3.2 Soils and Topography

3.2.1 Existing Setting

Geology

The project site lies within the Manhattan Prong of the New England Upland physiographic province. In southern New York, this province is defined by rolling, hilly, topography on crystalline rocks. The area of upper Westchester County in which the Property is located is made up of lower Paleozoic and/or Precambrian bedrock. Specifically, the project site is underlain by the Manhattan Formation which extends throughout the lower, southeastern Hudson River valley and parts of Connecticut. This formation consists of Paleozoic age metamorphic rocks which can vary greatly in composition and metamorphic grade depending on the location. No bedrock outcrops were observed on the property.

Ridgelines in the majority of the province trend northeast to southwest, strongly in evidence by the local topography and drainage patterns. Other landforms on or around the Property are representative of a glacial till plain, topographic features typical of remnant landforms which are found near the margin of a former continental ice sheet. In general, the hills and drainage patterns of the glaciated landforms trend north to south, tracking the flow of the glaciers from the higher elevations to the north and west. This pattern is evidenced by the stream corridor which runs along the western edge of the Property.

Topography

The Property is characterized by gently rolling topography highlighted by a broad north-south trending hillside in the center of the site with grades generally sloping towards the north and east. Topography on the property reflects the local topography with north south trending hills separated by streams and wetland areas in the lower elevations. No prominent hills or mountains are shown in the vicinity of the property on the U.S. Geological Topographic map for the site (see Figure 3.2-1 Local Topography).

On-site topography and slopes are shown in Figure 3.2-2 Existing Conditions. A broad gently sloping hillside occupies the center of the site. This hillside generally slopes towards the north and the east. Steeper slopes are found in the southeast corner and along the eastern edge of the property. More gentle slopes occupy the center and western edges of the property. The highest elevations on-site are found in the southwestern hilltop, with an elevation of 614. The lowest elevations on the site are found in a depression in the northwest corner of the site along Route 6, with an elevation of 516. Elevations vary approximately 100 feet across the site.

Slopes on the site have been mapped by the project engineer and are shown in Figure 3.2-3. The majority of the site (27.8 acres) has slopes of less than 10 percent. Steep slopes of greater than 15 percent occupy 5.2 acres or 12 percent of the site. Those steep slope area are mostly located near the eastern edge of the site and in the southeast corner of the site, on a hillside that borders a stream channel. Smaller scattered areas of steep slope are found on the hillside bordering Route 6 in the northern third of the property.

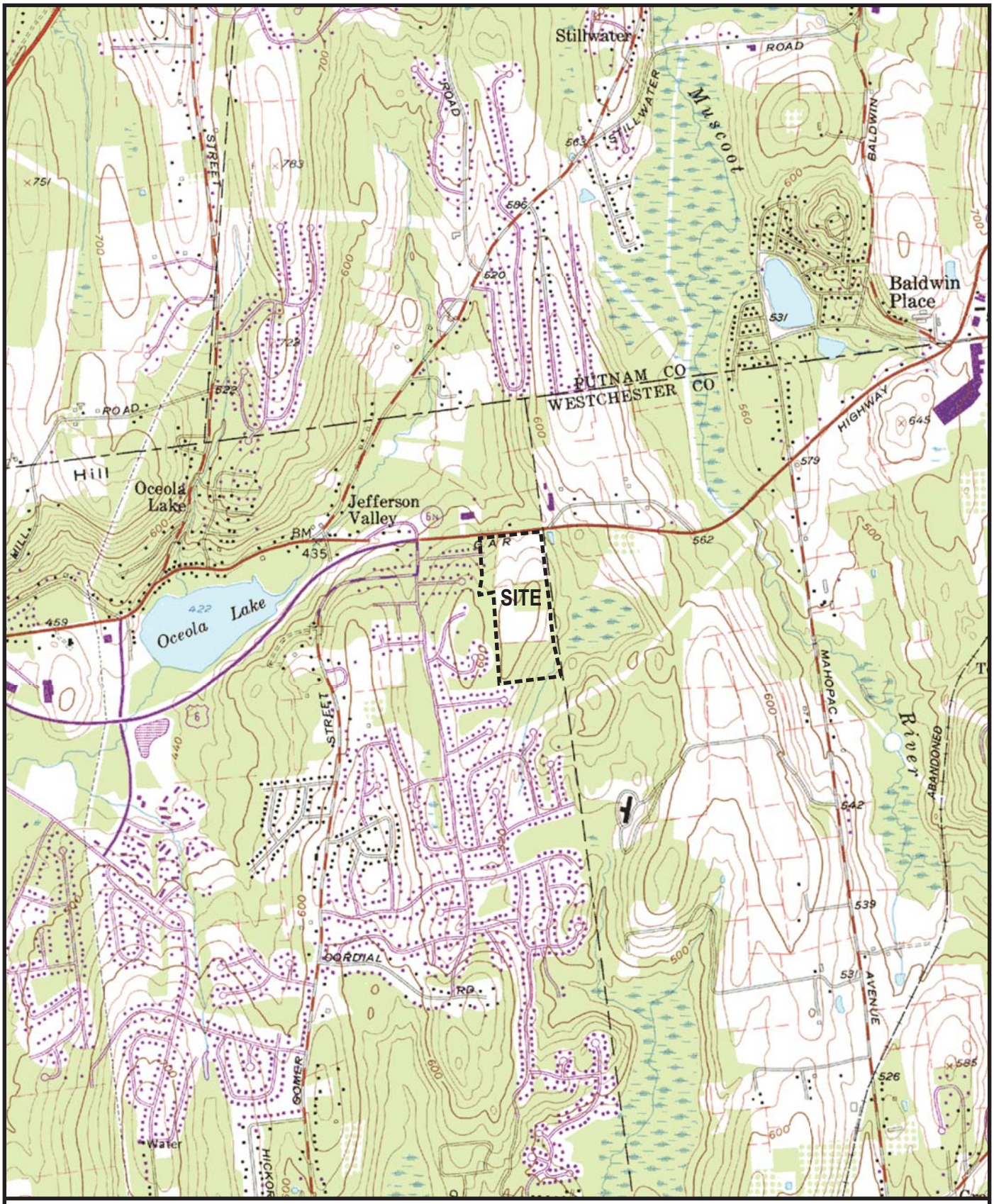

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Figure 3.2-1: Local Topography

