4.2.5.1.3 SPT Borings

Thiele Geotech completed six SPT borings (identified as Borings B-10 through B-15) from November 9 through 17, 2011. The location of the SPT borings and their relationship to the Geotechnology seismic investigation lines is presented in Figure 4-6. These six borings were drilled to ground-truth subsurface anomalies identified as "low velocity features" in the Geotechnology report titled "Geophysical Survey for Void Detection." One of the SPT borings, B-10, was intended to be a baseline boring and was drilled in an area that did not evidence low velocity features. The other five borings were drilled at locations of reported low velocity features. These borings were drilled to bedrock and were continuously sampled so that the low velocity features could be evaluated using SPT test result data. Of these six borings, three were completed in the Paved Access Area (Borings B-12, B-13, and B-14). Boring logs and test results from Borings B-12, B-13, and B-14 were evaluated to address KDI #2. Figures 4-7 through 4-12 present the data from the seismic refraction lines with the appropriate ground truthing SPT boring shown.

The borings were continuously sampled from 10 ft below existing ground surface to the maximum depth investigated. The uppermost 10 ft of soil at each boring was hydro-excavated to clear possible underground utilities. Continuous split-spoon SPTs (ASTM D 1586-08a) were performed and soil samples collected during drilling except occasionally where undisturbed Shelby tube samples were collected by direct-push. Where Shelby tube samples were collected, laboratory dry density test results were used for the evaluation. All borings were advanced to auger refusal and terminated on the top of the limestone bedrock formation underlying the site.

A summary of the test borings and seismic anomalies addressed by each is as follows:

- Boring B-12 – Intercepted a single low velocity zone reported as existing from about 32 to 58 ft below ground surface (see Figure 4-10 and the Geotechnology report titled "Geophysical Survey for Void Detection," Plate 11, provided in Attachment 6C).
- Boring B-13 – Intercepted two reported low velocity zones, one existing from about 3 to 20 ft below ground surface and one existing from about 41 to 70 ft below ground surface (see Figure 4-9 and the Geotechnology report titled "Geophysical Survey for Void Detection," Plate 9, provided in Attachment 6C).
- Boring B-14 – Intercepted two reported low velocity zones, one existing from about 6 to 28 ft below ground surface and one existing from about 38 to 53 ft below ground surface (see Figure 4-8 and the Geotechnology report titled "Geophysical Survey for Void Detection," Plate 9, provided in Attachment 6C).

4.2.5.1.4 Inclinometer Monitoring

Thiele Geotech performed weekly monitoring of inclinometers (installed into bedrock for this assessment), which began in late November 2011 and ran through late January 2012. A total of five inclinometers (Inclinometers I-1 through I-5) were installed and monitored to evaluate if any lateral movement was occurring at the site related to the 2011 flood. Monitoring results from the inclinometers were reviewed for this KDI #2 forensic investigation to evaluate movement in the Paved Access Area possibly related to KDI #2.