

## 2.6 Geology

The geological conditions at the STP 3 & 4 site, including detailed geological, seismological, and geotechnical site evaluations, are provided in COLA Part 2, FSAR Section 2.5S. The groundwater and surface water conditions are discussed in FSAR Section 2.4. The following presents a summary of the geologic impact evaluation of STP 3 & 4 development.

### 2.6.1 Geologic Impact Evaluation

The geologic impact evaluation considers both long-term and short-term impacts of construction and operations of STP 3 & 4.

#### 2.6.1.1 Long-Term Geologic Impacts

Based on the geologic conditions at the STP site and the STP site area description in FSAR Subsections 2.5S.1 and 2.5S.3, long-term adverse impacts on the geology as a result of construction or operation of new nuclear units at the STP site are not considered significant, but in some cases will require monitoring. This conclusion is based on the following:

- The absence of capable tectonic sources (see COLA Part 2, FSAR Subsections 2.5S.1.2 and 2.5S.3) at the STP site eliminates the possibility of tectonic faulting resulting in surface fault rupture in the present seismotectonic regime. The excavation for STP 3 & 4 will be geologically mapped to verify the absence of non-tectonic growth faults that might pose a hazard to the facility.
- Surface settlement (as a result of facility construction) could temporarily affect surface water drainage. However, should such settlement occur, it will likely take place during construction and will be monitored, and can be mitigated if necessary by regrading the site. This is supported by experience with STP 1 & 2 and FSAR Subsection 2.5S.1.
- The geologic strata are not subject to dissolution, therefore karstic features such as sink holes are not a consideration. FSAR Subsection 2.5S.1 discusses the site stratigraphy and geomorphology.
- Based on experience with the construction and operation of STP 1 & 2, permanent dewatering during construction and operation will not be required at STP 3 & 4. Even if the removal of groundwater would be protracted over the life of the operation of the plant, the potential for minimal settlement is possible, but the expected magnitude of settlement is considered manageable through facility foundation design mitigation measures. Subsidence is discussed in FSAR Subsections 2.5S.1 and 2.5S.4.
- There are no natural slopes near the STP 3 & 4 construction site that could be adversely impacted by foundation excavation, loading resulting from construction of the proposed structures, or infiltration of precipitation as a result of surface modifications.

- Any potentially adverse impacts that could result from the placement of fill at the STP 3 & 4 construction site plant area will be mitigated by earthwork design.

Based on the knowledge and experience gained on the construction and operation of STP 1 & 2, and the consideration of the site geology, no long-term geological impacts adverse to the operation of STP 3 & 4 are expected and beyond the capacity of foundation design to effectively mitigate these geological impacts.

#### **2.6.1.2 Short-Term Geologic Impacts**

Some short-term geologic impacts could occur during construction. These construction activities have a limited scope and/or duration and are not expected to have any long-term adverse impacts. These impacts would be primarily associated with the excavation and/or temporary dewatering activities described in the following:

- Disposal of excavated material likely will be required either on- or off-site. Silt fences, seeding, and/or drainage control will be utilized to mitigate the potential for erosion of this material at the disposal site. Excavated surface soil exposed during construction will be protected by tarps and hay bales to mitigate erosion and control surface water runoff.
- Temporary dewatering of foundation excavations may impact water levels in the water table aquifer. Based on experience during the construction of STP 1 & 2 (FSAR 2.5S.1), these impacts are not anticipated to be significant, and these activities will be monitored and mitigation measures or other appropriate corrective measures will be considered as appropriate. Anticipated subsidence as a result of construction dewatering amounts to 0.4 inch to 0.8 inch for the four years of construction. This amount is not sufficient to adversely impact surface water drainage.
- Construction equipment could cause vibrations that are felt within the operating facility and nearby residences. These vibrations will not be large enough to cause any adverse impacts.

Based on the knowledge and experience gained on the construction of STP 1 & 2, and the consideration of the site geology, no short-term geological impacts during construction of STP 3 & 4 are considered significant. Short-term mitigation measures and adherence to standard construction and good engineering practice can effectively mitigate these geological impacts.