## 4.0 SOILS AND TOPOGRAPHY

The Bear Mountain Triangle Rezoning area is located in the Town of Yorktown. The property is proposed to be rezoned to conform to surrounding land use. The area is surrounded by Crompound Road (US Route 202/US Route 35) to the south, the Bear Mountain Extension to the north and west and the Taconic Parkway to the east.

### 4.1.1 Existing Conditions

The area, contains primarily three types of soils, mapped by the United States Department of Agriculture (USDA) Soil Conservation Service (SCS) of Putnam and Westchester Counties, New York as Charlton Soils, Leicester Soils, and Charlton-Chatfield Complex. The location of these soils groups on the site is shown in Figure 4-1, Soils Map.

The Charlton Loam soils (ChC and CIB listed on the soils map) are strongly sloping, very deep and well drained. Slopes for these soils groups are typically 8 to 15 percent for ChC soils and 2 to 8 percent for CIB soils. Depth to water is found at more than 6 feet below the ground surface throughout the year, permeability is moderate or moderately rapid and the available water capacity is moderate. The depth to bedrock and be found at more than 60 inches below the ground surface.

Leicester soils (LcA and LcB) are nearly level to gently sloping, very deep and poorly drained. Slopes are typically 0 to 3 percent for LcA soils and 3 to 8 percent for LcB soils. Depth to water is within 1.5 feet below the ground surface from November through May, permeability is moderate or low and the available water capacity is moderate. The depth to bedrock is more than 60 inches below the ground surface.

Charlton-Chatfield complex (CrC) and Chatfield-Charlton complex (CsD) are soils that are very deep, well drained and located on hillsides and underlain by folded bedrock. Depth to water can be found more than 6 feet below the ground surface throughout the year, permeability is moderate or moderately rapid, and the available water capacity is moderate. The depth to bedrock can be found more than 60 inches below the ground surface.

The site generally slopes down from the eastern portion with rocky slopes on the eastern portion of the property.

Preliminary soils testing was conducted on June 23, 2015 and June 30, 2015. Figure 4-3 illustrates the test pit locations. The Soils data sheets are included in Appendix E. The results of this testing confirm the presence of the Charlton-Chatfield complex (CrC) and Chatfield-Charlton complex (CsD) and the Leicester soils (LcA and LcB) as discussed above.

### 4.1.2 Avoidance or Minimization of Potential Impacts

*Soils*

Grading is required to build the internal roads, install utilities, prepare areas for the proposed residential and commercial buildings, and to create two infiltration basins, one in the center of the site and the second in the northeastern portion of the project site. The conceptual grading is shown in Figure 4-4 - Preliminary Earthwork Estimate. It should be noted, for the purpose of this environmental review, an analysis of the maximum impact scenario has been evaluated. As an actual site plan for development of this area is prepared, measures will be incorporated to work with the existing topography thus minimizing the amount of earthwork necessary.

Based upon preliminary engineering estimates, a total of approximately 223,000 cubic yards of material will be cut and approximately 85,000 cubic yards will be filled. Of the remaining 138,000 cubic yards, it is estimated that approximately 130,000 cubic yards of rock will be crushed to be used a base for the parking areas and the road improvements to Old Crompond Road. The areas of cut and fill are shown in Figure 4-4. The balance, or approximately 8,000 cubic yards, will be removed from the site. This is a preliminary estimate based upon the conceptual grading plan and information provided by the project engineers. Upon development every effort will be made to use all or a portion of the 8,000 cubic yards on the site. Excess material will be transported off-site by tri-axel trucks with a 28 ton capacity. It is anticipated that grading will

occur over the first 6 months of the project resulting in a maximum of two truckloads per day on average.

Engineering measures such as proper design of foundations, subsurface drainage as needed, and proper designs of pavement subbase and excavated slopes can be utilized to overcome any construction limitations of the onsite soils. An erosion and sediment control plan will be prepared to assure proper handling of soils to avoid undue erosion. Currently the site is developed with several structures. Historic use of part of the property shows that it is capable of supporting structures and is conducive to being used in a developed manner.

