-39	GEM-CH-02-22	1009.50	1010.16	Sandstone, tuffaceous, breccia	27.80	2.40	4.83	137	3,330	736	0.09	0.12	0.09	0.06
UCS-40	GEM-CH-02-22	1479.50	1480.00	Breccia, tuffaceous	27.78	2.40	5.29	125	49,645	10,974	1.93	0.24	1.72	0.15
UCS-41	GEM-CH-02-22	1501.50	1502.25	Tuff, welded	27.49	2.40	4.98	131	58,285	12,857	3.05	0.18	2.77	0.12
UCS-42	GEM-CH-02-22	1512.16	1512.91	Tuff, welded	27.66	2.40	5.09	130	51,970	11,481	2.60	0.24	2.13	0.13
UCS-43	GEM-CH-02-22	1542.50	1543.00	Tuff, welded	26.96	2.39	5.20	125	39,720	8,856	2.01	0.18	1.64	0.07
UCS-44	GEM-CH-02-22	1551.00	1552.00	Tuff, welded	27.93	2.39	5.29	127	37,640	8,392	2.09	0.14	1.97	0.04
UCS-45	GEM-CH-02-22	1561.00	1561.66	Tuff, welded	27.92	2.39	5.35	125	38,465	8,558	2.05	0.15	1.51	0.05
UCS-46	GEM-CH-02-22	1576.00	1576.50	Tuff, welded	29.78	2.40	5.79	123	22,965	5,093	1.73	0.12	1.48	0.02
UCS-47	GEM-CH-02-22	1585.33	1586.00	Tuff, welded	29.54	2.39	5.84	121	43,950	9,768	1.71	0.20	1.77	0.12
UCS-48	GEM-CH-02-22	1600.33	1601.00	Tuff, welded	28.36	2.40	5.48	124	19,255	4,271	1.60	0.14	1.17	0.06
UCS-49	GEM-CH-02-22	1604.00	1605.00	Tuff, welded	30.10	2.39	5.87	123	11,290	2,510	0.89	0.18	0.68	0.05
UCS-50	GEM-CH-02-22	1641.00	1641.50	Rhyolite, banded interbedded	29.29	2.40	5.09	138	100,450	22,251	5.02	0.19	4.86	0.12
UCS-51	GEM-CH-02-22	1645.25	1646.00	Rhyolite, banded interbedded	32.84	2.40	5.72	137	79,280	17,576	4.95	0.19	5.54	0.12
UCS-52	GEM-CH-02-22	1664.25	1665.08	Rhyolite, banded interbedded	34.48	2.39	5.56	149	125,295	27,905	6.90	0.18	6.94	0.13
UCS-53	GEM-CH-02-22	1703.91	1704.58	Shale	31.57	2.39	5.42	141	3,835	857	0.68	0.35	0.65	0.14
UCS-54	GEM-CH-02-22	1721.00	1721.75	Granite, decomposed	30.68	2.39	5.70	130	24,925	5,560	1.17	0.26	1.08	0.12
UCS-55	GEM-CH-02-22	1730.16	1731.00	Granite, decomposed	29.92	2.39	5.73	125	22,010	4,894	0.65	0.18	0.79	0.13
UCS-56	GEM-CH-02-22	1927.41	1928.00	Granite, partially decomposed	35.67	2.40	5.56	153	17,530	3,866	0.52	0.11	0.46	0.03
UCS-57	GEM-CH-02-22	1954.08	1955.25	Granite, partially decomposed	36.05	2.41	5.69	150	5,885	1,293	0.18	0.24	0.23	0.18
UCS-58	GEM-CH-02-22	1966.66	1967.83	Granite, partially decomposed	33.80	2.41	5.29	152	4,480	986	0.32	0.17	0.29	0.03
UCS-59	GEM-CH-02-22	1977.50	1978.25	Granite, partially decomposed	34.73	2.40	5.61	147	9,540	2,101	-	-	-	-
UCS-60	GEM-CH-02-22	1980.25	1981.00	Granite, partially decomposed	37.53	2.40	5.69	157	23,350	5,148	1.78	0.12	1.36	0.04
UCS-61	GEM-CH-02-22	1984.83	1985.75	Granite, partially decomposed	37.12	2.40	5.67	156	17,715	3,907	1.24	0.11	1.11	0.07
UCS-62	GEM-CH-02-22	1991.00	1992.00	Granite, partially decomposed	36.27	2.40	5.74	151	13,525	2,983	1.45	0.18	0.91	0.06
UCS-63	GEM-CH-02-22	1992.83	1993.50	Granite, partially decomposed	33.46	2.40	5.25	152	17,825	3,929	1.35	0.20	1.03	0.08
UCS-64	GEM-CH-02-22	2007.75	2008.58	Granite, partially decomposed	34.56	2.41	5.69	144	6,980	1,534	0.30	0.18	0.27	0.09
UCS-65	GEM-CH-02-22	2008.66	2009.25	Granite, partially decomposed	33.76	2.41	5.58	143	3,400	746	-	-	-	-
UCS-66	GEM-CH-02-22	2023.16	2023.83	Granite, partially decomposed	31.74	2.40	5.20	145	12,760	2,816	0.91	0.29	0.79	0.13
UCS-67	GEM-CH-02-22	2030.41	2031.00	Granite, partially decomposed	35.89	2.40	5.45	157	11,950	2,635	0.52	0.16	0.40	0.03
UCS-68	GEM-CH-02-22	2035.25	2036.00	Granite, partially decomposed	31.15	2.40	5.06	146	6,135	1,351	0.32	0.25	0.30	0.13
UCS-69	GEM-CH-02-22	2036.00	2036.66	Granite, partially decomposed	37.10	2.40	5.68	156	12,665	2,794	0.42	0.22	0.40	0.07
UCS-70	GEM-CH-02-22	2052.33	2053.33	Granite, partially decomposed	36.35	2.40	5.56	156	21,955	4,858	1.04	0.15	0.73	0.03
UCS-71	GEM-CH-02-22	2055.50	2056.00	Granite, partially decomposed	33.00	2.40	5.06	155	32,515	7,172	3.37	0.27	3.36	0.10
UCS-72	GEM-CH-02-22	2057.00	2058.00	Granite, partially decomposed	37.67	2.40	5.65	159	79,835	17,625	6.53	0.24	6.28	0.13
UCS-73	GEM-CH-02-22	2072.00	2072.50	Rhyolite, interbedded granite	27.49	2.39	4.98	133	36,320	8,089	1.68	0.33	1.78	0.15
UCS-74	GEM-CH-02-22	2075.00	2075.91	Rhyolite, interbedded granite	24.10	2.40	5.19	111	1,635	363	0.07	0.26	0.09	0.12
UCS-75	GEM-CH-02-22	2084.75	2084.91	Rhyolite, interbedded granite	32.55	2.39	4.94	158	63,700	14,149	6.90	0.17	6.95	0.06
UCS-76	GEM-CH-02-22	2093.50	2094.50	Rhyolite, interbedded granite	29.69	2.40	5.60	127	36,310	8,038	2.02	0.23	2.00	0.12
UCS-77	GEM-CH-02-22	2108.08	2108.83	Granite, interbedded rhyolite breccia	36.25	2.39	5.50	158	33,965	7,547	-	-	-	-
UCS-78	GEM-CH-02-22	2112.00	2113.00	Granite, partially decomposed	36.07	2.40	5.62	153	18,865	4,171	2.35	0.22	1.35	0.04
UCS-79	GEM-CH-02-22	2128.00	2128.91	Granite, partially decomposed	35.85	2.39	5.58	154	7,310	1,623	-	-	-	-
UCS-80	GEM-CH-02-22	2136.50	2137.00	Granite, partially decomposed	34.08	2.40	5.45	149	7,280	1,609	0.36	0.22	0.30	0.09
UCS-81	GEM-CH-02-22	2155.58	2156.58	Shale, sandy, tuffaceous	31.67	2.40	5.63	135	31,690	7,030	2.74	0.30	2.81	0.09
UCS-82	GEM-CH-02-22	2166.00	2166.50	Shale, sandy, tuffaceous	31.56	2.40	5.03	150	57,955	12,835	3.86	0.29	3.12	0.14
UCS-83	GEM-CH-02-22	2177.00	2177.66	Shale, sandy, tuffaceous	31.88	2.39	5.62	137	45,870	10,222	3.04	0.20	3.31	0.13
UCS-84	GEM-CH-02-22	2227.50	2228.50	Granite, decomposed	35.41	2.40	5.60	151	16,145	3,579	0.51	0.22	0.44	0.12
UCS-85	GEM-CH-02-22	2248.25	2249.08	Granite, decomposed	36.17	2.40	5.63	154	16,895	3,750	0.84	0.18	0.79	0.04
UCS-86	GEM-CH-02-22	2256.00	2256.50	Granite, decomposed	34.13	2.39	5.59	147	8,885	1,980	0.38	0.21	0.30	0.08
UCS-87	GEM-CH-02-22	2277.11	2278.11	Granodiorite	35.45	2.39	5.62	152	21,795	4,860	1.84	0.24	1.25	0.07
UCS-88	GEM-CH-02-22	2287.00	2288.00	Granodiorite	32.18	2.39	5.11	152	23,920	5,350	2.53	0.22	1.93	0.06
UCS-89	GEM-CH-02-22	2334.58	2335.33	Granodiorite	37.38	2.40	5.58	159	20,110	4,433	-	-	-	-
UCS-90	GEM-CH-02-22	2361.00	2361.50	Granodiorite	33.72	2.40	5.03	160	23,100	5,110	1.90	0.20	1.82	0.01
UCS-91	GEM-CH-02-22	2372.00	2372.58	Granodiorite	35.05	2.39	5.60	150	6,365	1,413	0.53	0.25	0.42	0.12
UCS-99	GEM-CH-02-22	1317.16	1318.00	Breccia, tuffaceous, lapilli	26.25	2.40	5.29	118	20,205	4,466	1.19	0.26	1.11	0.09
UCS-100	GEM-CH-02-22	1337.00	1338.00	Breccia, tuffaceous, lapilli	25.35	2.40	5.04	120	6,935	1,529	1.18	0.33	1.01	0.16
UCS-101	GEM-CH-02-22	1367.00	1368.00	Breccia, tuffaceous, lapilli	28.85	2.40	5.50	125	25,740	5,686	1.44	0.13	1.72	0.04
UCS-102	GEM-CH-02-22	1377.25	1378.33	Breccia, tuffaceous, lapilli	28.55	2.40	5.33	128	44,390	9,816	2.69	0.17	2.40	0.09
UCS-103	GEM-CH-02-22	1387.50	1388.25	Breccia, tuffaceous, lapilli	26.83	2.40	5.40	119	22,710	5,027	1.45	0.15	1.20	0.07
UCS-104	GEM-CH-02-22	1409.00	1410.25	Breccia, tuffaceous, lapilli	27.78	2.40	5.47	121	23,145	5,111	1.42	0.18	1.28	0.06
UCS-105	GEM-CH-02-22	1428.66	1429.33	Tuff, welded	29.07	2.40	5.43	128	34,520	7,643	2.29	0.16	1.86	0.04
UCS-106	GEM-CH-02-22	1447.30	1448.00	Tuff, welded	27.98	2.40	5.42	123	20,235	4,466	1.44	0.24	1.05	0.02
UCS-107	GEM-CH-02-22	1471.00	1471.91	Tuff, welded	26.75	2.40	5.34	120	10,570	2,337	0.85	0.16	0.55	0.07
UCS-108	GEM-CH-02-22	1526.00	1527.50	Tuff, welded	28.64	2.40	5.42	126	22,335	4,937	1.82	0.15	1.52	0.04
UCS-109	GEM-CH-02-22	1615.00	1616.00	Breccia, tuffaceous	23.46	2.40	4.82	116	11,760	2,602	-	-	-	-

†Tangent calculation method.
‡Secant calculation method.

Table 3. Uniaxial Compressive Strength Test Results for Hole GEM-CH-03-22

Specimen No.	Hole ID	Depth From (ft)	Depth To (ft)	Rock Type	Weight (oz)	Average Diameter (inch)	Axial Length (inch)	Density (pcf)	Failure Load (lb)	UCS (psi)	Young's Modulus† ($\times 10^6$ psi)	Poisson's Ratio†	Young's Modulus‡ ($\times 10^6$ psi)	Poisson's Ratio‡
UCS-110	GEM-CH-03-22	1186.0	1186.7	Tuff, hard, welded	32.22	2.42	5.48	138	27,090	5,897	1.05	0.27	1.11	0.14
UCS-111	GEM-CH-03-22	1191.6	1192.3	Tuff, hard, welded	32.79	2.42	5.46	141	33,640	7,311	1.72	0.25	1.58	0.09
UCS-112	GEM-CH-03-22	1192.4	1193.4	Tuff, hard, welded	32.36	2.42	5.47	139	18,235	3,965	1.79	0.28	1.80	0.14
UCS-113	GEM-CH-03-22	1317.5	1318.4	Tuff, rhyolitic	32.26	2.42	5.45	139	26,920	5,858	2.28	0.28	2.01	0.10
UCS-114	GEM-CH-03-22	1319.0	1319.9	Tuff, rhyolitic	33.32	2.42	5.58	140	11,605	2,525	-	-	-	-
UCS-115	GEM-CH-03-22	1324.0	1325.0	Tuff, rhyolitic	31.12	2.42	5.24	140	10,895	2,370	1.02	0.19	1.13	0.05
UCS-116	GEM-CH-03-22	1334.0	1334.8	Tuff, rhyolitic	31.16	2.42	5.35	137	27,295	5,954	1.82	0.28	1.93	0.17
UCS-117	GEM-CH-03-22	1349.7	1350.6	Rhyolite	31.50	2.42	5.37	137	19,220	4,172	1.55	0.30	1.69	0.02
UCS-118	GEM-CH-03-22	1361.3	1362.0	Rhyolite	31.94	2.42	5.42	138	19,065	4,152	1.92	0.32	1.94	0.11
UCS-119	GEM-CH-03-22	1367.3	1368.3	Rhyolite	32.11	2.42	5.40	139	35,495	7,717	2.39	0.24	2.23	0.06
UCS-120	GEM-CH-03-22	1380.7	1381.6	Andesite	34.19	2.42	5.47	146	10,495	2,279	-	-	-	-
UCS-121	GEM-CH-03-22	1381.8	1382.5	Andesite	33.00	2.42	5.35	144	10,410	2,256	0.62	0.31	0.45	0.13
UCS-122	GEM-CH-03-22	1406.3	1407.2	Andesite	32.04	2.42	5.34	141	16,475	3,577	1.08	0.28	0.76	0.12
UCS-123	GEM-CH-03-22	1410.2	1411.2	Andesite	31.64	2.42	5.23	142	21,095	4,579	2.21	0.35	1.97	0.13
UCS-124	GEM-CH-03-22	1421.8	1422.5	Andesite	32.63	2.42	5.26	145	10,330	2,239	1.49	0.17	1.26	0.05
UCS-125	GEM-CH-03-22	1426.0	1426.8	Andesite	33.44	2.42	5.28	149	37,385	8,111	-	-	-	-
UCS-126	GEM-CH-03-22	1427.0	1428.7	Andesite	34.17	2.42	5.33	150	33,990	7,367	2.26	0.30	1.73	0.06
UCS-127	GEM-CH-03-22	1438.3	1439.0	Andesite	32.77	2.42	5.43	141	17,405	3,778	1.57	0.23	1.19	0.08
UCS-128	GEM-CH-03-22	1452.0	1452.6	Andesite/Rhyolite	-	-	-	-	-	-	-	-	-	-
UCS-129	GEM-CH-03-22	1468.5	1469.0	Andesite/Rhyolite	29.71	2.42	5.07	137	22,540	4,897	-	-	-	-
UCS-130	GEM-CH-03-22	1473.5	1474.0	Andesite/Rhyolite	34.17	2.42	5.85	137	41,810	9,097	2.43	0.26	2.38	0.11
UCS-131	GEM-CH-03-22	1486.5	1487.0	Quartz Monzonite, decomposed	38.52	2.42	5.66	160	11,810	2,569	-	-	-	-
UCS-132	GEM-CH-03-22	1498.3	1499.0	Quartz Monzonite, decomposed	36.02	2.42	5.38	157	10,525	2,285	-	-	-	-
UCS-133	GEM-CH-03-22	1513.3	1514.0	Quartz Monzonite, hard	35.83	2.42	5.37	157	22,495	4,896	1.15	0.26	0.63	0.09
UCS-134	GEM-CH-03-22	1551.2	1552.0	Granodiorite, decomposed	33.72	2.40	5.13	157	15,270	3,374	0.88	0.33	0.45	0.09
UCS-135	GEM-CH-03-22	1558.3	1559.0	Granodiorite, decomposed	34.62	2.40	5.29	157	24,960	5,534	1.31	0.21	0.62	0.04
UCS-136	GEM-CH-03-22	1596.4	1597.0	Granodiorite, decomposed	33.22	2.40	5.09	156	8,560	1,900	0.48	0.30	0.35	0.04
UCS-137	GEM-CH-03-22	1608.3	1609.0	Granodiorite, decomposed	33.83	2.39	5.31	153	5,175	1,149	0.25	0.30	0.19	0.10
UCS-138	GEM-CH-03-22	1618.0	1618.6	Granodiorite, decomposed	37.63	2.40	5.46	165	31,480	6,967	3.29	0.35	1.86	0.13

†Tangent calculation method.
‡Secant calculation method.

Table 4. Splitting Tensile Strength (Brazilian) Test Results for Hole GM-CH-01-22

Specimen No.	Hole ID	Depth From (ft)	Depth To (ft)	Rock Type	Weight (oz)	Average Diameter (inch)	Axial Length (inch)	Density (pcf)	Failure Load (lb)	Splitting Tensile Strength (psi)
BTS-01	GEM-CH-01-22	1973.41	1974.20	Granite	9.87	2.40	1.47	161	2,117	383
BTS-02	GEM-CH-01-22	1980.00	1980.50	K-Feldspar Rich Pegmatite	9.30	2.41	1.42	156	1,501	280
BTS-03	GEM-CH-01-22	2003.33	2003.64	Granite	9.87	2.40	1.43	165	3,236	602
BTS-04	GEM-CH-01-22	2014.25	2015.00	Granite	9.72	2.40	1.40	165	2,284	431
BTS-05	GEM-CH-01-22	2037.75	2038.16	Granite	9.50	2.40	1.44	158	385	71
BTS-06	GEM-CH-01-22	2060.00	2062.62	Granite	9.67	2.41	1.43	161	654	121
BTS-07	GEM-CH-01-22	2086.00	2086.45	Granite	9.30	2.41	1.43	154	404	75
BTS-08	GEM-CH-01-22	2102.00	2102.54	Granite/K-Feldspar Rich Pegmatite	9.30	2.41	1.43	154	250	46
BTS-09	GEM-CH-01-22	2126.83	2127.00	Granite	9.75	2.40	1.43	162	1,477	273
BTS-10	GEM-CH-01-22	2151.00	2151.50	Granite	8.97	2.40	1.39	154	662	126
BTS-11	GEM-CH-01-22	2172.40	2173.00	Granite	10.09	2.40	1.47	164	2,396	432
BTS-12	GEM-CH-01-22	2202.80	2203.00	Granite	9.91	2.40	1.48	160	856	154
BTS-13	GEM-CH-01-22	1312.30	1313.00	Shale, sandy, tuffaceous	7.54	2.37	1.27	145	1,184	250
BTS-14	GEM-CH-01-22	1334.55	1335.35	Tuff, breccia in places, altered in places	7.20	2.37	1.35	130	2,551	508
BTS-15	GEM-CH-01-22	1372.70	1373.30	Tuff, breccia in places, altered in places	7.41	2.39	1.49	120	1,087	195
BTS-16	GEM-CH-01-22	1383.70	1384.75	Tuff, breccia in places, altered in places	7.99	2.39	1.48	130	799	144
BTS-17	GEM-CH-01-22	1392.80	1393.90	Tuff	7.63	2.39	1.44	128	1,646	305
BTS-18	GEM-CH-01-22	1424.00	1424.90	Tuff	7.77	2.40	1.40	132	437	83
BTS-19	GEM-CH-01-22	1433.90	1434.70	Mudstone/shale, tuffaceous	7.23	2.39	1.35	128	1,961	386
BTS-20	GEM-CH-01-22	1449.00	1449.90	Tuff, welded	6.61	2.37	1.32	122	1,583	321
BTS-21	GEM-CH-01-22	1455.10	1456.00	Tuff, welded	7.01	2.40	1.32	127	2,808	564
BTS-22	GEM-CH-01-22	1482.50	1483.20	Breccia, tuffaceous	7.20	2.40	1.27	135	2,857	596
BTS-23	GEM-CH-01-22	1491.40	1492.20	Tuff, lithic lapilli	7.55	2.41	1.37	130	228	44

Table 5. Splitting Tensile Strength (Brazilian) Test Results for Hole GM-CH-02-22

Specimen No.	Hole ID	Depth From (ft)	Depth To (ft)	Rock Type	Weight (oz)	Average Diameter (inch)	Axial Length (inch)	Density (pcf)	Failure Load (lb)	Splitting Tensile Strength (psi)
BTS-24	GEM-CH-02-22	1317.16	1318.00	Breccia, tuffaceous, lapilli	7.26	2.40	1.52	114	2,074	362
BTS-25	GEM-CH-02-22	1327.50	1328.00	Breccia, tuffaceous, lapilli	7.94	2.40	1.57	121	2,073	350
BTS-26	GEM-CH-02-22	1367.00	1368.00	Breccia, tuffaceous, lapilli	6.87	2.40	1.33	123	1,939	387
BTS-27	GEM-CH-02-22	1398.00	1398.66	Breccia, tuffaceous, lapilli	6.49	2.40	1.43	109	1,936	359
BTS-28	GEM-CH-02-22	1418.60	1420.00	Breccia, tuffaceous, lapilli	7.68	2.40	1.51	121	2,604	457
BTS-29	GEM-CH-02-22	1428.66	1429.33	Tuff, welded	7.81	2.40	1.49	125	1,931	344
BTS-30	GEM-CH-02-22	1447.33	1448.00	Tuff, welded	8.26	2.40	1.59	124	1,679	280
BTS-31	GEM-CH-02-22	1471.00	1471.91	Tuff, welded	7.33	2.40	1.49	117	2,089	371
BTS-32	GEM-CH-02-22	1499.83	1500.16	Tuff, welded	7.49	2.40	1.38	129	2,508	483
BTS-33	GEM-CH-02-22	1526.00	1527.25	Tuff, welded	6.73	2.40	1.37	117	2,065	400
BTS-34	GEM-CH-02-22	1545.66	1546.00	Tuff, welded	6.57	2.39	1.34	118	1,479	294
BTS-35	GEM-CH-02-22	1570.66	1571.00	Tuff, welded	6.52	2.40	1.31	120	2,173	443
BTS-36	GEM-CH-02-22	1602.66	1603.00	Tuff, welded	6.54	2.39	1.33	119	2,408	484
BTS-37	GEM-CH-02-22	1622.16	1623.00	Breccia, tuffaceous	6.57	2.39	1.31	120	1,291	262
BTS-38	GEM-CH-02-22	1636.58	1637.00	Breccia, tuffaceous	7.08	2.40	1.33	127	698	139

Table 6. Splitting Tensile Strength (Brazilian) Test Results for Hole GEM-CH-03-22

Specimen No.	Hole ID	Depth From (ft)	Depth To (ft)	Rock Type	Weight (oz)	Average Diameter (inch)	Axial Length (inch)	Density (pcf)	Failure Load (lb)	Splitting Tensile Strength (psi)
BTS-39	GEM-CH-03-22	1194.50	1195.50	Tuff, hard, welded	7.88	2.42	1.36	136	1,450	281
BTS-40	GEM-CH-03-22	1327.00	1328.00	Tuff, rhyolitic	7.56	2.42	1.31	135	1,307	262
BTS-41	GEM-CH-03-22	1342.16	1343.16	Tuff, rhyolitic	7.60	2.42	1.32	135	2,114	423
BTS-42	GEM-CH-03-22	1386.00	1387.06	Andesite	8.27	2.41	1.37	142	1,825	351
BTS-43	GEM-CH-03-22	1402.66	1403.58	Andesite	7.85	2.42	1.32	140	1,725	344
BTS-44	GEM-CH-03-22	1429.75	1430.58	Andesite	9.19	2.42	1.45	149	1,418	258
BTS-45	GEM-CH-03-22	1464.00	1465.00	Andesite / Rhyolite	9.66	2.42	1.48	153	1,790	318
BTS-46	GEM-CH-03-22	1478.00	1479.00	Andesite / Rhyolite	8.51	2.42	1.35	148	6,168	1,203
BTS-47	GEM-CH-03-22	1501.23	1502.00	Quartz Monzonite	8.43	2.42	1.30	152	579	117
BTS-48	GEM-CH-03-22	1531.66	1532.33	Quartz Monzonite	9.31	2.40	1.44	154	1,285	236
BTS-49	GEM-CH-03-22	1568.00	1569.00	Granodiorite, decomposed	9.04	2.40	1.39	156	952	182
BTS-50	GEM-CH-03-22	1602.41	1603.16	Granodiorite, decomposed	8.47	2.40	1.37	148	338	66

Table 7. Point Load Test Results for Hole GEM-CH-01-22

Specimen No.	Hole ID	From (ft)	To (ft)	Lithology	"Failure Load" P (lb)	Test Orientation (A/D)	Corrected Point Load Index, $I_{S(50)}$ (psi)	Estimated UCS (psi)
PLT-01	GEM-CH-01-22	1,973.41	1,974.20	Granite	470	A	118	2,472
PLT-02	GEM-CH-01-22	1,983.81	1,984.00	Granite	1,699	A	430	9,029
PLT-03	GEM-CH-01-22	1,999.41	2,000.04	Granite	1,044	A	285	5,981
PLT-04	GEM-CH-01-22	2,014.25	2,015.00	Granite	1,059	A	256	5,384
PLT-05	GEM-CH-01-22	2,029.25	2,029.58	Granite	331	A	83	1,742
PLT-06	GEM-CH-01-22	2,037.75	2,038.16	Granite	222	A	57	1,196
PLT-07	GEM-CH-01-22	2,052.16	2,052.70	Granite	721	A	196	4,116
PLT-08	GEM-CH-01-22	2,060.00	2,062.62	Granite	397	A	102	2,138
PLT-09	GEM-CH-01-22	2,068.41	2,068.82	Granite	161	A	40	837
PLT-10	GEM-CH-01-22	2,071.00	2,072.00	Granite	583	A	158	3,323
PLT-11	GEM-CH-01-22	2,090.50	2,091.00	Granite	529	A	131	2,745
PLT-12	GEM-CH-01-22	2,109.58	2,110.00	Granite	624	A	145	3,038
PLT-13	GEM-CH-01-22	1,327.00	1,328.20	Shale, sandy, tuffaceous	1,831	A	544	11,433
PLT-14	GEM-CH-01-22	1,347.60	1,348.50	Tuff, breccia in places, altered in places	1,956	A	573	12,029
PLT-15	GEM-CH-01-22	1,392.80	1,393.90	Tuff	1,297	A	325	6,835
PLT-16	GEM-CH-01-22	1,424.00	1,424.90	Tuff	173	A	42	874
PLT-17	GEM-CH-01-22	1,433.90	1,434.70	Mudstone/shale, tuffaceous	886	A	236	4,946
PLT-18	GEM-CH-01-22	1,449.00	1,449.90	Tuff, welded	1,011	A	251	5,274
PLT-19	GEM-CH-01-22	1,482.50	1,483.20	Breccia, tuffaceous	1,579	A	442	9,281
PLT-20	GEM-CH-01-22	1,491.40	1,492.20	Tuff, lithic lapilli	201	A	53	1,121
PLT-21	GEM-CH-01-22	1,510.90	1,511.70	Tuff, lithic lapilli	83	A	19	404

Table 8. Point Load Test Results for Hole GEM-CH-02-22

Specimen No.	Hole ID	From (ft)	To (ft)	Lithology	"Failure Load" P (lb)	Test Orientation (A/D)	Corrected Point Load Index, $I_{S(50)}$ (psi)	Estimated UCS (psi)
PLT-22	GEM-CH-02-22	1,317.16	1,318.00	Breccia, tuffaceous, lapilli	1,312	A	329	6,904
PLT-23	GEM-CH-02-22	1,327.50	1,328.00	Breccia, tuffaceous, lapilli	1,496	A	351	7,363
PLT-24	GEM-CH-02-22	1,337.00	1,338.00	Breccia, tuffaceous, lapilli	1,361	A	309	6,485
PLT-25	GEM-CH-02-22	1,367.00	1,368.00	Breccia, tuffaceous, lapilli	1,328	A	353	7,413
PLT-26	GEM-CH-02-22	1,377.25	1,378.33	Breccia, tuffaceous, lapilli	1,524	A	369	7,745
PLT-27	GEM-CH-02-22	1,409.00	1,410.25	Breccia, tuffaceous, lapilli	1,423	A	352	7,396
PLT-28	GEM-CH-02-22	1,418.60	1,420.00	Breccia, tuffaceous, lapilli	865	A	219	4,598
PLT-29	GEM-CH-02-22	1,437.00	1,438.00	Tuff, welded	888	A	210	4,420
PLT-30	GEM-CH-02-22	1,459.00	1,459.66	Tuff, welded	1,401	A	321	6,749
PLT-31	GEM-CH-02-22	1,526.00	1,527.25	Tuff, welded	886	A	265	5,566
PLT-32	GEM-CH-02-22	1,622.16	1,623.00	Breccia, tuffaceous	1,023	A	260	5,451

Table 9. Point Load Test Results for Hole GEM-CH-03-22

Specimen No.	Hole ID	From (ft)	To (ft)	Lithology	"Failure Load" P (lb)	Test Orientation (A/D)	Corrected Point Load Index, $I_{S(50)}$ (psi)	Estimated UCS (psi)
PLT-33	GEM-CH-03-22	1,184.00	1,184.50	Tuff, hard, welded	889	A	238	5,001
PLT-34	GEM-CH-03-22	1,304.00	1,304.50	Tuff, rhyolitic	780	A	214	4,496
PLT-35	GEM-CH-03-22	1,356.58	1,357.16	Rhyolite	893	A	245	5,148
PLT-36	GEM-CH-03-22	1,393.41	1,394.00	Andesite	669	A	173	3,628
PLT-37	GEM-CH-03-22	1,398.00	1,398.66	Andesite	574	A	158	3,313
PLT-38	GEM-CH-03-22	1,434.00	1,434.66	Andesite	525	A	129	2,709
PLT-39	GEM-CH-03-22	1,445.58	1,446.00	Andesite / Rhyolite	702	A	185	3,892
PLT-40	GEM-CH-03-22	1,469.00	1,469.33	Andesite / Rhyolite	116	A	28	592
PLT-41	GEM-CH-03-22	1,507.66	1,508.00	Quartz Monzonite, hard	234	A	61	1,283
PLT-42	GEM-CH-03-22	1,554.00	1,554.48	Granodiorite	307	A	82	1,713
PLT-43	GEM-CH-03-22	1,574.00	1,574.33	Granodiorite	329	A	84	1,762
PLT-44	GEM-CH-03-22	1,617.50	1,617.91	Granodiorite	218	A	57	1,190

Table 10. Slake Durability Test Results for Hole GEM-CH-01-22

		Sample Depth			Slake Durability		
Specimen ID	Hole ID	From (ft)	To (ft)	Lithology	Moisture Content (%)	Index, I_d (2)	Retained Material Description (Type) *
SLK-01	GEM-CH-01-22	1976.00	1976.50	Granite	1.1%	69.9	II
SLK-02	GEM-CH-01-22	1988.41	1989.03	Granite	0.4%	97.1	I
SLK-03	GEM-CH-01-22	1999.41	2000.04	Granite	0.3%	96.2	I
SLK-04	GEM-CH-01-22	2010.08	2010.66	Granite	1.1%	49.6	II
SLK-05	GEM-CH-01-22	2024.83	2025.33	Granite	0.1%	64.6	II
SLK-06	GEM-CH-01-22	2032.00	2032.33	Granite	0.5%	61.3	II
SLK-07	GEM-CH-01-22	2041.00	2042.00	Granite	0.7%	37.5	II
SLK-08	GEM-CH-01-22	2053.00	2053.50	Granite	0.4%	96.1	I
SLK-09	GEM-CH-01-22	2067.66	2068.41	Granite	0.9%	72.3	II
SLK-10	GEM-CH-01-22	2073.83	2074.62	Granite	0.9%	85.6	I
SLK-11	GEM-CH-01-22	2089.00	2089.58	Granite	0.3%	74.1	II
SLK-12	GEM-CH-01-22	2106.00	2107.00	Granite	0.5%	75.4	II
SLK-24	GEM-CH-01-22	1327.00	1328.20	Tuff, breccia in places, altered in places	0.5%	99.0	I
SLK-25	GEM-CH-01-22	1347.60	1348.00	Tuff, breccia in places, altered in places	1.3%	99.0	I
SLK-26	GEM-CH-01-22	1383.70	1384.75	Tuff, breccia in places, altered in places	2.9%	96.2	I
SLK-27	GEM-CH-01-22	1408.50	1409.30	Tuff	1.7%	99.4	I
SLK-28	GEM-CH-01-22	1463.90	1464.70	Breccia, tuffaceous	1.6%	99.2	I
SLK-29	GEM-CH-01-22	1506.20	1506.90	Tuff, lithic lapilli	1.5%	87.7	II

* Type I = Retained pieces remained virtually unchanged
II = Retained materials consist of large and small pieces
III = Retained materials is exclusively small fragments

Table 11. Slake Durability Test Results for Hole GEM-CH-02-22

		Sample Depth			Slake Durability		
Specimen ID	Hole ID	From (ft)	To (ft)	Lithology	Moisture Content (%)	Index, I_d (2)	Retained Material Description (Type) *
SLK-13	GEM-CH-02-22	1347.00	1348.00	Breccia, tuffaceous, lapilli	3.8%	99.1	I
SLK-14	GEM-CH-02-22	1506.50	1507.33	Tuff, welded	7.8%	98.7	I
SLK-15	GEM-CH-02-22	1575.00	1575.66	Tuff, welded	4.6%	98.9	I
SLK-16	GEM-CH-02-22	1662.75	1663.33	Granite, hydrothermally altered	1.2%	99.7	I
SLK-17	GEM-CH-02-22	1732.00	1733.00	Granite, hydrothermally altered	0.9%	92.5	I
SLK-18	GEM-CH-02-22	1746.50	1747.16	Granite, hydrothermally altered	0.4%	59.6	II
SLK-19	GEM-CH-02-22	1311.66	1312.32	Breccia, tuffaceous, lapilli	3.4%	97.9	I
SLK-20	GEM-CH-02-22	1398.00	1398.66	Breccia, tuffaceous, lapilli	4.2%	92.9	I
SLK-21	GEM-CH-02-22	1460.75	1461.00	Tuff, welded	7.2%	96.4	I
SLK-22	GEM-CH-02-22	1534.00	1535.58	Tuff, welded	4.2%	95.8	I
SLK-23	GEM-CH-02-22	1604.00	1605.00	Tuff, welded	6.7%	95.4	I
SLK-30	GEM-CH-02-22	1337.00	1338.00	Breccia, tuffaceous, lapilli	3.7%	98.5	I
SLK-31	GEM-CH-02-22	1367.00	1368.00	Breccia, tuffaceous, lapilli	3.2%	98.4	I
SLK-32	GEM-CH-02-22	1387.50	1388.25	Breccia, tuffaceous, lapilli	4.1%	98.1	I
SLK-33	GEM-CH-02-22	1418.60	1420.00	Breccia, tuffaceous, lapilli	4.6%	98.0	I
SLK-34	GEM-CH-02-22	1437.00	1438.00	Tuff, welded	7.4%	96.8	I
SLK-35	GEM-CH-02-22	1622.16	1623.00	Breccia, tuffaceous	6.4%	97.1	I

* Type I = Retained pieces remained virtually unchanged
II = Retained materials consist of large and small pieces
III = Retained materials is exclusively small fragments

Table 12. Slake Durability Test Results for Hole GEM-CH-03-22

		Sample Depth			Slake Durability		
Specimen ID	Hole ID	From (ft)	To (ft)	Lithology	Moisture Content (%)	Index, I_d (2)	Retained Material Description (Type) *
SLK-36	GEM-CH-03-22	1195.58	1196.66	Tuff, hard, welded	4.1%	99.9	I
SLK-37	GEM-CH-03-22	1316.58	1317.41	Tuff, rhyolitic	3.5%	94.1	I
SLK-38	GEM-CH-03-22	1340.88	1342.00	Tuff, rhyolitic	2.6%	98.5	I
SLK-39	GEM-CH-03-22	1364.66	1365.75	Rhyolite	2.3%	98.9	I
SLK-40	GEM-CH-03-22	1386.00	1387.06	Andesite	3.0%	94.9	I
SLK-41	GEM-CH-03-22	1414.50	1415.83	Andesite	2.3%	97.1	I
SLK-42	GEM-CH-03-22	1432.50	1433.50	Andesite	2.4%	98.3	I
SLK-43	GEM-CH-03-22	1444.00	1445.00	Andesite / Rhyolite	3.0%	98.3	I
SLK-44	GEM-CH-03-22	1474.00	1475.00	Andesite / Rhyolite	4.0%	99.0	I
SLK-45	GEM-CH-03-22	1522.08	1523.08	Granodiorite, decomposed	17.8%	11.9	III
SLK-46	GEM-CH-03-22	1541.16	1542.00	Granodiorite, decomposed	5.6%	95.1	I
SLK-47	GEM-CH-03-22	1582.58	1583.58	Granodiorite, decomposed	0.8%	54.3	II
SLK-48	GEM-CH-03-22	1609.83	1610.53	Granodiorite, decomposed	0.8%	64.5	II

* Type I = Retained pieces remained virtually unchanged
II = Retained materials consist of large and small pieces
III = Retained materials is exclusively small fragments

APPENDIX A

UNIAXIAL COMPRESSIVE STRENGTH (UCS) TEST DATA SHEETS

AGAPITO ASSOCIATES, INC.
2913 Hill Avenue, #B
Grand Junction, CO 81504 USA
970-242-4220

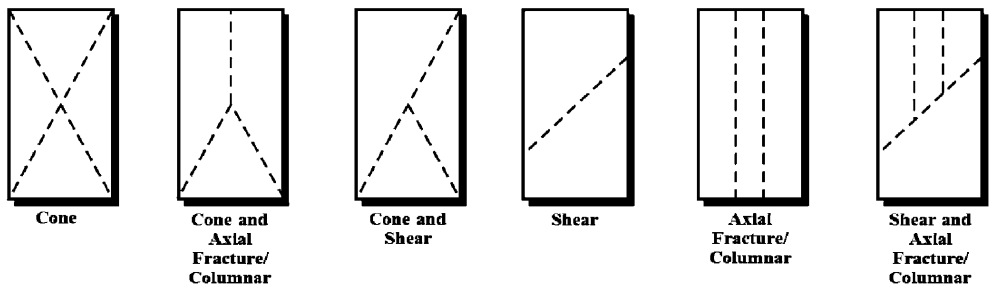
UNIAXIAL COMPRESSION TESTS

CLIENT:	Lane PES	**HOLE NO:**	GEM-CH-01-22
JOB NO:	951-14	**MOISTURE CONDITION:**	As received
DATE:	July 27, 2022	**TEMPERATURE:**	Ambient

Specimen No.	Hole No.	Depth From (ft)	Depth To (ft)	Length of Interval (ft)	Weight (oz)	Diameter D_1 (in)	Diameter D_2 (in)	Axial Length (inch)	Length-to-Diameter Ratio	Area (inch^2)	Density (pcf)	Specific Gravity
UCS-01	GEM-CH-01-22	1,549.00	1,549.66	0.66	35.05	2.41	2.41	5.38	2.2	4.56	154	2.5
UCS-02	GEM-CH-01-22	1,558.75	1,559.25	0.50	34.86	2.41	2.40	5.37	2.2	4.54	154	2.5
UCS-03	GEM-CH-01-22	1,586.25	1,587.00	0.75	37.02	2.41	2.42	5.39	2.2	4.57	162	2.6
UCS-04	GEM-CH-01-22	1,589.00	1,589.75	0.75	35.94	2.41	2.41	5.29	2.2	4.57	160	2.6
UCS-05	GEM-CH-01-22	1,616.00	1,617.00	1.00	36.70	2.41	2.41	5.47	2.3	4.56	159	2.5
UCS-06	GEM-CH-01-22	1,617.00	1,617.83	0.83	36.37	2.41	2.41	5.49	2.3	4.56	157	2.5
UCS-07	GEM-CH-01-22	1,670.50	1,671.50	1.00	31.25	2.41	2.42	5.27	2.2	4.59	139	2.2
UCS-08	GEM-CH-01-22	1,706.58	1,707.33	0.75	32.31	2.42	2.38	5.29	2.2	4.53	146	2.3
UCS-09	GEM-CH-01-22	1,728.00	1,729.00	1.00	-	-	-	-	-	-	-	-
UCS-10	GEM-CH-01-22	1,961.00	1,961.91	0.91	33.95	2.40	2.40	4.89	2.0	4.52	166	2.7
UCS-11	GEM-CH-01-22	1,983.87	1,984.62	0.75	-	-	-	-	-	-	-	-
UCS-12	GEM-CH-01-22	2,003.75	2,004.75	1.00	34.39	2.40	2.40	4.93	2.1	4.53	166	2.7
UCS-13	GEM-CH-01-22	2,028.41	2,029.00	0.59	33.30	2.41	2.40	4.87	2.0	4.54	163	2.6
UCS-14	GEM-CH-01-22	2,042.08	2,043.08	1.00	31.11	2.40	2.40	4.84	2.0	4.51	154	2.5
UCS-15	GEM-CH-01-22	2,057.83	2,058.58	0.75	33.81	2.40	2.40	4.90	2.0	4.53	164	2.6
UCS-16	GEM-CH-01-22	2,098.00	2,099.00	1.00	32.92	2.40	2.40	4.85	2.0	4.53	162	2.6
UCS-17	GEM-CH-01-22	2,112.00	2,112.66	0.66	32.33	2.40	2.40	4.74	2.0	4.53	162	2.6
UCS-18	GEM-CH-01-22	2,131.00	2,132.00	1.00	-	-	-	-	-	-	-	-
UCS-19	GEM-CH-01-22	2,162.45	2,163.00	0.55	33.51	2.40	2.40	4.85	2.0	4.51	166	2.7
UCS-20	GEM-CH-01-22	2,170.37	2,171.00	0.63	33.22	2.40	2.40	4.82	2.0	4.53	164	2.6
UCS-21	GEM-CH-01-22	2,193.00	2,193.65	0.65	27.82	2.36	2.41	4.53	1.9	4.47	148	2.4
UCS-22	GEM-CH-01-22	1,966.16	1,967.66	1.50	36.97	2.40	2.40	5.40	2.3	4.51	164	2.6
UCS-23	GEM-CH-01-22	1,971.00	1,972.00	1.00	30.07	2.40	2.40	4.36	1.8	4.51	165	2.6
UCS-24	GEM-CH-01-22	1,986.25	1,987.25	1.00	33.74	2.41	2.40	4.91	2.0	4.55	163	2.6
UCS-25	GEM-CH-01-22	1,994.16	1,994.83	0.67	34.81	2.40	2.41	5.38	2.2	4.54	154	2.5
UCS-26	GEM-CH-01-22	2,005.58	2,006.00	0.42	34.53	2.40	2.40	5.04	2.1	4.52	164	2.6
UCS-27	GEM-CH-01-22	2,013.37	2,013.87	0.50	34.72	2.40	2.40	5.01	2.1	4.52	165	2.7
UCS-28	GEM-CH-01-22	2,034.37	2,035.37	1.00	27.54	2.39	2.40	4.36	1.8	4.51	151	2.4
UCS-29	GEM-CH-01-22	2,053.83	2,054.33	0.50	35.73	2.40	2.41	5.20	2.2	4.55	163	2.6
UCS-30	GEM-CH-01-22	2,061.00	2,061.75	0.75	37.19	2.40	2.40	5.43	2.3	4.52	164	2.6
UCS-31	GEM-CH-01-22	2,061.75	2,063.08	1.33	35.63	2.40	2.40	5.24	2.2	4.52	162	2.6
UCS-32	GEM-CH-01-22	2,076.00	2,077.00	1.00	30.15	2.40	2.40	4.46	1.9	4.52	161	2.6
UCS-33	GEM-CH-01-22	2,083.00	2,084.00	1.00	33.73	2.40	2.40	5.03	2.1	4.52	160	2.6
UCS-34	GEM-CH-01-22	2,099.00	2,099.83	0.83	39.04	2.40	2.40	5.76	2.4	4.52	162	2.6
UCS-35	GEM-CH-01-22	2,108.00	2,108.95	0.95	33.54	2.40	2.40	5.21	2.2	4.53	153	2.5
UCS-36	GEM-CH-01-22	2,117.00	2,117.83	0.83	36.63	2.40	2.40	5.34	2.2	4.52	164	2.6
UCS-37	GEM-CH-01-22	2,122.00	2,122.91	0.91	36.49	2.40	2.40	5.42	2.3	4.52	161	2.6
UCS-38	GEM-CH-01-22	2,126.00	2,126.83	0.83	36.90	2.39	2.40	5.39	2.2	4.51	164	2.6
UCS-92	GEM-CH-01-22	1,312.3	1,313.0	0.70	30.52	2.37	2.37	5.09	2.1	4.41	147	2.4
UCS-93	GEM-CH-01-22	1,361.2	1,361.9	0.70	29.88	2.38	2.38	4.79	2.0	4.43	152	2.4
UCS-94	GEM-CH-01-22	1,383.7	1,384.8	1.05	28.55	2.39	2.39	5.32	2.2	4.48	129	2.1
UCS-95	GEM-CH-01-22	1,392.8	1,393.9	1.10	28.09	2.39	2.39	5.27	2.2	4.48	128	2.1
UCS-96	GEM-CH-01-22	1,433.9	1,434.7	0.80	29.98	2.39	2.39	5.62	2.3	4.49	128	2.1
UCS-97	GEM-CH-01-22	1,455.1	1,456.0	0.90	28.46	2.40	2.40	5.27	2.2	4.52	129	2.1
UCS-98	GEM-CH-01-22	1,477.5	1,478.1	0.60	29.54	2.40	2.40	5.18	2.2	4.52	136	2.2

Specimen No.	Lithological Description	Failure Load (lb)	UCS (psi)	Failure Mode Notes	Comments
UCS-01	Granite, decomposed	5,560	1,219	Axial	Failed along pre-existing fracture
UCS-02	Granite, decomposed	3,110	685	Axial	
UCS-03	Granite, decomposed	26,565	5,808	Axial	
UCS-04	Granite	10,360	2,265	Axial	
UCS-05	Granite	3,650	800	Shear	Failed along pre-existing fracture
UCS-06	Granite	1,085	238	Shear	Failed along pre-existing fracture
UCS-07	Granite, decomposed	490	107	Shear	
UCS-08	Granite, decomposed	550	122	Axial	
UCS-09	Granite, decomposed	-	-	-	Sample broken during preparation
UCS-10	Granite	55,800	12,358	Axial	
UCS-11	Granite	-	-	-	Sample broken during preparation
UCS-12	Granite	45,570	10,061	Axial	
UCS-13	Granite	17,505	3,858	Shear	
UCS-14	Granite	2,075	460	Axial	
UCS-15	Granite	24,500	5,409	Shear/Axial	Partially failed along pre-existing fracture
UCS-16	Granite	40,745	8,994	Axial	Partially failed along vein
UCS-17	Granite	21,750	4,790	Shear	Elastic properties unable to be collected
UCS-18	Granite	-	-	-	Sample broken during preparation
UCS-19	Granite	44,645	9,906	Shear/Axial	
UCS-20	Granite	17,165	3,789	Shear/Axial	
UCS-21	Granite	1,575	350	Shear/Axial	Sample shorter than ASTM Specifications
UCS-22	Granite	25,190	5,588	Shear/Axial	
UCS-23	Granite	32,885	7,199	Shear	Sample shorter than ASTM Specifications; Partially failed along pre-existing mineralized fracture
UCS-24	Granite	51,810	11,393	Axial	
UCS-25	Granite	1,815	399	Axial	
UCS-26	Granite	27,095	6,001	Shear/Axial	
UCS-27	Granite	40,340	8,921	Shear/Axial	
UCS-28	Granite	6,310	1,383	Axial	Sample shorter than ASTM Specifications
UCS-29	Granite	30,565	6,724	Axial	
UCS-30	Granite	12,170	2,694	Shear/Axial	
UCS-31	Granite	13,855	3,062	Axial	
UCS-32	Granite	17,980	3,937	Axial	Sample shorter than ASTM Specifications
UCS-33	Granite	10,440	2,311	Axial	
UCS-34	Granite	46,090	10,207	Axial	
UCS-35	Granite	6,375	1,407	Axial	
UCS-36	Granite	18,750	4,148	Axial	
UCS-37	Granite	10,375	2,295	Axial	
UCS-38	Granite	14,015	3,108	Axial	
UCS-92	Shale, sandy, tuffaceous	19,675	4,460	Axial	
UCS-93	Tuff, breccia in places, altered in places	54,825	12,365	Axial	
UCS-94	Tuff, breccia in places, altered in places	16,265	3,632	Axial	Elastic properties unable to be collected
UCS-95	Tuff	27,350	6,101	Axial	
UCS-96	Mudstone/shale, tuffaceous	20,645	4,593	Axial	
UCS-97	Tuff, welded	48,990	10,827	Axial	
UCS-98	Breccia, tuffaceous	26,635	5,888	Axial	

Failure Mode Sketches



AGAPITO ASSOCIATES, INC.
2913 Hill Avenue, #B
Grand Junction, CO 81504 USA
970-242-4220

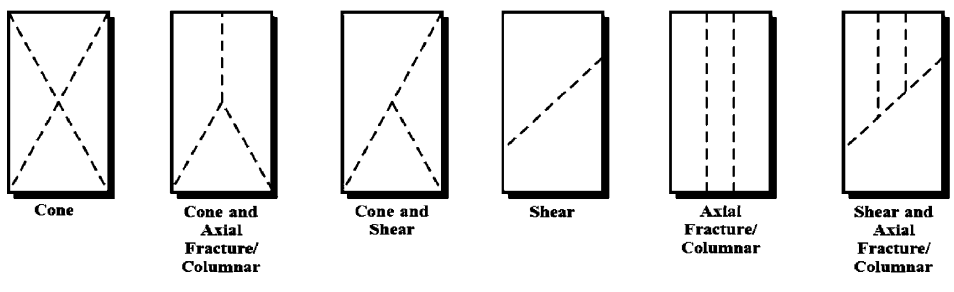
UNIAXIAL COMPRESSION TESTS

CLIENT:	Lane / Hydrostor	**HOLE NO:**	GEM-CH-02-22
JOB NO:	951-14	**MOISTURE CONDITION:**	As received
DATE:	October 18, 2022	**TEMPERATURE:**	Ambient

Specimen No.	Hole No.	Depth From (ft)	Depth To (ft)	Length of Interval (ft)	Weight (oz)	Diameter D_1 (in)	Diameter D_2 (in)	Axial Length (inch)	Length-to-Diameter Ratio	Area (inch^2)	Density (pcf)	Specific Gravity
UCS-39	GEM-CH-02-22	1,009.50	1,010.16	0.66	27.80	2.40	2.40	4.83	2.0	4.52	137	2.2
UCS-40	GEM-CH-02-22	1,479.50	1,480.00	0.50	27.78	2.40	2.40	5.29	2.2	4.52	125	2.0
UCS-41	GEM-CH-02-22	1,501.50	1,502.25	0.75	27.49	2.40	2.40	4.98	2.1	4.53	131	2.1
UCS-42	GEM-CH-02-22	1,512.16	1,512.91	0.75	27.66	2.40	2.40	5.09	2.1	4.53	130	2.1
UCS-43	GEM-CH-02-22	1,542.50	1,543.00	0.50	26.96	2.39	2.39	5.20	2.2	4.49	125	2.0
UCS-44	GEM-CH-02-22	1,551.00	1,552.00	1.00	27.93	2.39	2.39	5.29	2.2	4.49	127	2.0
UCS-45	GEM-CH-02-22	1,561.00	1,561.66	0.66	27.92	2.39	2.39	5.35	2.2	4.49	125	2.0
UCS-46	GEM-CH-02-22	1,576.00	1,576.50	0.50	29.78	2.39	2.40	5.79	2.4	4.51	123	2.0
UCS-47	GEM-CH-02-22	1,585.33	1,586.00	0.67	29.54	2.39	2.39	5.84	2.4	4.50	121	1.9
UCS-48	GEM-CH-02-22	1,600.33	1,601.00	0.67	28.36	2.40	2.40	5.48	2.3	4.51	124	2.0
UCS-49	GEM-CH-02-22	1,604.00	1,605.00	1.00	30.10	2.40	2.39	5.87	2.5	4.50	123	2.0
UCS-50	GEM-CH-02-22	1,641.00	1,641.50	0.50	29.29	2.40	2.40	5.09	2.1	4.51	138	2.2
UCS-51	GEM-CH-02-22	1,645.25	1,646.00	0.75	32.84	2.40	2.40	5.72	2.4	4.51	137	2.2
UCS-52	GEM-CH-02-22	1,664.25	1,665.08	0.83	34.48	2.39	2.39	5.56	2.3	4.49	149	2.4
UCS-53	GEM-CH-02-22	1,703.91	1,704.58	0.67	31.57	2.39	2.38	5.42	2.3	4.47	141	2.3
UCS-54	GEM-CH-02-22	1,721.00	1,721.75	0.75	30.68	2.39	2.39	5.70	2.4	4.48	130	2.1
UCS-55	GEM-CH-02-22	1,730.16	1,731.00	0.84	29.92	2.40	2.39	5.73	2.4	4.50	125	2.0
UCS-56	GEM-CH-02-22	1,927.41	1,928.00	0.59	35.67	2.40	2.40	5.56	2.3	4.53	153	2.4
UCS-57	GEM-CH-02-22	1,954.08	1,955.25	1.17	36.05	2.41	2.41	5.69	2.4	4.55	150	2.4
UCS-58	GEM-CH-02-22	1,966.66	1,967.83	1.17	33.80	2.40	2.41	5.29	2.2	4.54	152	2.4
UCS-59	GEM-CH-02-22	1,977.50	1,978.25	0.75	34.73	2.41	2.40	5.61	2.3	4.54	147	2.4
UCS-60	GEM-CH-02-22	1,980.25	1,981.00	0.75	37.53	2.40	2.40	5.69	2.4	4.54	157	2.5
UCS-61	GEM-CH-02-22	1,984.83	1,985.75	0.92	37.12	2.40	2.40	5.67	2.4	4.53	156	2.5
UCS-62	GEM-CH-02-22	1,991.00	1,992.00	1.00	36.27	2.40	2.40	5.74	2.4	4.53	151	2.4
UCS-63	GEM-CH-02-22	1,992.83	1,993.50	0.67	33.46	2.40	2.40	5.25	2.2	4.54	152	2.4
UCS-64	GEM-CH-02-22	2,007.75	2,008.58	0.83	34.56	2.41	2.41	5.69	2.4	4.55	144	2.3
UCS-65	GEM-CH-02-22	2,008.66	2,009.25	0.59	33.76	2.41	2.40	5.58	2.3	4.56	143	2.3
UCS-66	GEM-CH-02-22	2,023.16	2,023.83	0.67	31.74	2.40	2.40	5.20	2.2	4.53	145	2.3
UCS-67	GEM-CH-02-22	2,030.41	2,031.00	0.59	35.89	2.40	2.40	5.45	2.3	4.54	157	2.5
UCS-68	GEM-CH-02-22	2,035.25	2,036.00	0.75	31.15	2.40	2.41	5.06	2.1	4.54	146	2.3
UCS-69	GEM-CH-02-22	2,036.00	2,036.66	0.66	37.10	2.40	2.40	5.68	2.4	4.53	156	2.5
UCS-70	GEM-CH-02-22	2,052.33	2,053.33	1.00	36.35	2.40	2.40	5.56	2.3	4.52	156	2.5
UCS-71	GEM-CH-02-22	2,055.50	2,056.00	0.50	33.00	2.40	2.40	5.06	2.1	4.53	155	2.5
UCS-72	GEM-CH-02-22	2,057.00	2,058.00	1.00	37.67	2.40	2.40	5.65	2.4	4.53	159	2.5
UCS-73	GEM-CH-02-22	2,072.00	2,072.50	0.50	27.49	2.39	2.39	4.98	2.1	4.49	133	2.1
UCS-74	GEM-CH-02-22	2,075.00	2,075.91	0.91	24.10	2.40	2.39	5.19	2.2	4.51	111	1.8
UCS-75	GEM-CH-02-22	2,084.75	2,084.91	0.16	32.55	2.40	2.39	4.94	2.1	4.50	158	2.5
UCS-76	GEM-CH-02-22	2,093.50	2,094.50	1.00	29.69	2.40	2.40	5.60	2.3	4.52	127	2.0
UCS-77	GEM-CH-02-22	2,108.08	2,108.83	0.75	36.25	2.40	2.39	5.50	2.3	4.50	158	2.5
UCS-78	GEM-CH-02-22	2,112.00	2,113.00	1.00	36.07	2.40	2.40	5.62	2.3	4.52	153	2.5
UCS-79	GEM-CH-02-22	2,128.00	2,128.91	0.91	35.85	2.39	2.40	5.58	2.3	4.50	154	2.5
UCS-80	GEM-CH-02-22	2,136.50	2,137.00	0.50	34.08	2.40	2.40	5.45	2.3	4.52	149	2.4
UCS-81	GEM-CH-02-22	2,155.58	2,156.58	1.00	31.67	2.40	2.40	5.63	2.3	4.51	135	2.2
UCS-82	GEM-CH-02-22	2,166.00	2,166.50	0.50	31.56	2.40	2.40	5.03	2.1	4.52	150	2.4
UCS-83	GEM-CH-02-22	2,177.00	2,177.66	0.66	31.88	2.40	2.39	5.62	2.4	4.49	137	2.2
UCS-84	GEM-CH-02-22	2,227.50	2,228.50	1.00	35.41	2.40	2.40	5.60	2.3	4.51	151	2.4
UCS-85	GEM-CH-02-22	2,248.25	2,249.08	0.83	36.17	2.39	2.40	5.63	2.4	4.51	154	2.5
UCS-86	GEM-CH-02-22	2,256.00	2,256.50	0.50	34.13	2.39	2.39	5.59	2.3	4.49	147	2.4
UCS-87	GEM-CH-02-22	2,277.11	2,278.11	1.00	35.45	2.39	2.39	5.62	2.4	4.48	152	2.4
UCS-88	GEM-CH-02-22	2,287.00	2,288.00	1.00	32.18	2.39	2.39	5.11	2.1	4.47	152	2.4
UCS-89	GEM-CH-02-22	2,334.58	2,335.33	0.75	37.38	2.40	2.40	5.58	2.3	4.54	159	2.6
UCS-90	GEM-CH-02-22	2,361.00	2,361.50	0.50	33.72	2.40	2.40	5.03	2.1	4.52	160	2.6
UCS-91	GEM-CH-02-22	2,372.00	2,372.58	0.58	35.05	2.39	2.40	5.60	2.3	4.50	150	2.4
UCS-99	GEM-CH-02-22	1,317.16	1,318.00	0.84	26.25	2.40	2.40	5.29	2.2	4.52	118	1.9
UCS-100	GEM-CH-02-22	1,337.00	1,338.00	1.00	25.35	2.41	2.40	5.04	2.1	4.54	120	1.9
UCS-101	GEM-CH-02-22	1,367.00	1,368.00	1.00	28.85	2.40	2.40	5.50	2.3	4.53	125	2.0
UCS-102	GEM-CH-02-22	1,377.25	1,378.33	1.08	28.55	2.40	2.40	5.33	2.2	4.52	128	2.0
UCS-103	GEM-CH-02-22	1,387.50	1,388.25	0.75	26.83	2.40	2.40	5.40	2.3	4.52	119	1.9
UCS-104	GEM-CH-02-22	1,409.00	1,410.25	1.25	27.78	2.40	2.40	5.47	2.3	4.53	121	1.9
UCS-105	GEM-CH-02-22	1,428.66	1,429.33	0.67	29.07	2.40	2.40	5.43	2.3	4.52	128	2.1
UCS-106	GEM-CH-02-22	1,447.30	1,448.00	0.70	27.98	2.40	2.40	5.42	2.3	4.53	123	2.0
UCS-107	GEM-CH-02-22	1,471.00	1,471.91	0.91	26.75	2.40	2.40	5.34	2.2	4.52	120	1.9
UCS-108	GEM-CH-02-22	1,526.00	1,527.50	1.50	28.64	2.40	2.40	5.42	2.3	4.52	126	2.0
UCS-109	GEM-CH-02-22	1,615.00	1,616.00	1.00	23.46	2.40	2.40	4.82	2.0	4.52	116	1.9

Specimen No.	Lithological Description	Failure Load (lb)	UCS (psi)	Failure Mode Notes	Comments
UCS-39	Sandstone, tuffaceous, breccia	3,330	736	Axial	
UCS-40	Breccia, tuffaceous	49,645	10,974	Axial	
UCS-41	Tuff, welded	58,285	12,857	Axial	
UCS-42	Tuff, welded	51,970	11,481	Axial	
UCS-43	Tuff, welded	39,720	8,856	Axial	
UCS-44	Tuff, welded	37,640	8,392	Axial	
UCS-45	Tuff, welded	38,465	8,558	Axial	
UCS-46	Tuff, welded	22,965	5,093	Axial	Sample failed partially along pre-existing lamination
UCS-47	Tuff, welded	43,950	9,768	Axial	
UCS-48	Tuff, welded	19,255	4,271	Shear/Axial	Sample failed partially along pre-existing lamination
UCS-49	Tuff, welded	11,290	2,510	Shear/Axial	Sample failed along pre-existing mineralized fracture
UCS-50	Rhyolite, banded interbedded	100,450	22,251	Axial	
UCS-51	Rhyolite, banded interbedded	79,280	17,576	Axial	
UCS-52	Rhyolite, banded interbedded	125,295	27,905	Cone (?)	Violent sample failure
UCS-53	Shale	3,835	857	Shear	
UCS-54	Granite, decomposed	24,925	5,560	Axial	
UCS-55	Granite, decomposed	22,010	4,894	Axial	
UCS-56	Granite, partially decomposed	17,530	3,866	Axial	
UCS-57	Granite, partially decomposed	5,885	1,293	Axial	Sample failed along pre-existing mineralized fracture
UCS-58	Granite, partially decomposed	4,480	986	Axial	
UCS-59	Granite, partially decomposed	9,540	2,101	Axial	
UCS-60	Granite, partially decomposed	23,350	5,148	Axial	
UCS-61	Granite, partially decomposed	17,715	3,907	Axial	
UCS-62	Granite, partially decomposed	13,525	2,983	Axial	
UCS-63	Granite, partially decomposed	17,825	3,929	Axial	
UCS-64	Granite, partially decomposed	6,980	1,534	Axial	
UCS-65	Granite, partially decomposed	3,400	746	Axial	
UCS-66	Granite, partially decomposed	12,760	2,816	Axial	
UCS-67	Granite, partially decomposed	11,950	2,635	Axial	Sample failed partially along pre-existing mineralized fracture
UCS-68	Granite, partially decomposed	6,135	1,351	Axial	
UCS-69	Granite, partially decomposed	12,665	2,794	Axial	
UCS-70	Granite, partially decomposed	21,955	4,858	Axial	Sample failed partially along pre-existing mineralized fracture
UCS-71	Granite, partially decomposed	32,515	7,172	Axial	
UCS-72	Granite, partially decomposed	79,835	17,625	Axial	
UCS-73	Rhyolite, interbedded granite	36,320	8,089	Axial	
UCS-74	Rhyolite, interbedded granite	1,635	363	Axial	
UCS-75	Rhyolite, interbedded granite	63,700	14,149	Axial	Sample failed partially along pre-existing mineralized fracture
UCS-76	Rhyolite, interbedded granite	36,310	8,038	Axial	
UCS-77	Granite, interbedded rhyolite breccia	33,965	7,547	Axial	
UCS-78	Granite, partially decomposed	18,865	4,171	Axial	
UCS-79	Granite, partially decomposed	7,310	1,623	Axial	
UCS-80	Granite, partially decomposed	7,280	1,609	Axial	
UCS-81	Shale, sandy, tuffaceous	31,690	7,030	Shear/Axial	
UCS-82	Shale, sandy, tuffaceous	57,955	12,835	Axial	
UCS-83	Shale, sandy, tuffaceous	45,870	10,222	Axial	
UCS-84	Granite, decomposed	16,145	3,579	Axial	
UCS-85	Granite, decomposed	16,895	3,750	Axial	
UCS-86	Granite, decomposed	8,885	1,980	Axial	
UCS-87	Granodiorite	21,795	4,860	Axial	
UCS-88	Granodiorite	23,920	5,350	Axial	
UCS-89	Granodiorite	20,110	4,433	Axial	
UCS-90	Granodiorite	23,100	5,110	Axial	
UCS-91	Granodiorite	6,365	1,413	Axial	
UCS-99	Breccia, tuffaceous, lapilli	20,205	4,466	Axial	
UCS-100	Breccia, tuffaceous, lapilli	6,935	1,529	Axial	
UCS-101	Breccia, tuffaceous, lapilli	25,740	5,686	Axial	
UCS-102	Breccia, tuffaceous, lapilli	44,390	9,816	Axial	
UCS-103	Breccia, tuffaceous, lapilli	22,710	5,027	Axial	
UCS-104	Breccia, tuffaceous, lapilli	23,145	5,111	Axial	
UCS-105	Tuff, welded	34,520	7,643	Axial	
UCS-106	Tuff, welded	20,235	4,466	Axial	Sample failed partially along pre-existing mineralized fracture
UCS-107	Tuff, welded	10,570	2,337	Axial	
UCS-108	Tuff, welded	22,335	4,937	Axial	
UCS-109	Breccia, tuffaceous	11,760	2,602	Axial	Sample failed partially along pre-existing mineralized fracture

Failure Mode Sketches



AGAPITO ASSOCIATES, INC.
2913 Hill Avenue, #B
Grand Junction, CO 81504 USA
970-242-4220

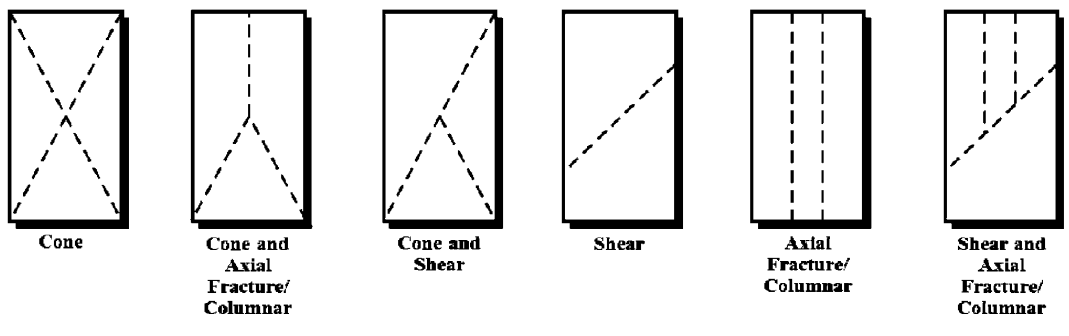
UNIAXIAL COMPRESSION TESTS

CLIENT:	Lane/Hydrostor	**HOLE NO:**	GEM-CH-03-22
JOB NO:	951-14	**MOISTURE CONDITION:**	As received
DATE:	December 27, 2022	**TEMPERATURE:**	Ambient

Specimen No.	Hole No.	Depth From (ft)	Depth To (ft)	Length of Interval (ft)	Weight (oz)	Diameter D_1 (in)	Diameter D_2 (in)	Axial Length (inch)	Length-to-Diameter Ratio	Area (inch^2)	Density (pcf)	Specific Gravity
UCS-110	GEM-CH-03-22	1,186.0	1,186.7	0.66	32.22	2.42	2.42	5.48	2.3	4.59	138	2.2
UCS-111	GEM-CH-03-22	1,191.6	1,192.3	0.75	32.79	2.42	2.42	5.46	2.3	4.60	141	2.3
UCS-112	GEM-CH-03-22	1,192.4	1,193.4	1.00	32.36	2.42	2.42	5.47	2.3	4.60	139	2.2
UCS-113	GEM-CH-03-22	1,317.5	1,318.4	0.91	32.26	2.42	2.42	5.45	2.3	4.60	139	2.2
UCS-114	GEM-CH-03-22	1,319.0	1,319.9	0.91	33.32	2.42	2.42	5.58	2.3	4.60	140	2.2
UCS-115	GEM-CH-03-22	1,324.0	1,325.0	1.00	31.12	2.42	2.42	5.24	2.2	4.60	140	2.2
UCS-116	GEM-CH-03-22	1,334.0	1,334.8	0.75	31.16	2.41	2.42	5.35	2.2	4.58	137	2.2
UCS-117	GEM-CH-03-22	1,349.7	1,350.6	0.92	31.50	2.42	2.42	5.37	2.2	4.61	137	2.2
UCS-118	GEM-CH-03-22	1,361.3	1,362.0	0.75	31.94	2.42	2.42	5.42	2.2	4.59	138	2.2
UCS-119	GEM-CH-03-22	1,367.3	1,368.3	1.00	32.11	2.42	2.42	5.40	2.2	4.60	139	2.2
UCS-120	GEM-CH-03-22	1,380.7	1,381.6	0.92	34.19	2.42	2.42	5.47	2.3	4.61	146	2.3
UCS-121	GEM-CH-03-22	1,381.8	1,382.5	0.75	33.00	2.42	2.42	5.35	2.2	4.61	144	2.3
UCS-122	GEM-CH-03-22	1,406.3	1,407.2	0.91	32.04	2.42	2.42	5.34	2.2	4.61	141	2.3
UCS-123	GEM-CH-03-22	1,410.2	1,411.2	1.00	31.64	2.42	2.42	5.23	2.2	4.61	142	2.3
UCS-124	GEM-CH-03-22	1,421.8	1,422.5	0.75	32.63	2.42	2.42	5.26	2.2	4.61	145	2.3
UCS-125	GEM-CH-03-22	1,426.0	1,426.8	0.75	33.44	2.42	2.42	5.28	2.2	4.61	149	2.4
UCS-126	GEM-CH-03-22	1,427.0	1,428.7	1.70	34.17	2.42	2.43	5.33	2.2	4.61	150	2.4
UCS-127	GEM-CH-03-22	1,438.3	1,439.0	0.75	32.77	2.42	2.42	5.43	2.2	4.61	141	2.3
UCS-128	GEM-CH-03-22	1,452.0	1,452.6	0.58	-	-	-	-	-	-	-	-
UCS-129	GEM-CH-03-22	1,468.5	1,469.0	0.50	29.71	2.42	2.42	5.07	2.1	4.60	137	2.2
UCS-130	GEM-CH-03-22	1,473.5	1,474.0	0.50	34.17	2.42	2.42	5.85	2.4	4.60	137	2.2
UCS-131	GEM-CH-03-22	1,486.5	1,487.0	0.50	38.52	2.42	2.42	5.66	2.3	4.60	160	2.6
UCS-132	GEM-CH-03-22	1,498.3	1,499.0	0.75	36.02	2.42	2.42	5.38	2.2	4.61	157	2.5
UCS-133	GEM-CH-03-22	1,513.3	1,514.0	0.75	35.83	2.42	2.42	5.37	2.2	4.59	157	2.5
UCS-134	GEM-CH-03-22	1,551.2	1,552.0	0.80	33.72	2.40	2.40	5.13	2.1	4.53	157	2.5
UCS-135	GEM-CH-03-22	1,558.3	1,559.0	0.67	34.62	2.39	2.40	5.29	2.2	4.51	157	2.5
UCS-136	GEM-CH-03-22	1,596.4	1,597.0	0.59	33.22	2.39	2.40	5.09	2.1	4.51	156	2.5
UCS-137	GEM-CH-03-22	1,608.3	1,609.0	0.67	33.83	2.39	2.40	5.31	2.2	4.50	153	2.4
UCS-138	GEM-CH-03-22	1,618.0	1,618.6	0.58	37.63	2.40	2.40	5.46	2.3	4.52	165	2.6

Specimen No.	Lithological Description	Failure Load (lb)	UCS (psi)	Failure Mode Notes	Comments
UCS-110	Tuff, hard, welded	27,090	5,897	Axial	
UCS-111	Tuff, hard, welded	33,640	7,311	Shear	
UCS-112	Tuff, hard, welded	18,235	3,965	Shear	Sample failed along pre-existing fracture
UCS-113	Tuff, rhyolitic	26,920	5,858	Axial	
UCS-114	Tuff, rhyolitic	11,605	2,525	Shear	Sample failed along pre-existing fracture
UCS-115	Tuff, rhyolitic	10,895	2,370	Shear	Corner missing from sample
UCS-116	Tuff, rhyolitic	27,295	5,954	Axial	
UCS-117	Rhyolite	19,220	4,172	Axial	
UCS-118	Rhyolite	19,065	4,152	Axial	
UCS-119	Rhyolite	35,495	7,717	Shear	
UCS-120	Andesite	10,495	2,279	Shear/Axial	
UCS-121	Andesite	10,410	2,256	Shear	Sample failed along pre-existing fracture
UCS-122	Andesite	16,475	3,577	Axial	
UCS-123	Andesite	21,095	4,579	Shear/Axial	
UCS-124	Andesite	10,330	2,239	Shear	Sample failed along pre-existing fracture
UCS-125	Andesite	37,385	8,111	Axial	
UCS-126	Andesite	33,990	7,367	Axial	
UCS-127	Andesite	17,405	3,778	Shear	
UCS-128	Andesite/Rhyolite	-	-	-	Sample broken during preparation
UCS-129	Andesite/Rhyolite	22,540	4,897	Axial	
UCS-130	Andesite/Rhyolite	41,810	9,097	Axial	
UCS-131	Quartz Monzonite, decomposed	11,810	2,569	Axial	
UCS-132	Quartz Monzonite, decomposed	10,525	2,285	Axial	
UCS-133	Quartz Monzonite, hard	22,495	4,896	Axial	
UCS-134	Granodiorite, decomposed	15,270	3,374	Axial	
UCS-135	Granodiorite, decomposed	24,960	5,534	Axial	
UCS-136	Granodiorite, decomposed	8,560	1,900	Axial	
UCS-137	Granodiorite, decomposed	5,175	1,149	Shear	
UCS-138	Granodiorite, decomposed	31,480	6,967	Shear/Axial	

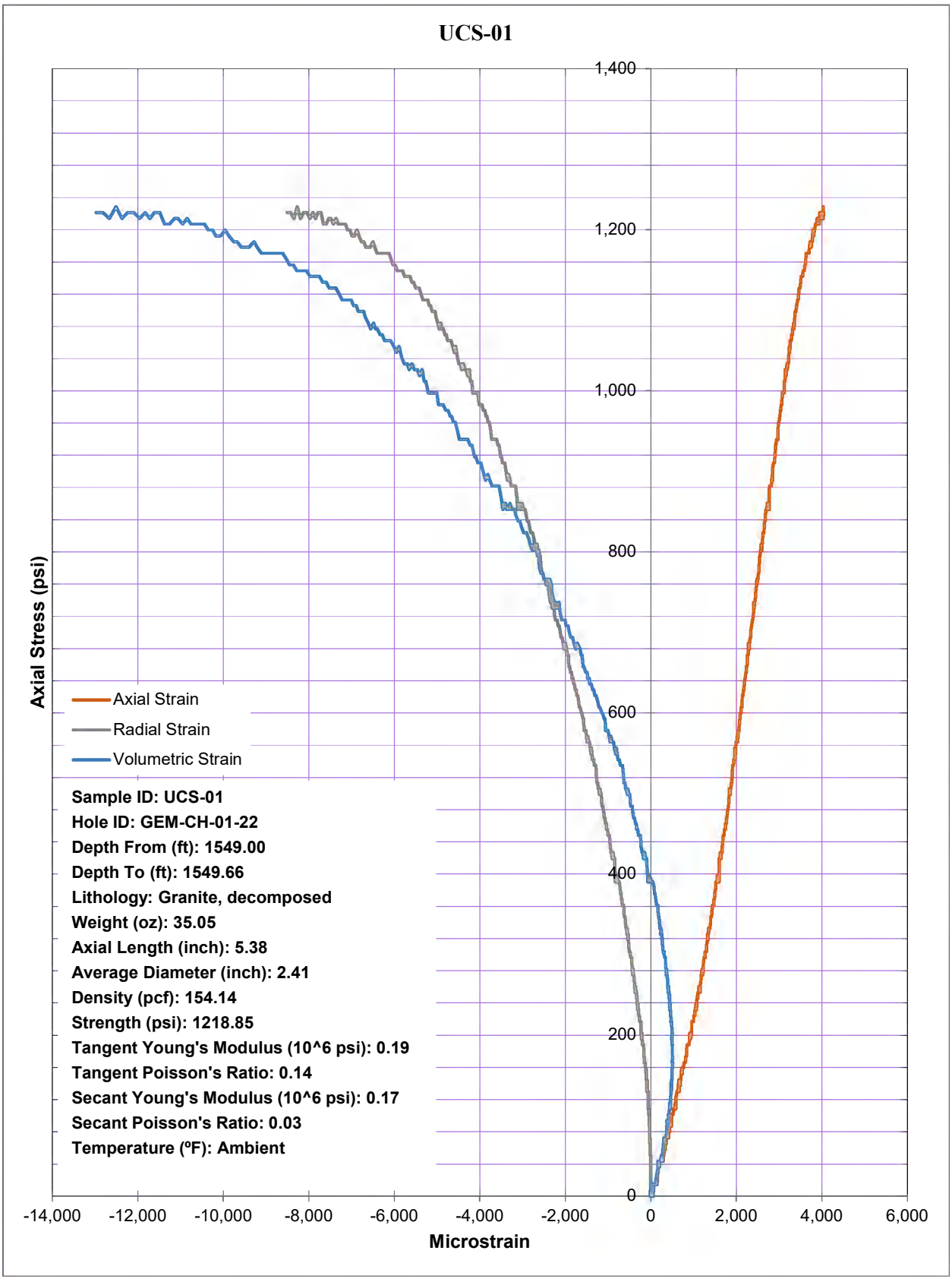
Failure Mode Sketches

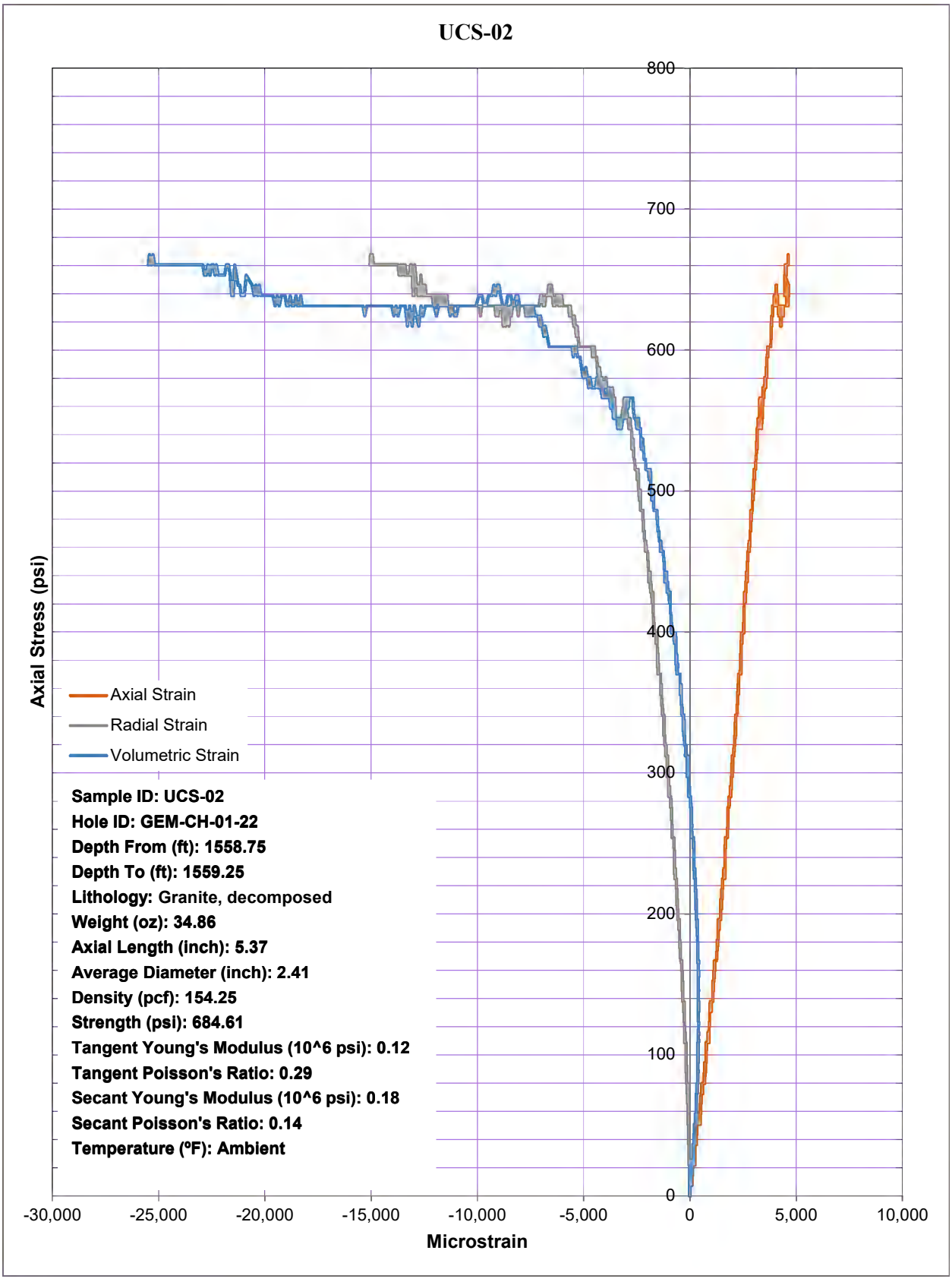


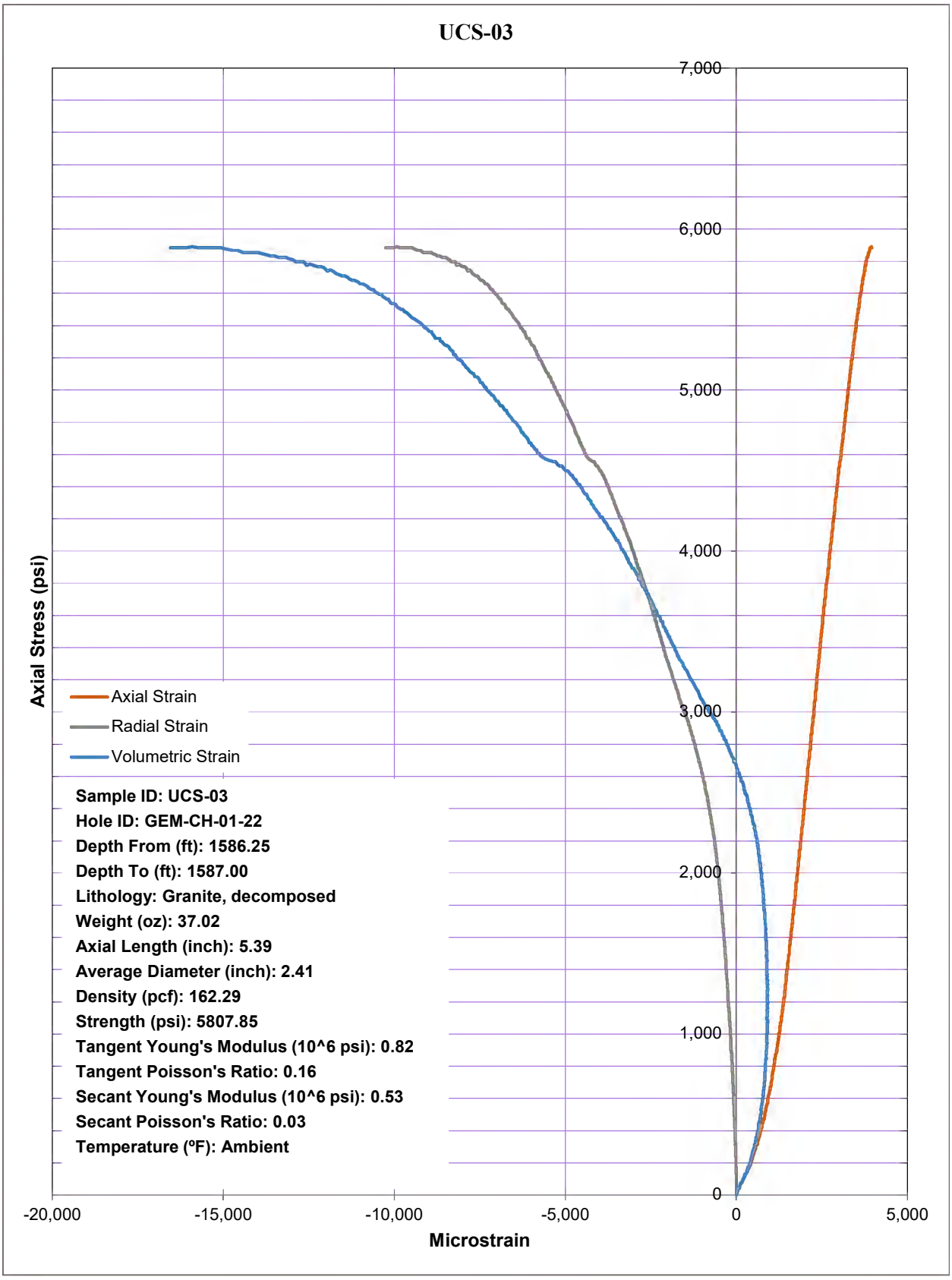
APPENDIX B

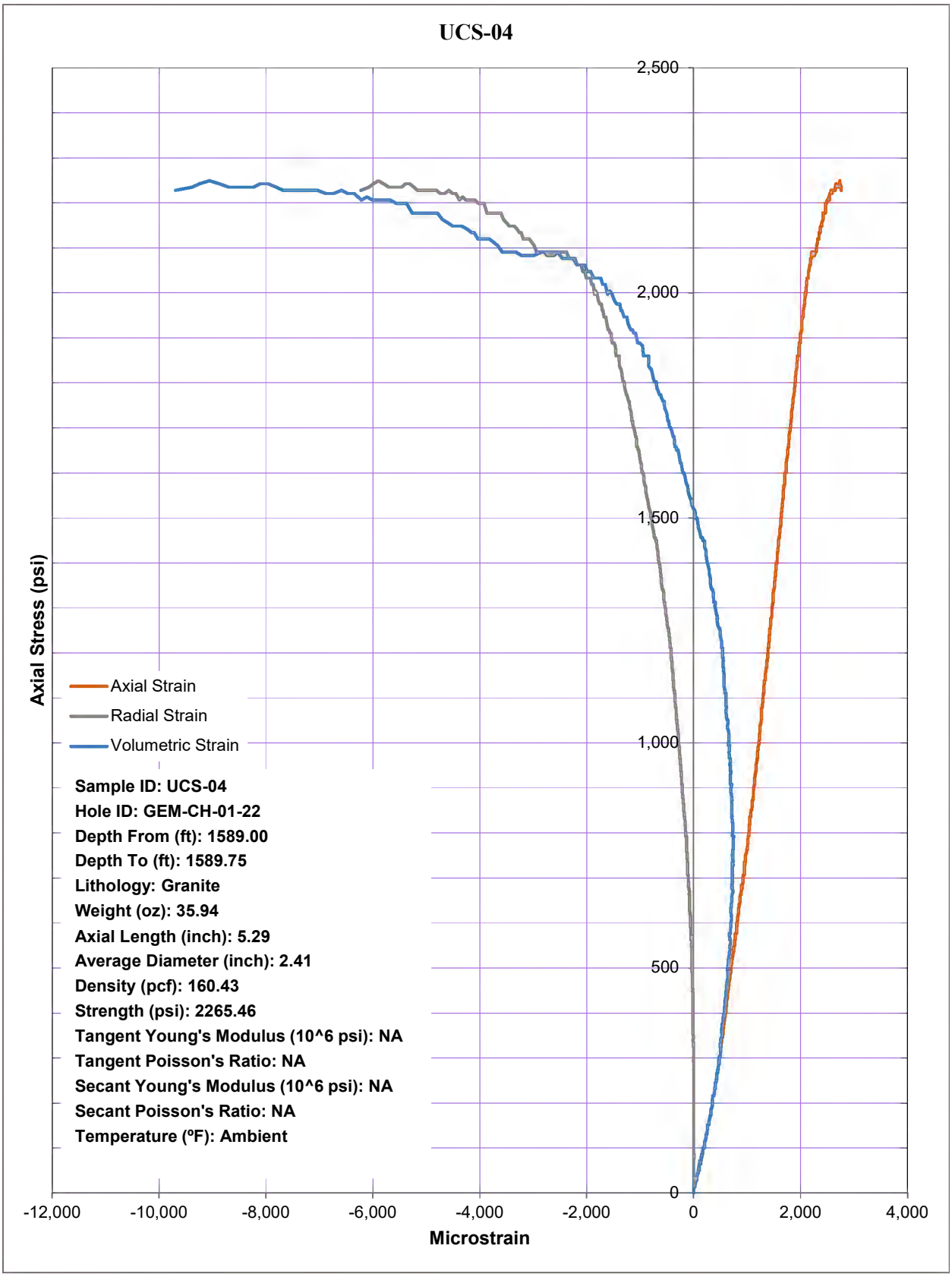
STRESS-STRAIN PLOTS FOR UNIAXIAL COMPRESSIVE STRENGTH TEST SPECIMENS

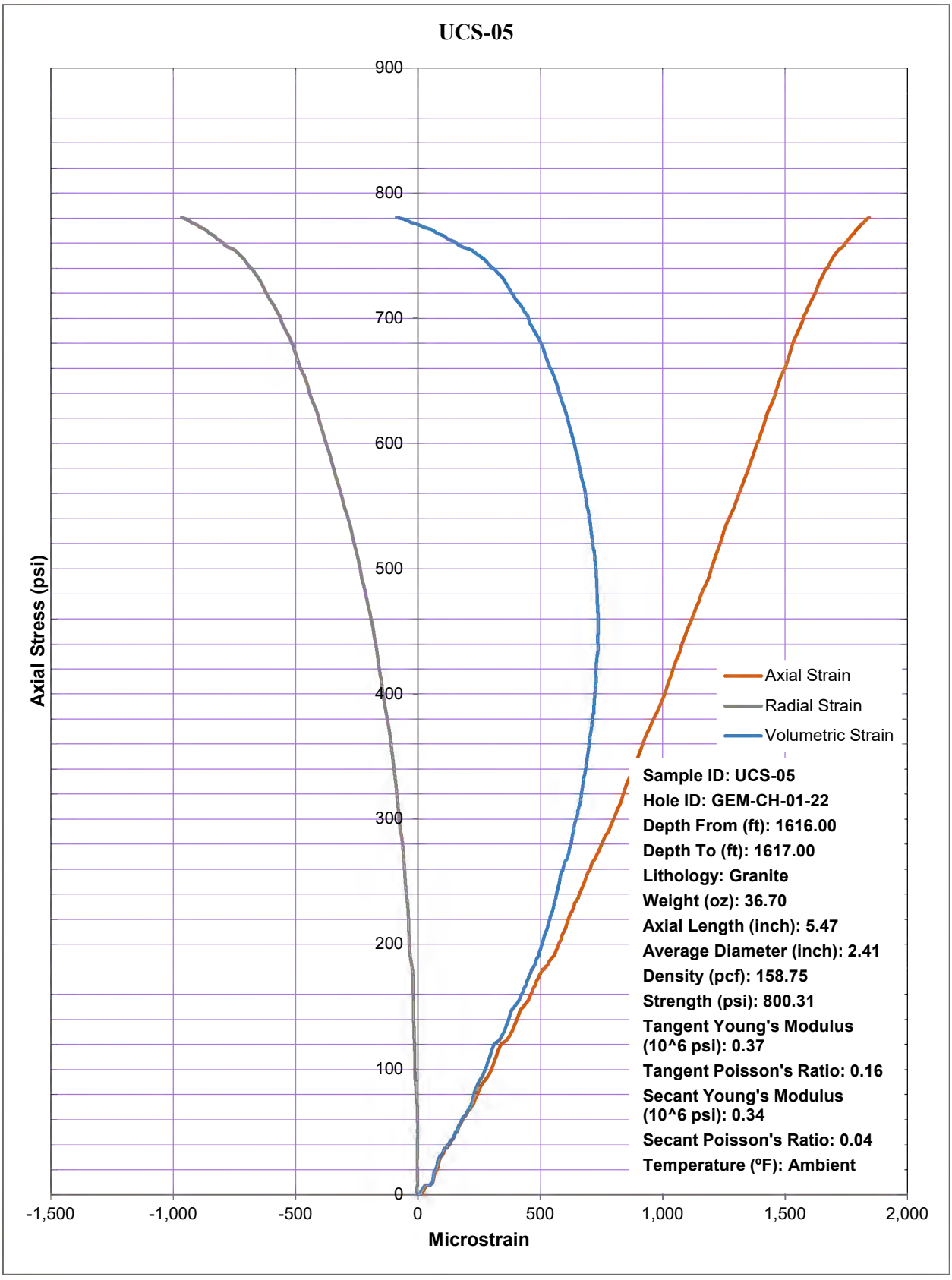
GEM-CH-01-22
UCS STRESS-STRAIN PLOTS

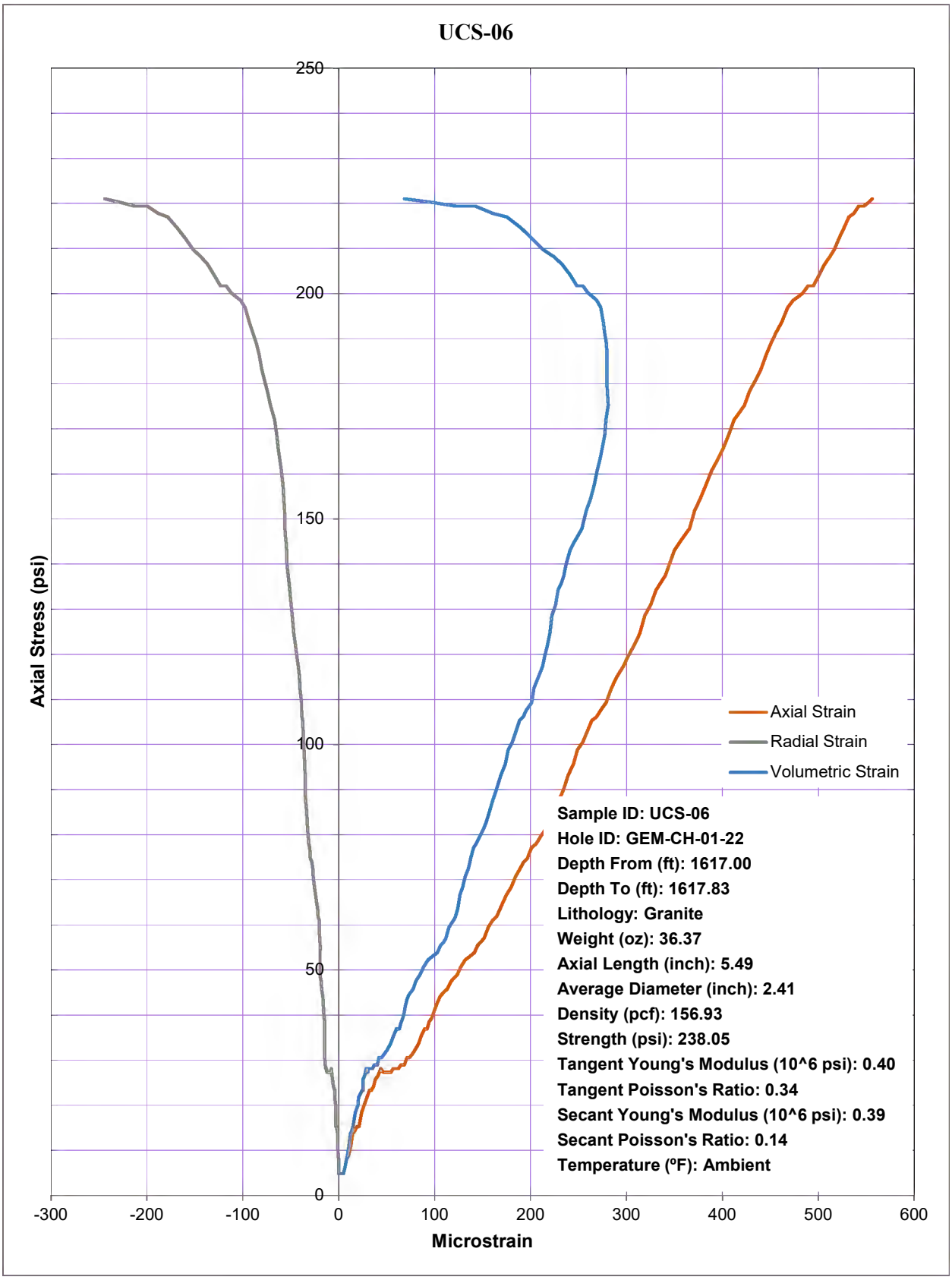

UCS-01
Axial Stress (psi)
1,400
1,200
1,000
800
600
400
200
0
-14,000
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-01
Hole ID: GEM-CH-01-22
Depth From (ft): 1549.00
Depth To (ft): 1549.66
Lithology: Granite, decomposed
Weight (oz): 35.05
Axial Length (inch): 5.38
Average Diameter (inch): 2.41
Density (pcf): 154.14
Strength (psi): 1218.85
Tangent Young's Modulus (10^6 psi): 0.19
Tangent Poisson's Ratio: 0.14
Secant Young's Modulus (10^6 psi): 0.17
Secant Poisson's Ratio: 0.03
Temperature (ºF): Ambient