Yorktown Farms Subdivision
Town of Yorktown, Westchester County, New York
Source: USGS Topographic Map (Mohegan Lake Quad)
Scale: 1 inch = 2000 feet

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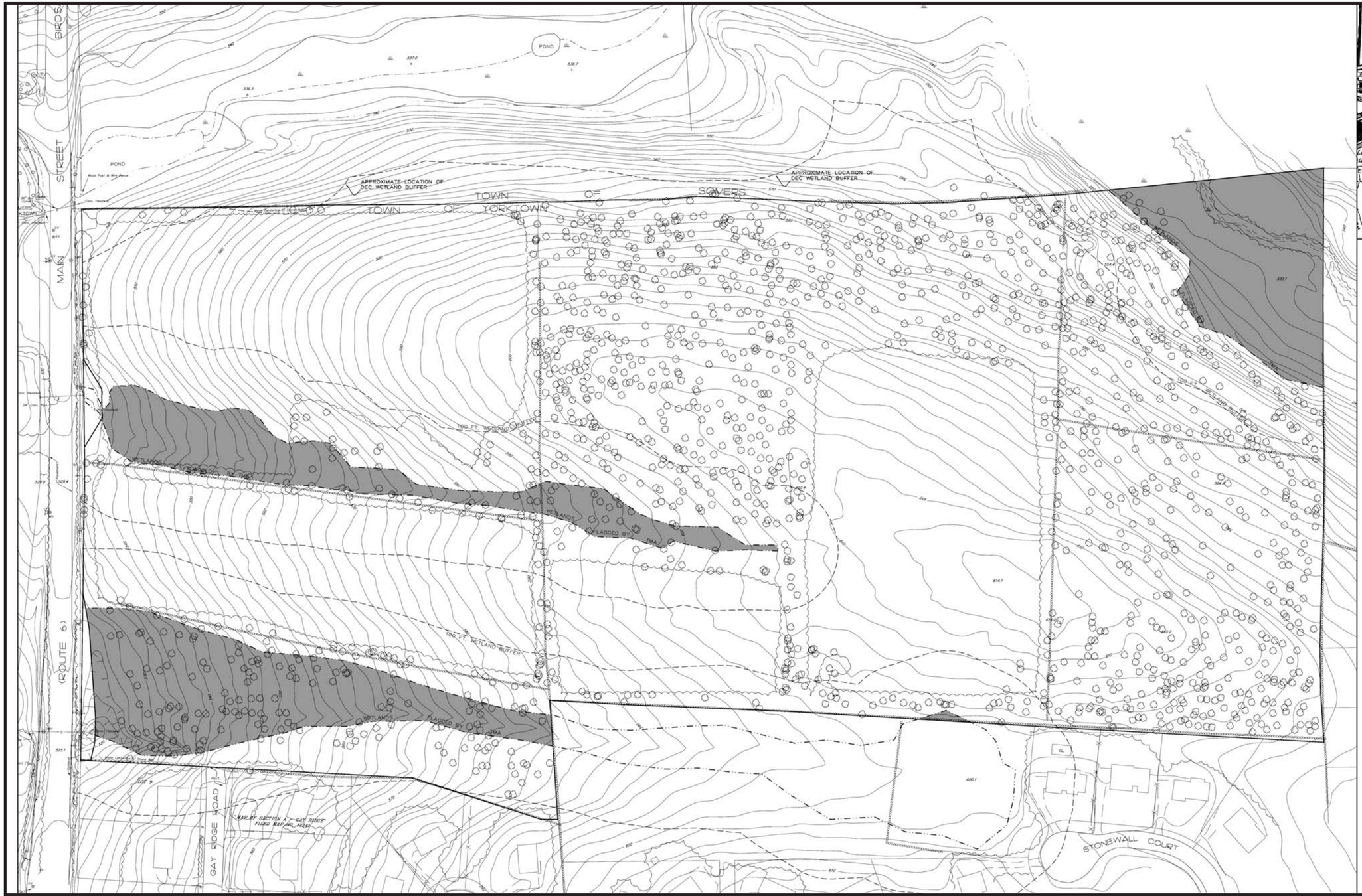

LOCATION MAP
N.T.S.

0 80 160
SCALE IN FEET

LEGEND

EXISTING	PROPOSED	
		CATCH BASIN
		DRAIN MANHOLE
		SAN. SEWER MANHOLE
		HYDRANT
		DRAIN INLET
		WATER VALVE
		HEADWALL
		DRY WELL
		STREET LIGHT
		MONUMENT
		WELL
		S.D.A.
294	294	CONTOUR LINE
		WETLANDS FLAGGED BY TIM MILLER ASSOCIATES (2003–2004)

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Consulting Engineers
13 Dove Court, Croton-on-Hudson, New York 10520
(914) 271-4762 (914) 271-2820 Fax

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Figure 3.2-2: Existing Conditions Map
Yorktown Farms Subdivision
Town of Yorktown, Westchester County, New York
Source: Ralph G. Mastromonaco, P.E., P.C., 11/05/04
Scale: As shown

