October 12, 2020
J.N. 20-227

MS. CAROLINE LEGRAND
8407 Wyndham Road
Los Angeles, California 90046

Subject: **Report of Active Faulting, The Ridge Wellness Center, Approximately 36-acre Parcel, Assessor Parcel Number 568-070-021, Lake Hemet Area, Riverside County, California**

Dear Ms. Legrand:

Petra Geosciences, Inc. (Petra) has prepared this report presenting the results of our active faulting investigation for the subject project. Our services consisted of data review, exploratory test pit excavation, soil age dating, seismic reflection profiling, and preparation of this report. The location of the project site is shown on (Figure 1). This investigation is needed based on the requirements of the State of California to the Alquist-Priolo (A-P) Earthquake Fault Zoning Act. The A-P Act requires that projects proposing the development of habitable structures within A-P zones have site-specific studies done by a geologist to determine the presence or absence of faulting. A habitable structure is defined as one having 2,000 person-hours of occupancy in a year. The State of California defines an active fault as one that has displaced the surface in about the past 11,000 years. Figures 2 and 3 present the locations of the zones requiring site specific geologic investigations by the county of Riverside and the State of California, respectively.

MAPPED GEOLOGY AND FAULTLING

Young alluvial soils underlie the The Ridge project site. The soils are fine to coarse grained. Below the alluvium are Cretaceous-age granitic rocks mapped as Quartz Diorite (Dibblee 2008) and Tonalite (Sharp, 1967).

The Sharp map identifies two faults in the area; the Thomas Mountain fault and the Hot Springs fault. Sharp shows the Hot Spring fault offsetting the Granitic rocks against Early-Mid Pleistocene age Bautista Beds. Sharp maps the Hot Springs fault deflecting slightly to the north and buried as it projects into the alluvium and into The Ridge Project site (Figure 4). The Thomas Mountain fault is also mapped as buried and terminates into the Hot Springs fault. Dibblee (2008) does not show the extension of the Thomas Mountain fault into the alluvium (Figure 5) at The Ridge but shows it buried and curving to the south consistent with Sharps (1967) Thomas Mountain fault.

Research on the Hot Springs fault Reveled little information. The Southern California Earthquake Center (SCEC) database refers to the Fault Activity Map of California and Adjacent Areas (Jennings, 1994). No information on slip rate or recurrence interval is provided in the SCEC data base. The Jennings 1994 and 2010 maps identify the Hot Springs Fault as showing evidence of activity in the Late Quaternary and questioned displacement during Holocene time.

Review of USGS Seismicity maps https://earthquake.usgs.gov/earthquakes/map/ Show seismicity typically on the order of Magnitude 2.5 at depths on the order of 15 kilometers below surface.

A boring drilled approximately 500 feet north northeast of The Ridge project site for the Ronald McDonald Camp encountered Granitic bedrock about 45 feet below ground surface.

FIELD INVESTIGATION

Soil-Age Test Pit

Information on the age of the soils at the site is not available. Accordingly, we proposed a phased approach of which the first phase was to excavate a test pit to gather soil-age data. A test pit was excavated to 10 feet below the ground surface. Groundwater encountered at that depth prevented further excavation. Carbon samples were collected and sent to Beta Analytical for Carbon 14 age dating. Age-dating of carbon samples taken at 38 and 52 inches below the ground surface near the middle of the site resulted in estimated ages of 570 years and 910 years, respectively. The results of the Carbon 14 tests are presented in Appendix A. To reach 11,000-year-old soils, assuming a relatively constant deposition rate, a trench on the order of 50 feet deep could be required and is not feasible.

Geophysical Investigation

Based on the young soils and the shallow groundwater, a geophysical investigation (Seismic Reflection) was incorporated into the investigation. The full geophysical investigation report is included as Appendix B of this report. The following paragraph is from the geophysical report.

"Our evaluation included the assessing the presence of faulting at the project site through the collection of seismic reflection data. The seismic reflection method uses body waves which are generated, typically at the surface, and then recorded using an array of vertical component geophones (receivers). When the propagating wave encounters a change in acoustic impedance (impedance is equal to the product of a materials density and velocity) some of the wave energy is reflected back to the surface and detected by the geophones and recorded with a data logging instrument (seismograph). During the acquisition of seismic reflection data, the seismic waves recorded from each geophone are gathered into groups that have a common source point (source record)."

FINDINGS

Geologic mapping (Sharp, 1967, Dibblee, 2008) show conflicting interpretations of the relation of the Hot Springs fault and Thomas Mountain fault. Seismicity record search from the present to 1850 show minimal seismicity in the area of which are deep (on the order of 15 Kilometers below ground surface) and small.

Seismic reflection profiling shows two anomalies in the bedrock that project to the surface at Stations 257 and 330 and are enveloped on the blue box on Figure 6. The mapped fault would intersect the Seismic line (SL-1) on Figure 6 at Station 606. Anomalies were not observed in SL-1 at Station 606.

As described above, the mapped Hot Springs fault deflects as it traverses to the south from its last surface expression. A straight-line projection of the strike of the Hot Springs fault before it deflect projects into the blue box on Figure 6.

CONCLUSIONS AND RECOMMENDATION

It our opinion that the Hot Springs fault offsets granitic bedrock at depths on the order of 45 to 50 feet at The Ridge project site. The alluvium above the bedrock is young. If the alluvium is offset, the depth to offset of the alluvium is not discernable using seismic reflection. Trenching is not viable due to shallow groundwater. The anomalies observed on the seismic reflection are considered active faults, and the projection to the surface should be viewed as an active fault zone. A habitable building restriction zone should be established. The projection of the Hot Springs fault before the mapped deflection represents the location of the fault at the project site.

We recommend that a building restriction zone be established using the coordinate of Station 0 of the Seismic line (33.672864, -116.677252). The building restriction zone will extend 50 feet beyond the possible fault zone identified on Figure 6. The strike of the undeflected Hot Springs fault (297 degrees/N64W) will be used to define the building restriction zone boundaries.

The location of the Building restriction zone is anchored by two points. These two points are located 200 feet and 380 feet from Station 0 of the seismic line (N22E). The building restriction zone boundary extends from those points to the project limits in the direction of 296 degrees/N64W. The limits of the building restriction zone are shown on Figure 7.

This opportunity to be of service is sincerely appreciated. If you have any additional questions or concerns, please feel free contact this office.

Respectfully submitted,

PETRA GEOSCIENCES, INC.

Alan Pace
Vice President

SJ/AP/lv

Attachments: References
Figure 1 – Site Location Map
Figure 2 – Fault Zone Location Map
Figure 3 – Alquist – Priolo Zone Map
Figure 4 – Sharp 1967 Geological Map
Figure 5 – Dibblee 2008 Geological Map
Figure 6 – Potential Fault Zone Map
Figure 7 – Building Restriction Zone Map
Appendix A – Result of Carbon 14 Soil Age Dating
Appendix B – Seismic Reflection Survey Report

W:\2020-2025\2020\200\20-227 Caroline Legrand (The Ridge Wellness Center, Lake Hemet)\Reports\20-227 700 Fault Report.docx

REFERENCES

Bryant, W.A., and Hart, E.W., 2007, Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Maps: California Geological Survey Special Publication 42 (Interim Revision).

California Geological Survey (CGS), 1974, Earthquake Zones of Required Investigation, Northwest ¼ of Idyllwild Quadrangle.

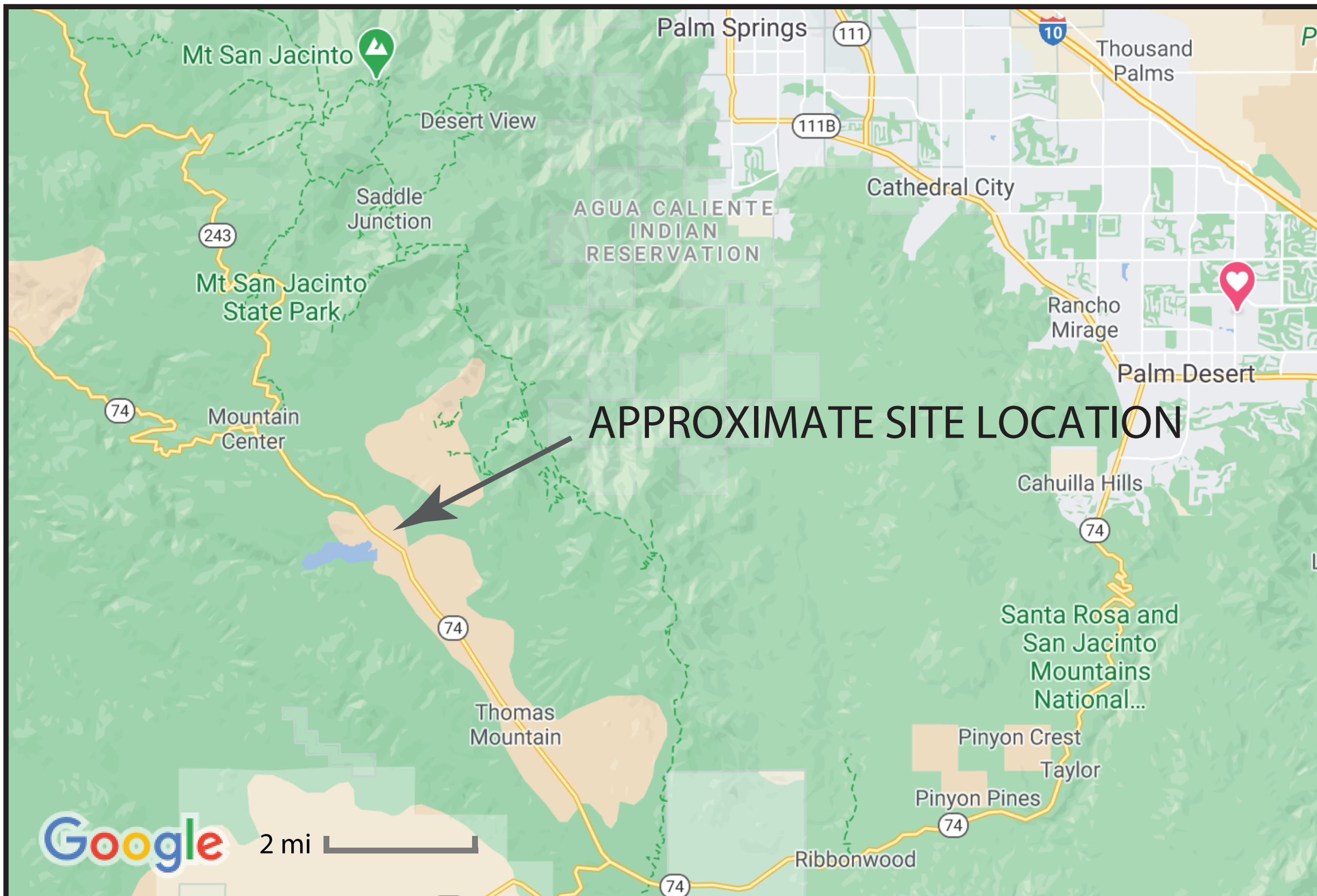
Dibblee, T. W. 2008, Geologic Map of the Hemet and Idyllwild 15 Minute Quadrangles, Riverside County, California, Edited by John A. Minch, Dibblee Geology Center Map #DF-371, First Printing March 2008, Santa Barbara Museum of Natural History, 2559 Puesta Del Sol Road, Santa Barbara, CA 93105, http://www.sbnature.org/.