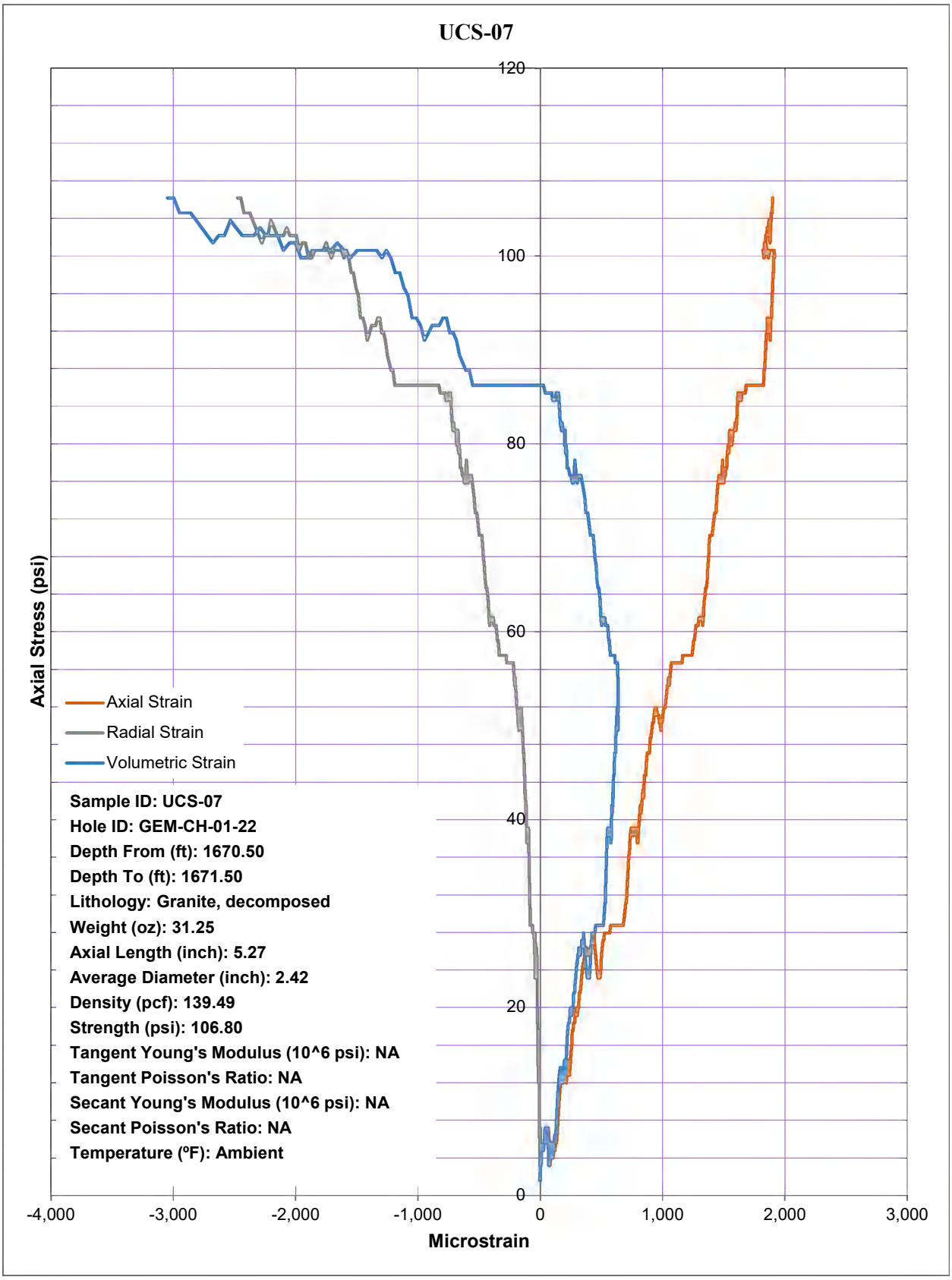

UCS-02
Axial Stress (psi)
800
700
600
500
400
300
200
100
0
-30,000
-25,000
-20,000
-15,000
-10,000
-5,000
0
5,000
10,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-02
Hole ID: GEM-CH-01-22
Depth From (ft): 1558.75
Depth To (ft): 1559.25
Lithology: Granite, decomposed
Weight (oz): 34.86
Axial Length (inch): 5.37
Average Diameter (inch): 2.41
Density (pcf): 154.25
Strength (psi): 684.61
Tangent Young's Modulus (10^6 psi): 0.12
Tangent Poisson's Ratio: 0.29
Secant Young's Modulus (10^6 psi): 0.18
Secant Poisson's Ratio: 0.14
Temperature (ºF): Ambient

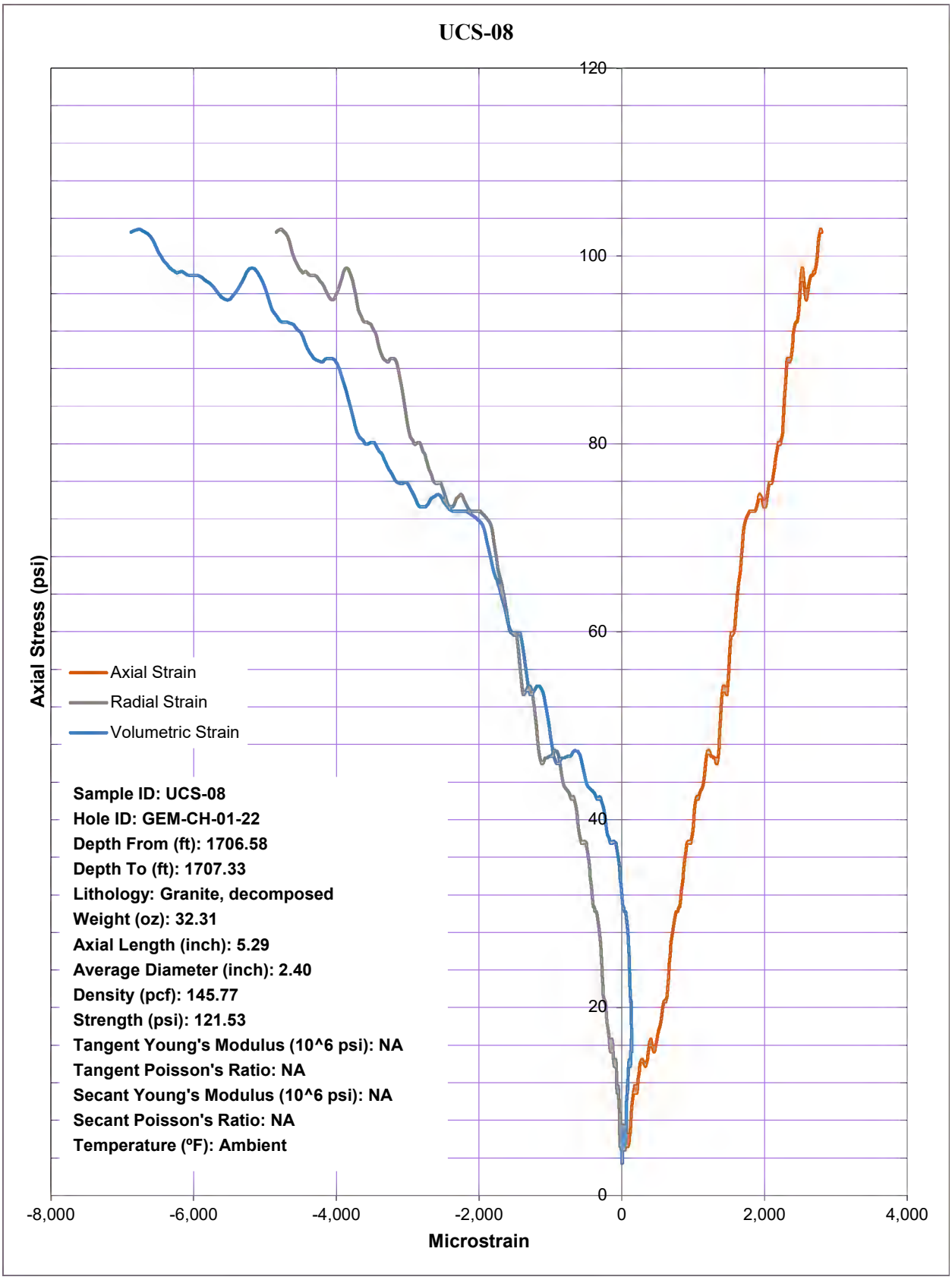

UCS-03
Axial Stress (psi)
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-20,000
-15,000
-10,000
-5,000
0
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-03
Hole ID: GEM-CH-01-22
Depth From (ft): 1586.25
Depth To (ft): 1587.00
Lithology: Granite, decomposed
Weight (oz): 37.02
Axial Length (inch): 5.39
Average Diameter (inch): 2.41
Density (pcf): 162.29
Strength (psi): 5807.85
Tangent Young's Modulus (10^6 psi): 0.82
Tangent Poisson's Ratio: 0.16
Secant Young's Modulus (10^6 psi): 0.53
Secant Poisson's Ratio: 0.03
Temperature (ºF): Ambient

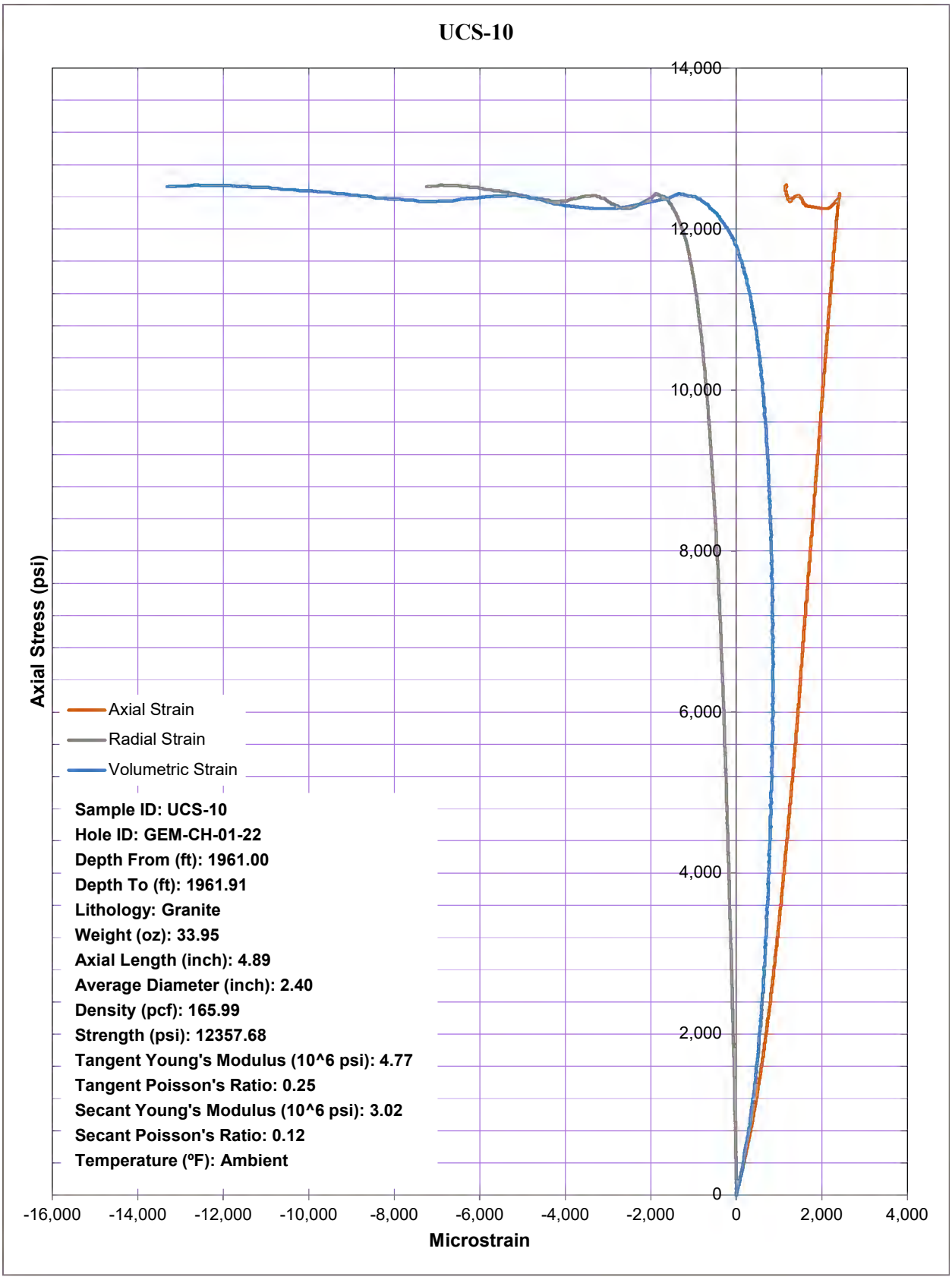

UCS-04
2,500
2,000
1,500
1,000
500
0
Axial Stress (psi)
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-04
Hole ID: GEM-CH-01-22
Depth From (ft): 1589.00
Depth To (ft): 1589.75
Lithology: Granite
Weight (oz): 35.94
Axial Length (inch): 5.29
Average Diameter (inch): 2.41
Density (pcf): 160.43
Strength (psi): 2265.46
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA
Temperature (ºF): Ambient
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain

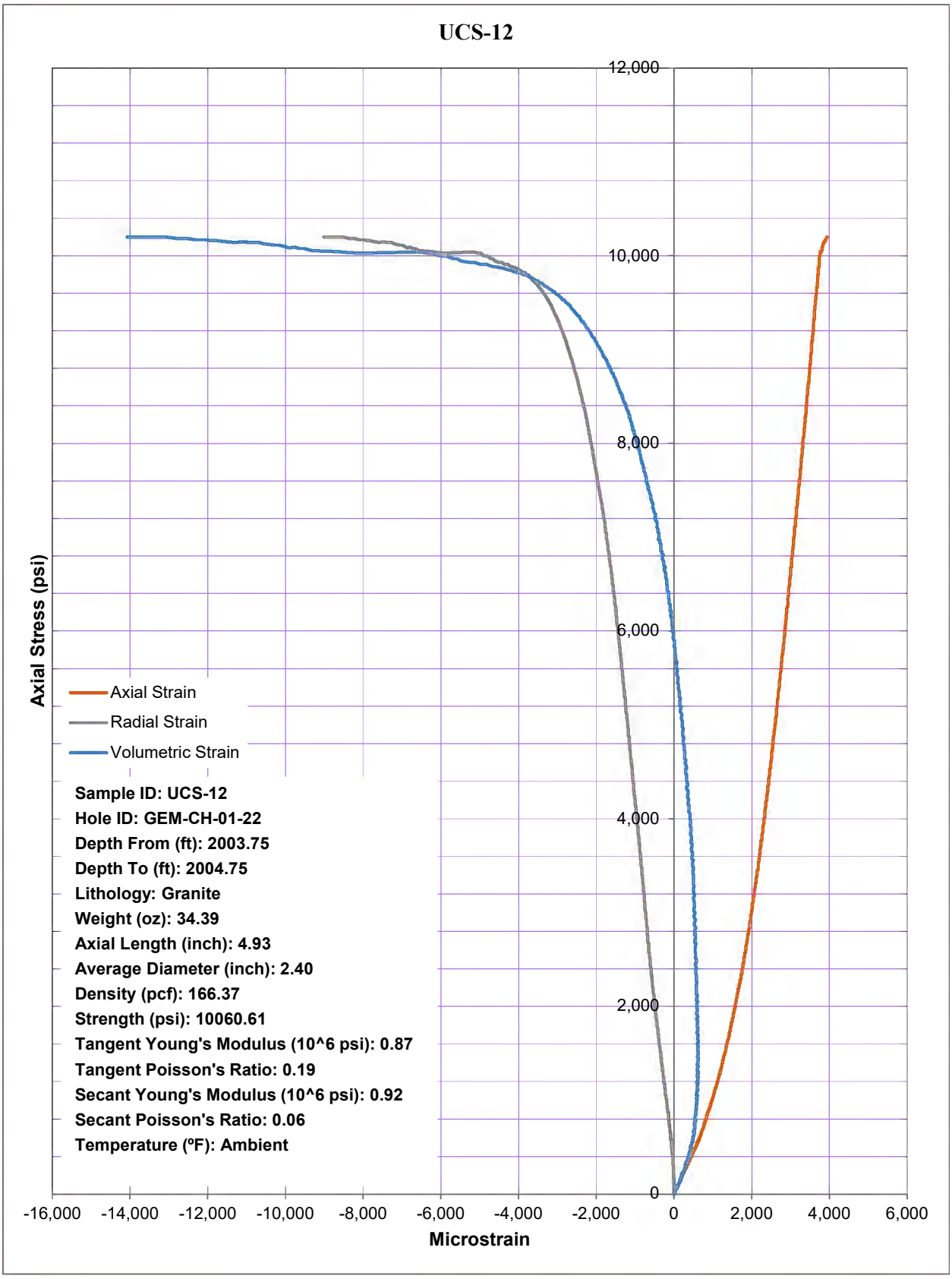

UCS-05
Axial Stress (psi)
900
800
700
600
500
400
300
200
100
0
-1,500
-1,000
-500
0
500
1,000
1,500
2,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-05
Hole ID: GEM-CH-01-22
Depth From (ft): 1616.00
Depth To (ft): 1617.00
Lithology: Granite
Weight (oz): 36.70
Axial Length (inch): 5.47
Average Diameter (inch): 2.41
Density (pcf): 158.75
Strength (psi): 800.31
Tangent Young's Modulus (10^6 psi): 0.37
Tangent Poisson's Ratio: 0.16
Secant Young's Modulus (10^6 psi): 0.34
Secant Poisson's Ratio: 0.04
Temperature (ºF): Ambient

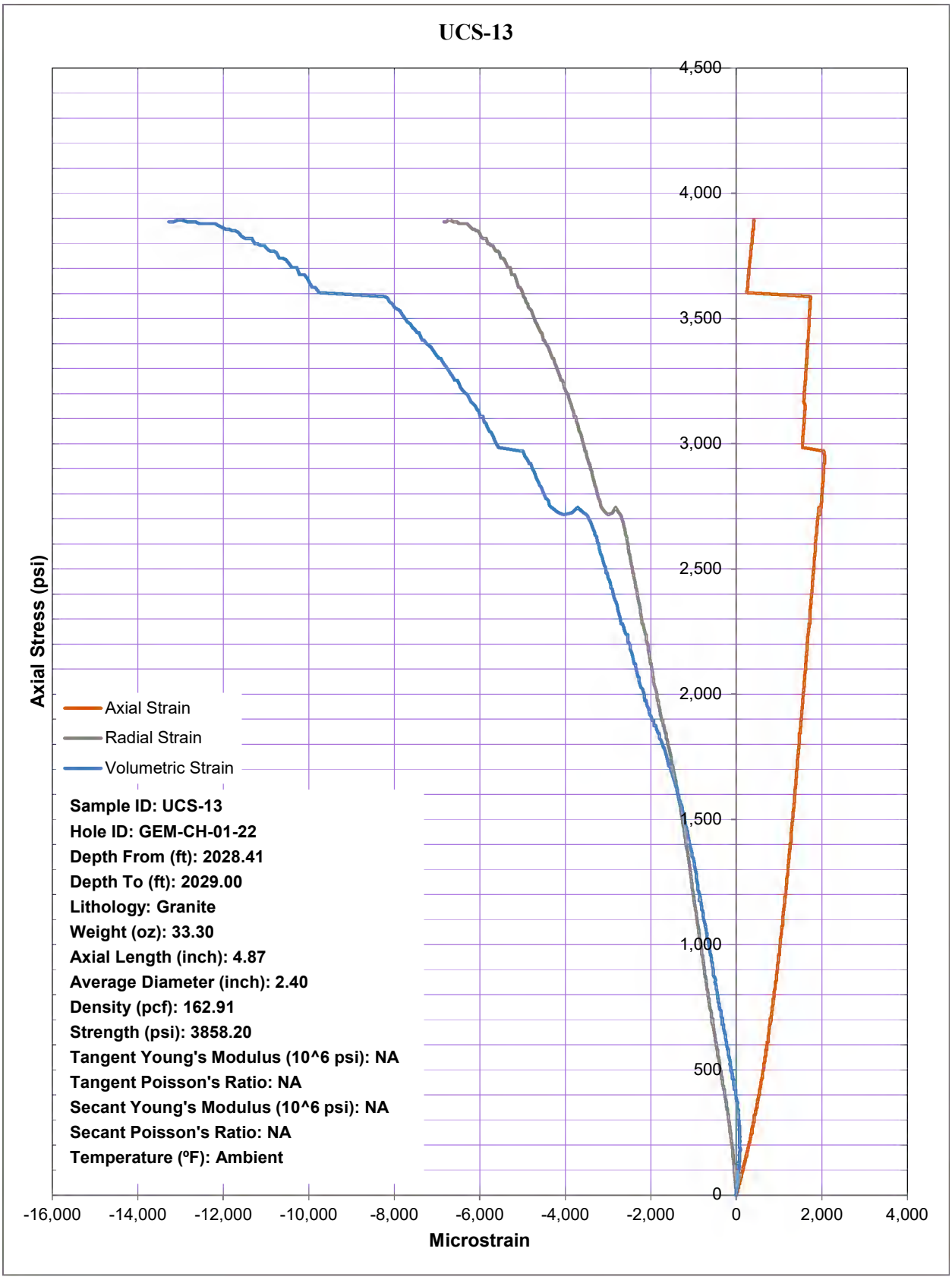

UCS-06
Axial Stress (psi)
250
200
150
100
50
0
-300
-200
-100
0
100
200
300
400
500
600
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-06
Hole ID: GEM-CH-01-22
Depth From (ft): 1617.00
Depth To (ft): 1617.83
Lithology: Granite
Weight (oz): 36.37
Axial Length (inch): 5.49
Average Diameter (inch): 2.41
Density (pcf): 156.93
Strength (psi): 238.05
Tangent Young's Modulus (10^6 psi): 0.40
Tangent Poisson's Ratio: 0.34
Secant Young's Modulus (10^6 psi): 0.39
Secant Poisson's Ratio: 0.14
Temperature (ºF): Ambient

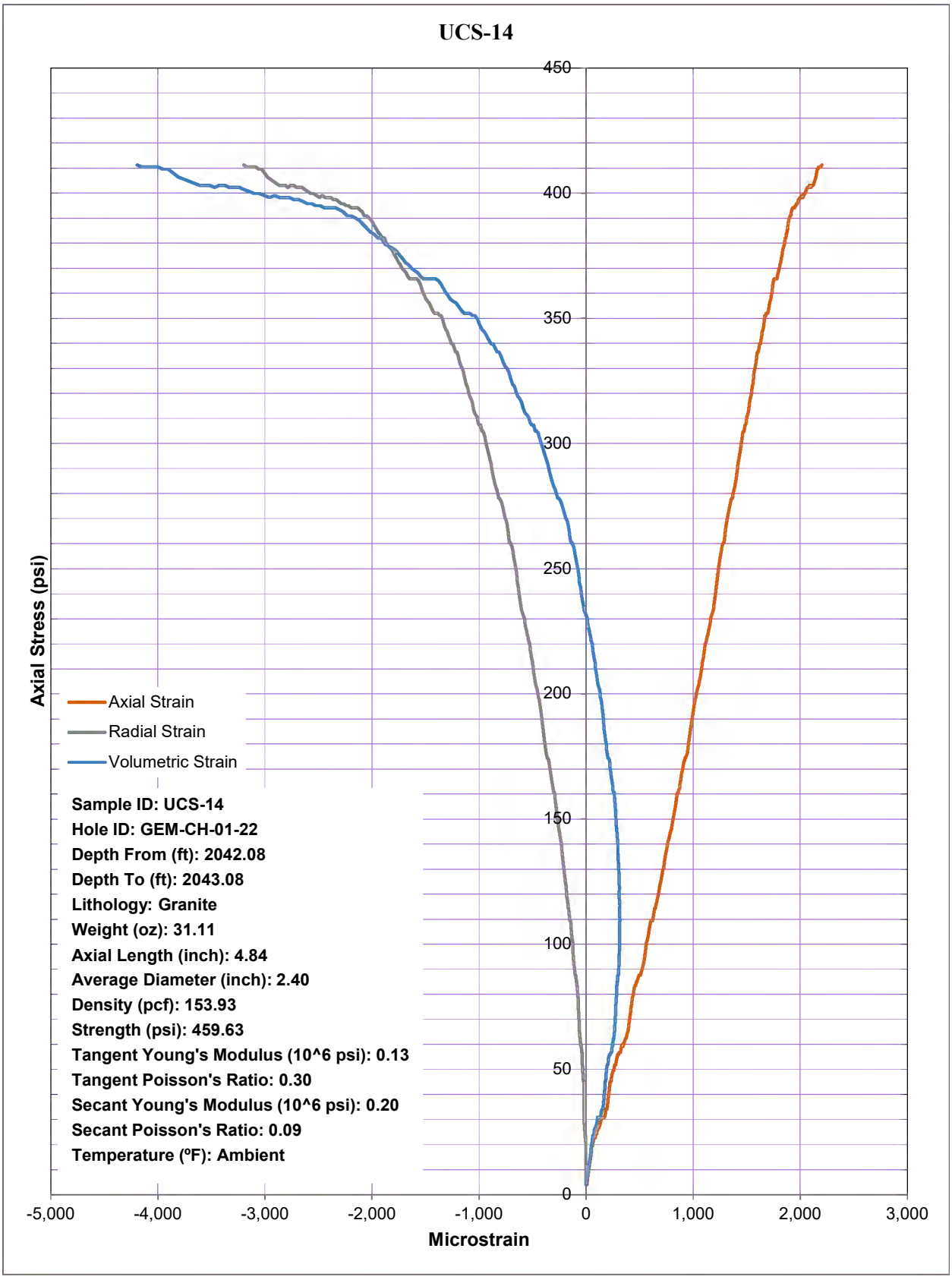

UCS-07
Axial Stress (psi)
120
100
80
60
40
20
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-07
Hole ID: GEM-CH-01-22
Depth From (ft): 1670.50
Depth To (ft): 1671.50
Lithology: Granite, decomposed
Weight (oz): 31.25
Axial Length (inch): 5.27
Average Diameter (inch): 2.42
Density (pcf): 139.49
Strength (psi): 106.80
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA
Temperature (ºF): Ambient

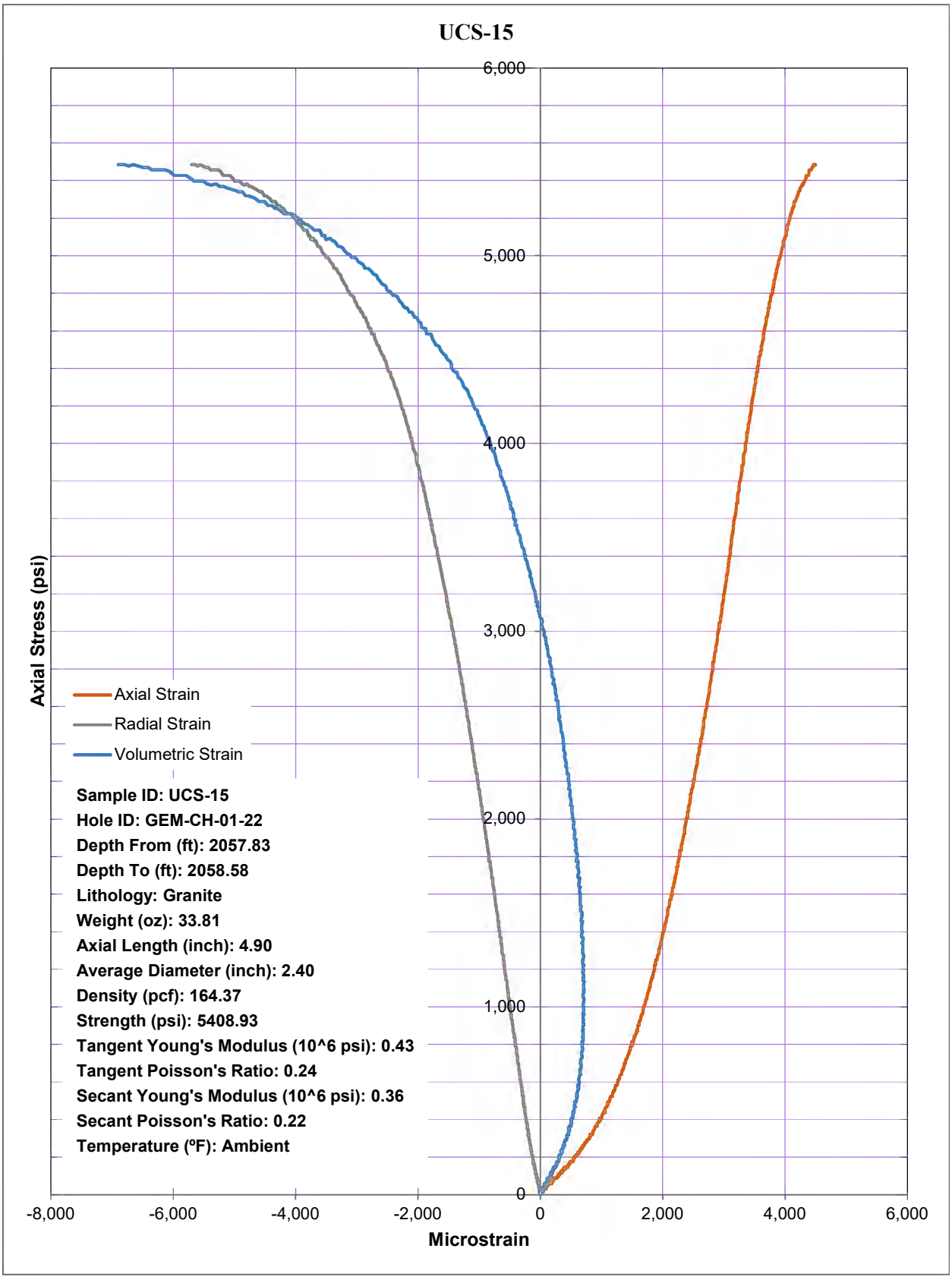

UCS-08
Axial Stress (psi)
120
100
80
60
40
20
0
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-08
Hole ID: GEM-CH-01-22
Depth From (ft): 1706.58
Depth To (ft): 1707.33
Lithology: Granite, decomposed
Weight (oz): 32.31
Axial Length (inch): 5.29
Average Diameter (inch): 2.40
Density (pcf): 145.77
Strength (psi): 121.53
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA
Temperature (ºF): Ambient

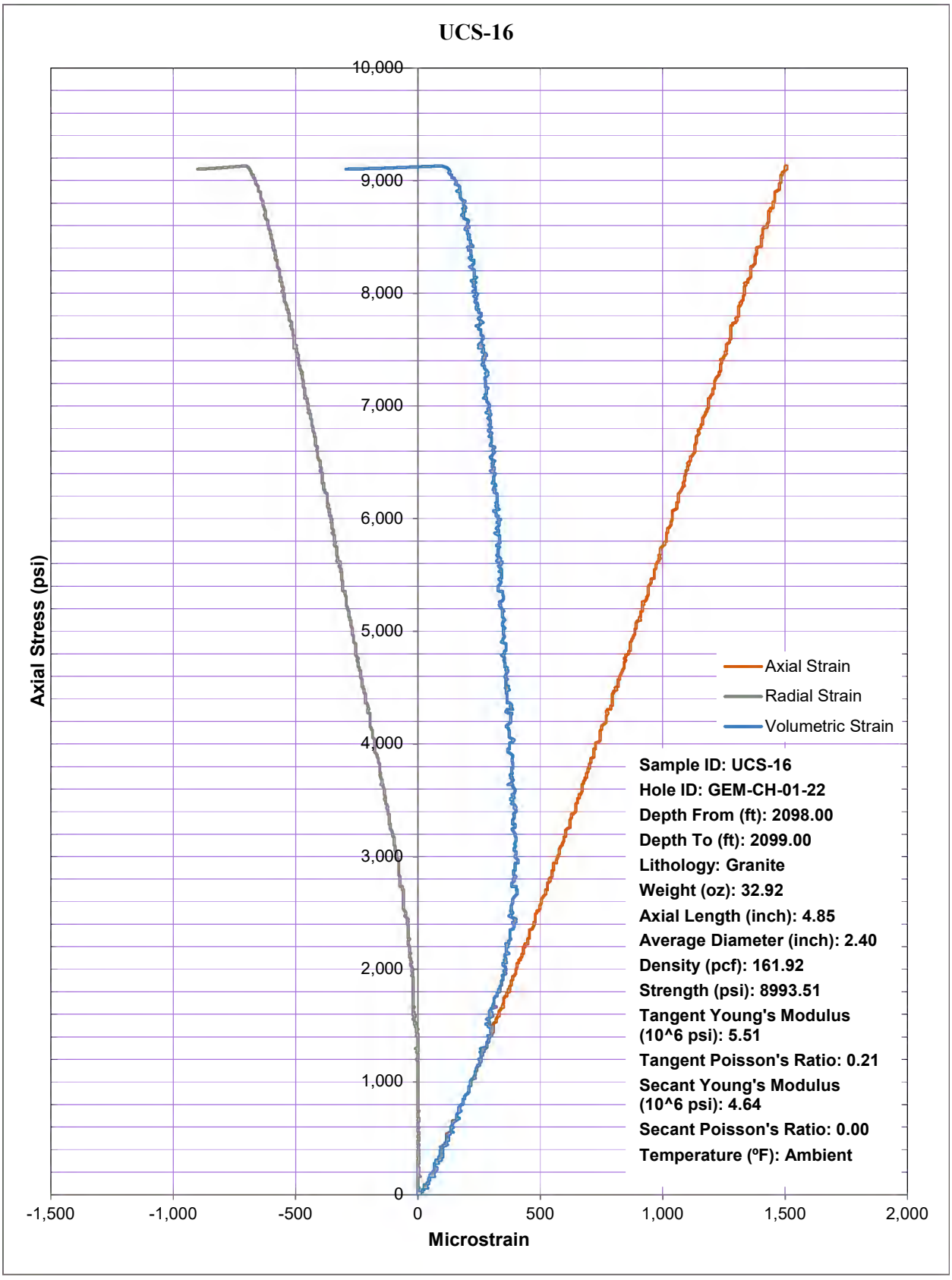

UCS-10
Axial Stress (psi)
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
-16,000
-14,000
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-10
Hole ID: GEM-CH-01-22
Depth From (ft): 1961.00
Depth To (ft): 1961.91
Lithology: Granite
Weight (oz): 33.95
Axial Length (inch): 4.89
Average Diameter (inch): 2.40
Density (pcf): 165.99
Strength (psi): 12357.68
Tangent Young's Modulus (10^6 psi): 4.77
Tangent Poisson's Ratio: 0.25
Secant Young's Modulus (10^6 psi): 3.02
Secant Poisson's Ratio: 0.12
Temperature (ºF): Ambient

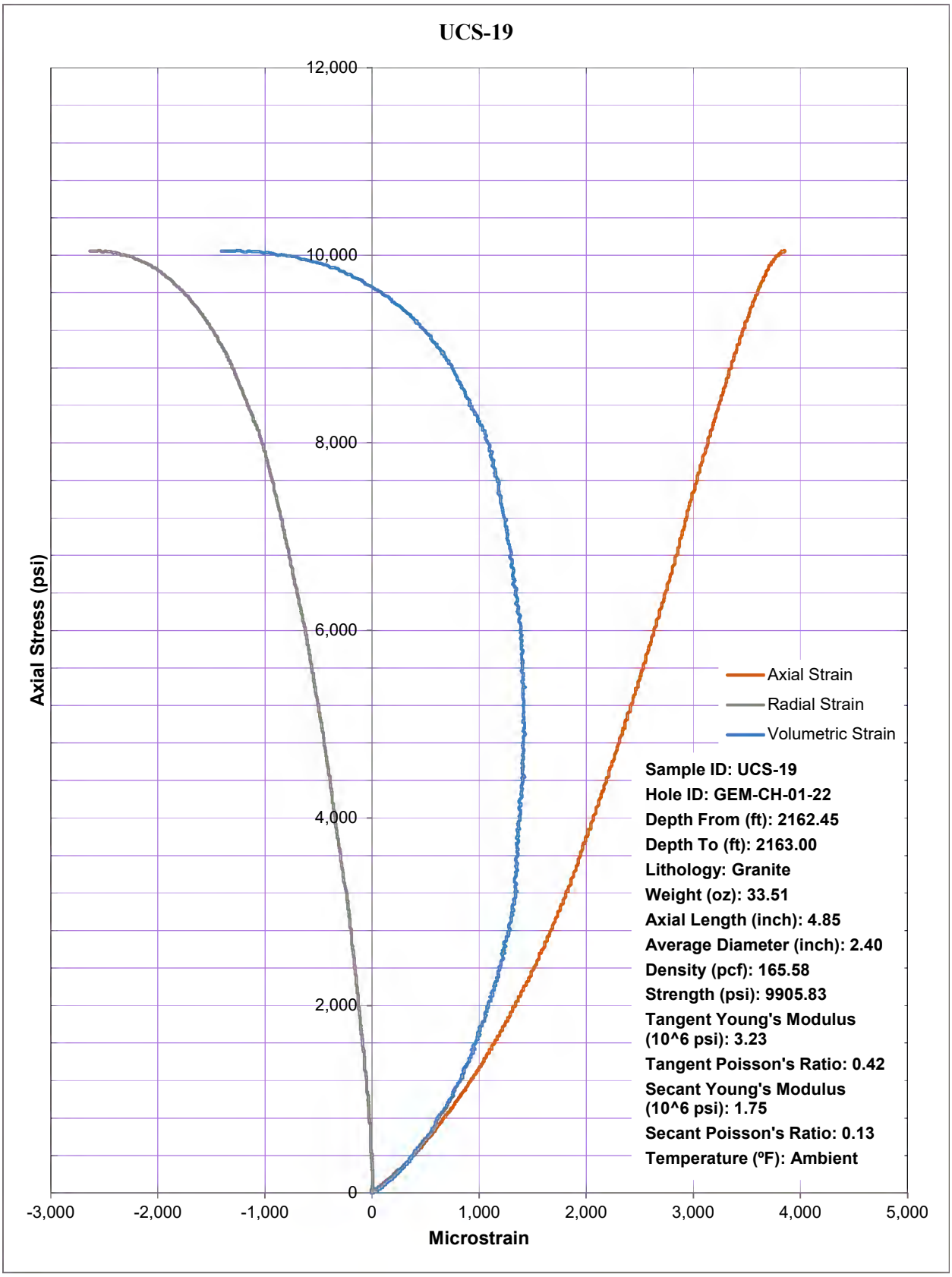

UCS-12
12,000
10,000
8,000
6,000
4,000
2,000
0
Axial Stress (psi)
-16,000
-14,000
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-12
Hole ID: GEM-CH-01-22
Depth From (ft): 2003.75
Depth To (ft): 2004.75
Lithology: Granite
Weight (oz): 34.39
Axial Length (inch): 4.93
Average Diameter (inch): 2.40
Density (pcf): 166.37
Strength (psi): 10060.61
Tangent Young's Modulus (10^6 psi): 0.87
Tangent Poisson's Ratio: 0.19
Secant Young's Modulus (10^6 psi): 0.92
Secant Poisson's Ratio: 0.06
Temperature (ºF): Ambient

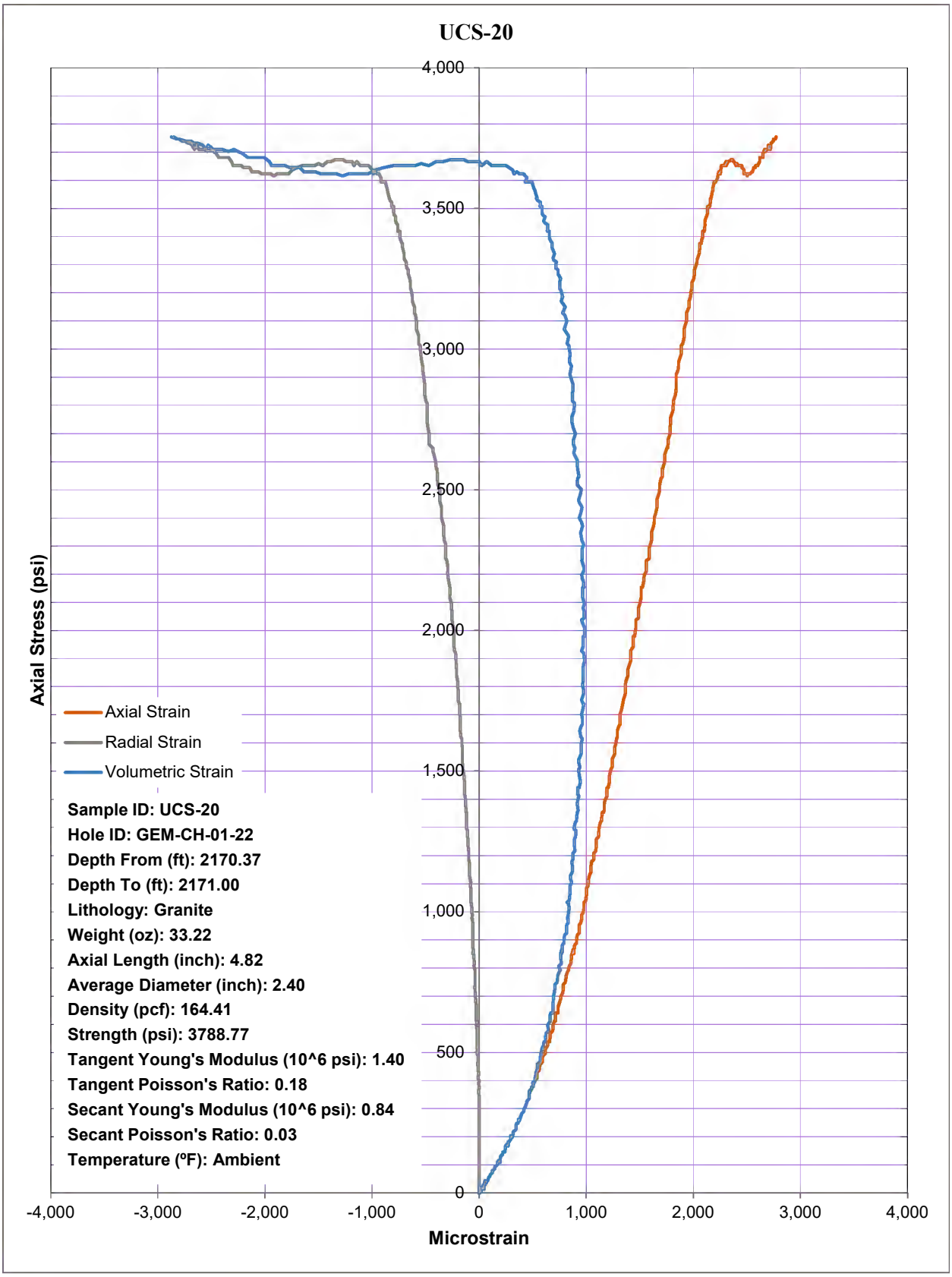

UCS-13
Axial Stress (psi)
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-13
Hole ID: GEM-CH-01-22
Depth From (ft): 2028.41
Depth To (ft): 2029.00
Lithology: Granite
Weight (oz): 33.30
Axial Length (inch): 4.87
Average Diameter (inch): 2.40
Density (pcf): 162.91
Strength (psi): 3858.20
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA
Temperature (ºF): Ambient
-16,000
-14,000
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain

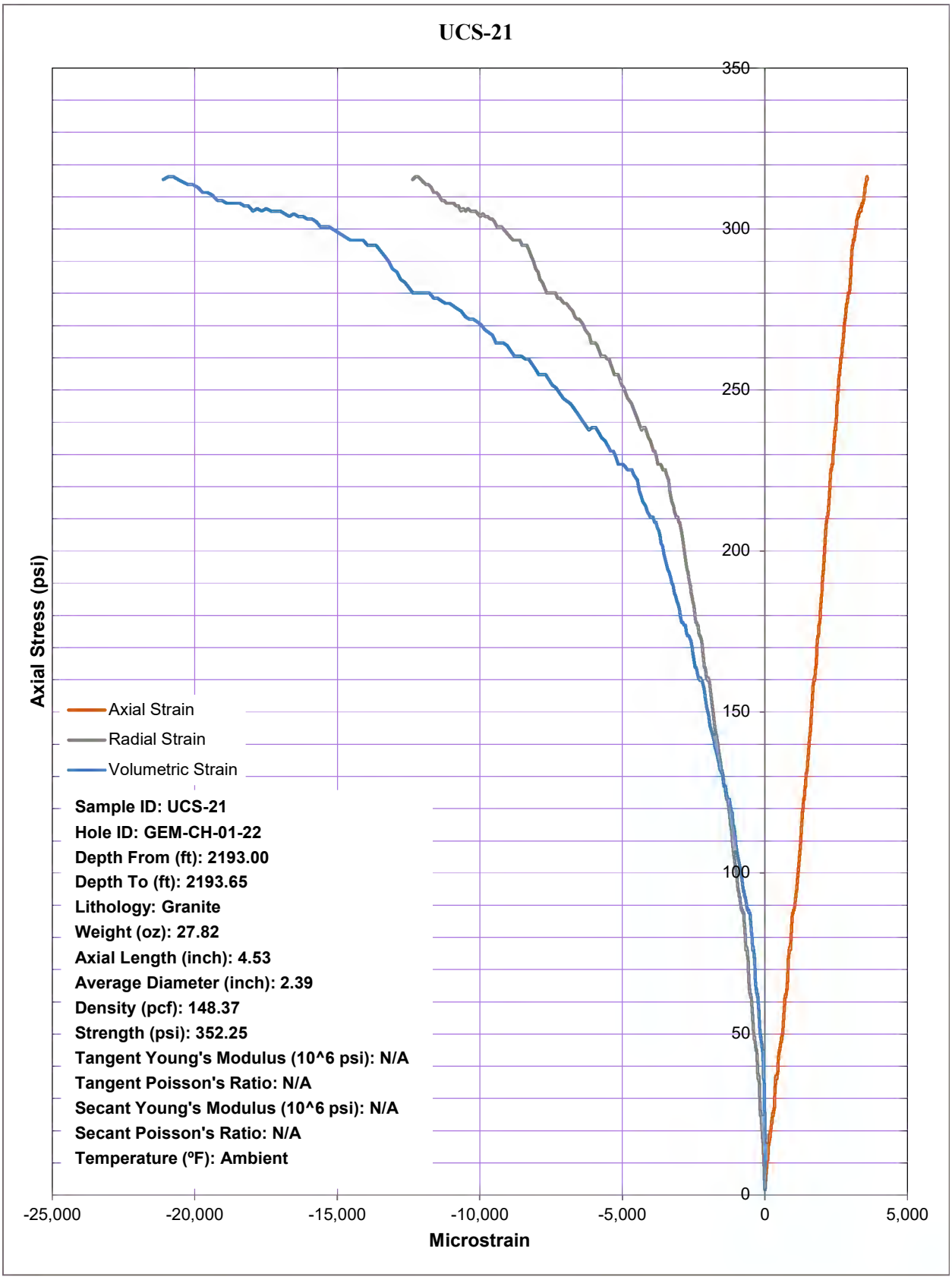

UCS-14
Axial Stress (psi)
450
400
350
300
250
200
150
100
50
0
-5,000
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-14
Hole ID: GEM-CH-01-22
Depth From (ft): 2042.08
Depth To (ft): 2043.08
Lithology: Granite
Weight (oz): 31.11
Axial Length (inch): 4.84
Average Diameter (inch): 2.40
Density (pcf): 153.93
Strength (psi): 459.63
Tangent Young's Modulus (10^6 psi): 0.13
Tangent Poisson's Ratio: 0.30
Secant Young's Modulus (10^6 psi): 0.20
Secant Poisson's Ratio: 0.09
Temperature (ºF): Ambient

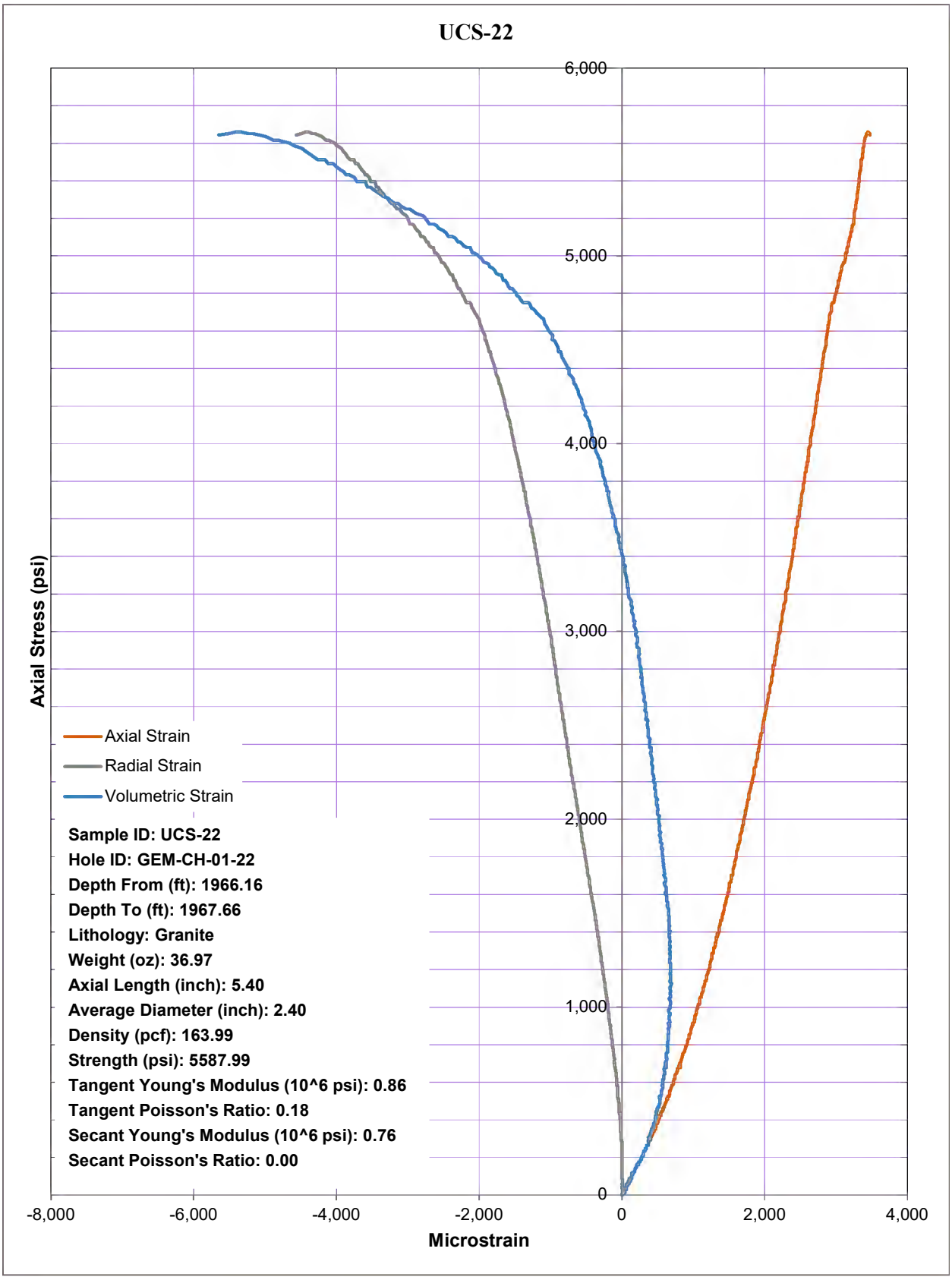

UCS-15
Axial Stress (psi)
6,000
5,000
4,000
3,000
2,000
1,000
0
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-15
Hole ID: GEM-CH-01-22
Depth From (ft): 2057.83
Depth To (ft): 2058.58
Lithology: Granite
Weight (oz): 33.81
Axial Length (inch): 4.90
Average Diameter (inch): 2.40
Density (pcf): 164.37
Strength (psi): 5408.93
Tangent Young's Modulus (10^6 psi): 0.43
Tangent Poisson's Ratio: 0.24
Secant Young's Modulus (10^6 psi): 0.36
Secant Poisson's Ratio: 0.22
Temperature (ºF): Ambient

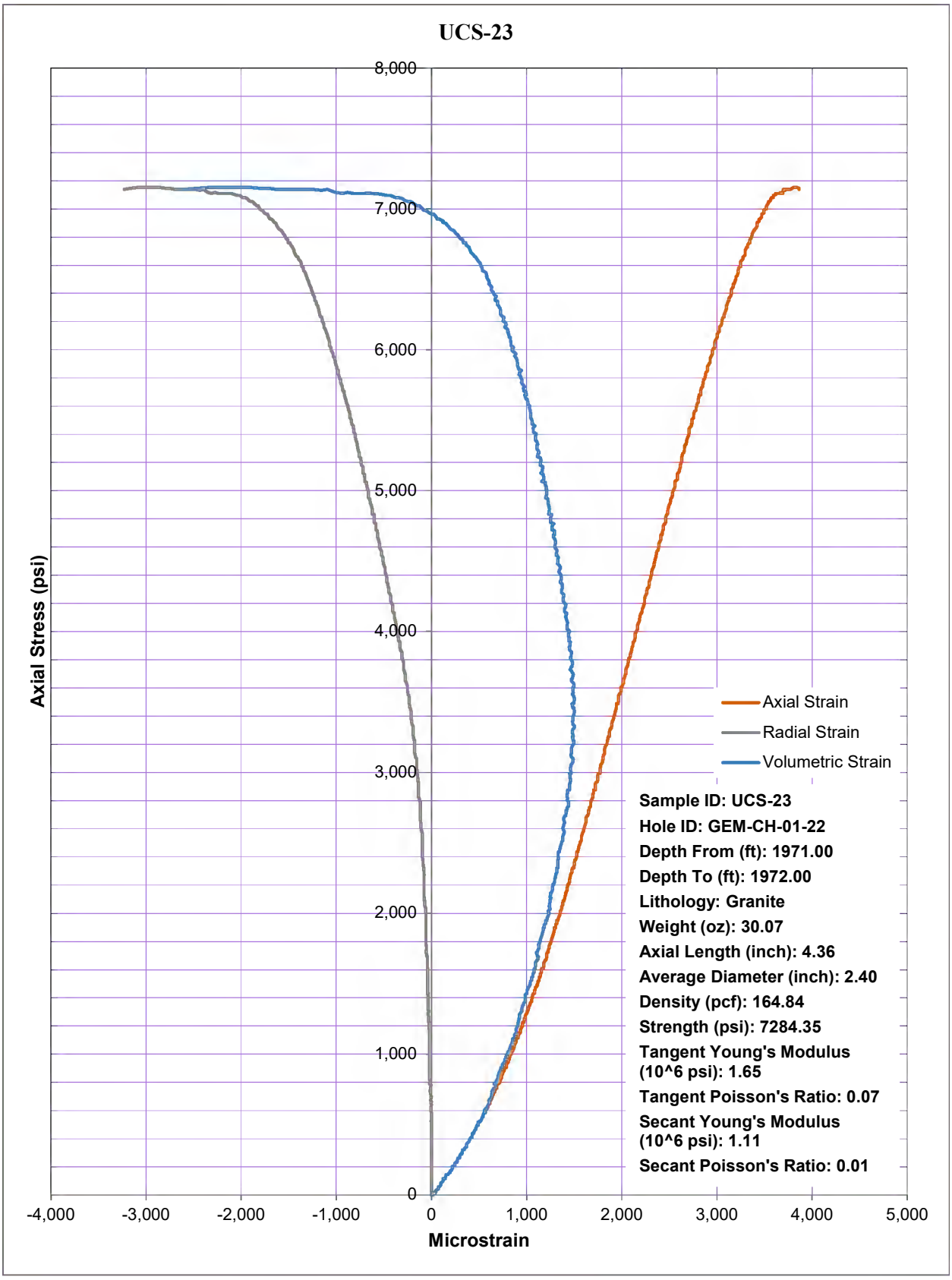

UCS-16
Axial Stress (psi)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-1,500
-1,000
-500
0
500
1,000
1,500
2,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-16
Hole ID: GEM-CH-01-22
Depth From (ft): 2098.00
Depth To (ft): 2099.00
Lithology: Granite
Weight (oz): 32.92
Axial Length (inch): 4.85
Average Diameter (inch): 2.40
Density (pcf): 161.92
Strength (psi): 8993.51
Tangent Young's Modulus (10^6 psi): 5.51
Tangent Poisson's Ratio: 0.21
Secant Young's Modulus (10^6 psi): 4.64
Secant Poisson's Ratio: 0.00
Temperature (ºF): Ambient

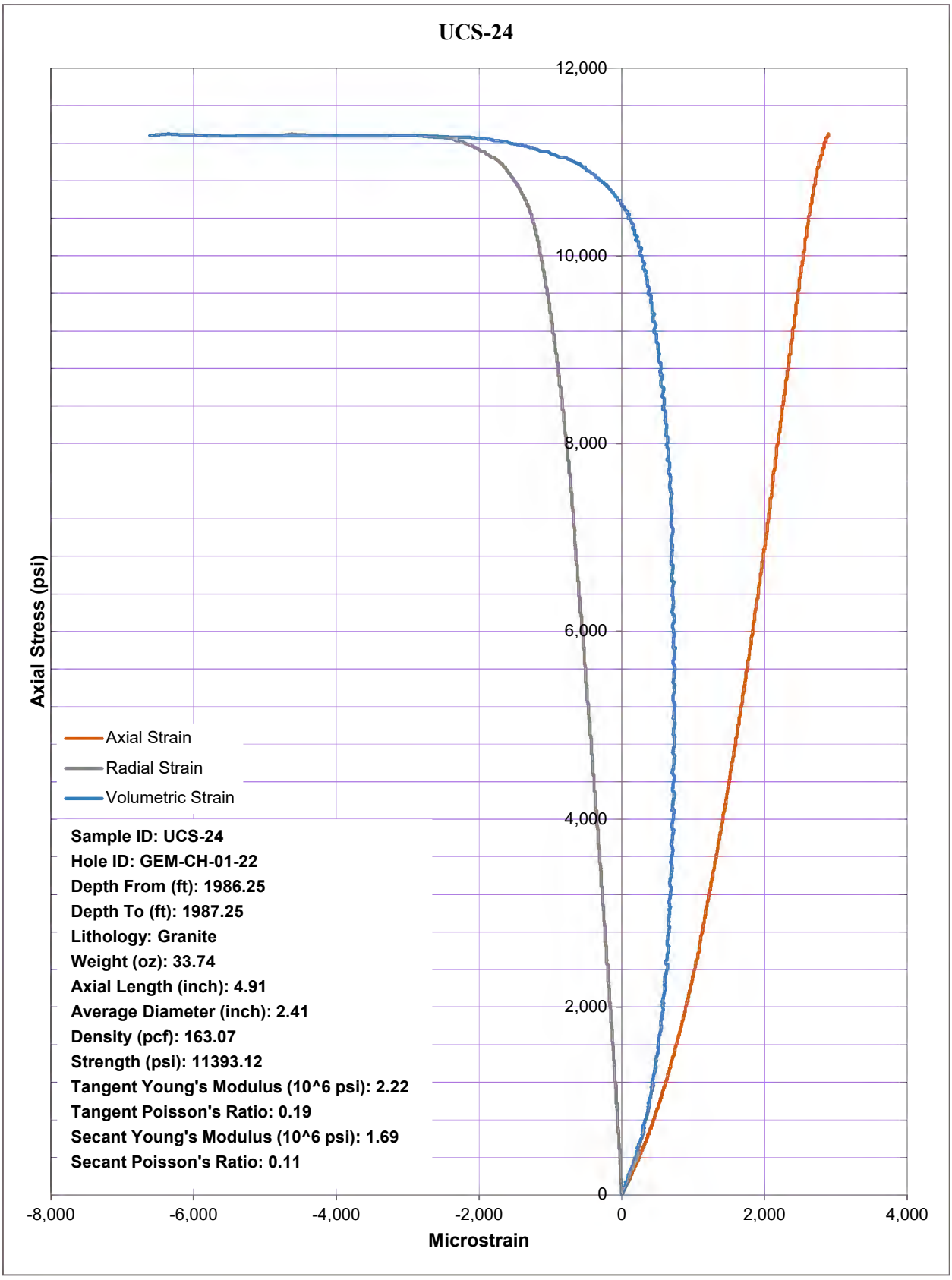

UCS-19
12,000
10,000
8,000
6,000
4,000
2,000
0
Axial Stress (psi)
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-19
Hole ID: GEM-CH-01-22
Depth From (ft): 2162.45
Depth To (ft): 2163.00
Lithology: Granite
Weight (oz): 33.51
Axial Length (inch): 4.85
Average Diameter (inch): 2.40
Density (pcf): 165.58
Strength (psi): 9905.83
Tangent Young's Modulus (10^6 psi): 3.23
Tangent Poisson's Ratio: 0.42
Secant Young's Modulus (10^6 psi): 1.75
Secant Poisson's Ratio: 0.13
Temperature (ºF): Ambient

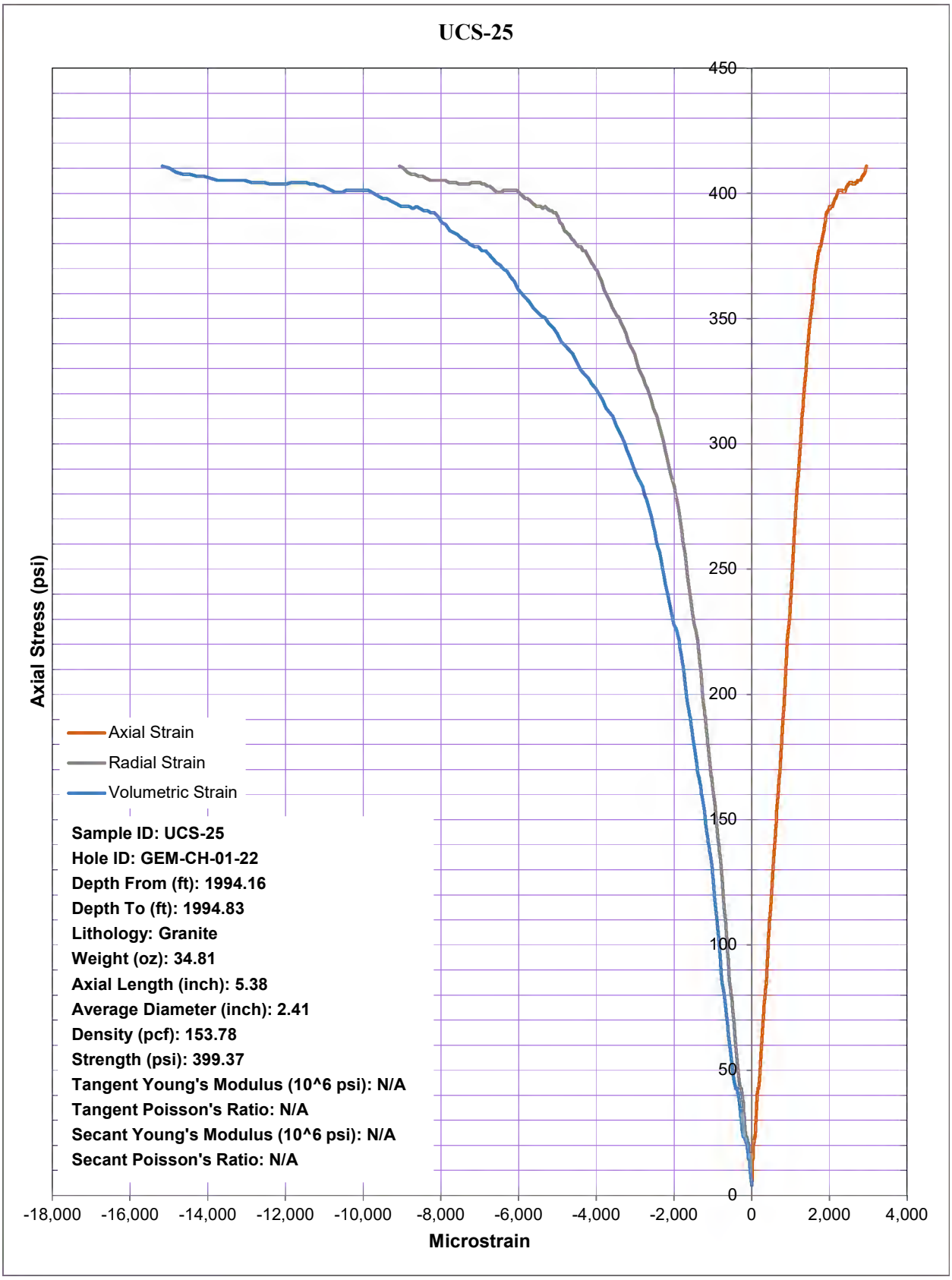

UCS-20
Axial Stress (psi)
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-20
Hole ID: GEM-CH-01-22
Depth From (ft): 2170.37
Depth To (ft): 2171.00
Lithology: Granite
Weight (oz): 33.22
Axial Length (inch): 4.82
Average Diameter (inch): 2.40
Density (pcf): 164.41
Strength (psi): 3788.77
Tangent Young's Modulus (10^6 psi): 1.40
Tangent Poisson's Ratio: 0.18
Secant Young's Modulus (10^6 psi): 0.84
Secant Poisson's Ratio: 0.03
Temperature (ºF): Ambient

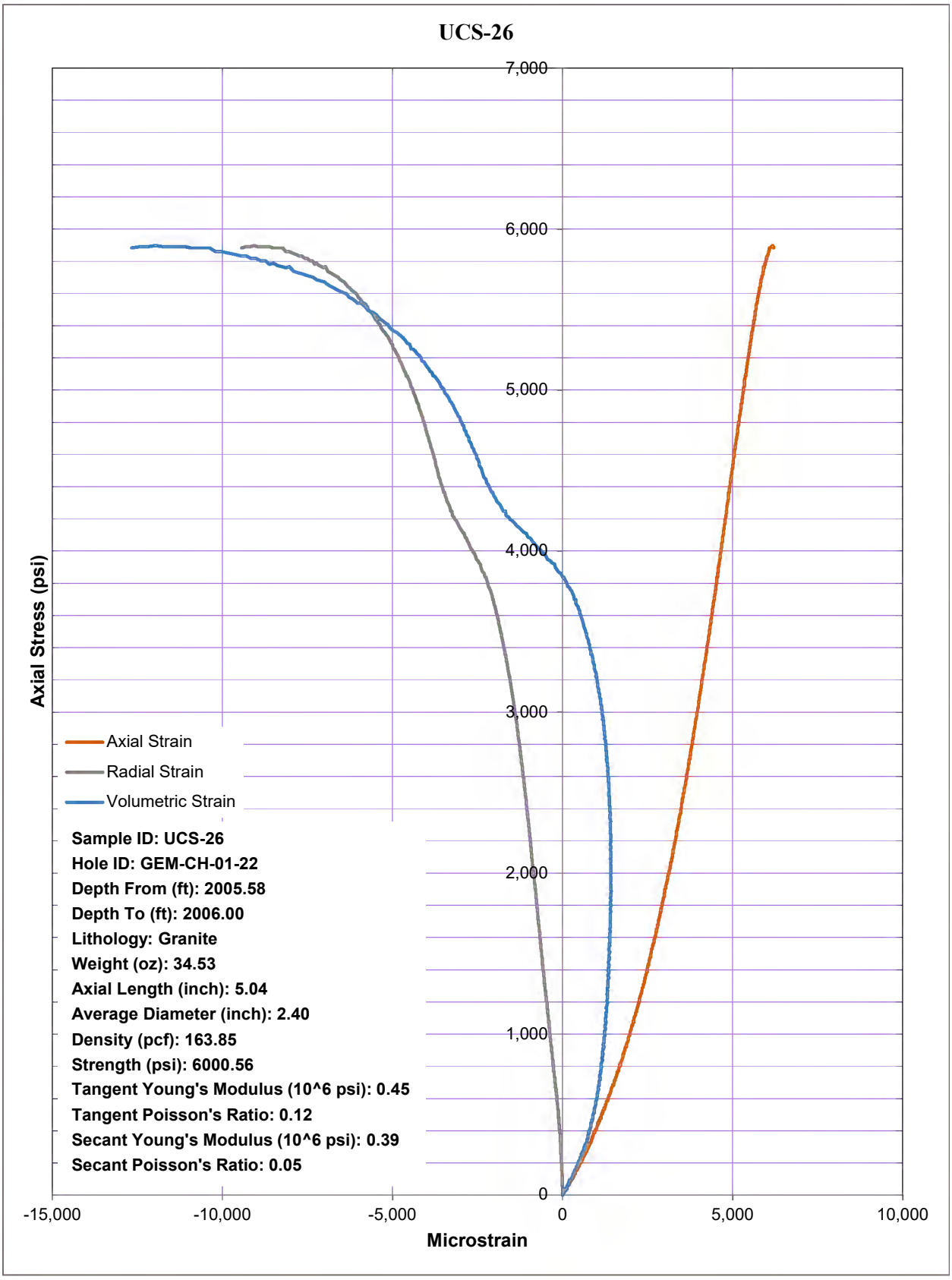

UCS-21
Axial Stress (psi)
350
300
250
200
150
100
50
0
-25,000
-20,000
-15,000
-10,000
-5,000
0
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-21
Hole ID: GEM-CH-01-22
Depth From (ft): 2193.00
Depth To (ft): 2193.65
Lithology: Granite
Weight (oz): 27.82
Axial Length (inch): 4.53
Average Diameter (inch): 2.39
Density (pcf): 148.37
Strength (psi): 352.25
Tangent Young's Modulus (10^6 psi): N/A
Tangent Poisson's Ratio: N/A
Secant Young's Modulus (10^6 psi): N/A
Secant Poisson's Ratio: N/A
Temperature (ºF): Ambient

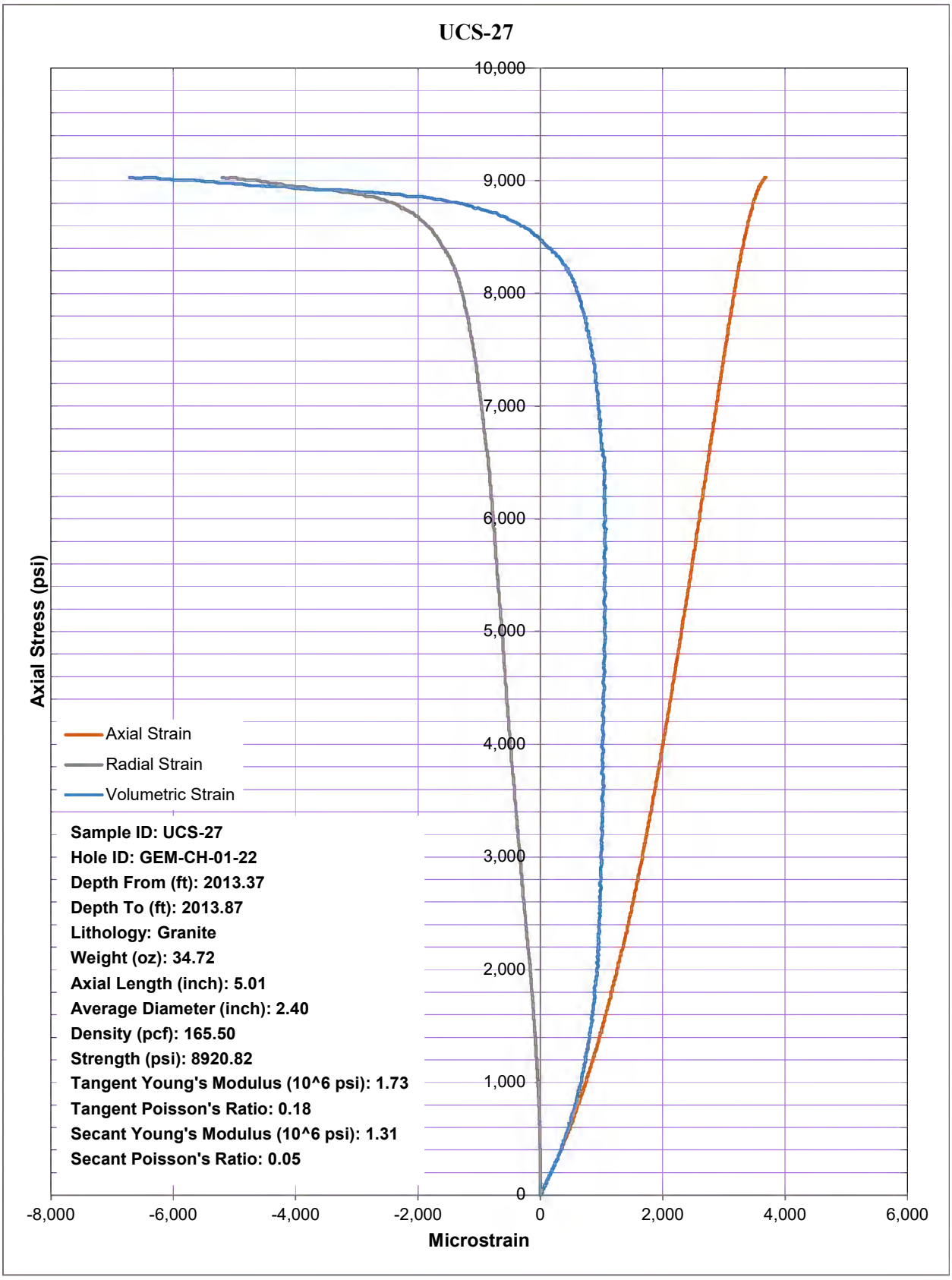

UCS-22
6,000
5,000
4,000
3,000
2,000
1,000
0
Axial Stress (psi)
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-22
Hole ID: GEM-CH-01-22
Depth From (ft): 1966.16
Depth To (ft): 1967.66
Lithology: Granite
Weight (oz): 36.97
Axial Length (inch): 5.40
Average Diameter (inch): 2.40
Density (pcf): 163.99
Strength (psi): 5587.99
Tangent Young's Modulus (10^6 psi): 0.86
Tangent Poisson's Ratio: 0.18
Secant Young's Modulus (10^6 psi): 0.76
Secant Poisson's Ratio: 0.00

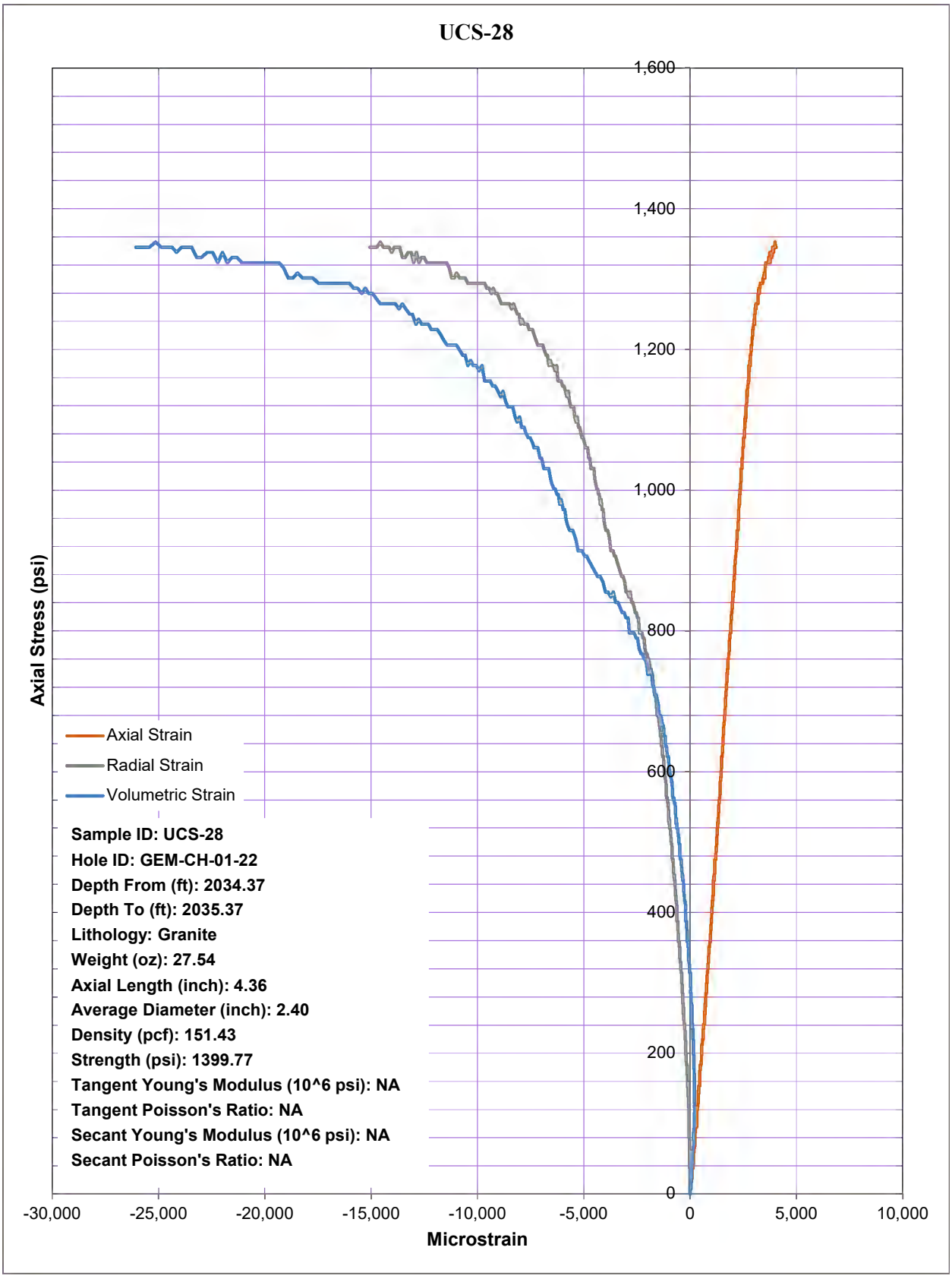

UCS-23
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Axial Stress (psi)
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-23
Hole ID: GEM-CH-01-22
Depth From (ft): 1971.00
Depth To (ft): 1972.00
Lithology: Granite
Weight (oz): 30.07
Axial Length (inch): 4.36
Average Diameter (inch): 2.40
Density (pcf): 164.84
Strength (psi): 7284.35
Tangent Young's Modulus (10^6 psi): 1.65
Tangent Poisson's Ratio: 0.07
Secant Young's Modulus (10^6 psi): 1.11
Secant Poisson's Ratio: 0.01