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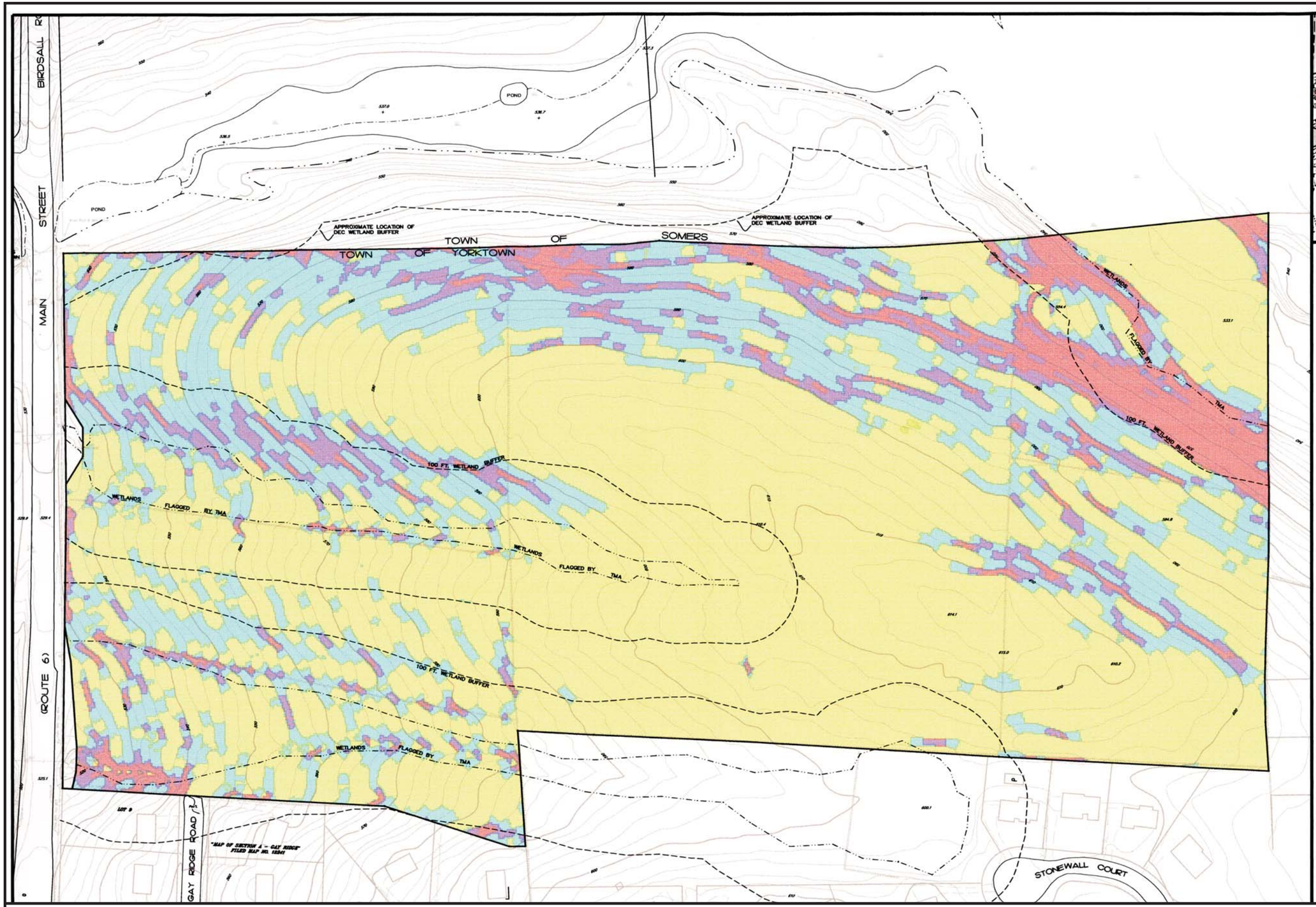
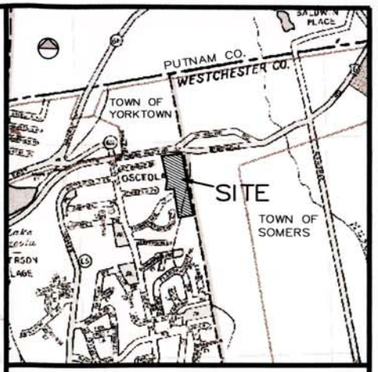
JS:\0326 Santucci Rte 6 Yorktown\DEIS Graphics\Fig 3.2-2 Existing Conditions.cdr





LOCATION MAP
N.T.S.

0 80 160
SCALE IN FEET

LEGEND

EXISTING	PROPOSED	
		CATCH BASIN
		DRAIN MANHOLE
		SAN. SEWER MANHOLE
		HYDRANT
		DRAIN INLET
		WATER VALVE
		HEADWALL
		DRY WELL
		STREET LIGHT
		MONUMENT
		WELL
		S.D.A.
294	294	CONTOUR LINE
		WETLANDS FLAGGED BY TIM MILLER ASSOCIATES (2003–2004)

SLOPE LEGEND

SLOPE CATEGORY	AREA (ACRES)
Above – 20.00	2.25
20.00 – 15.00	2.90
15.00 – 10.00	10.36
Below – 10.00	27.65

RALPH G. MASTROMONACO, P.E., P.C.
Consulting Engineers
13 Dove Court, Croton-on-Hudson, New York 10520
(914) 271-4762 (914) 271-2820 Fax

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JS:\0326 Santucci Rte 6 Yorktown\DEIS Graphics\Figure 3.2-3 Slopes Map.cdr

Figure 3.2-3: Slopes Map
Yorktown Farms Subdivision
Town of Yorktown, Westchester County, New York
Source: Ralph G. Mastromonaco, P.E., P.C., 11/04
Scale: As shown

Soils

The soils on the Property were identified using the soil classifications of the USDA Soil Conservation Service (SCS), and confirmed in a site visit by a TMA geologist. The Property is underlain primarily by four soil types: Woodbridge fine sandy loam, which dominates the sloping fields and pastures in the central and northern portions; Charlton-Chatfield complex soils found on the hilltop in the southwest corner of the site; Paxton fine sandy loam, located on the eastern property slopes; and Ridgebury loam soils, which are mapped in drainage channels and wetlands in the center and western edges of the site. A small area of Sun loam is mapped in the wetland stream channel in the southeast corner of the site. The distribution of the soil types on the Property is shown on Figure 3.2-4, Soils Map. The characteristics of each of the soil series identified on this property are described below generally in the order of their prevalence.