Jennings, C. W., 1994, "Fault Activity Map of California and Adjacent Areas, with Locations and ages of Recent Volcanic Eruptions, Divisions of Mines and Geology": California Division of Mines and Geology Map No. 6 (scale 1: 750,000).

Jennings, C. W., and Bryant, W.A., 2010, Fault Activity Map of California, Version 2.0 (California Geological Survey 150th Anniversary Edition), Geologic Data Map, 1:750,000 Scale, GDM Map No. 6.

Sharp, R. V., 1967, San Jacinto fault zone in the Peninsular Ranges of southern California: Geological Society of America Bulletin, v. 78, p. 705–730, Plate 1, Generalized Geologic Map of the San Jacinto Fault Zone in Part of the Peninsular Ranges, Southern California, Scale 1:62,500.

FIGURES



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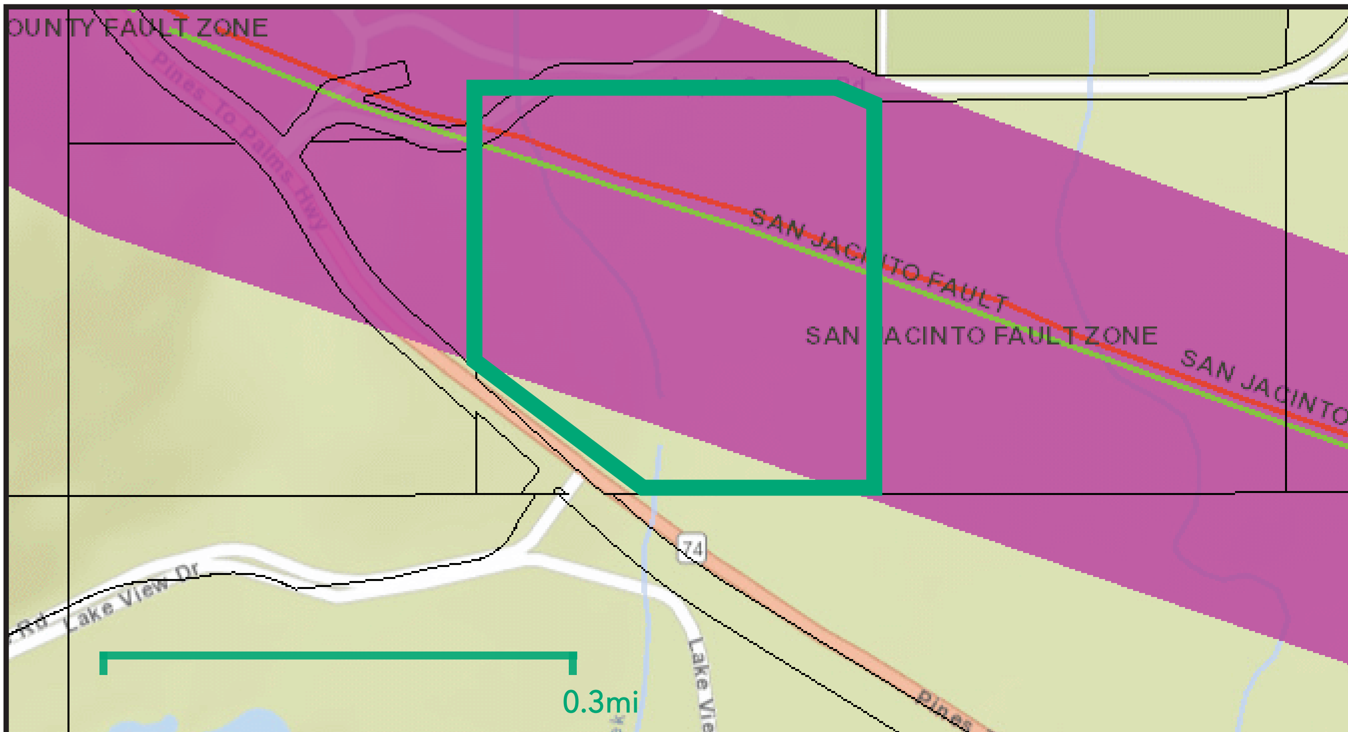
SITE LOCATION

THE RIDGE WELLNESS CENTER

CAROLINE LEGRAND

DATE:	OCT 2020	JN:	20-227	Figure 1
DWG BY:	ANA	SCALE:	See Scale	



LIMITS OF THE RIDGE PROJECT

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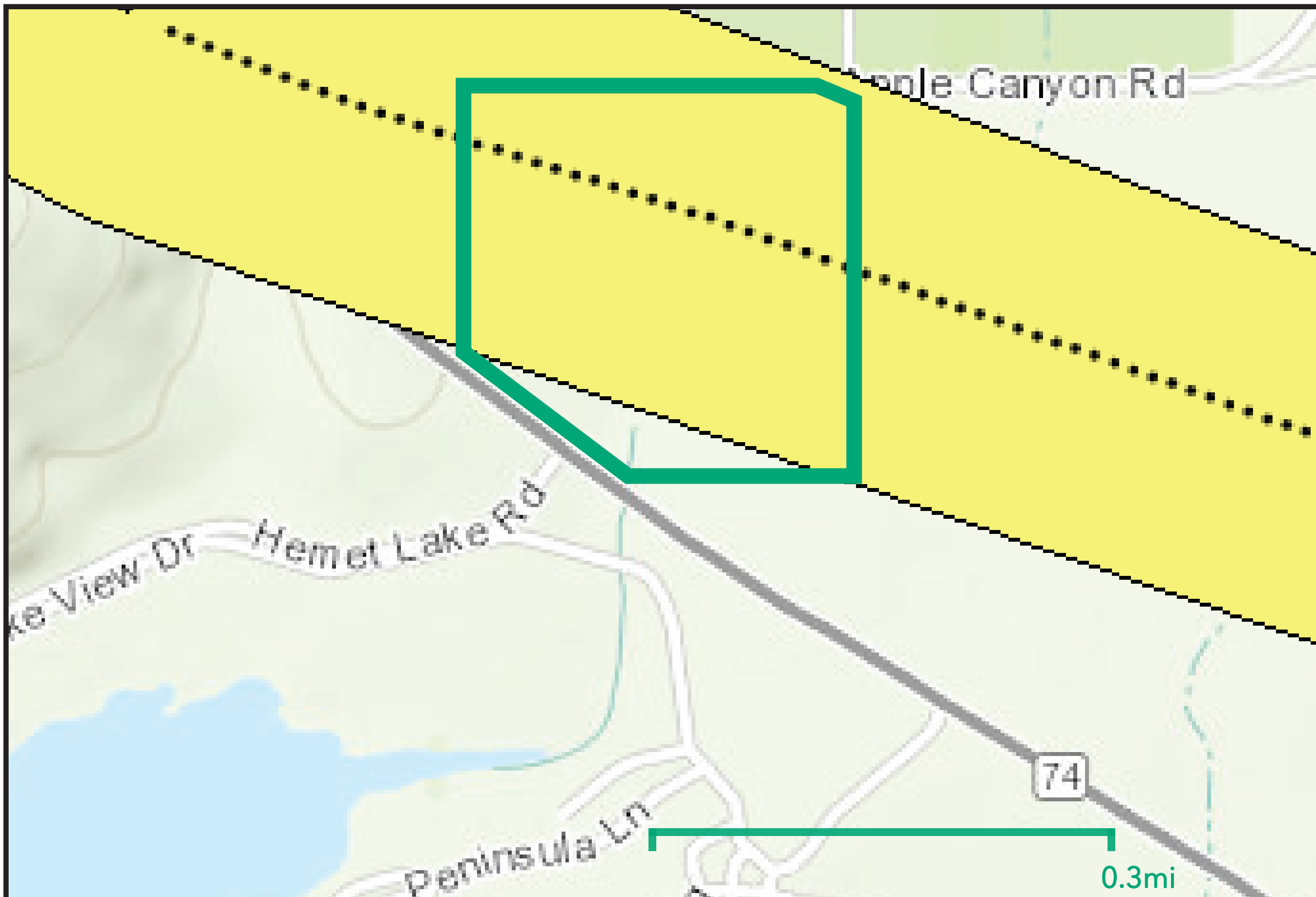
FAULT ZONE LOCATION
FROM RIVERSIDE COUNTY TLMA

