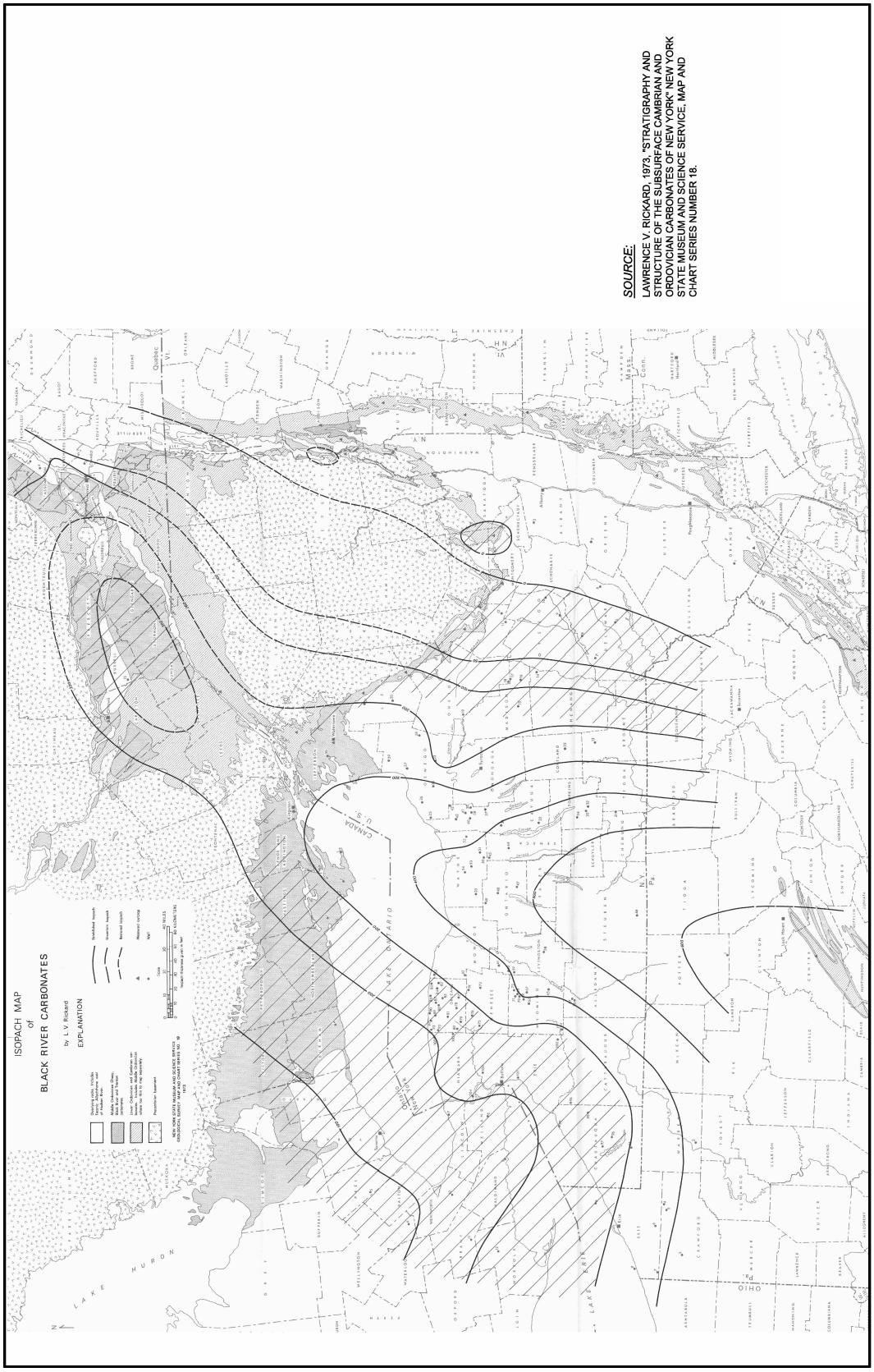



**Figure 2.5-71—{Plate 7 - Isopach Map of Black River Carbonates}**

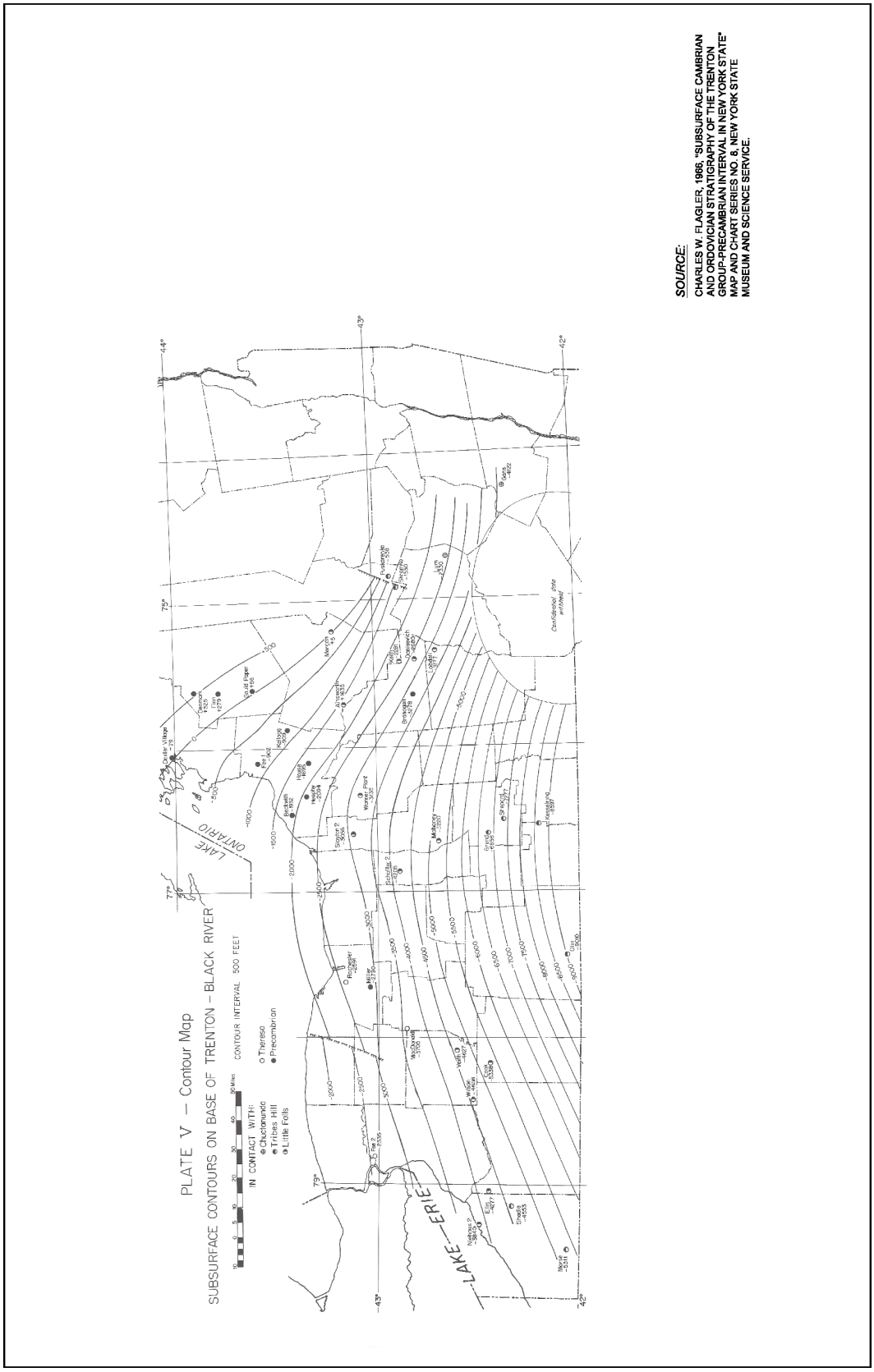



**Figure 2.5-72—{Plate 5 - Contour Map Subsurface Contours on Base of Trenton - Black River}**

**Figure 2.5-73—{NMP Unit 1 and Unit 2 Site Geologic Structures}**

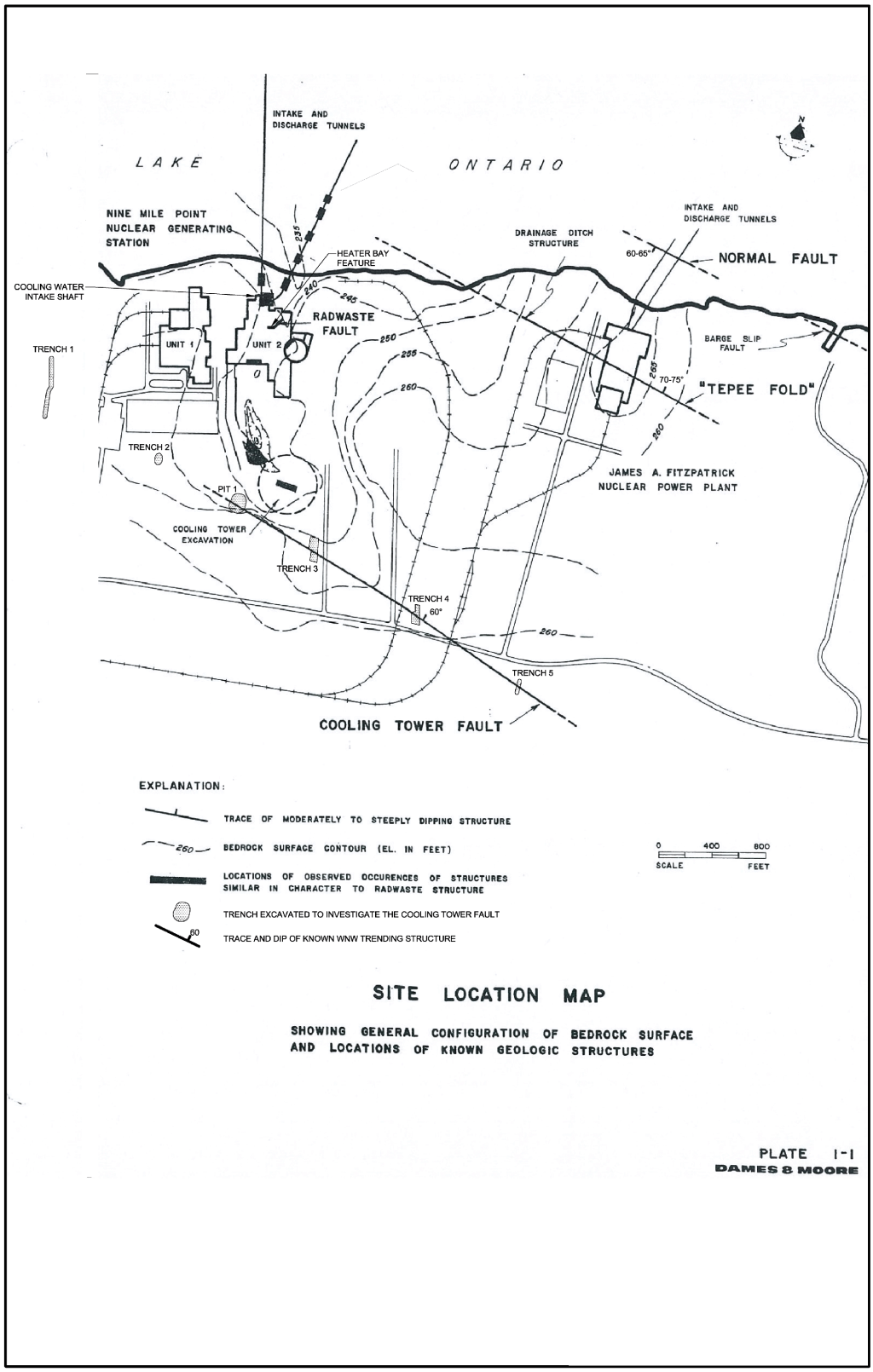


**Figure 2.5-74—{Historical Seismicity in Vicinity of NMPS Site (shown with a star) from EPRI Catalog and from {Additional Catalogs (1985-2007)}**

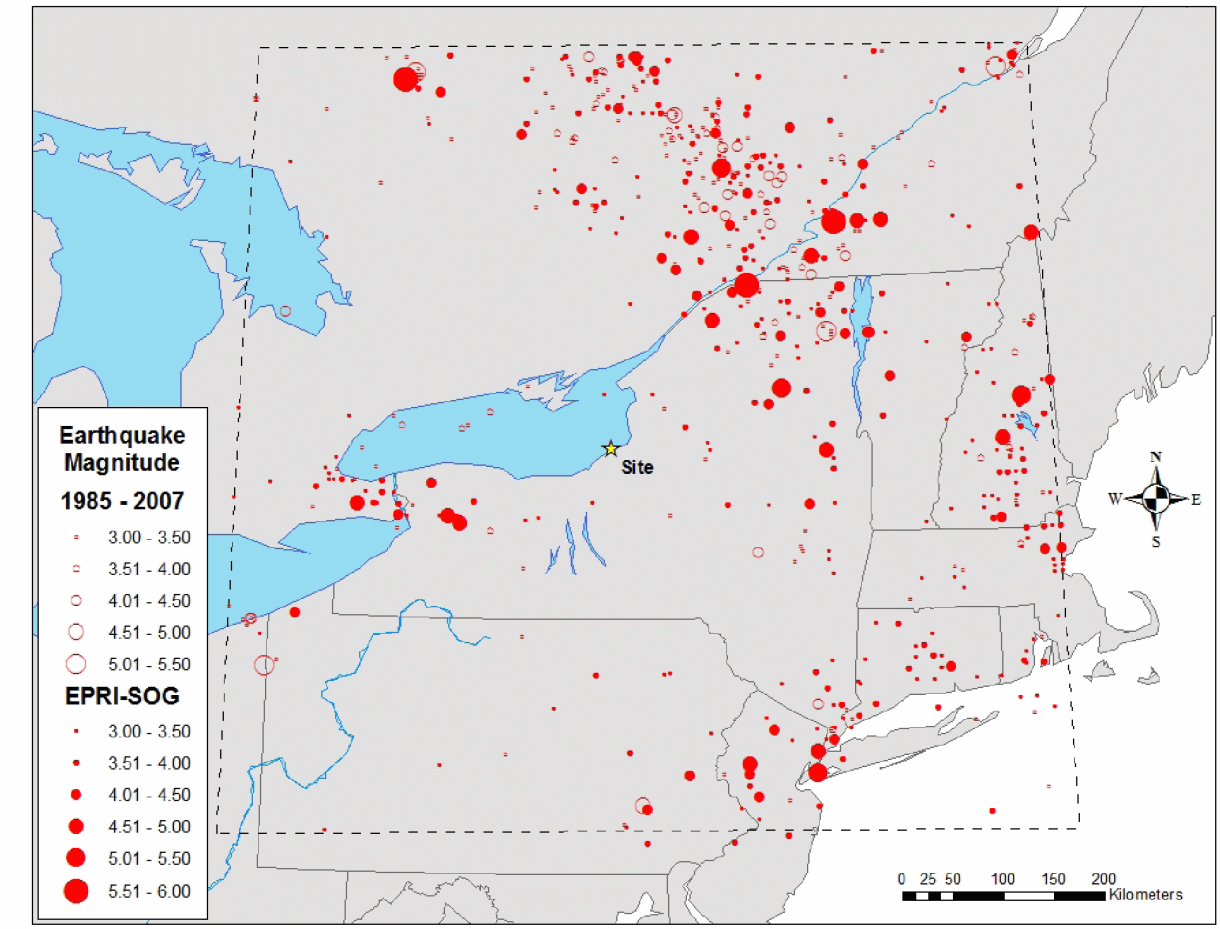


**Figure 2.5-75—{Historical Seismicity Close to NMPS Site (shown with a star) from EPRI Catalog and from {Additional Catalogs (1985-2007)}**

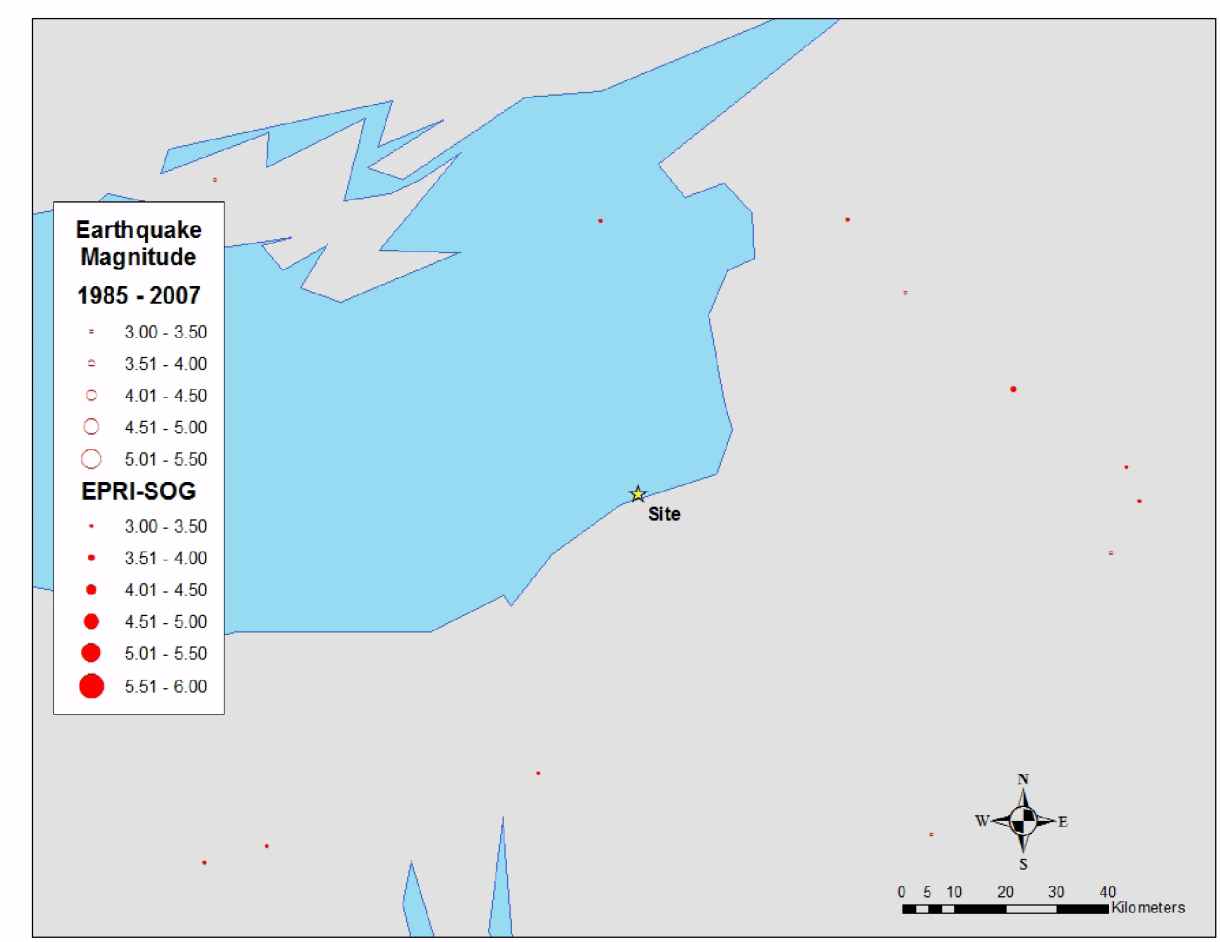


**Figure 2.5-76—{Historical Seismicity in Charlevoix Seismic Zone (with NMPS site shown as a star) from EPRI Catalog (through 1984) and from Additional Catalogs (1985-2007)}**

