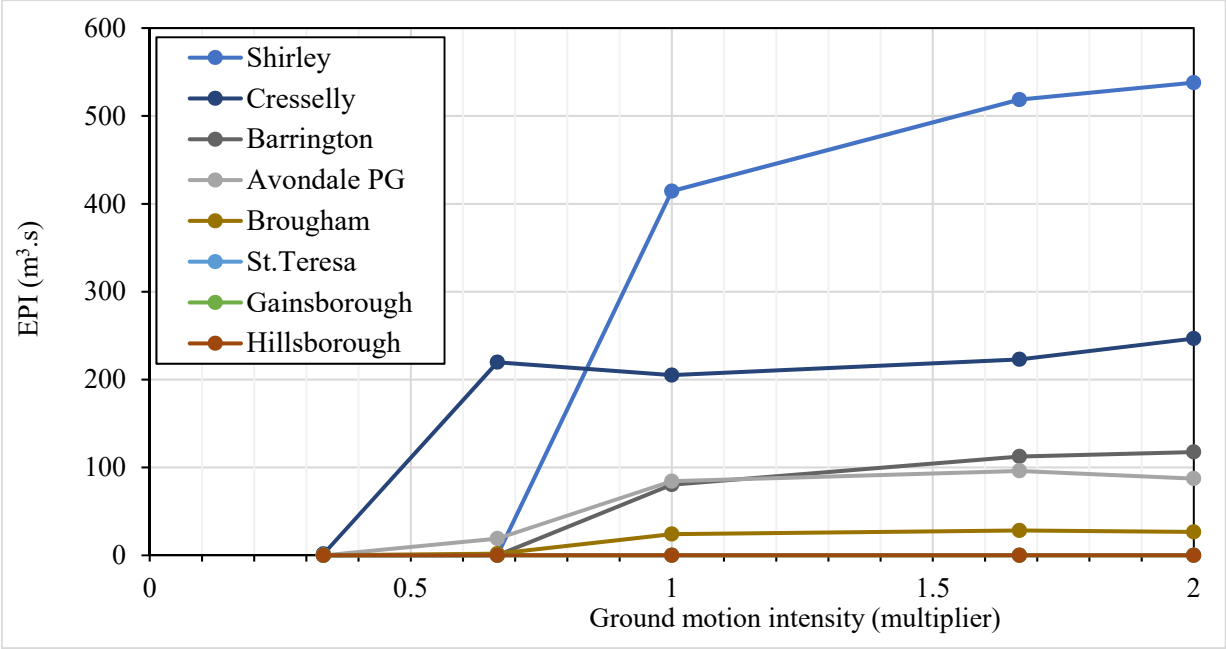


Figure 1. Computed EPI values with different ground motion intensity level for sites with different manifestation orderly plotted from extreme (top) to none (bottom).

Findings:

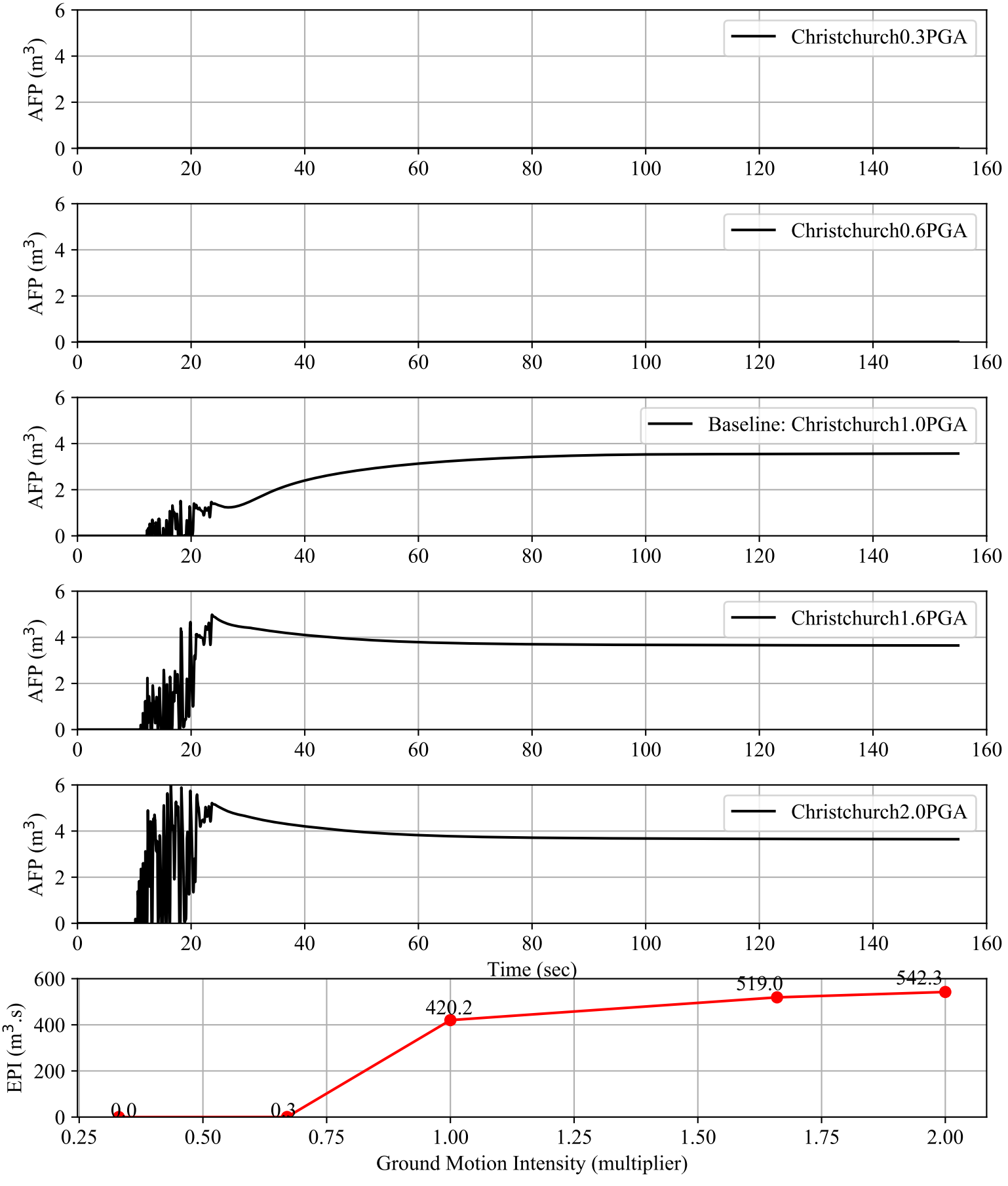
1. EPI values for sites without ejecta manifestation (e.g., Gainsborough and St. Teresa) are always zero for different shaking intensity level. The significant k_v contrast of the highly-stratified deposit prevents the upward seepage-induced secondary liquefaction at shallow elevation to occur and this process is well captured by EPI. EPI is capable to distinguish sites with and without ejecta effectively as it can capture the post-shaking upward seepage mechanism. The changes of GWL, k_v and input motion PGA do not influence the computed EPI, which confirms that the layer stratification is the main reason why ejecta was not produced at these two sites.

2. The computed EPI values for sites with more ejecta manifestation are flatten at stronger shaking intensity. The liquefiable deposit have a maximum amount of residual excess pore water pressure generated during shaking and maximum thickness of liquefied layer. Thus, EPI is consistent to capture this mechanism. Different intensity may change the thickness of the liquefied layer and change the timing when first liquefaction occurs.