THE RIDGE WELLNESS CENTER
CAROLINE LEGRAND

DATE:	OCT 2020	JN:	20-227	Figure 2
DWG BY:	ANA	SCALE:	See Scale	



LIMITS OF THE RIDGE PROJECT

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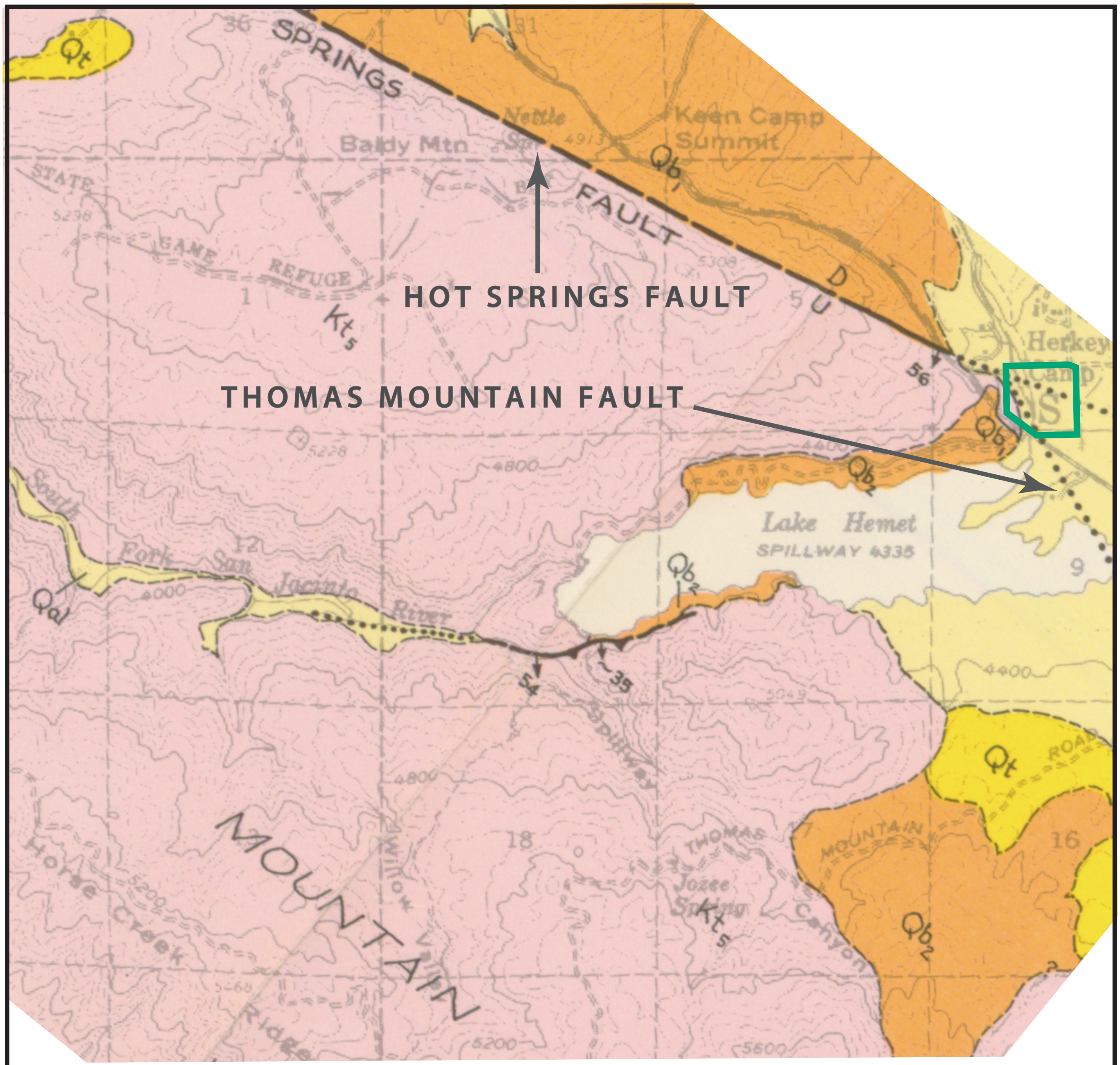
ALQUIST - PRIOLO ZONE

THE RIDGE WELLNESS CENTER

CAROLINE LEGRAND

DATE:	OCT 2020	JN:	20-227	Figure 3
DWG BY:	ANA	SCALE:	See Scale	



LIMITS OF THE RIDGE PROJECT

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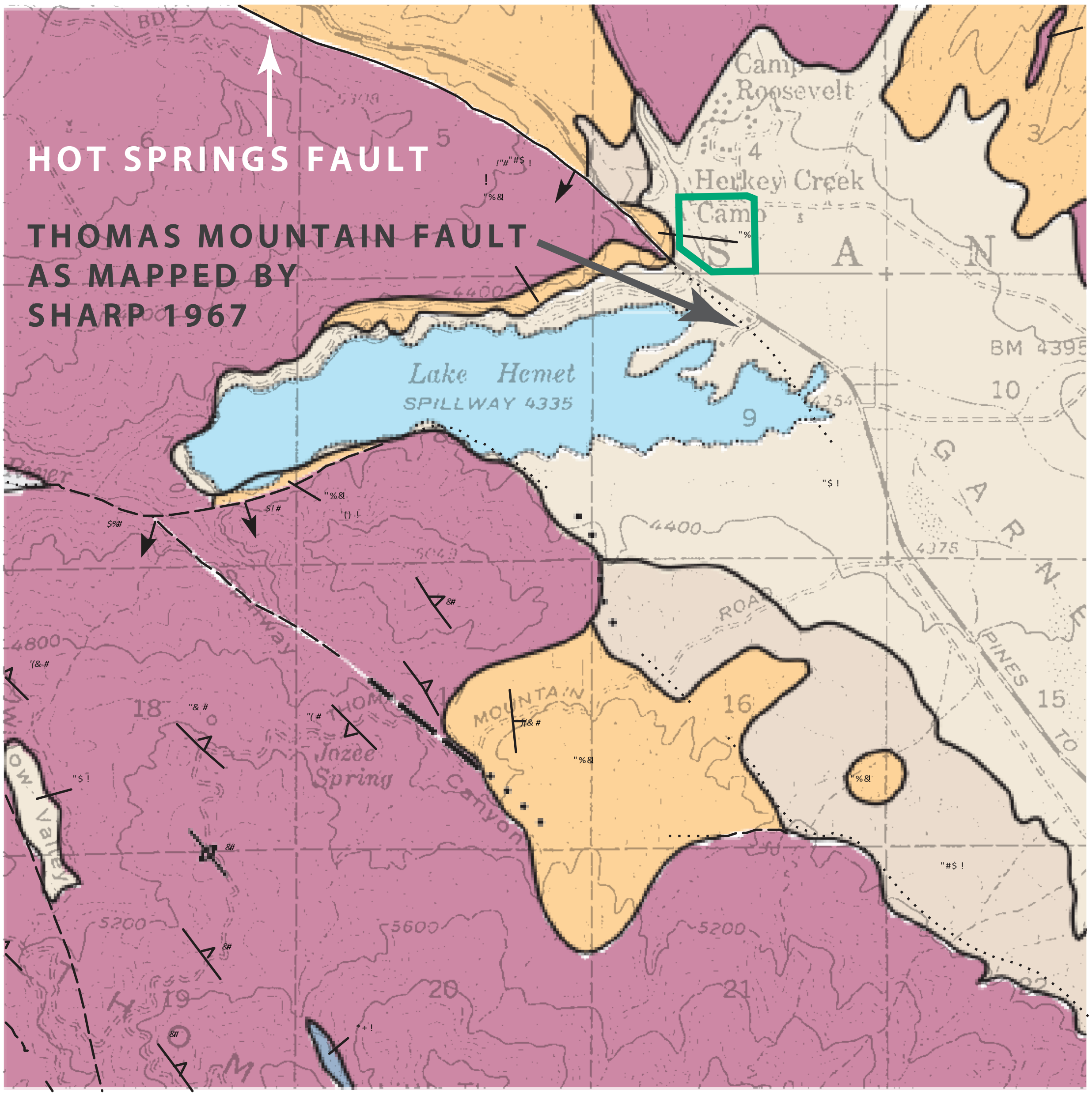
SHARP 1967 GEOLOGICAL MAP

THE RIDGE WELLNESS CENTER

CAROLINE LEGRAND

DATE: OCT 2020	JN: 20-227	Figure 4
DWG BY: ANA	SCALE: NTS	



LIMITS OF THE RIDGE PROJECT

PETRA GEOSCIENCES INC.

