U.S. Department of the Interior
U.S. Geological Survey

Open-File Report 2009-1228
Sheet 1 of 2

SUMMARY

This publication makes available maps and trench logs associated with studies of the Central Range Fault, part of the South American-Caribbean plate boundary in Trinidad (Figures 1 &2). Our studies were conducted in 2001 and 2002.

We mapped geomorphic features indicative of active faulting along the right-lateral, Central Range Fault, part of the South American-Caribbean plate boundary in Trinidad (Figures 1 & 2). We excavated trenches at two sites, the Samlalsingh and Tabaquite sites. At the Samlalsingh site, sediments deposited after the most recent fault movement bury the fault, and the exact location of the fault was unknown until we exposed it in our excavations. At this site, we excavated a total of eleven trenches, six of which exposed the fault (Figure 3). The trenches exposed fluvial sediments deposited over a strath terrace developed on Miocene bedrock units.

We cleaned the walls of the excavations, gridded the walls with either 1 m X 1 m or 1 m X 0.5 m nail and string grid, and logged the walls in detail at a scale of 1:20. Additionally, we described the different sedimentary units in the field, incorporating these descriptions into our trench logs. We mapped the locations of the trenches using a tape and compass (Figure 3).

Our field logs were scanned, and unit contacts were traced in Adobe Illustrator. The final drafted logs of all the trenches are presented here, along with photographs showing important relations among faults and Holocene sedimentary deposits. Logs of south walls were reversed in Illustrator, so that all logs are drafted with the view direction to the north. We collected samples of various materials exposed in the trench walls, including charcoal samples for radiocarbon dating from both faulted and unfaulted deposits. The locations of all samples collected are shown on the logs. The ages of seventeen of the charcoal samples submitted for radiocarbon analysis at the University of Arizona Accelerator Mass Spectrometry Laboratory in Tucson, AZ, are given in Table 1. Samples found in Table 1 are shown in red on the trench logs. All radiocarbon ages are calibrated and given with 2 standard deviation age ranges.

Our studies suggest that the Central Range Fault is a Holocene fault capable of producing damaging earthquakes in Trinidad.

REFERENCES CITED

Stuiver, M. and Reimer, P. 1998 CALIB Version 4.0 [Computer program] URL http://depts.washington.edu/qil/
Stuiver, M. and Reimer, P.J., 1993, Extended 14C data base and revised CALIB 3.0 14C age calibration program, Radiocarbon, 35:215-230.

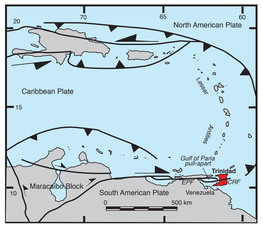


Figure 1a. Caribbean tectonic setting. Trinidad, located on the South American - Caribbean plate boundary, is shown in red. EPF, E. Paria Fault; CRF, Central Range Fault

Figure 1b. Sketch map of the island of Trinidad. Location of Central Range Fault is approximate. Red part of fault illustrates the extent of mapping along the Central Range Fault shown in Figures 2a, b below.

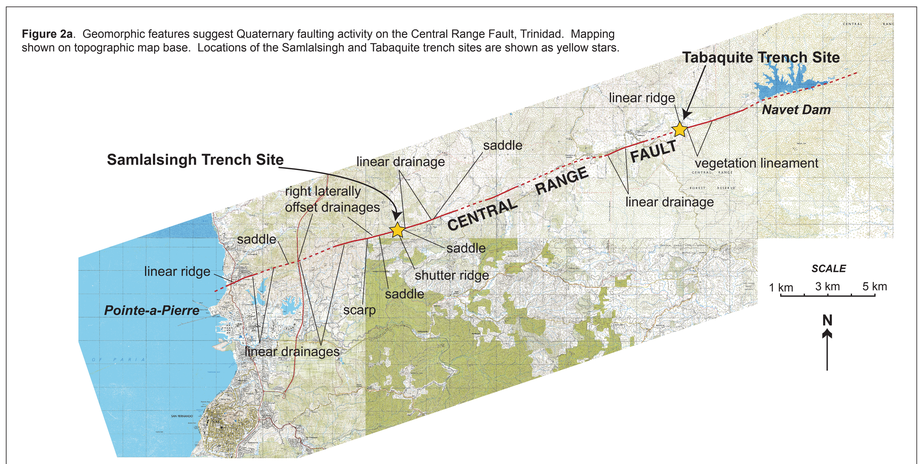


Figure 2a. Geomorphic features suggest Quaternary faulting activity on the Central Range Fault, Trinidad. Mapping shown on topographic map base. Locations of the Samlalsingh and Tabaquite trench sites are shown as yellow stars.

