3.0 EXISTING SETTING, POTENTIAL IMPACTS AND MITIGATION

3.1 Geology, Soils and Topography

3.1.1 Existing Conditions

Topography and Slopes

The project site occupies the southern and eastern slopes of a broad hillside, locally known as Mount Pisgah. Topography on the site is varied and is shown in Figure 3.1-1, Local Topography. The topography on the property generally slopes towards the east and towards the south. The Fairways project area slopes mostly to the east, while the Gateway Summit project site mostly slopes toward the south and Route 6.

The high point of the site is near an off-site water tower at the western edge of the Gateway Summit site, with an elevation of approximately 757 feet. The lowest elevations on the site are found in a depression in the southwest corner of the Gateway Summit site, with an elevation of approximately 300 feet. On-site topography is shown in Figure 3.1-2 Existing Conditions Plan - Fairways and Figure 3.1-3 Existing Conditions - Gateways Summit.

The highest elevations on The Fairways site are found along the western edge of the property, adjacent to the Centennial golf course, with elevations of approximately 690 feet. The lowest elevations on The Fairways site are found in the wetland at the eastern edge of the site, with elevations of approximately 480 feet.

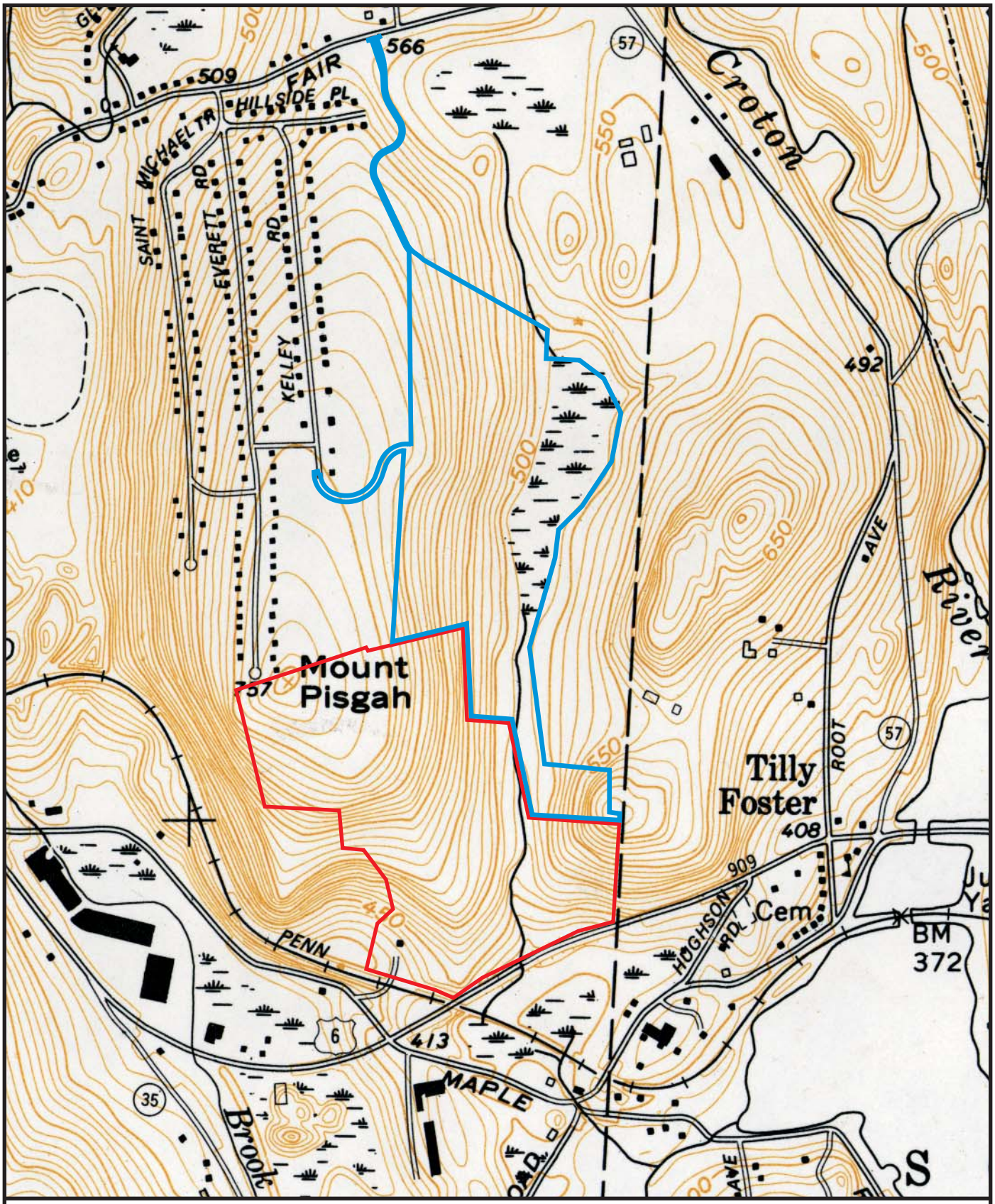
A stream channel separates two hillsides at the eastern portion of the Gateway Summit project area. A small hill at the eastern edge of the site (also the Town of Southeast/Carmel border), has an elevation of approximately 640 feet.

Slopes analysis for both The Fairways site and the Gateway Summit site were prepared by Putnam Engineering, PLLC, the project engineer. A slope analysis for The Fairways site is shown in Figure 3.1-4. The Fairways site and its access easement contain approximately 30.8 acres of land with slopes ranging from 0 to 15 percent, or approximately one third of the 100.2 acre site. This figure does not include approximately 23.9 acres that are seasonally flooded wetland. Approximately 47.5 acres or 46 percent has slopes greater than 15 percent. Areas of steep slopes (greater than 25 percent), are generally located in the center of the site, on the hillside above the wetland area.

Based upon the slopes analysis, 38.8 acres or 43 percent of the Gateway Summit site and its easement area contains slopes of 0 to 15 percent, 26.3 acres or 29 percent of the site contains slopes of 15 to 25 percent and approximately 11.7 acres or 28 percent of the site contains slopes greater than 25 percent. A slope analysis for the Gateways Summit site is shown in Figure 3.1-5.

Local Topography

As described above, the project site is located on the western and southern slopes of a broad hill known as Mount Pisgah. Similar to much of the topography in Putnam County, the local topography reflects the underlying geology, with north-south trending hills separated by low areas, typically containing wetlands, streams or lakes. The west branch of the Croton



N
W E
S

KEY
= Gateway Summit
= The Fairways

File 02136 08/05/04

Figure 3.1-1: Local Topography
Gateway Summit / The Fairways
Town of Carmel, Putnam County, New York
Source: NYSDOT Planimetric Map (Lake Carmel Quad)
Scale: 1" = 1000'

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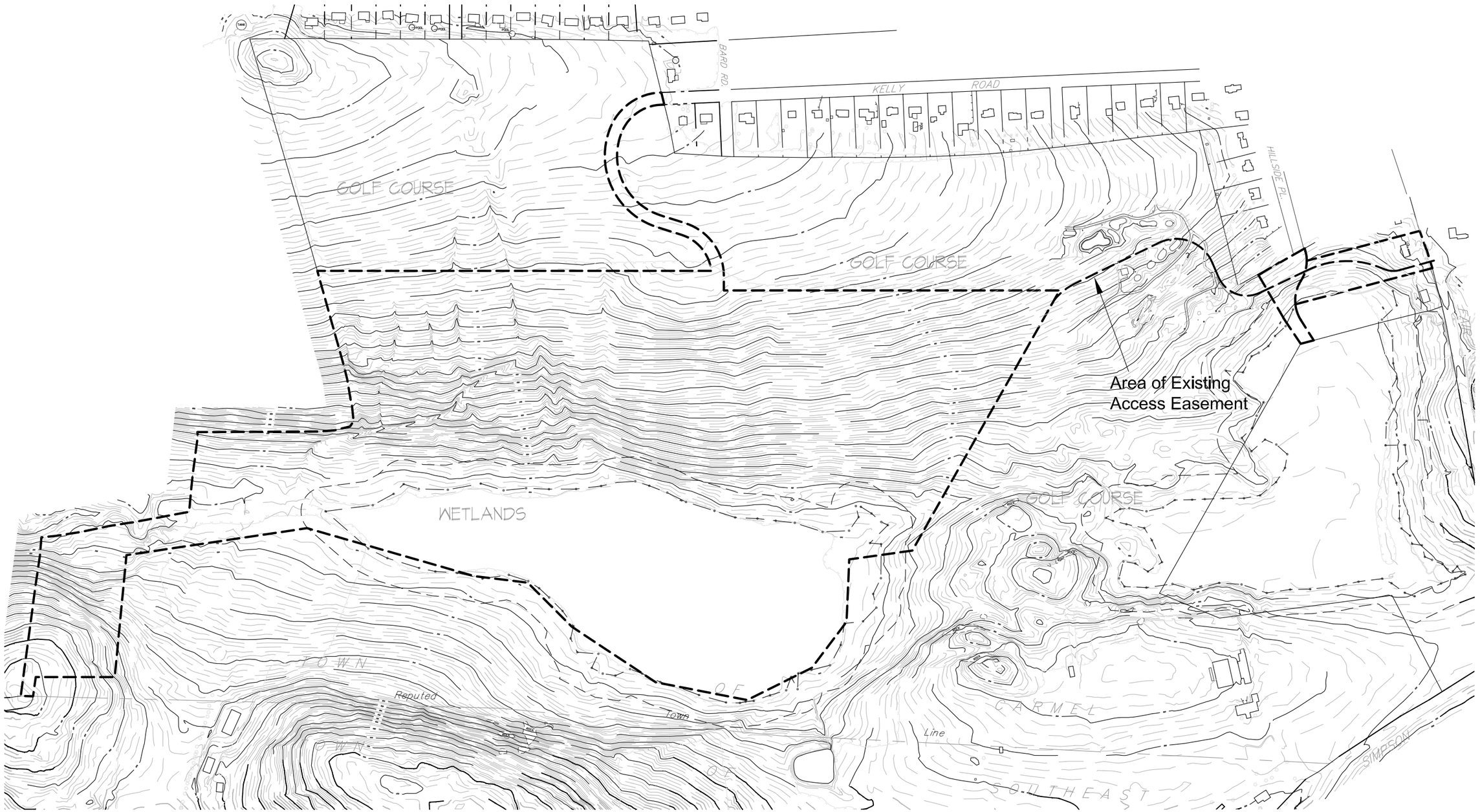

Figure 3.1-2: Existing Conditions Plan-The Fairways

Gateway Summit/ The Fairways

Town of Carmel, Putnam County, New York

Source: Putnam Engineering, P.L.L.C.