Woodbridge Series (Wd)

Woodbridge soils are moist upland soils which are formed in glacial till derived mainly from metamorphic bedrock. Slopes range from 0 to 15 percent. A perched water table may exist over the dense substratum at a depth of 1.5 to 2.5 feet during the Spring months and temporary wet periods. Permeability is moderate in the surface layer and subsoil and slow or very slow in the substratum. The erosion potential for these soils varies from slight to moderate associated with the surface slopes. The depth to bedrock is more than 60 inches.

Woodbridge soils are mapped on the gradual slopes in the center and northern portions of the site (See Figure 3.2-4 Soils Map).

Chatfield-Charlton Complex (Cr)

This unit consists of the very deep and moderately deep, well-drained and somewhat excessively drained Chatfield soil (about 30 percent) and the well-drained Charlton soil (about 50 percent), with about 20 percent other soils and rock outcrop (2 to 10 percent). The rock is dominantly granite, gneiss or schist. The unit is located at the hilltop, with slopes ranging from 3 to 15 percent. The water table exists at a depth of more than six (6) feet throughout the year. Permeability is moderate or moderately rapid throughout the profile. Erosion potential of these soils is moderate. The depth to bedrock varies from 0 to more than 60 inches.

Charleton-Chatfield soils are mapped in the broad hilltop located in the southwest portion of the property and on slopes in the southeast portion of the site.

Paxton Fine Sandy Loam (Pn)

The Paxton series consists of very deep, well-drained soils on uplands. These soils were formed in glacial till derived mainly from schist, gneiss and granite. In tilled areas such as this site, these soils have a dark brown fine sandy loam surface layer eight inches thick. Slopes of Paxton soils on this site range from 2 to 25 percent, but predominantly less than 15 percent.

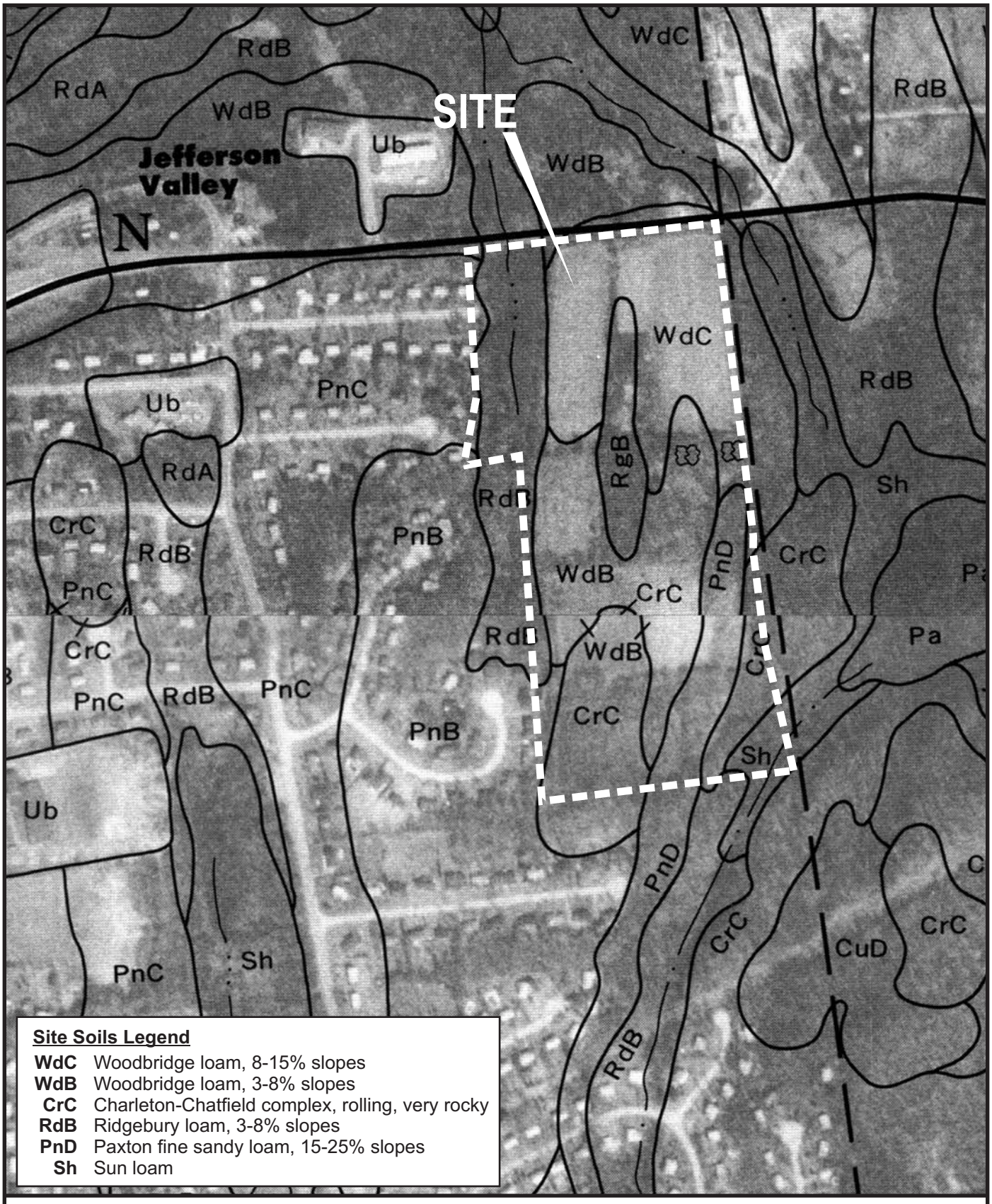

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Figure 3.2-4: Project Site on Westchester County Soils Survey Map