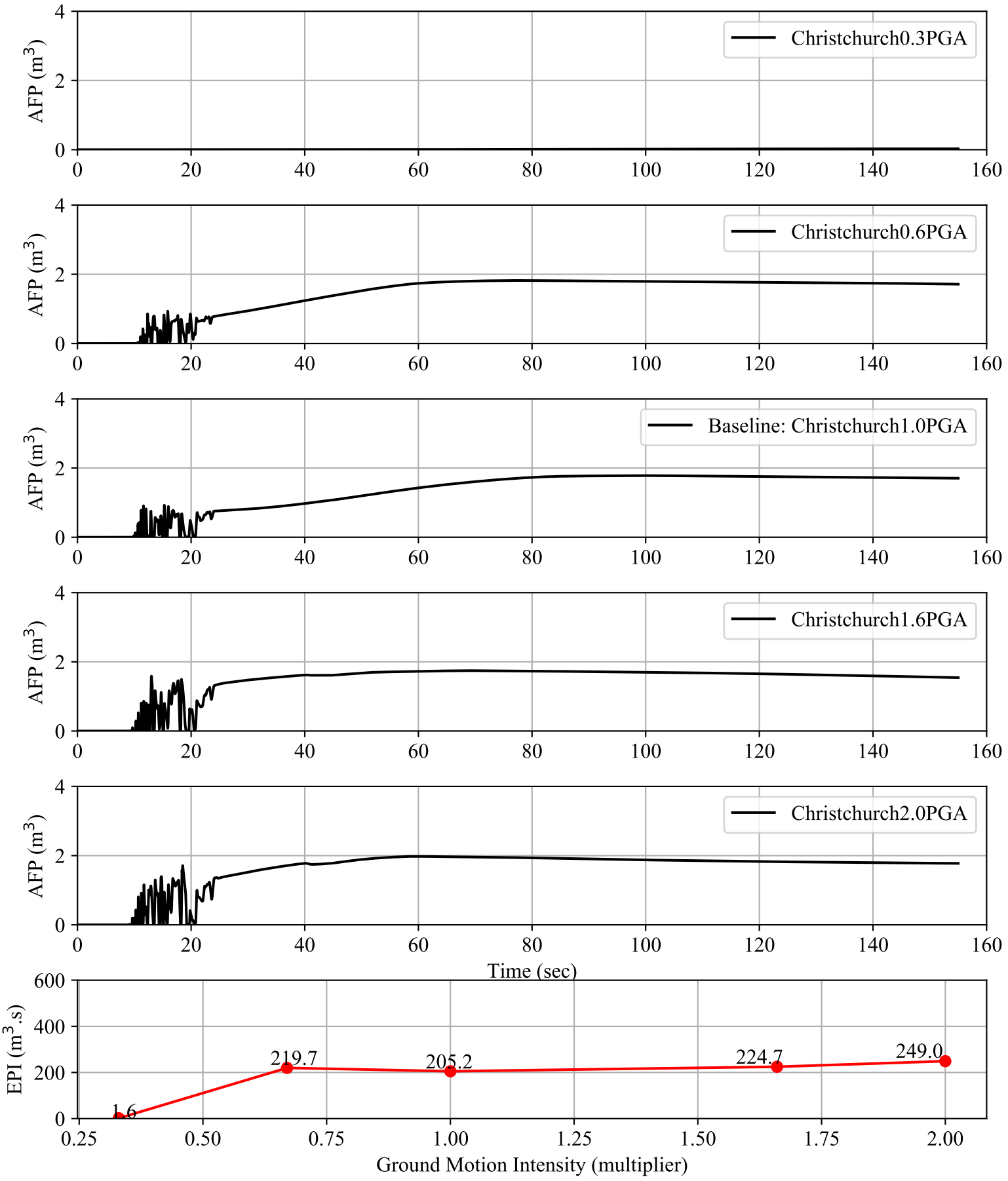
3. As expected, the shaking intensity is sensitive to the computed EPI values only during shaking and relatively minor after the shaking stop. The post-shaking AFP time history tend to have similar dissipation shape and reach a similar value as soil hydraulic conductivity is the controling parameter during this period .

4. Stronger intensity does not necessarily increase the computed EPI value significantly as it can cause more severe deep liquefaction that reduce the seismic propagation towards ground surface. This mechanism is also capture by computed EPI values as indicated in Figure 1.