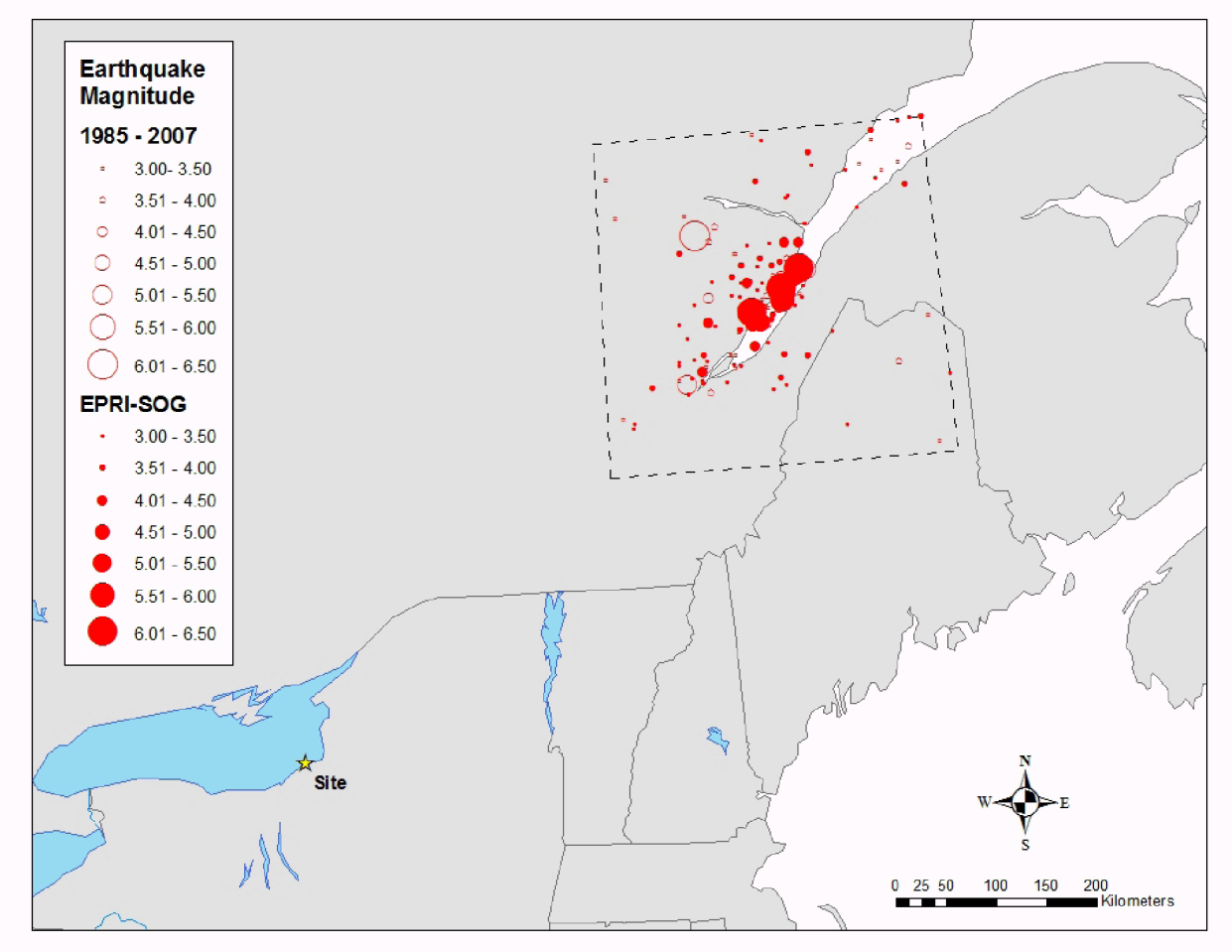


**Figure 2.5-77—{Bechtel Seismic Source Zones and EPRI-SOG pre-1985 Catalog}**

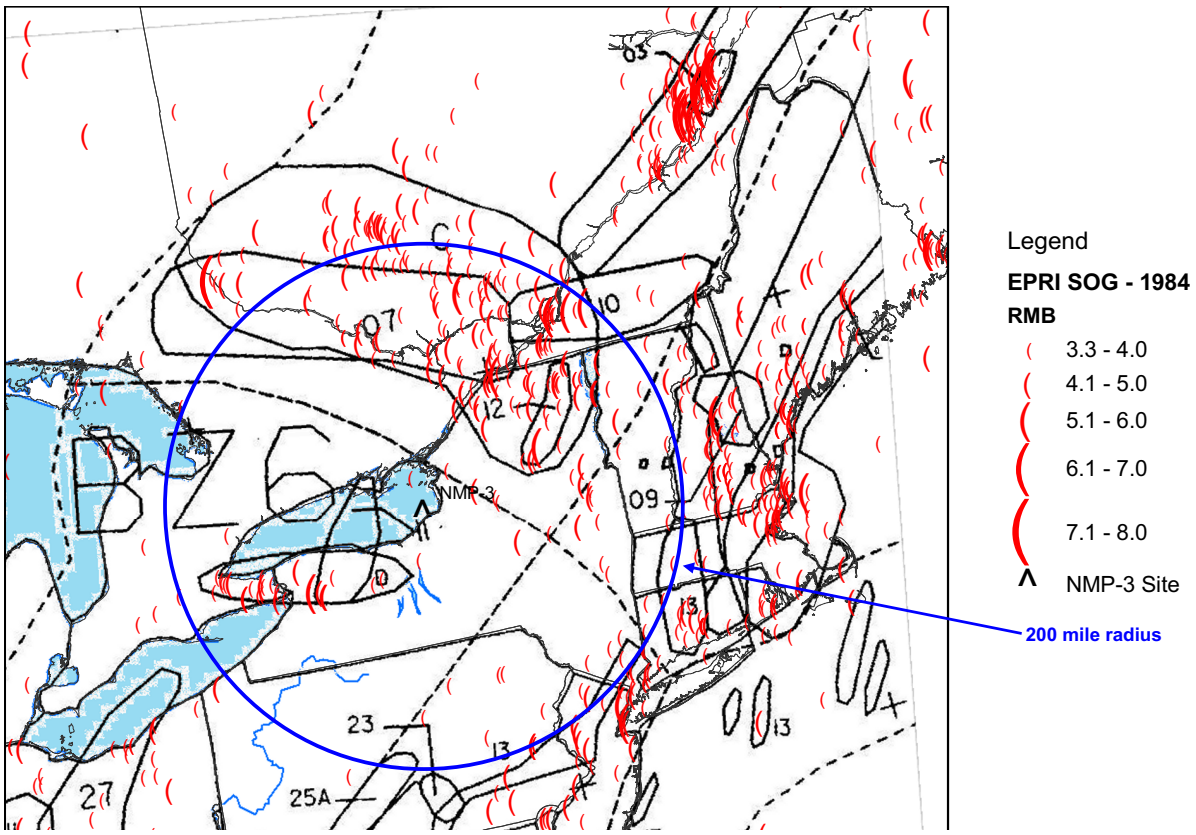


**Figure 2.5-78—{Bechtel Seismic Source Zones and 1985-2007 Catalog Update}**

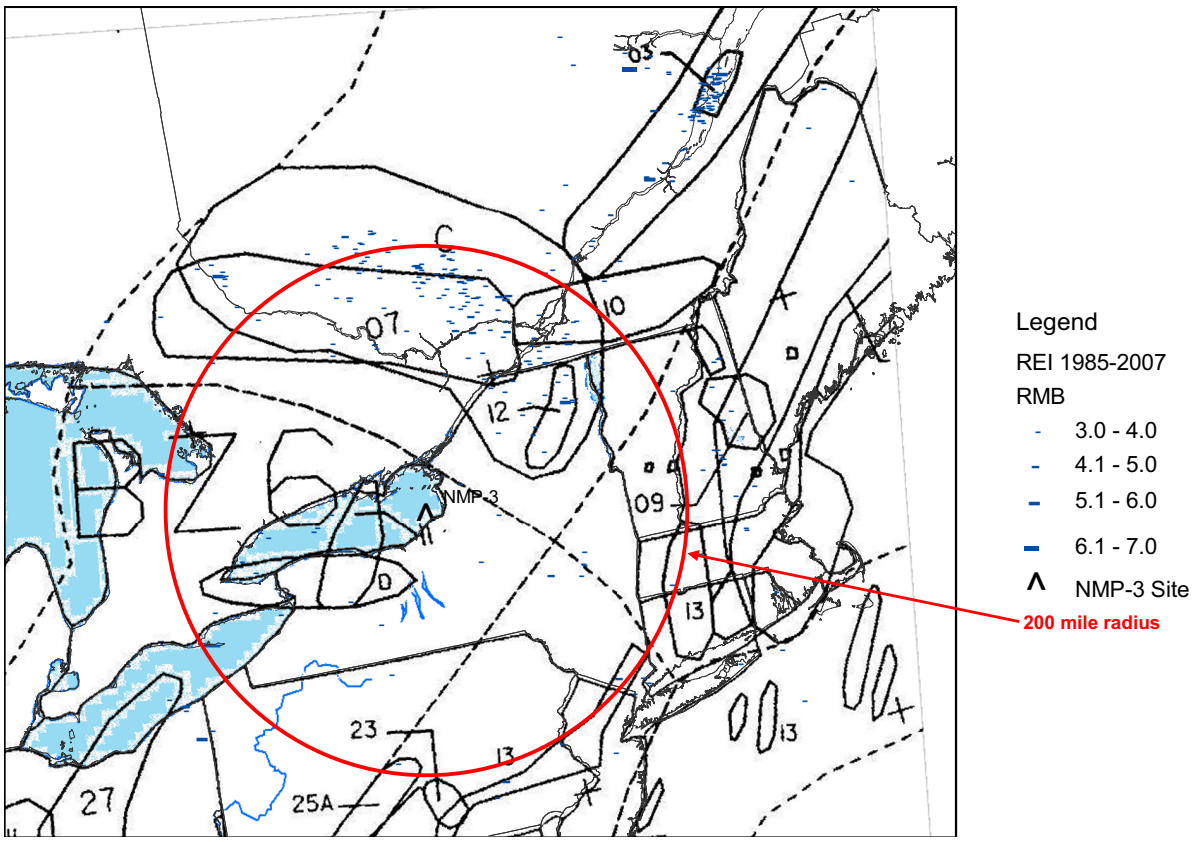


**Figure 2.5-79—{Dames & Moore Seismic Source Zones and EPRI-SOG pre-1985 Catalog}**

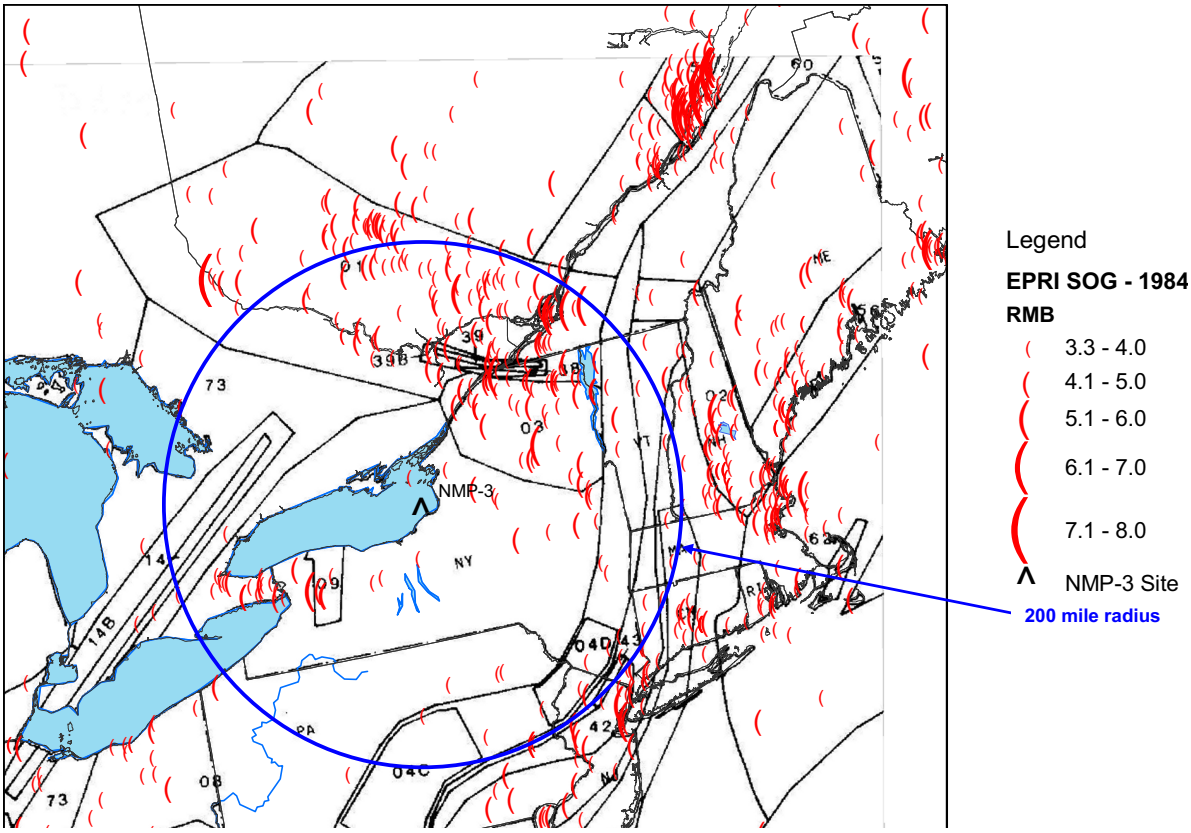


**Figure 2.5-80—{Dames & Moore Seismic Source Zones and 1985-2007 Catalog Update}**

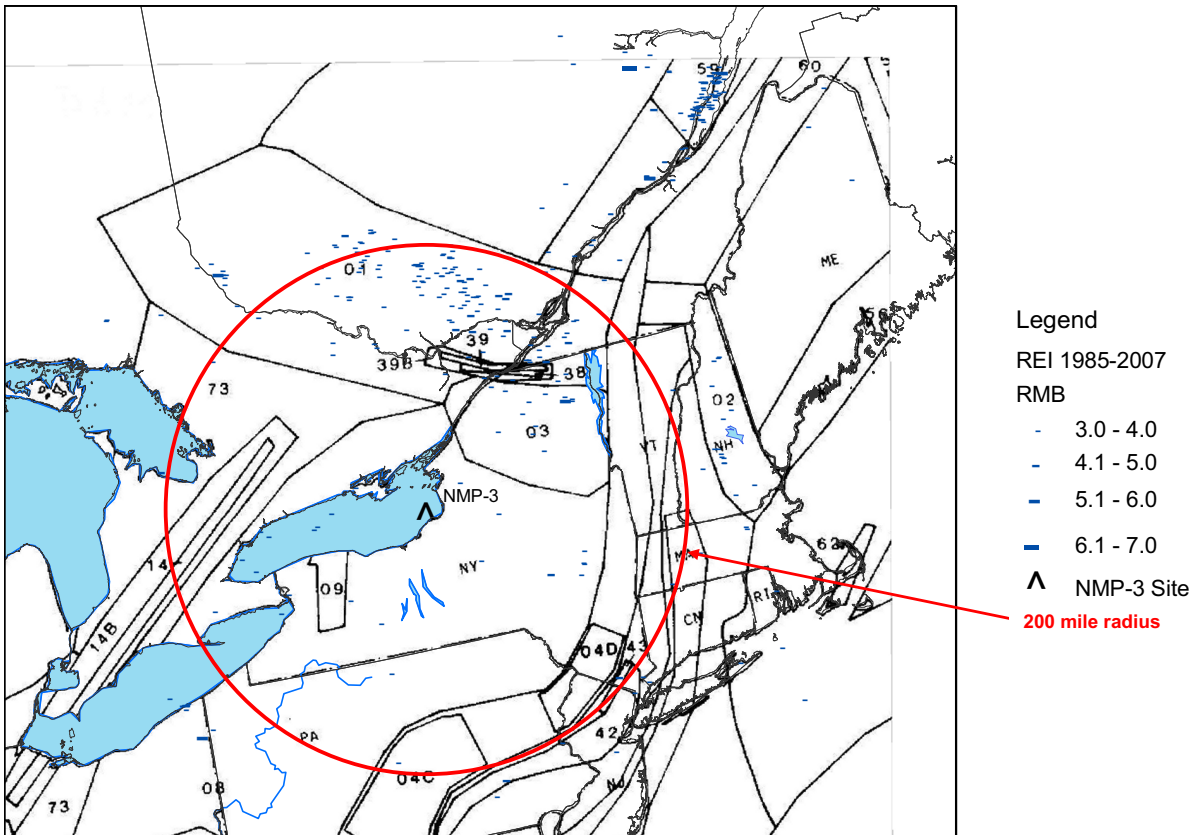


**Figure 2.5-81—{Law Engineering Seismic Source Zones and EPRI-SOG pre-1985 Catalog}**

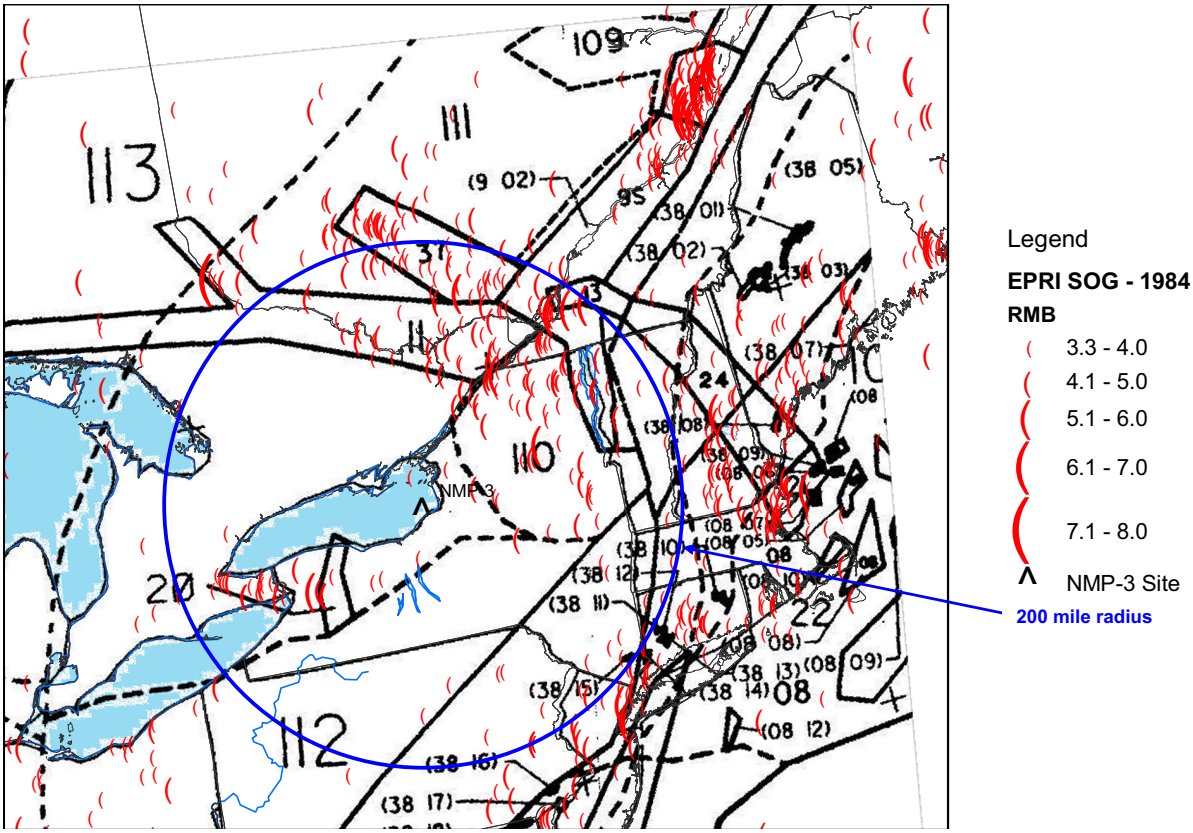


**Figure 2.5-82—{Law Engineering Seismic Source Zones and 1985-2007 Catalog Update}**

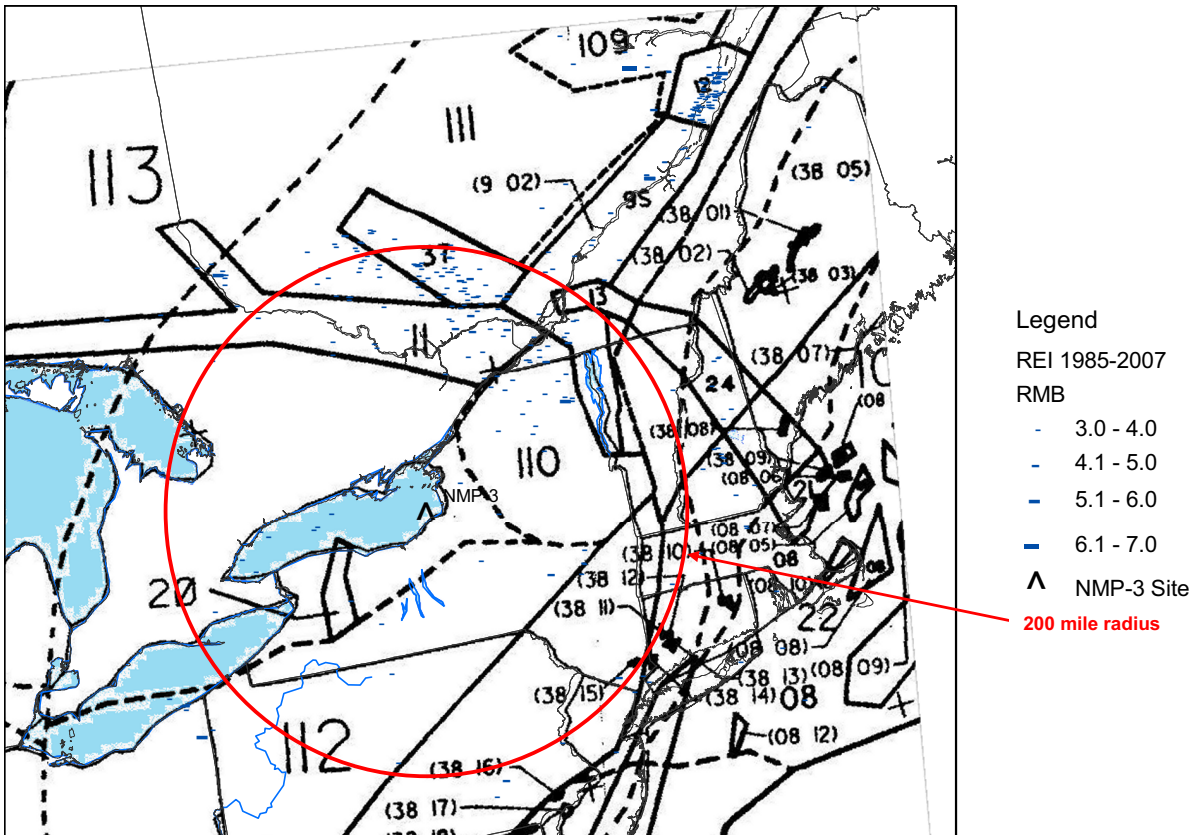


**Figure 2.5-83—{Rondout Seismic Source Zones and EPRI-SOG pre-1985 Catalog}**

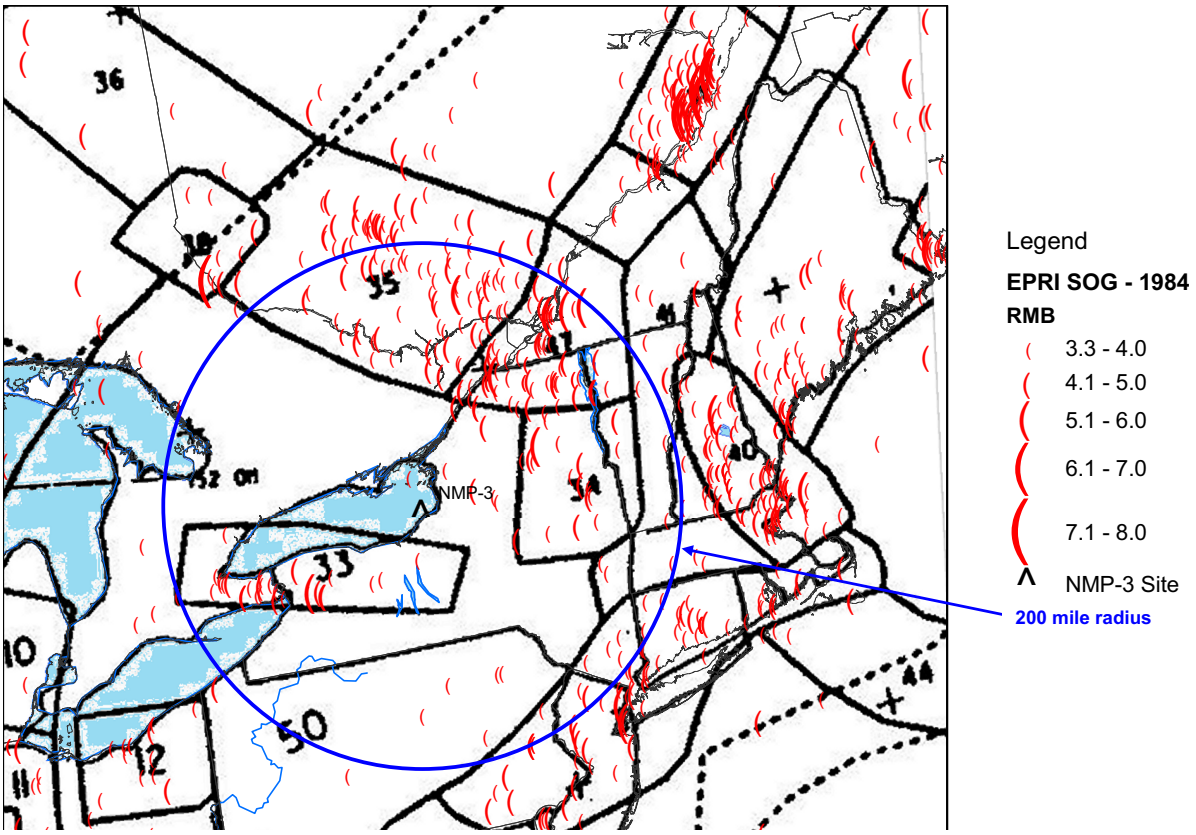


**Figure 2.5-84—{Rondout Seismic Source Zones and 1985-2007 Catalog Update}**

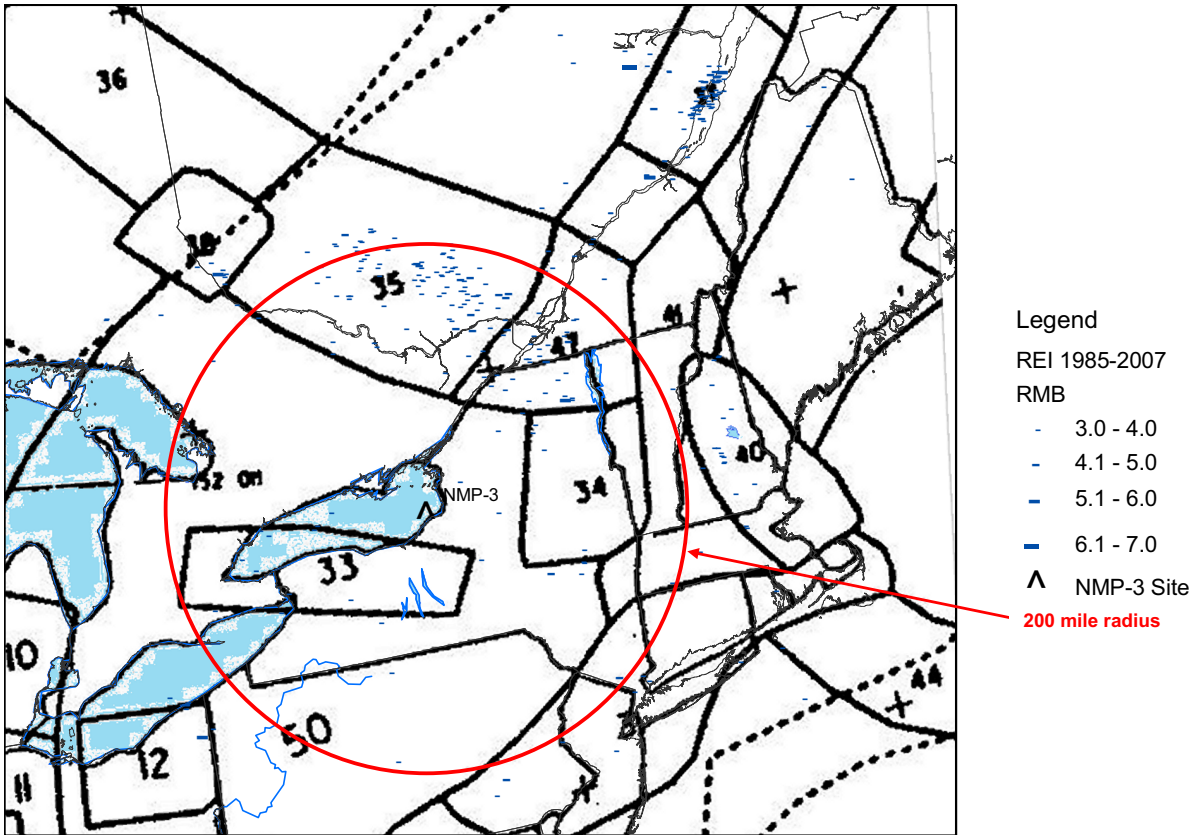


**Figure 2.5-85—{Weston Geophysical Seismic Source Zones and EPRI-SOG pre-1985 Catalog}**

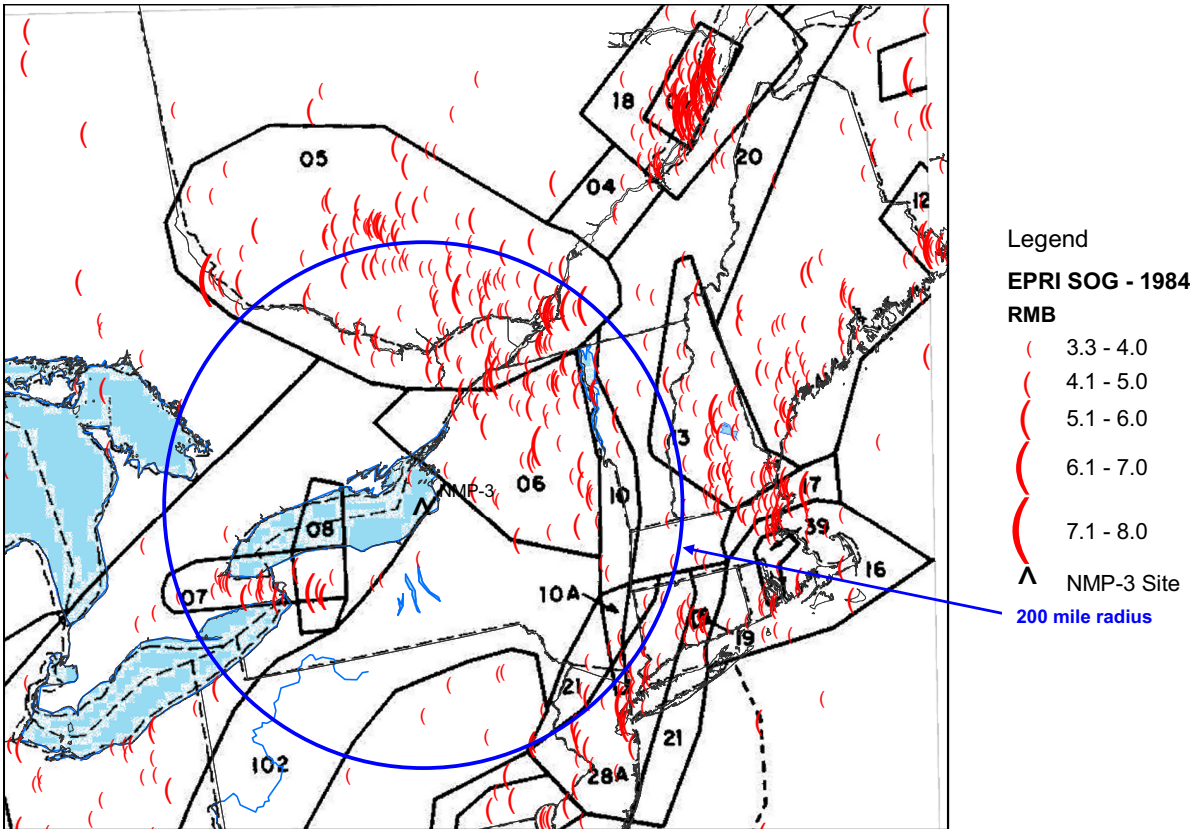


**Figure 2.5-86—{Weston Geophysical Seismic Source Zones and 1985-2007 Catalog Update}**

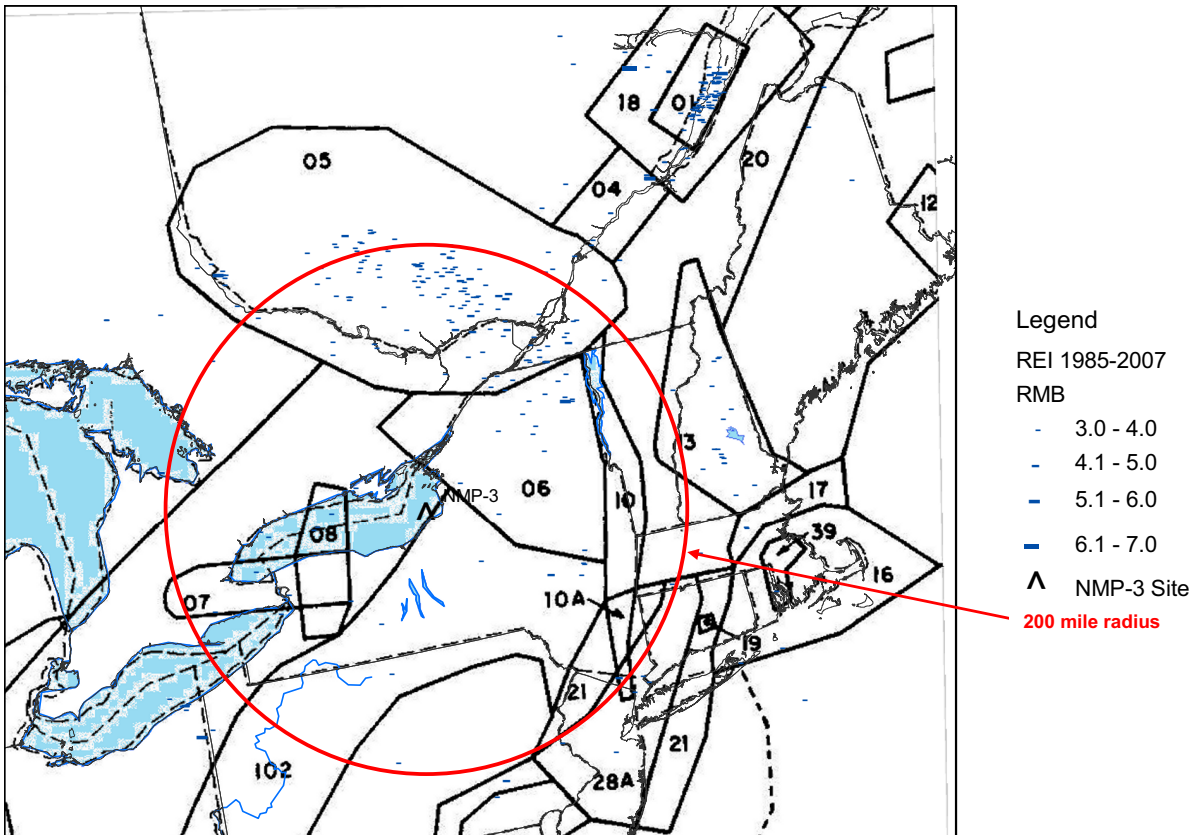


**Figure 2.5-87—{Woodward-Clyde Seismic Source Zones and EPRI-SOG pre-1985 Catalog}**

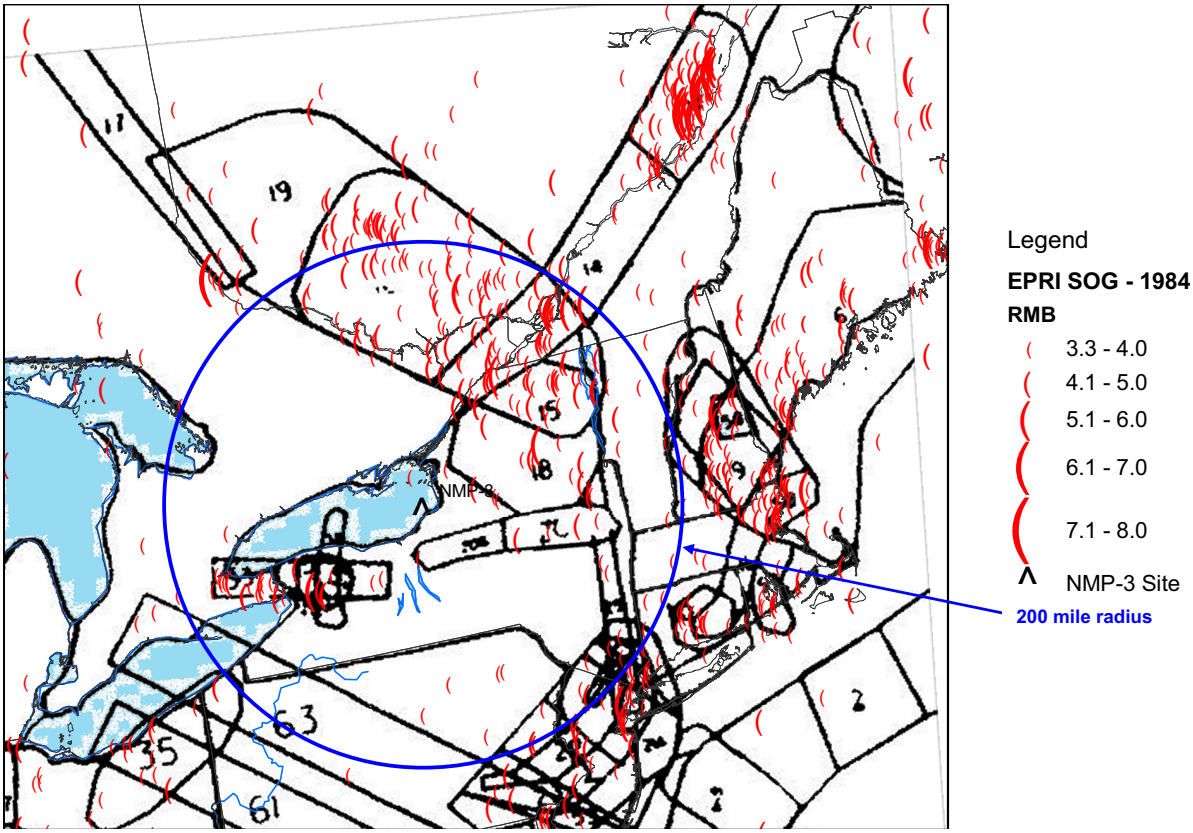


**Figure 2.5-88—{Woodward-Clyde Seismic Source Zones and 1985-2007 Catalog Update}**

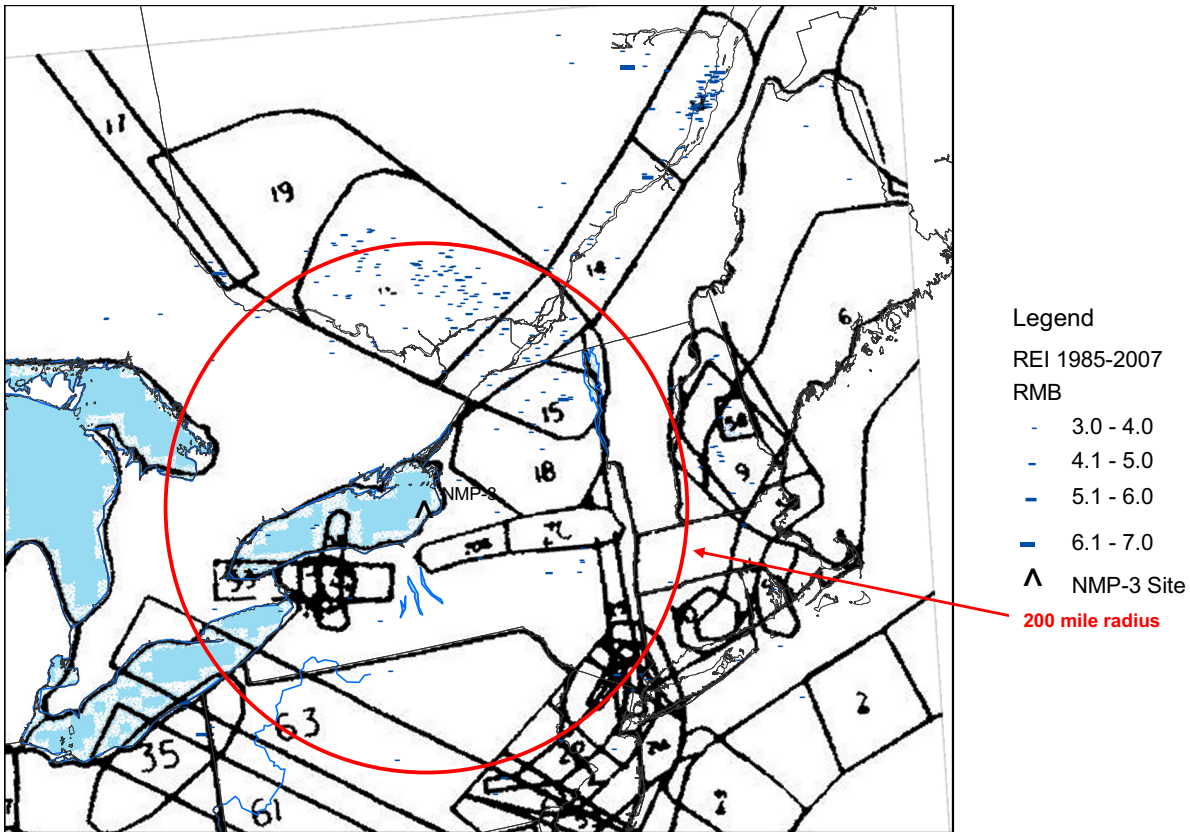


**Figure 2.5-89—{Historical Seismicity in Vicinity of NMNPS Site (shown with a star) and Two Areas Used to Test the Effects of Additional Seismicity}**

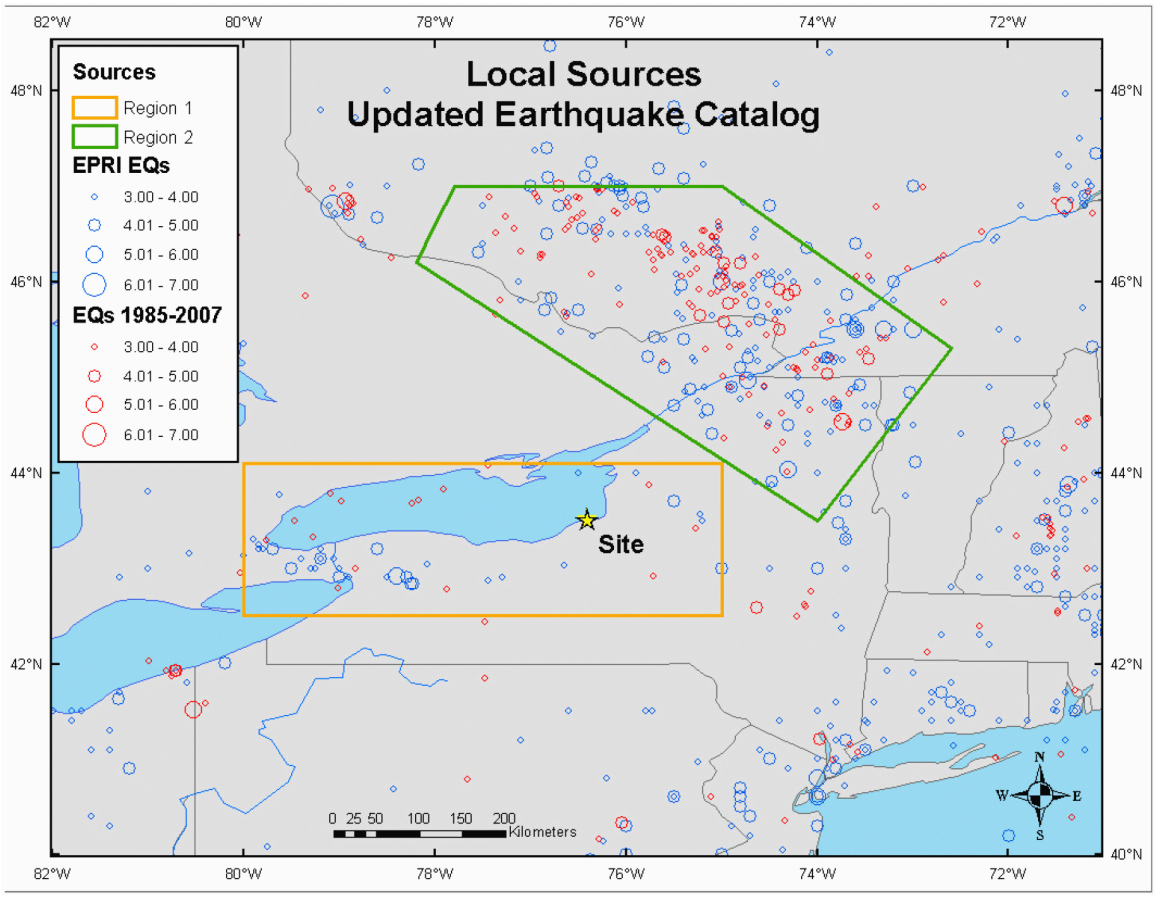


**Figure 2.5-90—{Historical Seismicity in Vicinity of the Charlevoix Seismic Zone and the EPRI Team Sources Used to Represent that Zone}**

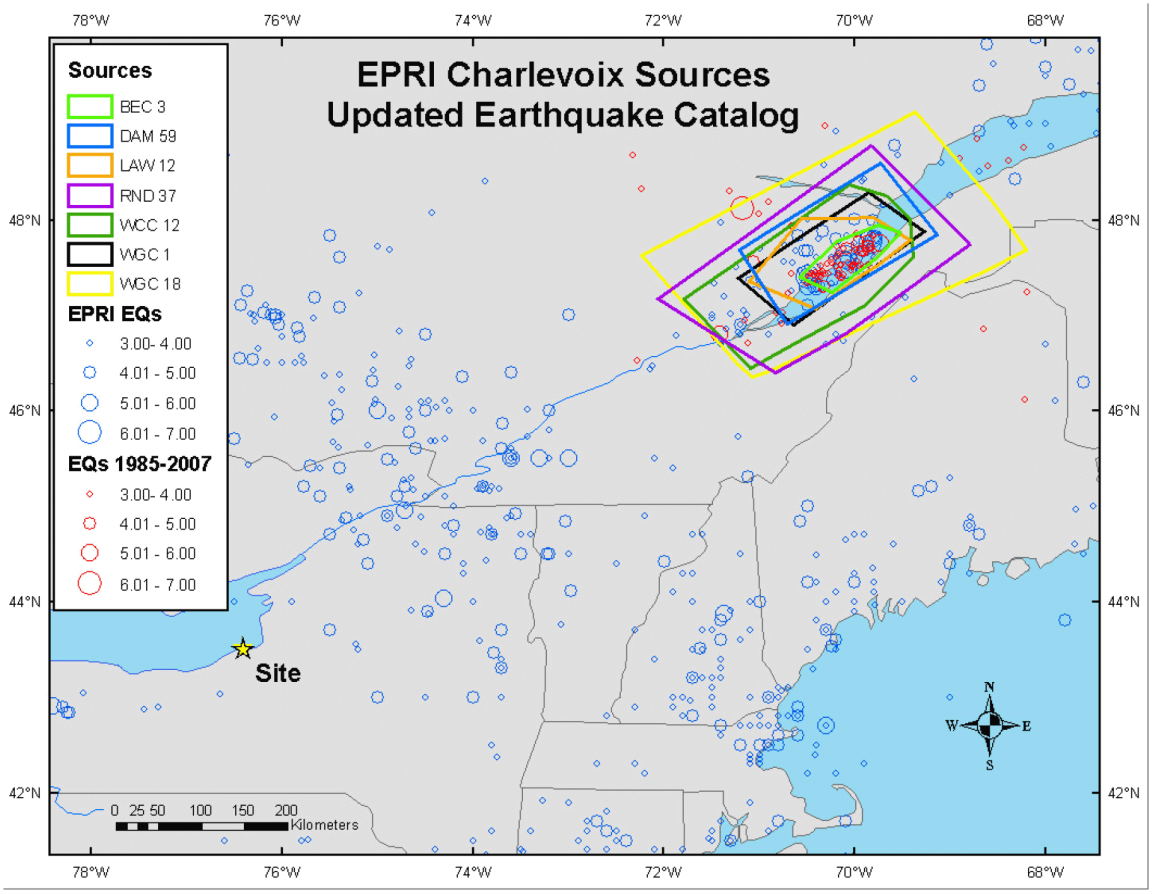


**Figure 2.5-91—{Earthquake Occurrence Rates for EPRI (1989) Catalog and for Catalog Extended Through 2007 for Region 1}**

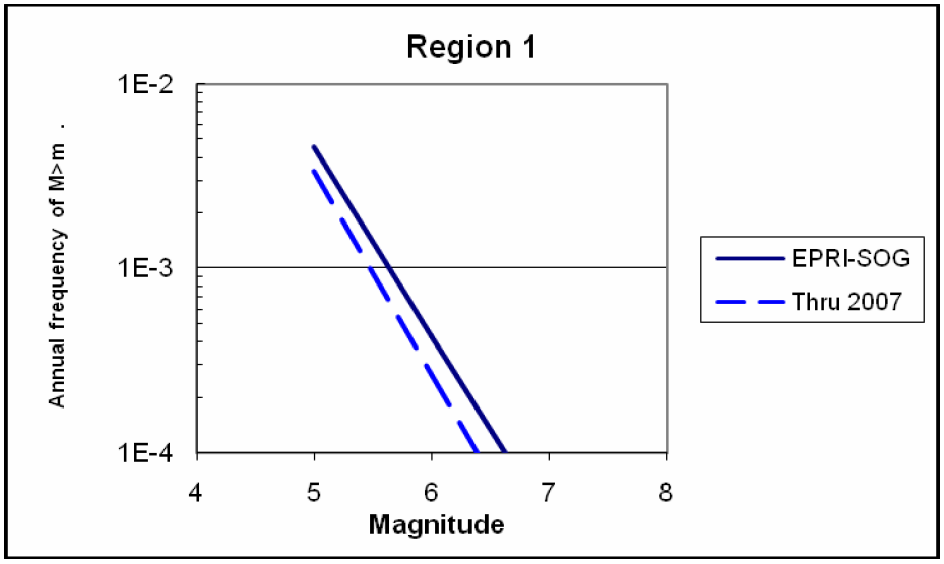


**Figure 2.5-92—{Earthquake Occurrence Rates for EPRI (1989) Catalog and for Catalog Extended Through 2007 for Region 2}**