Yorktown Farms Subdivision

Town of Yorktown, Westchester County, New York

Source: U.S. Dept. of Agriculture

Scale: 1" = 500'

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Densely packed glacial till forms an impermeable layer called a fragipan, which inhibits vertical migration of water through the soil. During the Spring and temporary wet periods, a "perched" water table will form on top of the fragipan. In the Paxton soils, a perched water table may exist over the dense substratum at a depth of 1.5 to 2.5 feet. Permeability is moderate in the surface layer and subsoil and slow or very slow in the substratum. Erodibility of these soils varies with the surface slopes. The depth to bedrock is more than 60 inches.

Paxton soils on this site form a strip along the hillside in the southeast portion of the site.

Ridgebury Series (Rg)

The Ridgebury series consists of very deep, poorly and somewhat poorly drained soils formed in a coarse loamy mantle underlain by firm, compact glacial till. They occupy slopes ranging from 2 to 8 percent on uplands. The soils are formed in glacial till derived mainly from schist, gneiss or granite. These soils are very stony. A seasonal water table may exist within a depth of 1.5 feet during the Winter and Spring months. Permeability is moderate to moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. Erodibility of these soils is slight. The depth to bedrock is more than 60 inches.

Ridgebury soils are mapped in a wetland area in the north central portion of the site, as well as a wetland area along the western edge of the site. These are typically hydric soils.

Sun Series (Sh)

This soil is very deep, poorly drained or very poorly drained located in nearly level lowland areas. These soils are extremely stony. These soils are formed in glacial till derived from granite, gneiss, and schist. Slopes range from 0 to 3 percent. A seasonal water table may flood these areas, or rise to within a depth of 0.5 feet, during the Winter and Spring months. Permeability is moderate in the surface layer and slow or very slow in the subsoil and substratum. Erodibility of these soils is none to slight. The depth to bedrock is more than 60 inches.

Sun soils occupy a small area in the southeast corner of the site, bordering a stream corridor. These are hydric soils, indicative of wetland conditions (see Section 3.7)

Soil characteristics for individual soils mapped on the site are provided in Table 3.2-1, below. Also tabulated are the degree and kind of soil limitations that may affect typical building site development. This information has been compiled from data in the SCS Soil Survey of Putnam and Westchester Counties. Development limitations are considered *slight* where soil properties are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties are less favorable for the indicated use and special planning, design or maintenance may be needed to overcome or minimize the limitations; and *severe* if soil properties require special design and will necessitate increased costs to construct and possibly increased maintenance.

Table 3.2-1
Soil Characteristics and Limitations

Soil Series	Hydrologic Group[1]	Permeability (in./hr.)	Erosion Factor	Potential Limitations for:		
			K[2]	Roads, Parking Lots	Buildings w/ basements	Shallow excavations
Charlton	B	0.6-6.0	0.24	Slight to Severe: slope	Slight to Severe: slope	Slight to Severe: slope
Chatfield	B	0.6-6.0	0.20-0.24	Severe: depth to rock	Severe: depth to rock	Moderate: slope, depth to rock, frost action
Paxton	C	0.6-2.0 (0-20" deep) <0.2 (20-60"deep)	0.24-0.32	Moderate to Severe: wetness, frost action, slope	Moderate to Severe: wetness, slope	Moderate to Severe: dense layer, wetness, slope
Ridgebury	C	0.6-6.0 (0-26" deep) <0.2 (26-60"deep)	0.24-0.32	Severe: wetness, frost action	Severe: wetness	Severe: wetness
Sun	D	0.6-2.0 (0-9" deep) <0.2 (9-60"deep)	0.20	Severe: wetness, frost action	Severe: wetness	Severe: wetness
Woodbridge	C	0.6-2.0 (0-29" deep) <0.2 (29-60"deep)	0.24-0.32	Severe: frost action	Severe: wetness	Severe: wetness

[1] Hydrologic groups are used to estimate runoff from precipitation; they range from high infiltration (A) to low infiltration (D).
[2] Erosion Factor K indicates susceptibility to sheet and rill erosion (expressed in tons/acre/year). K values range from 0.05 to 0.69.
Source: Soil Survey of Putnam and Westchester Counties, New York, USDA SCS

As noted in Table 3.2-1, the SCS identifies these soils as possessing potential limitations for development of roads, buildings and excavations due to their characteristics. Such limitations require planning consideration prior to development. The presence of these constraints does not mean the land cannot be developed, nor are they a rating of construction potential. The ratings reflect the difficulty and relative costs of corrective measures that may be necessary (e.g. erosion controls, footing drains or other drainage improvements) for development. The limiting characteristics of these soils may be overcome by careful project planning, design and management.

Charlton and Paxton soils are rated with slight to severe limitations for the construction of pavements and buildings, and for excavations for utilities, depending on the slope. As the areas of steep slopes (25 percent and greater) occupy little area of the site as described below, the extent of such limitations is quite small.

Chatfield and Hollis soils are rated with severe limitations for the construction of pavements and buildings, and for excavations for utilities, due to shallow bedrock. No rock outcrops were observed on the project site, however. To provide a basis for analysis, areas of potential rock excavation have been identified as discussed later in this section. Again, these restrictions do not preclude development on these soils, but may require a greater degree of engineering and construction costs.

Paxton, Ridgebury, Sun and Woodbridge soils are rated with moderate to severe limitations for the construction of pavements and buildings, and for excavations for utilities, due to wetness in the soil profile. This limitation for "hard" construction is the result of a seasonal high water table which may rise to 18 inches or less below the surface. Construction in these soils requires provisions to remove subsurface water from excavations, foundations and subpavements to eliminate potential water and frost damage, thus adding to engineering requirements and construction costs.