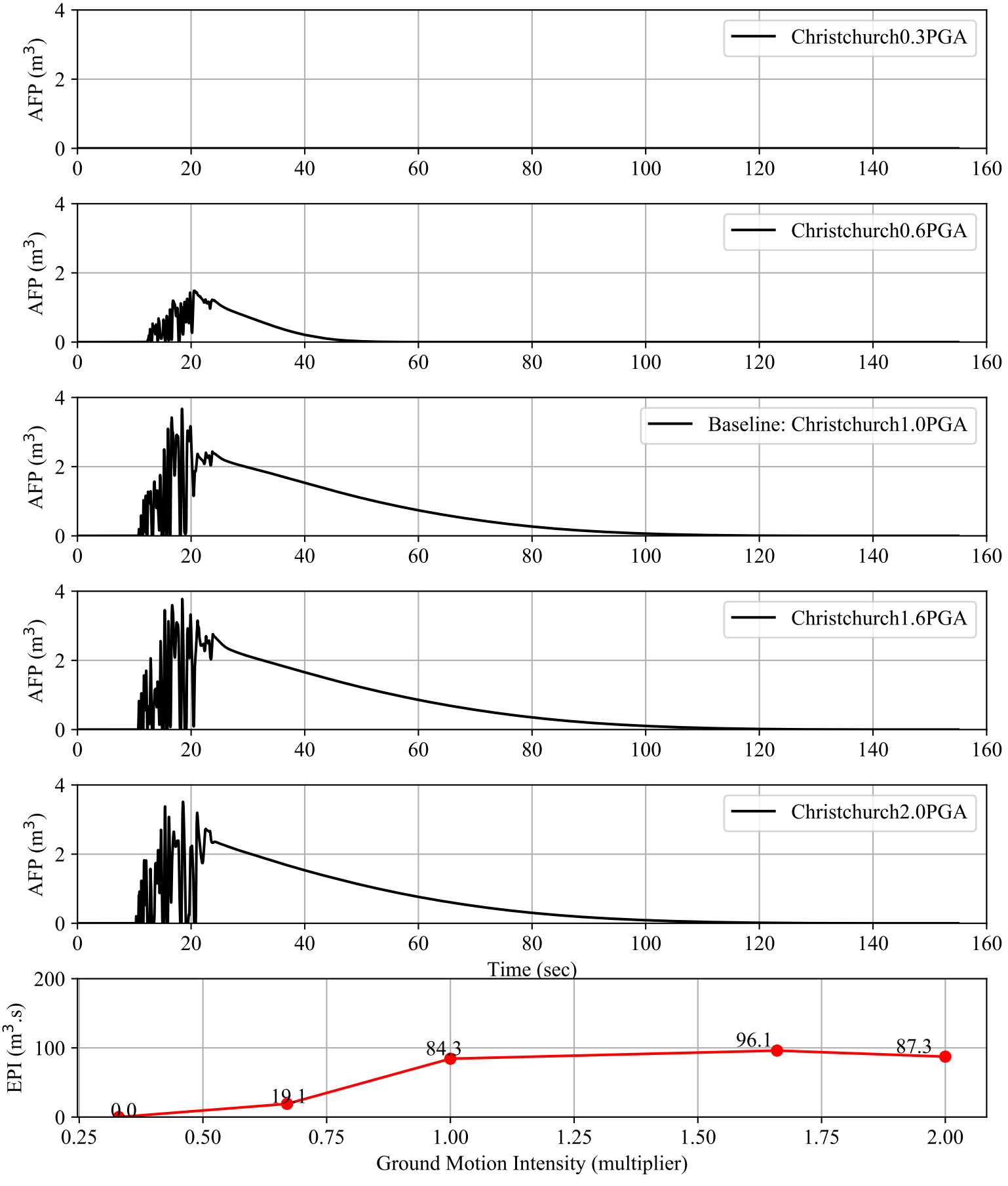
Ground Motion Intensity Sensitivity Analysis - Shirley School



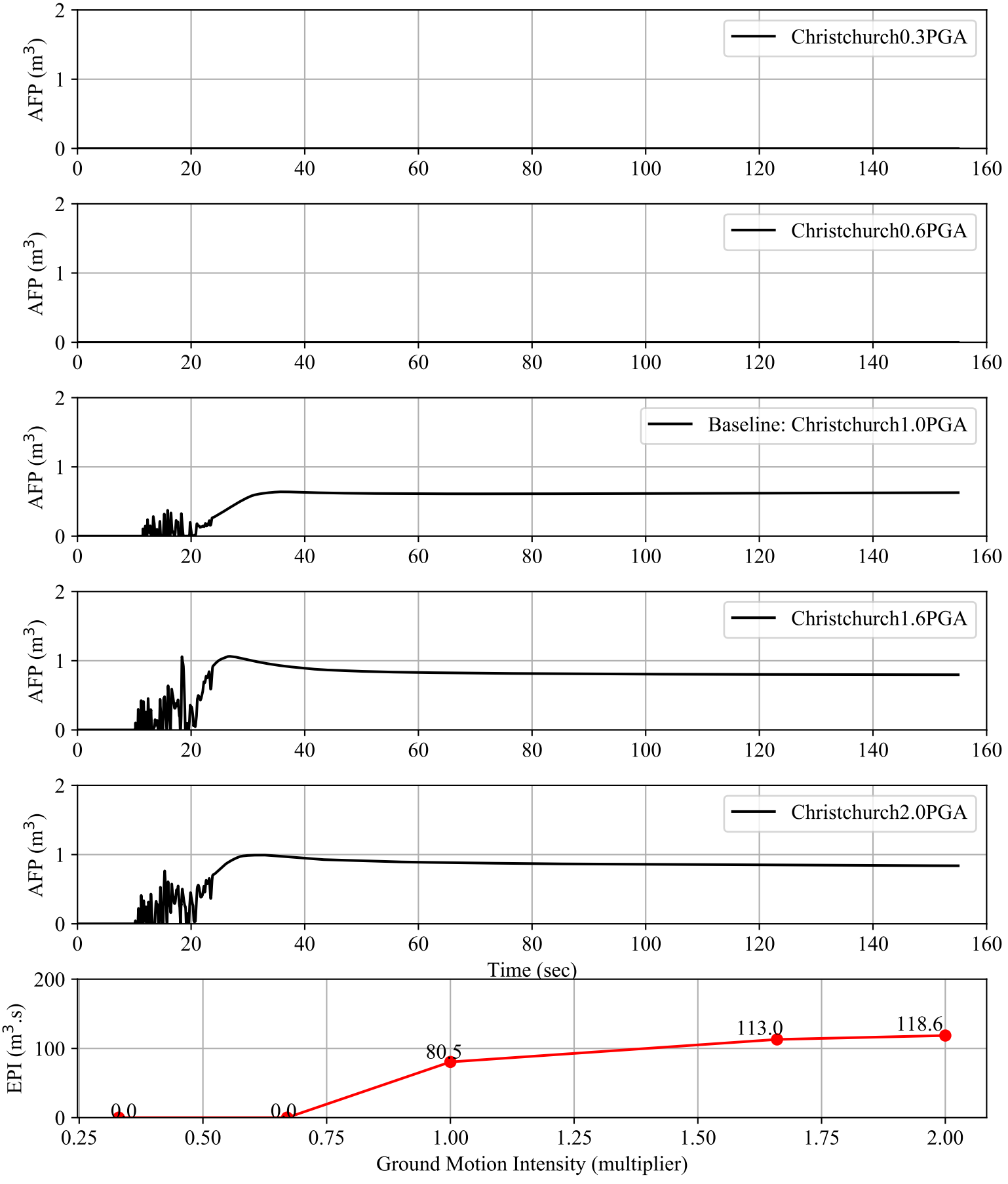