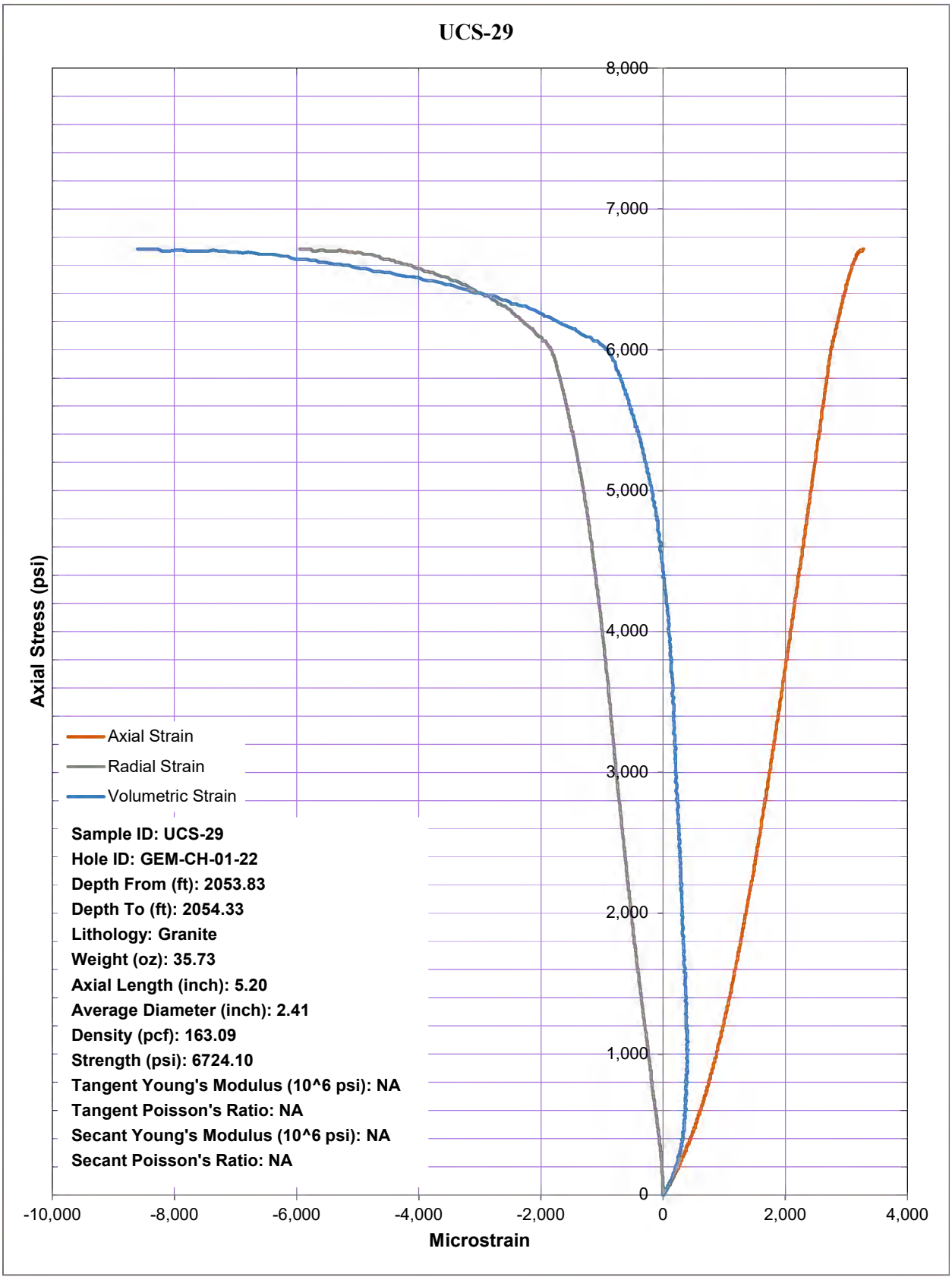

UCS-24
12,000
10,000
8,000
6,000
4,000
2,000
0
Axial Stress (psi)
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-24
Hole ID: GEM-CH-01-22
Depth From (ft): 1986.25
Depth To (ft): 1987.25
Lithology: Granite
Weight (oz): 33.74
Axial Length (inch): 4.91
Average Diameter (inch): 2.41
Density (pcf): 163.07
Strength (psi): 11393.12
Tangent Young's Modulus (10^6 psi): 2.22
Tangent Poisson's Ratio: 0.19
Secant Young's Modulus (10^6 psi): 1.69
Secant Poisson's Ratio: 0.11

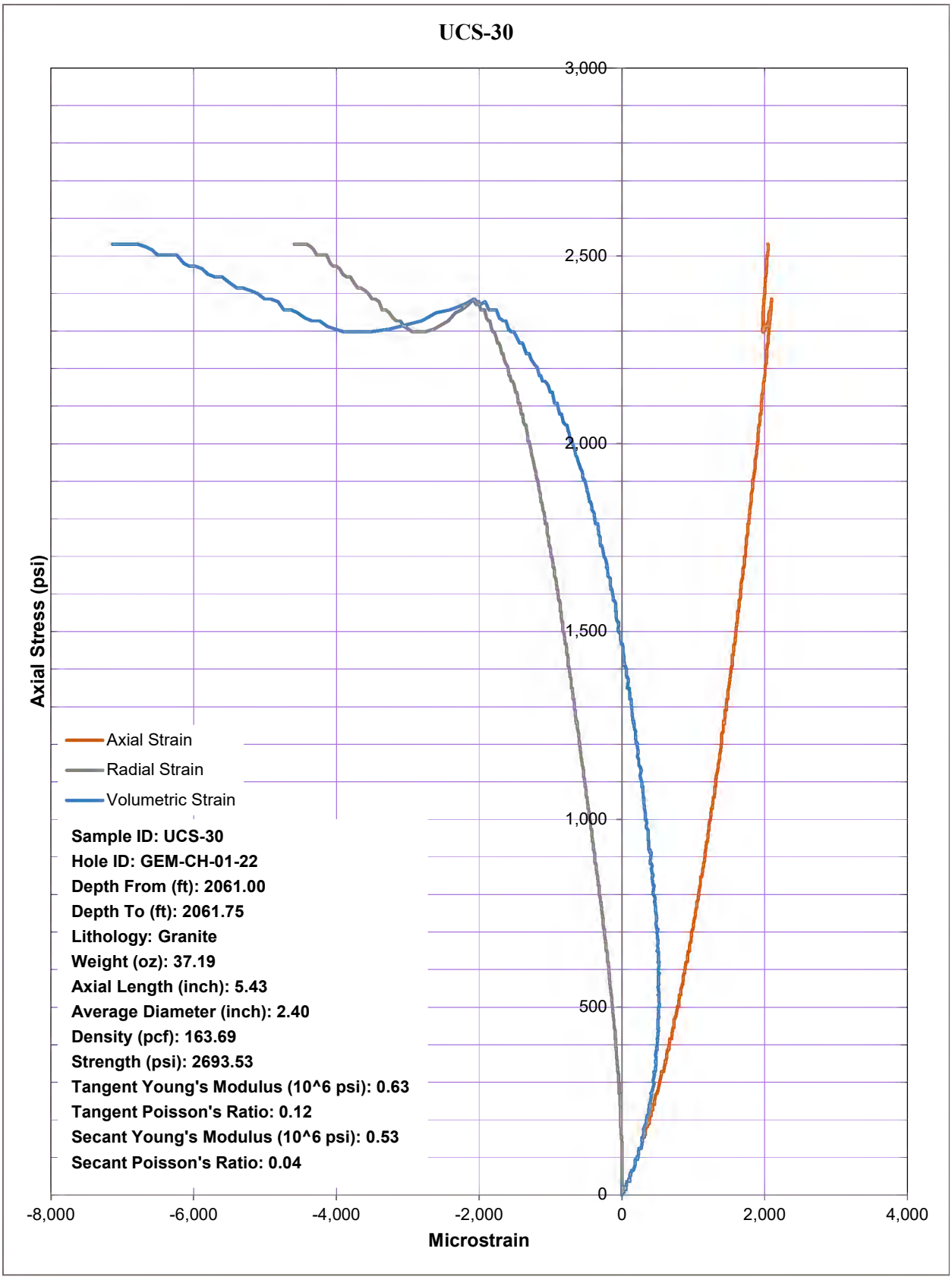

UCS-25
Axial Stress (psi)
450
400
350
300
250
200
150
100
50
0
-18,000
-16,000
-14,000
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-25
Hole ID: GEM-CH-01-22
Depth From (ft): 1994.16
Depth To (ft): 1994.83
Lithology: Granite
Weight (oz): 34.81
Axial Length (inch): 5.38
Average Diameter (inch): 2.41
Density (pcf): 153.78
Strength (psi): 399.37
Tangent Young's Modulus (10^6 psi): N/A
Tangent Poisson's Ratio: N/A
Secant Young's Modulus (10^6 psi): N/A
Secant Poisson's Ratio: N/A

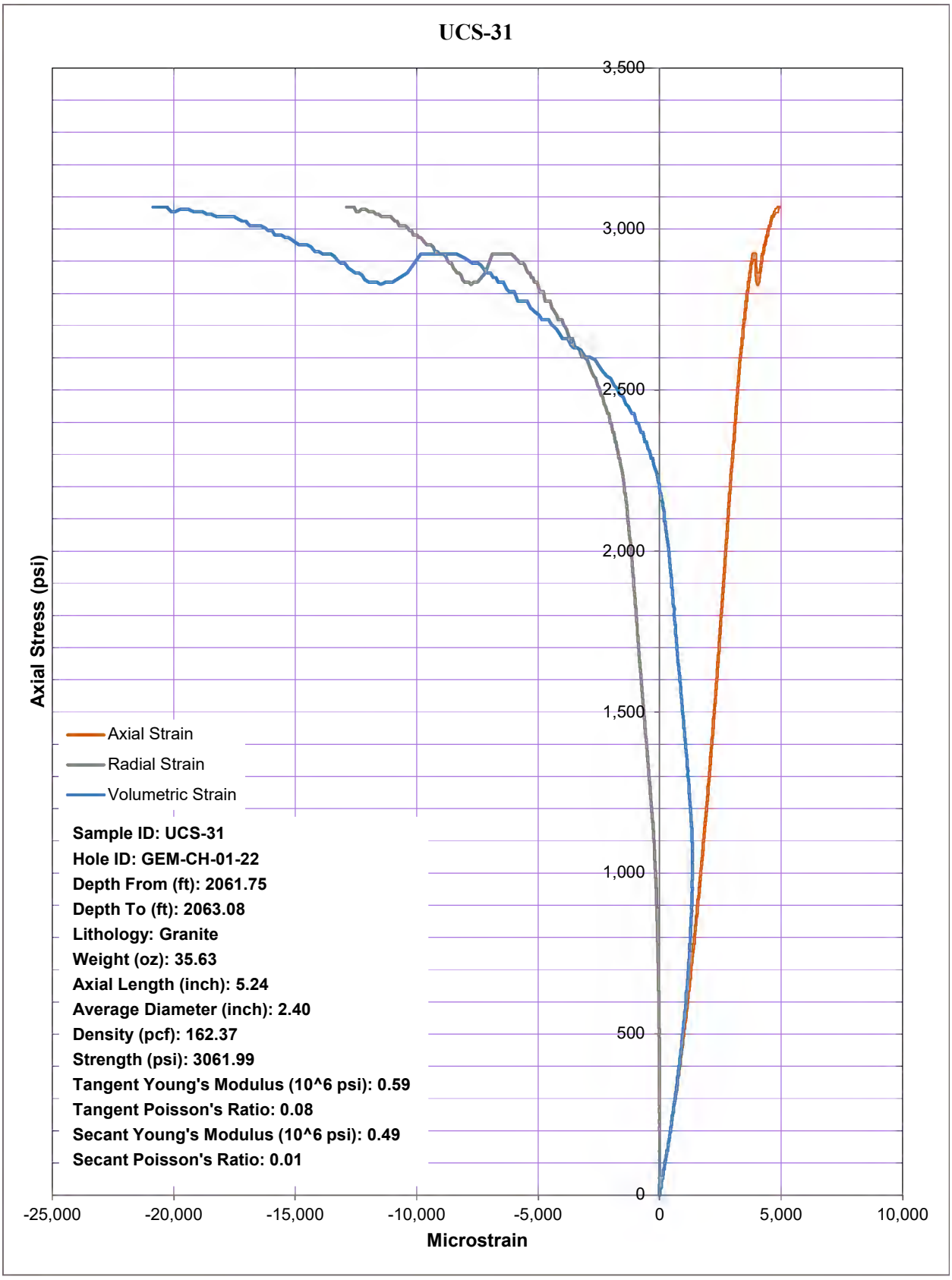

UCS-26
Axial Stress (psi)
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-15,000
-10,000
-5,000
0
5,000
10,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-26
Hole ID: GEM-CH-01-22
Depth From (ft): 2005.58
Depth To (ft): 2006.00
Lithology: Granite
Weight (oz): 34.53
Axial Length (inch): 5.04
Average Diameter (inch): 2.40
Density (pcf): 163.85
Strength (psi): 6000.56
Tangent Young's Modulus (10^6 psi): 0.45
Tangent Poisson's Ratio: 0.12
Secant Young's Modulus (10^6 psi): 0.39
Secant Poisson's Ratio: 0.05

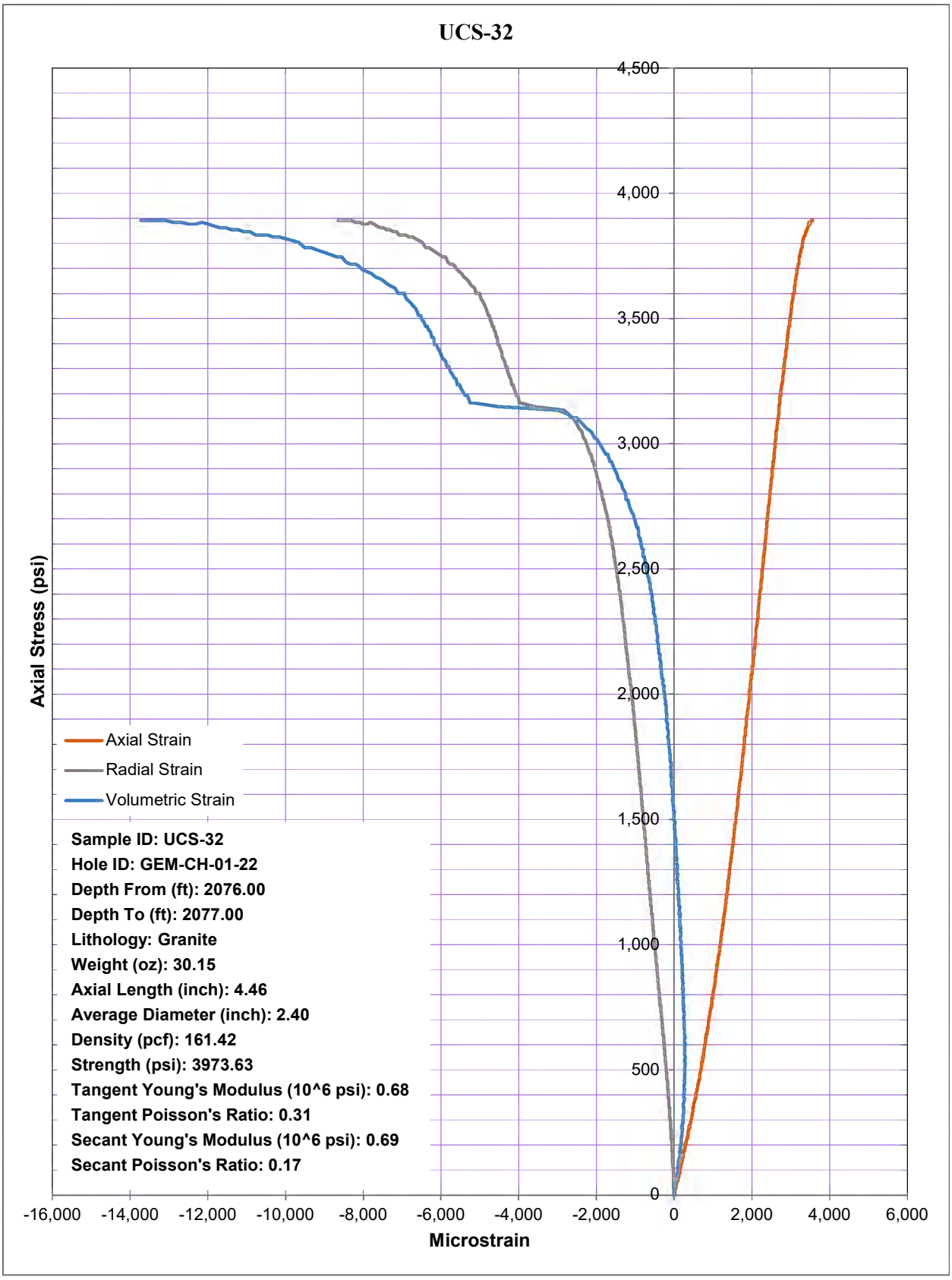

UCS-27
Axial Stress (psi)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-27
Hole ID: GEM-CH-01-22
Depth From (ft): 2013.37
Depth To (ft): 2013.87
Lithology: Granite
Weight (oz): 34.72
Axial Length (inch): 5.01
Average Diameter (inch): 2.40
Density (pcf): 165.50
Strength (psi): 8920.82
Tangent Young's Modulus (10^6 psi): 1.73
Tangent Poisson's Ratio: 0.18
Secant Young's Modulus (10^6 psi): 1.31
Secant Poisson's Ratio: 0.05

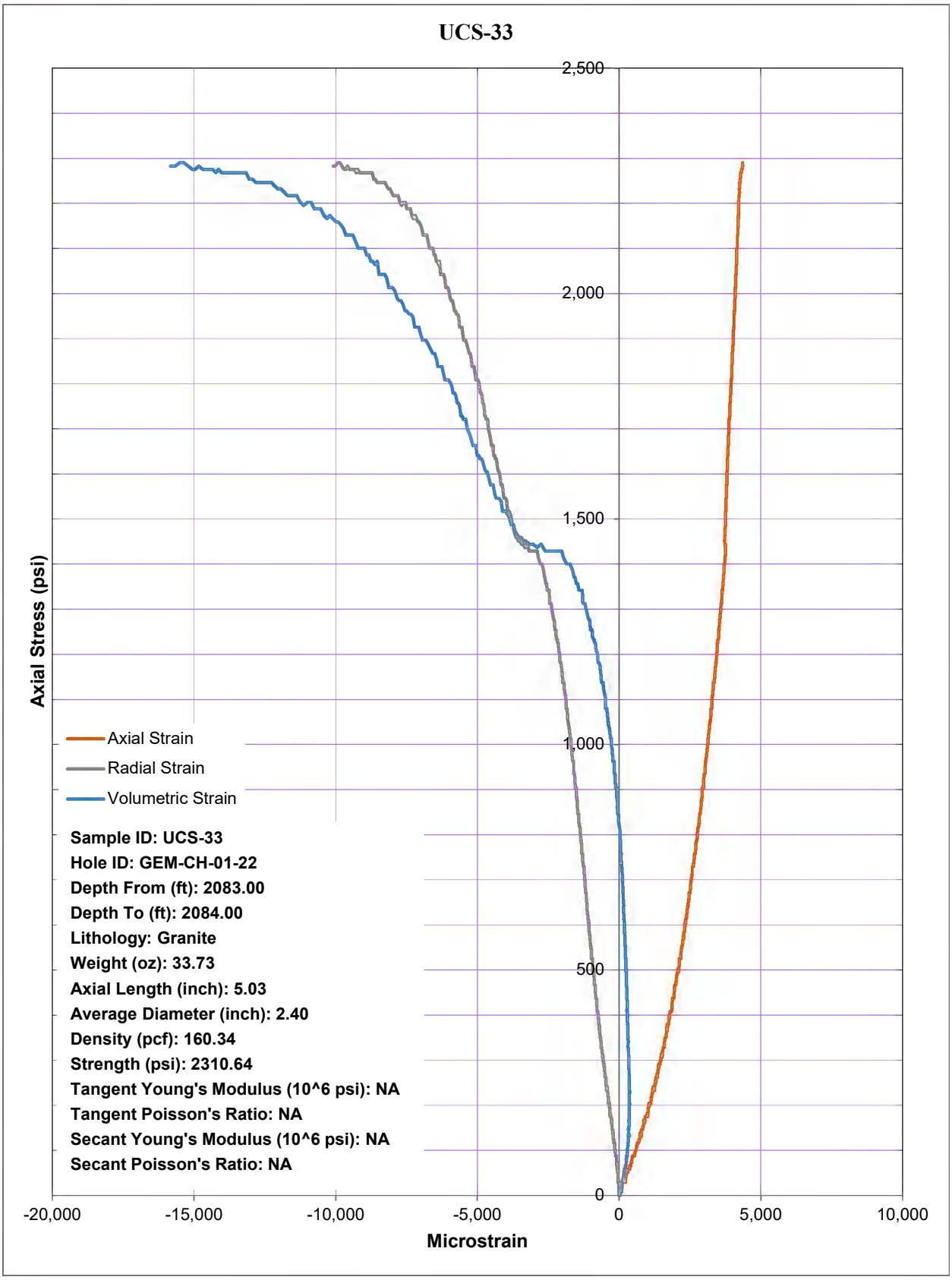

UCS-28
Axial Stress (psi)
1,600
1,400
1,200
1,000
800
600
400
200
0
-30,000
-25,000
-20,000
-15,000
-10,000
-5,000
0
5,000
10,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-28
Hole ID: GEM-CH-01-22
Depth From (ft): 2034.37
Depth To (ft): 2035.37
Lithology: Granite
Weight (oz): 27.54
Axial Length (inch): 4.36
Average Diameter (inch): 2.40
Density (pcf): 151.43
Strength (psi): 1399.77
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA

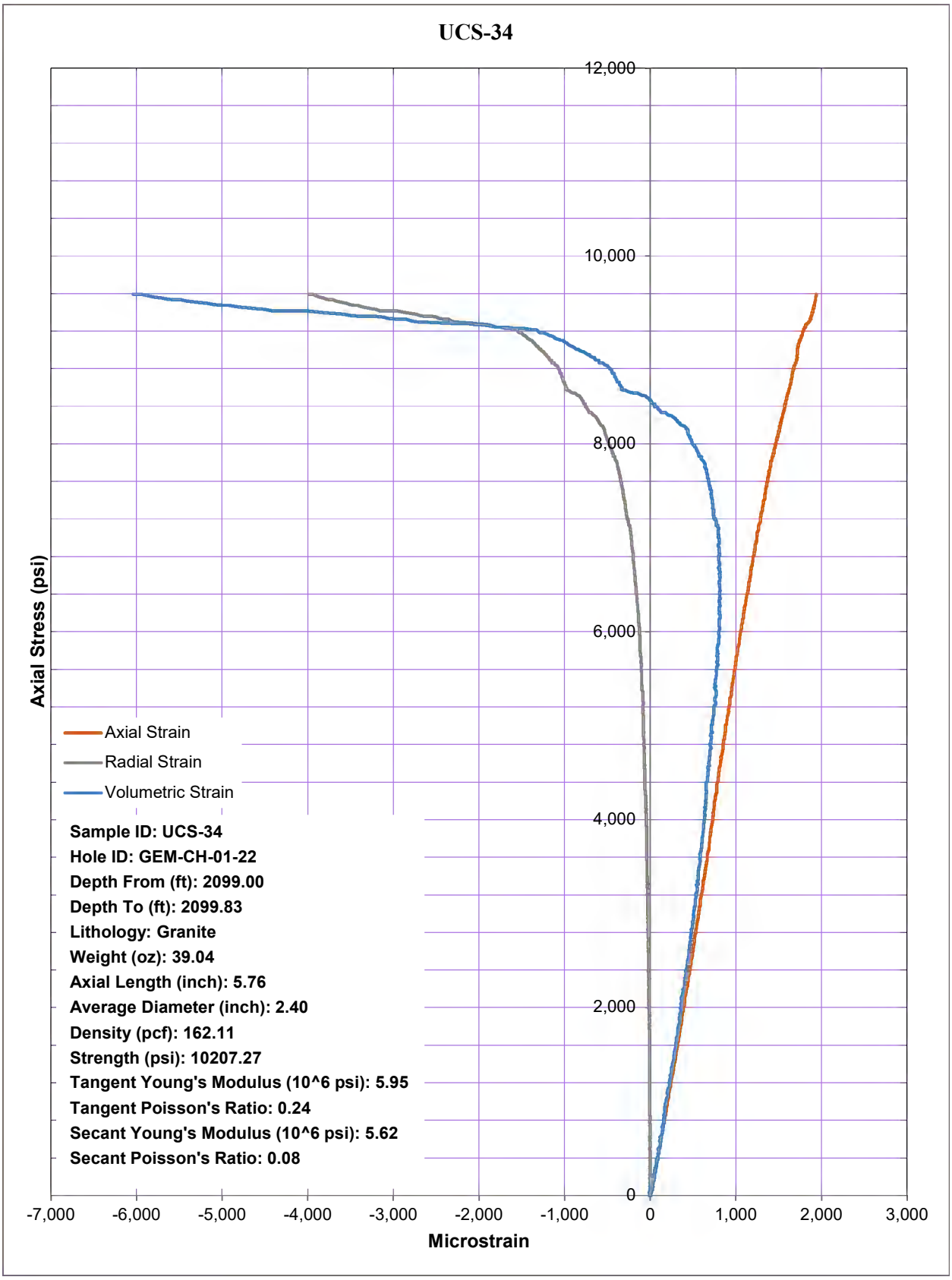

UCS-29
Axial Stress (psi)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-29
Hole ID: GEM-CH-01-22
Depth From (ft): 2053.83
Depth To (ft): 2054.33
Lithology: Granite
Weight (oz): 35.73
Axial Length (inch): 5.20
Average Diameter (inch): 2.41
Density (pcf): 163.09
Strength (psi): 6724.10
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA

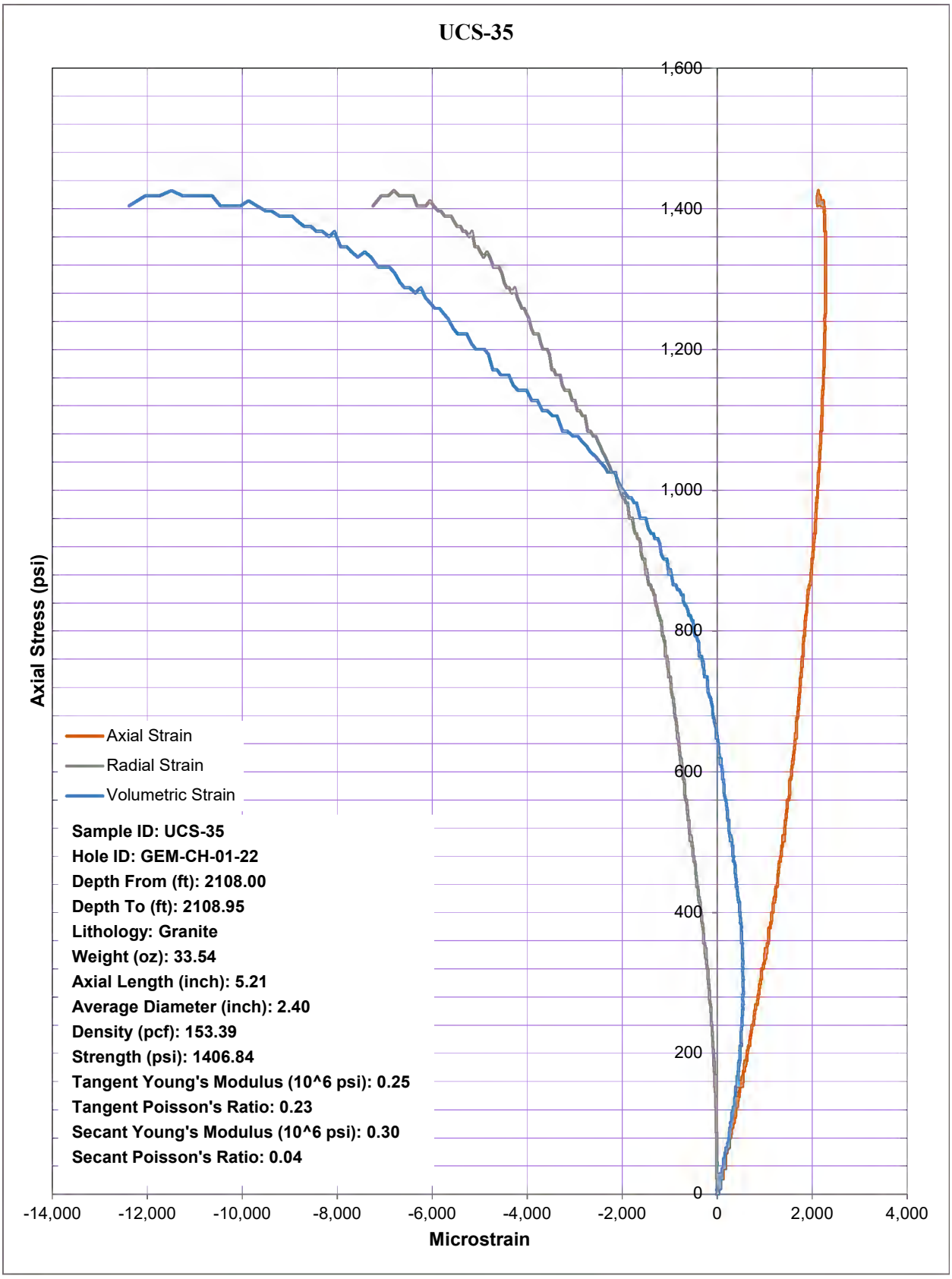

UCS-30
3,000
2,500
2,000
1,500
1,000
500
0
Axial Stress (psi)
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-30
Hole ID: GEM-CH-01-22
Depth From (ft): 2061.00
Depth To (ft): 2061.75
Lithology: Granite
Weight (oz): 37.19
Axial Length (inch): 5.43
Average Diameter (inch): 2.40
Density (pcf): 163.69
Strength (psi): 2693.53
Tangent Young's Modulus (10^6 psi): 0.63
Tangent Poisson's Ratio: 0.12
Secant Young's Modulus (10^6 psi): 0.53
Secant Poisson's Ratio: 0.04

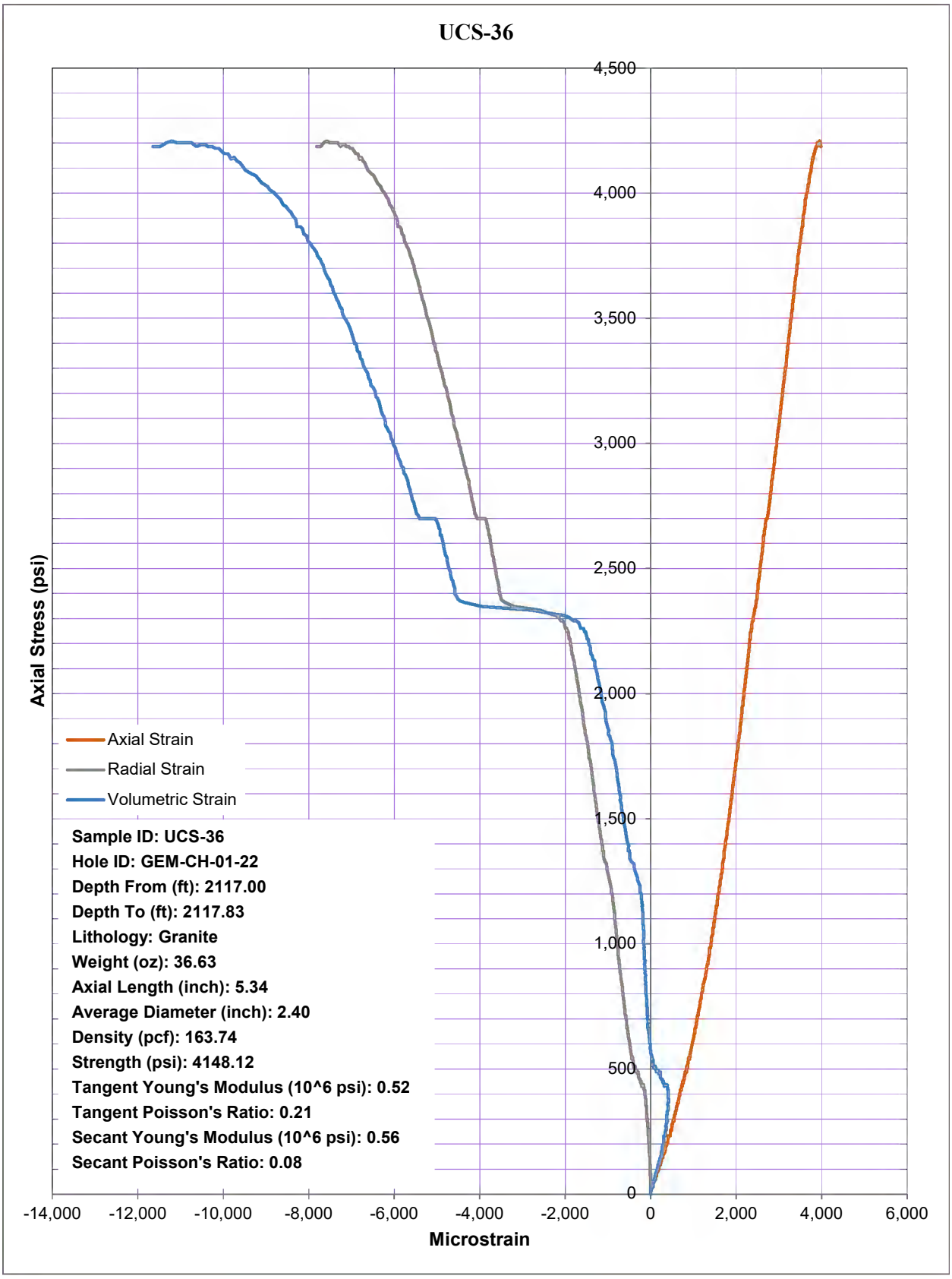

UCS-31
Axial Stress (psi)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-25,000
-20,000
-15,000
-10,000
-5,000
0
5,000
10,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-31
Hole ID: GEM-CH-01-22
Depth From (ft): 2061.75
Depth To (ft): 2063.08
Lithology: Granite
Weight (oz): 35.63
Axial Length (inch): 5.24
Average Diameter (inch): 2.40
Density (pcf): 162.37
Strength (psi): 3061.99
Tangent Young's Modulus (10^6 psi): 0.59
Tangent Poisson's Ratio: 0.08
Secant Young's Modulus (10^6 psi): 0.49
Secant Poisson's Ratio: 0.01

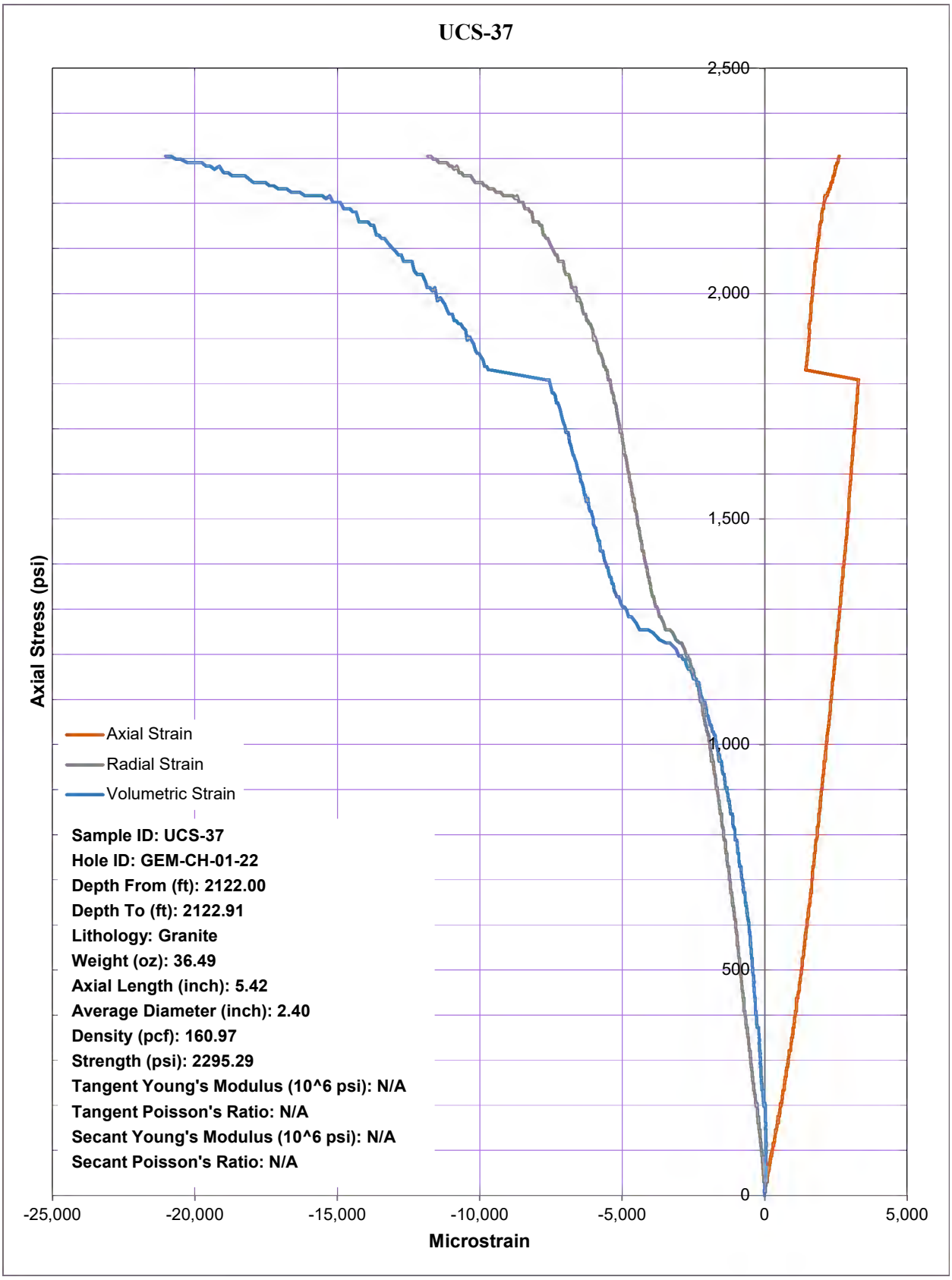

UCS-32
Axial Stress (psi)
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-32
Hole ID: GEM-CH-01-22
Depth From (ft): 2076.00
Depth To (ft): 2077.00
Lithology: Granite
Weight (oz): 30.15
Axial Length (inch): 4.46
Average Diameter (inch): 2.40
Density (pcf): 161.42
Strength (psi): 3973.63
Tangent Young's Modulus (10^6 psi): 0.68
Tangent Poisson's Ratio: 0.31
Secant Young's Modulus (10^6 psi): 0.69
Secant Poisson's Ratio: 0.17
-16,000
-14,000
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain

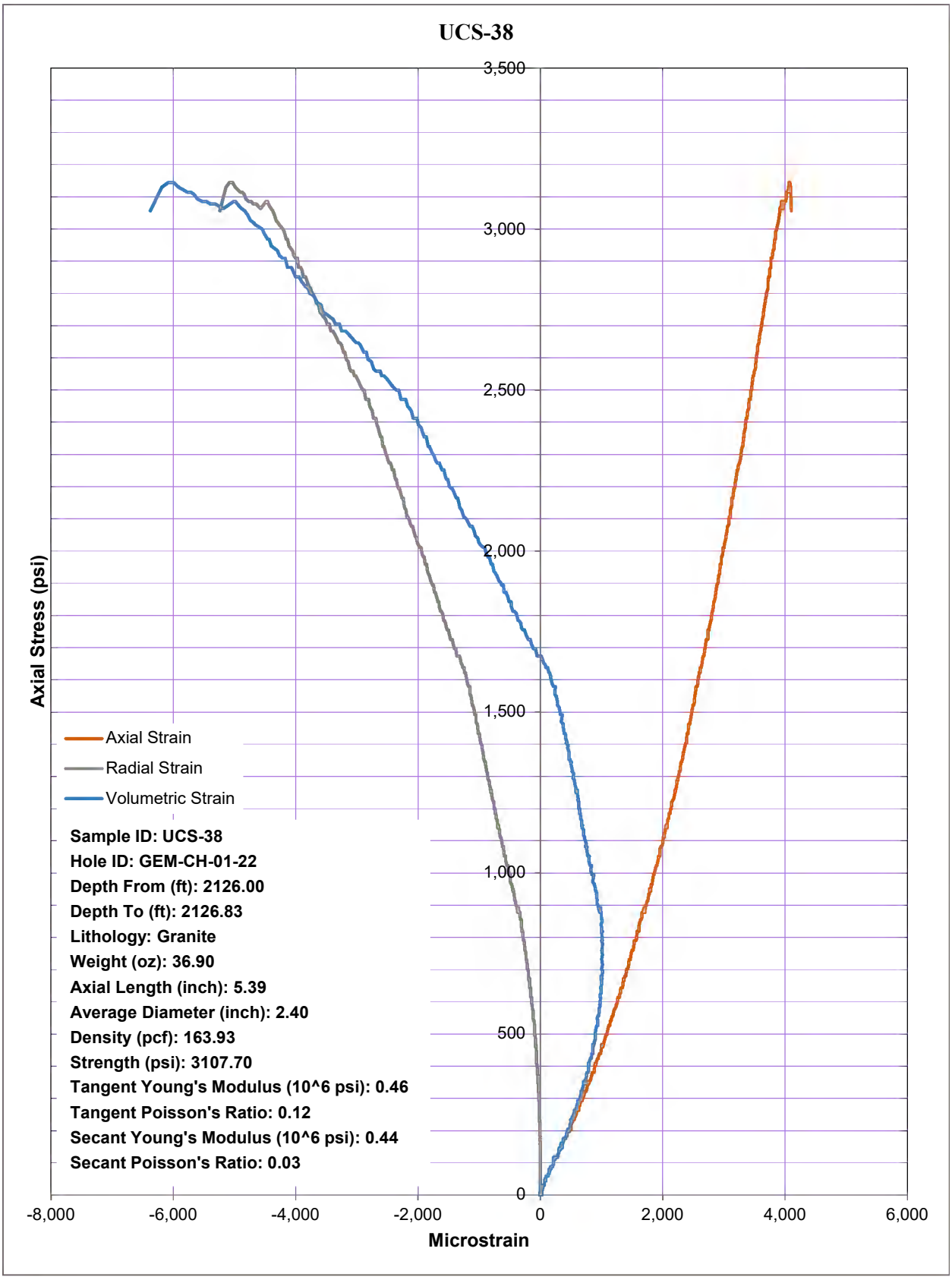

UCS-33
2,500
2,000
1,500
1,000
500
0
Axial Stress (psi)
-20,000
-15,000
-10,000
-5,000
0
5,000
10,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-33
Hole ID: GEM-CH-01-22
Depth From (ft): 2083.00
Depth To (ft): 2084.00
Lithology: Granite
Weight (oz): 33.73
Axial Length (inch): 5.03
Average Diameter (inch): 2.40
Density (pcf): 160.34
Strength (psi): 2310.64
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA

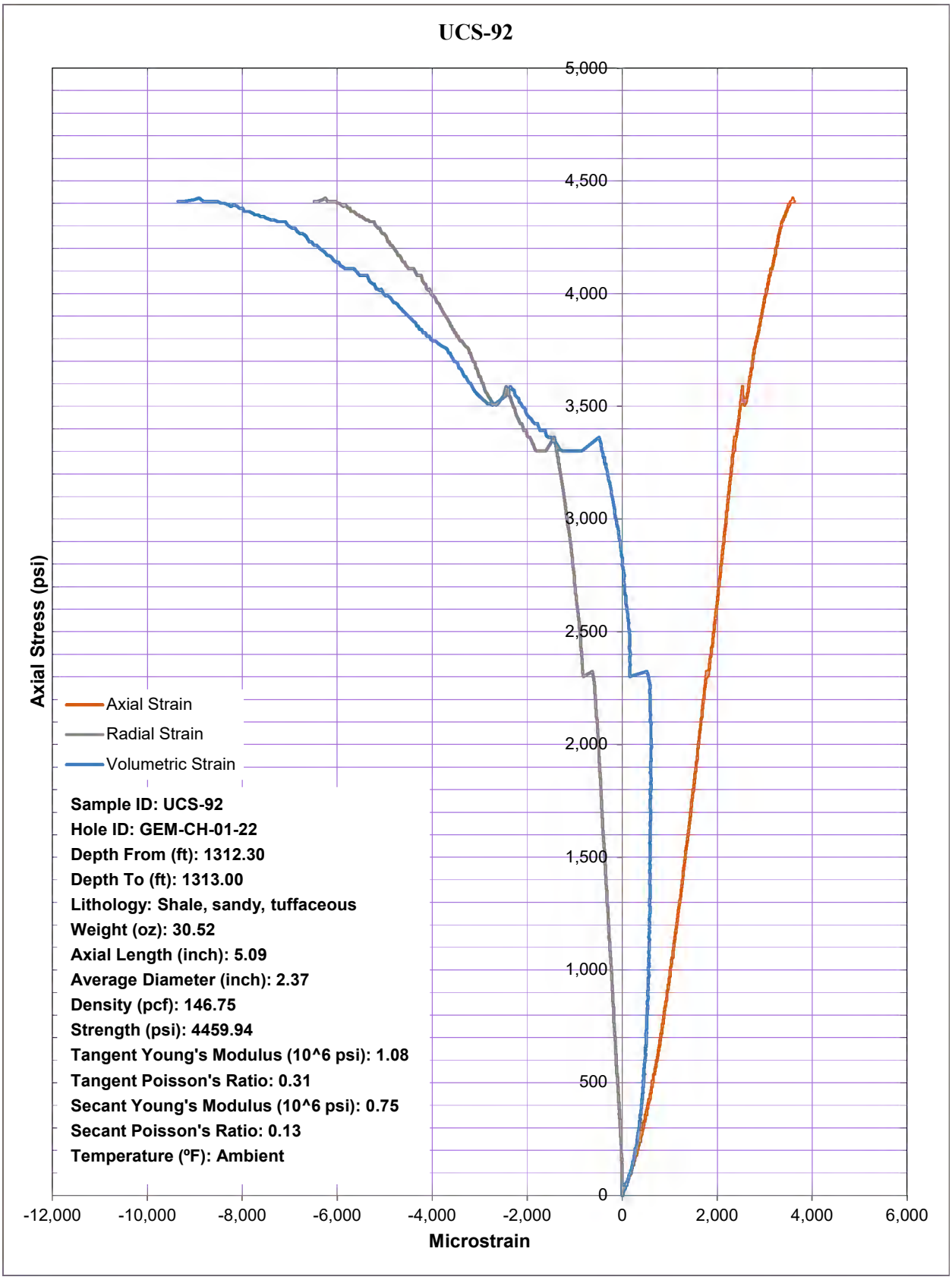

UCS-34
12,000
10,000
8,000
6,000
4,000
2,000
0
Axial Stress (psi)
-7,000
-6,000
-5,000
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-34
Hole ID: GEM-CH-01-22
Depth From (ft): 2099.00
Depth To (ft): 2099.83
Lithology: Granite
Weight (oz): 39.04
Axial Length (inch): 5.76
Average Diameter (inch): 2.40
Density (pcf): 162.11
Strength (psi): 10207.27
Tangent Young's Modulus (10^6 psi): 5.95
Tangent Poisson's Ratio: 0.24
Secant Young's Modulus (10^6 psi): 5.62
Secant Poisson's Ratio: 0.08

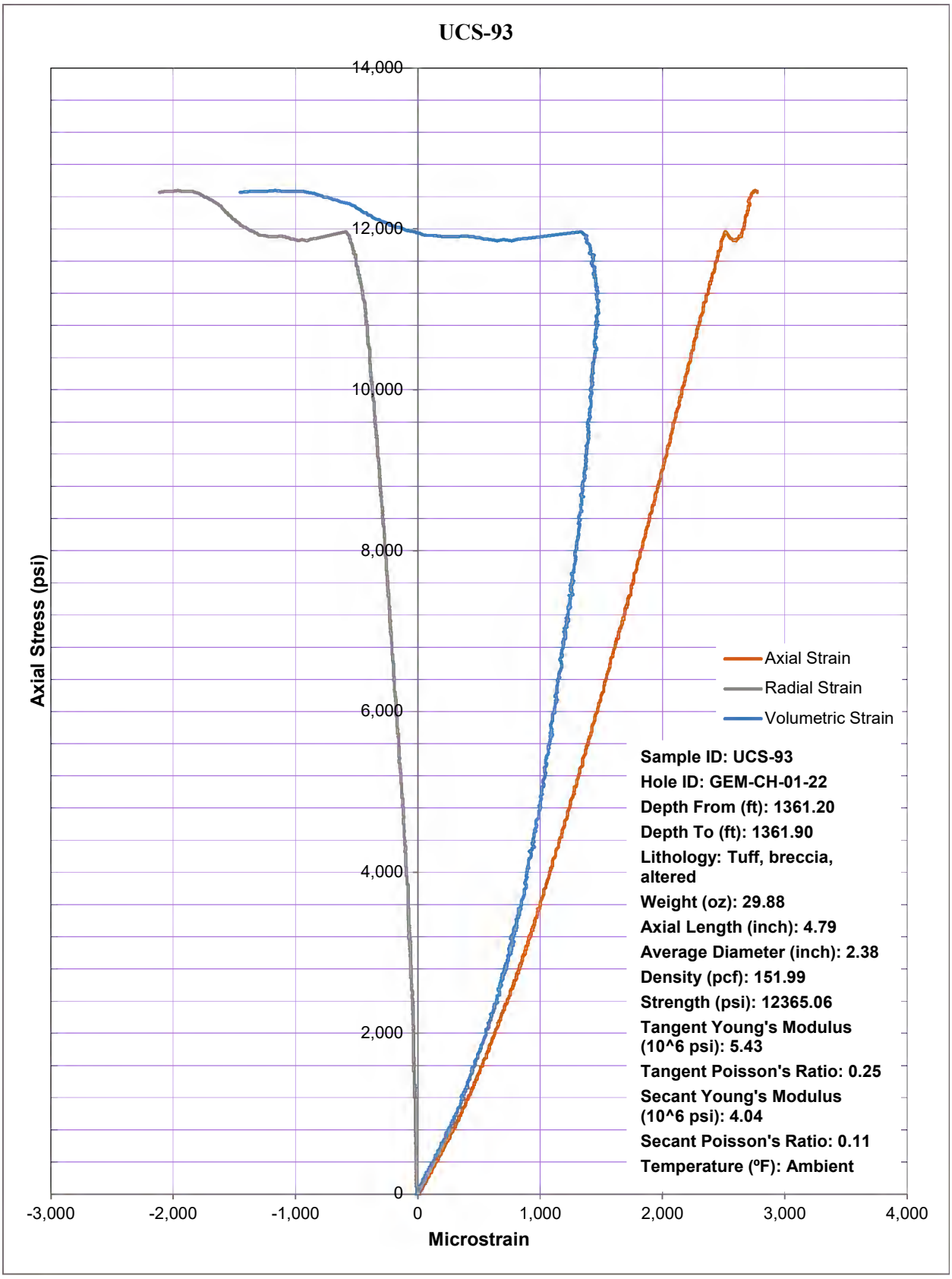

UCS-35
Axial Stress (psi)
1,600
1,400
1,200
1,000
800
600
400
200
0
-14,000
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-35
Hole ID: GEM-CH-01-22
Depth From (ft): 2108.00
Depth To (ft): 2108.95
Lithology: Granite
Weight (oz): 33.54
Axial Length (inch): 5.21
Average Diameter (inch): 2.40
Density (pcf): 153.39
Strength (psi): 1406.84
Tangent Young's Modulus (10^6 psi): 0.25
Tangent Poisson's Ratio: 0.23
Secant Young's Modulus (10^6 psi): 0.30
Secant Poisson's Ratio: 0.04

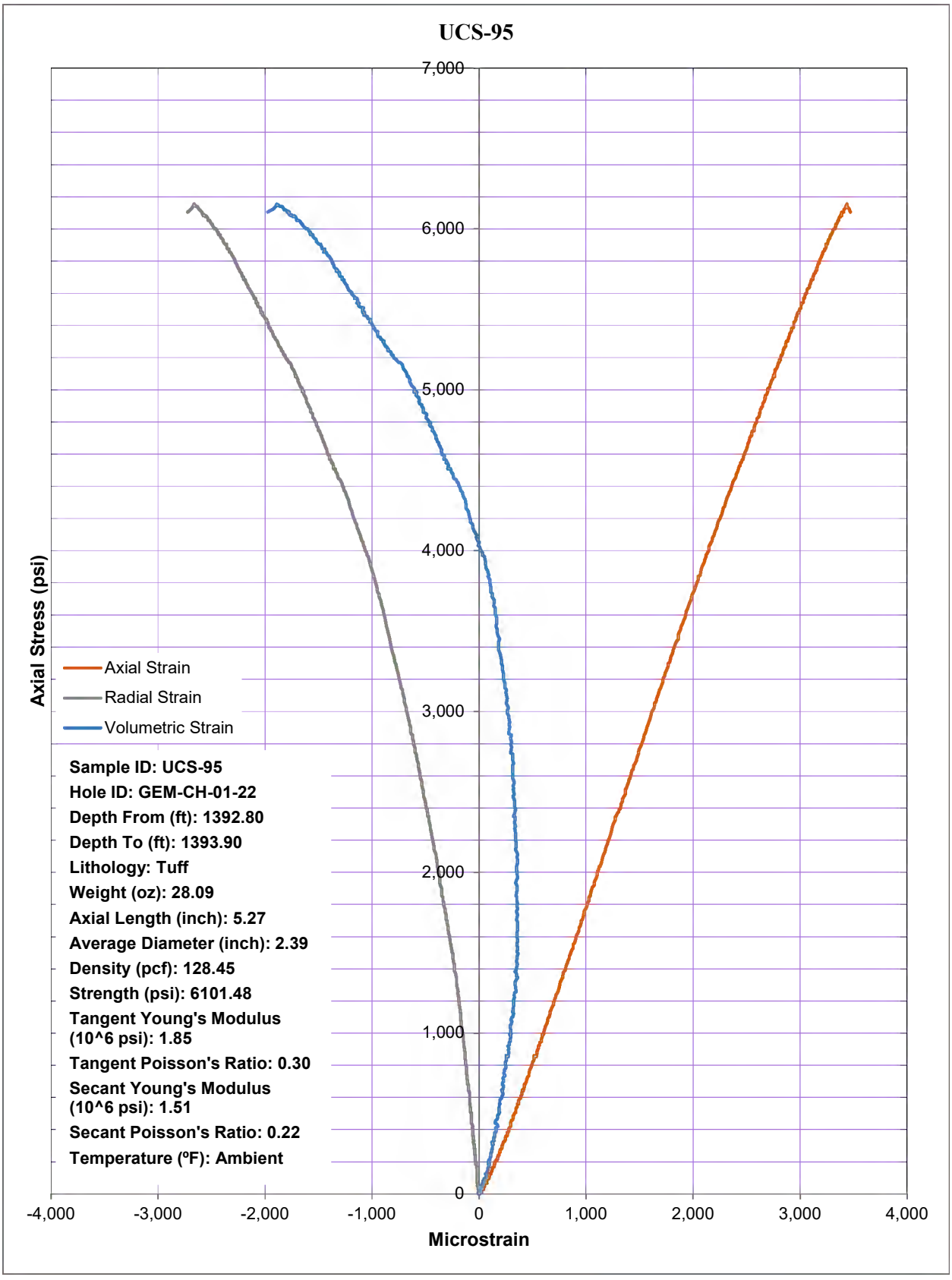

UCS-36
Axial Stress (psi)
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-14,000
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-36
Hole ID: GEM-CH-01-22
Depth From (ft): 2117.00
Depth To (ft): 2117.83
Lithology: Granite
Weight (oz): 36.63
Axial Length (inch): 5.34
Average Diameter (inch): 2.40
Density (pcf): 163.74
Strength (psi): 4148.12
Tangent Young's Modulus (10^6 psi): 0.52
Tangent Poisson's Ratio: 0.21
Secant Young's Modulus (10^6 psi): 0.56
Secant Poisson's Ratio: 0.08

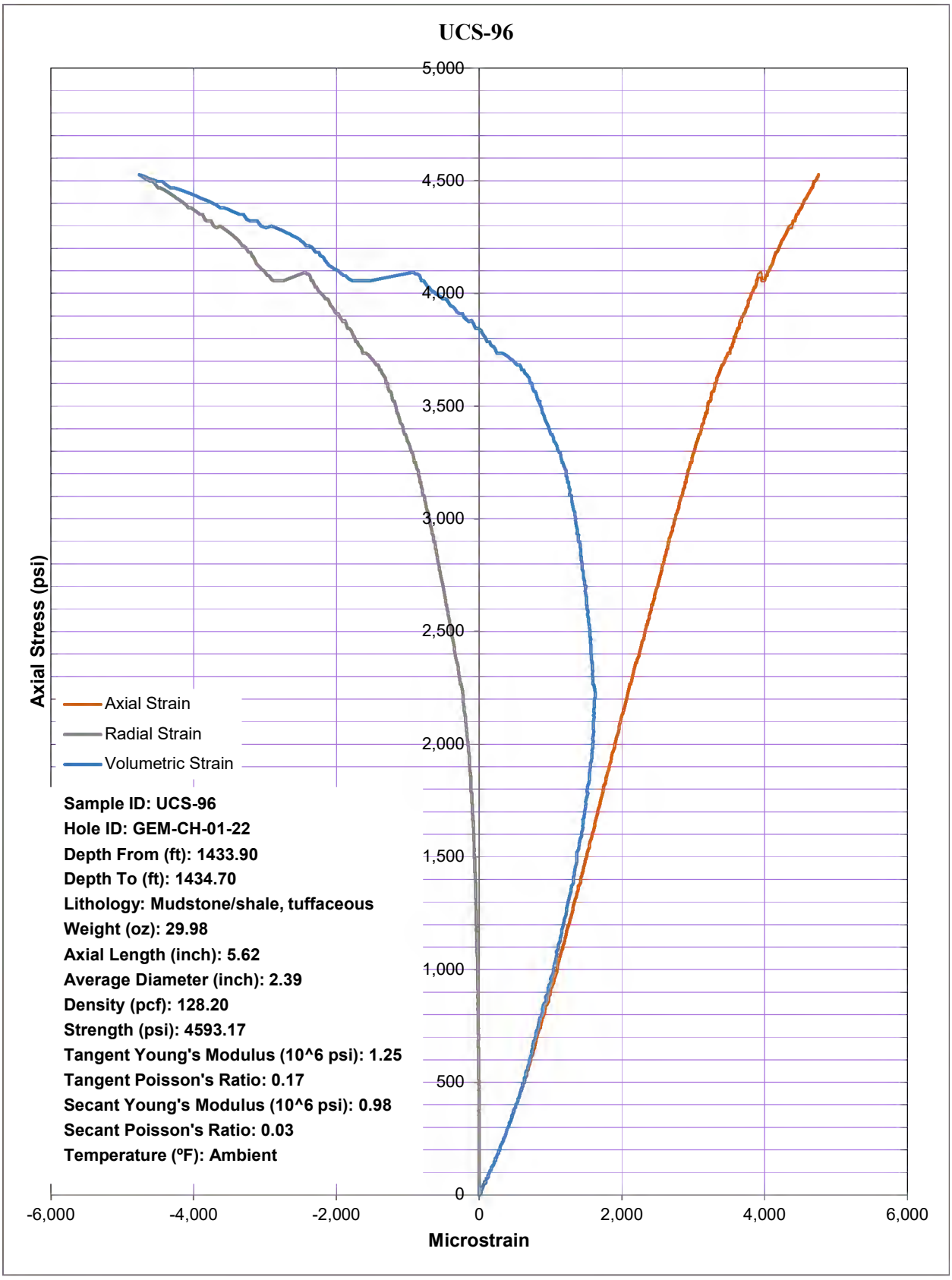

UCS-37
2,500
2,000
1,500
1,000
500
0
Axial Stress (psi)
-25,000
-20,000
-15,000
-10,000
-5,000
0
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-37
Hole ID: GEM-CH-01-22
Depth From (ft): 2122.00
Depth To (ft): 2122.91
Lithology: Granite
Weight (oz): 36.49
Axial Length (inch): 5.42
Average Diameter (inch): 2.40
Density (pcf): 160.97
Strength (psi): 2295.29
Tangent Young's Modulus (10^6 psi): N/A
Tangent Poisson's Ratio: N/A
Secant Young's Modulus (10^6 psi): N/A
Secant Poisson's Ratio: N/A

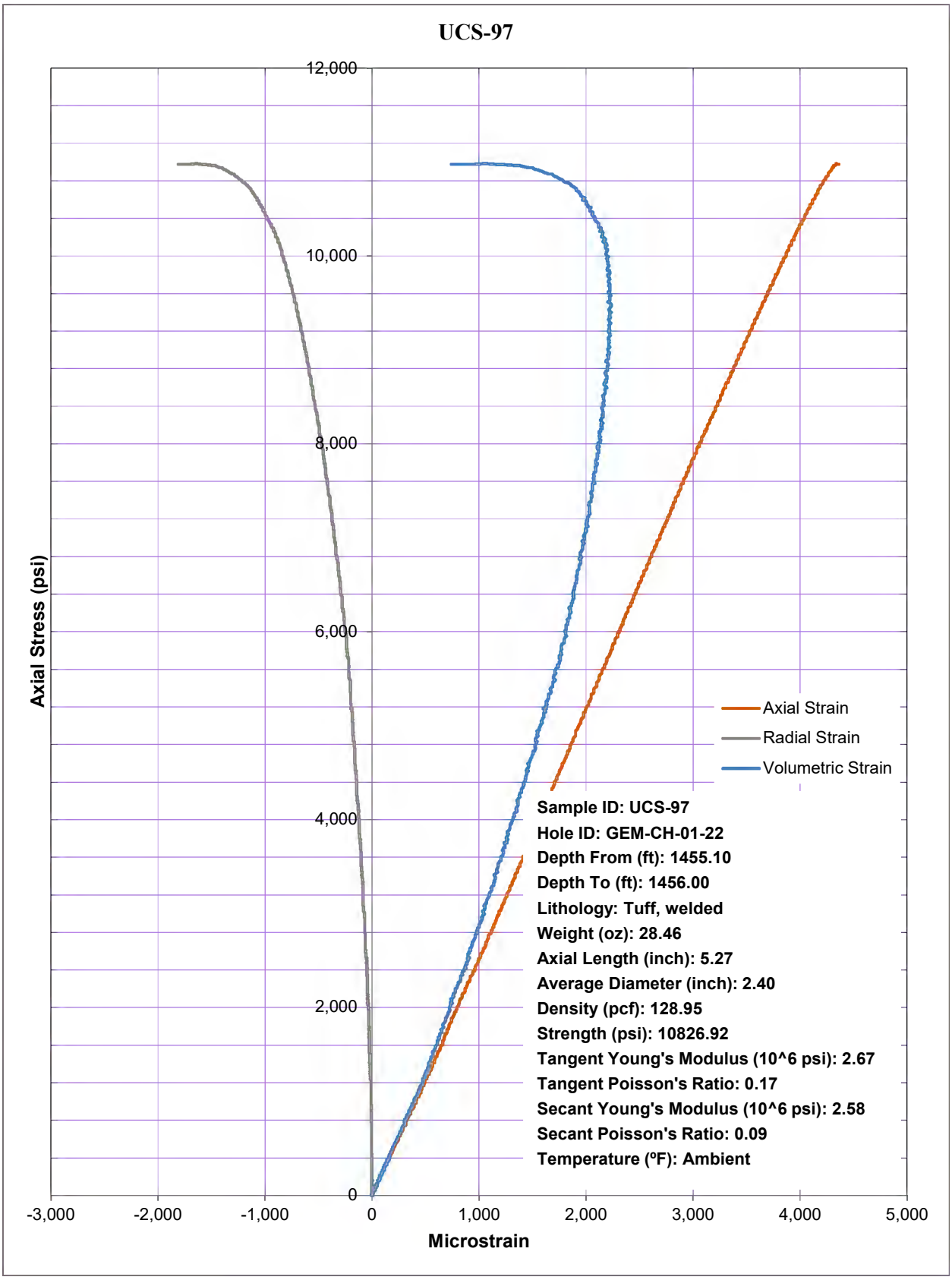

UCS-38
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Axial Stress (psi)
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-38
Hole ID: GEM-CH-01-22
Depth From (ft): 2126.00
Depth To (ft): 2126.83
Lithology: Granite
Weight (oz): 36.90
Axial Length (inch): 5.39
Average Diameter (inch): 2.40
Density (pcf): 163.93
Strength (psi): 3107.70
Tangent Young's Modulus (10^6 psi): 0.46
Tangent Poisson's Ratio: 0.12
Secant Young's Modulus (10^6 psi): 0.44
Secant Poisson's Ratio: 0.03

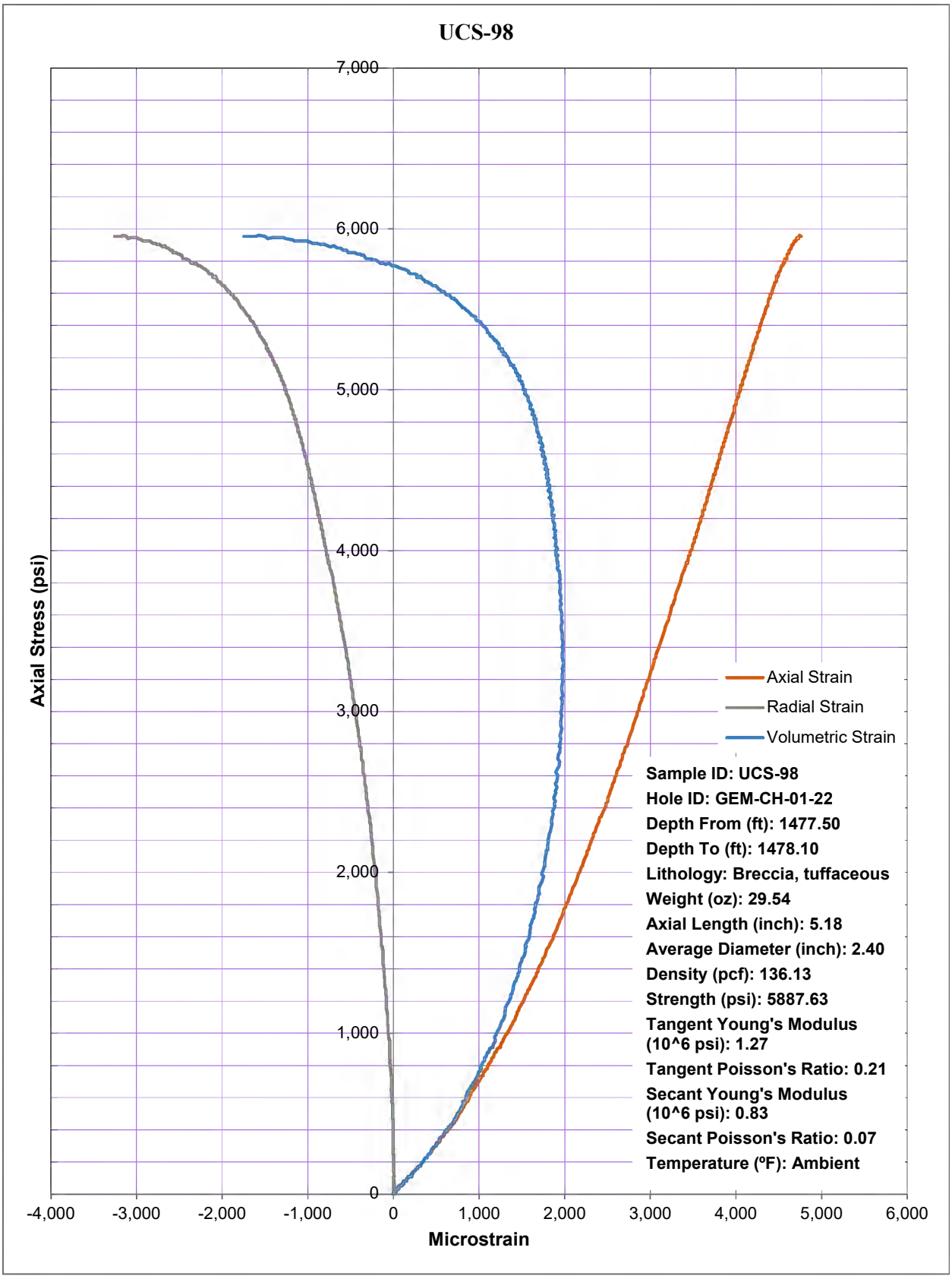

UCS-92
Axial Stress (psi)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-92
Hole ID: GEM-CH-01-22
Depth From (ft): 1312.30
Depth To (ft): 1313.00
Lithology: Shale, sandy, tuffaceous
Weight (oz): 30.52
Axial Length (inch): 5.09
Average Diameter (inch): 2.37
Density (pcf): 146.75
Strength (psi): 4459.94
Tangent Young's Modulus (10^6 psi): 1.08
Tangent Poisson's Ratio: 0.31
Secant Young's Modulus (10^6 psi): 0.75
Secant Poisson's Ratio: 0.13
Temperature (ºF): Ambient


UCS-93
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Axial Stress (psi)
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-93
Hole ID: GEM-CH-01-22
Depth From (ft): 1361.20
Depth To (ft): 1361.90
Lithology: Tuff, breccia, altered
Weight (oz): 29.88
Axial Length (inch): 4.79
Average Diameter (inch): 2.38
Density (pcf): 151.99
Strength (psi): 12365.06
Tangent Young's Modulus (10^6 psi): 5.43
Tangent Poisson's Ratio: 0.25
Secant Young's Modulus (10^6 psi): 4.04
Secant Poisson's Ratio: 0.11
Temperature (ºF): Ambient

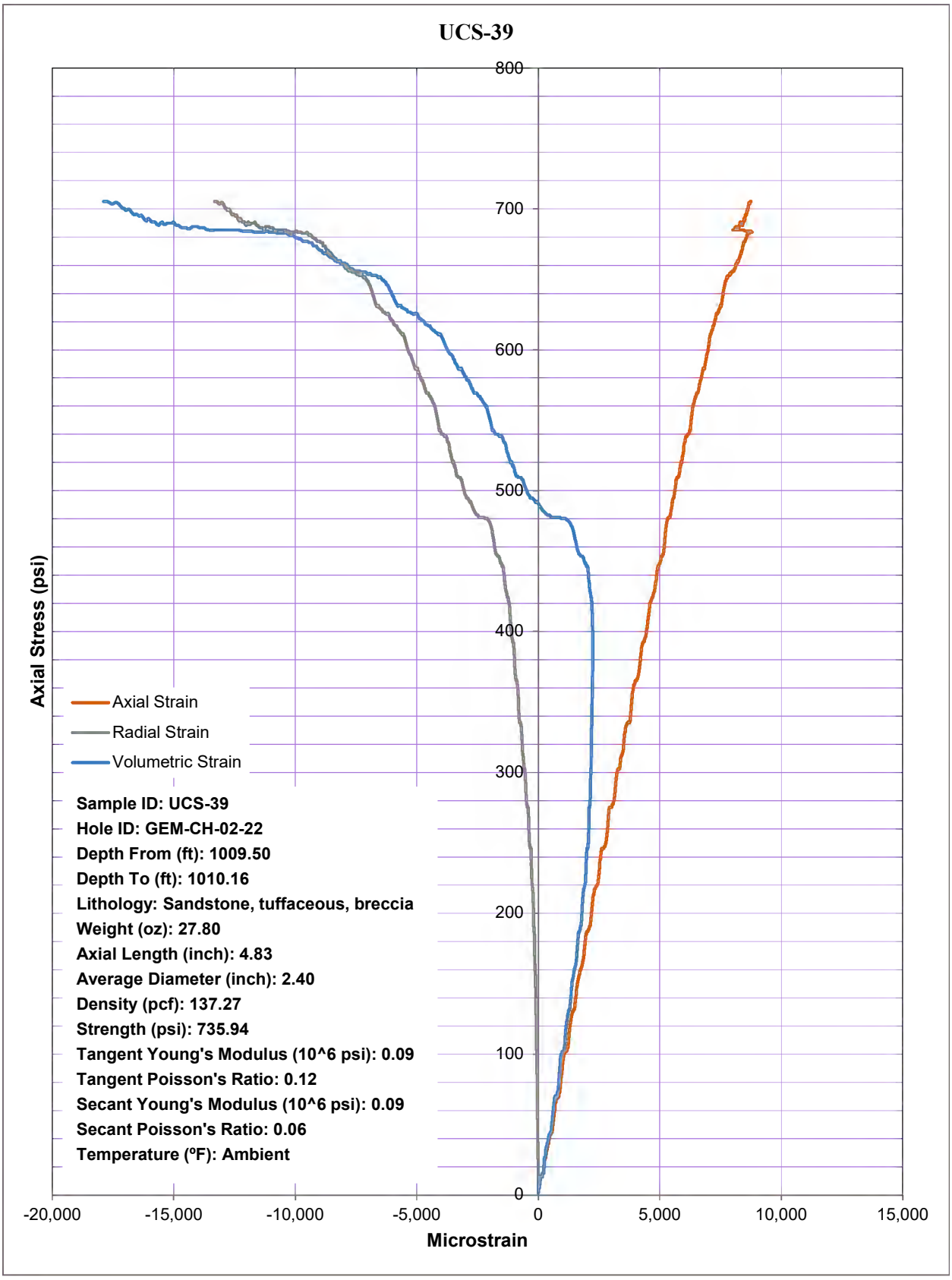

UCS-95
Axial Stress (psi)
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-95
Hole ID: GEM-CH-01-22
Depth From (ft): 1392.80
Depth To (ft): 1393.90
Lithology: Tuff
Weight (oz): 28.09
Axial Length (inch): 5.27
Average Diameter (inch): 2.39
Density (pcf): 128.45
Strength (psi): 6101.48
Tangent Young's Modulus (10^6 psi): 1.85
Tangent Poisson's Ratio: 0.30
Secant Young's Modulus (10^6 psi): 1.51
Secant Poisson's Ratio: 0.22
Temperature (ºF): Ambient

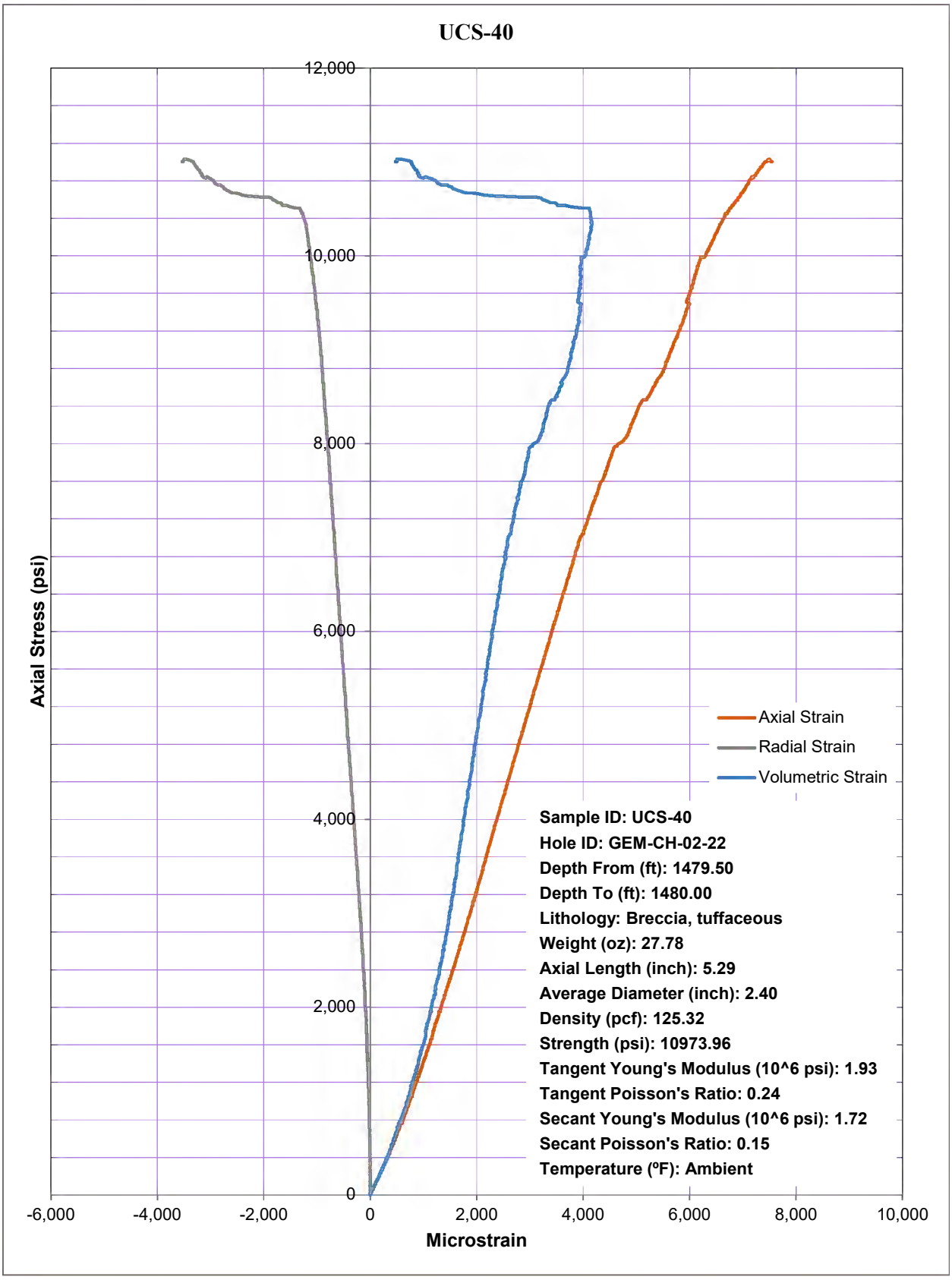

UCS-96
Axial Stress (psi)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-96
Hole ID: GEM-CH-01-22
Depth From (ft): 1433.90
Depth To (ft): 1434.70
Lithology: Mudstone/shale, tuffaceous
Weight (oz): 29.98
Axial Length (inch): 5.62
Average Diameter (inch): 2.39
Density (pcf): 128.20
Strength (psi): 4593.17
Tangent Young's Modulus (10^6 psi): 1.25
Tangent Poisson's Ratio: 0.17
Secant Young's Modulus (10^6 psi): 0.98
Secant Poisson's Ratio: 0.03
Temperature (ºF): Ambient

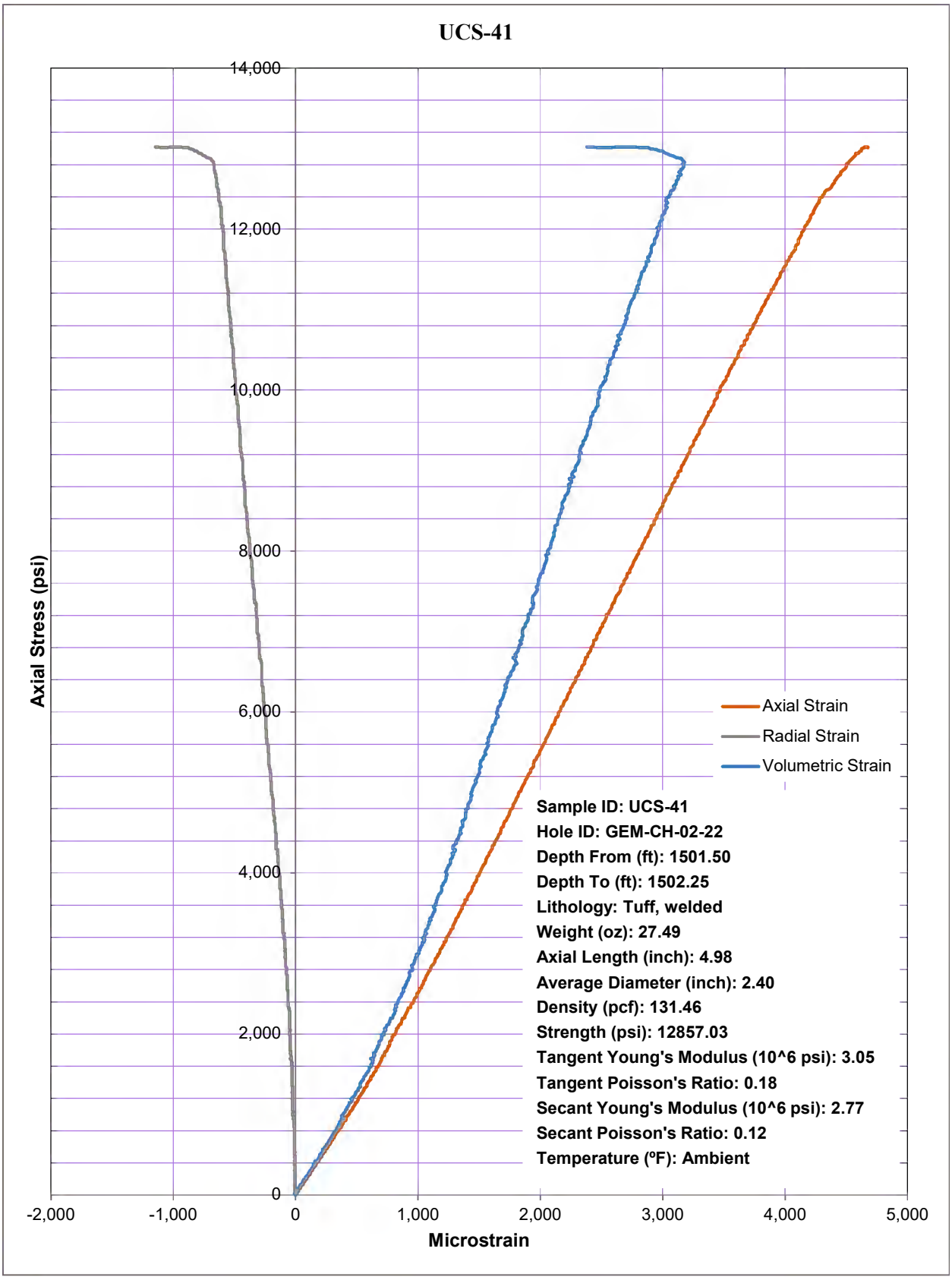

UCS-97
12,000
10,000
8,000
6,000
4,000
2,000
0
Axial Stress (psi)
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-97
Hole ID: GEM-CH-01-22
Depth From (ft): 1455.10
Depth To (ft): 1456.00
Lithology: Tuff, welded
Weight (oz): 28.46
Axial Length (inch): 5.27
Average Diameter (inch): 2.40
Density (pcf): 128.95
Strength (psi): 10826.92
Tangent Young's Modulus (10^6 psi): 2.67
Tangent Poisson's Ratio: 0.17
Secant Young's Modulus (10^6 psi): 2.58
Secant Poisson's Ratio: 0.09
Temperature (ºF): Ambient

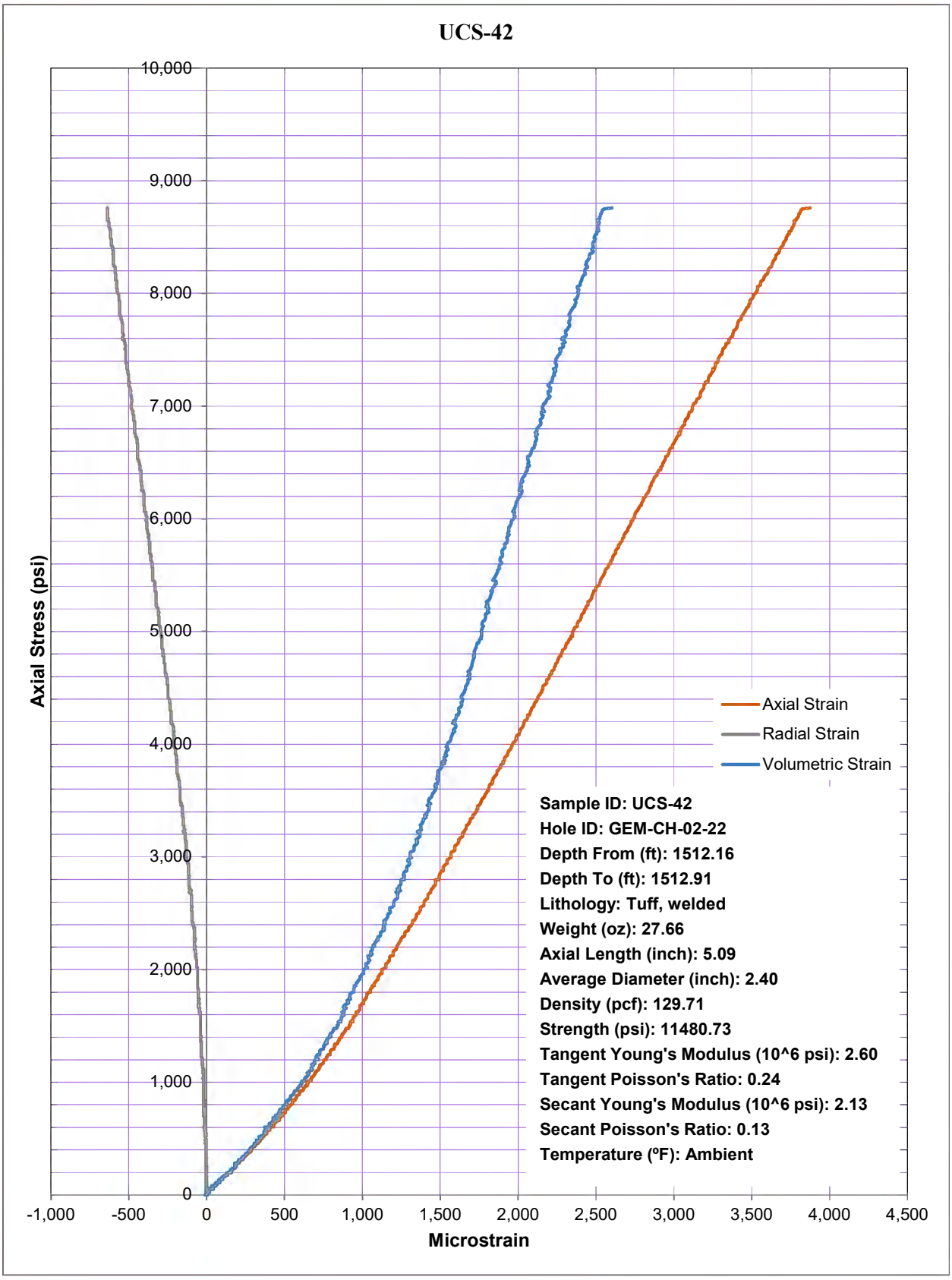

UCS-98
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Axial Stress (psi)
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-98
Hole ID: GEM-CH-01-22
Depth From (ft): 1477.50
Depth To (ft): 1478.10
Lithology: Breccia, tuffaceous
Weight (oz): 29.54
Axial Length (inch): 5.18
Average Diameter (inch): 2.40
Density (pcf): 136.13
Strength (psi): 5887.63
Tangent Young's Modulus (10^6 psi): 1.27
Tangent Poisson's Ratio: 0.21
Secant Young's Modulus (10^6 psi): 0.83
Secant Poisson's Ratio: 0.07
Temperature (ºF): Ambient