3.2.2 Potential Impacts

Slopes Impacts

Impacts to steep slopes are directly related to the potential for soil erosion during construction. A Slopes Disturbance Map is shown in Figure 3.2-5. The majority of grading for the proposed project will occur in areas with slopes of less than 10 percent. Impacts to steep slopes of 15 percent or greater are mostly limited to the site entrance roadway, the storm water detention basins along the eastern edge of the site, and grading for proposed homes along the eastern edge of the site.

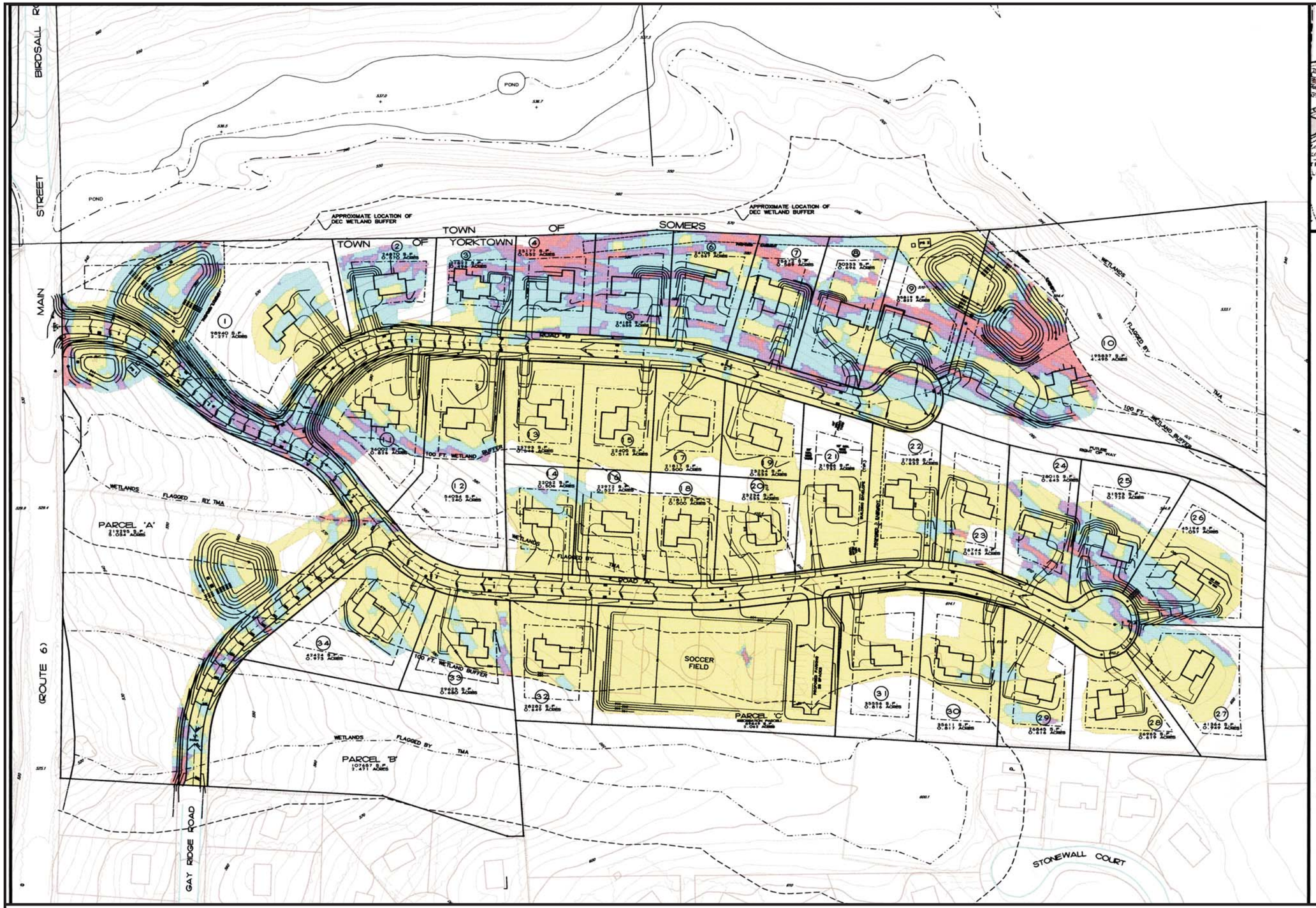
A comparison of slopes disturbance is provided in Table 3.2-2 Slopes Disturbance Summary.

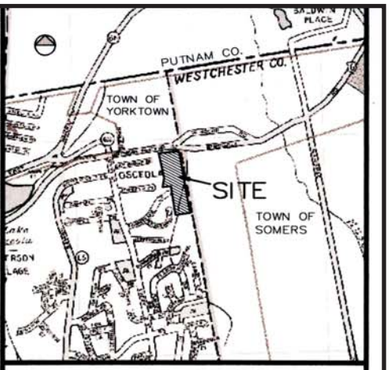
Table 3.2-2
Disturbance by Slopes

Slope Category	*Approximate Acres Disturbed*
<10%	16.85 acres
10% to 15%	5.44 acres
15% to 20%	1.63 acres
>20%	0.71 acres
Total Site Disturbance	24.62 acres

Note: Total Site Acreage: 43.168
Source: Ralph G. Mastromonaco, P.E., P.C.

Exposing soils on steep slopes during construction increases the potential for erosion in the short term. This potential impact will be mitigated by adherence to soil erosion and sedimentation control practices described below. Following construction, soil erosion from the property is expected to be minimal since developed areas will be stabilized with lawn and landscaping, and storm water management features will be fully functional.