Scale: 1 inch = 400 feet

File: 02136 Fig 3.1-2 09/01/04

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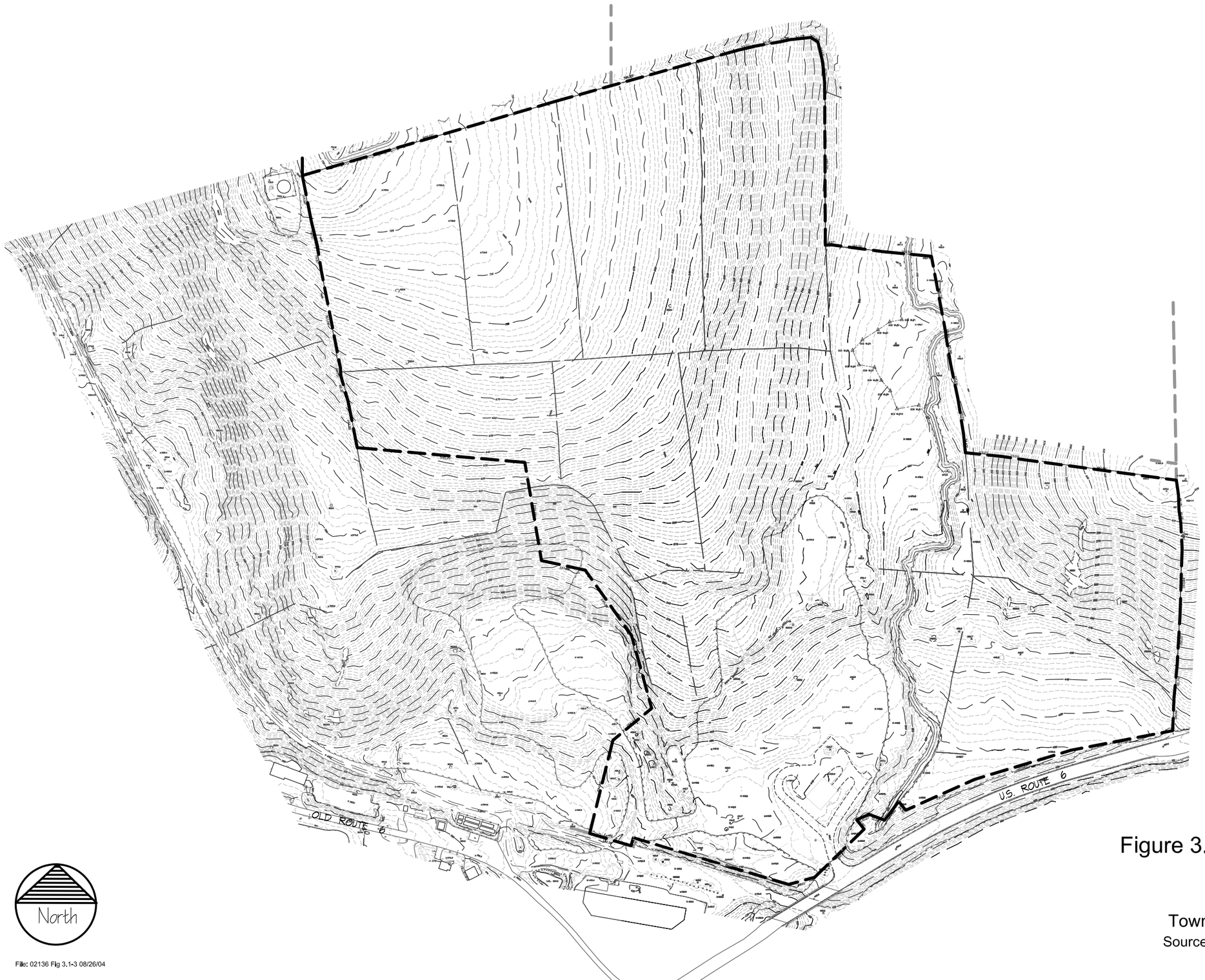

GRAPHIC SCALE

0 150 300 600

(IN FEET)

1 INCH = 300 FT

North

File: 02136 Fig 3.1-3 08/26/04

Figure 3.1-3: Existing Conditions Plan - Gateway Summit

Gateway Summit/The Fairways

Town of Carmel, Putnam County, New York

Source: Putnam Engineering, PLLC, Revised 08-25-04

Scale: 1 inch = 300 feet

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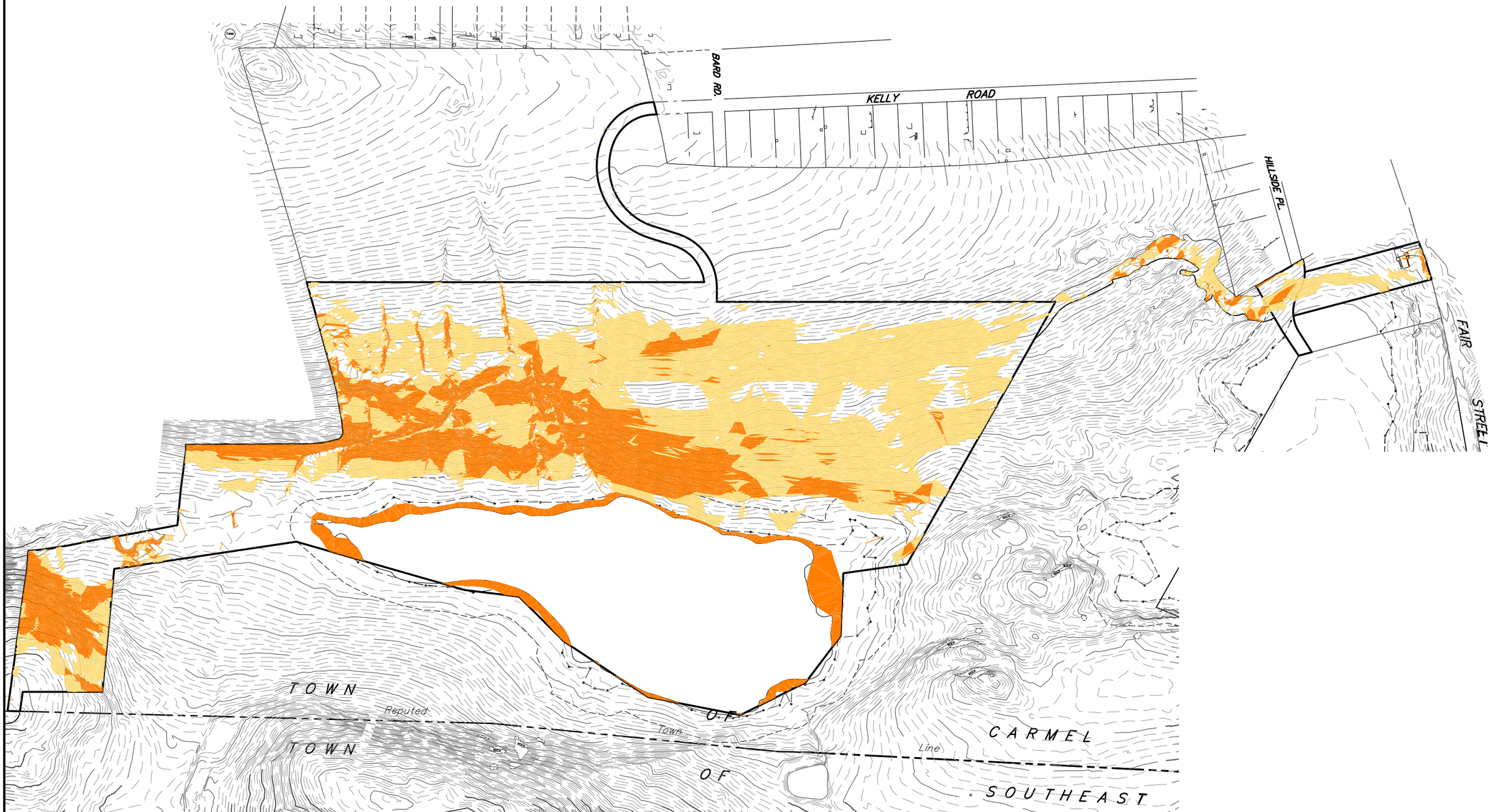

SLOPES LEGEND:

Color	Range	Percent	Area
□	0 TO 15%	39.4	1341712.99
	15% TO 25%	38.3	1306493.77
	>25%	22.3	761001.06