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PALM DESERT, CALIFORNIA 92211
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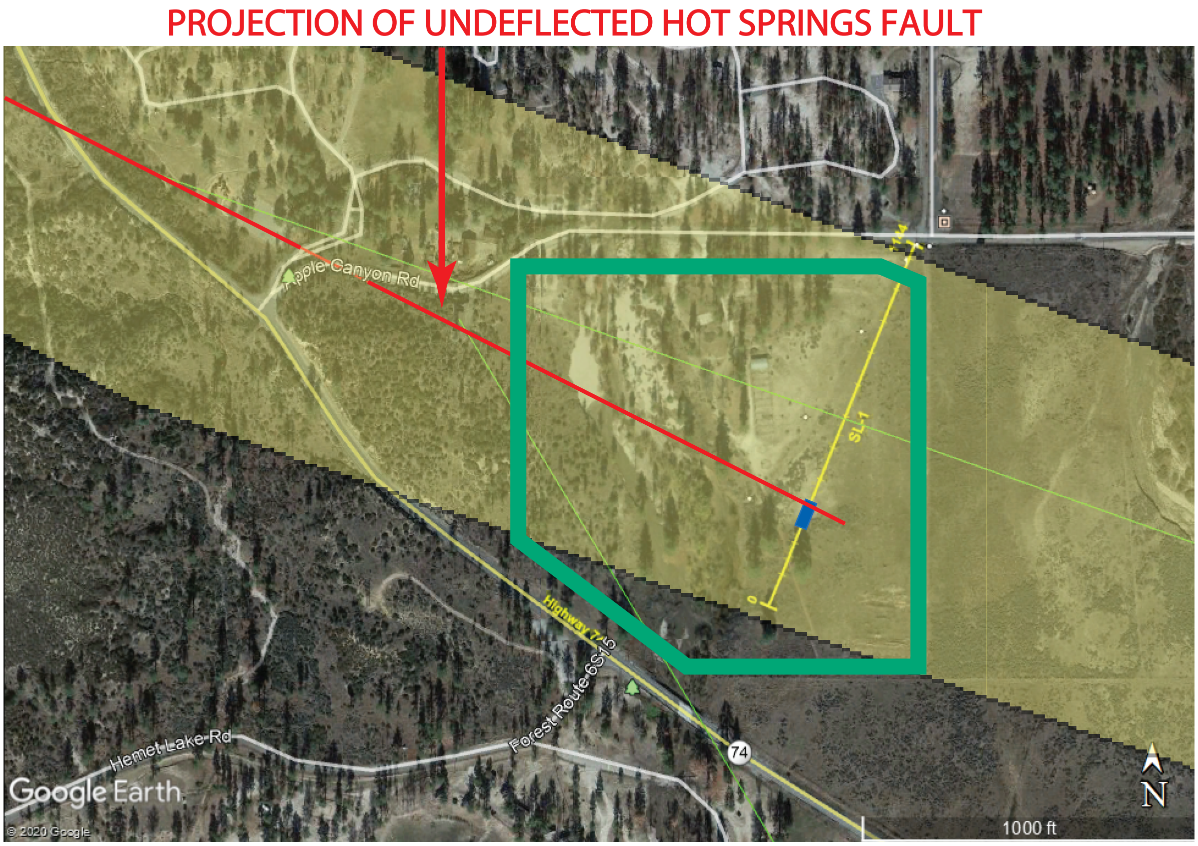
COSTA MESA LOS ANGELES TEMECULA PALM DESERT

DIBBLEE 2008 GEOLOGICAL MAP

THE RIDGE WELLNESS CENTER
CAROLINE LEGRAND

DATE:	OCT 2020	JN:	20-227	Figure 5
DWG BY:	ANA	SCALE:	NTS	



POTENTIAL FAULT ZONE IDENTIFIED IN SEISMIC LINE

LIMITS OF THE RIDGE PROJECT

SEISMIC LINE SL-1

ALQUIST-PRIOLO ZONE

0.3mi

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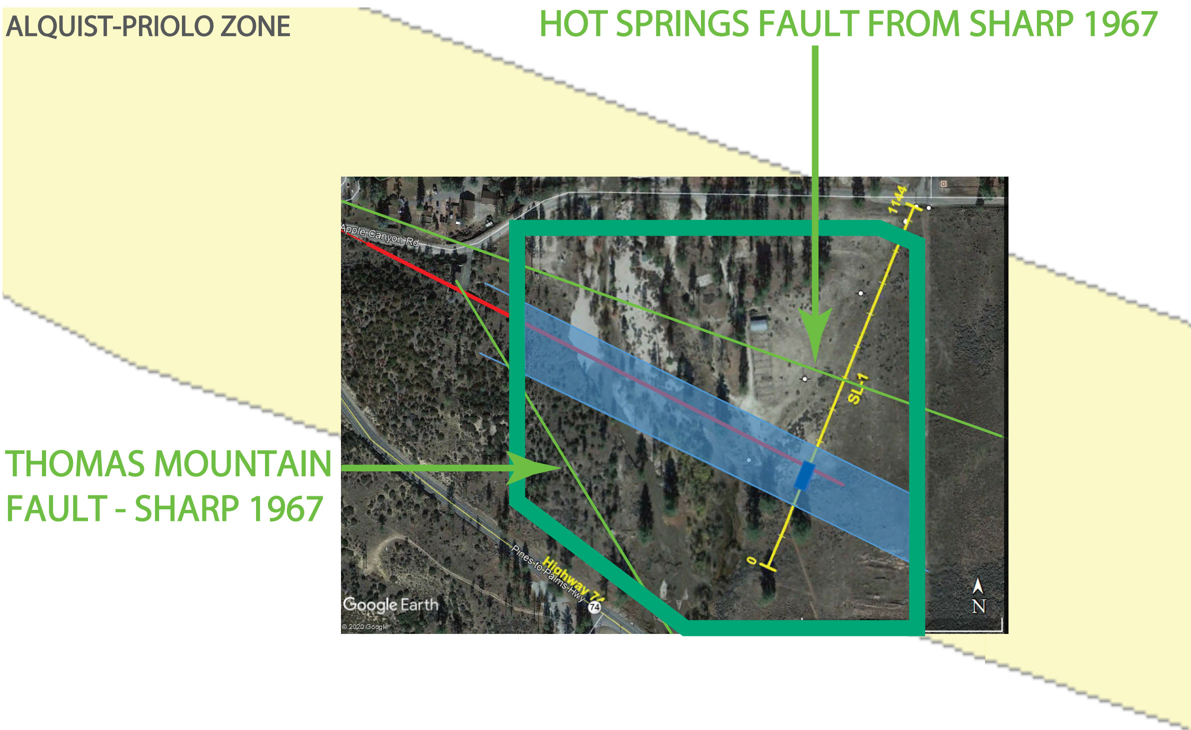
POTENTIAL FAULT ZONE FROM SEISMIC LINE

THE RIDGE WELLNESS CENTER

CAROLINE LEGRAND

DATE:	OCT 2020	JN:	20-227	Figure 6
DWG BY:	ANA	SCALE:	See Scale	



BUILDING RESTRICTION ZONE

POTENTIAL FAULT ZONE IDENTIFIED IN SEISMIC LINE

LIMITS OF THE RIDGE PROJECT

SEISMIC LINE SL-1

0.3mi

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BUILDING RESTRICTION ZONE FROM THE POTENTIAL FAULT ZONE

THE RIDGE WELLNESS CENTER

CAROLINE LEGRAND

DATE:	OCT 2020	JN:	20-227	Figure 7
DWG BY:	ANA	SCALE:	See Scale	

APPENDIX A

RESULT OF CARBON 14 SOIL AGE DATING

Beta Analytic TESTING LABORATORY

Beta Analytic Inc
4985 SW 74 Court
Miami, Florida 33155
Tel: 305-667-5167
Fax: 305-663-0964
info@betalabservices.com

July 10, 2020

Mr. Alan Pace
Petra Geosciences
42240 Green Way
Suite E
Palm Desert, CA 92211
USA

RE: Radiocarbon Dating Results

Dear Mr. Pace,

Enclosed are the radiocarbon dating results for two samples recently sent to us. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable. The Conventional Radiocarbon Ages have all been corrected for total fractionation effects and where applicable, calibration was performed using 2013 calibration databases (cited on the graph pages).

The web directory containing the table of results and PDF download also contains pictures, a cvs spreadsheet download option and a quality assurance report containing expected vs. measured values for 3-5 working standards analyzed simultaneously with your samples.

Reported results are accredited to ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 standards and all chemistry was performed here in our laboratory and counted in our own accelerators here. Since Beta is not a teaching laboratory, only graduates trained to strict protocols of the ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 program participated in the analyses.

As always Conventional Radiocarbon Ages and sigmas are rounded to the nearest 10 years per the conventions of the 1977 International Radiocarbon Conference. When counting statistics produce sigmas lower than +/- 30 years, a conservative +/- 30 BP is cited for the result. The reported d13C values were measured separately in an IRMS (isotope ratio mass spectrometer). They are NOT the AMS d13C which would include fractionation effects from natural, chemistry and AMS induced sources.

When interpreting the results, please consider any communications you may have had with us regarding the samples.

Thank you for prepaying the analyses. As always, if you have any questions or would like to discuss the results, don't hesitate to contact us.

