

III-I | GEOTECHNICAL TECHNICAL SUMMARY

A comprehensive geotechnical investigation was initiated by the GCEDC in December 2017 and expanded through subsequent fieldwork in 2021 focusing on the southern campus. These evaluations involved a series of 25 test borings, the installation of five groundwater observation wells, and seismic shear wave surveys. Laboratory testing was also performed on soil and bedrock samples to determine the site's mechanical properties.

Subsurface Conditions and Composition

The investigations reveal a consistent and favorable subsurface profile for large-scale development. The site is primarily underlain by medium-firm to hard, low-plasticity clay. This layer eventually transitions into weathered dolomite bedrock, typically encountered at depths below 30 feet. Groundwater levels are generally expected to be found between 10 and 15 feet below grade.

Engineering and Seismic Specifications

The subsurface data supports the following design parameters:

- **Foundation Support:** Preliminary allowable bearing capacities range from 3 ksf to 5.5 ksf, making the site suitable for conventional spread foundations and slab-on-grade construction.
- **Settlement:** Soils are expected to behave in an elastic manner, with settlement typically concluding within 1 to 3 months following the placement of new fills.
- **Seismic Classification:** The site is classified as Seismic Class "C" based on measured shear wave profiles, indicating moderate seismic ground motion.
- **Hazard Mitigation:** Analysis indicates a low potential for liquefaction and negligible risk regarding soil corrosion or sulfate attack on buried concrete and metal components.

Ongoing and Future Evaluations

While the 2017 and 2021 studies confirm that the underlying geotechnical makeup supports the project's foundational requirements, further work is ongoing. Additional geotechnical investigations for both the northern and southern campuses are currently underway. These localized studies will refine the final structural engineering and allow for the development of tailored construction methodologies specific to individual buildings and infrastructure.

Localized Dewatering for Construction

Construction-related dewatering is not anticipated to have a significant adverse impact on the groundwater table, private water wells, or the downstream ecosystems of the Tonawanda Seneca Nation.

The documented subsurface profile consisting of low-plasticity clay and dolomite bedrock typically encountered below 30 feet establishes a favorable environment for hydraulic containment. The site's geological makeup provides high confidence that the "cone of depression" from localized pumping will remain well within the project boundaries and will not affect distant residential water supplies.

Furthermore, while the site naturally drains into streams and wetlands on the Nation's territory, the low-permeability clay prevents the sub-surface "draining" of these features. To ensure the continued protection of downstream resources, the project will utilize Best Management Practices (BMPs), including sedimentation basins and monitored filtration. These measures are designed to ensure that the volume and quality of water discharged from the site remain consistent with natural, pre-construction conditions.

BUFA - GCEDC Application

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