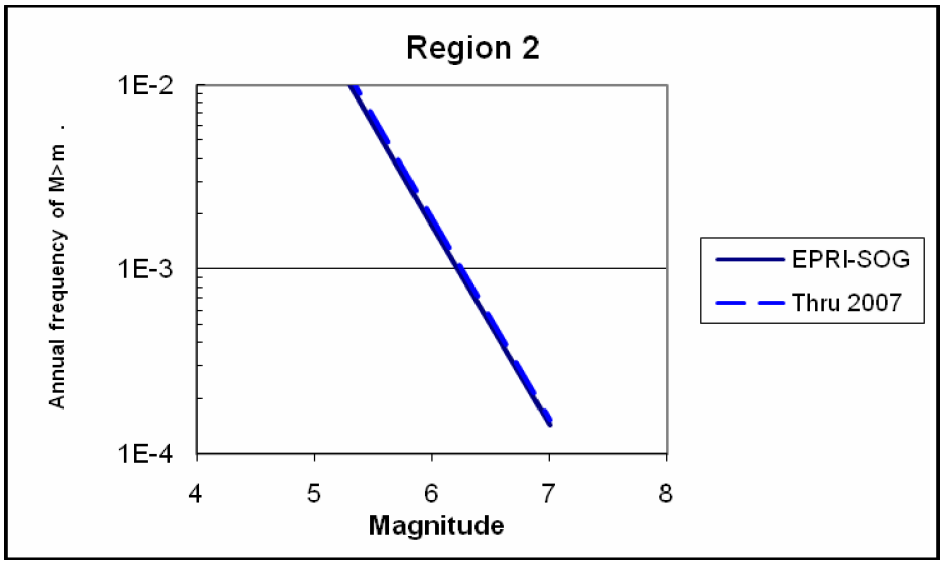


**Figure 2.5-93—{Mean and Fractile PGA Seismic Hazard Curves, Rock, No CAV}**

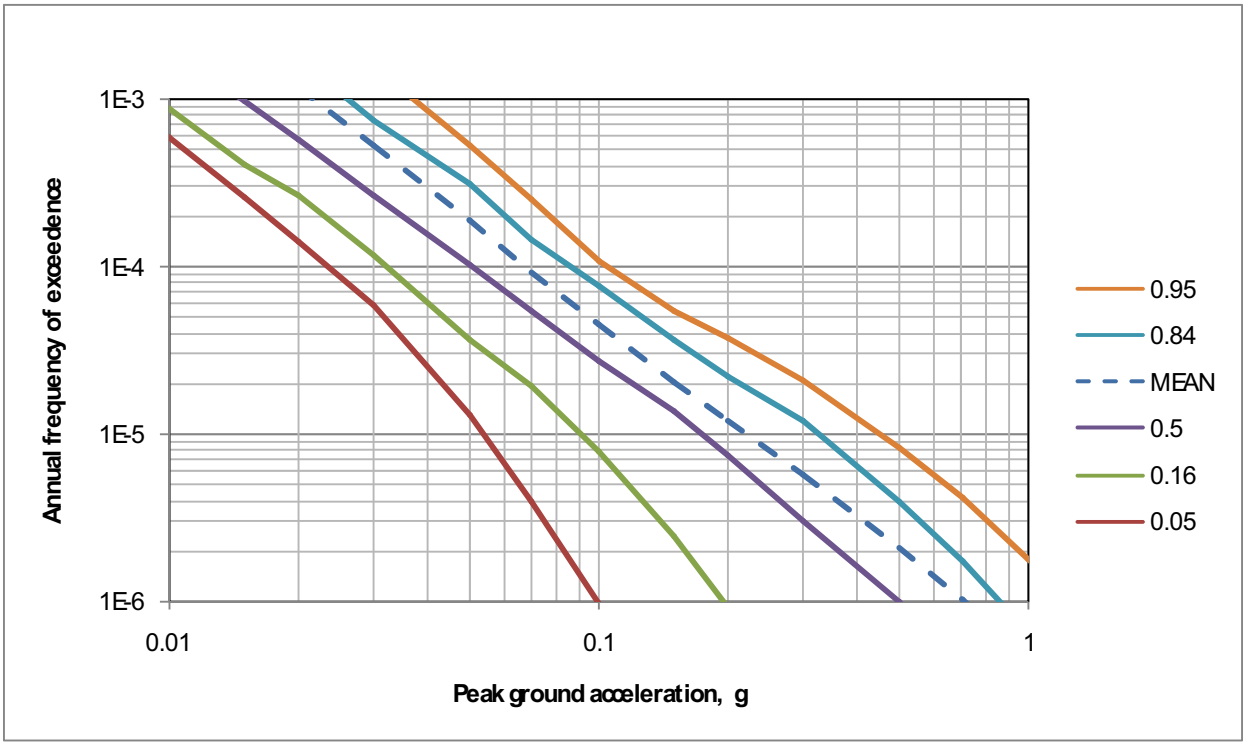


**Figure 2.5-94—{Mean and Fractile 25 Hz Seismic Hazard Curves, Rock, No CAV}**

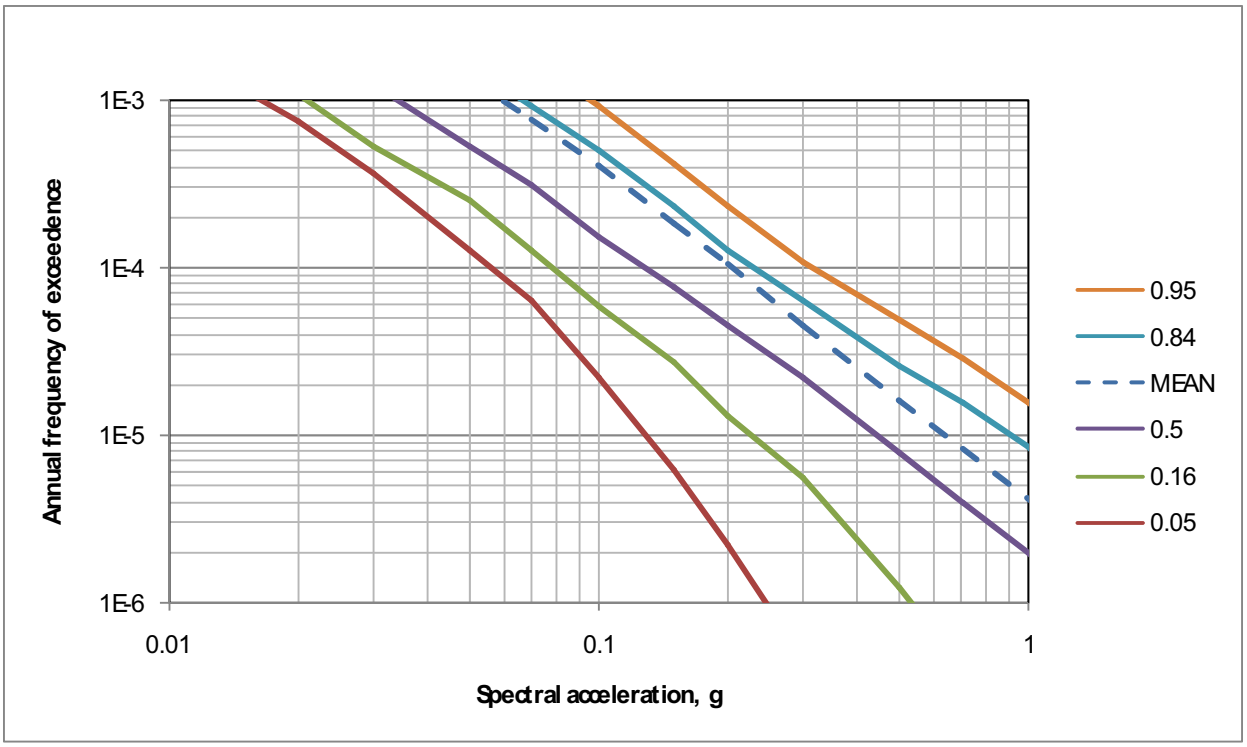


**Figure 2.5-95—{Mean and Fractile 10 Hz Seismic Hazard Curves, Rock, No CAV}**

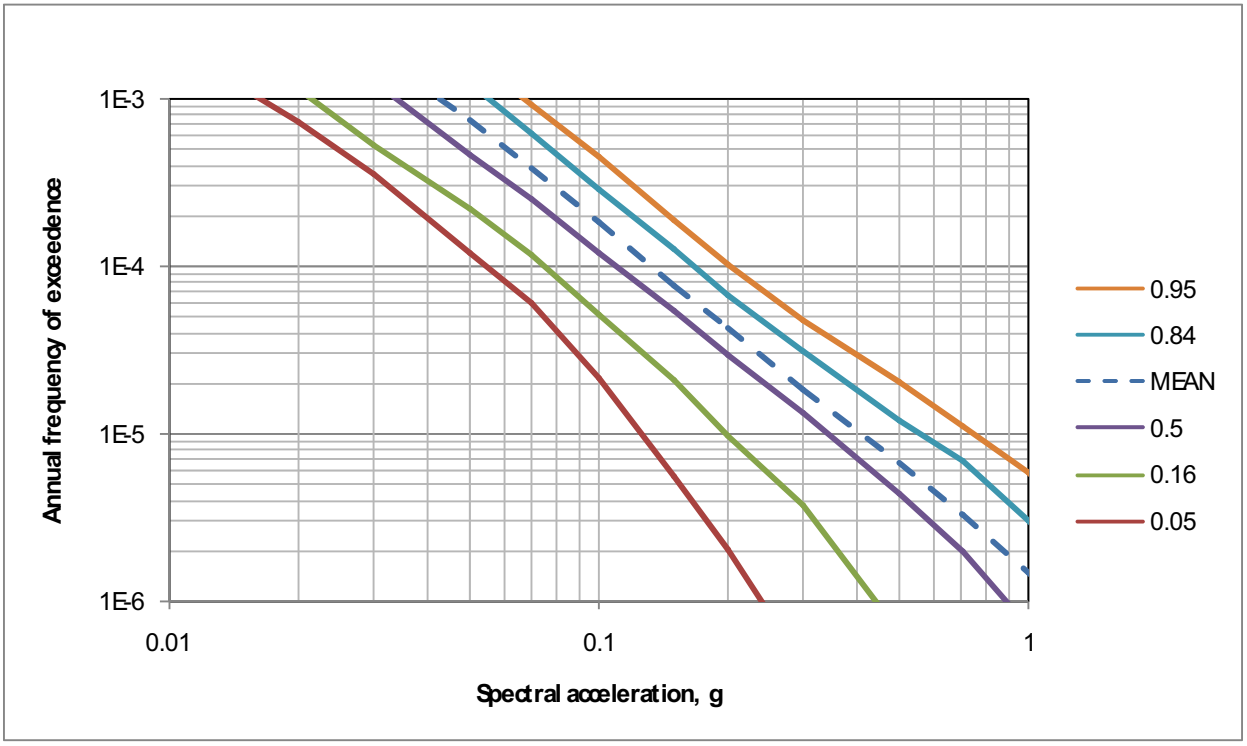


**Figure 2.5-96—{Mean and Fractile 5 Hz Seismic Hazard Curves, Rock, No CAV}**

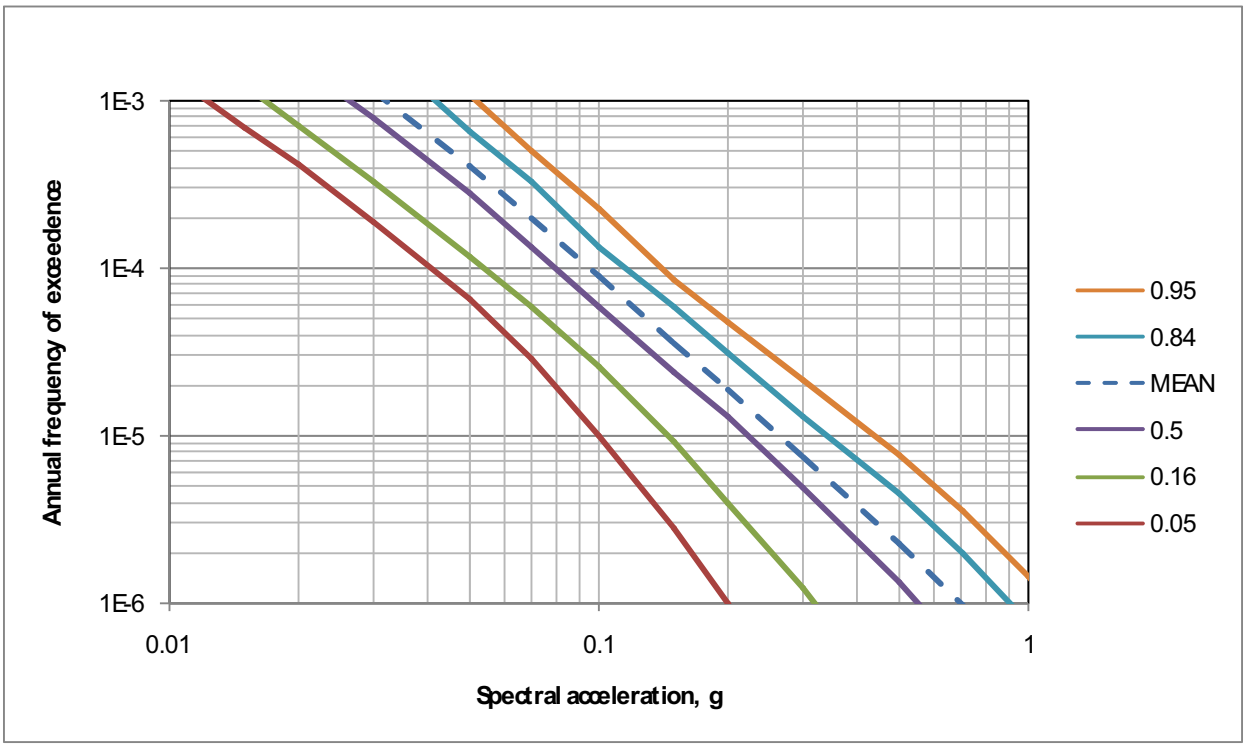


**Figure 2.5-97—{Mean and Fractile 2.5 Hz Seismic Hazard Curves, Rock, No CAV}**

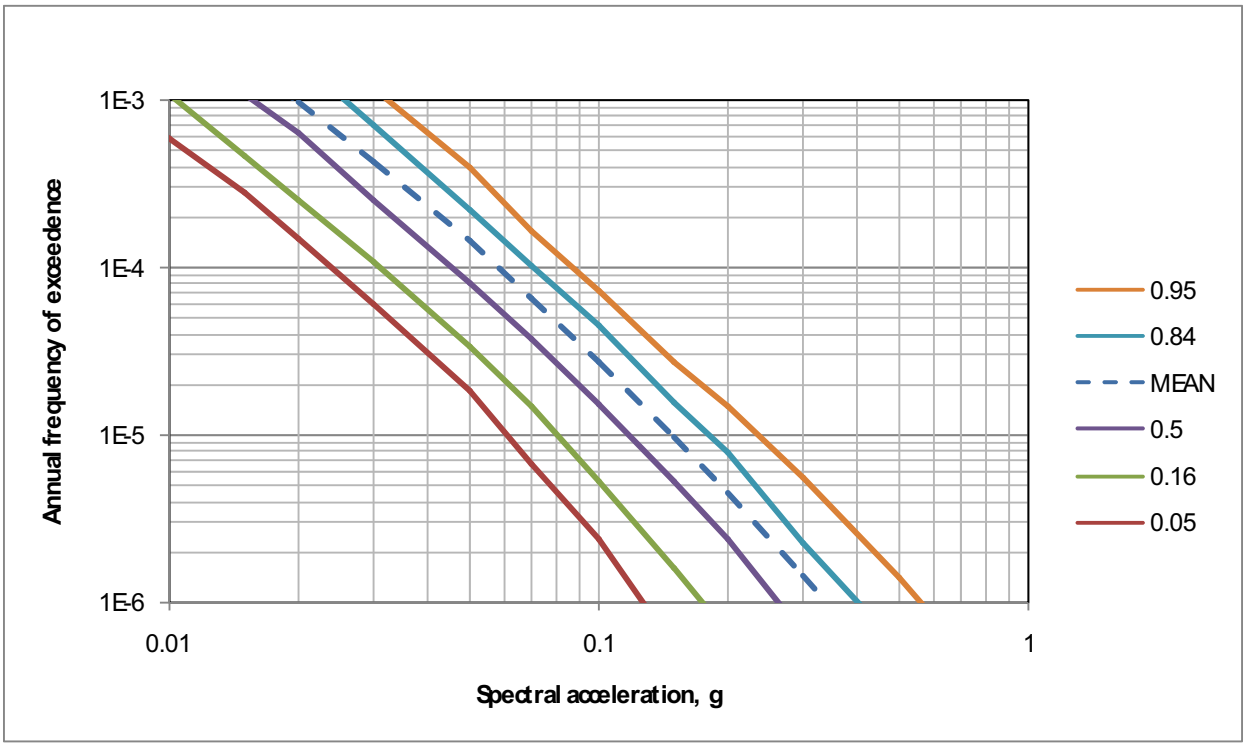


**Figure 2.5-98—{Mean and Fractile 1 Hz Seismic Hazard Curves, Rock, No CAV}**

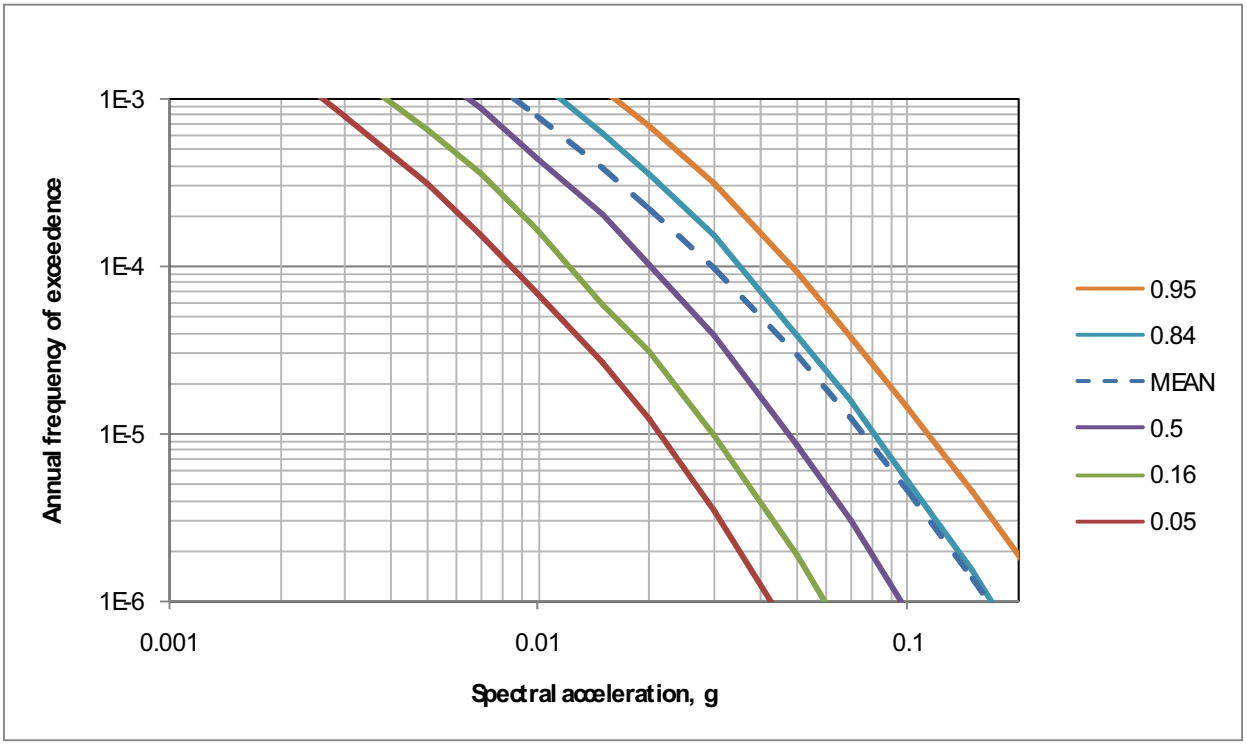


**Figure 2.5-99—{Mean and Fractile 0.5 Hz Seismic Hazard Curves, Rock, No CAV}**

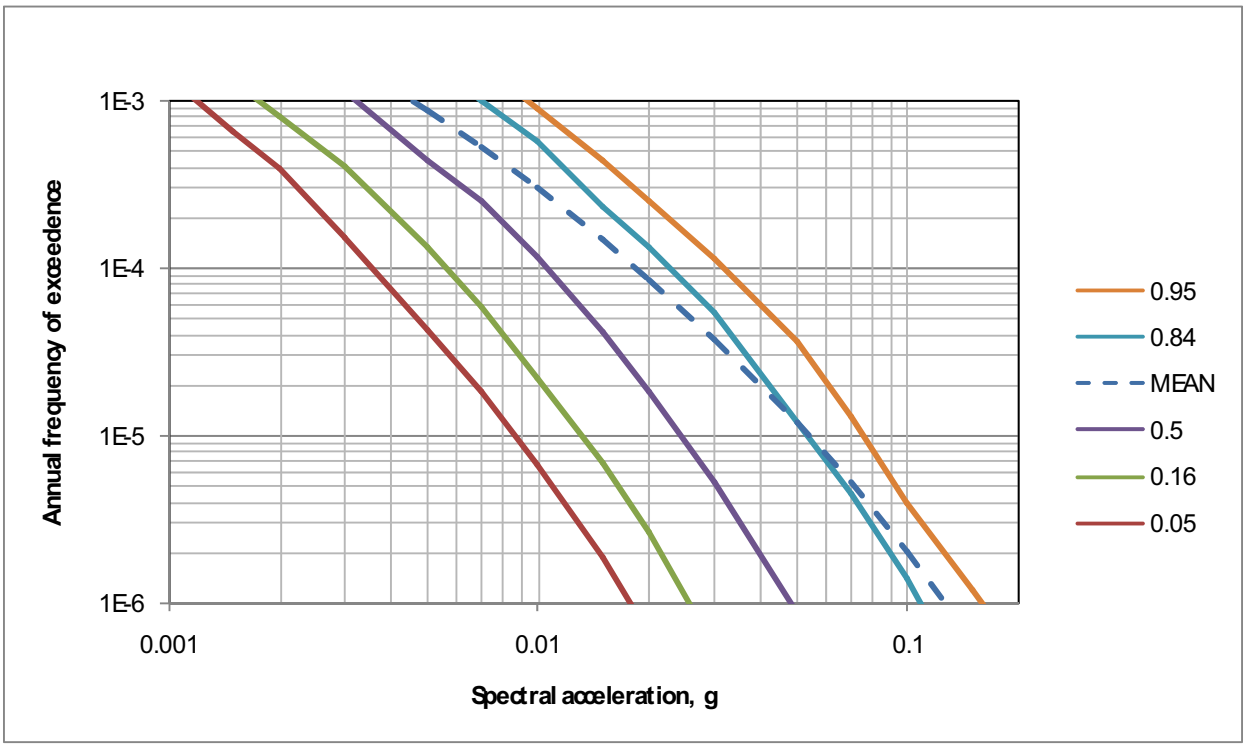


**Figure 2.5-100—{M and R Deaggregation for 1 and 2.5 Hz at 10-4 Annual Frequency of Exceedence}**

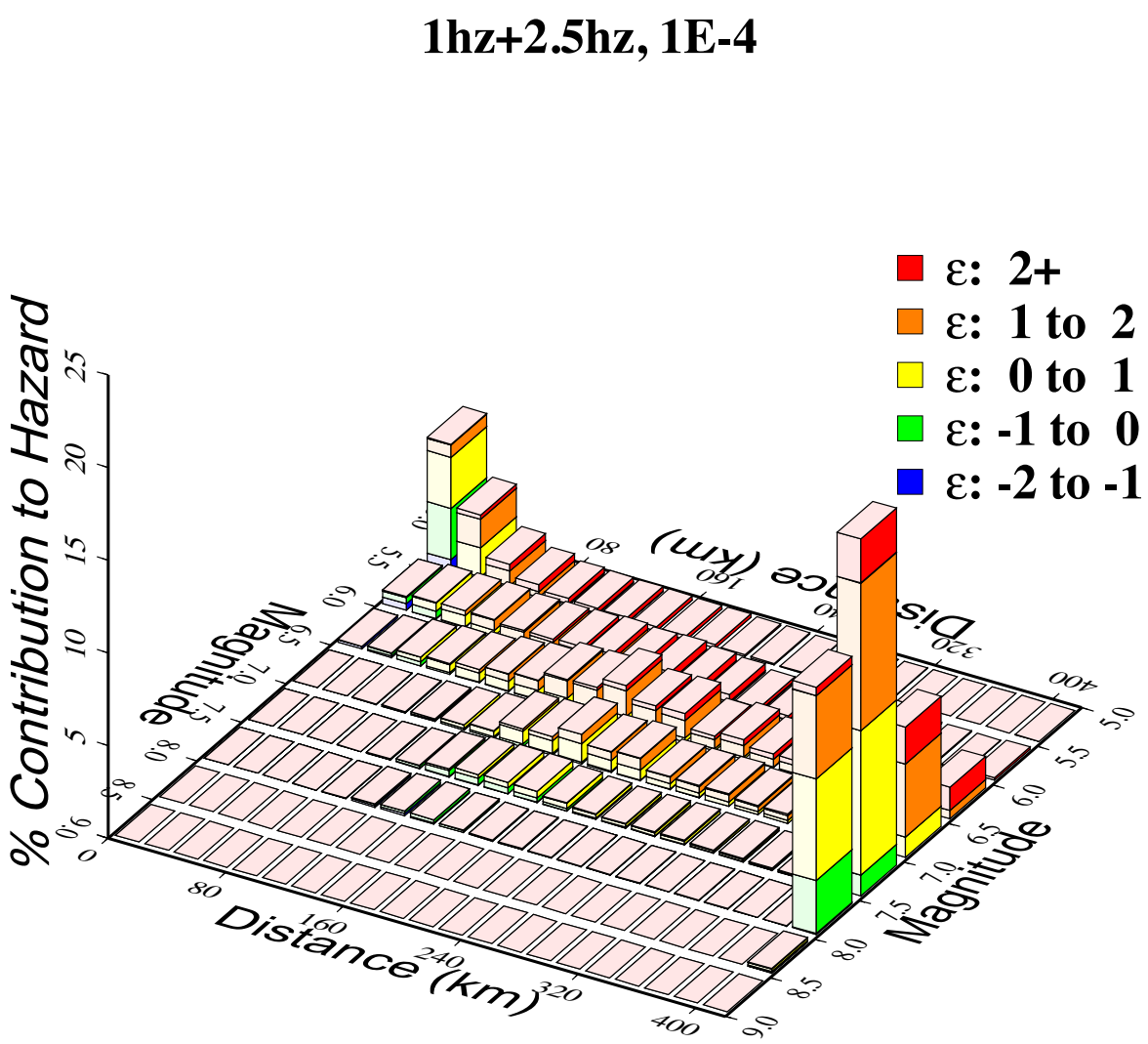


**Figure 2.5-101—{M and R Deaggregation for 5 and 10 Hz at 10-4 Annual Frequency of Exceedence}**

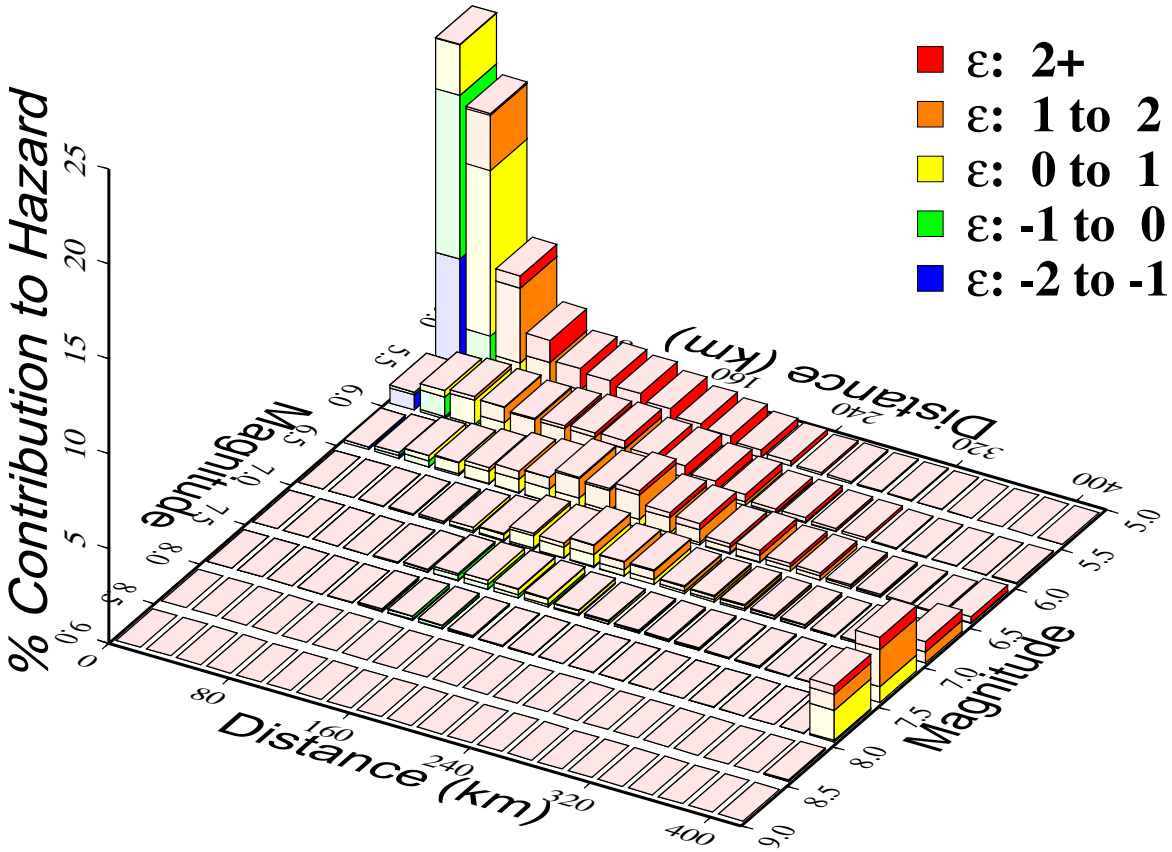


**Figure 2.5-102—{M and R Deaggregation for 1 and 2.5 Hz at 10-5 Annual Frequency of Exceedence}**

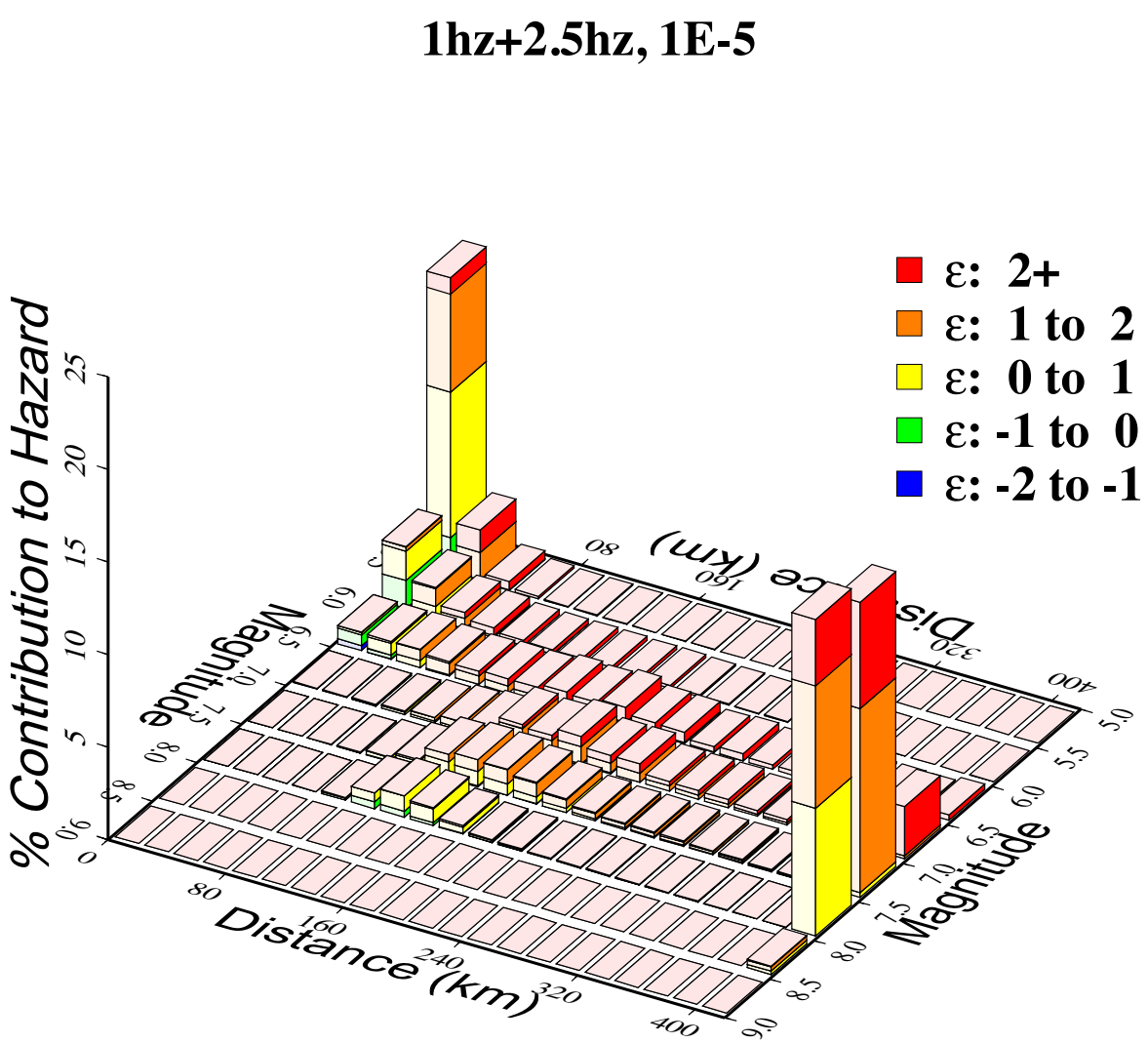


**Figure 2.5-103—{M and R Deaggregation for 5 and 10 Hz at 10-5 Annual Frequency of Exceedence}**

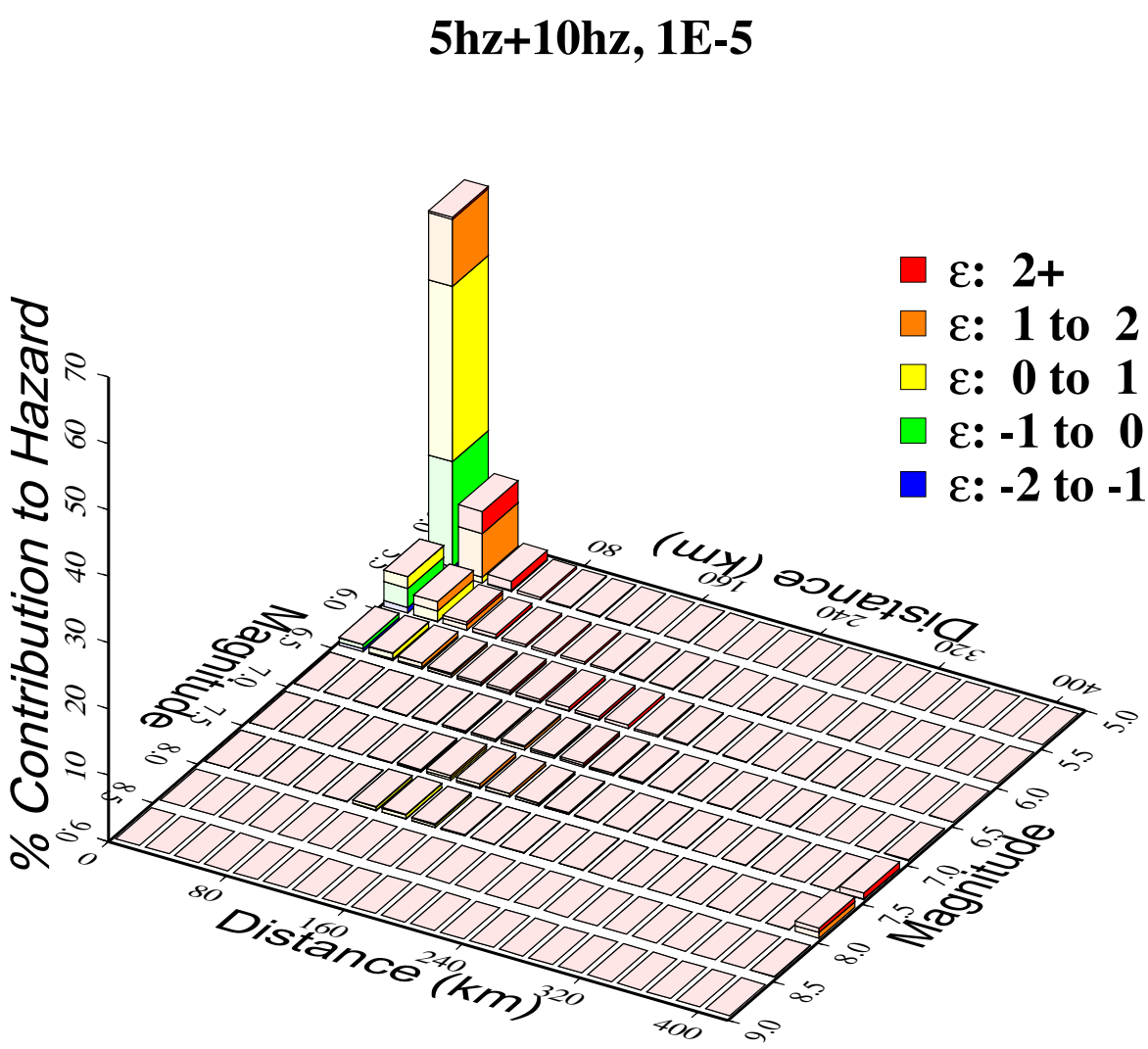


**Figure 2.5-104—{M and R Deaggregation for 1 and 2.5 Hz at 10-6 Annual Frequency of Exceedence}**

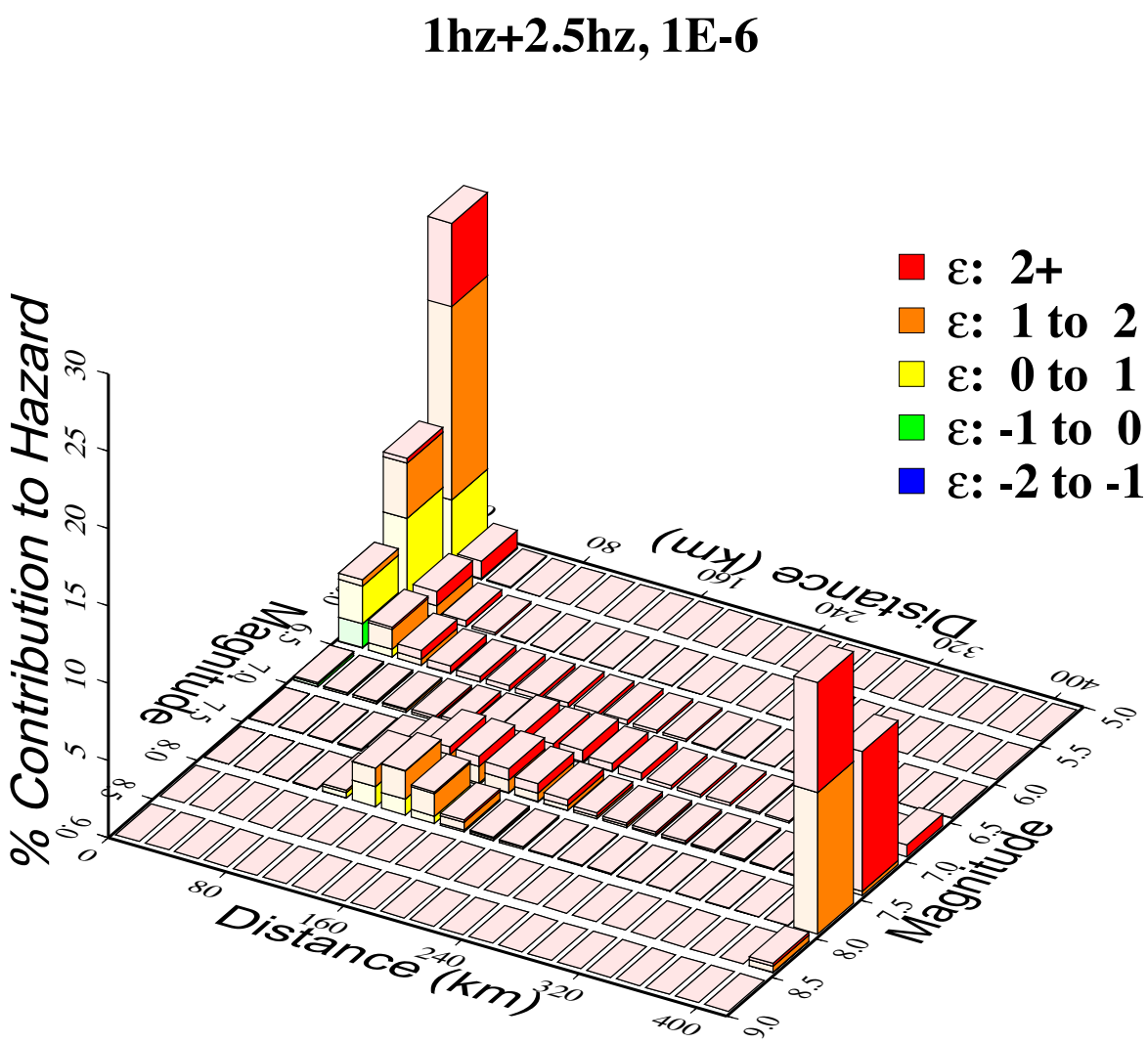


**Figure 2.5-105—{M and R Deaggregation for 5 and 10 Hz at 10-6 Annual Frequency of Exceedence}**

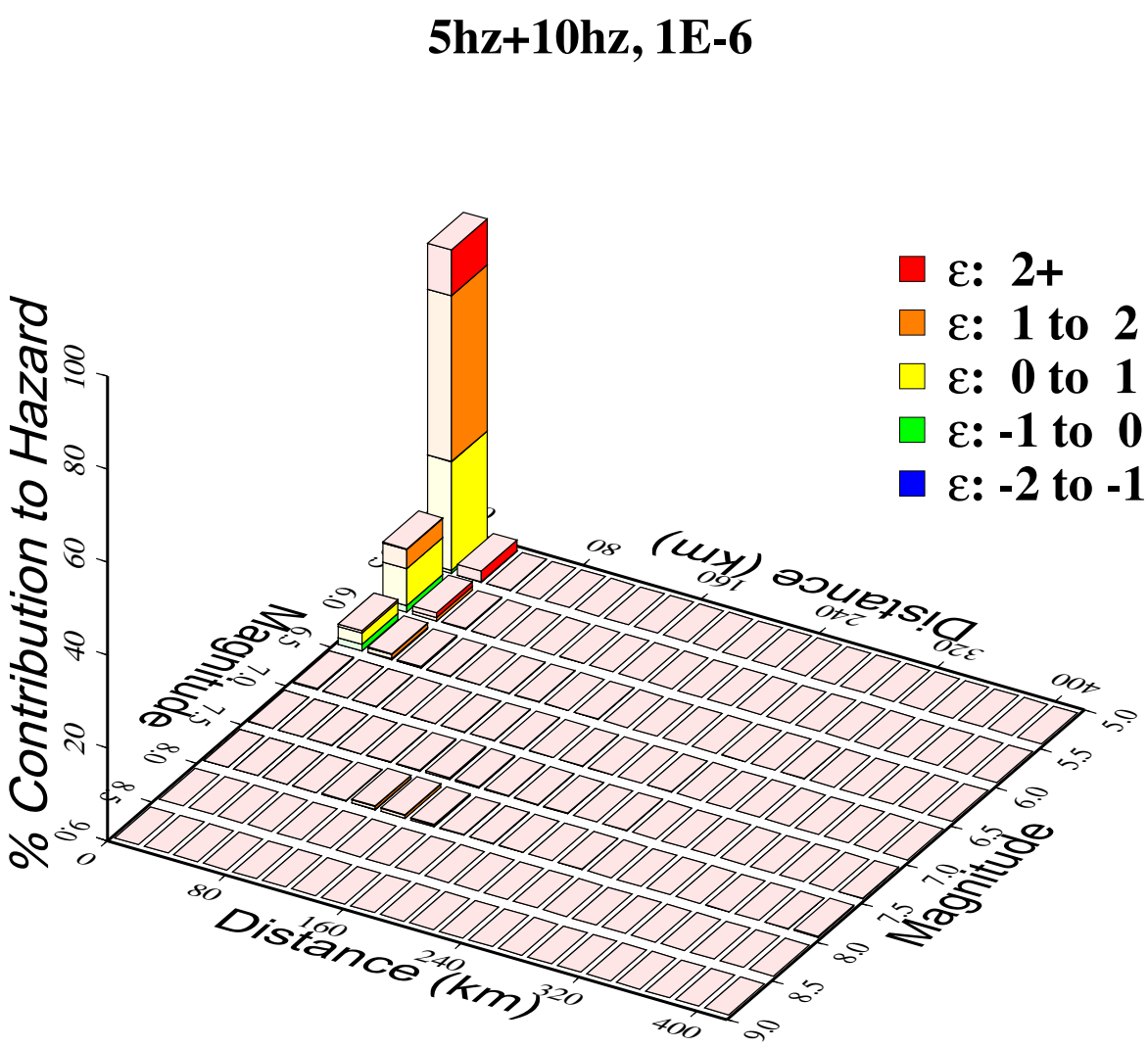


**Figure 2.5-106—{Smooth 10-4 UHRS for HF and LF Earthquakes}**

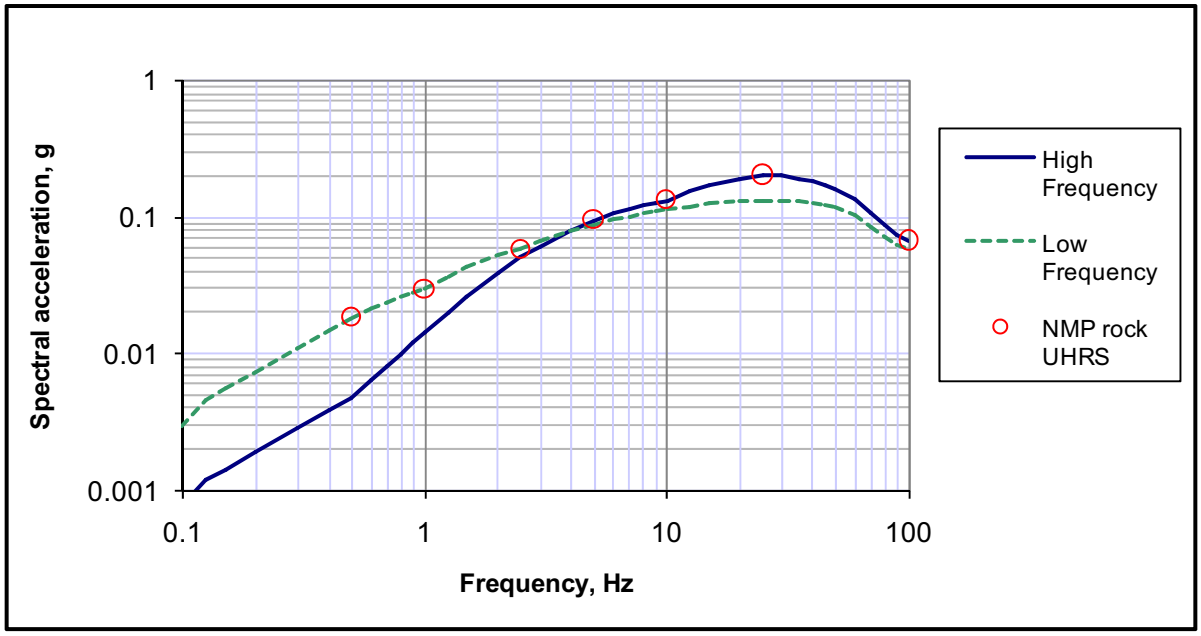


**Figure 2.5-107—{Smooth 10-5 UHRS for HF and LF Earthquakes}**

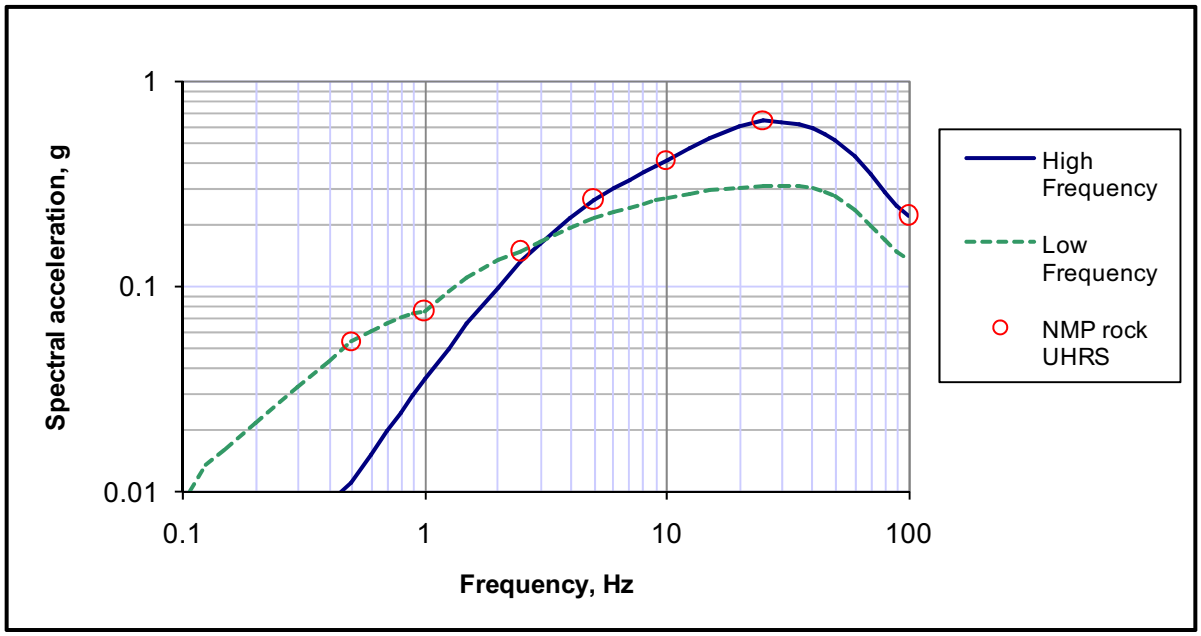


**Figure 2.5-108—{Smooth 10-6 UHRS for HF and LF Earthquakes}**

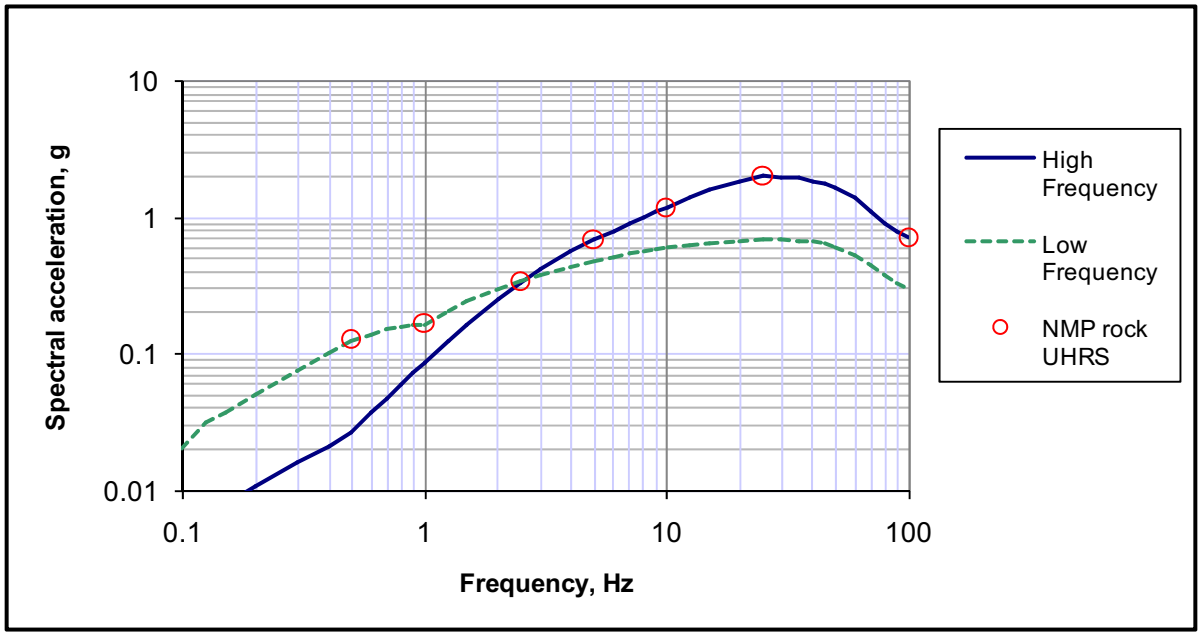


**Figure 2.5-109—{Artificial VS Profiles 1 through 10 for the GMRS Calculations}**

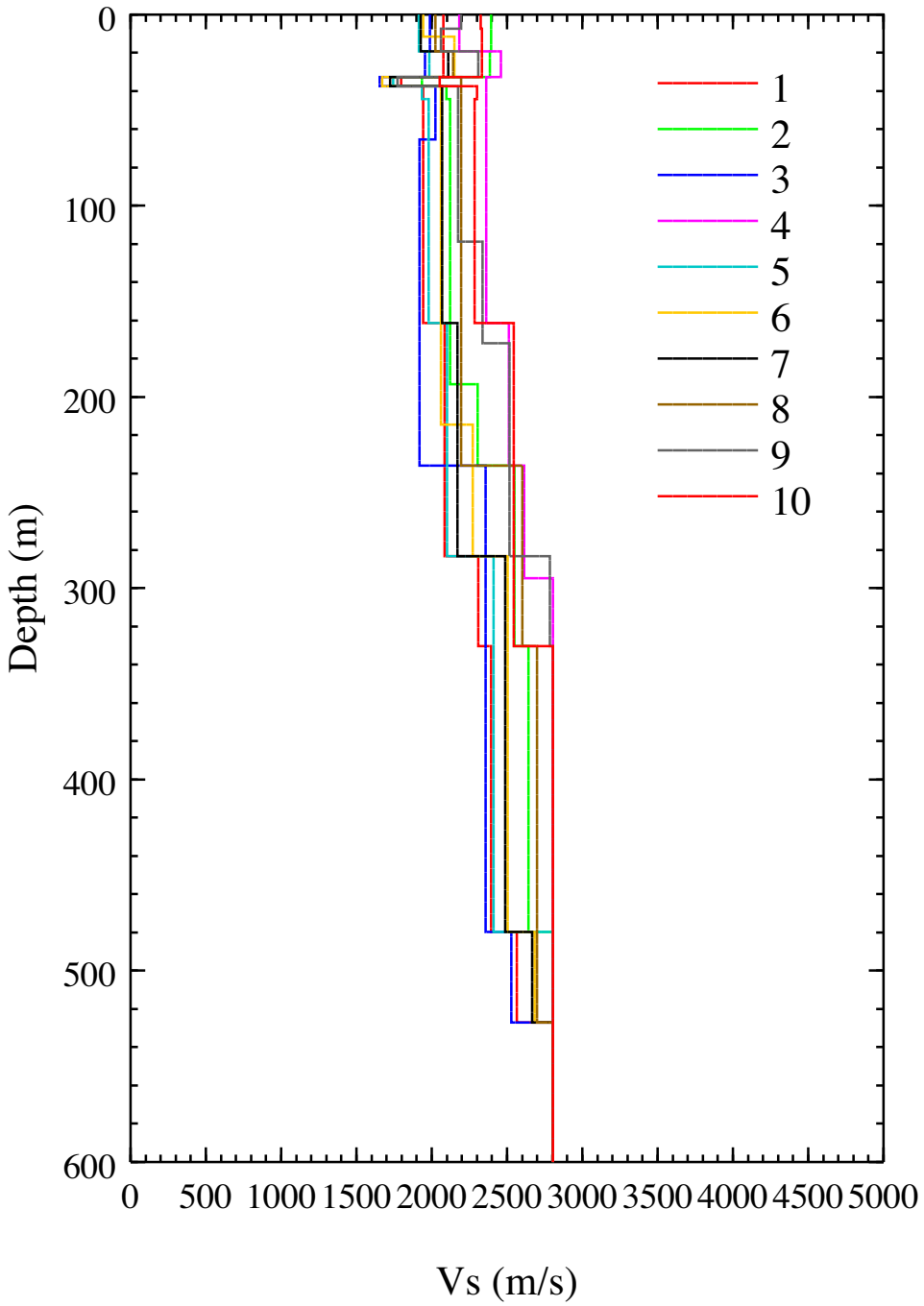


**Figure 2.5-110—{Summary Statistics of VS for the GMRS Calculations}**

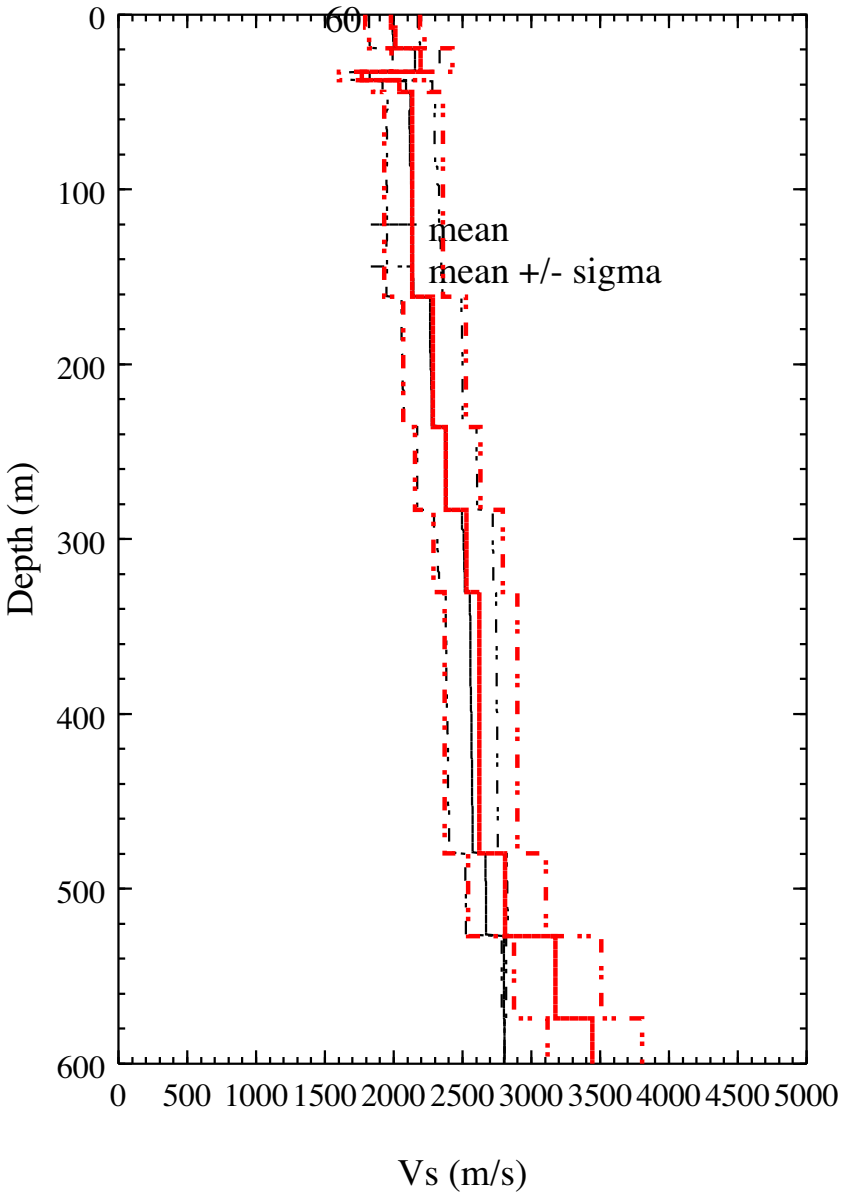