Sincerely,

R.E. Hatfield
Digital signature on file

Ronald E. Hatfield President

Beta Analytic
TESTING LABORATORY

Beta Analytic Inc
4985 SW 74 Court
Miami, Florida 33155
Tel: 305-667-5167
Fax: 305-663-0964
info@betalabservices.com

ISO/IEC 17025:2005-Accredited Testing Laboratory

REPORT OF RADIOCARBON DATING ANALYSES

Alan Pace	Report Date: July 10, 2020
Petra Geosciences	Material Received: July 06, 2020

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes Calendar Calibrated Results: 95.4 % Probability High Probability Density Range Method (HPD)	
Beta - 562412	**20-227 52"**	**910 +/- 30 BP**	IRMS δ13C: -23.4 o/oo

(94.0%)	**1033 - 1190 cal AD**	**(917 - 760 cal BP)**
(1.4%)	**1198 - 1204 cal AD**	**(752 - 746 cal BP)**

Submitter Material: Charcoal
Pretreatment: (charred material) acid/alkali/acid
Analyzed Material: Charred material
Analysis Service: AMS-PRIORITY delivery
Percent Modern Carbon: 89.29 +/- 0.33 pMC
Fraction Modern Carbon: 0.8929 +/- 0.0033
D14C: -107.10 +/- 3.33 o/oo
Δ14C: -114.63 +/- 3.33 o/oo (1950:2020)
Measured Radiocarbon Age: (without d13C correction): 880 +/- 30 BP
Calibration: BetaCal3.21: HPD method: INTCAL13

Results are ISO/IEC-17025:2005 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.

Beta Analytic
TESTING LABORATORY

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ISO/IEC 17025:2005-Accredited Testing Laboratory

REPORT OF RADIOCARBON DATING ANALYSES

Alan Pace		Report Date:	July 10, 2020
Petra Geosciences		Material Received:	July 06, 2020

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes Calendar Calibrated Results: 95.4 % Probability High Probability Density Range Method (HPD)	
Beta - 562413	**20-227 38"**	**570 +/- 30 BP**	IRMS δ13C: -21.7 o/oo

(57.7%)	**1304 - 1364 cal AD**	**(646 - 586 cal BP)**
(37.7%)	**1384 - 1422 cal AD**	**(566 - 528 cal BP)**

Submitter Material: Charcoal
Pretreatment: (charred material) acid/alkali/acid
Analyzed Material: Charred material
Analysis Service: AMS-PRIORITY delivery
Percent Modern Carbon: 93.15 +/- 0.35 pMC
Fraction Modern Carbon: 0.9315 +/- 0.0035
D14C: -68.50 +/- 3.48 o/oo
Δ14C: -76.35 +/- 3.48 o/oo (1950:2020)
Measured Radiocarbon Age: (without d13C correction): 520 +/- 30 BP
Calibration: BetaCal3.21: HPD method: INTCAL13

Results are ISO/IEC-17025:2005 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL13)

(Variables: d13C = -23.4 o/oo)

Laboratory number **Beta-562412**

Conventional radiocarbon age **910 ± 30 BP**

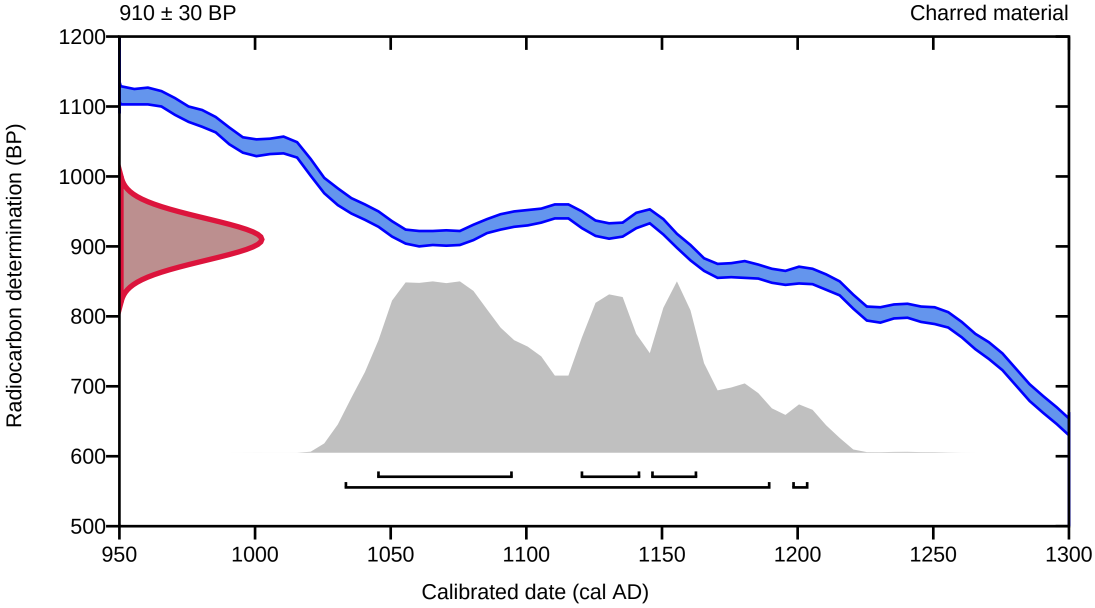
95.4% probability

(94%)	1033 - 1190 cal AD	(917 - 760 cal BP)
(1.4%)	1198 - 1204 cal AD	(752 - 746 cal BP)

68.2% probability

(39.7%)	1045 - 1095 cal AD	(905 - 855 cal BP)
(16.1%)	1120 - 1142 cal AD	(830 - 808 cal BP)
(12.4%)	1146 - 1163 cal AD	(804 - 787 cal BP)

20-227 38"



Database used

INTCAL13

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database INTCAL13

Reimer, et.al., 2013, Radiocarbon55(4).

BetaCal 3.21

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL13)

(Variables: d13C = -21.7 o/oo)

Laboratory number **Beta-562413**

Conventional radiocarbon age **570 ± 30 BP**

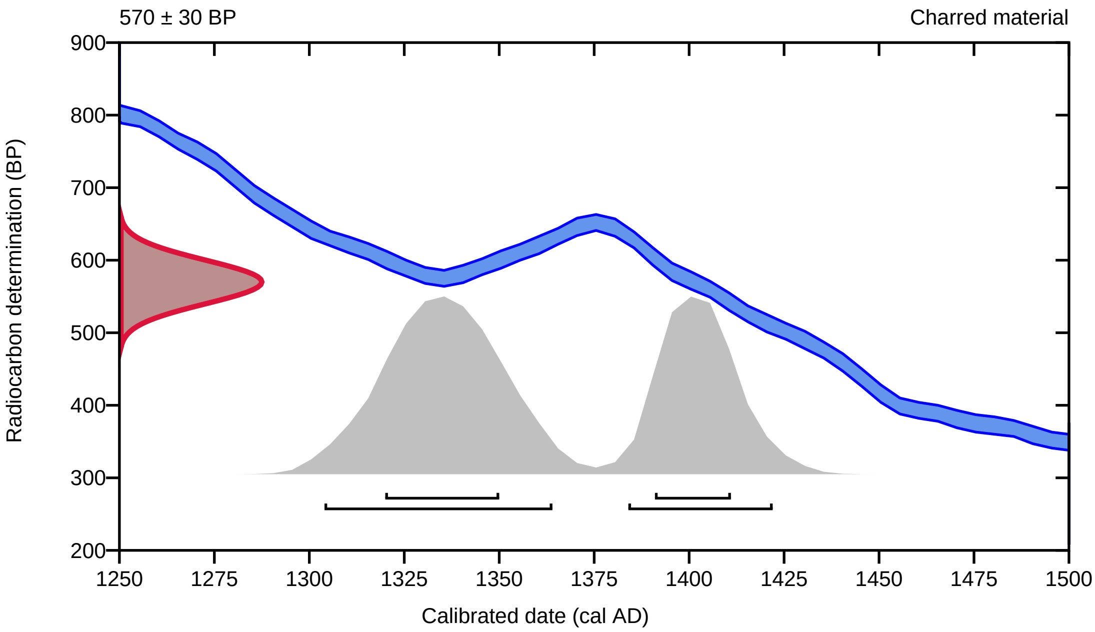
95.4% probability

(57.7%)	1304 - 1364 cal AD	(646 - 586 cal BP)
(37.7%)	1384 - 1422 cal AD	(566 - 528 cal BP)

68.2% probability

(40.9%)	1320 - 1350 cal AD	(630 - 600 cal BP)
(27.3%)	1391 - 1411 cal AD	(559 - 539 cal BP)

20-227 52"



Database used

INTCAL13

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database INTCAL13

Reimer, et.al., 2013, Radiocarbon55(4).

APPENDIX B

SEISMIC REFLECTION SURVEY REPORT

GEOPHYSICAL STUDY

LAKE HEMET WELLNESS CENTER FAULT STUDY

Lake Hemet, California

PREPARED FOR:

Petra, Inc.
42-240 Green Way, Suite E
Palm Desert, CA 92211

PREPARED BY:

Atlas Technical Consultants, LLC
6280 Riverdale Street
San Diego, CA 92120

October 12, 2020

ATLAS

6280 Riverdale Street
San Diego, CA 92120
(877) 215-4321 | oneatlas.com

October 12, 2020

Atlas No. 120361SWG
Report No. 1

MR. ALAN PACE
PETRA, INC.
42-240 GREEN WAY, SUITE E
PALM DESERT, CA 92211

Subject: **Geophysical Study**
Lake Hemet Wellness Center Fault Study
Lake Hemet, California

Dear Mr. Pace:

In accordance with your authorization, Atlas Technical Consultants (Atlas) has performed a geophysical study pertaining to the proposed Lake Hemet Wellness Center located in Lake Hemet, California. Specifically, our study included evaluating the presence of faulting at a portion of the project site through the collection of seismic reflection data. The field work was conducted on August 17 through 20, 2020. This data report presents our survey methodology, equipment used, analysis, and results.

