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SPECIALIZING IN ACTIVE
GEOLOGIC FAULTS ON THE
GULF COASTAL PLAIN

October 19, 2017

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Conroe, Texas. 77304

Attention: Mark Smith, GRP Division Director
Copy To: Lance McLeod, PE, PMP

SUBJECT: REPORT ON THE FIFTH RE-MEASURE OF WATERLINE W1A AND W2A BENCHMARK
ELEVATIONS IN THE WOODLANDS, TEXAS IN SEPTEMBER 2017

The fifth re-measure shows no evidence of convincing fault movement at any of the 4 lines of benchmarks since their installation in March 2015. During that 2.5 year period, 18 of the total of 47 benchmarks show no elevation change; 1 shows a gain of +0.01 feet; 20 show a loss of -0.01 feet; 7 a loss of -0.02 feet; and 1 a loss of -0.05 feet. The -0.05 foot (0.60 inch) change occurred at the middle of a line of 20 benchmarks that crosses the Egypt Fault along the east side of FM 2978. The remaining 19 benchmarks on that line (10 on the high side of the fault, 9 on the low side) showed elevation changes of 0.00 to -0.02 feet over the past 2.5 years. Such small changes are within the range of measurement error.

Considering only elevation changes that have taken place over the past 6 months, 32 of the 47 benchmarks showed no change; 5 showed an increase of +0.01 feet, 9 a decrease of -0.01 feet, and 1 a decrease of -0.02 feet, all of which are within the range of measurement error.

As suggested in my October 11, 2016 report on the third re-measure of the benchmarks, a fault movement event will be demonstrated when most, or all, benchmarks on one side of the fault show a consistent up or down sense of movement compared to those on the opposite side of the fault. I should have added that the rate of differential movement between the upthrown and downthrown sides of the fault should exceed approximately 0.15 feet per year.

The sixth re-measure of the benchmarks is scheduled for March 2018.

Respectfully submitted,

Carl E. Norman, Ph.D.