3. The South Carolina Department of Transportation (SCDOT) (2008) presents hazard maps developed by Chapman and Talwani (2006) to estimate the rock outcrop and geologically realistic PGA in South Carolina. The SCDOT seismic hazard map indicates that the estimated geologically realistic PGA at CGS is approximately 0.55g for the 2,500-year return period.

The SCEPD and SCDOT hazard maps indicate the geologically realistic PGA at CGS is less than that published within the USGS National Seismic Hazard Maps. The SCDOT value of 0.55g provides the more conservative estimate and was recommended and selected by Garrett & Moore (2011) to design the onsite CCR landfill. The Bottom Ash Pond evaluation used the same PGA to determine if it was designed to resist the maximum horizontal acceleration in lithified earth material.

Pseudo-static slope stability analyses were performed by Geosyntec as part of this demonstration to evaluate the seismic performance of the Bottom Ash Pond perimeter dike structures using a procedure consistent with Hynes-Griffin and Franklin (1984). The procedure is described as follows:

1. Estimate the maximum horizontal earthquake acceleration for the potential critical slip surfaces of the perimeter dike system.

2. Com ute the seismic horizontal force coefficient k usin the ratio of thtc20ri1to1

Based on a review of the geologic and hydrogeologic data, the primary type of karst features that have occurred or are likely to occur at the CGS are cover-subsidence sinkholes. Although cover collapse sinkholes are possible, they are not likely based on the reviewed information and the current and historical observations of karst features at CGS.

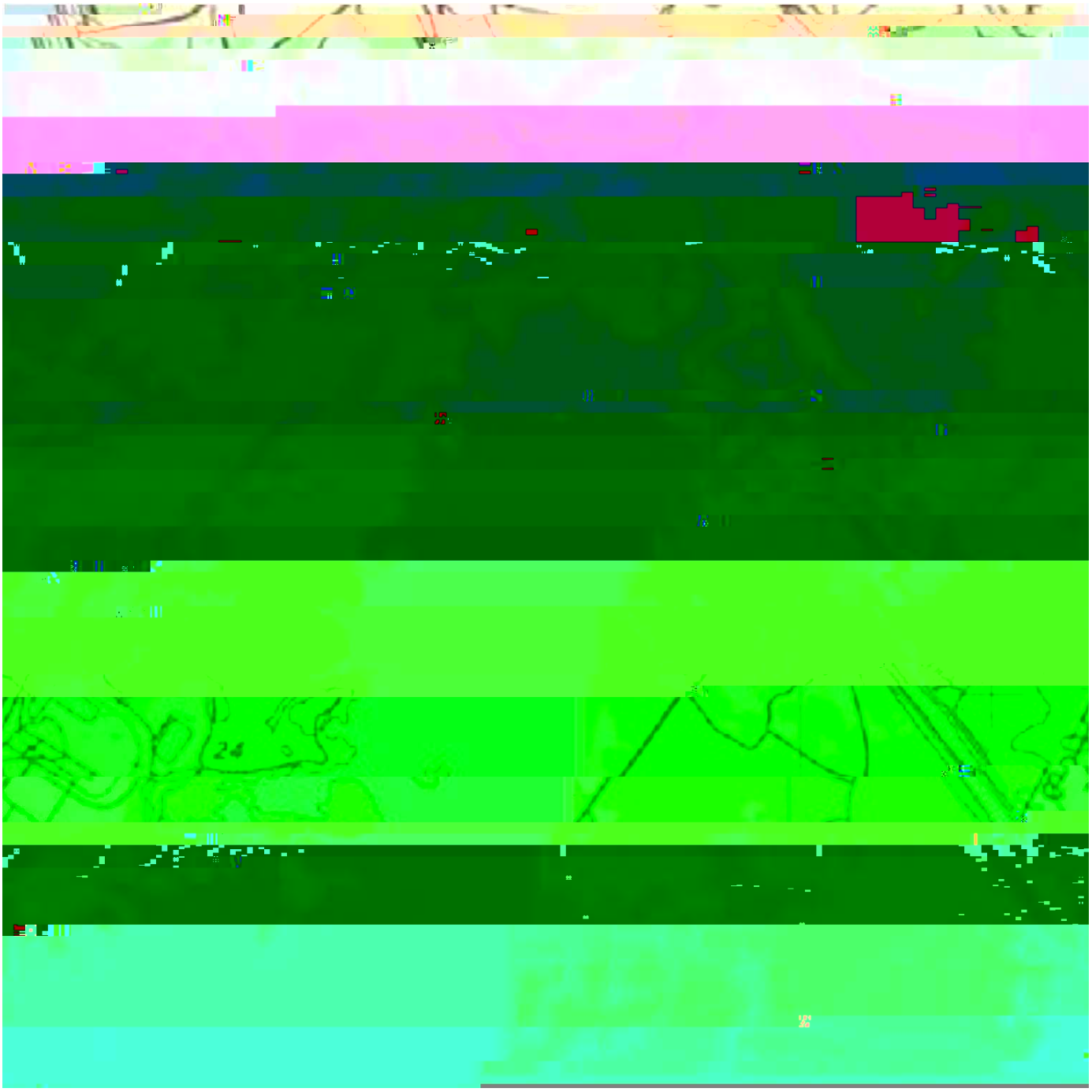
However, to further evaluate the risk due to subsidence, due to potential subsurface void collapse, a general three-dimensional (3-D) Mine Subsidence Model solution was utilized. This model was developed by Geosyntec by extending the technical basis used in conventional two-dimensional (2-D) mine subsidence models (i.e., Attewell, 1977; Drumm et al. 1990). The analysis results are used to evaluate deformations at the ground surface caused by the collapse of the void below the ground surface.