If you have any questions, please call us at (858) 527-0849.

Respectfully submitted,
Atlas Technical Consultants LLC

REGISTERED GEOPHYSICIST
Hans van de Vrugt
No 1012
Exp. 2/29/22
STATE OF CALIFORNIA

Eric Carlson	Hans van de Vrugt, C.E.G., P.Gp.
Project Geologist/Geophysicist	Principal Geologist/Geophysicist

HV:ERC:hv:ds

Distribution: Apace@petra-inc.com

CONTENTS

FIGURES

1. INTRODUCTION

In accordance with your authorization, Atlas Technical Consultants (Atlas) has performed a geophysical study pertaining to the proposed Lake Hemet Wellness Center located in Lake Hemet, California (Figure 1). Specifically, our study included evaluating the presence of faulting at a portion of the project site through the collection of seismic reflection data. The field work was conducted on August 17 through 20, 2020. This data report presents our survey methodology, equipment used, analysis, and results.

2. SCOPE OF SERVICES

Our scope of services included:

- Review of background project information, including maps, provided by your office.
- Conducting a seismic reflection line across a portion of the project site.
- Compiling and analyzing the data collected.
- Preparing this illustrated data report presenting our findings and conclusions.

3. SITE AND PROJECT DESCRIPTION

The project site is located to the northeast of the Lake Hemet reservoir and is in between Apple Canyon Road and Highway 74 (Figure 1). The study area, which was selected by your office, included a portion of the property. Specifically, the seismic traverse crossed the study area southwest to northeast, roughly perpendicular to possible faulting in the area (Figure 2). The study area is relatively flat, and vegetation includes scattered brush and trees, and annual grass. Overhead electric lines are located just to the west of the seismic traverse. Figures 2 and 3 depict the general site conditions in the study area.

Based on our discussions with you, it is our understanding that faulting has been mapped in or near the study area. Is also our understanding that your office is conducting a fault hazard evaluation for the proposed development.

4. GEOPHYSICAL METHOD AND APPLICATIONS

Our evaluation included the assessing the presence of faulting at the project site through the collection of seismic reflection data. The seismic reflection method uses body waves which are generated, typically at the surface, and then recorded using an array of vertical component geophones (receivers). When the propagating wave encounters a change in acoustic impedance (impedance is equal to the product of a materials density and velocity) some of the wave energy is reflected back to the surface and detected by the geophones and recorded with a data logging instrument (seismograph). During the acquisition of seismic reflection data, the seismic waves recorded from each geophone are gathered into groups that have a common source point (source record). The individual traces within the source records are subsequently regrouped into gathers that have the midpoint between their source and receiver locations in common (termed common-midpoint [CMP] or common-depth-point [CDP] gathers). The differences in times of arrivals at variable source points to geophone distances along reflection paths are termed "moveout" and are hyperbolic (if reflecting geologic strata dips and source-receiver offsets distances are not too large). Moveout depends upon velocity, dip (to a lesser extent), and offset distance and decreases with increased reflection time.

Once the seismic traces have been grouped (sorted) into CDP gathers, analyses of the moveout of reflections within the dataset provides velocities that are used to flatten the hyperbolic moveout on adjacent traces to a common two-way travel time (time it takes seismic energy to travel from a point on the surface to a reflector and back to the same point on the surface). These correction velocities consider the approximate root-mean-square (rms) velocities of all the overlying layers, and the moveout correction is termed normal moveout or NMO. Corrected traces can be summed horizontally, or CDP stacked, to attenuate random effects and non-primary reflection NMO from other wave types (e.g., multiple reflections, surface waves, refractions, diffractions, etc.), and to increase the signal-to-noise (S/N) ratio. The amount of horizontal summing, or CDP fold, is dependent upon the number of seismograph channels (i.e., number of geophones), and the location and number of source points. Each CDP gather then becomes one stacked trace with reflected energy at two-way travel time. A seismic reflection section consists of stacked CDP gathers along the length of the line.

Signals can be enhanced through vertical stacking, which involves repeated source impacts at the same point into the same set of geophones. For each source point the stacked data are recorded into the same seismic data file and theoretically the seismic signal arrives at the same time from each impact, and thus is enhanced, while noise is random and tends to be reduced or canceled.

The quality of seismic data can be adversely affected by spurious vibrations from nearby vehicular or aircraft traffic, machinery, or wind. If the seismic noise sources are sporadic, acquisition can be timed to when the noise is at a minimum. Under conditions of constant noise, the number of stacks can be increased, or at last resort filtering can be applied.

The seismic reflection data for our study were acquired along a linear geophone spread. Five Geometrics Geode signal-enhancement seismographs and 120 40-Hz vertical component geophones spaced 8 feet apart were used. Shots were conducted between each geophone pair along the array and off the ends of the geophone spread. A 20-pound sledgehammer and aluminum impact plate were used as a seismic source (shot).

After initial in-field testing, data were independently acquired five times at each source point. Only data of high quality were vertically stacked (i.e., the records at each source point were stacked together) during processing although for most source points that included each record. Each geophone location and elevation along the line were recorded. The overall quality of the reflection seismic data collected is considered good to excellent.

The collected reflection seismic data were processed by Columbia Geophysical, LLC, Englewood, Colorado. Columbia Geophysical's UNIX workstation-based ProMAX reflection seismic software package was used to process the data and offered the opportunity to perform extensive testing in a short period of time.

The seismic data processing sequence applied is as follows (** = testing steps):

1. Format conversion from SEG2 to SEG-Y
2. Geometry definition and application
3. Trace editing
4. ***Spectral analysis and filter analysis to determine frequency range*
5. ***First break picking and refraction statics calculation*
6. Statics calculations: datum = 0 feet, velocity = 4,200 ft/sec
7. Gain recovery and spherical divergence correction
8. ****Deconvolution (testing)*
9. Surface consistent spiking deconvolution
10. Zero phase spectral whitening: 6-10-130-150 Hz range
11. Long gate trace balance
12. Common-Depth-Point (CDP) sort
13. Interactive velocity analysis
14. ***First break mute analysis*
15. Preliminary brute stack with datum statics and mutes
16. Surface consistent residual autostatics
17. Interactive velocity analysis with autostatics applied
18. Q.C. of shot records and CDP gathers
19. Normal moveout (NMO) corrections
20. ***Final first break mute analysis*
21. Final mute application
22. CDP stack
23. ***Spectral analysis and filter testing on unfiltered final stack*
24. Bandpass filter application (20-30-150-200 Hz), 0 to 500 milliseconds (ms)
25. FX noise attenuation
26. Time variant scaling
27. SEG-Y digital output.

Spectral analyses and filter tests are conducted upon individual records in order to determine the quality of the data, the amount of information present, and to design a preliminary data processing flow. Elevation statics are used to determine surface consistent residual statics that are applied after interactive velocity analysis. Statics are corrections applied to seismic data to compensate for the effects of variations in elevation, weathering thickness, weathering velocity and reference to a datum. The objective is to determine the reflection arrival times which would have been observed if all measurements had been made on a (usually) flat plane with no weathering or low velocity material present. Surface consistent means that the statics take into account time delays from both source and geophone locations.

Normal moveout (NMO) is described as the variation of reflection arrival time because of different source point to geophone distances. To determine the NMO correction, velocity analyses of the CDP gathers are conducted by stacking several velocities and choosing those velocities where the coherency of the NMO for selected reflectors is maximized. These velocities are further refined via narrow and/or full-line CDP gather panel analyses to arrive at the final stacking velocities along the lines. The first-break mute excludes traces that are dominated by refraction arrivals or contain frequencies after NMO correction that are appreciably lower than the other surrounding traces.

In filter testing, narrow bandpass filters were applied to the data to determine the optimum frequency filtering interval(s) that can be used on the data to enhance any possible reflections and reduce noise. For the processing flow used in this project (and typically for most seismic data processing), the data are bandpass filtered after CDP stacking.

5. RESULTS AND CONCLUSIONS

As previously discussed, the purpose of our geophysical study was to assess the presence of faulting within the study area through the collection of seismic reflection data. The reflection results are presented in Figure 4 as a model comprised of continuous and discontinuous reflectors (orange and black bands). Please note that the reflection profile vertical scale is two-way travel time (TWTT) in milliseconds (ms) and that absent specific subsurface velocity information, an accurate depth scale is not provided. For rough estimating purposes only, the two-way travel time multiplied by two approximates the near surface depth in feet. This multiplier increases with depth and increased velocity. It should also be noted that the data near the beginning and the end of the section is generally incoherent because the CDP fold is low near the ends of the line. Consequently, interpretations of the sections near the ends of lines are questionable or not possible.

As illustrated in Figure 4, a very strong reflector is present at approximately 45ms (TWTT). This reflector is continuous across the profile and likely represents the contact with or within the granitic rock. Based on our discussions with you, it is understanding that the site is likely underlain by massive alluvial soils over granitic rock, with varied degrees of weathering. The depth to this bright reflector is on the order of 90 feet, which would suggest that the alluvium is 90 feet thick if the reflector represents the top of the granitic rock. As part of our evaluation we conducted some limited refraction analyses on the collected data and found that there is a substantial increase in P-wave velocity from 5,000 to 7,000 feet per second at 35 to 40 feet below the ground surface. These velocities are typical of weathered granitic bedrock. Consequently, the strong reflector, observed at 45ms likely represents a transition from weathered to non, or slightly, weathered rock rather than the top of the rock.