**Figure 2.5-111—{Randomized G/$G_{max}$ Curves for the Oswego Sandstone}**

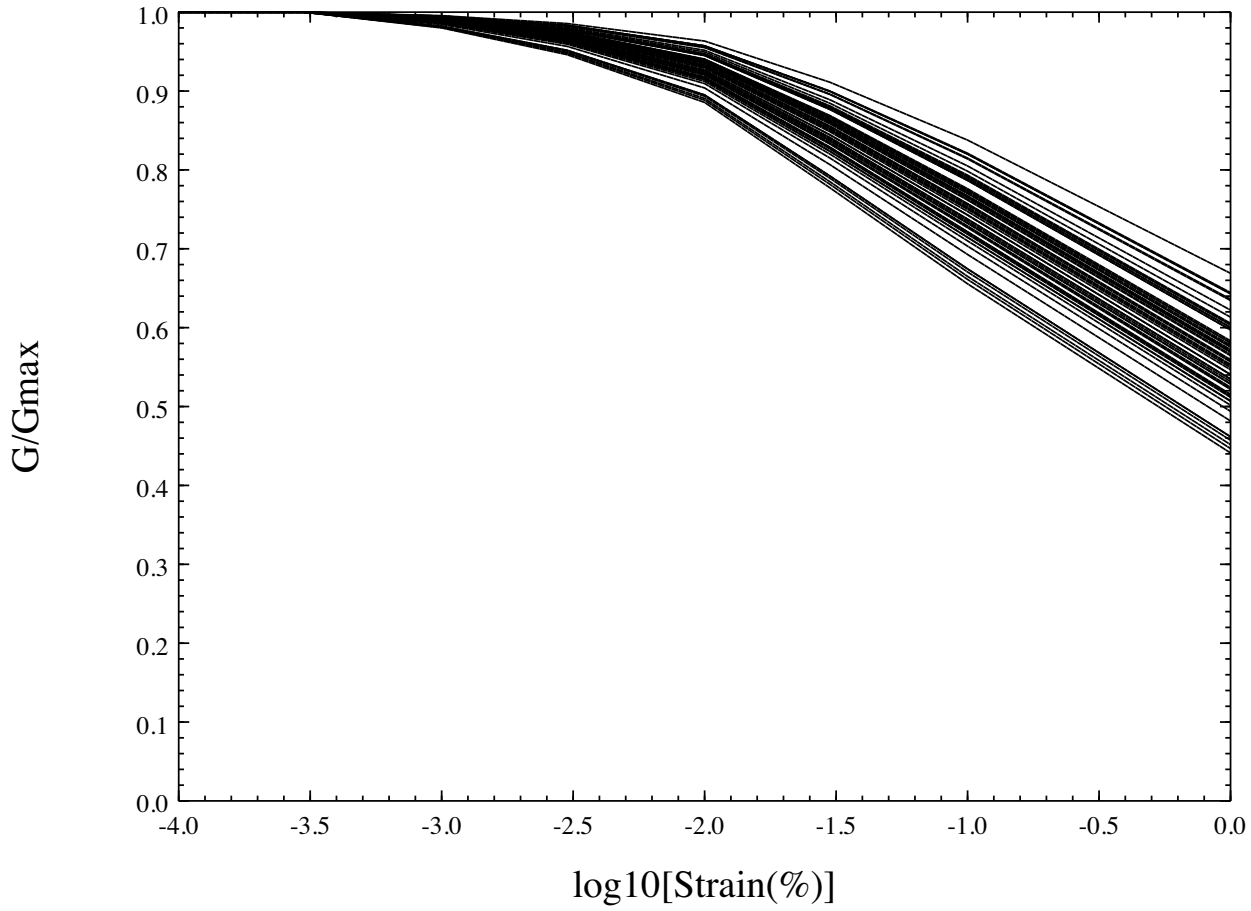


**Figure 2.5-112—{Randomized Damping Curves for the Oswego Sandstone}**



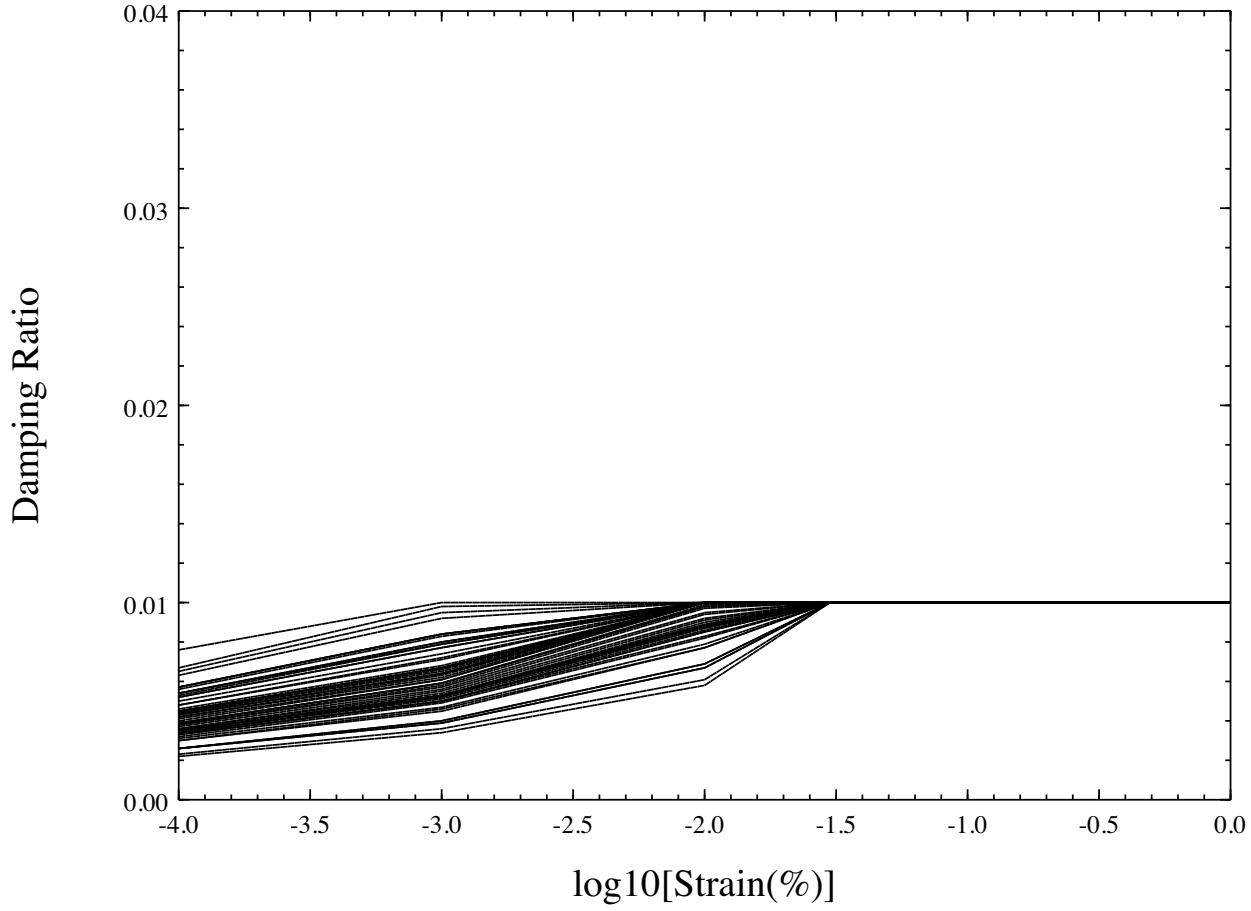


**Figure 2.5-113—{Response Spectra and Logarithmic Sigma at GMRS Elevation for 1E-4 HF Input Motion}**

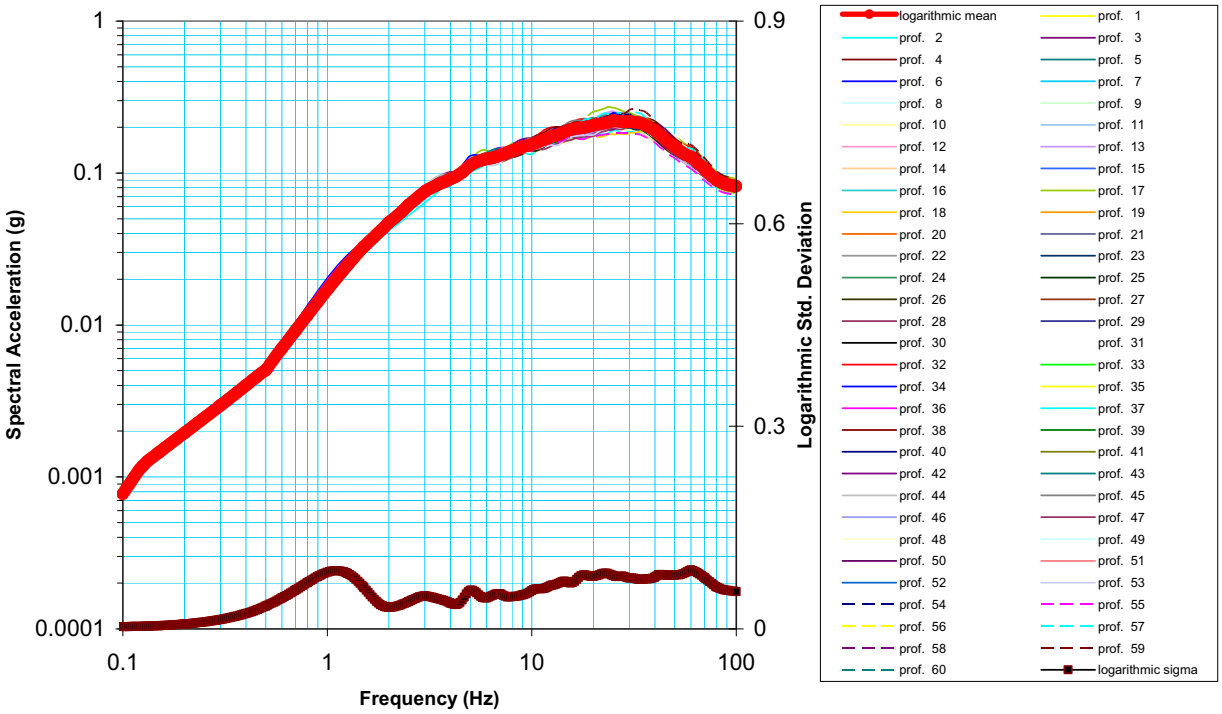


**Figure 2.5-114—{Amplification Factor and Logarithmic Sigma at GMRS Elevation for 1E-4 HF Input Motion}**

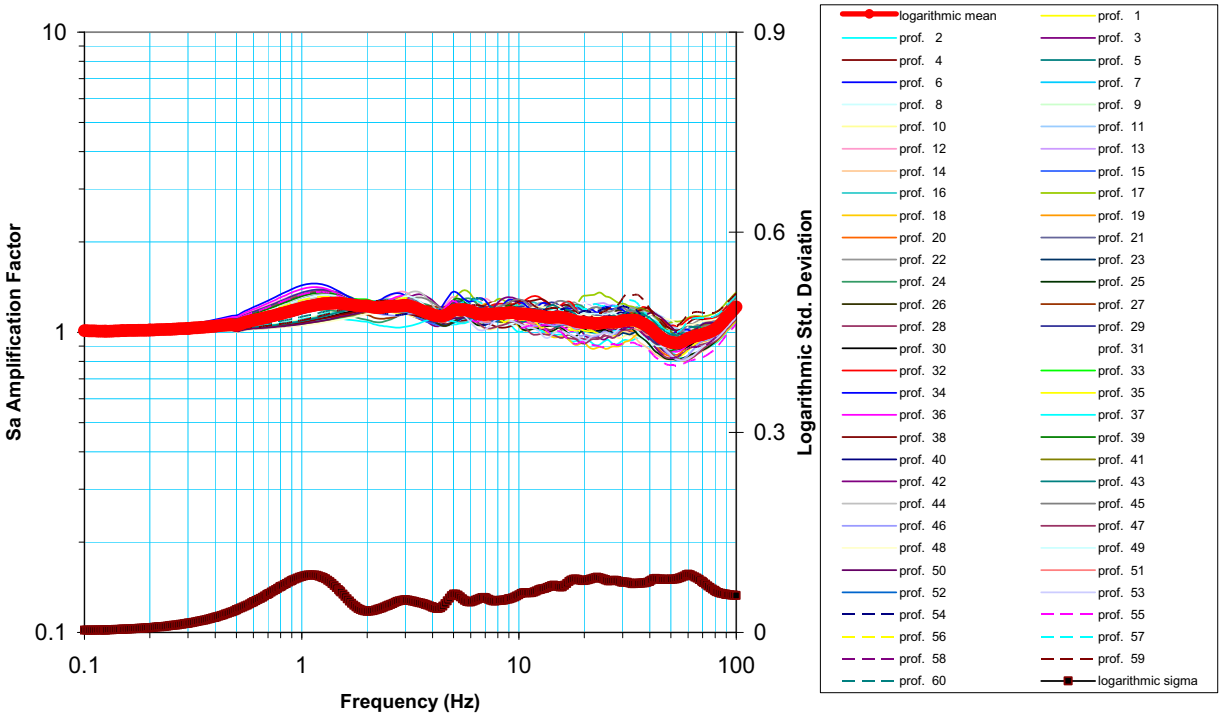


**Figure 2.5-115—{Maximum Strain vs. Depth at GMRS Elevation for 1E-4 HF Input Motion}**

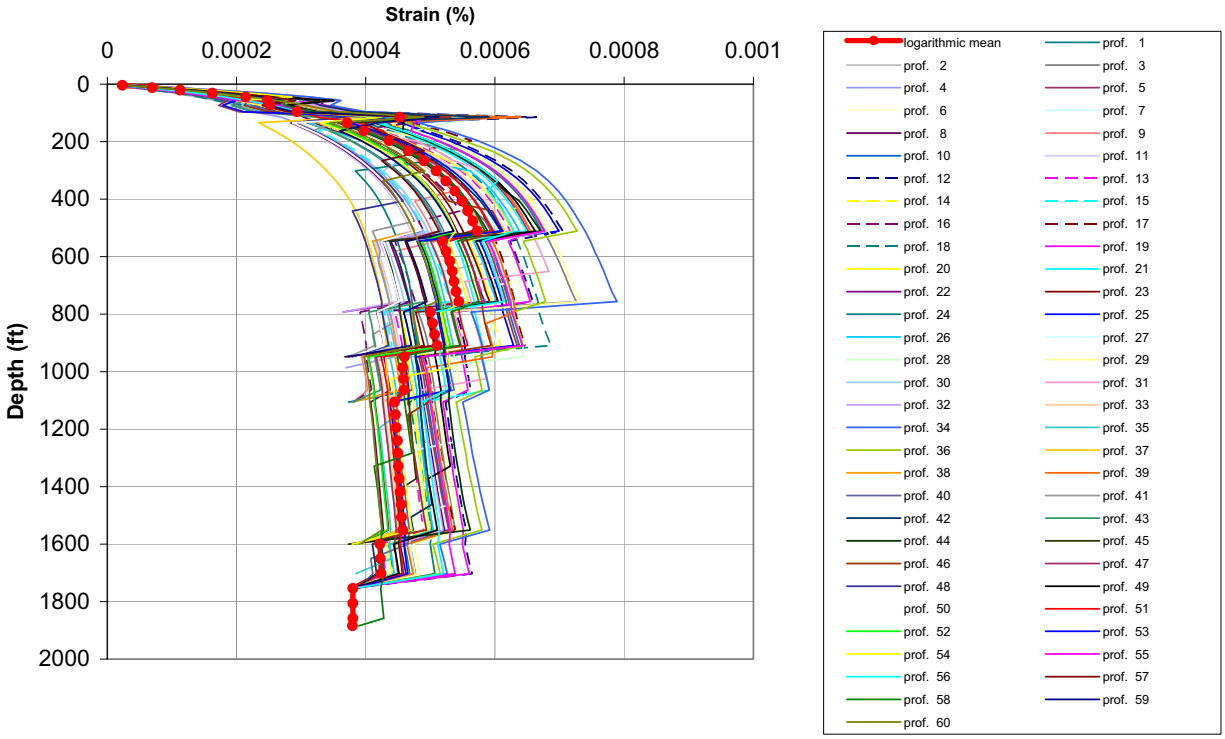


**Figure 2.5-116—{Damping Ratio vs. Depth at GMRS Elevation for 1E-4 HF Input Motion}**

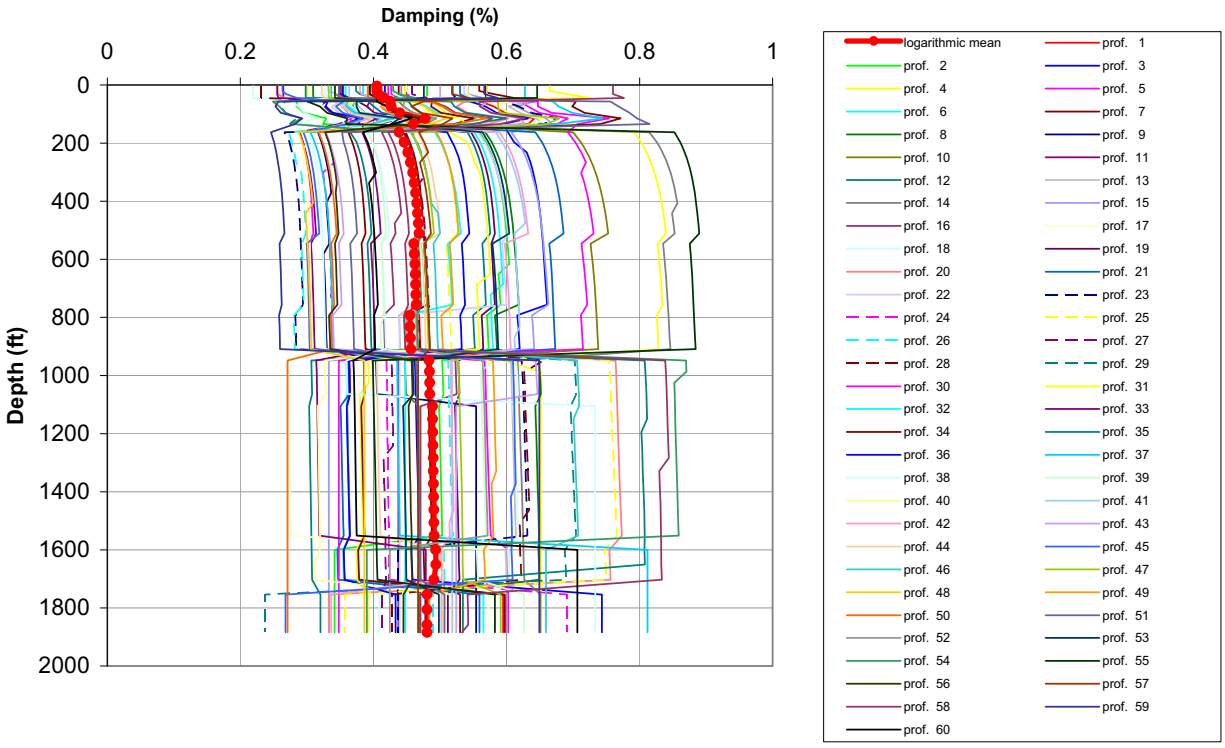


**Figure 2.5-117—{Response Spectra and Logarithmic Sigma at GMRS Elevation for 1E-4 LF Input Motion}**

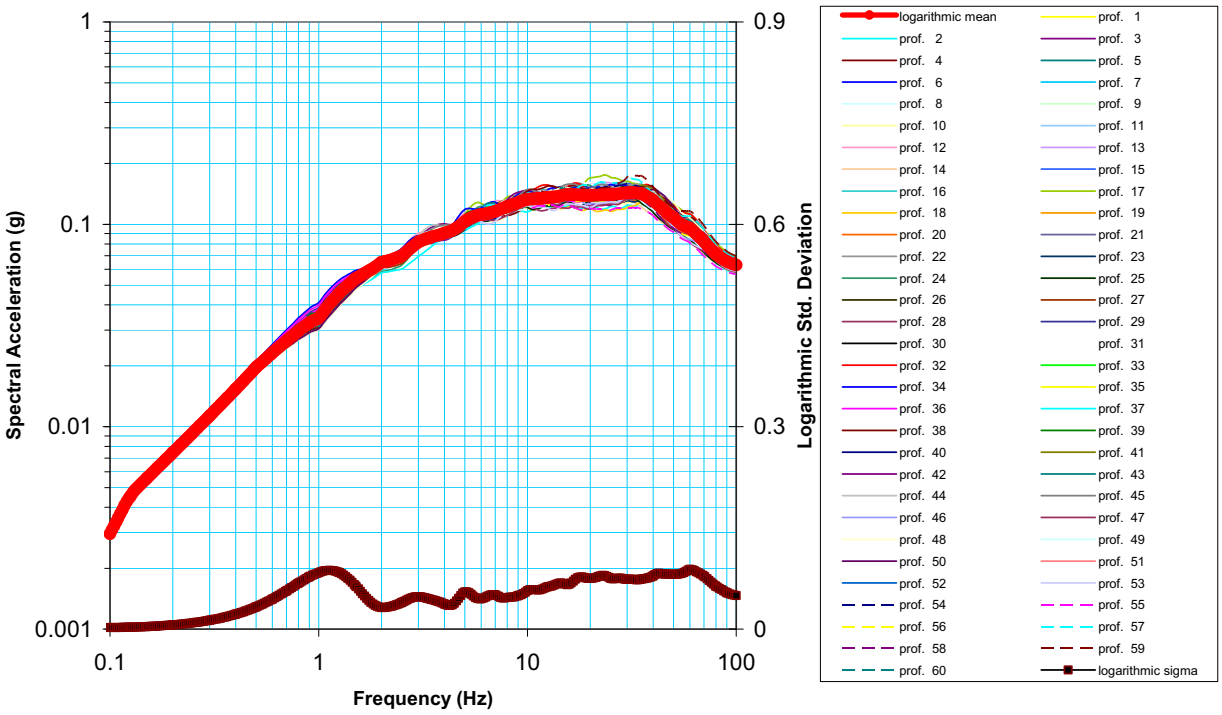


**Figure 2.5-118—{Amplification Factor and Logarithmic Sigma at GMRS Elevation for 1E-4 LF Input Motion}**

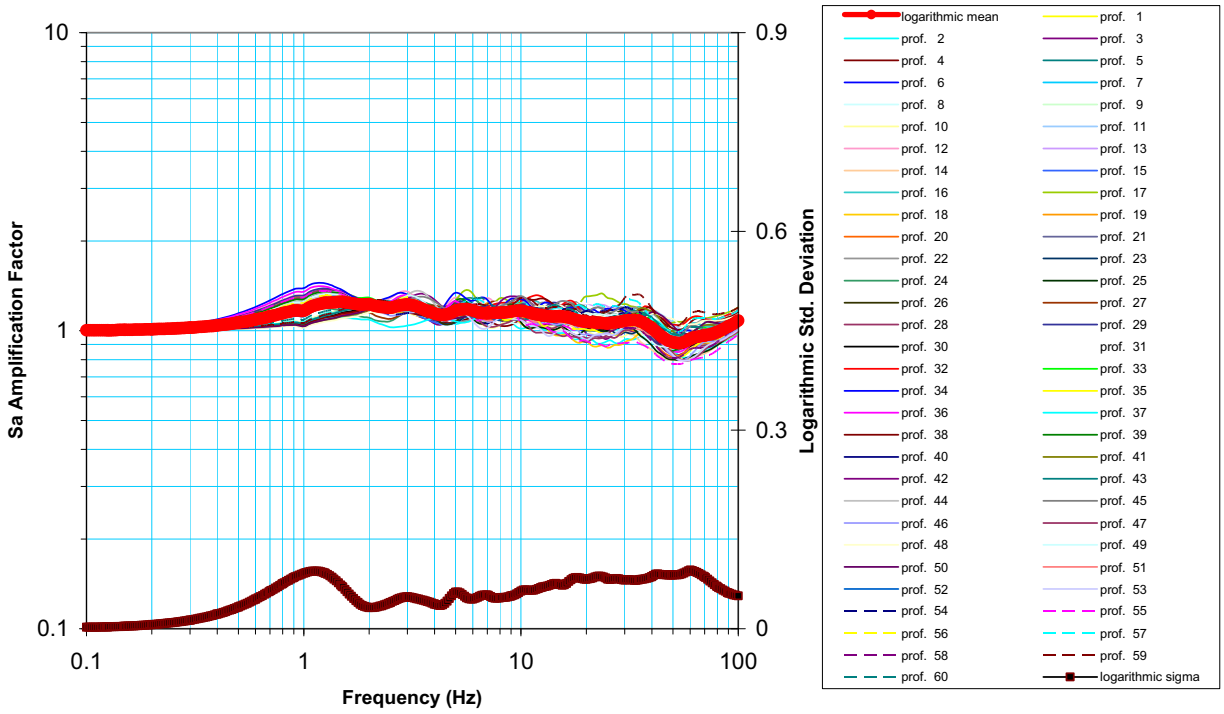


**Figure 2.5-119—{Maximum Strain vs. Depth at GMRS Elevation for 1E-4 LF Input Motion}**

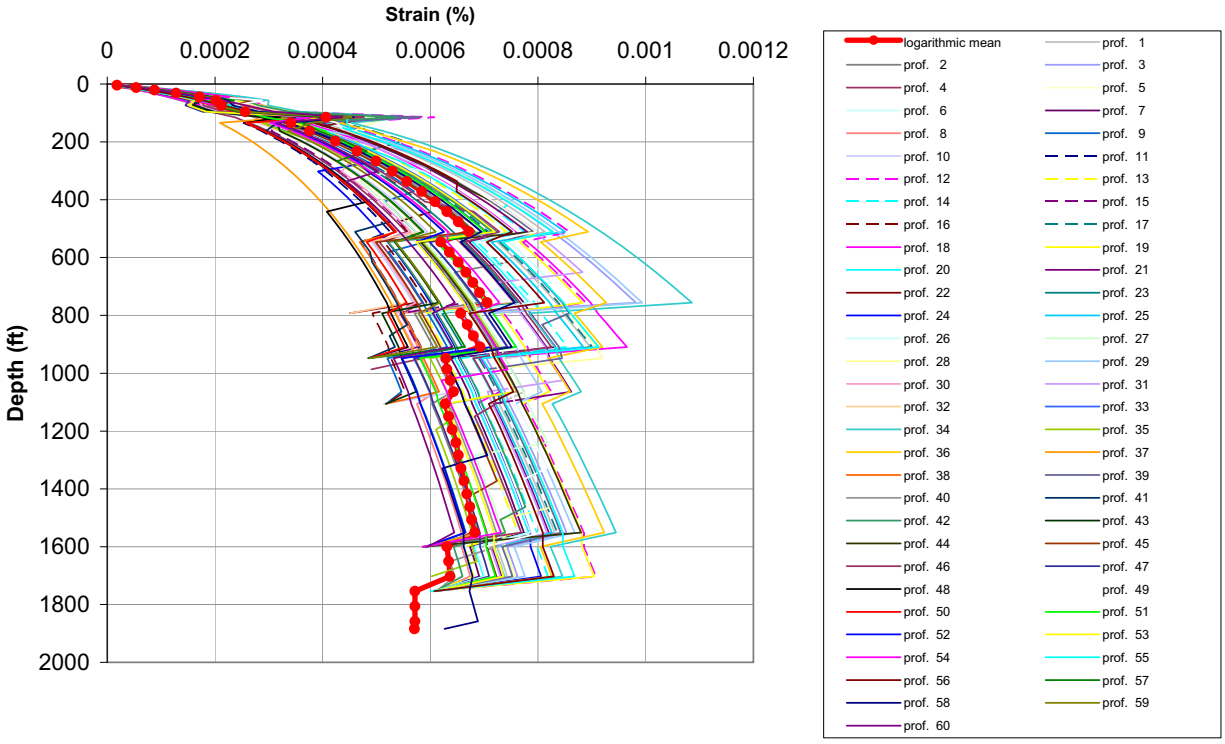


**Figure 2.5-120—{Damping Ratio vs. Depth at GMRS Elevation for 1E-4 LF Input Motion}**

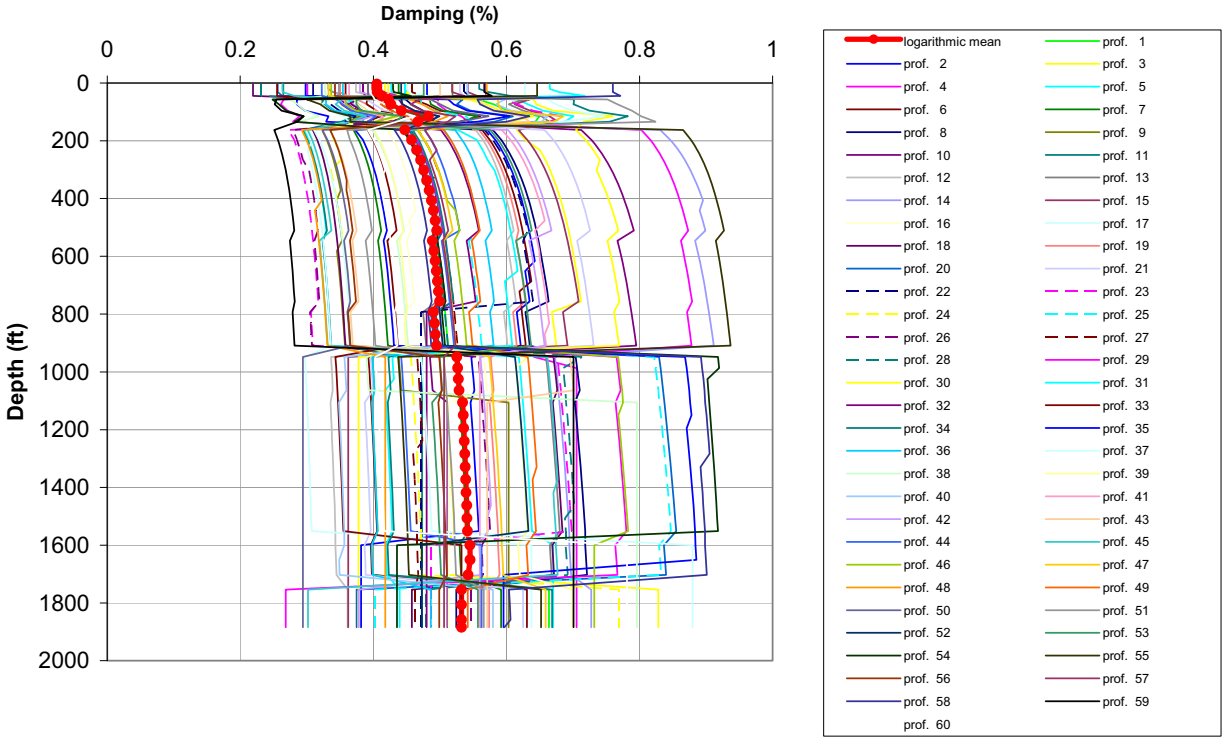


**Figure 2.5-121—{Response Spectra and Logarithmic Sigma at GMRS Elevation for 1E-5 HF Input Motion}**

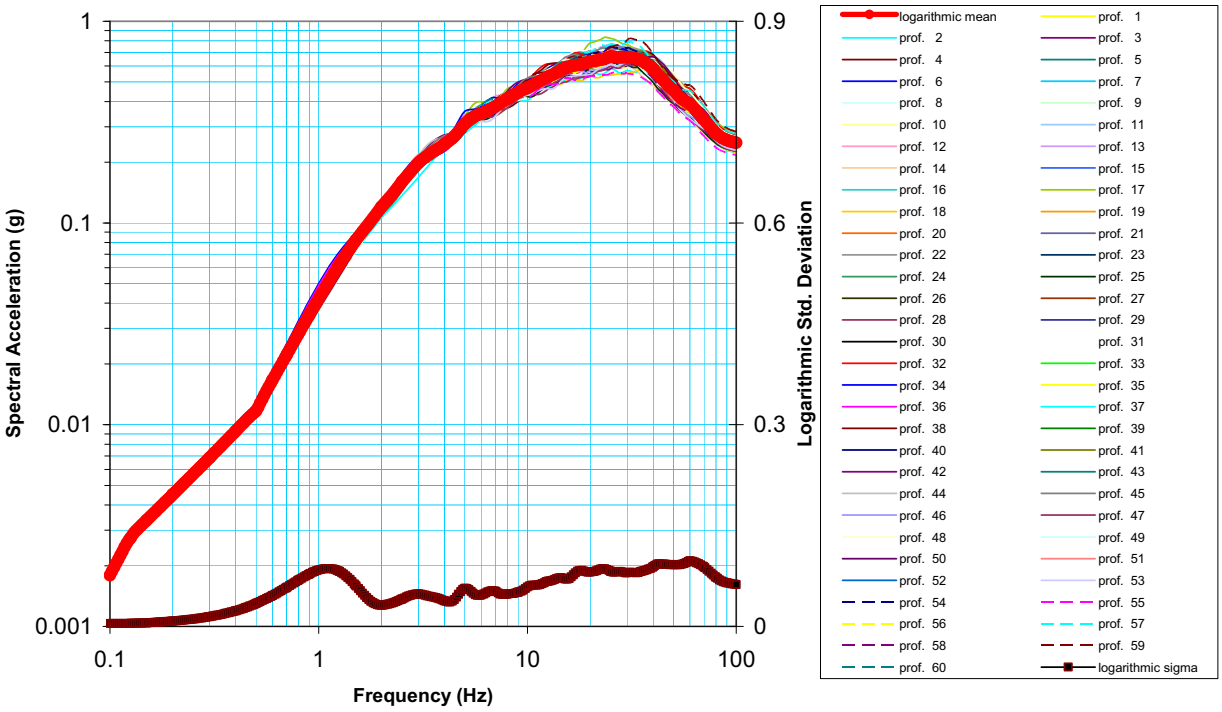


**Figure 2.5-122—{Amplification Factor and Logarithmic Sigma at GMRS Elevation for 1E-5 HF Input Motion}**

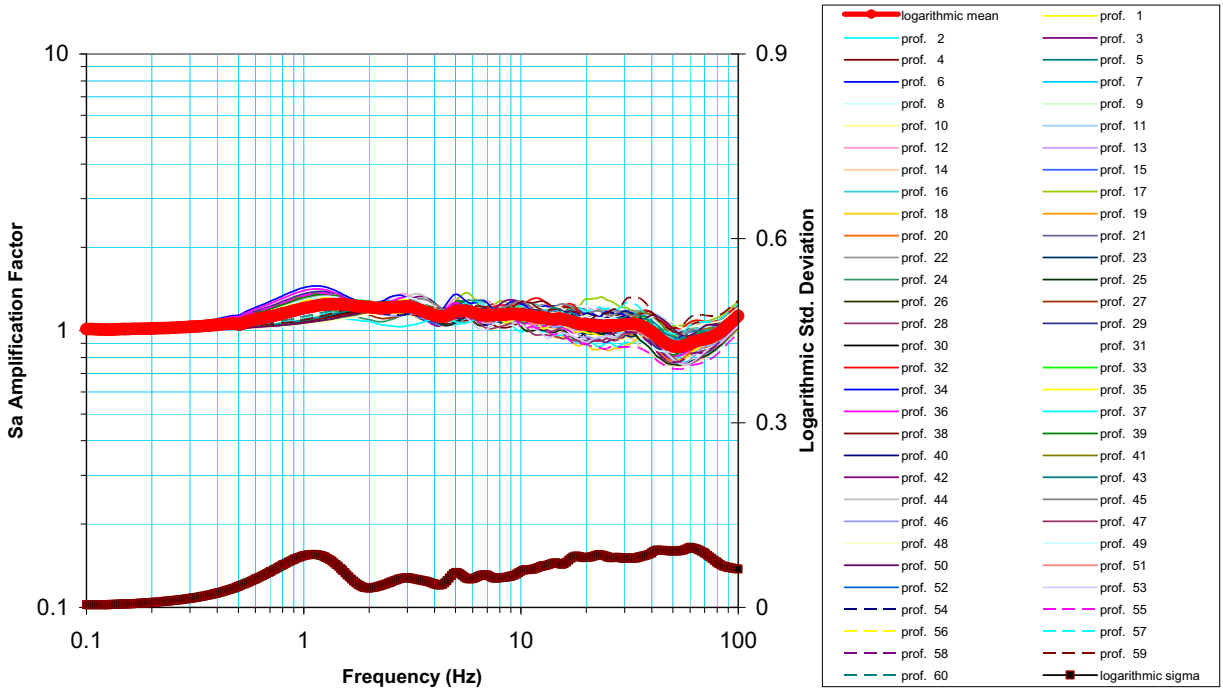


**Figure 2.5-123—{Maximum Strain vs. Depth at GMRS Elevation for 1E-5 HF Input Motion}**

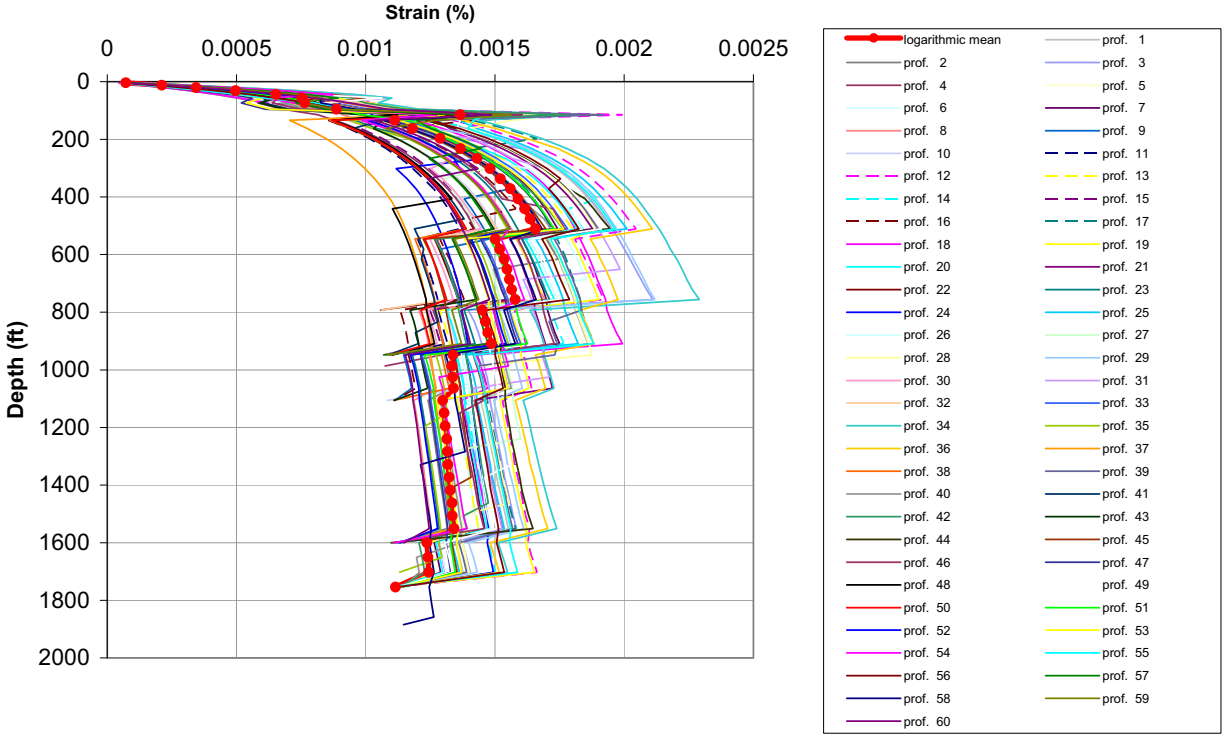


**Figure 2.5-124—{Damping Ratio vs. Depth at GMRS Elevation for 1E-5 HF Input Motion}**

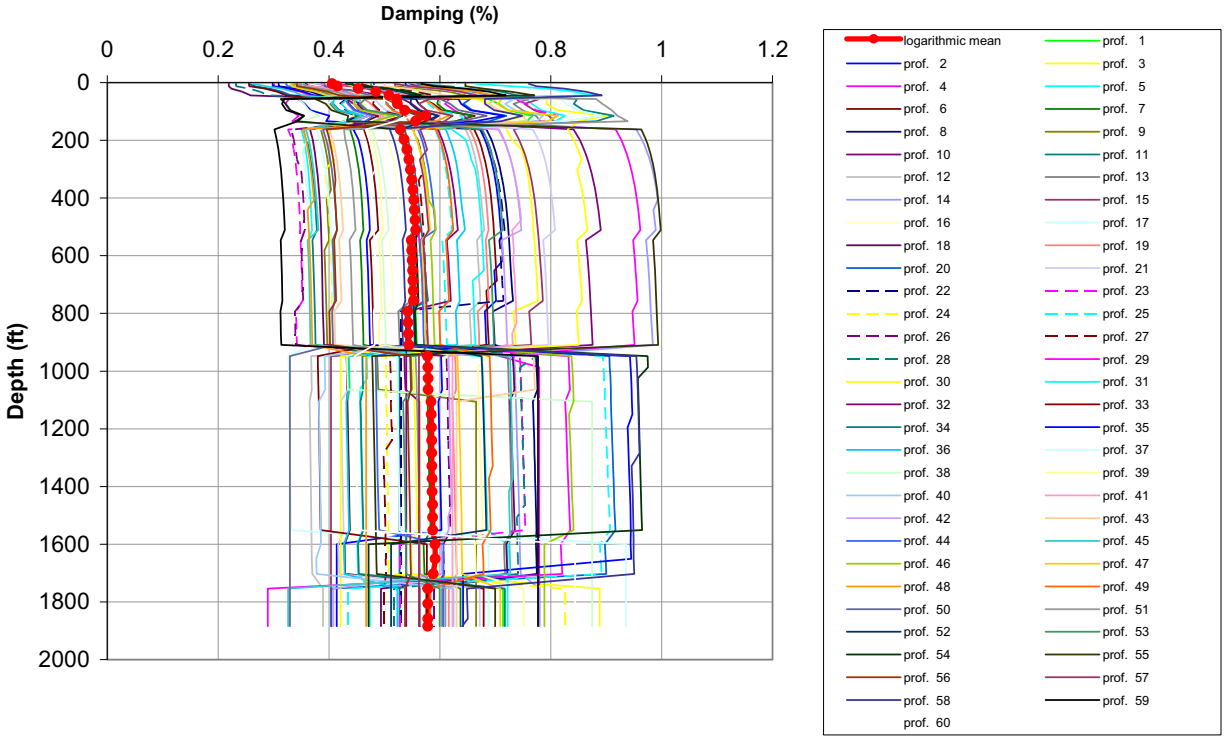


**Figure 2.5-125—{Response Spectra and Logarithmic Sigma at GMRS Elevation for 1E-5 LF Input Motion}**

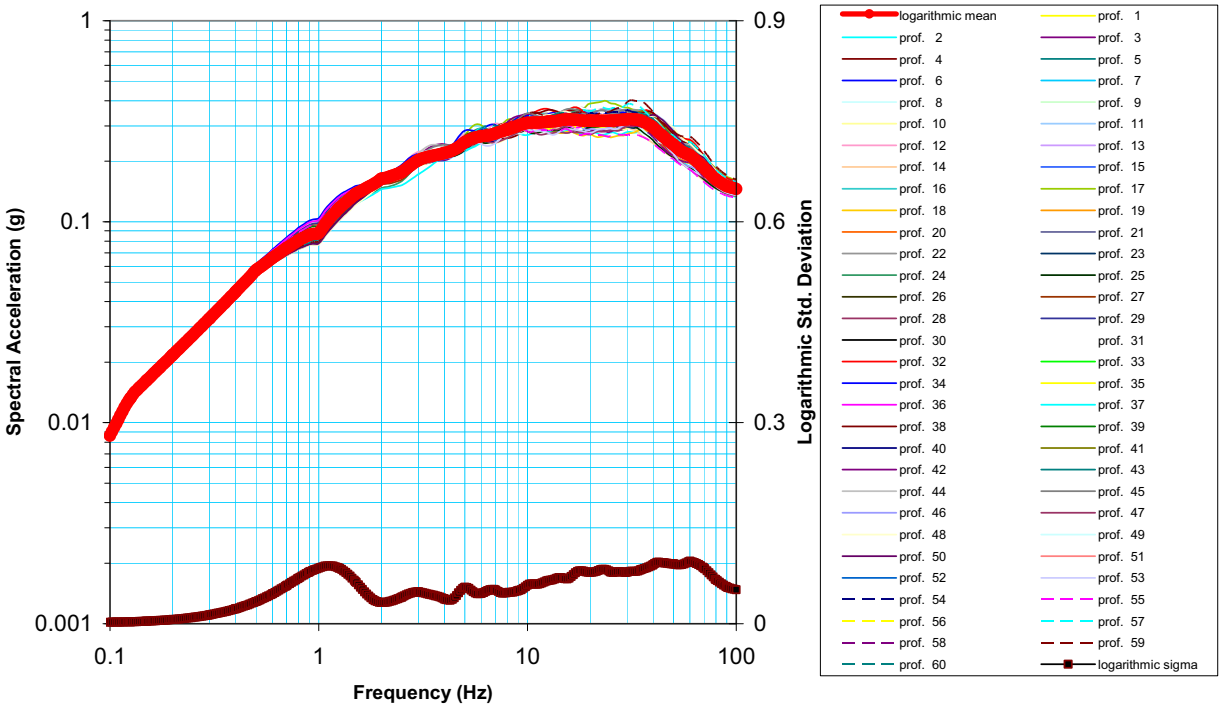


**Figure 2.5-126—{Amplification Factor and Logarithmic Sigma at GMRS Elevation for 1E-5 LF Input Motion}**

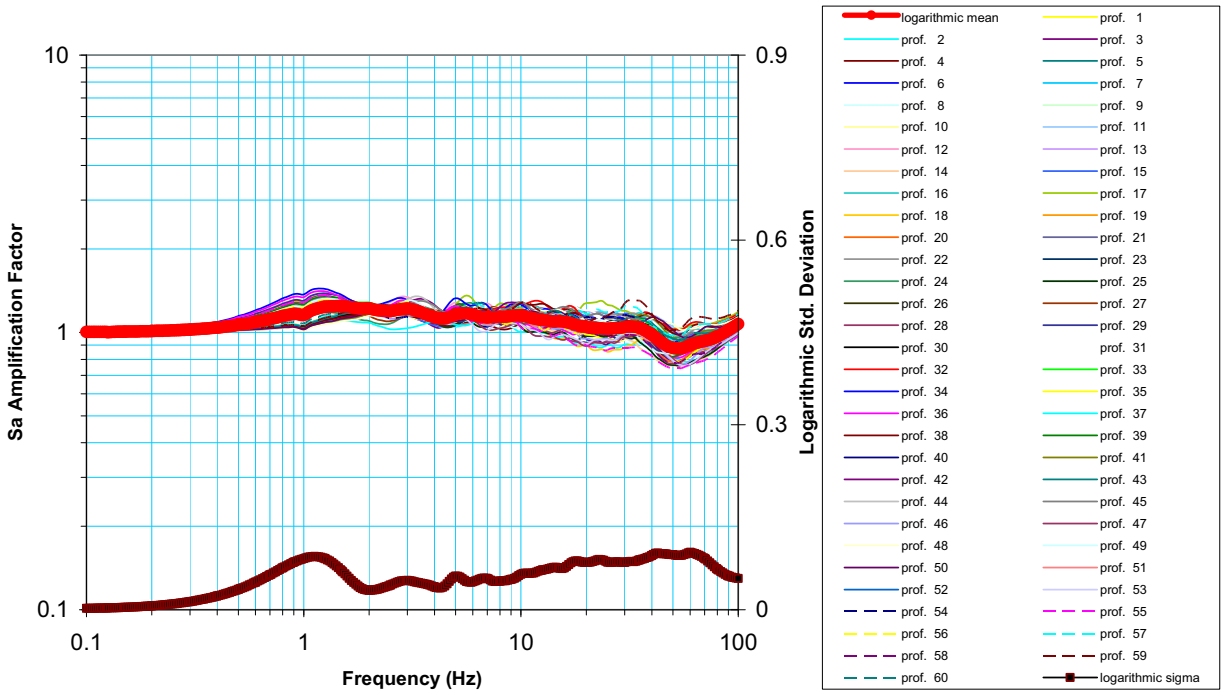


**Figure 2.5-127—{Maximum Strain vs. Depth at GMRS Elevation for 1E-5 LF Input Motion}**

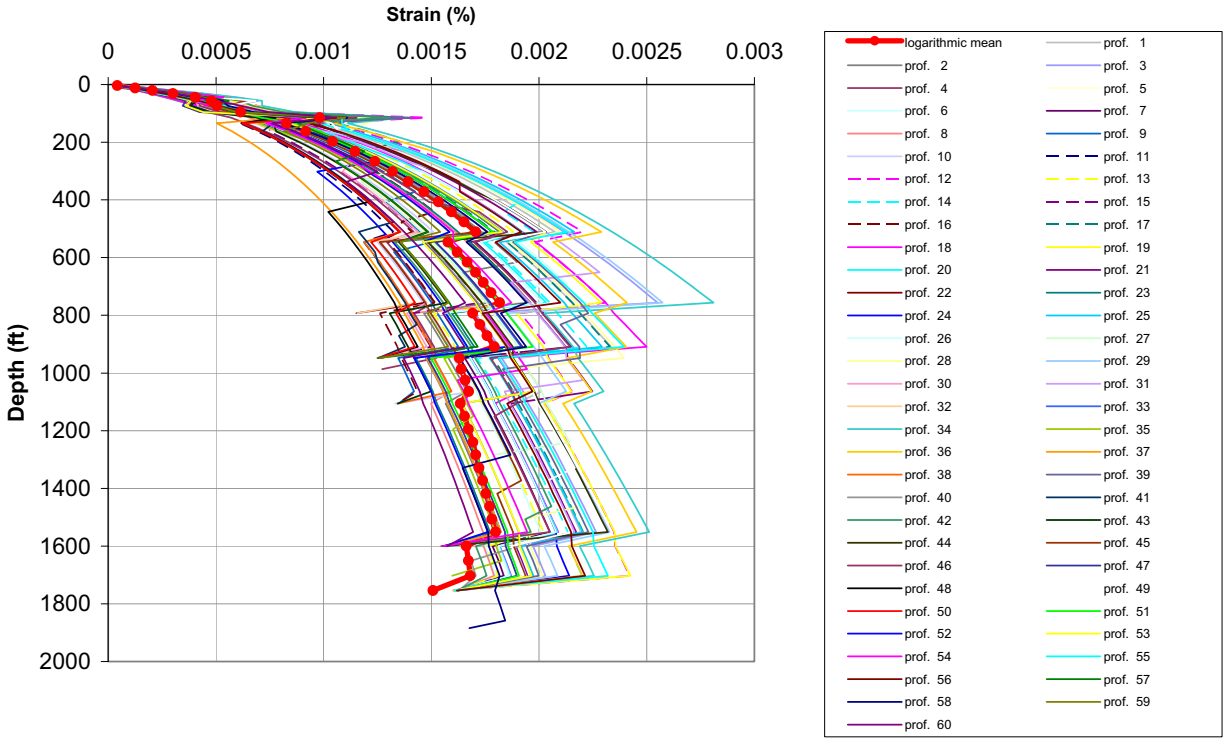


