

GEOLOGICAL LIMITATIONS

Soils

Soils on the slopes below the site are mapped as Gilpin-Upshur Complex occurring on 25% to 80% slopes. These soils are associated with springs and ground water seeps, and are susceptible to landslides. The soils lying on the upland are predominantly Dormont silt loams, with slopes ranging from 2% to 15%. These soils are not slide prone; however, very steep valley fills that consist of Dormont soils are subject to landslides.

Landslides

Historic and prehistoric landslide activity has been recorded for the slopes below the site. Prehistoric slides are dominantly earth slumps and earth flows, characterized by uneven, hummocky ground. These prehistoric slides are relatively stable in their natural state; however, they can be reactivated by loading (addition of fill or heavy structures), and changes in groundwater and surface water conditions (excavation, addition of pavements, utility conduits). Historic slides are also documented, one of which has occurred in the small gulley northwest of the site on the east side of a small reservoir. A smaller historic slide is documented on the slopes immediately below the site.

Mining

Abandoned deep-mine workings on the Pittsburgh Coal bed and are estimated to lie between 20 and 100 feet below the existing ground surface. The mines were known as the Schottig 3 and Calhoun mines; however, the companies that operated them are not known. A survey of the area in the 1920s has indicated that the mines were abandoned prior to 1925. In addition, this area has been mapped as an area that correlates with high numbers of deep mine subsidence events.

The Redstone coal outcrops around the two small knobs on the site, and the coal lies approximately 80 feet above the Pittsburgh mine workings. The Redstone Coal is not known to have been deep-mined in this area.

CONCLUSIONS

The site requires subsurface investigation to document subsurface conditions above the mine workings. Several borings should be advanced through the mine workings to determine the actual depth of the workings, character of the overburden, and to document how much and the nature of the void space. Once the mine properties are known, the appropriate engineering controls (re-mining, back-filling) can be determined prior to site development.

Laboratory testing of site soils should be performed to assess their engineering properties. In addition, pyrite (iron sulfide) testing should be performed on the strata lying above the Redstone Coal. The strata lying on coal beds often contain high amounts of pyrite, which produces sulfuric acid upon exposure to water. The reaction also causes expansion of the material with enough pressure to damage structures. Finally, overburden analysis will have to be performed to determine the whether material excavated during construction will produce a net acid discharge. Net acid discharges will have to be controlled and treated prior. Pre- and post-construction run-off will have to be strictly controlled in order to avoid triggering landslides.