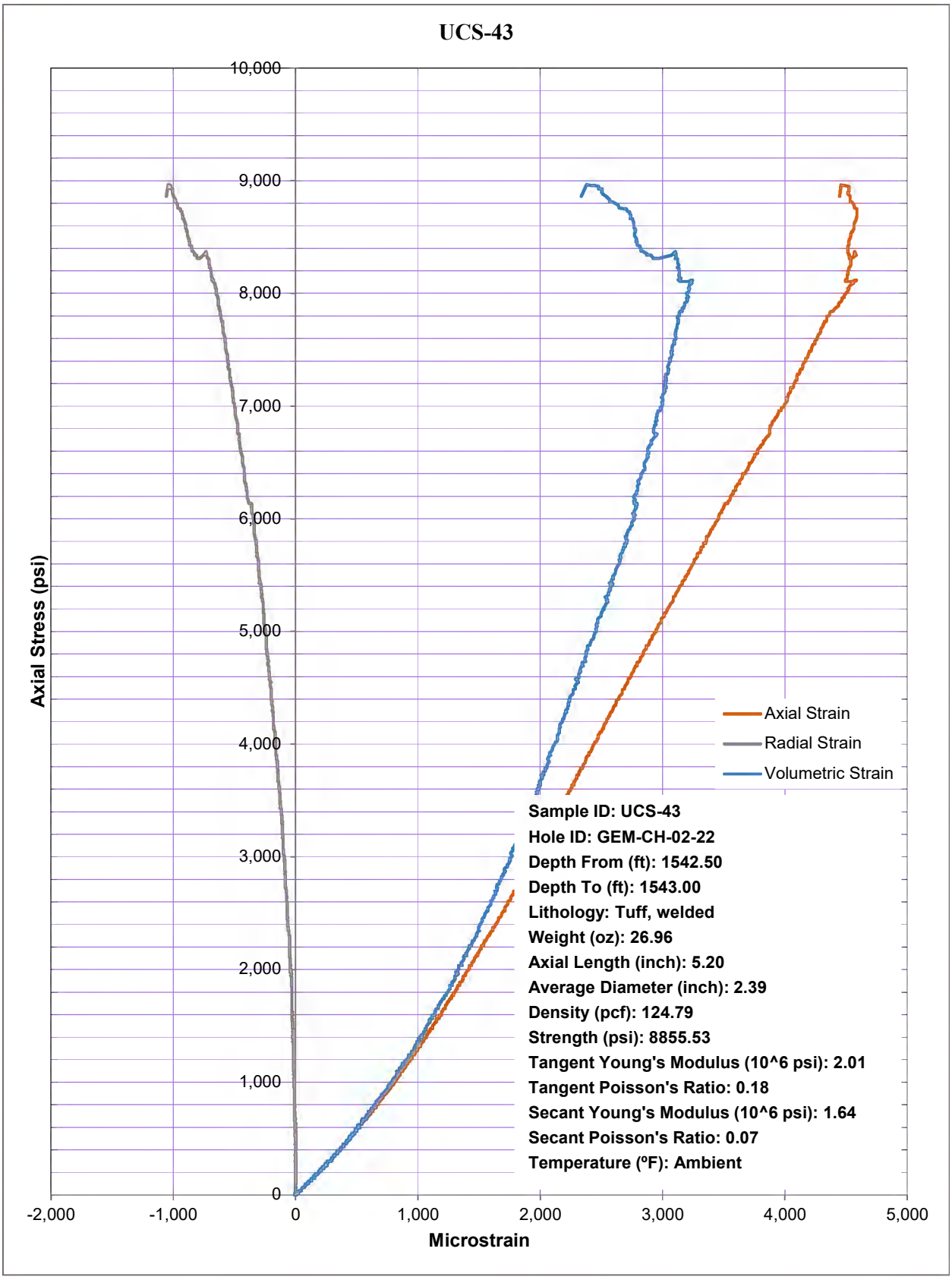
GEM-CH-02-22
UCS STRESS-STRAIN PLOTS

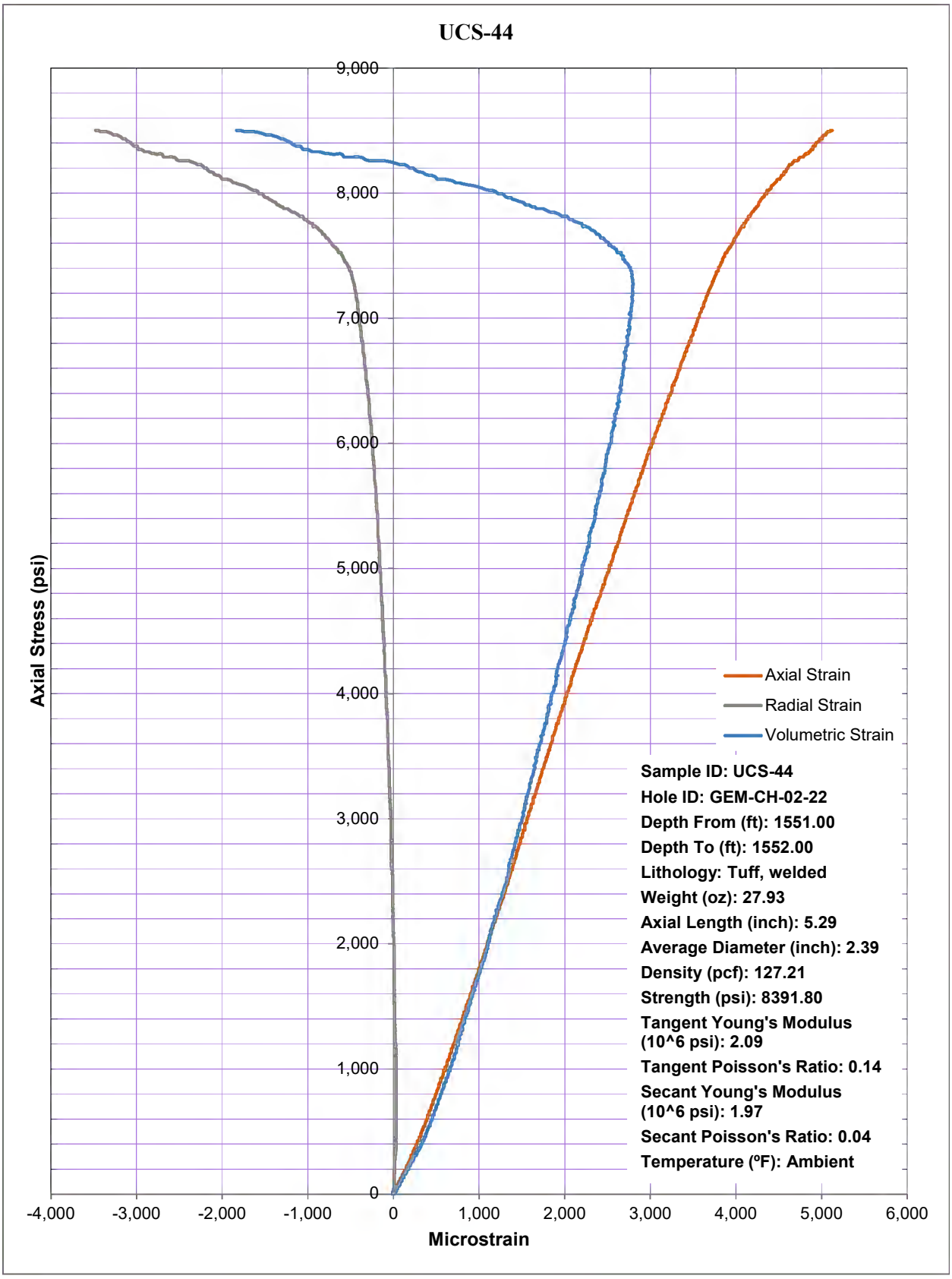

UCS-39
Axial Stress (psi)
800
700
600
500
400
300
200
100
0
-20,000
-15,000
-10,000
-5,000
0
5,000
10,000
15,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-39
Hole ID: GEM-CH-02-22
Depth From (ft): 1009.50
Depth To (ft): 1010.16
Lithology: Sandstone, tuffaceous, breccia
Weight (oz): 27.80
Axial Length (inch): 4.83
Average Diameter (inch): 2.40
Density (pcf): 137.27
Strength (psi): 735.94
Tangent Young's Modulus (10^6 psi): 0.09
Tangent Poisson's Ratio: 0.12
Secant Young's Modulus (10^6 psi): 0.09
Secant Poisson's Ratio: 0.06
Temperature (ºF): Ambient

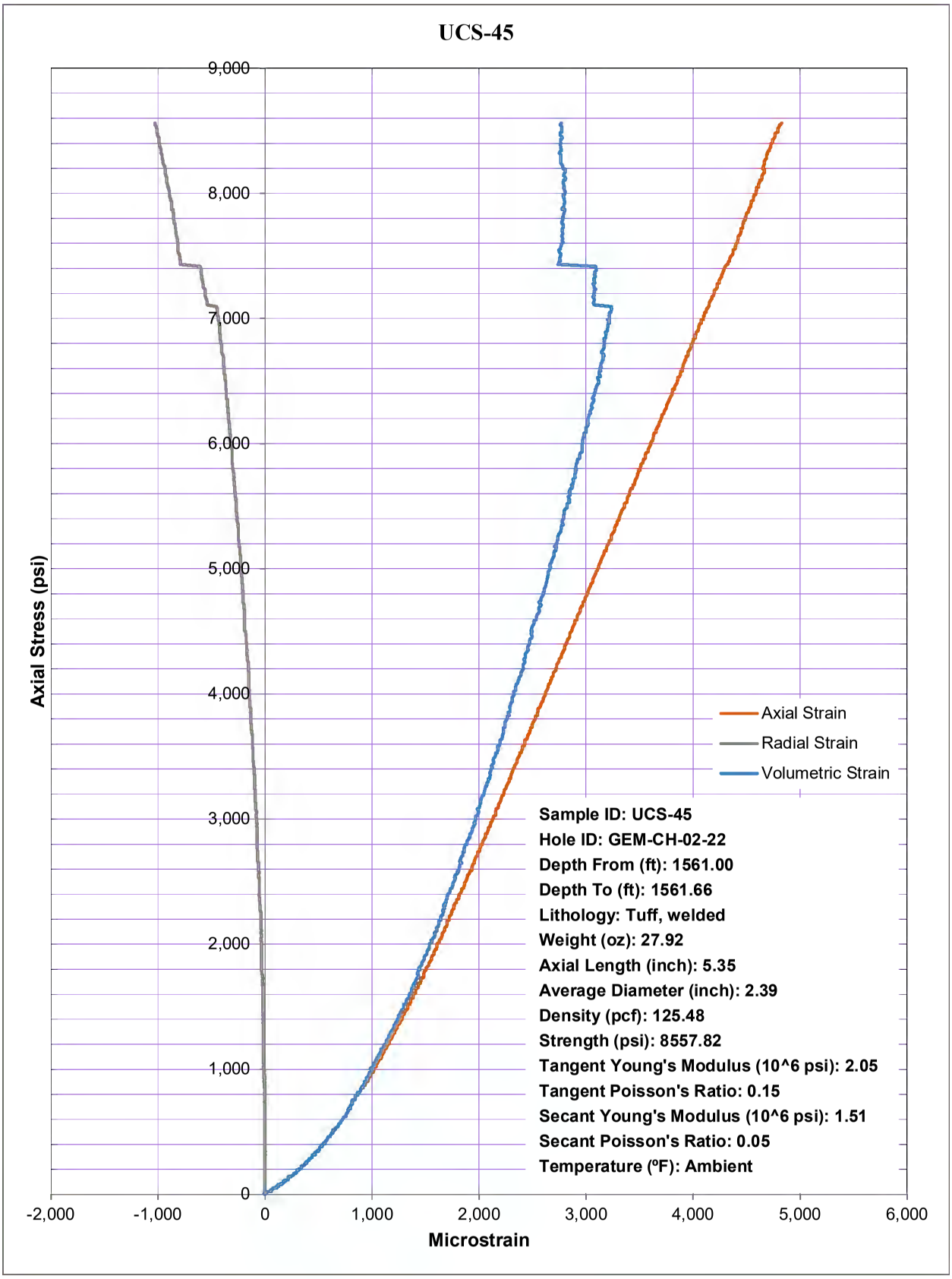

UCS-40
12,000
10,000
8,000
6,000
4,000
2,000
0
Axial Stress (psi)
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
8,000
10,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-40
Hole ID: GEM-CH-02-22
Depth From (ft): 1479.50
Depth To (ft): 1480.00
Lithology: Breccia, tuffaceous
Weight (oz): 27.78
Axial Length (inch): 5.29
Average Diameter (inch): 2.40
Density (pcf): 125.32
Strength (psi): 10973.96
Tangent Young's Modulus (10^6 psi): 1.93
Tangent Poisson's Ratio: 0.24
Secant Young's Modulus (10^6 psi): 1.72
Secant Poisson's Ratio: 0.15
Temperature (ºF): Ambient

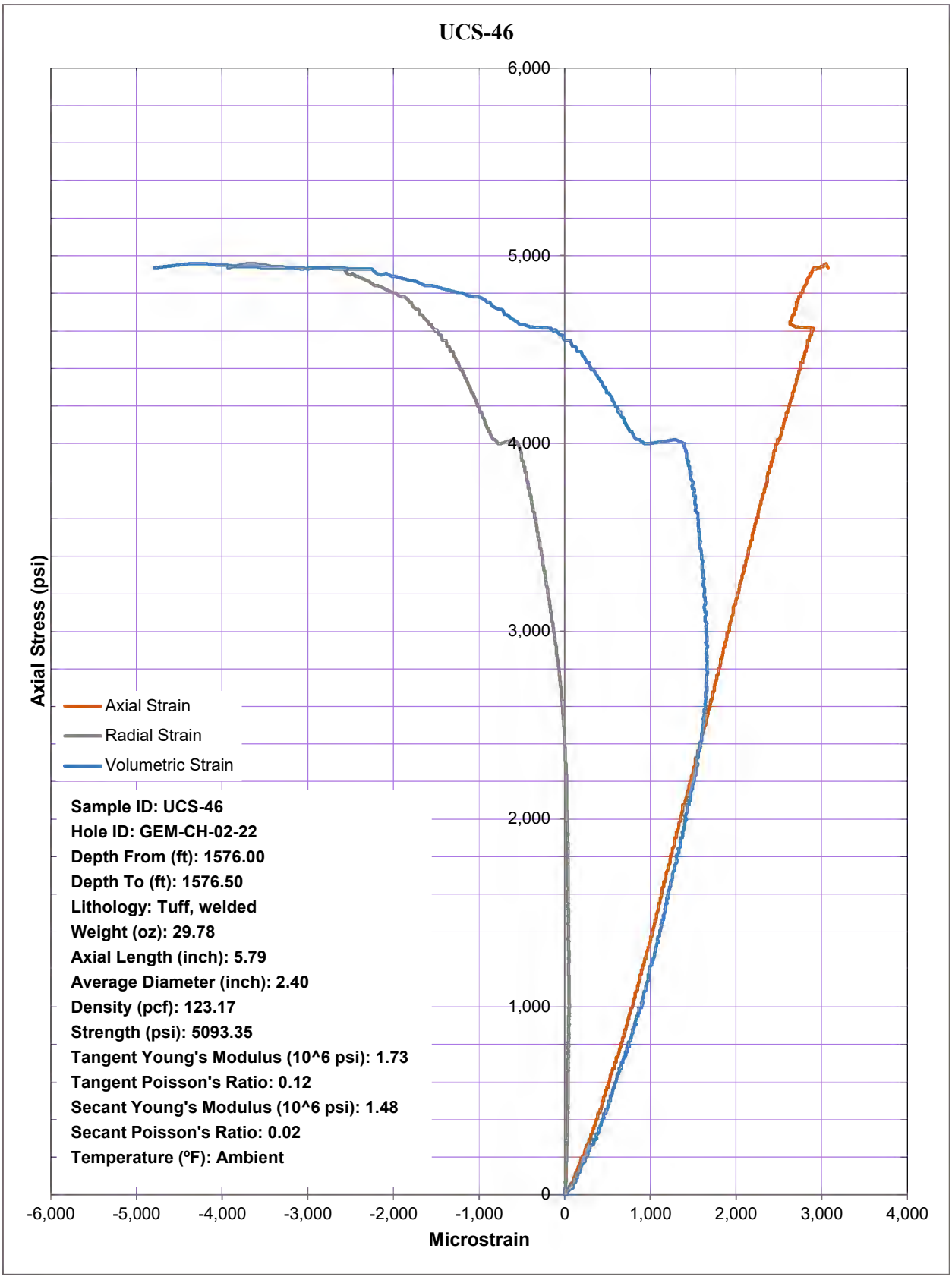

UCS-41
Axial Stress (psi)
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-41
Hole ID: GEM-CH-02-22
Depth From (ft): 1501.50
Depth To (ft): 1502.25
Lithology: Tuff, welded
Weight (oz): 27.49
Axial Length (inch): 4.98
Average Diameter (inch): 2.40
Density (pcf): 131.46
Strength (psi): 12857.03
Tangent Young's Modulus (10^6 psi): 3.05
Tangent Poisson's Ratio: 0.18
Secant Young's Modulus (10^6 psi): 2.77
Secant Poisson's Ratio: 0.12
Temperature (ºF): Ambient

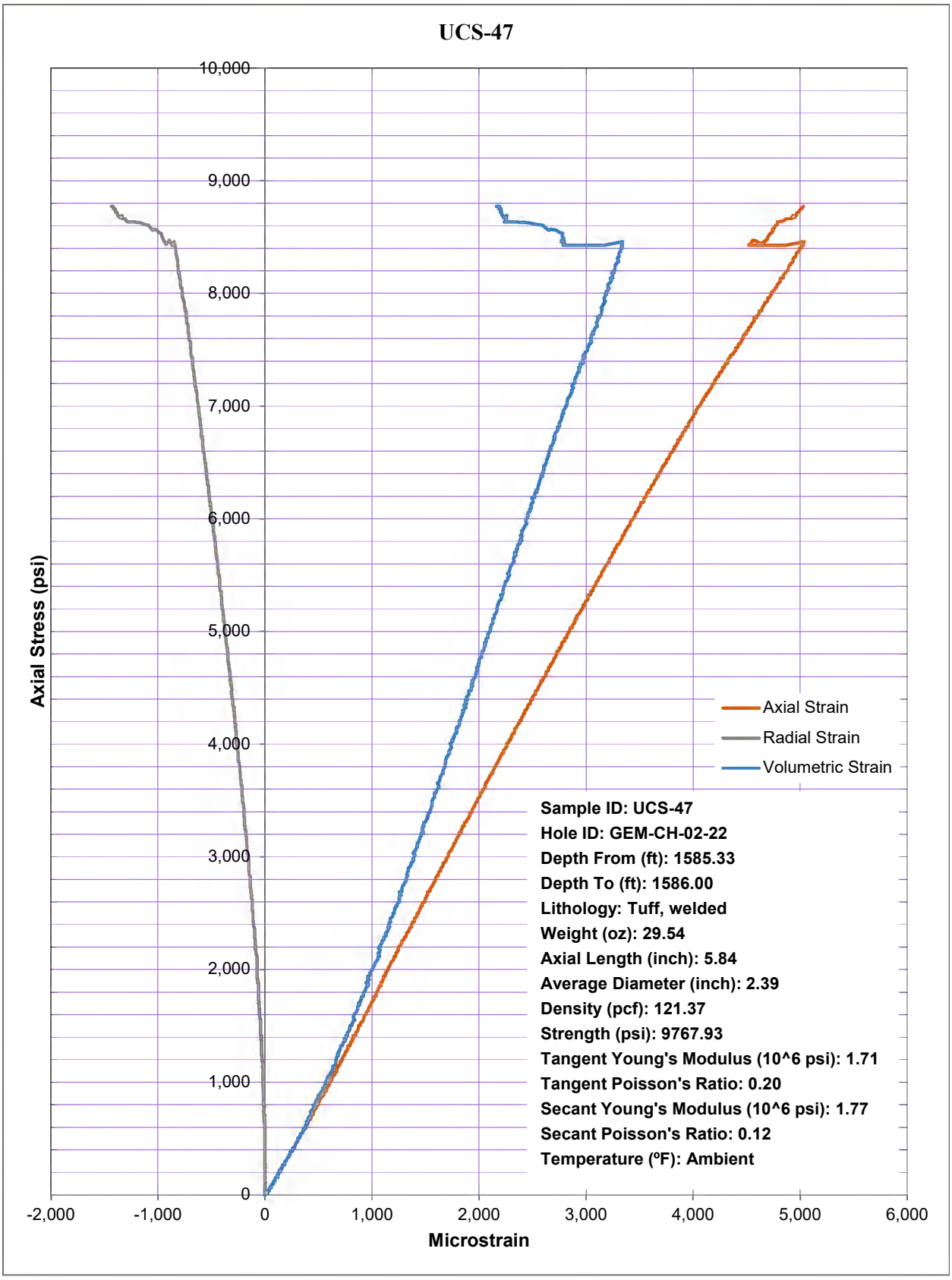

UCS-42
Axial Stress (psi)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-1,000
-500
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
4,500
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-42
Hole ID: GEM-CH-02-22
Depth From (ft): 1512.16
Depth To (ft): 1512.91
Lithology: Tuff, welded
Weight (oz): 27.66
Axial Length (inch): 5.09
Average Diameter (inch): 2.40
Density (pcf): 129.71
Strength (psi): 11480.73
Tangent Young's Modulus (10^6 psi): 2.60
Tangent Poisson's Ratio: 0.24
Secant Young's Modulus (10^6 psi): 2.13
Secant Poisson's Ratio: 0.13
Temperature (ºF): Ambient

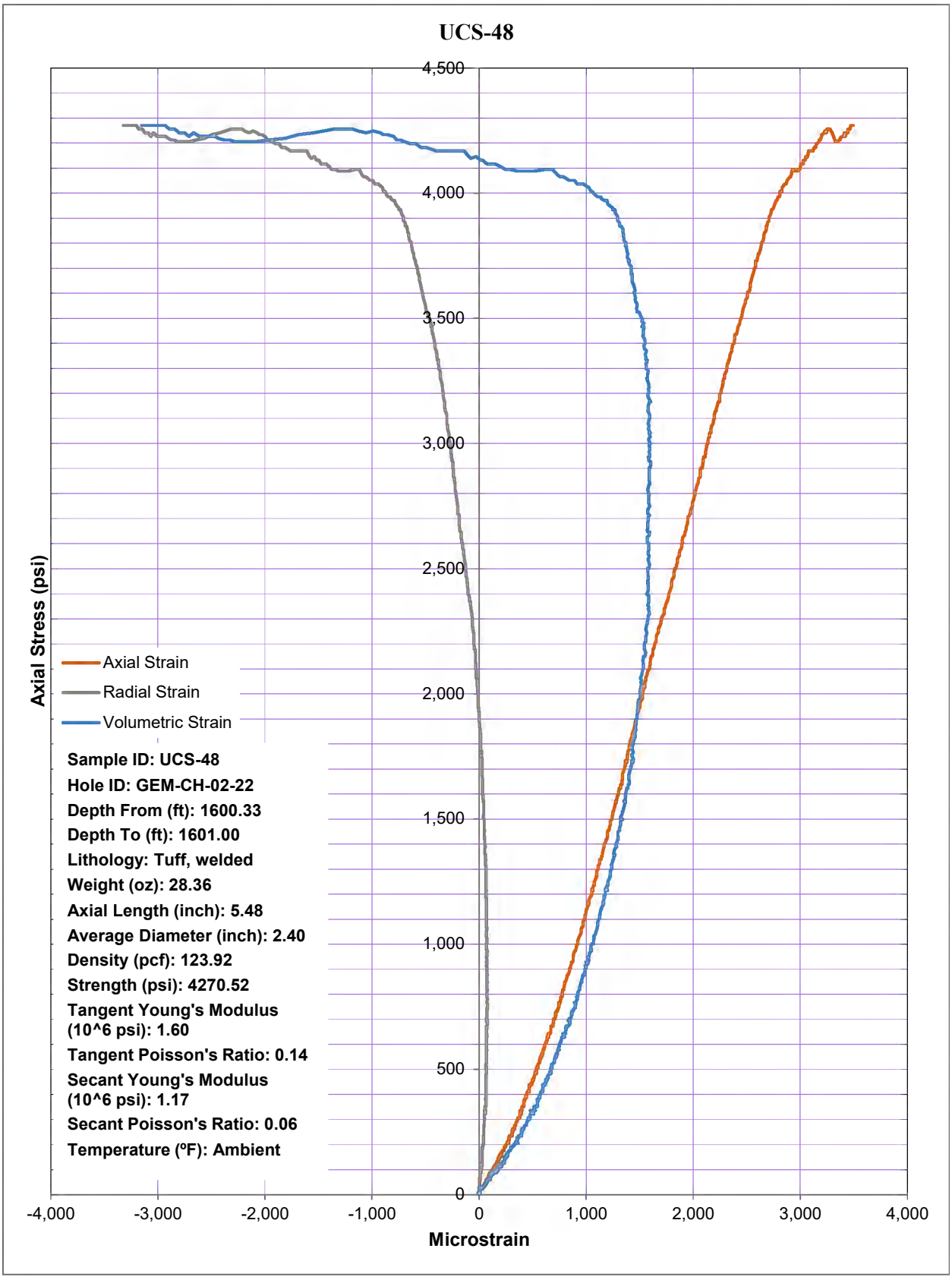

UCS-43
Axial Stress (psi)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-43
Hole ID: GEM-CH-02-22
Depth From (ft): 1542.50
Depth To (ft): 1543.00
Lithology: Tuff, welded
Weight (oz): 26.96
Axial Length (inch): 5.20
Average Diameter (inch): 2.39
Density (pcf): 124.79
Strength (psi): 8855.53
Tangent Young's Modulus (10^6 psi): 2.01
Tangent Poisson's Ratio: 0.18
Secant Young's Modulus (10^6 psi): 1.64
Secant Poisson's Ratio: 0.07
Temperature (ºF): Ambient

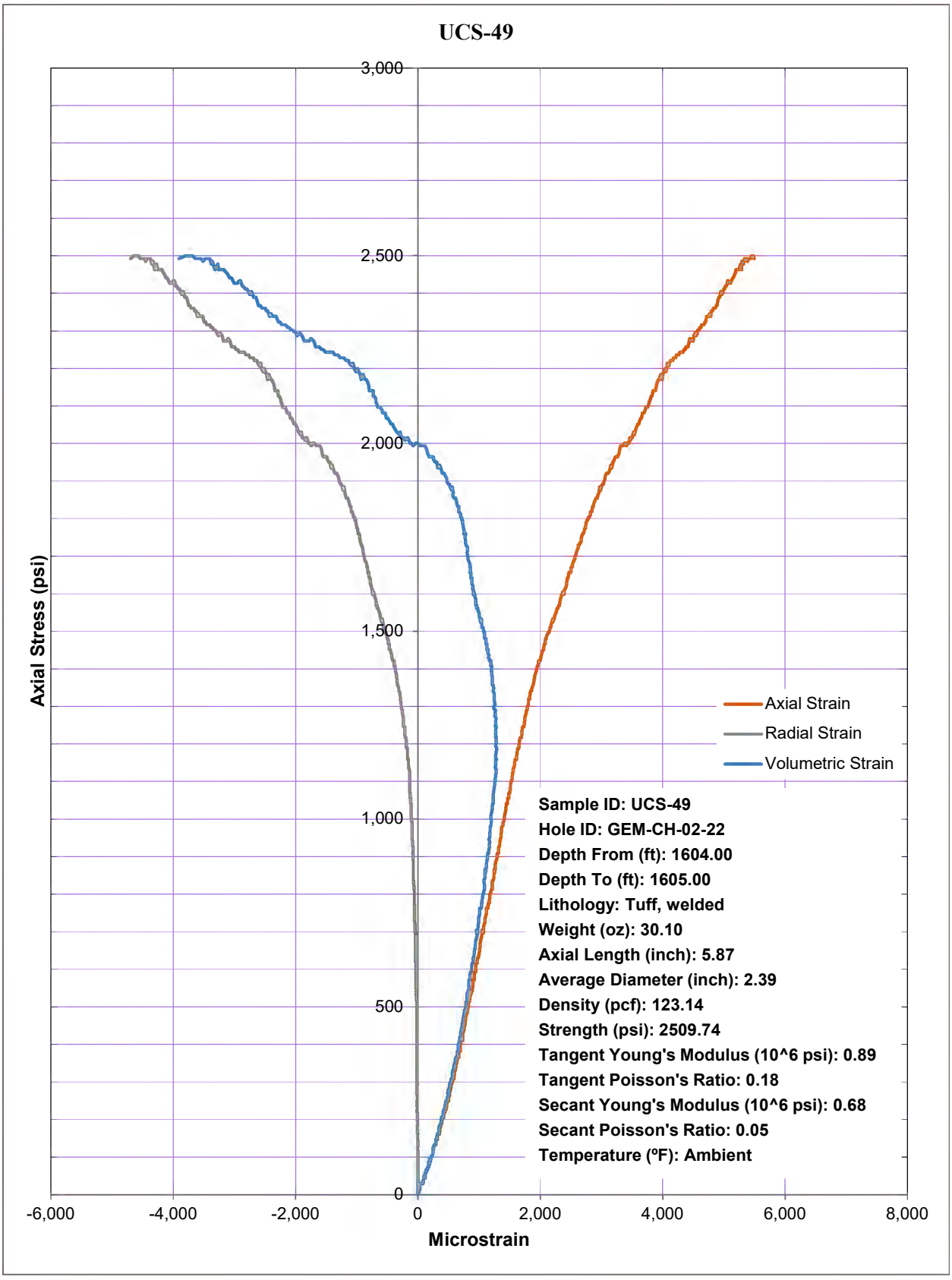

UCS-44
Axial Stress (psi)
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-44
Hole ID: GEM-CH-02-22
Depth From (ft): 1551.00
Depth To (ft): 1552.00
Lithology: Tuff, welded
Weight (oz): 27.93
Axial Length (inch): 5.29
Average Diameter (inch): 2.39
Density (pcf): 127.21
Strength (psi): 8391.80
Tangent Young's Modulus (10^6 psi): 2.09
Tangent Poisson's Ratio: 0.14
Secant Young's Modulus (10^6 psi): 1.97
Secant Poisson's Ratio: 0.04
Temperature (ºF): Ambient

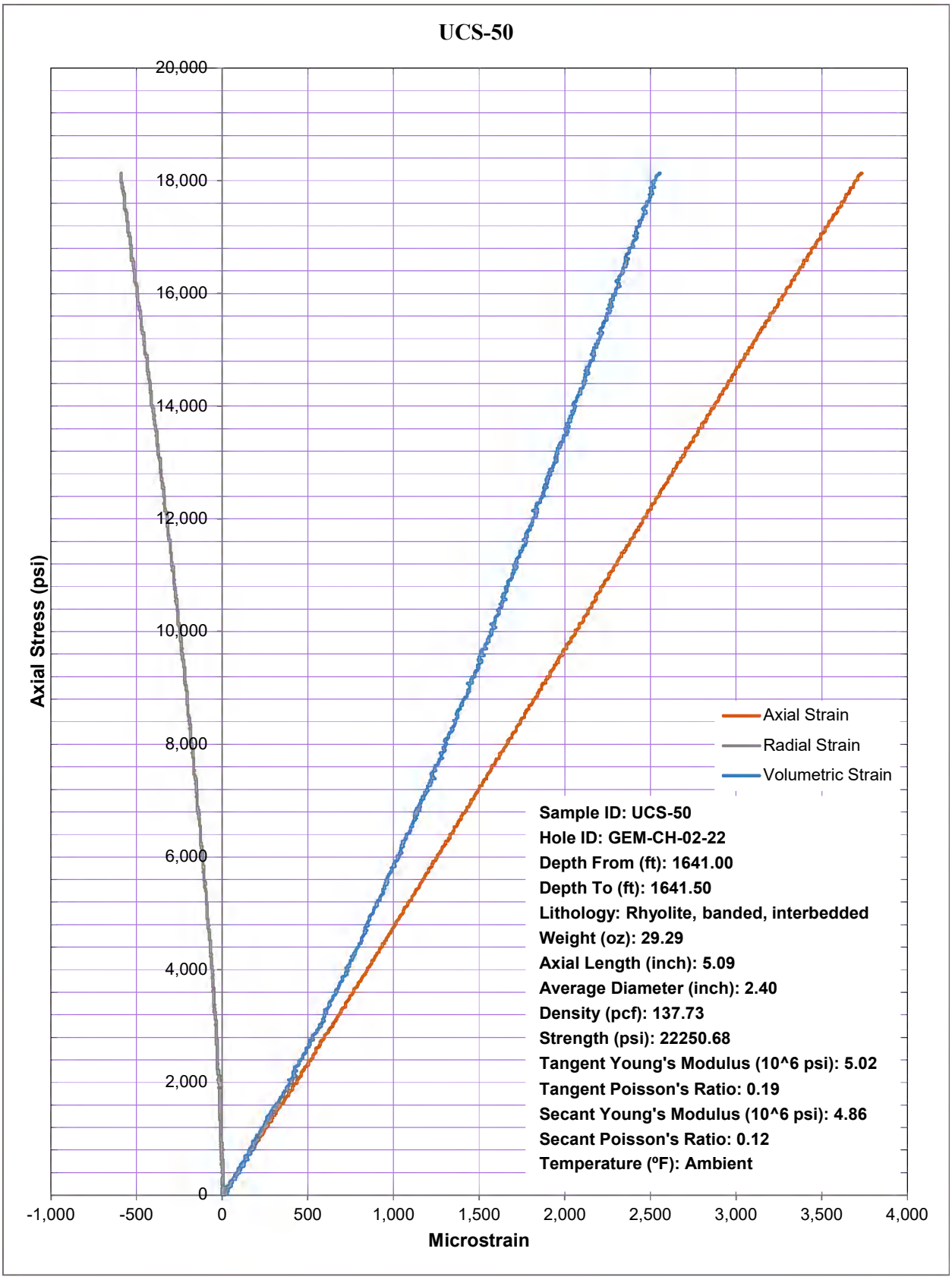

UCS-45
Axial Stress (psi)
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-45
Hole ID: GEM-CH-02-22
Depth From (ft): 1561.00
Depth To (ft): 1561.66
Lithology: Tuff, welded
Weight (oz): 27.92
Axial Length (inch): 5.35
Average Diameter (inch): 2.39
Density (pcf): 125.48
Strength (psi): 8557.82
Tangent Young's Modulus (10^6 psi): 2.05
Tangent Poisson's Ratio: 0.15
Secant Young's Modulus (10^6 psi): 1.51
Secant Poisson's Ratio: 0.05
Temperature (ºF): Ambient

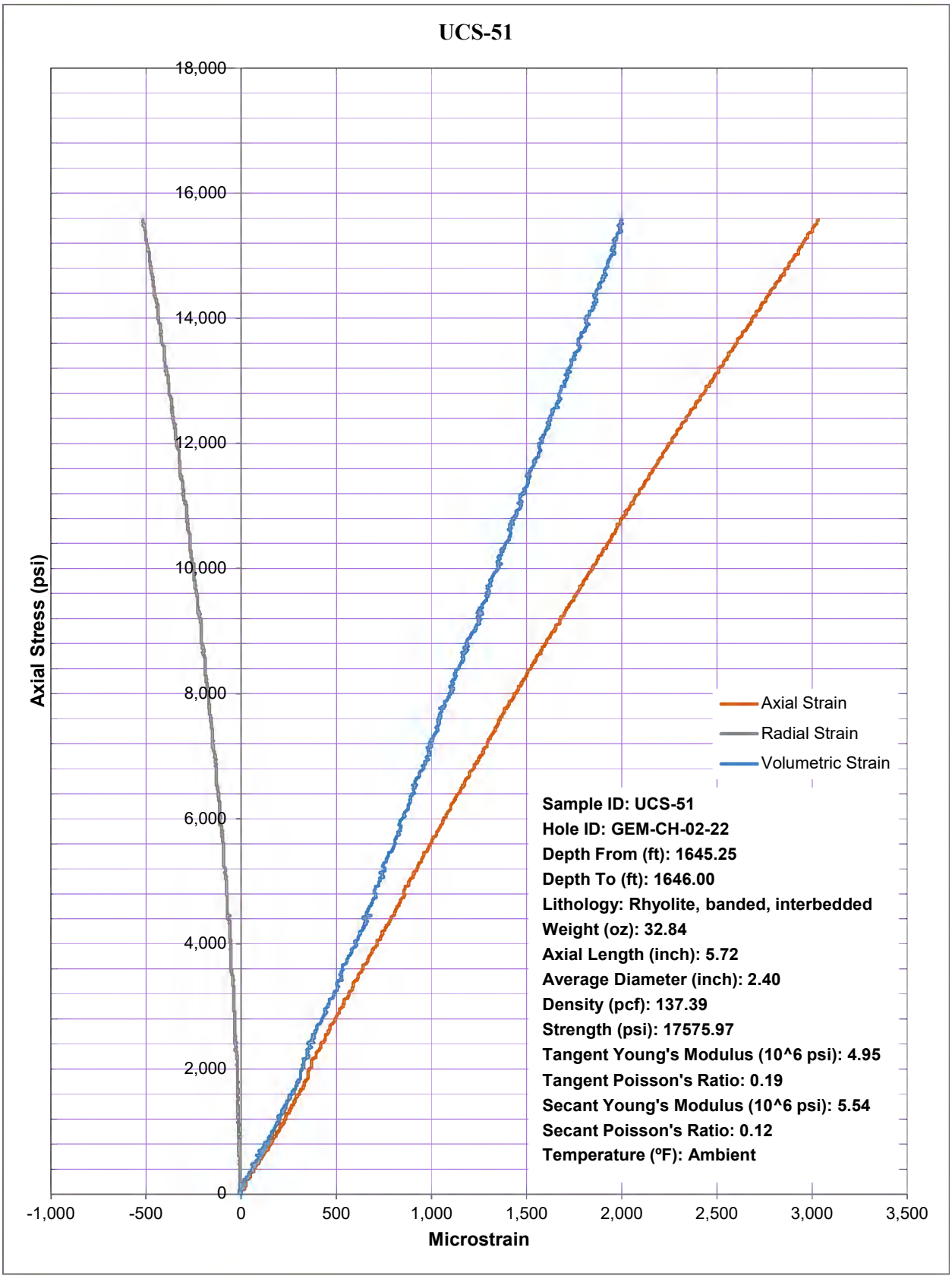

UCS-46
Axial Stress (psi)
6,000
5,000
4,000
3,000
2,000
1,000
0
-6,000
-5,000
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-46
Hole ID: GEM-CH-02-22
Depth From (ft): 1576.00
Depth To (ft): 1576.50
Lithology: Tuff, welded
Weight (oz): 29.78
Axial Length (inch): 5.79
Average Diameter (inch): 2.40
Density (pcf): 123.17
Strength (psi): 5093.35
Tangent Young's Modulus (10^6 psi): 1.73
Tangent Poisson's Ratio: 0.12
Secant Young's Modulus (10^6 psi): 1.48
Secant Poisson's Ratio: 0.02
Temperature (ºF): Ambient

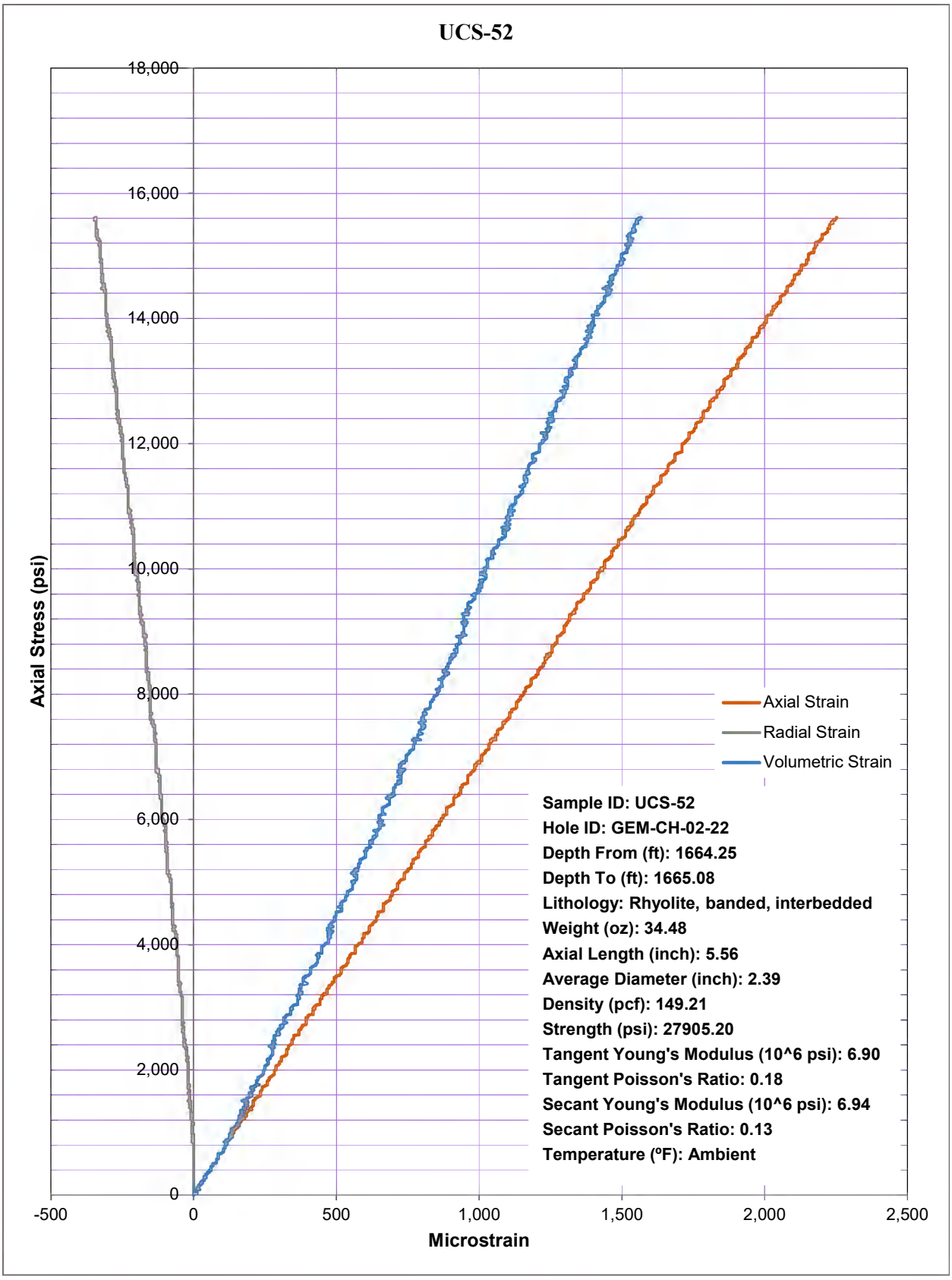

UCS-47
Axial Stress (psi)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-47
Hole ID: GEM-CH-02-22
Depth From (ft): 1585.33
Depth To (ft): 1586.00
Lithology: Tuff, welded
Weight (oz): 29.54
Axial Length (inch): 5.84
Average Diameter (inch): 2.39
Density (pcf): 121.37
Strength (psi): 9767.93
Tangent Young's Modulus (10^6 psi): 1.71
Tangent Poisson's Ratio: 0.20
Secant Young's Modulus (10^6 psi): 1.77
Secant Poisson's Ratio: 0.12
Temperature (ºF): Ambient

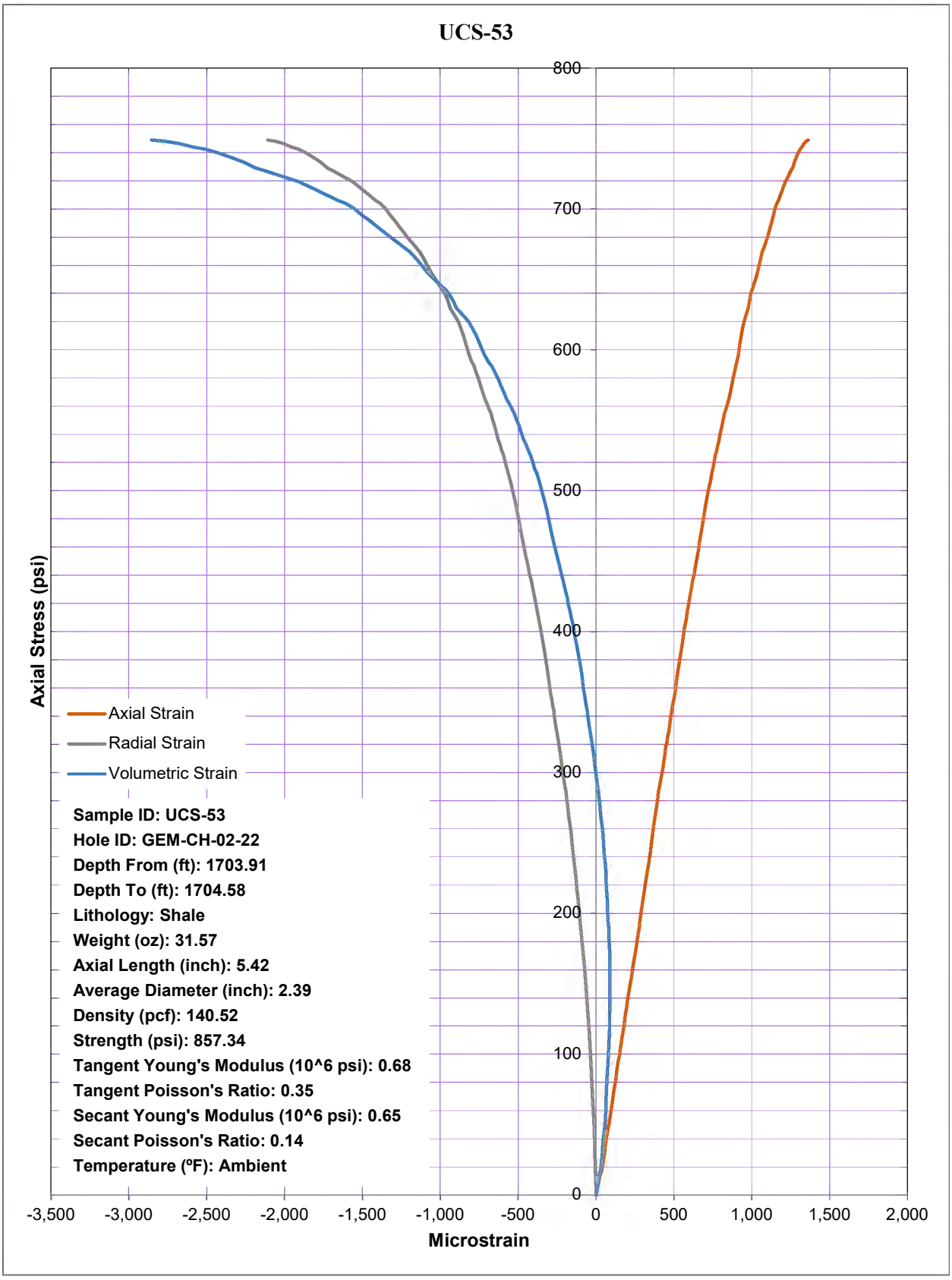

UCS-48
Axial Stress (psi)
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-48
Hole ID: GEM-CH-02-22
Depth From (ft): 1600.33
Depth To (ft): 1601.00
Lithology: Tuff, welded
Weight (oz): 28.36
Axial Length (inch): 5.48
Average Diameter (inch): 2.40
Density (pcf): 123.92
Strength (psi): 4270.52
Tangent Young's Modulus (10^6 psi): 1.60
Tangent Poisson's Ratio: 0.14
Secant Young's Modulus (10^6 psi): 1.17
Secant Poisson's Ratio: 0.06
Temperature (ºF): Ambient

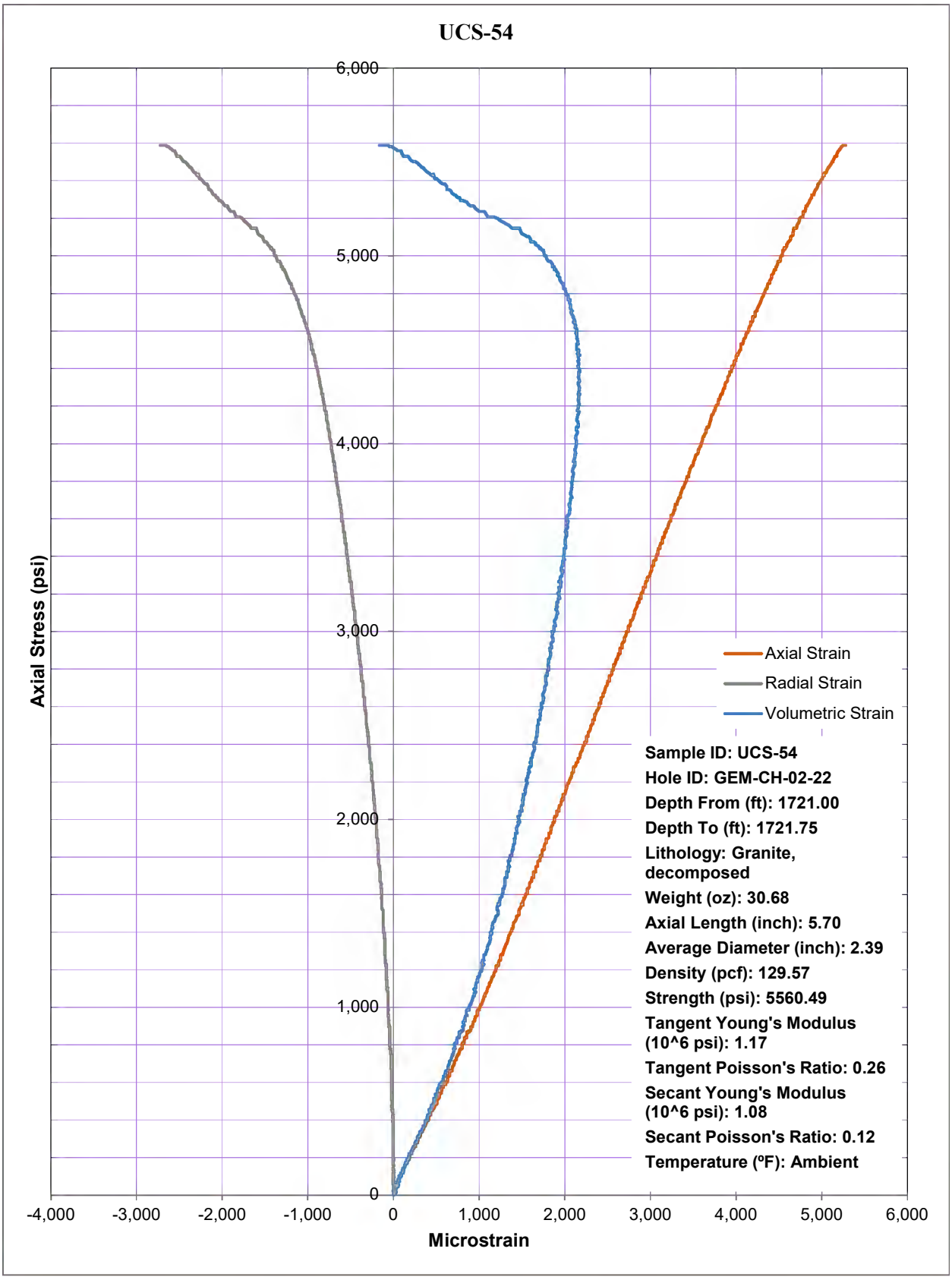

UCS-49
3,000
2,500
2,000
1,500
1,000
500
0
Axial Stress (psi)
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
8,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-49
Hole ID: GEM-CH-02-22
Depth From (ft): 1604.00
Depth To (ft): 1605.00
Lithology: Tuff, welded
Weight (oz): 30.10
Axial Length (inch): 5.87
Average Diameter (inch): 2.39
Density (pcf): 123.14
Strength (psi): 2509.74
Tangent Young's Modulus (10^6 psi): 0.89
Tangent Poisson's Ratio: 0.18
Secant Young's Modulus (10^6 psi): 0.68
Secant Poisson's Ratio: 0.05
Temperature (ºF): Ambient

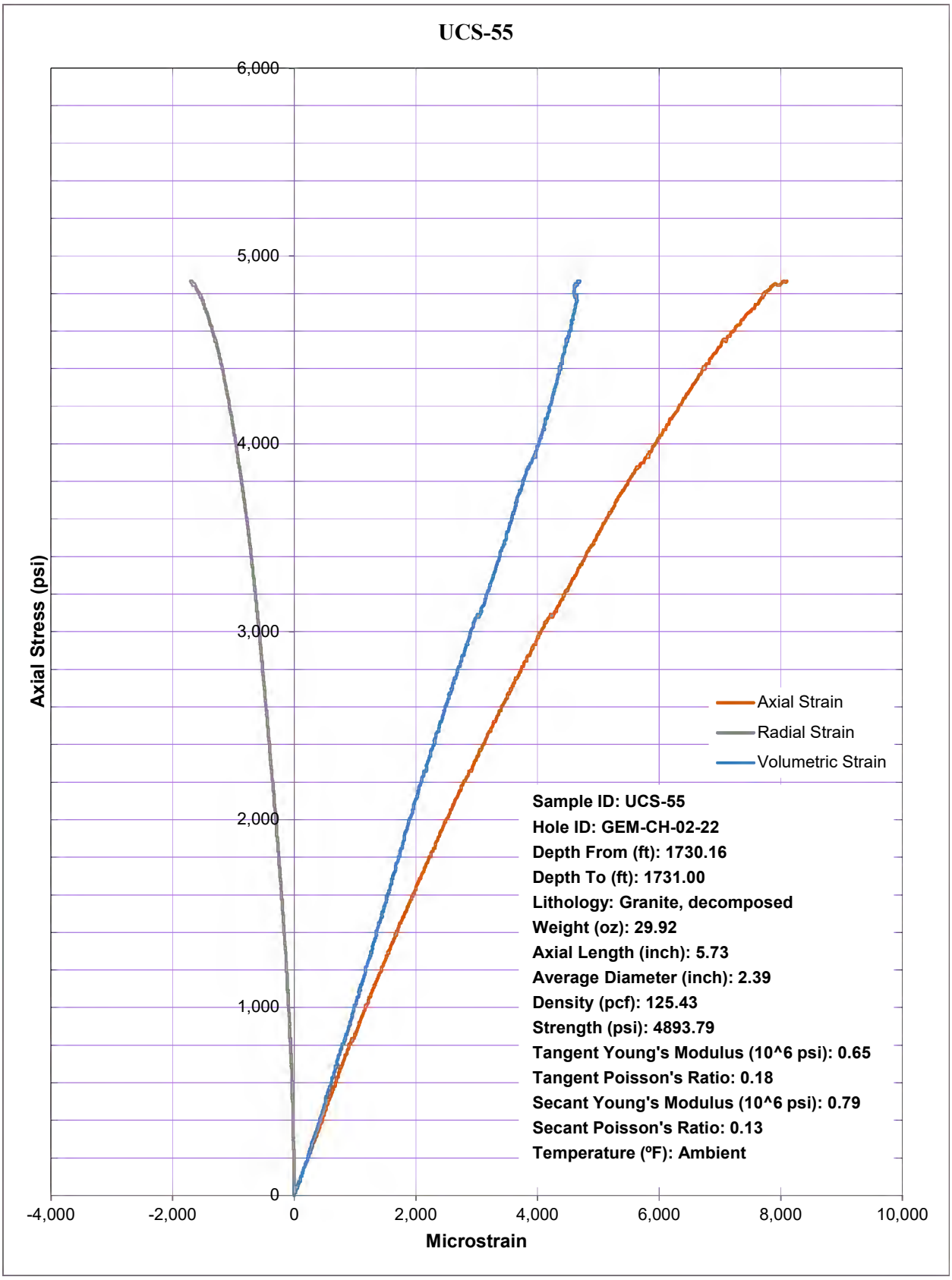

UCS-50
Axial Stress (psi)
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
-1,000
-500
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-50
Hole ID: GEM-CH-02-22
Depth From (ft): 1641.00
Depth To (ft): 1641.50
Lithology: Rhyolite, banded, interbedded
Weight (oz): 29.29
Axial Length (inch): 5.09
Average Diameter (inch): 2.40
Density (pcf): 137.73
Strength (psi): 22250.68
Tangent Young's Modulus (10^6 psi): 5.02
Tangent Poisson's Ratio: 0.19
Secant Young's Modulus (10^6 psi): 4.86
Secant Poisson's Ratio: 0.12
Temperature (ºF): Ambient

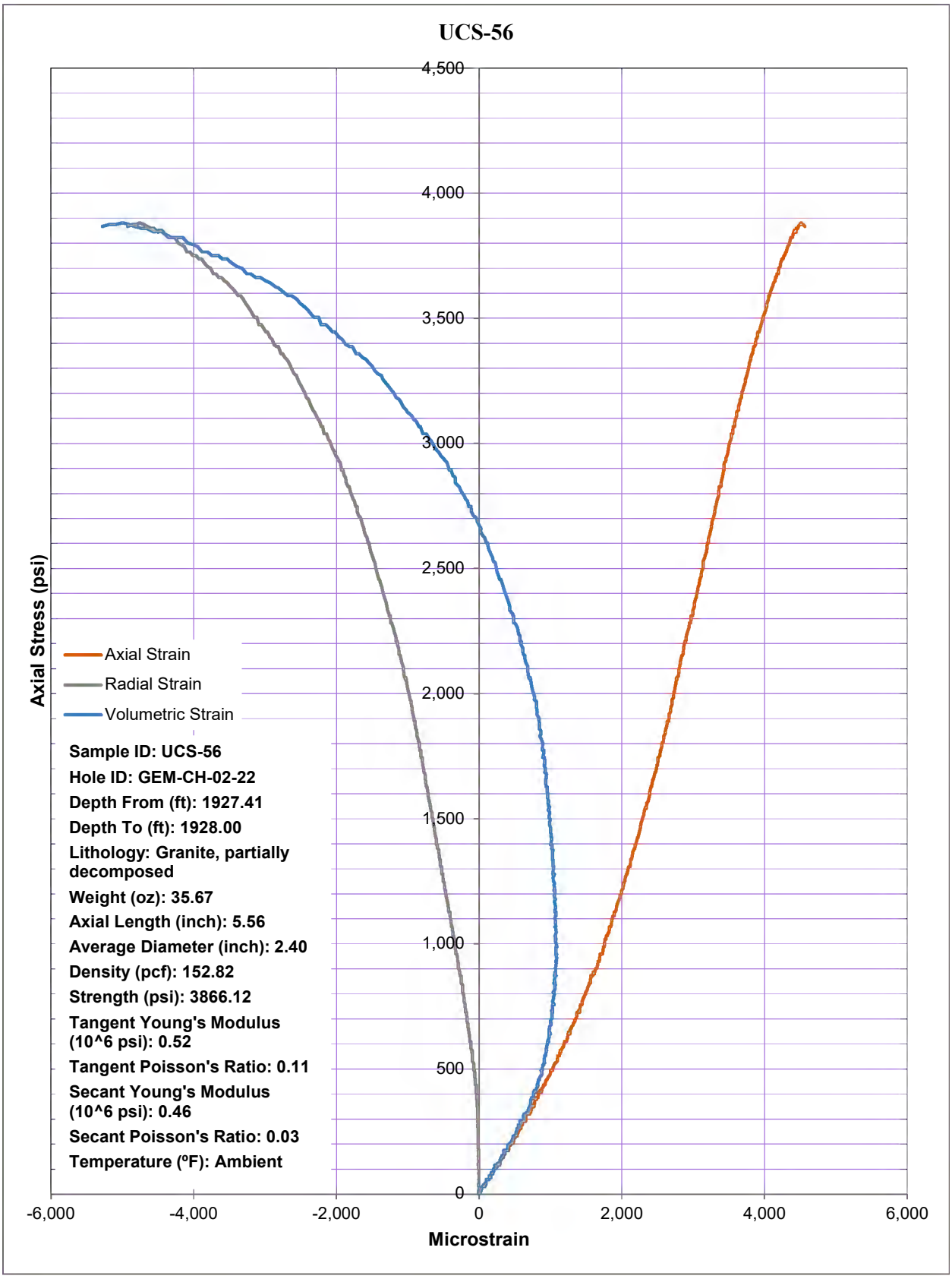

UCS-51
Axial Stress (psi)
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
-1,000
-500
0
500
1,000
1,500
2,000
2,500
3,000
3,500
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-51
Hole ID: GEM-CH-02-22
Depth From (ft): 1645.25
Depth To (ft): 1646.00
Lithology: Rhyolite, banded, interbedded
Weight (oz): 32.84
Axial Length (inch): 5.72
Average Diameter (inch): 2.40
Density (pcf): 137.39
Strength (psi): 17575.97
Tangent Young's Modulus (10^6 psi): 4.95
Tangent Poisson's Ratio: 0.19
Secant Young's Modulus (10^6 psi): 5.54
Secant Poisson's Ratio: 0.12
Temperature (ºF): Ambient

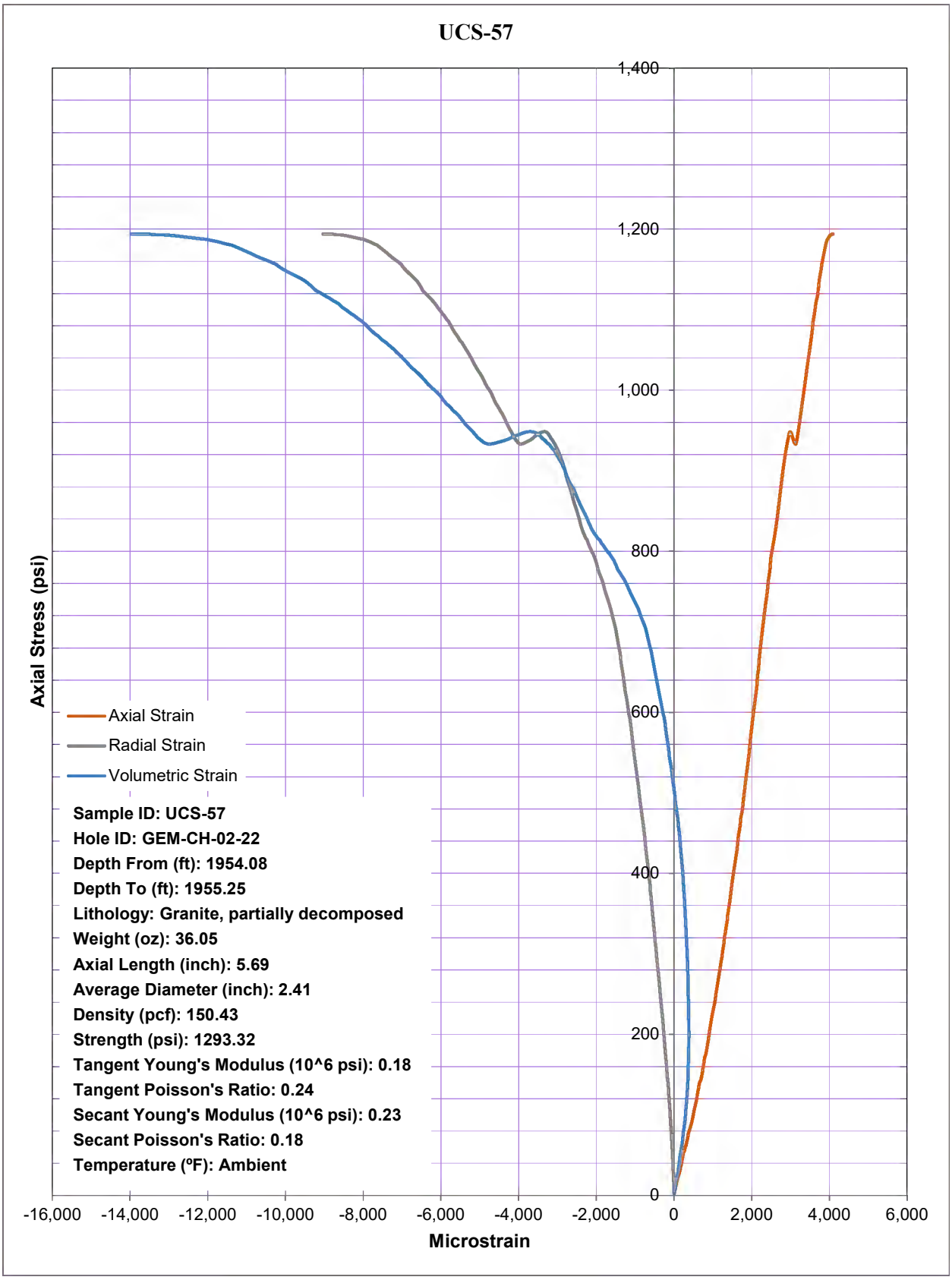

UCS-52
Axial Stress (psi)
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
-500
0
500
1,000
1,500
2,000
2,500
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-52
Hole ID: GEM-CH-02-22
Depth From (ft): 1664.25
Depth To (ft): 1665.08
Lithology: Rhyolite, banded, interbedded
Weight (oz): 34.48
Axial Length (inch): 5.56
Average Diameter (inch): 2.39
Density (pcf): 149.21
Strength (psi): 27905.20
Tangent Young's Modulus (10^6 psi): 6.90
Tangent Poisson's Ratio: 0.18
Secant Young's Modulus (10^6 psi): 6.94
Secant Poisson's Ratio: 0.13
Temperature (ºF): Ambient

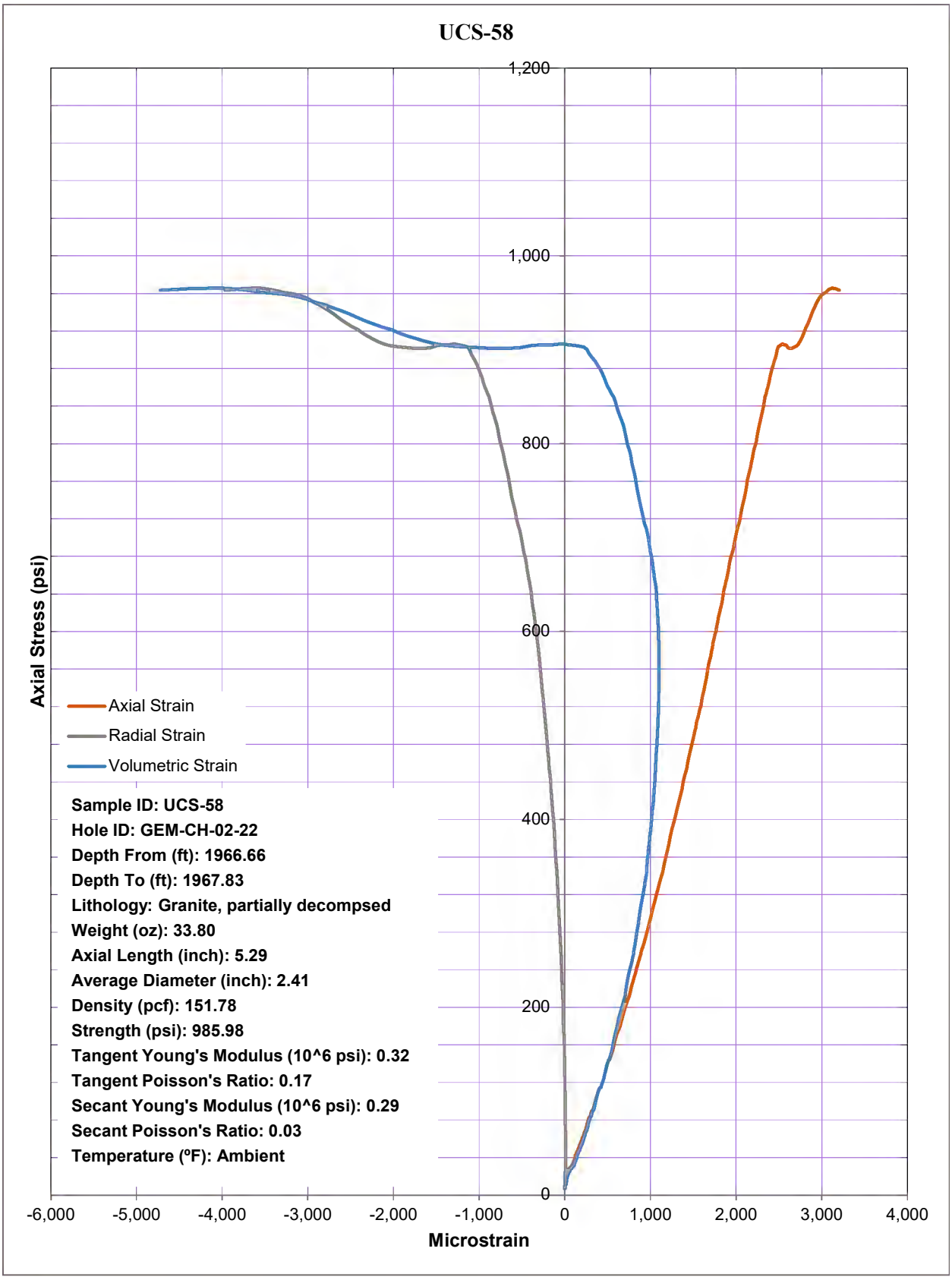

UCS-53
Axial Stress (psi)
800
700
600
500
400
300
200
100
0
-3,500
-3,000
-2,500
-2,000
-1,500
-1,000
-500
0
500
1,000
1,500
2,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-53
Hole ID: GEM-CH-02-22
Depth From (ft): 1703.91
Depth To (ft): 1704.58
Lithology: Shale
Weight (oz): 31.57
Axial Length (inch): 5.42
Average Diameter (inch): 2.39
Density (pcf): 140.52
Strength (psi): 857.34
Tangent Young's Modulus (10^6 psi): 0.68
Tangent Poisson's Ratio: 0.35
Secant Young's Modulus (10^6 psi): 0.65
Secant Poisson's Ratio: 0.14
Temperature (ºF): Ambient

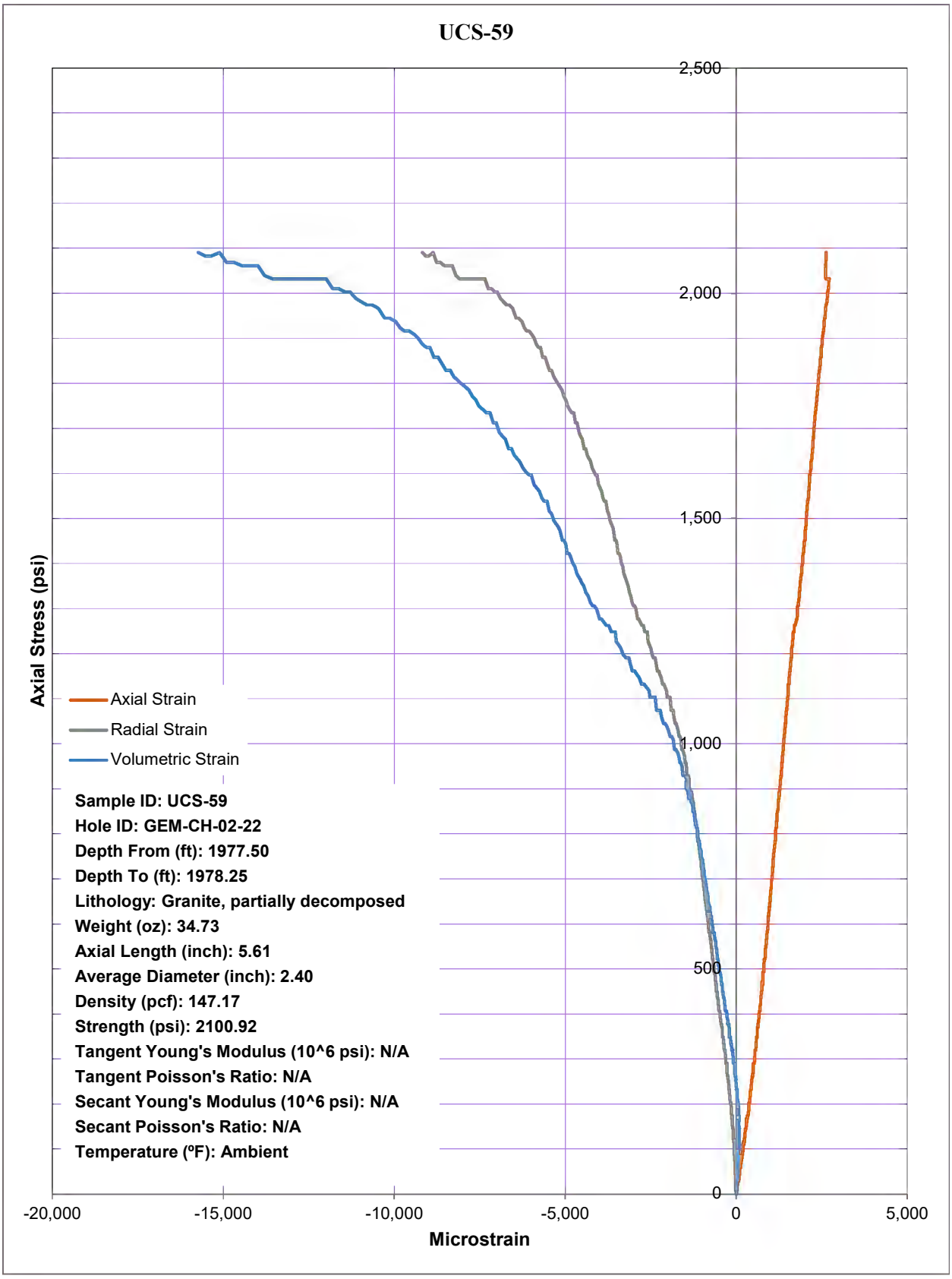

UCS-54
Axial Stress (psi)
6,000
5,000
4,000
3,000
2,000
1,000
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-54
Hole ID: GEM-CH-02-22
Depth From (ft): 1721.00
Depth To (ft): 1721.75
Lithology: Granite, decomposed
Weight (oz): 30.68
Axial Length (inch): 5.70
Average Diameter (inch): 2.39
Density (pcf): 129.57
Strength (psi): 5560.49
Tangent Young's Modulus (10^6 psi): 1.17
Tangent Poisson's Ratio: 0.26
Secant Young's Modulus (10^6 psi): 1.08
Secant Poisson's Ratio: 0.12
Temperature (ºF): Ambient

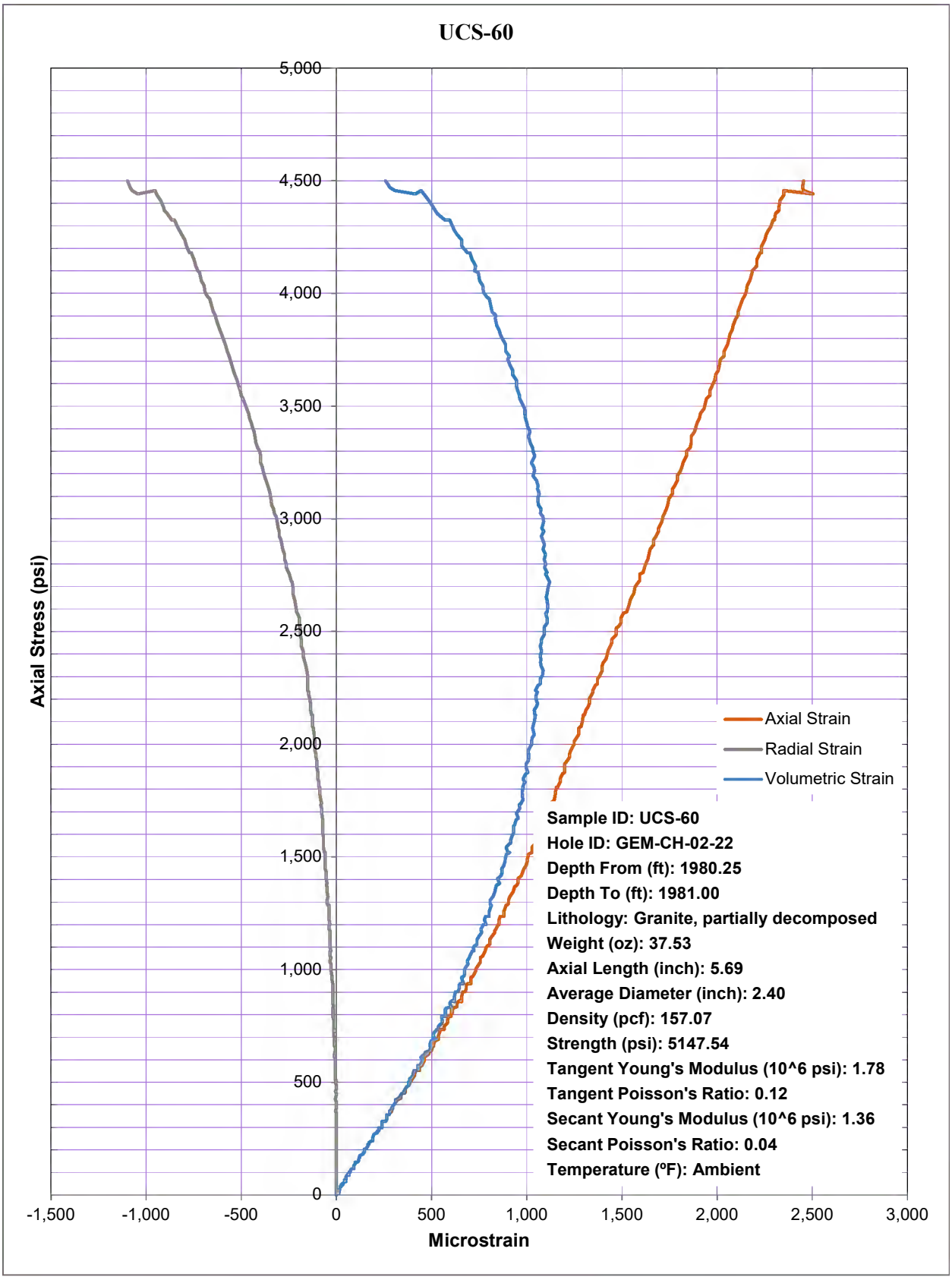

UCS-55
Axial Stress (psi)
6,000
5,000
4,000
3,000
2,000
1,000
0
-4,000
-2,000
0
2,000
4,000
6,000
8,000
10,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-55
Hole ID: GEM-CH-02-22
Depth From (ft): 1730.16
Depth To (ft): 1731.00
Lithology: Granite, decomposed
Weight (oz): 29.92
Axial Length (inch): 5.73
Average Diameter (inch): 2.39
Density (pcf): 125.43
Strength (psi): 4893.79
Tangent Young's Modulus (10^6 psi): 0.65
Tangent Poisson's Ratio: 0.18
Secant Young's Modulus (10^6 psi): 0.79
Secant Poisson's Ratio: 0.13
Temperature (ºF): Ambient

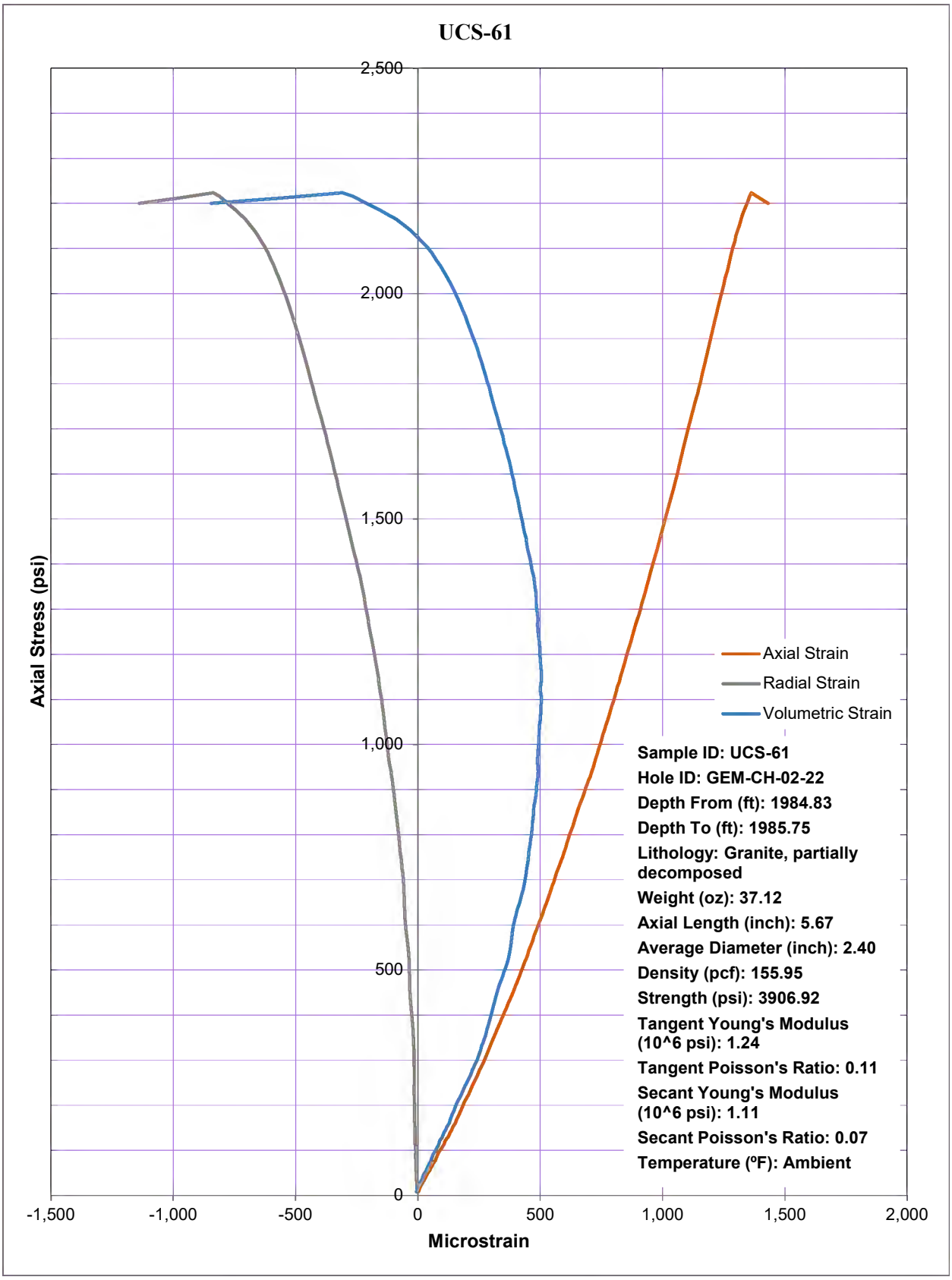

UCS-56
Axial Stress (psi)
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-56
Hole ID: GEM-CH-02-22
Depth From (ft): 1927.41
Depth To (ft): 1928.00
Lithology: Granite, partially decomposed
Weight (oz): 35.67
Axial Length (inch): 5.56
Average Diameter (inch): 2.40
Density (pcf): 152.82
Strength (psi): 3866.12
Tangent Young's Modulus (10^6 psi): 0.52
Tangent Poisson's Ratio: 0.11
Secant Young's Modulus (10^6 psi): 0.46
Secant Poisson's Ratio: 0.03
Temperature (ºF): Ambient

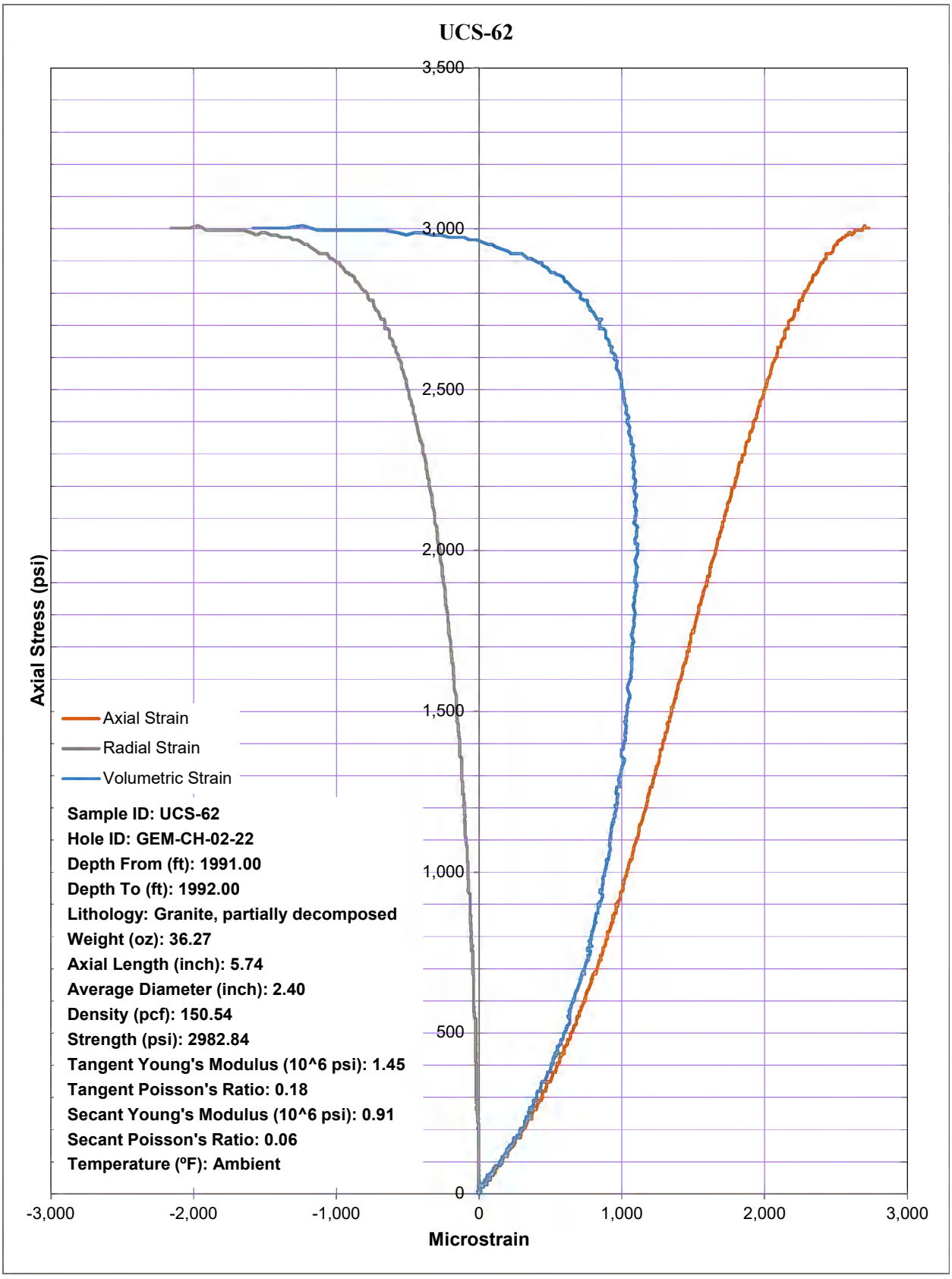

UCS-57
Axial Stress (psi)
1,400
1,200
1,000
800
600
400
200
0
-16,000
-14,000
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-57
Hole ID: GEM-CH-02-22
Depth From (ft): 1954.08
Depth To (ft): 1955.25
Lithology: Granite, partially decomposed
Weight (oz): 36.05
Axial Length (inch): 5.69
Average Diameter (inch): 2.41
Density (pcf): 150.43
Strength (psi): 1293.32
Tangent Young's Modulus (10^6 psi): 0.18
Tangent Poisson's Ratio: 0.24
Secant Young's Modulus (10^6 psi): 0.23
Secant Poisson's Ratio: 0.18
Temperature (ºF): Ambient

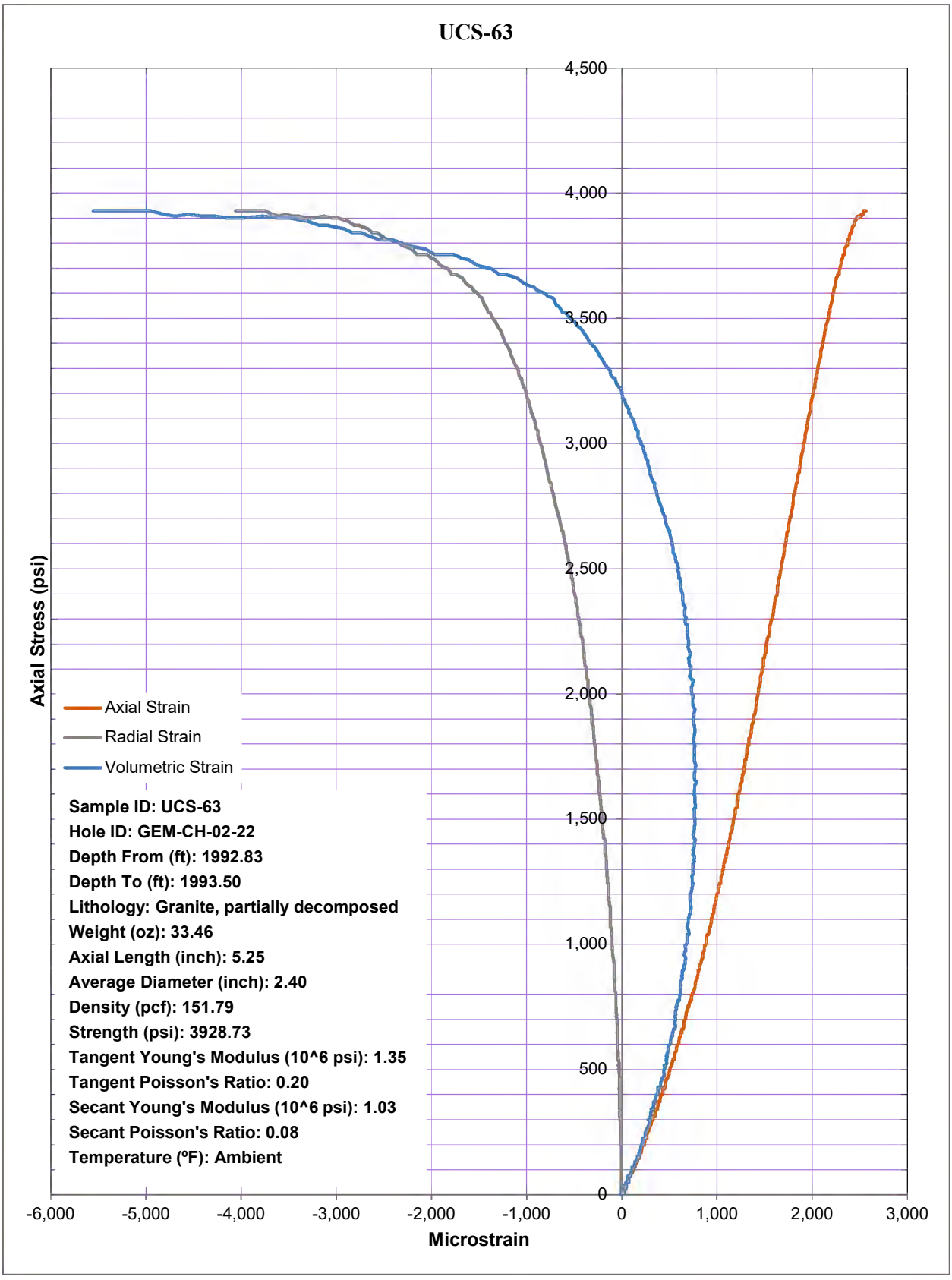

UCS-58
1,200
1,000
800
600
400
200
0
Axial Stress (psi)
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-58
Hole ID: GEM-CH-02-22
Depth From (ft): 1966.66
Depth To (ft): 1967.83
Lithology: Granite, partially decompsed
Weight (oz): 33.80
Axial Length (inch): 5.29
Average Diameter (inch): 2.41
Density (pcf): 151.78
Strength (psi): 985.98
Tangent Young's Modulus (10^6 psi): 0.32
Tangent Poisson's Ratio: 0.17
Secant Young's Modulus (10^6 psi): 0.29
Secant Poisson's Ratio: 0.03
Temperature (ºF): Ambient
-6,000
-5,000
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain

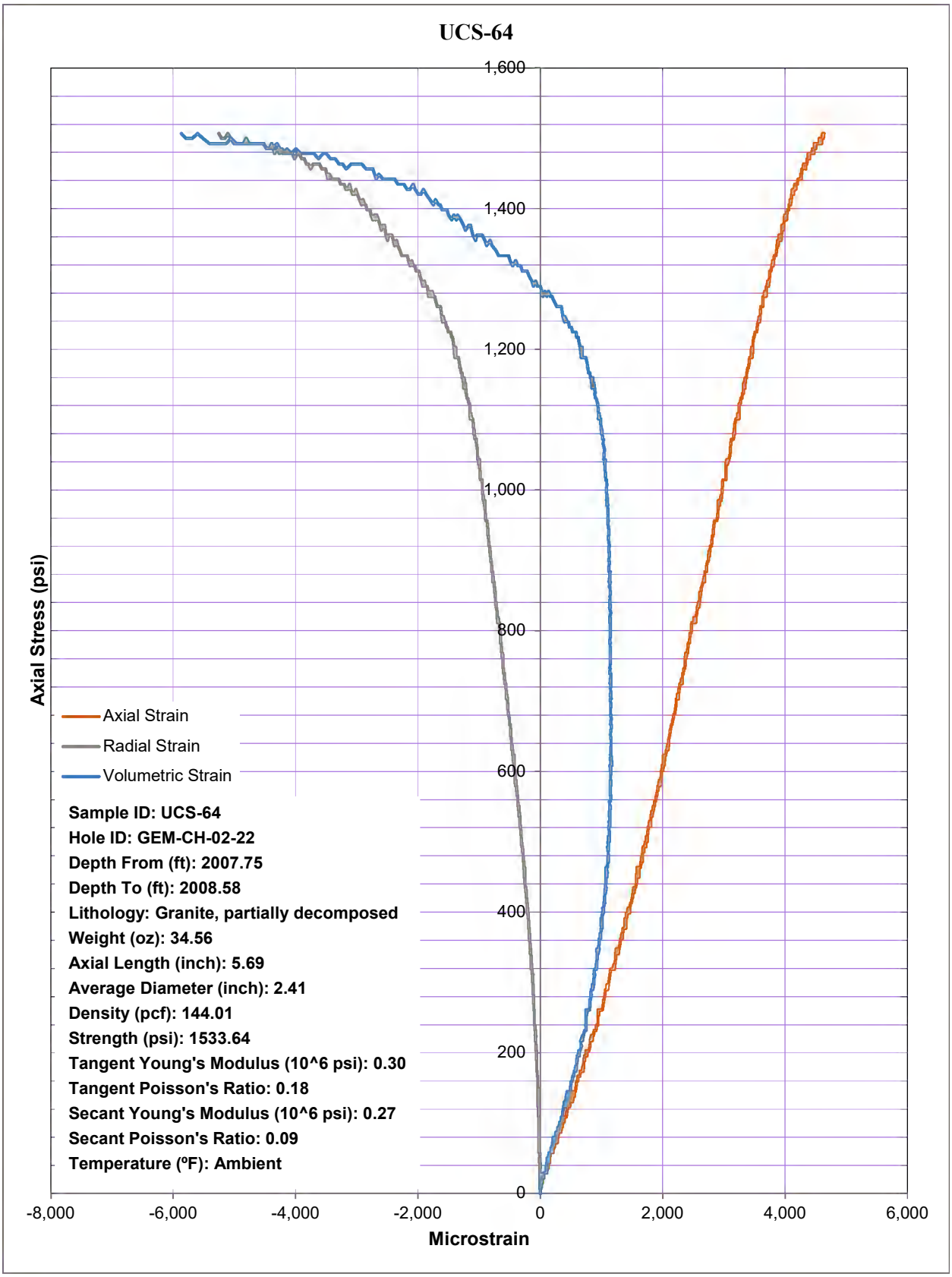

UCS-59
Axial Stress (psi)
2,500
2,000
1,500
1,000
500
0
-20,000
-15,000
-10,000
-5,000
0
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-59
Hole ID: GEM-CH-02-22
Depth From (ft): 1977.50
Depth To (ft): 1978.25
Lithology: Granite, partially decomposed
Weight (oz): 34.73
Axial Length (inch): 5.61
Average Diameter (inch): 2.40
Density (pcf): 147.17
Strength (psi): 2100.92
Tangent Young's Modulus (10^6 psi): N/A
Tangent Poisson's Ratio: N/A
Secant Young's Modulus (10^6 psi): N/A
Secant Poisson's Ratio: N/A
Temperature (ºF): Ambient

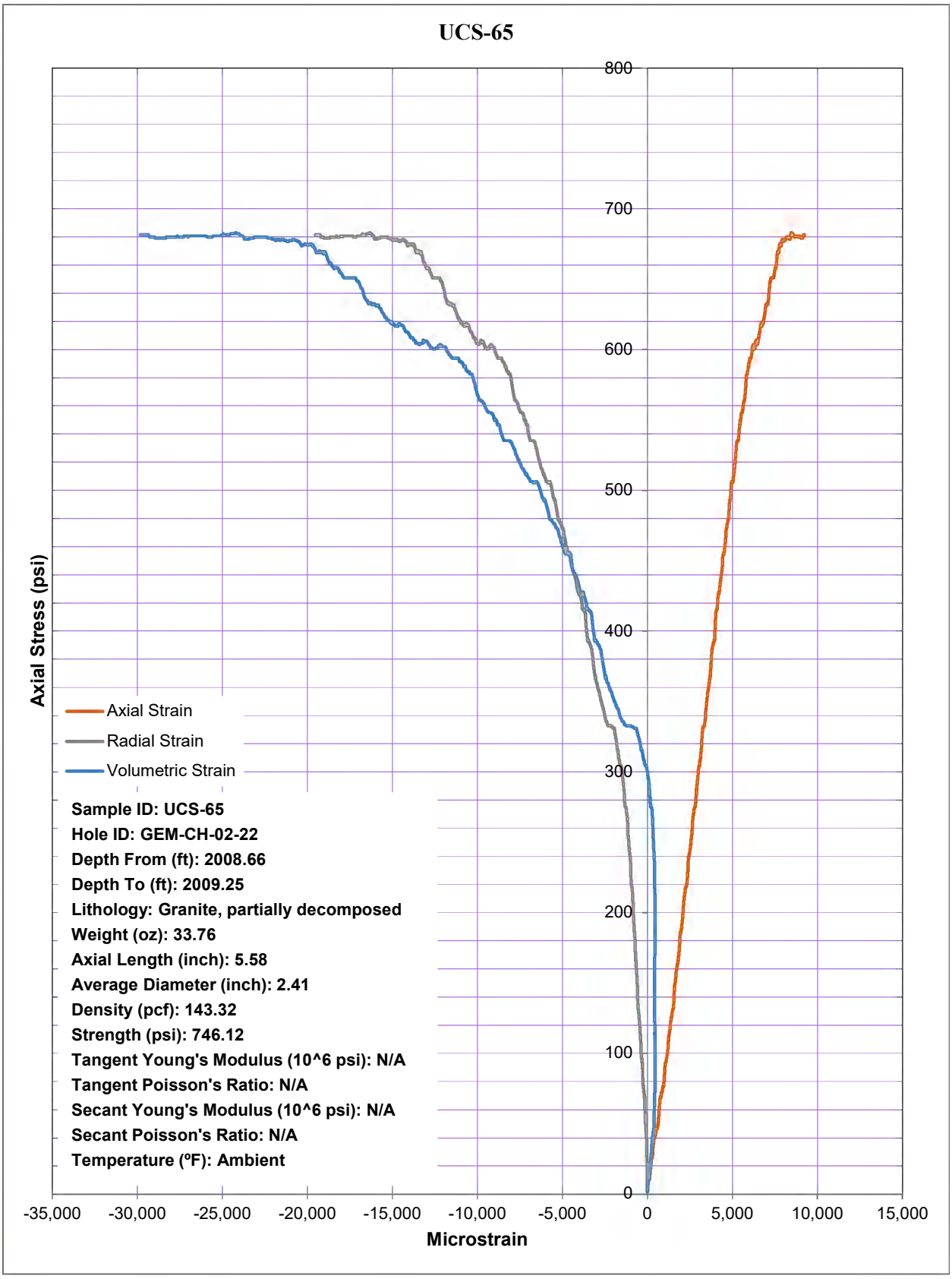

UCS-60
Axial Stress (psi)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-1,500
-1,000
-500
0
500
1,000
1,500
2,000
2,500
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-60
Hole ID: GEM-CH-02-22
Depth From (ft): 1980.25
Depth To (ft): 1981.00
Lithology: Granite, partially decomposed
Weight (oz): 37.53
Axial Length (inch): 5.69
Average Diameter (inch): 2.40
Density (pcf): 157.07
Strength (psi): 5147.54
Tangent Young's Modulus (10^6 psi): 1.78
Tangent Poisson's Ratio: 0.12
Secant Young's Modulus (10^6 psi): 1.36
Secant Poisson's Ratio: 0.04
Temperature (ºF): Ambient

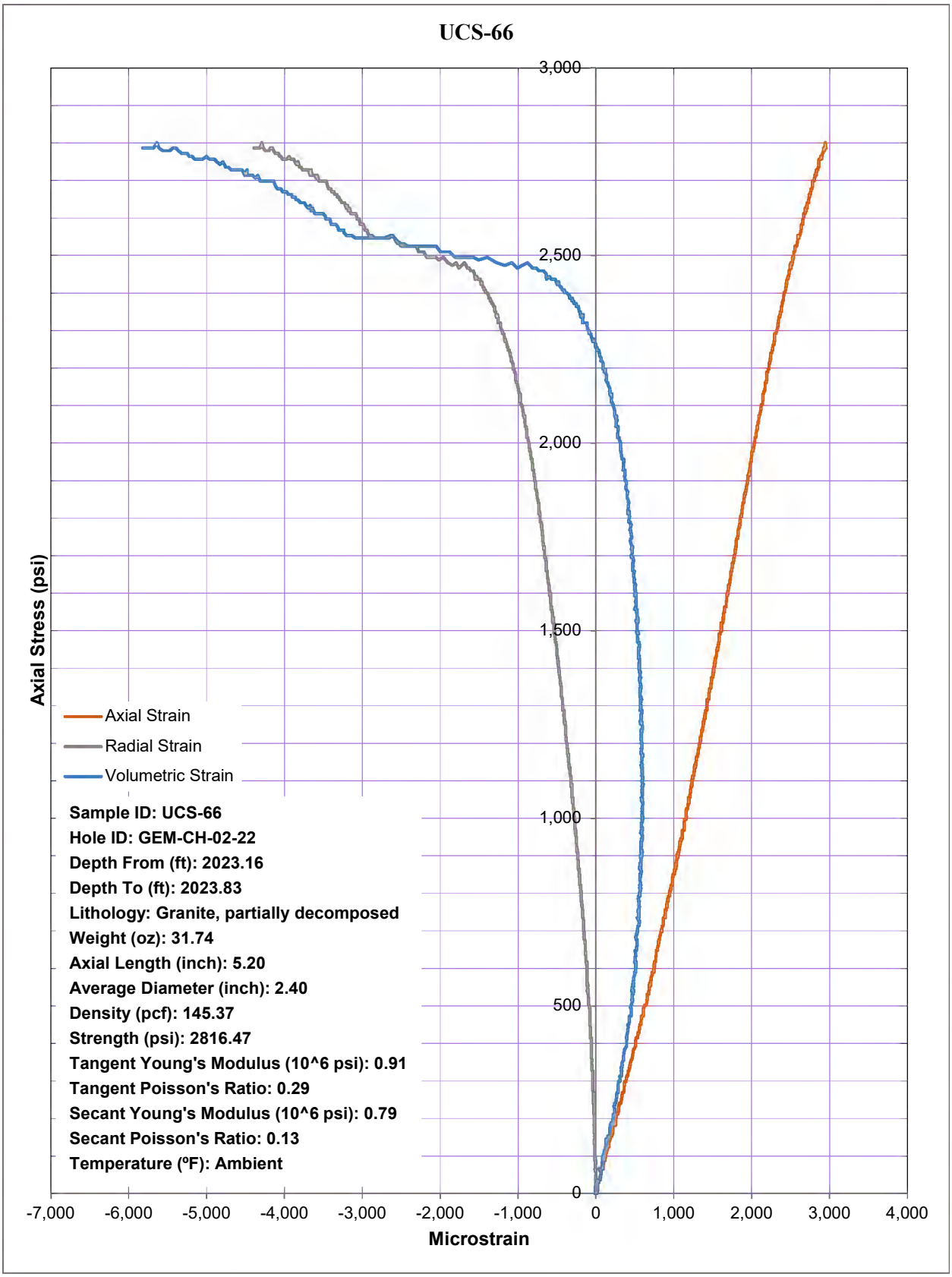

UCS-61
Axial Stress (psi)
2,500
2,000
1,500
1,000
500
0
-1,500
-1,000
-500
0
500
1,000
1,500
2,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-61
Hole ID: GEM-CH-02-22
Depth From (ft): 1984.83
Depth To (ft): 1985.75
Lithology: Granite, partially decomposed
Weight (oz): 37.12
Axial Length (inch): 5.67
Average Diameter (inch): 2.40
Density (pcf): 155.95
Strength (psi): 3906.92
Tangent Young's Modulus (10^6 psi): 1.24
Tangent Poisson's Ratio: 0.11
Secant Young's Modulus (10^6 psi): 1.11
Secant Poisson's Ratio: 0.07
Temperature (ºF): Ambient

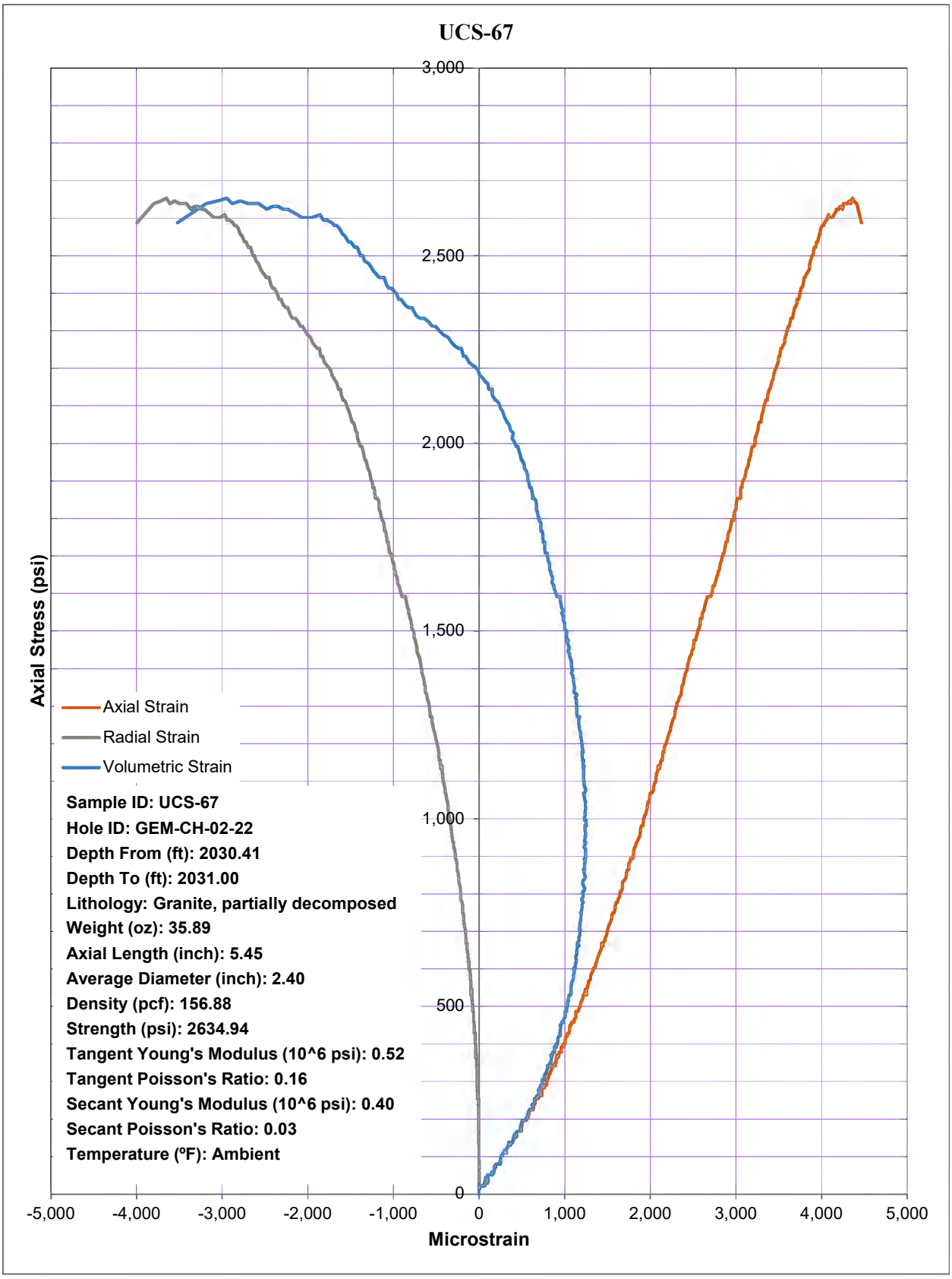

UCS-62
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Axial Stress (psi)
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-62
Hole ID: GEM-CH-02-22
Depth From (ft): 1991.00
Depth To (ft): 1992.00
Lithology: Granite, partially decomposed
Weight (oz): 36.27
Axial Length (inch): 5.74
Average Diameter (inch): 2.40
Density (pcf): 150.54
Strength (psi): 2982.84
Tangent Young's Modulus (10^6 psi): 1.45
Tangent Poisson's Ratio: 0.18
Secant Young's Modulus (10^6 psi): 0.91
Secant Poisson's Ratio: 0.06
Temperature (ºF): Ambient

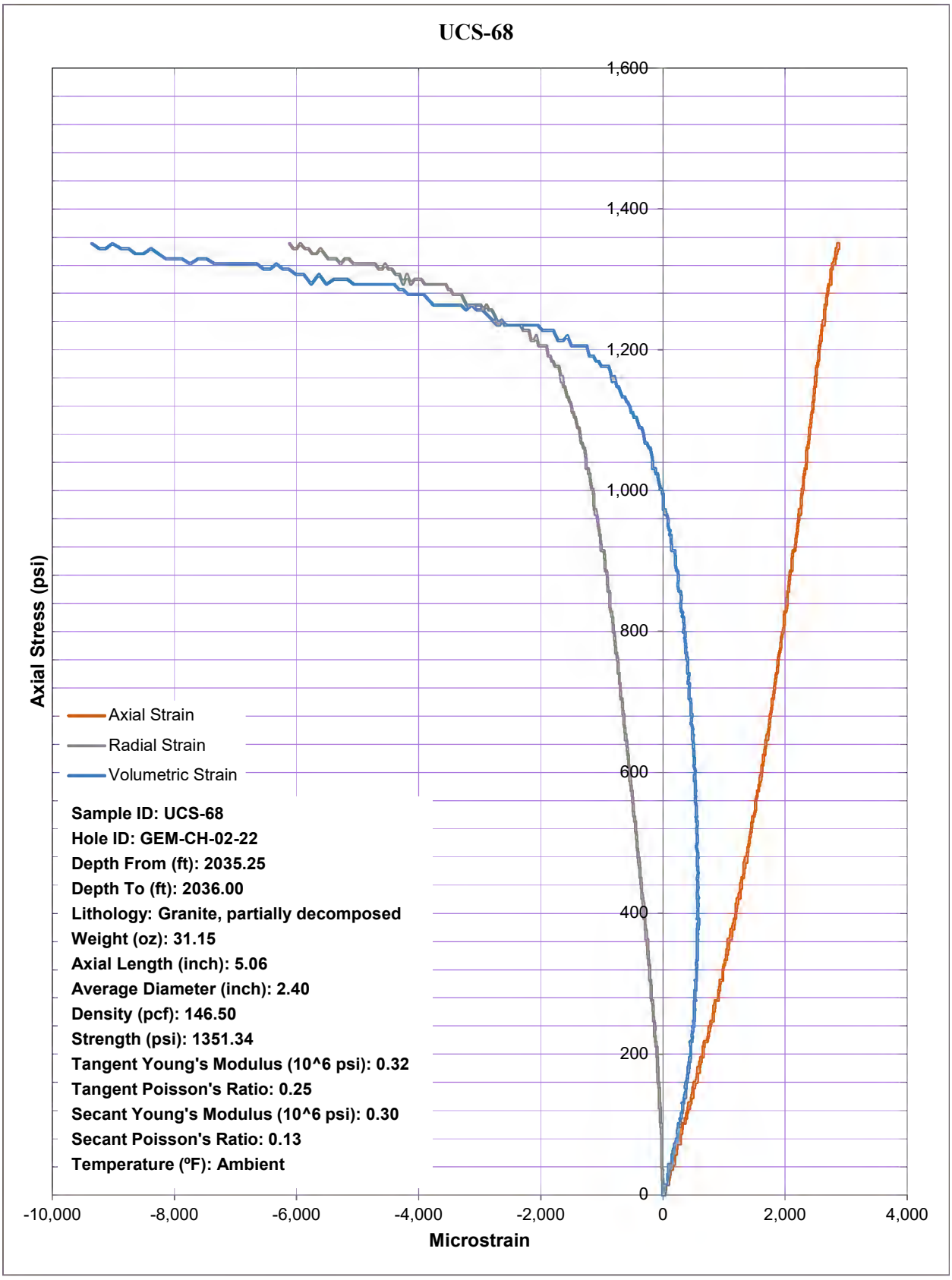

UCS-63
Axial Stress (psi)
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-6,000
-5,000
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-63
Hole ID: GEM-CH-02-22
Depth From (ft): 1992.83
Depth To (ft): 1993.50
Lithology: Granite, partially decomposed
Weight (oz): 33.46
Axial Length (inch): 5.25
Average Diameter (inch): 2.40
Density (pcf): 151.79
Strength (psi): 3928.73
Tangent Young's Modulus (10^6 psi): 1.35
Tangent Poisson's Ratio: 0.20
Secant Young's Modulus (10^6 psi): 1.03
Secant Poisson's Ratio: 0.08
Temperature (ºF): Ambient

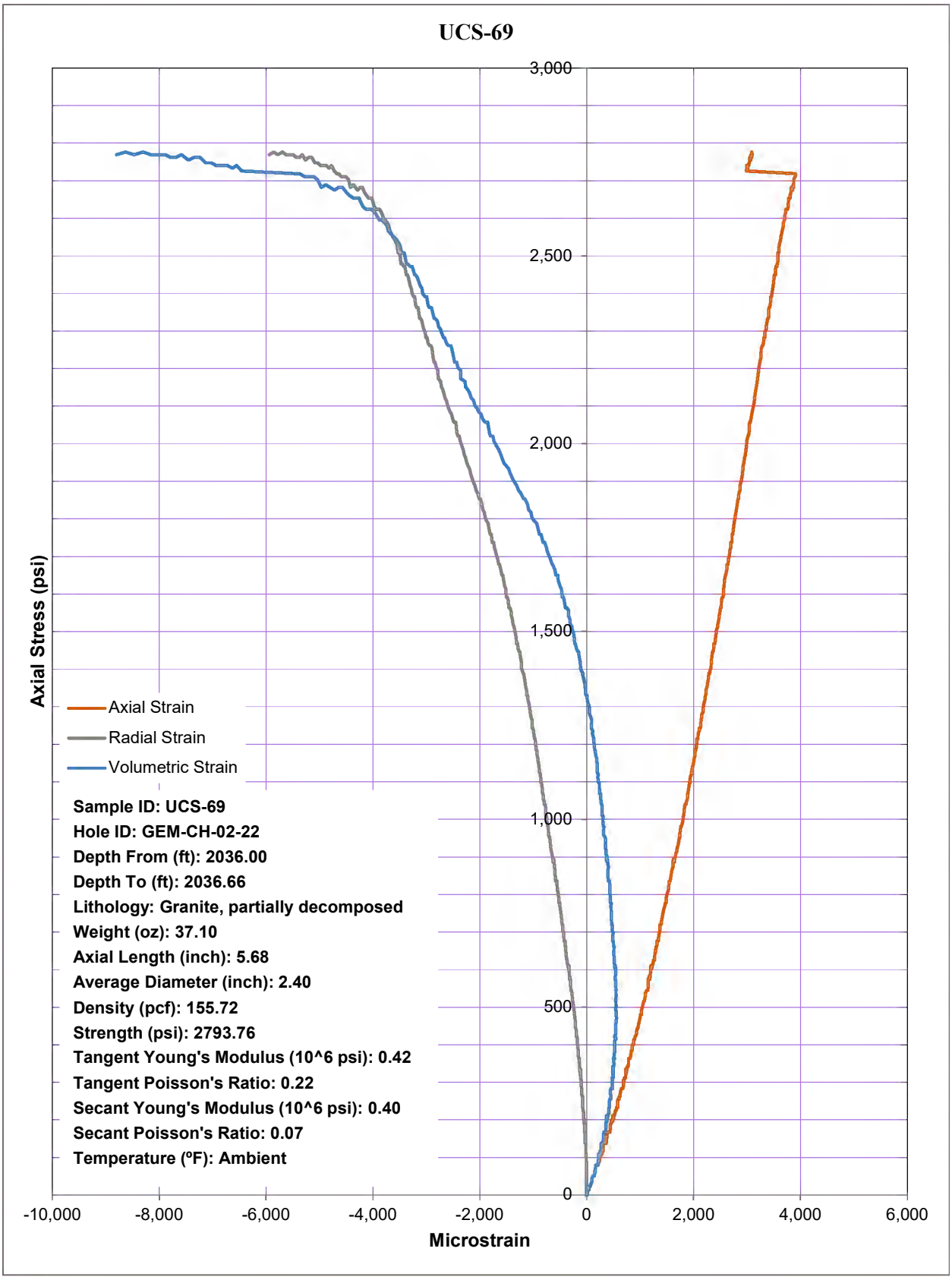

UCS-64
Axial Stress (psi)
1,600
1,400
1,200
1,000
800
600
400
200
0
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-64
Hole ID: GEM-CH-02-22
Depth From (ft): 2007.75
Depth To (ft): 2008.58
Lithology: Granite, partially decomposed
Weight (oz): 34.56
Axial Length (inch): 5.69
Average Diameter (inch): 2.41
Density (pcf): 144.01
Strength (psi): 1533.64
Tangent Young's Modulus (10^6 psi): 0.30
Tangent Poisson's Ratio: 0.18
Secant Young's Modulus (10^6 psi): 0.27
Secant Poisson's Ratio: 0.09
Temperature (ºF): Ambient

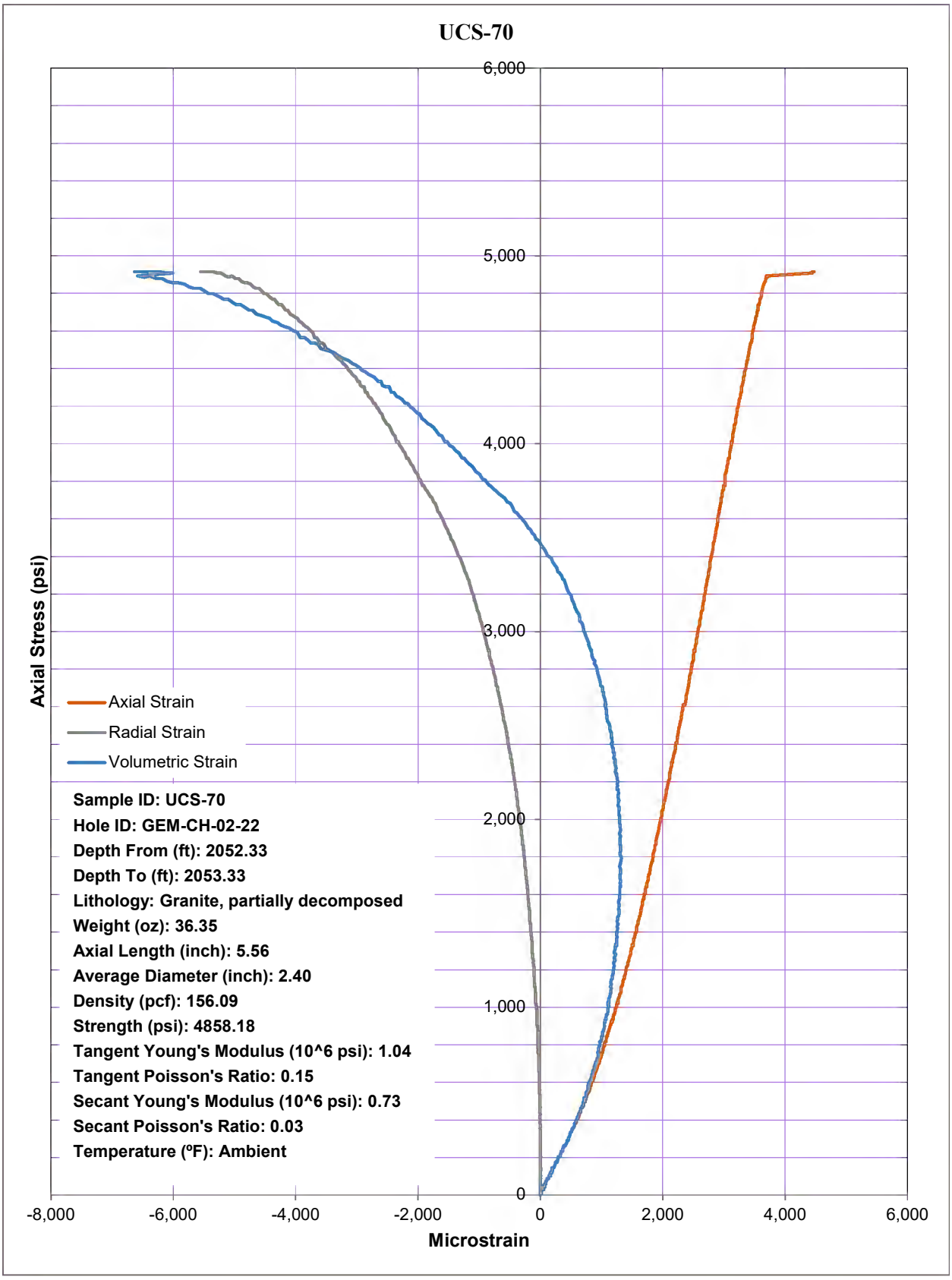

UCS-65
Axial Stress (psi)
800
700
600
500
400
300
200
100
0
-35,000
-30,000
-25,000
-20,000
-15,000
-10,000
-5,000
0
5,000
10,000
15,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-65
Hole ID: GEM-CH-02-22
Depth From (ft): 2008.66
Depth To (ft): 2009.25
Lithology: Granite, partially decomposed
Weight (oz): 33.76
Axial Length (inch): 5.58
Average Diameter (inch): 2.41
Density (pcf): 143.32
Strength (psi): 746.12
Tangent Young's Modulus (10^6 psi): N/A
Tangent Poisson's Ratio: N/A
Secant Young's Modulus (10^6 psi): N/A
Secant Poisson's Ratio: N/A
Temperature (ºF): Ambient

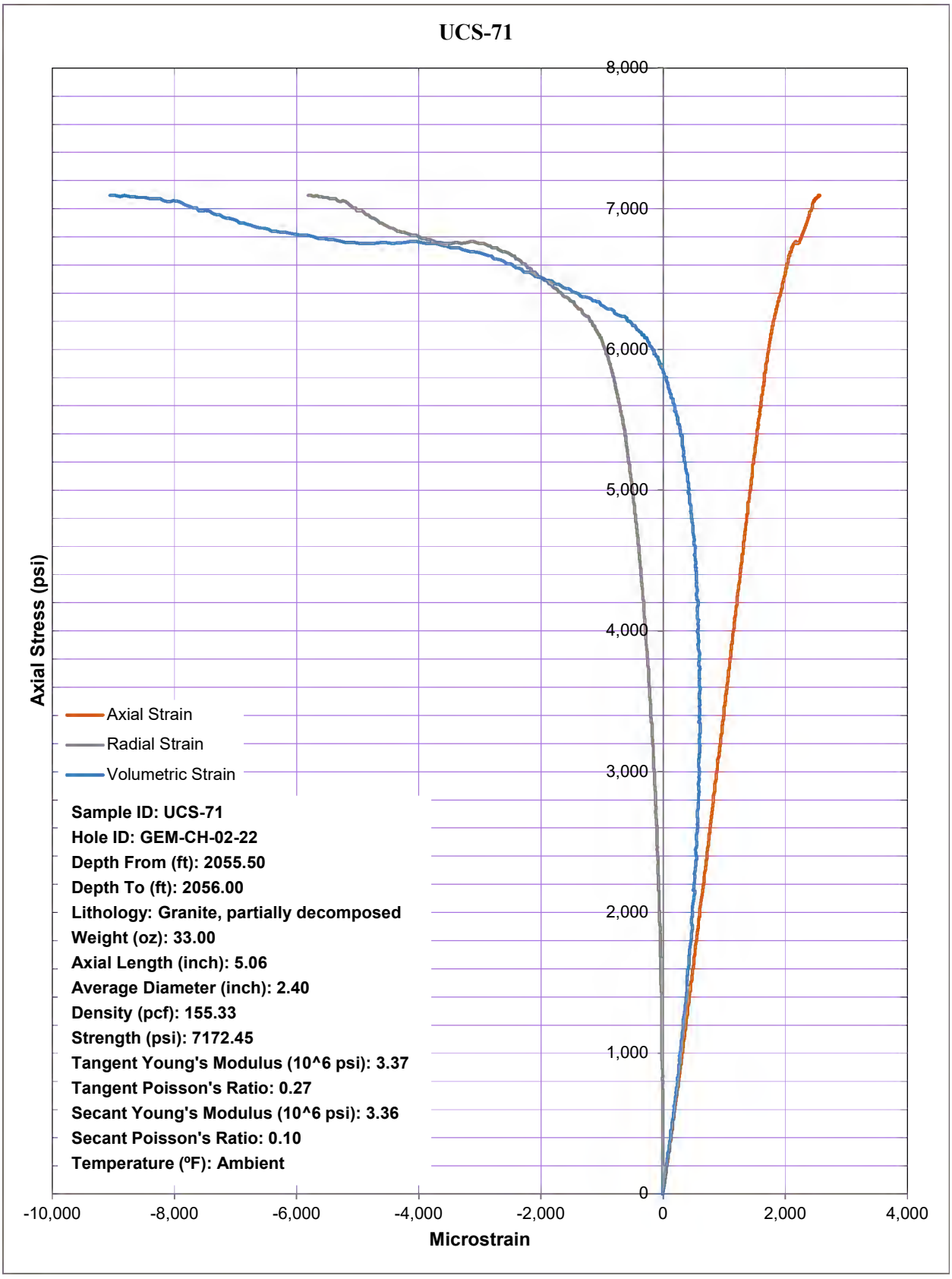

UCS-66
Axial Stress (psi)
3,000
2,500
2,000
1,500
1,000
500
0
-7,000
-6,000
-5,000
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-66
Hole ID: GEM-CH-02-22
Depth From (ft): 2023.16
Depth To (ft): 2023.83
Lithology: Granite, partially decomposed
Weight (oz): 31.74
Axial Length (inch): 5.20
Average Diameter (inch): 2.40
Density (pcf): 145.37
Strength (psi): 2816.47
Tangent Young's Modulus (10^6 psi): 0.91
Tangent Poisson's Ratio: 0.29
Secant Young's Modulus (10^6 psi): 0.79
Secant Poisson's Ratio: 0.13
Temperature (ºF): Ambient

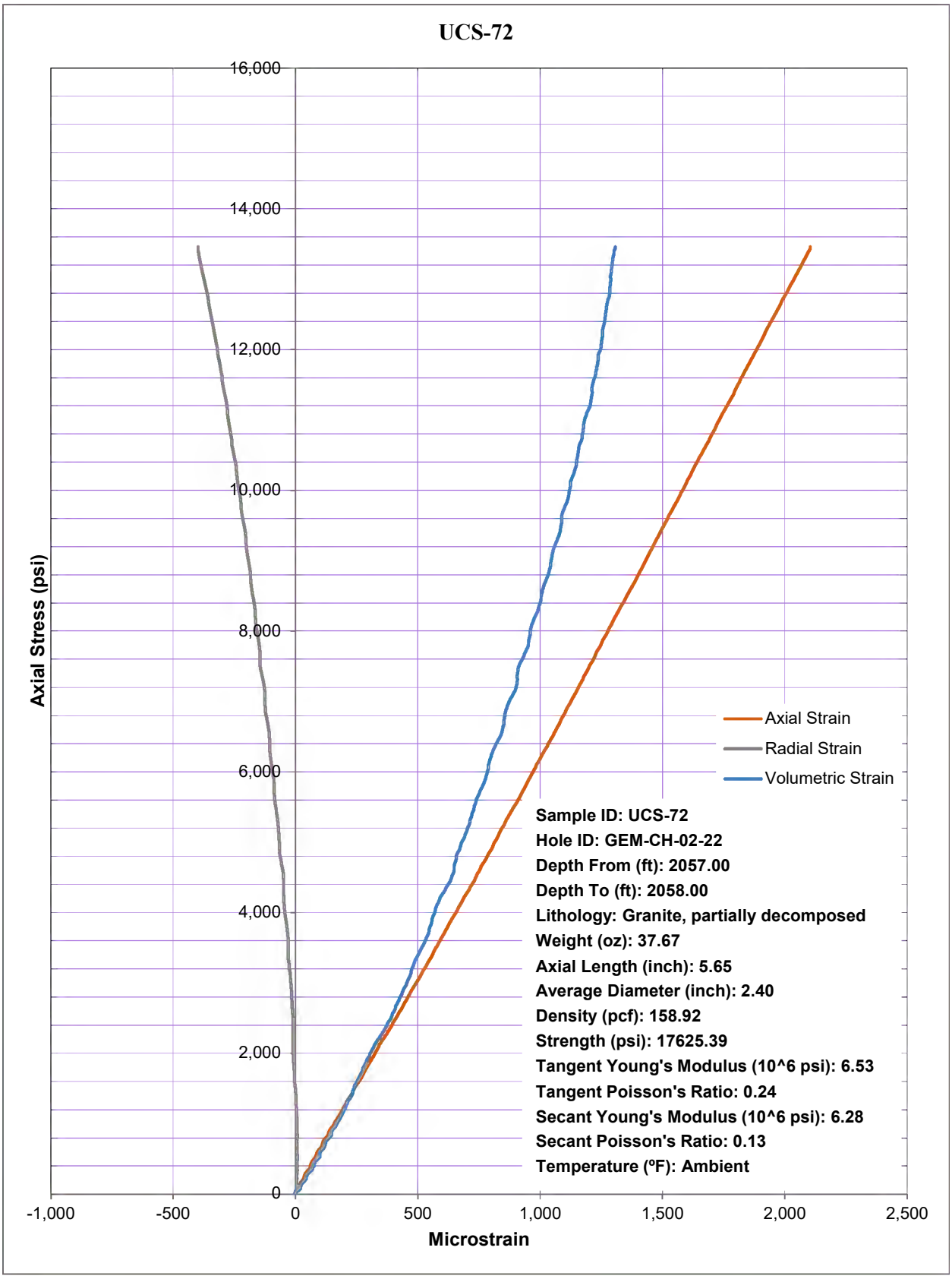

UCS-67
Axial Stress (psi)
3,000
2,500
2,000
1,500
1,000
500
0
-5,000
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-67
Hole ID: GEM-CH-02-22
Depth From (ft): 2030.41
Depth To (ft): 2031.00
Lithology: Granite, partially decomposed
Weight (oz): 35.89
Axial Length (inch): 5.45
Average Diameter (inch): 2.40
Density (pcf): 156.88
Strength (psi): 2634.94
Tangent Young's Modulus (10^6 psi): 0.52
Tangent Poisson's Ratio: 0.16
Secant Young's Modulus (10^6 psi): 0.40
Secant Poisson's Ratio: 0.03
Temperature (ºF): Ambient

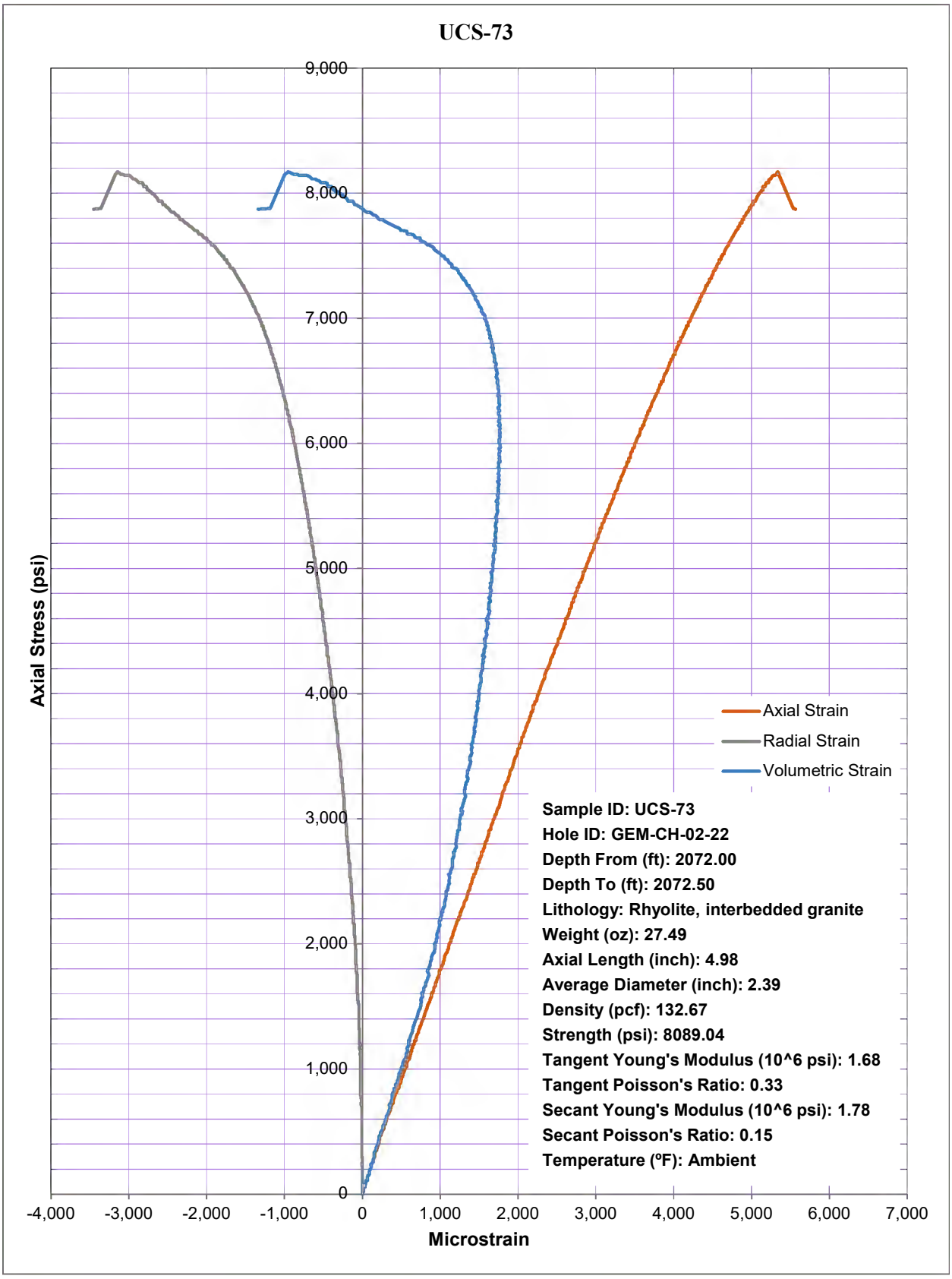

UCS-68
Axial Stress (psi)
1,600
1,400
1,200
1,000
800
600
400
200
0
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-68
Hole ID: GEM-CH-02-22
Depth From (ft): 2035.25
Depth To (ft): 2036.00
Lithology: Granite, partially decomposed
Weight (oz): 31.15
Axial Length (inch): 5.06
Average Diameter (inch): 2.40
Density (pcf): 146.50
Strength (psi): 1351.34
Tangent Young's Modulus (10^6 psi): 0.32
Tangent Poisson's Ratio: 0.25
Secant Young's Modulus (10^6 psi): 0.30
Secant Poisson's Ratio: 0.13
Temperature (ºF): Ambient

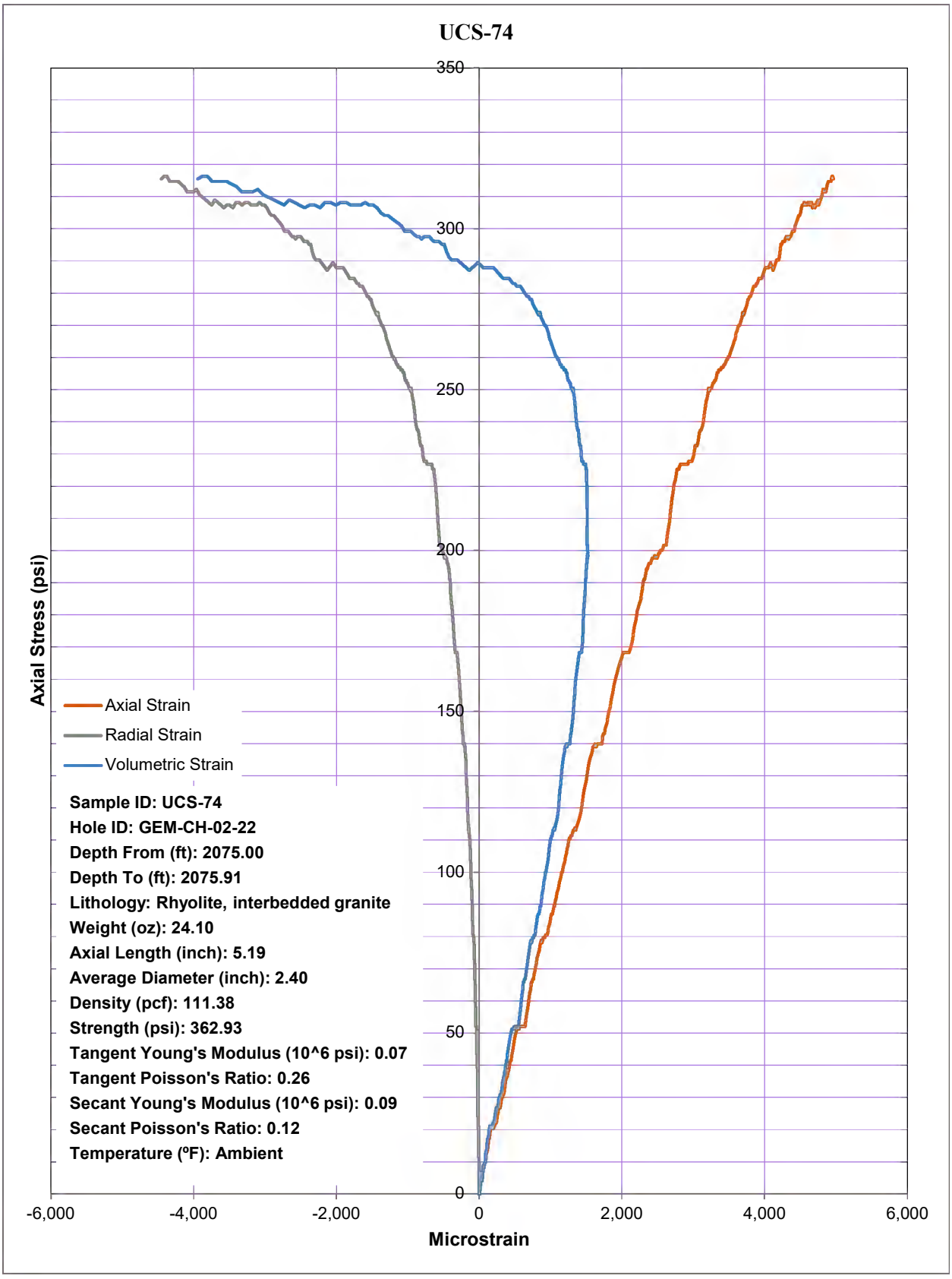

UCS-69
Axial Stress (psi)
3,000
2,500
2,000
1,500
1,000
500
0
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-69
Hole ID: GEM-CH-02-22
Depth From (ft): 2036.00
Depth To (ft): 2036.66
Lithology: Granite, partially decomposed
Weight (oz): 37.10
Axial Length (inch): 5.68
Average Diameter (inch): 2.40
Density (pcf): 155.72
Strength (psi): 2793.76
Tangent Young's Modulus (10^6 psi): 0.42
Tangent Poisson's Ratio: 0.22
Secant Young's Modulus (10^6 psi): 0.40
Secant Poisson's Ratio: 0.07
Temperature (ºF): Ambient

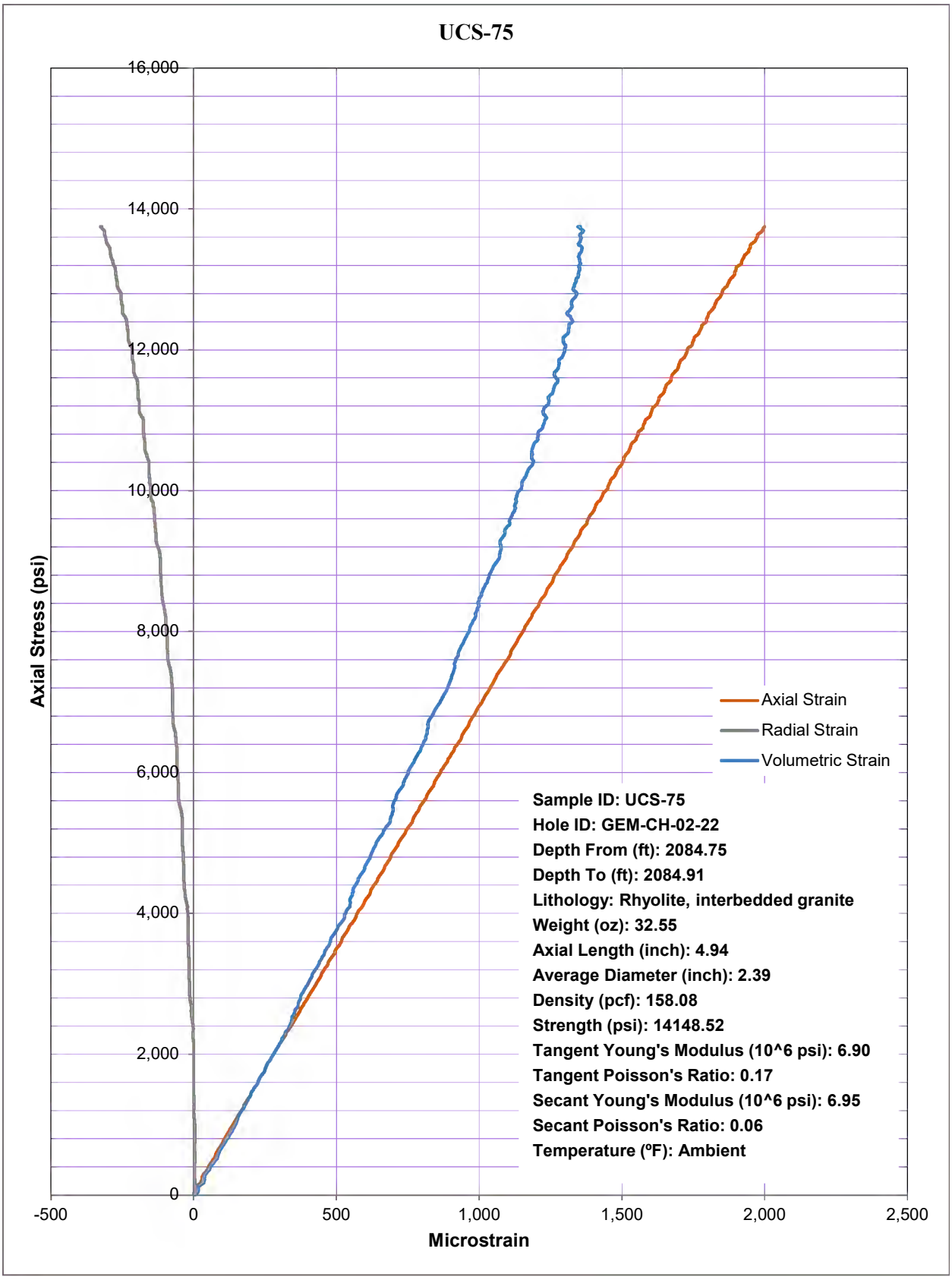

UCS-70
Axial Stress (psi)
6,000
5,000
4,000
3,000
2,000
1,000
0
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-70
Hole ID: GEM-CH-02-22
Depth From (ft): 2052.33
Depth To (ft): 2053.33
Lithology: Granite, partially decomposed
Weight (oz): 36.35
Axial Length (inch): 5.56
Average Diameter (inch): 2.40
Density (pcf): 156.09
Strength (psi): 4858.18
Tangent Young's Modulus (10^6 psi): 1.04
Tangent Poisson's Ratio: 0.15
Secant Young's Modulus (10^6 psi): 0.73
Secant Poisson's Ratio: 0.03
Temperature (ºF): Ambient

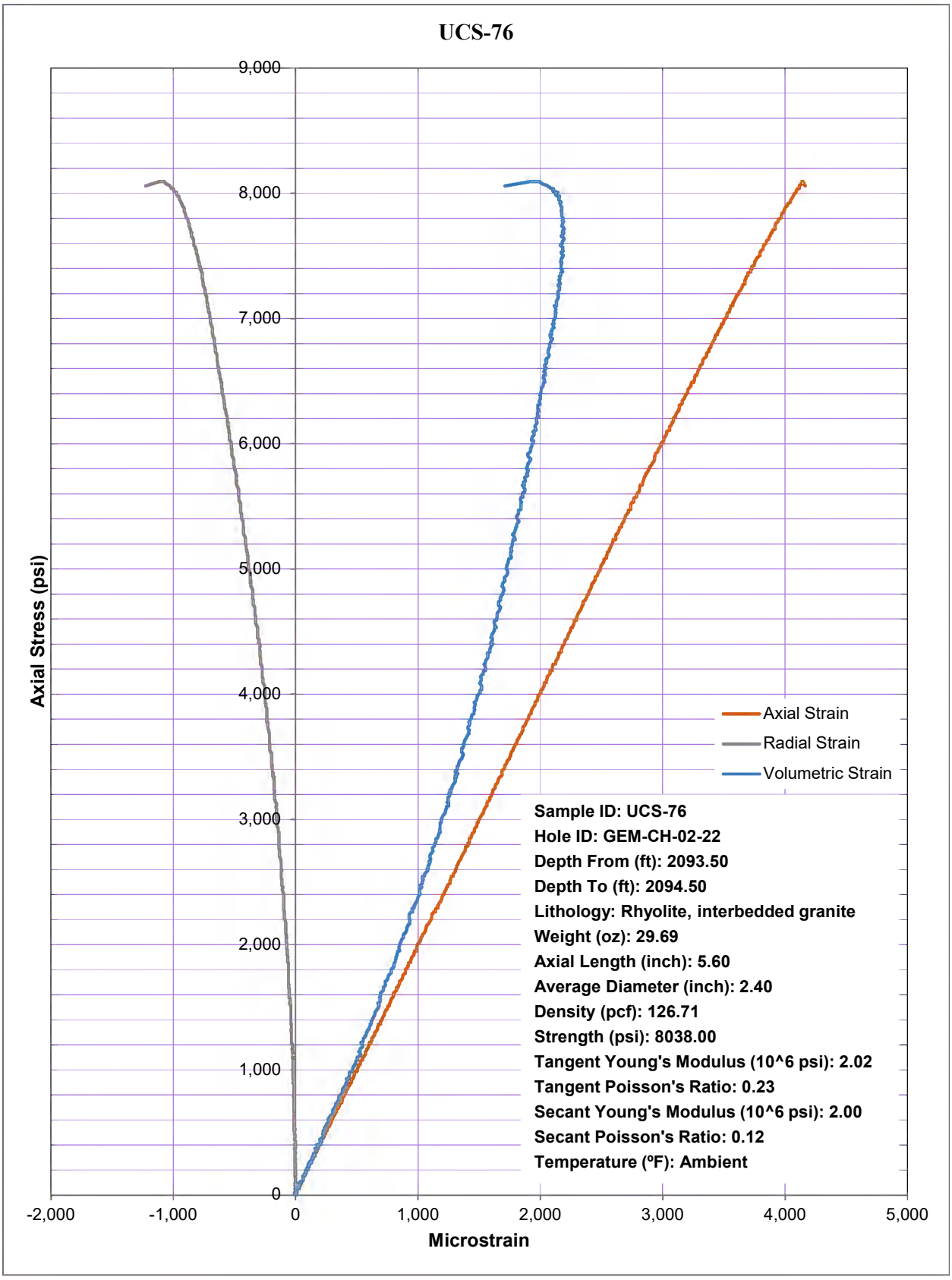

UCS-71
Axial Stress (psi)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-71
Hole ID: GEM-CH-02-22
Depth From (ft): 2055.50
Depth To (ft): 2056.00
Lithology: Granite, partially decomposed
Weight (oz): 33.00
Axial Length (inch): 5.06
Average Diameter (inch): 2.40
Density (pcf): 155.33
Strength (psi): 7172.45
Tangent Young's Modulus (10^6 psi): 3.37
Tangent Poisson's Ratio: 0.27
Secant Young's Modulus (10^6 psi): 3.36
Secant Poisson's Ratio: 0.10
Temperature (ºF): Ambient

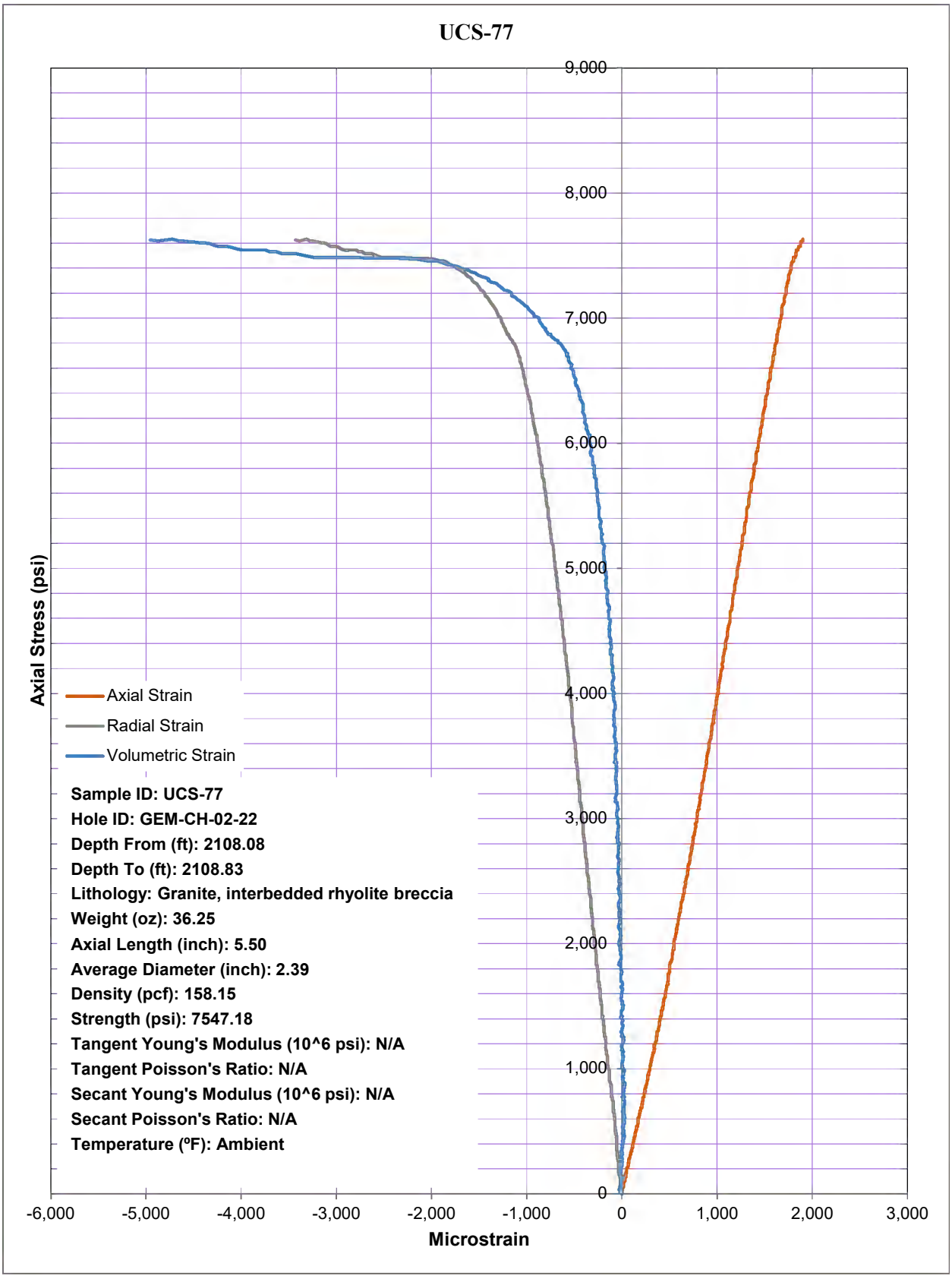

UCS-72
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Axial Stress (psi)
-1,000
-500
0
500
1,000
1,500
2,000
2,500
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-72
Hole ID: GEM-CH-02-22
Depth From (ft): 2057.00
Depth To (ft): 2058.00
Lithology: Granite, partially decomposed
Weight (oz): 37.67
Axial Length (inch): 5.65
Average Diameter (inch): 2.40
Density (pcf): 158.92
Strength (psi): 17625.39
Tangent Young's Modulus (10^6 psi): 6.53
Tangent Poisson's Ratio: 0.24
Secant Young's Modulus (10^6 psi): 6.28
Secant Poisson's Ratio: 0.13
Temperature (ºF): Ambient

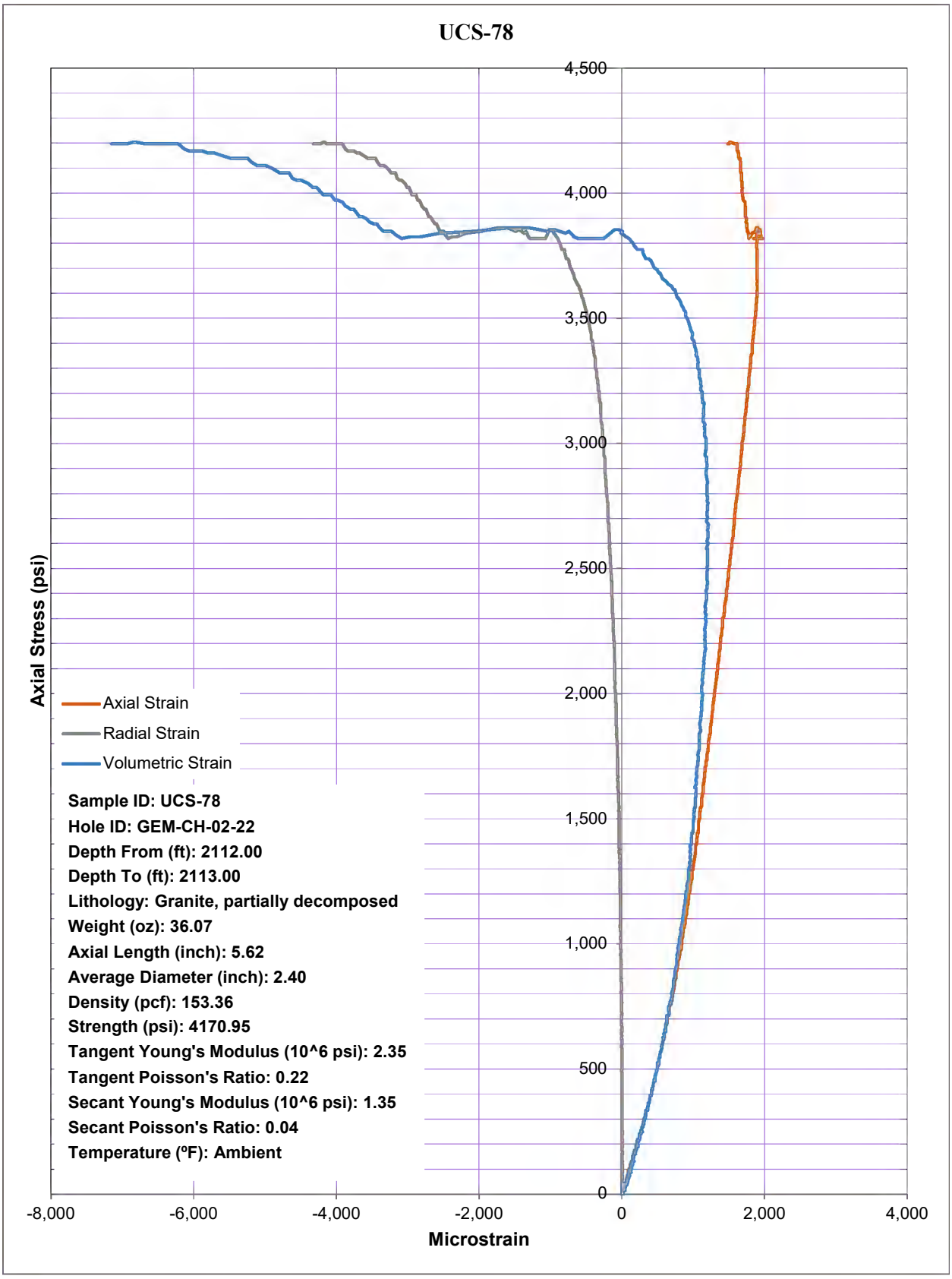

UCS-73
Axial Stress (psi)
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
6,000
7,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-73
Hole ID: GEM-CH-02-22
Depth From (ft): 2072.00
Depth To (ft): 2072.50
Lithology: Rhyolite, interbedded granite
Weight (oz): 27.49
Axial Length (inch): 4.98
Average Diameter (inch): 2.39
Density (pcf): 132.67
Strength (psi): 8089.04
Tangent Young's Modulus (10^6 psi): 1.68
Tangent Poisson's Ratio: 0.33
Secant Young's Modulus (10^6 psi): 1.78
Secant Poisson's Ratio: 0.15
Temperature (ºF): Ambient

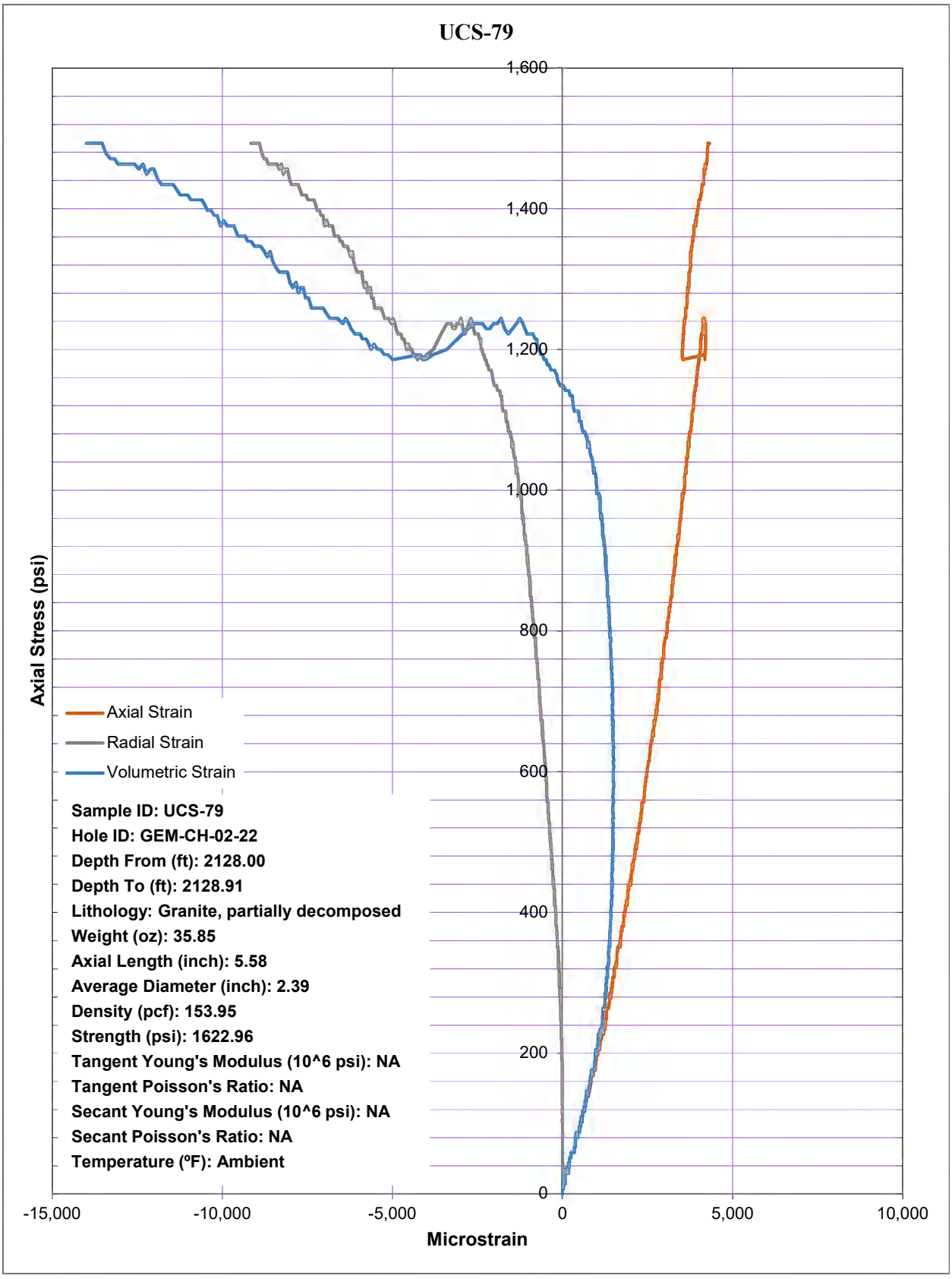

UCS-74
Axial Stress (psi)
350
300
250
200
150
100
50
0
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-74
Hole ID: GEM-CH-02-22
Depth From (ft): 2075.00
Depth To (ft): 2075.91
Lithology: Rhyolite, interbedded granite
Weight (oz): 24.10
Axial Length (inch): 5.19
Average Diameter (inch): 2.40
Density (pcf): 111.38
Strength (psi): 362.93
Tangent Young's Modulus (10^6 psi): 0.07
Tangent Poisson's Ratio: 0.26
Secant Young's Modulus (10^6 psi): 0.09
Secant Poisson's Ratio: 0.12
Temperature (ºF): Ambient

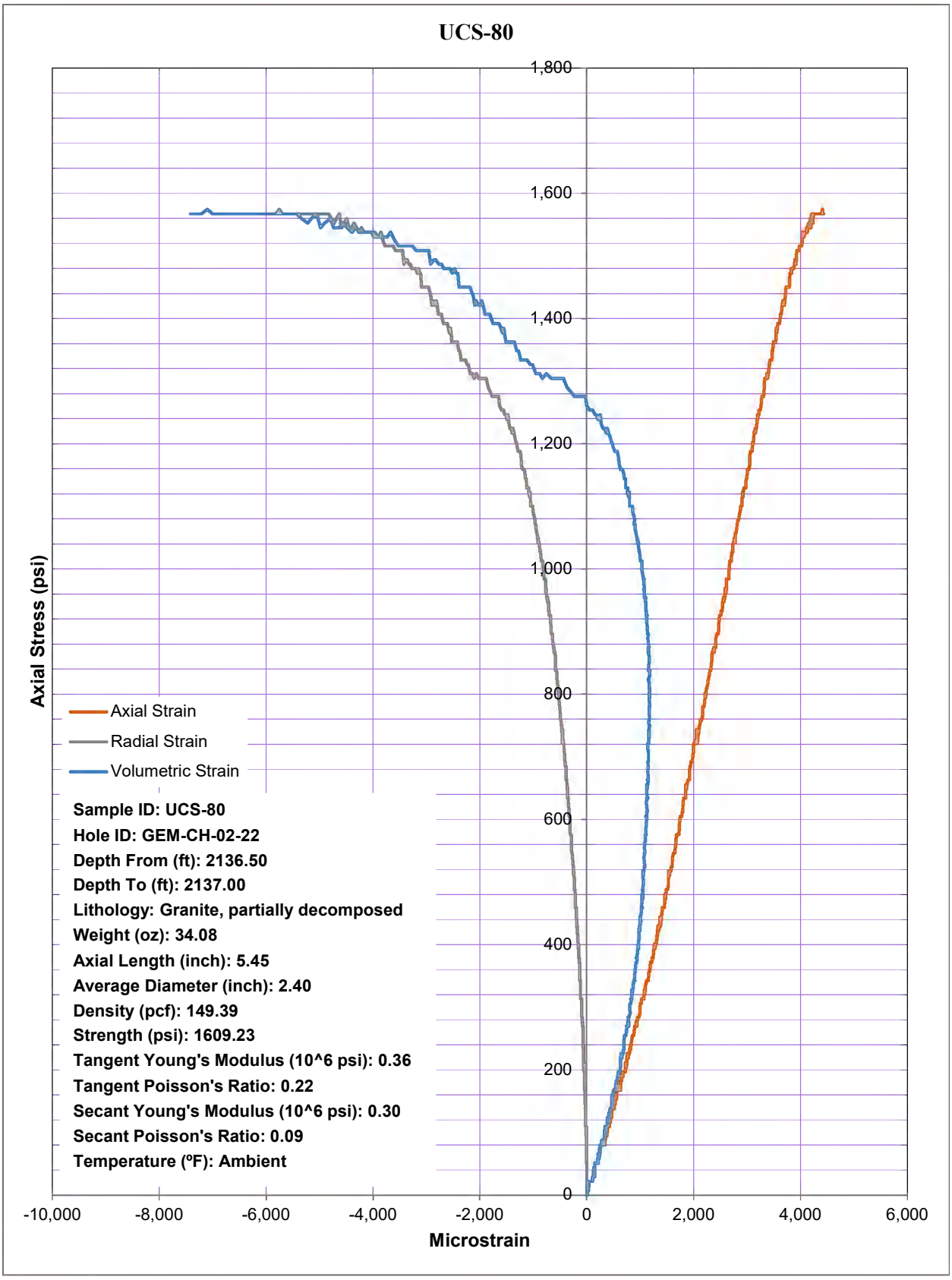

UCS-75
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Axial Stress (psi)
-500
0
500
1,000
1,500
2,000
2,500
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-75
Hole ID: GEM-CH-02-22
Depth From (ft): 2084.75
Depth To (ft): 2084.91
Lithology: Rhyolite, interbedded granite
Weight (oz): 32.55
Axial Length (inch): 4.94
Average Diameter (inch): 2.39
Density (pcf): 158.08
Strength (psi): 14148.52
Tangent Young's Modulus (10^6 psi): 6.90
Tangent Poisson's Ratio: 0.17
Secant Young's Modulus (10^6 psi): 6.95
Secant Poisson's Ratio: 0.06
Temperature (ºF): Ambient

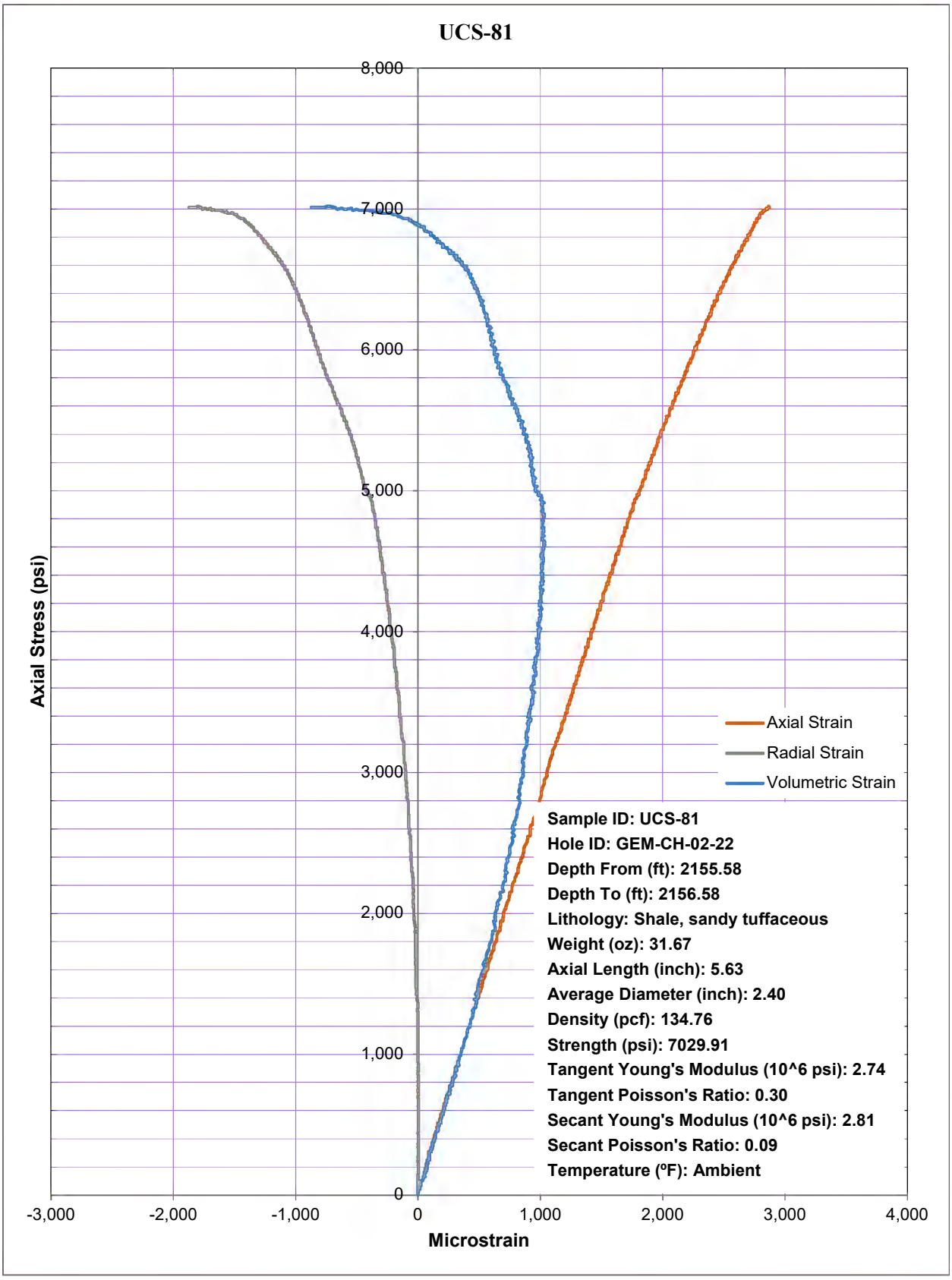

UCS-76
Axial Stress (psi)
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-76
Hole ID: GEM-CH-02-22
Depth From (ft): 2093.50
Depth To (ft): 2094.50
Lithology: Rhyolite, interbedded granite
Weight (oz): 29.69
Axial Length (inch): 5.60
Average Diameter (inch): 2.40
Density (pcf): 126.71
Strength (psi): 8038.00
Tangent Young's Modulus (10^6 psi): 2.02
Tangent Poisson's Ratio: 0.23
Secant Young's Modulus (10^6 psi): 2.00
Secant Poisson's Ratio: 0.12
Temperature (ºF): Ambient

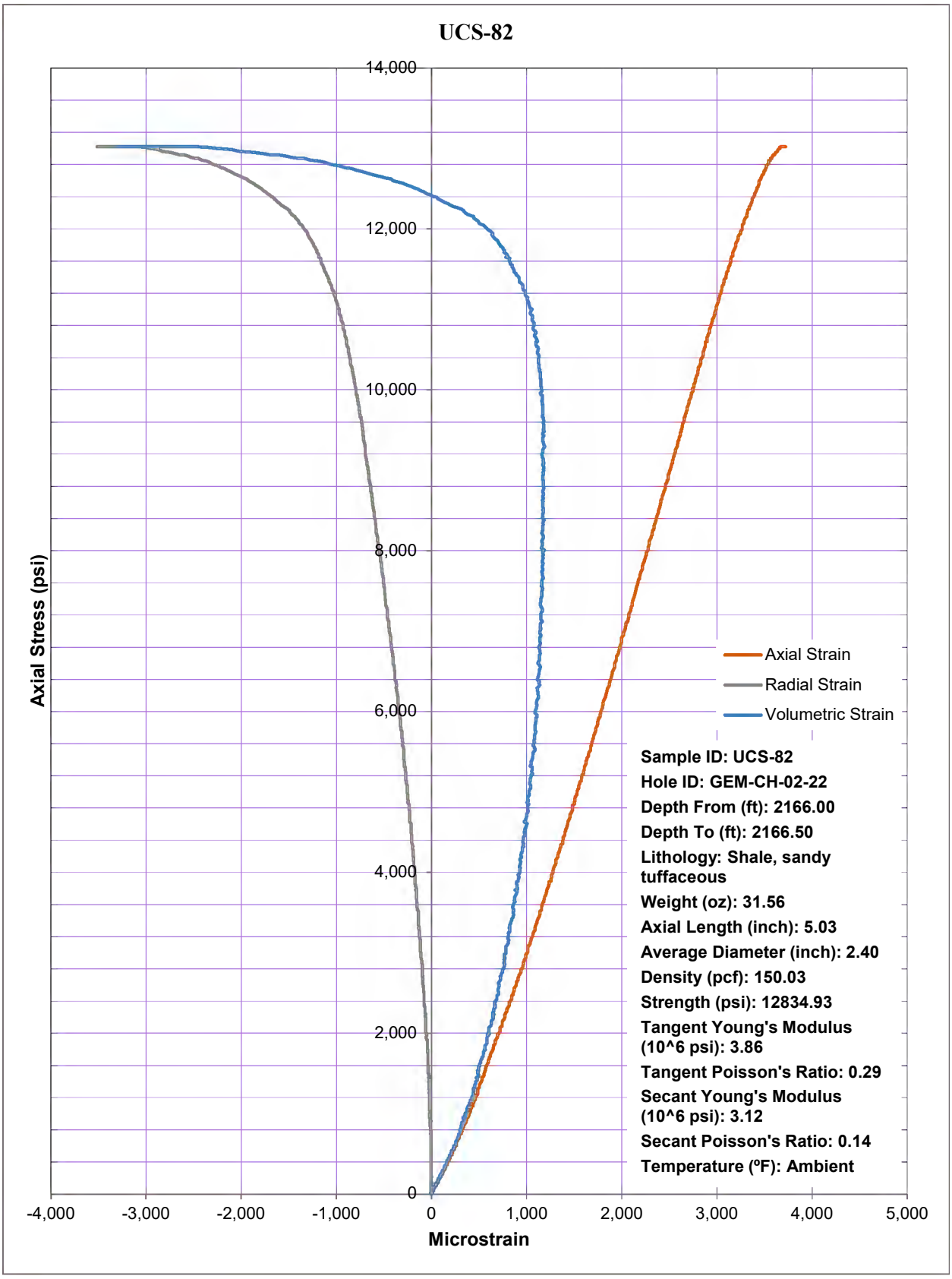

UCS-77
Axial Stress (psi)
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-6,000
-5,000
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-77
Hole ID: GEM-CH-02-22
Depth From (ft): 2108.08
Depth To (ft): 2108.83
Lithology: Granite, interbedded rhyolite breccia
Weight (oz): 36.25
Axial Length (inch): 5.50
Average Diameter (inch): 2.39
Density (pcf): 158.15
Strength (psi): 7547.18
Tangent Young's Modulus (10^6 psi): N/A
Tangent Poisson's Ratio: N/A
Secant Young's Modulus (10^6 psi): N/A
Secant Poisson's Ratio: N/A
Temperature (ºF): Ambient

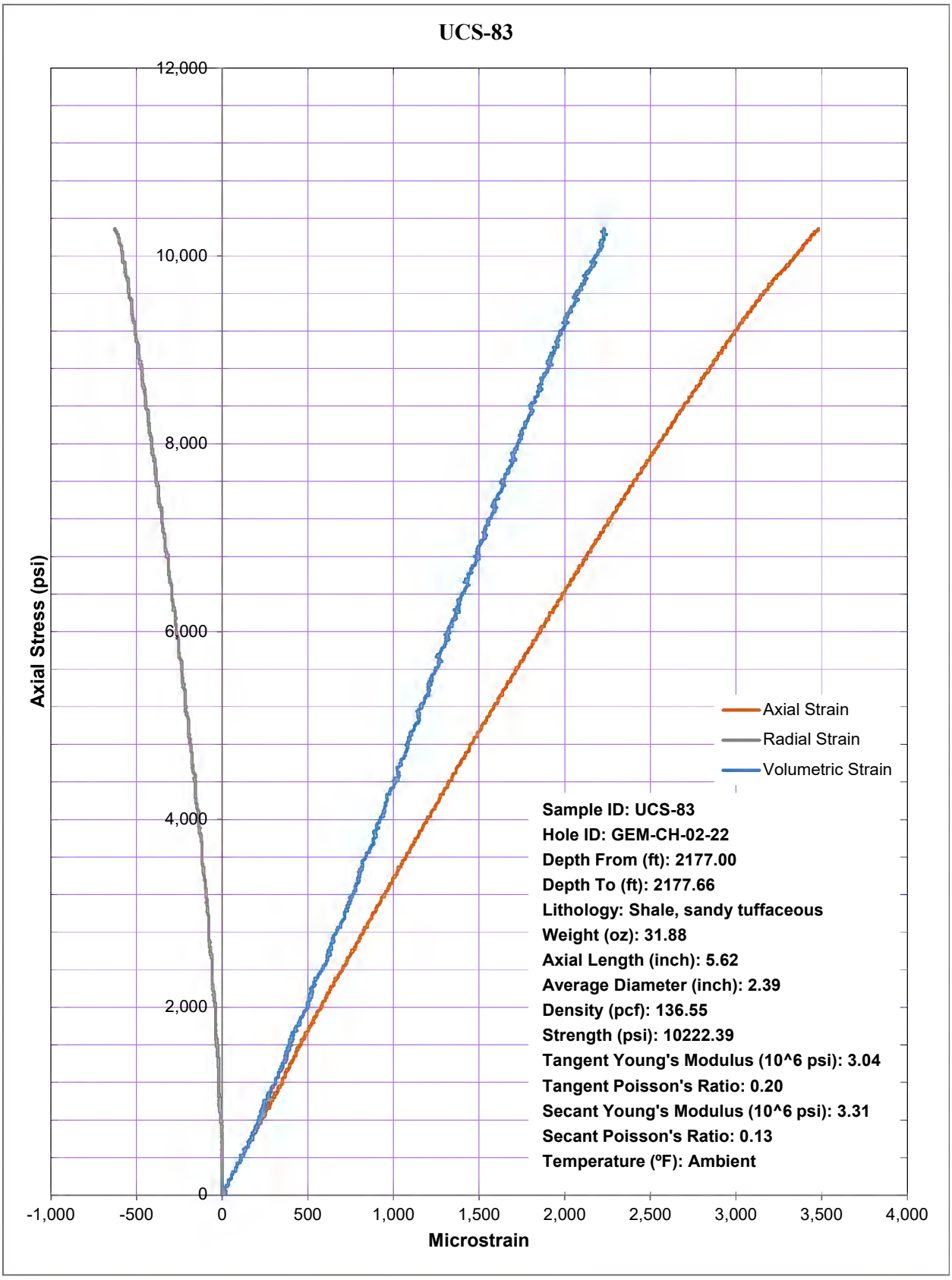

UCS-78
Axial Stress (psi)
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-78
Hole ID: GEM-CH-02-22
Depth From (ft): 2112.00
Depth To (ft): 2113.00
Lithology: Granite, partially decomposed
Weight (oz): 36.07
Axial Length (inch): 5.62
Average Diameter (inch): 2.40
Density (pcf): 153.36
Strength (psi): 4170.95
Tangent Young's Modulus (10^6 psi): 2.35
Tangent Poisson's Ratio: 0.22
Secant Young's Modulus (10^6 psi): 1.35
Secant Poisson's Ratio: 0.04
Temperature (ºF): Ambient