**Figure 2.5-128—{Damping Ratio vs. Depth at GMRS Elevation for 1E-5 LF Input Motion}**

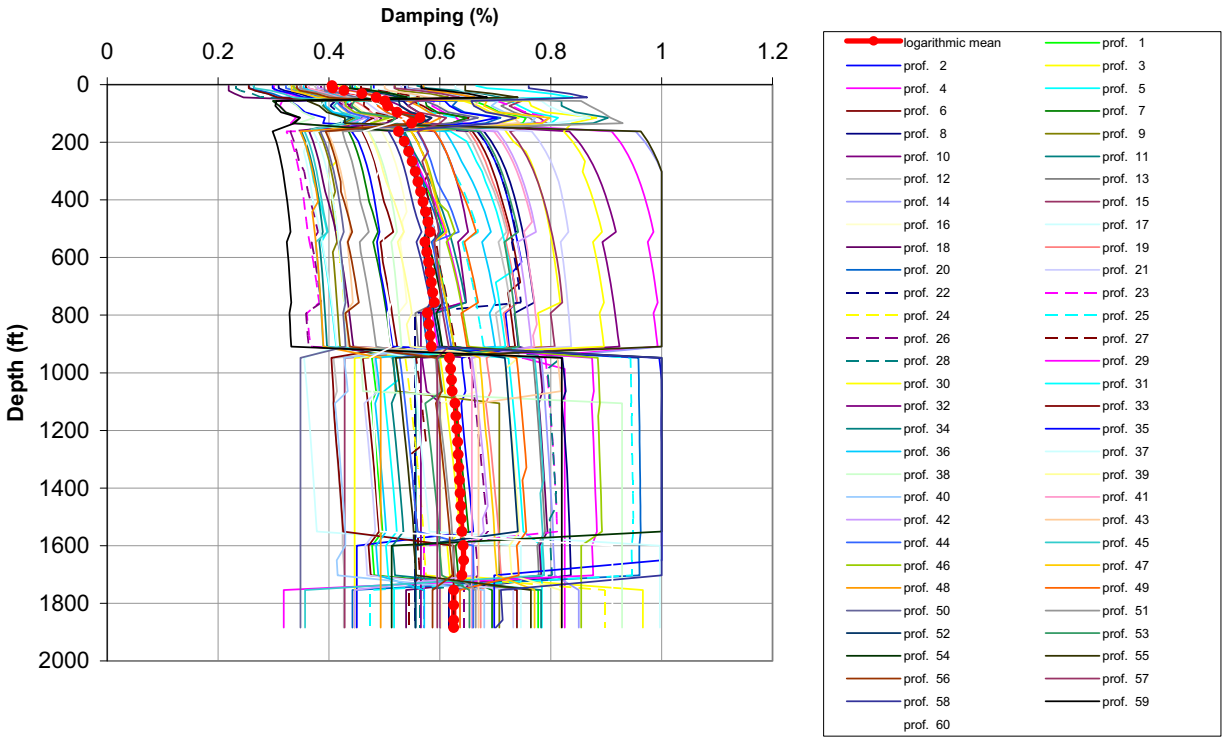


**Figure 2.5-129—{Response Spectra and Logarithmic Sigma at GMRS Elevation for 1E-6 HF Input Motion}**

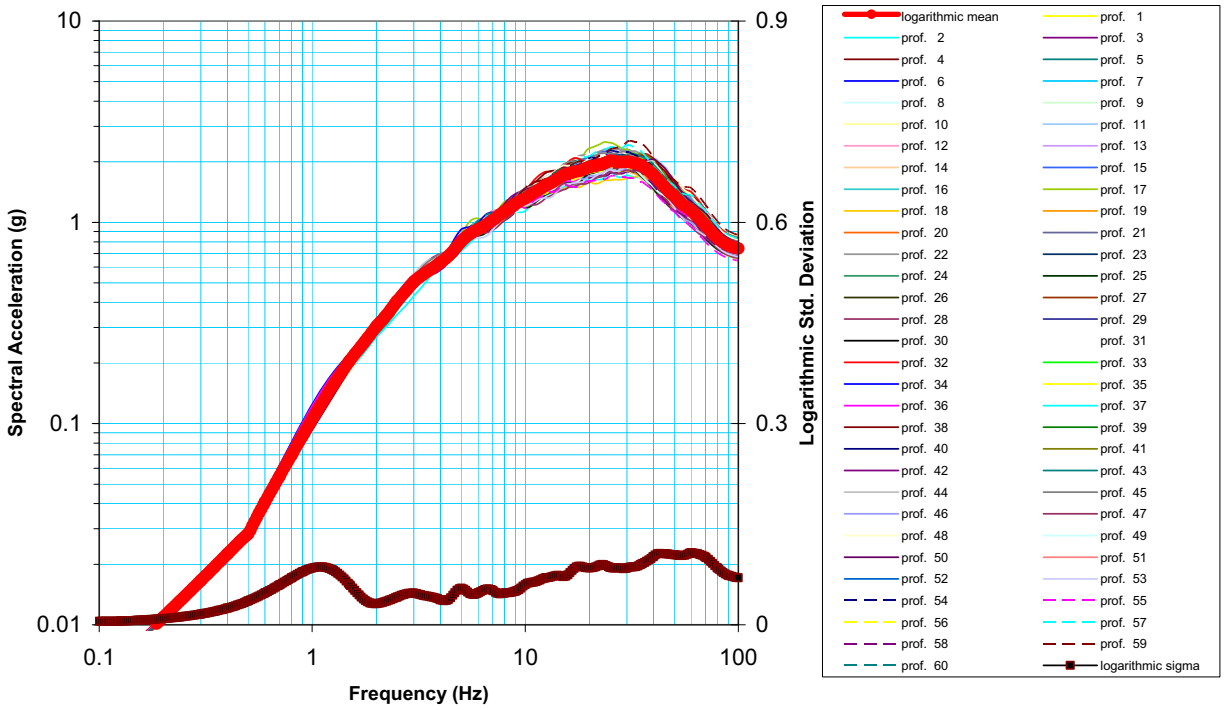


**Figure 2.5-130—{Amplification Factor and Logarithmic Sigma at GMRS Elevation for 1E-6 HF Input Motion}**

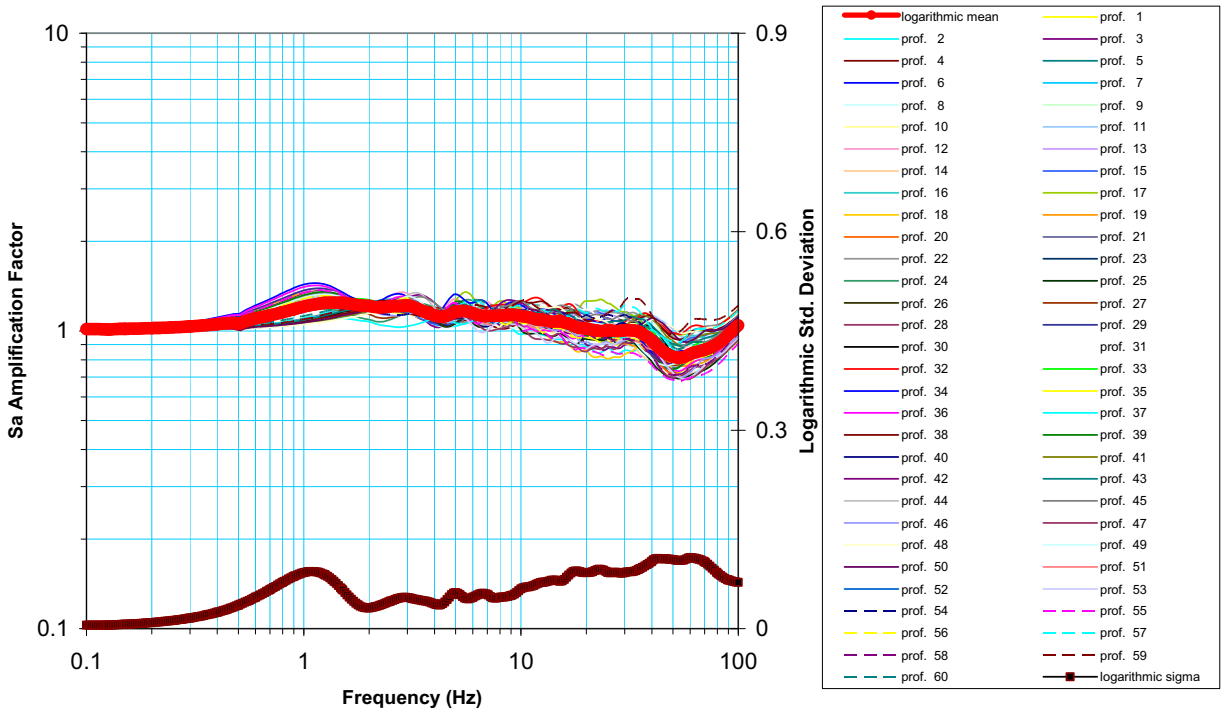


**Figure 2.5-131—{Maximum Strain vs. Depth at GMRS Elevation for 1E-6 HF Input Motion}**

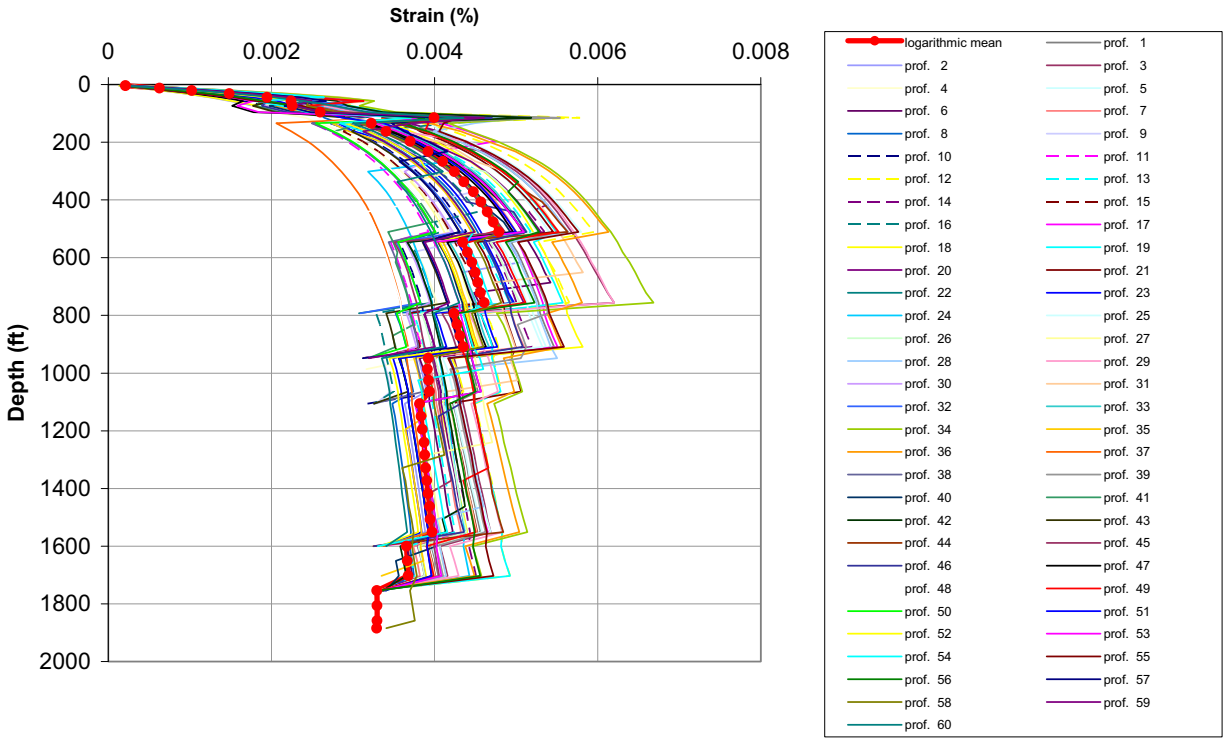


**Figure 2.5-132—{Damping Ratio vs. Depth at GMRS Elevation for 1E-6 HF Input Motion}**

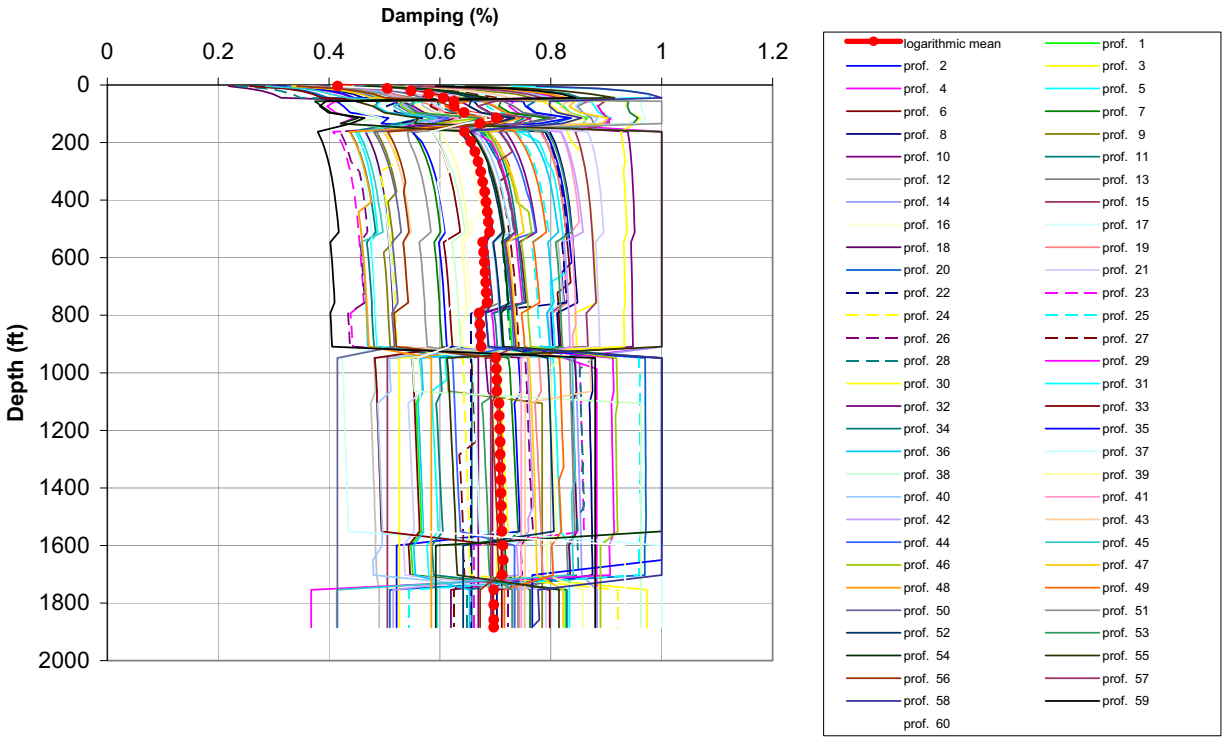


**Figure 2.5-133—{Response Spectra and Logarithmic Sigma at GMRS Elevation for 1E-6 LF Input Motion}**

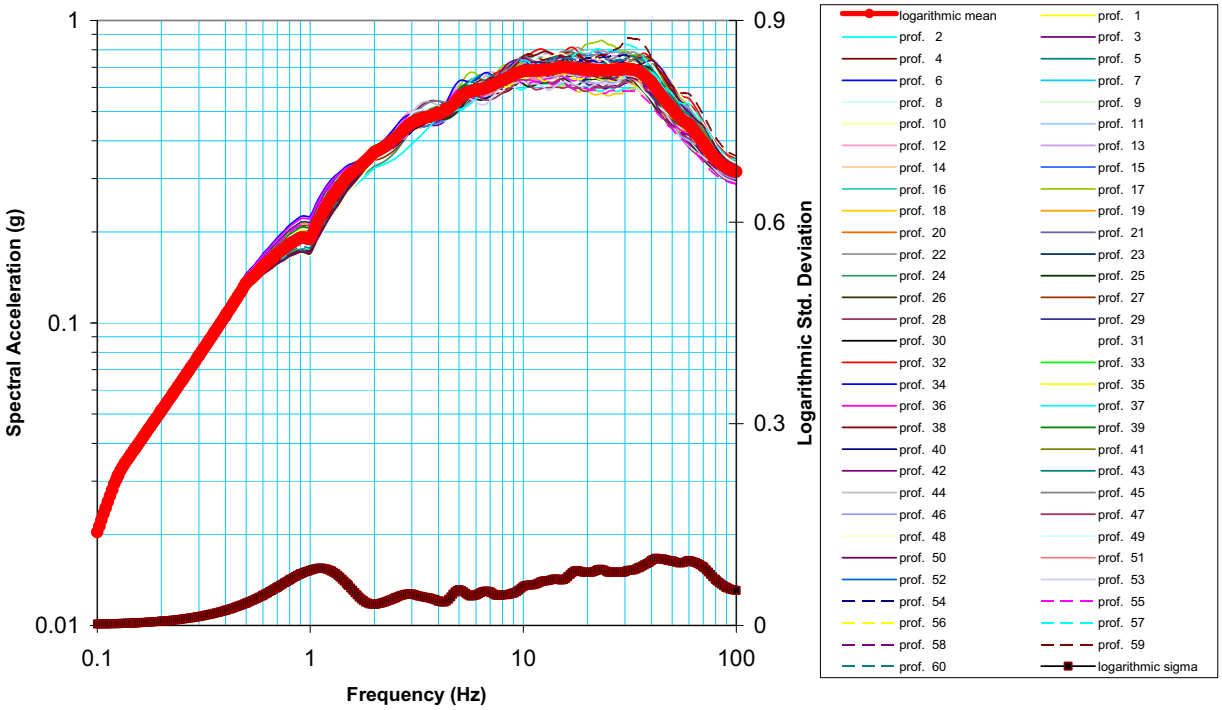


**Figure 2.5-134—{Amplification Factor and Logarithmic Sigma at GMRS Elevation for 1E-6 LF Input Motion}**

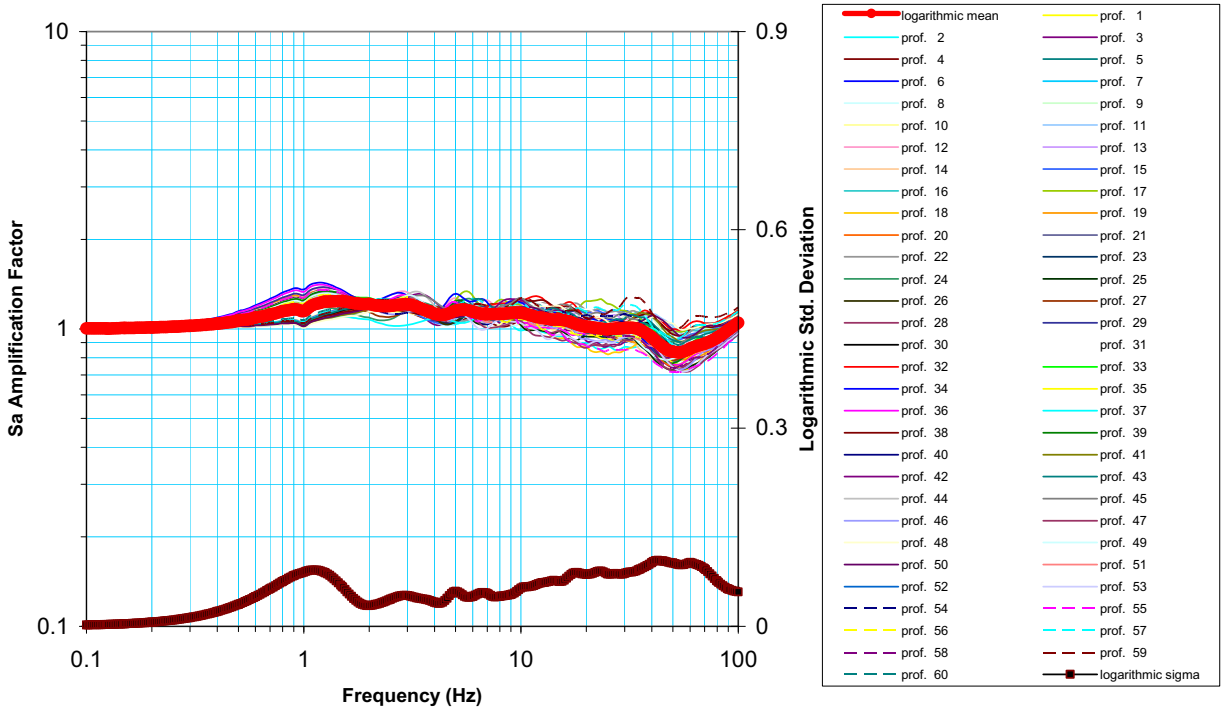


**Figure 2.5-135—{Maximum Strain vs. Depth at GMRS Elevation for 1E-6 LF Input Motion}**

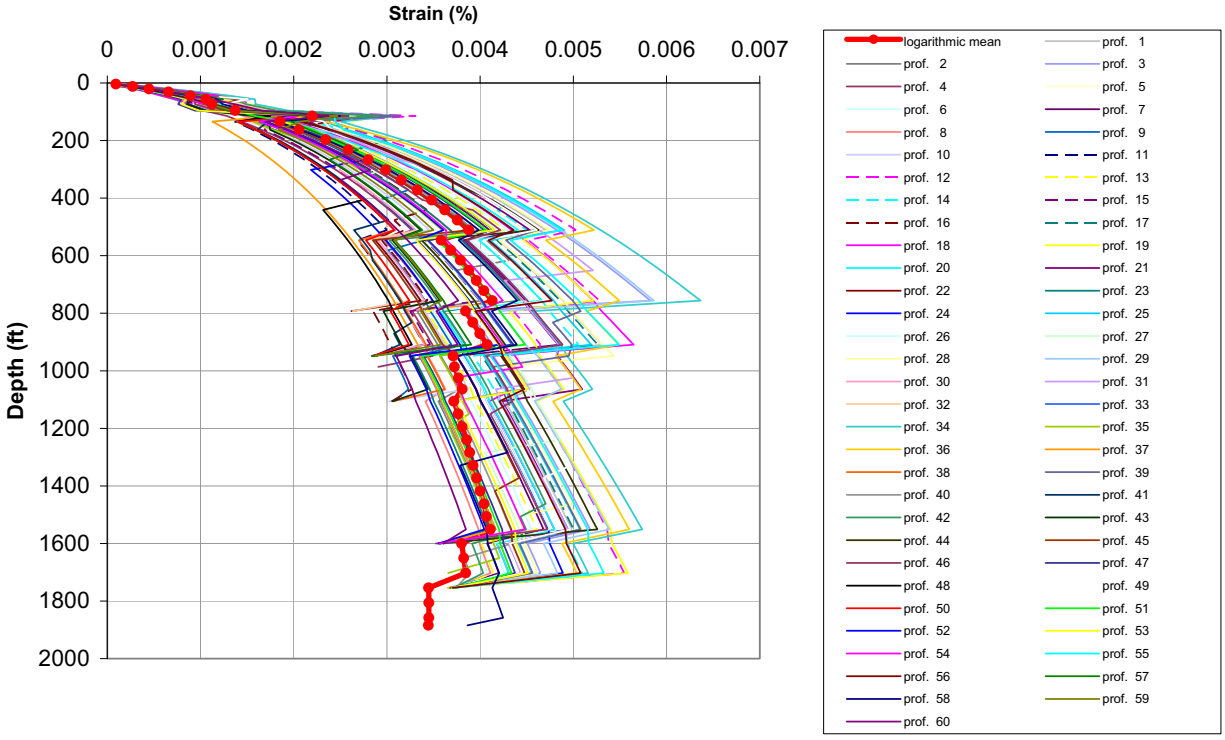


**Figure 2.5-136—{Damping Ratio vs. Depth at GMRS Elevation for 1E-6 LF Input Motion}**

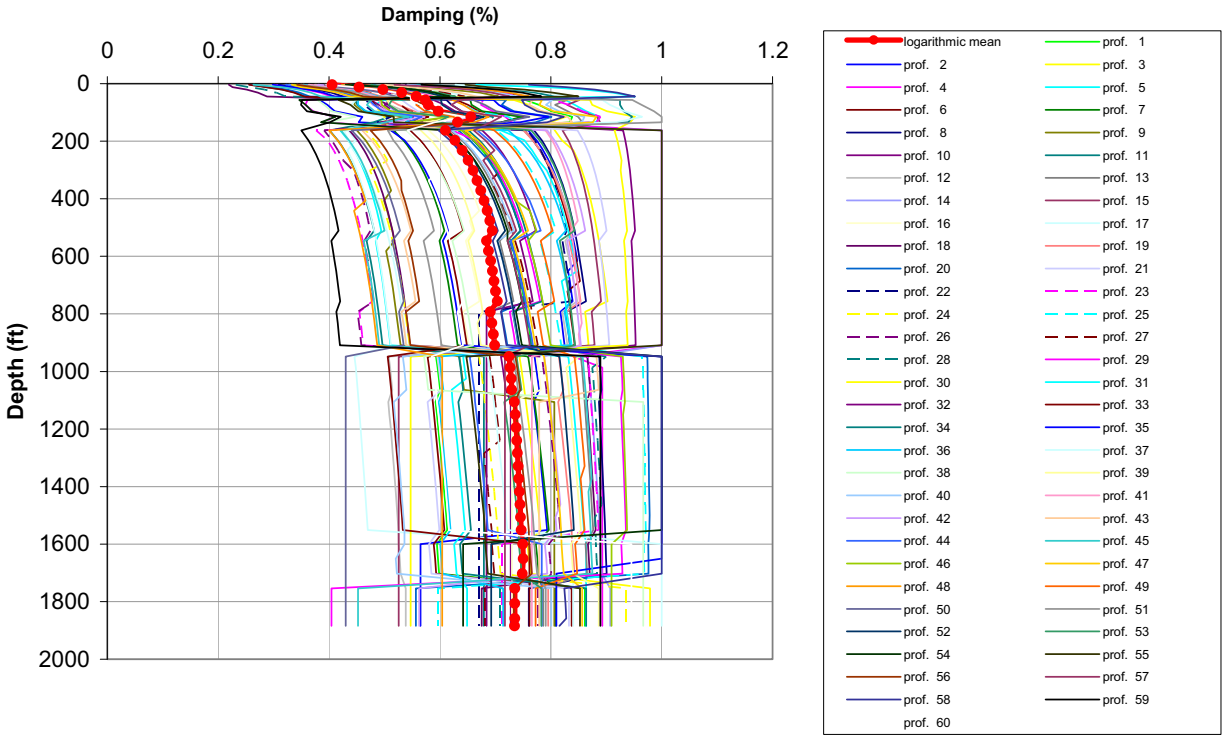


**Figure 2.5-137—{Summary Amplification Results for GMRS for High-Frequency Rock Motions}**

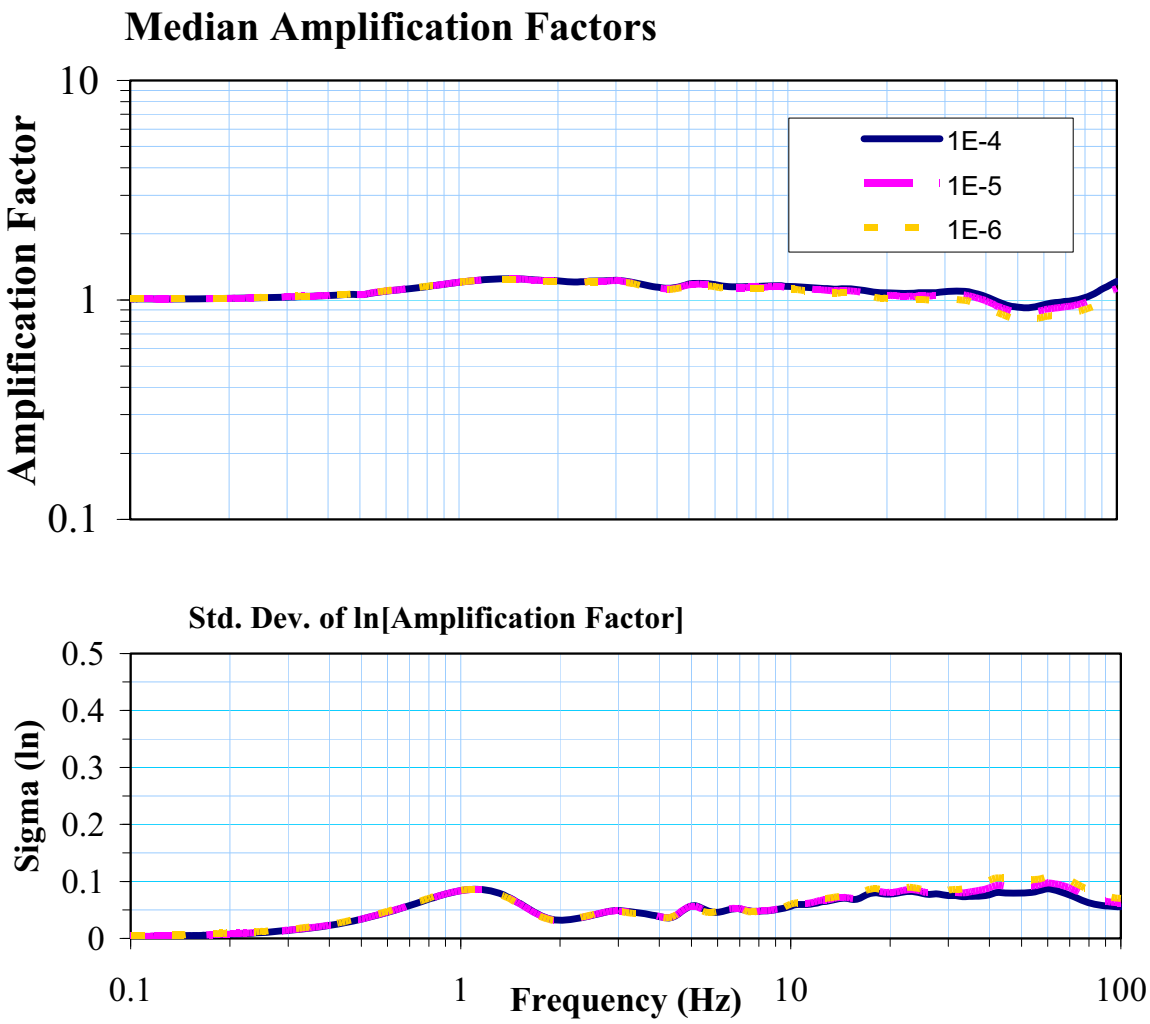


**Figure 2.5-138—{Summary Amplification Results for GMRS for Low-Frequency Rock Motions}**

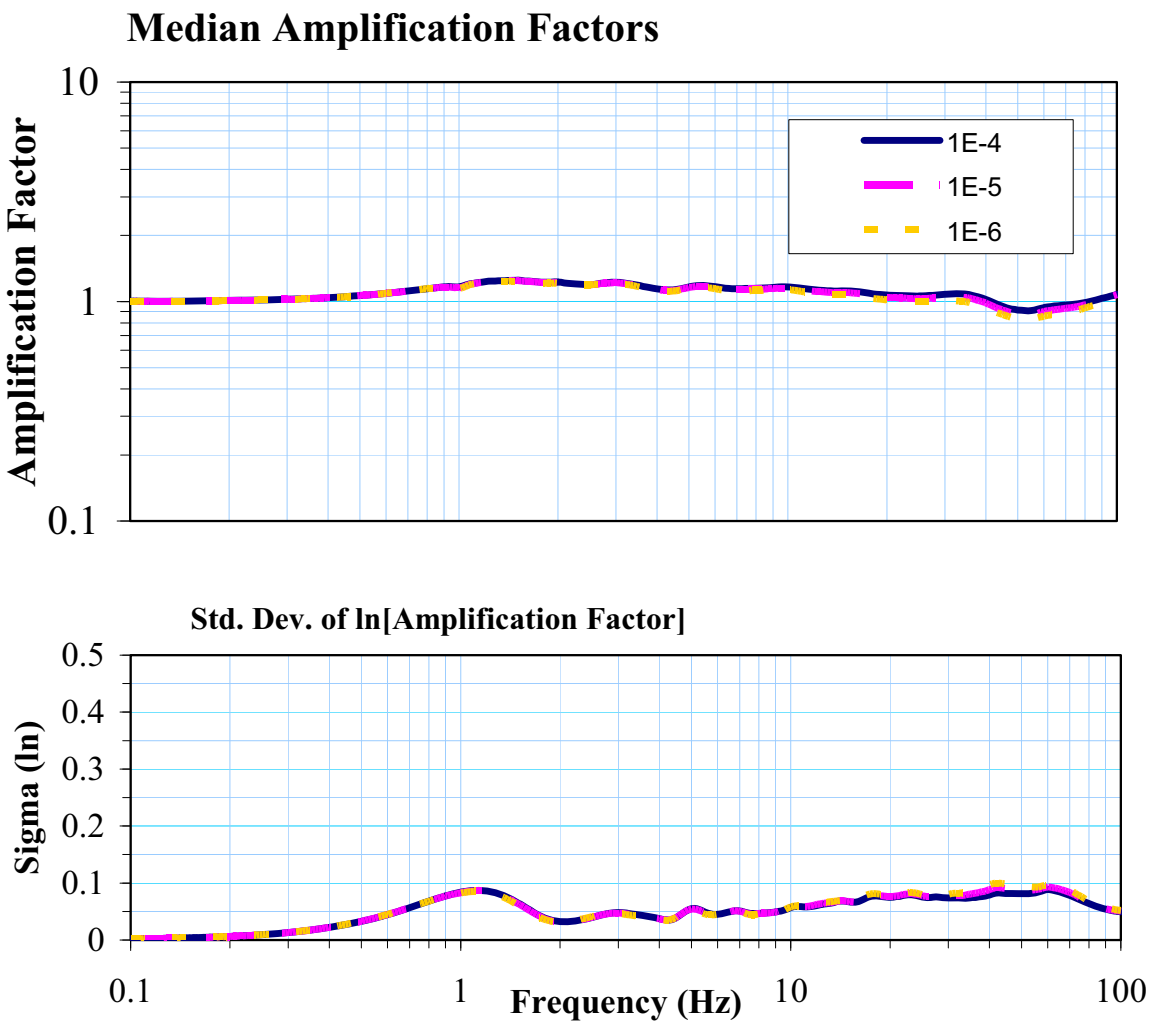


**Figure 2.5-139—{Summary Amplification Results for FIRS for High-Frequency Rock Motions}**

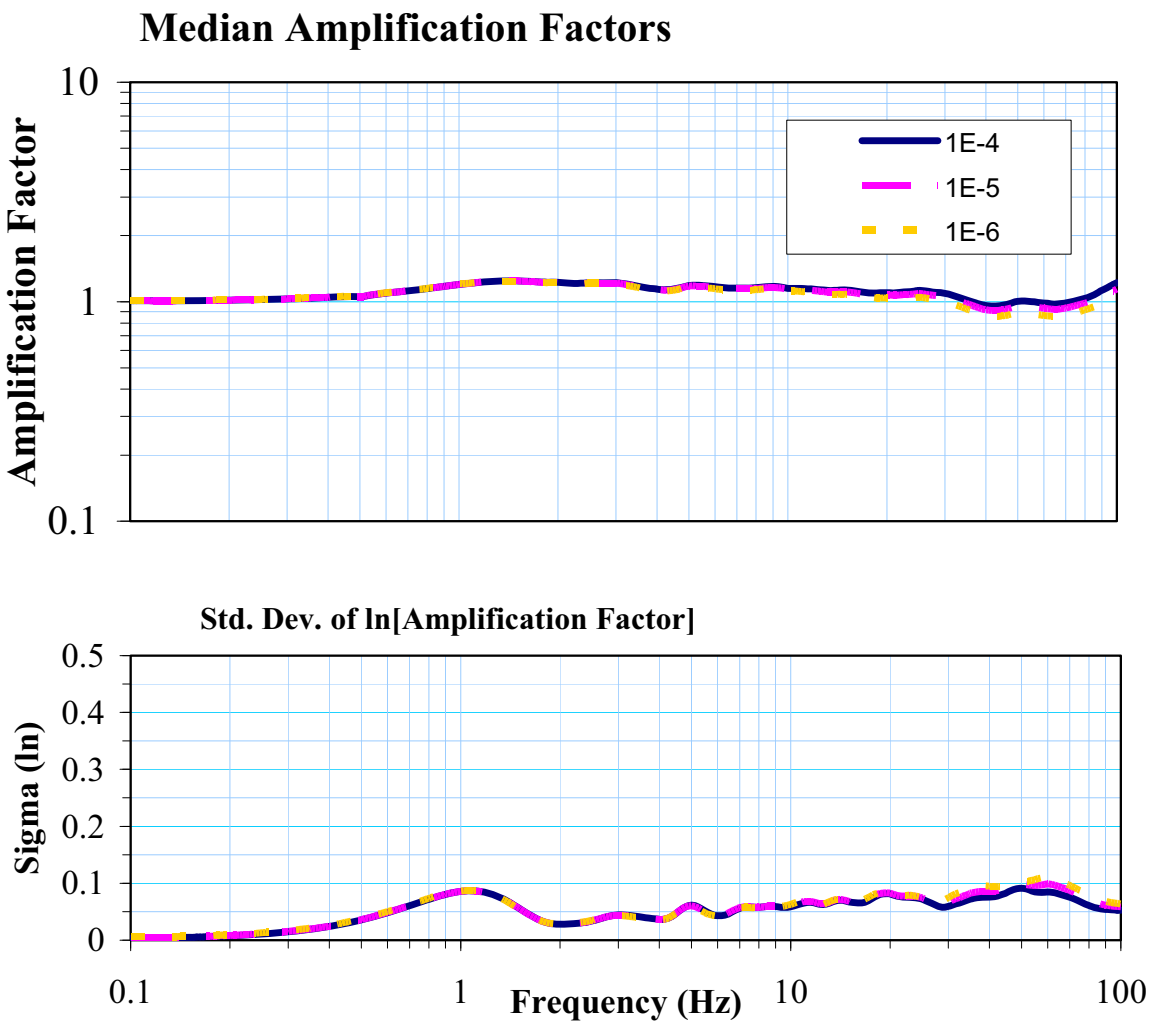


**Figure 2.5-140—{Summary Amplification Results for FIRS for Low-Frequency Rock Motions}**

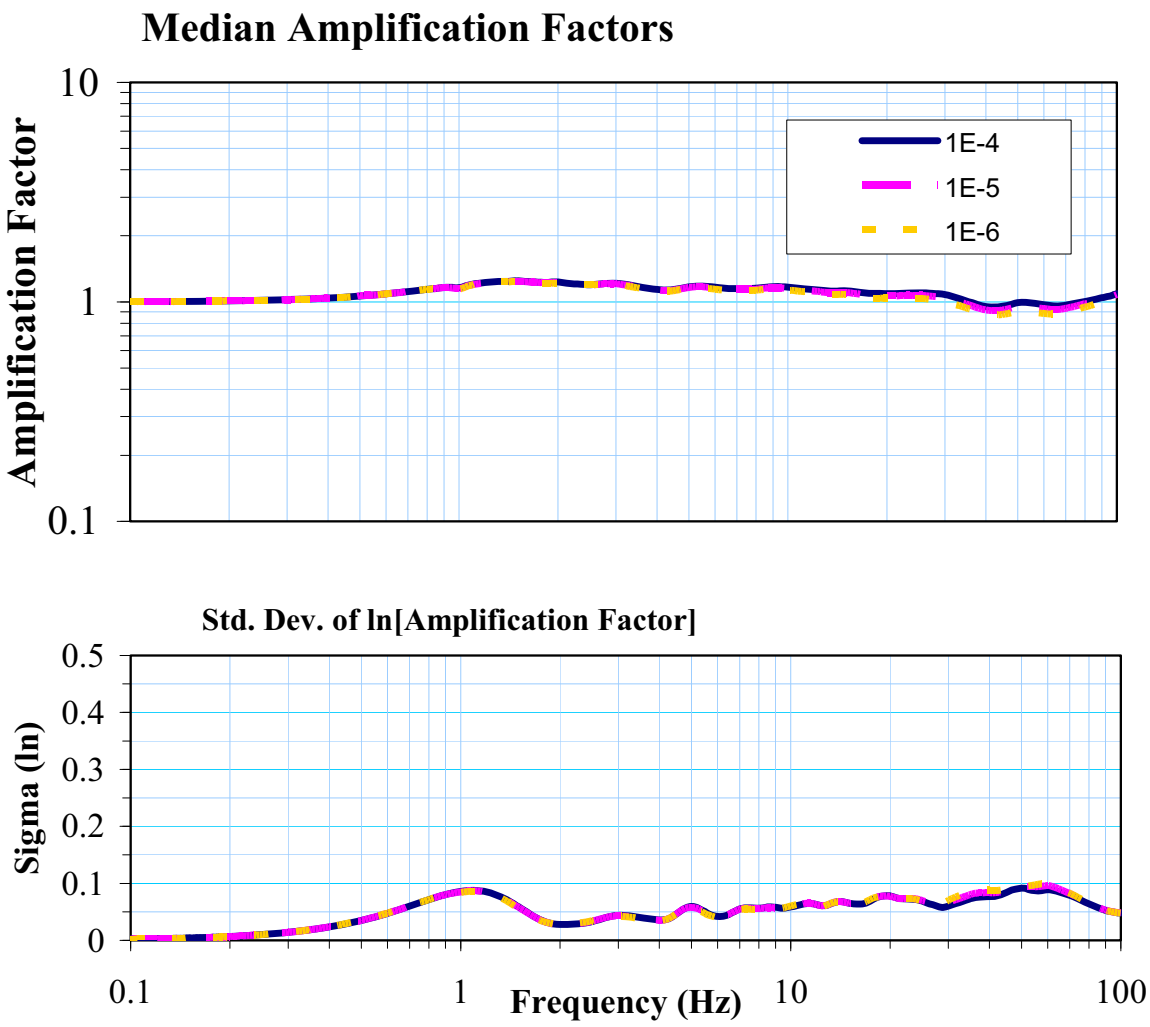


**Figure 2.5-141—{Ratio of Median Amplification Factors for GMRS and FIRS Elevations for 1E-4 HF and LF Input Motion}**

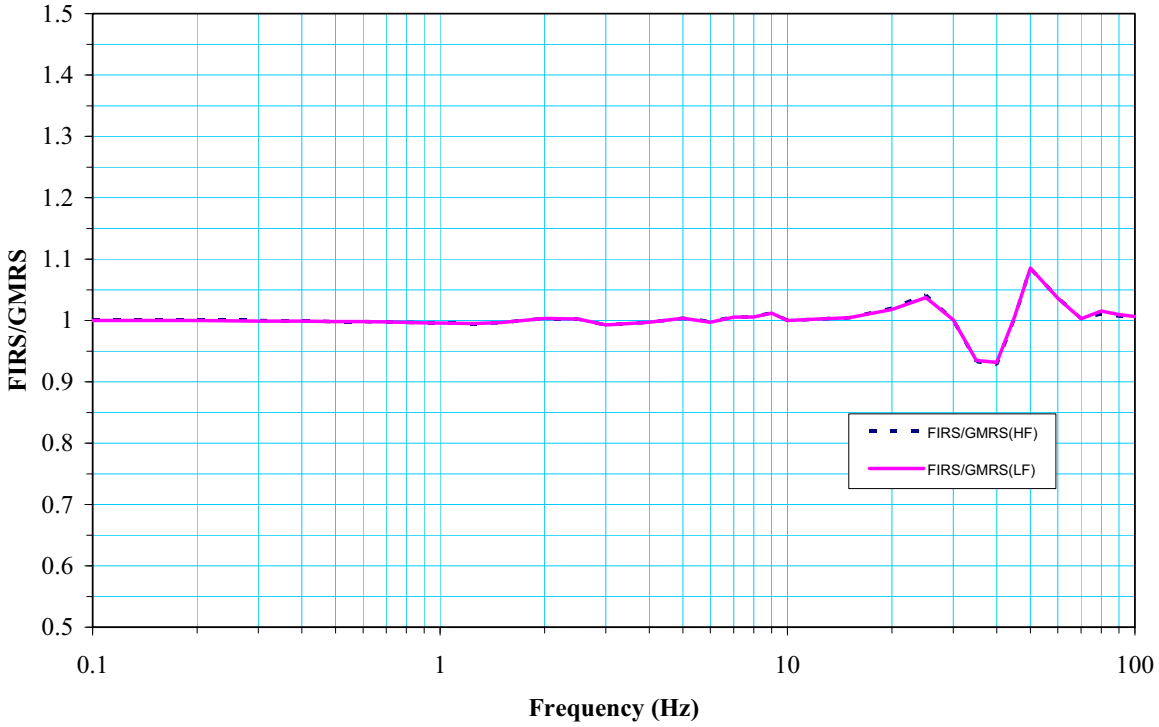


**Figure 2.5-142—{Mean and Fractile PGA Seismic Hazard Curves at GMRS Elevation (CAV)}**

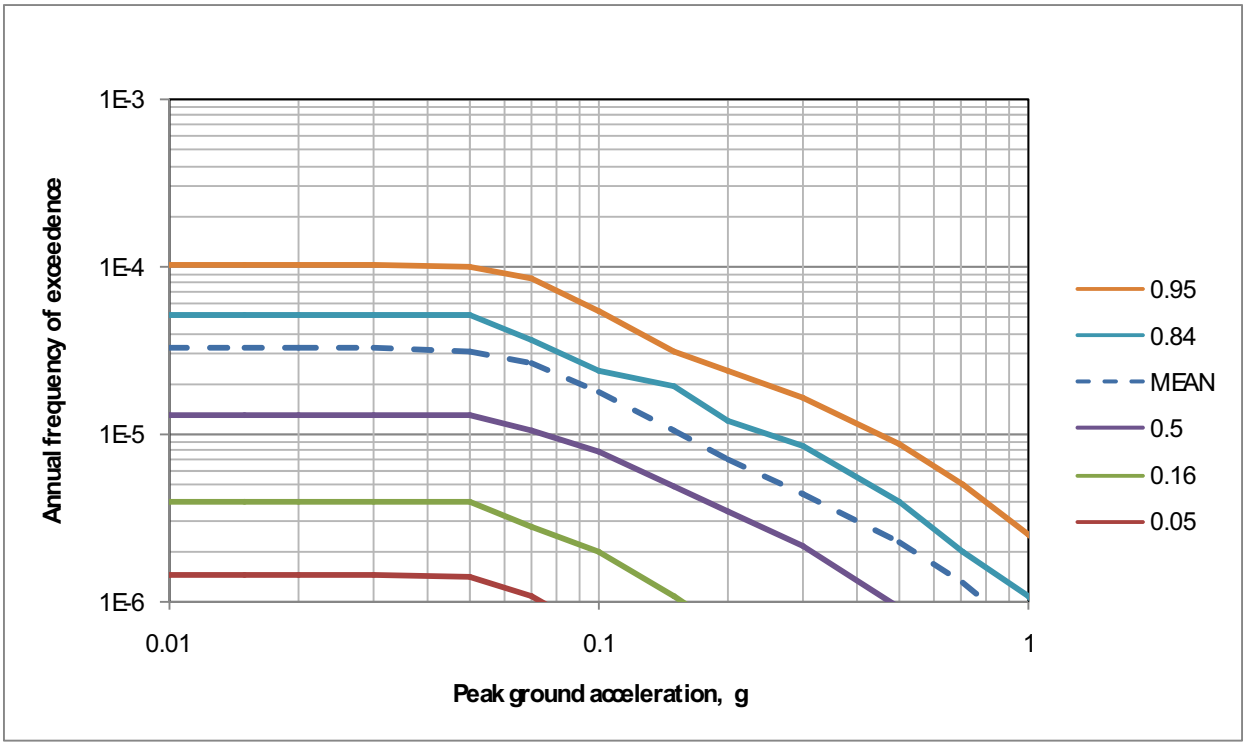


**Figure 2.5-143—{Mean and Fractile 25 Hz Seismic Hazard Curves at GMRS Elevation (CAV)}**

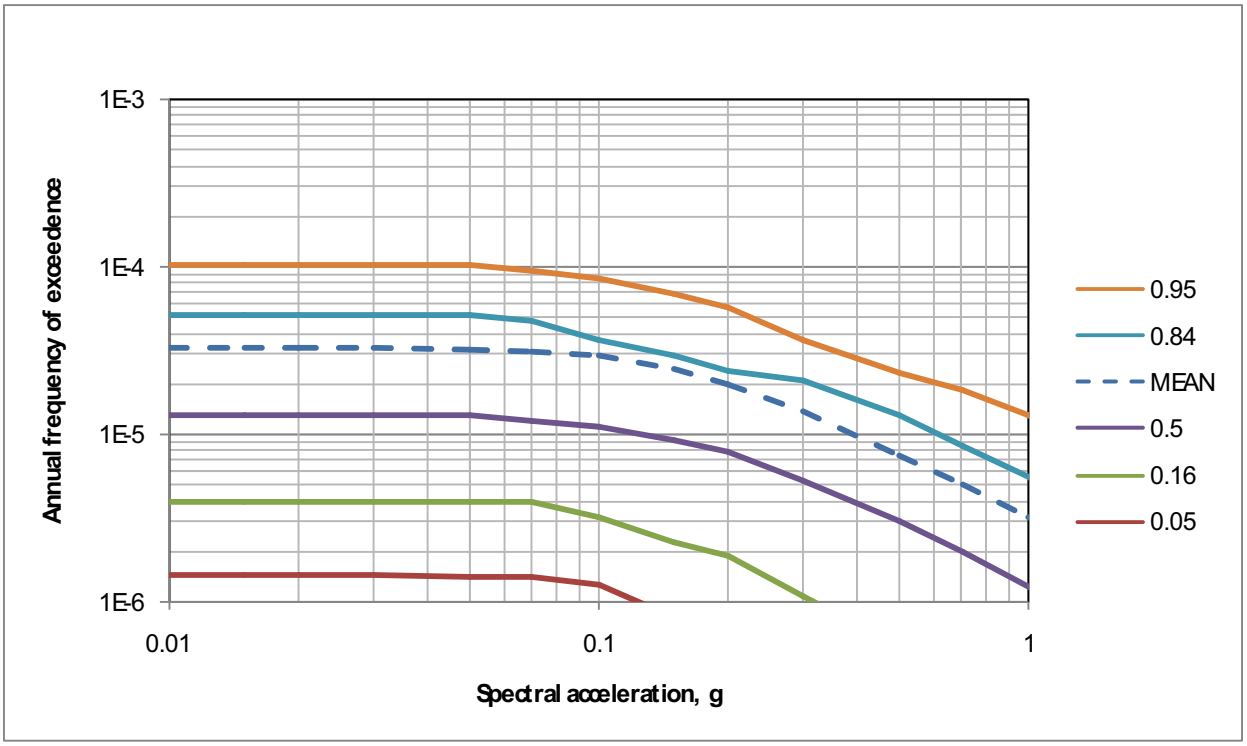


**Figure 2.5-144—{Mean and Fractile 10 Hz Seismic Hazard Curves at GMRS Elevation (CAV)}**

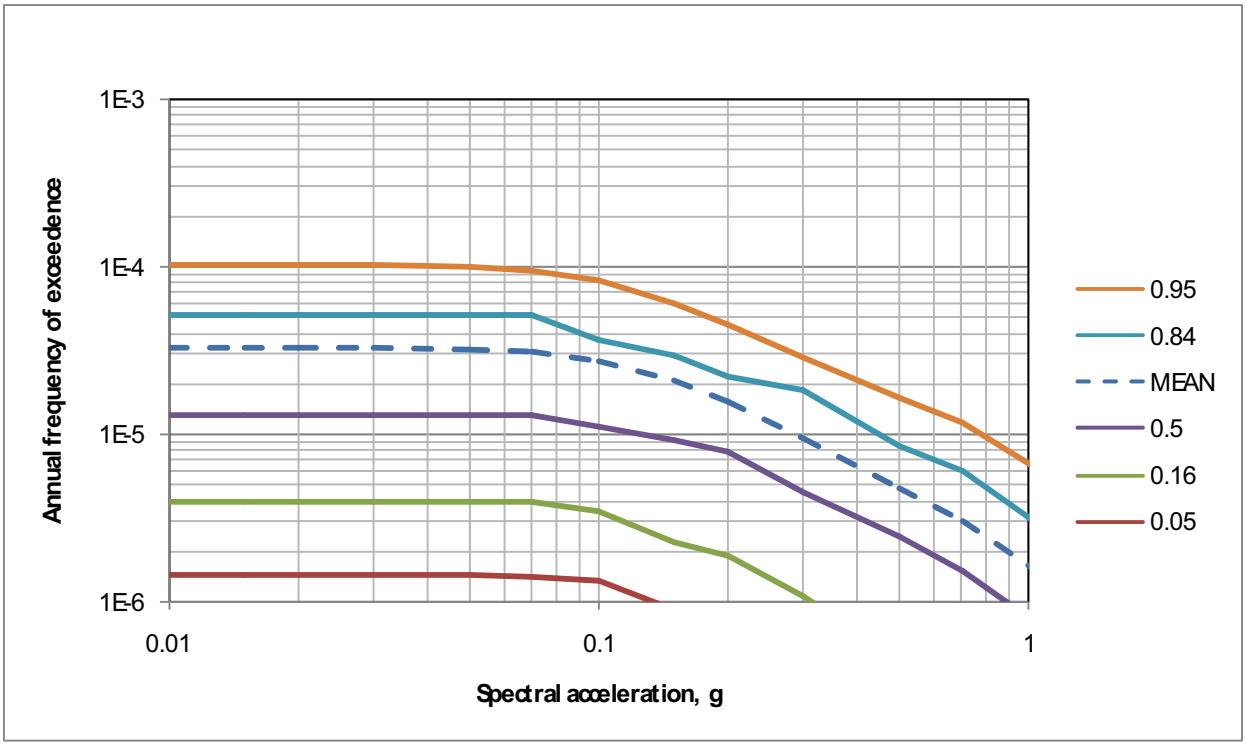