LOCATION MAP
N.T.S.

0 80 160
SCALE IN FEET

LEGEND

EXISTING	PROPOSED	
▨	◪	CATCH BASIN
⊖	●	DRAIN MANHOLE
○	●	SAN. SEWER MANHOLE
♂	●	HYDRANT
⊠	◙	DRAIN INLET
⊗	●	WATER VALVE
(	)	HEADWALL
	○	DRY WELL
	□	STREET LIGHT
	⊠	MONUMENT
	◆	WELL
	▱	S.D.A.
394	394	CONTOUR LINE
		WETLANDS FLAGGED BY TIM MILLER ASSOCIATES (2003–2004)

SLOPE LEGEND

SLOPE CATEGORY	DISTURBED SLOPE AREA (ACRES)
Above – 20.00	0.71
20.00 / 15.00	1.63
15.00 / 10.00	5.44
Below – 10.00	16.85

RALPH G. MASTROMONACO, P.E., P.C.
Consulting Engineers
13 Dove Court, Croton-on-Hudson, New York 10520
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JS:\0326 Santucci Rte 6 Yorktown\DEIS Graphics\Figure 3.2-5 Slopes Disturbance Map.cdr

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Figure 3.2-5: Slope Disturbance Map
Yorktown Farms Subdivision
Town of Yorktown, Westchester County, New York
Source: Ralph G. Mastromonaco, P.E., P.C., 12/03
Scale: As shown

Soils Impacts

Grading and recontouring of soils is required for the construction of roads, individual home sites and driveways, and the five storm water detention basins. Areas of proposed grade changes for the project development are shown in the grading plans in the rear pocket of this document (Drawing 2) and in Figure 3.2-6 Grading Plan. The total area of grading or site disturbance is estimated to be 24.62 acres, or 57 percent of the site. Therefore, 18.6 acres of the site, or 43 percent will remain undisturbed.

The impacts to soils associated with this work are temporary in nature, relating to erosion hazards. Soils that will be covered with impervious surfaces (totaling 5.8 acres) will be permanently disturbed. Virtually all of the disturbed area that does not become impervious will be graded, seeded and landscaped, including the storm water management basins.

The majority of residential and road construction will occur within soils mapped as Woodbridge loam and Chatfield-Charlton Complex soils. Only limited grading will occur in areas of mapped Ridgebury and Paxton soils, and no grading will occur in Sun loam wetland soils. As described in the soils characteristics above, Woodbridge soils have the potential for construction limitations due to wetness, while Chatfield-Charlton soils may have limitations due to slope and depth to bedrock. With proper construction techniques, such soil limitations will not impact the project. Mitigation measures to ensure limited construction impacts due to erosion or blasting are described below.

Based on the characteristics of the on-site soil types, the potential for sheet and rill erosion during site construction activities is moderate. The potential impact of soil disturbance can be directly related to slopes, since all soils on-site have similar K-Factor range relative to erosion potential. As shown in Table 3.2-2, above, nearly 90 percent of the soils to be disturbed for project construction will occur on slopes of less than 15 percent.

A site specific Erosion Control Plan has been developed for the project and is shown in Drawing 3. Erosion control and slope protection will be undertaken in accordance with Westchester County's Best Management Practices Manual for Erosion and Sediment Control (1991), as described under Mitigation Measures below. It is anticipated that the proper design and implementation of these measures, along with consistent and frequent inspections, will ensure success of the project with minimal soil erosion impacts.

Total earthwork is estimated to involve approximately 82,711 cubic yards (cy). While the preliminary estimates indicate that there would be an excess cut of 33,123 cy over the entire site, efforts will be made to utilize as much of this excess material on-site as possible. The relatively large volume of excess material is primarily the result of major cuts required for the construction of the access road entrance, and the requirement to maintain a road grade of 8 percent or less (see Figure 3.2-6). The required grading for the majority of the roadway and residential development is not extensive.

Geology Impacts

The absence of bedrock outcrops on the site indicates that blasting may not be required for project construction, or if required, it will be limited. Soil borings or other geotechnical

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JS:\0326 Santucci Rte 6 Yorktown\DEIS Graphics\Figure 3.2-6 Grading Plan.cdr

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Figure 3.2-6: Grading Plan
Yorktown Farms Subdivision
Town of Yorktown, Westchester County, New York
Source: Ralph G. Mastromonaco, P.E., P.C., 11/05
Scale: As shown

investigations have not yet been completed on the site, and therefore, the need for blasting has not yet been established. For the purposes of this assessment, it is assumed that blasting may be required in estimated areas of greater than 20 feet of material cut. Such areas are identified in Figure 3.2-7 Areas of Potential Blasting. As shown in the figure, blasting may be required in three relatively small areas.

Quantities of rock excavation cannot be determined from available information but subsurface investigations will be conducted to confirm the actual depths to bedrock prior to application to the Town for a blasting permit. In some areas where rock is encountered, ripping bedrock may be possible in lieu of blasting. Given the relatively small areas on the site where blasting may be required, impacts to bedrock are expected to be small. Any blasting will be carried out in accordance with the blasting mitigation plan described below.

3.2.3 Mitigation Measures

Soil Erosion and Sediment Control Plan

Erosion and sedimentation will be controlled during the construction period by temporary devices in accordance with a Soil Erosion and Sediment Control Plan developed specifically for this site and this project (see Drawing 3 at the rear of this document). The plan has been developed by the project engineer Ralph Mastromonaco, P.E., P.C. The plan addresses erosion control and slope stabilization. This plan was developed in accordance with the Erosion and Sediment Control Guidelines in the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-93-06), and the Westchester County "Best Management Practices Manual for Erosion and Sediment Control (1991)". The plan includes limitations on the area of disturbance, limitations of the duration of soil exposure, delineation of microbasins, criteria and specifications for placement and installation of erosion control devices, and a maintenance schedule.