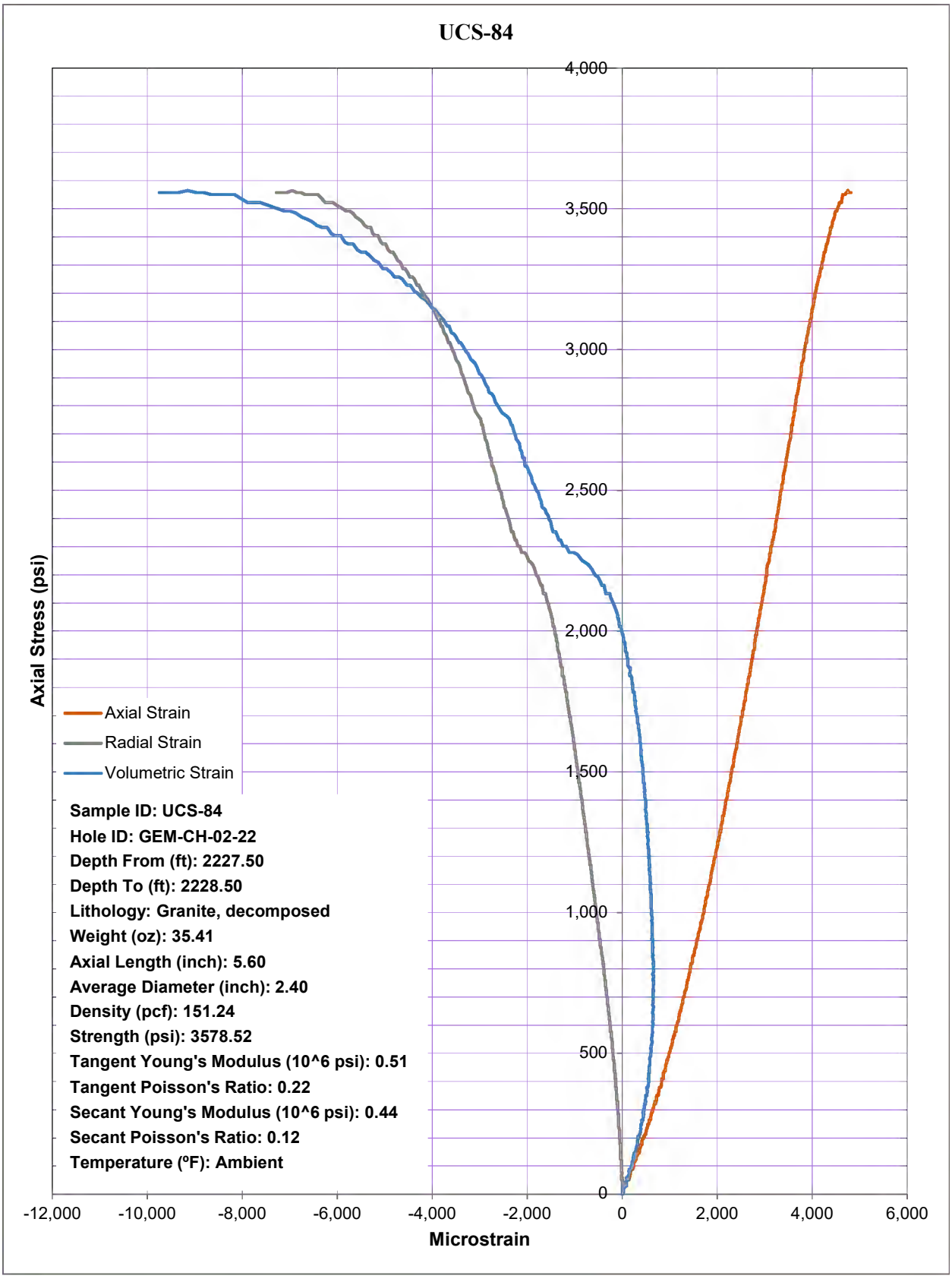

UCS-79
Axial Stress (psi)
1,600
1,400
1,200
1,000
800
600
400
200
0
-15,000
-10,000
-5,000
0
5,000
10,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-79
Hole ID: GEM-CH-02-22
Depth From (ft): 2128.00
Depth To (ft): 2128.91
Lithology: Granite, partially decomposed
Weight (oz): 35.85
Axial Length (inch): 5.58
Average Diameter (inch): 2.39
Density (pcf): 153.95
Strength (psi): 1622.96
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA
Temperature (ºF): Ambient

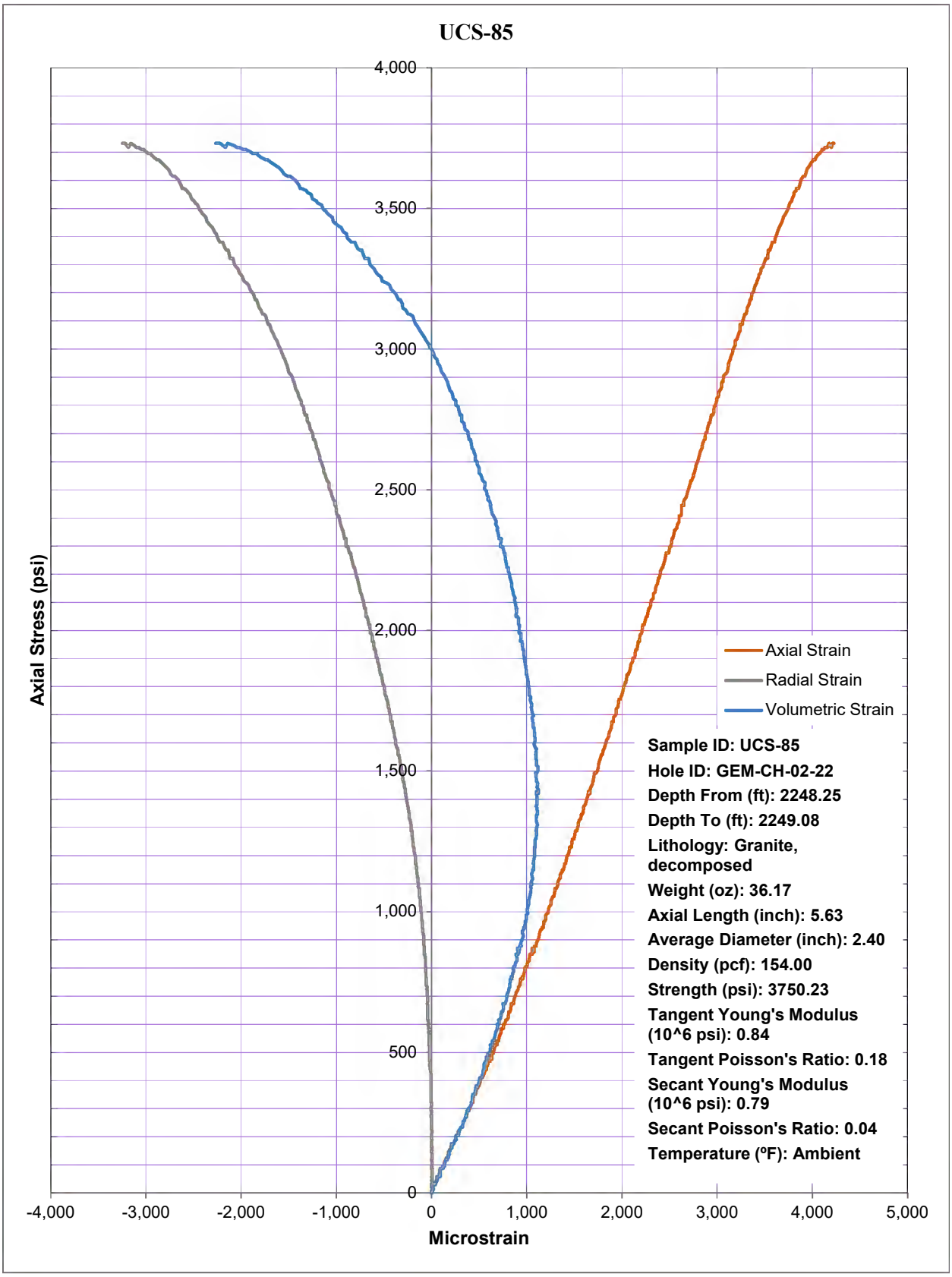

UCS-80
Axial Stress (psi)
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-80
Hole ID: GEM-CH-02-22
Depth From (ft): 2136.50
Depth To (ft): 2137.00
Lithology: Granite, partially decomposed
Weight (oz): 34.08
Axial Length (inch): 5.45
Average Diameter (inch): 2.40
Density (pcf): 149.39
Strength (psi): 1609.23
Tangent Young's Modulus (10^6 psi): 0.36
Tangent Poisson's Ratio: 0.22
Secant Young's Modulus (10^6 psi): 0.30
Secant Poisson's Ratio: 0.09
Temperature (ºF): Ambient

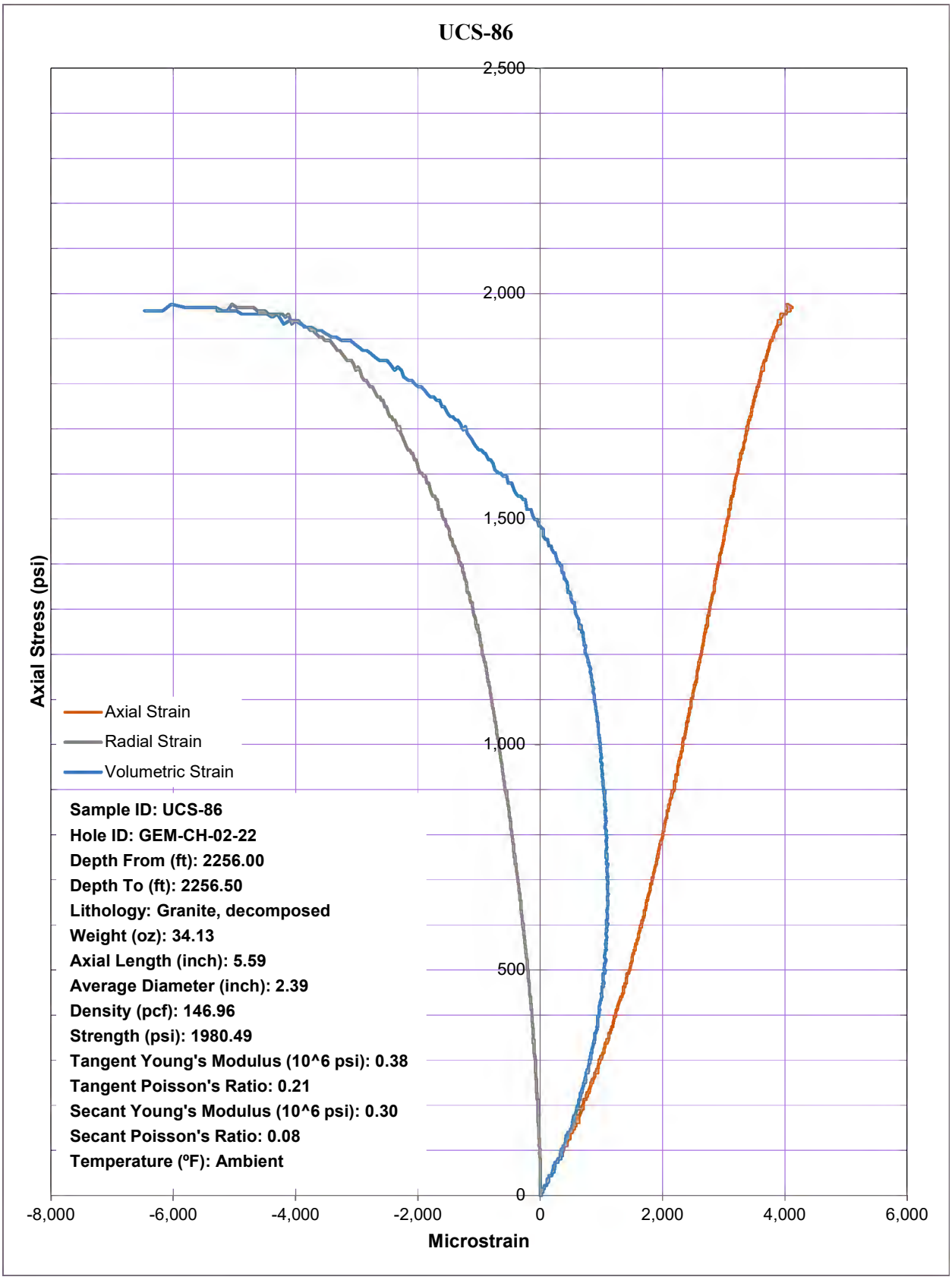

UCS-81
Axial Stress (psi)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-81
Hole ID: GEM-CH-02-22
Depth From (ft): 2155.58
Depth To (ft): 2156.58
Lithology: Shale, sandy tuffaceous
Weight (oz): 31.67
Axial Length (inch): 5.63
Average Diameter (inch): 2.40
Density (pcf): 134.76
Strength (psi): 7029.91
Tangent Young's Modulus (10^6 psi): 2.74
Tangent Poisson's Ratio: 0.30
Secant Young's Modulus (10^6 psi): 2.81
Secant Poisson's Ratio: 0.09
Temperature (ºF): Ambient

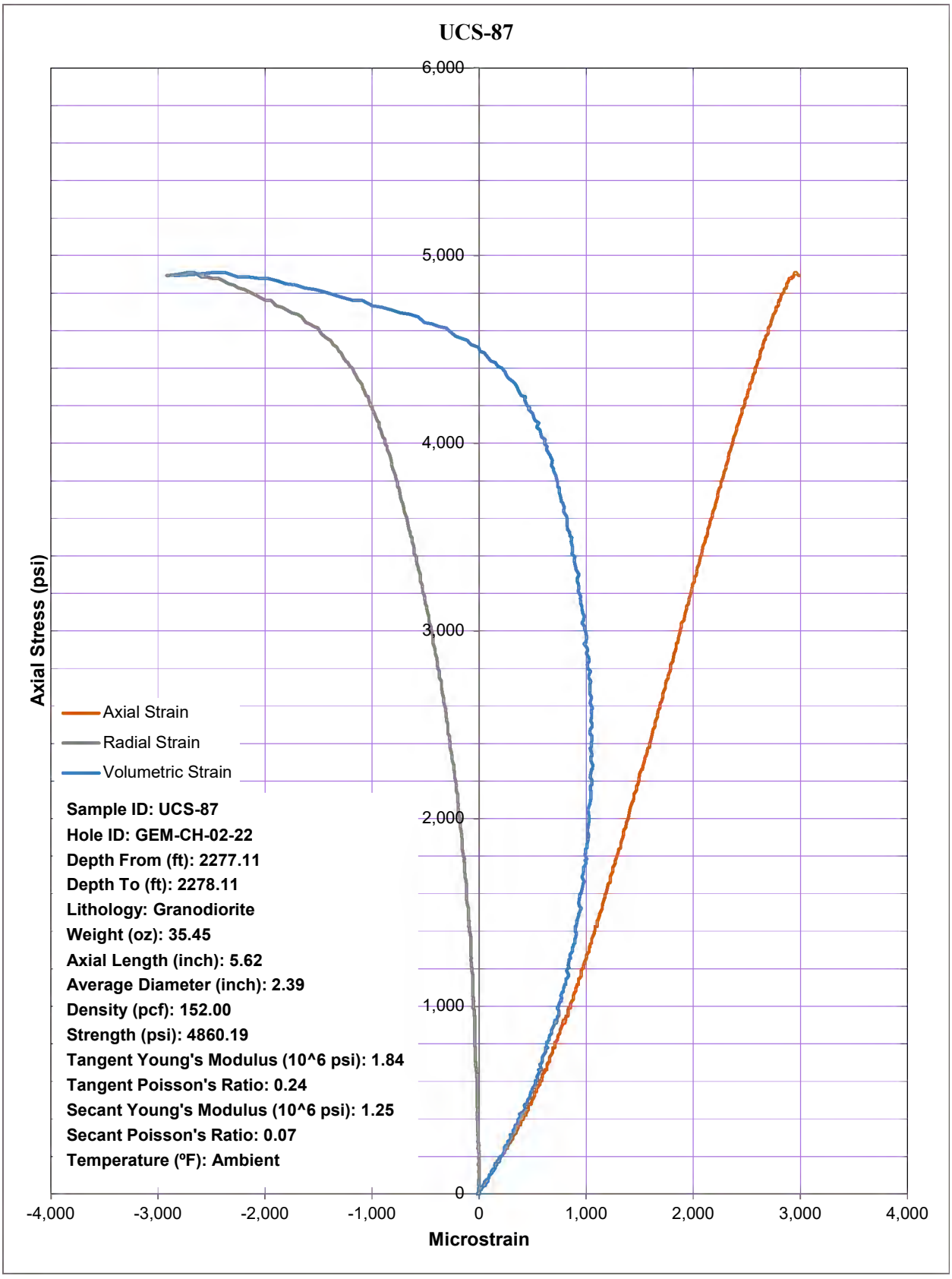

UCS-82
Axial Stress (psi)
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-82
Hole ID: GEM-CH-02-22
Depth From (ft): 2166.00
Depth To (ft): 2166.50
Lithology: Shale, sandy tuffaceous
Weight (oz): 31.56
Axial Length (inch): 5.03
Average Diameter (inch): 2.40
Density (pcf): 150.03
Strength (psi): 12834.93
Tangent Young's Modulus (10^6 psi): 3.86
Tangent Poisson's Ratio: 0.29
Secant Young's Modulus (10^6 psi): 3.12
Secant Poisson's Ratio: 0.14
Temperature (ºF): Ambient

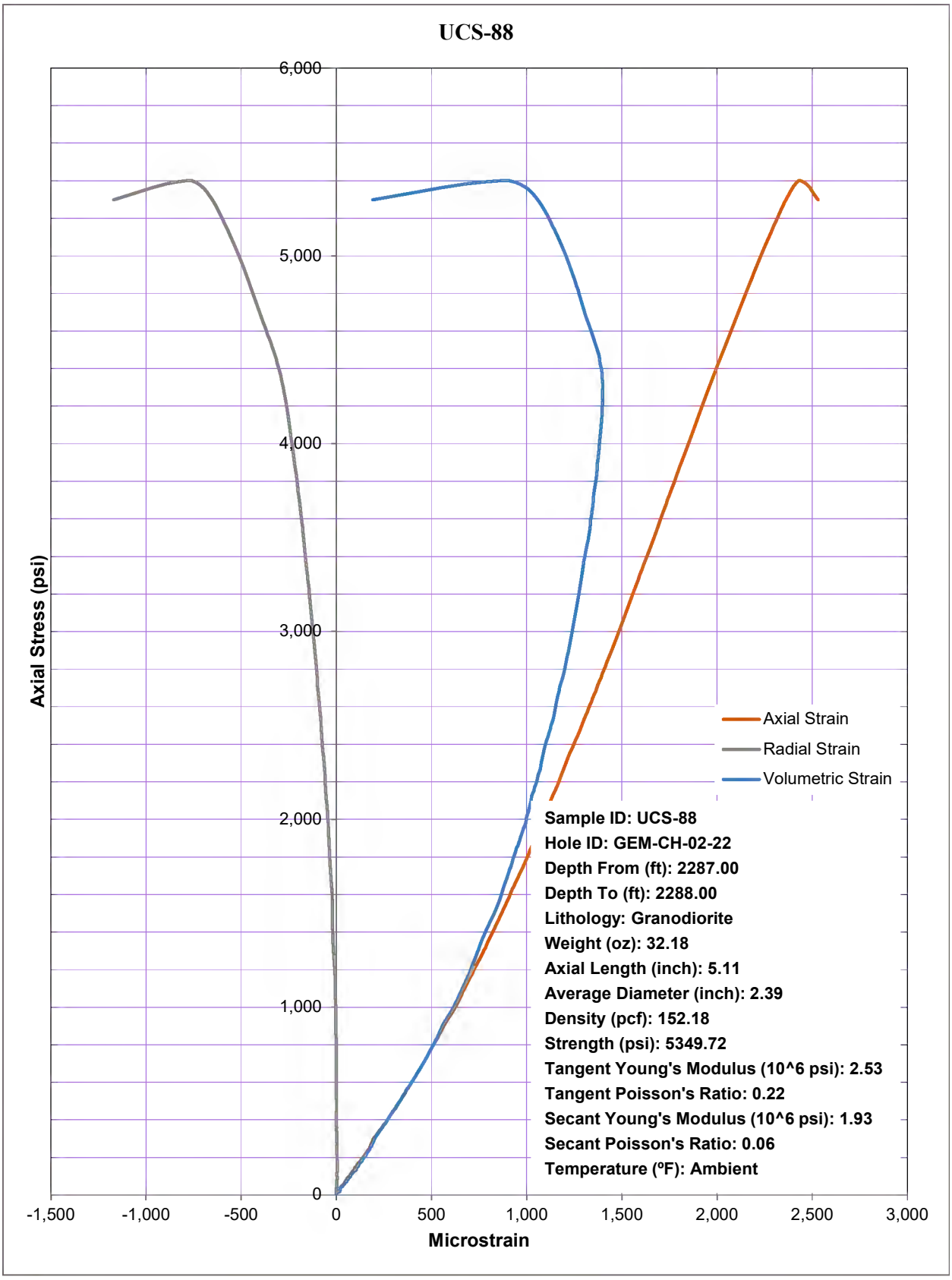

UCS-83
Axial Stress (psi)
12,000
10,000
8,000
6,000
4,000
2,000
0
-1,000
-500
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-83
Hole ID: GEM-CH-02-22
Depth From (ft): 2177.00
Depth To (ft): 2177.66
Lithology: Shale, sandy tuffaceous
Weight (oz): 31.88
Axial Length (inch): 5.62
Average Diameter (inch): 2.39
Density (pcf): 136.55
Strength (psi): 10222.39
Tangent Young's Modulus (10^6 psi): 3.04
Tangent Poisson's Ratio: 0.20
Secant Young's Modulus (10^6 psi): 3.31
Secant Poisson's Ratio: 0.13
Temperature (ºF): Ambient

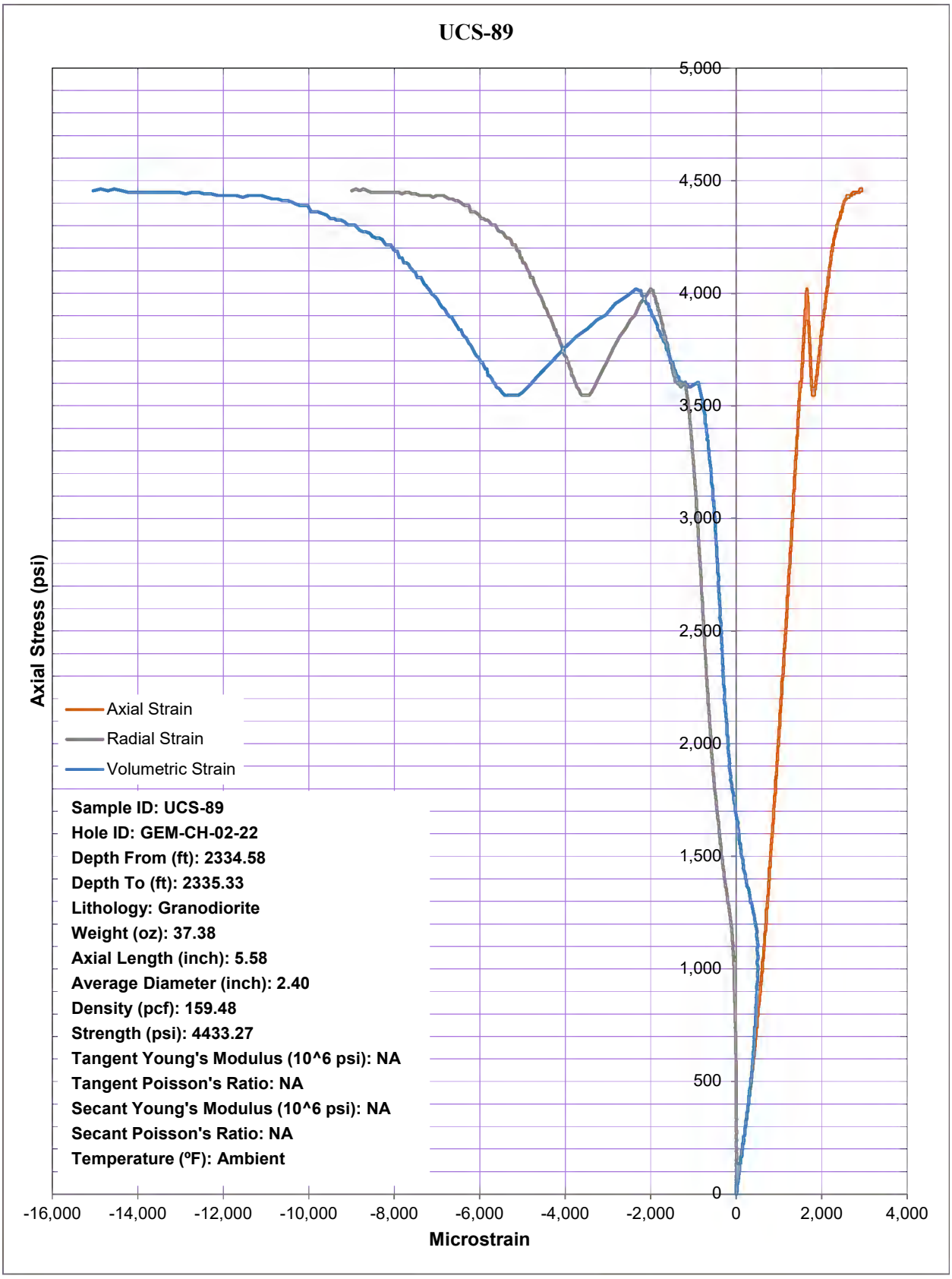

UCS-84
Axial Stress (psi)
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-84
Hole ID: GEM-CH-02-22
Depth From (ft): 2227.50
Depth To (ft): 2228.50
Lithology: Granite, decomposed
Weight (oz): 35.41
Axial Length (inch): 5.60
Average Diameter (inch): 2.40
Density (pcf): 151.24
Strength (psi): 3578.52
Tangent Young's Modulus (10^6 psi): 0.51
Tangent Poisson's Ratio: 0.22
Secant Young's Modulus (10^6 psi): 0.44
Secant Poisson's Ratio: 0.12
Temperature (ºF): Ambient

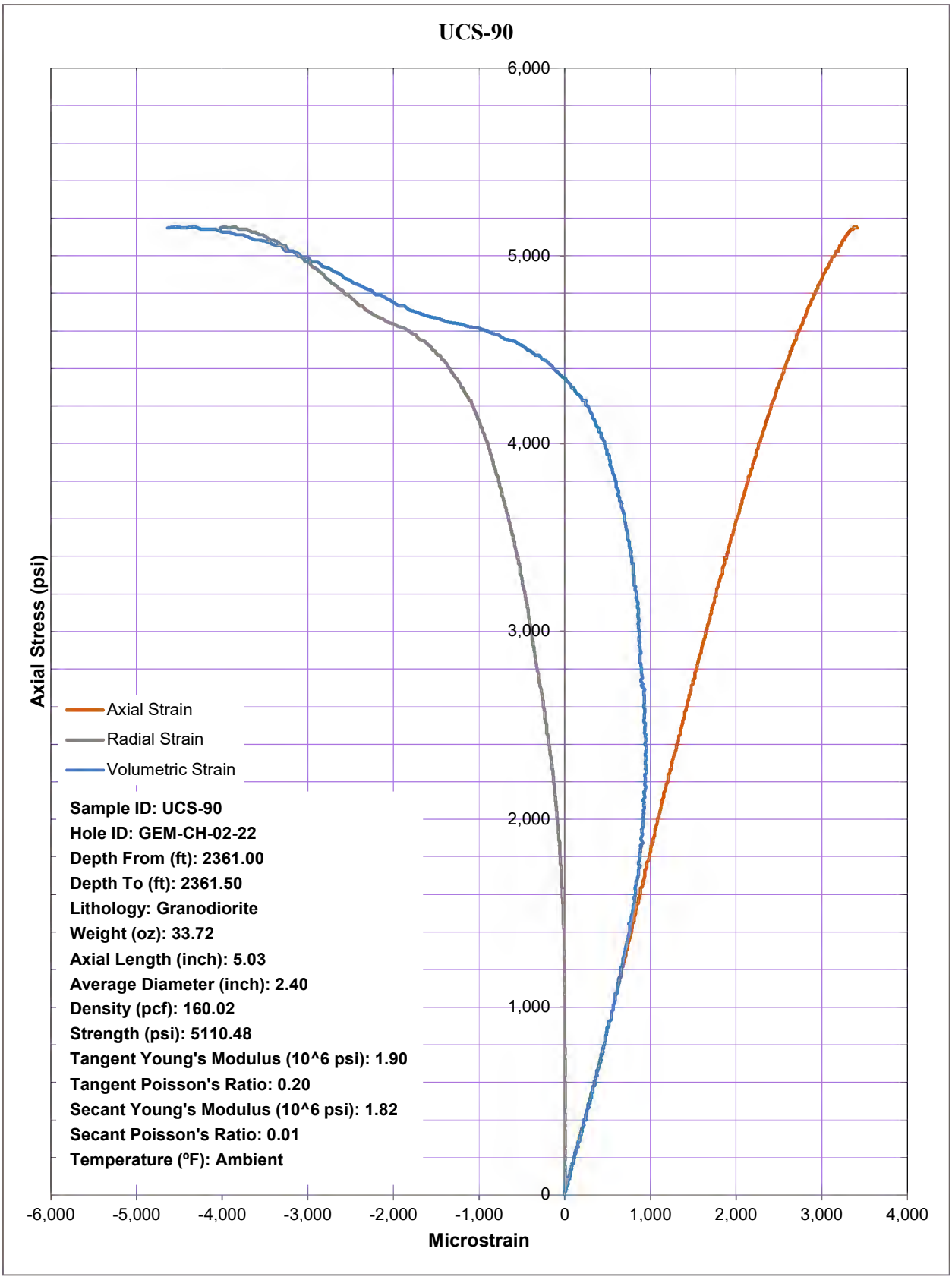

UCS-85
Axial Stress (psi)
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-85
Hole ID: GEM-CH-02-22
Depth From (ft): 2248.25
Depth To (ft): 2249.08
Lithology: Granite, decomposed
Weight (oz): 36.17
Axial Length (inch): 5.63
Average Diameter (inch): 2.40
Density (pcf): 154.00
Strength (psi): 3750.23
Tangent Young's Modulus (10^6 psi): 0.84
Tangent Poisson's Ratio: 0.18
Secant Young's Modulus (10^6 psi): 0.79
Secant Poisson's Ratio: 0.04
Temperature (ºF): Ambient

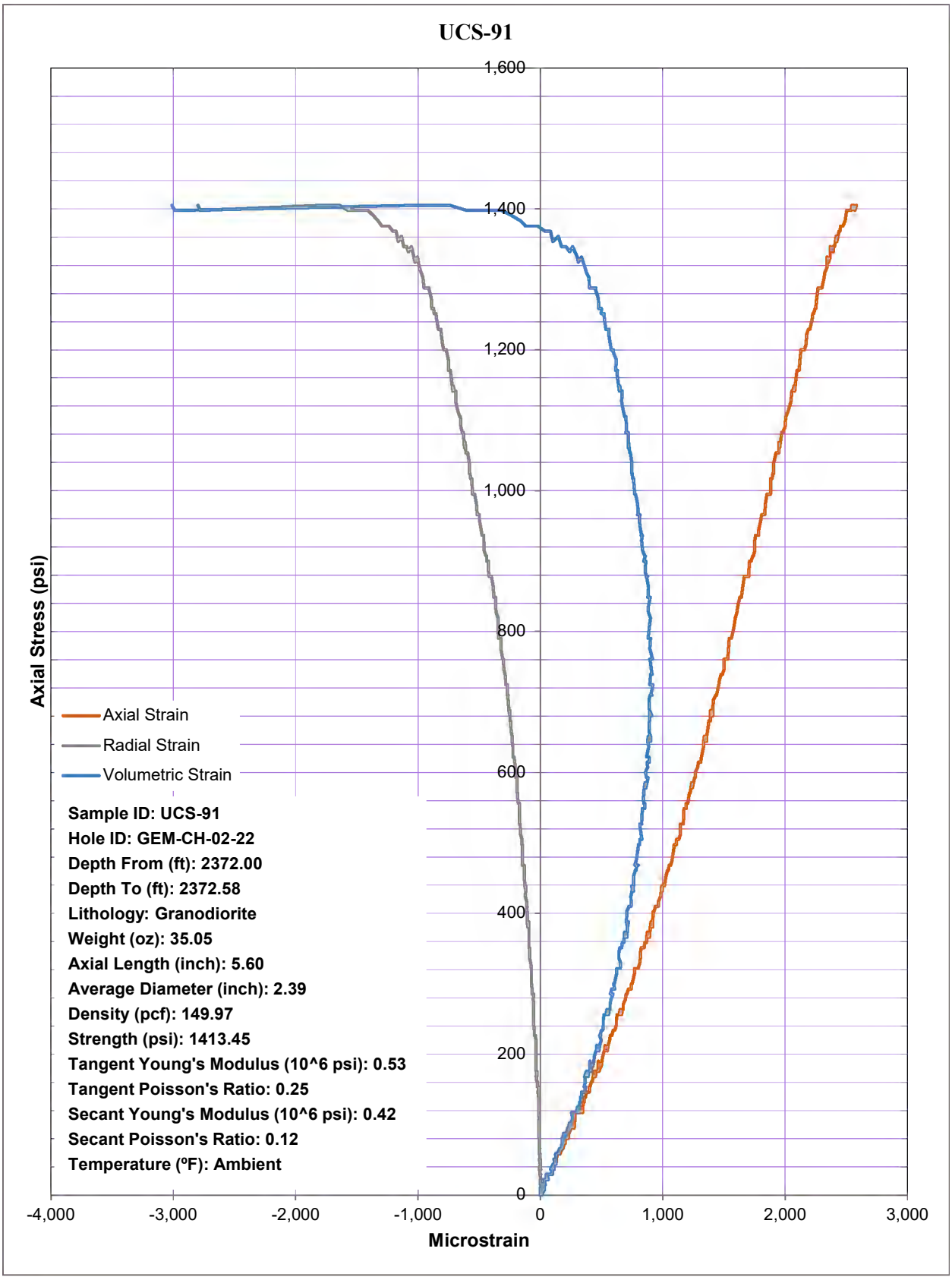

UCS-86
2,500
2,000
1,500
1,000
500
0
Axial Stress (psi)
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-86
Hole ID: GEM-CH-02-22
Depth From (ft): 2256.00
Depth To (ft): 2256.50
Lithology: Granite, decomposed
Weight (oz): 34.13
Axial Length (inch): 5.59
Average Diameter (inch): 2.39
Density (pcf): 146.96
Strength (psi): 1980.49
Tangent Young's Modulus (10^6 psi): 0.38
Tangent Poisson's Ratio: 0.21
Secant Young's Modulus (10^6 psi): 0.30
Secant Poisson's Ratio: 0.08
Temperature (ºF): Ambient

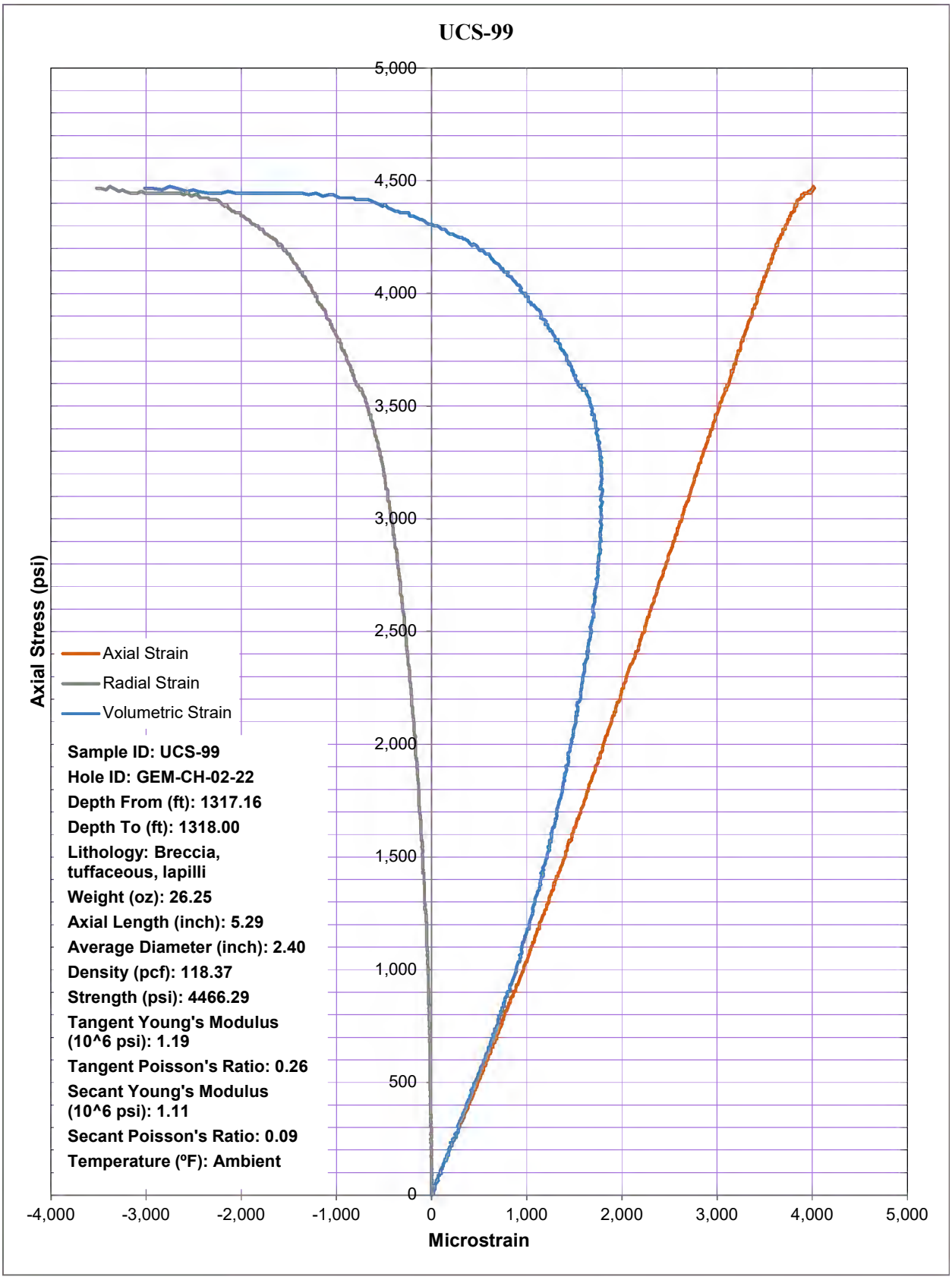

UCS-87
6,000
5,000
4,000
3,000
2,000
1,000
0
Axial Stress (psi)
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-87
Hole ID: GEM-CH-02-22
Depth From (ft): 2277.11
Depth To (ft): 2278.11
Lithology: Granodiorite
Weight (oz): 35.45
Axial Length (inch): 5.62
Average Diameter (inch): 2.39
Density (pcf): 152.00
Strength (psi): 4860.19
Tangent Young's Modulus (10^6 psi): 1.84
Tangent Poisson's Ratio: 0.24
Secant Young's Modulus (10^6 psi): 1.25
Secant Poisson's Ratio: 0.07
Temperature (ºF): Ambient

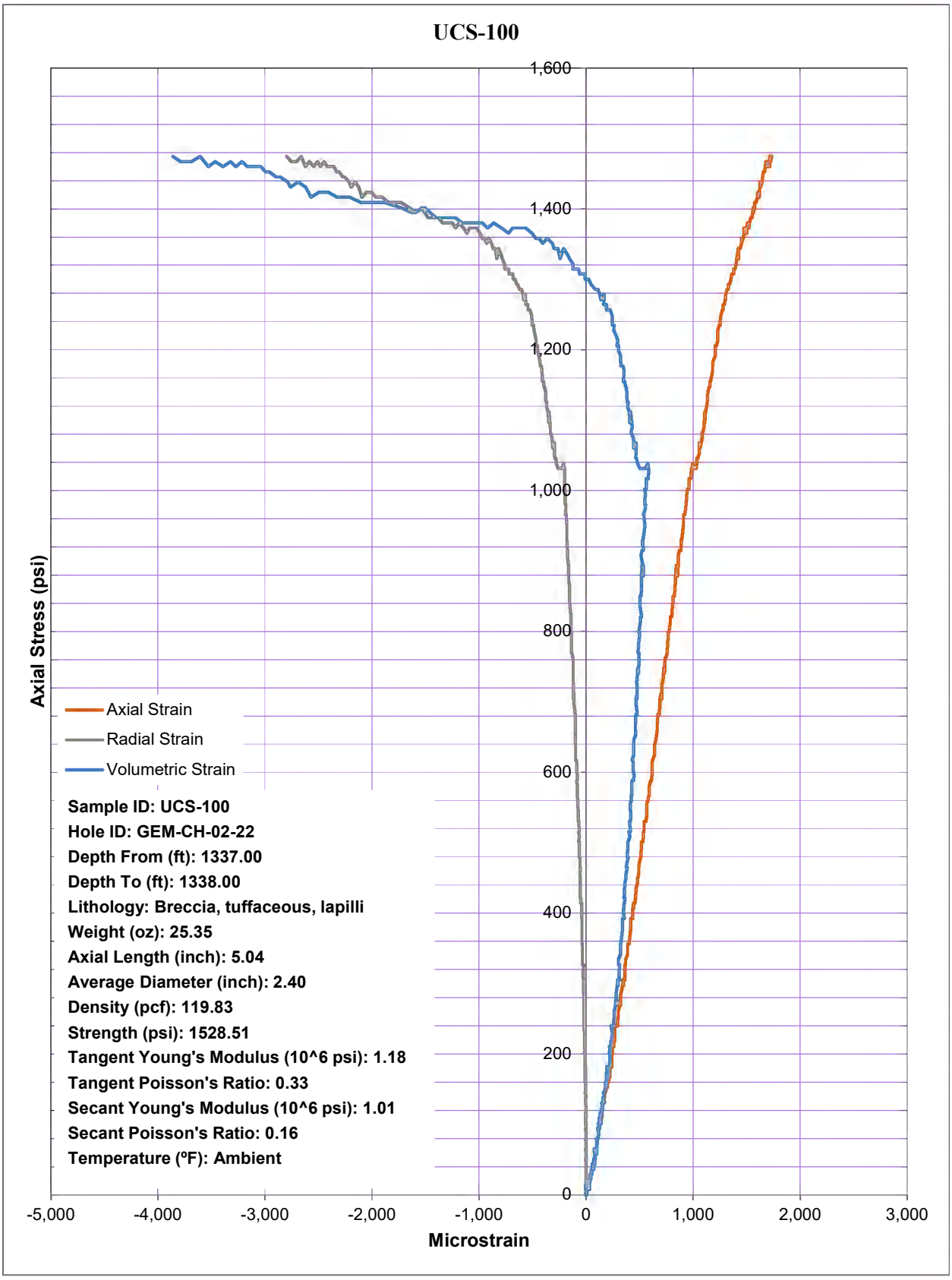

UCS-88
Axial Stress (psi)
6,000
5,000
4,000
3,000
2,000
1,000
0
-1,500
-1,000
-500
0
500
1,000
1,500
2,000
2,500
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-88
Hole ID: GEM-CH-02-22
Depth From (ft): 2287.00
Depth To (ft): 2288.00
Lithology: Granodiorite
Weight (oz): 32.18
Axial Length (inch): 5.11
Average Diameter (inch): 2.39
Density (pcf): 152.18
Strength (psi): 5349.72
Tangent Young's Modulus (10^6 psi): 2.53
Tangent Poisson's Ratio: 0.22
Secant Young's Modulus (10^6 psi): 1.93
Secant Poisson's Ratio: 0.06
Temperature (ºF): Ambient

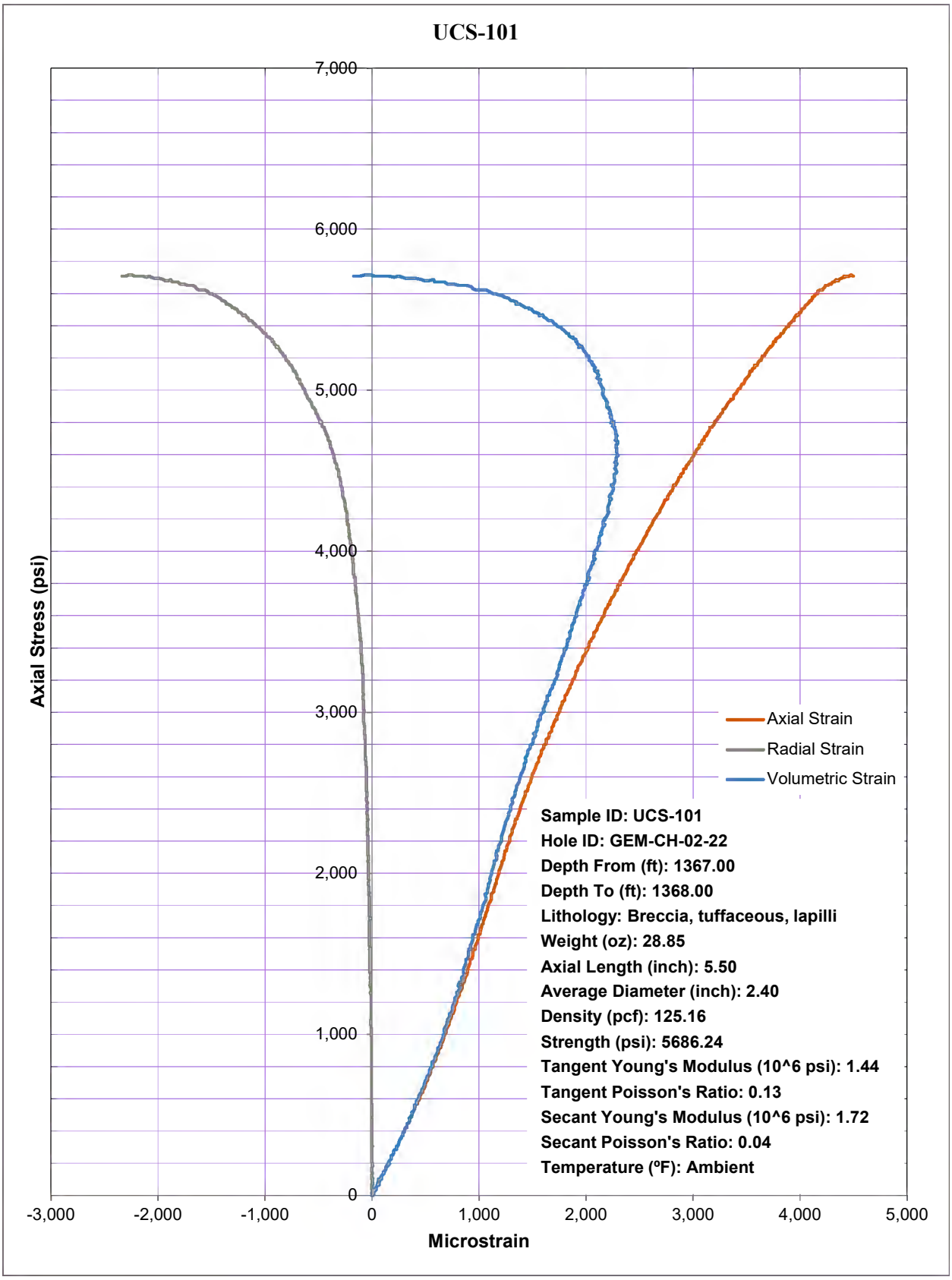

UCS-89
Axial Stress (psi)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-16,000
-14,000
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-89
Hole ID: GEM-CH-02-22
Depth From (ft): 2334.58
Depth To (ft): 2335.33
Lithology: Granodiorite
Weight (oz): 37.38
Axial Length (inch): 5.58
Average Diameter (inch): 2.40
Density (pcf): 159.48
Strength (psi): 4433.27
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA
Temperature (ºF): Ambient

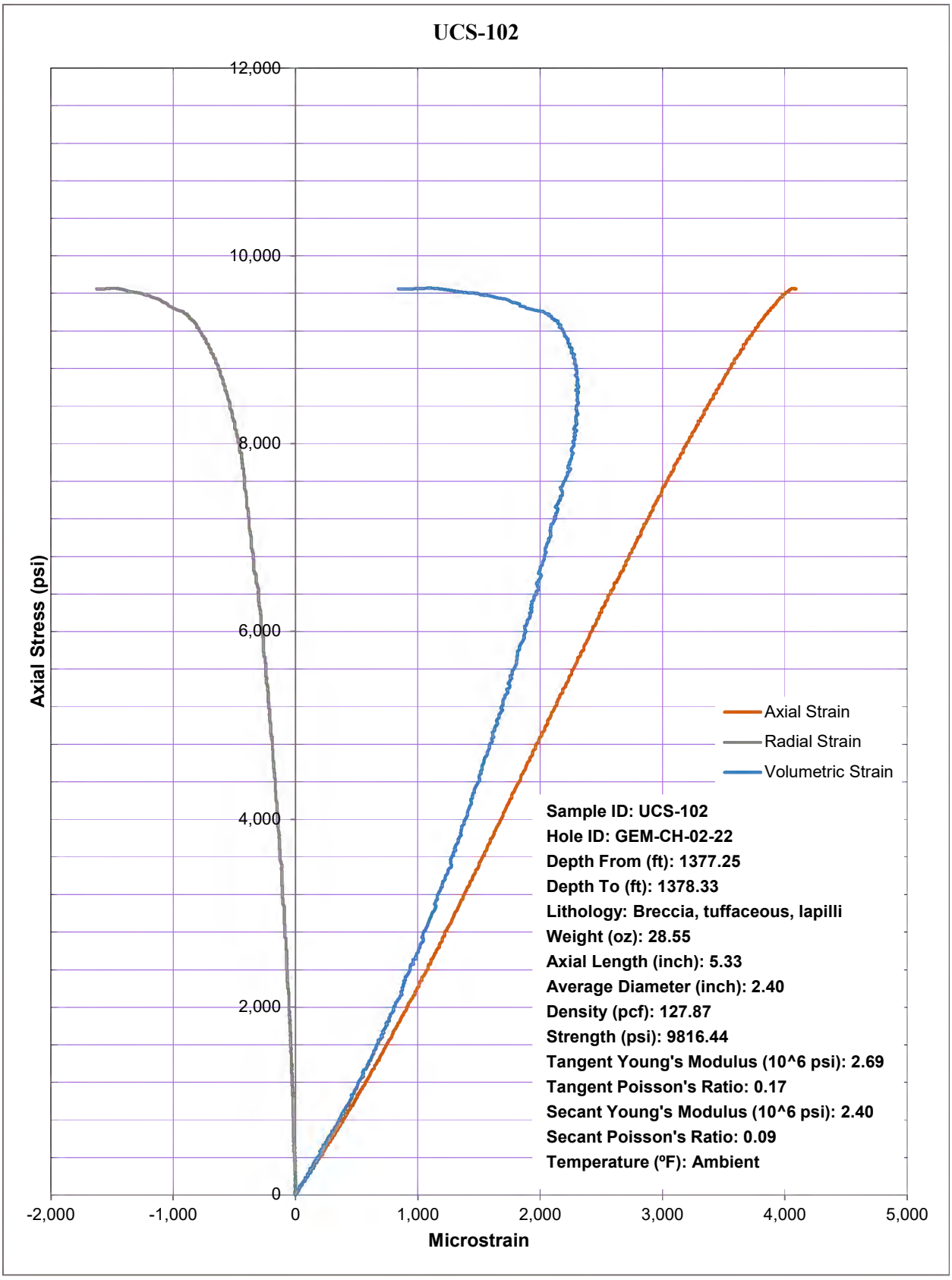

UCS-90
Axial Stress (psi)
6,000
5,000
4,000
3,000
2,000
1,000
0
-6,000
-5,000
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-90
Hole ID: GEM-CH-02-22
Depth From (ft): 2361.00
Depth To (ft): 2361.50
Lithology: Granodiorite
Weight (oz): 33.72
Axial Length (inch): 5.03
Average Diameter (inch): 2.40
Density (pcf): 160.02
Strength (psi): 5110.48
Tangent Young's Modulus (10^6 psi): 1.90
Tangent Poisson's Ratio: 0.20
Secant Young's Modulus (10^6 psi): 1.82
Secant Poisson's Ratio: 0.01
Temperature (ºF): Ambient

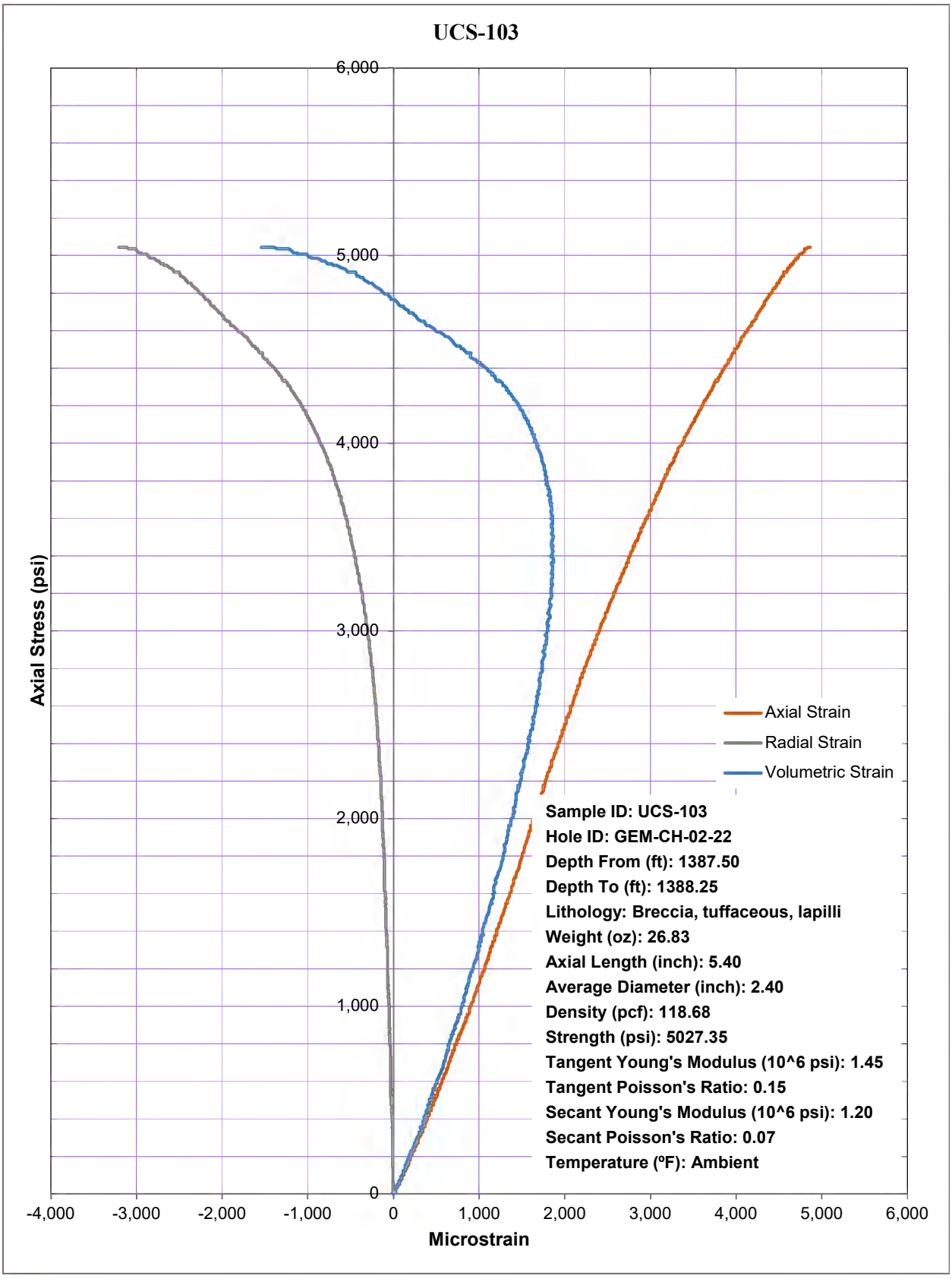

UCS-91
Axial Stress (psi)
1,600
1,400
1,200
1,000
800
600
400
200
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-91
Hole ID: GEM-CH-02-22
Depth From (ft): 2372.00
Depth To (ft): 2372.58
Lithology: Granodiorite
Weight (oz): 35.05
Axial Length (inch): 5.60
Average Diameter (inch): 2.39
Density (pcf): 149.97
Strength (psi): 1413.45
Tangent Young's Modulus (10^6 psi): 0.53
Tangent Poisson's Ratio: 0.25
Secant Young's Modulus (10^6 psi): 0.42
Secant Poisson's Ratio: 0.12
Temperature (ºF): Ambient

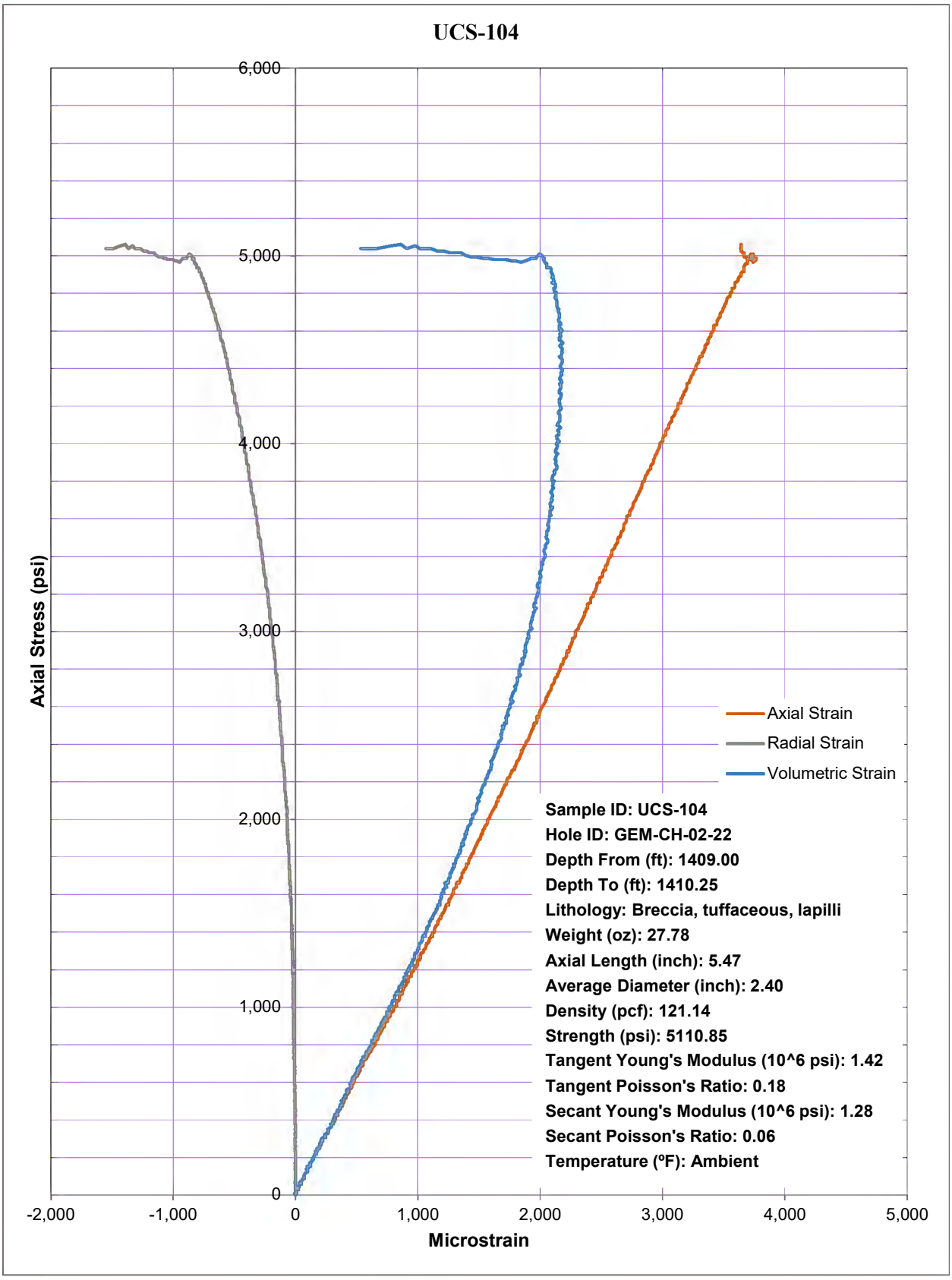

UCS-99
Axial Stress (psi)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-99
Hole ID: GEM-CH-02-22
Depth From (ft): 1317.16
Depth To (ft): 1318.00
Lithology: Breccia, tuffaceous, lapilli
Weight (oz): 26.25
Axial Length (inch): 5.29
Average Diameter (inch): 2.40
Density (pcf): 118.37
Strength (psi): 4466.29
Tangent Young's Modulus (10^6 psi): 1.19
Tangent Poisson's Ratio: 0.26
Secant Young's Modulus (10^6 psi): 1.11
Secant Poisson's Ratio: 0.09
Temperature (ºF): Ambient

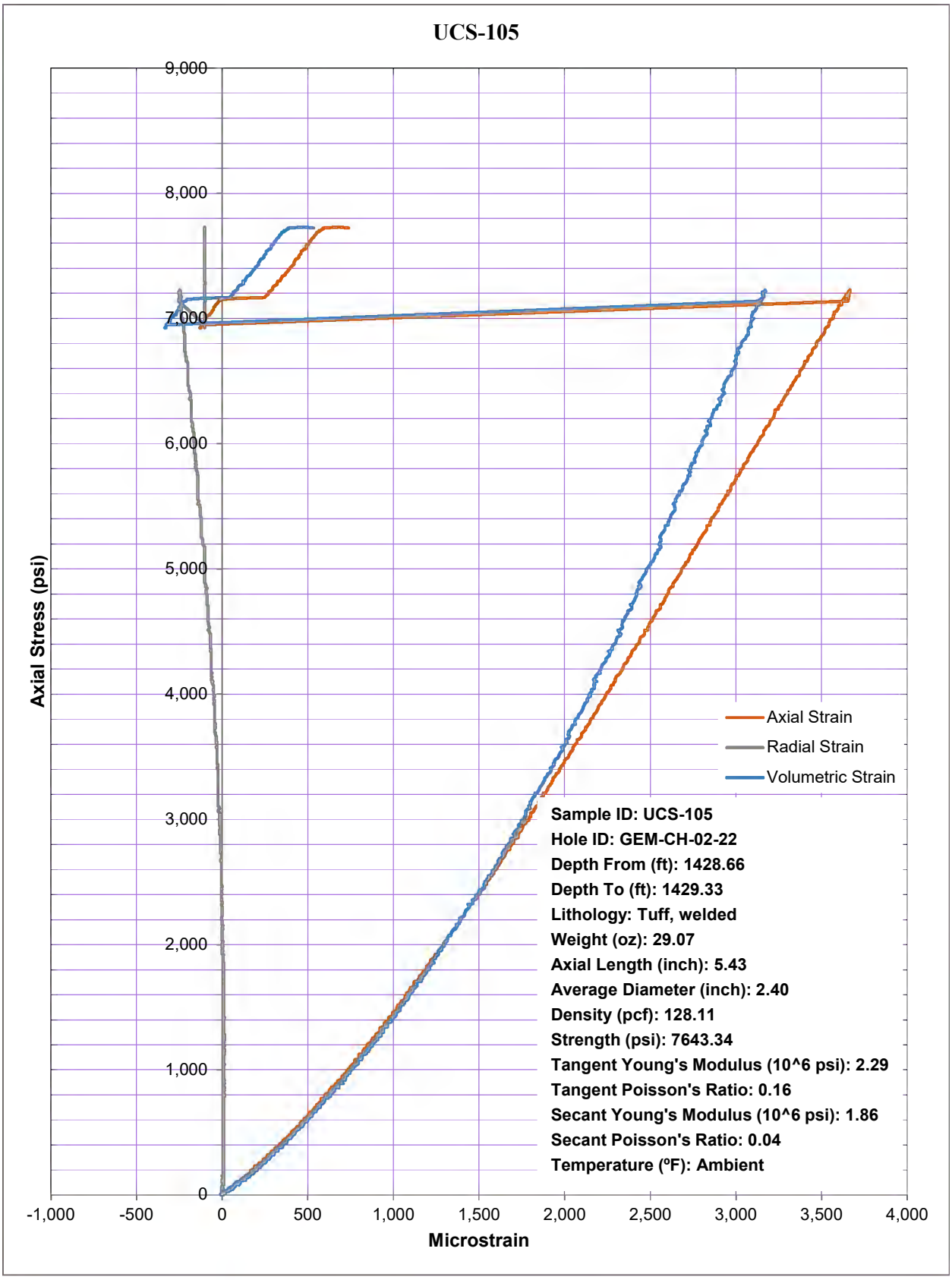

UCS-100
Axial Stress (psi)
1,600
1,400
1,200
1,000
800
600
400
200
0
-5,000
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-100
Hole ID: GEM-CH-02-22
Depth From (ft): 1337.00
Depth To (ft): 1338.00
Lithology: Breccia, tuffaceous, lapilli
Weight (oz): 25.35
Axial Length (inch): 5.04
Average Diameter (inch): 2.40
Density (pcf): 119.83
Strength (psi): 1528.51
Tangent Young's Modulus (10^6 psi): 1.18
Tangent Poisson's Ratio: 0.33
Secant Young's Modulus (10^6 psi): 1.01
Secant Poisson's Ratio: 0.16
Temperature (ºF): Ambient

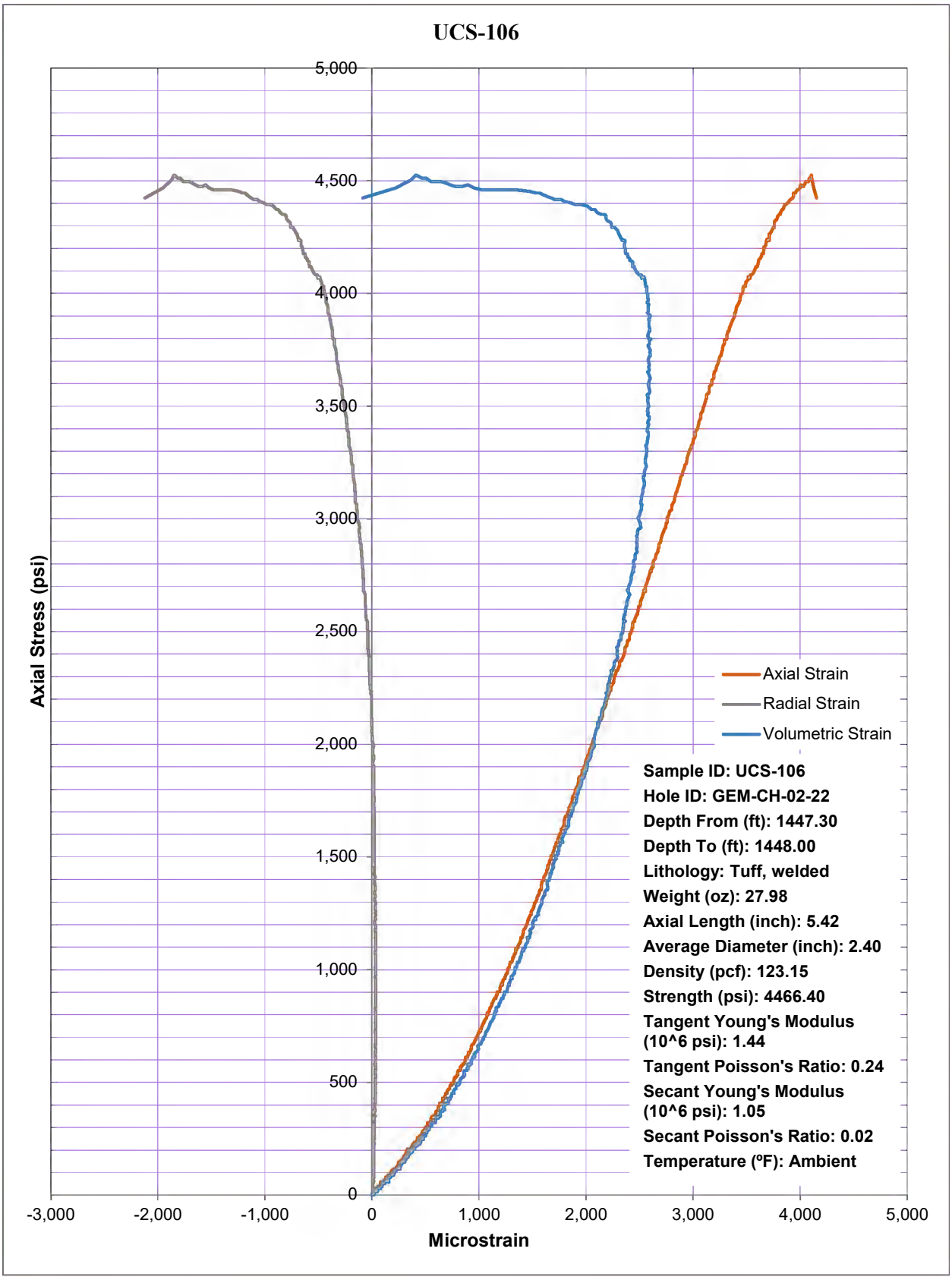

UCS-101
Axial Stress (psi)
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-101
Hole ID: GEM-CH-02-22
Depth From (ft): 1367.00
Depth To (ft): 1368.00
Lithology: Breccia, tuffaceous, lapilli
Weight (oz): 28.85
Axial Length (inch): 5.50
Average Diameter (inch): 2.40
Density (pcf): 125.16
Strength (psi): 5686.24
Tangent Young's Modulus (10^6 psi): 1.44
Tangent Poisson's Ratio: 0.13
Secant Young's Modulus (10^6 psi): 1.72
Secant Poisson's Ratio: 0.04
Temperature (ºF): Ambient

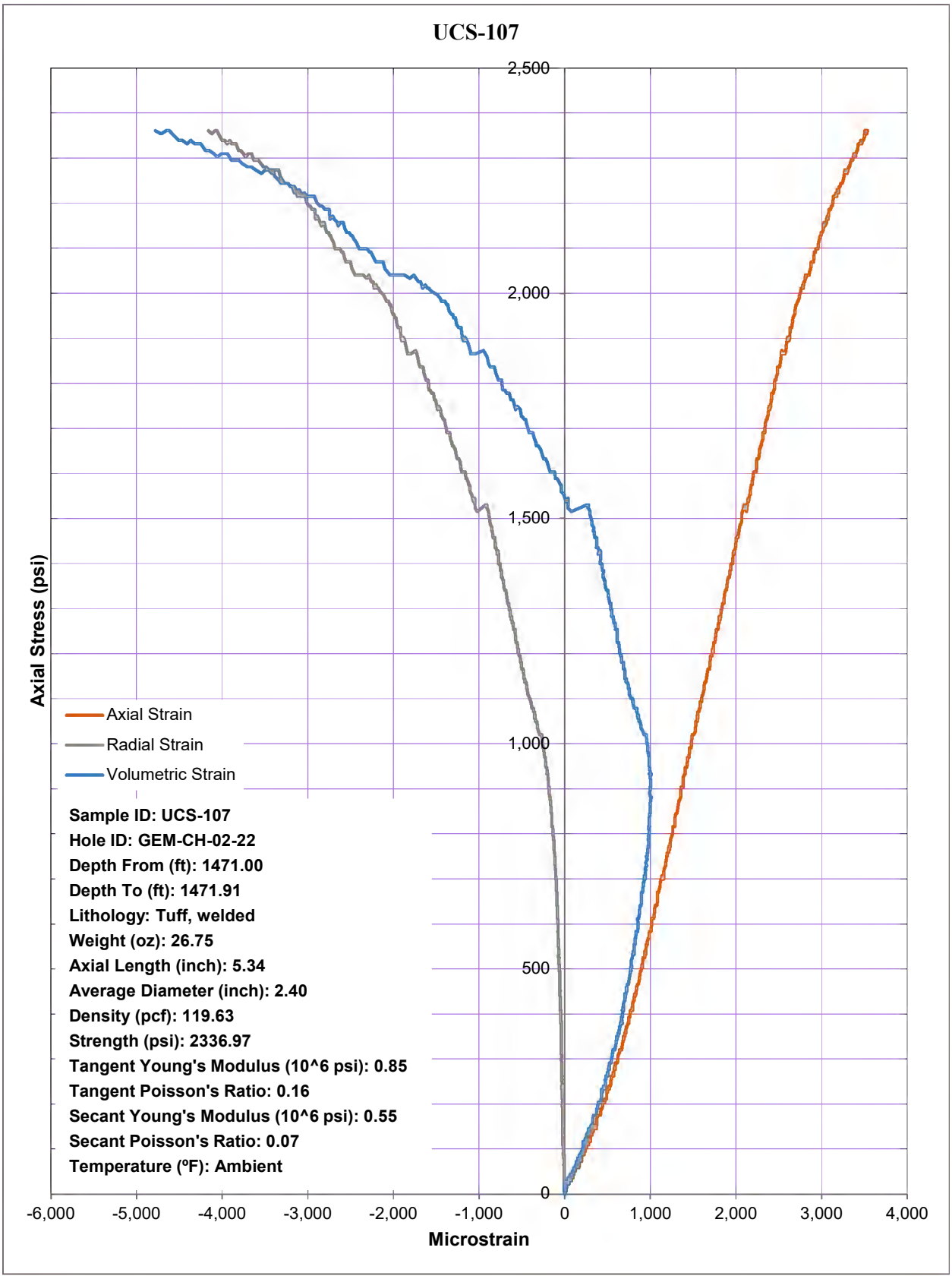

UCS-102
12,000
10,000
8,000
6,000
4,000
2,000
0
Axial Stress (psi)
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-102
Hole ID: GEM-CH-02-22
Depth From (ft): 1377.25
Depth To (ft): 1378.33
Lithology: Breccia, tuffaceous, lapilli
Weight (oz): 28.55
Axial Length (inch): 5.33
Average Diameter (inch): 2.40
Density (pcf): 127.87
Strength (psi): 9816.44
Tangent Young's Modulus (10^6 psi): 2.69
Tangent Poisson's Ratio: 0.17
Secant Young's Modulus (10^6 psi): 2.40
Secant Poisson's Ratio: 0.09
Temperature (ºF): Ambient

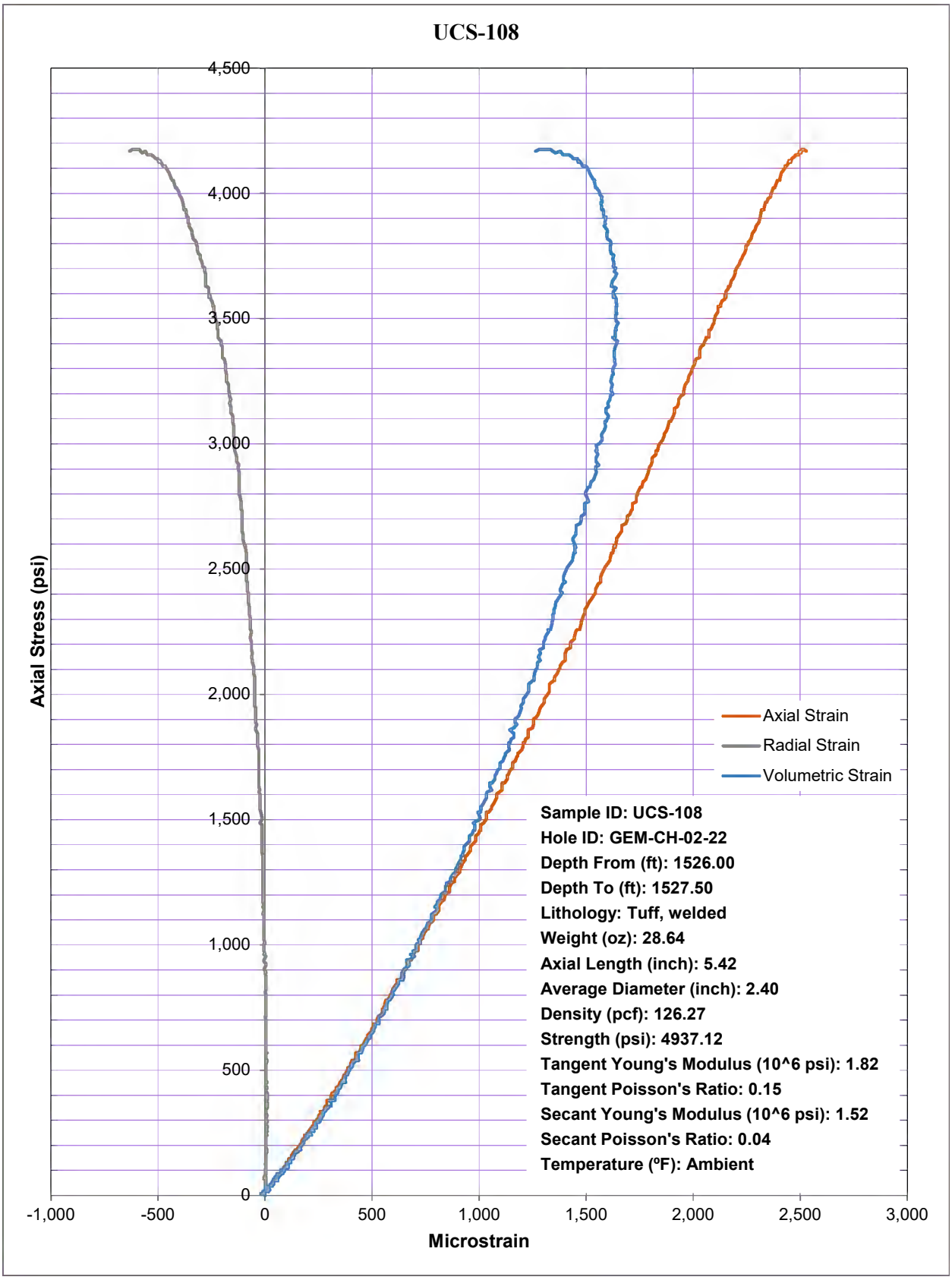

UCS-103
Axial Stress (psi)
6,000
5,000
4,000
3,000
2,000
1,000
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-103
Hole ID: GEM-CH-02-22
Depth From (ft): 1387.50
Depth To (ft): 1388.25
Lithology: Breccia, tuffaceous, lapilli
Weight (oz): 26.83
Axial Length (inch): 5.40
Average Diameter (inch): 2.40
Density (pcf): 118.68
Strength (psi): 5027.35
Tangent Young's Modulus (10^6 psi): 1.45
Tangent Poisson's Ratio: 0.15
Secant Young's Modulus (10^6 psi): 1.20
Secant Poisson's Ratio: 0.07
Temperature (ºF): Ambient

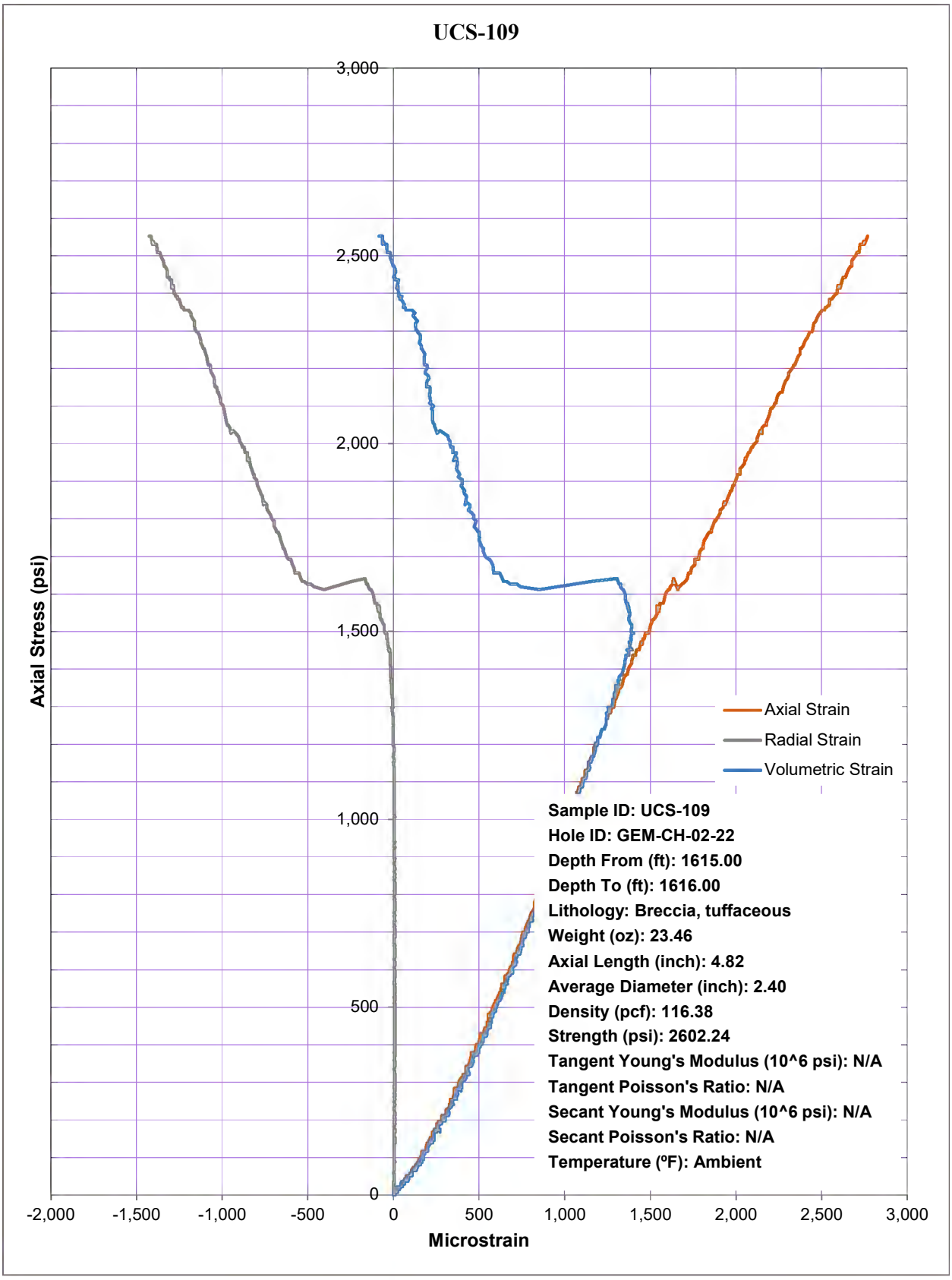

UCS-104
Axial Stress (psi)
6,000
5,000
4,000
3,000
2,000
1,000
0
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-104
Hole ID: GEM-CH-02-22
Depth From (ft): 1409.00
Depth To (ft): 1410.25
Lithology: Breccia, tuffaceous, lapilli
Weight (oz): 27.78
Axial Length (inch): 5.47
Average Diameter (inch): 2.40
Density (pcf): 121.14
Strength (psi): 5110.85
Tangent Young's Modulus (10^6 psi): 1.42
Tangent Poisson's Ratio: 0.18
Secant Young's Modulus (10^6 psi): 1.28
Secant Poisson's Ratio: 0.06
Temperature (ºF): Ambient


UCS-105
Axial Stress (psi)
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-1,000
-500
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-105
Hole ID: GEM-CH-02-22
Depth From (ft): 1428.66
Depth To (ft): 1429.33
Lithology: Tuff, welded
Weight (oz): 29.07
Axial Length (inch): 5.43
Average Diameter (inch): 2.40
Density (pcf): 128.11
Strength (psi): 7643.34
Tangent Young's Modulus (10^6 psi): 2.29
Tangent Poisson's Ratio: 0.16
Secant Young's Modulus (10^6 psi): 1.86
Secant Poisson's Ratio: 0.04
Temperature (ºF): Ambient

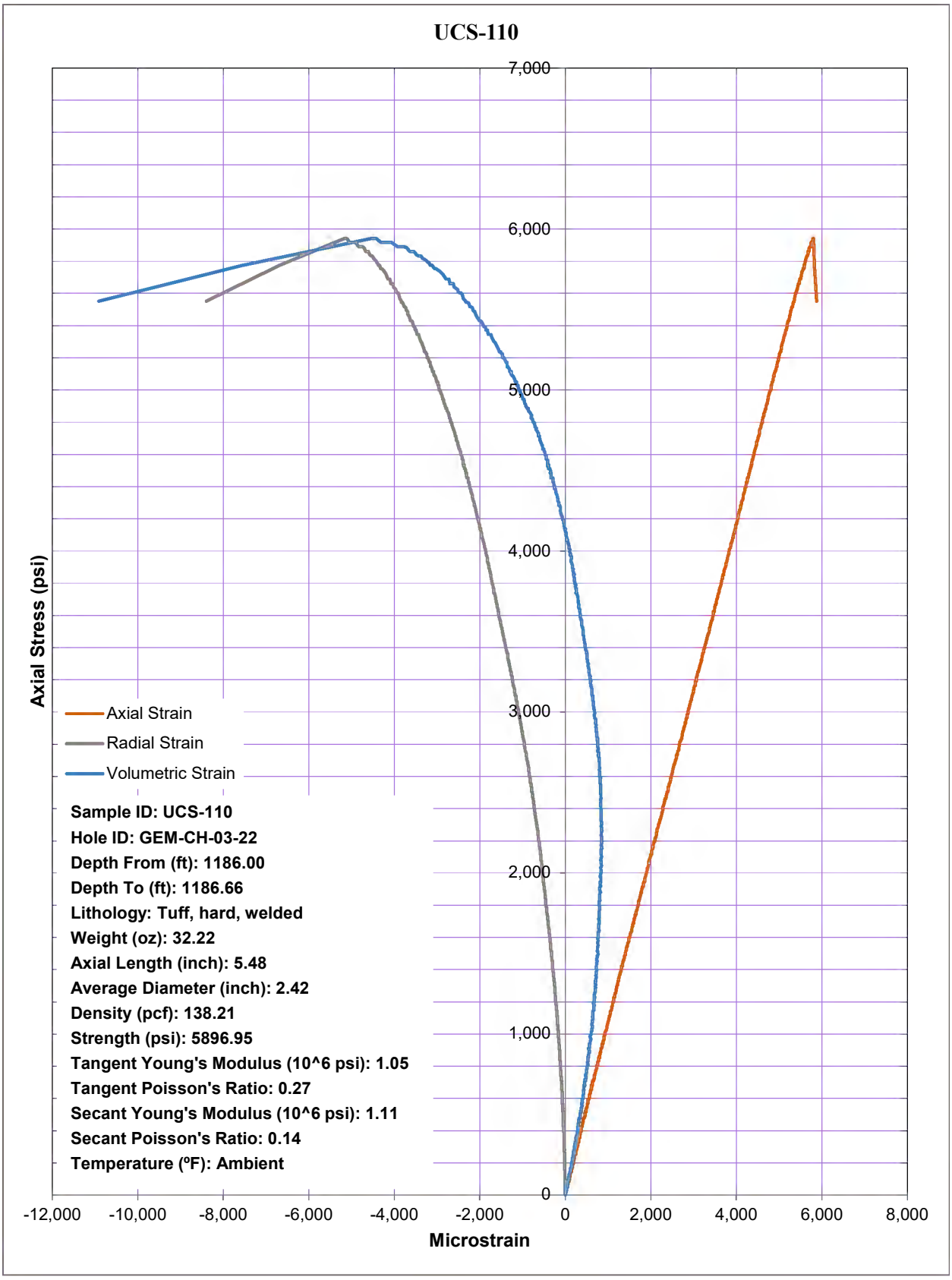

UCS-106
Axial Stress (psi)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-106
Hole ID: GEM-CH-02-22
Depth From (ft): 1447.30
Depth To (ft): 1448.00
Lithology: Tuff, welded
Weight (oz): 27.98
Axial Length (inch): 5.42
Average Diameter (inch): 2.40
Density (pcf): 123.15
Strength (psi): 4466.40
Tangent Young's Modulus (10^6 psi): 1.44
Tangent Poisson's Ratio: 0.24
Secant Young's Modulus (10^6 psi): 1.05
Secant Poisson's Ratio: 0.02
Temperature (ºF): Ambient