**Figure 2.5-145—{Mean and Fractile 5 Hz Seismic Hazard Curves at GMRS Elevation (CAV)}**

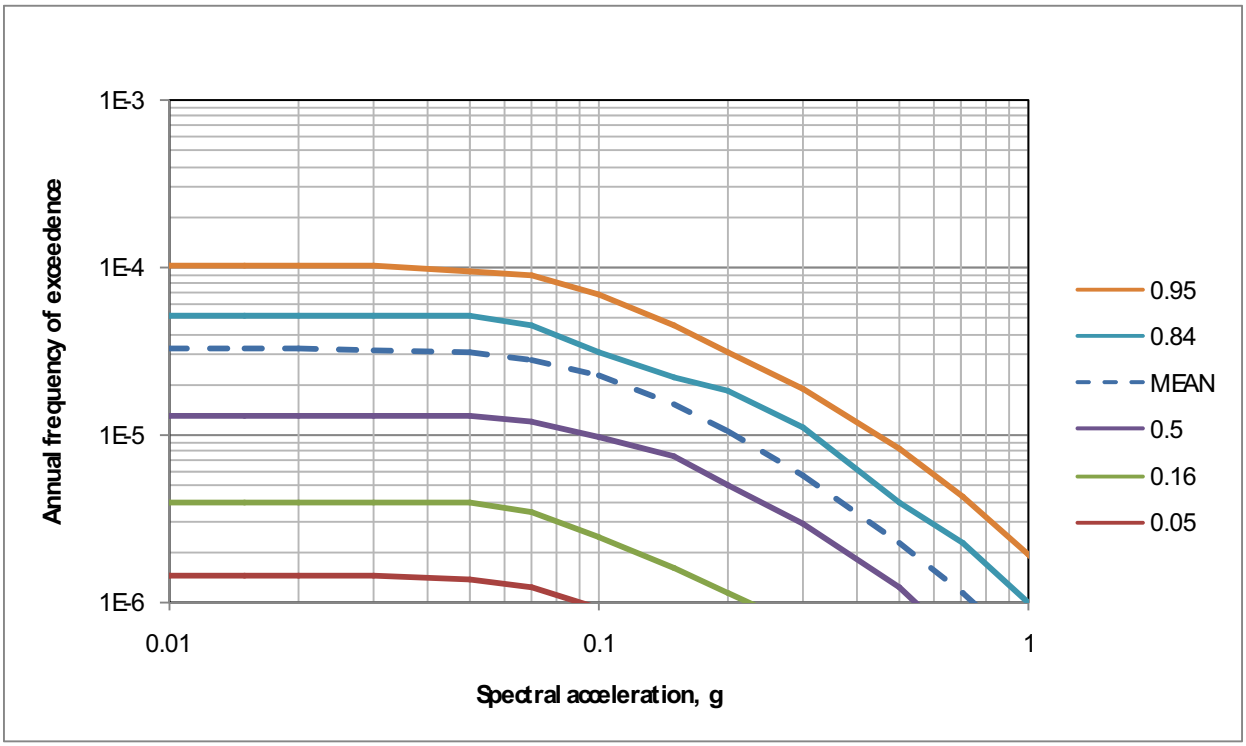


**Figure 2.5-146—{Mean and Fractile 2.5 Hz Seismic Hazard Curves at GMRS Elevation (CAV)}**

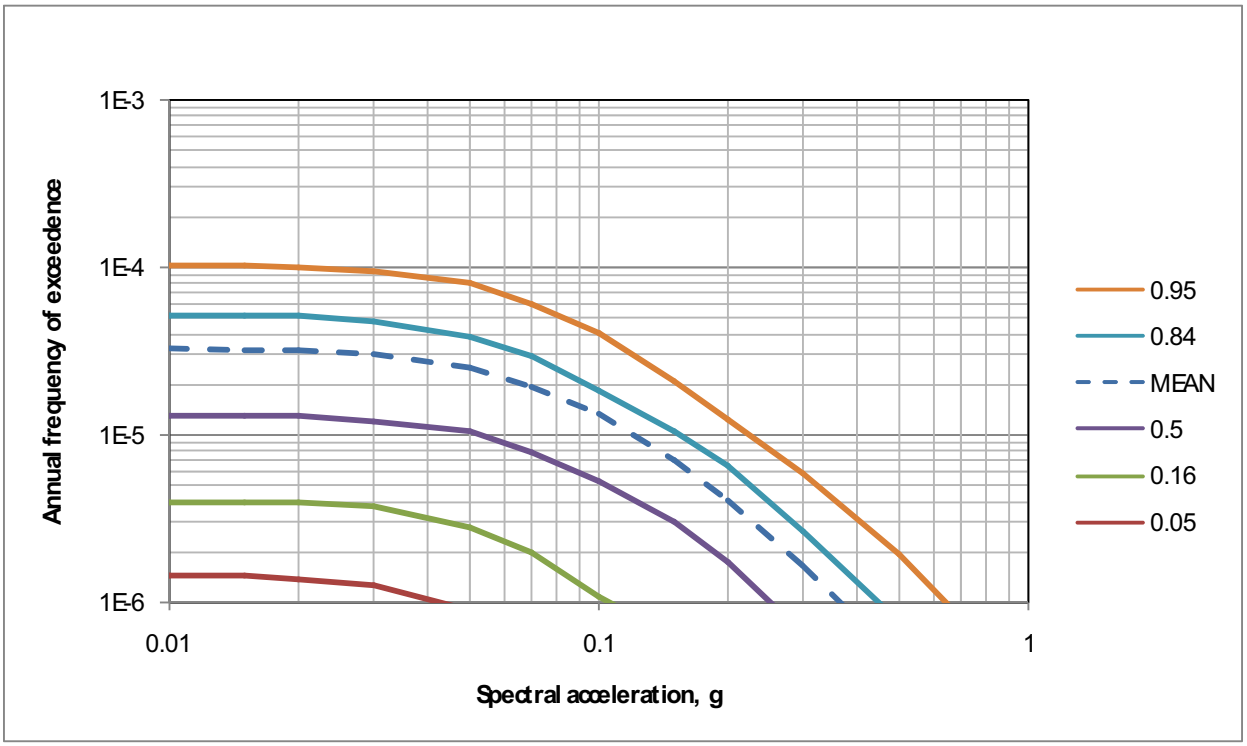


**Figure 2.5-147—{Mean and Fractile 1 Hz Seismic Hazard Curves at GMRS Elevation (CAV)}**

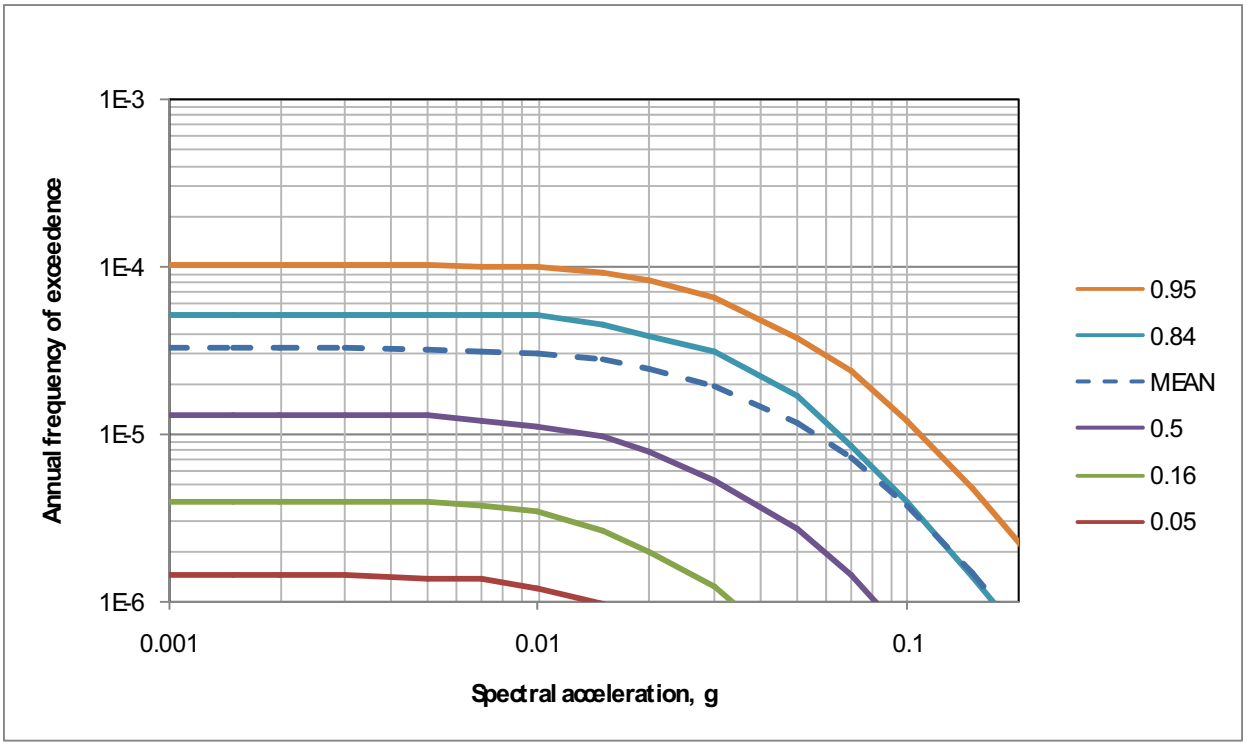


**Figure 2.5-148—{Mean and Fractile 0.5 Hz Seismic Hazard Curves at GMRS Elevation (CAV)}**

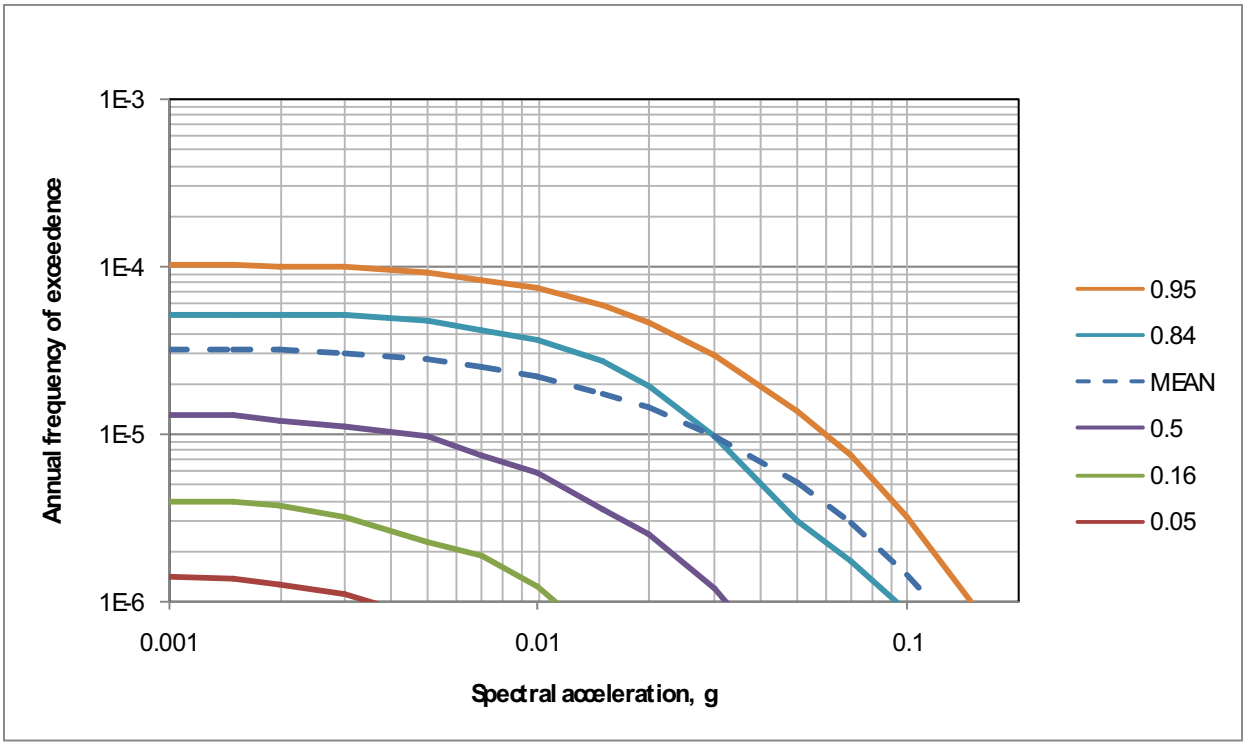


**Figure 2.5-149—{10-5 Horizontal UHRS at GMRS Elevation, and GMRS}**

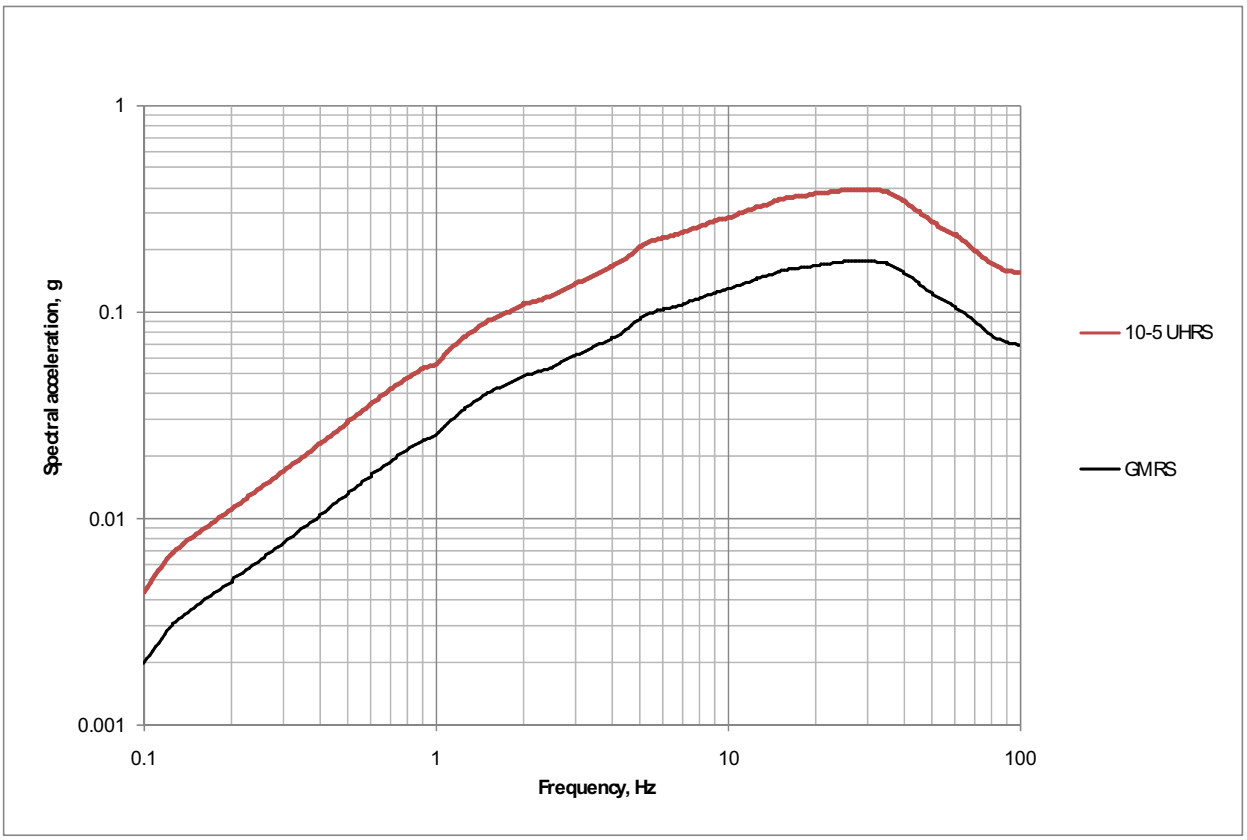


**Figure 2.5-150—{10-5 Horizontal UHRS at FIRS Elevation, and FIRS}**

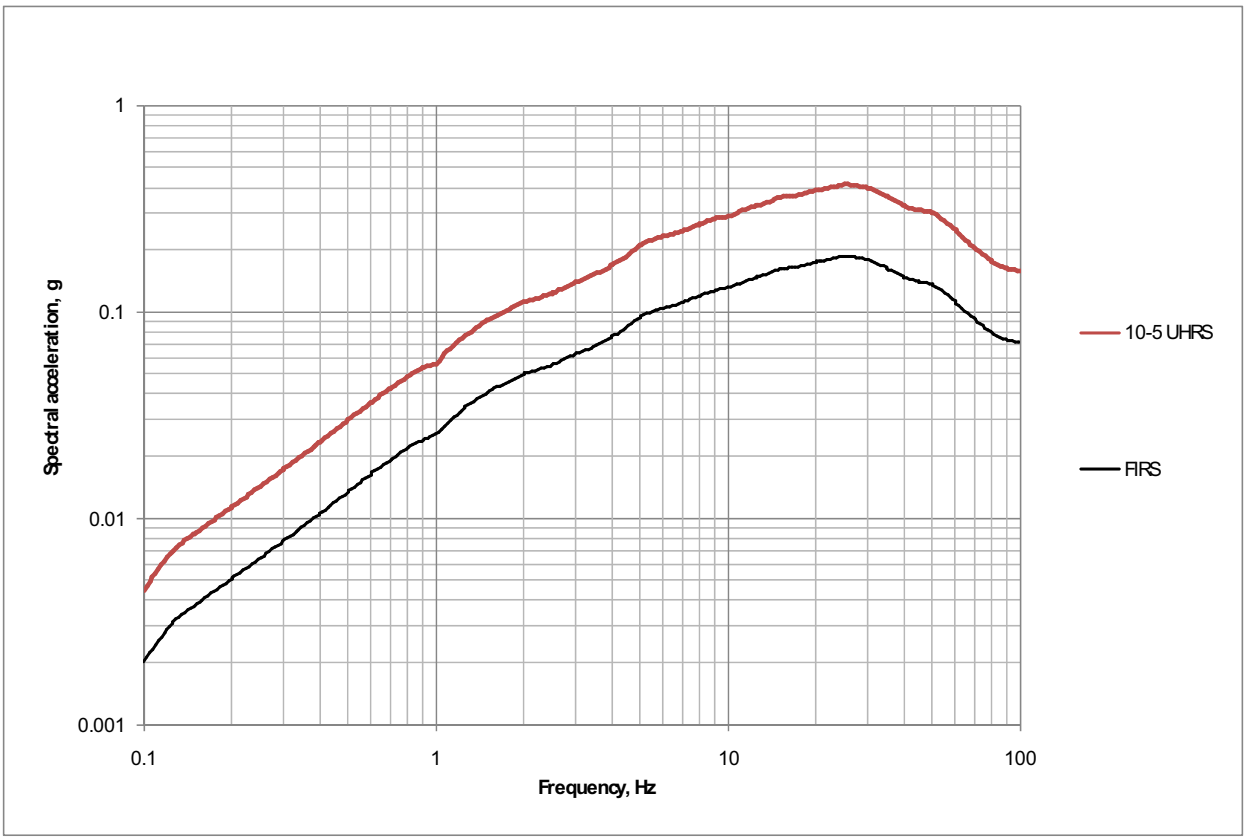


**Figure 2.5-151—{V/H Ratios from NUREG/CR-6728 (Risk Engineering, Inc., 2001)}**

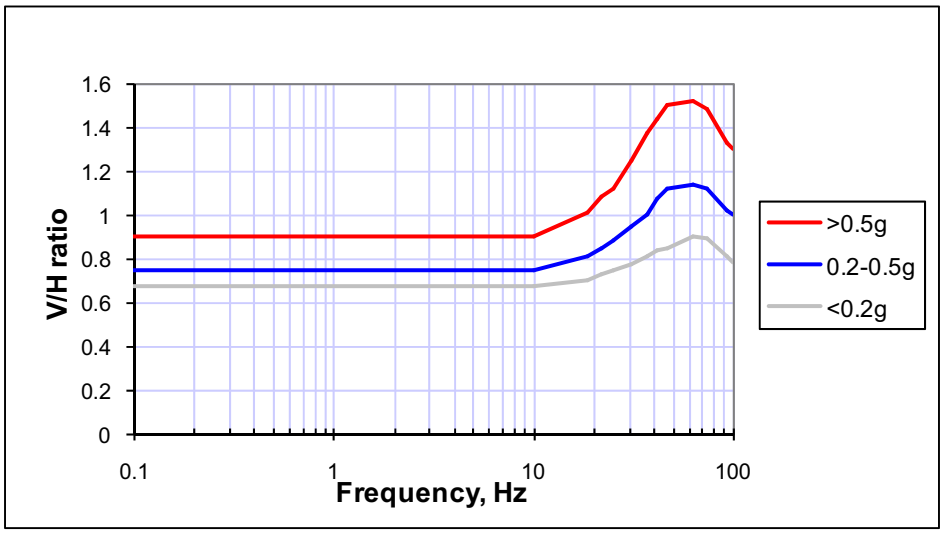


**Figure 2.5-152—{Horizontal and Vertical GMRS}**

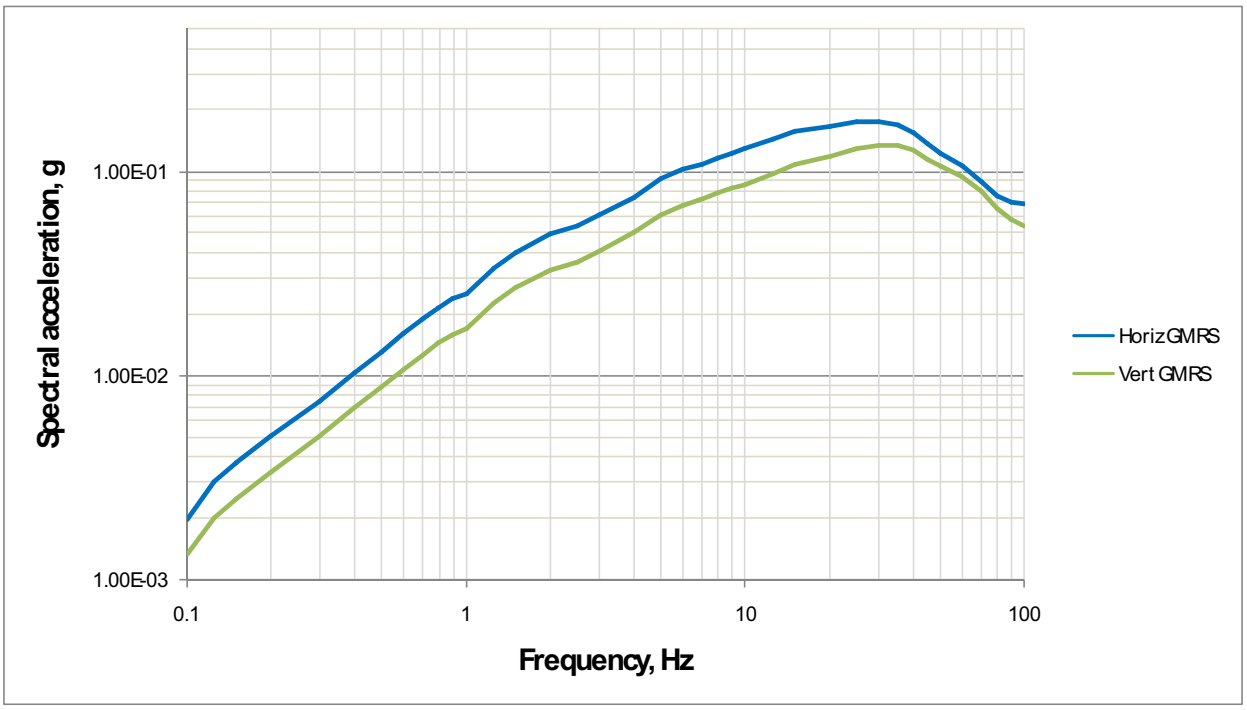
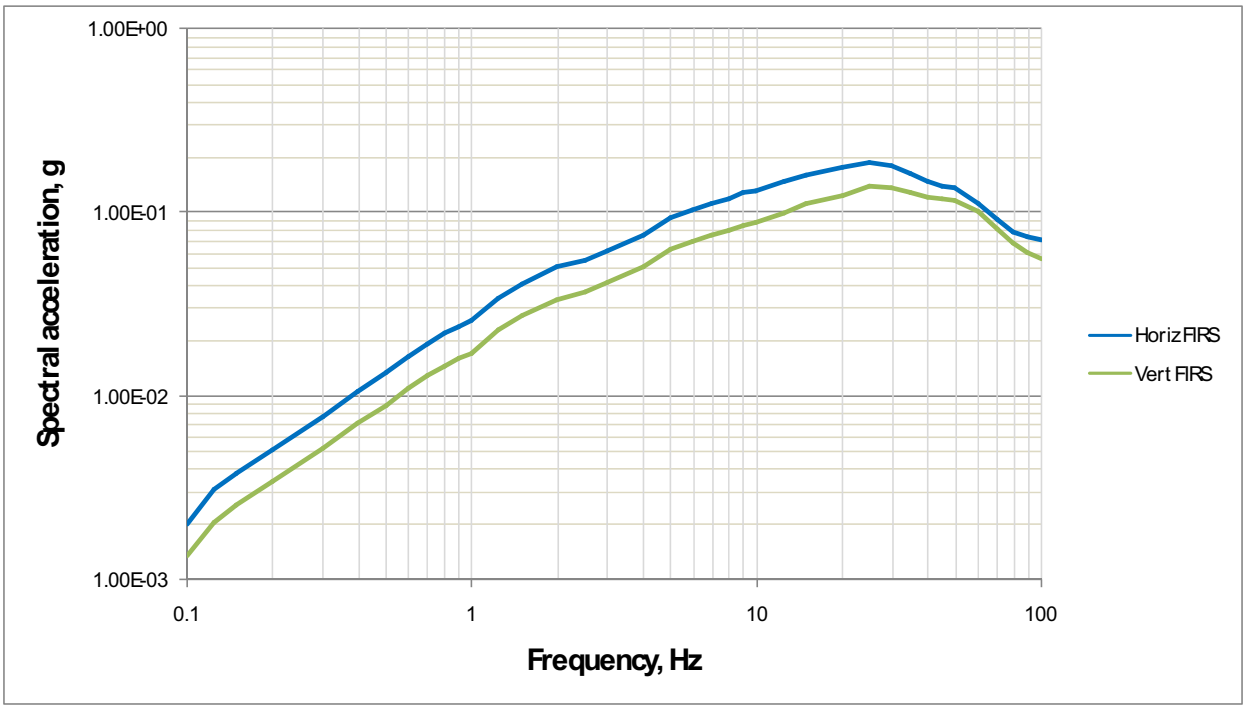


**Figure 2.5-153—{Horizontal and Vertical FIRS}**



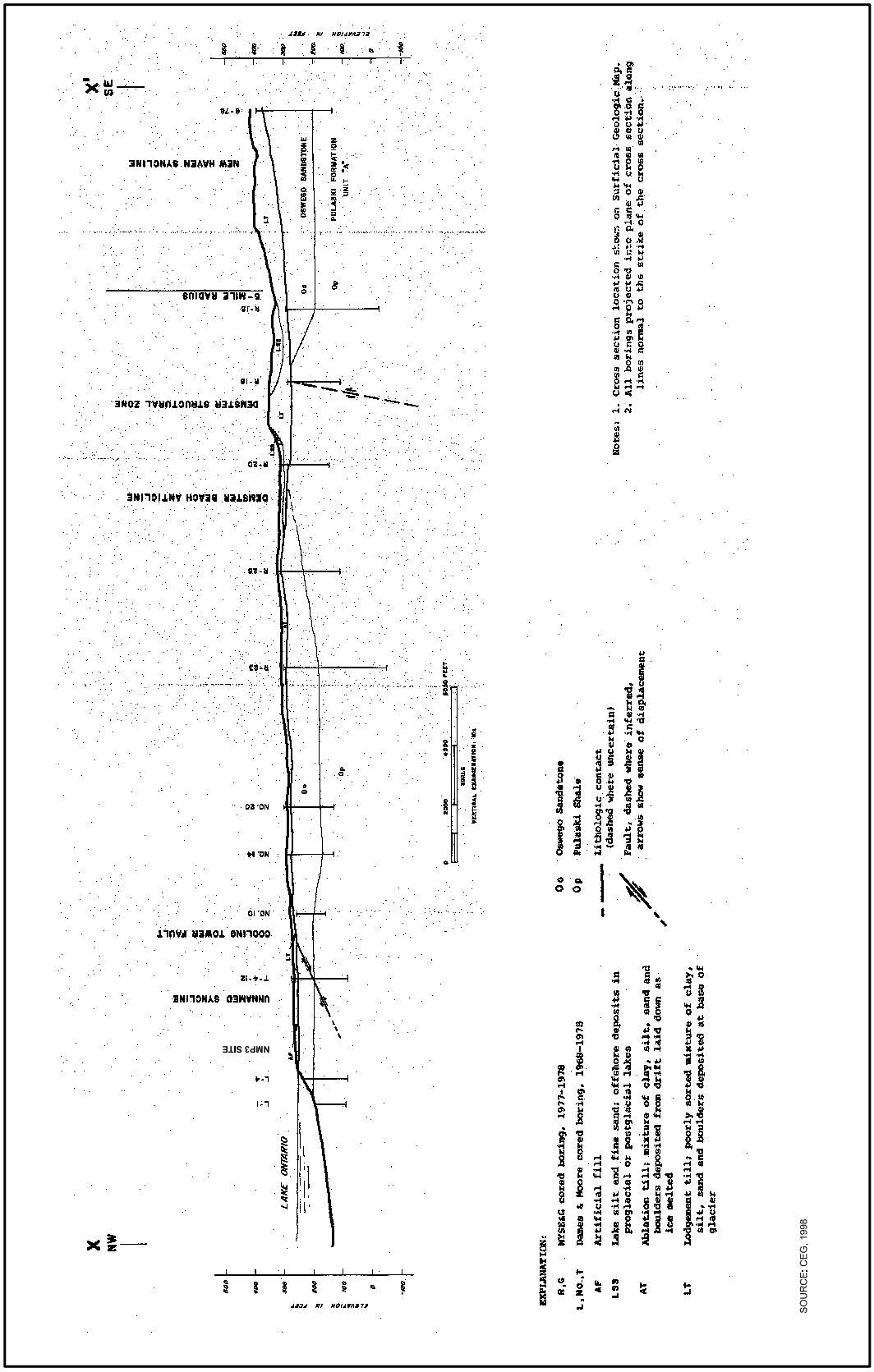



**Figure 2.5-154—{Site Area Cross Section}**

**Figure 2.5-155—{Consolidated Isotropic Undrained Triaxial Compression Glacial Till — Part 1}**

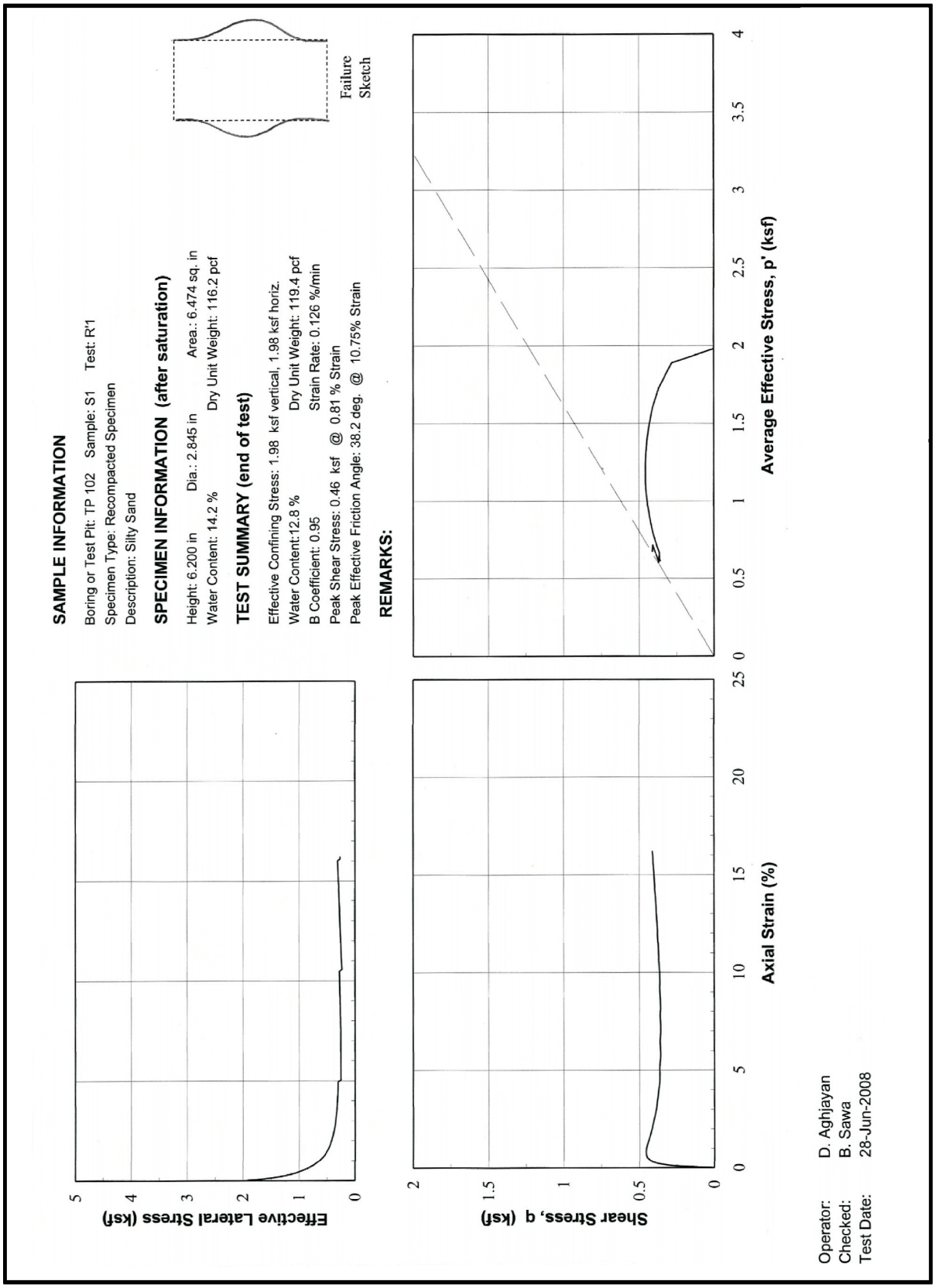
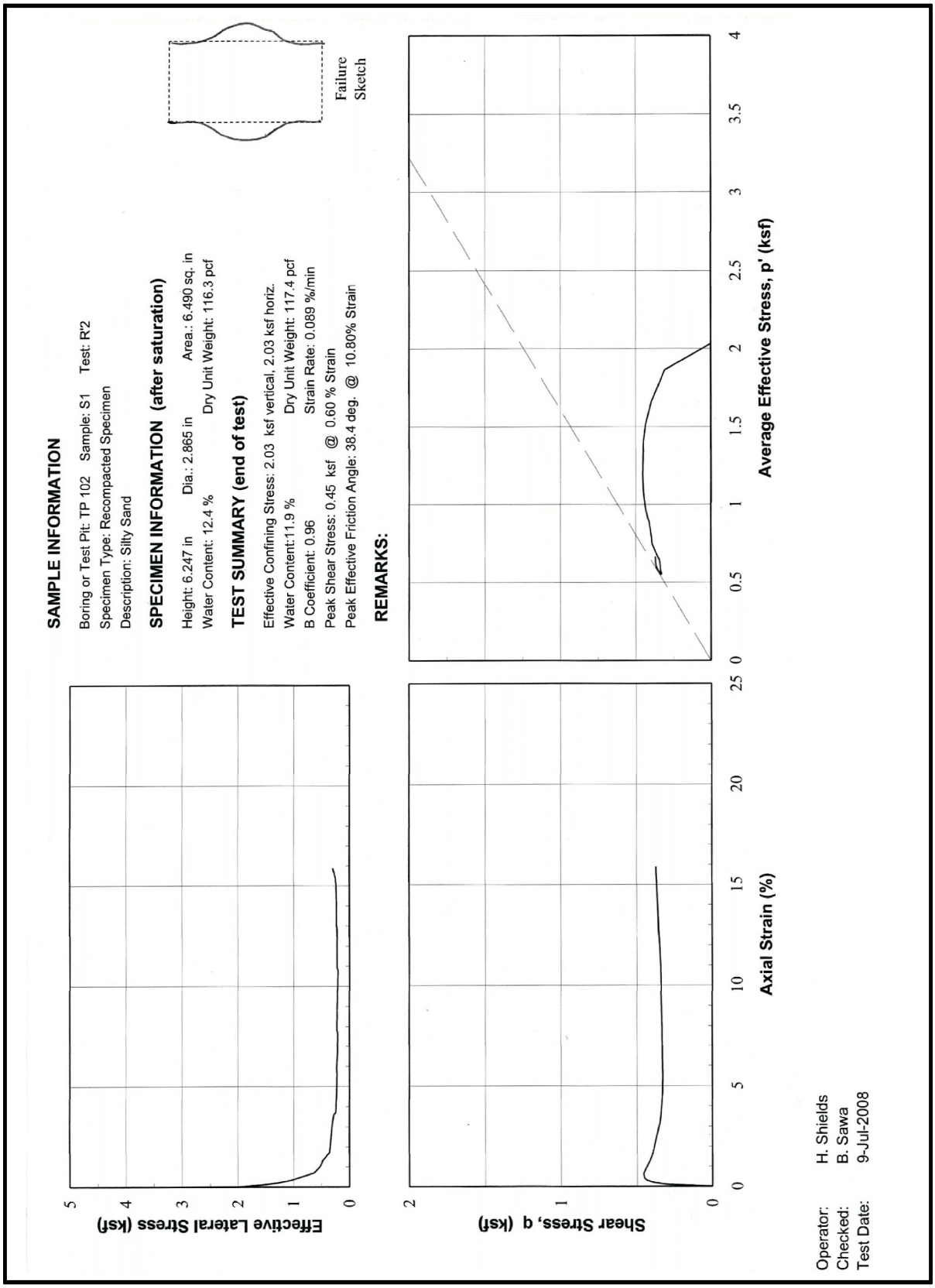
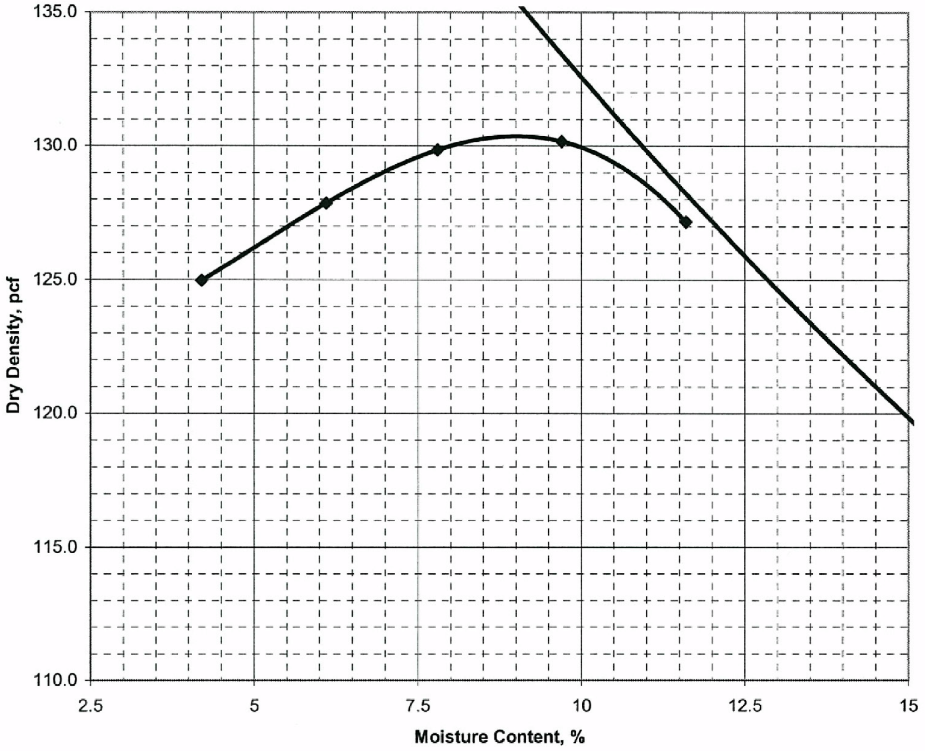


**Figure 2.5-156—{Consolidated Isotropic Undrained Triaxial Compression Glacial Till – Part 2}**



## Figure 2.5-157—{Moisture Density Curve Modified Compaction}

| Point | Moisture Content, percent | Dry Unit Wt. lb/ft$^3$ |
|---|---|---|
| 1 | 4.2 | 125.0 |
| 2 | 6.1 | 127.9 |
| 3 | 7.8 | 129.9 |
| 4 | 9.7 | 130.2 |
| 5 | 11.6 | 127.2 |
| 6 | NM | NM |




| | |
|---|---|
| Specific Gravity for Zero Air Voids Curve | 2.698 |
| Maximum Dry Density, pcf | 130.4 |
| Optimum Moisture Content, % | 9.0 |

Note: Maximum dry density and optimum moisture content are based on minus 3/4-inch fraction, and are NOT corrected for oversize gravel.

| | |
|---|---|
| Compaction Test Method (A, B, or C): | C |
| Max Particle Size in Test: | 3/4 in. |
| Percent Oversize Particles >3/4 in. | 24.5 |

**Source: Streeter Rathburn Rd.**
**Sample: Sample Pad #1**

**Figure 2.5-158—{Consolidated Isotropic Undrained Triaxial Compression Structural Fill – Part 1}**

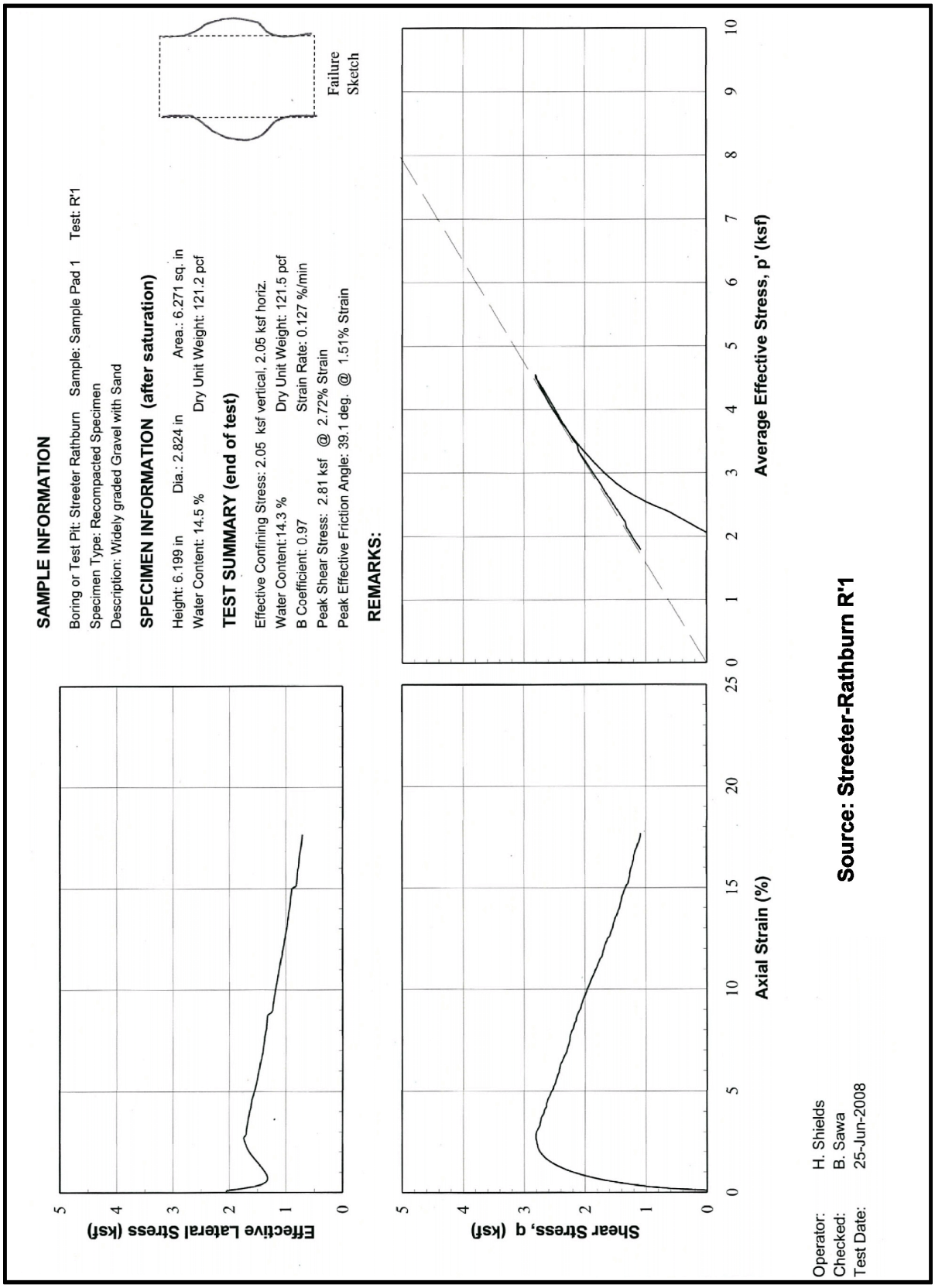
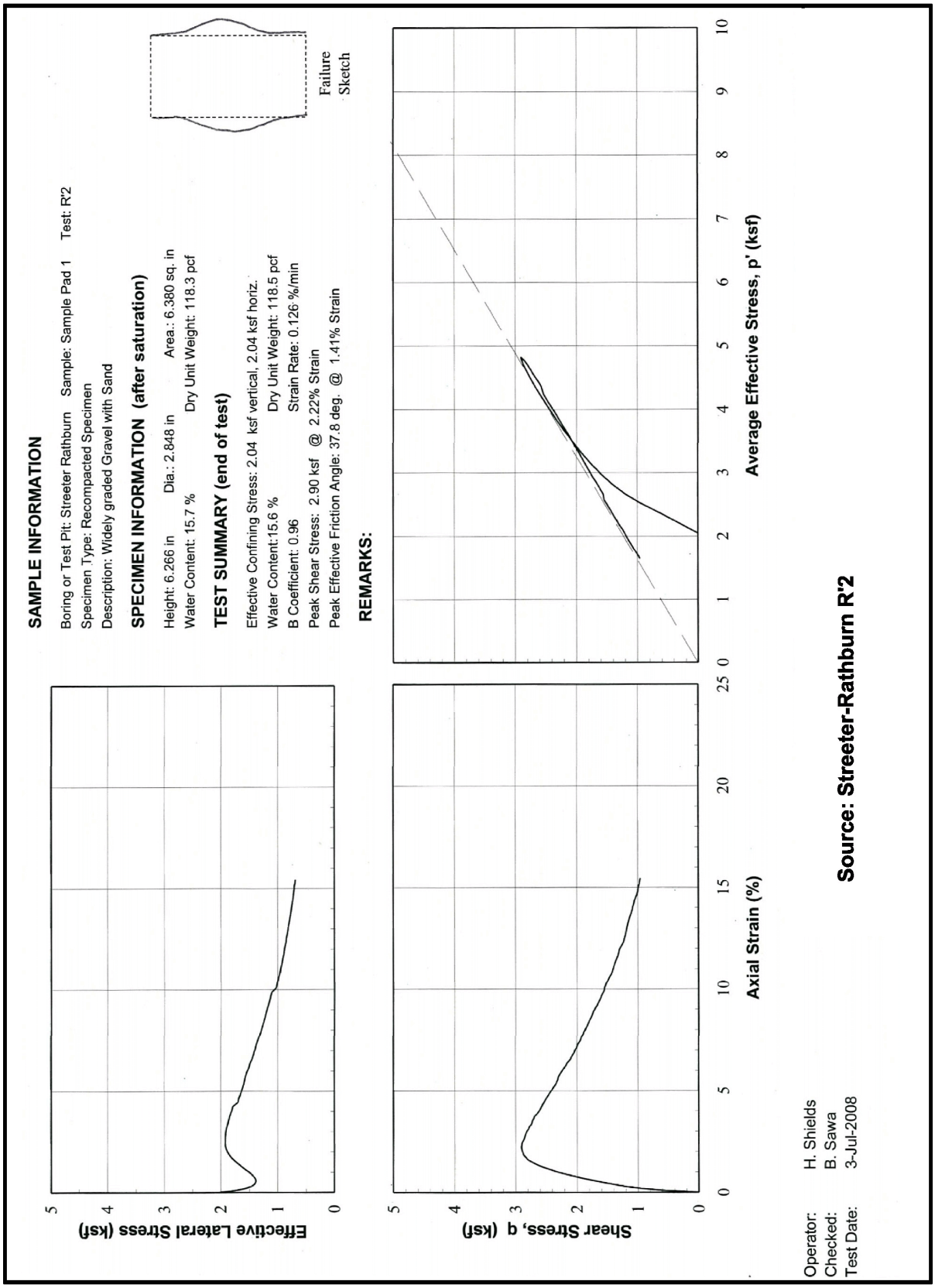