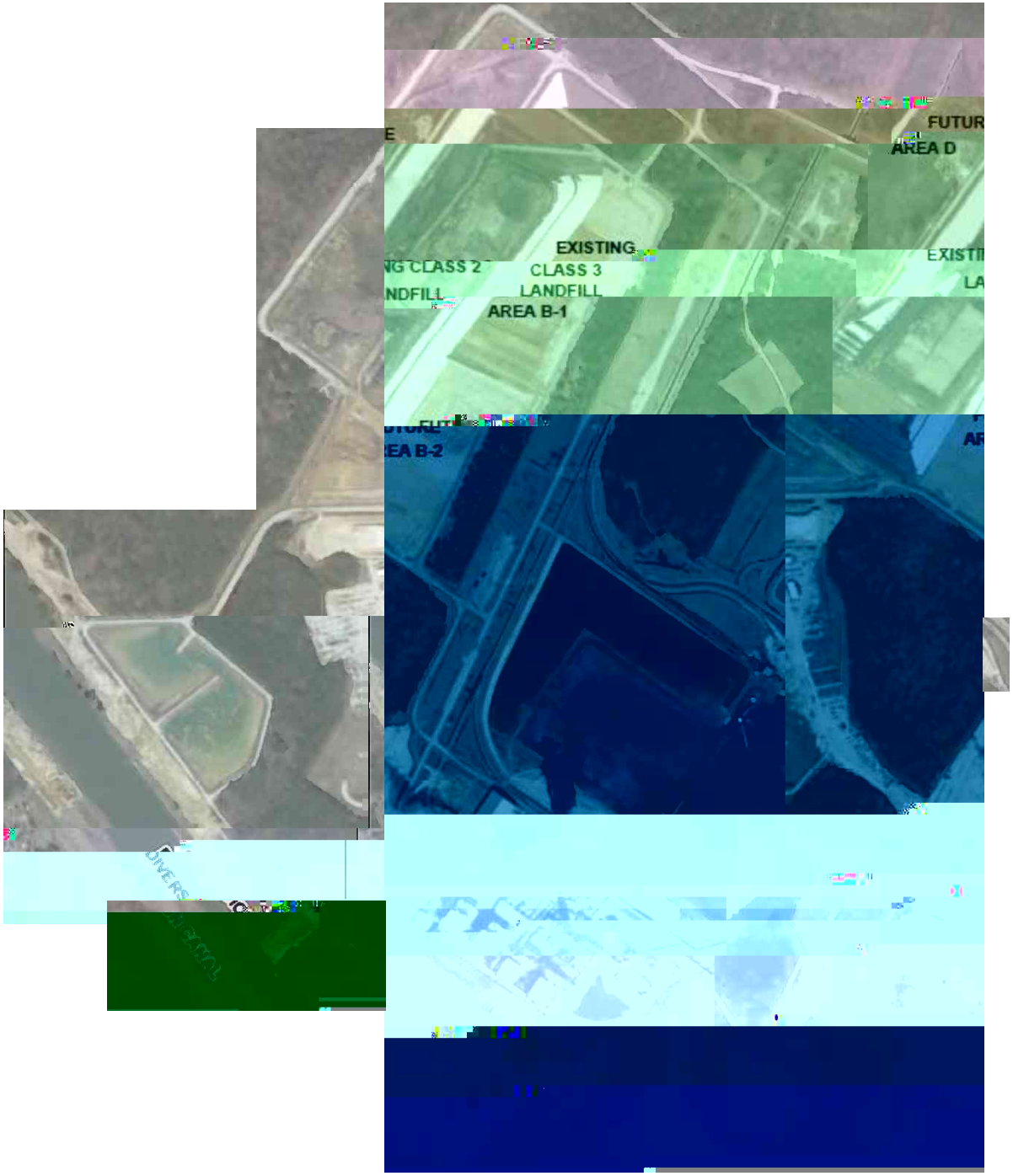
Based on the conservative assumptions of void diameter (D) of 7.2 ft, bridging layer thickness of 18 ft, and no soil bulking, the maximum calculated subsidence at the base of the bottom ash pond is 0.8 ft and the maximum calculated strain is 0.6%.

It is noted that the assumption of no soil bulking is very conservative and that assuming a bulking factor will result in lower calculated subsidence and strain at the base of the pond. The calculated deformations and strains are relatively small and are not anticipated to have a negative impact on the performance of the bottom ash pond.

Based on the demonstration above, the Bottom Ash Pond is considered to be in compliance with the requirements of §257.64 for unstable areas.

FIGURES

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AREA D
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AREA B-1
AREA B-2