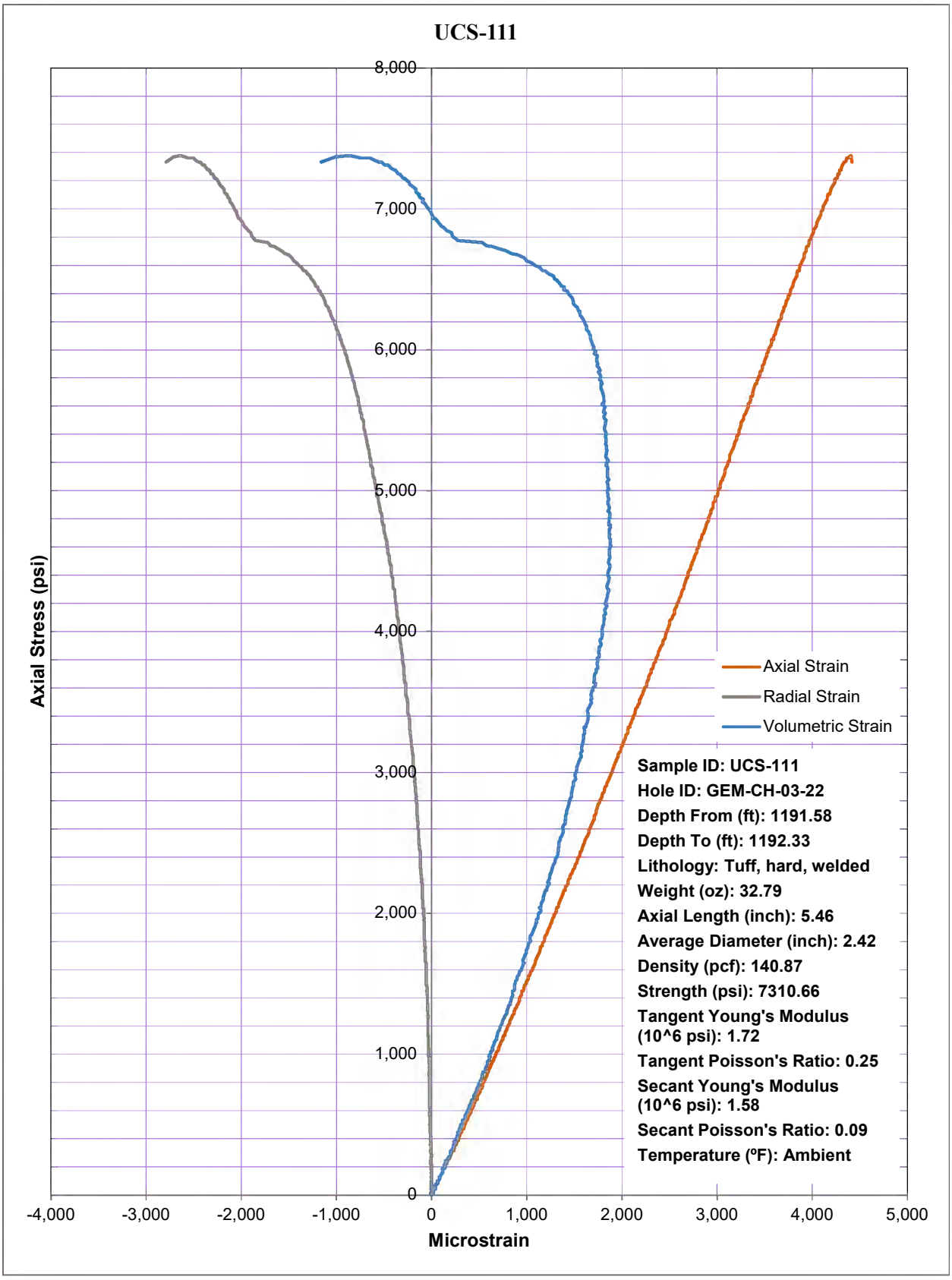

UCS-107
Axial Stress (psi)
2,500
2,000
1,500
1,000
500
0
-6,000
-5,000
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-107
Hole ID: GEM-CH-02-22
Depth From (ft): 1471.00
Depth To (ft): 1471.91
Lithology: Tuff, welded
Weight (oz): 26.75
Axial Length (inch): 5.34
Average Diameter (inch): 2.40
Density (pcf): 119.63
Strength (psi): 2336.97
Tangent Young's Modulus (10^6 psi): 0.85
Tangent Poisson's Ratio: 0.16
Secant Young's Modulus (10^6 psi): 0.55
Secant Poisson's Ratio: 0.07
Temperature (ºF): Ambient

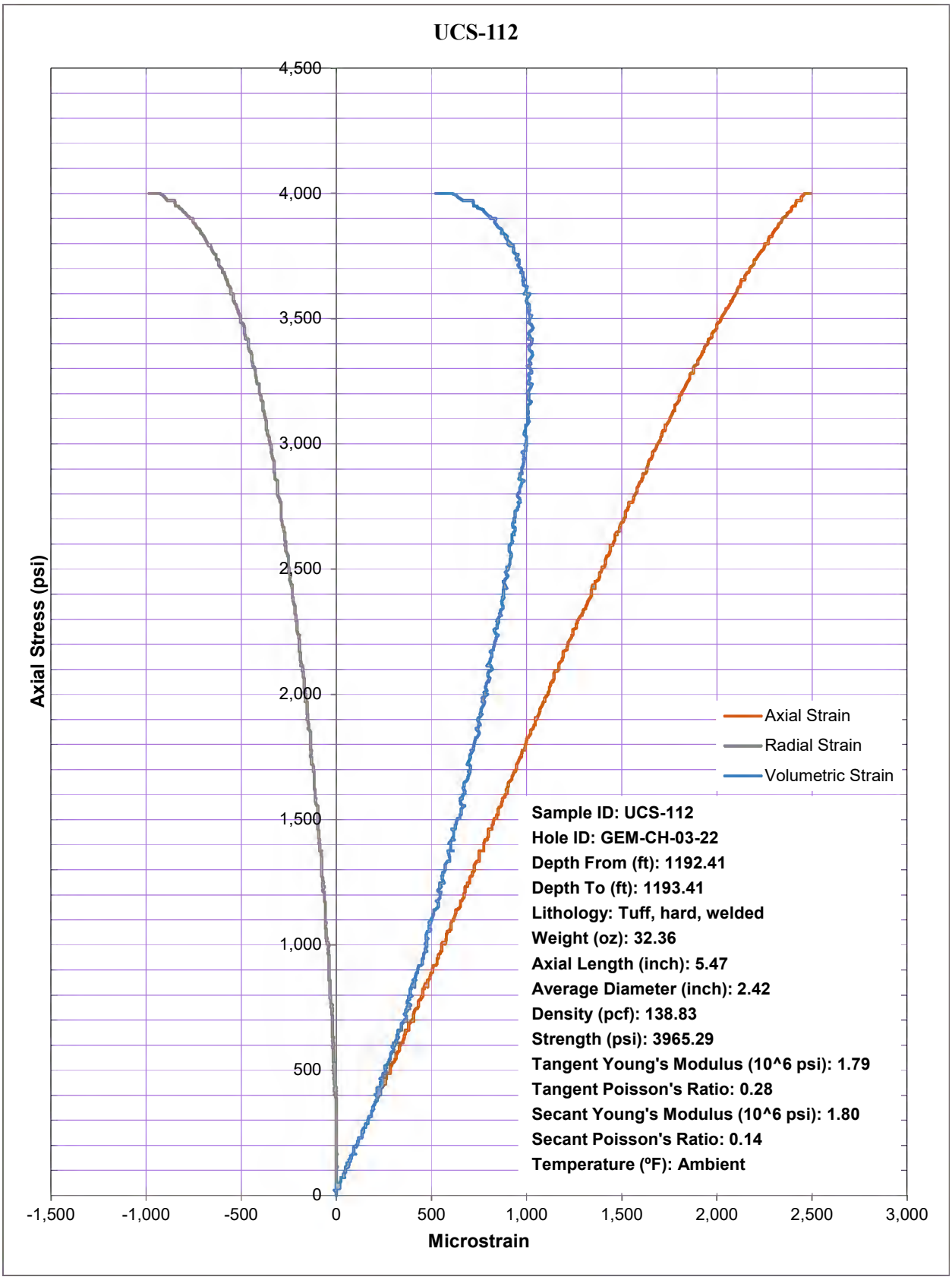

UCS-108
Axial Stress (psi)
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-1,000
-500
0
500
1,000
1,500
2,000
2,500
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-108
Hole ID: GEM-CH-02-22
Depth From (ft): 1526.00
Depth To (ft): 1527.50
Lithology: Tuff, welded
Weight (oz): 28.64
Axial Length (inch): 5.42
Average Diameter (inch): 2.40
Density (pcf): 126.27
Strength (psi): 4937.12
Tangent Young's Modulus (10^6 psi): 1.82
Tangent Poisson's Ratio: 0.15
Secant Young's Modulus (10^6 psi): 1.52
Secant Poisson's Ratio: 0.04
Temperature (ºF): Ambient

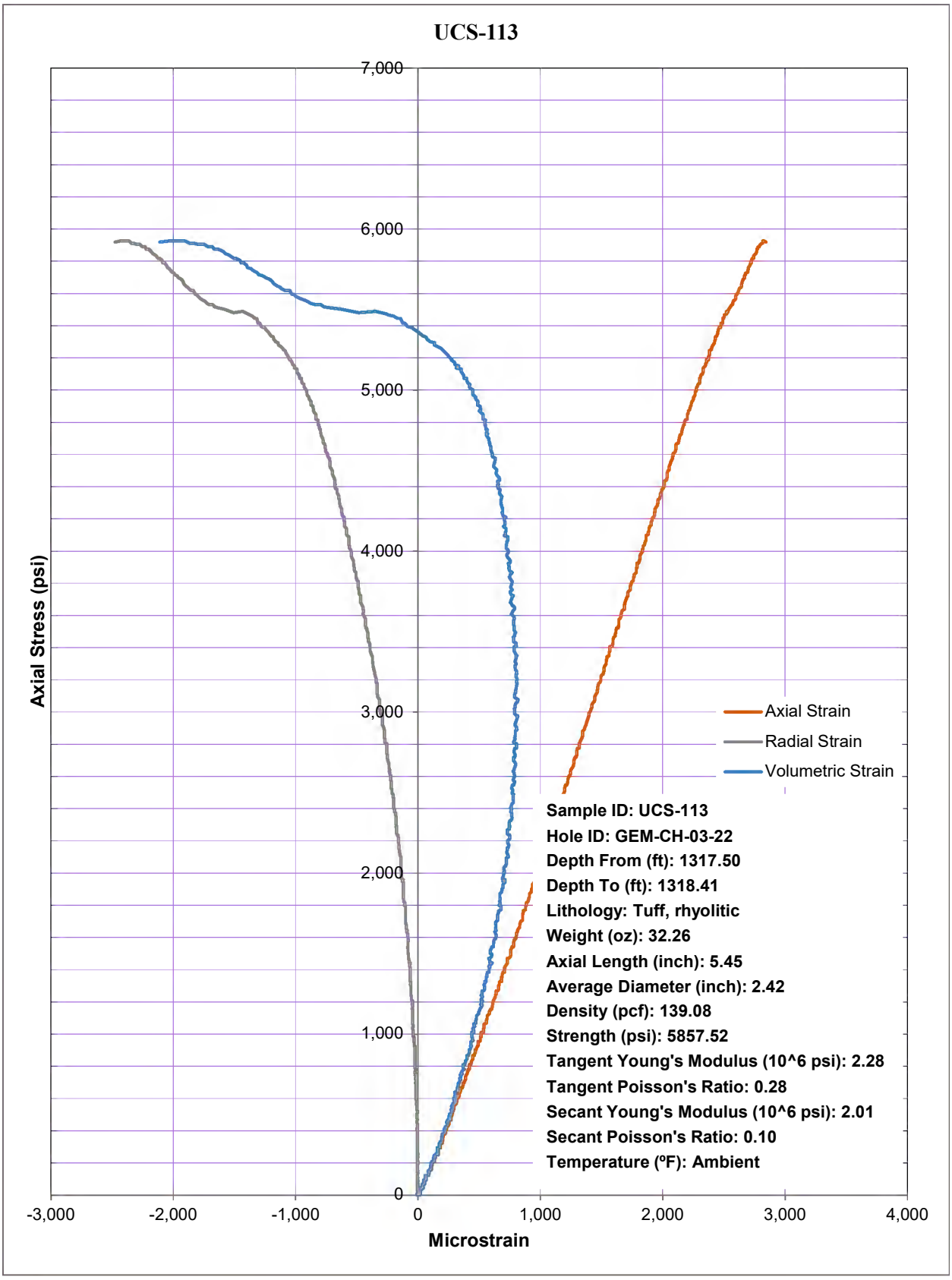

UCS-109
Axial Stress (psi)
3,000
2,500
2,000
1,500
1,000
500
0
-2,000
-1,500
-1,000
-500
0
500
1,000
1,500
2,000
2,500
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-109
Hole ID: GEM-CH-02-22
Depth From (ft): 1615.00
Depth To (ft): 1616.00
Lithology: Breccia, tuffaceous
Weight (oz): 23.46
Axial Length (inch): 4.82
Average Diameter (inch): 2.40
Density (pcf): 116.38
Strength (psi): 2602.24
Tangent Young's Modulus (10^6 psi): N/A
Tangent Poisson's Ratio: N/A
Secant Young's Modulus (10^6 psi): N/A
Secant Poisson's Ratio: N/A
Temperature (ºF): Ambient

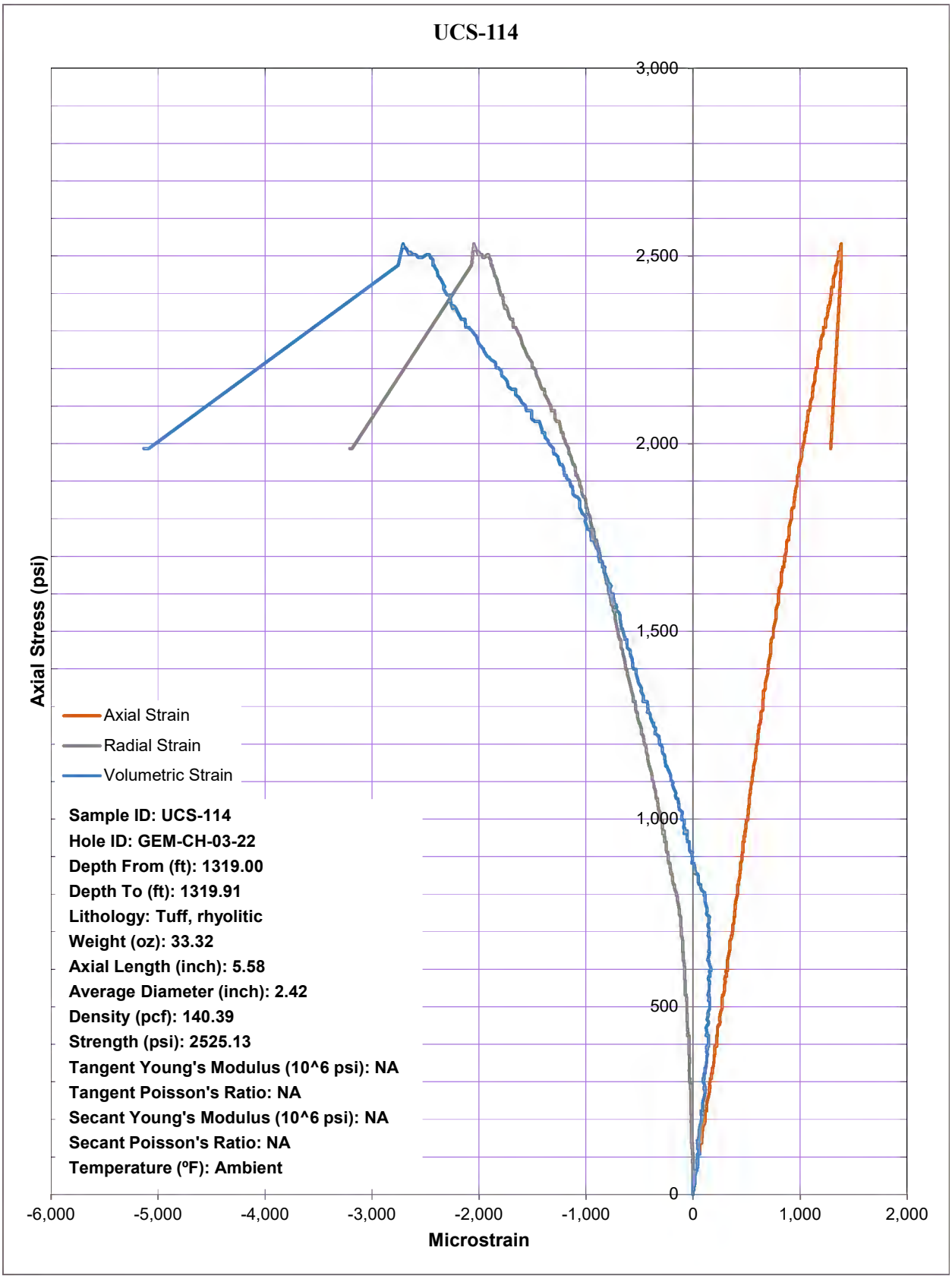
GEM-CH-03-22
UCS STRESS-STRAIN PLOTS

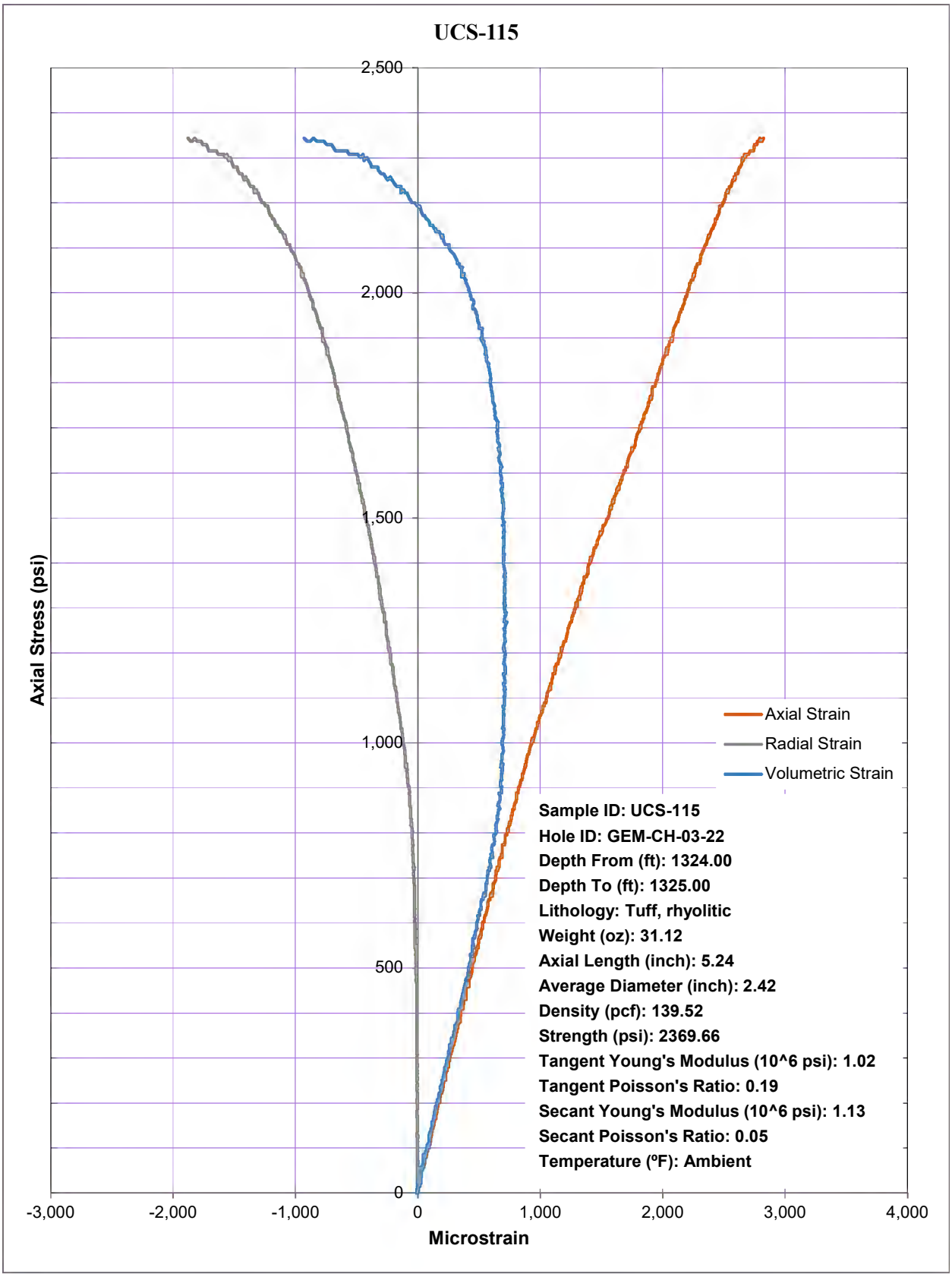

UCS-110
Axial Stress (psi)
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
8,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-110
Hole ID: GEM-CH-03-22
Depth From (ft): 1186.00
Depth To (ft): 1186.66
Lithology: Tuff, hard, welded
Weight (oz): 32.22
Axial Length (inch): 5.48
Average Diameter (inch): 2.42
Density (pcf): 138.21
Strength (psi): 5896.95
Tangent Young's Modulus (10^6 psi): 1.05
Tangent Poisson's Ratio: 0.27
Secant Young's Modulus (10^6 psi): 1.11
Secant Poisson's Ratio: 0.14
Temperature (ºF): Ambient

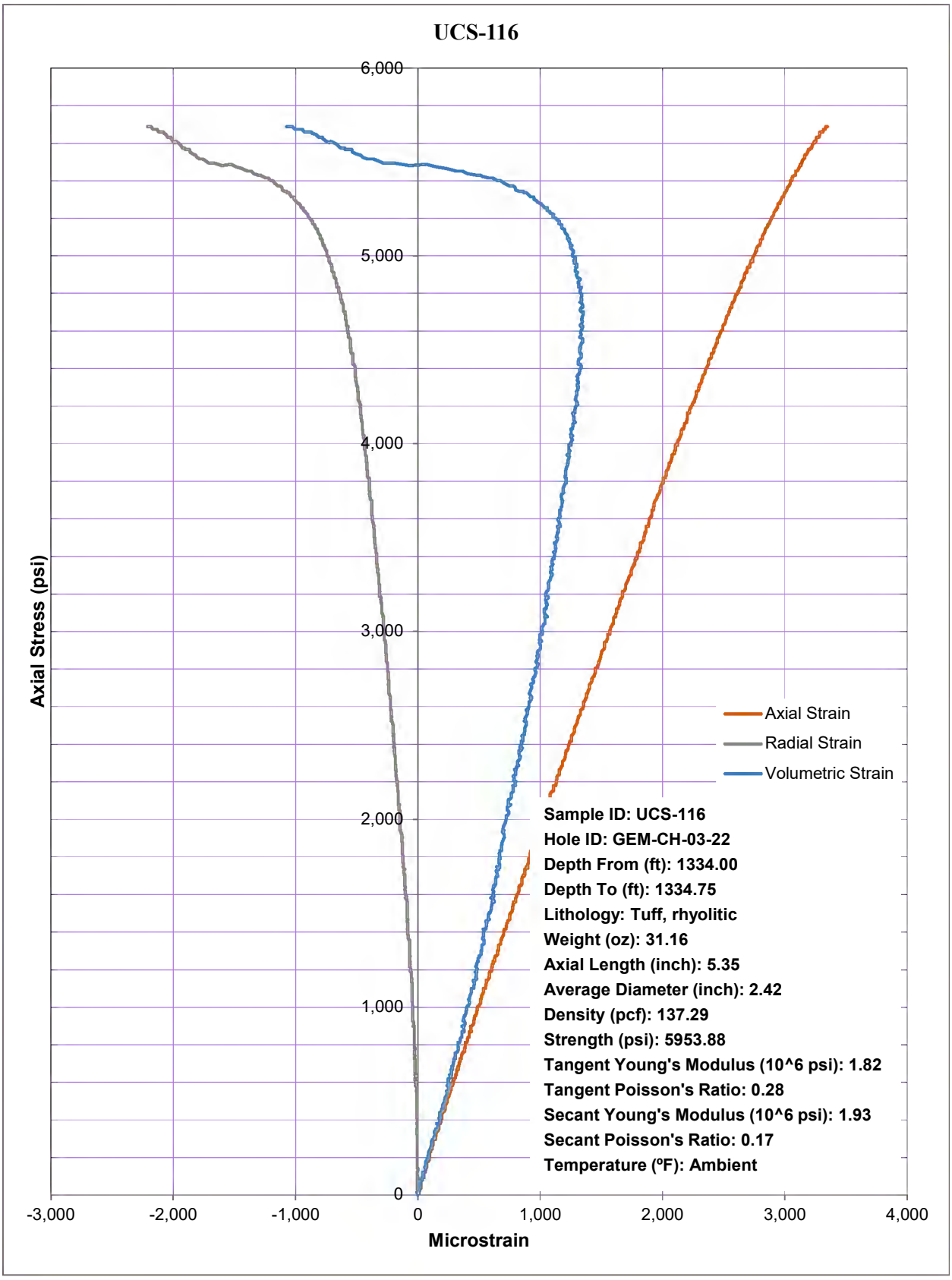

UCS-111
Axial Stress (psi)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-111
Hole ID: GEM-CH-03-22
Depth From (ft): 1191.58
Depth To (ft): 1192.33
Lithology: Tuff, hard, welded
Weight (oz): 32.79
Axial Length (inch): 5.46
Average Diameter (inch): 2.42
Density (pcf): 140.87
Strength (psi): 7310.66
Tangent Young's Modulus (10^6 psi): 1.72
Tangent Poisson's Ratio: 0.25
Secant Young's Modulus (10^6 psi): 1.58
Secant Poisson's Ratio: 0.09
Temperature (ºF): Ambient

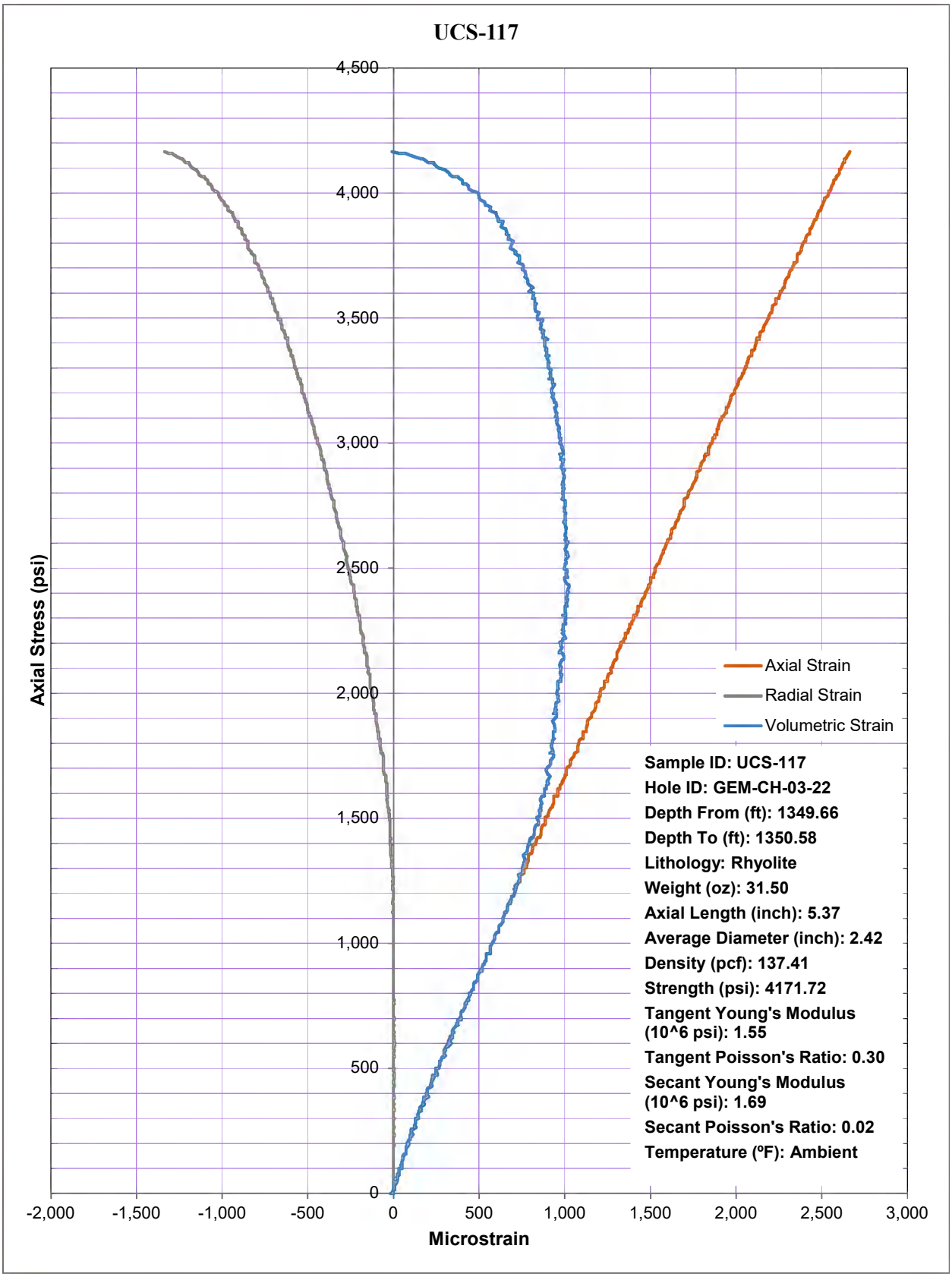

UCS-112
Axial Stress (psi)
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-1,500
-1,000
-500
0
500
1,000
1,500
2,000
2,500
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-112
Hole ID: GEM-CH-03-22
Depth From (ft): 1192.41
Depth To (ft): 1193.41
Lithology: Tuff, hard, welded
Weight (oz): 32.36
Axial Length (inch): 5.47
Average Diameter (inch): 2.42
Density (pcf): 138.83
Strength (psi): 3965.29
Tangent Young's Modulus (10^6 psi): 1.79
Tangent Poisson's Ratio: 0.28
Secant Young's Modulus (10^6 psi): 1.80
Secant Poisson's Ratio: 0.14
Temperature (ºF): Ambient

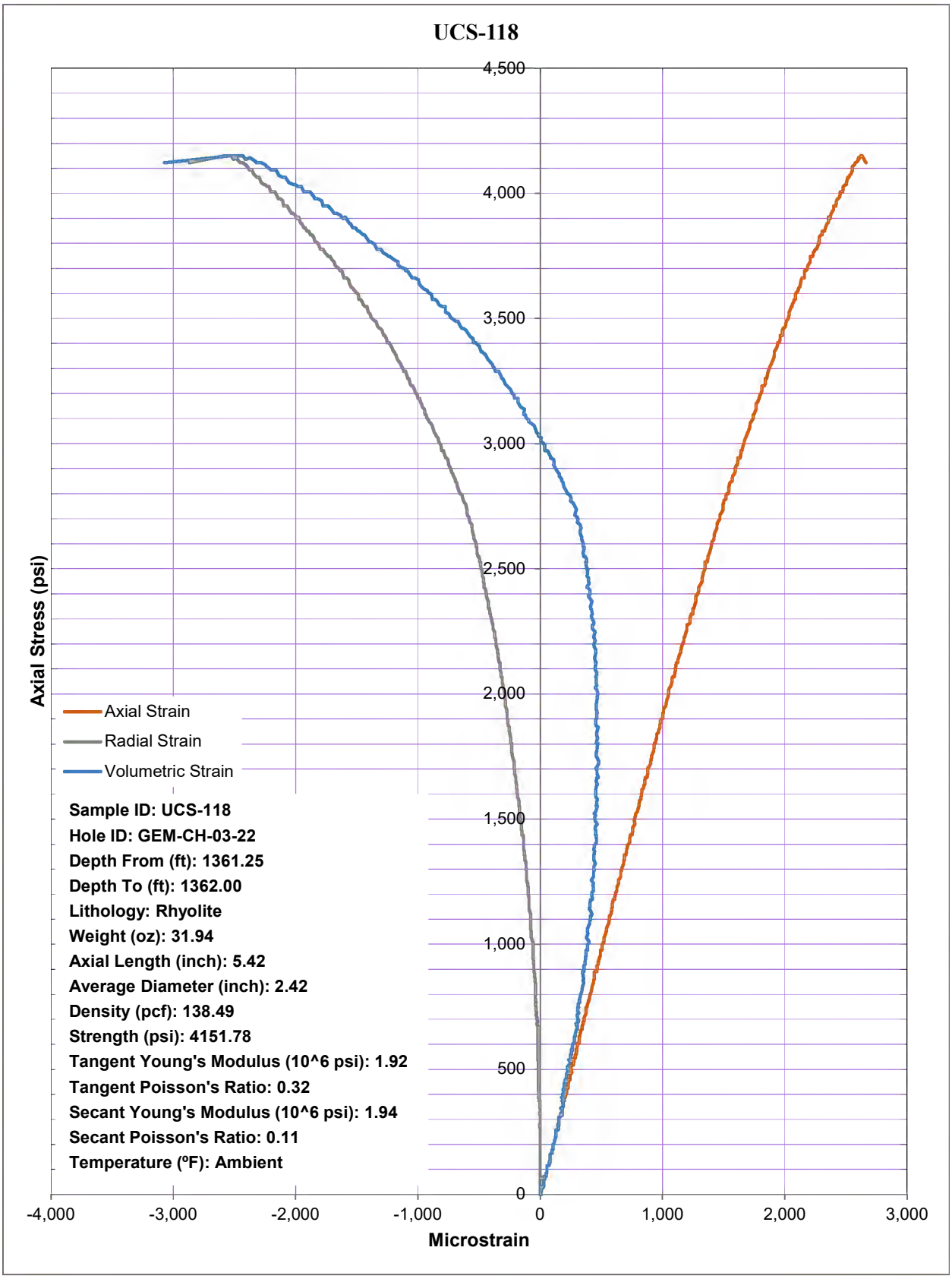

UCS-113
Axial Stress (psi)
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-113
Hole ID: GEM-CH-03-22
Depth From (ft): 1317.50
Depth To (ft): 1318.41
Lithology: Tuff, rhyolitic
Weight (oz): 32.26
Axial Length (inch): 5.45
Average Diameter (inch): 2.42
Density (pcf): 139.08
Strength (psi): 5857.52
Tangent Young's Modulus (10^6 psi): 2.28
Tangent Poisson's Ratio: 0.28
Secant Young's Modulus (10^6 psi): 2.01
Secant Poisson's Ratio: 0.10
Temperature (ºF): Ambient

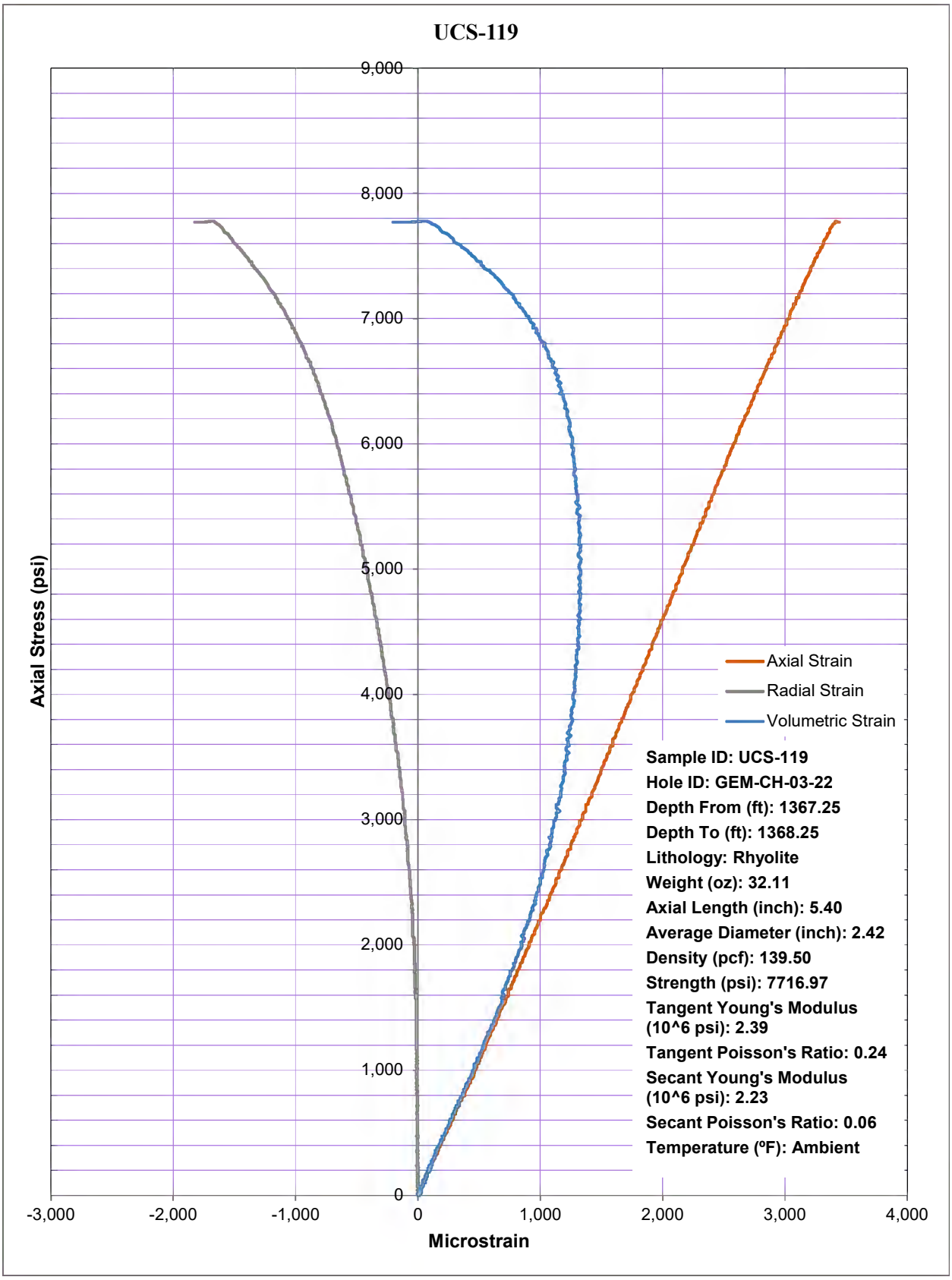

UCS-114
Axial Stress (psi)
3,000
2,500
2,000
1,500
1,000
500
0
-6,000
-5,000
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-114
Hole ID: GEM-CH-03-22
Depth From (ft): 1319.00
Depth To (ft): 1319.91
Lithology: Tuff, rhyolitic
Weight (oz): 33.32
Axial Length (inch): 5.58
Average Diameter (inch): 2.42
Density (pcf): 140.39
Strength (psi): 2525.13
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA
Temperature (ºF): Ambient

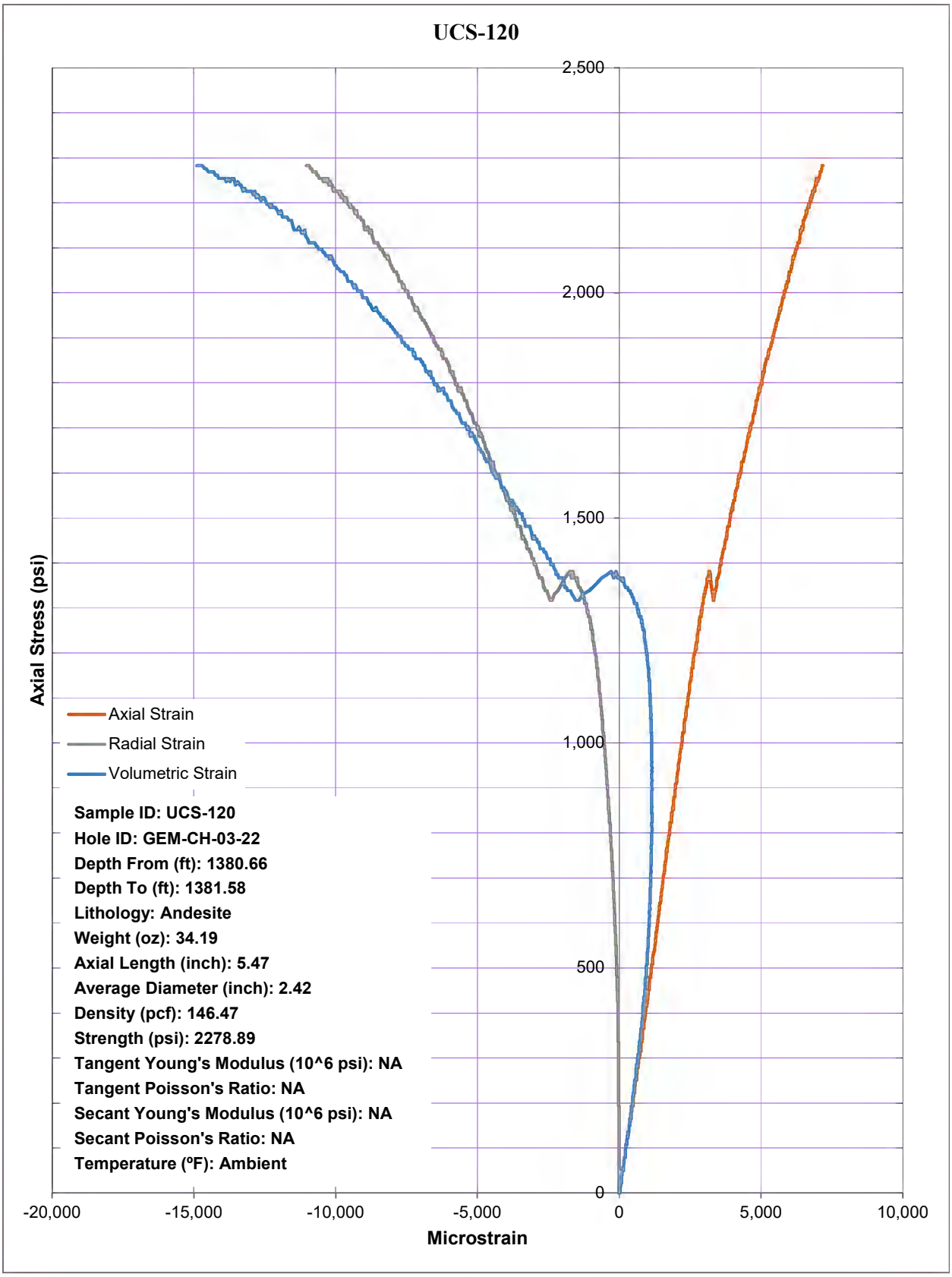

UCS-115
2,500
2,000
1,500
1,000
500
0
Axial Stress (psi)
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-115
Hole ID: GEM-CH-03-22
Depth From (ft): 1324.00
Depth To (ft): 1325.00
Lithology: Tuff, rhyolitic
Weight (oz): 31.12
Axial Length (inch): 5.24
Average Diameter (inch): 2.42
Density (pcf): 139.52
Strength (psi): 2369.66
Tangent Young's Modulus (10^6 psi): 1.02
Tangent Poisson's Ratio: 0.19
Secant Young's Modulus (10^6 psi): 1.13
Secant Poisson's Ratio: 0.05
Temperature (ºF): Ambient

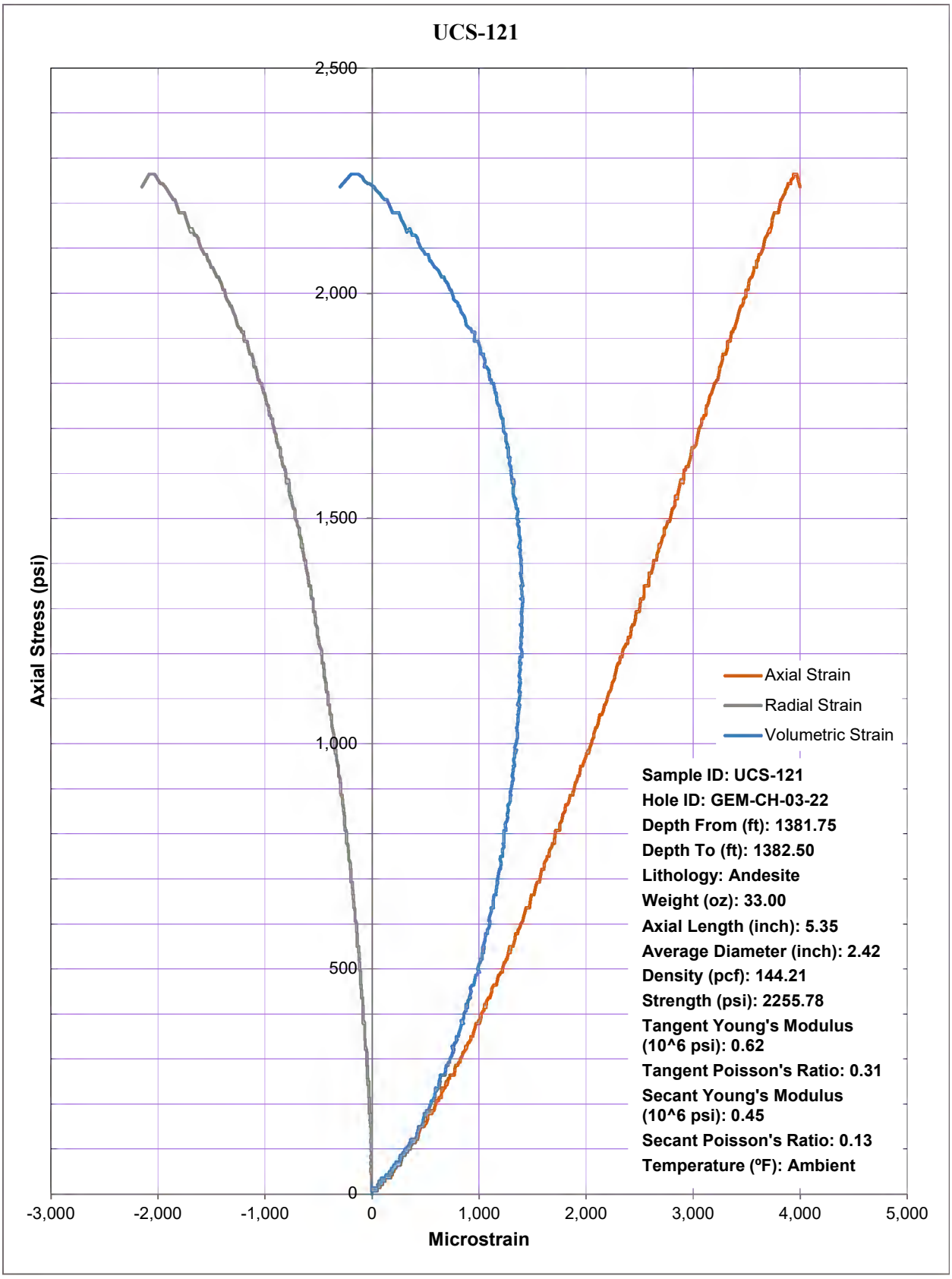

UCS-116
Axial Stress (psi)
6,000
5,000
4,000
3,000
2,000
1,000
0
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-116
Hole ID: GEM-CH-03-22
Depth From (ft): 1334.00
Depth To (ft): 1334.75
Lithology: Tuff, rhyolitic
Weight (oz): 31.16
Axial Length (inch): 5.35
Average Diameter (inch): 2.42
Density (pcf): 137.29
Strength (psi): 5953.88
Tangent Young's Modulus (10^6 psi): 1.82
Tangent Poisson's Ratio: 0.28
Secant Young's Modulus (10^6 psi): 1.93
Secant Poisson's Ratio: 0.17
Temperature (ºF): Ambient

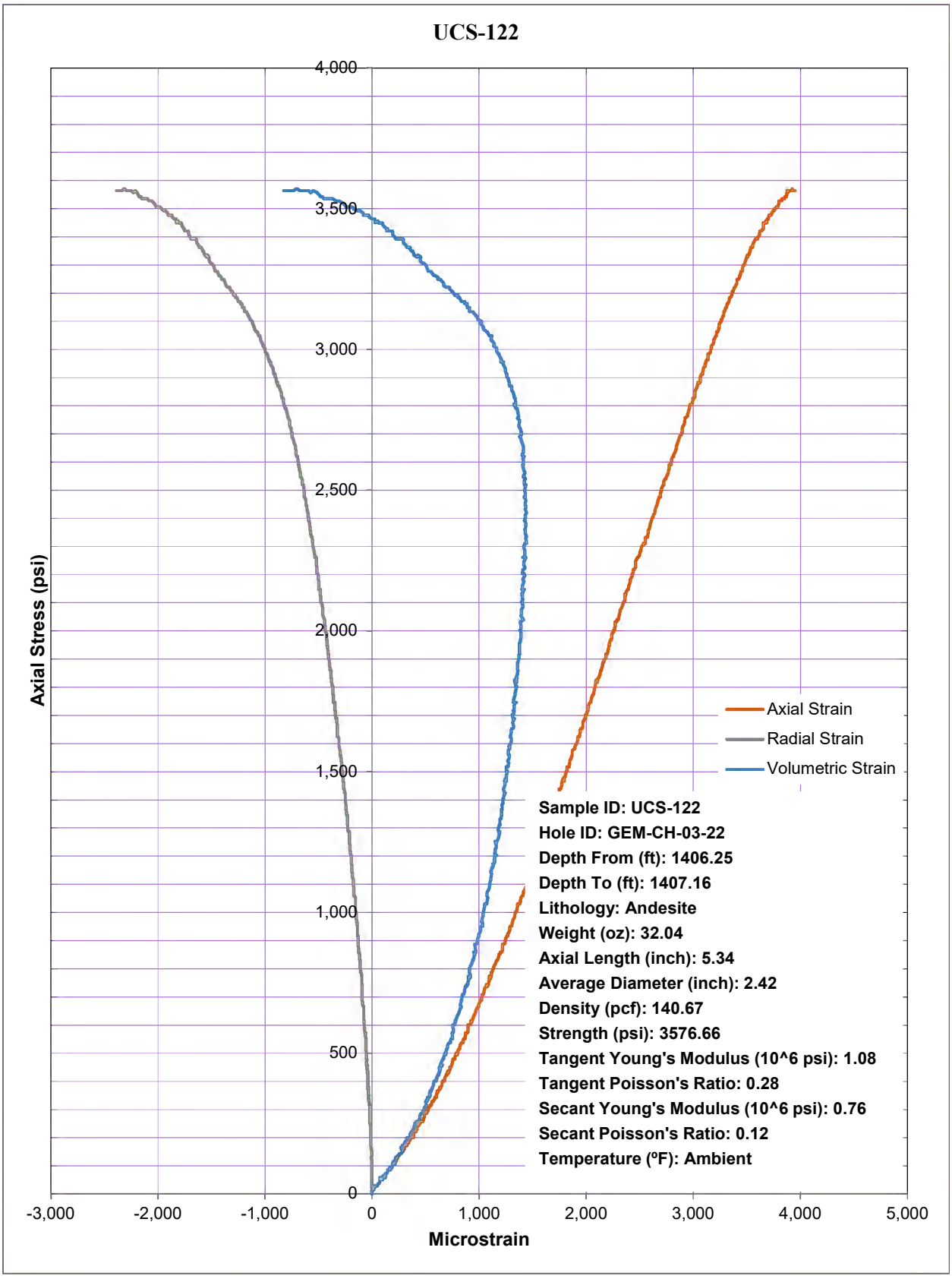

UCS-117
Axial Stress (psi)
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-2,000
-1,500
-1,000
-500
0
500
1,000
1,500
2,000
2,500
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-117
Hole ID: GEM-CH-03-22
Depth From (ft): 1349.66
Depth To (ft): 1350.58
Lithology: Rhyolite
Weight (oz): 31.50
Axial Length (inch): 5.37
Average Diameter (inch): 2.42
Density (pcf): 137.41
Strength (psi): 4171.72
Tangent Young's Modulus (10^6 psi): 1.55
Tangent Poisson's Ratio: 0.30
Secant Young's Modulus (10^6 psi): 1.69
Secant Poisson's Ratio: 0.02
Temperature (ºF): Ambient

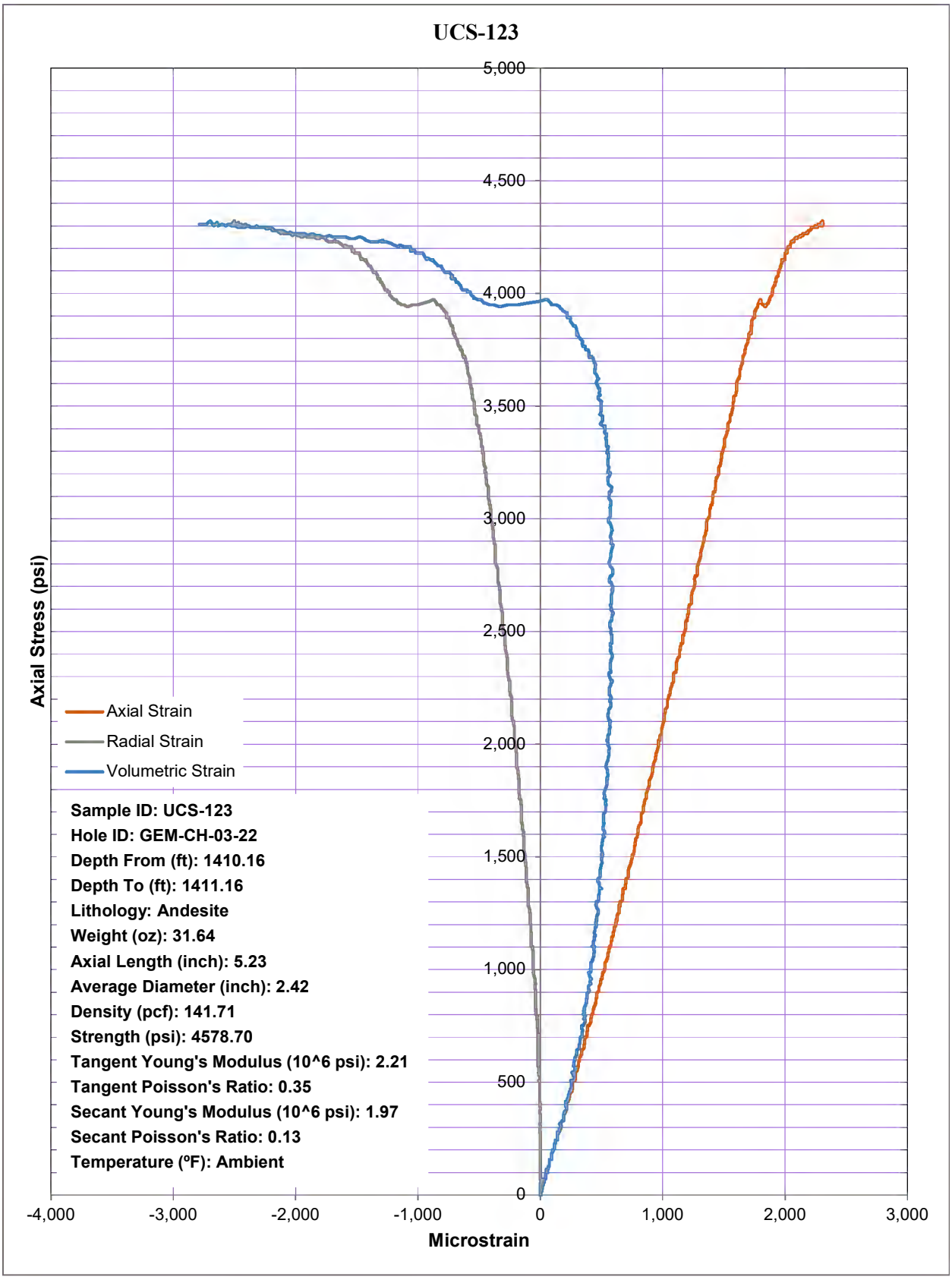

UCS-118
Axial Stress (psi)
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-118
Hole ID: GEM-CH-03-22
Depth From (ft): 1361.25
Depth To (ft): 1362.00
Lithology: Rhyolite
Weight (oz): 31.94
Axial Length (inch): 5.42
Average Diameter (inch): 2.42
Density (pcf): 138.49
Strength (psi): 4151.78
Tangent Young's Modulus (10^6 psi): 1.92
Tangent Poisson's Ratio: 0.32
Secant Young's Modulus (10^6 psi): 1.94
Secant Poisson's Ratio: 0.11
Temperature (ºF): Ambient

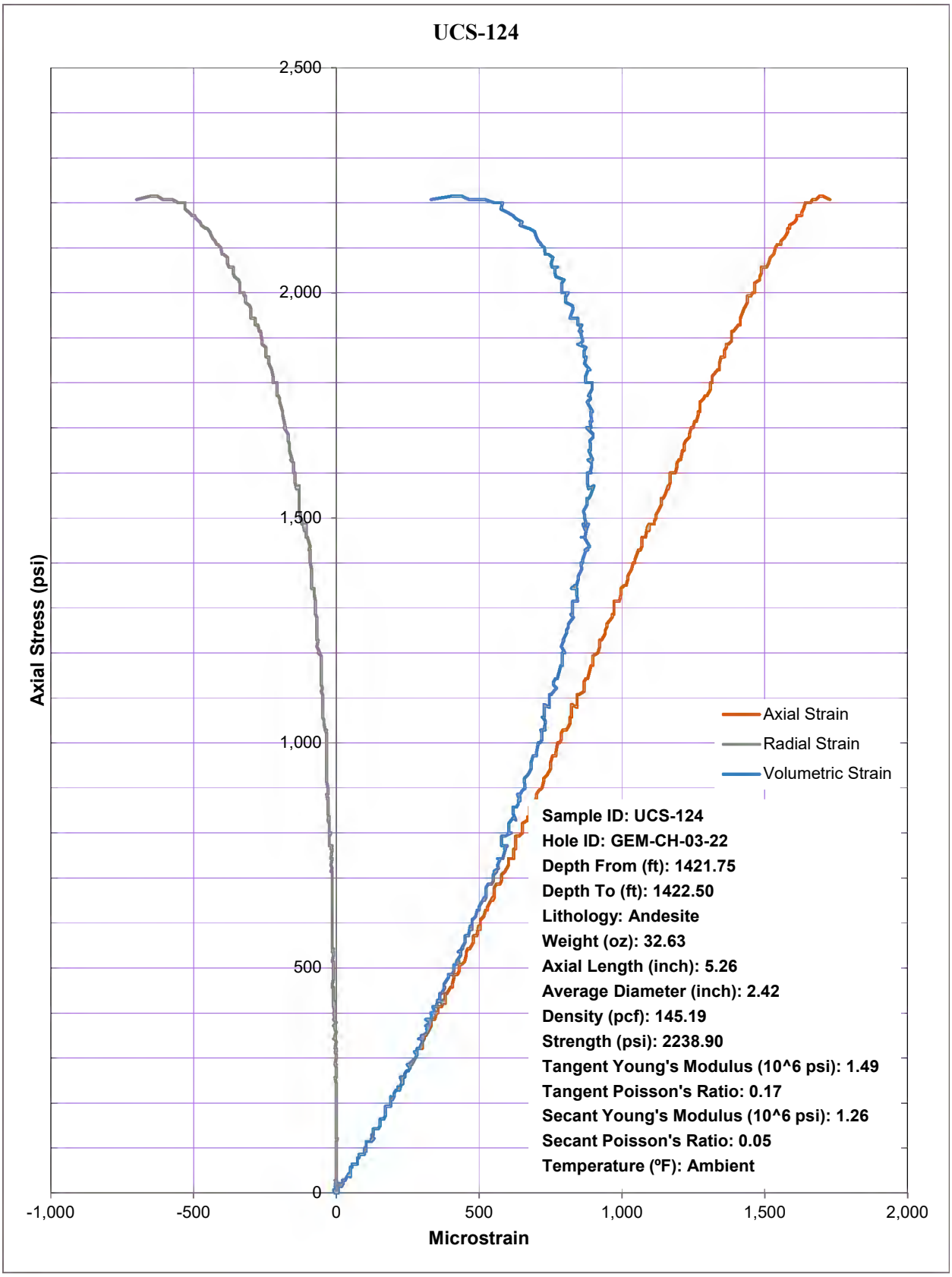

UCS-119
Axial Stress (psi)
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-119
Hole ID: GEM-CH-03-22
Depth From (ft): 1367.25
Depth To (ft): 1368.25
Lithology: Rhyolite
Weight (oz): 32.11
Axial Length (inch): 5.40
Average Diameter (inch): 2.42
Density (pcf): 139.50
Strength (psi): 7716.97
Tangent Young's Modulus (10^6 psi): 2.39
Tangent Poisson's Ratio: 0.24
Secant Young's Modulus (10^6 psi): 2.23
Secant Poisson's Ratio: 0.06
Temperature (ºF): Ambient

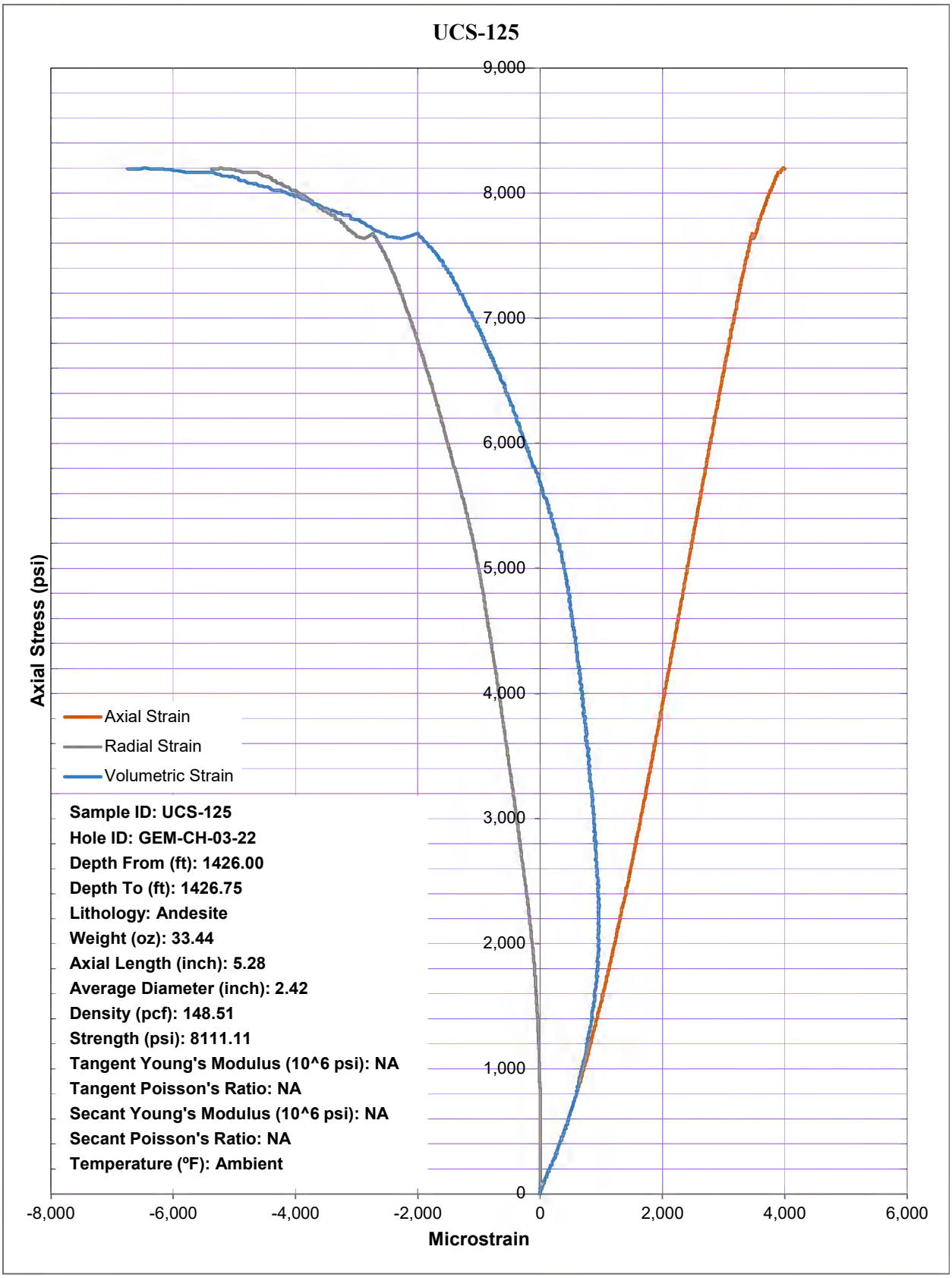

UCS-120
2,500
2,000
1,500
1,000
500
0
Axial Stress (psi)
-20,000
-15,000
-10,000
-5,000
0
5,000
10,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-120
Hole ID: GEM-CH-03-22
Depth From (ft): 1380.66
Depth To (ft): 1381.58
Lithology: Andesite
Weight (oz): 34.19
Axial Length (inch): 5.47
Average Diameter (inch): 2.42
Density (pcf): 146.47
Strength (psi): 2278.89
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA
Temperature (ºF): Ambient

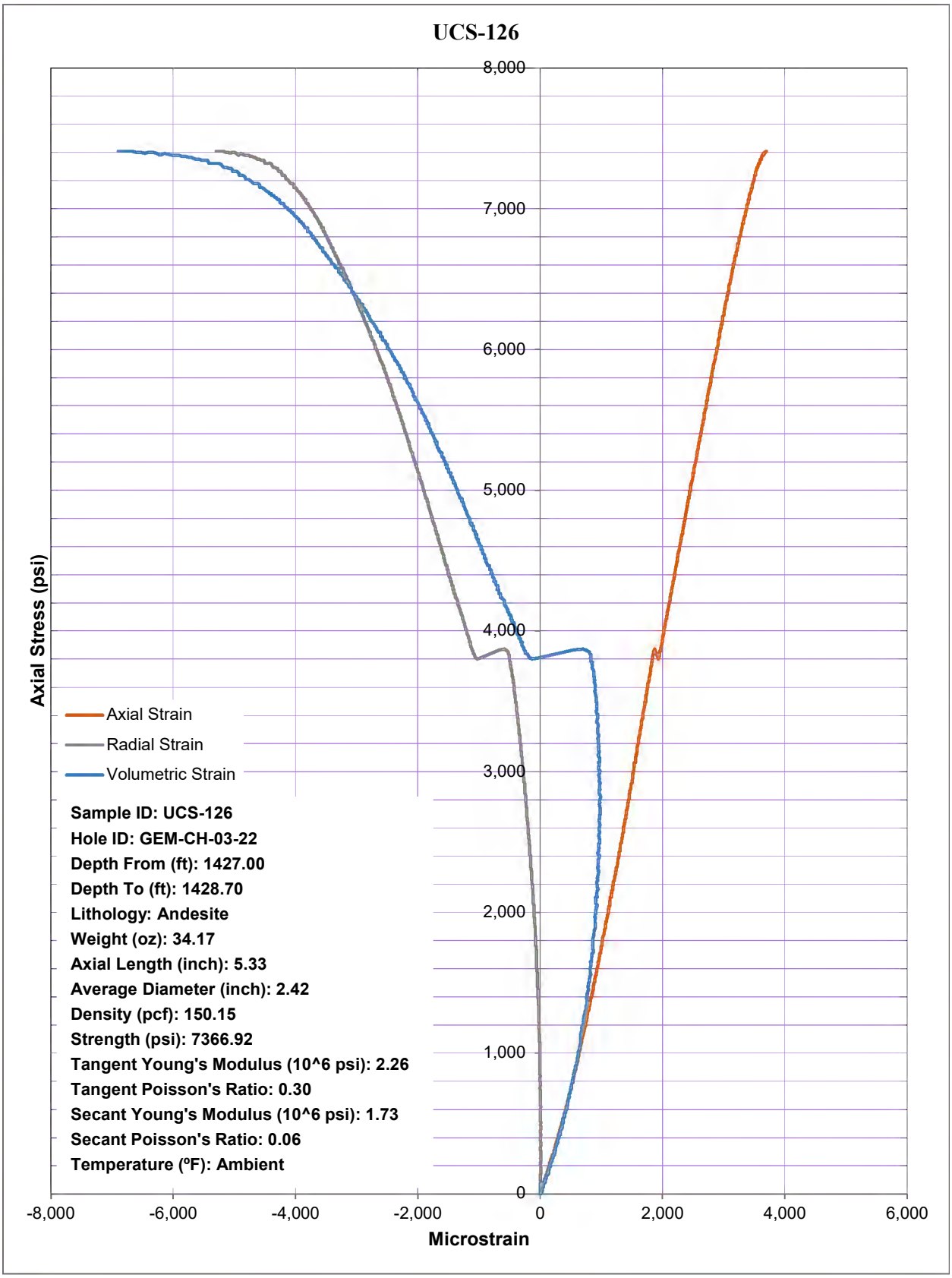

UCS-121
Axial Stress (psi)
2,500
2,000
1,500
1,000
500
0
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-121
Hole ID: GEM-CH-03-22
Depth From (ft): 1381.75
Depth To (ft): 1382.50
Lithology: Andesite
Weight (oz): 33.00
Axial Length (inch): 5.35
Average Diameter (inch): 2.42
Density (pcf): 144.21
Strength (psi): 2255.78
Tangent Young's Modulus (10^6 psi): 0.62
Tangent Poisson's Ratio: 0.31
Secant Young's Modulus (10^6 psi): 0.45
Secant Poisson's Ratio: 0.13
Temperature (ºF): Ambient

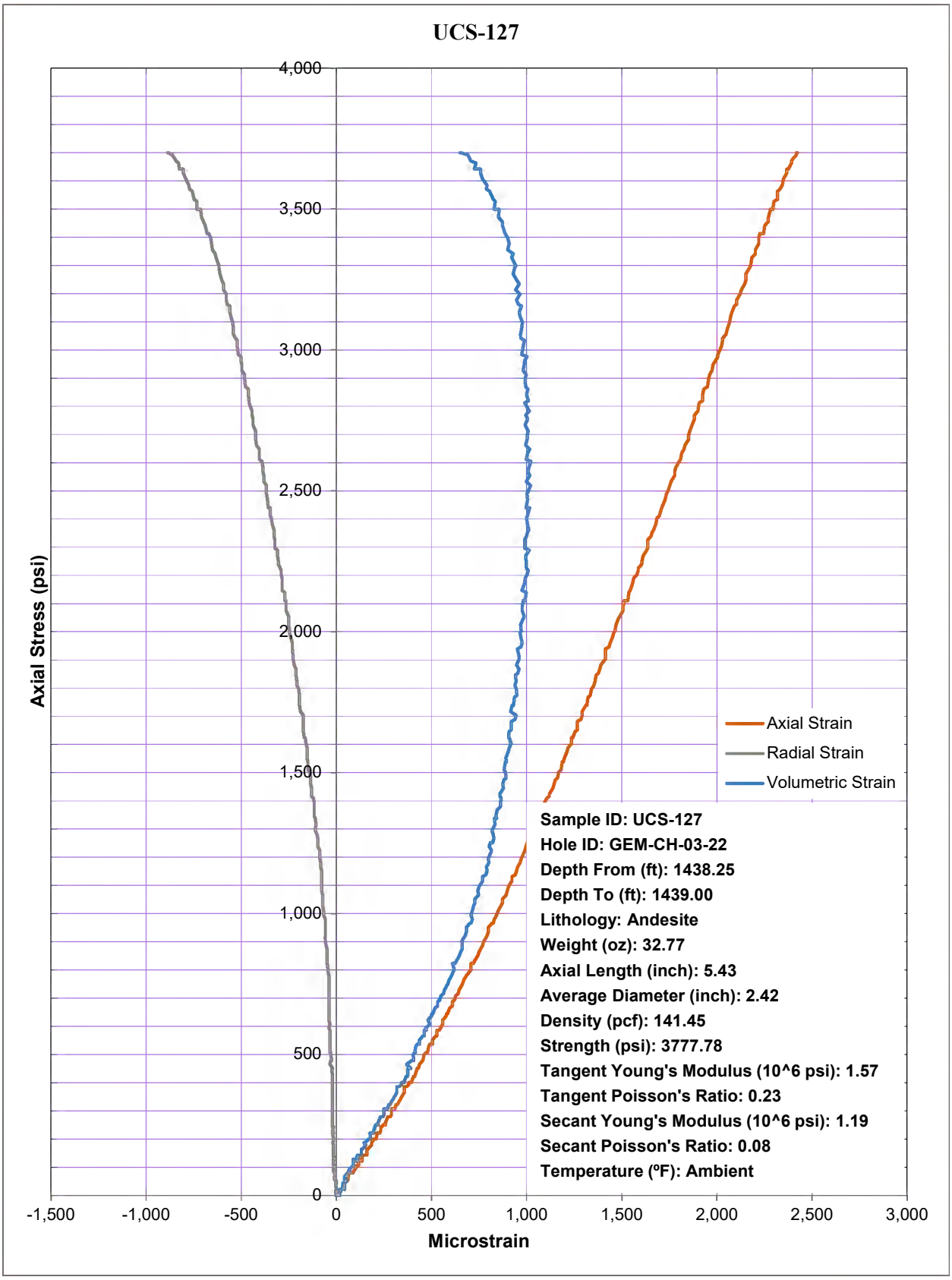

UCS-122
Axial Stress (psi)
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-122
Hole ID: GEM-CH-03-22
Depth From (ft): 1406.25
Depth To (ft): 1407.16
Lithology: Andesite
Weight (oz): 32.04
Axial Length (inch): 5.34
Average Diameter (inch): 2.42
Density (pcf): 140.67
Strength (psi): 3576.66
Tangent Young's Modulus (10^6 psi): 1.08
Tangent Poisson's Ratio: 0.28
Secant Young's Modulus (10^6 psi): 0.76
Secant Poisson's Ratio: 0.12
Temperature (ºF): Ambient

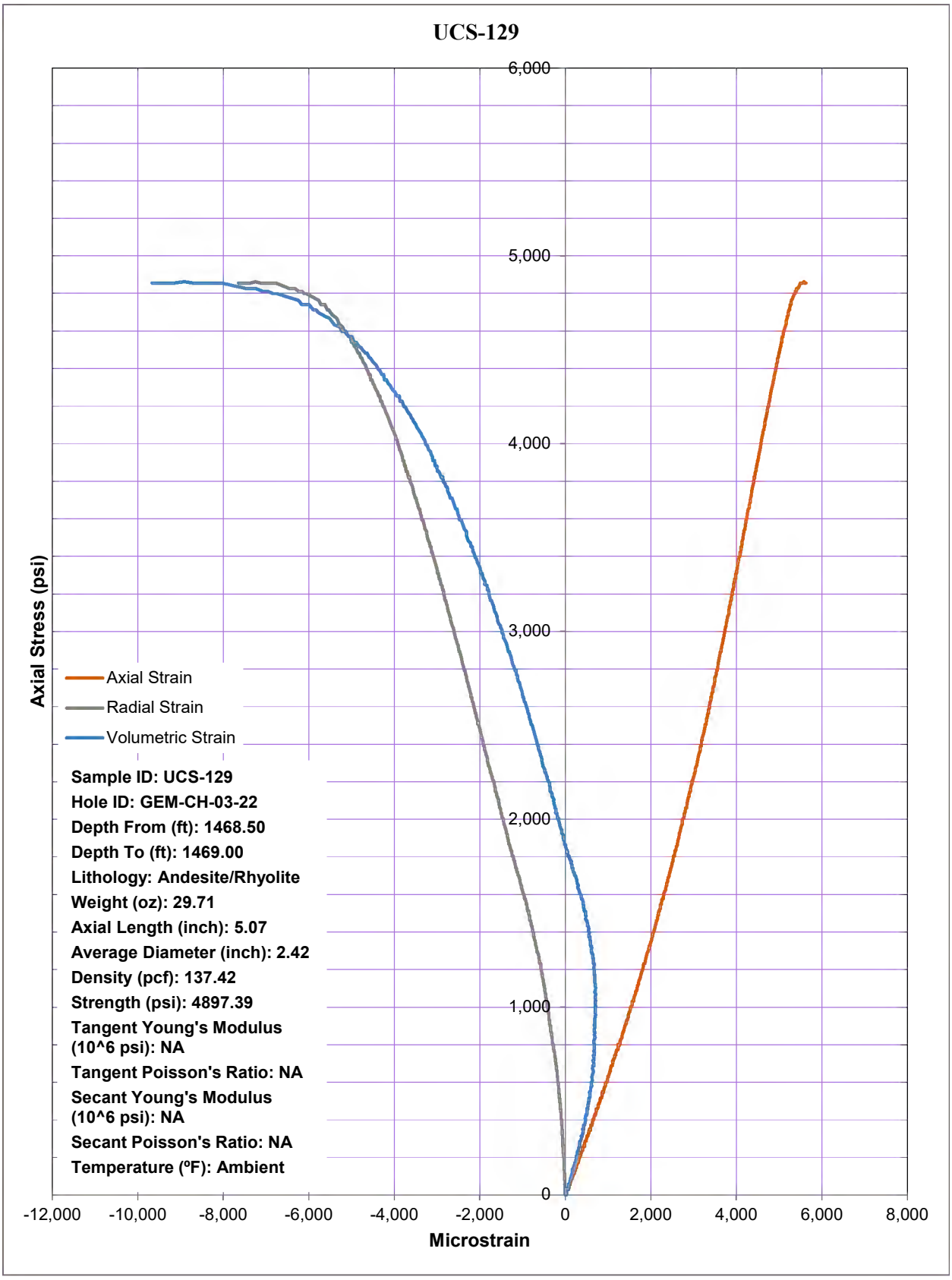

UCS-123
Axial Stress (psi)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-123
Hole ID: GEM-CH-03-22
Depth From (ft): 1410.16
Depth To (ft): 1411.16
Lithology: Andesite
Weight (oz): 31.64
Axial Length (inch): 5.23
Average Diameter (inch): 2.42
Density (pcf): 141.71
Strength (psi): 4578.70
Tangent Young's Modulus (10^6 psi): 2.21
Tangent Poisson's Ratio: 0.35
Secant Young's Modulus (10^6 psi): 1.97
Secant Poisson's Ratio: 0.13
Temperature (ºF): Ambient

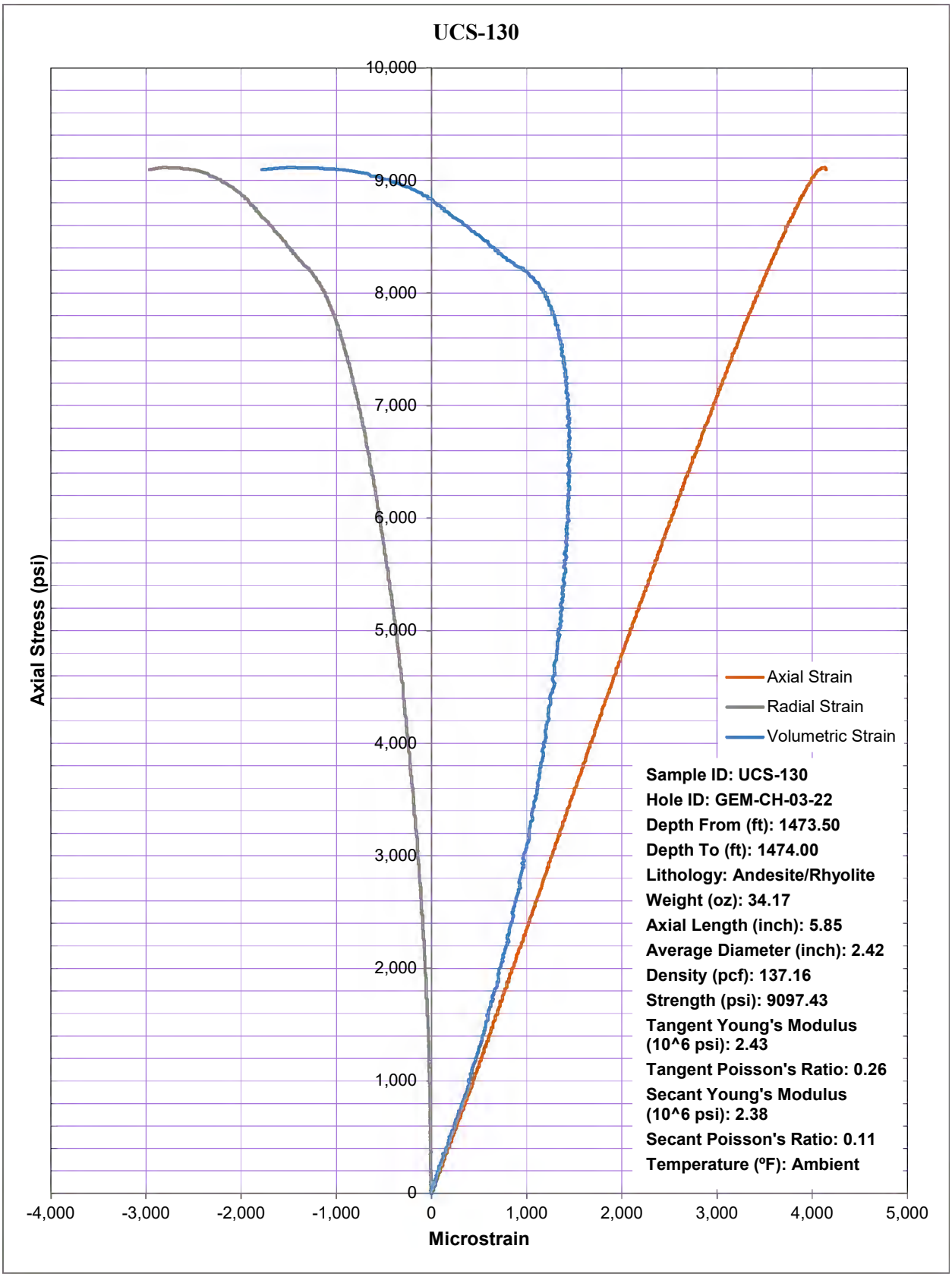

UCS-124
Axial Stress (psi)
2,500
2,000
1,500
1,000
500
0
-1,000
-500
0
500
1,000
1,500
2,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-124
Hole ID: GEM-CH-03-22
Depth From (ft): 1421.75
Depth To (ft): 1422.50
Lithology: Andesite
Weight (oz): 32.63
Axial Length (inch): 5.26
Average Diameter (inch): 2.42
Density (pcf): 145.19
Strength (psi): 2238.90
Tangent Young's Modulus (10^6 psi): 1.49
Tangent Poisson's Ratio: 0.17
Secant Young's Modulus (10^6 psi): 1.26
Secant Poisson's Ratio: 0.05
Temperature (ºF): Ambient

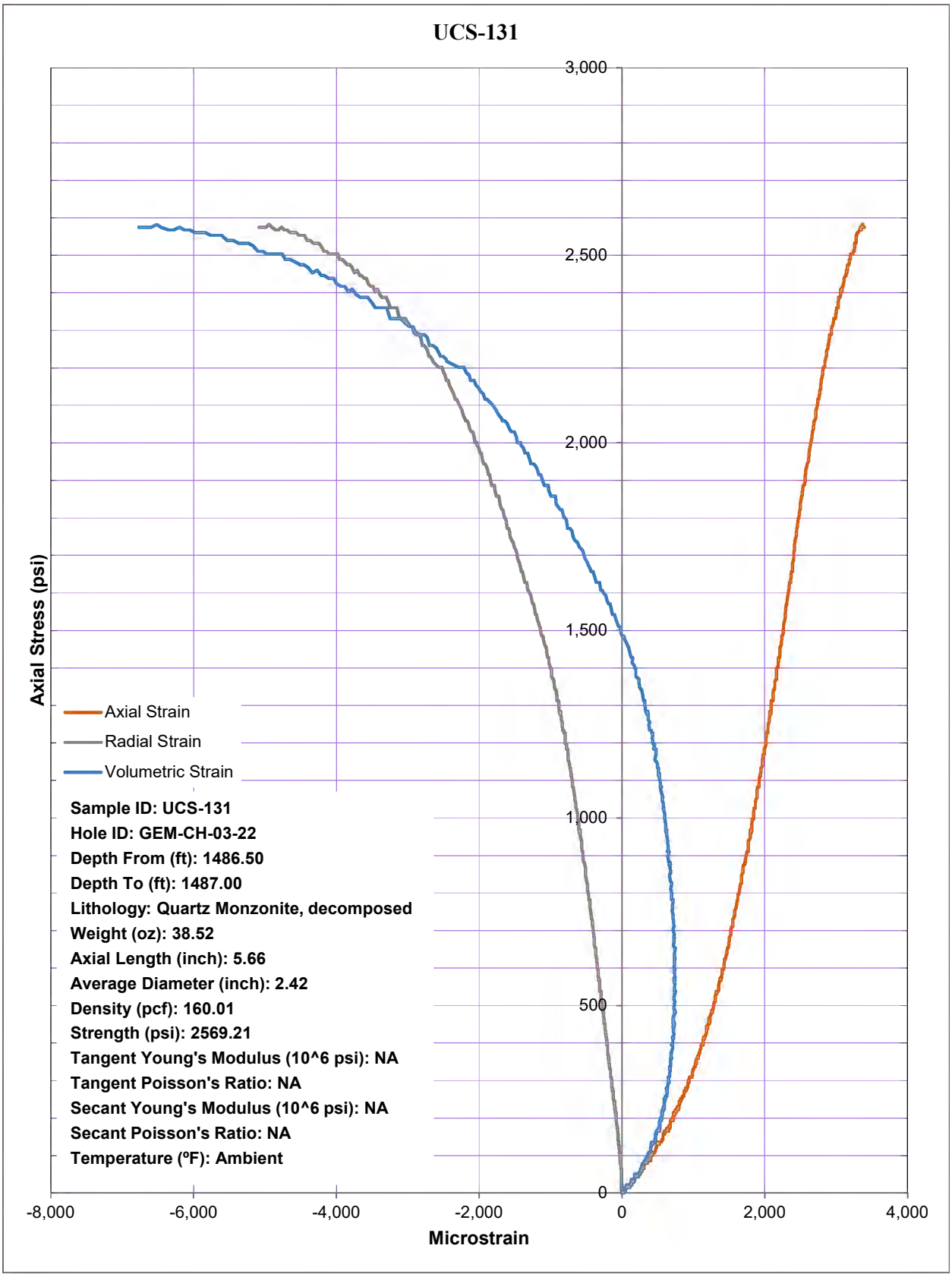

UCS-125
Axial Stress (psi)
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-125
Hole ID: GEM-CH-03-22
Depth From (ft): 1426.00
Depth To (ft): 1426.75
Lithology: Andesite
Weight (oz): 33.44
Axial Length (inch): 5.28
Average Diameter (inch): 2.42
Density (pcf): 148.51
Strength (psi): 8111.11
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA
Temperature (ºF): Ambient

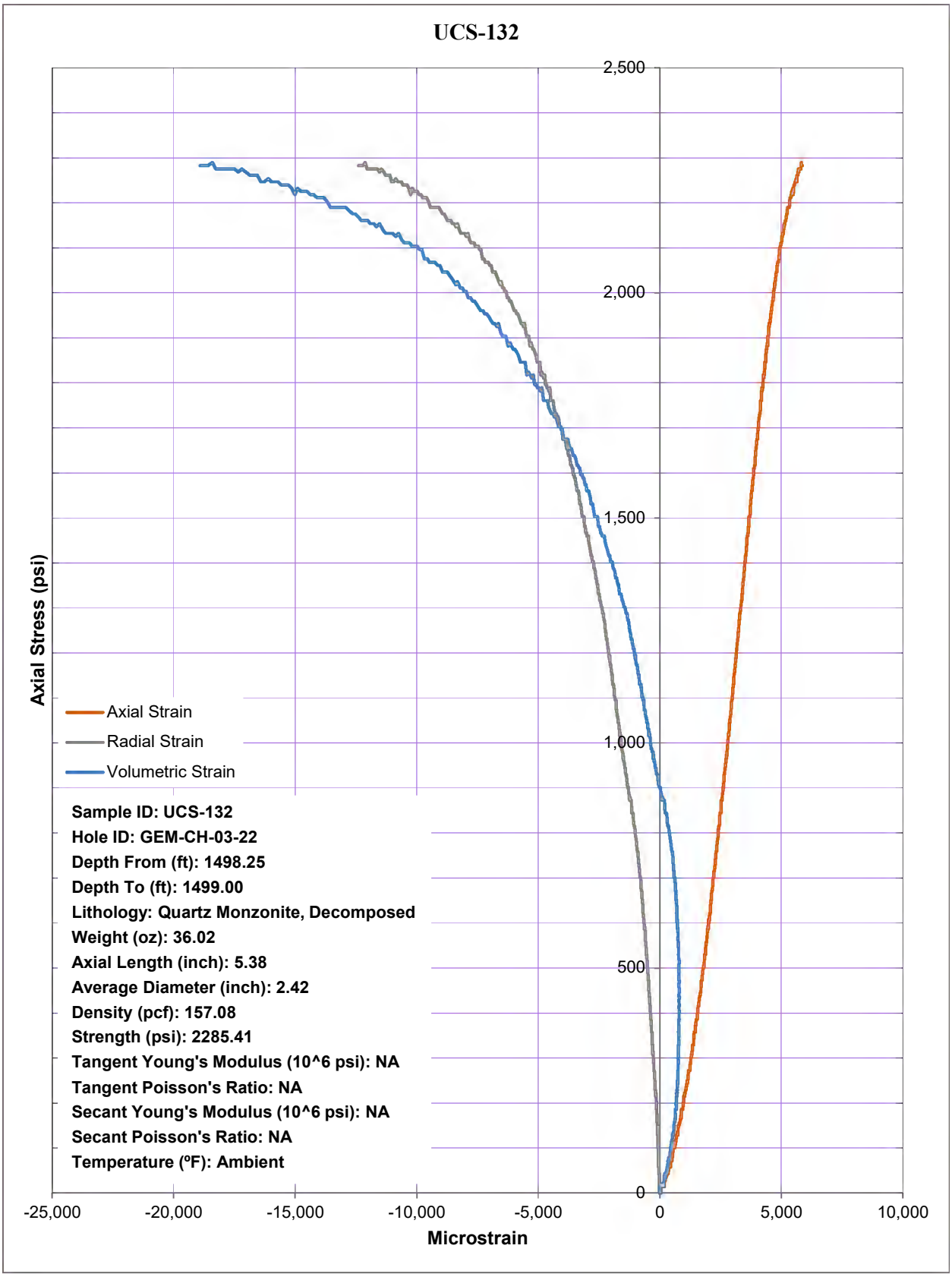

UCS-126
Axial Stress (psi)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-126
Hole ID: GEM-CH-03-22
Depth From (ft): 1427.00
Depth To (ft): 1428.70
Lithology: Andesite
Weight (oz): 34.17
Axial Length (inch): 5.33
Average Diameter (inch): 2.42
Density (pcf): 150.15
Strength (psi): 7366.92
Tangent Young's Modulus (10^6 psi): 2.26
Tangent Poisson's Ratio: 0.30
Secant Young's Modulus (10^6 psi): 1.73
Secant Poisson's Ratio: 0.06
Temperature (ºF): Ambient