Ground Motion Intensity Sensitivity Analysis - 15 Cresselly Place



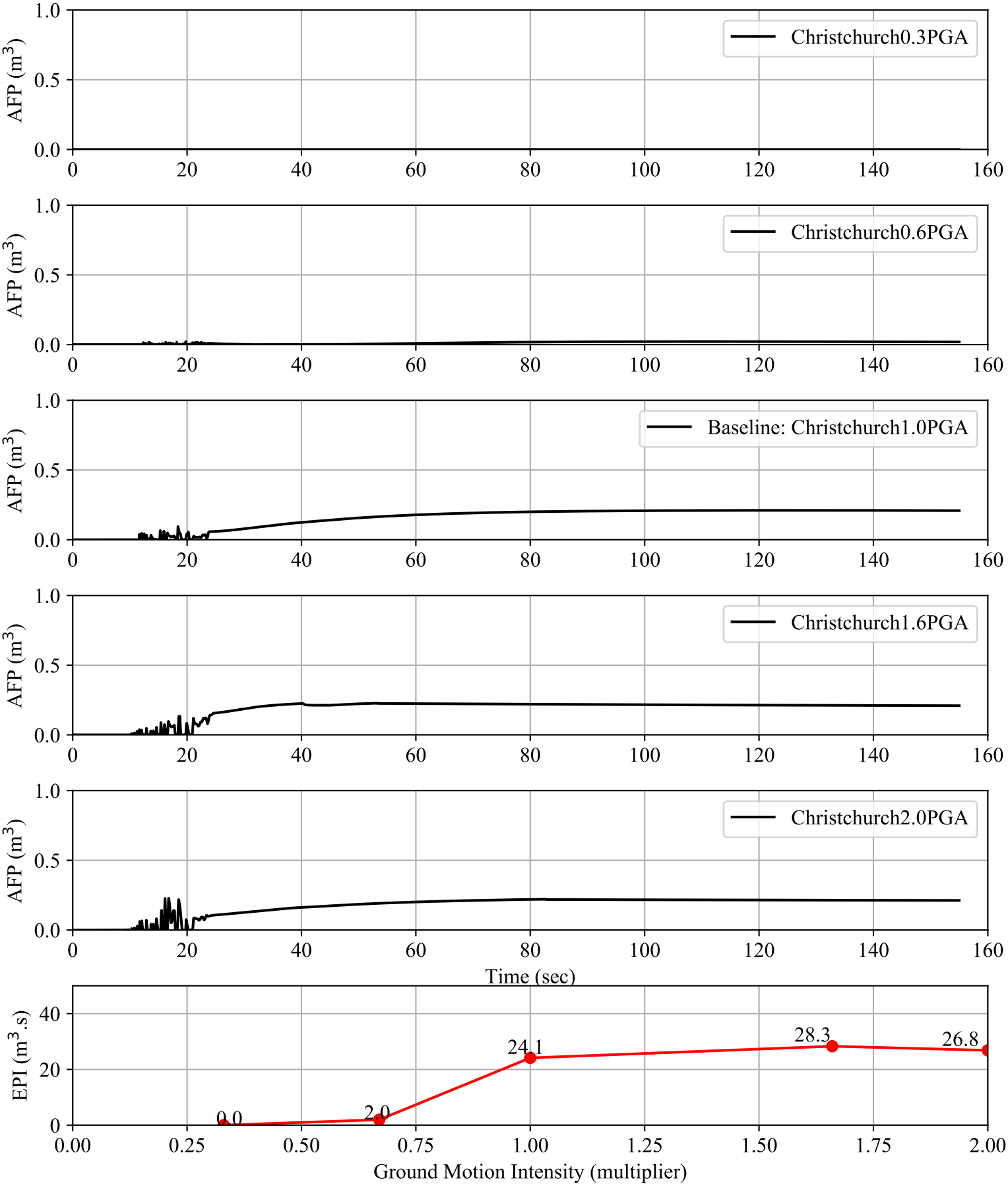
Ground Motion Intensity