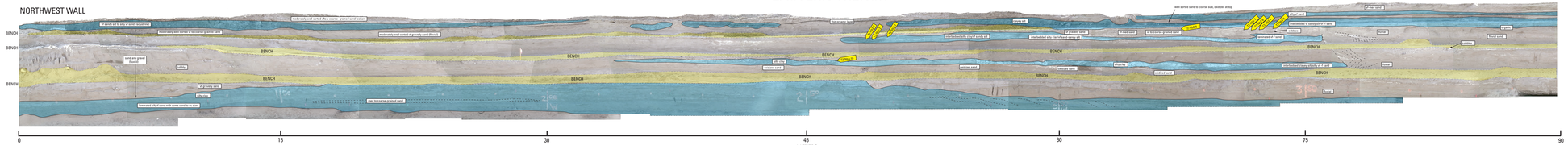
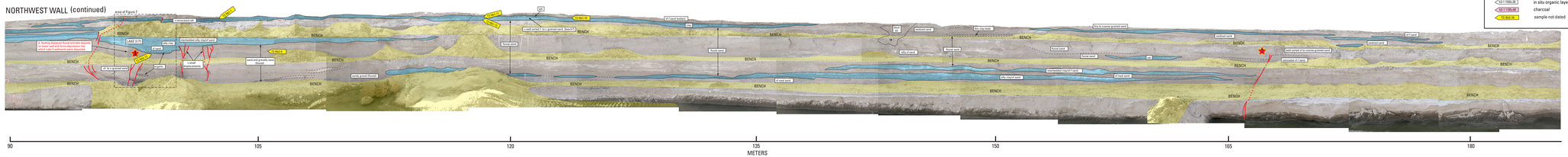
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

EASTERN TRENCH

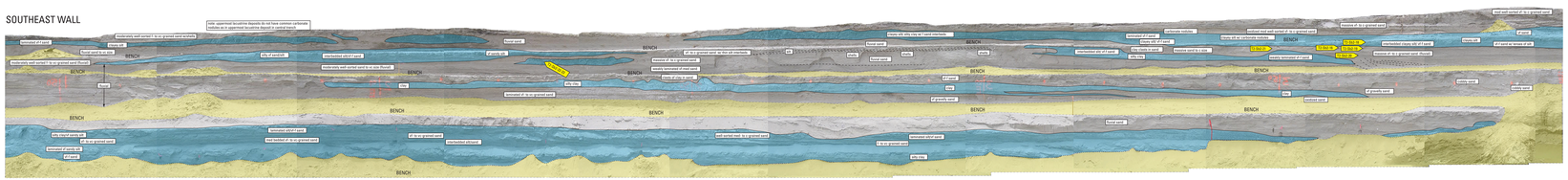
NORTHWEST WALL



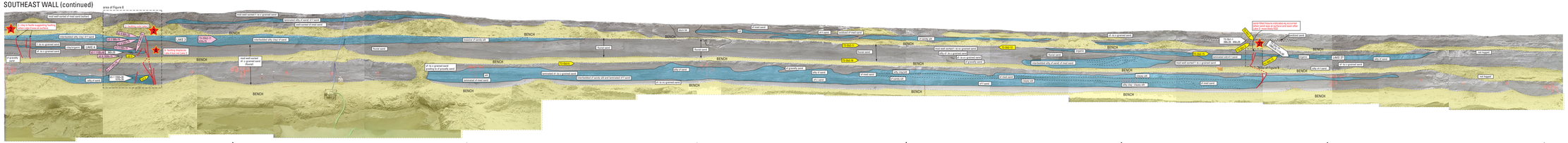
NORTHWEST WALL (continued)



SOUTHEAST WALL



SOUTHEAST WALL (continued)



Photomosaics of the Eastern Trench

The photomosaics for the eastern trench (Figure 6) were spliced together from digital overview photos taken from the top of each trench wall. There is significant distortion because of the wide-angle lens and the fact that the photos were taken at a downward angle and for this reason there are no vertical scale bars. Because the fault zones are not as well developed as in the central trench (sheet 1) and there is relatively little evidence for paleoearthquakes, this trench was neither photographed nor logged in as much detail as the central trench. Close-up photos showing evidence for paleoearthquakes in this trench are shown in Figures 7-9. See "Summary" on sheet 1 for overview of investigation.