Figure 3.1-4: Slopes Map-The Fairways

Gateway Summit/The Fairways

Town of Carmel, Putnam County, New York

Source: Putnam Engineering, P.L.L.C.-Revised 08/30/2004

Scale: 1 inch = 400 feet

North

File: 02136 Fig 3.1-4 08/30/04

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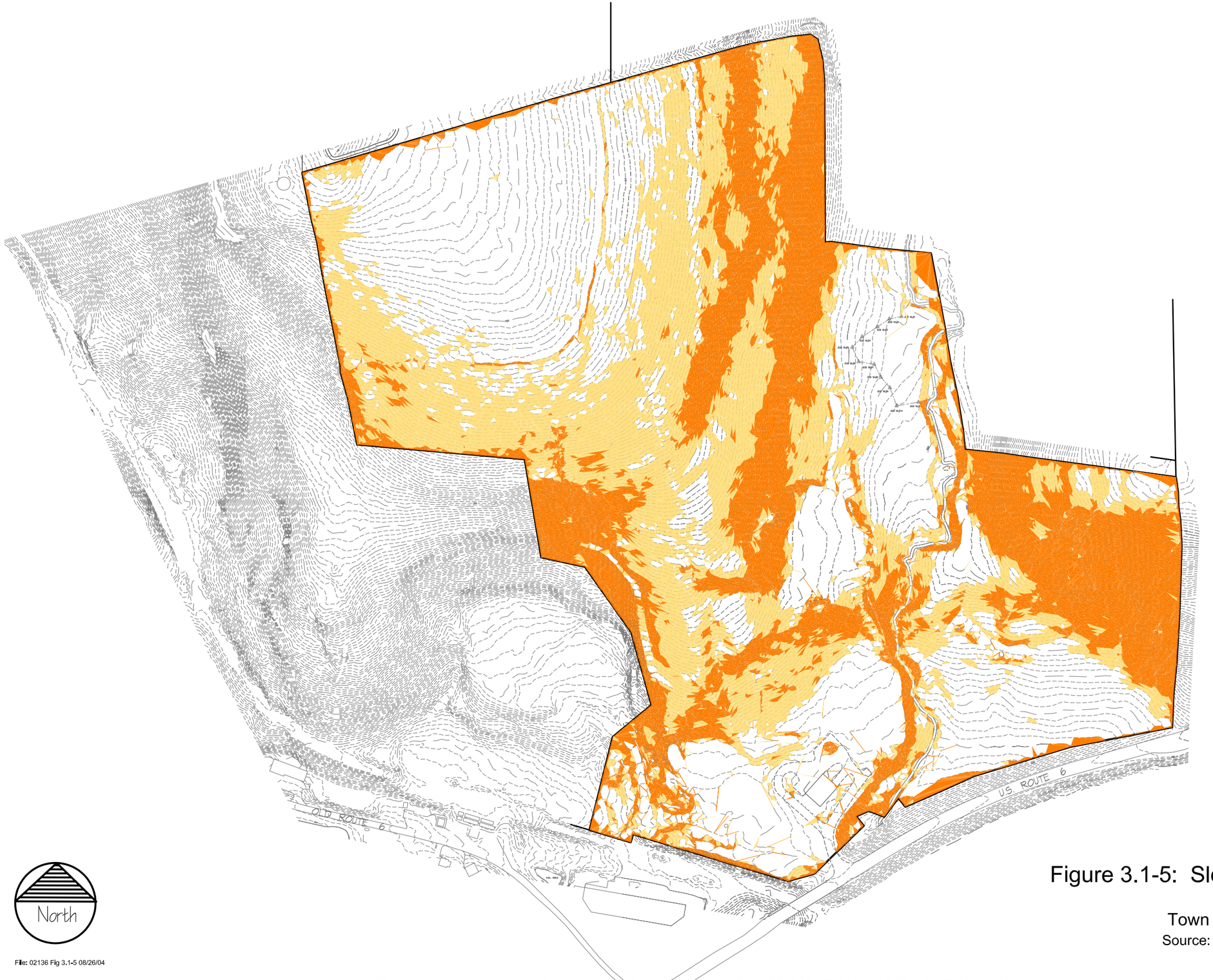
Fileserver2\Uses\Tina_Wang\Projects\02136-GatewaySummit\figures\Fig 3.1-4 Slopes Plan.dwg



SLOPES LEGEND:

Color	Range
□	0 - 15
	15 - 25
	>25

GRAPHIC SCALE

0 150 300 600

(IN FEET)
1 INCH = 300 FT

North

File: 02136 Fig 3.1-5 08/26/04

Figure 3.1-5: Slopes Map - Gateway Summit

Gateway Summit/The Fairways
Town of Carmel, Putnam County, New York
Source: Putnam Engineering, PLLC, Revised 08-25-04
Scale: 1 inch = 300 feet

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River lies approximately 2,500 feet east of the site. Another series of hills known as the Carmel Hills is located southwest of the site.

Soils

Soils on the site were identified from the Soil Survey of Putnam and Westchester Counties (SCS, 1994). A geologist and a wetland scientist walked the site several times to confirm soil and topographic conditions. In addition, a site specific soil survey was completed by TMA staff on June 30, 2004. Soil units were confirmed on-site through soil cores and descriptions. The results of the soil survey are described further below. Soil units mapped on the project area are shown in Figure 3.1-6 for The Fairways site and on Figure 3.1-7 for the Gateway Summit site. Due to the varied topography, slopes and the size of the two sites, multiple soil types are found on the Gateways and Fairways sites. The soil mapping units on the site are summarized below:

- Paxton fine sandy loam (Pn) This unit consists of deep, well drained soils found on the top and sides of broad ridges. This soil comprises the greatest area on the two sites and occurs in areas of gentle to moderate slopes on the higher portions of the property.

- Charlton Series (Ch, CIE) This soil is sloping, very deep, and well-drained, and is located on steeper hillsides, typically on the slopes below the Paxton soils. It is formed in glacial till derived from granite, schist and gneiss. Slopes range from 2 to 35 percent. Permeability is moderate or moderately rapid throughout the profile. Erodibility of these soils is slight. The depth to bedrock is more than 60 inches.

- Charlton-Chatfield complex, rolling, very rocky (CrC). This unit consists of the deep, well drained Charlton soil and the well drained and somewhat excessively drained Chatfield soil. This soil is typically formed on hilltops and is underlain by highly folded bedrock. This soil unit is found on the gentle slopes in the southeast corner of the site, near Route 6.

- Chatfield-Hollis Rock Outcrop Complex (CtC, CuD). This unit includes moderately deep, well drained and somewhat excessively drained Chatfield soil, the shallow, well drained and somewhat excessively drained Hollis soil, and areas of rock outcrop. Slopes are mostly 15 to 20 percent. This soil is found on the rocky hillside in the southeast portion of the site, and a small area at the northern edge of The Fairways site.

- Leicester loam (Lc). This unit consists of very deep, moderately well drained soils that have formed on the lower parts of hillsides. On the site it is found in areas of 3 to 15 percent slopes. This soil comprises only a small proportion of the property including a small area around the stream near Route 6 and at the northern edge of The Fairways site.

- Ridgebury (RdB). 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, and are generally stony. Permeability is moderate to moderately rapid in the surface layer and subsoil and slow or very