Sensitivity Analysis - Avondale Playground



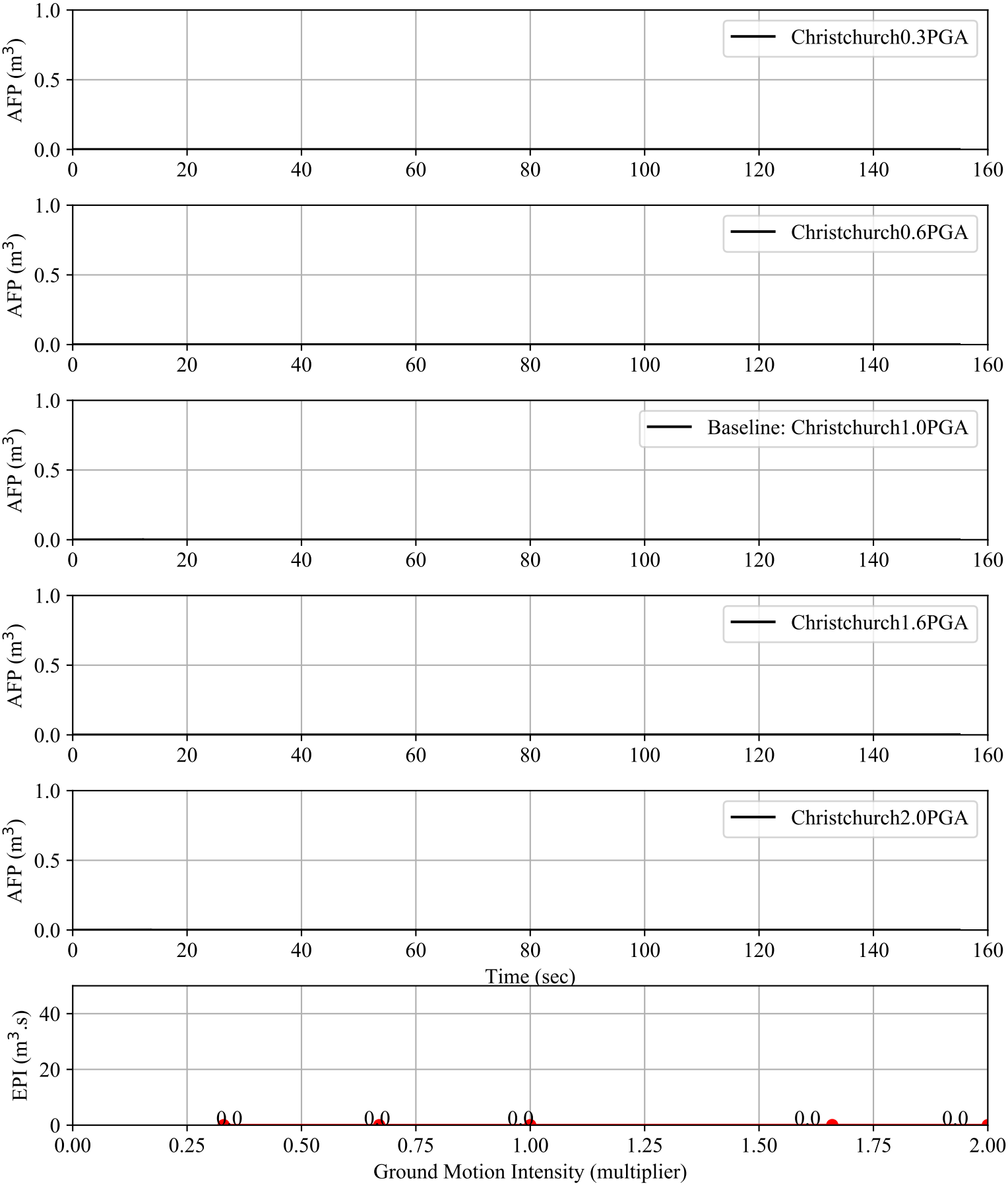
Ground Motion Intensity Sensitivity Analysis - Barrington Park