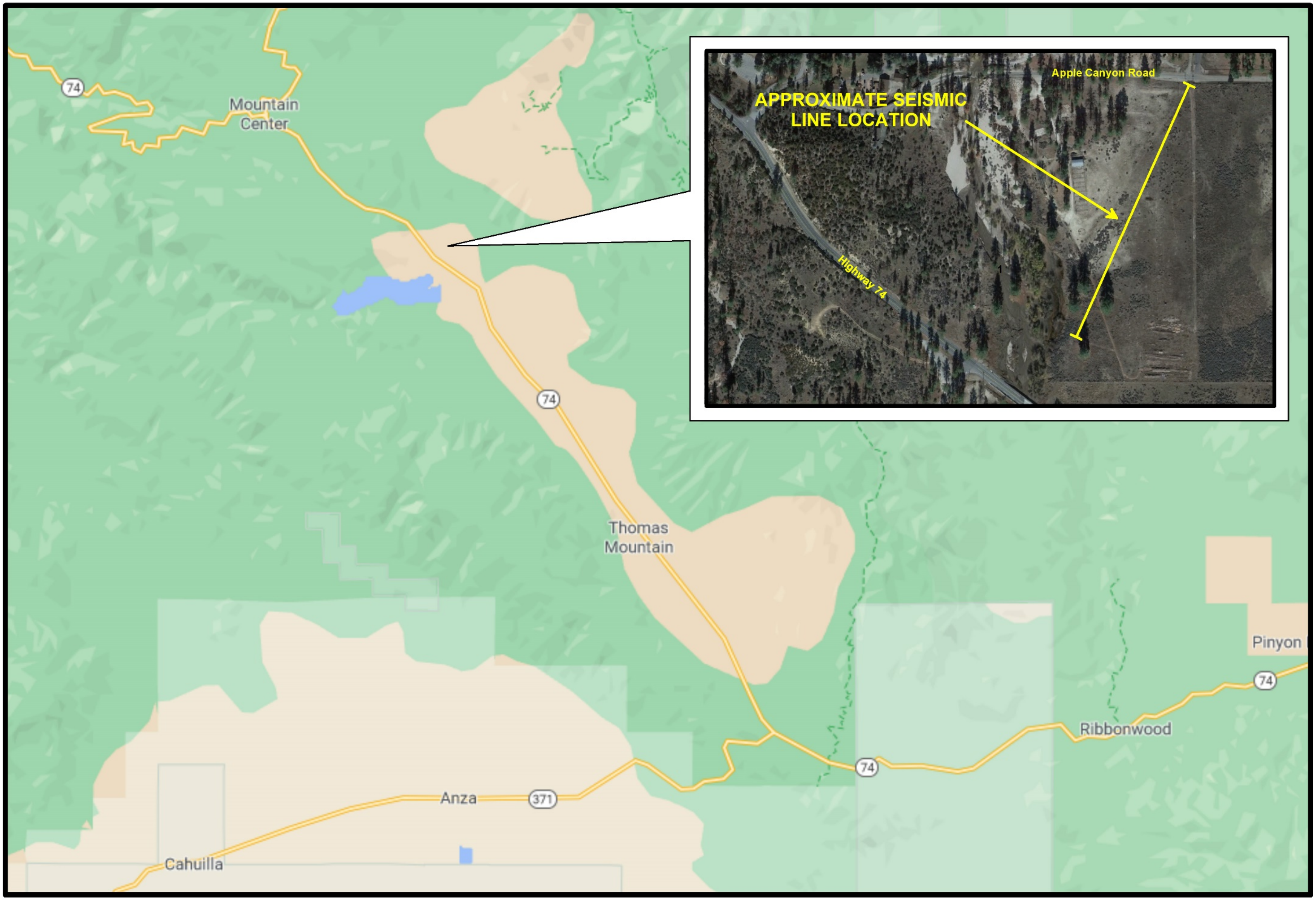
Based on our results, two possible somewhat subtle fault splays are observed in the data, and are shown in blue on Figure 4. These two features appear to disrupt the granitic rock. The surface projection of these features are shown on Figure 2 as the limits of a possible fault zone.

It should be noted that the picking, or tracing, of reflectors and faulting in high resolution data may be considered a combination of art and science and it is possible that other geophysicists or geologists might trace features differently along some portions of the line, although the general nature of the subsurface interpretation of the seismic data will not appreciably change.

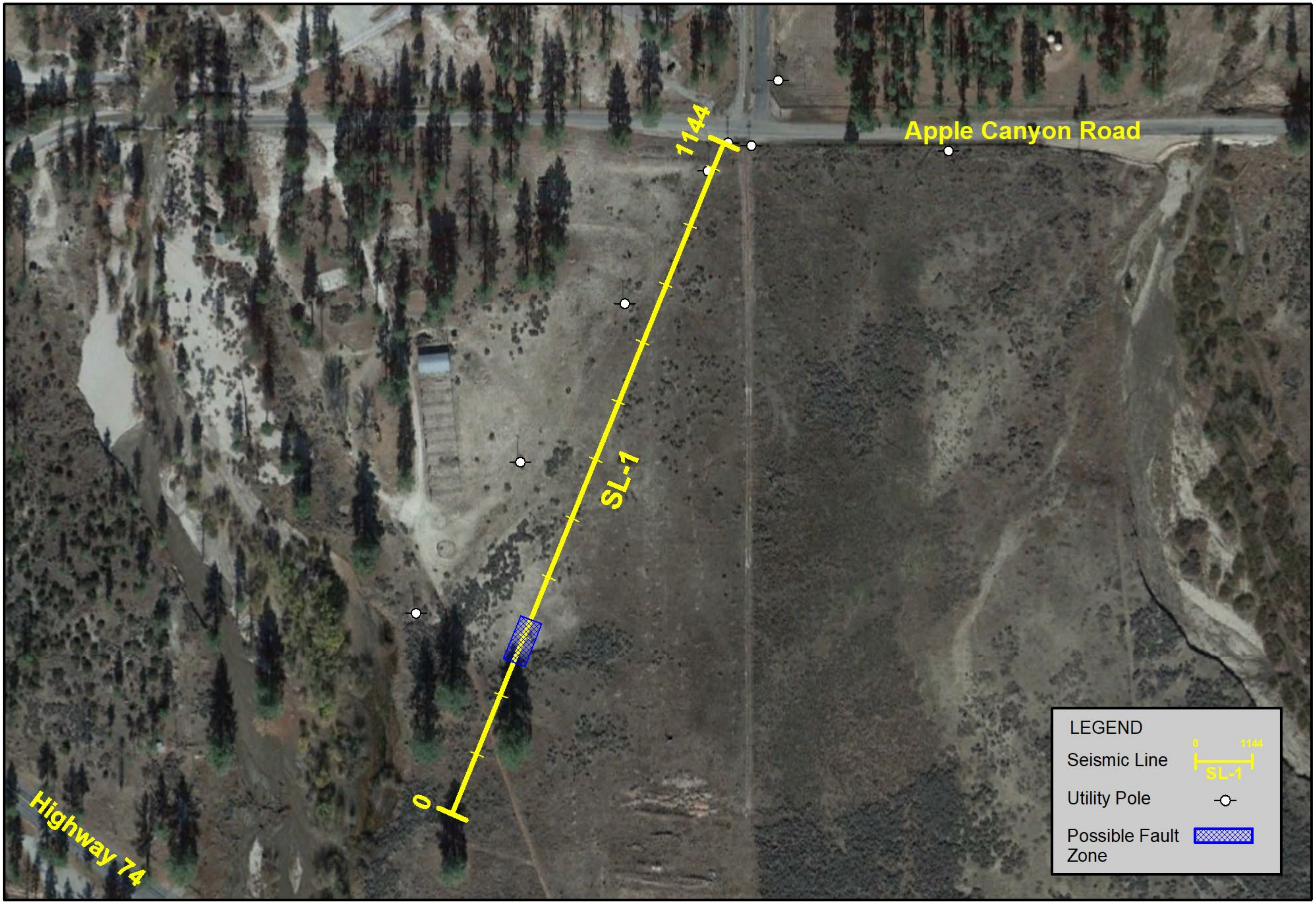
6. LIMITATIONS

The field evaluation and geophysical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by consultants performing similar tasks in the project area. No warranty, express or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be present. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface surveying will be performed upon request.