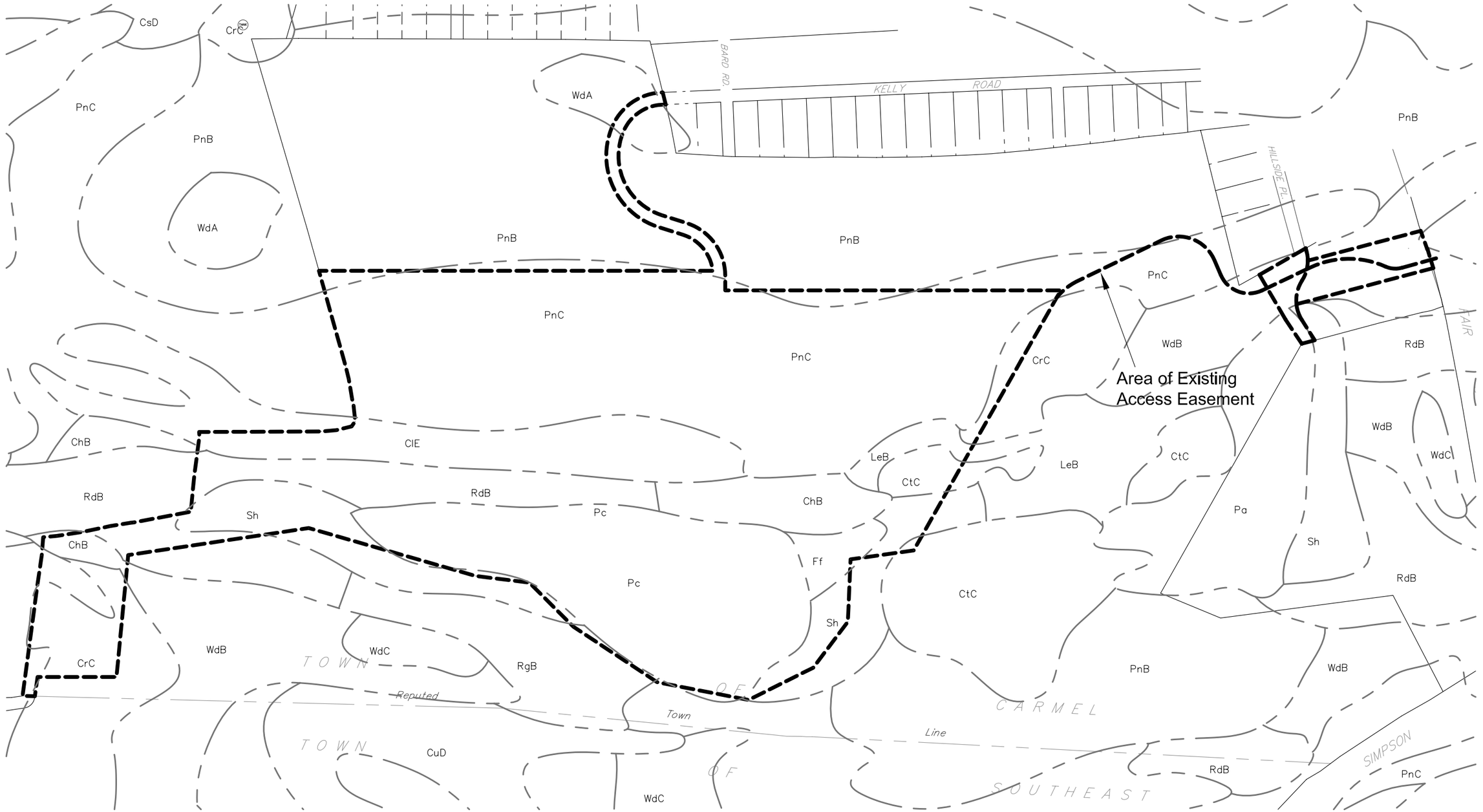

Figure 3.1-6: Soils Map-The Fairways

Gateway Summit/The Fairways

Town of Carmel, Putnam County, New York

Source: Putnam Engineering, P.L.L.C.

Scale: 1 inch = 400 feet

File: 03126 Fig 3.1-6 03/11/04

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SOILS LEGEND

SYM	NAME	HYDRO. GROUP
ChB	CHARLTON LOAM - 2%-8% SLOPES	B
ChE	CHARLTON LOAM - 25%-35% SLOPES	B
ClE	CHARLTON LOAM - 25%-35% SLOPES, VERY STONY	B
CrC	CHARLTON-CHATFIELD COMPLEX - ROLLING, VERY ROCKY	B
CsD	CHATFIELD-CHARLTON COMPLEX	B
CtC	CHATFIELD-HOLLIS-ROCK OUTCROP COMPLEX, ROLLING	B-C/D
CuD	CHATFIELD-HOLLIS-ROCK OUTCROP COMPLEX, HILLY	B-C/D
HrF	HOLLIS ROCK OUTCROP-COMPLEX	C/D
LcA	LEICESTER LOAM - 0%-3% SLOPES, STONY	C
LeB	LEICESTER LOAM - 2%-8% SLOPES	C
PnB	PAXTON FINE SANDY LOAM - 2%-8% SLOPES	C
PnC	PAXTON FINE SANDY LOAM - 8%-15% SLOPES	C
RdB	RIDGEBURY LOAM - 3%-8% SLOPES	C
Sh	SUN LOAM	D
Ub	UDORTHENTS, SMOOTHED	
Uc	UDORTHENTS, WET SUBSTRATUM	
WdA	WOODBRIDGE LOAM, 0%-3% SLOPES	C

GRAPHIC SCALE

0 150 300 600

(IN FEET)

1 INCH = 300 FT

North

File: 02136 Fig 3.1-7 03/16/04

Figure 3.1-7: Soils Map - Gateway Summit

Gateway Summit/The Fairways

Town of Carmel, Putnam County, New York

Source: Putnam Engineering, PLLC

Scale: 1 inch = 300 feet

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slow in the substratum. Erodibility of these soils is slight. This soil unit is mapped in the area of the stream channel in the north central portion of the Gateway site and directly above the ponded wetland on The Fairways site.

- Fluvaquents complex (Ff). This unit consists of very deep, well drained to very poorly drained nearly level soils that have been formed in recent alluvial deposits. The soils are frequently flooded and have variable composition, texture and drainage class. This soil is found in only a small area at the north side of the ponded wetland on The Fairways site. The soil is mapped around the stream channel entering the wetland.

- Sun loam (Sh). Sun loam soil is very deep, nearly level, and poorly drained or very poorly drained. This soil type typically indicates wetland conditions. It is found in depressions and along drainage ways in till plains. This soil is mapped in the ponded wetland area at the eastern edge of The Fairways site.

- Udorthents, smoothed (Ub). This unit consists of very deep, excessively drained to moderately well drained soils that have been altered by cutting and filling. It is mainly found in urban areas or adjacent to highways or borrow areas. Since these soils are disturbed, the properties and characteristics of the soils are variable. This soil is mapped in the area of the current entrance into the Gateways Summit site, including around the existing Town storage building and up the hillside, north of that building. This area has been graded and stripped of soil at some point in the past. The historical topographic changes on-site are further described below.

- Woodbridge loam (Wd). This unit consists of very deep, moderately well drained soils that have formed generally on the lower parts of hillsides. Slopes are generally 0 to 3 percent. This soil is mapped on the Gateways Summit site, in a circular area on the hillside in the northwest portion of the site.

Soil Survey

A soil survey was completed by a TMA geologist on June 29, 2004. Soil cores were completed at multiple locations on the Gateway Summit and Fairways properties in order to confirm soil types, sequence, depth and composition of the soil layers. A Munsell Soil Color chart was used to compare soil color to descriptions in the soil survey. The cores were completed to a minimum depth of 24 inches or until bedrock was encountered.

In general the soil encountered in the field soil survey was consistent with the descriptions in the *Soil Survey of Putnam and Westchester Counties*. At one location, on the lower slope of The Fairways site, the soil mapped as Charlton Series (CiE), appeared to be Leicester loam (Lc), due to prominent mottles in the subsoil. As indicated above, the depth and composition of soils at other testing locations were generally consistent with the *Soil Survey*.

In October and November of 2004, deep soil field testing was conducted in the areas of proposed stormwater management facilities. These tests extended as deep as 15 feet beneath the surface in some cases. Descriptions of the soils encountered are listed in the tables below. The deep hole tests confirm the soil types and soil profile descriptions in the *Soil Survey of Putnam County and Westchester Counties, New York.* These deep tests also confirm the suitability of soils for use as stormwater basins in the areas of the proposed

basins, in terms of their texture, compactness and other drainage characteristics. Soil descriptions are indicated in the following Table 3.1-1a and Table 3.1-1b, with test hole identification numbers corresponding to those shown in Drawings DT-1 located at the rear of this DGEIS.

Table 3.1-1a
Deep Test Soil Descriptions - Gateway Summit

Hole ID Number	Depth	Soil Description
1	0”-12” 12”-30” 30”-84” 84”-156”	Topsoil/Fill Tan Loam Gravelly Fine to Medium Sand Mottled Compact Fine Sand w/ Silt No Water Bottom at 13 feet
1A	0”-12” 12”-30” 30”-84” 84”-156”	Topsoil Red Loam Gravelly Fine to Medium Sand Brown Sand with Trace of Silt, No Mottling, No Ledge, No Water Bottom at 13 feet
2	0”-6” 6”-36” 36”-132”	Topsoil Red Loam Fine Sand/Silt Mottling at 3-6 feet Bottom at 11 feet
2E	0”-30” 30”-132”	Dark Gray Fill Somewhat Compact Gravelly Course Sand w/ Boulders, No Mottling, Water Seepage at 6 feet
3	0”-6” 6”-24” 24”-84” 84”-180”	Topsoil Tan Loam Gray Fine Sand Gray Brown Medium Sand No Mottling, No Water, Bottom at 15 feet
4	0”-48” 48”-132”	Boney Fill Material Compact Very Fine Sand No Mottling No Water, Bottom at 11 feet
4W	0”-6” 6”-84”	Topsoil Gray Brown Medium Sand with Trace Gravel, 10%-20% Cobbles, No Mottling, No Water, Bottom at 8 feet
5	0”-6” 6”-84”	Topsoil Gray Brown Medium Sand with 30% Cobbles and Boulders, No Mottling, No Water, Bottom at 7 feet
6	0”-6” 6”-66” 66”-120”	Topsoil Grayish Fine Sand with Cobbles Significantly Compacted Very Fine Sand, No Mottling, No Water, Bottom at 10 feet
7	0”-18” 18”-48” 48”-102”	Topsoil Dark Brown Loam Mottled Fine to medium Sand/Silt, Water at 4 feet Bottom at 8 feet, six inches
7A	0”-12” 12”-30” 30”-96”	Topsoil Red Brown Fine Loam Medium Sand with Silt, Mottling at 4 feet, Water at 8 feet, Bottom at 8 feet
8	0”-12” 12”-84”	Topsoil Mottled Gravelly Sand with Silt, Water at 7 feet, Bottom at 7 feet