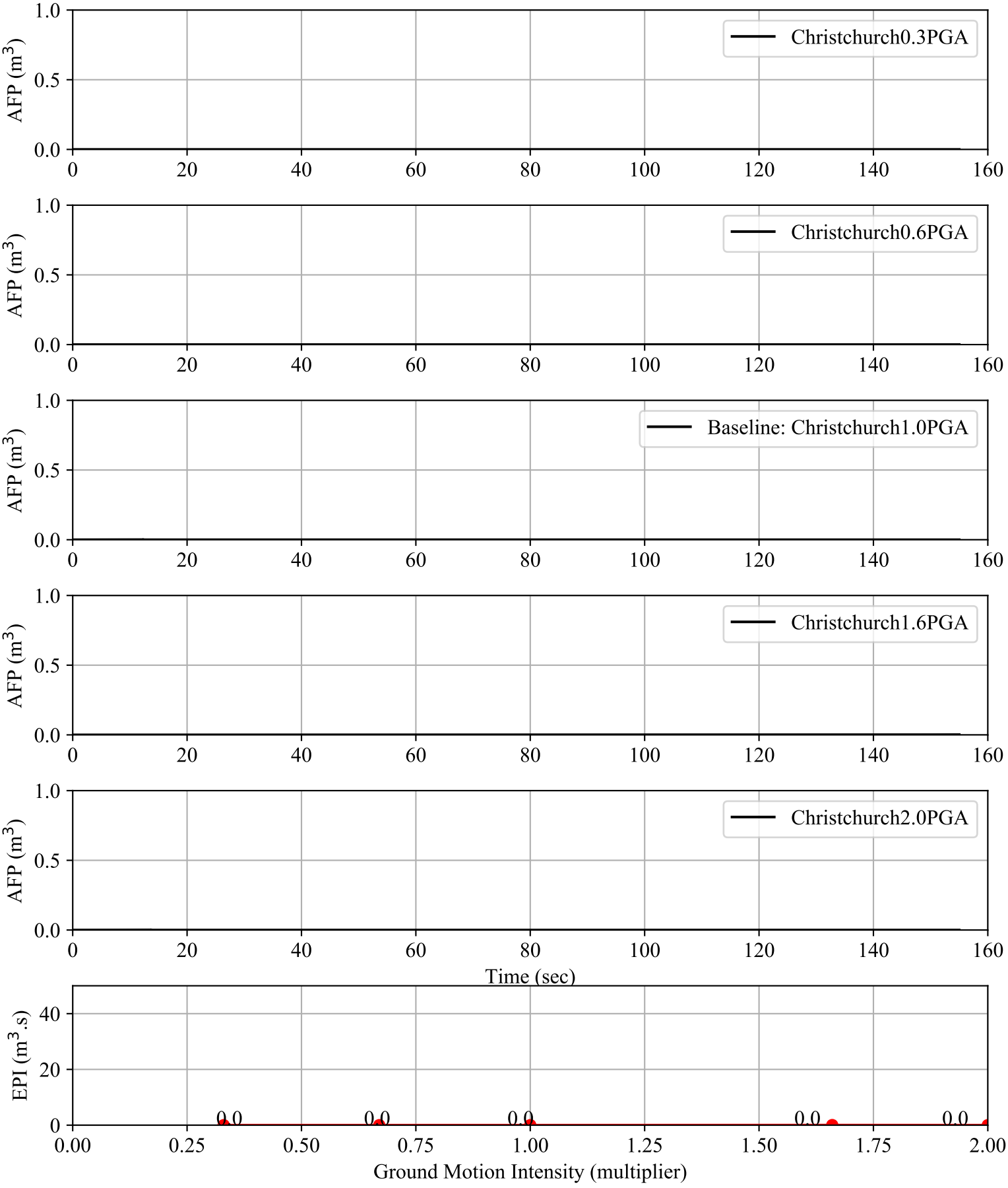
Ground Motion Intensity Sensitivity Analysis - Brougham St



Ground Motion Intensity Sensitivity Analysis - Gainsborough



Ground Motion Intensity Sensitivity Analysis - Hillsborough



Ground Motion Intensity Sensitivity Analysis - St.Teresa