Bedrock outcrops are more prevalent in the soils located on the eastern portion of the site located on the hillside. Development on this hillside is proposed in the general project outline and if bedrock were to be encountered during construction, mechanical means (i.e. ripping, chipping) would be employed first to avoid any unnecessary blasting.

*Blasting*

Any necessary blasting would only be carried out in conformance with an approved Blasting Plan, specific to this project, developed between the Blasting Contractor and the Town. The Blasting Plan would include, but not be limited to the following:

- Determination of a radius of sensitive receptors to the blasting site.
- Notification of property owners within the radius of sensitive receptors. This notification would provide warning that blasting will occur and the dates it is planned to start and finish.
- Conducting pre-blasting inspections for buildings within the radius of sensitive receptors. This will be completed by the Blasting Contractor.
- Conducting post-blasting inspections of the buildings within the specified radius.
- Blasting would only be conducted during specified hours in conformance with the Town of Yorktown code, or may be further restricted in the Blasting Protocol to be approved by the Town's representative.

The Blasting Plan would be developed in full conformance with all Town of Yorktown regulations and in accordance with New York State blasting law. The contractor's Blasting

Contract would be based on site specific blasting requirements, and would be submitted to the Town for approval in advance of any site work activity. Peak particle velocity would be maintained at the property line so as to avoid any effects on off-site structures.

*Topography*

The anticipated development includes the demolition of the existing buildings on the subject property and regrading for any proposed development. The proposed commercial buildings are generally envisioned along the southern boundary of the rezoning area on Old Crompound Road. The proposed residential zoning is located within the interior of the Property from the western boundary to the eastern boundary on the hillside, as shown on Figure 1-5, Representative Landscape Plan. Slope Disturbance areas are shown on Figure 4-2. During construction, erosion control measures will be implemented to mitigate any steep slope disturbance.

*Potential Erosion*

A soil Erosion and Sediment Control Plan for the project will be designed to conform to applicable requirements of the New York State Department of Environmental Conservation. The Plan will be completed in accordance with New York State Department of Environmental Conservation best management practices ("BMPs") as listed below;

*Best Management Practices (BMPs)*

The principle objectives of the Soil Erosion and Sediment Control Plan shall include the following:

- divert clean surface water before it reaches the construction area;
- control erosion at its source with temporary and permanent soil protection measures;
- capture sediment-laden runoff from areas of disturbance and filter the runoff prior to discharge; and,
- decelerate and distribute storm water runoff through use of natural vegetative buffers or structural means before discharge to off-site areas.

These objectives will be achieved by utilizing a collective approach to managing runoff, i.e. Best Management Practices (BMPs).

*Divert clean runoff* - Diversion of runoff from off-site or stabilized areas will be accomplished through surface swales and erosion control barriers in order to keep clean water clean.

*Time grading and construction to minimize soil exposure* - To the extent practical, the development will be phased to limit the area of disturbed soil exposed at any particular time.

*Retain existing vegetation wherever feasible* - Construction fencing or silt fencing will be used to physically define the limits of work. Areas not to be developed (regraded), will be retained in the existing condition until the developed areas are completed and stabilized.

*Stabilize disturbed areas as soon as possible* - In areas where work will not occur for periods longer than two weeks, soil stabilization by hydroseeding or mulching will be done within 48 hours after the soil has been exposed. Following completion of grading operations, level areas will be immediately seeded and mulched. Sloped areas, such as fill slopes will be treated as exposed areas and will be seeded or stabilized using an appropriate approved method such as matting. depending upon weather conditions at the time of carrying out the work.

*Minimize the length and steepness of slopes* - The steepness and length of project associated slopes have been designed to minimize runoff velocities and to control concentrated flow. Should any concentrated (swale) flow from exposed surfaces be expected to be greater than 3 feet per second, haybale or stone check dams will be installed in the swale. The check dams will be placed so that unchecked flow lengths will not be greater than 100 feet.

*Maintain low runoff velocities* - To protect disturbed areas from storm water runoff, haybale diversion berms and/or soil diversion berms and channels will be installed wherever runoff is likely to traverse newly exposed soil. Immediately following the clearing and stripping of topsoil, rough grading for the temporary and permanent