Table 3.1-1a (continued) Deep Test Soil Descriptions - Gateway Summit		
8A	0”-12” 12”-24” 24”-132”	Topsoil Dark Brown Fine Loam Gray Brown Gravelly Sand with Silt, No Mottling, Water at 4 feet, Bottom at 11 feet
9	0”-12” 12”-84”	Topsoil Mottled Gravelly Sand with Silt, No Water, Bottom at 7 feet
9A	0”-12” 12”-90”	Topsoil Mottled Gravelly Sand with Silt, No Water, Bottom at 7 feet 6 inches
10	0”-6” 6”-66”	Topsoil Mottled Gravelly Sand with Silt, Water at 2 feet 6 inches, Bottom at 5 feet 6 inches
10W	0”-12” 12”-36” 36”-144”	Topsoil Red Loam Medium Sand and Silt, No Mottling, Water at 10 feet, Bottom at 12 feet
11	0”-6” 6”-24” 24”-120”	Topsoil Red Loam Gravelly sand with Silty Compact at 6 feet, No Mottling, No Water, Bottom at 10 feet with Boulder
12	0”-6” 6”-24” 24”-102”	Topsoil Tan Loam Mottled Compact Medium Sand with Gravel, No Water, Bottom at 8 feet six inches
13	0”-12” 12”-24” 24”-132”	Topsoil Brown Loam Gravelly Fine to medium Sand with Cobbles and Boulders, No Mottling, No Water, Bottom at 11 feet
13E	0”-6” 6”-72” 72”-126”	Topsoil Medium Sand with Gravel Mottled Compact Sand with Silt Compact, No Water, Bottom at 11 feet 6 inches
13W	0”-6” 6”-30” 30”-138”	Topsoil Red Brown Loam Gravelly Medium Sand with Silt, Mottling at 6 feet 6 inches No Water Bottom at 11 feet, 6 inches
14	0”-12” 12”-66” 66”-120”	Topsoil/Fine Grayish Fine Loam with Cobbles Very Compact Extremely Fine Sand, No Mottling, No Water, Bottom at 10 feet
14N	0”-12” 12”-42” 42”-96” 96”-168”	Topsoil Tan Loam Gravelly Medium Sand with Cobble Loose Fine Sand and Gravel, No Mottling, No Water, Bottom at 14 feet
14S	0”-12” 12”-30” 30”-156”	Topsoil Red Brown Loam Gravelly medium to Fine Sand and Silt 5% Boulders, No Mottling, Water at 12 feet, Bottom at 13 feet
14W	0”-6” 6”-24” 24”-73” 72”-132”	Topsoil Tan Loam Medium Sand and Silt Mottled Sand/Silt Water at 6 feet Bottom at 11 feet

Table 3.1-1a (continued) Deep Test Soil Descriptions - Gateway Summit		
15	0”-6” 6”-24” 24”-132”	Topsoil Brown Loam Mottled Sand/Silt, No Water, Bottom at 11 feet
15W	0”-6” 6”-24” 24”-72” 72”-144”	Topsoil Tan Loam Somewhat Compact sand and Silt Mottled Fine to Medium Sand and Silt, Water at 8 feet, Bottom at 12 feet
16W	0”-6” 6”-24” 24”-156”	Topsoil Red Brown Loam Gravelly medium Sand, No Mottling, Water at 12 feet, Bottom at 13 feet
17W	0”-6” 6”-24” 24”-166”	Topsoil Red Brown Loam Gray Brown Gravelly Medium Sand, No Mottling, No Water, Bottom at 14 feet
18	0”-6” 6”-24” 24”-72” 72”-144”	Topsoil Tan Loam Medium Sand and Silt Compact Sand and Silt, No Mottling, No Water, Bottom at 12 feet
18S	0”-6” 6”-24” 24”-72” 72”-108”	Topsoil Tan Loam Medium Sand and Silt Compact Sand and Silt, No Mottling, No Water, Bottom at 9 feet
19	0”-6” 6”-24” 24”-120”	Topsoil Tan Loam Medium sand and Silt, No Mottling, Water at 4 feet, Bottom at 10 feet
20	0”-6” 6”-24” 24”-60” 60”-144”	Topsoil Tan Loam Loose Medium Sand/Silt Water Seepage at 5 feet, Compact Gravelly Sand with Silt Trace, 144 feet total depth
21	0”-6” 6”-24” 24”-132”	Topsoil Tan Loam Compact Medium Sand with Silt, Water Seepage at 3 feet, Standing Water at 10 feet, Bottom at 11 feet
21A	0”-6” 6”-24” 24”-72” 72”-156”	Topsoil Tan Loam Gravelly Medium Sand with Silt Compact Medium Sand/Silt, Spot Mottled at 3 feet, Water Seepage at 6 feet, 156 feet total depth
21B	0”-6” 6”-24” 24”-72”	Topsoil Tan Loam Medium Sand With Silt, Significant Compaction at 5 feet 6 inches, Total Depth 13 feet
21C	0”-6” 6”-30” 30”-132”	Topsoil Tan Loam Compact medium Sand and Silt, Water Seepage at 4 feet, total depth 11 feet
22	0”-6” 6”-30” 30”-108”	Topsoil Red Brown Loam Gravelly Sand-Silt, No Mottling, Seepage at 6 feet, Water at 8 feet, Bottom at 9 feet
23	0”-6” 6”-24” 24”-108”	Topsoil Reddish Brown Loam Medium Sand/Silt with Gravel, Mottling at 6 feet, Standing Water at 9 feet 6 inches, Bottom at 10 feet

Table 3.1-1a (continued) Deep Test Soil Descriptions - Gateway Summit		
24	0”-6” 6”-30” 30”-120”	Topsoil Red Brown Loam Fine to Medium Sand with Silt Trace, No Mottling, Water at 9 feet 6 inches, Bottom at 10 feet
25	0”-6” 6”-24” 24”-114”	Topsoil Red Brown Loam Fine to Medium Sand with Silt trace and 10% Boulders and Gravel Throughout, No Mottling, Water at 9 feet 6 inches, Bottom at 9 feet 6 inches
26	0”-12” 12”-30” 30”-66” 66”-132”	Topsoil Reddish Silt/Sand Silt and Medium Sand Compact Grayish Silt with Sand and gravel, Mottling at 10 feet, Water at 10 feet, Bottom at 11 feet
26A	0”-6” 6”-30” 30”-114”	Topsoil Red Brown Loam Medium Sand/Silt with Gravel, No Mottling, Water at 8 feet 6 inches, Bottom at 9 feet 6 inches
27	0”-12” 12”-24” 24”-144”	Topsoil Reddish Loam Grayish Brown Medium Sand With gravel, No Mottling, No Water, Bottom at 10 feet
28	0”-6” 6”-24” 24”-66” 66”-120”	Topsoil Red Brown Loam Fine to medium sand/Silt Gravelly medium sand/Silt, Mottling at 6 feet 6 inches, No Water, Bottom at 10 feet
29	0”-6” 6”-24” 24”-108”	Topsoil Red Brown Loam Gravelly Fine to Medium Sand with Silty Trace and some Cobbles, No Mottling, No Ledge, No Water, Bottom at 15 feet
30	0”-12” 12”-36” 36”-72” 72”-180”	Topsoil Reddish Brown Loam Loose Fine to Medium Sand with Silty Trace Somewhat Compact Fine Sand with Gravel and Silt Trace, No Ledge, No Water, Bottom at 15 feet
30A	0”-6” 6”-30” 30”-120” 120”-156”	Topsoil Tan Loam Brown Fine to Medium Sand with Silt Trace Significantly Compact Sand/Silt, No Ledge, No Water, Bottom at 13 feet
Source: Putnam Engineering, PLLC. Field surveys conducted October 27, 2004, November 3, 2004 and November 5, 2004.		

Table 3.1-1b
Deep Test Soil Descriptions - The Fairways

Hole ID Number	Depth	Soil Description
2	0”-12” 12”-420” 42”-120”	Topsoil/Fill Tan Fine Loam Mottled Somewhat Compacted Fine to Medium Sand/Silt Water Seepage at 42 inches Standing Water at 8 feet
2A	0”-12”	Topsoil Ledge at 5 feet Total Depth 5 feet
3	0”-12” 12”-24” 24”-84” 84”-114”	Topsoil Red Loam Somewhat Compact medium to Fine Sand with Gravel Coarse sand and Brown Rock Total Depth 9 feet 6 inches
4	0”-12” 12”-36” 36”-72” 72”-138”	Dark Gray Fill Tan Fine Loam Medium Sand and Gravel Dark Gray Coarse Sand and Broken Rock Total Depth 11 feet 6 inches
5	0”-12” 12”-36” 30”-78”	Topsoil Tan Loam Medium Sand and Gravel, Ledge at 6 feet 6 inches
6	0”-12” 12”-36” 36”-96” 96”-168”	Topsoil Tan Fine Loam Medium Sand and Gravel Coarse Gray and Green Sand with Broken Rock Total Depth 14 feet
7	0”-12” 12”-36” 36”-120” 120”-174”	Topsoil Red Loam Tan Medium Sand and Gravel Loose Gray Coarse Sand and Broken Rock, total Depth 14 feet 6 inches
8	0”-12” 12”-30” 30”-84”	Topsoil Red Loam Total Depth 7 feet
9	0”-12” 12”-30” 30”-144”	Topsoil Tan Fine Loam Medium Sand with Trace and Silt Gravel Total Depth 12 feet
10	0”-12” 12”-30” 30”-84” 84”-132”	Topsoil Tan Fine Loam Somewhat Compact Medium Medium Sand and Gravel, Total Depth 11 feet

Table 3.1-1b (continued) Deep Test Soil Descriptions - The Fairways		
11	0”-6” 6”-24” 24”-96”	Topsoil Tan Loam Somewhat Medium Sand with Trace Silt, Total Depth 8 feet
12	0”-6” 6”-42” 42”	Topsoil Red Brown Loam Rock
13	0”-12” 12”-36” 36”-120” 120”-174”	Topsoil Red Loam Tan Medium Sand and Gravel Loose Gray Coarse Sand and Broken Rock, Total Depth 14 feet 6 inches
14	0”-12” 12”-24” 24”-108”	Topsoil Red Loam Gray-Tan Medium Sand with Broken Rock, Water at 9 feet, Total Depth 9 feet
15	0”-6” 6”-24” 24”-96”	Topsoil Tan Loam Medium Sand with Trace Silt, Water at 7 feet 6 inches
16	0”-6” 6”-24” 24”-72” 72”-156”	Topsoil Tan Fine Loam Medium to Fine Sand with Silt Compact Medium Sand and Silt, Water Seepage at 7 feet, Total Depth 13 feet
17	0”-6” 6”-24” 24”-84” 84”-144”	Topsoil Tan Loam Medium Sand and Silt Compact Medium Sand and Silt, Water Seepage at 7 feet, Total Depth 12 feet
18	0”-6” 6”-24” 24”-84” 84”-156”	Topsoil Tan Fine Loam Medium Sand/Silt Compact Medium Sand and Silt, Total Depth 13 feet
19	0”-6” 6”-24” 24”-84” 84”-156”	Topsoil Tan Fine Loam Medium Sand/Silt Compact Medium Sand and Silt, Total Depth 10 feet
Source: Putnam Engineering, PLLC. Field surveys conducted November 10, 2004.		