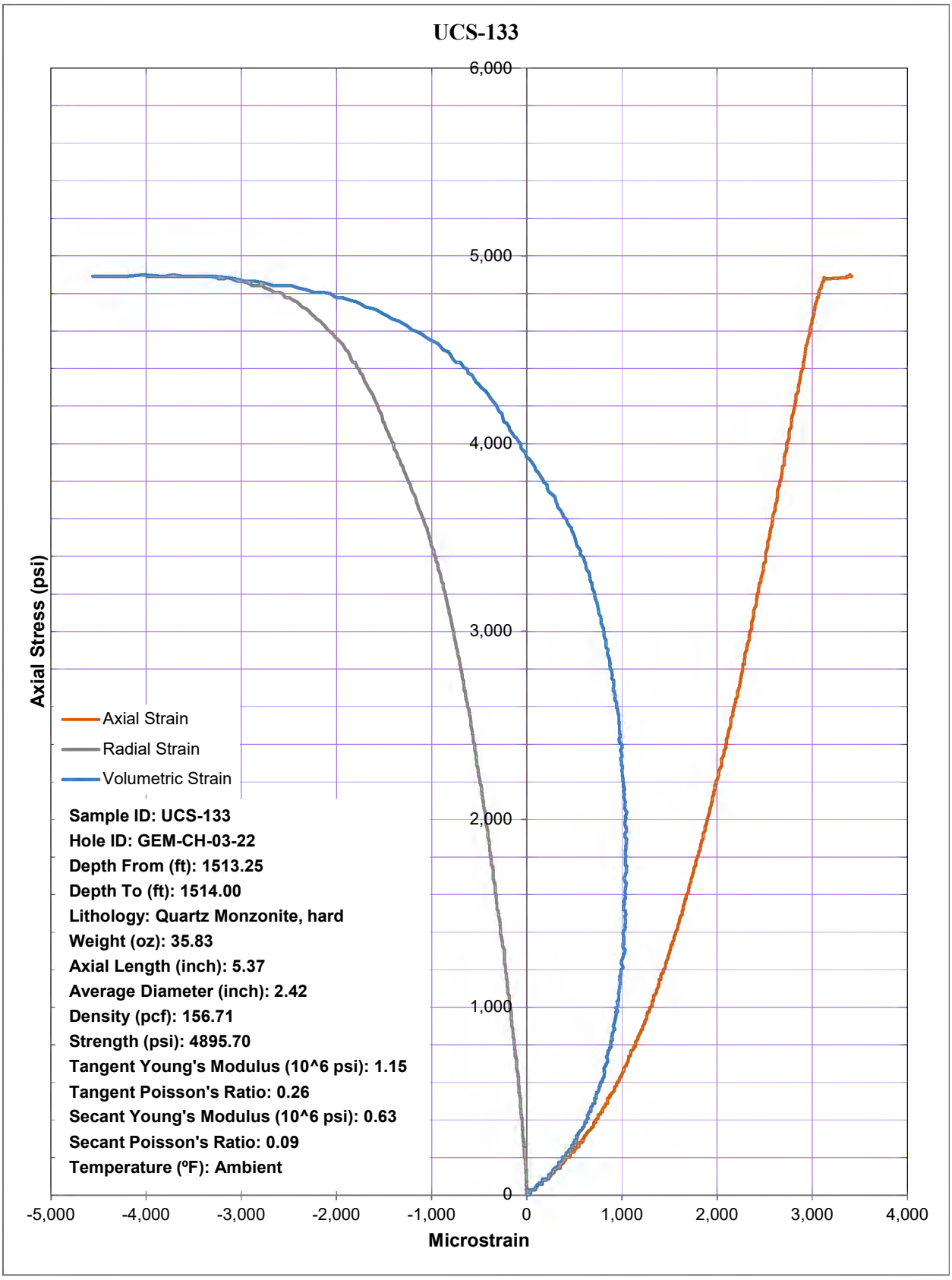

UCS-127
Axial Stress (psi)
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-1,500
-1,000
-500
0
500
1,000
1,500
2,000
2,500
3,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-127
Hole ID: GEM-CH-03-22
Depth From (ft): 1438.25
Depth To (ft): 1439.00
Lithology: Andesite
Weight (oz): 32.77
Axial Length (inch): 5.43
Average Diameter (inch): 2.42
Density (pcf): 141.45
Strength (psi): 3777.78
Tangent Young's Modulus (10^6 psi): 1.57
Tangent Poisson's Ratio: 0.23
Secant Young's Modulus (10^6 psi): 1.19
Secant Poisson's Ratio: 0.08
Temperature (ºF): Ambient

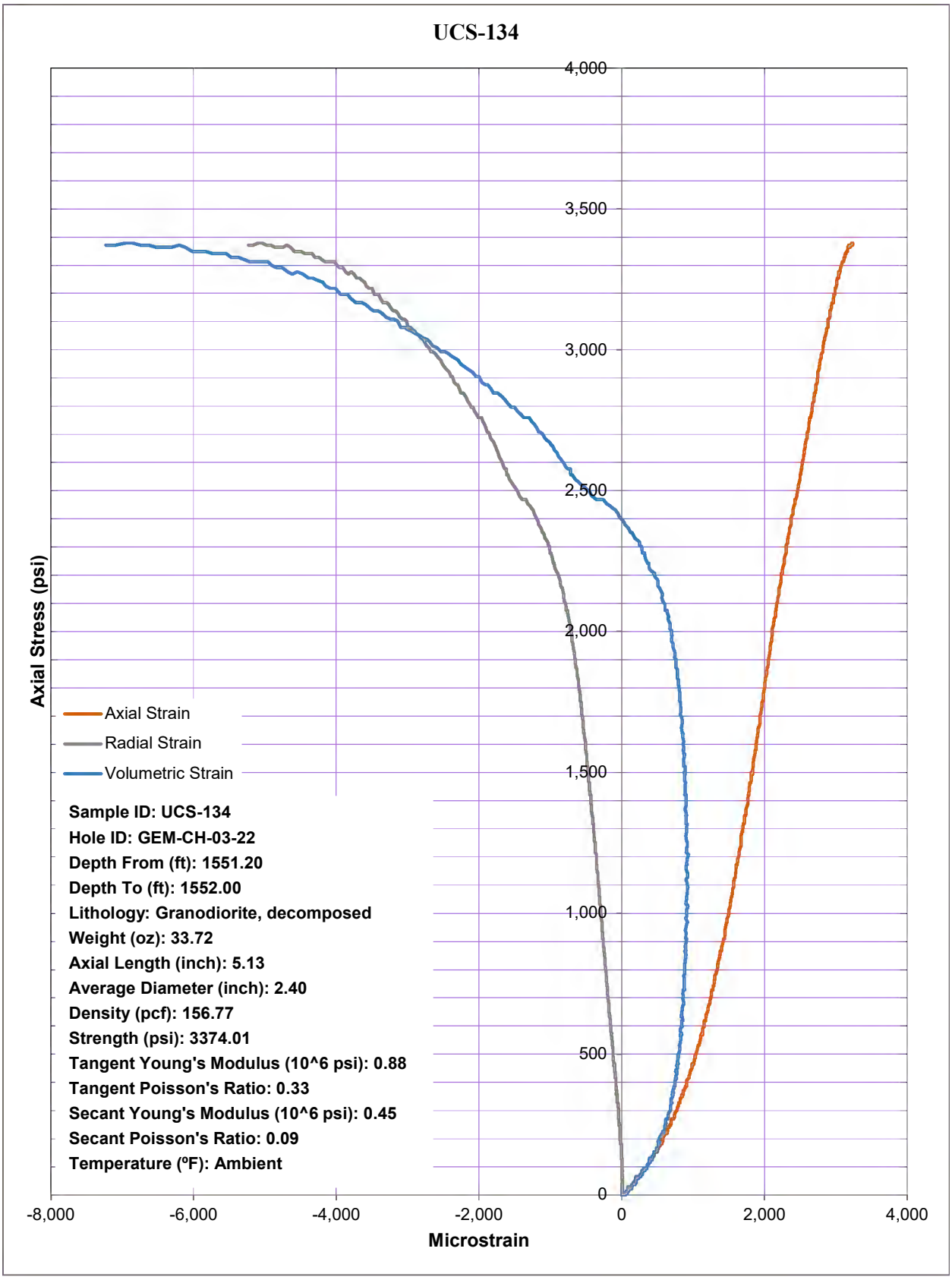

UCS-129
Axial Stress (psi)
6,000
5,000
4,000
3,000
2,000
1,000
0
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
8,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-129
Hole ID: GEM-CH-03-22
Depth From (ft): 1468.50
Depth To (ft): 1469.00
Lithology: Andesite/Rhyolite
Weight (oz): 29.71
Axial Length (inch): 5.07
Average Diameter (inch): 2.42
Density (pcf): 137.42
Strength (psi): 4897.39
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA
Temperature (ºF): Ambient

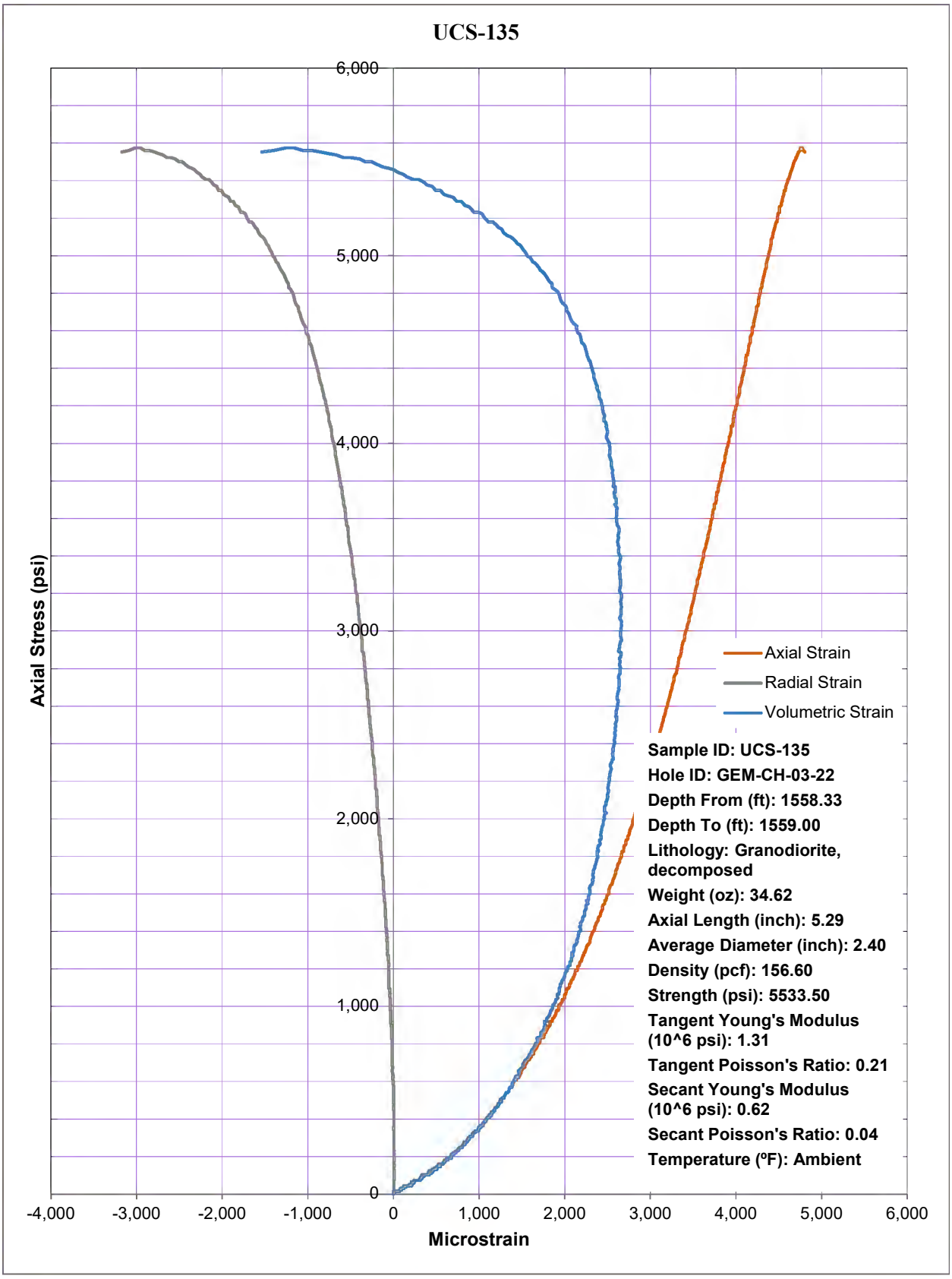

UCS-130
Axial Stress (psi)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-130
Hole ID: GEM-CH-03-22
Depth From (ft): 1473.50
Depth To (ft): 1474.00
Lithology: Andesite/Rhyolite
Weight (oz): 34.17
Axial Length (inch): 5.85
Average Diameter (inch): 2.42
Density (pcf): 137.16
Strength (psi): 9097.43
Tangent Young's Modulus (10^6 psi): 2.43
Tangent Poisson's Ratio: 0.26
Secant Young's Modulus (10^6 psi): 2.38
Secant Poisson's Ratio: 0.11
Temperature (ºF): Ambient

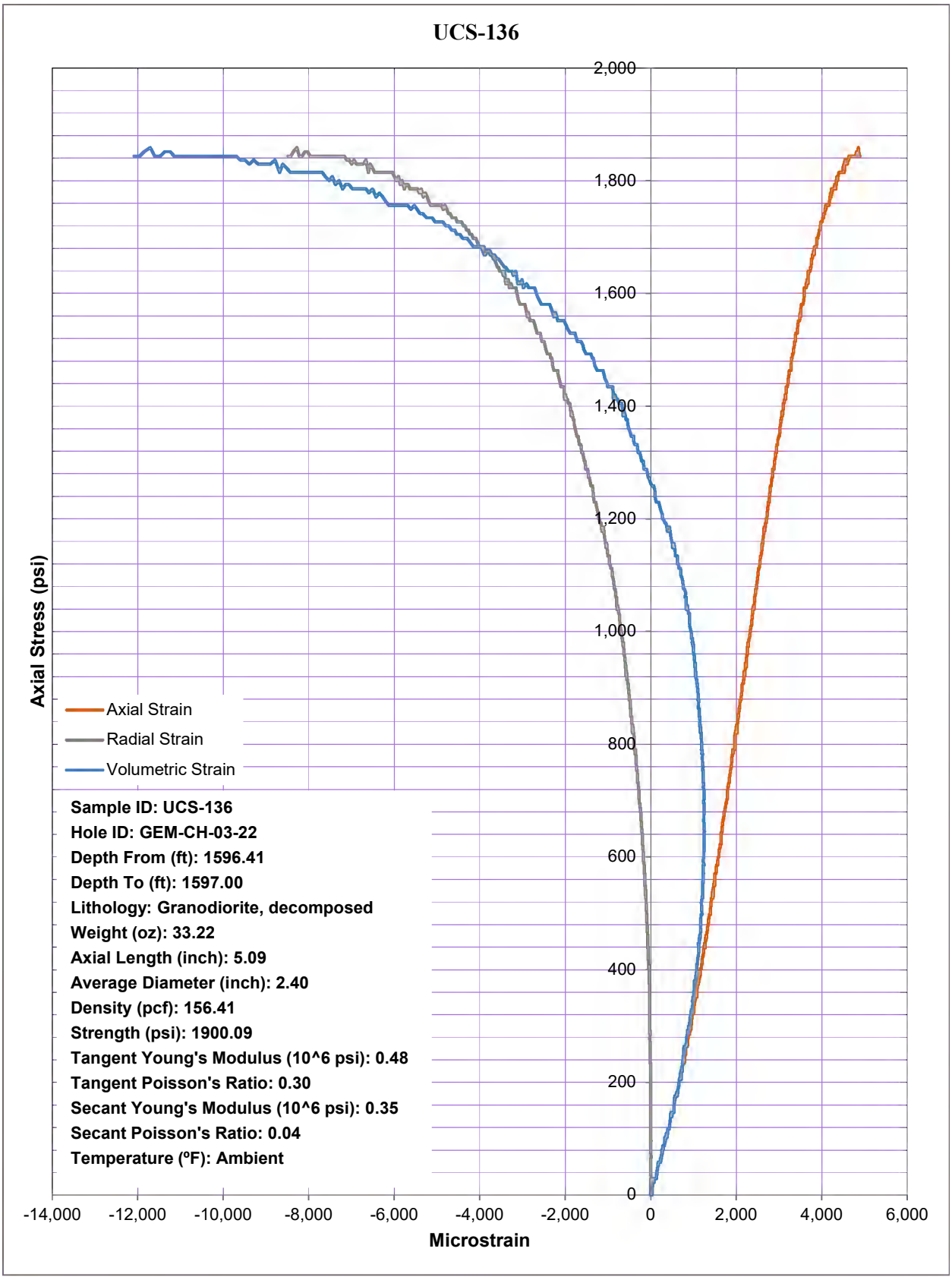

UCS-131
3,000
2,500
2,000
1,500
1,000
500
0
Axial Stress (psi)
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-131
Hole ID: GEM-CH-03-22
Depth From (ft): 1486.50
Depth To (ft): 1487.00
Lithology: Quartz Monzonite, decomposed
Weight (oz): 38.52
Axial Length (inch): 5.66
Average Diameter (inch): 2.42
Density (pcf): 160.01
Strength (psi): 2569.21
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA
Temperature (ºF): Ambient

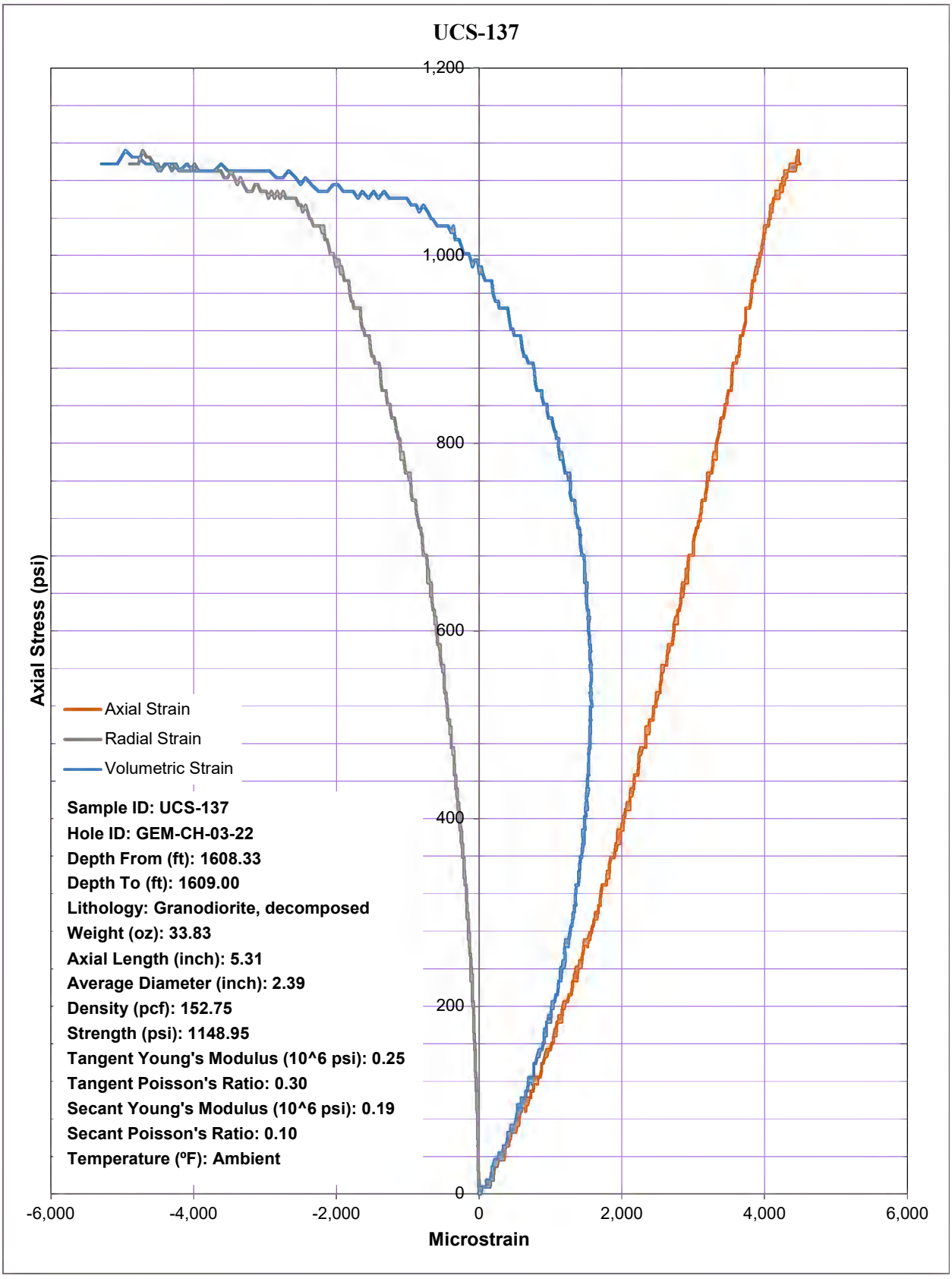

UCS-132
2,500
2,000
1,500
1,000
500
0
Axial Stress (psi)
-25,000
-20,000
-15,000
-10,000
-5,000
0
5,000
10,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-132
Hole ID: GEM-CH-03-22
Depth From (ft): 1498.25
Depth To (ft): 1499.00
Lithology: Quartz Monzonite, Decomposed
Weight (oz): 36.02
Axial Length (inch): 5.38
Average Diameter (inch): 2.42
Density (pcf): 157.08
Strength (psi): 2285.41
Tangent Young's Modulus (10^6 psi): NA
Tangent Poisson's Ratio: NA
Secant Young's Modulus (10^6 psi): NA
Secant Poisson's Ratio: NA
Temperature (ºF): Ambient

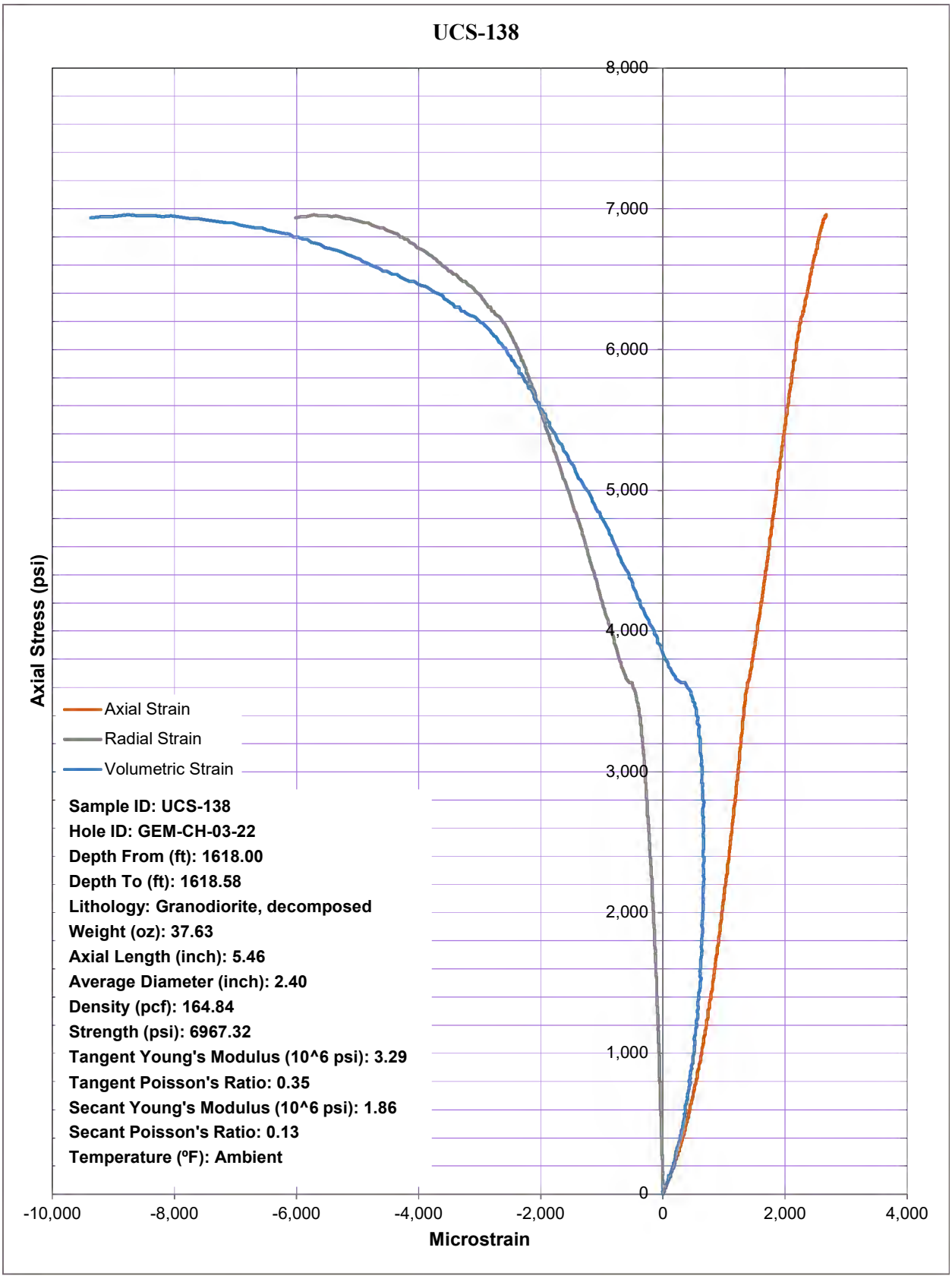

UCS-133
Axial Stress (psi)
6,000
5,000
4,000
3,000
2,000
1,000
0
-5,000
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-133
Hole ID: GEM-CH-03-22
Depth From (ft): 1513.25
Depth To (ft): 1514.00
Lithology: Quartz Monzonite, hard
Weight (oz): 35.83
Axial Length (inch): 5.37
Average Diameter (inch): 2.42
Density (pcf): 156.71
Strength (psi): 4895.70
Tangent Young's Modulus (10^6 psi): 1.15
Tangent Poisson's Ratio: 0.26
Secant Young's Modulus (10^6 psi): 0.63
Secant Poisson's Ratio: 0.09
Temperature (ºF): Ambient


UCS-134
Axial Stress (psi)
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-134
Hole ID: GEM-CH-03-22
Depth From (ft): 1551.20
Depth To (ft): 1552.00
Lithology: Granodiorite, decomposed
Weight (oz): 33.72
Axial Length (inch): 5.13
Average Diameter (inch): 2.40
Density (pcf): 156.77
Strength (psi): 3374.01
Tangent Young's Modulus (10^6 psi): 0.88
Tangent Poisson's Ratio: 0.33
Secant Young's Modulus (10^6 psi): 0.45
Secant Poisson's Ratio: 0.09
Temperature (ºF): Ambient


UCS-135
Axial Stress (psi)
6,000
5,000
4,000
3,000
2,000
1,000
0
-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-135
Hole ID: GEM-CH-03-22
Depth From (ft): 1558.33
Depth To (ft): 1559.00
Lithology: Granodiorite, decomposed
Weight (oz): 34.62
Axial Length (inch): 5.29
Average Diameter (inch): 2.40
Density (pcf): 156.60
Strength (psi): 5533.50
Tangent Young's Modulus (10^6 psi): 1.31
Tangent Poisson's Ratio: 0.21
Secant Young's Modulus (10^6 psi): 0.62
Secant Poisson's Ratio: 0.04
Temperature (ºF): Ambient


UCS-136
Axial Stress (psi)
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
-14,000
-12,000
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-136
Hole ID: GEM-CH-03-22
Depth From (ft): 1596.41
Depth To (ft): 1597.00
Lithology: Granodiorite, decomposed
Weight (oz): 33.22
Axial Length (inch): 5.09
Average Diameter (inch): 2.40
Density (pcf): 156.41
Strength (psi): 1900.09
Tangent Young's Modulus (10^6 psi): 0.48
Tangent Poisson's Ratio: 0.30
Secant Young's Modulus (10^6 psi): 0.35
Secant Poisson's Ratio: 0.04
Temperature (ºF): Ambient


UCS-137
1,200
1,000
800
600
400
200
0
Axial Stress (psi)
-6,000
-4,000
-2,000
0
2,000
4,000
6,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-137
Hole ID: GEM-CH-03-22
Depth From (ft): 1608.33
Depth To (ft): 1609.00
Lithology: Granodiorite, decomposed
Weight (oz): 33.83
Axial Length (inch): 5.31
Average Diameter (inch): 2.39
Density (pcf): 152.75
Strength (psi): 1148.95
Tangent Young's Modulus (10^6 psi): 0.25
Tangent Poisson's Ratio: 0.30
Secant Young's Modulus (10^6 psi): 0.19
Secant Poisson's Ratio: 0.10
Temperature (ºF): Ambient


UCS-138
Axial Stress (psi)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-10,000
-8,000
-6,000
-4,000
-2,000
0
2,000
4,000
Microstrain
Axial Strain
Radial Strain
Volumetric Strain
Sample ID: UCS-138
Hole ID: GEM-CH-03-22
Depth From (ft): 1618.00
Depth To (ft): 1618.58
Lithology: Granodiorite, decomposed
Weight (oz): 37.63
Axial Length (inch): 5.46
Average Diameter (inch): 2.40
Density (pcf): 164.84
Strength (psi): 6967.32
Tangent Young's Modulus (10^6 psi): 3.29
Tangent Poisson's Ratio: 0.35
Secant Young's Modulus (10^6 psi): 1.86
Secant Poisson's Ratio: 0.13
Temperature (ºF): Ambient

APPENDIX C

BEFORE AND AFTER PHOTOGRAPHS OF UNIAXIAL COMPRESSIVE STRENGTH TEST SPECIMENS

GEM-CH-01-22
UCS BEFORE AND AFTER PHOTOGRAPHS

UCS-01—Before

UCS-01—After

UCS-02—Before

UCS-02—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens

UCS-03—Before

UCS-03—After

UCS-04—Before

UCS-04—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-05—Before

UCS-05—After

UCS-06—Before

UCS-06—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

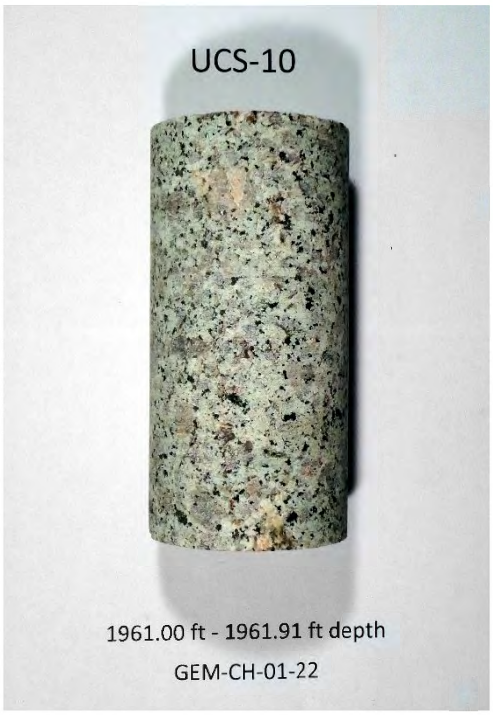
UCS-07—Before

UCS-07—After

UCS-08—Before

UCS-08—After

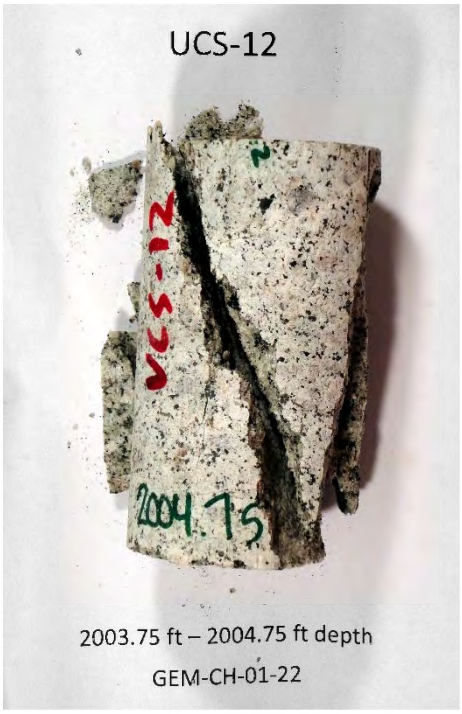
Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*



UCS-10—Before

UCS-10—After

UCS-12—Before



UCS-12—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-13—Before

UCS-13—After

UCS-14—Before

UCS-14—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-15—Before

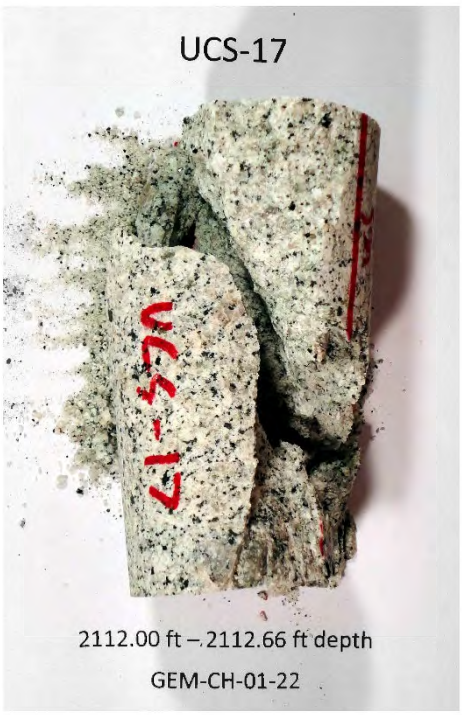
UCS-15—After

UCS-16—Before

UCS-16—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-17—Before



UCS-17—After

UCS-19—Before

UCS-19—After

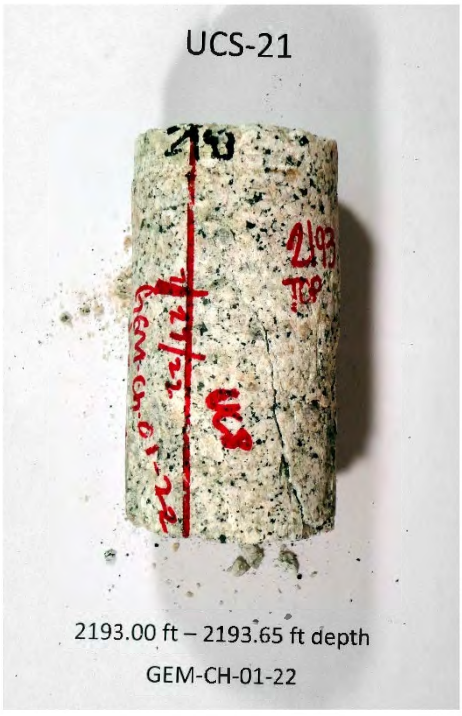
Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

NO PHOTO

UCS-20—Before

UCS-20—After

UCS-21—Before



UCS-21—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-22—Before

UCS-22—After

UCS-23—Before

UCS-23—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-24—Before

UCS-24—After

UCS-25—Before

UCS-25—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-26—Before

UCS-26—After

UCS-27—Before

UCS-27—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-28—Before

UCS-28—After

UCS-29—Before

UCS-29—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-30—Before

UCS-30—After

UCS-31—Before

UCS-31—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-32—Before

UCS-32—After

UCS-33—Before

UCS-33—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-34—Before

UCS-34—After

UCS-35—Before

UCS-35—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-36—Before

UCS-36—After

UCS-37—Before

UCS-37—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-38—Before

UCS-38—After

UCS-92—Before

UCS-92—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-93—Before

UCS-93—After

UCS-94—Before

UCS-94—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-95—Before

UCS-95—After

UCS-96—Before

UCS-96—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-97—Before

UCS-97—After

UCS-98—Before

UCS-98—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

GEM-CH-02-22
UCS BEFORE AND AFTER PHOTOGRAPHS

UCS-39—Before

UCS-39—After

UCS-40—Before

UCS-40—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-41—Before

UCS-41—After

UCS-42—Before

UCS-42—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-43—Before

UCS-43—After

UCS-44—Before

UCS-44—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-45—Before

UCS-45—After

UCS-46—Before

UCS-46—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-47—Before

UCS-47—After

UCS-48—Before

UCS-48—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-49—Before

UCS-49—After

UCS-50—Before

UCS-50—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-51—Before

UCS-51—After

UCS-52—Before

UCS-52—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-53—Before

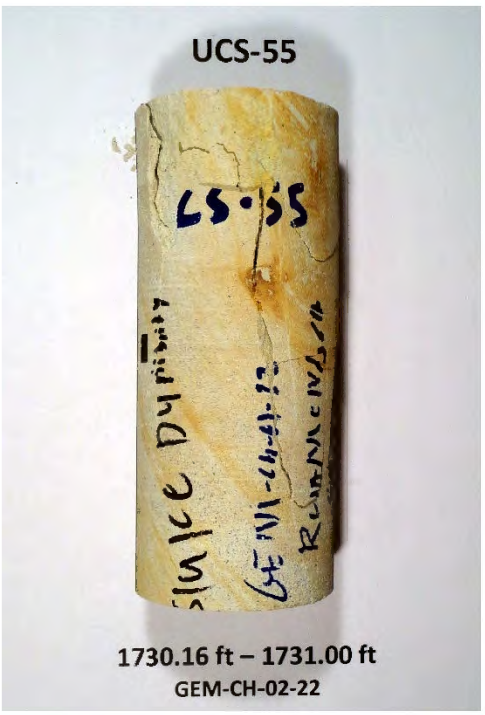
UCS-53—After

UCS-54—Before

UCS-54—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-55—Before



UCS-55—After

UCS-56—Before

UCS-56—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-57—Before

UCS-57—After

UCS-58—Before

UCS-58—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-59—Before

UCS-59—After

UCS-60—Before

UCS-60—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-61—Before

UCS-61—After

UCS-62—Before

UCS-62—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-63—Before

UCS-63—After

UCS-64—Before

UCS-64—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-65—Before

UCS-65—After

UCS-66—Before

UCS-66—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-67—Before

UCS-67—After

UCS-68—Before

UCS-68—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-69—Before

UCS-69—After

UCS-70—Before

UCS-70—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-71—Before

UCS-71—After

UCS-72—Before

UCS-72—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-73—Before

UCS-73—After

UCS-74—Before

UCS-74—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-75—Before

UCS-75—After

UCS-76—Before

UCS-76—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-77—Before

UCS-77—After

UCS-78—Before

UCS-78—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-79—Before

UCS-79—After

UCS-80—Before

UCS-80—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-81—Before

UCS-81—After

UCS-82—Before

UCS-82—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-83—Before

UCS-83—After

UCS-84—Before

UCS-84—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-85—Before

UCS-85—After

UCS-86—Before

UCS-86—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-87—Before

UCS-87—After

UCS-88—Before

UCS-88—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-89—Before

UCS-89—After

UCS-90—Before

UCS-90—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-91—Before

UCS-91—After

UCS-99—Before

UCS-99—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-100—Before

UCS-100—After

UCS-101—Before

UCS-101—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-102—Before

UCS-102—After

UCS-103—Before

UCS-103—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-104—Before

UCS-104—After

UCS-105—Before

UCS-105—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-106—Before

UCS-106—After

UCS-107—Before

UCS-107—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-108—Before

UCS-108—After

UCS-109—Before

UCS-109—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

GEM-CH-03-22
UCS BEFORE AND AFTER PHOTOGRAPHS

NO PHOTO

UCS-110—Before

UCS-110—After

UCS-111—Before

UCS-111—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-112—Before

UCS-112—After

UCS-113—Before

UCS-113—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-114—Before

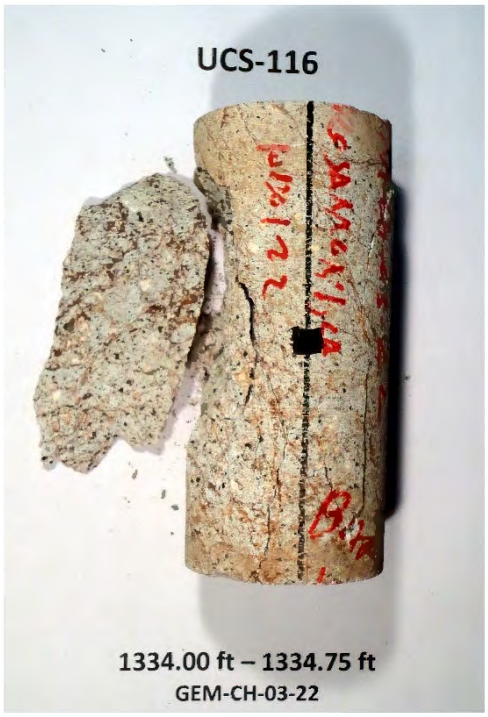
UCS-114—After

UCS-115—Before

UCS-115—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-116—Before



UCS-116—After

UCS-117—Before

UCS-117—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-118—Before

UCS-118—After

UCS-119—Before

UCS-119—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-120—Before

UCS-120—After

UCS-121—Before

UCS-121—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-122—Before

UCS-122—After

UCS-123—Before

UCS-123—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-124—Before

UCS-124—After

UCS-125—Before

UCS-125—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-126—Before

UCS-126—After

UCS-127—Before

UCS-127—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-129—Before

UCS-129—After

UCS-130—Before

UCS-130—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-131—Before

UCS-131—After

UCS-132—Before

UCS-132—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-133—Before

UCS-133—After

UCS-134—Before

UCS-134—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-135—Before

UCS-135—After

UCS-136—Before

UCS-136—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(continued)*

UCS-137—Before

UCS-137—After

UCS-138—Before

UCS-138—After

Figure C-1. Before and After Photographs of Uniaxial Compressive Strength Test Specimens *(concluded)*

APPENDIX D

SPLITTING TENSILE STRENGTH (BRAZILIAN) TEST DATA SHEETS

AGAPITO ASSOCIATES, INC.
2913 Hill Avenue, #B
Grand Junction, CO 81504 USA
970-242-4220

INDIRECT TENSILE STRENGTH (BRAZILIAN) TESTS

CLIENT	Lane / Hydrostor	**HOLE NUMBER**	GEM-CH-01-22
JOB NUMBER	951-14	**MOISTURE CONDITION**	As Received
DATE	October 10, 2022	**TEMPERATURE**	Ambient

Specimen No.	Hole No.	Depth From (ft)	Depth To (ft)	Length of Interval (ft)	Weight (oz)	Diameter D_1 (in)	Diameter D_2 (in)	Axial Length (inch)	Area (inch^2)	Density (pcf)	Specific Gravity
BTS-01	GEM-CH-01-22	1,973.41	1,974.20	0.79	9.87	2.40	2.40	1.47	4.52	161	2.6
BTS-02	GEM-CH-01-22	1,980.00	1,980.50	0.50	9.30	2.41	2.41	1.42	4.55	156	2.5
BTS-03	GEM-CH-01-22	2,003.33	2,003.64	0.31	9.87	2.40	2.40	1.43	4.53	165	2.6
BTS-04	GEM-CH-01-22	2,014.25	2,015.00	0.75	9.72	2.40	2.40	1.40	4.54	165	2.6
BTS-05	GEM-CH-01-22	2,037.75	2,038.16	0.41	9.50	2.40	2.40	1.44	4.53	158	2.5
BTS-06	GEM-CH-01-22	2,060.00	2,062.62	2.62	9.67	2.41	2.41	1.43	4.55	161	2.6
BTS-07	GEM-CH-01-22	2,086.00	2,086.45	0.45	9.30	2.41	2.41	1.43	4.56	154	2.5
BTS-08	GEM-CH-01-22	2,102.00	2,102.54	0.54	9.30	2.41	2.41	1.43	4.57	154	2.5
BTS-09	GEM-CH-01-22	2,126.83	2,127.00	0.17	9.75	2.40	2.40	1.43	4.53	162	2.6
BTS-10	GEM-CH-01-22	2,151.00	2,151.50	0.50	8.97	2.40	2.40	1.39	4.52	154	2.5
BTS-11	GEM-CH-01-22	2,172.40	2,173.00	0.60	10.09	2.40	2.40	1.47	4.53	164	2.6
BTS-12	GEM-CH-01-22	2,202.80	2,203.00	0.20	9.91	2.40	2.40	1.48	4.54	160	2.6
BTS-13	GEM-CH-01-22	1,312.30	1,313.00	0.70	7.54	2.37	2.37	1.27	4.42	145	2.3
BTS-14	GEM-CH-01-22	1,334.55	1,335.35	0.80	7.20	2.37	2.37	1.35	4.42	130	2.1
BTS-15	GEM-CH-01-22	1,372.70	1,373.30	0.60	7.41	2.39	2.39	1.49	4.48	120	1.9
BTS-16	GEM-CH-01-22	1,383.70	1,384.75	1.05	7.99	2.39	2.38	1.48	4.47	130	2.1
BTS-17	GEM-CH-01-22	1,392.80	1,393.90	1.10	7.63	2.39	2.39	1.44	4.49	128	2.0
BTS-18	GEM-CH-01-22	1,424.00	1,424.90	0.90	7.77	2.39	2.40	1.40	4.52	132	2.1
BTS-19	GEM-CH-01-22	1,433.90	1,434.70	0.80	7.23	2.39	2.39	1.35	4.49	128	2.1
BTS-20	GEM-CH-01-22	1,449.00	1,449.90	0.90	6.61	2.37	2.37	1.32	4.41	122	2.0
BTS-21	GEM-CH-01-22	1,455.10	1,456.00	0.90	7.01	2.40	2.40	1.32	4.52	127	2.0
BTS-22	GEM-CH-01-22	1,482.50	1,483.20	0.70	7.20	2.40	2.40	1.27	4.53	135	2.2
BTS-23	GEM-CH-01-22	1,491.40	1,492.20	0.80	7.55	2.41	2.41	1.37	4.56	130	2.1

Specimen No.	Lithological Description	Failure Load (lb)	Splitting Tensile Strength (psi)	Failure Mode Notes
BTS-01	Granite	2,117	383	Tensile - Center; Secondary failure along mineralized fracture
BTS-02	K-Feldspar Rich Pegmatite	1,501	280	Tensile - Center; Secondary failure along mineralized fracture
BTS-03	Granite	3,236	602	Tensile - Center
BTS-04	Granite	2,284	431	Tensile - Center
BTS-05	Granite	385	71	Tensile - Center; Secondary shear failure
BTS-06	Granite	654	121	Tensile - Slightly Off Center; Secondary shear failure
BTS-07	Granite	404	75	Tensile - Off Center; Secondary failures along mineralized fractures
BTS-08	Granite/K-Feldspar Rich Pegmatite	250	46	Tensile - Slightly Off Center; Secondary shear failure
BTS-09	Granite	1,477	273	Tensile - Center; Secondary shear failure
BTS-10	Granite	662	126	Tensile - Center
BTS-11	Granite	2,396	432	Tensile - Center
BTS-12	Granite	856	154	Tensile - Center; Secondary shear failure
BTS-13	Shale, sandy, tuffaceous	1,184	250	Tensile - Center, secondary failure on fracture
BTS-14	Tuff, breccia in places, altered in places	2,551	508	Tensile - Center
BTS-15	Tuff, breccia in places, altered in places	1,087	195	Tensile - Center
BTS-16	Tuff, breccia in places, altered in places	799	144	Tensile - Center
BTS-17	Tuff	1,646	305	Tensile - Center, secondary failure on fracture
BTS-18	Tuff	437	83	Tensile - Center, secondary failure on fracture
BTS-19	Mudstone/shale, tuffaceous	1,961	386	Tensile - Center, secondary failure on fracture
BTS-20	Tuff, welded	1,583	321	Tensile - Center
BTS-21	Tuff, welded	2,808	564	Tensile - Center
BTS-22	Breccia, tuffaceous	2,857	596	Tensile - Center
BTS-23	Tuff, lithic lapilli	228	44	Tensile - Center, secondary failure on fracture

AGAPITO ASSOCIATES, INC.
2913 Hill Avenue, #B
Grand Junction, CO 81504 USA
970-242-4220

INDIRECT TENSILE STRENGTH (BRAZILIAN) TESTS

CLIENT	Lane / Hydrostore	**HOLE NUMBER**	GEM-CH-02-22
JOB NUMBER	951-14	**MOISTURE CONDITION**	As Received
DATE	October 18, 2022	**TEMPERATURE**	Ambient

Specimen No.	Hole No.	Depth From (ft)	Depth To (ft)	Length of Interval (ft)	Weight (oz)	Diameter D_1 (in)	Diameter D_2 (in)	Axial Length (inch)	Area ($inch^2$)	Density (pcf)	Specific Gravity
BTS-24	GEM-CH-02-22	1,317.16	1,318.00	0.84	7.26	2.40	2.40	1.52	4.53	114	1.8
BTS-25	GEM-CH-02-22	1,327.50	1,328.00	0.50	7.94	2.40	2.40	1.57	4.52	121	1.9
BTS-26	GEM-CH-02-22	1,367.00	1,368.00	1.00	6.87	2.41	2.40	1.33	4.53	123	2.0
BTS-27	GEM-CH-02-22	1,398.00	1,398.66	0.66	6.49	2.40	2.40	1.43	4.51	109	1.7
BTS-28	GEM-CH-02-22	1,418.60	1,420.00	1.40	7.68	2.40	2.40	1.51	4.53	121	1.9
BTS-29	GEM-CH-02-22	1,428.66	1,429.33	0.67	7.81	2.40	2.40	1.49	4.52	125	2.0
BTS-30	GEM-CH-02-22	1,447.33	1,448.00	0.67	8.26	2.40	2.40	1.59	4.54	124	2.0
BTS-31	GEM-CH-02-22	1,471.00	1,471.91	0.91	7.33	2.40	2.40	1.49	4.52	117	1.9
BTS-32	GEM-CH-02-22	1,499.83	1,500.16	0.33	7.49	2.41	2.40	1.38	4.54	129	2.1
BTS-33	GEM-CH-02-22	1,526.00	1,527.25	1.25	6.73	2.40	2.40	1.37	4.52	117	1.9
BTS-34	GEM-CH-02-22	1,545.66	1,546.00	0.34	6.57	2.39	2.39	1.34	4.49	118	1.9
BTS-35	GEM-CH-02-22	1,570.66	1,571.00	0.34	6.52	2.39	2.40	1.31	4.51	120	1.9
BTS-36	GEM-CH-02-22	1,602.66	1,603.00	0.34	6.54	2.38	2.39	1.33	4.47	119	1.9
BTS-37	GEM-CH-02-22	1,622.16	1,623.00	0.84	6.57	2.39	2.40	1.31	4.50	120	1.9
BTS-38	GEM-CH-02-22	1,636.58	1,637.00	0.42	7.08	2.40	2.40	1.33	4.51	127	2.0

Specimen No.	Lithological Description	Failure Load (lb)	Splitting Tensile Strength (psi)	Failure Mode Notes
BTS-24	Breccia, tuffaceous, lapilli	2,074	362	Tensile - Center
BTS-25	Breccia, tuffaceous, lapilli	2,073	350	Tensile - Center
BTS-26	Breccia, tuffaceous, lapilli	1,939	387	Tensile - Center, secondary shear failure
BTS-27	Breccia, tuffaceous, lapilli	1,936	359	Tensile - Center
BTS-28	Breccia, tuffaceous, lapilli	2,604	457	Tensile - Center
BTS-29	Tuff, welded	1,931	344	Tensile - Center
BTS-30	Tuff, welded	1,679	280	Tensile - Center
BTS-31	Tuff, welded	2,089	371	Tensile - Center
BTS-32	Tuff, welded	2,508	483	Tensile - Center
BTS-33	Tuff, welded	2,065	400	Tensile - Center, secondary shear failure
BTS-34	Tuff, welded	1,479	294	Tensile - Center
BTS-35	Tuff, welded	2,173	443	Tensile - Center
BTS-36	Tuff, welded	2,408	484	Tensile - Center
BTS-37	Breccia, tuffaceous	1,291	262	Tensile - Center
BTS-38	Breccia, tuffaceous	698	139	Tensile - Center

AGAPITO ASSOCIATES, INC.
2913 Hill Avenue, #B
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970-242-4220

INDIRECT TENSILE STRENGTH (BRAZILIAN) TESTS

CLIENT	Lane/Hydrostor	**HOLE NUMBER**	GEM-CH-03-22
JOB NUMBER	951-14	**MOISTURE CONDITION**	As Received
DATE	December 27, 2022	**TEMPERATURE**	Ambient

Specimen No.	Hole No.	Depth From (ft)	Depth To (ft)	Length of Interval (ft)	Weight (oz)	Diameter D_1 (in)	Diameter D_2 (in)	Axial Length (inch)	Area ($inch^2$)	Density (pcf)	Specific Gravity
BTS-39	GEM-CH-03-22	1,194.50	1,195.50	1.00	7.88	2.42	2.42	1.36	4.59	136	2.2
BTS-40	GEM-CH-03-22	1,327.00	1,328.00	1.00	7.56	2.42	2.42	1.31	4.60	135	2.2
BTS-41	GEM-CH-03-22	1,342.16	1,343.16	1.00	7.60	2.42	2.42	1.32	4.60	135	2.2
BTS-42	GEM-CH-03-22	1,386.00	1,387.06	1.06	8.27	2.41	2.42	1.37	4.58	142	2.3
BTS-43	GEM-CH-03-22	1,402.66	1,403.58	0.92	7.85	2.42	2.43	1.32	4.62	140	2.2
BTS-44	GEM-CH-03-22	1,429.75	1,430.58	0.83	9.19	2.42	2.42	1.45	4.61	149	2.4
BTS-45	GEM-CH-03-22	1,464.00	1,465.00	1.00	9.66	2.42	2.43	1.48	4.62	153	2.5
BTS-46	GEM-CH-03-22	1,478.00	1,479.00	1.00	8.51	2.42	2.42	1.35	4.60	148	2.4
BTS-47	GEM-CH-03-22	1,501.23	1,502.00	0.77	8.43	2.42	2.42	1.30	4.60	152	2.4
BTS-48	GEM-CH-03-22	1,531.66	1,532.33	0.67	9.31	2.40	2.40	1.44	4.53	154	2.5
BTS-49	GEM-CH-03-22	1,568.00	1,569.00	1.00	9.04	2.40	2.40	1.39	4.53	156	2.5
BTS-50	GEM-CH-03-22	1,602.41	1,603.16	0.75	8.47	2.40	2.40	1.37	4.53	148	2.4

Specimen No.	Lithological Description	Failure Load (lb)	Splitting Tensile Strength (psi)	Failure Mode Notes
BTS-39	Tuff, hard, welded	1,450	281	Tensile - Center
BTS-40	Tuff, rhyolitic	1,307	262	Tensile - Center
BTS-41	Tuff, rhyolitic	2,114	423	Tensile - Center
BTS-42	Andesite	1,825	351	Tensile - Center
BTS-43	Andesite	1,725	344	Tensile - Center
BTS-44	Andesite	1,418	258	Tensile - Center
BTS-45	Andesite / Rhyolite	1,790	318	Tensile - Center
BTS-46	Andesite / Rhyolite	6,168	1,203	Tensile - Center
BTS-47	Quartz Monzonite	579	117	Tensile - Failed along pre-existing fracture
BTS-48	Quartz Monzonite	1,285	236	Tensile - Center
BTS-49	Granodiorite, decomposed	952	182	Tensile - Center
BTS-50	Granodiorite, decomposed	338	66	Tensile - Center

APPENDIX E

POINT LOAD TEST DATA SHEETS

AGAPITO ASSOCIATES, INC.
2913 Hill Avenue, #B
Grand Junction, CO 81504 USA
970-242-4220

POINT LOAD TESTS

CLIENT	Lane / Hydrostor	**HOLE NUMBER**	GEM-CH-01-22
JOB NUMBER	951-14	**MOISTURE CONDITION**	As Received
DATE	October 13, 2022	**TEMPERATURE**	Ambient

Sample No.	Hole ID	Depth From (ft)	Depth To (ft)	Failure Gauge Pressure (psi)	"Failure Load" P (lb)	Test Orientation (A/D)	D (inch)	W (inch)	D_e (inch)	D_e^2 (inch^2)	Uncorrected Point Load Index, I_s (psi)	Size Correction Factor, F	Corrected Point Load Index, $I_{S(50)}$ (psi)	UCS (psi)	Lithology
PLT-01	GEM-CH-01-22	1973.41	1974.20	271	470	A	1.32	2.40	2.01	4.03	117	1.01	118	2,472	Granite
PLT-02	GEM-CH-01-22	1983.81	1984.00	980	1,699	A	1.30	2.40	1.99	3.97	428	1.01	430	9,029	Granite
PLT-03	GEM-CH-01-22	1999.41	2000.04	602	1,044	A	1.18	2.40	1.90	3.61	289	0.98	285	5,981	Granite
PLT-04	GEM-CH-01-22	2014.25	2015.00	611	1,059	A	1.38	2.40	2.05	4.21	252	1.02	256	5,384	Granite
PLT-05	GEM-CH-01-22	2029.25	2029.58	191	331	A	1.32	2.40	2.01	4.03	82	1.01	83	1,742	Granite
PLT-06	GEM-CH-01-22	2037.75	2038.16	128	222	A	1.28	2.40	1.98	3.90	57	1.00	57	1,196	Granite
PLT-07	GEM-CH-01-22	2052.16	2052.70	416	721	A	1.24	2.30	1.90	3.62	199	0.99	196	4,116	Granite
PLT-08	GEM-CH-01-22	2060.00	2062.62	229	397	A	1.28	2.40	1.98	3.91	102	1.00	102	2,138	Granite
PLT-09	GEM-CH-01-22	2068.41	2068.82	93	161	A	1.34	2.40	2.02	4.09	39	1.01	40	837	Granite
PLT-10	GEM-CH-01-22	2071.00	2072.00	336	583	A	1.18	2.41	1.90	3.63	161	0.99	158	3,323	Granite
PLT-11	GEM-CH-01-22	2090.50	2091.00	305	529	A	1.34	2.40	2.02	4.10	129	1.01	131	2,745	Granite
PLT-12	GEM-CH-01-22	2109.58	2110.00	360	624	A	1.48	2.37	2.11	4.45	140	1.03	145	3,038	Granite
PLT-13	GEM-CH-01-22	1327.00	1328.20	1,056	1,831	A	1.44	1.76	1.80	3.23	567	0.96	544	11,433	Shale, sandy, tuffaceous
PLT-14	GEM-CH-01-22	1347.60	1348.50	1,128	1,956	A	1.20	2.15	1.81	3.29	594	0.96	573	12,029	Tuff, breccia in places, altered in places
PLT-15	GEM-CH-01-22	1392.80	1393.90	748	1,297	A	1.32	2.39	2.00	4.02	323	1.01	325	6,835	Tuff
PLT-16	GEM-CH-01-22	1424.00	1424.90	100	173	A	1.40	2.39	2.06	4.25	41	1.02	42	874	Tuff
PLT-17	GEM-CH-01-22	1433.90	1434.70	511	886	A	1.24	2.36	1.93	3.73	238	0.99	236	4,946	Mudstone/shale, tuffaceous
PLT-18	GEM-CH-01-22	1449.00	1449.90	583	1,011	A	1.34	2.39	2.02	4.07	248	1.01	251	5,274	Tuff, welded
PLT-19	GEM-CH-01-22	1482.50	1483.20	911	1,579	A	1.14	2.40	1.87	3.49	452	0.98	442	9,281	Breccia, tuffaceous
PLT-20	GEM-CH-01-22	1491.40	1492.20	116	201	A	1.22	2.40	1.93	3.74	54	0.99	53	1,121	Tuff, lithic lapilli
PLT-21	GEM-CH-01-22	1510.90	1511.70	48	83	A	1.46	2.41	2.11	4.47	19	1.03	19	404	Tuff, lithic lapilli

AGAPITO ASSOCIATES, INC.
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POINT LOAD TESTS

CLIENT	Lane / Hydrostor	**HOLE NUMBER**	GEM-CH-02-22
JOB NUMBER	951-14	**MOISTURE CONDITION**	As Received
DATE	October 18, 2022	**TEMPERATURE**	Ambient

Sample No.	Hole ID	Depth From (ft)	Depth To (ft)	Failure Gauge Pressure (psi)	"Failure Load" P (lb)	Test Orientation (A/D)	D (inch)	W (inch)	D_e (inch)	D_e^2 (inch^2)	Uncorrected Point Load Index, I_s (psi)	Size Correction Factor, F	Corrected Point Load Index, $I_{S(50)}$ (psi)	UCS (psi)	Lithology
PLT-22	GEM-CH-02-22	1317.16	1318.00	757	1,312	A	1.32	2.40	2.01	4.03	326	1.01	329	6,904	Breccia, tuffaceous, lapilli
PLT-23	GEM-CH-02-22	1327.50	1328.00	863	1,496	A	1.44	2.40	2.09	4.39	341	1.03	351	7,363	Breccia, tuffaceous, lapilli
PLT-24	GEM-CH-02-22	1337.00	1338.00	785	1,361	A	1.50	2.40	2.14	4.58	297	1.04	309	6,485	Breccia, tuffaceous, lapilli
PLT-25	GEM-CH-02-22	1367.00	1368.00	766	1,328	A	1.22	2.40	1.93	3.73	356	0.99	353	7,413	Breccia, tuffaceous, lapilli
PLT-26	GEM-CH-02-22	1377.25	1378.33	879	1,524	A	1.38	2.40	2.05	4.21	362	1.02	369	7,745	Breccia, tuffaceous, lapilli
PLT-27	GEM-CH-02-22	1409.00	1410.25	821	1,423	A	1.34	2.40	2.02	4.09	348	1.01	352	7,396	Breccia, tuffaceous, lapilli
PLT-28	GEM-CH-02-22	1418.60	1420.00	499	865	A	1.30	2.40	1.99	3.97	218	1.01	219	4,598	Breccia, tuffaceous, lapilli
PLT-29	GEM-CH-02-22	1437.00	1438.00	512	888	A	1.42	2.40	2.08	4.32	205	1.02	210	4,420	Tuff, welded
PLT-30	GEM-CH-02-22	1459.00	1459.66	808	1,401	A	1.48	2.40	2.12	4.51	311	1.03	321	6,749	Tuff, welded
PLT-31	GEM-CH-02-22	1526.00	1527.25	511	886	A	1.26	2.00	1.79	3.20	277	0.96	265	5,566	Tuff, welded
PLT-32	GEM-CH-02-22	1622.16	1623.00	590	1,023	A	1.30	2.39	1.99	3.96	258	1.00	260	5,451	Breccia, tuffaceous

AGAPITO ASSOCIATES, INC.
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970-242-4220

POINT LOAD TESTS

CLIENT	Lane/Hydrostor	**HOLE NUMBER**	GEM-CH-03-22
JOB NUMBER	951-14	**MOISTURE CONDITION**	As Received
DATE	December 27, 2022	**TEMPERATURE**	Ambient

Sample No.	Hole ID	Depth From (ft)	Depth To (ft)	Failure Gauge Pressure (psi)	"Failure Load" P (lb)	Test Orientation (A/D)	D (inch)	W (inch)	D_e (inch)	D_e^2 (inch^2)	Uncorrected Point Load Index, I_s (psi)	Size Correction Factor, F	Corrected Point Load Index, $I_{S(50)}$ (psi)	UCS (psi)	Lithology
PLT-33	GEM-CH-03-22	1184.00	1184.50	513	889	A	1.20	2.42	1.92	3.70	241	0.99	238	5,001	Tuff, hard, welded
PLT-34	GEM-CH-03-22	1304.00	1304.50	450	780	A	1.16	2.42	1.89	3.58	218	0.98	214	4,496	Tuff, rhyolitic
PLT-35	GEM-CH-03-22	1356.58	1357.16	515	893	A	1.16	2.42	1.89	3.58	250	0.98	245	5,148	Rhyolite
PLT-36	GEM-CH-03-22	1393.41	1394.00	386	669	A	1.26	2.41	1.97	3.87	173	1.00	173	3,628	Andesite
PLT-37	GEM-CH-03-22	1398.00	1398.66	331	574	A	1.16	2.42	1.89	3.57	161	0.98	158	3,313	Andesite
PLT-38	GEM-CH-03-22	1434.00	1434.66	303	525	A	1.34	2.42	2.03	4.13	127	1.01	129	2,709	Andesite
PLT-39	GEM-CH-03-22	1445.58	1446.00	405	702	A	1.22	2.42	1.94	3.76	187	0.99	185	3,892	Andesite / Rhyolite
PLT-40	GEM-CH-03-22	1469.00	1469.33	67	116	A	1.36	2.42	2.05	4.19	28	1.02	28	592	Andesite / Rhyolite
PLT-41	GEM-CH-03-22	1507.66	1508.00	135	234	A	1.24	2.42	1.95	3.82	61	1.00	61	1,283	Quartz Monzonite, hard
PLT-42	GEM-CH-03-22	1554.00	1554.48	177	307	A	1.22	2.40	1.93	3.73	82	0.99	82	1,713	Granodiorite
PLT-43	GEM-CH-03-22	1574.00	1574.33	190	329	A	1.30	2.38	1.99	3.94	84	1.00	84	1,762	Granodiorite
PLT-44	GEM-CH-03-22	1617.50	1617.91	126	218	A	1.26	2.40	1.96	3.85	57	1.00	57	1,190	Granodiorite

APPENDIX F

SLAKE DURABILITY TEST DATA SHEETS

AGAPITO ASSOCIATES, INC.
2913 Hill Avenue, #B
Grand Junction, CO 81504 USA
970-242-4220

SLAKE DURABILITY TESTS

CLIENT	Lane PES / Hydrostor	**HOLE NUMBER**	GEM-CH-01-22
JOB NUMBER	951-14	**MOISTURE CONDITION**	As Received
DATE	October 5, 2022	**OVEN TEMPERATURE**	230 ± 10 °F

SYMBOLS:

A	Weight of drum plus sample at natural moisture content (oz)	**D**	Weight of drum plus oven-dried sample before second cycle (oz)
B	Weight of drum plus oven-dried sample before first cycle (oz)	**W_F**	Weight of drum plus oven-dried sample after second cycle (oz)
C	Weight of drum (oz)		

Specimen No.	Hole ID	Interval		Length of Interval (ft)	A (oz)	B (oz)	C (oz)	D (oz)	Water Temperature Cycle 1		W_F (oz)	Water Temperature Cycle 2		Moisture Content (%)	Slake Durability Index I_d(2)	Retained Materials Description	
		From (ft)	To (ft)						Before (°F)	After (°F)		Before (°F)	After (°F)			Lithology	Type*
SLK-01	GEM-CH-01-22	1,976.00	1,976.50	0.50	70.27	70.09	53.43	67.13	62.6	65.6	65.08	58.9	63.5	1.1%	69.9	Granite	II
SLK-02	GEM-CH-01-22	1,988.41	1,989.03	0.62	71.60	71.52	53.43	71.17	62.6	65.6	70.99	58.9	63.5	0.4%	97.1	Granite	I
SLK-03	GEM-CH-01-22	1,999.41	2,000.04	0.63	70.26	70.22	52.69	69.73	62.6	65.6	69.55	58.9	63.5	0.3%	96.2	Granite	I
SLK-04	GEM-CH-01-22	2,010.08	2,010.66	0.58	71.11	70.92	53.68	64.93	65.4	68.4	62.23	63.2	64.7	1.1%	49.6	Granite	II
SLK-05	GEM-CH-01-22	2,024.83	2,025.33	0.50	70.18	70.15	53.00	65.46	65.4	68.4	64.08	63.2	64.7	0.1%	64.6	Granite	II
SLK-06	GEM-CH-01-22	2,032.00	2,032.33	0.33	70.07	69.98	52.86	65.23	65.4	68.4	63.36	63.2	64.7	0.5%	61.3	Granite	II
SLK-07	GEM-CH-01-22	2,041.00	2,042.00	1.00	71.47	71.34	53.43	62.31	58.6	65.0	60.15	67.8	74.0	0.7%	37.5	Granite	II
SLK-08	GEM-CH-01-22	2,053.00	2,053.50	0.50	70.76	70.70	53.43	70.29	58.6	65.0	70.03	67.8	74.0	0.4%	96.1	Granite	I
SLK-09	GEM-CH-01-22	2,067.66	2,068.41	0.75	71.89	71.72	52.69	68.48	58.6	65.0	66.45	67.8	74.0	0.9%	72.3	Granite	II
SLK-10	GEM-CH-01-22	2,073.83	2,074.62	0.79	71.24	71.09	53.68	69.50	64.9	68.4	68.58	74.0	76.9	0.9%	85.6	Granite	I
SLK-11	GEM-CH-01-22	2,089.00	2,089.58	0.58	72.52	72.47	54.92	68.60	64.9	68.4	67.93	74.0	76.9	0.3%	74.1	Granite	II
SLK-12	GEM-CH-01-22	2,106.00	2,107.00	1.00	73.77	73.69	55.34	70.51	64.9	68.4	69.17	74.0	76.9	0.5%	75.4	Granite	II
SLK-24	GEM-CH-01-22	1,327.00	1,328.20	1.20	71.46	71.37	53.42	71.24	60.0	65.0	71.19	59.9	65.2	0.5%	99.0	Tuff, breccia in places, altered in places	I
SLK-25	GEM-CH-01-22	1,347.60	1,348.00	0.40	71.03	70.80	53.43	70.68	60.0	65.0	70.63	59.9	65.2	1.3%	99.0	Tuff, breccia in places, altered in places	I
SLK-26	GEM-CH-01-22	1,383.70	1,384.75	1.05	70.42	69.91	52.07	69.50	60.0	65.0	69.23	59.9	65.2	2.9%	96.2	Tuff, breccia in places, altered in places	I
SLK-27	GEM-CH-01-22	1,408.50	1,409.30	0.80	72.76	72.44	53.42	72.36	50.4	57.2	72.32	60.1	67.2	1.7%	99.4	Tuff	I
SLK-28	GEM-CH-01-22	1,463.90	1,464.70	0.80	70.42	70.16	53.43	70.05	50.4	57.2	70.02	60.1	67.2	1.6%	99.2	Breccia, tuffaceous	I
SLK-29	GEM-CH-01-22	1,506.20	1,506.90	0.70	69.99	69.74	52.69	68.35	50.4	57.2	67.640	60.1	67.2	1.5%	87.7	Tuff, lithic lapilli	II

* Type I = Retained pieces remained virtually unchanged
II = Retained materials consist of large and small pieces
III = Retained materials is exclusively small fragments

AGAPITO ASSOCIATES, INC.
2913 Hill Avenue, #B
Grand Junction, CO 81504 USA
970-242-4220

SLAKE DURABILITY TESTS

CLIENT	Lane/Hydrostor	**HOLE NUMBER**	GEM-CH-02-22
JOB NUMBER	951-14	**MOISTURE CONDITION**	As Received
DATE	November 29, 2022	**OVEN TEMPERATURE**	230 ± 10 °F

SYMBOLS:

A	Weight of drum plus sample at natural moisture content (oz)	**D**	Weight of drum plus oven-dried sample before second cycle (oz)
B	Weight of drum plus oven-dried sample before first cycle (oz)	**W_F**	Weight of drum plus oven-dried sample after second cycle (oz)
C	Weight of drum (oz)		

Specimen No.	Hole ID	Interval		Length of Interval (ft)	A (oz)	B (oz)	C (oz)	D (oz)	Water Temperature Cycle 1		W_F (oz)	Water Temperature Cycle 2		Moisture Content (%)	Slake Durability Index I_d(2)	Retained Materials Description	
		From (ft)	To (ft)						Before (°F)	After (°F)		Before (°F)	After (°F)			Lithology	Type*
SLK-13	GEM-CH-02-22	1,347.00	1,348.00	1.00	71.04	70.40	53.42	70.39	58.3	64.9	70.25	67.8	70.5	3.8%	99.1	Breccia, tuffaceous, lapilli	I
SLK-14	GEM-CH-02-22	1,506.50	1,507.33	0.83	70.37	69.14	53.43	69.07	58.3	64.9	68.93	67.8	70.5	7.8%	98.7	Tuff, welded	I
SLK-15	GEM-CH-02-22	1,575.00	1,575.66	0.66	70.03	69.27	52.69	69.26	58.3	64.9	69.10	67.8	70.5	4.6%	98.9	Tuff, welded	I
SLK-16	GEM-CH-02-22	1,662.75	1,663.33	0.58	71.46	71.25	53.67	71.22	64.6	70.8	71.21	70.2	74.0	1.2%	99.7	Granite, hydrothermally altered	I
SLK-17	GEM-CH-02-22	1,732.00	1,733.00	1.00	71.63	71.48	54.93	70.74	64.6	70.8	70.24	70.2	74.0	0.9%	92.5	Granite, hydrothermally altered	I
SLK-18	GEM-CH-02-22	1,746.50	1,747.16	0.66	73.89	73.81	55.34	68.77	64.6	70.8	66.36	70.2	74.0	0.4%	59.6	Granite, hydrothermally altered	II
SLK-19	GEM-CH-02-22	1,311.66	1,312.32	0.66	71.28	70.70	53.67	70.49	60.4	66.8	70.335	60.3	66.6	3.4%	97.9	Breccia, tuffaceous, lapilli	I
SLK-20	GEM-CH-02-22	1,398.00	1,398.66	0.66	71.69	71.01	54.93	70.45	60.4	66.8	69.865	60.3	66.6	4.2%	92.9	Breccia, tuffaceous, lapilli	I
SLK-21	GEM-CH-02-22	1,460.75	1,461.00	0.25	72.14	71.01	55.34	70.62	60.4	66.8	70.440	60.3	66.6	7.2%	96.4	Tuff, welded	I
SLK-22	GEM-CH-02-22	1,534.00	1,535.58	1.58	72.37	71.69	55.44	71.28	66.8	69.6	71.015	66.6	69.9	4.2%	95.8	Tuff, welded	I
SLK-23	GEM-CH-02-22	1,604.00	1,605.00	1.00	70.02	68.94	52.85	68.49	66.8	69.6	68.200	66.6	69.9	6.7%	95.4	Tuff, welded	I
SLK-30	GEM-CH-02-22	1,337.00	1,338.00	1.00	71.14	70.52	53.66	70.49	56.4	63.9	70.275	67.2	73.0	3.7%	98.5	Breccia, tuffaceous, lapilli	I
SLK-31	GEM-CH-02-22	1,367.00	1,368.00	1.00	72.430	71.885	54.93	71.845	56.4	63.9	71.620	67.2	73.0	3.2%	98.4	Breccia, tuffaceous, lapilli	I
SLK-32	GEM-CH-02-22	1,387.50	1,388.25	0.75	73.310	72.595	55.34	72.485	56.4	63.9	72.260	67.2	73.0	4.1%	98.1	Breccia, tuffaceous, lapilli	I
SLK-33	GEM-CH-02-22	1,418.60	1,420.00	1.40	73.320	72.540	55.42	72.390	63.8	68.6	72.190	73.0	76.1	4.6%	98.0	Breccia, tuffaceous, lapilli	I
SLK-34	GEM-CH-02-22	1,437.00	1,438.00	1.00	69.525	68.380	52.85	68.230	63.8	68.6	67.890	73.0	76.1	7.4%	96.8	Tuff, welded	I
SLK-35	GEM-CH-02-22	1,622.16	1,623.00	0.84	71.410	70.295	53.01	70.150	63.8	68.6	69.790	73.0	76.1	6.4%	97.1	Breccia, tuffaceous	I

* Type I = Retained pieces remained virtually unchanged
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AGAPITO ASSOCIATES, INC.
2913 Hill Avenue, #B
Grand Junction, CO 81504 USA
970-242-4220

SLAKE DURABILITY TESTS

CLIENT	Lane/Hydrostor	**HOLE NUMBER**	GEM-CH-03-22
JOB NUMBER	951-14	**MOISTURE CONDITION**	As Received
DATE	December 27, 2022	**OVEN TEMPERATURE**	230 ± 10 °F

SYMBOLS:

A	Weight of drum plus sample at natural moisture content (oz)	**D**	Weight of drum plus oven-dried sample before second cycle (oz)
B	Weight of drum plus oven-dried sample before first cycle (oz)	**W_F**	Weight of drum plus oven-dried sample after second cycle (oz)
C	Weight of drum (oz)		

Specimen No.	Hole ID	Interval		Length of Interval (ft)	A (oz)	B (oz)	C (oz)	D (oz)	Water Temperature Cycle 1		W_F (oz)	Water Temperature Cycle 2		Moisture Content (%)	Slake Durability Index I_d(2)	Retained Materials Description	
		From (ft)	To (ft)						Before (°F)	After (°F)		Before (°F)	After (°F)			Lithology	Type*
SLK-36	GEM-CH-03-22	1,195.58	1,196.66	1.08	71.14	70.45	53.42	70.55	48.9	57.5	70.44	47.6	55.9	4.1%	99.9	Tuff, hard, welded	I
SLK-37	GEM-CH-03-22	1,316.58	1,317.41	0.83	69.66	69.11	53.43	68.46	48.9	57.5	68.19	47.6	55.9	3.5%	94.1	Tuff, rhyolitic	I
SLK-38	GEM-CH-03-22	1,340.88	1,342.00	1.12	71.97	71.48	52.69	71.31	48.9	57.5	71.20	47.6	55.9	2.6%	98.5	Tuff, rhyolitic	I
SLK-39	GEM-CH-03-22	1,364.66	1,365.75	1.09	71.30	70.91	53.67	70.79	57.7	63.7	70.71	55.9	61.5	2.3%	98.9	Rhyolite	I
SLK-40	GEM-CH-03-22	1,386.00	1,387.06	1.06	71.77	71.28	54.82	70.71	57.7	63.7	70.44	55.9	61.5	3.0%	94.9	Andesite	I
SLK-41	GEM-CH-03-22	1,414.50	1,415.83	1.33	73.71	73.30	55.23	72.95	57.7	63.7	72.77	55.9	61.5	2.3%	97.1	Andesite	I
SLK-42	GEM-CH-03-22	1,432.50	1,433.50	1.00	72.86	72.45	55.42	72.26	63.5	67.2	72.160	61.5	65.6	2.4%	98.3	Andesite	I
SLK-43	GEM-CH-03-22	1,444.00	1,445.00	1.00	70.27	69.77	52.85	69.59	63.5	67.2	69.485	61.5	65.6	3.0%	98.3	Andesite / Rhyolite	I
SLK-44	GEM-CH-03-22	1,474.00	1,475.00	1.00	70.75	70.07	53.00	69.98	63.5	67.2	69.900	61.5	65.6	4.0%	99.0	Andesite / Rhyolite	I
SLK-45	GEM-CH-03-22	1,522.08	1,523.08	1.00	70.56	67.97	53.42	56.70	58.7	63.8	55.145	47.5	51.8	17.8%	11.9	Granodiorite, decomposed	III
SLK-46	GEM-CH-03-22	1,541.16	1,542.00	0.84	71.41	70.46	53.43	69.98	58.7	63.8	69.630	47.5	51.8	5.6%	95.1	Granodiorite, decomposed	I
SLK-47	GEM-CH-03-22	1,582.58	1,583.58	1.00	70.54	70.39	52.69	64.19	62.3	66.7	62.305	51.7	55.1	0.8%	54.3	Granodiorite, decomposed	II
SLK-48	GEM-CH-03-22	1,609.83	1,610.53	0.70	71.615	71.475	53.665	67.350	62.3	66.7	65.160	51.7	55.1	0.8%	64.5	Granodiorite, decomposed	II

* Type I = Retained pieces remained virtually unchanged
II = Retained materials consist of large and small pieces
III = Retained materials is exclusively small fragments

APPENDIX G

BEFORE AND AFTER PHOTOGRAPHS OF SLAKE DURABILITY TEST SPECIMENS

GEM-CH-01-22
SLAKE BEFORE AND AFTER PHOTOGRAPHS

SLK-01—Before

SLK-01—After

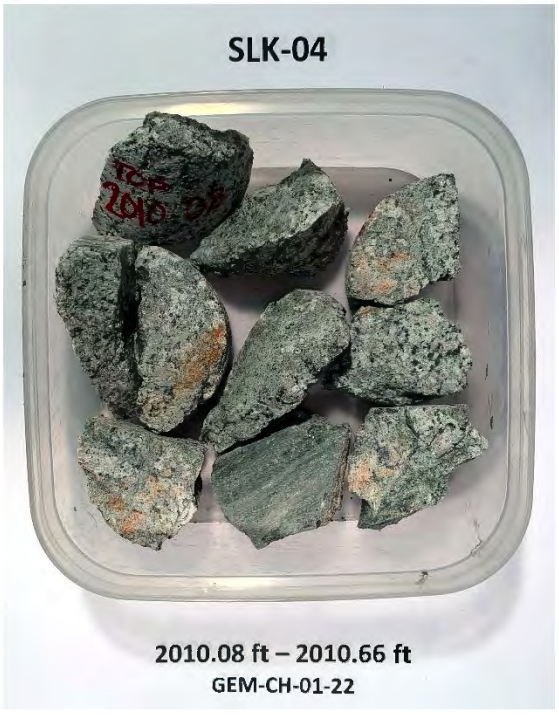
SLK-02—Before

SLK-02—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-03—Before

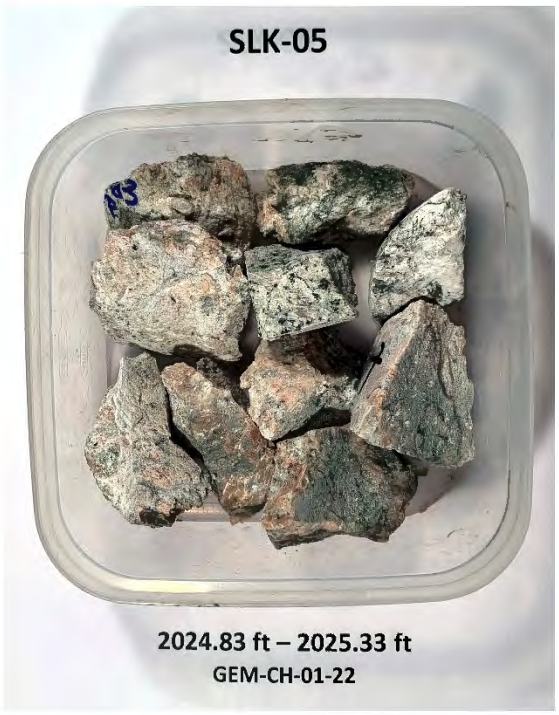
SLK-03—After



SLK-04—Before

SLK-04—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens



SLK-05—Before

SLK-05—After

SLK-06—Before

SLK-06—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-07—Before

SLK-07—After

SLK-08—Before

SLK-08—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-09—Before

SLK-09—After

SLK-10—Before

SLK-10—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-11—Before

SLK-11—After

SLK-12—Before

SLK-12—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-24—Before

SLK-24—After

SLK-25—Before

SLK-25—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-26—Before

SLK-26—After

SLK-27—Before

SLK-27—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-28—Before

SLK-28—After

SLK-29—Before

SLK-29—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

GEM-CH-02-22
SLAKE BEFORE AND AFTER PHOTOGRAPHS

SLK-13—Before

SLK-13—After

SLK-14—Before

SLK-14—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-15—Before

SLK-15—After

SLK-16—Before

SLK-16—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-17—Before

SLK-17—After

SLK-18—Before

SLK-18—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-19—Before

SLK-19—After

SLK-20—Before

SLK-20—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-21—Before

SLK-21—After

SLK-22—Before

SLK-22—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-23—Before

SLK-23—After

SLK-30—Before

SLK-30—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-31—Before

SLK-31—After

SLK-32—Before

SLK-32—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-33—Before

SLK-33—After

SLK-34—Before

SLK-34—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-35—Before **SLK-35—After**

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

GEM-CH-03-22
SLAKE BEFORE AND AFTER PHOTOGRAPHS

SLK-36—Before

SLK-36—After

SLK-37—Before

SLK-37—After

Figure F -1. Before and After Photographs of Slake Durability Test Specimens

SLK-38—Before

SLK-38—After

SLK-39—Before

SLK-39—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-40—Before

SLK-40—After

SLK-41—Before

SLK-41—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-42—Before

SLK-42—After

SLK-43—Before

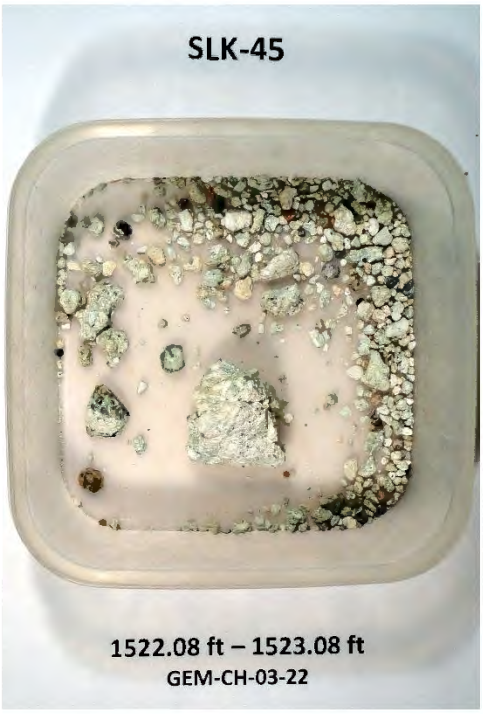
SLK-43—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

SLK-44—Before

SLK-44—After

SLK-45—Before



SLK-45—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens

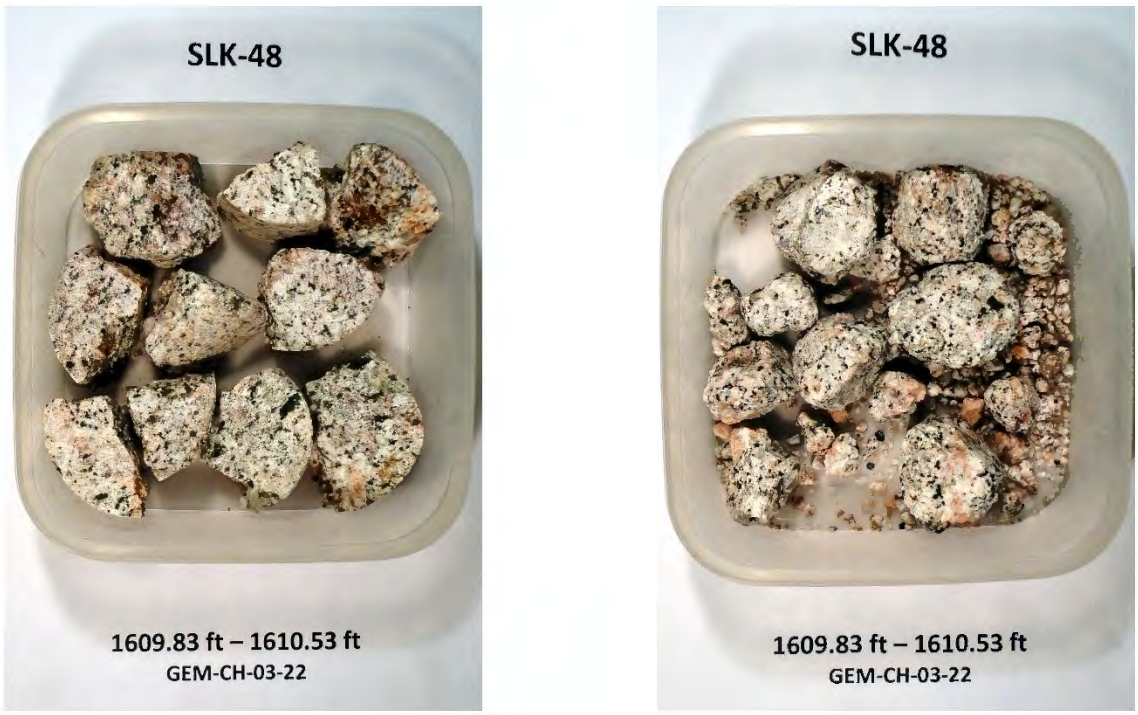
SLK-46—Before

SLK-46—After

SLK-47—Before

SLK-47—After

Figure G-1. Before and After Photographs of Slake Durability Test Specimens



SLK-48—Before **SLK-48—After**

Figure G-1. Before and After Photographs of Slake Durability Test Specimens