**Figure 2.5-159—{Consolidated Isotropic Undrained Triaxial Compression Structural Fill – Part 2}**



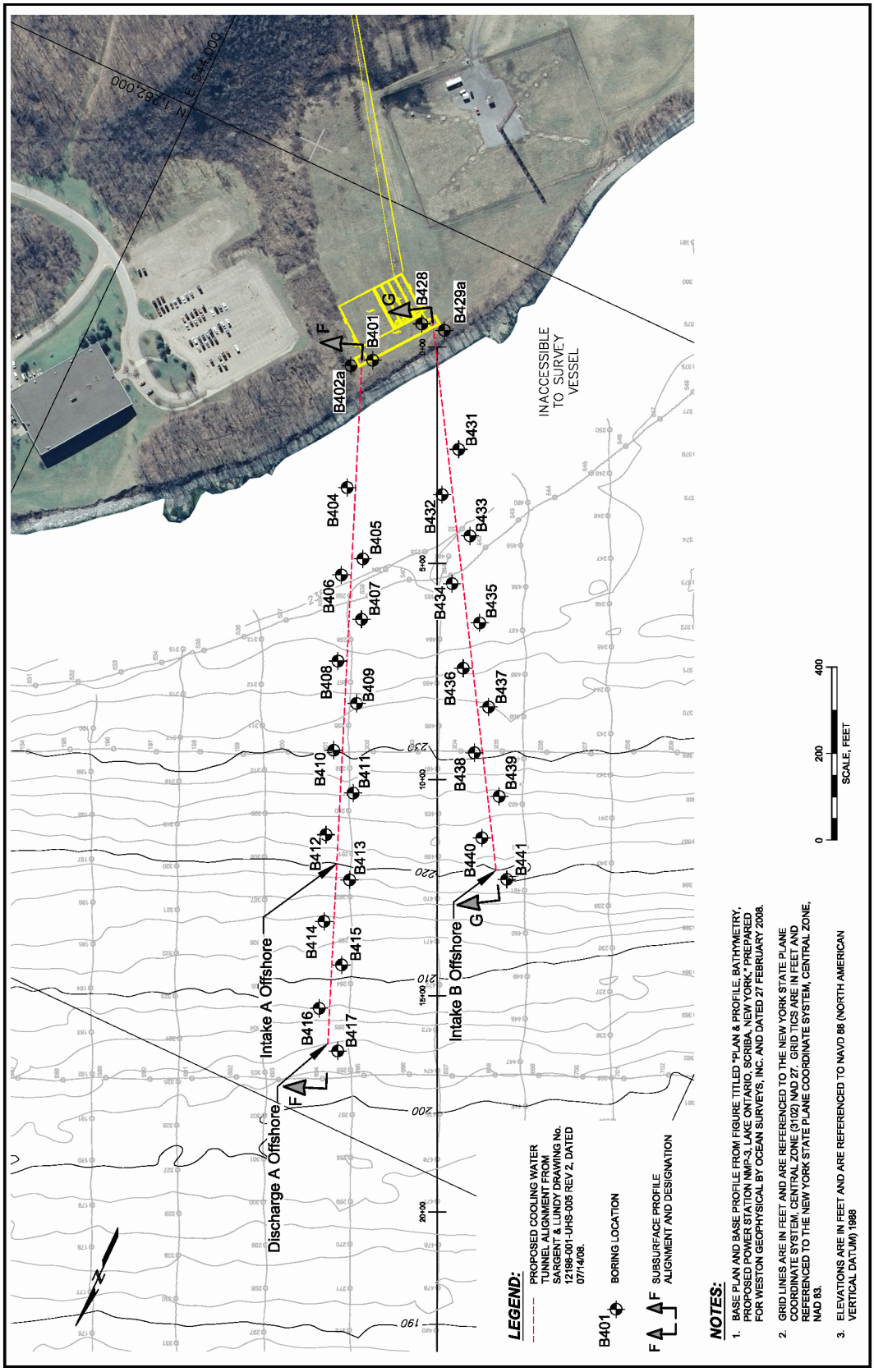



**Figure 2.5-160—{Exploration Plan 400 Series Borings}**

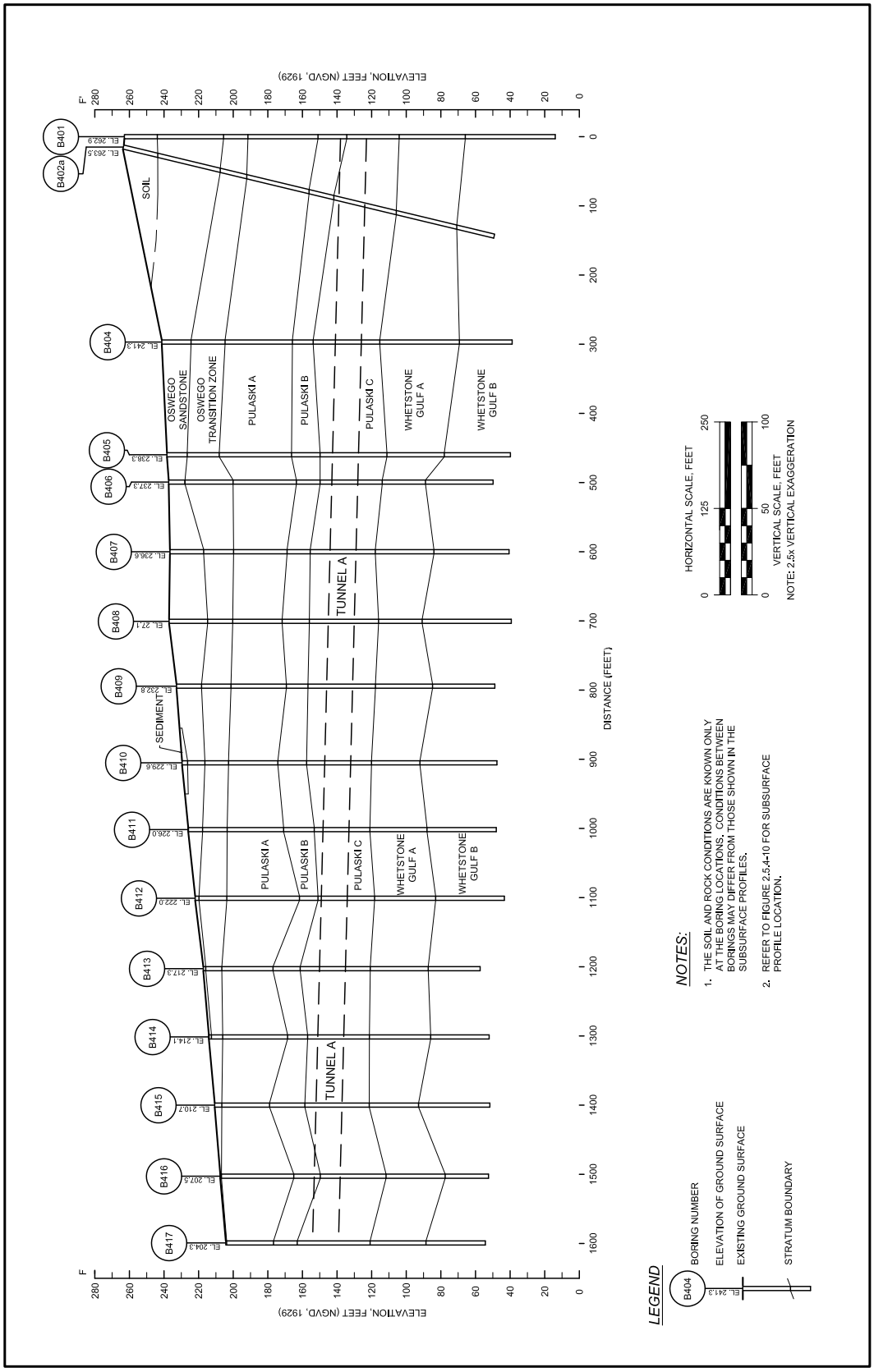



**Figure 2.5-161—{Subsurface Profile F-F}**

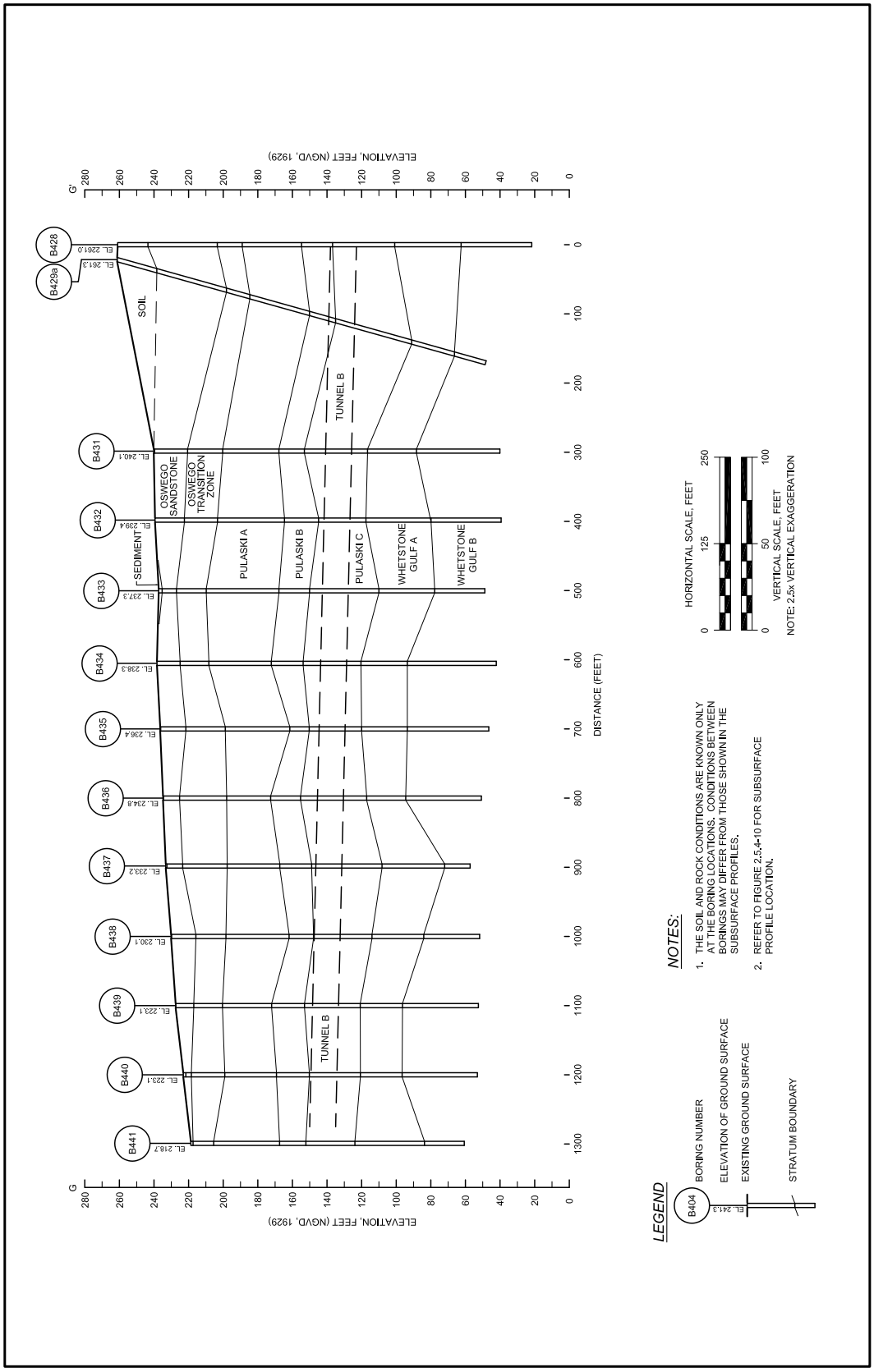



**Figure 2.5-162—{Subsurface Profile G-G}**

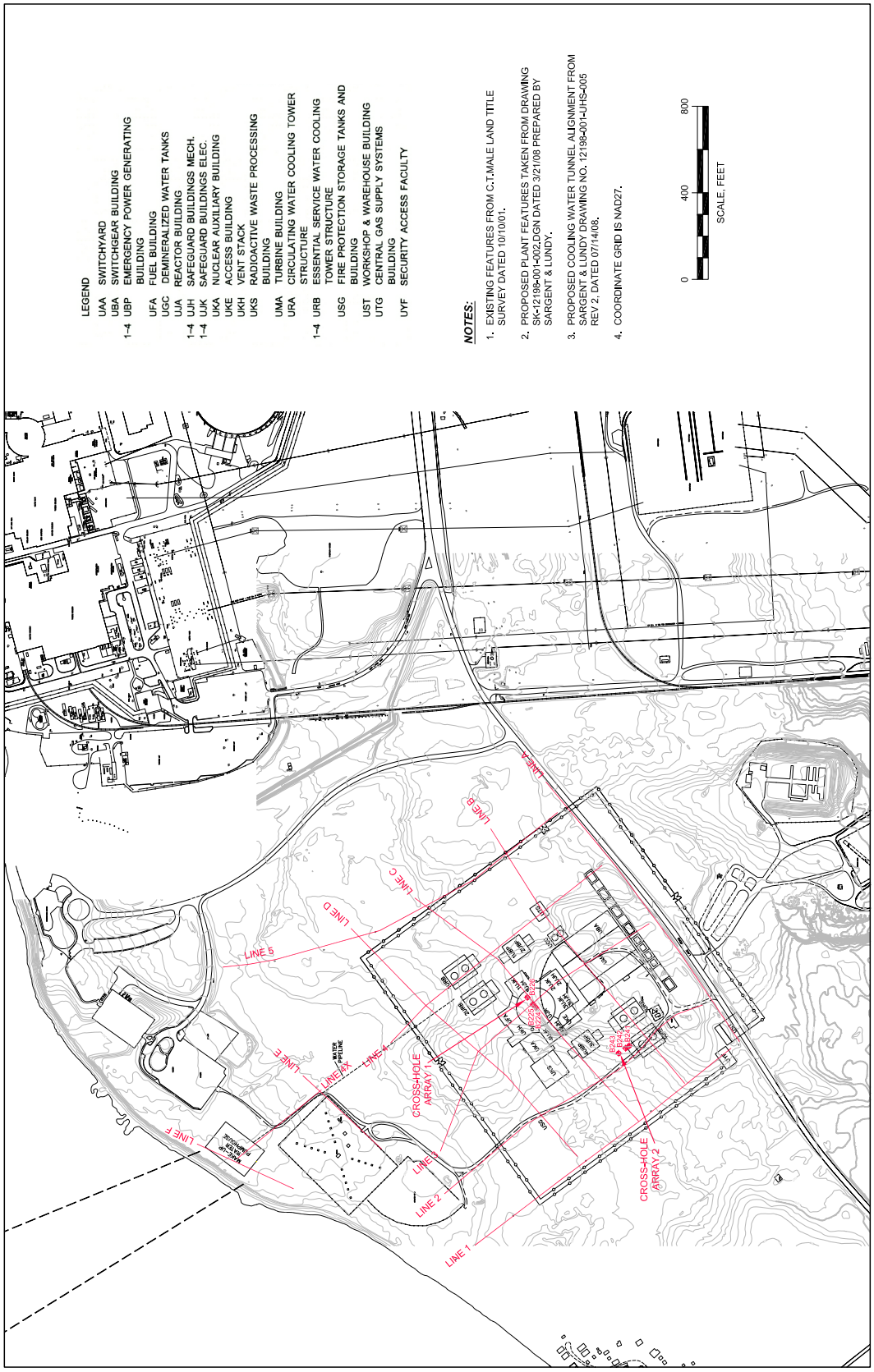



**Figure 2.5-163—{Seismic Refraction Survey and Cross-Hole Array Locations}**

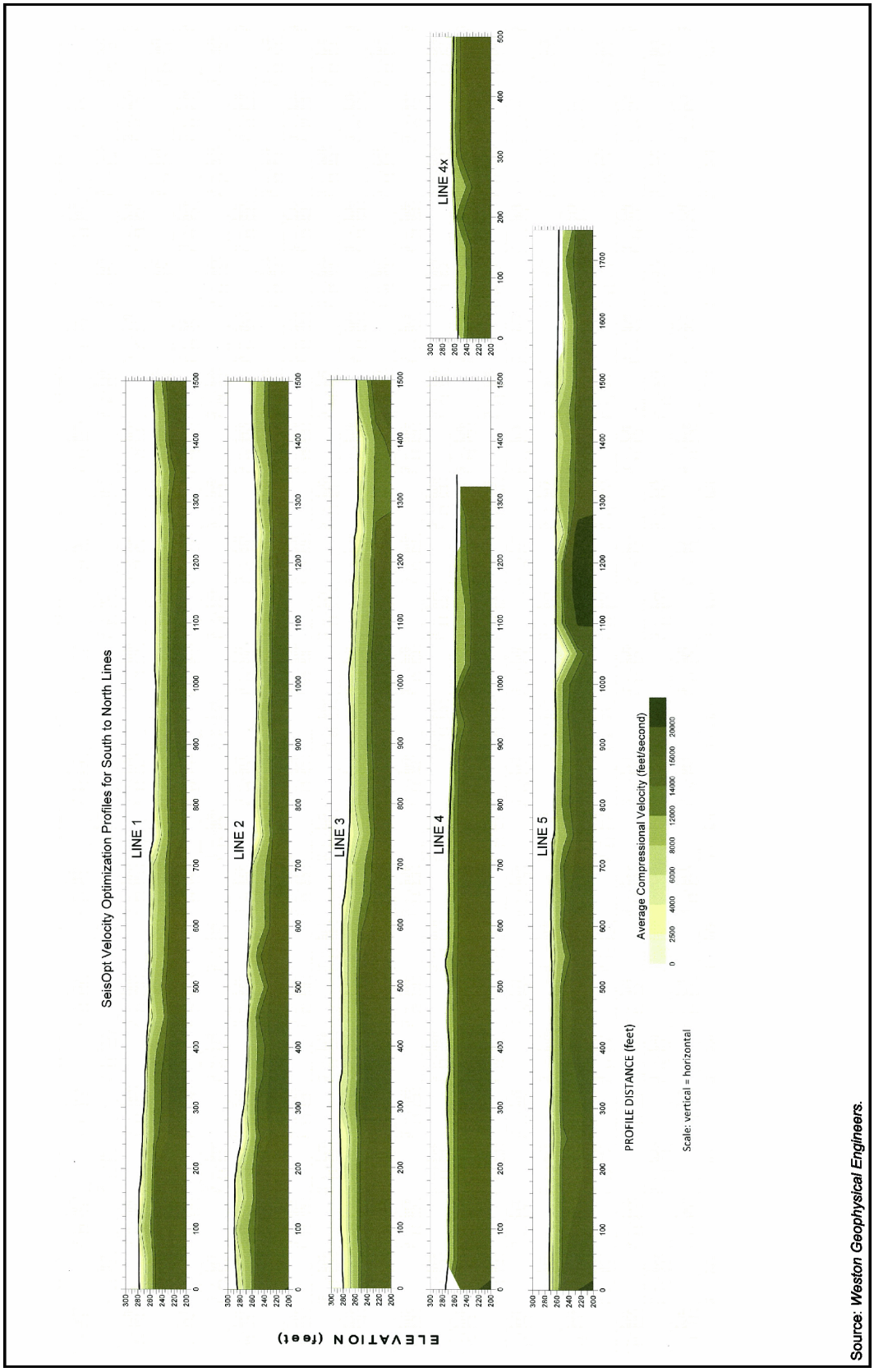
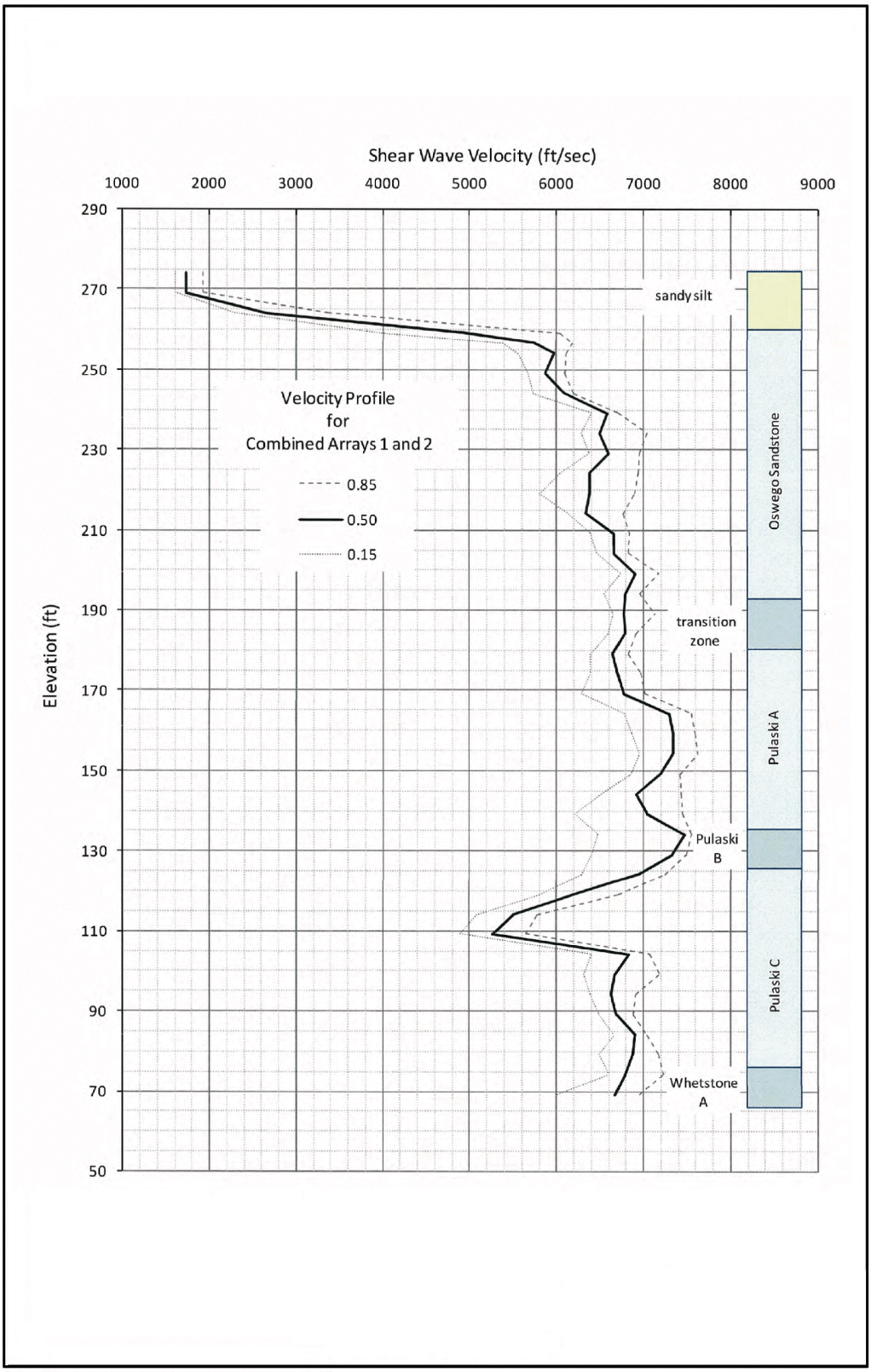



**Figure 2.5-164—{Seismic Contour Lines 1-5}**


**Figure 2.5-165—{Seismic Contour Lines A-F}**

**Figure 2.5-166—{Shear Wave Velocity Profile For Combined Arrays 1 and 2}**



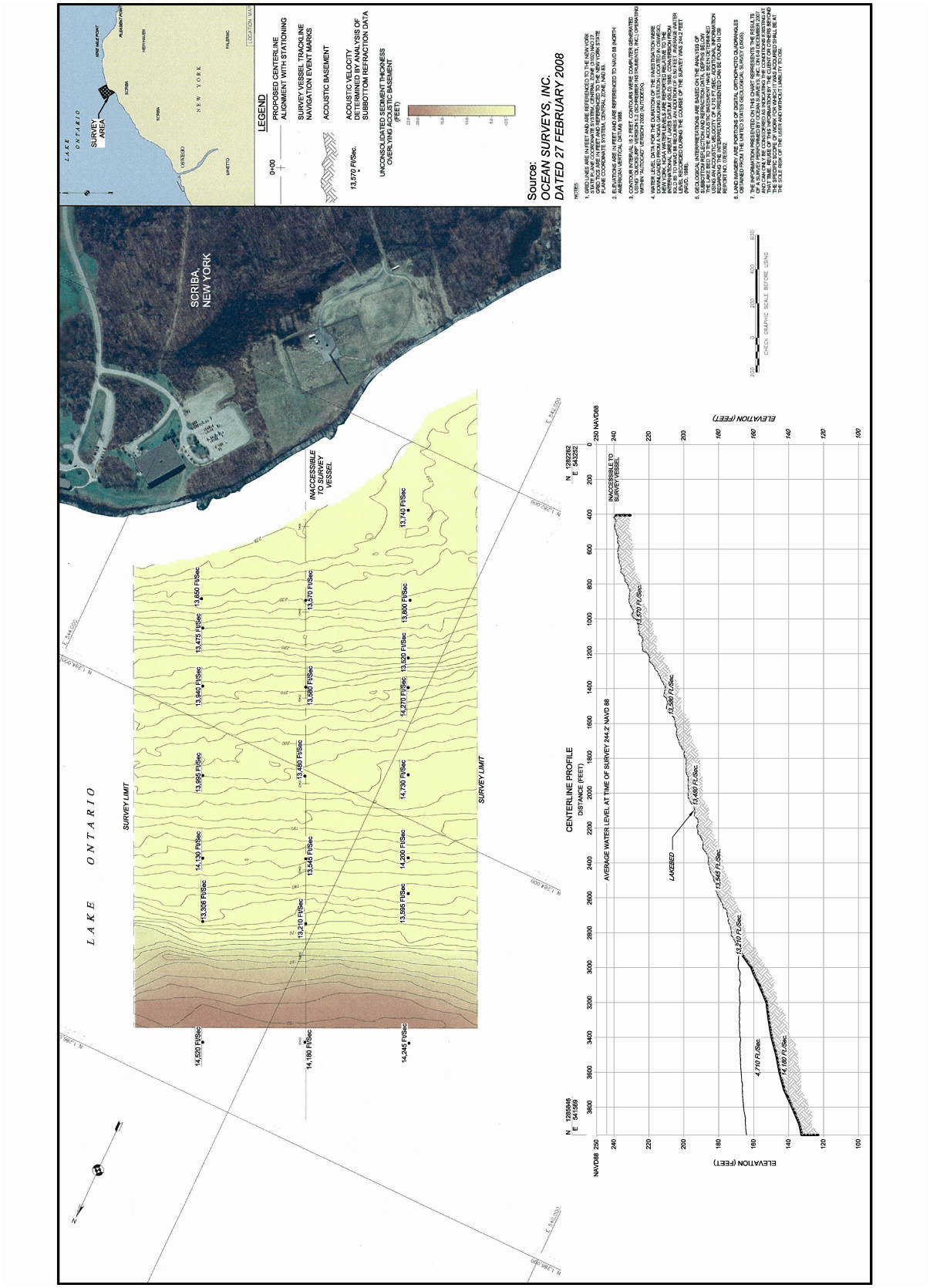



**Figure 2.5-167—{Plan and Profile Acoustic Basement Lake Ontario Scriba, New York}**

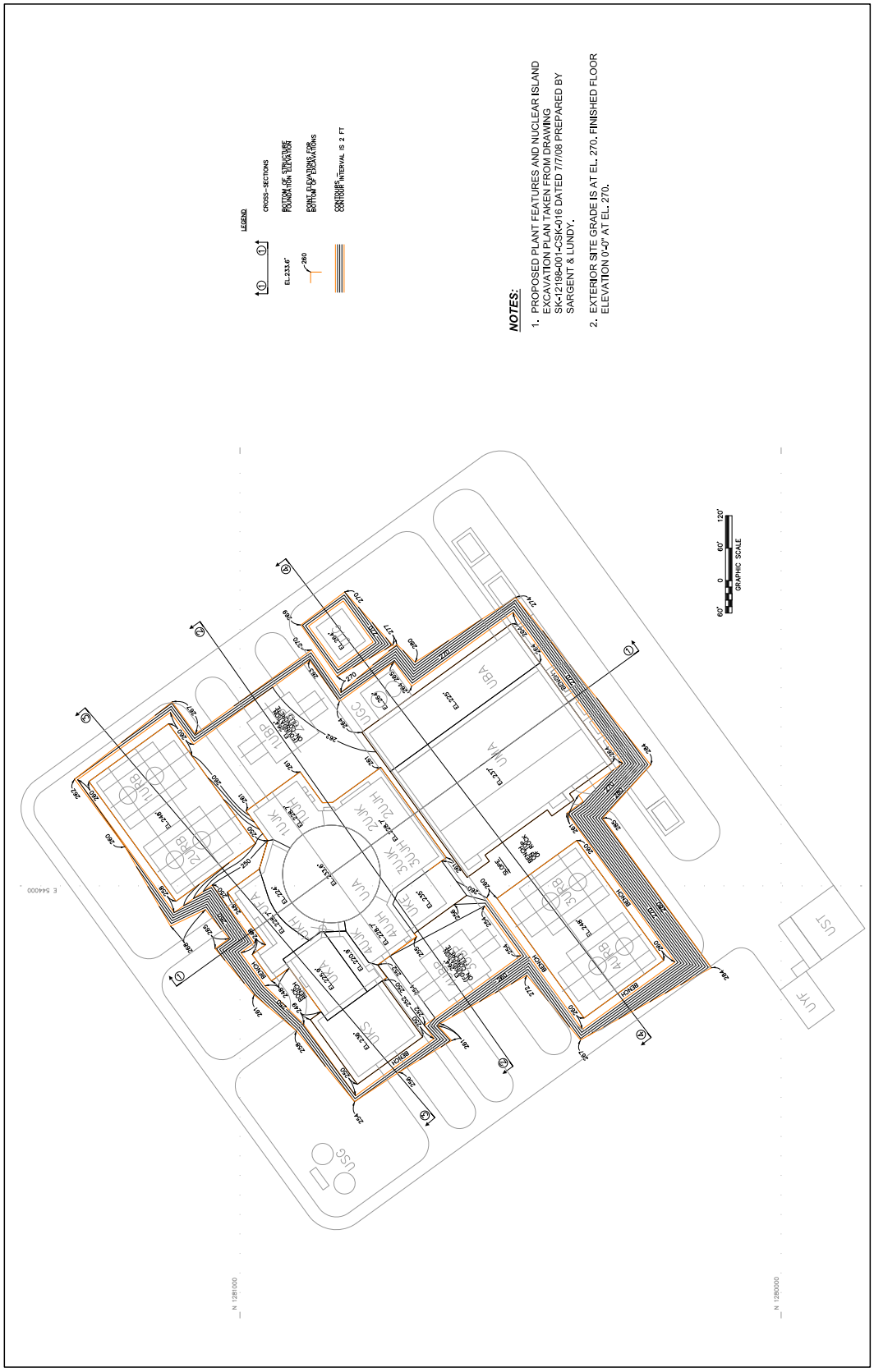
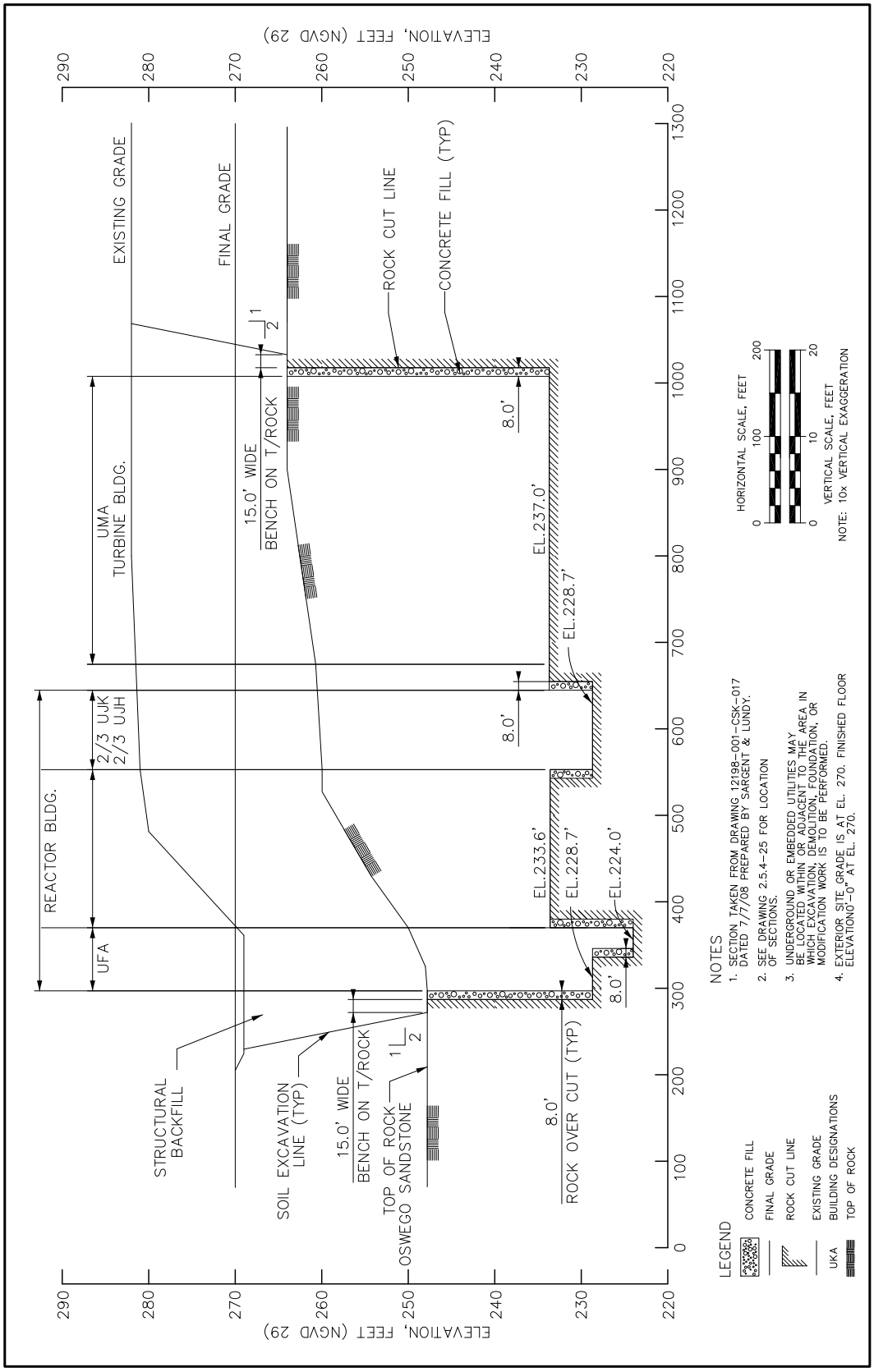



**Figure 2.5-168—{ Nuclear Island Excavation Plan}**

**Figure 2.5-169—{Nuclear Island Excavation Cross Section 1-1}**



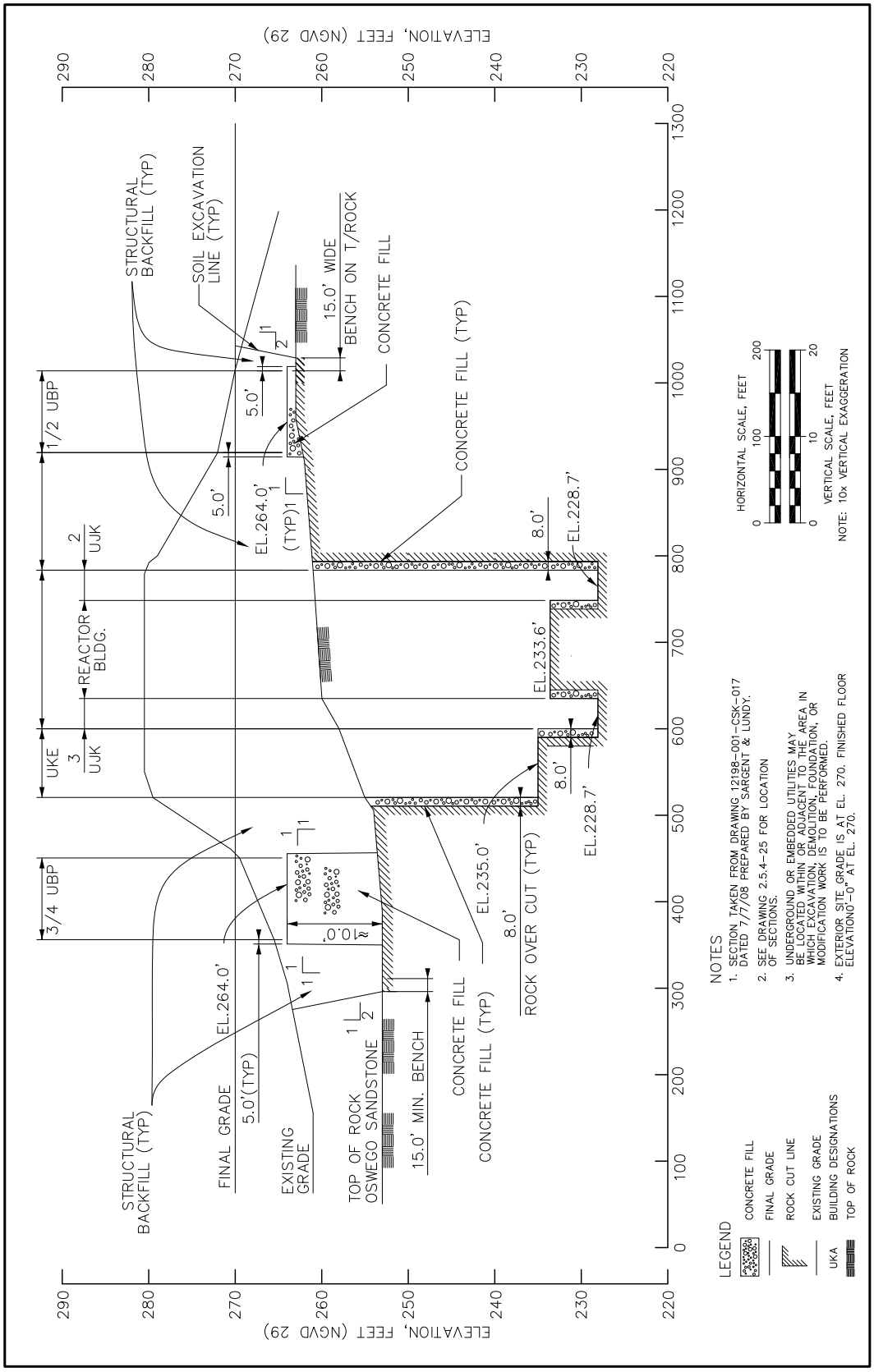



**Figure 2.5-170—{Nuclear Island Excavation Cross Section 2-2}**

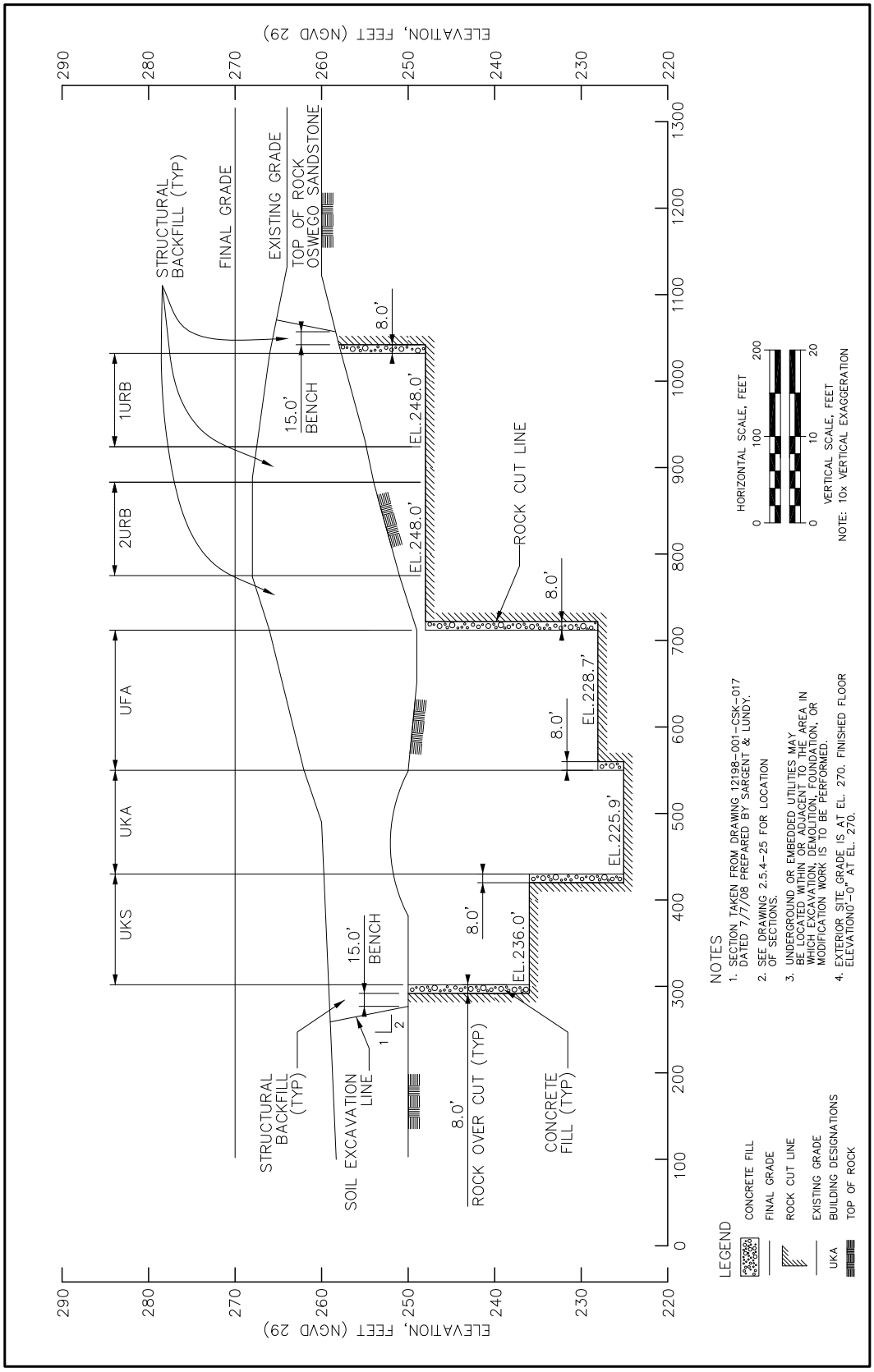



**Figure 2.5-171—{Nuclear Island Excavation Cross Section 3-3}**

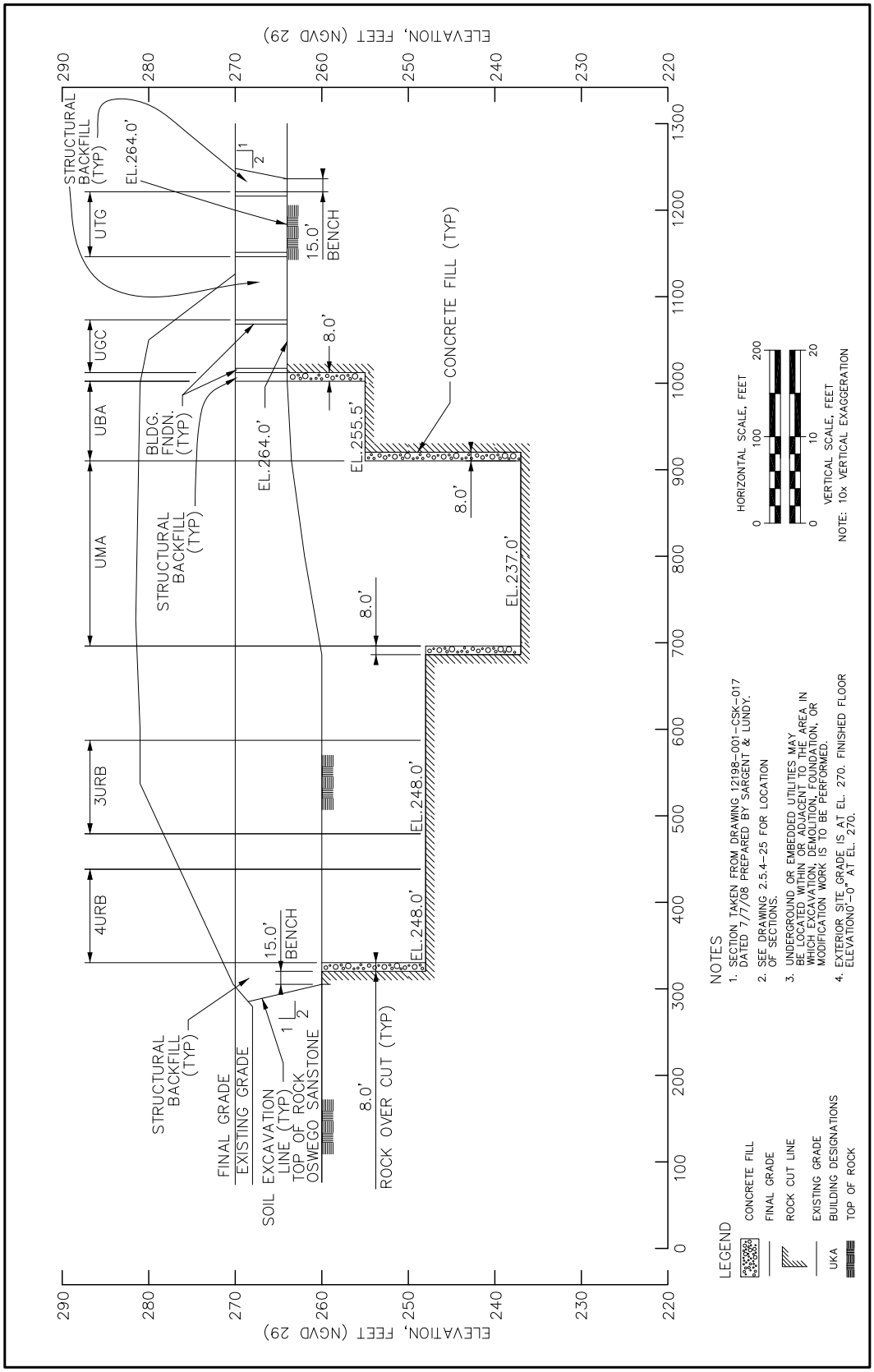
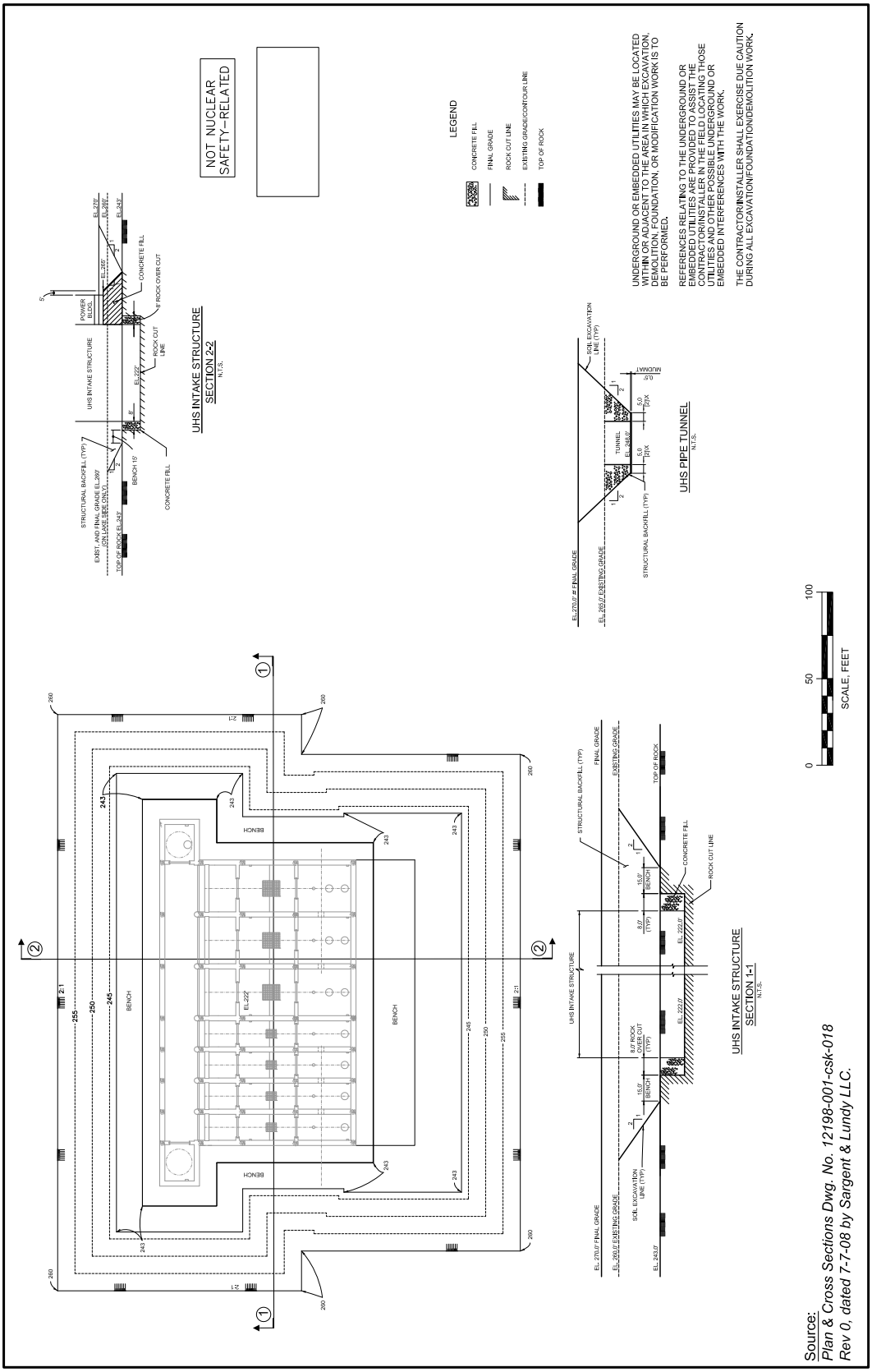



**Figure 2.5-172—{Nuclear Island Excavation Cross Section 4-4}**

**Figure 2.5-173—{Intake Structure Excavation Plan and Cross Sections}**




Source:
*Plan & Cross Sections Dwg. No. 12198-001-csk-018 Rev 0, dated 7-7-08 by Sargent & Lundy LLC.*