Soil Characteristics

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 3.1-1
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
Fluvaquents	D	0.2-20.0	0.28-0.32	Severe: Ponding, flooding, frost action	Severe: Flooding, ponding	Severe: cutbanks cave, ponding
Leicester	C	0.6-6.0	0.24-0.28	Severe: wetness	Severe: Wetness, frost action	Severe: wetness
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
Udorthents	N/A[3]	N/A[3]	N/A[3]	N/A[3]	N/A[3]	N/A[3]

[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.
[3l] Properties for Udorthent soils vary considerably and are not provided in the Soil Survey.
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, but rather the requirement for engineering methods to compensate for soil limitations, such as erosion controls, footing drains or other drainage improvements.

Charlton and Paxton soils, which comprise the majority of the area proposed for development, are rated with slight to severe limitations for the construction of pavements and buildings, and for excavations for utilities, depending on the slope. To the extent possible, development is proposed for areas on the site with the least amount of slopes.

Chatfield, Leicester, Ridgebury and Woodbridge soils are mapped on generally smaller, discontinuous areas on the site. Chatfield soils are rated with limitations due to slope and depth to bedrock, while the Leicester, Ridgebury, and Woodbridge soils have limitations due to wetness. 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.

No development or grading is proposed in areas of Sun soils or Fluvequent complex soils.

Geologic Setting

The project site is located in the Hudson Highlands physiographic province, which is characterized by complexly folded and faulted metamorphic and igneous rocks. Bedrock which underlies the site is metamorphic rock of uncertain origin according to the Bedrock Geologic Map of New York (New York State Education Department, 1989). These metamorphic rocks include: amphibolite, pyroxene, hornblende, and gneiss.

The advance and retreat of glaciers during the Pleistocene Epoch, left behind landform features and glacial till deposits across much of Putnam County. These till deposits generally vary in composition from clay, to silt, sand and gravel. The project area appears to be covered by various thickness of till. No deep soil borings have been completed at the site and therefore the maximum thickness of till on-site is not known.

Bedrock was observed in only one area of the Gateways site, in the southeast corner, near the proposed project entrance. Bedrock was not observed on The Fairways project site.

Historical Topographic Modifications

Modification of topography on the site has occurred. It included excavation of soil used for the capping of a former landfill on an adjacent parcel (see description below). Vegetation on a portion of the site in the vicinity of the former Town Highway building had been cleared and soil removed for use as fill for the capping of the adjacent landfill. The extent of soil removal and grading is shown on Figure 3.1-7 Soils Map - Gateway Summit. Areas of previous grading generally conform to areas mapped as Udorthents.

Although the dates of excavation and topographic modification are not certain, the adjacent landfill was active in the mid-1970's. It is likely that the soil was excavated at this time. Several test pits were excavated into this disturbed soil near the former Town Highway building in May and June, 2001. The test pits indicate relatively thick (6 to 11 feet) layer of silty sand or sand and gravel in the southern portion of the area mapped as udorthents. The

thickness sand and gravel is less on the hillside north of the Town Highway building. Based upon surrounding and nearby topography, it does not appear that major changes in topography resulted from the grading. It appears that the topsoil and upper soil layers of loam were removed and the lower sand and gravel layers were retained and remain near the surface.

Summary of Previous Environmental Investigations

A Phase 2 Environmental Site Assessment for the Gateway Summit site was completed by Tim Miller Associates, Inc. in 2001 (August 10, 2001). The Phase 2 investigation included a review and summary of available public and private records concerning the subject property as well as the adjacent Putnam County property. A field investigation, including soil and groundwater sampling, was completed on the Gateway Summit site. The Phase 2 assessment included the review of an environmental database and Town and environmental agency records, tasks typically done for Phase 1 assessments. The environmental assessment was done to characterize current environmental conditions on the Gateway Summit property and to document previous uses which may have impacted the site. Related work was completed on an adjacent parcel owned by Putnam County, which formerly operated as a landfill.

Available public records, an environmental database, and private studies did not reveal any record of dumping, spills or releases on the Gateway Summit site. A 1988 groundwater study completed for a portion of the Gateway site by Leggette, Brashears & Graham indicates that two wells on the site were capable of 10 and 7.5 gallons per minute respectively. According to the report, laboratory analysis showed the groundwater to be of generally good quality, slightly basic in pH and low in nitrates, chloride and metals. Only manganese slightly exceeded drinking water standards.

Several environmental studies have been completed for the adjacent former municipal waste landfill, operated by Putnam County. The County parcel is 18.2 acres in size and is located directly west of the Gateway property, and north of Old Route 6. The landfill was operated from 1975 until August, 1976, when dumping was ceased. A detailed Phase 2 investigation by Wehran Engineering (1987) indicated that the landfill contained solid domestic and commercial waste generated in Putnam County. No documentation of industrial waste was found. Several intact 55 gallon drums were observed during a 1985 inspection.

Environmental studies of the landfill property concluded that leachate from the landfill, and its potential migration off-site is the primary concern with the former landfill. The 1988 Phase 2 study by Wehran Engineering concluded that there was no conclusive evidence of groundwater contamination from the landfill. In November 1990, the NYS DEC delisted the former landfill site from the State's Inactive Hazardous Waste Sites registry since there was no conclusive evidence of hazardous waste disposal. The site was referred to the NYS DEC Division of Solid Waste for closure. Permanent closure of the landfill has not yet been completed by the County.

As part of the TMA Phase 2 study (August, 2001), soil samples were collected at the Gateway site in a series of test pits and trenches, excavated in June and July, 2001. During excavation at 13 locations, no soil staining or other indications of petroleum or chemical releases were observed. Four test pits were completed near the unpaved access road near the western edge of the Putnam County landfill property. No buried debris, solid waste,

tanks, or containers of petroleum or chemicals were observed in any of the test pit locations. Eleven soil samples were analyzed for volatile organic compounds. The laboratory analysis of soils indicated no concentrations of volatile organic compounds in the soil samples. Four soil samples were analyzed for semi-volatile compounds and no compounds were detected.

Three temporary wells were installed and sampled to assess shallow groundwater quality on the Gateway Summit property. Two wells were installed on the property boundary with the landfill, and a third well was installed 250 feet east of the property line. The analytical results indicated no volatile compounds in the groundwater samples. Results for inorganic water quality and metals were within ranges typical for shallow groundwater and did not show concentrations indicating possible impact from landfill leachate.

In summary, no indications of impact from the former landfill were found in the testing of soil and groundwater on the Gateways Summit site.

3.1.2. Potential Impacts

Slopes Impacts

Impacts from disturbance to steep slopes are directly related to the potential for soil erosion during construction. Slope Disturbance Maps are shown in Figures 3.1-8 for The Fairways site and Figure 3.1-9 for the Gateways Summit Site. As shown in the Slope Disturbance Maps and the table below, the project will involve grading on slopes of greater that 15 percent.