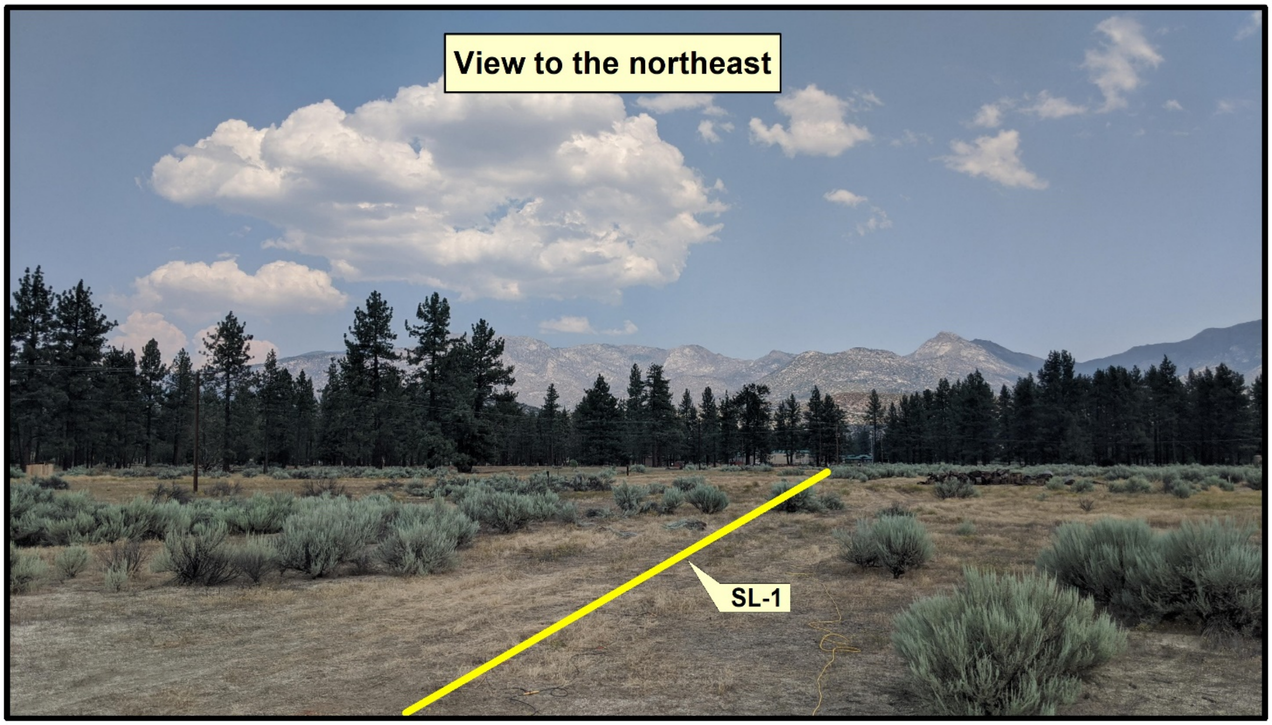
This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Atlas should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document. This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

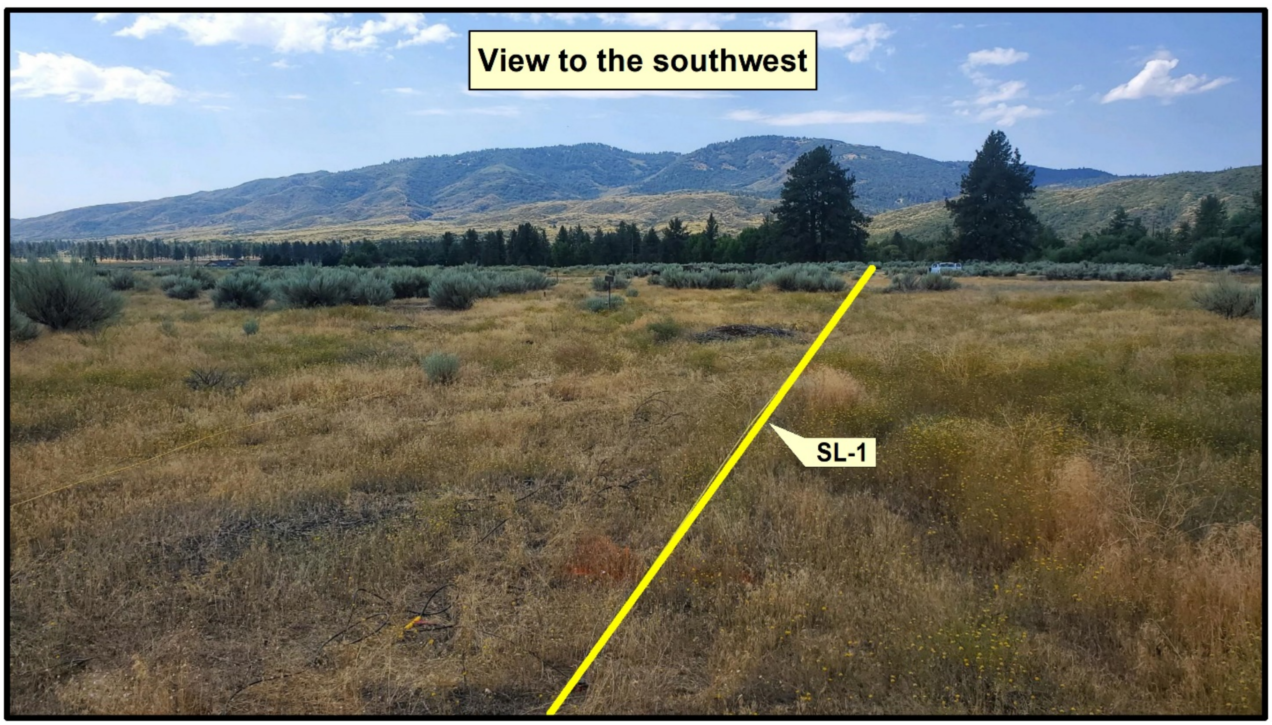


SITE LOCATION MAP	N	Lake Hemet Wellness Center Lake Hemet, California	ATLAS
		Project No.: 120361SWG / Date: 10/20	Figure 1

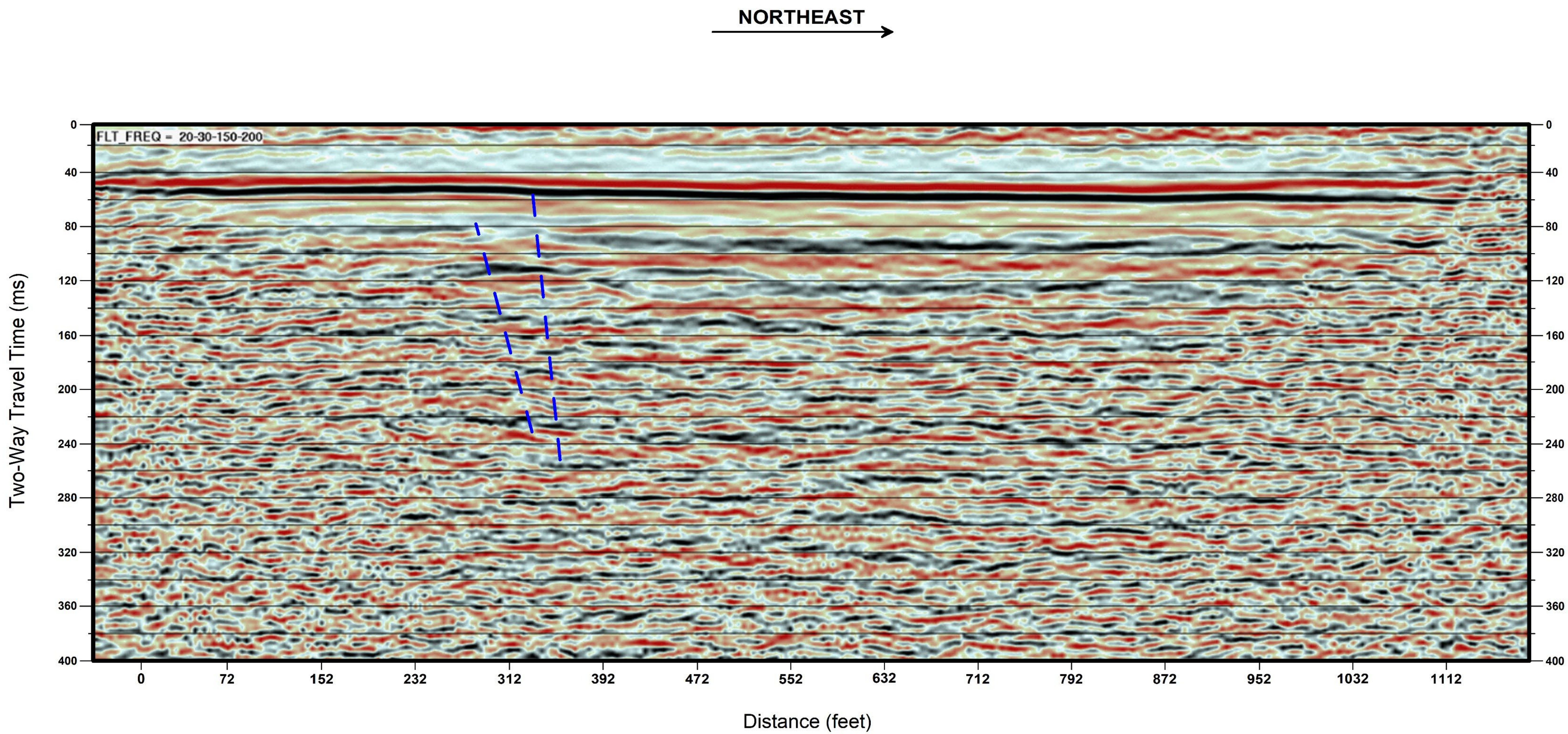


LINE LOCATION MAP	N	Lake Hemet Wellness Center Lake Hemet, California Project No.: 120361SWG Date: 10/20	ATLAS Figure 2	0 200 400 **approximate scale in feet**





SITE PHOTOGRAPHS	Lake Hemet Wellness Center Lake Hemet, California	ATLAS
	Project No.: 120361SWG / Date: 10/20	Figure 3



Legend

Possible Fault

SEISMIC REFLECTION PROFILE SL-1	Lake Hemet Wellness Center Lake Hemet, California	ATLAS
	Project No.: 120361SWG / Date: 10/20	Figure 4