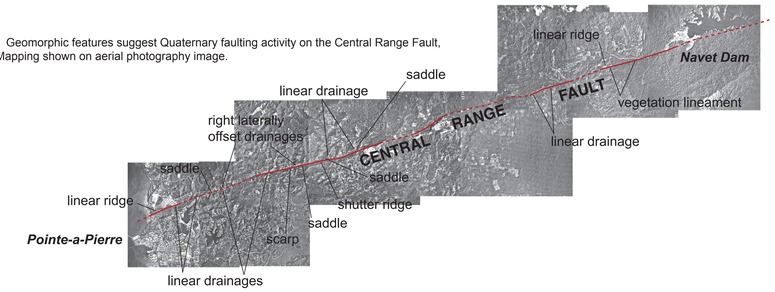


Figure 2b. Geomorphic features suggest Quaternary faulting activity on the Central Range Fault, Trinidad. Mapping shown on aerial photography image.

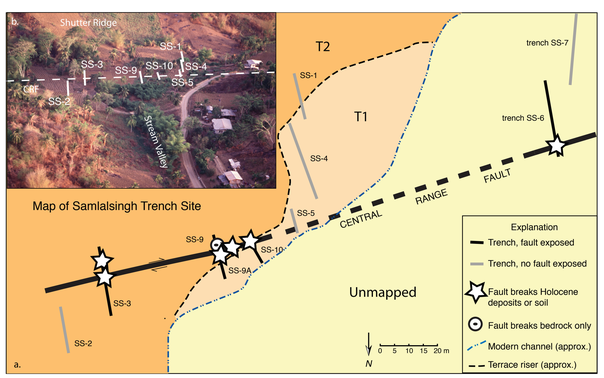
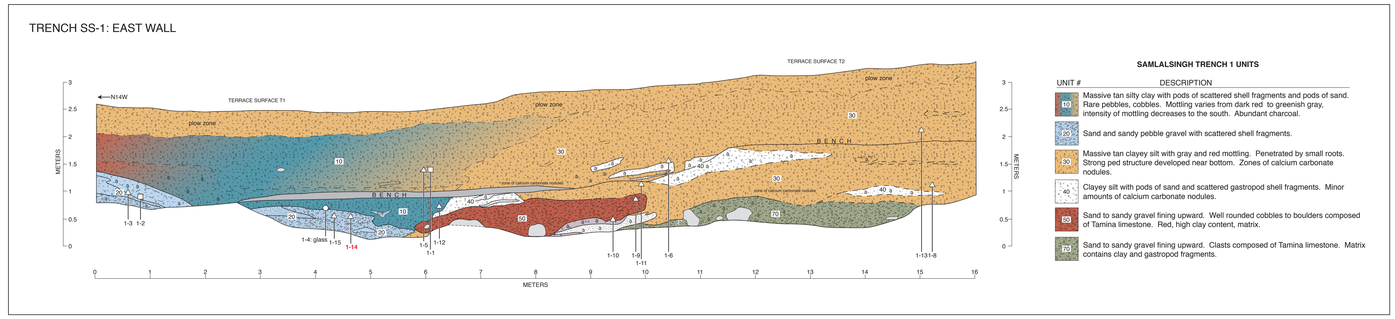
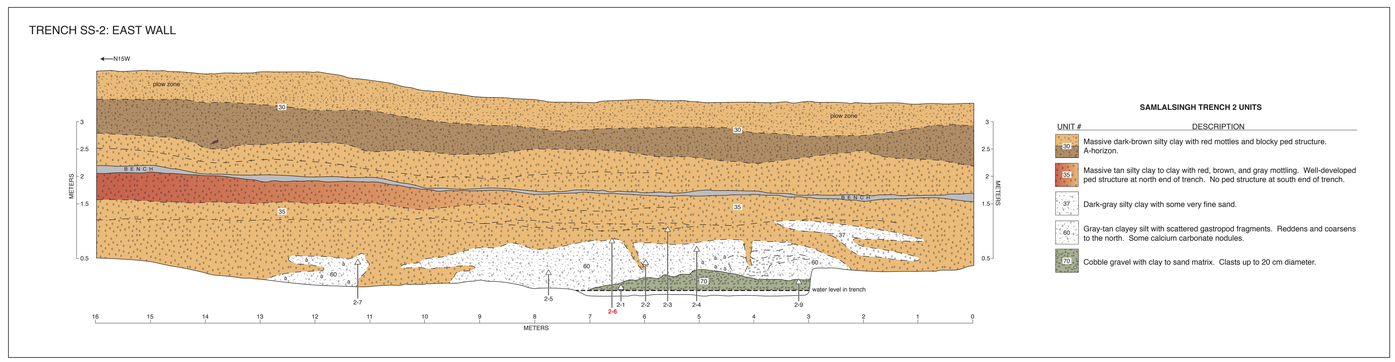
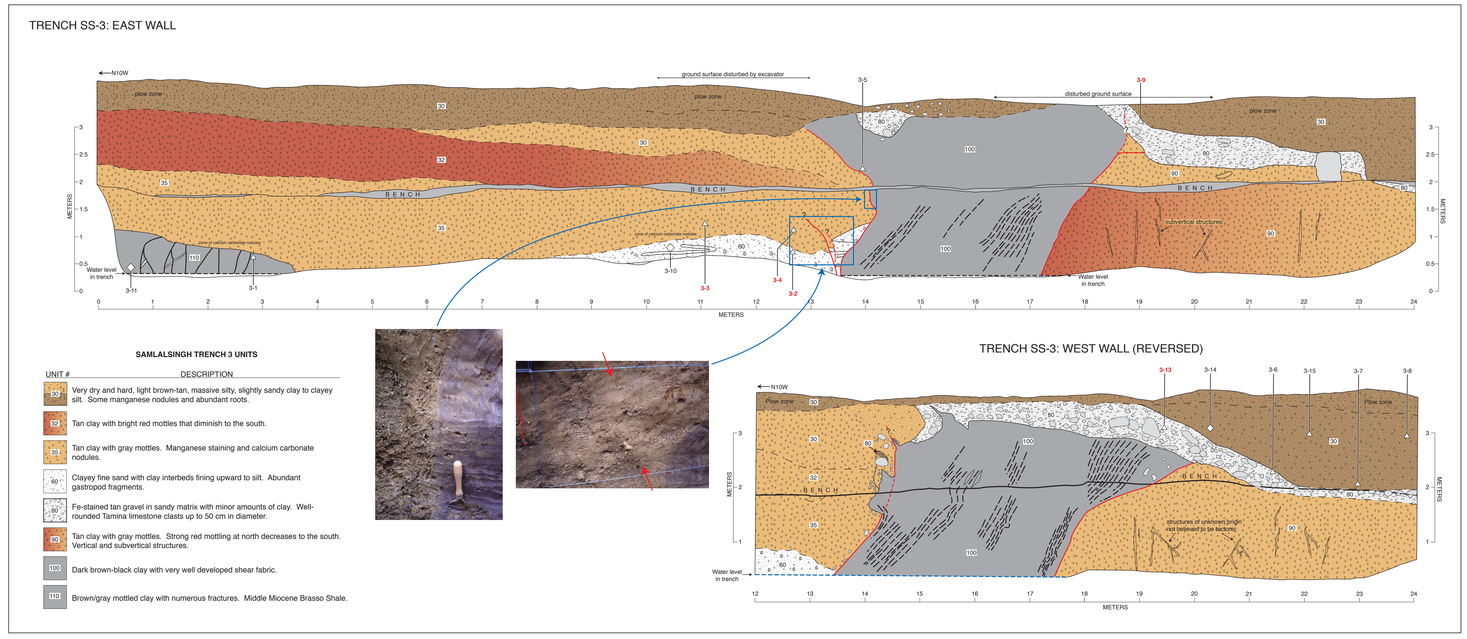


Figure 3a. Map of the Samlalasingh trench site located on a series of fluvial terraces adjacent to a small stream channel. The modern channel is deeply incised into the terrace surface. Map shows the location of all 9 excavations at the site. Also shown are locations where faulting breaks Holocene deposits or soil (see trench logs for additional details). Trench logs for each excavation shown on the site map are included in this report.

Figure 3b. Oblique aerial photo taken for this study that shows the site as well as the locations of the Central Range Fault study excavations.







LOGS OF PALEOSEISMIC EXCAVATIONS ACROSS THE CENTRAL RANGE FAULT, TRINIDAD

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