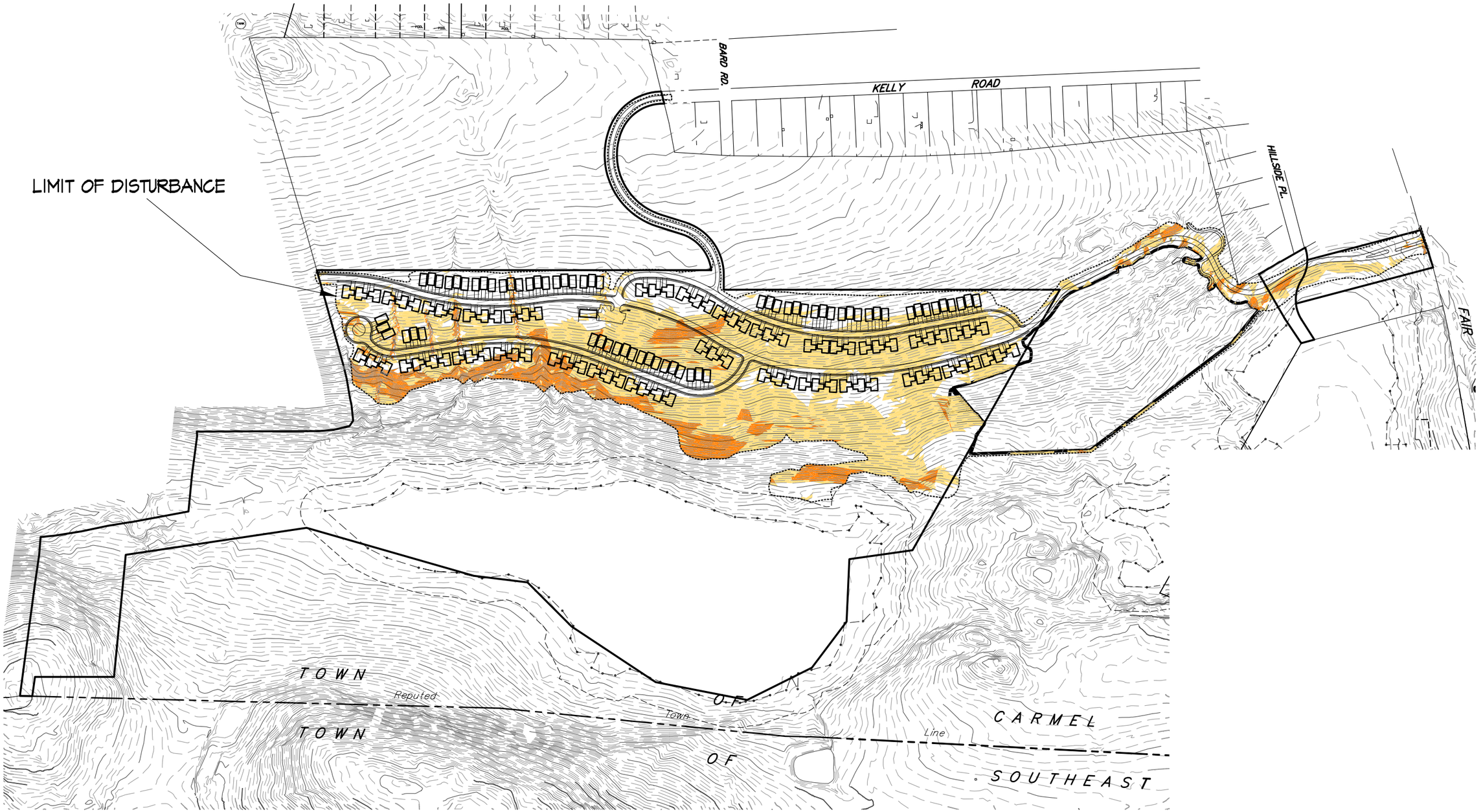
Regarding Gateway Summit, grading on steep slopes will occur largely with the construction of the access road and stormwater management facilities in the north central portion of the site. Grading will occur in areas of slope greater than 15 percent on The Fairways site for the road network, a portion of the residences, and the stormwater management facilities.

A summary of slopes disturbance is provided in Table 3.1-2 Slopes Disturbance.

Table 3.1-2
Slopes Disturbance

Slope Category	***Approximate Acres Disturbed***	
	Fairways	**Gateway Summit**
15% to 25%	21.5 acres	24.1 acres
>25%	4.6 acres	14.5 acres
Total Slope Disturbance	26.1 acres	38.6 acres
Source: Putnam Engineering, PLLC , 2004		

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.



SLOPES LEGEND:

Color	Range
□	0 TO 15%
	15% TO 25%
	>25%

North

File: 02136 09/30/04

Figure 3.1-8: Slopes Disturbance Plan-The Fairways

Gateway Summit/The Fairways

Town of Carmel, Putnam County, New York

Source: Putnam Engineering, P.L.L.C. Revised 09-28-2004

Scale: 1 inch = 400 feet

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

File: 02136 Fig 3.1-9 09/28/04

Figure 3.1-9: Slopes Disturbance Plan - Gateway Summit

Gateway Summit/The Fairways
Town of Carmel, Putnam County, New York
Source: Putnam Engineering, PLLC, Revised 09-27-04
Scale: 1 inch = 300 feet

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

Soils Impacts

Grading will be required for the construction of building sites, roads, stormwater management basins and utilities. Grading plans and estimates have been prepared by Putnam Engineering for both The Fairways site and the Gateways Summit site, including their easement areas. Grading on The Fairways site and its easement will involve the disturbance of an estimated 41.8 acres of the 100.2 acre site, or 41 percent of the site. Grading for the Gateway Summit site and its easement will involve an estimated 73.6 acres of the 90.2 acre site or 82 percent of the site. Therefore, an estimated 58 acres or 58 percent of The Fairways site will remain undisturbed following construction of the residential project. Approximately 16.6 acres or 18 percent of the Gateway Summit site will remain undisturbed.

Detailed grading plans which include areas of cut and fill have been developed for the two project areas and are provided at the rear of this document. The grading plan for The Fairways project is shown in Figure 3.1-10 and the plan for the Gateway Summit site is shown in Figure 3.1-11.

Potential site development limitations presented by the different soil types on site are indicated on Table 3.2-1. Such limitations have required special planning considerations for this project. Planning factors described as limitations in the tables developed by the Soil Conservation Service reflect the difficulty and relative costs of the corrective measures that may be necessary (i.e. construction phasing, erosion control, footing drains or other drainage improvements). The limiting characteristics of these soils can be mitigated by careful project planning, design and management.

The impacts to soils associated with the project are mostly temporary and relate to erosion potential. Soils that will be covered with impervious surfaces will be permanently stabilized, including 24.5 acres on the Gateway Summit site and 12.8 acres for The Fairways site. 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 construction on both The Fairways site and the Gateway Summit site will occur within soils mapped as Paxton and Charlton loam, soils with limitations primarily due to slope and wetness (Paxton loam). Only limited grading will occur in areas of mapped Ridgebury, and Leicester soils, and no grading will occur in Sun loam wetland soils. 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.

Site specific Erosion Control Plans have been developed for the two project sites and are shown in Drawing C-1200 for The Fairways site and Drawing C-103 for the Gateway Summit site. 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.

LEGEND:

AREAS OF CUT

AREAS OF FILL

BARD RD.

KELLY ROAD

HILLSIDE PL.

FAIR

GOLF COURSE

GOLF COURSE

GOLF COURSE

LIMIT OF DISTURBANCE

Area of Existing
Access Easement

TOWN OF CARMEL

Reputed Town Line

TOWN OF SOUTHEAST

SIMPSON

North

File: 03126 Fig 3.1-10 08/30/04

Figure 3.1-10: Grading Plan-The Fairways

Gateway Summit/The Fairways

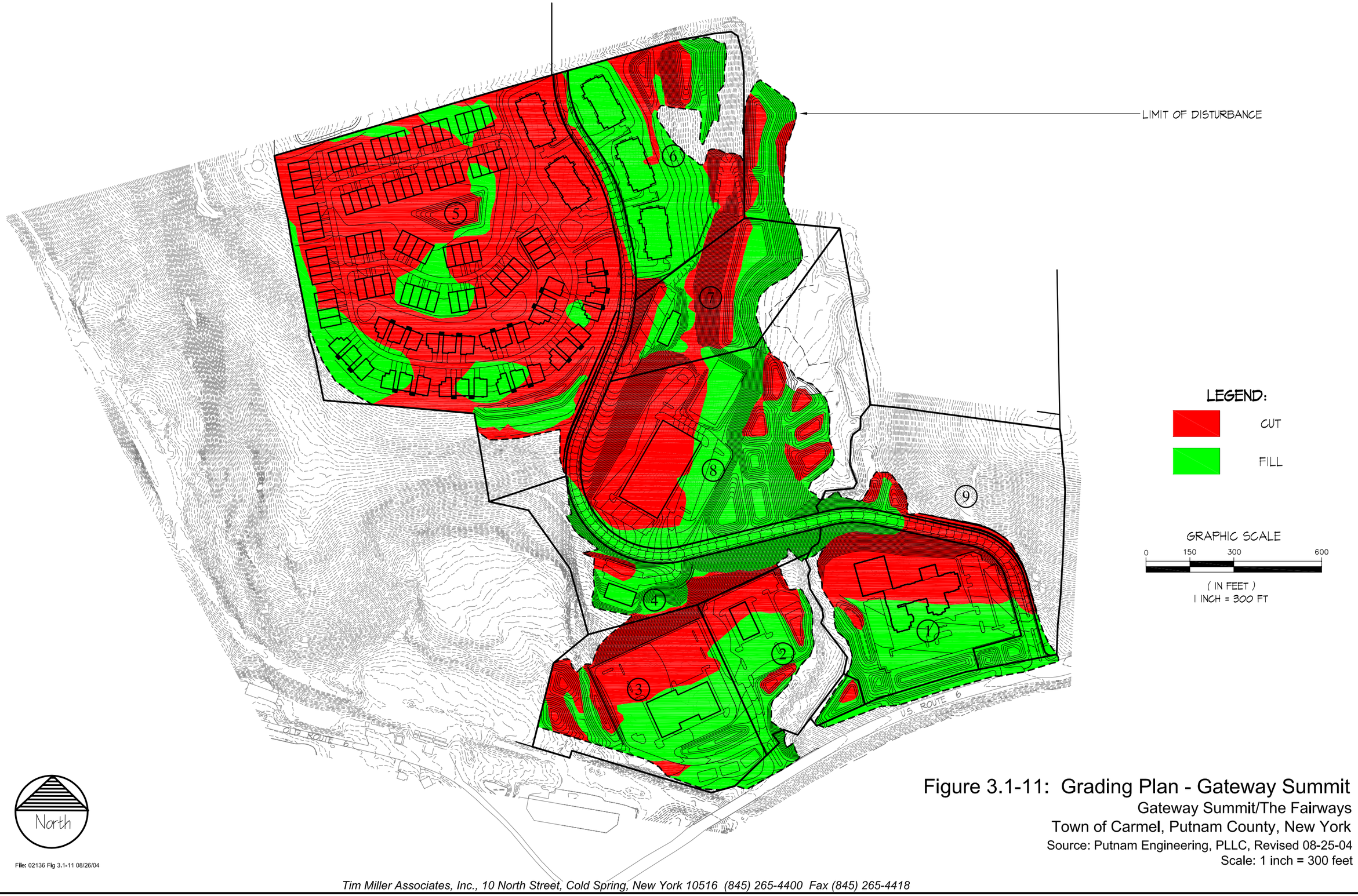
Town of Carmel, Putnam County, New York

Source: Putnam Engineering, P.L.L.C.-Revised 08-30-2004

Scale: 1 inch = 400 feet

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

Fileserver2\Users\Tina_Wang\Projects\02136-GatewaySummit\figures\fig 3.1-10 Grading Plan.dwg