Explanation

- Lacustrine deposits-Likely correlations with numbered lake deposits in the central trench suggested by radiocarbon dates are indicated.
- Covered
- not tinted — Fluvial/eolian deposits
- Contact- Dashed for internal bedding; dotted where inferred
- Fault- Dashed where inferred
- (mod well-sorted f-c sand) — Lithologic description. Abbreviations: v, very; vf, very fine; f, fine; m or med, medium; c, coarse; mod, moderately
- Location of evidence for probable earthquake with sequential event number
- (3 fissure filled with sand) — Sequential earthquake number and description of evidence
- Location of radiocarbon sample. Shells were collected with charcoal so are not shown separately. Dates are in C14 years B. P.
  - in situ organic layer
  - charcoal
  - sample not dated

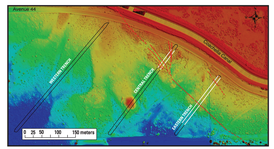


Figure 6. LiDAR topography of the study site showing locations of faults (red lines; dashed where approximated) and trenches (black lines; logged portions outlined in white). Eastern trench depicted at left, see sheet 1 for photomosaics of eastern trench. Western trench did not cross fault zone so we did not photograph it.

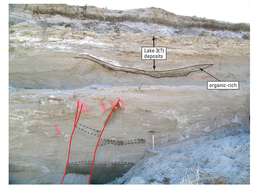


Figure 7. Evidence for paleoearthquake, likely EQ3, on main fault zone, on northwest wall of the eastern trench near meter 100. Faulting has displaced lacustrine and fluvial deposits on lower wall but not the organic-rich deposit on overlying Lake 3(?) deposits. Shape of organic-rich layer suggests that it may have been deposited in depression formed by faulting.

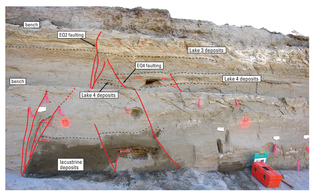


Figure 8. Evidence for paleoearthquakes on main fault zone on southeast wall of eastern trench near meter 100. Faulting during EQ4 has produced relatively large displacements and the resulting apparent thickness changes of Lake 4 deposits exposed near the middle of the wall while faulting during EQ2 has produced but only slight displacements of overlying Lake 3 deposits.

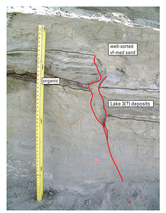


Figure 9. Evidence for paleoearthquake, that likely is EQ2, on southeast wall of eastern trench near meter 175. Faulting has displaced Lake 3(?) deposits about 25 cm vertically and produced a fissure. This fissure is filled with loose sand derived from the overlying sandy fluvial deposits, indicating the earthquake occurred when the sand was at the ground surface.

Table 2. Ages Of Radiocarbon Samples From Eastern Trench

Main Fault Zone

Sample Name	14C age	±	Layer
T2-S0.3-c	530	15	3L
T2-S0.3-o	560	20	3L
T2-S0.3-o	605	20	3L
T2-S0.3-17-c	610	15	3L
T2-S0.3-c	930	15	4S
T2-S0.3-c	945	15	4S
T2-S0.3-b-f	Modern		5Sq X
T2-S0.3-b-h,AA	960	30	5Sa
T2-S0.3-b-h	1005	30	5Sa X
T2-S0.3-b-h2	1575	30	5Sa X
T2-S0.3-b-ch3	1695	35	5Sa X
T2-S0.3-b-ch1	1725	45	5Sa X
T2-S0.3-o	1020	15	5Sb
T2-S0.3-c	1030	15	5Sb
T2-S0.3-b-hsm	1550	30	6.5L?
T2-S0.3-b-AAA	1570	35	6.5L?

Northeastern (Secondary) Fault Zone

T2-S0.3-b-hsm	780	35	3L
T2-S0.3-b-AAA	870	30	3L
T2-S0.3-b-h-AAA	1080	30	5L
T2-S0.3-b-hsm	1115	30	5L

Sample types:
hsm = bulk sediment acid-alkali-acid pretreated fraction
b-hsm bulk sediment humic acid
c charcoal
r roots
ch1 clam shell
ch2 helmet shell
ch3 turritella shell

Note: Gray/green bars bare outline groups of dates obtained from different fractions/pieces of the same sample. Samples followed by X were judged to be stratigraphically inconsistent and were excluded from the final analysis. X numbers indicate the OxCal model refinement step at which the sample was removed. Sample nomenclature consists of trench number (T2 for second trench), distance (meters) from the east end of the meter number (from the southwest end of the logged exposures). The final capital letter is used to distinguish between multiple samples in a given wall-river meter. In the eastern trench, samples are numbered sequentially on each bench river.
All samples were dated at the Center For Accelerator Mass Spectrometry at Lawrence Livermore National Laboratory, Livermore, CA or the Keck CCAMS Laboratory at UC Irvine, Irvine, CA.

PHOTOMOSAICS AND LOGS OF TRENCHES ON THE SAN ANDREAS FAULT NEAR COACHELLA, CALIFORNIA

By
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