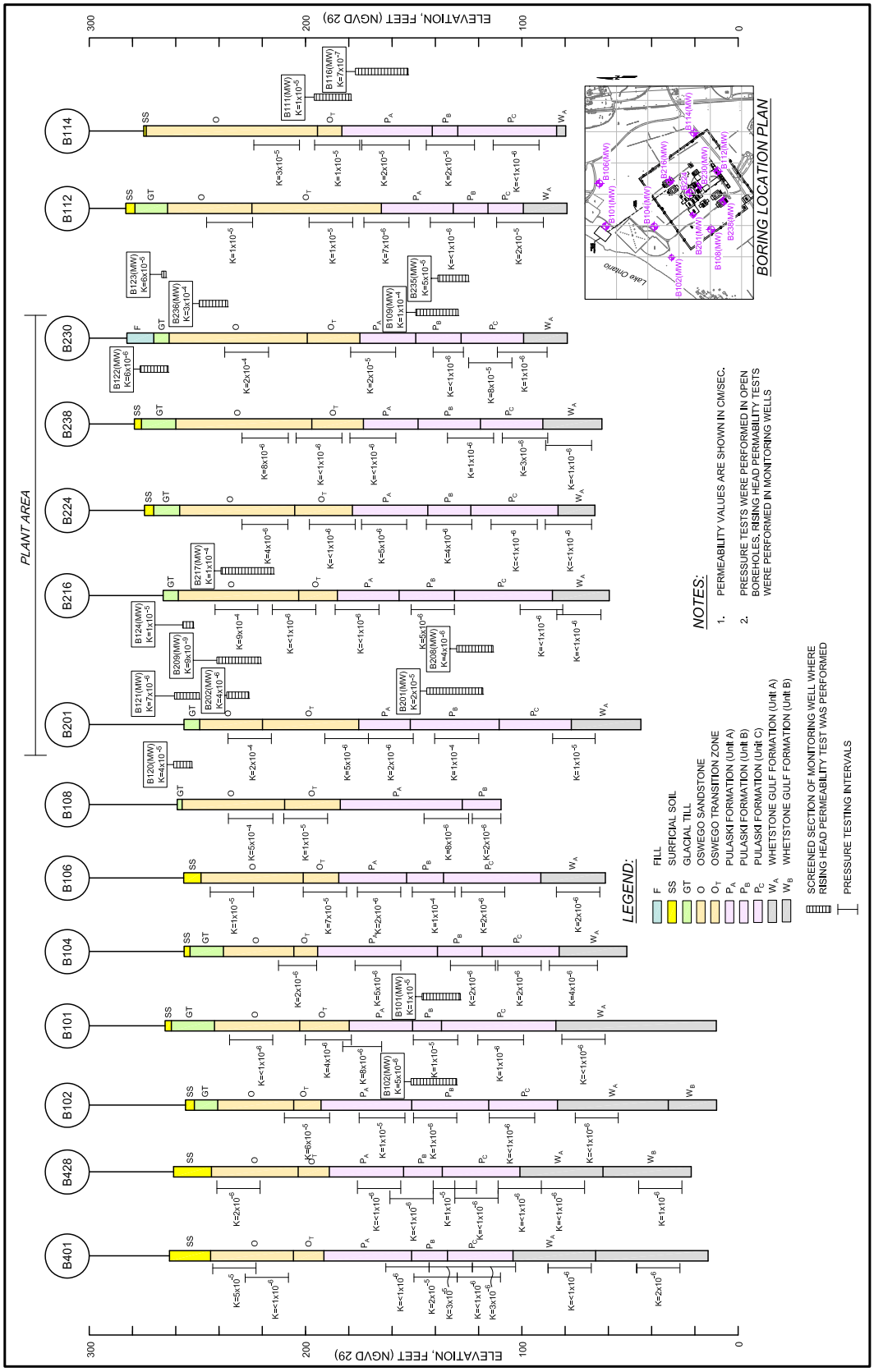



**Figure 2.5-174—{Onshore Permeability Tests in Rock}**

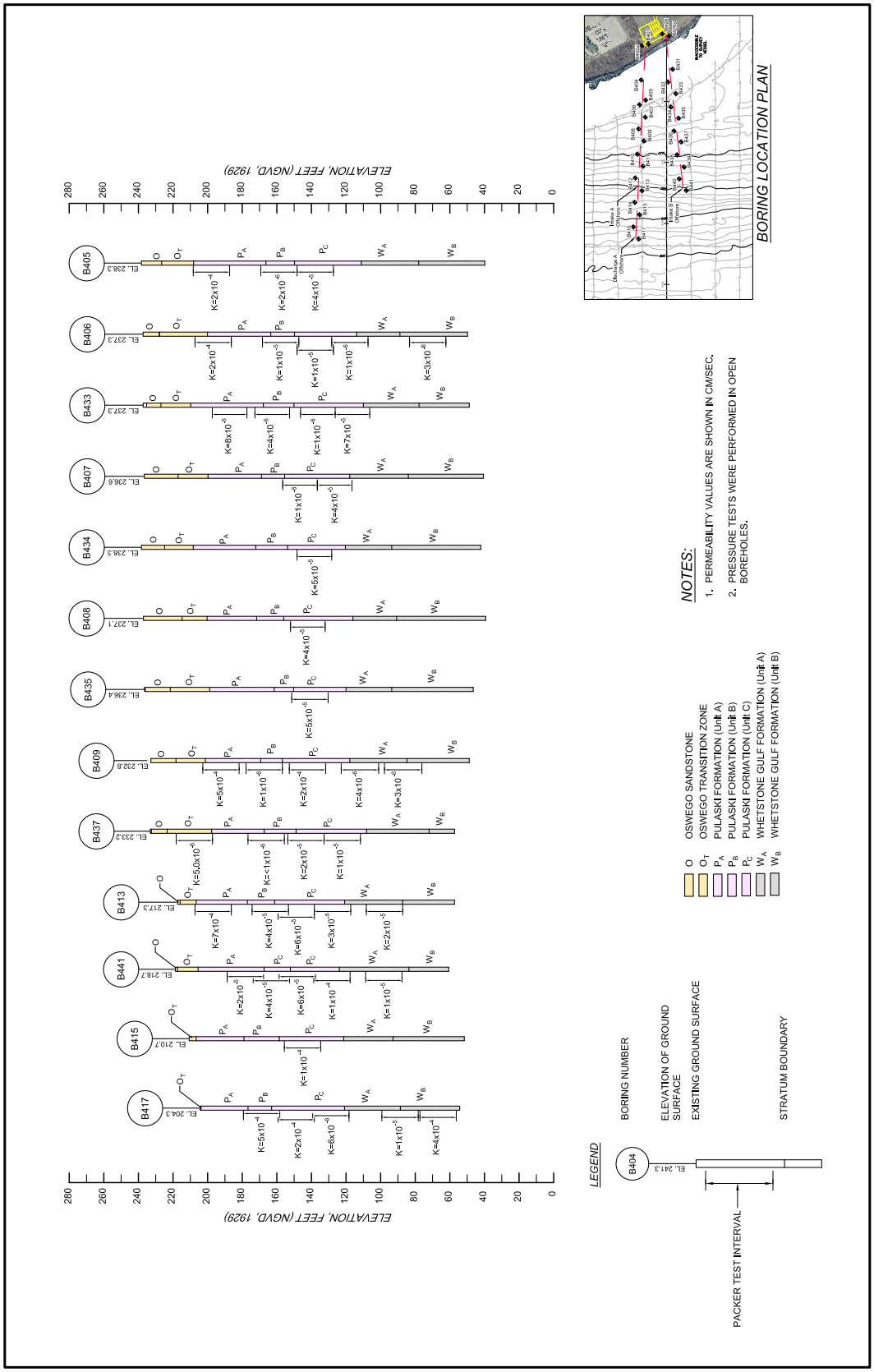



**Figure 2.5-175—{Offshore Permeability Tests in Rock}**

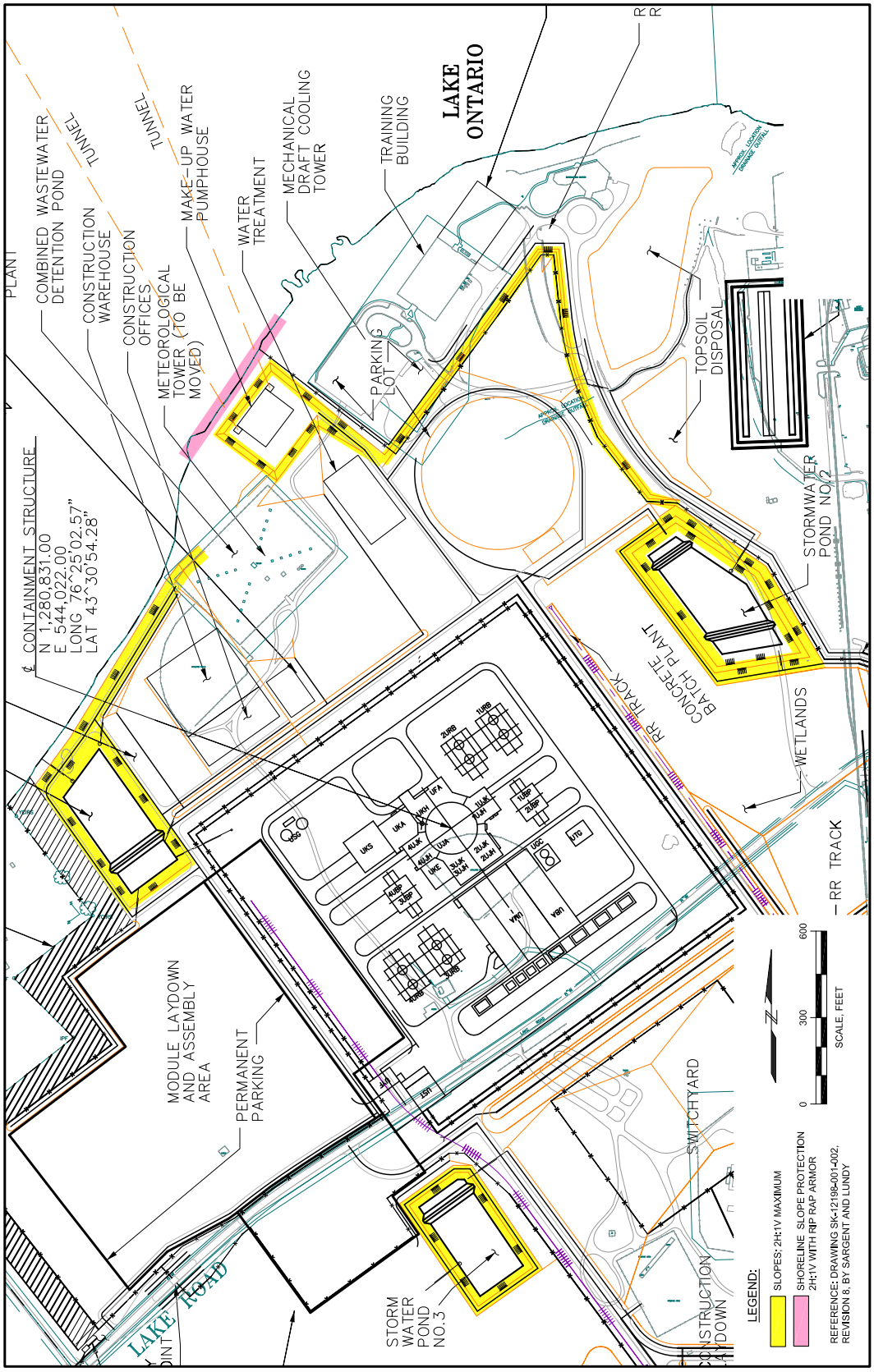
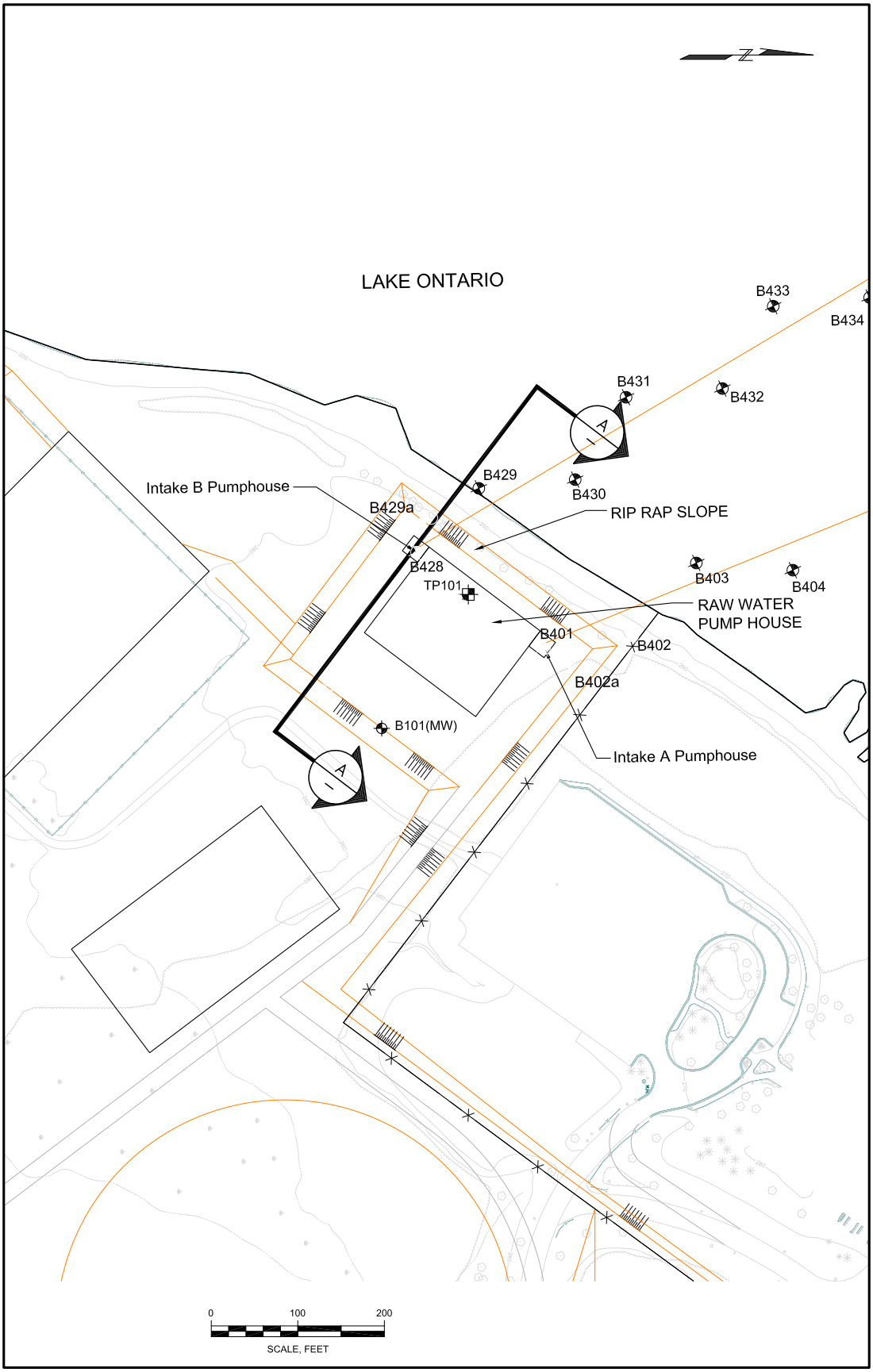



**Figure 2.5-176—{General Site and Grading Plan with Slope Locations}**

**Figure 2.5-177—{Location Plan for Slope Stability Analysis Cross Section}**



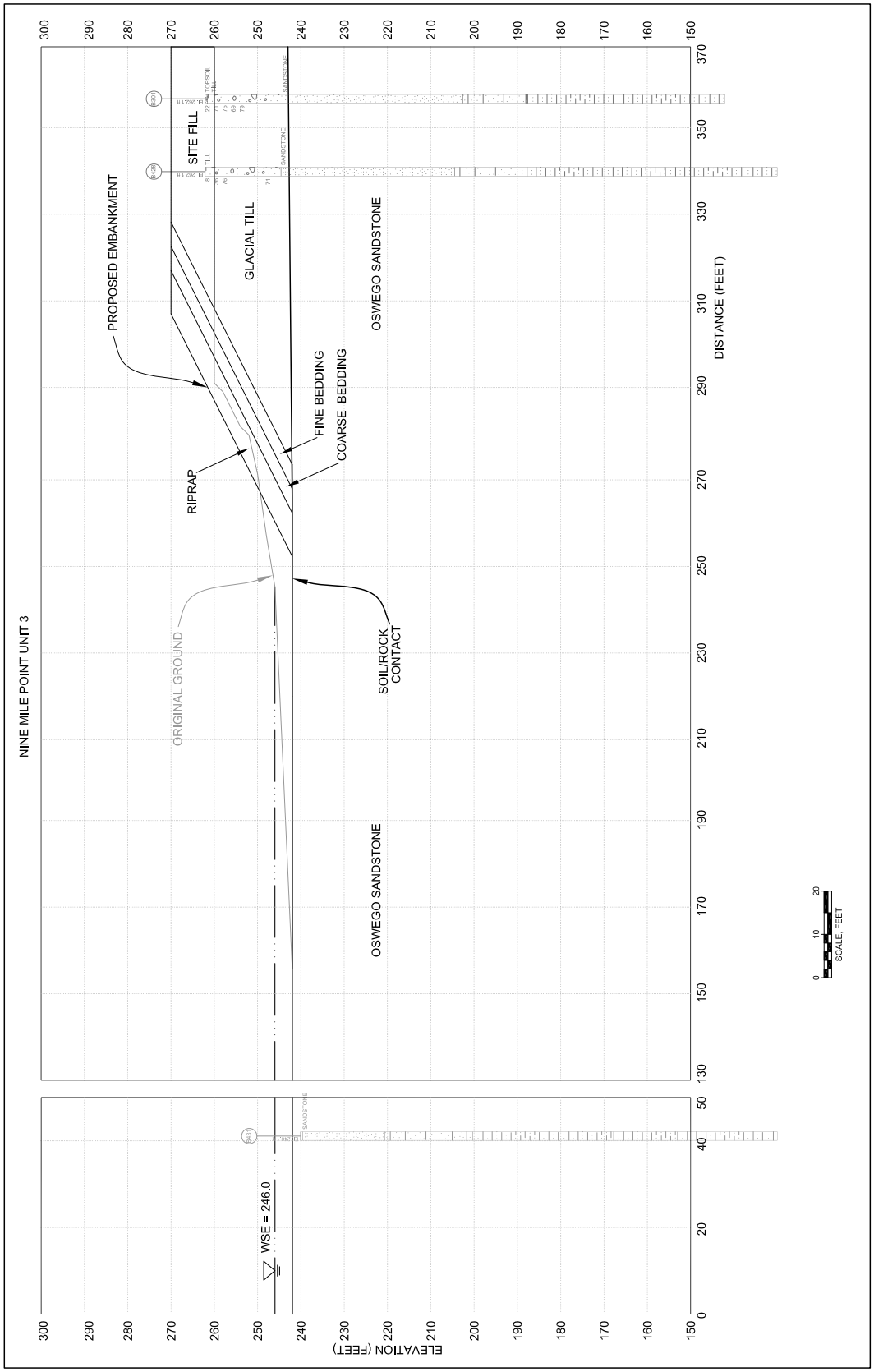



**Figure 2.5-178—{Cross Section for Slope Stability Analyses}**

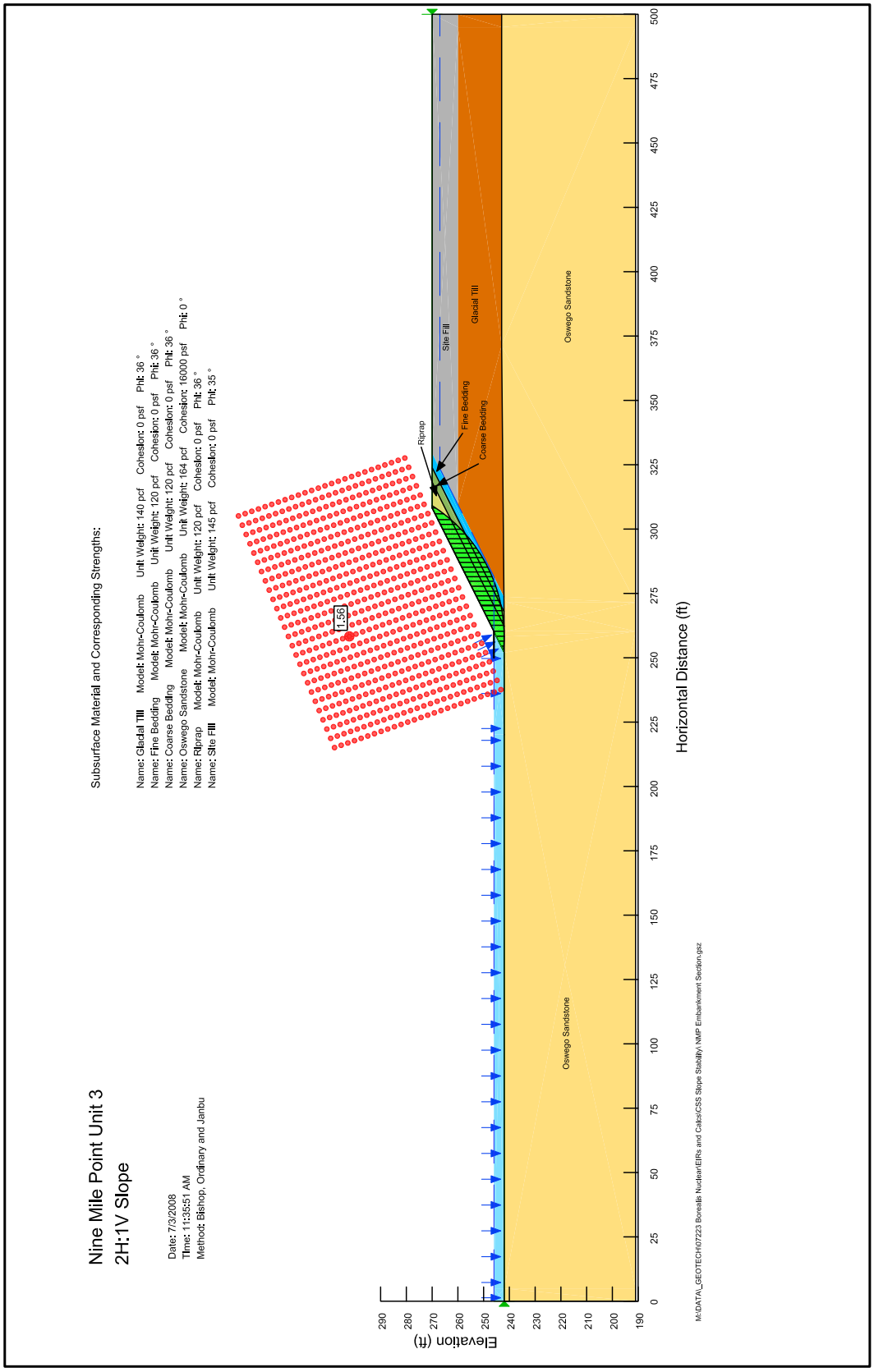



**Figure 2.5-179—{Stability Analysis Results, Static Loading, Circular Surface}**

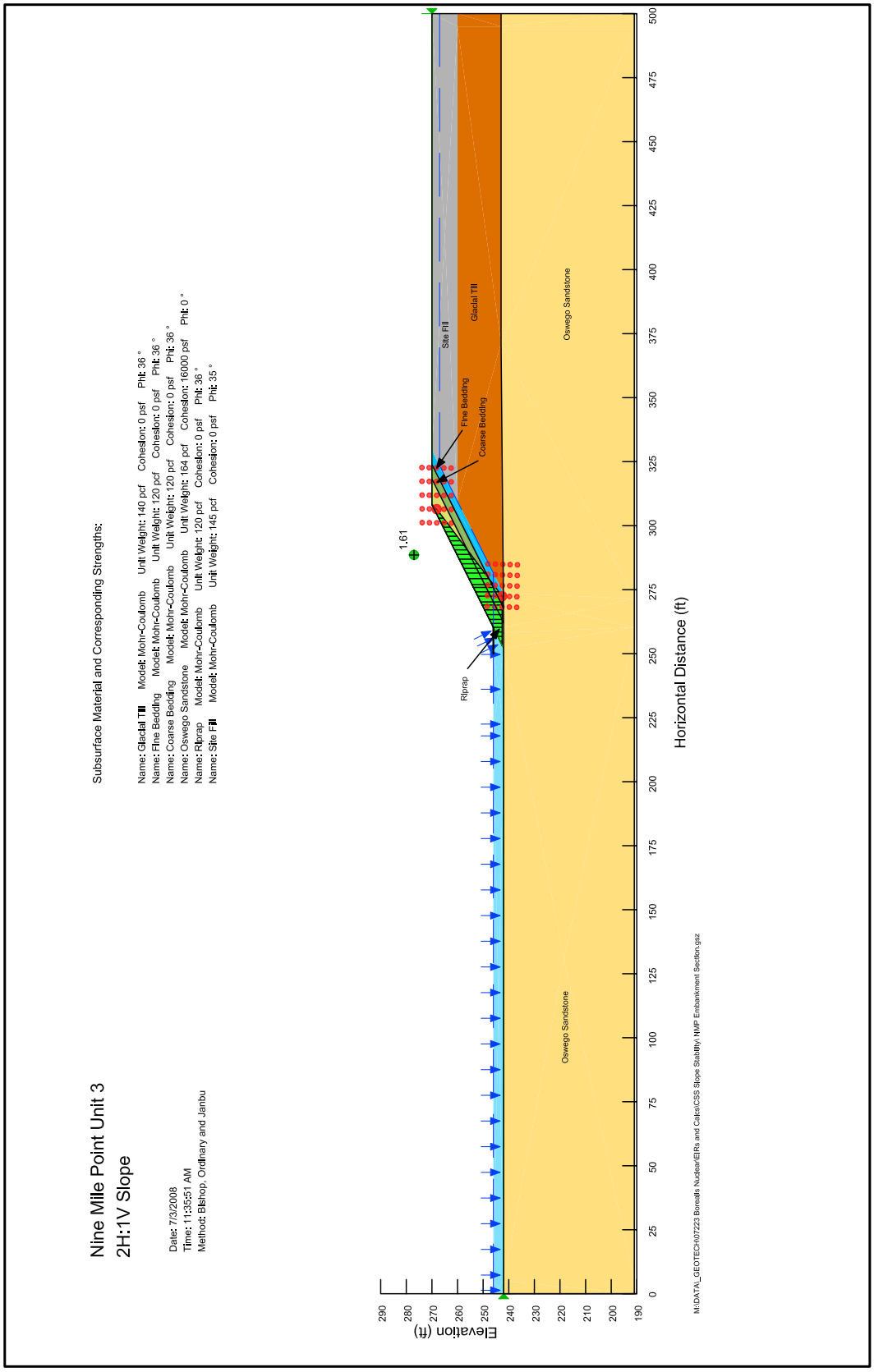



**Figure 2.5-180—{Stability Analysis Results, Static Loading, Non-Circular Surface}**

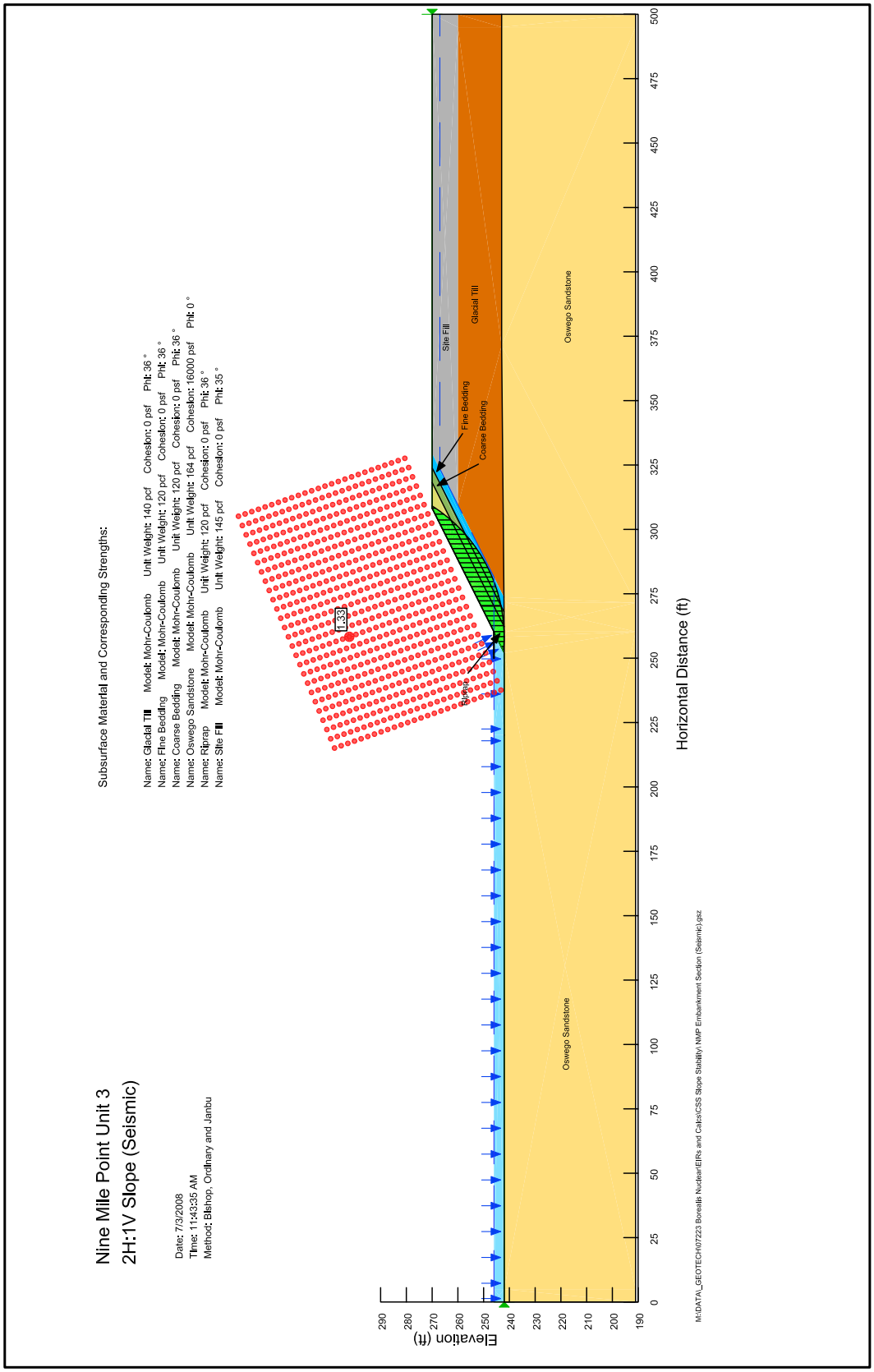



**Figure 2.5-181—{Stability Analysis Results, Pseudo-Static Loading, Circular Surface}**

**Figure 2.5-182—{Stability Analysis Results, Pseudo-Static Loading, Non-Circular Surface}**

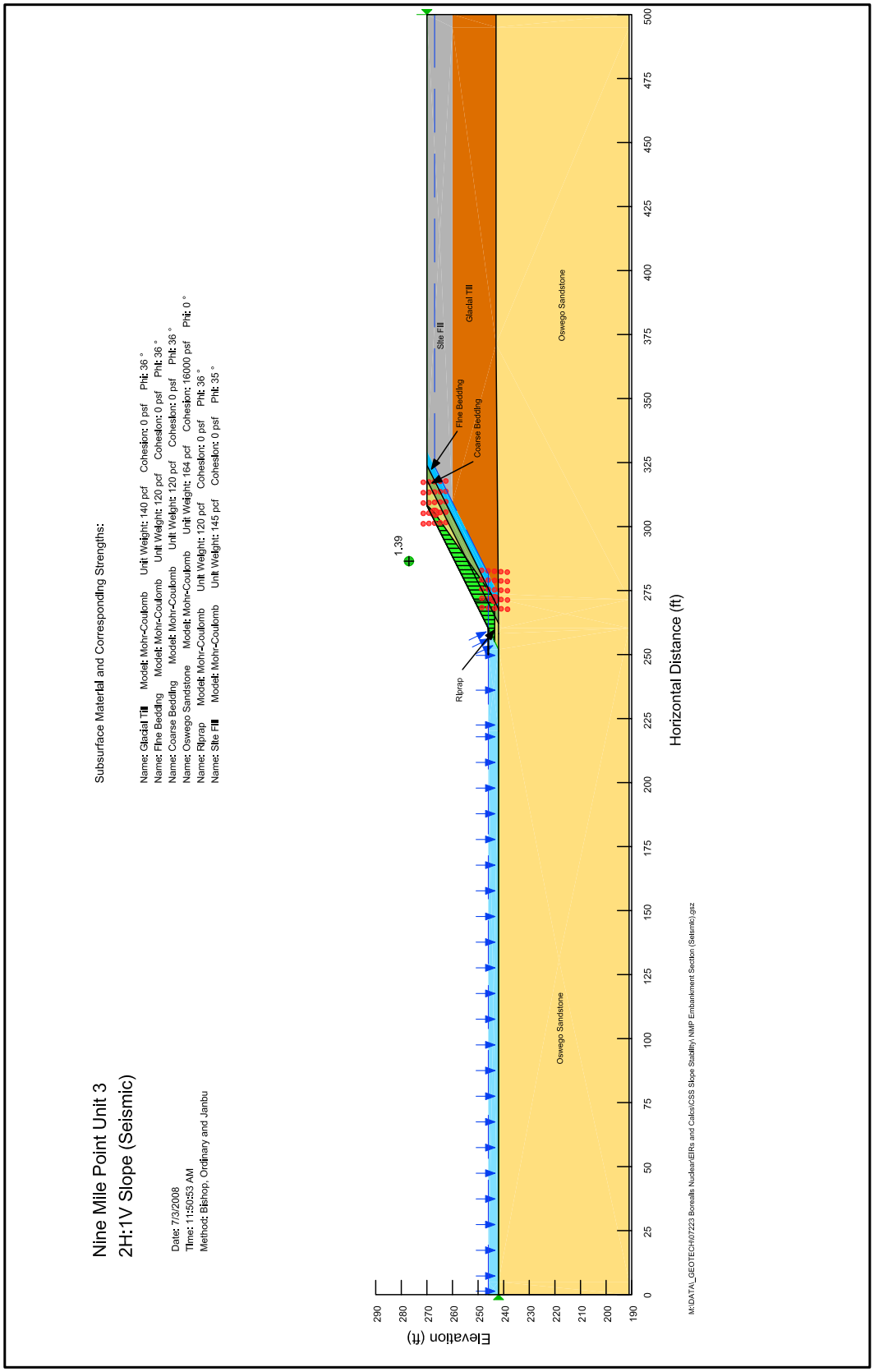


**Figure 2.5-183—{Stability Analysis Results, Static + Surcharge Loading, Circular Surface}**

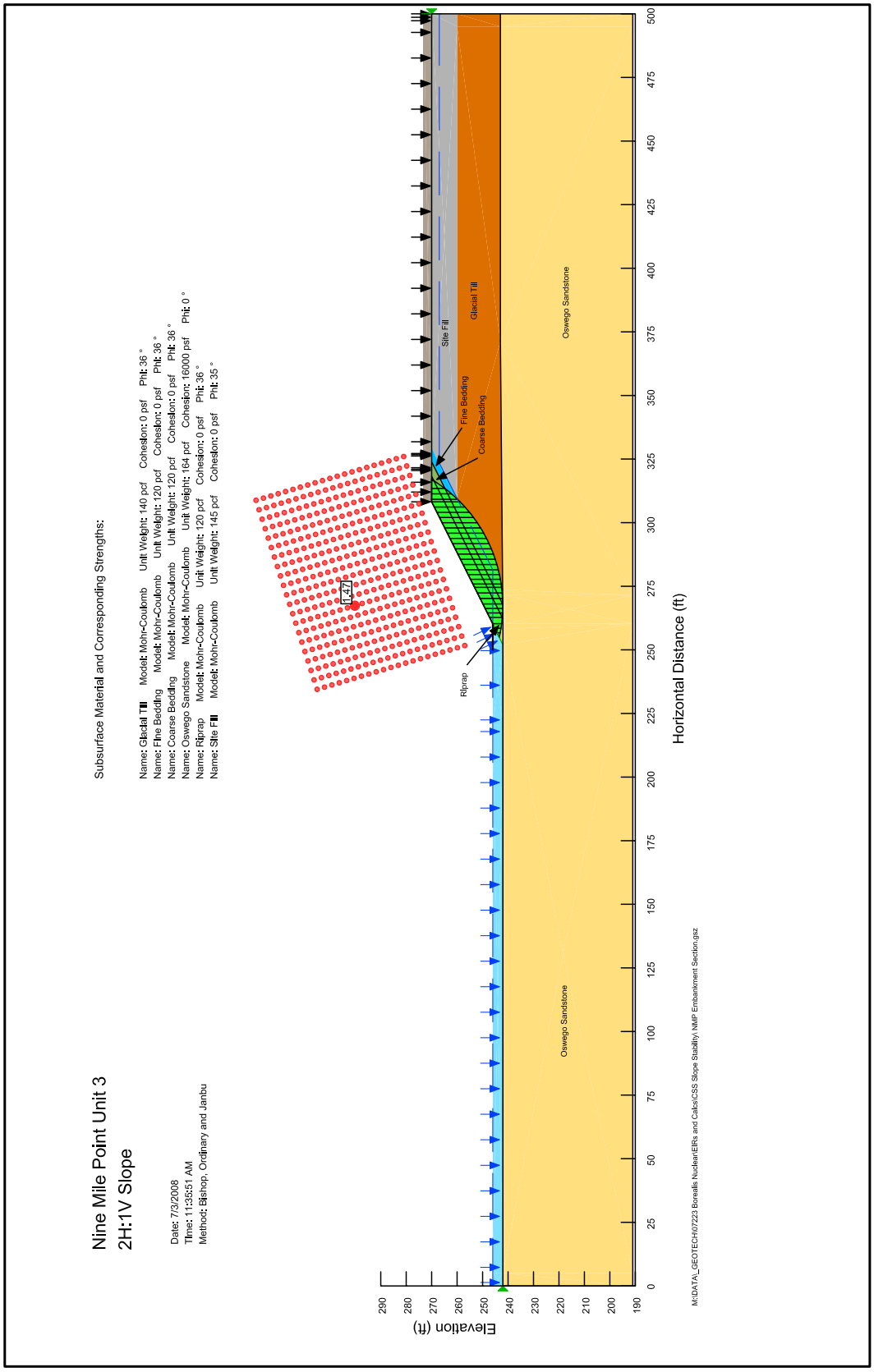
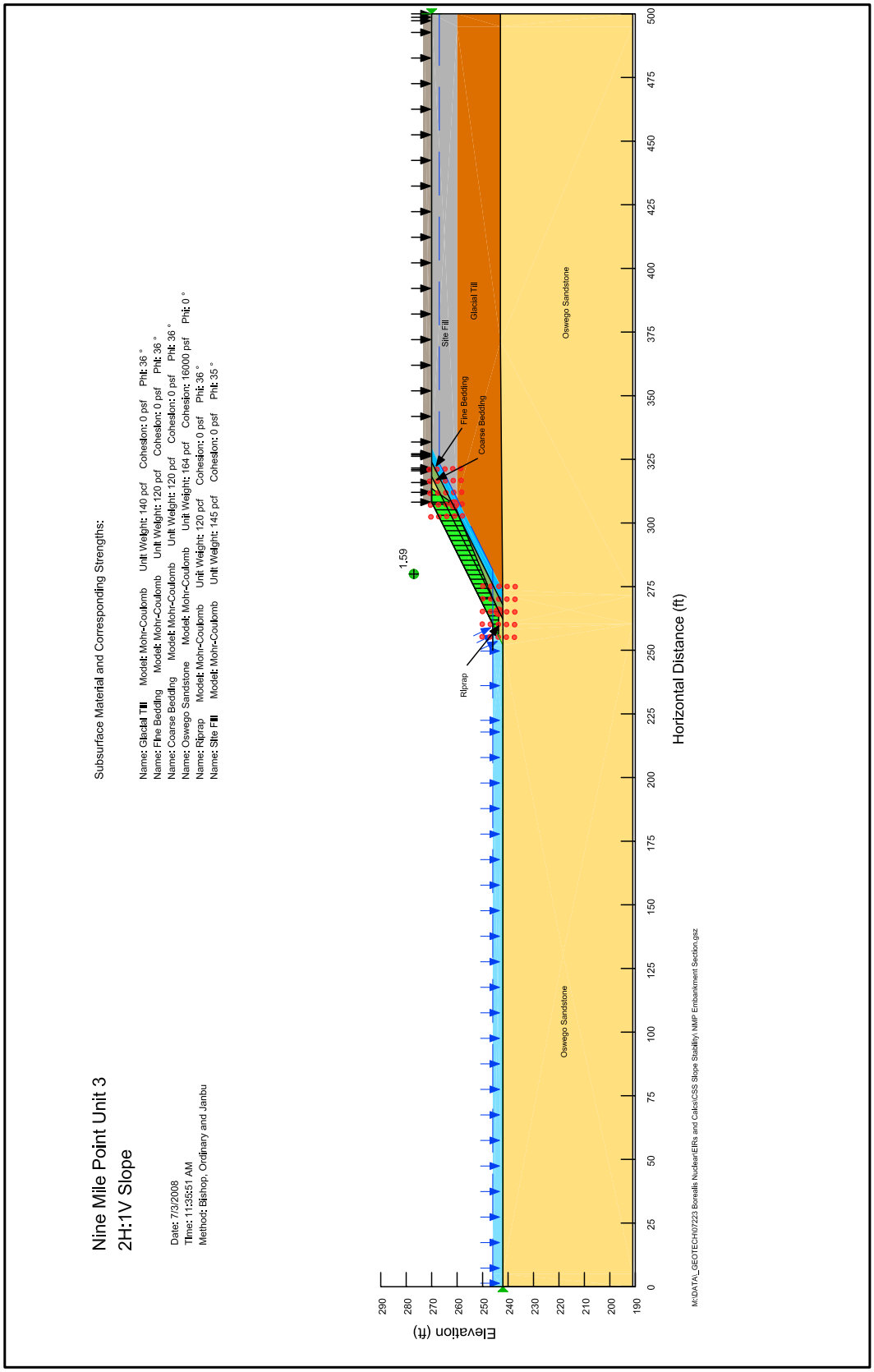


**Figure 2.5-184—{Stability Analysis Results, Static + Surcharge Loading, Non-Circular Surface}**



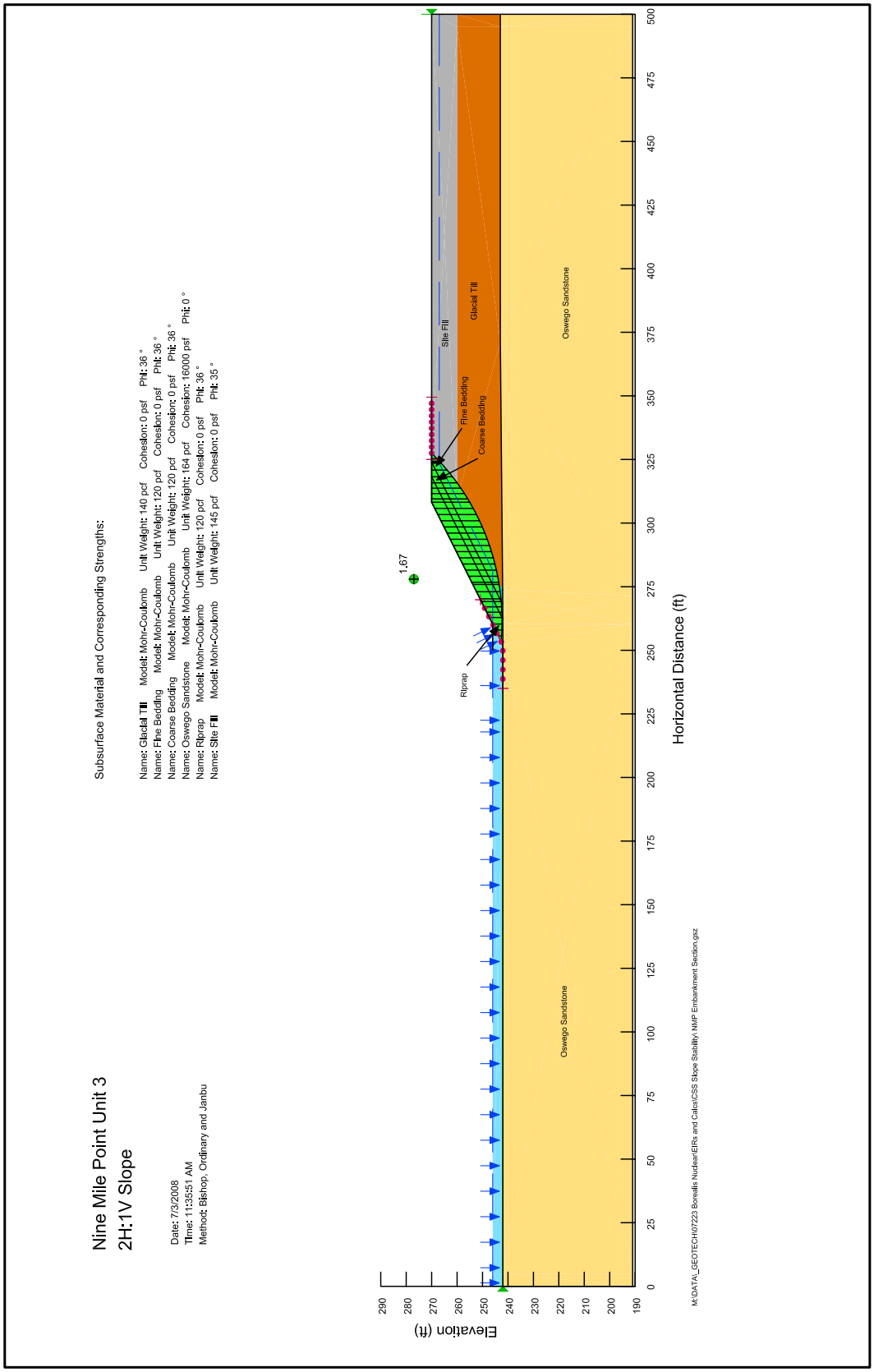



**Figure 2.5-185—{Stability Analysis Results, Static Loading, Deep Circular Surface}**

**Figure 2.5-186—{Stability Analysis Results, Pseudo-Static Loading, Deep Circular Surface}**

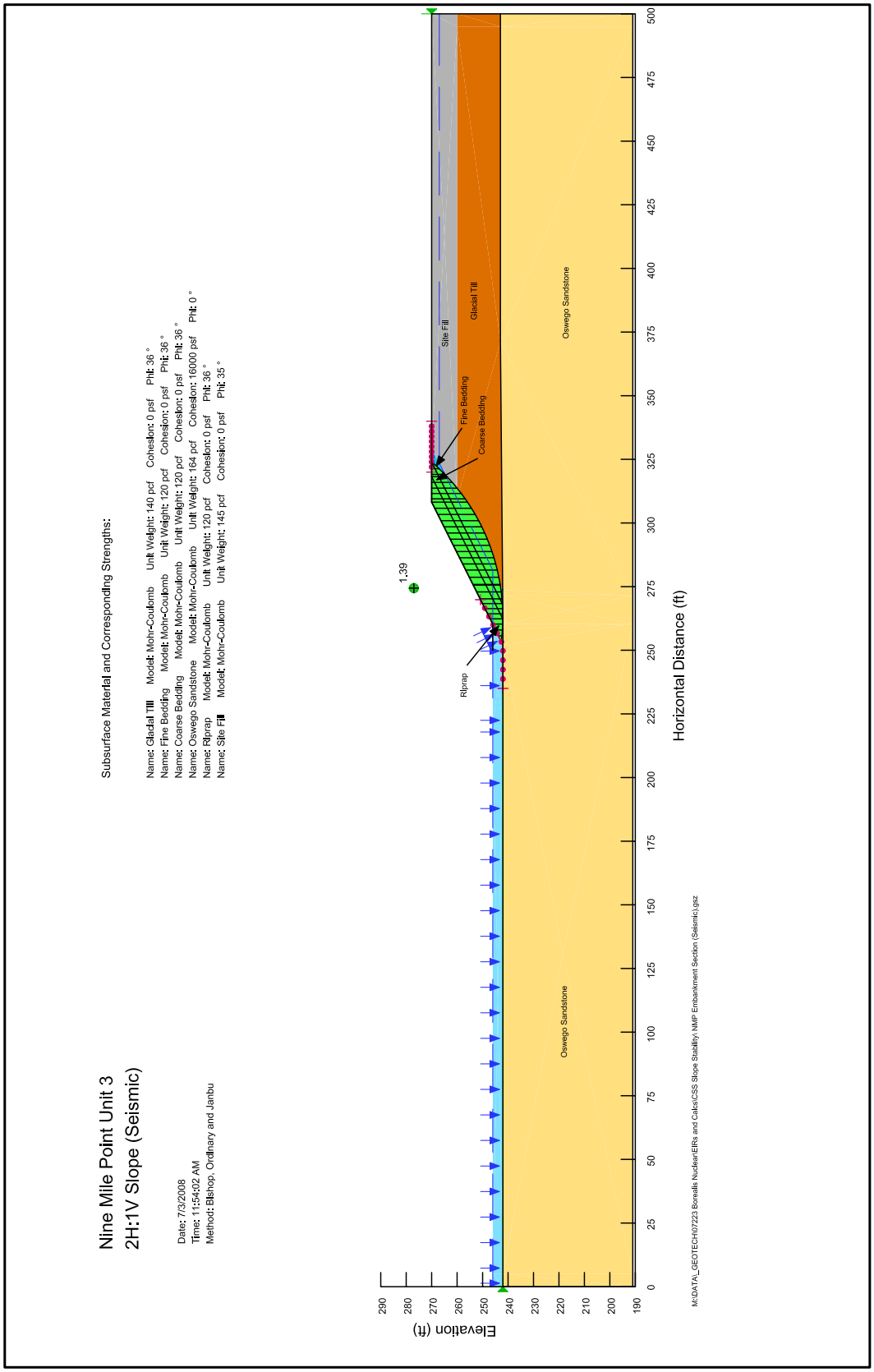


**Figure 2.5-187—{Stability Analysis Results, Static + Surcharge Loading, Deep Circular Surface}**