Topsoil from areas to be graded will be stripped and stockpiled for future use. Stockpiled soils will be stabilized with temporary seeding or covered until reuse and enclosed with erosion control devices such as haybales or silt fences. Stormwater management basins will be used as temporary sediment basins during the construction period. Redundant sediment barriers (filter fabric fence plus haybales) will be maintained adjacent to wetland areas.

Following construction, erosion will be prevented by established vegetation and by the storm water management and storm water quality devices specified on the drawings. Construction of the permanent storm water management systems will commence as part of the initial earthwork for the residential development so that these systems will be functional at the completion of construction.

A construction detail for each of the proposed soil erosion control devices (including temporary controls for use during the construction period) is provided on Drawing 6.

Best Management Practices (BMPs)

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

LOCATION MAP
N.T.S.

0 100 200
SCALE IN FEET

LEGEND

EXISTING	PROPOSED	
		CATCH BASIN
		DRAIN MANHOLE
		SAN. SEWER MANHOLE
		HYDRANT
		DRAIN INLET
		WATER VALVE
		HEADWALL
		DRY WELL
		STREET LIGHT
		MONUMENT
		WELL
		S.D.A.
294	294	CONTOUR LINE
		WETLANDS FLAGGED BY TIM MILLER ASSOCIATES (2003–2004)
		AREAS OF POTENTIAL BLASTING

RALPH G. MASTROMONACO, P.E., P.C.
Consulting Engineers
13 Dove Court, Croton-on-Hudson, New York 10520
(914) 271-4762 (914) 271-2820 Fax

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JS:\0326 Santucci Rte 6 Yorktown\DEIS Graphics\Figure 3.2-7 Areas of Potential Blasting.cdr

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Figure 3.2-7: Areas of Potential Blasting
Yorktown Farms Subdivision
Town of Yorktown, Westchester County, New York
Source: Ralph G. Mastromonaco, P.E., P.C., 11/05/04
Scale: As shown

- 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 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 at any particular time. One phase of construction, for example, will remain undisturbed or temporarily stabilized until the preceding phase is substantially complete.

Retain existing vegetation wherever feasible - Silt fencing will be used to physically define the limits of work. Wooded and wetland areas not to be developed (regraded) , will be retained in the existing condition until the developed areas are completed and stabilized. Substantial buffers of existing vegetation also will be provided along the perimeter of the site and near existing wetland areas. Approximately 18.6 acres (about 43 percent of the project site) will remain undisturbed woods or meadow.

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 may be seeded or stabilized depending upon weather conditions at the time of carrying out the work.

Minimize the length and steepness of slopes - The steepness and length of slopes have been designed to minimize runoff velocities and to control concentrated flow. Where concentrated (swale) flow from exposed surfaces is 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 swales and ponds will take place. The swales will direct runoff so that it can be checked or impounded.

Trap sediment on-site and prior to reaching critical areas such as wetlands - Silt fences, hay bale check dams, filter strips, ponds, sediment traps (in areas where no ponds are proposed), and catch basin filters will be used to either impound sediment-carrying runoff and or to filter the runoff as it flows through an area. Silt fencing, augmented by haybale barriers installed on the upgradient side of the silt fencing, will be used wherever land disturbance occurs within 50 feet of wetlands. A stabilized construction entrance will be installed at the single construction entrance to prevent construction vehicles from tracking soil onto public roadways. All temporary erosion control devices will be installed prior to the commencement of construction. The permanent storm water management systems will be installed in conjunction with the residential construction.

Establish a thorough maintenance and repair program - Erosion control measures will be inspected frequently, particularly prior to and following storms, and repaired as needed to ensure that they function properly. In addition to inspections by Town of Yorktown representatives, the applicant will be responsible for monitoring and maintaining the soil erosion and sedimentation controls.

Assign responsibility for the maintenance program - The responsibility for the monitoring and maintenance of the Erosion Control Plan will be detailed in the project specifications or construction drawings.

Blasting Mitigation Plan

Blasting may be necessary at two locations for the entrance road and in a storm water retention basin, as explained above. Subsurface investigations will be conducted prior to construction to confirm the actual depths to bedrock. If bedrock is found, other construction methods will be evaluated, such as cutting, ripping, or chipping, that can be used in lieu of blasting.

Any blasting which is required will be done in full conformance with New York State Code, the Town of Yorktown Blasting and Explosives regulations §124. Blasting operations will be conducted under the direct control and supervision of competent and licensed persons. The blasting contractor performing the work will be fully insured in accordance with §124. Once any required blasting sites have been identified, a general blasting schedule will be developed and a blasting permit will be obtained from the Building Inspector covering the specific blasting operation.

The quantity of explosives will be limited to the amount necessary to fracture the rock without endangering persons or property. Before firing, all blasts will be covered with a suitable protective device to prevent escape of broken rock. Warning flags or other means will be used at a reasonable distance to give proper warning to the public at least three minutes in advance of firing. Blasting will not be conducted between the hours of 5:00 PM and 8:00 AM, nor on Sundays, in accordance with §124.

The applicant will identify all structures, including residential dwellings, located within 300 feet of the blast site. Neighboring property owners and appropriate municipal representatives (Town Clerk and Police Department) will be notified of intent to blast not more than 30 days nor less than 72 hours prior to planned blasting activities, and such persons will be notified not more than 72 hours nor less than 24 hours prior to the

commencement of blasting, in accordance with §124. A qualified independent specialist will inspect site foundations or other sensitive structures within 300 feet of blasting sites before and after blasting work. The blasting contractor will be liable for any damage to off-site properties resulting from blasting activities.

While there is little potential for impacts to nearby local wells, any documented impact to local wells will be remedied by the applicant. If required by the Town, the applicant will develop a well monitoring plan to obtain water level data on wells within 500 feet of blasting sites, before, during and after blasting.