File: 02136 Fig 3.1-11 08/26/04

Figure 3.1-11: Grading Plan - Gateway Summit

Gateway Summit/The Fairways

Town of Carmel, Putnam County, New York

Source: Putnam Engineering, PLLC, Revised 08-25-04

Scale: 1 inch = 300 feet

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

Total earthwork for The Fairways site is estimated to involve approximately 71,587 cubic yards of cut and 140,291 cubic yards of fill, resulting in the need to import approximately 68,704 cubic yards of material. While the preliminary estimates indicate that there would be a deficit of material on The Fairways site, excess material from the Gateway site may be utilized and therefore reduce the required import of material. Engineering estimates indicate the grading for the Gateway Summit site will require 668,800 cubic yards of material cut and 552,500 cubic yards of material fill, resulting in 116,300 cubic yards of excess material. As described above, excess material from the Gateway Summit site may be utilized on The Fairways site. The estimated material balance for both the Gateway Summit and Fairways sites is 47,596 cubic yards.

Geology Impacts

The absence of substantial areas of bedrock outcrops on the sites indicate that blasting may not be required for project construction, or if required, it will be limited. 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 3.1-12 Areas of Potential Rock Removal. As shown in the figure, blasting may be required in two areas on the Gateway Summit site; at the project entrance, and along the access road, in the approximate center of the site.

Quantities of rock excavation cannot be determined from available information. In some areas where rock is encountered, ripping bedrock may be possible in lieu of blasting. Any blasting will be carried out in accordance with the blasting mitigation plan described below.

Given the relatively limited areas on the site where rock removal may be required, impacts to bedrock and any potential impacts to nearby businesses and structures are expected to be small. As shown in Figure 3.1-12, the closest structure to an area of potential rock removal is a church located approximately 420 feet southeast of the site entrance, across Route 6. The closest structures to the northern area of potential rock removal are petroleum storage tanks and a trailer located approximately 980 feet southwest of the potential area of rock removal.

Use and Storage of Road Salt

Following construction, the access road for the Gateways site will be dedicated to the Town of Carmel. The looped roadway and cul de sac for The Fairways property will be owned and maintained by a homeowners association. Winter maintenance for the Gateway access road will be the responsibility of the Town and any use of road salt on the Gateway road will primarily be the responsibility of the Town. Parking lots for the commercial sites on the Gateway Summit property and The Fairways roads and common parking areas will be maintained by private contractors. These contractors will not store salt on the Gateway Summit or The Fairways sites, but would transport the necessary sand and salt in the maintenance trucks used for snow removal and sanding services during the winter months. Practices will be employed to minimize the amounts of salt applied to roads during winter months.

File: 02136 08/05/04

Figure 3.1-12: Areas of Potential Rock Removal - Gateway Summit

Gateway Summit/The Fairways
Town of Carmel, Putnam County, New York
Source: Putnam Engineering, PLLC
Scale: 1 inch = 300 feet

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

3.1.3 Mitigation Measures

Soil Erosion and Sediment Control Plan

Detailed erosion and sedimentation control plans have been developed for each of the project sites by the project engineer, Putnam Engineering, PLLC. The Overall Erosion Control Plan for The Fairways site is provided as Drawing C-1200 , attached at the rear of this document. The Road Erosion Control plan for the Gateway Summit site is provided as Drawing C-103 , at the rear of this document).

The erosion control plans were 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 a construction sequencing schedule, limitations on the area of disturbance, limitations of the duration of soil exposure, criteria and specifications for placement and installation of erosion control devices, and a maintenance schedule.

Erosion Control Sequencing

Erosion control for the Gateway Summit site will occur in five phases, as described on Drawing C-103, Road Erosion Control Plan. Prior to any construction or grading, silt fence and haybales will be installed. In Phase 1, stormwater detention basins temporary diversion swales and grading for the first portion of the entrance drive will be completed. Phase 2 will involve the grading for the portion of the driveway which crosses the small stream on the Gateway Summit site, and will include two stormwater basins to collect the run-off from this portion of roadway.

Phase 3 involves the construction of seven stormwater basins designed to capture run-off from the upper portions of the Gateway Summit drive. Phase 4 involves the construction of the remainder of the project drive to the northern edge of the site. Phase 5 will involve the phased construction of the buildings on each of the building lots. Again, prior to grading on any of the building lots, erosion control measures will be installed. Stormwater run-off will be diverted to previously constructed stormwater management basins.

Erosion control for The Fairways project will be installed according to the construction sequence, which will occur in 12 phases. The Overall Erosion Control Plan for The Fairways project is provided in the drawings at the end of this document (Drawing C-1200). The Erosion Control Plan provides the specific construction phasing, generally progressing from north to south on The Fairways property. Early phases 2 and 3 including the construction of stormwater detention basins, at the northeast edge of the residential development. This series of stormwater basins will capture run-off from a majority of the project site and provide stormwater treatment both during construction and post-construction. Prior to any grading, erosion control features such as silt fences, haybales, diversion swales and check dams will be installed at the down-slope limits of disturbance.

Topsoil from areas to be graded will be stripped and stockpiled on the most level portions of the site for future use. For the Gateway Summit site, topsoil from road construction will be stockpiled in the level portion of site west of the former Town Highway building, as shown in the Road Erosion Control Plan (C-103). Topsoil from The Fairways site will be stockpiled on

the most level areas of the site, at the western edge of the property. 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.

Erosion Control Maintenance

Maintenance of erosion control features is critical to their effectiveness and proper functioning. Erosion control maintenance responsibility and schedule is detailed on the Road Erosion Control Plan (C-103) for the Gateway Summit site and on the Overall Erosion Control Plan (C-1200) for The Fairways project. Inspections are required under NYSDEC and NYC DEP permits.

All erosion and sediment control practices will be checked for stability and operation following every run-off producing rainfall, but at a minimum, each week. Sediment will be removed from detention basins, sediment traps, catch basins, diversion swales, and from behind silt fencing, as need to ensure the proper functioning of the devices. The maintenance activities will be conducted by the construction contractor, and will be the responsibility of the applicant until the final completion of the project, at which time the facilities will be dedicated to the Homeowners Association for The Fairways project site and to the Town for the Gateway Summit site.

Best Management Practices (BMPs)

The principle objectives of the Soil Erosion and Sediment Control Plan are 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 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 58.4 acres (about 58 percent of The Fairways site) will remain undisturbed woods or wetland. For the Gateways site, 16.6 acres or 18 percent of existing woods will be retained.

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. Erosion control maintenance is further described above, under Erosion Control Sequencing. In addition to inspections by Town of Carmel 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 erosion and sediment control features is detailed in the Erosion Control Plan (C-103) for the Gateway Summit site and the Overall Erosion Control Plan (C-1200) for The Fairways site.

Rock Removal Plan

Rock removal may be necessary at two locations. One at the entrance road to the Gateway site and the other at 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 than blasting 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 Carmel Blasting and Explosives regulations. If necessary, blasting operations would be conducted under the direct control and supervision of competent and licensed persons. The blasting contractor performing the work would be fully insured. Once any required blasting sites have been identified, a general blasting schedule would be developed and a blasting permit would be obtained from the Building Inspector covering the specific blasting operation.

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

If blasting is deemed to be necessary, the applicant would 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) would be notified of intent to blast not more than 30 days nor less than 72 hours prior to planned blasting activities, and such persons would be notified not more than 72 hours nor less than 24 hours prior to the commencement of blasting. A qualified independent specialist would inspect site foundations or other sensitive structures within 300 feet of potential blasting sites before and after blasting work. The blasting contractor would be liable for any damage to off-site properties resulting from potential blasting activities.

While there is little potential for impacts to nearby local wells (public water exists in this area), 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.

Rock Removal Procedures

As described above, blasting may potentially be required for construction of the access road. If necessary, all blasting at the site would be conducted using methods to mitigate potential impacts to neighboring properties and residences. A blasting protocol that would be adhered to in the event that blasting is required is summarized below:

- All blasting will be conducted in compliance with New York State requirements (Title 12 of the New York Code of Rules and Regulations (12 NYCRR Part 39).
- Blasting will be conducted by qualified and insured blasting contractors.
- Pre-blasting inspections will be conducted of all off-site structures located within 500 feet of the excavation area, if authorized by the property owner. These inspections will include photographic or video documentation.
- The contractor will conduct test blasting and seismographic monitoring prior to any other blasting to determine appropriate on-site blasting techniques.
- Seismographic monitoring will continue throughout the periods of blasting at the site, and daily logs of seismographic data, explosive use and field conditions will be maintained.